Developer Guide: SAP Mobile Server Runtime

SAP Mobile Platform 2.3 SP02

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Contents

Documentation Roadmap for SAP Mobile Platform

SAP® Mobile Platform documents are available for administrative and mobile development user roles. Some administrative documents are also used in the development and test environment; some documents are used by all users.

See *Documentation Roadmap* in *Fundamentals* for document descriptions by user role.

Check the Product Documentation Web site regularly for updates: *http://sybooks.sybase.com/sybooks/sybooks.xhtml?id=1289&c=firsttab&a=0&p=categories*, then navigate to the most current version.

Security API

Use the Security API to develop a custom authentication or authorization provider. The audience is advanced developers who are experienced in working with APIs, but who may be new to SAP® Mobile Platform.

This guide describes the Common Security Infrastructure (CSI) component, the security framework in SAP Mobile Platform, and how to develop a custom provider for extending the authentication and authorization functionality to use a back-end repository that is not supported by the default providers included in SAP Mobile Platform.

Introducing Security API

Use the Security API to develop a custom provider. The audience is advanced developers who are experienced in working with APIs, but who may be new to SAP Mobile Platform.

SAP Mobile Platform delegates the functions of storing and maintaining users and access control rules to the enterprise's existing security solutions. It uses a plug-in model to delegate the security checks to the configured providers using the CSI component.

CSI has a service provider plug-in model that integrates with the customer's existing security infrastructure. If none of the default providers shipped with SAP Mobile Platform meet the security needs, you can use the Security API to implement a custom login module, authorizer, or attributer that interfaces with a security back-end of your choice and plug it into SAP Mobile Platform.

Companion documentation for Security API includes:

- *Fundamentals*
- *Security*
- *SAP Control Center for SAP Mobile Platform*
- *Troubleshooting*

Quick Start Task Flow

This section provides a quick reference to information and task flows relevant to Security API.

1. *Getting Started with CSI Provider Development*

   This section describes the task flow for developing a custom CSI provider.
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Develop your custom provider by writing a provider metadata file specifying valid configuration options.

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   After you have developed a custom provider, you must package the provider for installation.

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5. *Validating a Custom Provider Using the HTTP Channel Debug Application*

   After installing your custom provider, validate your configuration using the HTTP Channel debug application.

Getting Started with CSI Provider Development

This section describes the task flow for developing a custom CSI provider.

Before you get started with CSI provider development, be aware of provider project dependencies including:

- `csi-core.jar` - This JAR encapsulates the CSI security framework packages, containing classes and interfaces that are required for developing CSI providers. More details on the packages contained in this JAR file can be found in *Developing a Custom Provider* and in the *CSI SDK API Reference*.

  The file can be found at *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI\lib`.
- `providermetadata44.xsd` - This file specifies the XML schema that dictates the structure of a provider metadata file describing the provider configuration options, type, and default values. The provider metadata file is used to display the configuration options for the provider in SAP Control Center and should be present in every CSI provider JAR. For more details on the provider metadata file, see *Developing a Custom Provider* and *Packaging a Custom Provider into a JAR File*. Also refer to *Validating a Custom Provider Using the HTTP Channel Debug Application*.

  This file can be accessed from one of the following locations:
  - *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI\metadata\`
  - From within the `csi-core-admin.jar` at `com\sybase\security\admin\` (the `csi-core-admin.jar` file can be found at *SMP_HOME*`\Servers\UnwiredServer\lib\ext`)

A CSI sample provider project, complete with working code and supporting documentation, can be found at: *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI\samples`. This sample project provides a hands-on approach to exploring the CSI SDK.

The `quickStartGuide.html` file in the CSI SDK describes the steps to set up the sample provider project. This file can be found at: *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI\`.

Developing a Custom Provider

Develop your custom provider by writing a provider metadata file specifying valid configuration options.

Packages in csi-core.jar library

Before starting development, be sure to understand the packages in the CSI core library. Packages include:

- The `com.sybase.security package` contains the main classes and interfaces that define the SAP CSI framework.
- The `com.sybase.security.authorization` package provides various types of security authorization request types with which a CSI consumer could construct more complex authorization requests.
- The `com.sybase.security.callback` package contains the callback and callback handler implementations used and supported by the default authentication providers.
- The `com.sybase.security.core` package contains the default provider implementations packaged as part of `csi-core.jar` file, as well as utility classes that are useful in implementing new providers.
- The `com.sybase.security.provider` package contains the interfaces implemented by various provider types and helper abstract classes. These helper classes provide an abstract implementation of the corresponding provider interfaces, complete with placeholders for all of the implemented interface's methods, so that subclasses need only to override relevant methods. The AbstractLoginModule, AbstractAuthorizer, and AbstractAttributer present in this package can be extended to overwrite the necessary methods to develop a custom login module, authorizer, and attributer respectively.

For more information, see *Security API Reference*.

Writing a provider metadata file

The CSI provider metadata XML file specifies the valid configuration options, including names, types, default values, as well as required or optional properties, for a particular CSI provider. The custom provider's details and configuration options in SAP Control Center is derived from the contents of this file. This metadata file should be named `sybcsi-provider.xml` and should conform to the latest `providermetadata.xsd` file included in the Security API.

A sample `sybcsi-provider.xml` file is available in the sample project located at *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI\samples\src\main\resources`.

Packaging a Custom Provider into a JAR File

After you have developed a custom provider, you must package the provider for installation.

The custom CSI provider classes are packaged into a JAR file that adheres to the standard JAR file specification at *http://docs.oracle.com/javase/6/docs/technotes/guides/jar/jar.html*.

In addition to the standard layout, include a provider metadata file named `sybcsi-provider.xml` at the root directory level of the provider JAR. The details about the custom provider and its configuration options displayed in SAP Control Center come from this file.

Installing a Custom Provider JAR File on SAP Mobile Server

After you have developed your custom provider and packaged the JAR file, you must install the JAR file.

You must make your new CSI provider available to SAP Mobile Server so it can be used in your security configuration. The JAR file needs to be installed onto the server instance by following the steps below:

1. Shutdown the SAP Mobile Server.
2. Copy the custom provider JAR file into the *SMP_HOME*`\Servers\UnwiredServer\lib\ext` folder.
3. Create a file named `sup.cff` in the *SMP_HOME*`\Servers\UnwiredServer\bin\private` directory, if it does not already exist.
4. Start the server using the batch command start mode in order to regenerate the class path.

To confirm that the installation succeeded, create a security configuration using SAP Control Center, and confirm the provider classes packaged in the installed JAR are listed as available providers. For more information, see *Security Configurations* in *SAP Control Center for SAP Mobile Platform*.

Validating a Custom Provider Using the HTTP Channel Debug Application

After installing your custom provider, validate your configuration using the HTTP Channel debug application.

To validate that a security configuration in SAP Mobile Server is setup correctly, use the HTTP Channel debug Web application pre-installed in the SAP Mobile Server.

For more information, see *Debug Security Configurations Using HTTP Channel* in the *Troubleshooting*.

SAP Mobile Platform Security Framework

SAP Mobile Platform delegates the functions of storing and maintaining users and access control rules to the enterprise's existing security solutions. It uses a plug-in model to delegate the security checks to the configured providers that use the CSI component.

CSI has a service provider plug-in model that integrates with the customer's existing security infrastructure. If none of the default providers shipped with SAP Mobile Platform meet your security needs, you can implement a custom login module, authorizer, and attributer that interfaces with the security back-end of choice, and plug it into SAP Mobile Platform as long as it implements the interfaces described in this section.

Administrative access to the SAP Mobile Platform server and the domains is controlled by the providers in the "admin" security configuration. Access to the packages deployed in the various SAP Mobile Platform domains is controlled by the security configuration associated with the packages. Different message-based synchronization (MBS) subscriptions and the mobile business object (MBO) operations in a package may require different roles to access them. The user authentication and role requirement at runtime is enforced by the security configuration associated with the package. The security configuration includes authentication, authorization, attribution, and audit providers.

A CSI SecContextFactory instance is associated with a single security configuration in SAP Mobile Platform and is cached to avoid the overhead in creating and initializing the factory for each authentication. A separate SecContext instance is created for each client authentication request, and is saved for the duration of the client connection. For example, a replication-based synchronization (RBS) session involves authenticating the user, the begin sync event, and the end sync event. For MBS, each message sent by the client results in a separate session in SAP Mobile Platform that triggers user authentication, and an authorization check to verify the user's authority to execute the operation and method invocation requested in the message.

Authentication

Authentication within CSI is performed internally using the Java Authentication and Authorization Services (JAAS) model by supplying the client credentials in an object instance that implements the `javax.security.auth.callback.CallbackHandler` interface.

SAP Mobile Platform caches a successful authentication result for a configurable time interval. If another authentication request using the same credentials is received within the authentication cache time interval after a successful authentication, the request is not delegated to CSI.

The authentication provider interfaces in CSI are primarily based on JAAS. The goal of the design is to allow any implementation of the JAAS pluggable authentication module system to alternatively plug into the CSI framework. Specifically, the

`javax.security.auth.spi.LoginModule` interface must be implemented by all authentication providers. CSI provides a flexible mechanism for defining active authentication providers and their control flags. All control flags defined in JAAS are fully implemented in the SAP Mobile Platform architecture. See the JAAS documentation for a complete discussion of the configuration options available with JAAS login modules.

CSI instantiates new authentication provider instances, upon demand, for each authentication request. This is distinctly different from authorization and attribution providers, for which instances are reused and must be thread-safe. Normally, the first method called on a security context after creation results in authentication. The framework creates the authentication providers using the default public, no-argument constructor. If a provider class does not have a constructor meeting these requirements, a `com.sybase.security.SecException` object is created and thrown with the appropriate detail information.

After initialization, the provider methods are called in the following order; however, not all methods are necessarily called:

1. `initialize()`
2. `login()`
3. `commit()`

At any time after the `login()` method is called on a provider, be prepared for the abort method to be called to abort the authentication attempt.

The `initialize()` method call includes four arguments. The callback handler is how an authentication provider should attempt to retrieve credentials from the client. Also included is a `javax.security.auth.Subject` object, into which an authentication provider typically adds custom principals and credentials. The next argument is a `java.util.Map` instance that provides a way for all configured providers to share information. There are no standard way for providers to communicate with each other, but many of the providers that ship with the JDK support certain well-defined communication capabilities. The last argument is also a `java.util.Map` instance, which represents all of the provider-specific configuration options. Included in this argument are any URLs, user names, passwords, and anything else a provider needs to know about its environment to provide authentication services.

Principals play a crucial role in the JAAS and Java security models. It is through principals that a direct JAAS client can discover an authenticated user. A typical authentication provider might add one or more principals to the subject's principal set (see the `Subject.getPrincipals()` method) after verifying the user's identity. Each principal instance must include at least one method, `getName()`, which is defined in the `java.security.Principal` interface. The return value of this method is a unique string that represents this user in the underlying security system.

For an example, the LDAPLoginModule adds these principal objects to the Subject after authentication

- `com.sybase.security.ldap.LDAPDNPrincipal`, which represents the user's LDAP DN
- `com.sybase.security.ldap.LDAPUsernamePrincipal`, which represents the name used to authenticate the user

Either of these objects can be used individually to determine exactly who the authenticated user is, which makes them good candidates for principals. Examples of other potentially good choices for principals include e-mail address, phone number, or user name. Poor choices for principals include first name, last name, or birthday.

Principals themselves are not useful without any context about where they came from and what format they are in. After authentication is complete and the user's principals are collected, CSI makes a pass through the set of principals and attempts to classify them according to some rudimentary rules. In particular, two categories are defined: name and ID. A principal that is the name of a user is thought to be a principal whose string representation presents itself in a relatively human-readable form. Something like the user name or e-mail address might be considered a name principal. A principal that is an ID principal is typically not very human-friendly–it might be a large number or a string of seemingly random characters that form a machine-readable unique identifier.

Both of these principals are useful in their own places, so CSI provides a way to categorize a principal as a name and/or ID, or neither. You can use the empty interfaces `com.sybase.security.providers.SecIDPrincipal` and `com.sybase.security.providers.SecNamePrincipal` to tag custom authentication providers' principals as name or ID, or both. If a principal instance implements the `SecIDPrincipal` interface, then the value returned from the `getName()` method is added to the security context as an ID attribute. Logically, principals that implement the `SecNamePrincipal` interface are added as NAME attributes in the security context. The actual principal instances themselves remain available to CSI clients and providers within the JAAS subject object, which you can retrieve using the `SecSubject.getJAASSubject()` method.

To facilitate role-based authentication, login modules may also retrieve the roles assigned to a user and add them as Principals to the authenticated subject. If these principals implement the `interface com.sybase.security.core.RoleCheck`, you can use the default authorizer `com.sybase.security.core.RoleCheckAuthorizer`, which is part of the SAP Mobile Platform configurations, to perform authorization checks without the need for an authorization provider for the specific back end.

Table 1. Control Flag Settings for Authentication Providers

Control Flag Value	Description
Required	The authentication provider is always called, and the user must always pass its authentication test. Regardless of whether authentication succeeds or fails, authentication proceeds down the list of providers.

Control Flag Value	Description
Requisite	The user is required to pass the authentication test of the authentication provider. If the user passes the authentication test of the authentication provider, subsequent providers are executed but can fail (except for authentication providers with the JAAS control flag set to required).
Sufficient	The user is not required to pass the authentication test of the authentication provider. If authentication succeeds, no subsequent authentication providers are executed. If authentication fails, authentication proceeds down the list of providers.
Optional	The user is allowed to pass or fail the authentication test of the authentication provider. However, if all authentication providers configured in a security realm have the JAAS control flag set to optional, the user must pass the authentication test of one of the configured providers.

Note: When an authentication provider is added to an existing security configuration, the control flag is set to required by default.

Credentials in Single Sign-on

Created as a direct result of authentication, credentials are usually time-limited objects that you can use to perform tasks such as authorization checks, attribution requests, and single sign-on (SSO).

In addition to principals, credentials help identify users to other remote services. For example, in SAP Mobile Platform where CSI is integrated as the primary security system, credentials perform single sign-on into other systems that are accessed to fulfill a client's request. CSI provides a wrapper on the credential concept to associate a name with a credential. This is to aid SAP Mobile Server in selecting the correct credential to propagate to the remote service when multiple providers (or multiple instances of a provider) add credentials of the same type (class) to the JAAS subject.

You can configure the endpoint connection definition with a property to identify the NamedCredential that should be propagated to the remote service to perform SSO. Credentials can also be used by the providers to communicate session information. An authentication provider can store the session information necessary for the attribution and authorization providers to perform their functions.

Add credentials using the `getPublicCredentials()` and `getPrivateCredentials()` methods from the Subject class. CSI does not treat public and private credentials differently. Providers should follow standard JAAS best practices when using credentials. When the security context is destroyed using the `destroy()` `method`, each of the public and private credentials that implements the `javax.security.auth.Destroyable` interface has its `destroy()` method called. This can be used to close any security doors left open by the credential's existence. For example, destroying the credentials may terminate a user's session that was kept open and

stored in the credential for use by the authorization or attribution provider, or it may have the eventual effect of triggering a logout audit record in the underlying security system.

The interface `com.sybase.security.SSOTokenCredential` should be implemented by credentials that contain tokens to be used for single sign-on into an SAP® system. It is used to identify the credential to be forwarded to an SAP endpoint (both JCo and DOEC endpoints).

The interface `com.sybase.security.CertificateCredential` should be implemented by credentials that contain the certificate to be used for single sign on into an SAP system. It is used to identify the credential to be forwarded to an SAP endpoint (both JCo and DOEC endpoints).

The interface `com.sybase.security.NamedCredential` associates a name with a credential object so the Web service endpoints can be configured with the name of the credential to forward to the Web service for single sign-on.

The interface `com.sybase.security.core.ExpiringCredential` allows a credential to be marked with an expiration time. This is used by SAP Mobile Platform server to expire the user session in the authentication cache based on the credential expiration time instead of the configured authentication cache timeout interval.

Authorization

The authorization provider interface is defined by the `com.sybase.security.provider.Authorizer` interface.

There are two primary worker methods:

- `checkRole()`
- `checkAccess()`

There are also two security context life-cycle methods, `initContext()` and `destroyContext()`, and one provider lifecycle method, `init()`, all of which are inherited from `com.sybase.security.provider.SecContextProvider`.

Provider Initialization

Authorization providers are normally initialized once per static class context. The provider instance itself is shared among any security context instances subsequently created.

The provider must expect to be used concurrently by multiple security clients. The security provider is initialized by the CSI infrastructure with a call to the `init()` method, which takes as an argument a `java.util.Map` of configuration data specific to the provider.

The provider should take this opportunity to validate connections to external resources, if possible, so that configuration errors are manifested as early as possible in the business flow. After initialization, the provider list is provided to security context instances as they are being created. During creation, a security context calls each provider's `initContext()` method, passing in an internal context `java.util.Map` (not to be confused with the security

context). This structure should be used to store any working information that the provider needs to maintain state. Because the provider instances are used concurrently by multiple clients, each provider method's first argument is this context object that is unique to the client's security context.

After context initialization has completed, the following context map data is passed into the security provider methods:

Table 2. Context Map Data

Constant	Expected Data Type	Description
`ProviderConst.SEC_CONTEXT`	`SecContext`	The client security context associated with the context map.
`ProviderConst.CURRENT_SUBJECT`	`SecSubject`	If authenticated, the subject associated with this security context. A provider can use this object to retrieve principals and credentials from the underlying JAAS subject.
`ProviderConst.WARNING_MANAGER`	`WarningManager`	Providers may use this object to add warnings for the current operation. **Note:** Deprecated, use `ProviderServices`.
`ProviderConst.PROVIDER_SERVICES`	`ProviderServices`	Any service exposed internally to all providers is available through this interface, for example `WarningManager`, access to profiles, certificate validation, and so on.

Authorization Checks

The authorization capabilities in SAP Mobile Platform center around two primary authorization methods: role checks and resource access checks.

Role checks are performed using the context's `checkRole()` method, passing the role ID as the parameter. A list of potential roles that may be used for access checks can be retrieved using the `listRoles()` method. Some provider sets have the ability to enumerate the roles available. The return value of this method does not necessarily comprise the complete list of roles, depending on the providers.

Resource access checks are more complicated than role checks because three factors are applied to resource access checks:

- the resource, represented by the `SecResource` interface
- the action, which is a named object
- the subject

Before attempting an access check, a reference to a resource object must be retrieved through a call to `getResource()`, possibly preceded by a call to `listResources()` to obtain a resource list. Next, the client can either immediately call `checkAccess()` supplying the resource reference and an action identifier, or the client can first use the `listActions()` method to retrieve a list of potential actions that can be expected to be performed on a given resource instance. As with all enumeration methods, providers are not required or guaranteed to implement these and in this case additional valid actions may exist for the given resource.

The calls to the variety of `SecContext.checkAccess()` and `SecContext.checkRole()` methods by the client result in calls to the corresponding methods in the authorization provider. The security context combines the results of the role and access check from all of the configured authorization providers when delegating these calls. Therefore, because one provider identifies a user as having a particular role, it does not mean that the `checkRole()` call succeeds.

Access Check

The access checks performed by the `checkAccess()` method are similar to role checks.

There are two differences regarding access checks:

- Instead of a role name, a `SecResource` instance and an action string are supplied. The `SecResource` object is retrieved with the help of the attribution provider, so it is not possible to perform access checks without an attribution provider installed.
- A `com.sybase.security.SecEnvironment` instance may be present, depending on which variant of the method was called.

This argument is additional information the client must pass to the back-end security provider. This could be information about where the security check occurs or extra rules to evaluate in addition to the standard security check. The contents of this structure are not defined by the CSI except to declare it as attributed. Clients and providers need to coordinate what attributes are supported and meaningful. It is important for authorization providers to know when to return NO and when to return ABSTAIN. The same decision flow should be used to determine the return value for the `checkAccess()` method.

Provider Implementation of Role Check

The `checkRole()` method accepts three arguments: the context map, the role name, and a `SecSubject` object.

The first argument is the context map. This is the same argument that was passed into the `initContext()` method, so any information saved in that method call is now available using this object instance.

The second argument provided to the `checkRole()` method is the role name. The specifics of how the implementation interprets this string argument are determined during

implementation. However, SAP strongly recommends that authorization and attribution providers coordinate their efforts. This ensures the results from an attribution provider's `listRoles()` method return named objects whose identifiers are supported as role name arguments in the authorization provider's `checkRole()` method. It is possible for the provider's `checkRole()` implementation to accept multiple role-name formats beyond those returned by the attribution provider.

The third argument provided to the `checkRole()` method is a `SecSubject` object. Note that this is not necessarily the subject object that is authenticated into the active security context, which can be retrieved from the first argument (context map). In CSI, it is possible for a security client to perform a role check on another security subject. Not all providers need support this capability – if the provider does not, then it should simply return ProviderConst.ABSTAIN.

There are three valid return values from an authorization provider authorization check (both role and access check), all of which are contained in the `com.sybase.security.ProviderConst` interface. YES, NO, and ABSTAIN are the three constants. In general, if a provider can verify the existence of a role and can verify that the specified `SecSubject` does not have the role, the provider should return NO. Otherwise, the provider should return ABSTAIN.

For example, the `RoleCheckAuthorizer` provider provides role checking capabilities when the login module adds principals and credentials that implement the `RoleCheck` interface. This provider checks if a principal or credential exists in the JAAS subject with the specified role name and that it implements the `RoleCheck` interface. If the provider finds one, it returns YES. Note that the absence of a principal or credential does not guarantee that the role is not granted to the authenticated user, because the user might be granted the role through an alternate provider in a mixed security model. In this case, the provider must return ABSTAIN or lose interoperability with other authorization providers.

Attribution

The attribution capabilities provide attribute information for attributed objects within the security system and provide lists of objects.

The attribution capabilities are classified as those that perform one or both of the following tasks:

- Provide complete attribute information for attributed objects, for example resources and subjects, within the security system
- Provide enumerated lists of objects, for example resources, resource types, actions, and roles, possibly filtering using qualifiers

Attributed objects are represented by the `com.sybase.provider.Attributed` interface, which is sub-classed by several core interfaces such as `SecSubject` and `SecResource`.

In general, attributed objects may have zero or more attributes assigned to them represented by string keys. Each of these keys may have zero or more string values associated with it. Example attributes for a subject may be first name and e-mail address. Each attribution provider defines their own list of attributes, keys, and values. Some standard attributes that all attribution providers should support, if relevant, are:

- `Const.ATT_NAME`
- `Const.ATT_DESCRIPTION`

These map cleanly to extra fields in named objects.

Not all provider sets include an attribution provider. For example HttpAuthetnicationLoginModule and NTProxyAuthLoginModule do not have a corresponding attributer. In SAP Mobile Platform, the attributer is the key interface for making changes to the back-end security system. The attributer is typically used for listing resources and roles in the back-end. For example LDAPAttributer is used to list the roles defined in the LDAP server. Using the attributer, you can implement self-registration to create a user account in the back-end security configuration or to change a password.

The attribution provider interface is defined by the `com.sybase.security.provider.Attributer` interface. The attribution providers have the same life-cycle methods as the authorization providers. The same rules should be followed with respect to thread safety. All of the attribution provider methods include a context map which can be used to store state information associated with a security context.

Enumeration Methods

Enumeration of objects is a function of the attribution layer.

Methods that meet this qualification typically return a list of named objects and have a name in the format listXYZ where XYZ is an object type, such as Roles or Actions. The enumeration APIs are those which are prefixed by list and return a java.util.List.

Order is important and relevant within the enumeration methods. CSI calls the providers in the order in which they are configured. Values in lists are concatenated in the order in which providers are called. In some cases, duplicates are removed.

Attribution Methods

There are three attribution methods that an attribution provider should implement: `attributeAuthenticatedSubject()`, `attributeSubject()`, and `attributeResource()`.

After authentication, the method `attributeAuthenticatedSubject()` is called to further elaborate on a subject's attributes. Because authentication is done by combining JAAS LoginModules and the results of this authentication process are simply a set of principals and credentials, there is more required after authentication to provide additional information about a user. Immediately following authentication, the CSI architecture reviews the authenticated

subject's principals and initializes the ID and NAME attributes of the `SecSubject` object as described in *Authentication*.

Any attributes other than these must be provided by the `attributeAuthenticatedSubject()` method, which takes two arguments. The first argument is the context map. The second argument is the `SecSubject` object that needs to have attributes defined on it. The attribution provider should use information contained in this object to add more attributes to the subject object.

For example, an LDAP authentication module adds an `LDAPDNPrincipal` principal to the subject's principal set. A companion LDAP attribution provider may contain the `attributeAuthenticatedSubject()` implemented to look for the custom `LDAPDNPrincipal` object in the principal set. It then uses the DN stored in the principal to connect to the LDAP server and retrieve extended attributes about the user represented by the principal. The specifics of the attributes are undefined in the context of CSI – each attribution provider defines its own sets of attributes. The only subject attributes which are used in SAP Mobile Platform are ID and NAME attributes. Others are ignored.

While the most common way to retrieve a `SecSubject` instance is through an authenticated security context's `getSubject()` method, there is also a way to retrieve an unauthenticated subject using the context's `getSubject(String id)` method. It is through this method that the attribution provider's `attributeSubject()` method is called. This method is similar to the `attributeAuthenticatedSubject()` method, except the method is supplied with a single identifier in a third argument that is to be used as the subject identifier. If an attribution provider can recognize and attribute a subject with the given identifier, it should return "true" when complete. This indicates to CSI that the attribution provider recognized a user with the specified identity, and that it should pass an unauthenticated `SecSubject` instance back to the CSI client.

The third attribution method, `attributeResource()` is used in a manner similar to `attributeSubject()`. The security context's `getResource()` method delegates to each of the configured attribution providers, and if one or more signals that it recognized and attributed the provider, a `SecResource` implementation is returned to the client. One difference is that in addition to attributes, this method should populate the resource type lists for the `SecResource` object.

Multiple Provider Interaction

When multiple active providers are configured, CSI reconciles conflicting decisions across the providers.

Security configurations can include a variety of active providers, all interacting and voicing their own perspective on an incoming request. CSI reconciles the conflicting decisions.

Authentication is unique in that it is partly the responsibility of the individual providers and partly the responsibility of the CSI configuration. CSI uses the JAAS authentication model for authentication and allows each provider to be associated with a control flag (required,

requisite, sufficient, and optional). See *http://www.oracle.com/technetwork/java/javase/jaas/index.html* for an introduction to the JAAS model. When reviewing the JAAS model, consider references to `LoginContext` the same as `SecContext` because CSI provides its own entry point.

An additional feature the framework adds on top of the JAAS model is the ability to detect impersonation. This is meaningful when both a user name and other data (certificate or an opaque token) are provided in an authentication request. When the authentication succeeds, the authenticated subject's attributes contain the `Const.ATT_NAME` attribute with the value set to the set of names (derived from the Principal objects of type `com.sybase.security.provider.SecNamePrincipal`) aggregated from the configured providers.

If the configured providers only consider the extra data (for example, certificate or token) and add Principal objects based on that, the supplied user name may not match any of the values for the `Const.ATT_NAME` attribute of the authenticated subject. When it is critical for the supplied user name to match at least one of the Principal names, you can set the configuration property checkImpersonation to true. This results in authentication failure even when all the configured login modules succeed but none of the Named principal names match the supplied user name.

in CSI, the result of authorization operations is either YES, NO, or ABSTAIN. However, there may be multiple authorization providers all vying to respond to a given authorization request. Providers have three possible answers to the authorization question – true, false, or abstain. Abstain should be used when a provider is not capable of answering yes or no. CSI denies the authorization request if either of the following occurs:

- Any authorization provider returns NO
- No authorization provider returns YES

CSI permits the authorization request in any other situation. Another way of describing a successful authorization request is when at least one authorization provider returns YES and none return NO.

The result of attribution operations is also a combined exercise. For methods such as enumeration methods, the union of the corresponding values for each provider is created and returned to the client. For attributed objects, the union of the attributes that each provider states are created.

For example, Provider A knows that Resource A has a NAME attribute of "Resource A" and an OWNER attribute of "Bob". Provider B knows that resource A has a NAME attribute of "Resource A-B" and a GROUP attribute of "Sales". The net attribute names and values for Resource A would be NAME = {"Resource A", "Resource A-B"}, OWNER="Bob", GROUP="Sales".

Shared Data Structures for Providers

Provider instances use a shared map to store information and share it with other providers.

All the provider instances are passed a shared map when context-specific methods are invoked. This map can be used by the provider instances to store context-specific information and share it with other providers that need to access it. If providers need to store and share data at the factory level so they can access the data across multiple contexts, they can do so by storing the data in the map indexed with the key `ProviderConst.FACTORY_LEVEL_SHARED_STATE`.

When using the core provider CertificateValidationLoginModule or CertificateAuthenticationLoginModule, the validated certificate chain is stored in the shared map and available to all the authentication providers using a pre-defined key. Providers can set and retrieve the certificate chain using the key `ProviderConst.CERTIFICATE_SHARED_KEY` to support certificate authentication principals.

In SAP Mobile Platform, all the client parameters (including personalization parameters as well as the HTTP headers and cookies from the client session) are populated in the shared map passed into the `initialize()` method. A map is stored in the shared state with the key `ProviderConst.HTTP_PROPERTIESCOOKIES_SHARED_KEY`. It contains the client parameter names as the keys.

Capability Query

CSI provides the capabilities API to allow a CSI client to interrogate the capabilities of the underlying providers within CSI.

A capability query result has a Boolean value, either true or false. Capabilities are dynamic and may change over time even within the same security context. Standard capabilities are defined in the `com.sybase.security.Const` class. Some of these are listed in the table below:

Table 3. CSI Capabilities APIs

Capability Name	Description
`com.sybase.security.capabilities.provider.SelfRegistration`	If the security context has the ability to perform self registration, this capability is available. **Note:** Not used in SAP Mobile Platform.
`com.sybase.security.capabilities.provider.X509Authentication`	If the security context is able to authenticate X.509 certificates, this capability is available.

Capability Name	Description
`com.sybase.security.capabilities.provider.PasswordChange`	Not used in SAP Mobile Platform.
`com.sybase.security.capabilities.provider.FineGrainAccessControl`	The provider implements the `checkAccess` methods, not just the `checkRole` methods.

The capability API supports provider-specific capabilities. This allows a provider to define its own set of capabilities that may be checked by SAP Mobile Platform. Providers can implement the `com.sybase.security.provider.SecProviderCapabilites` interface to respond to a capabilities query.

Capabilities API that may be implemented by providers is as follows:

```
package com.sybase.security.provider;

/**
* Optional provider interface that allows providers to respond to
capability requests.
*/
public interface SecProviderCapabilities
{
/**
* Called when when building the capability set of a provider. The
* result of this call will not be cached by the SecContext
implementation.
* @param context the context map
* @param capability the capability to check
* @throws SecException if some sort of error occurs that should abort
* the entire capability query.
*/
boolean hasCapability(Map<String, Object> context, String
capability) throws SecException;
}
```

For example, a method implementation in a provider implements `SecProviderCapabilities` interface and supports certificate authentication capability:

```
public boolean hasCapability(Map<String, Object> context, String
capability) throws SecException
{
if (capability.equals(CAPABILITY_X509_AUTHENTICATION))
{
return true;
}

return false;
}
```

CSI Audit Generation and Configuration

CSI provides audit trail generation and configuration.

An audit destination may write an audit record to a file. All audit destinations have the ability to use an audit formatter, although they may be configured to ignore this if they do their own formatting. Audit destinations may be configured to initialize a default formatter. Audit destinations must be thread safe, unlike other CSI providers. CSI guarantees that each audit destination is created only once per factory instance.

However, it may be desirable for an audit destination to be aware of other instances of itself instantiated in the same VM and ensure that these instances appropriately share access to common resources, such as audit files. Audit destinations may also add additional attributes to the audit record, such as a sequential record ID, to guard against log tampering or signature attributes that can be later verified to check for audit record tampering.

The primary sources for generating audit records are:

- CSI core classes perform a variety of operations that generate audit records. Examples of events that are audited include authentication and authorization decisions, self registration attempts, and configuration information such as active provider sets.
- Providers may audit additional information about the operations to which they contribute. An example of extra information might be an extended response from the authentication server that indicates why an operation failed in more detail.

Providers that need to issue audit records can take advantage of auditing APIs defined in the `com.sybase.security.providers.ProviderServices` interface. Those audit APIs require the provider pass in an audit token. This token identifies which provider is issuing the audit request. The provider can retrieve and save this token from the provider configuration using the constant `ProviderConst.AUDIT_TOKEN_CONFIG_PROPERTY` in the provider's `init()` method or a LoginModule's initialize method.

An audit record includes five common parts:

- timestamp - the time at which the event occurred
- resource class - the scope used when processing the resource ID
- resource ID - the object on which an operation is being performed
- action - the operation that is being performed
- decision - the result of the security check

The decision has four potential values: PERMIT, DENY, ABSTAIN or NOTAPPLICABLE. The NOTAPPLICABLE decision is used for those cases where the audit is an event rather than a security decision.

In addition to the core of the audit record, there are additional attributes. These attributes vary with the type of audit record being generated but may include context ID, provider identifier, and failure reason.

The auditing providers consist of the following configurable components:

- The `com.sybase.security.provider.AuditDestination` interface defines APIs for the audit destination component, which decides where to write audit record. The framework includes a simple file-based audit destination component, `com.sybase.security.core.FileAuditDestination`, that uses an audit formatter to retrieve a string representation of the audit record, and writes it to a file.
- The `com.sybase.security.provider.AuditFilter` interface defines APIs for audit filtering components, which decide whether an audit record should be audited or not. The default filter component, `com.sybase.security.core.DefaultAuditFilter`, adopts a filter string to perform audit record filtering. The syntax for the filter consists of zero or more filter expressions, delimited by parenthesis (brackets denote optional values). For example, (expr1)[(expr2)...]. Each of these expressions has syntax like the following: [key1=value [,key2=value...]]. The allowed keys are: ResourceClass, Action, and Decision. For example, filter string (ResourceClass=core.*,Decision=Deny) enables auditing all of the CSI core resource classes involved in a deny decision.

The default formatter, `com.sybase.security.core.XmlAuditFormatter`, stores the audit record in one type of XML format. Each audit destination component is associated with one audit filter and one audit formatter. The framework supports an audit destination control flag scheme similar to Java's JAAS LoginModule control flags of required, requisite, sufficient, and optional.

Table 4. Control Flag Settings for AuditDestination

Control Flag Value	Description
Required	If the audit filter associated with the destination enables logging a particular event, the audit record is always logged to the audit destination, and the logging must succeed. Regardless of whether or not the audit record is successfully logged to the destination, the other configured audit providers are invoked.
Requisite	If the audit filter associated with the destination enables logging a particular event, the audit record is required to be successfully logged to the audit destination. If the audit record is successfully logged to the audit destination provider, subsequent providers are executed but can fail (except for providers with the JAAS control flag set to required).
Sufficient	If the audit filter associated with the destination enables logging a particular event, the audit record is not required to be successfully logged to the audit destination. However, if the audit record is successfully logged by the provider, no subsequent providers are executed. If audit record logging fails, the audit filter proceeds down the list of configured providers.

Control Flag Value	Description
Optional	If the audit filter associated with the destination enables logging a particular event, the logging of the audit record by the provider is allowed to succeed or fail. However, if all the audit destination providers are configured with control flag set to optional, the audit record must be successfully logged by at least one provider.

Note: The audit results are combined in the same way authentication results of login modules are combined to decide if the authentication succeeds or not overall. If the combined audit result fails, then the security operation being audited fails. For example, if an authorization check is audited and the audit filter is set up to log that event, the authorization check fails if the audit record cannot be successfully logged even if the authorization provider returns VOTE_YES.

Configuration Validation

The provider architecture allows each configured provider to have its own namespace of configuration options.

When a provider's `init()` method (or a login module's `initialize()` method) is called, a configuration map is provided. The keys and values in the map always appear as string types.

To detect any configuration errors before they are saved, CSI validates that the supplied internal configuration in the properties format adheres to the stored provider metadata, and the providers validate the supplied configuration by performing runtime checks where possible. The provider implementations should include a `sybcsi-provider.xml` file that contains the metadata about the valid configuration options (including names, types, default values, and whether they are required or optional properties, and so on) to simplify the configuration administration and validation. The provider metadata should conform to the latest configuration XSD included in the SDK.

A provider can participate in configuration validation by implementing the optional interface `com.sybase.security.provider.SecConfigurationValidatingProvider` to perform the same validation checks on the specified configuration options that it performs at runtime when instantiated with the configuration using the `init()` method. It should return the validation errors as a list of `com.sybase.security.provider.ConfigurationProblem`.

A configuration problem report includes an error description, its severity, and the configuration property with which it is associated. In the case of a missing required property or an invalid property combination, the problem is associated with the provider itself.

Login modules can implement `com.sybase.security.provider.NamedCredentialProvider` as an

optional interface to aid in validating that the NamedCredential added by the provider does not conflict with the credentials added by other configured login modules.

Internationalization in CSI

Internationalization ensures that data integrity is maintained while passing through the CSI core.

The core CSI classes do not provide any character set conversions. All string type values are expected to be encoded in Java standard UCS-16. Any providers that receive or send character-based information in any other character set are responsible for character set conversions.

The following examples show how the API handles character sets:

XML Configuration

The XML configuration provider retrieves configuration data from the XML file. It uses standard Java APIs to read and process the XML data. Any non-ASCII data embedded in the XML file is properly handled and converted to strings using an active Java XML parser (JAXP).

LDAP Attributer

The LDAP attributer uses the JNDI LDAP provider to retrieve attribute data about specific subjects. Exact string references are returned from the JNDI LDAP provider, and the CSI core does not inspect the string.

Login Module

The login module requests any credentials from the supplied callback. The transmission of credentials to the login module is done through the JAAS callback mechanism, requiring the login module to request any credentials from the supplied callback.

CSI and Provider Localization

Message localization within the CSI core and the default providers is performed using Java resource bundles along with some internal-only helper classes.

Messages are localized to the system locale before being written to a file or shown to a user.

Note: No translations are maintained, except the English default.

CSI core does not provide localization services to the providers. Provider authors are encouraged to use the Java resource bundle technique to provide localization services, but may choose to use other methods.

CSI Core Java Logging

CSI core and its default providers use Java logging APIs.

SAP Mobile Platform using the CSI core enables you to configure and localize logging.

CSI does not provide any logging services to providers. It is the responsibility of each provider author to log messages using their framework of choice. Providers are encouraged to use Java logging and resource bundles, which ensure that custom provider logging can be configured from SAP Control Center for SAP Mobile Platform.

SAP Mobile Platform Logging Configuration

The SAP Mobile Platform logging configuration sets the logging level for the core CSI framework classes and the default providers shipped with SAP Mobile Platform when the **Security** component logging level is set in SAP Control Center for SAP Mobile Platform.

If you develop and deploy a custom provider with a different namespace, the log level for it can be set using the **Other** component in the SAP Control Center for SAP Mobile Platform log configuration screen. The **Other** component includes all third-party libraries deployed and used in SAP Mobile Platform, and results in a large number of log messages.

SAP recommends that a custom security provider be developed in the namespace `sup.custom.security.*`.

Logging Localization

All log messages generated at the INFO level and higher within the framework and the default providers can be localized.

Localization of messages within CSI core and the default providers is performed using Java resource bundles along with some internal-only helper classes. In contrast, DEBUG messages cannot be localized because they are intended to be interpreted by technical support and development personnel only. Implement a custom provider implementation using the same guideline.

For more information, see *Localization*.

Error Handling for Providers

Errors in the providers are typically reported by throwing exceptions.

Localized error messages are made available from the `java.lang.Throwable.getMessage()` method that all exception classes implement. However, the framework defines a few exception types and interfaces that are

intended to be used for reporting errors. The exception `com.sybase.security.SecException` can be thrown from most methods.

The framework aggregates results from multiple providers where each can throw their own errors for a given operation. Also, the providers can be stacked where only a subset of providers are required to fulfill a request (authentication or audit) controlled by the control flag. For example, if the first authentication provider fails with an exception, and the second one succeeds, the exception thrown by the first provider is not propagated to the client if the control flag dictates that the error is irrelevant in the authentication process. Control flag is a JAAS concept. For more detailed information, refer to the `javax.security.auth.login.Configuration` javadoc at *http://docs.oracle.com/javase/6/docs/api/javax/security/auth/login/Configuration.html*.

The framework allows all warnings to be tracked and retrieved so they can be propagated to SAP Mobile Platform clients. Warnings are represented by the `com.sybase.security.SecWarning` interface. Providers can introduce new warnings using special provider-side APIs. There are several predefined warning sub-interfaces for standard security messages such as `password is expiring in the future at this time/date`.

See the javadoc for more details. SAP Mobile Platform inspects the warnings after an authentication attempt and although not all warnings are returned to the client, SAP Mobile Platform does look for a few pre-defined warnings that are propagated to clients.

Error Localization

Exception messages generated by the security framework and the default providers can be localized.

All messages are propagated in the system locale only. The security context does not provide a way to specify an alternative location for message translation

CSI does not provide error or message localization services to the providers. Each provider author must choose a localization facility. Providers are encouraged to use Java resource bundles for error or message localization.

Reporting Errors and Warnings from Providers

Providers indicate errors and warnings in a variety of ways, including framework and stack-trace logging to the logging system. Provider authors can customize exception handling and reporting.

Nearly all provider methods include `SecException` to indicate a failure. At a minimum, the framework logs the exception's message and stack trace to the logging system. The framework may propagate the message to the client, depending on the provider type and the exception type. The framework may add the exceptions to the context warning list or log them for troubleshooting purposes.

In the provider implementation, use `com.sybase.security.provider.ProviderServices` to add a warning to the SecContext. The ProviderServices can be accessed from the shared map passed into the initialize method in the provider (ProviderServices)sharedState.get(ProviderConst.PROVIDER_SERVICES).

Authentication providers have an alternative mechanism to propagate warnings. When a LoginException is thrown from the login method of an authentication provider, the framework automatically adds a warning to the SecContext. If the LoginException instance already implements the SecWarning interface, the exception itself is added as a warning. Otherwise, the exception is wrapped in a lightweight wrapper (`com.sybase.security.provider.SecLoginExceptionWarningImpl`). The authentication provider can use the `com.sybase.security.provider.SecLoginExceptionAuthenticationFailureWarningImpl` class to simultaneously signify login failure and supply a more specific failure reason mapped from `com.sybase.security.core.AuthenticationFailureReasons`.

For more details, see the javadoc for these classes, and refer to the sample provider implementation in the server SDK.

Security API Reference

Use the Quick Start Guide and the javadoc as a Security API reference.

Refer to the sample project in the *Quick Start Guide* located in the SAP Mobile Platform installation directory: *SMP_HOME*`\Servers\UnwiredServer\ServerSDK\securityAPI`

Refer to the Security API javadoc for applicable documentation for each available package.

security package

The com.sybase.security package contains the main classes and interfaces that define the SAP Common Security Infrastructure (CSI) framework.

Members

All public members of the security package.

- **authorization package –** The authorization package provides various types of security authorization request types with which a CSI consumer could construct more complex authorization requests.
- **callback package –** The com.sybase.security.callback package contains the callback and callback handler implementations used/supported by the default authentication providers.

- **core package –** The com.sybase.security.core package contains the default provider implementations that are packaged as part of csi-core.jar file as well as some utility classes that are useful in implementing new providers.
- **provider package –** Custom providers allow for the customization and extension of security enforcement as needed, by implementing Provider-side interfaces to author custom providers.
- **Attributed interface –** All objects that have Attributes should implement this interface.
- **CertificateCredential class –** This class exposes the method to retrieve the certificate after a user has been authenticated so that other components can retrieve it for performing SSO.
- **Const interface –** This interface defines constants for use with CSI.
- **Decision class –** Represents decisions within the audit subsystems.
- **Named interface –** This interface defines a base for objects that have names and unique identifiers.
- **NamedCredential interface –** This interface associates a name with a credential object added to the JAAS subject.
- **Operation class –** Represents operations that can be performed on cryptographic objects.
- **SecAdminContext interface –** This interface provides access to administrative CSI services.
- **SecConfiguration interface –** The interface that describes the configuration interface for CSI.
- **SecConfiguration2 interface –** The interface that describes the configuration interface for CSI.
- **SecConfiguration3 interface –** The interface that describes the configuration interface for CSI.
- **SecContext interface –** This interface defines methods available for performing security checks, and factories for Resource, Subject, and Environment classes.
- **SecContextFactory class –** This class exposes factory methods that other SAP products can use for programmatic security.
- **SecEnvironment interface –** This interface wraps classes that can convey arbitrary attributes of the execution environment to the PDP.
- **SecException class –** Various security exceptions that occur during the use of methods in this package will throw this exception.
- **SecProfile interface –** This interface defines methods available for obtaining information on profiles.
- **SecResource interface –** This interface defines classes that can represent a protected resource in a security system.
- **SecSubject interface –** This interface defines methods available for obtaining information on subjects.
- **SecWarning interface –** An interface to propagate error information from the framework or the provider to the client.

- **SSOTokenCredential interface –** This represents a credential that contains Single Sign On (SSO) data that can be retrieved from an authenticated Subject.

Remarks

CSI has a service provider plug-in model defined by the classes and interfaces in the com.sybase.security package that allows providers to be plugged into the framework to integrate with the existing security infrastructure. If none of the default providers meet the security needs, one can implement a new provider that interfaces with a security back-end of choice and plug it into CSI as long as it implements the relevant interfaces.

authorization package

The authorization package provides various types of security authorization request types with which a CSI consumer could construct more complex authorization requests.

Members

All public members of the authorization package.

- **AbstractAuthzChecker class –** The abstract base class that implements the setters/getters in the AuthorizationChecker interface.
- **AbstractAuthzRequest class –** Base class that implements the setters/getters in the AuthzRequest interface.
- **AuthorizationChecker interface –** Interface that should be implemented by all authorization checkers.
- **AuthorizationCheckerFactory class –** Factory to obtain an AuthorizationChecker that knows how to evaluate a given AuthzRequest type.
- **AuthzRequest interface –** The Marker interface to define authorization requests.
- **AuthzResponse interface –** The Marker interface to define the authorization response returned.
- **AuthzResponseImpl class –** Basic implementation of AuthzResponse interface.
- **CompositeAuthzRequest interface –** An authorization request interface that groups multiple requests together in some fashion.
- **FineGrainedAuthzChecker class –** Authorization checker that checks if the subject is allowed to perform specified action on the specified resource using the SecContext.checkAccess() method.
- **FineGrainedAuthzRequest class –** Fine grained authorization request to check if the subject is allowed to perform specified action on the specified resource.
- **LogicalAndAuthzChecker class –** Authorization checker that returns a response with PERMIT decision only if all of the authorization requests are successful.
- **LogicalAndAuthzRequest class –** Composite authorization request for authorization check to succeed only if all of the authorization requests are successful.
- **LogicalOrAuthzChecker class –** Authorization checker that returns a response with PERMIT decision if at least one of the authorization requests is successful.

- **LogicalOrAuthzRequest class –** Composite authorization request for authorization check to succeed if at least one of the authorization requests is successful.
- **RoleAuthzChecker class –** Authorization checker that performs role check using the SecContext.checkRole() method.
- **RoleAuthzRequest class –** An implementation class for Role based authorization requests.

Remarks

In cases where the access control policy is not straight forward role based access control, these request objects may be combined to pose a more complex authorization request, and use the SecContext.checkAuthorization method. One benefit of this is to avoid false negative audit records.

For example, if the security policy says "grant access if the user is in any one of this set of roles {A, B, C}", the Policy Enforcement Point (PEP), without the support for complex authorization requests, could have checked each role separately and granted access if any of the checks succeeded, but we might have ended up with DENY audit records for failed checks without any indication that all the role checks are tied to one single access check.

Using this package, a composite request can be constructed as demonstrated int he following sample code:

```
            CompositeAuthzRequest request =
        RoleAuthzRequest.getCompositeAuthzRequest(
    Arrays.asList(new String[]
         { "A", "B", "C" }), LogicalOrAuthzRequest.class);
     request.setPackage("Application A");
     AuthzResponse resp = _context.checkAuthorization(request);
     if (resp.getDecision() == Decision.PERMIT)
     {
         // access granted
```

The audit records generated for a composite authorization check are all tied with the same request ID to indicate that they are all part of one composite authorization check.

At the moment there are 4 types of AuthzRequest: RoleAuthzRequest uses checkRole to check a role. LogicalOrAuthzRequest returns PERMIT if any of the requests contained within the composite request returns PERMIT LogicalAndAuthzRequest returns PERMIT only if all of the requests contained within the composite return PERMIT FineGrainedAuthzRequest uses checkAccess to perform a fine grained access check

For each AuthzRequest there is a corresponding AuthorizationChecker. The AuthorizationCheckerFactory is used to correlate a AuthzRequest with its corresponding checker. At some future point we may allow extensions beyond these 4 request types, but for the moment this is closed.

AbstractAuthzChecker class

The abstract base class that implements the setters/getters in the AuthorizationChecker interface.

Syntax

```
public class AbstractAuthzChecker
```

Derived classes

- *com.sybase.security.authorization.FineGrainedAuthzChecker* on page 41
- *com.sybase.security.authorization.LogicalAndAuthzChecker* on page 43
- *com.sybase.security.authorization.LogicalOrAuthzChecker* on page 45
- *com.sybase.security.authorization.RoleAuthzChecker* on page 47

Remarks

Sub-classes should implement the performAuthorization() method.

getAuthorizationCheckerFactory() method

Method to retrieve an alternate AuthorizationCheckerFactory when the current AuthorizationChecker is required to process a nested AuthzRequest of a different type.

Syntax

```
AuthorizationCheckerFactory getAuthorizationCheckerFactory()
```

Returns

The factory for producing Authorization Checkers

Usage

AuthzRequests can nest other AuthzRequests of different types internally. When an

AuthorizationChecker

finds a nested request of a different type from which it was coded to process, it uses the

AuthorizationCheckerFactory

to retrieve an alternate

AuthorizationChecker

it can chain to process the nested request.

The factory for producing Authorization Checkers

inheritAttributes(AuthzRequest , AuthzRequest) method
Transfer the request attributes (SecSubject, Environment, Package) from a parent request to a child request.

Syntax
```
void inheritAttributes ( AuthzRequest parent , AuthzRequest child )
```

Parameters

- **parent –** The parent request
- **child –** The child request

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic behind a specific AuthzRequest type.

Syntax
```
abstract AuthzResponse performAuthorization ( AuthzRequest request , Map< String, Object > context , Map< String, Object > auditDetails ) throws SecException
```

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed.
- **auditDetails –** map containing the information to be added into the audit record.

Returns
An AuthzResponse describing if the request was Denied or Permitted.

Exceptions

- **SecException class –** security exceptions that occurs when an error is encountered while performing the authorization check.

Usage

An AuthzResponse describing if the request was Denied or Permitted.

setAuthorizationCheckerFactory(AuthorizationCheckerFactory) method
Sets the AuthorizationCheckerFactory to map an AuthzRequest to the corresponding AuthorizationChecker implementation.

Syntax
```
void setAuthorizationCheckerFactory
( AuthorizationCheckerFactory acf)
```

Parameters

- **acf –** The AuthorizationCheckerFactory to be used to obtain an AuthorizationChecker.

_acf variable
The AuthorizationCheckerFactory used to get the AuthorizationChecker.

Syntax
```
AuthorizationCheckerFactory _acf
```

MESSAGES variable
Member used to retrieve appropriate messages from resource bundles.

Syntax
```
final Messages MESSAGES
```

AbstractAuthzRequest class
Base class that implements the setters/getters in the AuthzRequest interface.

Syntax
```
public class AbstractAuthzRequest
```

Derived classes

- *com.sybase.security.authorization.FineGrainedAuthzRequest* on page 42
- *com.sybase.security.authorization.LogicalAndAuthzRequest* on page 44
- *com.sybase.security.authorization.LogicalOrAuthzRequest* on page 46
- *com.sybase.security.authorization.RoleAuthzRequest* on page 48

getEnvironment() method
Retrieves the environment object set in the request.

Syntax
```
SecEnvironment getEnvironment ()
```

Returns
Returns the SecEnvironment object set in the request

Usage

Returns the SecEnvironment object set in the request

getPackage() method
Retrieves the scope to be used for the authorization request.

Syntax
```
String getPackage ()
```

Returns
A string representing the package scope to be used for the authorization request.

Usage

A string representing the package scope to be used for the authorization request.

getSubject() method
Retrieves the subject to be used for the authorization request.

Syntax
```
SecSubject  getSubject ()
```

Returns
Returns the SecSubject to be used for the authorization request

Usage

Returns the SecSubject to be used for the authorization request

setEnvironment(SecEnvironment) method
Sets the environment object to be used for evaluating the authorization request.

Syntax
```
void setEnvironment (  SecEnvironment  environment )
```

Parameters

- **environment –** The SecEnvironment object to be used for evaluating the authorization

setPackage(String) method
Sets the scope to be used for the authorization request.

Syntax
```
void setPackage ( String pkg )
```

Parameters

- **pkg –** The package scope to be used for the authorization request.

setSubject(SecSubject) method
Sets the subject to be used for the authorization check.

Syntax
```
void setSubject (  SecSubject  subject )
```

Parameters

- **subject –** The SecSubject to be used for the authorization check.

_environment variable
The Security environment of the PDP.

Syntax
```
SecEnvironment  _environment
```

_pkg variable
The scope to be used for authorization check.

Syntax
```
String _pkg
```

_subject variable
The subject to be used for the authorization check.

Syntax
```
SecSubject  _subject
```

AuthorizationChecker interface
Interface that should be implemented by all authorization checkers.

Syntax
```
public interface  AuthorizationChecker
```

Derived classes

- *com.sybase.security.authorization.AbstractAuthzChecker* on page 30

getAuthorizationCheckerFactory() method
Method to retrieve an alternate AuthorizationCheckerFactory when the current AuthorizationChecker is required to process a nested AuthzRequest of a different type.

Syntax
```
AuthorizationCheckerFactory getAuthorizationCheckerFactory()
```

Returns
The factory for producing Authorization Checkers

Usage

AuthzRequests can nest other AuthzRequests of different types internally. When an

AuthorizationChecker

finds a nested request of a different type from which it was coded to process, it uses the

AuthorizationCheckerFactory

to retrieve an alternate

AuthorizationChecker

it can chain to process the nested request.

The factory for producing Authorization Checkers

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic behind a specific AuthzRequest type.

Syntax
```
AuthzResponse performAuthorization( AuthzRequest request, Map< String, Object > context, Map< String, Object > auditDetails) throws SecException
```

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed.
- **auditDetails –** map containing the information to be added into the audit record.

Returns
An AuthzResponse describing if the request was Denied or Permitted.

Exceptions

- **SecException class –** security exceptions that occurs when an error is encountered while performing the authorization check.

Usage

An AuthzResponse describing if the request was Denied or Permitted.

setAuthorizationCheckerFactory(AuthorizationCheckerFactory) method
Sets the AuthorizationCheckerFactory to map an AuthzRequest to the corresponding AuthorizationChecker implementation.

Syntax
```
void setAuthorizationCheckerFactory
( AuthorizationCheckerFactory acf)
```

Parameters

- **acf –** The AuthorizationCheckerFactory to be used to obtain an AuthorizationChecker.

AuthorizationCheckerFactory class
Factory to obtain an AuthorizationChecker that knows how to evaluate a given AuthzRequest type.

Syntax
```
public class AuthorizationCheckerFactory
```

getChecker(AuthzRequest) method
Returns an AuthorizationChecker that knows how to evaluate a given AuthzRequest type.

Syntax
```
AuthorizationChecker getChecker( AuthzRequest request) throws
SecException
```

Parameters

- **request –** authorization request type

Returns
An AuthorizationChecker that knows how to evaluate a given AuthzRequest type

Exceptions

- **SecException class –**

Usage

An AuthorizationChecker that knows how to evaluate a given AuthzRequest type

AuthzRequest interface
The Marker interface to define authorization requests.

Syntax
```
public interface AuthzRequest
```

Derived classes

- *com.sybase.security.authorization.AbstractAuthzRequest* on page 32
- *com.sybase.security.authorization.CompositeAuthzRequest* on page 40

getEnvironment() method
Retrieves the environment object set in the request.

Syntax
```
SecEnvironment getEnvironment ()
```

Returns
Returns the SecEnvironment object set in the request

Usage

Returns the SecEnvironment object set in the request

getPackage() method
Retrieves the scope to be used for the authorization request.

Syntax
```
String getPackage ()
```

Returns
A string representing the package scope to be used for the authorization request.

Usage

A string representing the package scope to be used for the authorization request.

getSubject() method
Retrieves the subject to be used for the authorization request.

Syntax
```
SecSubject getSubject ()
```

Returns
Returns the SecSubject to be used for the authorization request

Usage

Returns the SecSubject to be used for the authorization request

setEnvironment(SecEnvironment) method
Sets the environment object to be used for evaluating the authorization request.

Syntax
```
void setEnvironment ( SecEnvironment environment )
```

Parameters

- **environment –** The SecEnvironment object to be used for evaluating the authorization

setPackage(String) method
Sets the scope to be used for the authorization request.

Syntax
```
void setPackage ( String pkg )
```

Parameters

- **pkg –** The package scope to be used for the authorization request.

setSubject(SecSubject) method
Sets the subject to be used for the authorization check.

Syntax
```
void setSubject ( SecSubject subject )
```

Parameters

- **subject –** The SecSubject to be used for the authorization check.

AuthzResponse interface
The Marker interface to define the authorization response returned.

Syntax
```
public interface AuthzResponse
```

Derived classes

- *com.sybase.security.authorization.AuthzResponseImpl* on page 39

getDecision() method
Returns the decision of the authorization check.

Syntax
```
Decision getDecision()
```

Returns
the Decision object representing the authorization decision

Usage

the Decision object representing the authorization decision

setDecision(Decision) method
Sets the decision of the authorization check.

Syntax
```
void setDecision( Decision decision)
```

Parameters

- **decision –** The Decision of the authorization check

AuthzResponseImpl class
Basic implementation of AuthzResponse interface.

Syntax
```
public class AuthzResponseImpl
```

getDecision() method
Returns the decision of the authorization check.

Syntax
```
Decision getDecision()
```

Returns
The decision of the authorization check.

Usage

The decision of the authorization check.

setDecision(Decision) method
Sets the decision of the authorization check.

Syntax
```
void setDecision ( Decision decision )
```

Parameters

- **decision –** The decision of the authorization check.

CompositeAuthzRequest interface
An authorization request interface that groups multiple requests together in some fashion.

Syntax
```
public interface CompositeAuthzRequest
```

Derived classes

- *com.sybase.security.authorization.LogicalAndAuthzRequest* on page 44
- *com.sybase.security.authorization.LogicalOrAuthzRequest* on page 46

getRequestList() method
Returns the list of authorization requests.

Syntax
```
List< AuthzRequest > getRequestList ()
```

Returns
the list of authorization requests.

Usage

the list of authorization requests.

setRequestList(List< AuthzRequest >) method
Sets the list of authorization requests.

Syntax
```
void setRequestList ( List< AuthzRequest > requestList )
```

Parameters

- **requestList –** list of authorization requests.

FineGrainedAuthzChecker class
Authorization checker that checks if the subject is allowed to perform specified action on the specified resource using the SecContext.checkAccess() method.

Syntax
```
public class  FineGrainedAuthzChecker
```

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic for a FineGrainedAuthzRequest.

Syntax
```
AuthzResponse performAuthorization ( AuthzRequest request , Map< String, Object > context ,  Map< String, Object > auditDetails ) throws SecException
```

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed
- **auditDetails –** map containing the information to be added into the audit record.

Returns
an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if the current subject is allowed to perform the action on the resource specified in the request.

Exceptions

- **SecException class –**

Usage

an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if the current subject is allowed to perform the action on the resource specified in the request.

FineGrainedAuthzRequest class
Fine grained authorization request to check if the subject is allowed to perform specified action on the specified resource.

Syntax
```
public class  FineGrainedAuthzRequest
```

FineGrainedAuthzRequest(String, SecResource) constructor
Constructs a fine grained authorization request to check if the subject is allowed to perform specified action on the specified resource.

Syntax
```
FineGrainedAuthzRequest ( String action ,   SecResource  resource )
```

getAction() method
Returns the action set in the request.

Syntax
```
String getAction ()
```

Returns
the action set in the request.

Usage

the action set in the request.

getResource() method
Returns the resource set in the request.

Syntax
```
SecResource  getResource ()
```

Returns
the resource set in the request.

Usage

the resource set in the request.

setAction(String) method
Sets the action to be used in the authorization request.

Syntax
```
void setAction ( String action )
```

Parameters

- **action –** Action to be used in the authorization request.

setResource(SecResource) method
Sets the resource to be used in the authorization request.

Syntax
```
void setResource (  SecResource  resource )
```

Parameters

- **resource –** resource to be used in the authorization request.

LogicalAndAuthzChecker class
Authorization checker that returns a response with PERMIT decision only if all of the authorization requests are successful.

Syntax
```
public class  LogicalAndAuthzChecker
```

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic for a LogicalAndAuthzRequest.

Syntax
```
AuthzResponse performAuthorization ( AuthzRequest request , Map< String, Object > context ,  Map< String, Object > auditDetails ) throws SecException
```

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed
- **auditDetails –** map containing the information to be added into the audit record.

Returns
an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT only if all the authorization requests in the list are permitted.

Exceptions

- **SecException class –**

Usage

an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT only if all the authorization requests in the list are permitted.

LogicalAndAuthzRequest class
Composite authorization request for authorization check to succeed only if all of the authorization requests are successful.

Syntax
```
public class LogicalAndAuthzRequest
```

LogicalAndAuthzRequest(List< AuthzRequest >) constructor
Constructs a composite LogicalAndAuthzRequest for authorization check to succeed only if all of the authorization requests are successful.

Syntax
```
LogicalAndAuthzRequest ( List< AuthzRequest > requestList )
```

Parameters

- **requestList –** list of authorization requests

LogicalAndAuthzRequest() constructor
Constructs a composite LogicalAndAuthzRequest for authorization check to succeed only if all of the authorization requests are successful.

Syntax
```
LogicalAndAuthzRequest ()
```

getRequestList() method
Returns the list of authorization requests set in the composite request.

Syntax
```
List< AuthzRequest > getRequestList ()
```

Returns
list of authorization requests

Usage

list of authorization requests

setRequestList(List< AuthzRequest >) method
Sets the list of authorization requests in the composite request.

Syntax
`void setRequestList ( List< AuthzRequest > requestList )`

Parameters

- **requestList –** list of authorization requests

_requests variable
The list of authorization requests used in the LogicalAndAuthzRequest.

Syntax
`List< AuthzRequest > _requests`

LogicalOrAuthzChecker class
Authorization checker that returns a response with PERMIT decision if at least one of the authorization requests is successful.

Syntax
`public class LogicalOrAuthzChecker`

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic for a LogicalOrAuthzRequest.

Syntax
`AuthzResponse performAuthorization ( AuthzRequest request , Map< String, Object > context , Map< String, Object > auditDetails )` throws `SecException`

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed
- **auditDetails –** map containing the information to be added into the audit record.

Returns
an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if least one of the authorization requests is permitted.

Exceptions

- **SecException class –**

Usage

an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if least one of the authorization requests is permitted.

LogicalOrAuthzRequest class
Composite authorization request for authorization check to succeed if at least one of the authorization requests is successful.

Syntax
```
public class LogicalOrAuthzRequest
```

LogicalOrAuthzRequest(List< AuthzRequest >) constructor
Constructs a composite LogicalOrAuthzRequest for authorization check to succeed if at least one of the authorization requests in the list is successful.

Syntax
```
LogicalOrAuthzRequest ( List< AuthzRequest > requestList )
```

Parameters

- **requestList –** list of authorization requests

LogicalOrAuthzRequest() constructor
Constructs a composite LogicalOrAuthzRequest for authorization check to succeed if at least one of the authorization requests in the list is successful.

Syntax
```
LogicalOrAuthzRequest ()
```

getRequestList() method
Returns the list of authorization requests set in the composite request.

Syntax
```
List< AuthzRequest > getRequestList ()
```

Returns
list of authorization requests

Usage

list of authorization requests

setRequestList(List< AuthzRequest >) method
Sets the list of authorization requests in the composite request.

Syntax
`void setRequestList ( List< AuthzRequest > requestList )`

Parameters

- **requestList –** list of authorization requests

_requests variable
The list of authorization requests used in the LogicalOrAuthzRequest.

Syntax
`List< AuthzRequest > _requests`

RoleAuthzChecker class
Authorization checker that performs role check using the SecContext.checkRole() method.

Syntax
`public class RoleAuthzChecker`

performAuthorization(AuthzRequest , Map< String, Object >, Map< String, Object >) method
This method implements the authorization logic for a RoleAuthzRequest.

Syntax
`AuthzResponse performAuthorization ( AuthzRequest request , Map< String, Object > context , Map< String, Object > auditDetails )` throws `SecException`

Parameters

- **request –** the AuthzRequest being processed.
- **context –** the security context in which the request is being processed
- **auditDetails –** map containing the information to be added into the audit record.

Returns
an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if the checkRole() method on the context returns true for the role specified in the RoleAuthzRequest.

Exceptions

- **SecException class –**

Usage

an AuthzResponse describing if the request was Denied or Permitted. The decision is set to PERMIT if the checkRole() method on the context returns true for the role specified in the RoleAuthzRequest.

RoleAuthzRequest class
An implementation class for Role based authorization requests.

Syntax
```
public class RoleAuthzRequest
```

RoleAuthzRequest(String) constructor
Authorization request that involves role based check.

Syntax
```
RoleAuthzRequest ( String role )
```

Parameters

- **role –** role to check for

getCompositeAuthzRequest(List< String >, Class<?extends CompositeAuthzRequest >) method
Constructs a composite authorization request containing a list of roles.

Syntax
```
CompositeAuthzRequest getCompositeAuthzRequest ( List< String > roles , Class<?extends CompositeAuthzRequest > container )
```

Parameters

- **roles –** list of roles to be checked.
- **container –** CompositeAuthzRequest Class into which the list of RoleAuthzRequest wrapping the specified roles is set.

Returns
composite authorization request containing a list of RoleAuthzRequest.

Usage

This can be used to enforce complex authorization requirements (require a subject to be granted to at least one of the roles or all of the roles etc).

composite authorization request containing a list of RoleAuthzRequest.

getRole() method
returns the role to check for.

Syntax
```
String getRole ()
```

Returns
the role to check for.

Usage

the role to check for.

setRole(String) method
Sets the role to base the authorization check.

Syntax
```
void setRole ( String role )
```

Parameters

- **role –** role for the authorization check.

callback package
The com.sybase.security.callback package contains the callback and callback handler implementations used/supported by the default authentication providers.

Members
All public members of the callback package.

- **CertificateCallback class –** Callback implementation for use by LoginModule implementations that use Certificates for authentication.
- **CertificateCallbackHandler class –** A rudimentary CallbackHandler that supports passing a certificate to the LoginModule by handling CertificateCallback.

- **ServletRequestCallback class –** Callback implementation for use by JAAS LoginModule implementations that can use a HttpServletRequest for authentication.
- **ServletRequestCallbackHandler class –** A rudimentary CallbackHandler that supports passing an HttpServletRequest implementation to the LoginModule.
- **UsernamePasswordCallbackHandler class –** A simple implementation of callback handler that supports simple username/password authentications.

CertificateCallback class

Callback implementation for use by LoginModule implementations that use Certificates for authentication.

Syntax

```
public class  CertificateCallback
```

getCertificateChain() method

Gets the certificate chain to be authenticated.

Syntax

```
Certificate[] getCertificateChain ()
```

Returns

Certificate chain to be authenticated

Usage

The chain, or path, begins with the certificate of the subject to be authenticated, and each certificate in the chain is signed by the entity identified by the next certificate in the chain.

Certificate chain to be authenticated

setCertificateChain(Certificate[]) method

Sets the certificate chain to be authenticated in the callback.

Syntax

```
void setCertificateChain ( Certificate[] certChain )
```

Parameters

- **certChain –** certificate chain to be authenticated

Usage

The chain, or path, should begin with the certificate of the subject to be authenticated, and each certificate in the chain should be signed by the entity identified by the next certificate in the chain.

CertificateCallbackHandler class
A rudimentary CallbackHandler that supports passing a certificate to the LoginModule by handling CertificateCallback.

Syntax
```
public class  CertificateCallbackHandler
```

CertificateCallbackHandler(Certificate[]) constructor
Constructor that accepts the supplied certificate chain to return when handling the CertificateCallback.

Syntax
`CertificateCallbackHandler ( Certificate[] certs )`

Parameters

- **certs –** certificate chain to be returned when handling the CertificateCallback.

CertificateCallbackHandler(javax.net.ssl.SSLSocket) constructor
Constructor that extracts the certificate chain from the specified socket.

Syntax
`CertificateCallbackHandler ( javax.net.ssl.SSLSocket socket )` throws `SSLException`

Parameters

- **socket –** SSLSocket to extract the peer certificate chain

Usage

The extracted certificate chain is used to handle the

CertificateCallback

.

CertificateCallbackHandler(javax.servlet.http.HttpServletRequest) constructor
Certificates will be extracted from the servlet request object.

Syntax
```
CertificateCallbackHandler
( javax.servlet.http.HttpServletRequest req )
```

Parameters

- **req –** servlet request object to extract the certificate chain from the javax.servlet.request.X509Certificate attribute

Usage

Constructor that extracts the certificate chain from the specified servlet request. The extracted certificate chain is used to handle the

CertificateCallback

.

handle(Callback[]) method
Retrieves the information requested in the specified Callbacks.

Syntax

```
void handle ( Callback[] cbarray ) throws IOException,
UnsupportedCallbackException
```

Parameters

- **cbarray –** An array of Callback objects that contain the information requested to be retrieved.

Exceptions

- **IOException –** if an input or output error occurs.
- **UnsupportedCallbackException –** if UnsupportedCallbackException if any Callback other than CertificateCallback is supplied in the Callback array.

ServletRequestCallback class
Callback implementation for use by JAAS LoginModule implementations that can use a HttpServletRequest for authentication.

Syntax

```
public class  ServletRequestCallback
```

ServletRequestCallback() constructor
Default constructor.

Syntax

```
ServletRequestCallback ()
```

Usage

The setRequest method should be invoked after an instance of the Callback is constructed.

getRequest() method
Gets the the value of the HttpServletRequest as set by the CallbackHandler.

Syntax

```
HttpServletRequest getRequest ()
```

Returns

the HttpServletRequest object or null if it was not set

Usage

the HttpServletRequest object or null if it was not set

setRequest(HttpServletRequest) method
The CallbackHandler can use this method to set the value of the HttpServletRequest.

Syntax

```
void setRequest ( HttpServletRequest request )
```

Parameters

- **request –** the HttpServletRequest value

ServletRequestCallbackHandler class
A rudimentary CallbackHandler that supports passing an HttpServletRequest implementation to the LoginModule.

Syntax

```
public class  ServletRequestCallbackHandler
```

ServletRequestCallbackHandler(HttpServletRequest) constructor
Constructor to initialize the CallbackHandler with the specified HttpServletRequest.

Syntax

```
ServletRequestCallbackHandler ( HttpServletRequest request )
```

Parameters

- **request –** The HttpServletRequest value to supply to the LoginModule

handle(Callback[]) method
This callback implementation will pass the constructor-initialized HttpServletRequest to an ServletRequestCallback implementation supplied in the Callback array.

Syntax
```
void handle ( Callback[] callbacks ) throws
UnsupportedCallbackException
```

Exceptions

- **UnsupportedCallbackException –** if any Callback other than ServletRequestCallback is supplied in the Callback array.

UsernamePasswordCallbackHandler class
A simple implementation of callback handler that supports simple username/password authentications.

Syntax
```
public class UsernamePasswordCallbackHandler
```

Remarks
For security reasons, this implementation will automatically clear the password by default after the first authentication attempt. This may be bypassed by modifying the allowMultipleAuthentications flag in the complete constructor.

UsernamePasswordCallbackHandler(String, char[], boolean) constructor
Constructor that accepts the username and password credentials along with the boolean flag that dictates if multiple retrieval of the password are allowed.

Syntax
```
UsernamePasswordCallbackHandler ( String username , char[]
password , boolean allowMultipleAuthentications )
```

Parameters

- **username –** Username to use when authenticating
- **password –** Password to use when authenticating
- **allowMultipleAuthentications –** Whether or not multiple authentication attempts are allowed. If this value is false then additional attempts to retrieve the password (after the first one) using the handle method will result in an UnsupportedCallbackException.

UsernamePasswordCallbackHandler(String, char[]) constructor
Constructor that accepts only the username and password credentials.

Syntax

```
UsernamePasswordCallbackHandler ( String username ,  char[]
password )
```

Parameters

- **username –** Username to use when authenticating
- **password –** Password to use when authenticating

Usage

Same as the other constructor, assumes the value "false" for allowMultipleAuthentications flag.

handle(Callback[]) method
This callback implementation will use the constructor-initialized username and password values to handle the javax.security.auth.callback.NameCallback and javax.security.auth.callback.PasswordCallback.

Syntax

```
void handle ( Callback[] callbacks ) throws IOException,
UnsupportedCallbackException
```

Exceptions

- **IOException –** if an input or output error occurs.
- **UnsupportedCallbackException –** if any Callback other than javax.security.auth.callback.NameCallback and javax.security.auth.callback.PasswordCallback is supplied in the Callback array.

core package

The com.sybase.security.core package contains the default provider implementations that are packaged as part of csi-core.jar file as well as some utility classes that are useful in implementing new providers.

Members
All public members of the core package.

- **AlreadyExistsException class –** This exception is thrown when an attempt is made to create or rename an item where an item already exists by that name.

- **AuthenticationFailureWarning interface –** Defines the pre-defined set of authentication failure codes.
- **CertificateAuthenticationLoginModule class –** Certificate authentication provider authenticates the user by verifying that the password field contains the certificate as well as the certificate digest encrypted with the corresponding private key.
- **CertificateBlob class –** This class is an implementation of an ASN.1 SEQUENCE type.
- **CertificateIDPrincipal class –** Identity Principal that is derived from the information in the certificate used to authenticate a user.
- **CertificatePrincipal class –** Principal that associates the given name with the authenticated certificate chain.
- **CertificateTools class –** Utility functions to convert Java Certificate class instances to string form and back again, for use with attributes in CSI which can currently only be in string format.
- **CertificateValidationLoginModule class –** Authenticates the user based on the supplied certificate chain and adds the Certificate DN or the Certificate chain itself to the Principal set based on the configuration options.
- **ClientValuePropagatingLoginModule class –** Login module whose only purpose is to add the specified client http values from the map accessible with the key ProviderConst.HTTP_PROPERTIESCOOKIES_SHARED_KEY from shared context as NamedCredentials.
- **DefaultAuditFilter class –** The default audit filter implementation.
- **ExpiringCredential interface –** Interface to mark credentials that expire.
- **FileAuditDestination class –** A file-based audit destination.
- **HierarchialItem< C, P, S > class –** Abstract class for maintaining role mapping information and scopes in sorted maps.
- **JCESecureDataServices class –** This class creates and initializes a javax.crypto.Cipher object for encrypt/decrypt oprations based on the properties specified in the specified profile Map.
- **LogicalRole class –** LogicalRole maintains a list of physical role mappings to a single logical role within a RolePackage.
- **NamedConfiguration class –** Provides the named configuration facility for CSI.
- **NamedCredentialImpl class –** Simple implementation of NamedCredential interface.
- **NoSecAttributer class –** A simple implementation of Attributer interface.
- **NoSecAuthorizer class –** This authorizer ALWAYS grants access.
- **NoSecLoginModule class –** This authenticator implementation always authenticates the user.
- **PasswordExpirationWarning interface –** Warning to propagate the password expiration date.
- **PasswordUtils class –** Utility class that houses methods to compute encoded password hash and method to compare a specified password against such encoded password hash.

- **PhysicalRole class –** PhysicalRole represents a physical role assigned to a LogicalRole within a RolePackage.
- **PreConfiguredUserLoginModule class –** This login module only authenticates pre-configured users.
- **ProfilerImpl class –**
- **PropertiesConfiguration class –** Provides the standard property file-based configuration facility for CSI.
- **RoleCheck interface –** An interface that principals and credentials can implement to signal that they convey role membership.
- **RoleCheckAuthorizer class –** This authorizer provides only role-based authorization checks.
- **RoleMapperAdmin class –** Allows role mappings to be managed programmtically.
- **RoleMappings class –** Maintains a list of role package objects.
- **RolePackage class –** RolePackage maintains a list of logical role mappings within a package.
- **XmlAuditFormatter class –** An audit formatter that formats audit data into an XML record.
- **XmlConfiguration class –** Provides the standard XML-based configuration facility for CSI.
- **XMLFileRoleMapper class –** The RoleMapper provider maintains role mapping data in an XML File format.

AlreadyExistsException class

This exception is thrown when an attempt is made to create or rename an item where an item already exists by that name.

Syntax

```
public class AlreadyExistsException
```

AlreadyExistsException(String) constructor

Constructor that accepts a message to be included in the exception.

Syntax

```
AlreadyExistsException ( String message )
```

Parameters

- **message –**

AuthenticationFailureWarning interface
Defines the pre-defined set of authentication failure codes.

Syntax
```
public interface AuthenticationFailureWarning
```

Derived classes

- *com.sybase.security.provider.AuthenticationFailureWarningImpl* on page 220
- *com.sybase.security.provider.SecLoginExceptionAuthenticationFailureWarningImpl* on page 286

getFailureCode() method
Returns the failure code for the failed authentication attempt.

Syntax
```
int getFailureCode ()
```

Returns
Authentication failure code

Usage

Authentication failure code

FAILURE_CODE_ACCOUNT_DISABLED variable
Failure code to indicate authentication failed as the account is disabled.

Syntax
```
final int FAILURE_CODE_ACCOUNT_DISABLED
```

FAILURE_CODE_ACCOUNT_EXPIRED variable
Failure code to indicate authentication failed as the account has expired.

Syntax
```
final int FAILURE_CODE_ACCOUNT_EXPIRED
```

FAILURE_CODE_ACCOUNT_LOCKED variable
Failure code to indicate authentication failed as the account is locked.

Syntax
```
final int FAILURE_CODE_ACCOUNT_LOCKED
```

FAILURE_CODE_IMPERSONATION_ERROR variable
Failure code to indicate authentication failed because the specified username does not match the validated token/certificate etc.

Syntax
```
final int FAILURE_CODE_IMPERSONATION_ERROR
```

FAILURE_CODE_INVALID_CREDENTIALS variable
Failure code to indicate authentication failed because invalid credentials were supplied.

Syntax
```
final int FAILURE_CODE_INVALID_CREDENTIALS
```

FAILURE_CODE_PASSWORD_EXPIRED variable
Failure code to indicate authentication failed because the password has expired.

Syntax
```
final int FAILURE_CODE_PASSWORD_EXPIRED
```

Remarks
The expired password cannot be changed.

FAILURE_CODE_PASSWORD_EXPIRED_CAN_CHANGE variable
Failure code to indicate authentication failed because the password has expired and the expired password can be changed.

Syntax
```
final int FAILURE_CODE_PASSWORD_EXPIRED_CAN_CHANGE
```

FAILURE_CODE_TOKEN_VALIDATION_ERROR variable
Failure code to indicate authentication failed because the token validation failed.

Syntax
```
final int FAILURE_CODE_TOKEN_VALIDATION_ERROR
```

FAILURE_CODE_UNSPECIFIED variable
Failure code to indicate authentication failed due to unknown reason.

Syntax
```
final int FAILURE_CODE_UNSPECIFIED
```

CertificateAuthenticationLoginModule class

Certificate authentication provider authenticates the user by verifying that the password field contains the certificate as well as the certificate digest encrypted with the corresponding private key.

Syntax

```
public class  CertificateAuthenticationLoginModule
```

Remarks

This provider authenticates the user by verifying that the password field contains the certificate as well as the certificate digest encrypted with the corresponding private key. Further, it compares the specified username with the subjectDN extracted from the certificate using the configured regular expression. After successfully validating the certificate, the provider stores the certificate in the shared context state indexed with the key ProviderConst.CERTIFICATE_SHARED_KEY so other providers in the security configuration can access it.

Upon successful authentication, the following a CertificateIDPrincipal with the specified username and a public credential CertificateCredential containing the certificate used for authentication with the configured credential name are added to the authenticated JAAS subject.

The provider expects the common name (from the certificate) as the username and the base64 encoded ASN.1 structure

```
CertBlob ::= SEQUENCE {
    x509Cert OCTET STRING,
    signature OCTET STRING,
    algorithm INTEGER
}
```

in the password field.

The digest of the certificate is expected to be encrypted using the private key. The only supported value for the algorithm identifier in the ASN.1 sequence is "1". It corresponds to the algorithms, "SHA1" for computing the digest and "RSA/ECB/PKCS1Padding" for decrypting the encrypted digest.

AlgorithmSet class

Syntax

```
package class  AlgorithmSet
```

AlgorithmSet(String, String) constructor

Syntax

```
AlgorithmSet ( String digestAlg ,  String cipherAlg )
```

cipherTransformation variable

Syntax

```
String cipherTransformation
```

messageDigestAlgorithm variable

Syntax

```
String messageDigestAlgorithm
```

getCredentialNames(Map< String, String >) method
Returns the set of names associated with the NamedCredentials that the provider may add to an authenticated subject.

Syntax

```
Set< String > getCredentialNames ( Map< String, String >
configuration )
```

Parameters

- **configuration –** provider configuration properties

Returns
the set of names associated with the NamedCredentials that the provider may add to an authenticated subject

Usage

This is used to detect conflicts among the configured providers when validating the configuration so as to avoid duplicate NamedCredentials added by multiple providers.

the set of names associated with the NamedCredentials that the provider may add to an authenticated subject

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax

```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
`String getProviderVersion ()`

Returns
the version

Usage

the version

hasCapability(Map< String, Object >, String) method
Returns true for the capability query Const.CAPABILITY_X509_AUTHENTICATION.

Syntax
`boolean hasCapability ( Map< String, Object >` *context* `, String` *capability* `)` throws `SecException`

Parameters

- **context –** the context map
- **capability –** the capability to check

Returns
true for the capability query Const.CAPABILITY_X509_AUTHENTICATION; false for other capability queries

Exceptions

- **SecException class –** if some sort of error occurs that should abort the entire capability query.

Usage

true for the capability query Const.CAPABILITY_X509_AUTHENTICATION; false for other capability queries

initialize(Subject, CallbackHandler, Map, Map) method

Syntax

```
void initialize ( Subject subject , CallbackHandler callback , Map sharedState , Map options )
```

login() method

Authenticates the user by verifying that the password field contains the certificate as well as the certificate digest encrypted with the corresponding private key.

Syntax

```
boolean login () throws LoginException
```

Returns

true if authentication is successful

Exceptions

- **LoginException –** if authentication fails

Usage

Further, it compares the specified username with the subjectDN extracted from the certificate using the configured regular expression.

true if authentication is successful

CERTIFICATE_AUTH_REGEX_MATCH variable

Configuration property to specify the regular expression to use for matching the supplied username with the subjectDN in the certificate.

Syntax

```
final String CERTIFICATE_AUTH_REGEX_MATCH
```

Remarks

The string "{username}" in the regex will be replaced with the specified username before using it to match with the subjectDN from the certificate.

DEF_CERTIFICATE_AUTH_REGEX_MATCH variable
Default value for CERTIFICATE_AUTH_REGEX_MATCH that matches the specified username to the common name (CN) attribute in the certificate.

Syntax
```
final String DEF_CERTIFICATE_AUTH_REGEX_MATCH
```

Remarks
The common name may appear not just in the beginning of the distinguished name (DN) but anywhere.

MESSAGE_DIGEST_ALGORITHM_1 variable
Message digest algorithm associated with algorithm identifier "1".

Syntax
```
final String MESSAGE_DIGEST_ALGORITHM_1
```

CertificateBlob class
This class is an implementation of an ASN.1 SEQUENCE type.

Syntax
```
public class CertificateBlob
```

Remarks
The certificate blob consists of the following ASN.1 structure

```
CertBlob ::= SEQUENCE {
x509Cert OCTET STRING,
signature OCTET STRING,
algorithm INTEGER
}
```

This class relies heavily on the Codec library to decode the encoded ASN.1 structure.

CertificateBlob(byte[], byte[], int) constructor
Constructs the Certificate Blob with the specified certificate, the encrypted digest and the algorithm used to compute the encrypted digest so that it can be encoded.

Syntax
```
CertificateBlob ( byte[] cert , byte[] digest , int alg )
```

Parameters

- **cert –** certificate
- **digest –** encrypted certificate digest
- **alg –** algorithm identifier used to compute the encrypted digest

CertificateBlob() constructor
Constructor to create an empty blob which can then be used to decode the encoded ASN1 sequence.

Syntax
```
CertificateBlob ()
```

decode(byte[]) method
Decodes the byte array (encoded ASN.1 structure) passed as argument.

Syntax
```
void decode ( byte[] encodedData ) throws ASN1Exception, IOException
```

Parameters

- **encodedData –** the encoded ASN.1 structure that should be decoded into the member variables.

Exceptions

- **ASN1Exception –** error decoding the ASN.1 structure
- **IOException –** if an input or output error occurs while dealing with the byte array streams

Usage

The decoded values are stored in the member variables of this class that represent the components of the corresponding ASN.1 type.

getAlgorithmID() method
Returns the algorithm identifier for the algorithm used to encrypt the certificate digest.

Syntax
```
int getAlgorithmID ()
```

Returns
algorithm identifier

Usage

algorithm identifier

getCertificate() method
Returns the stored/decoded certificate.

Syntax

```
byte[] getCertificate ()
```

Returns

certificate

Usage

certificate

getEncoded() method
Returns the encoded certificate blob i.e., ASN.1 structure.

Syntax

```
byte[] getEncoded () throws ASN1Exception, IOException
```

Returns

encoded certificate blob.

Exceptions

- **ASN1Exception –** if any error is encountered while encoding the provided certificate data into the ASN.1 structure.
- **IOException –** if an input or output error occurs while dealing with the byte array streams

Usage

encoded certificate blob.

getEncryptedDigest() method
Returns the encrypted certificate digest.

Syntax

```
byte[] getEncryptedDigest ()
```

Returns

encrypted certificate digest

Usage

encrypted certificate digest

CertificateIDPrincipal class
Identity Principal that is derived from the information in the certificate used to authenticate a user.

Syntax
```
public class CertificateIDPrincipal
```

CertificateIDPrincipal(String) constructor
Constructs the Principal that identifies the certificate used for authentication.

Syntax
```
CertificateIDPrincipal ( String id )
```

Parameters

- **id –** certificate identifier

Usage

This id may be the entire certificate itself, but may also be the subjectDN retrieved from the certificate or the username matched with an attribute in the certificate.

CertificatePrincipal class
Principal that associates the given name with the authenticated certificate chain.

Syntax
```
public class CertificatePrincipal
```

Remarks
The name is derived from the certificate used to authenticate the user. This id may be the entire certificate itself, but may also be the subjectDN retrieved from the certificate or the username matched with an attribute in the certificate.

CertificatePrincipal(String, Certificate[]) constructor
Constructor that accepts the name to be set in the principal and certificate chain used to authenticate the user.

Syntax
```
CertificatePrincipal ( String name , Certificate[] certs )
```

Parameters

- **name –** Name to be associated with the certificate chain
- **certs –** certificate chain used to authenticate the user

equals(Object) method

Syntax

```
boolean equals ( Object o )
```

getCertificateChain() method

Retrieves the certificate chain used to authenticate the user.

Syntax

```
Certificate[] getCertificateChain ()
```

Returns

certificate chain used to authenticate the user

Usage

certificate chain used to authenticate the user

getName() method

Retrieves the name associated with the certificate chain.

Syntax

```
String getName ()
```

Returns

name set in the Principal.

Usage

name set in the Principal.

hashCode() method

Syntax

```
int hashCode ()
```

_certs variable
Certificate chain used to authenticate the user.

Syntax
```
final Certificate[] _certs
```

_name variable
Name set in the principal.

Syntax
```
final String _name
```

CertificateTools class
Utility functions to convert Java Certificate class instances to string form and back again, for use with attributes in CSI which can currently only be in string format.

Syntax
```
public class  CertificateTools
```

fromAttributeString(String) method
Standard method to be used to convert an attribute value to a certificate instance.

Syntax
```
Certificate fromAttributeString ( String attributeString )
```

Parameters

- **attributeString –** certificate encoded in special attribute format

Returns
certificate instance reconstructed from the string format

Usage

certificate instance reconstructed from the string format

fromPEMString(String) method
Parse PEM format certificate string to retrieve certificate.

Syntax
```
Certificate fromPEMString ( String pemString )
```

Parameters

- **pemString –** The PEM formatted string data

Returns
Certificate instance reconstructed from the PEM string format

Usage

Certificate instance reconstructed from the PEM string format

getAttributeStringFromEncodedCert(byte[]) method
Given a binary certificate representation, return the encoded attribute string.

Syntax
`String getAttributeStringFromEncodedCert ( byte[] cert )` throws `IOException`

Parameters

- **cert –** the certificate data

Returns
The encoded attribute string

Exceptions

- **IOException –** if encoding error occurs

Usage

The encoded attribute string

getEncodedCertFromAttributeString(String) method
Given a certificate attribute string, return the binary certificate information.

Syntax
`byte[] getEncodedCertFromAttributeString ( String attributeString )` throws `IOException`

Parameters

- **attributeString –** the certificate attribute string

Returns
binary certificate data

Exceptions

- **IOException –** if decoding error occurs

Usage

binary certificate data

toAttributeString(Certificate) method
Standard method to be used to convert a certificate object to a string which can be supplied to an attributer.

Syntax
```
String toAttributeString ( Certificate cert )
```

Parameters

- **cert –** certificate instance to be converted into string format

Returns
certificate encoded in special attribute format

Usage

certificate encoded in special attribute format

CertificateValidationLoginModule class
Authenticates the user based on the supplied certificate chain and adds the Certificate DN or the Certificate chain itself to the Principal set based on the configuration options.

Syntax
```
public class  CertificateValidationLoginModule
```

Remarks
The authentication is successful if the provider is able to validate the certificate chain retrieved from the CertificateCallback successfully based on the configuration properties.

After successfully validating the certificate, the provider stores the certificate in the shared context state indexed with the key ProviderConst.CERTIFICATE_SHARED_KEY so other providers in the security configuration can access it. The subjectDN from the client certificate (or the certificate itself) is added to the authenticated JAAS subject as CertificateIDPrincipal if the configuration property ProviderConst.VALIDATED_CERT_IS_IDENTITY is set to true.

If the configuration property value is false, a CertificatePrincipal with the subjectDN from the certificate and validated certificate chain is added to the authenticated JAAS subject.

getProviderDescription() method

Syntax

```
String getProviderDescription ()
```

getProviderVersion() method

Syntax

```
String getProviderVersion ()
```

hasCapability(Map< String, Object >, String) method
Returns true for the capability query Const.CAPABILITY_X509_AUTHENTICATION.

Syntax

```
boolean hasCapability ( Map< String, Object > context , String capability ) throws SecException
```

Parameters

- **context –** the context map
- **capability –** the capability to check

Returns
true for the capability query Const.CAPABILITY_X509_AUTHENTICATION; false for other capability queries

Exceptions

- **SecException class –** if some sort of error occurs that should abort the entire capability query.

Usage

true for the capability query Const.CAPABILITY_X509_AUTHENTICATION; false for other capability queries

initialize(Subject, CallbackHandler, Map< String,?>, Map< String,?>) method
Initializes the LoginModule.

Syntax

```
void initialize ( Subject subject , CallbackHandler callback , Map<
String,?> sharedState , Map< String,?> options )
```

Parameters

- **subject –** Subject to be authenticated
- **callback –** CallbackHandler to retrieve credentials
- **sharedState –** state shared with other configured providers
- **options –** configuration options for this provider

Usage

This method is invoked after the LoginModule has been instantiated. The purpose of this method is to initialize this LoginModule with the configuration properties. If this LoginModule does not understand any of the data stored in sharedState or options parameters, they can be ignored.

login() method
Validates the certificate chain retrieved from the callback against the configured CRLs.

Syntax

```
boolean login () throws LoginException
```

Returns

true if authentication is successful

Exceptions

- **LoginException –** if authentication fails

Usage

true if authentication is successful

ClientValuePropagatingLoginModule class

Login module whose only purpose is to add the specified client http values from the map accessible with the key ProviderConst.HTTP_PROPERTIESCOOKIES_SHARED_KEY from shared context as NamedCredentials.

Syntax

```
public class  ClientValuePropagatingLoginModule
```

Remarks

This provider always returns false from the login method and should be configured as "optional" so as to not affect the outcome of the authentication process.

CVPLMRolePrincipal class

Principal that implements RoleCheck interface to add a principal with the specified role name.

Syntax

```
public class  CVPLMRolePrincipal
```

Remarks

This facilitates the delegation of authorization check to RoleCheckAuthorizer.

CVPLMRolePrincipal(String) constructor

Constructor that accepts the role name to be set as Principal name.

Syntax

```
CVPLMRolePrincipal ( String name )
```

Parameters

- **name –** role name that should be set as the Principal name.

checkRole(String) method

Syntax

```
boolean checkRole ( String role )
```

equals(Object) method

Syntax

```
boolean equals ( Object o )
```

getName() method

Syntax

```
String getName ()
```

hashCode() method

Syntax

```
int hashCode ()
```

CVPLMUserPrincipal class

SecNamePrincipal implementation to add a principal with the specified username.

Syntax

```
public class  CVPLMUserPrincipal
```

CVPLMUserPrincipal(String) constructor

Constructor that accepts the username to be set as Principal name.

Syntax

```
CVPLMUserPrincipal ( String name )
```

Parameters

- **name –** username that should be set as the Principal name.

commit() method

Override commit method in the super class as it only adds the credentials if login succeeded in this provider.

Syntax

```
boolean commit () throws LoginException
```

Returns

true if this method succeeded, or false if this LoginModule should be ignored.

Usage

This provider needs to add the credentials even though login returns false.

true if this method succeeded, or false if this LoginModule should be ignored.

getCredentialNames(Map< String, String >) method
Returns all the NamedCredentials the configuration specifies.

Syntax
```
Set< String > getCredentialNames ( Map< String, String > configuration )
```

Parameters

- **configuration –** configuration property map based on which to return the list of NamedCredentials added by this provider

Returns
list of NamedCredentials added by this provider

Usage

No configuration validation is performed to detect invalid/duplicate NamedCredentials. This check will be performed by

SecAdminContext.validateExternalConfiguration

method that aggregates the named credentials added by the configured providers.

list of NamedCredentials added by this provider

initialize(Subject, CallbackHandler, Map, Map) method

Syntax
```
void initialize ( Subject subject , CallbackHandler callback , Map sharedState , Map options )
```

login() method
Always returns false.

Syntax
```
boolean login () throws LoginException
```

Returns
false always

Exceptions

- **LoginException –** if credential mapping is specified in invalid format or duplicate mappings are detected or if no client values are available in the session

Usage

This provider should always be configured with the control flag value of optional so that it does not affect the overall outcome of the authentication process. The method implementation simply adds the client values available in the session as credentials/Principals to the Subject based on the configuration properties.

false always

validateConfiguration(Map< String, String >) method
Validate the supplied configuration and report any errors.

Syntax

`List< ConfigurationProblem > validateConfiguration ( Map< String, String > `*configuration*` )` throws `SecException`

Parameters

- **configuration –** provider configuration to be validated

Returns

the list of configuration problems.

Exceptions

- **SecException class –** if there is an error validating the specified configuration. *The configuration problems should not be reported using the Exception mechanism.*

Usage

If no errors are discovered an empty set should be returned. If possible, the same runtime checks that are done in the init() method should be performed so that the configuration errors can be fixed prior to deploying the configuration. A

SecException

should not be thrown to report the configuration problems, it should only be thrown in case of an error in validating the specified configuration.

the list of configuration problems.

PROP_HTTP_VALUES_AS_NAME_PRINCIPALS variable
Comma separated list of mappings that specify client http values that should be added as name principals after successful authentication.

Syntax
```
final String PROP_HTTP_VALUES_AS_NAME_PRINCIPALS
```

PROP_HTTP_VALUES_AS_ROLE_PRINCIPALS variable
Comma separated list of mappings that specify client http values that should be added as role principals after successful authentication.

Syntax
```
final String PROP_HTTP_VALUES_AS_ROLE_PRINCIPALS
```

PROP_HTTP_VALUES_TO_NAMED_CREDENTIAL_MAPPING variable
Comma separated list of mappings that specify the credential names for the client http values that should be added as credentials after successful authentication and the name to be associated with the credential.

Syntax
```
final String PROP_HTTP_VALUES_TO_NAMED_CREDENTIAL_MAPPING
```

Remarks
Ex: clientName1:credentialName1

DefaultAuditFilter class
The default audit filter implementation.

Syntax
```
public class  DefaultAuditFilter
```

Remarks
This provides a simple wildcard syntax for selecting the resource classes, actions and decisions to be included in the audit logs.

init(Map< String,?>) method
Implementations that care about initialization properties should override this method.

Syntax
```
void init ( Map< String,?> configuration ) throws SecException
```

Parameters

- **configuration –** Provider specific configuration data.

Exceptions

- **SecException class –** if a required property is missing, or a provided property had bad syntax or couldn't be used. If a provider throws this exception it will be printed to the log and the provider will be inaccessible.

isAuditEnabled(String, String, Decision) method
This method will be called to query if an audit record with the specified attributes should be logged to the audit destination.

Syntax
`boolean isAuditEnabled ( String` *`resourceClass`* `, String` *`action`* `, Decision` *`decision`* `)` throws `SecException`

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **action –** the operation that is being performed.
- **decision –** the result of the security check.

Returns
the decision on whether or not an audit record with the specified attributes should be logged to the audit destination.

Exceptions

- **SecException class –** generated when an error is encountered while performing the audit record query.

Usage

the decision on whether or not an audit record with the specified attributes should be logged to the audit destination.

isFilteringCaseSensitive() method
Retrieves the case sensitivity of the filter.

Syntax
`boolean isFilteringCaseSensitive ()`

Returns
Whether or not the filtering is case sensitive which is based on the configuration property values.

Usage

Whether or not the filtering is case sensitive which is based on the configuration property values.

validateConfiguration(Map< String, String >) method
Validate the supplied configuration and report any errors.

Syntax
`List< ConfigurationProblem > validateConfiguration ( Map< String, String > `*`configuration`*` )` throws `SecException`

Parameters

- **configuration –** provider configuration to be validated

Returns
the list of configuration problems.

Exceptions

- **SecException class –** if there is an error validating the specified configuration. *The configuration problems should not be reported using the Exception mechanism.*

Usage

If no errors are discovered an empty set should be returned. If possible, the same runtime checks that are done in the

init()

method should be performed so that the configuration errors can be fixed prior to deploying the configuration. A

SecException

should not be thrown to report the configuration problems, it should only be thrown in case of an error in validating the specified configuration.

the list of configuration problems.

OPTION_CASE_SENSITIVE_FILTERING variable
The configuration option to specify whether or not to use case sensitivity when matching resource classes and actions.

Syntax
```
final String OPTION_CASE_SENSITIVE_FILTERING
```

Remarks
The default is not to be case sensitive.

OPTION_FILTER variable
The configuration option to specify the actual filter string to use.

Syntax
```
final String OPTION_FILTER
```

Remarks
The default value is specified by the

OPTION_FILTER_DEFAULT variable
The default value for the configuration option filter.

Syntax
```
final String OPTION_FILTER_DEFAULT
```

Remarks
This default enables role and resouce authorization, profile access, authentication, logout and all provider and client audit events.

ExpiringCredential interface
Interface to mark credentials that expire.

Syntax
```
public interface ExpiringCredential
```

getExpirationTime() method
Returns the time when the credential expires.

Syntax
```
long getExpirationTime ()
```

Usage

The time is expressed as milliseconds since Jan 1, 1970

FileAuditDestination class
A file-based audit destination.

Syntax
```
public class  FileAuditDestination
```

Remarks
This implementation supports concurrent access to the same file from multiple instances of this class. This can happen under normal circumstances if, for example, multiple factories are created with the same audit configuration. The implementation supports audit file rollover based upon size. It has the capability to compress rolled over items using GZIP and remove rolled over items beyond a certain count.

audit(String, String, String, Map< String, Object >, Decision) method
Generates and logs an audit record with the specified audit information.

Syntax
`void audit ( String` *resourceClass* `, String` *resourceID* `, String` *action* `, Map< String, Object >` *attributes* `, Decision` *decision* `)` throws `SecException`

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **resourceID –** the object on which an operation is being performed.
- **action –** the operation that is being performed.
- **attributes –** A map of attributes associated with the audit record.
- **decision –** the result of the security check.

Exceptions

- **SecException class –** If an error occurs while issuing the audit request.

init(Map< String,?>) method
Implementations that care about initialization properties should override this method.

Syntax
`void init ( Map< String,?>` *configuration* `)` throws `SecException`

Parameters

- **configuration –** Provider specific configuration data.

Exceptions

- **SecException class –** if a required property is missing, or a provided property had bad syntax or couldn't be used. If a provider throws this exception it will be printed to the log and the provider will be inaccessible.

rollover(File) method
Subclasses may override this method to modify rollover behavior.

Syntax
```
void rollover ( File log ) throws SecException
```

Parameters

- **log –** The base log file to roll over

Exceptions

- **SecException class –** if an error occurs in rolling the file over.

Usage

This method is used to perform all of the rolling over.

setFormatter(AuditFormatter) method
Sets the formatter to be used to format the audit information before writing it to the destination.

Syntax
```
void setFormatter ( AuditFormatter formatter )
```

Parameters

- **formatter –** Audit formatter to be used to format the audit information before writing it to the destination.

shouldRollover(File, long) method
Subclasses may override this method to modify rollover behavior.

Syntax
```
boolean shouldRollover ( File log , long size ) throws SecException
```

Parameters

- **log –** The base log file that may be rolled over
- **size –** The current size of the log file (this is a generally more accurate value than that returned from the filesystem).

Returns

Whether or not it is time to roll over the log file

Usage

This method is called on every audit record write so it should be fast. The default implementation delegates to the size rollover implementation.

Whether or not it is time to roll over the log file

validateConfiguration(Map< String, String >) method

Validate the supplied configuration and report any errors.

Syntax

`List< ConfigurationProblem > validateConfiguration ( Map< String, String >` *configuration* `)` throws `SecException`

Parameters

- **configuration –** provider configuration to be validated

Returns

the list of configuration problems.

Exceptions

- **SecException class –** if there is an error validating the specified configuration. *The configuration problems should not be reported using the Exception mechanism.*

Usage

If no errors are discovered an empty set should be returned. If possible, the same runtime checks that are done in the

init()

method should be performed so that the configuration errors can be fixed prior to deploying the configuration. A

SecException

should not be thrown to report the configuration problems, it should only be thrown in case of an error in validating the specified configuration.

the list of configuration problems.

OPTION_AUDIT_FILE variable
This configuration option MUST be supplied to specify the file to which audit data will be writen.

Syntax
```
final String OPTION_AUDIT_FILE
```

OPTION_COMPRESSION_THRESHOLD variable
This configuration option may be supplied to specify the number of uncompressed audit log rollover files that are created, before GZIP compression is used to archive the audit data.

Syntax
```
final String OPTION_COMPRESSION_THRESHOLD
```

Remarks
The default value is to never compress the data.

OPTION_DELETION_THRESHOLD variable
This configuration option may be supplied to specify the number of audit log files that will be preserved.

Syntax
```
final String OPTION_DELETION_THRESHOLD
```

Remarks
This value includes the main audit log, so a value of "3" will allow an audit.log, audit.log.0 and audit.log.1 before deleting old logs. The default value is to never delete old audit log data.

OPTION_ENCODING variable
This configuration option may be supplied to specify the encoding to use when writing the audit log.

Syntax
```
final String OPTION_ENCODING
```

Remarks
If this is not specified then UTF-8 will be used.

OPTION_ERROR_THRESHOLD variable
This configuration option may be supplied to specify the maximum number of audit log files that will be allowed -- when this threshold is reached then an error occurs and all auditing will fail.

Syntax
```
final String OPTION_ERROR_THRESHOLD
```

Remarks
For example, with this value set to "3", audit.log, audit.log.0 and audit.log.1 will be created according to the maximum log size value. If another audit log rollover is triggered then all audit operations will fail until one of the rollover files is removed.

This value is mutually exclusive with the deletion threshold -- the smallest value of the two will take effect.

OPTION_MAXIMUM_LOG_SIZE variable
This option may be supplied to specify the maximum audit log file size before a rollover occurs.

Syntax
```
final String OPTION_MAXIMUM_LOG_SIZE
```

Remarks
The default value never rolls over.

HierarchialItem< C, P, S > class
Abstract class for maintaining role mapping information and scopes in sorted maps.

Syntax
```
public class  HierarchialItem< C, P, S >
```

addChild(String) method
Creates a new named child item.

Syntax
```
abstract C addChild ( String name ) throws AlreadyExistsException
```

Parameters

- **name –** Name of the child item to add

Returns
the newly created item.

Exceptions

- **AlreadyExistsException class –** it a child by that name already exists.

Usage

the newly created item.

clear() method
Clears all children of the current item.

Syntax

```
void clear ()
```

deepClone() method
Return a deep clone of the object in question.

Syntax

```
Object deepClone ()
```

Returns

the deep clone

Usage

the deep clone

get(String) method
Returns a child of the current item with the given name or null if the child does not exist.

Syntax

```
C get ( String name )
```

Parameters

- **name –** Name of the child to return

Returns

a child with the given name or null if the child does not exist.

Usage

a child with the given name or null if the child does not exist.

getName() method
Returns the name of the item.

Syntax
```
String getName ()
```

Returns
the name of the item

Usage

the name of the item

HierarchialItem(String, HierarchialItem< S,?, P >, boolean) method

Syntax
```
HierarchialItem ( String name , HierarchialItem< S,?, P > parent , boolean hasChildren )
```

iterator() method
Returns an iterator to iterate over the child objects.

Syntax
```
Iterator< C > iterator ()
```

Returns
an iterator to iterate over child objects. Objects will be returned in alphabetically increasing order based on their names.

Usage

an iterator to iterate over child objects. Objects will be returned in alphabetically increasing order based on their names.

remove() method
Deletes the current item.

Syntax
```
void remove ()
```

rename(String) method
Renames the item to the specified name.

Syntax
```
void rename ( String name ) throws AlreadyExistsException
```

Parameters

- **name –** new name for the item

Exceptions

- **AlreadyExistsException class –** if there is already an item by that name in the parent collection.

size() method
Returns the number of child items.

Syntax
```
int size ()
```

Returns
the number of children

Usage

the number of children

_children variable
sorted child list

Syntax
```
TreeMap< String, C > _children
```

_name variable
Name of the item.

Syntax
```
String _name
```

_parent variable
Parent item.

Syntax
```
HierarchialItem< S,?, P > _parent
```

MESSAGES variable

Syntax
```
final Messages MESSAGES
```

JCESecureDataServices class
This class creates and initializes a javax.crypto.Cipher object for encrypt/decrypt oprations based on the properties specified in the specified profile Map.

Syntax
```
public class  JCESecureDataServices
```

JCESecureDataServices() constructor

Syntax
```
JCESecureDataServices ()
```

getCipher(Map< String, Object >, SecProfile , String) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
Cipher getCipher ( Map< String, Object > context ,   SecProfile
profile ,  String operation )
```

getMessageDigest(Map< String, Object >, SecProfile) method

Syntax
```
MessageDigest getMessageDigest ( Map< String, Object > context ,
SecProfile  profile )
```

Parameters

- **context –** CSI context
- **profile –** SecProfile object containing the properties to create and initialize a MessageDigest instance.

Returns
MessageDigest object created based on the properties specified in the profile Map and initialized for the digest operation. Returns null if unable to handle the profile.

Exceptions

- **SecException class –**

Usage

MessageDigest object created based on the properties specified in the profile Map and initialized for the digest operation. Returns null if unable to handle the profile.

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

getSignature(Map< String, Object >, SecProfile , String) method

Syntax
```
Signature getSignature ( Map< String, Object > context ,
SecProfile  profile ,  String operation )
```

Parameters

- **context –** CSI context
- **profile –** SecProfile object containing the properties to create and initialize a Signature instance.
- **operation –** specifies the operation for which to initialize the Signature object. Valid values are Const.OP_SIGN and Const.OP_VERIFY

Returns

Signature object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

Exceptions

- **SecException class –**

Usage

Signature object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

LogicalRole class

LogicalRole maintains a list of physical role mappings to a single logical role within a RolePackage.

Syntax

```
public class LogicalRole
```

LogicalRole(String, RolePackage) constructor

Constructor that accepts the logical role name and the role package to scope the mapping to.

Syntax

```
LogicalRole ( String name ,  RolePackage rp )
```

Parameters

- **name –** logical role name
- **rp –** role package to scope the mapping to

addChild(String) method

Adds a new physical role mapped to the current logical role for the specific package.

Syntax

```
PhysicalRole addChild ( String name ) throws
AlreadyExistsException
```

Parameters

- **name –** role name to be mapped to the logical role

Returns

PhysicalRole that represents a physical role assigned to a LogicalRole within a RolePackage

Usage

PhysicalRole that represents a physical role assigned to a LogicalRole within a RolePackage

NamedConfiguration class

Provides the named configuration facility for CSI.

Syntax

```
public class NamedConfiguration
```

Remarks

This configuration provider can be used to retrieve configuration data from two different sources in various combinations:

- A file on the filesystem
- A java.util.Properties object specified programmatically

The Properties object overrides those values loaded from the file.

System properties may be used to alter the default behavior when the class is instantiated, or the values may be modified programmatically. The system property "com.sybase.security.core.NamedConfiguration.ConfigurationProvider" determines the configuration provider that is delegated the task of retrieving the desired configuration file. The specified configuration provider must implement the interface CompatibleConfiguration. By default the XmlConfiguration provider is used.

System property values may be embedded into any provider option values included in the configuration file. Properties are referenced using the format ${system.property.name}.

ConfigKey class

Class that represents a unique configuration possibility, based on the supplied selectors.

Syntax

```
protected class ConfigKey
```

ConfigKey(String, URL) constructor
Constructor that accepts configuration name and the base repository URL.

Syntax
```
ConfigKey ( String configName ,  URL baseURL )
```

Parameters

- **configName –** configuration name
- **baseURL –** repository URL

equals(Object) method

Syntax
```
boolean equals ( Object obj )
```

getBaseURL() method
Gets the repository URL.

Syntax
```
URL getBaseURL ()
```

Returns
repository URL

Usage

repository URL

getConfigName() method
Gets the configuration name.

Syntax
```
String getConfigName ()
```

Returns
configuration name

Usage

configuration name

hashCode() method

Syntax
```
int hashCode ()
```

toString() method

Syntax
```
String toString ()
```

CompatibleConfiguration interface
Interface that providers should implement to make themselves compatible with Named Configuration.

Syntax
```
public interface  CompatibleConfiguration
```

Derived classes

- *com.sybase.security.core.PropertiesConfiguration* on page 131
- *com.sybase.security.core.XmlConfiguration* on page 149

getSuggestedExtension() method
Gets the configuration file extension.

Syntax
```
String getSuggestedExtension ()
```

Returns
file extension to fully qualify the file name.

Usage

file extension to fully qualify the file name.

setURL(URL) method
Sets the configuration file URL.

Syntax
```
void setURL ( URL url )
```

Parameters

- **url –** URL to retrieve the configuration from.

NamedConfiguration(boolean) constructor
Subclasses should call this constructor with false as the doBootstrap argument.

Syntax

```
NamedConfiguration ( boolean doBootstrap )
```

Parameters

- **doBootstrap –** Flag to indicate if automatic bootstrapping should be performed by this method.

Usage

This will allow the subclasses constructor to call

automaticBootstrap()

to perform bootstrapping.

NamedConfiguration() constructor
Instantiates NamedConfiguration with default values.

Syntax

```
NamedConfiguration ()
```

bootstrap(Properties) method
Saves bootstrap properties so they can used to bootstrap the underlying configuration provider.

Syntax

```
void bootstrap ( Properties props ) throws SecException
```

Parameters

- **props –** properties to bootstrap the underlying configuration provider

Exceptions

- **SecException class –** to propagate any initialization errors

buildConfigurationInstance() method
Subclasses can override this to customize how the configuration provider instance is initialized.

Syntax
```
CompatibleConfiguration buildConfigurationInstance () throws SecException
```

Returns
An instance of the underlying configuration provider to which the configuration reading/storing tasks are delegated.

Exceptions

- **SecException class –** to propagate any initialization errors

Usage

An instance of the underlying configuration provider to which the configuration reading/storing tasks are delegated.

getConfiguration() method
This method is not implemented.

Syntax
```
Map< String, String > getConfiguration ()
```

Exceptions

- **IllegalStateException –** Since the concept of default configuration does not apply to NamedConfiguration, this method throws IllegalStateException if invoked.

getConfiguration(Map< String, Object >) method
Returns the configuration specified by the selectors.

Syntax
```
Map< String, String > getConfiguration ( Map< String, Object > selectors ) throws SecException
```

Parameters

- **selectors –** Map of key/value pairs that dynamically alter the configuration selection

Exceptions

- **SecException class –** if the repository or the configuration identified by the selectors does not exist or if an error occurs trying to read the specified configuration

Usage

For valid selector definitions, please refer to

SecConfiguration2

interface.

getConfigurationKeys(Map< String, Object >) method
Gets a list of configuration keys that will be searched in order, given the selectors.

Syntax

```
List< ConfigKey > getConfigurationKeys ( Map< String, Object > selectors ) throws SecException
```

Parameters

- **selectors –** Map of key/value pairs that dynamically alter the configuration selection

Returns

list of ConfigKey that identifies the configuration in the primary and/or alternate repository specified by the selectors

Exceptions

- **SecException class –** if the repository URL identified by the selectors is invalid

Usage

list of ConfigKey that identifies the configuration in the primary and/or alternate repository specified by the selectors

getProperty(String) method
Gets the value of the specified property.

Syntax

```
Object getProperty ( String name )
```

Parameters

- **name –** Name of the property to retrieve the value for

Returns
value of the specified property

Usage

value of the specified property

getProviderDescription() method
Gets the provider description.

Syntax
```
String getProviderDescription ()
```

Returns
Provider description string.

Usage

Provider description string.

getProviderVersion() method
Gets the provider version.

Syntax
```
String getProviderVersion ()
```

Returns
Provider version string.

Usage

Provider version string.

getRepository() method
Gets the configuration repository URL.

Syntax
```
URL getRepository ()
```

Returns
repository URL

Usage

repository URL

initializeNewProvider(CompatibleConfiguration) method
Cycle through the configuration properties that have been set, setting them using reflection.

Syntax
```
void initializeNewProvider ( CompatibleConfiguration config )
throws SecException
```

Parameters

- **config –** Configuration provider instance in which the configuration properties are to be set

Exceptions

- **SecException class –** to propagate any initialization errors

invalidateCache() method
Clears the configuration cache.

Syntax
```
void invalidateCache ()
```

setBootstrapProperty(String, String) method
Overrides bootstrapping to ignore properties destined for underlying provider.

Syntax
```
void setBootstrapProperty ( String name , String value )
```

Parameters

- **name –** bootstrap property name
- **value –** bootstrap property value

setConfigurationProviderName(String) method
Sets the underlying configuration provider to delegate the configuration retrieval.

Syntax

```
void setConfigurationProviderName ( String configProviderName ) throws SecException
```

Parameters

- **configProviderName –** Name of the configuration provider to delegate the configuration retrieval to

Exceptions

- **IllegalArgumentException –** if the configuration provider name is null
- **SecException class –** if the specified provider class cannot be instantiated or if the provider does not implement the interface CompatibleConfiguration.

setOverrideProperties(Properties) method
Sets the properties/values that will override the ones read from the configuration repository using the specified selectors.

Syntax

```
void setOverrideProperties ( Properties props )
```

Parameters

- **props –** override proeprties

setProperty(String, Object) method
Sets the specified property value in the provider configuration map.

Syntax

```
void setProperty ( String name ,  Object value )
```

Parameters

- **name –** Property name to be set
- **value –** Property value to be set

setRepository(File) method
Sets the configuration repository by specifying the directory containing the configuration files.

Syntax
`void setRepository ( File` *repository* `)` throws `SecException`

Parameters

- **repository –** path to the directory containing the configuration files

Exceptions

- **IllegalArgumentException –** if the specified repository path is null
- **SecException class –** if the specified repository is invalid (i.e., not a directory or if it does not exist etc)

setRepositoryURL(URL) method
Sets the configuration repository URL.

Syntax
`void setRepositoryURL ( URL` *repository* `)` throws `SecException`

Parameters

- **repository –** repository URL

Exceptions

- **IllegalArgumentException –** if the specified url is null
- **SecException class –** if the specified url is invalid.

writeNewConfiguration(Map< String, Object >, Map< String, String >) method
Stores the specified configuration properties as the Named configuration identified by the selectors.

Syntax
`void writeNewConfiguration ( Map< String, Object >` *selectors* `, Map< String, String >` *configuration* `)` throws `SecException`

Parameters

- **selectors –** Map of key/value pairs that identify the configuration to be stored to.

Exceptions

- **SecException class –** if the repository identified by the selectors does not exist or if an error occurs trying to store the specified configuration

Usage

For valid selector definitions, please refer to

SecConfiguration2

interface.

_bootstrapProps variable
Properties for use in bootstrapping the provider.

Syntax
```
Properties _bootstrapProps
```

_configCache variable
Configuration cache indexed by the ConfigKey.

Syntax
```
Map< ConfigKey, CompatibleConfiguration > _configCache
```

_configProvider variable
Underlying configuration provider that will be delegated the task to retrieve the desired configuration file.

Syntax
```
String _configProvider
```

_initProviderMap variable
Map containing the provider configuration properties.

Syntax
```
Map< String, Object > _initProviderMap
```

_repository variable

Syntax
```
URL _repository
```

CONFIGURATION_PROVIDER variable
The system property that should be used to select the configuration provider that will be delegated the task to retrieve the desired configuration file from the specified repository.

Syntax
```
final String CONFIGURATION_PROVIDER
```

Remarks
By default, the XmlConfiguration provider is used. The configured provider MUST implement the CompatibleConfiguration interface.

CONFIGURATION_PROVIDER_DEFAULT variable
Default configuration provider used to retrieve the desired configuration.

Syntax
```
final String CONFIGURATION_PROVIDER_DEFAULT
```

REPOSITORY_URL_SYSTEM_PROPERTY variable
The system property that should be set to specify the directory where the configuration files should be loaded from.

Syntax
```
final String REPOSITORY_URL_SYSTEM_PROPERTY
```

Remarks
This system property has no default value.

NamedCredentialImpl class
Simple implementation of NamedCredential interface.

Syntax
```
public class NamedCredentialImpl
```

NamedCredentialImpl(String, String) constructor
Constructor that accepts the credential name and value.

Syntax
```
NamedCredentialImpl ( String name,  String value )
```

Parameters

- **name –** Name to be associated with the credential
- **value –** Value of the credential

getName() method
Returns Name associated with the credential.

Syntax
```
String getName ()
```

Returns
Name of the credential.

Usage

Name of the credential.

getValue() method
Returns the value stored in the credential.

Syntax
```
String getValue ()
```

Returns
value stored in the credential.

Usage

This should be in the format appropriate to relay to the backend system to perform SSO i.e., base64 encoded certificate, http header/cookie value in the format expected by the backend.

value stored in the credential.

NoSecAttributer class
A simple implementation of Attributer interface.

Syntax
```
public class NoSecAttributer
```

Remarks
It simply returns true from the attribute methods but does not add any attributes to the SecSubject or SecResource.

attributeResource(Map< String, Object >, SecResource , String) method
Always returns true without adding any attributes to the SecResource.

Syntax
```
boolean attributeResource ( Map< String, Object > context ,
SecResource  resource ,  String id )
```

Parameters

- **resource –** resource to be attributed
- **context –** CSI context
- **id –** the ID of the resource to retrieve the attributes for

Returns
true always

Usage

true always

attributeSubject(Map< String, Object >, SecSubject , String) method
Always returns true without adding any attributes to the SecSubject.

Syntax
```
boolean attributeSubject ( Map< String, Object > context ,
SecSubject  subject ,  String id )
```

Parameters

- **context –** CSI context
- **subject –** subject that should be attributed
- **id –** The ID to look up the subject when retrieving attributes.

Returns
true always

Usage

true always

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

NoSecAuthorizer class
This authorizer ALWAYS grants access.

Syntax
```
public class NoSecAuthorizer
```

Remarks
This provider does not enforce any security at all. So, it is not recommended for use in production environment. Because many access checks are dependent on the combined results of all configured authorizers, including this provider in the security configuration will not guarantee that access checks will always be successful when combined with other providers.

checkAccess(Map< String, Object >, String, SecResource , SecSubject , SecEnvironment) method
This always votes YES for access checks.

Syntax

```
int checkAccess ( Map< String, Object > context , String action ,
SecResource resource , SecSubject subject , SecEnvironment
env )
```

Parameters

- **action –** the action to check
- **resource –** the resource on which to check the action
- **subject –** the subject to check access on
- **env –** the security environment
- **context –** the CSI context

Returns
Const.VOTE_YES, always

Usage

Const.VOTE_YES, always

checkRole(Map< String, Object >, String, SecSubject) method
This always votes YES for role membership.

Syntax

```
int checkRole ( Map< String, Object > context , String roleName ,
SecSubject subject )
```

Parameters

- **context –** the CSI context
- **roleName –** the role name to check
- **subject –** the subject to check

Returns
Const.VOTE_YES, always

Usage

Const.VOTE_YES, always

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

NoSecLoginModule class
This authenticator implementation always authenticates the user.

Syntax
```
public class  NoSecLoginModule
```

Remarks
This provider does not enforce any security at all. So, it is not recommended for use in production environment.

It supports the two configuration options:

- useUsernameAsIdentity - If this option is set to true, the username supplied in the callback is set as the name of the principal added to the subject.
- identity - The value of this configuration option is used as the identity of the user if one of two conditions is met:
  1. No credentials were supplied

2. The useUsernameAsIdentity option is set to false.
The default value, if none is specified is "nosec_identity".

Principal class

Syntax
```
public class  Principal
```

Principal(String) constructor

Syntax
```
Principal ( String name )
```

abort() method
Aborts the authentication process.

Syntax
```
boolean abort ()
```

Returns
true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while aborting the authentication process.

Usage

This method is called if the LoginContext's overall authentication failed. (the relevant REQUIRED, REQUISITE, SUFFICIENT and OPTIONAL LoginModules did not succeed). If this LoginModule's own authentication attempt succeeded (checked by retrieving the private state saved by the login method), then this method cleans up any state that was originally saved.

true if this method succeeded, or false if this LoginModule should be ignored.

commit() method
Method to commit the authentication process.

Syntax
```
boolean commit ()
```

Returns
true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while associating relevant Principals and Credentials with the Subject

Usage

This method is called if the LoginContext's overall authentication succeeded (the relevant REQUIRED, REQUISITE, SUFFICIENT and OPTIONAL LoginModules succeeded). If this LoginModule's own authentication attempt succeeded (checked by retrieving the private state saved by the login method), then this method associates relevant Principals and Credentials with the Subject located in the LoginModule. If this LoginModule's own authentication attempted failed, then this method removes/destroys any state that was originally saved.

true if this method succeeded, or false if this LoginModule should be ignored.

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

initialize(Subject, CallbackHandler, Map< String,?>, Map< String,?>) method
Initializes the LoginModule.

Syntax

```
void initialize ( Subject subject , CallbackHandler callback , Map< String,?> sharedState , Map< String,?> options )
```

Parameters

- **subject –** Subject to be authenticated
- **callback –** CallbackHandler to retrieve credentials
- **sharedState –** state shared with other configured providers
- **options –** configuration options for this provider

Usage

This method is invoked after the LoginModule has been instantiated. The purpose of this method is to initialize this LoginModule with the configuration properties. If this LoginModule does not understand any of the data stored in sharedState or options parameters, they can be ignored.

login() method
Always returns true.

Syntax

```
boolean login () throws LoginException
```

Returns

true always

Exceptions

- **LoginException –** if the callback handler does not support NameCallback and/or PasswordCallback

Usage

true always

logout() method
Destroys any credentials relevant to this LoginModule.

Syntax
```
boolean logout ()
```

Returns
true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while logging out.

Usage

This typically means ending any session that was created as part of this LoginModule.

If the subject isn't readonly, this also remove any principals and credentials added as part of the earlier authentication.

true if this method succeeded, or false if this LoginModule should be ignored.

DEFAULT_IDENTITY_OPTION variable
Default value for the IDENTITY_OPTION property.

Syntax
```
final String DEFAULT_IDENTITY_OPTION
```

DEFAULT_USE_USERNAME_AS_IDENTITY variable

Syntax
```
final boolean DEFAULT_USE_USERNAME_AS_IDENTITY
```

IDENTITY_OPTION variable
Configuration property to specify the identity to be set for the user if no credentials are supplied and if the useUsernameAsIdentity option is set to false.

Syntax
```
final String IDENTITY_OPTION
```

USE_USERNAME_AS_IDENTITY variable

Syntax
```
final String USE_USERNAME_AS_IDENTITY
```

PasswordExpirationWarning interface

Warning to propagate the password expiration date.

Syntax

```
public interface  PasswordExpirationWarning
```

Derived classes

- *com.sybase.security.provider.PasswordExpirationWarningImpl* on page 257

getExpiration() method

Returns the password expiration date.

Syntax

```
Date getExpiration ()
```

Returns

Password expiration date. Null if password does not expire.

Usage

Null is returned if password does not expire. If expiration date is not known,

PasswordExpirationWarning

is not returned.

Password expiration date. Null if password does not expire.

PasswordUtils class

Utility class that houses methods to compute encoded password hash and method to compare a specified password against such encoded password hash.

Syntax

```
public class  PasswordUtils
```

PasswordException class

Exception thrown by the various methods in PasswordUtils class to signal an error encoding/verifying the password.

Syntax

```
public class  PasswordException
```

PasswordException(String) constructor
Constructor that accepts the message to be associated with the exception.

Syntax
`PasswordException ( String` *message* `)`

Parameters

- **message –** Message to be associated with the exception.

PasswordException(Throwable) constructor
Constructor that accepts the root cause to be associated with the exception.

Syntax
`PasswordException ( Throwable` *e* `)`

Parameters

- **e –** Root cause to be associated with the exception.

getRootException() method
Gets the root cause of the exception, if any.

Syntax
`Throwable getRootException ()`

Returns
root exception

Usage

root exception

checkPassword(char[], String) method
Checks if the password matches the encoded password hash.

Syntax
`boolean checkPassword ( char[]` *password* `, String` *encodedPassword* `)` throws `PasswordException`

Parameters

- **password –** password to be checked
- **encodedPassword –** encoded password digest to compare against

Returns

true if they match, false otherwise

Exceptions

- **PasswordException –** if the encoded password hash is not in the expected format or if the digest algorithm ID is not valid/supported.

Usage

true if they match, false otherwise

extractBase64Data(String) method

Decodes the base64 string and returns the byte array.

Syntax

`byte[] extractBase64Data ( String` *`data`* `)` throws `IOException`

Parameters

- **data –** base64 string to be decoded

Returns

byte array decoded from the input

Exceptions

- **IOException –** if an error occurs during the decoding

Usage

byte array decoded from the input

extractEncodingAlgorithm(String) method

Extracts the algorithm used to encode the encoded password.

Syntax

`String extractEncodingAlgorithm ( String` *`encodedPassword`* `)`

Parameters

- **encodedPassword –** the encoded password from which to extract the algorithm

Returns
the algorithm in all upper case or null if unable to extract it properly

Usage

the algorithm in all upper case or null if unable to extract it properly

extractRawPassword(String) method
Extracts the password digest without the algorithm tag or the random salt.

Syntax
`String extractRawPassword ( String` *`encodedPassword`* `)`

Parameters

- **encodedPassword –** the encoded password from which to strip the algorithm tag and the random salt.

Returns
the password digest

Usage

the password digest

extractSaltData(String) method
Extracts the salt data used to encode the encoded password.

Syntax
`byte[] extractSaltData ( String` *`encodedPassword`* `)` throws `IOException`

Parameters

- **encodedPassword –** the encoded password from which to extract the salt data

Returns
the salt data

Exceptions

- **IOException –** propagates IOException encountered extracting the salt from base64 encoded form.

Usage

the salt data

fatalJVMError(Throwable) method
Prints the stack trace of the Throwable and throws an Error.

Syntax

```
void fatalJVMError ( Throwable e )
```

Parameters

- **e –** Throwable to log

Exceptions

- **Error –**

Usage

This is invoked only in the case when an IOException is encountered while converting String into byte array using the

DEFAULT_ENCODING

.

generateSaltData() method
Generates random byte data of the specified length.

Syntax

```
byte[] generateSaltData ()
```

Returns

random byte data of the specified length

Usage

random byte data of the specified length

getBase64String(byte[]) method
Encodes the specified byte array into a Base64 string.

Syntax
`String getBase64String ( byte[] data )` throws `IOException`

Parameters

- **data –** Byte array to compute the Base64 string from

Returns
Base64 encoding of the input

Exceptions

- **IOException –** if error is encountering during encoding.

Usage

Base64 encoding of the input

getByteArrayFromCharArray(char[]) method
Converts a character array to a byte array using the DEFAULT_ENCODING.

Syntax
`byte[] getByteArrayFromCharArray ( char[] ch )`

Parameters

- **ch –** character array to convert

Returns
byte array derived using the default encoding from the specified input

Usage

byte array derived using the default encoding from the specified input

getByteArrayFromString(String) method
Converts a string to a byte array using the DEFAULT_ENCODING.

Syntax
`final byte[] getByteArrayFromString ( String str )`

Parameters

- **str –** String to convert into byte array

Returns
byte array

Usage

}

byte array

getEncodedPassword(char[]) method
Returns the password hash encoding with the algorithm tags included.

Syntax
`String getEncodedPassword ( char[] password ) throws PasswordException`

Parameters

- **password –** the password to encode

Returns
the encoded password

Exceptions

- **PasswordException –** if an error is encountered while encoding the password.

Usage

Uses the default algorithm to compute the password hash.

the encoded password

getEncodedPassword(char[], String, boolean) method
Returns the password hash encoding with the algorithm tags included.

Syntax
`String getEncodedPassword ( char[] password , String algorithm , boolean shouldSalt ) throws PasswordException`

Parameters

- **password –** the password to encode
- **algorithm –** the message digest algorithm to use
- **shouldSalt –** whether or not to salt the password

Returns
the encoded password

Exceptions

- **PasswordException –** if an error is encountered while encoding the password.

Usage

the encoded password

getMessageDigest(String) method
Instantiates a MessageDigest object with the specified algorithm.

Syntax
`synchronized MessageDigest getMessageDigest ( String` *`algorithm`* `)`
throws `NoSuchAlgorithmException`

Parameters

- **algorithm –** digest algorithm

Returns
MessageDigest instance that uses the specified algorithm.

Exceptions

- **NoSuchAlgorithmException –** if an invalid algorithm identifier is specified.

Usage

If a previous instance of MessageDigest using the same algorithm is found in the cache, it is cloned and returned. If not, a new instance is created and saved in a hash table for later usage. To be thread safe, always a clone of the created digest is returned.

MessageDigest instance that uses the specified algorithm.

getRawEncodedPassword(char[], byte[], String) method
Computes the raw base64 encoded password digest, without the algorithm tags.

Syntax

```
String getRawEncodedPassword(char[] password, byte[] salt, String algorithm) throws NoSuchAlgorithmException, IOException
```

Parameters

- **password –** clear text password to encode
- **salt –** salt to be used for encoding
- **algorithm –** algorithm to use for computing the password digest.

Exceptions

- **NoSuchAlgorithmException –** if the specified algorithm is not valid.
- **IOException –** if an error is encountered in obtaining the base64 string of the computed password digest.

CLEARTEXT_HASH_ALGORITHM variable
Algorithm ID to store the password in clear text (useful for debugging purposes).

Syntax

```
final String CLEARTEXT_HASH_ALGORITHM
```

DEFAULT_ENCODING variable
Default encoding used to convert password string into a byte array.

Syntax

```
final String DEFAULT_ENCODING
```

DEFAULT_HASH_ALGORITHM variable
Default algorithm used to compute password hash.

Syntax

```
final String DEFAULT_HASH_ALGORITHM
```

SALT_LENGTH variable
The salt length.

Syntax

```
final static int SALT_LENGTH
```

PhysicalRole class
PhysicalRole represents a physical role assigned to a LogicalRole within a RolePackage.

Syntax
```
public class  PhysicalRole
```

PhysicalRole(String, LogicalRole) constructor
Constructor that accepts the name of the physical role and the LogicalRole it is mapped to.

Syntax
```
PhysicalRole ( String name ,   LogicalRole  lr )
```

Parameters

- **name –** physical role name
- **lr –** LogicalRole mapped to the specified physical role name

addChild(String) method
Unsupported Operation.

Syntax
```
PhysicalRole  addChild ( String name ) throws
AlreadyExistsException
```

Parameters

- **name –** Name of the child item to add

Returns
the newly created item.

Exceptions

- **AlreadyExistsException class –** it a child by that name already exists.
- **UnsupportedOperationException –** always.

Usage

the newly created item.

PreConfiguredUserLoginModule class

This login module only authenticates pre-configured users.

Syntax

```
public class  PreConfiguredUserLoginModule
```

Remarks

It supports three configuration options:

- username - valid user name.
- password - encoded password for the user. The expected format is"{HASH_ALG_ID[:salt]}base64 encoded password digest calculated using the specified algorithm and the salt}" [ ] represents optional data
- roles - comma separated list of roles that are granted to the user.

The user name supplied in the callback is set as the name of the principal added to the subject upon successful authentication. The specified roles are also added as a Principal to the subject.

PreConfigUserPrincipal class

SecNamePrincipal implementation to add a principal with the specified username.

Syntax

```
public class  PreConfigUserPrincipal
```

PreConfigUserPrincipal(String) constructor

Constructor that accepts the username to be set as Principal name.

Syntax

```
PreConfigUserPrincipal ( String name )
```

Parameters

- **name –** username that should be set as the Principal name.

PreConfigUserRolePrincipal class

Principal that implements RoleCheck interface to add a principal that the name of the role granted to a user.

Syntax

```
public class  PreConfigUserRolePrincipal
```

Remarks

This facilitates the delegation of authorization check to RoleCheckAuthorizer.

PreConfigUserRolePrincipal(String) constructor
Constructor that accepts the role name to be set as Principal name.

Syntax
```
PreConfigUserRolePrincipal ( String name )
```

Parameters

- **name –** role name that should be set as the Principal name.

checkRole(String) method

Syntax
```
boolean checkRole ( String role )
```

equals(Object) method

Syntax
```
boolean equals ( Object o )
```

getName() method

Syntax
```
String getName ()
```

hashCode() method

Syntax
```
int hashCode ()
```

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

initialize(Subject, CallbackHandler, Map< String,?>, Map< String,?>) method
Initializes the LoginModule.

Syntax
```
void initialize ( Subject subject , CallbackHandler callback , Map< String,?> sharedState , Map< String,?> options )
```

Parameters

- **subject –** Subject to be authenticated
- **callback –** CallbackHandler to retrieve credentials
- **sharedState –** state shared with other configured providers
- **options –** configuration options for this provider

Usage

This method is invoked after the LoginModule has been instantiated. The purpose of this method is to initialize this LoginModule with the configuration properties. If this LoginModule does not understand any of the data stored in sharedState or options parameters, they can be ignored.

login() method

Syntax
```
boolean login () throws LoginException
```

validateConfiguration(Map< String, String >) method
Validate the supplied configuration and report any errors.

Syntax

```
List< ConfigurationProblem > validateConfiguration ( Map< String, String > configuration ) throws SecException
```

Parameters

- **configuration –** provider configuration to be validated

Returns

the list of configuration problems.

Exceptions

- **SecException class –** if there is an error validating the specified configuration. *The configuration problems should not be reported using the Exception mechanism.*

Usage

If no errors are discovered an empty set should be returned. If possible, the same runtime checks that are done in the init() method should be performed so that the configuration errors can be fixed prior to deploying the configuration. A

SecException

should not be thrown to report the configuration problems, it should only be thrown in case of an error in validating the specified configuration.

the list of configuration problems.

PRECONFIG_PASSWORD_OPTION variable
Configuration property to specify the user's password.

Syntax

```
final String PRECONFIG_PASSWORD_OPTION
```

PRECONFIG_ROLES_OPTION variable
Configuration property to specify the comma separated names of the roles granted to the user.

Syntax

```
final String PRECONFIG_ROLES_OPTION
```

PRECONFIG_USERNAME_OPTION variable
Configuration property to specify the user name.

Syntax
```
final String PRECONFIG_USERNAME_OPTION
```

ProfilerImpl class

Syntax
```
public class  ProfilerImpl
```

destroyContext(Map< String, Object >) method
Subclasses that need to clean up when a SecContext will no longer be used should override this method so they can do their cleanup.

Syntax
```
void destroyContext ( Map< String, Object > context ) throws
SecException
```

Parameters

- **context –** the context from the SecContext that is being destroyed.

Exceptions

- **SecException class –** if any error occurs while destroying the context. This error will be logged but will not be propogated to the client.

getProfile(Map< String, Object >, SecProfile) method
This method should populate the SecProfile object by calling the set methods on it .

Syntax
```
boolean getProfile ( Map< String, Object > context ,   SecProfile
profile )
```

Parameters

- **context –** CSI context
- **profile –** profile object

Returns
true if the SecProfile is populated; false otherwise

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned false.

Usage

true if the SecProfile is populated; false otherwise

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

init(Map< String,?>) method
Implementations that care about initialization properties should override this method.

Syntax
`void init ( Map< String,?>` *`configuration`* `)` throws `SecException`

Parameters

- **configuration –** Provider specific configuration data.

Exceptions

- **SecException class –** if a required property is missing, or a provided property had bad syntax or couldn't be used. If a provider throws this exception it will be printed to the log and the provider will be inaccessible.

initContext(Map< String, Object >) method
Subclasses that would like to initialize each SecContext before any other methods are called may do so in this method.

Syntax

```
void initContext ( Map< String, Object > context ) throws
SecException
```

Parameters

- **context –** the context from the SecContext that is being initialized

Exceptions

- **SecException class –** if any error occurs while creating the context. This will invalidate the context so care should be made about throwing this exception. The exception will be propogated to the client.

Usage

The context object will NOT have the SEC_CONTEXT key because the security context has not been created yet.

listProfiles(Map< String, Object >) method
Returns the list of all known profiles.

Syntax

```
List< Named > listProfiles ( Map< String, Object > context )
```

Parameters

- **context –** CSI context

Returns

List containing Named objects describing the profiles known to this profiler.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

List containing Named objects describing the profiles known to this profiler.

PropertiesConfiguration class

Provides the standard property file-based configuration facility for CSI.

Syntax

```
public class  PropertiesConfiguration
```

Remarks

This configuration provider can use configuration data from three different sources in various combinations:

- A file on the filesystem
- A resource loaded from the classpath
- A java.util.Properties object specified programmatically

Loading from a file and resource are each mutually exclusive. The Properties object overrides those values loaded from either the file or resource.

System properties may be used to alter the default behavior when the class is instantiated, or the values may be modified programmatically.

System property values may be embedded into the values side of the properties file. The format of the value must be ${system.property.name}.

PropertiesConfiguration(boolean) constructor

Subclasses of PropertiesConfiguration should call this constructor with false as the doBootstrap argument.

Syntax

```
PropertiesConfiguration ( boolean doBootstrap )
```

Usage

This will allow the subclasses constructor to call

automaticBootstrap()

to perform bootstrapping.

PropertiesConfiguration() constructor
Instantiates properties configuration with the default values.

Syntax
```
PropertiesConfiguration ()
```

buildConfiguration() method
This method rebuilds the configuration without regards for caching.

Syntax
```
Map< String, String > buildConfiguration () throws SecException
```

Returns
configuration Map

Usage

configuration Map

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

getSuggestedExtension() method
Gets the configuration file extension.

Syntax

```
String getSuggestedExtension ()
```

Returns

file extension to fully qualify the file name.

Usage

file extension to fully qualify the file name.

writeNewConfiguration(Map< String, Object >, Map< String, String >) method
Stores the specified configuration to the file it was loaded from.

Syntax

```
void writeNewConfiguration ( Map< String, Object > selectors , Map< String, String > configuration ) throws SecException
```

Usage

If the configuration source is an URL pointing to a non local file, a resource or a read only file a

SecException

is thrown.

FILE_NAME_SYSTEM_PROPERTY variable
The system property that should be set in order to set the file name on the filesystem where the properties file should be loaded from.

Syntax

```
final String FILE_NAME_SYSTEM_PROPERTY
```

Remarks
This property has no default and overrides the resource name, if set.

RESOURCE_NAME_SYSTEM_PROPERTY variable
The system property that should be set in order to modify the name of the resource where CSI properties are loaded from.

Syntax
```
final String RESOURCE_NAME_SYSTEM_PROPERTY
```

RESOURCE_NAME_SYSTEM_PROPERTY_DEFAULT variable
The default value of the corresponding system property.

Syntax
```
final String RESOURCE_NAME_SYSTEM_PROPERTY_DEFAULT
```

RoleCheck interface
An interface that principals and credentials can implement to signal that they convey role membership.

Syntax
```
public interface RoleCheck
```

Derived classes

- *com.sybase.security.core.ClientValuePropagatingLoginModule.CVPLMRolePrincipal* on page 74
- *com.sybase.security.core.PreConfiguredUserLoginModule.PreConfigUserRolePrincipal* on page 124

checkRole(String) method
Checks if the specified role is granted.

Syntax
```
boolean checkRole ( String role )
```

Parameters

- **role –** name of the role to check.

Returns
true if the role is granted; false otherwise

Usage

true if the role is granted; false otherwise

RoleCheckAuthorizer class
This authorizer provides only role-based authorization checks.

Syntax
```
public class  RoleCheckAuthorizer
```

Remarks
It answers the checkRole method based on the principals and credentials contained in the specified subject. It scans for principals and credentials that implement the com.sybase.security.core.RoleCheck interface in order to perform the role check.

checkRole(Map< String, Object >, String, SecSubject) method

Syntax
```
int checkRole ( Map< String, Object > context ,  String roleName ,
SecSubject  subject )
```

Returns
ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

Usage

ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

RoleMapperAdmin class
Allows role mappings to be managed programmtically.

Syntax
```
public class RoleMapperAdmin
```

Derived classes

- *com.sybase.security.core.XMLFileRoleMapper.XMLFileRoleMapperAdmin* on page 155

Remarks
Instances of this class may be retrieved in one of two ways:

1. Using the no-argument constructor, an "empty" container will be created on which you may call loadFromXML(Reader) and toXML(Writer). Changes made to objects retrieved in this manner will not affect any other resources indirectly.
2. By calling SecAdminContext.getRoleMapperAdmin(), one may retrieve an instance of this class associated with the active role mapping file. The container will be prepopulated with the existing mappings from the file. Changes made to this object will not affect the underlying role mappings until the activate() method is called.

SimpleHandler class
this class handles the parsing logic through standard SAX mechanisms.

Syntax
```
private class SimpleHandler
```

Remarks
It associates with parent class instance.

characters(char[], int, int) method

Syntax
```
void characters ( char[] ch ,  int start ,  int length )
```

endElement(String, String, String) method

Syntax
```
void endElement ( String uri ,  String localName ,  String qName ) throws SAXException
```

error(SAXParseException) method

Syntax
```
void error ( SAXParseException ex ) throws SAXException
```

fatalError(SAXParseException) method

Syntax
```
void fatalError ( SAXParseException ex ) throws SAXException
```

startElement(String, String, String, Attributes) method

Syntax
```
void startElement ( String uri ,  String localName ,  String qName ,  Attributes attributes ) throws SAXException
```

warning(SAXParseException) method

Syntax
```
void warning ( SAXParseException ex )
```

elementContent variable

Syntax
```
StringBuilder elementContent
```

hasMap variable

Syntax
```
boolean hasMap
```

RoleMapperAdmin() constructor
Constructs an empty role mapper admin object.

Syntax
```
RoleMapperAdmin ()
```

RoleMapperAdmin(Reader, SecAdminContext) constructor
Constructor used by subclasses that can set the admin context.

Syntax
`RoleMapperAdmin ( Reader` *in* `, SecAdminContext` *adminCtx* `)` throws `SecException`

Parameters

- **adminCtx –** unused for this impl, but used for subclasses SecException if any error is encountered initializing the role mappings from the supplied reader.

RoleMapperAdmin(RoleMappings , SecAdminContext) constructor
Constructor used by subclasses that can set the admin context.

Syntax
`RoleMapperAdmin ( RoleMappings` *mappings* `, SecAdminContext` *adminCtx* `)`

Parameters

- **mappings –** role mappings
- **adminCtx –** unused for this impl, but used for subclasses

activate() method
Will activate the current set of mappings in the role mapper provider from which it was created.

Syntax
`void activate ()` throws `SecException`

Exceptions

- **SecException class –** if any errors occur while activating the mappings

Usage

This normally includes writing the mappings out to the role mapping file.

fromXML(Reader) method
This method is deprecated in favor of activate() and loadFromXML.

Syntax
```
void fromXML ( Reader in ) throws SecException
```

Parameters

- **in –** the source for new mappings, null if no new mappings (only write file)

Exceptions

- **SecException class –** if an error occurs trying to read or parse the new mapping source or writing new files

Usage

Replace the existing mappings in this object with those from the supplied Reader object. A call to this method will attempt to store the mappings in the underlying mapping data file as well, if one exists.

ATTENTION: This is a destructive operation and will remove ALL existing mappings!

getMapping(String, String) method
Retrieve a list of physical roles associated with the supplied package and logical role.

Syntax
```
List< String > getMapping ( String pkg ,  String logicalRole )
```

Parameters

- **pkg –** the package
- **logicalRole –** the logical role

Returns
a list of physical roles

Usage

a list of physical roles

getMappings() method
Gets the stored role mappings.

Syntax
```
RoleMappings getMappings()
```

Returns
role mappings

Usage

role mappings

getSecAdminContext() method
Gets the SecAdminContext.

Syntax
```
SecAdminContext getSecAdminContext()
```

Returns
SecAdminContext stored in this instance.

Usage

SecAdminContext stored in this instance.

loadFromXML(Reader) method
Replace the existing mappings in this object with those from the supplied Reader object.

Syntax
`void loadFromXML ( Reader` *in* `)` throws `SecException`

Parameters

- **in –** the source for new mappings, null if no new mappings (only write file)

Exceptions

- **SecException class –** if an error occurs trying to read or parse the new mapping source

Usage

ATTENTION: This is a destructive operation and will remove ALL existing mappings!

setMappings(RoleMappings) method
Sets the specified role mappings.

Syntax
```
void setMappings ( RoleMappings mappings )
```

Parameters

- **mappings –** role mappings to be set

Usage

These are not stored to the destination until toXML method is invoked.

setValidate(boolean) method
Sets the validation flag to the specified value to enable/disable XML validation when reading the role mapping information.

Syntax
```
void setValidate ( boolean validate )
```

Parameters

- **validate –** boolean flag to be set to enable/disable XML validation

toXML(Writer) method
Generate an XML document containing the current role mappings.

Syntax
```
void toXML ( Writer out ) throws SecException
```

Parameters

- **out –** a destination for existing mappings

Exceptions

- **SecException class –** if an error occurs while writing the mappings to the destination

Usage

This method call will not change the existing mappings at all.

RoleMappings class
Maintains a list of role package objects.

Syntax
```
public class  RoleMappings
```

Remarks
This is the root container object for role mappings.

RoleMappings() constructor
Creates an empty role mapping container.

Syntax
```
RoleMappings ()
```

addChild(String) method

Syntax
```
RolePackage  addChild ( String name ) throws
AlreadyExistsException
```

RolePackage class
RolePackage maintains a list of logical role mappings within a package.

Syntax
```
public class  RolePackage
```

RolePackage(String, RoleMappings) constructor
Constructor to define the package name for which the role mappings are defined.

Syntax
```
RolePackage ( String name ,   RoleMappings  mappings )
```

Parameters

- **name –** name of the package the role mappings are to be scoped
- **mappings –** role mappings

addChild(String) method

Syntax
```
LogicalRole  addChild ( String name ) throws
AlreadyExistsException
```

XmlAuditFormatter class

An audit formatter that formats audit data into an XML record.

Syntax

```
public class  XmlAuditFormatter
```

Remarks

This implementation is completely threadsafe in that one instance may satisfy requests from multiple threads concurrently.

FactoryHolder class

Holds a set of classes whose access must be synchronized between instances.

Syntax

```
private class  FactoryHolder
```

Derived classes

- *com.sybase.security.core.XmlAuditFormatter.SynchronizedFormatHelper* on page 144

FactoryHolder() constructor

Syntax

`FactoryHolder ()` throws `SecException`

generateDateTimeField(Date) method

Syntax

`String generateDateTimeField ( Date` *date* `)`

transformDocument(Document) method

Syntax

`String transformDocument ( Document` *document* `)` throws `SecException`

_dateFormatter variable

Syntax

```
final SimpleDateFormat _dateFormatter
```

_documentBuilder variable

Syntax
```
final DocumentBuilder _documentBuilder
```

_stringWriter variable

Syntax
```
final StringWriter _stringWriter
```

_transformer variable

Syntax
```
final Transformer _transformer
```

SynchronizedFormatHelper class
This is a well-performing format helper that creates a single set of generation objects and synchronizes access to them as appropriate.

Syntax
```
private class  SynchronizedFormatHelper
```

Remarks
This is a fairly simple implementation.

SynchronizedFormatHelper() constructor

Syntax
`SynchronizedFormatHelper ()` throws `SecException`

generateDateTimeField(Date) method

Syntax
`synchronized String generateDateTimeField ( Date` *date* `)`

newDocument() method

Syntax
`synchronized Document newDocument ()` throws `SecException`

transformDocument(Document) method

Syntax

```
synchronized String transformDocument ( Document document ) throws
SecException
```

ThreadLocalFormatHelper class

This is the best-performing format helper when memory is plentiful.

Syntax

```
private class  ThreadLocalFormatHelper
```

Remarks

It uses theadlocal variables to create helper objects for each thread eliminating any need for synchronization. Using simple microbenchmarks, this approach was found to be ~25% faster than the synchronized format helper on a single-cpu machine. On a 4-cpu machine, this implementation was 90% faster than the synchronized format helper. Warning: this implementation exposed significant problems in very old XML implementations that resulted in OutOfMemoryError's. This was not a problem with the implementations in JDK 1.4.2 or higher. This is why we have left in the synchronized implementation.

generateDateTimeField(Date) method

Syntax

```
String generateDateTimeField ( Date date ) throws SecException
```

newDocument() method

Syntax

```
Document newDocument () throws SecException
```

transformDocument(Document) method

Syntax

```
String transformDocument ( Document document ) throws SecException
```

FormatHelper interface

Common interface for the formatting helper classes.

Syntax

```
private interface  FormatHelper
```

Derived classes

- *com.sybase.security.core.XmlAuditFormatter.SynchronizedFormatHelper* on page 144
- *com.sybase.security.core.XmlAuditFormatter.ThreadLocalFormatHelper* on page 145

generateDateTimeField(Date) method

Syntax

```
String generateDateTimeField ( Date date ) throws SecException
```

newDocument() method

Syntax

```
Document newDocument () throws SecException
```

transformDocument(Document) method

Syntax

```
String transformDocument ( Document document ) throws SecException
```

format(String, String, String, Map< String, Object >, Decision) method
Retrieve the string format of the given audit information.

Syntax

```
String format ( String resourceClass , String resourceID , String action ,
Map< String, Object > attributes , Decision decision ) throws
SecException
```

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **resourceID –** the object on which an operation is being performed.
- **action –** the operation that is being performed.
- **attributes –** A map of attributes associated with the audit record.
- **decision –** the result of the security check.

Returns
a string representation of the given audit information.

Exceptions

- **SecException class –** when a error is encountered during audit record formatting.

Usage

a string representation of the given audit information.

getFooter() method
Retrieve the footer for the XML document containing log entries.

Syntax

```
String getFooter ()
```

Returns

the footer

Usage

the footer

getHeader() method
Retrieve the header for the XML document containing log entries.

Syntax

```
String getHeader ()
```

Returns

the header

Usage

the header

getStringAttributeValue(Object) method
Build a string attribute value.

Syntax

`String getStringAttributeValue ( Object` *value* `)` throws `SecException`

Parameters

- **value –** object to construct the string attribute value from

Exceptions

- **SecException class –**

Usage

This implementation specially handles Date and X509Certificate instances.

init(Map< String,?>) method
Implementations that care about initialization properties should override this method.

Syntax

```
void init ( Map< String,?> configuration ) throws SecException
```

Parameters

- **configuration –** Provider specific configuration data.

Exceptions

- **SecException class –** if a required property is missing, or a provided property had bad syntax or couldn't be used. If a provider throws this exception it will be printed to the log and the provider will be inaccessible.

isReduceThreadContentionSet() method
Checks if this instance is set to reduce thread contention.

Syntax

```
boolean isReduceThreadContentionSet ()
```

Returns

whether or not this instance is set to reduce thread contention

Usage

whether or not this instance is set to reduce thread contention

OPTION_REDUCE_THREAD_CONTENTION variable
If set to false, enables the slightly slower traditional synchronization object model.

Syntax

```
final String OPTION_REDUCE_THREAD_CONTENTION
```

OPTION_REDUCE_THREAD_CONTENTION_DEFAULT variable
default value for OPTION_REDUCE_THREAD_CONTENTION

Syntax

```
final boolean OPTION_REDUCE_THREAD_CONTENTION_DEFAULT
```

XmlConfiguration class

Provides the standard XML-based configuration facility for CSI.

Syntax

```
public class  XmlConfiguration
```

Remarks

This configuration provider can use configuration data from three different sources in various combinations:

- A file on the filesystem
- A resource loaded from the classpath
- A java.util.Properties object specified programmatically

Loading from a file and resource are each mutually exclusive. The Properties object overrides those values loaded from either the file or resource.

System properties may be used to alter the default behavior when the class is instantiated, or the values may be modified programmatically. The system property "com.sybase.security.core.XmlConfiguration.XmlValidation" determines if the input XML configuration should be validated against the XML schema definition. It must either be unspecified or must be set to "true" or "false". If it is unspecified then the XML configuration file is not validated against the schema.

System property values may be embedded into any provider option values included in the configuration file. Properties are referenced using the format ${system.property.name}.

SimpleHandler class

This class handles the parsing logic through standard SAX mechanisms.

Syntax

```
package class  SimpleHandler
```

Remarks

It associates with parent class instance.

SimpleHandler() constructor

Default constructor.

Syntax

```
SimpleHandler ()
```

endElement(String, String, String) method

Syntax

```
void endElement ( String uri ,  String localName ,  String qName ) throws SAXException
```

error(SAXParseException) method

Syntax

```
void error ( SAXParseException ex ) throws SAXException
```

fatalError(SAXParseException) method

Syntax

```
void fatalError ( SAXParseException ex ) throws SAXException
```

getConfig() method

Retrieves the parsed configuration.

Syntax

```
Map< String, String > getConfig ()
```

startElement(String, String, String, Attributes) method

Syntax

```
void startElement ( String uri ,  String localName ,  String qName ,  Attributes attributes ) throws SAXException
```

warning(SAXParseException) method

Syntax

```
void warning ( SAXParseException ex )
```

XmlConfiguration(boolean) constructor

Subclasses of XmlConfiguration should call this constructor with false as the doBootstrap argument.

Syntax

```
XmlConfiguration ( boolean doBootstrap )
```

Parameters

- **doBootstrap –** boolean value to indicate if the method should perform automatic bootstrapping in the constructor.

Usage

This will allow the subclasses constructor to call

automaticBootstrap()

to perform bootstrapping.

XmlConfiguration() constructor
Instantiates XmlConfiguration with default values.

Syntax
```
XmlConfiguration ()
```

buildConfiguration() method
Subclasses should implement this method to build the configuration from scratch whenever required.

Syntax
```
Map< String, String > buildConfiguration () throws SecException
```

Returns
configuration Map

Usage

configuration Map

buildConfiguration(File, String) method

Syntax
```
Map< String, String > buildConfiguration ( File file , String resourceName ) throws SecException
```

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

getSuggestedExtension() method
Gets the configuration file extension.

Syntax
```
String getSuggestedExtension ()
```

Returns
file extension to fully qualify the file name.

Usage

file extension to fully qualify the file name.

getValidateXml() method
Retrieves the validate xml flag.

Syntax
```
boolean getValidateXml ()
```

Returns
value of the validateXml flag

Usage

value of the validateXml flag

setValidateXml(boolean) method
Sets the validateXml flag to the specified value.

Syntax

```
void setValidateXml ( boolean validate )
```

Parameters

- **validate –** specifies whether or not to validate the input xml configuration file.

writeNewConfiguration(Map< String, Object >, Map< String, String >) method
Stores the specified configuration.

Syntax

```
void writeNewConfiguration ( Map< String, Object > selectors , Map< String, String > configuration ) throws SecException
```

Parameters

- **selectors –** a map of selectors that dynamically select the configuration destination.
- **configuration –** Configuration properties to be saved to the selected destination

Exceptions

- **SecException class –** If the configuration destination is an URL pointing to a non local file, a resource or a read only file

Usage

If the configuration source is an URL pointing to a non local file, a resource or a read only file a

SecException

is thrown.

CONFIGURATION_XML_VALIDATION_PROPERTY variable
The name of the system property used to choose the XML configuration file validation behavior.

Syntax

```
final String CONFIGURATION_XML_VALIDATION_PROPERTY
```

Remarks
If not specified, the xml file is not validated.

CONFIGURATION_XML_VALIDATION_PROPERTY_DEFAULT variable
The default value for CONFIGURATION_XML_VALIDATION_PROPERTY.

Syntax
```
final String CONFIGURATION_XML_VALIDATION_PROPERTY_DEFAULT
```

FILE_NAME_SYSTEM_PROPERTY variable
The system property that should be set in order to set the file name on the filesystem where the xml file should be loaded from.

Syntax
```
final String FILE_NAME_SYSTEM_PROPERTY
```

Remarks
This property has no default and overrides the resource name, if set.

JAXP_SCHEMA_LANGUAGE variable
tells the XML parser what schema language we're using

Syntax
```
final String JAXP_SCHEMA_LANGUAGE
```

JAXP_SCHEMA_SOURCE variable
allows us to hard-code the XSD file

Syntax
```
final String JAXP_SCHEMA_SOURCE
```

RESOURCE_NAME_SYSTEM_PROPERTY variable
The system property that should be set in order to modify the name of the resource from which CSI configuration is loaded from.

Syntax
```
final String RESOURCE_NAME_SYSTEM_PROPERTY
```

RESOURCE_NAME_SYSTEM_PROPERTY_DEFAULT variable
The default value for RESOURCE_NAME_SYSTEM_PROPERTY.

Syntax
```
final String RESOURCE_NAME_SYSTEM_PROPERTY_DEFAULT
```

W3C_XML_SCHEMA variable
the value that specifies the XML Schema language

Syntax
```
final String W3C_XML_SCHEMA
```

XMLFileRoleMapper class
The RoleMapper provider maintains role mapping data in an XML File format.

Syntax
```
public class  XMLFileRoleMapper
```

RoleMapperConfig class
This helper class processes the options for XMLFileRoleMapper provider.

Syntax
```
package class  RoleMapperConfig
```

XMLFileRoleMapperAdmin class
This class enhances the generic RoleMapperAdmin to provide persistence for role mapping data in the file specified in the CSI configuration for this provider.

Syntax
```
package class  XMLFileRoleMapperAdmin
```

activate() method
Let parent class parse and apply the mapping, then from here we write the new XML out.

Syntax
```
void activate () throws SecException
```

getMapping(String, String) method

Syntax
```
List< String > getMapping ( String pkg ,  String logicalRole )
```

Returns
an empty list of Strings by default, unless overridden in subclasses.

Usage

an empty list of Strings by default, unless overridden in subclasses.

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

getRoleMapperAdmin(SecAdminContext) method
Returns a RoleMapperAdmin object that can be used to manage the role mappings directly associated with this provider.

Syntax
```
RoleMapperAdmin getRoleMapperAdmin ( SecAdminContext sac )
```

Usage

Changes made to this object are isolated from the actual file until the fromXML() method is called

init(Map< String,?>) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
`void init ( Map< String,?> configuration ) throws SecException`

DISABLE_PASS_THRU variable
This boolean valued option indicates of straight thru mapping from logical to physical roles is enabled.

Syntax
`final String DISABLE_PASS_THRU`

Remarks
The default is enabled. Explicitly set this option to "true" to disable.

ROLE_MAP_FILE variable
This option name specifies the file where role Mappings are stored relative to the main CSI configuration file.

Syntax
`final String ROLE_MAP_FILE`

provider package
Custom providers allow for the customization and extension of security enforcement as needed, by implementing Provider-side interfaces to author custom providers.

Members
All public members of the provider package.

- **AbstractAttributed class –** This class provides an abstract implementation of interface Attributed.
- **AbstractAttributer class –** Abstract implementation of Attributer.
- **AbstractAuthorizer class –** Abstract implementation of Authorizer.
- **AbstractBootstrapConfiguration class –** Abstract class providing core configuration provider services.
- **AbstractFactoryRetriever class –** Common factory retriever base.
- **AbstractFileConfiguration class –** Abstract class providing configuration-file based services.
- **AbstractLoginModule class –** Provides common base implementations for most common LoginModule functions.

- **AbstractPrincipalContextRetriever class –** Abstract class used as a base for context retriever implementations that retrieve the security context from a principal made available through some environmental object.
- **AbstractProfiler class –** An abstract implementation of the Profiler interface.
- **AbstractRoleMapper class –** Base class for implementing RoleMapper providers.
- **AbstractSecureDataServices class –**
- **AbstractSecureFileConfiguration class –** Abstract class for configuring keystore options in order to facilitate subclass to get key information and decrypt and encrypt specified configuration properties.
- **Attributer interface –** This is the interface which Attributer providers must implement.
- **AttributerRegistration interface –** This is the interface to support self registration functions, which Attributer providers can optionally implement.
- **AttributerRegistration2 interface –** This is the interface to support self registration functions, which Attributer providers can optionally implement.
- **AuditConst interface –** Interface that defines the constants for audit record types.
- **AuditDestination interface –** The AuditDestination is the destination to which the audit information should be logged.
- **AuditFilter interface –** An audit filter may be configured by the administrator to filter out undesired events and only log the events that match the specified filter.
- **AuditFormatter interface –** The audit formatter is used to format an audit record from its component parts.
- **AuditToken interface –** An interface that is used to tag audit token classes.
- **AuthenticationFailureWarningImpl class –** Simple implementation for AuthenticationFailureWarning.
- **Authorizer interface –** This is the required interface for authorization providers.
- **BasicNamed class –** This class provides an implementation for Named.
- **BasicSecIDPrincipal class –** Provides a simple Principal base implementation that implements SecIDPrincipal.
- **BasicSecNamePrincipal class –** Provides a simple Principal base implementation that implements SecNamePrincipal.
- **Bootstrap class –** Provides an object bootstrapping function.
- **CertificateValidation interface –** Interface that provides certificate validation functionality.
- **CertificateValidationException class –** An exception thrown by the Certificate Validation module.
- **ConfigurationParser class –** Utility class that provides a tool to parse the internal configuration from the Map<String, String> format into Provider configuration classes for easy access to the configuration properties for the various providers.
- **ConfigurationProblem class –** Represents the configuration problems discovered during configuration validation.

- **ConfigurationValidationService interface –** Validates the supplied internal CSI configuration according to the stored provider metadata and lets the providers themselves validate the supplied configuration by performing runtime checks where possible.
- **ContextRetriever interface –** Authors wishing to create context retrievers must implement this interface in a class with a public, no argument constructor.
- **ContextRetriever2 interface –** Extended version of context retriever interface that allows the factory that was used to retrieve the context to be supplied.
- **ContextRetrieverPrincipal interface –** Principal interface designed to be paired with AbstractPrincipalContextRetriever and its subclasses.
- **DigitalSignature interface –** Interface to be implemented by secure data service providers that support digital signatures.
- **EncryptionTools class –** This class performs specialized encryption/decryption functions for relatively short strings such as passwords.
- **ExternalConfigurationService interface –** A service that will export the CSI configuration to a specified XML format.
- **FactoryRetriever interface –** Concrete factory retrievers must implement this interface in a class with a public, no argument constructor.
- **MessageDigest interface –** Interface to be implemented by secure data service providers that support message digest.
- **NamedCredentialProvider interface –** This is the interface that the providers can implement so that the configuration validation service can retrieve the names of the NamedCredential(s) the provider adds to an authenticated subject so that it can verify if they conflict with the credentials added by other providers.
- **OptionMapHelper class –** Provides some utility methods for retrieving options from a Map where there are default values and different data types involved.
- **PasswordExpirationWarningImpl class –** Simple implementation for PasswordExpirationWarning.
- **PrefixMap< T > class –** Utility class that extends HashMap that expects keys of type String.
- **Profiler interface –** This is the interface that Profile providers must implement.
- **ProviderConst interface –** Constants that are useful in implementing provider interfaces.
- **ProviderInfo interface –** This interface may optionally implemented by providers of the following types:
- **ProviderServices interface –** Interface that providers can use to access common services without interacting with other providers directly.
- **RoleMapAdministrable interface –** Interface to aid in managing role mappings.
- **RoleMapper interface –** Interface for providers that implement Role Mapping functionality.
- **SecConfigurationValidatingProvider interface –** This is the interface that the providers can implement so that the configuration can be validated and the discovered validation errors can be reported prior to actually using the configuration.

- **SecContextProvider interface –** Interface that should be implemented by providers that support the notion of a context (i.e., session) and need to perform specific actions when a context is created/destroyed.
- **SecIDPrincipal interface –** Tagging interface that can be used to identify a custom Principal as one that should be mapped to the ID attribute of a SecSubject.
- **SecLoginExceptionAuthenticationFailureWarningImpl class –** Simple LoginException implementation that implements the AuthenticationFailureWarning interface.
- **SecLoginExceptionWarningImpl class –** Simple LoginException implementation that implements the SecWarning interface.
- **SecNamePrincipal interface –** Tagging interface that can be used to identify a custom Principal as one that should be mapped to the NAME attribute of a SecSubject.
- **SecProvider interface –** Common interface that should be implemented by all security providers (except authentication providers).
- **SecProviderCapabilities interface –** Optional provider interface that allows providers to respond to capability requests.
- **SecProviderPersistence interface –** This interface gives a provider the opportunity to remove elements from the context Map before context serialization occurs and insert them after deserialization.
- **SecureDataServices interface –** Interface to be implemented by secure data service providers.
- **SecWarningImpl class –** Simple implementation for SecWarning.
- **SynchronizedSecAdminContext class –** This class synchronizes access to the supplied SecAdminContext instance.
- **SynchronizedSecContextImpl class –** This class synchronizes access to the supplied SecContext instance.
- **WarningManager interface –** Interface that providers can use to log and add warnings to the SecContext.

Remarks

Authentication Provider Interfaces The provider-side authentication interfaces are primarily based on Java Authentication and Authorization Services (JAAS). The goal of the design is to allow any implementation of the JAAS pluggable authentication module system to alternatively plug into the Security Framework. Specifically, the javax.security.auth.spi.LoginModule interface must be implemented by all authentication providers. The Framework provides a flexible mechanism for defining active authentication providers and their control flags. All of the control flags which are defined in JAAS are fully implemented in the Provider Framework. See the *JAAS documentation* for a complete discussion of the configuration options available with JAAS login modules.

Authorization Provider Interfaces The authorization provider interfaces are defined by the com.sybase.security.provider.Authorizer interface. There are two primary worker methods, checkRole() and checkAccess(). There are also two security context lifecycle methods,

initContext() and destroyContext(), and one provider lifecycle method, init(), all of which are inherited from com.sybase.security.provider.SecContextProvider.

Attribution Providers The attribution providers are a catch-all for several different tasks:

- Enumeration of resources, resource types, actions, roles
- Retrieval of attributes for resources and subjects

The attribution providers have the same lifecycle methods as the authorization providers. The same rules should be followed with respect to thread-safety; all of the attribution provider methods include a context map which can be used to store state information associated with any given security context.

Profile Providers A profile provider is based on the Profiler interface. A profiler retrieves the profile information given a profile name. Multiple profilers can be configured. There are two supported operations getProfile() and listProfiles(). There are also two security context lifecycle methods, initContext() and destroyContext(), and one provider lifecycle method, init(), all of which are inherited from com.sybase.security.provider.SecProvider. If a profiler does not recognize a profile name then it simply returns null and the getProfile() method calls falls through to the next configured profiler. The listProfiles() method is invoked on all the configured profilers and the aggregate list is returned to the client.

AbstractAttributed class

This class provides an abstract implementation of interface Attributed.

Syntax

```
public class  AbstractAttributed
```

AbstractAttributed(boolean) constructor

Constructor which allows callers to enable instantiation of the object in read-only mode.

Syntax

```
AbstractAttributed ( boolean allowsReadOnly )
```

Parameters

- **allowsReadOnly –** whether or not this implementation should allow calls to enable readonly mode

addAttribute(String, String) method

Adds an additional value to an attribute.

Syntax

```
void addAttribute ( String name ,  String value )
```

Parameters

- **name –** the name of the attribute
- **value –** the value to add

Exceptions

- **IllegalStateException –** if called after marked read only

Usage

If the attribute does not exist, it will be created.

addAttributes(String, String[]) method
Adds additional values to an attribute.

Syntax

```
void addAttributes ( String name ,  String[] values )
```

Parameters

- **name –** the name of the attribute
- **values –** the values to add

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

Usage

If the attribute does not exist, it will be created.

commitModifications() method
Commits any changes made to this attributed object.

Syntax

```
void commitModifications () throws SecException
```

getAllAttributes() method
A method to return a map of all the attribute names and their corresponding values.

Syntax

```
Map< String, String[]> getAllAttributes ()
```

Returns
a Map of attribute names and values. Modifications to the returned value will not be propagated to the attributed object.

Usage

a Map of attribute names and values. Modifications to the returned value will not be propagated to the attributed object.

getAttribute(String) method
Convenience method for getting single-valued attributes.

Syntax
```
String getAttribute ( String name )
```

Parameters

- **name –** The name of the attribute whose value should be retrieved.

Returns
The first value for the named attribute. If there are no attribute values with the given name, it returns null.

Usage

The first value for the named attribute. If there are no attribute values with the given name, it returns null.

getAttributes(String) method
Retrieves an array of values for the specified attribute name.

Syntax
```
String[] getAttributes ( String name )
```

Parameters

- **name –** The name of the attribute whose values should be retrieved.

Returns
All the values associated with the named attribute. If there are no attribute values with the given name returns null.

Usage

All the values associated with the named attribute. If there are no attribute values with the given name returns null.

internalGetAllAttributes() method
A method to return a mutable Map of attribute names and values.

Syntax

```
Map< String, String[]> internalGetAllAttributes ()
```

Returns

a read/write Map of attribute names and values

Usage

a read/write Map of attribute names and values

isReadOnly() method
Returns the status of read only mode.

Syntax

```
boolean isReadOnly ()
```

Returns

true if this instance is marked read only

Usage

true if this instance is marked read only

merge(Attributed) method
Merges attributes of another Attributed object into this one.

Syntax

```
void merge ( Attributed other)
```

Parameters

- **other –** the other Attributed object

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

merge(Map< String, String[]>) method
Merges the attributes from a Map object into this Attributed object.

Syntax
```
void merge ( Map< String, String[]> other )
```

Parameters

- **other –** the other Map object

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

Usage

The Map keys must be String objects and the values must be String[] objects.

setAttribute(String, String) method
Convenience method for setting single-valued attributes.

Syntax
```
void setAttribute ( String name ,  String value )
```

Parameters

- **name –** the name of the attribute
- **value –** the attribute's single value

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

setAttributes(String, String[]) method
Sets all of an attribute's values overwriting any values already set.

Syntax
```
void setAttributes ( String name ,  String[] values )
```

Parameters

- **name –** the name of the attribute
- **values –** the attribute's values

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

setReadOnly() method
On Attributed objects supporting this method, permanently disables any operations that would modify the contents of this object.

Syntax
```
void setReadOnly ()
```

Exceptions

- **UnsupportedOperationException –** if the operation is not allowed on this instance

toString() method
A method to return serialzed form of all attributes and their values.

Syntax
```
String toString ()
```

Returns
a java.lang.String representation of all attribute names and their corresponding values.

Usage

a java.lang.String representation of all attribute names and their corresponding values.

verifyNotReadOnly() method
A method to verify if the object is not read-only.

Syntax
```
void verifyNotReadOnly ()
```

Exceptions

- **IllegalStateException –** if the object is in readonly mode

_attributes variable
A Map of attribute names and values for overriding classes.

Syntax
```
HashMap< String, String[]> _attributes
```

AbstractAttributer class
Abstract implementation of Attributer.

Syntax
```
public class AbstractAttributer
```

Derived classes

- *com.sybase.security.core.NoSecAttributer* on page 105

Remarks
Provides place holder methods for all of the methods so the subclass only need override those that are relevant.

attributeAuthenticatedSubject(Map< String, Object >, SecSubject) method

Syntax
```
boolean attributeAuthenticatedSubject ( Map< String, Object >
context ,  SecSubject  subject ) throws SecException
```

Returns
false by default, unless overridden in subclasses.

Usage

false by default, unless overridden in subclasses.

attributeResource(Map< String, Object >, SecResource , String) method

Syntax
```
boolean attributeResource ( Map< String, Object > context ,
SecResource  resource ,  String id ) throws SecException
```

Returns
false by default, unless overridden in subclasses.

Usage

false by default, unless overridden in subclasses.

attributeSubject(Map< String, Object >, SecSubject , String) method

Syntax

```
boolean attributeSubject ( Map< String, Object > context ,
SecSubject  subject ,  String id ) throws SecException
```

Returns

false by default, unless overridden in subclasses.

Usage

false by default, unless overridden in subclasses.

destroyContext(Map< String, Object >) method

No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax

```
void destroyContext ( Map< String, Object > context ) throws
SecException
```

getSubjectAttributesForResource(Map< String, Object >, SecResource , SecSubject) method

Syntax

```
Map< String, String[]> getSubjectAttributesForResource ( Map<
String, Object > context ,  SecResource  res ,  SecSubject  subject )
throws SecException
```

Returns

null by default, unless overridden in subclasses.

Usage

null by default, unless overridden in subclasses.

init(Map< String,?>) method

No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax

```
void init ( Map< String,?> configuration ) throws SecException
```

initContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
`void initContext ( Map< String, Object > context ) throws SecException`

listActions(Map< String, Object >, SecResource) method

Syntax
`List< Named > listActions ( Map< String, Object > context , SecResource res ) throws SecException`

Returns
an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

listEnvironmentAttributes(Map< String, Object >) method

Syntax
`List< Named > listEnvironmentAttributes ( Map< String, Object > context ) throws SecException`

Returns
an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

listResources(Map< String, Object >, String) method

Syntax
`List< Named > listResources ( Map< String, Object > context , String resourceType ) throws SecException`

Returns
an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

listResourceTypes(Map< String, Object >) method

Syntax

`List< Named > listResourceTypes ( Map< String, Object >` *context* `)` throws `SecException`

Returns

an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

listRoles(Map< String, Object >) method

Syntax

`List< Named > listRoles ( Map< String, Object >` *context* `)` throws `SecException`

Returns

an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

listSubjectAttributesForResource(Map< String, Object >, SecResource , SecSubject) method

Syntax

`List< Named > listSubjectAttributesForResource ( Map< String, Object >` *context* `, SecResource` *res* `, SecSubject` *subject* `)` throws `SecException`

Returns

an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

AbstractAuthorizer class
Abstract implementation of Authorizer.

Syntax
```
public class AbstractAuthorizer
```

Derived classes

- *com.sybase.security.core.NoSecAuthorizer* on page 107
- *com.sybase.security.core.RoleCheckAuthorizer* on page 135

Remarks
Provides place holder methods for all of the methods so the subclass only need override those that are relevant.

checkAccess(Map< String, Object >, String, SecResource , SecSubject , SecEnvironment) method

Syntax
`int checkAccess ( Map< String, Object >` *context* `, String` *action* `, SecResource` *resource* `, SecSubject` *subject* `, SecEnvironment` *env* `)` throws `SecException`

Returns
ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

Usage

ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

checkRole(Map< String, Object >, String, SecSubject) method

Syntax
`int checkRole ( Map< String, Object >` *context* `, String` *roleName* `, SecSubject` *subject* `)` throws `SecException`

Returns
ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

Usage

ProviderConst.VOTE_ABSTAIN by default, unless overridden in subclasses.

destroyContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void destroyContext ( Map< String, Object > context ) throws SecException
```

init(Map< String,?>) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void init ( Map< String,?> configuration ) throws SecException
```

initContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void initContext ( Map< String, Object > context ) throws SecException
```

AbstractBootstrapConfiguration class
Abstract class providing core configuration provider services.

Syntax
```
public class  AbstractBootstrapConfiguration
```

Derived classes

- *com.sybase.security.core.NamedConfiguration* on page 93
- *com.sybase.security.provider.AbstractFileConfiguration* on page 176

Remarks
These services come in the form of bootstrapping capabilities based upon system properties that contain references to property files. Unlike many of the common security framework functions, each configuration provider must call the automaticBootstrap method in their constructor to take advantage of the system-property defined bootstrapping capabilities. Simply including this base class in the inheritance hierarchy does NOT enable the automatic bootstrapping.

AbstractBootstrapConfiguration() constructor
Default constructor.

Syntax
```
AbstractBootstrapConfiguration ()
```

Usage

This constructor will not call automaticBootstrap -- this is the responsibility of the implementation class's public constructor.

automaticBootstrap() method
This method, if called, should be called only ONCE during the initialization (constructors) of a class.

Syntax
```
void automaticBootstrap ()
```

bootstrap(InputStream) method
Bootstrap this configuration instance using data from the supplied InputStream.

Syntax
```
void bootstrap ( InputStream is ) throws IOException, SecException
```

bootstrap(File) method
Bootstrap this configuration instance using data from the supplied File.

Syntax
```
void bootstrap ( File f ) throws IOException, SecException
```

bootstrap(URL) method
Bootstrap this configuration instance using data from the supplied URL.

Syntax
```
void bootstrap ( URL url ) throws IOException, SecException
```

bootstrap(Properties) method
Bootstrap this configuration instance using data from the supplied Properties.

Syntax
```
void bootstrap ( Properties props ) throws SecException
```

Exceptions

- **SecException class –** if any errors occurred setting properties. If an error occurred setting a single property, the error is saved and the next property is processed. This ensures that an invalid property name/value does not necessarily break the entire configuration bootstrapping process.

setBootstrapProperty(String, String) method
called to set a name/value attribute

Syntax

```
void setBootstrapProperty ( String property ,  String value ) throws
SecException
```

_automaticBootstrapComplete variable
Set to true after automatic bootstrapping has been performed.

Syntax

```
boolean _automaticBootstrapComplete
```

Remarks
Used to throw assertion failure if multiple automatic bootstraps are attempted.

_failedBootstrap variable
After the constructor returns, this value will be true if errors occurred while trying to bootstrap the configuration.

Syntax

```
boolean _failedBootstrap
```

_failedBootstrapException variable
After the constructor returns, this value will contain the FIRST exception that caused the bootstrap configuration process to fail.

Syntax

```
Throwable _failedBootstrapException
```

BOOTSTRAP_CONFIGURATION_PROPERTY_FILE variable
If this system property is defined, the configuration provider will search for data in the form of a properties file at the specified location.

Syntax

```
final String BOOTSTRAP_CONFIGURATION_PROPERTY_FILE
```

Remarks
If the URL configuration property is specified then this property will be ignored.

BOOTSTRAP_CONFIGURATION_PROPERTY_URL variable
If this system property is defined, the configuration provider will search for data in the form of a properties file at the specified URL.

Syntax
```
final String BOOTSTRAP_CONFIGURATION_PROPERTY_URL
```

AbstractFactoryRetriever class
Common factory retriever base.

Syntax
```
public class  AbstractFactoryRetriever
```

Remarks
This handles logic that is shared between most factory retriever instances.

retrieveContainerFactory(Object) method
Subclasses should override this method.

Syntax
`abstract SecContextFactory  retrieveContainerFactory ( Object` *environmentObject* `)` throws `SecException`

Parameters

- **environmentObject –** client-supplied environment object

Returns
the appropriate factory object

Exceptions

- **SecException class –** on error

Usage

There is no need to return a cloned factory. The calling code will automatically clone it before returning it to the client.

the appropriate factory object

retrieveFactory(Object) method
This method provides a default implementation of retrieving a Security Context factory.

Syntax
```
SecContextFactory retrieveFactory(Object environmentObject) throws SecException
```

Parameters

- **environmentObject –** an instance of the configured environment.

Returns
an instance of the SecContextFactory

Usage

A default configuration is created for Servlet container contexts. Subclasses are generally required to implement the retrieveContainerFactory method.

an instance of the SecContextFactory

returnedFactoryShouldBeCloned() method
Subclasses can override this to skip the factory cloning step, for those cases where it is unnecessary.

Syntax
```
boolean returnedFactoryShouldBeCloned()
```

Returns
true by default, unless overridden in subclasses.

Usage

true by default, unless overridden in subclasses.

AbstractFileConfiguration class
Abstract class providing configuration-file based services.

Syntax
```
public class AbstractFileConfiguration
```

Derived classes

- *com.sybase.security.provider.AbstractSecureFileConfiguration* on page 198

Remarks

Subclasses need only implement the abstract buildConfiguration method if the default caching strategy is sufficient. This class supports loading configuration data from a specific file or a resource loaded from the classloader.

This class implements SecConfiguration3 but there is no default implementation for writeNewConfiguration method. The sub classes must overwrite this method to store the specified configuration. For backwards compatibility it supplies a default implementation of the SecConfiguration2.getConfiguration(Map) method that ignores all configuration selectors except SecConfiguration2.SELECTOR_FRESH_CONFIGURATION When this selector is specified the configuration from the configuration file is returned instead of the cached copy (which is still not updated).

AbstractFileConfiguration(String, File) constructor

Instantiates file-based configuration.

Syntax

```
AbstractFileConfiguration ( String defaultResourceName ,  File defaultFile )
```

Usage

Superclass should supply the appropriate default values for the no-arg constructor.

addGlobalProperties(Map< String, String >) method

return a map of provider prefixed Global configuration properties.

Syntax

```
Map< String, String > addGlobalProperties ( Map< String, String > configMap )
```

Parameters

- **configMap –** the map of properties to inspect for provider properties.

Returns

the map of global provider configuration properties.

Usage

the map of global provider configuration properties.

buildConfiguration() method
Subclasses should implement this method to build the configuration from scratch whenever required.

Syntax

```
abstract Map< String, String > buildConfiguration () throws SecException
```

Returns

configuration Map

Usage

configuration Map

getConfiguration(Map< String, Object >) method
This method is used by the CSI infrastructure to retrieve configuration information in a standardized format.

Syntax

```
Map< String, String > getConfiguration ( Map< String, Object > selectors ) throws SecException
```

Parameters

- **selectors –** a map of selectors that dynamically alter the returned configuration. The specific keys and values that are meaningful depend on the underling implementation.

Returns

map of configuration options.

Exceptions

- **SecException class –** on a configuration error

Usage

This method will be called once for the creation of every

SecContext

object. Because of this the following guidelines should be followed by any implementation:

1. The return value of this method should not change if the configuration data has not changed. This allows the CSI infrastructure to properly cache configuration data.
2. If the underlying configuration data has changed, the return value should not be modified and returned. Instead a new object should be created from scratch. CSI infrastructure caches based on object identity, not contents, so if this rule is not followed then updated configuration data will not be noticed by CSI.

map of configuration options.

getConfiguration() method
This method is used by the CSI infrastructure to retrieve configuration information in a standardized format.

Syntax
```
Map< String, String > getConfiguration () throws SecException
```

Returns
map of configuration options.

Exceptions

- **SecException class –** on a configuration error

Usage

This method will be called once for the creation of EVERY

SecContext

object. Because of this the following guidelines should be followed by any implementation:

1. The return value of this method should not change if the configuration data has not changed. This allows the CSI infrastructure to properly cache configuration data.
2. If the underlying configuration data has changed, the return value should not be modified and returned. Instead a new object should be created from scratch. CSI infrastructure caches based on object identity, not contents, so if this rule is not followed then updated configuration data will not be noticed by CSI.

map of configuration options.

getConfigurationFile() method
Returns the File object housing the configuration data.

Syntax
```
File getConfigurationFile ()
```

Usage

If the file is a remote URL or some other non-writable source then this method will return null.

getConfigurationStream() method
Retrieves the configuration stream.

Syntax

```
InputStream getConfigurationStream () throws SecException
```

Returns

an InputStream with the contents of the specified configuration data

Exceptions

- **SecException class –** on error

Usage

This may be from a file or a resource depending on the active configuration of this object.

an InputStream with the contents of the specified configuration data

getConfigurationStreamWithArg(File, String) method

Syntax

```
InputStream getConfigurationStreamWithArg ( File file ,  String resourceName ) throws SecException
```

getFile() method
Retrieves the file object where configuration data will be retrieved, if any.

Syntax

```
File getFile ()
```

Returns

null if the configuration data will not be retrieved from a file

Usage

null if the configuration data will not be retrieved from a file

getOverrideProperties() method
Retrieves the value of any override properties.

Syntax
```
Map< String, String > getOverrideProperties ()
```

Returns
null if there are no override properties set

Usage

null if there are no override properties set

getResolvedURL(String) method
return the a fully resolved URL given a relative path entry

Syntax
`URL getResolvedURL ( String` *relative* `)` throws `SecException`

getResource() method
Retrieves the resource where configuration data will be retrieved, if any.

Syntax
```
String getResource ()
```

Returns
null if the configuration data will not be retrieved from a resource

Usage

null if the configuration data will not be retrieved from a resource

getURL() method
Retrieves the URL where configuration data will be retrieved, if any.

Syntax
```
URL getURL ()
```

Returns
null if the configuration data will not be retrieved from a URL

Usage

null if the configuration data will not be retrieved from a URL

invalidateCache() method

Syntax

```
void invalidateCache ()
```

setFile(File) method

Modifies this configuration object to retrieve configuration data from the specified file.

Syntax

```
void setFile ( File file )
```

Parameters

- **file –** file to load data from

Usage

Setting this value will clear the value of the resource and url properties.

setOverrideProperties(Map< String, String >) method

Modifies this configuration object to include the specified override properties which are added after first loading in the values from the configured File or Resource.

Syntax

```
void setOverrideProperties ( Map< String, String > props )
```

Parameters

- **props –** the properties that should override those retrieved from the configuration file

Usage

Set this value to null to clear it. Both the keys and the values in the Map should be String objects.

setOverrideProperties(Properties) method

Modifies this configuration object to include the specified override properties which are added after first loading in the values from the configured File or Resource.

Syntax

```
void setOverrideProperties ( Properties props )
```

Parameters

- **props –** the properties that should override those retrieved from the configuration file

setResource(String) method
Modifies this configuration object to retrieve configuration data from the specified resource.

Syntax

```
void setResource ( String resource )
```

Parameters

- **resource –** resource to load data from

Usage

Setting this value will clear the value of the file and url properties.

setURL(URL) method
Modifies this configuration object to retrieve configuration data from the specified url.

Syntax

```
void setURL ( URL url )
```

Parameters

- **url –** url to load data from

Usage

Setting this value will clear the value of the file property and resource properties.

writeNewConfiguration(Map< String, Object >, Map< String, String >) method
Stores the updated configuration.

Syntax

```
void writeNewConfiguration ( Map< String, Object > selectors , Map< String, String > configuration ) throws SecException
```

Usage

There is no default implementation. The subclasses must overwrite this method to support this feature.

The supplied configuration should be written to the configuration file as is. The override properties should not be applied. The override properties should only be applied to the configuration when returned from getConfiguration.

AbstractLoginModule class

Provides common base implementations for most common LoginModule functions.

Syntax

```
public class AbstractLoginModule
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.CertificateValidationLoginModule* on page 71
- *com.sybase.security.core.ClientValuePropagatingLoginModule* on page 74
- *com.sybase.security.core.NoSecLoginModule* on page 109
- *com.sybase.security.core.PreConfiguredUserLoginModule* on page 124

Remarks

The only method that needs to be implemented under most circumstances is the login() method.

abort() method

Aborts the authentication process.

Syntax

```
boolean abort () throws LoginException
```

Returns

true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while aborting the authentication process.

Usage

This method is called if the LoginContext's overall authentication failed. (the relevant REQUIRED, REQUISITE, SUFFICIENT and OPTIONAL LoginModules did not succeed). If this LoginModule's own authentication attempt succeeded (checked by retrieving the private state saved by the login method), then this method cleans up any state that was originally saved.

true if this method succeeded, or false if this LoginModule should be ignored.

cleanupLocalCredentials() method
Subclasses must call this at the end of the login method in all cases to ensure the stored username/password are properly cleared.

Syntax
```
void cleanupLocalCredentials ()
```

Usage

It is recommended the entire body of the login method be wrapper in a try/finally with this method in the finally clause.

clearSharedCredentials() method
This method is called from abort and/or commit to remove shared credentials if configured to do so.

Syntax
```
void clearSharedCredentials ()
```

commit() method
Method to commit the authentication process.

Syntax
`boolean commit ()` throws `LoginException`

Returns
true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while associating relevant Principals and Credentials with the Subject

Usage

This method is called if the LoginContext's overall authentication succeeded (the relevant REQUIRED, REQUISITE, SUFFICIENT and OPTIONAL LoginModules succeeded). If this LoginModule's own authentication attempt succeeded (checked by retrieving the private state saved by the login method), then this method associates relevant Principals and Credentials with the Subject located in the LoginModule. If this LoginModule's own authentication attempted failed, then this method removes/destroys any state that was originally saved.

true if this method succeeded, or false if this LoginModule should be ignored.

getCertificateChain() method
Subclasses may call this method to retrieve the authenticated certificate chain.

Syntax
```
Certificate[] getCertificateChain ()
```

Returns
The authenticated Certificate chain

Usage

This value is normally added to the shared context state by the CertificateValidationLoginModule.

The authenticated Certificate chain

getPassword() method
Subclasses should call this method to retrieve the password.

Syntax
```
char[] getPassword () throws IOException,
UnsupportedCallbackException
```

Returns
the password

Exceptions

- **IOException –** or UnsupportedCallbackException thrown while retrieving password.

Usage

Depending on the configuration of the login module this may result in a call to the callback handler or it may attempt to retrieve the password from the shared context.

the password

getUsername() method
Subclasses should call this method to retrieve the username.

Syntax
```
String getUsername () throws IOException,
UnsupportedCallbackException
```

Returns
the username.

Exceptions

- **IOException –** or UnsupportedCallbackException thrown while retrieving the username.

Usage

Depending on the configuration of the login module this may result in a call to the callback handler or it may attempt to retrieve the username from the shared context.

the username.

initialize(Subject, CallbackHandler, Map< String,?>, Map< String,?>) method
Initializes the LoginModule.

Syntax
```
void initialize ( Subject subject , CallbackHandler callback , Map< String,?> sharedState , Map< String,?> options )
```

Parameters

- **subject –** Subject to be authenticated
- **callback –** CallbackHandler to retrieve credentials
- **sharedState –** state shared with other configured providers
- **options –** configuration options for this provider

Usage

This method is invoked after the LoginModule has been instantiated. The purpose of this method is to initialize this LoginModule with the configuration properties. If this LoginModule does not understand any of the data stored in sharedState or options parameters, they can be ignored.

isClearPassSet() method
Method to check if the configuration option CLEARPASS_OPTION is true or false.

Syntax
```
boolean isClearPassSet ()
```

Returns
value of CLEARPASS_OPTION

Usage

value of CLEARPASS_OPTION

isStorePassSet() method
Method to check if the configuration option STOREPASS_OPTION is true or false.

Syntax
```
boolean isStorePassSet ()
```

Returns
value of STOREPASS_OPTION

Usage

value of STOREPASS_OPTION

isTryFirstPassSet() method
Method to check if the configuration option TRYFIRSTPASS_OPTION is true or false.

Syntax
```
boolean isTryFirstPassSet ()
```

Returns
value of TRYFIRSTPASS_OPTION

Usage

value of TRYFIRSTPASS_OPTION

isUseFirstPassSet() method
Method to check if the configuration option USEFIRSTPASS_OPTION is true or false.

Syntax
```
boolean isUseFirstPassSet ()
```

Returns
value of USEFIRSTPASS_OPTION

Usage

value of USEFIRSTPASS_OPTION

logout() method
Destroys any credentials relevant to this LoginModule.

Syntax
```
boolean logout () throws LoginException
```

Returns
true if this method succeeded, or false if this LoginModule should be ignored.

Exceptions

- **LoginException –** encountered while logging out.

Usage

This typically means ending any session that was created as part of this LoginModule.

If the subject isn't readonly, this also remove any principals and credentials added as part of the earlier authentication.

true if this method succeeded, or false if this LoginModule should be ignored.

storeCertificateChain(Certificate[]) method
May be used to store an authenticated and validated certificate chain in the shared state.

Syntax
```
void storeCertificateChain ( Certificate[] certs )
```

Parameters

- **certs –** an authenticated certificate chain.

Usage

This method will only succeed if the following criteria are met:

- Certificate chain is not null
- Certificate chain contains at least one certificate.
- Certificate chain has not already been set in the shared context.

storeSharedCredentials() method
Subclasses must call this at the end of the login method if authentication is successful.

Syntax

```
void storeSharedCredentials ()
```

Usage

This will store the retrieved credentials if storePass flag is set.

_addedPrincipalSet variable
Upon successful authentication in login() method, derived classes should add principals to this set.

Syntax

```
Set< Principal > _addedPrincipalSet
```

_addedPrivateCredentialSet variable
Upon successful authentication in login() method, derived classes should add private credentials to this set.

Syntax

```
Set< Object > _addedPrivateCredentialSet
```

_addedPublicCredentialSet variable
Upon successful authentication in login() method, derived classes should add public credentials to this set.

Syntax

```
Set< Object > _addedPublicCredentialSet
```

_callback variable
initialized with the callback handler in the initialize method

Syntax

```
CallbackHandler _callback
```

_certificateAuthenticationEnabled variable
Initialized based on the configuration options.

Syntax

```
boolean _certificateAuthenticationEnabled
```

_commitSuccess variable
The commit method sets this value to true if the commit() was called successfully.

Syntax
```
boolean _commitSuccess
```

_loginSuccess variable
The login method should set this to true if the login was successful.

Syntax
```
boolean _loginSuccess
```

_options variable
initialized with the options in the initialize method

Syntax
```
Map< String, Object > _options
```

_sharedState variable
initialized with the shared state in the initialize method

Syntax
```
Map< String, Object > _sharedState
```

_subject variable
initialized with the subject in the initialize method

Syntax
```
Subject _subject
```

CLEARPASS_OPTION variable
Key relating to the clearPass option.

Syntax
```
final String CLEARPASS_OPTION
```

Remarks
If this option is true then the login module will clear the username/pw in the shared context when calling either commit or abort.

PASSWORD_SHARED_KEY variable
The shared key that the password is stored in when the storePass option is set to true.

Syntax
```
final String PASSWORD_SHARED_KEY
```

STOREPASS_OPTION variable
Key relating to the storePass option.

Syntax
```
final String STOREPASS_OPTION
```

Remarks
If this option is true then the login module will store the username/pw in the shared context after successfully authenticating.

TRYFIRSTPASS_OPTION variable
Key relating to the useFirstPass option.

Syntax
```
final String TRYFIRSTPASS_OPTION
```

Remarks
If this option is true, the login module will first attempt to retrieve username/pw from the shared context before attempting the callback handler.

USEFIRSTPASS_OPTION variable
Key relating to the tryFirstPass option.

Syntax
```
final String USEFIRSTPASS_OPTION
```

Remarks
If this option is true, the login module will only attempt to retrieve username/pw from the shared context; it will never call the callback handler.

USERNAME_SHARED_KEY variable
The shared key that the username is stored in when the storePass option is set to true.

Syntax
```
final String USERNAME_SHARED_KEY
```

AbstractPrincipalContextRetriever class

Abstract class used as a base for context retriever implementations that retrieve the security context from a principal made available through some environmental object.

Syntax

```
public class AbstractPrincipalContextRetriever
```

Remarks

This implementation supports both HttpServletRequest and EJBContext environmental objects but subclasses can add additional support by overriding the extractContext and extractPrincipal methods. This class has special support for Principal objects that implement the ContextRetrieverPrincipal interface. Often it will be sufficient for subclasses to declare themselves, without adding any methods at all.

extractContext(Principal) method

This method implementation supports principals that implement the ContextRetrieverPrincipal interface.

Syntax

```
SecContext extractContext ( Principal principal )
```

Parameters

- **principal –** the principal from which the context will be extracted

Returns

the extracted security context

Usage

Subclasses may override this method to support additional interfaces or extraction techniques.

the extracted security context

extractPrincipal(Object) method

This method supports extracting principals from both HttpServletRequest and EJBContext environment objects.

Syntax

```
Principal extractPrincipal ( Object environmentObject )
```

Parameters

- **environmentObject –** the object from which the principal will be extracted

Returns

the extracted Principal object

Usage

Subclasses may override this method to support additional environment objects.

the extracted Principal object

retrieveContext(Object) method

Context retriever providers must implement this method to allow for retrieval of SecContext objects stored in the environment.

Syntax

```
SecContext retrieveContext ( Object environmentObject )
```

Parameters

- **environmentObject –**

Returns

the SecContext object or null if none found

Exceptions

- **SecException class –**

Usage

the SecContext object or null if none found

ejbContextAvailable variable

Syntax

```
final boolean ejbContextAvailable
```

AbstractProfiler class

An abstract implementation of the Profiler interface.

Syntax

```
public class AbstractProfiler
```

Remarks
This class provides default implementations for the Profile interface methods.

destroyContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
`void destroyContext ( Map< String, Object >` *context* `)` throws `SecException`

getProfile(Map< String, Object >, SecProfile) method

Syntax
`boolean getProfile ( Map< String, Object >` *context* `, SecProfile` *profile* `)` throws `SecException`

Returns
returns false by default, unless overridden in subclasses.

Usage

returns false by default, unless overridden in subclasses.

init(Map< String,?>) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
`void init ( Map< String,?>` *configuration* `)` throws `SecException`

initContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
`void initContext ( Map< String, Object >` *context* `)` throws `SecException`

listProfiles(Map< String, Object >) method

Syntax
```
List< Named > listProfiles ( Map< String, Object > context ) throws
SecException
```

Returns
an empty list by default, unless overridden in subclasses.

Usage

an empty list by default, unless overridden in subclasses.

AbstractRoleMapper class
Base class for implementing RoleMapper providers.

Syntax
```
public class  AbstractRoleMapper
```

Derived classes

- *com.sybase.security.core.XMLFileRoleMapper* on page 155

destroyContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void destroyContext ( Map< String, Object > context ) throws
SecException
```

getMapping(String, String) method

Syntax
```
List< String > getMapping ( String pkg ,  String logicalRole )
```

Returns
an empty list of Strings by default, unless overridden in subclasses.

Usage

an empty list of Strings by default, unless overridden in subclasses.

init(Map< String,?>) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void init ( Map< String,?> configuration ) throws SecException
```

initContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void initContext ( Map< String, Object > context ) throws
SecException
```

AbstractSecureDataServices class

Syntax
```
public class  AbstractSecureDataServices
```

Derived classes

- *com.sybase.security.core.JCESecureDataServices* on page 90

destroyContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void destroyContext ( Map< String, Object > context ) throws
SecException
```

getCipher(Map< String, Object >, SecProfile , String) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
abstract Cipher getCipher ( Map< String, Object > context ,
SecProfile  profile ,  String operation ) throws SecException
```

init(Map< String,?>) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void init ( Map< String,?> configuration ) throws SecException
```

initContext(Map< String, Object >) method
No default implementation provided, can be overridden in subclasses to implement desired functionality.

Syntax
```
void initContext ( Map< String, Object > context ) throws
SecException
```

AbstractSecureFileConfiguration class
Abstract class for configuring keystore options in order to facilitate subclass to get key information and decrypt and encrypt specified configuration properties.

Syntax
```
public class AbstractSecureFileConfiguration
```

Derived classes

- *com.sybase.security.core.PropertiesConfiguration* on page 131
- *com.sybase.security.core.XmlConfiguration* on page 149

AbstractSecureFileConfiguration(String, File) constructor

Syntax
```
AbstractSecureFileConfiguration ( String resourceName , File
configFile )
```

getCipherConfig() method

Syntax
```
EncryptionTools getCipherConfig () throws SecException
```

setCharset(String) method

Syntax
```
void setCharset ( String charset )
```

setCipherProvider(String) method

Syntax
```
void setCipherProvider ( String provider )
```

setCipherTransformation(String) method

Syntax
```
void setCipherTransformation ( String transform )
```

setKeyStoreAlias(String) method

Syntax
```
void setKeyStoreAlias ( String storeAlias )
```

setKeyStoreAliasPassword(String) method

Syntax
```
void setKeyStoreAliasPassword ( String aliasPasswd )
```

setKeyStoreLocation(File) method

Syntax
```
void setKeyStoreLocation ( File keyStore )
```

setKeyStorePassword(String) method

Syntax
```
void setKeyStorePassword ( String storePasswd )
```

setKeyStoreProvider(String) method

Syntax
```
void setKeyStoreProvider ( String provider )
```

setKeyStoreType(String) method

Syntax
```
void setKeyStoreType ( String storeType )
```

setUseCertificate(boolean) method

Syntax

```
void setUseCertificate ( boolean useCert )
```

_charset variable

Syntax

```
String _charset
```

_cipherProvider variable

Syntax

```
String _cipherProvider
```

_cipherTransform variable

Syntax

```
String _cipherTransform
```

_keyStoreAlias variable

Syntax

```
String _keyStoreAlias
```

_keyStoreAliasPassword variable

Syntax

```
String _keyStoreAliasPassword
```

_keyStoreLocation variable

Syntax

```
String _keyStoreLocation
```

_keyStorePassword variable

Syntax

```
String _keyStorePassword
```

_keyStoreProvider variable

Syntax
```
String _keyStoreProvider
```

_keyStoreType variable

Syntax
```
String _keyStoreType
```

_useCert variable

Syntax
```
String _useCert
```

Attributer interface
This is the interface which Attributer providers must implement.

Syntax
```
public interface  Attributer
```

Derived classes

- *com.sybase.security.provider.AbstractAttributer* on page 167

Remarks
Providers implementing this interface may also optionally implement ProviderInfo interface to expose additional provider information. SecConfigurationValidatingProvider interface to validate the configuration properties for the provider before they are saved using the Admin API. SecProviderCapabilities interface to expose the capabilities of the provider. AttributerRegistration2 interface to support self registration functions.

attributeAuthenticatedSubject(Map< String, Object >, SecSubject) method
Given a SecSubject object, this method should populate it with the attributes.

Syntax
```
boolean attributeAuthenticatedSubject ( Map< String, Object >
context ,   SecSubject  subject ) throws SecException
```

Parameters

- **subject –** subject that should be attributed.
- **context –** CSI context

Returns
true if the attributer contributed any attributes to the subject; false otherwise

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned false.

Usage

NAME and ID attributes may already be populated if they were added as principals to the JAAS Subject during authentication. This method will be called to populate

SecSubject

attributes when a CSI client first attempts to retrieve attributes.

true if the attributer contributed any attributes to the subject; false otherwise

attributeResource(Map< String, Object >, SecResource , String) method
If the input resource ID is recognized by this attributer, populate the supplied SecResource with attributes and/or principals as appropriate.

Syntax
`boolean attributeResource ( Map< String, Object >` *context* `, SecResource` *resource* `, String` *id* `)` throws `SecException`

Parameters

- **resource –** add attributes to this object if the attributer knows anything about the given ID.
- **context –** CSI context
- **id –** the ID of the resource to retrieve

Returns
true if the resource object was recognized and modified

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned false.

Usage

The implementation of this method should additionally populate the resource with any resource types if it recognizes the ID.

This method is indirectly called when the CSI client calls

SecContext.getResource(String)

.

true if the resource object was recognized and modified

attributeSubject(Map< String, Object >, SecSubject , String) method
Given a SecSubject object, this method should populate it with the attributes.

Syntax

```
boolean attributeSubject ( Map< String, Object > context ,
SecSubject  subject ,  String id ) throws SecException
```

Parameters

- **subject –** subject that should be attributed (this subject may be just a container to hold the attributes, it may not have been populated with an ID attribute).
- **context –** CSI context
- **id –** The ID to look up the subject when retrieving attributes.

Returns

true if the attributer contributed any attributes to the subject; false otherwise

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned false.

Usage

This method will be called to populate

SecSubject

attributes when a CSI client first attempts to retrieve attributes. The subject may not have been authenticated so an ID attribute may not be available in the subject. The supplied ID parameter should be used to identify the subject and retrieve the attribute values.

true if the attributer contributed any attributes to the subject; false otherwise

getSubjectAttributesForResource(Map< String, Object >, SecResource , SecSubject) method
Returns all attribute names and values associated with the given resource and subject.

Syntax

```
Map< String, String[]> getSubjectAttributesForResource ( Map< String, Object > context ,  SecResource  res ,  SecSubject  subject ) throws SecException
```

Parameters

- **context –** CSI context
- **res –** the resource for which attributes are being retrieved
- **subject –** the subject to associate with the asset for attribute retrieval

Returns

map of attributes or null if there are no attributes

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty map.

Usage

This method is indirectly called when a CSI client calls

SecSubject.getAttributesForResource(SecResource)

.

map of attributes or null if there are no attributes

listActions(Map< String, Object >, SecResource) method
Lists all actions that can be performed on the specified resource.

Syntax

```
List< Named > listActions ( Map< String, Object > context , SecResource  res ) throws SecException
```

Parameters

- **context –** CSI context
- **res –** the resource for which the actions should be listed.

Returns
a List containing Named objects describing each action.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecContext.listActions(SecResource)

.

a List containing Named objects describing each action.

listEnvironmentAttributes(Map< String, Object >) method
Lists environment attributes that authorization providers may evaluate during checkAccess calls.

Syntax
`List< Named > listEnvironmentAttributes ( Map< String, Object >` *context* `)` throws `SecException`

Parameters

- **context –** CSI context

Returns
a List containing Named objects describing each environment attribute.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecContext.listEnvironmentAttributes()

.

a List containing Named objects describing each environment attribute.

listResources(Map< String, Object >, String) method
Lists all known resources.

Syntax
`List< Named > listResources ( Map< String, Object >` *context* `,`
`String` *resourceTypeName* `)` throws `SecException`

Parameters

- **context –** CSI context
- **resourceTypeName –** limit results to this resource type. To request a list of resources of all known types, null is specified.

Returns
a List containing Named objects describing each resource.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecContext.listResources()

and

SecContext.listResources(String resourceTypeName)

.

The implementor should first check to see if the specified resource type is a resource type that it understands and expects before performing any resource-intensive operations.

a List containing Named objects describing each resource.

listResourceTypes(Map< String, Object >) method
Lists all known resource types.

Syntax
`List< Named > listResourceTypes ( Map< String, Object >` *context* `)`
throws `SecException`

Parameters

- **context –** CSI context

Returns

a List containing Named objects describing each resource type. The "name" in the Named object is the value

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecContext.listResourceTypes()

.

The return value for this method is a List of

Named

objects. The important value in the

Named

object is the "name", which is used as the resourceTypeName parameter in the listResources method.

a List containing Named objects describing each resource type. The "name" in the Named object is the value

listRoles(Map< String, Object >) method
Lists all known roles.

Syntax

```
List< Named > listRoles ( Map< String, Object > context ) throws SecException
```

Parameters

- **context –** CSI context

Returns

a List containing Named objects describing each role.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecContext.listRoles()

.

a List containing Named objects describing each role.

listSubjectAttributesForResource(Map< String, Object >, SecResource , SecSubject) method
Lists all attribute names that may be associated with the resource/subject pair.

Syntax

```
List< Named > listSubjectAttributesForResource ( Map< String, Object > context , SecResource res , SecSubject subject ) throws SecException
```

Parameters

- **context –** CSI context
- **res –** the resource to return attribute info for.
- **subject –** the subject to associate with the asset for retrieving the names of the relevant attributes.

Returns

a List containing Named objects describing each resource attribute.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

This method is indirectly called when the CSI client calls

SecSubject.listAttributesForResource(String)

.

a List containing Named objects describing each resource attribute.

AttributerRegistration interface
This is the interface to support self registration functions, which Attributer providers can optionally implement.

Syntax
```
public interface AttributerRegistration
```

createSubject(SecSubject) method
This method will be called when commitModification method is called on a subject object retrieved by SecContextFactory.newSubject() Attributer can simply return false if it doesn't support this method.

Syntax
`boolean createSubject ( SecSubject` *subject* `)` throws `SecException`

modifySubject(Map< String, Object >, SecSubject , Attributed) method
This method will be called when commitModification method is called on a subject object retrieved through a SecContext instance.

Syntax
`boolean modifySubject (Map< String, Object >` *context*`, SecSubject` *subject*`, Attributed` *modifiedAttributes* `)` throws `SecException`

Parameters

- **context –** the context map
- **subject –** the subject to be modified
- **modifiedAttributes –** modified subject attrbutes to be committed

Returns
boolean value. "true" indicates subject modification is committed successfully; "false" indicates failed subject modification

Usage

Attributer

can simply return false if it doesn't support this method.

boolean value. "true" indicates subject modification is committed successfully; "false" indicates failed subject modification

AttributerRegistration2 interface
This is the interface to support self registration functions, which Attributer providers can optionally implement.

Syntax
```
public interface AttributerRegistration2
```

createSubject(Map< String, Object >, SecSubject) method
This method will be called when commitModification method is called on a subject object retrieved by SecContextFactory.newSubject() Attributer can simply return false if it doesn't support this method.

Syntax
```
boolean createSubject(Map< String, Object > context,  SecSubject subject) throws SecException
```

Parameters

- **context –**
- **subject –**

modifySubject(Map< String, Object >, SecSubject , Attributed) method
This method will be called when commitModification method is called on a subject object retrieved through a SecContext instance.

Syntax
```
boolean modifySubject(Map< String, Object > context,  SecSubject subject,  Attributed  modifiedAttributes) throws SecException
```

Parameters

- **context –** the context map
- **subject –** the subject to be modified
- **modifiedAttributes –** modified subject attrbutes to be committed

Returns
boolean value. "true" indicates subject modification is committed successfully; "false" indicates failed subject modification

Usage

Attributer

can simply return false if it doesn't support this method.

boolean value. "true" indicates subject modification is committed successfully; "false" indicates failed subject modification

AuditConst interface
Interface that defines the constants for audit record types.

Syntax
```
public interface AuditConst
```

ACTION_ACCESS variable
Action to represent an access check.

Syntax
```
final String ACTION_ACCESS
```

ACTION_ACTIVATE variable
Action to represent provider activation.

Syntax
```
final String ACTION_ACTIVATE
```

ACTION_AUTHENTICATION variable
Action to represent CSI core authentication (i.e., aggregating the provider authentication results according to the control flags).

Syntax
```
final String ACTION_AUTHENTICATION
```

ACTION_AUTHENTICATION_PROVIDER variable
Action to represent provider authentication.

Syntax
```
final String ACTION_AUTHENTICATION_PROVIDER
```

ACTION_AUTHORIZATION_AUTHORIZATION variable
Action to represent CSI core authorization check.

Syntax
```
final String ACTION_AUTHORIZATION_AUTHORIZATION
```

ACTION_AUTHORIZATION_RESOURCE variable
Action to represent CSI core resource access check.

Syntax
```
final String ACTION_AUTHORIZATION_RESOURCE
```

ACTION_AUTHORIZATION_RESOURCE_PROVIDER variable
Action to represent provider resource access check.

Syntax
```
final String ACTION_AUTHORIZATION_RESOURCE_PROVIDER
```

ACTION_AUTHORIZATION_ROLE variable
Action to represent CSI core role based authorization check.

Syntax
```
final String ACTION_AUTHORIZATION_ROLE
```

ACTION_AUTHORIZATION_ROLE_PROVIDER variable
Action to represent provider role based authorization check.

Syntax
```
final String ACTION_AUTHORIZATION_ROLE_PROVIDER
```

ACTION_CREATE variable
Action to represent object creation in CSI core.

Syntax
```
final String ACTION_CREATE
```

ACTION_CREATE_CIPHER variable
Action to represent a cipher creation.

Syntax
```
final String ACTION_CREATE_CIPHER
```

ACTION_CREATE_DIGEST variable
Action to represent a digest creation.

Syntax
```
final String ACTION_CREATE_DIGEST
```

ACTION_CREATE_PROVIDER variable
Action to represent object creation in a provider.

Syntax
```
final String ACTION_CREATE_PROVIDER
```

ACTION_CREATE_SIGNATURE variable
Action to represent a signature creation.

Syntax
```
final String ACTION_CREATE_SIGNATURE
```

ACTION_LOGOUT variable
Action to represent logout.

Syntax
```
final String ACTION_LOGOUT
```

ACTION_MODIFY variable
Action to represent object modification in CSI core.

Syntax
```
final String ACTION_MODIFY
```

ACTION_MODIFY_PROVIDER variable
Action to represent object modification in a provider.

Syntax
```
final String ACTION_MODIFY_PROVIDER
```

ATTRIBUTE_ALTERNATE_SUBJECT variable
Audit record attribute for alternate subject specified in the authorization check.

Syntax
```
final String ATTRIBUTE_ALTERNATE_SUBJECT
```

ATTRIBUTE_AUTHORIZATION_ACTION variable
Audit record attribute for action specified in the access check.

Syntax
```
final String ATTRIBUTE_AUTHORIZATION_ACTION
```

ATTRIBUTE_AUTHORIZATION_RESOURCE variable
Audit record attribute for resource specified in the access check.

Syntax
```
final String ATTRIBUTE_AUTHORIZATION_RESOURCE
```

ATTRIBUTE_CONTEXT_ID variable
Audit record attribute for context ID.

Syntax
```
final String ATTRIBUTE_CONTEXT_ID
```

ATTRIBUTE_CONTROL_FLAG variable
Audit record attribute representing the control flag for a provider (typically included in the log record for provider activation).

Syntax
```
final String ATTRIBUTE_CONTROL_FLAG
```

ATTRIBUTE_CSI_REQUEST_ID variable
Audit record attribute representing the CSI request that generated the audit record.

Syntax
```
final String ATTRIBUTE_CSI_REQUEST_ID
```

Remarks
This attribute ties multiple audit records generated in a single CSI request.

ATTRIBUTE_FAILURE_REASON variable
Audit record attribute representing the failure reason.

Syntax
```
final String ATTRIBUTE_FAILURE_REASON
```

ATTRIBUTE_PROVIDER_ID variable
Audit record attribute representing the ID of the provider that generated the audit record.

Syntax
```
final String ATTRIBUTE_PROVIDER_ID
```

ATTRIBUTE_ROLE_NAME variable
Audit record attribute for role name (typically used in audit record for role check).

Syntax
```
final String ATTRIBUTE_ROLE_NAME
```

ATTRIBUTE_ROLE_SCOPE variable
Audit record attribute for role scope (typically used in audit record for role check).

Syntax
```
final String ATTRIBUTE_ROLE_SCOPE
```

ATTRIBUTE_SUBJECT_ID variable
Audit record attribute for subject ID.

Syntax
```
final String ATTRIBUTE_SUBJECT_ID
```

ATTRIBUTE_SUPPLIED_CREDENTIALS variable
Audit record attribute for logging credentials supplied for authentication.

Syntax
```
final String ATTRIBUTE_SUPPLIED_CREDENTIALS
```

Remarks
This does not include sensitive information such as passwords but only inlcudes username or subjectDN from the certificate

CLIENT_RESOURCECLASS_PREFIX variable
Prefix added to the audit resource class name for audit records generated by CSI client applications.

Syntax
```
final String CLIENT_RESOURCECLASS_PREFIX
```

CORE_RESOURCECLASS_PREFIX variable
Prefix added to the audit resource class name for audit records generated by CSI core.

Syntax
```
final String CORE_RESOURCECLASS_PREFIX
```

PROVIDER_RESOURCECLASS_PREFIX variable
Prefix added to the audit resource class name for audit records generated by the configured providers.

Syntax
```
final String PROVIDER_RESOURCECLASS_PREFIX
```

RESOURCECLASS_CORE_PROFILE variable
Resource class name used in audit record for actions on a profile.

Syntax
```
final String RESOURCECLASS_CORE_PROFILE
```

RESOURCECLASS_CORE_PROVIDER variable
Resource class name used in audit record for actions on a provider.

Syntax
```
final String RESOURCECLASS_CORE_PROVIDER
```

RESOURCECLASS_CORE_SUBJECT variable
Resource class name used in audit record for actions on a subject.

Syntax
```
final String RESOURCECLASS_CORE_SUBJECT
```

AuditDestination interface
The AuditDestination is the destination to which the audit information should be logged.

Syntax
```
public interface AuditDestination
```

Derived classes

- *com.sybase.security.core.FileAuditDestination* on page 82

Remarks
A simple audit destination might write an audit record to a file. All audit destinations have the ability to use an audit formatter, although they may choose to ignore this if they do their own formatting. Audit destinations may choose to initialize a default formatter if they wish. Audit destinations must be thread-safe, unlike other CSI providers. CSI guarantees that each audit destination will be created only once per factory instance. However, it may be desirable for an audit destination to be aware of other instances of itself instantiated in the same VM and ensure that these instances share access to common resources such as audit files appropriately. Audit destinations may also add additional attributes to the audit record, such as a sequential

record ID to guard against log tampering or signature attributes that can be later verified to check for audit record tampering.

audit(String, String, String, Map< String, Object >, Decision) method
Generates and logs an audit record with the specified audit information.

Syntax

```
void audit ( String resourceClass , String resourceID , String action , Map< String, Object > attributes , Decision decision ) throws SecException
```

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **resourceID –** the object on which an operation is being performed.
- **action –** the operation that is being performed.
- **attributes –** A map of attributes associated with the audit record.
- **decision –** the result of the security check.

Exceptions

- **SecException class –** If an error occurs while issuing the audit request.

setFormatter(AuditFormatter) method
CSI will call this function on the destination in order to suggest what formatter it should use.

Syntax

```
void setFormatter ( AuditFormatter formatter )
```

Parameters

- **formatter –** the audit formatter to set

Usage

The destination may ignore this suggestion.

AuditFilter interface
An audit filter may be configured by the administrator to filter out undesired events and only log the events that match the specified filter.

Syntax

```
public interface AuditFilter
```

Derived classes

- *com.sybase.security.core.DefaultAuditFilter* on page 78

Remarks

The audit filter provider decides what audit records will actually be supplied to the audit destination. This gives applications a way to avoid effort spent collecting audit data when the record won't be audited anyway.

isAuditEnabled(String, String, Decision) method

This method will be called to query if an audit record with the specified attributes should be logged to the audit destination.

Syntax

```
boolean isAuditEnabled ( String resourceClass ,  String action ,
Decision  decision ) throws SecException
```

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **action –** the operation that is being performed.
- **decision –** the result of the security check.

Returns

the decision on whether or not an audit record with the specified attributes should be logged to the audit destination.

Exceptions

- **SecException class –** generated when an error is encountered while performing the audit record query.

Usage

the decision on whether or not an audit record with the specified attributes should be logged to the audit destination.

AuditFormatter interface

The audit formatter is used to format an audit record from its component parts.

Syntax

```
public interface AuditFormatter
```

Derived classes

- *com.sybase.security.core.XmlAuditFormatter* on page 143

Remarks
An example might be an XML audit formatter. An audit formatter will be supplied to the active audit destination upon initialization. The audit destination can use this formatter or not, depending on its needs.

format(String, String, String, Map< String, Object >, Decision) method
Retrieve the string format of the given audit information.

Syntax
`String format ( String` *resourceClass* `, String` *resourceID* `, String` *action* `, Map< String, Object >` *attributes* `, Decision` *decision* `)` throws `SecException`

Parameters

- **resourceClass –** the scope used when processing the resource ID.
- **resourceID –** the object on which an operation is being performed.
- **action –** the operation that is being performed.
- **attributes –** A map of attributes associated with the audit record.
- **decision –** the result of the security check.

Returns
a string representation of the given audit information.

Exceptions

- **SecException class –** when a error is encountered during audit record formatting.

Usage

a string representation of the given audit information.

getFooter() method
Retrieves a footer string that should be written at the end of a file-based audit log when closing out an audit log file permanently.

Syntax
`String getFooter ()`

Returns
the footer string for file based audits.

Usage

the footer string for file based audits.

getHeader() method
Retrieves a header string that should be written for file-based audit logs.

Syntax
```
String getHeader ()
```

Returns
the header string for file based audits.

Usage

the header string for file based audits.

AuditToken interface
An interface that is used to tag audit token classes.

Syntax
```
public interface AuditToken
```

getID() method
If the audit token is associated with a provider, this method returns the unique provider ID.

Syntax
```
String getID ()
```

Returns
the unique provider ID associated with the audit token.

Usage

the unique provider ID associated with the audit token.

AuthenticationFailureWarningImpl class
Simple implementation for AuthenticationFailureWarning.

Syntax
```
public class AuthenticationFailureWarningImpl
```

AuthenticationFailureWarningImpl() constructor
Default constructor.

Syntax
```
AuthenticationFailureWarningImpl ()
```

AuthenticationFailureWarningImpl(String) constructor
Creates an instance of AuthenticationFailureWarningImpl with the specified message.

Syntax
```
AuthenticationFailureWarningImpl ( String msg )
```

Parameters

- **msg –** message

AuthenticationFailureWarningImpl(int, String) constructor
Creates an instance of AuthenticationFailureWarningImpl with the specified failure code and message.

Syntax
```
AuthenticationFailureWarningImpl ( int code ,  String msg )
```

Parameters

- **code –** authentication failure code
- **msg –** message

AuthenticationFailureWarningImpl(int) constructor
Creates an instance of AuthenticationFailureWarningImpl with the specified failure code.

Syntax
```
AuthenticationFailureWarningImpl ( int code )
```

Parameters

- **code –** authentication failure code

getFailureCode() method
Returns the authentication failure code set.

Syntax
```
int getFailureCode ()
```

Returns
the integer failure code associated with the authentication failure.

Usage

the integer failure code associated with the authentication failure.

getMessage() method
Returns the message indicating the authentication failure reason.

Syntax
```
String getMessage ()
```

Returns
the message indicative of the authentication failure.

Usage

If a message has not been explicitly set, it maps the failure code to a message.

the message indicative of the authentication failure.

_code variable
Authentication failure code.

Syntax
```
int _code
```

Authorizer interface
This is the required interface for authorization providers.

Syntax
```
public interface  Authorizer
```

Derived classes

- *com.sybase.security.provider.AbstractAuthorizer* on page 171

Remarks
Providers implementing this interface may also optionally implement ProviderInfo interface to expose additional provider information. SecConfigurationValidatingProvider interface to validate the configuration properties for the provider before they are saved using the Admin API. SecProviderCapabilities interface to expose the capabilities of the provider.

checkAccess(Map< String, Object >, String, SecResource , SecSubject , SecEnvironment) method
Issues a decision for the check access request for this specified subject to perform the specified action on the specified resource under the specified environmental conditions.

Syntax

```
int checkAccess ( Map< String, Object > context , String action ,
SecResource resource , SecSubject subject , SecEnvironment env )
throws SecException
```

Parameters

- **context –** runtime information relevant to this security context.
- **action –** the action being considered
- **resource –** the target of that action
- **subject –** who is performing that action
- **env –** the circumstances under which that action is being performed.

Returns

one of the VOTE_* contants from Const

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned ABSTAIN.

Usage

If subject is null then the check is to be done for the "current" subject - whatever that means for your provider.

one of the VOTE_* contants from Const

checkRole(Map< String, Object >, String, SecSubject) method
Checks if the specified user has the specified role.

Syntax

```
int checkRole ( Map< String, Object > context , String roleName ,
SecSubject subject ) throws SecException
```

Parameters

- **context –** runtime information relevant to this security context.

- **roleName –** the role to check
- **subject –** the subject for whom to check the role.

Returns
one of the VOTE_* contants from Const

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned ABSTAIN.

Usage

If subject is null then the check is to be done for the "current" subject - whatever that means for the provider.

one of the VOTE_* contants from Const

BasicNamed class
This class provides an implementation for Named.

Syntax
```
public class  BasicNamed
```

Comparator< T extends Named > class
A comparator that works for all Named objects (not just BasicNamed).

Syntax
```
public class  Comparator< T extends Named >
```

Comparator() method

Syntax
```
Comparator ()
```

compare(T, T) method
A comparator that works for all Named objects (not just BasicNamed).

Syntax
```
int compare ( T t1 ,  T t2 )
```

Parameters

- **t1 –** the first named object to compare.

- **t2 –** the second named object to compare.

Returns
an integer representing the result of the comparison (0 indicating identical named objects).

Usage

an integer representing the result of the comparison (0 indicating identical named objects).

BasicNamed(String, String, String) constructor
Constructor.

Syntax
`BasicNamed ( String` *`name`* `, String` *`ID`* `, String` *`description`* `)`

Parameters

- **name –** the human readable name of the object
- **ID –** the unique identifier of the object
- **description –** the description of the object

equals(Object) method
Method to check for equality of BasicNamed objects based on ID.

Syntax
`boolean equals ( Object` *`o`* `)`

Returns
boolean value if the passed in Object's ID is identical to that of the current instance.

Usage

boolean value if the passed in Object's ID is identical to that of the current instance.

getDescription() method
Gets the description of this object.

Syntax
`String getDescription ()`

Returns
a description of this Named object

Usage

a description of this Named object

getID() method
Gets the identifier of this object.

Syntax
```
String getID ()
```

Returns
the unique identifier for this object

Usage

the unique identifier for this object

getName() method
Gets the name of this object.

Syntax
```
String getName ()
```

Returns
the name of this object

Usage

the name of this object

hashCode() method
Method to return the hashCode of the ID.

Syntax
```
int hashCode ()
```

Returns
an integer representing the hashCode of the ID.

Usage

an integer representing the hashCode of the ID.

toString() method
Method to return the serialized string representation of the object.

Syntax
```
String toString ()
```

Returns
a string representing the serialized object.

Usage

a string representing the serialized object.

BasicSecIDPrincipal class
Provides a simple Principal base implementation that implements SecIDPrincipal.

Syntax
```
public class  BasicSecIDPrincipal
```

Derived classes

- *com.sybase.security.core.CertificateIDPrincipal* on page 67

BasicSecIDPrincipal(String) constructor
Protected Constructor.

Syntax
```
BasicSecIDPrincipal ( String id )
```

Parameters

- **id –** the ID of the principal that should be returned by the getName() method.

equals(Object) method
Method to check for equality of BasicSecIDPrincipal objects based on ID.

Syntax
```
boolean equals ( Object o )
```

Returns
boolean value if the passed in Object's ID is identical to that of the current instance.

Usage

boolean value if the passed in Object's ID is identical to that of the current instance.

getName() method
Retrieves the ID of the principal.

Syntax
```
String getName ()
```

Returns
the ID of the principal

Usage

the ID of the principal

hashCode() method
Method to return the hashCode of the ID.

Syntax
```
int hashCode ()
```

Returns
an integer representing the hashCode of the ID.

Usage

an integer representing the hashCode of the ID.

_id variable
The ID of the principal.

Syntax
```
final String _id
```

BasicSecNamePrincipal class
Provides a simple Principal base implementation that implements SecNamePrincipal.

Syntax
```
public class BasicSecNamePrincipal
```

Derived classes

- *com.sybase.security.core.ClientValuePropagatingLoginModule.CVPLMUserPrincipal* on page 75
- *com.sybase.security.core.NoSecLoginModule.Principal* on page 110
- *com.sybase.security.core.PreConfiguredUserLoginModule.PreConfigUserPrincipal* on page 124

BasicSecNamePrincipal(String) constructor
Protected Constructor.

Syntax
```
BasicSecNamePrincipal ( String name )
```

Parameters

- **name –** the name of the principal that should be returned by the getName() method.

equals(Object) method
Method to check for equality of BasicSecNamePrincipal objects based on name.

Syntax
```
boolean equals ( Object o )
```

Returns
boolean value if the passed in Object's name is identical to that of the current instance.

Usage

boolean value if the passed in Object's name is identical to that of the current instance.

getName() method
Retrieves the name of the principal.

Syntax
```
String getName ()
```

Returns
the name of the principal

Usage

the name of the principal

hashCode() method
Method to return the hashCode of the ID.

Syntax
```
int hashCode ()
```

Returns
an integer representing the hashCode of the Object's name.

Usage

an integer representing the hashCode of the Object's name.

_name variable
The name of the principal.

Syntax
```
final String _name
```

Bootstrap class
Provides an object bootstrapping function.

Syntax
```
public class  Bootstrap
```

Derived classes

- *com.sybase.security.provider.AbstractBootstrapConfiguration* on page 172

Remarks
This sets JavaBean-style properties from a resource like a File, Properties object or URL. Some special characteristics apply, such as when a File property is set it will be resolved relative to the bootstrap properties source (if possible).

Bootstrap(Object) constructor
The object upon which the bootstrap will be performed is supplied as the only argument of the constructor.

Syntax
```
Bootstrap ( Object o )
```

Parameters

- **o –** if the supplied value is null, the operations will be performed on "this"

bootstrap(InputStream) constructor
Bootstrap the object instance using data from the supplied InputStream.

Syntax
```
void bootstrap ( InputStream is ) throws IOException, SecException
```

bootstrap(File) constructor
Bootstrap the object instance using data from the supplied File.

Syntax
```
void bootstrap ( File f ) throws IOException, SecException
```

bootstrap(URL) constructor
Bootstrap the object instance using data from the supplied URL.

Syntax
```
void bootstrap ( URL url ) throws IOException, SecException
```

bootstrap(Properties) constructor
Bootstrap the object instance using data from the supplied Properties.

Syntax
```
void bootstrap ( Properties props ) throws SecException
```

Exceptions

- **SecException class –** if any errors occurred setting properties. If an error occurred setting a single property, the error is saved and the next property is processed. This ensures that an invalid property name/value does not necessarily break the entire configuration bootstrapping process.

resolveBootstrapResourceAsFile(String) method
Resolve a filename against the bootstrap filename.

Syntax
```
File resolveBootstrapResourceAsFile ( String value )
```

resolveBootstrapResourceAsURL(String) method
Resolve a partial URL against the bootstrap URL.

Syntax
```
URL resolveBootstrapResourceAsURL ( String value ) throws
ResolveException
```

setBootstrapProperty(String, String) method
called to set a name/value attribute

Syntax
```
void setBootstrapProperty ( String property ,  String value ) throws
SecException
```

_bootstrapBaseFile variable
The file from which the bootstrap information was read.

Syntax
```
File _bootstrapBaseFile
```

_bootstrapBaseURL variable
The URL from which the bootstrap information was read.

Syntax
```
URL _bootstrapBaseURL
```

_object variable
The object on which the bootstrap operation will occur.

Syntax
```
final Object _object
```

CertificateValidation interface
Interface that provides certificate validation functionality.

Syntax
```
public interface  CertificateValidation
```

isValidCertificateChain(Certificate[]) method
Validates the specified certificate chain.

Syntax
`boolean isValidCertificateChain ( Certificate[] certs ) throws CertificateValidationException`

Parameters

- **certs –** certificate chain to be validated.

Returns
true if the certificate chain is valid; false otherwise.

Exceptions

- **CertificateValidationException class –** wraps any exceptions encountered while validating the certificate chain in a CertificateValidationException

Usage

true if the certificate chain is valid; false otherwise.

CertificateValidationException class
An exception thrown by the Certificate Validation module.

Syntax
`public class CertificateValidationException`

CertificateValidationException(String) constructor
Constructor for the CertificateValidationException.

Syntax
`CertificateValidationException ( String msg )`

Parameters

- **msg –** error encountered during Certificate Validation.

ConfigurationParser class
Utility class that provides a tool to parse the internal configuration from the Map<String, String> format into Provider configuration classes for easy access to the configuration properties for the various providers.

Syntax
```
public class ConfigurationParser
```

AuditProviderConfiguration class
Helper class that holds audit filter, formatter and destination configuration options.

Syntax
```
public class AuditProviderConfiguration
```

AuditProviderConfiguration(ProviderConfiguration , ProviderConfiguration , ProviderConfiguration) constructor

Syntax
```
AuditProviderConfiguration ( ProviderConfiguration filter , ProviderConfiguration formatter , ProviderConfiguration destination )
```

_destination variable
Audit destination configuration.

Syntax
```
final ProviderConfiguration _destination
```

_filter variable
Audit Filter configuration.

Syntax
```
final ProviderConfiguration _filter
```

_formatter variable

Syntax
```
final ProviderConfiguration _formatter
```

ConfigurationProperties class
Used to hold the configuration properties.

Syntax
```
public class ConfigurationProperties
```

ConfigurationProperties(List< AuditProviderConfiguration >, List< ProviderConfiguration >, List< ProviderConfiguration >, List< ProviderConfiguration >, List< ProviderConfiguration >, List< ProviderConfiguration >, Map< String, String >) constructor

Syntax
```
ConfigurationProperties ( List< AuditProviderConfiguration > auditConfig , List< ProviderConfiguration > login , List< ProviderConfiguration > auth , List< ProviderConfiguration > attr , List< ProviderConfiguration > roleMappers , List< ProviderConfiguration > dataServiceProviders , List< ProviderConfiguration > profilers , Map< String, String > csicfgOptions )
```

_attributers variable
Attributer configuration list.

Syntax
```
final List< ProviderConfiguration > _attributers
```

_auditConfigurations variable
Audit configuration list.

Syntax
```
final List< AuditProviderConfiguration > _auditConfigurations
```

_authorizers variable
Authorization provider configuration list.

Syntax
```
final List< ProviderConfiguration > _authorizers
```

_csiConfigOptions variable
configuration specific options

Syntax
```
final Map< String, String > _csiConfigOptions
```

_dataServiceProviders variable
Secure data service provider configuration list.

Syntax
```
final List< ProviderConfiguration > _dataServiceProviders
```

_loginModuleEntries variable
LoginModule configuration list.

Syntax
```
final List< ProviderConfiguration > _loginModuleEntries
```

_profilers variable
Profiler configuration list.

Syntax
```
final List< ProviderConfiguration > _profilers
```

_roleMappers variable
Role Mapper configuration list.

Syntax
```
final List< ProviderConfiguration > _roleMappers
```

ProviderConfiguration class
CSI Provider configuration.

Syntax
```
public class  ProviderConfiguration
```

ProviderConfiguration(String, Map< String, String >, Map< String, String >, Set< String >, String, String) constructor
Constructor.

Syntax
```
ProviderConfiguration ( String clz ,  Map< String, String > options ,
Map< String, String > preservedOptions ,  Set< String > encryptedOptions ,
String controlFlag ,  String id )
```

Parameters

- **clz –** Classname of the provider

- **options –** Map of options to be supplied to the provider at init time.
- **controlFlag –** control flag configured for the provider (if applicable)

getControlFlag() method
Returns the control flag configured for the provider.

Syntax
```
String getControlFlag ()
```

Returns
control flag value configured for the provider

Usage

control flag value configured for the provider

getId() method
Returns the provider id.

Syntax
```
String getId ()
```

Returns
provider id

Usage

This is guaranteed to be set. If it is not configured, the parser automatically adds one.

provider id

getOptionsToEncrypt() method
Returns the configuration properties that should be encrypted.

Syntax
```
Set< String > getOptionsToEncrypt ()
```

Returns
map containing the configuration property names that should be encrypted.

Usage

map containing the configuration property names that should be encrypted.

getProviderClass() method
Returns the provider class name.

Syntax
```
String getProviderClass ()
```

Returns
provider class name

Usage

provider class name

getProviderOptions() method
Returns the configuration properties.

Syntax
```
Map< String, String > getProviderOptions ()
```

Returns
configuration properties map

Usage

configuration properties map

ConfigurationParser() constructor

Syntax
```
ConfigurationParser ()
```

getUsePreservedValues() method

Syntax
```
boolean getUsePreservedValues ()
```

parseConfiguration(Map< String, String >) method
Parse the internal configuration properties and build the provider lists.

Syntax
```
ConfigurationProperties parseConfiguration ( Map< String,
String > configurationMap )
```

Parameters

- **configurationMap –** internal configuration map

Returns

parsed configuration

Usage

parsed configuration

setUsePreservedValues(boolean) method

Syntax

```
void setUsePreservedValues ( boolean usePreservedValues )
```

ConfigurationProblem class

Represents the configuration problems discovered during configuration validation.

Syntax

```
public class  ConfigurationProblem
```

Remarks

If the problem is related to a specific configuration property the error message is associated with the property. If the problem is associated with a combination of properties or is about a missing property, the error message is associated with the provider.

ConfigurationProblem(Severity , String, String) constructor

Constructs a ConfigurationProblem with the given problem description associated with the specified configuration property and the specified severity.

Syntax

```
ConfigurationProblem ( Severity severity , String
configurationProperty , String description )
```

Parameters

- **severity –** Severity of the problem.
- **configurationProperty –** provider configuration property that resulted in the generation of the problem.
- **description –** problem description.

Usage

If the problem is associated with the provider or involves one or more configuration properties then the configurationProperty argument should be null.

getConfigurationProperty() method
Retrieve an invalid configuration Property.

Syntax

```
String getConfigurationProperty ()
```

Returns

a string representing the invalid configuration property.

Usage

In the event of a single invalid configuration property, the property is returned. If the configuration problem is associated with a combination of keys, the return value is set to NULL.

a string representing the invalid configuration property.

getProblemDescription() method
Error message associated with the validation of the property.

Syntax

```
String getProblemDescription ()
```

Returns

the description of the configuration problem.

Usage

the description of the configuration problem.

getSeverity() method
Returns the configuration problem severity.

Syntax

```
Severity  getSeverity ()
```

Returns

severity of the problem being reported.

Usage

severity of the problem being reported.

Severity() enumeration
An enumeration representing problem severity.

Enum Constant Summary

- **FATAL –**
- **ERROR –**
- **WARNING –**
- **INFO –**

ConfigurationValidationService interface
Validates the supplied internal CSI configuration according to the stored provider metadata and lets the providers themselves validate the supplied configuration by performing runtime checks where possible.

Syntax
```
public interface ConfigurationValidationService
```

validateConfiguration(Map< String, String >) method
Validates internal configuration and returns the configuration problems.

Syntax

```
Map< String, List< ConfigurationProblem > >
validateConfiguration ( Map< String, String > internalConfiguration )
throws SecException
```

Parameters

- **internalConfiguration –** The internal CSI configuration map

Returns

Map containing the set of all validation errors associated with each provider ID. The key should be the provider ID and the corresponding value should be a list of ConfigurationProblem's associated with that provider.

Usage

Map containing the set of all validation errors associated with each provider ID. The key should be the provider ID and the corresponding value should be a list of ConfigurationProblem's associated with that provider.

ContextRetriever interface

Authors wishing to create context retrievers must implement this interface in a class with a public, no argument constructor.

Syntax

```
public interface ContextRetriever
```

Derived classes

- *com.sybase.security.provider.AbstractPrincipalContextRetriever* on page 193
- *com.sybase.security.provider.ContextRetriever2* on page 242

retrieveContext(Object) method

Context retriever providers must implement this method to allow for retrieval of SecContext objects stored in the environment.

Syntax

`SecContext retrieveContext(Object` *environmentObject*`)` throws `SecException`

Parameters

- **environmentObject –**

Returns

the SecContext object or null if none found

Exceptions

- **SecException class –**

Usage

the SecContext object or null if none found

ContextRetriever2 interface

Extended version of context retriever interface that allows the factory that was used to retrieve the context to be supplied.

Syntax

```
public interface ContextRetriever2
```

Remarks
Indeed, immediately after instantiation the factory will call the setFactory method on all context retrievers that implement this interface.

setFactory(SecContextFactory) method

Syntax
```
void setFactory ( SecContextFactory factory )
```

ContextRetrieverPrincipal interface
Principal interface designed to be paired with AbstractPrincipalContextRetriever and its subclasses.

Syntax
```
public interface ContextRetrieverPrincipal
```

Remarks
Principals that have the capability of exposing a stored security context can do so by implementing this interface.

getContext() method
Retrieve the security context associated with this principal.

Syntax
```
SecContext getContext ()
```

DigitalSignature interface
Interface to be implemented by secure data service providers that support digital signatures.

Syntax
```
public interface DigitalSignature
```

Derived classes

- *com.sybase.security.core.JCESecureDataServices* on page 90

getSignature(Map< String, Object >, SecProfile , String) method

Syntax
```
Signature getSignature ( Map< String, Object > context ,
SecProfile profile , String operation ) throws SecException
```

Parameters

- **context –** CSI context
- **profile –** SecProfile object containing the properties to create and initialize a Signature instance.
- **operation –** specifies the operation for which to initialize the Signature object. Valid values are Const.OP_SIGN and Const.OP_VERIFY

Returns

Signature object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

Exceptions

- **SecException class –**

Usage

Signature object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

EncryptionTools class

This class performs specialized encryption/decryption functions for relatively short strings such as passwords.

Syntax

```
public class  EncryptionTools
```

Remarks

All the set*** methods should be invoked first to provide all options required to instantiate a Cipher instance. Next init() should be called to perform necessary initialization. Finally, encrypt()/decrypt() can be invoked to accomplish expected cipher operation. Encryption result will be encoded using base64. UTF-8 will be used for encoding between String and byte array conversion.

EncryptionTools() constructor

Constructor.

Syntax

```
EncryptionTools ()
```

Usage

All the set*** methods should be invoked to provide the options required to instantiate a Cipher instance before invoking

init()

/encrypt()/decrypt()

decrypt(String) method
Decrypts the string using the configured key/certificate and returns the plain text.

Syntax
`String decrypt ( String` *ciphertext* `)` throws `SecException`

Parameters

- **ciphertext –** String to be decrypted.

Returns
decrypted string

Exceptions

- **SecException class –**

Usage

decrypted string

decryptWithFixedKey(String) method
Decrypts the string using the fixed key and returns the plain text.

Syntax
`String decryptWithFixedKey ( String` *cipherText* `)` throws `SecException`

Parameters

- **cipherText –** String to be decrypted.

Returns
decrypted string

Exceptions

- **SecException class –**

Usage

decrypted string

encrypt(String) method
Encrypts the specified string using the configured key/certificate and returns the base64 encoded encrypted string.

Syntax
`String encrypt ( String` *plaintext* `)` throws `SecException`

Parameters

- **plaintext –** String to be encrypted using the specified key/certificate.

Returns
Base64 encoded encrypted string

Exceptions

- **SecException class –**

Usage

Use the decrypt method to decrypt the string.

Base64 encoded encrypted string

encryptWithFixedKey(String) method
Encrypts the specified string using the fixed key and returns the base64 encoded encrypted string.

Syntax
`String encryptWithFixedKey ( String` *plaintext* `)` throws `SecException`

Parameters

- **plaintext –** String to be encrypted using the fixed key.

Returns
Base64 encoded encrypted string

Exceptions

- **SecException class –**

Usage

Use the decryptWithFixedKey method to decrypt the string.

Base64 encoded encrypted string

init() method
Creates and initializes the Cipher instance for use in encryption/decryption.

Syntax
```
void init () throws SecException
```

Exceptions

- **SecException class –** if any of the properties to instantiate a Cipher instance are not initialized or they are initialized with invalid values.

Usage

All the set*** methods should be invoked to provide the options required to instantiate a Cipher instance before invoking this method.

setCharset(String) method

Syntax
```
void setCharset ( String charset )
```

Parameters

- **charset –**

setCipherProvider(String) method

Syntax
```
void setCipherProvider ( String provider )
```

setCipherTransform(String) method

Syntax
```
void setCipherTransform ( String transform )
```

setEncryptWithLegacyMode(boolean) method

Syntax
```
void setEncryptWithLegacyMode ( boolean legacyMode )
```

Parameters

- **legacyMode –**

setKeyStoreAlias(String) method

Syntax

```
void setKeyStoreAlias ( String storeAlias )
```

setKeyStoreAliasPassword(String) method

Syntax

```
void setKeyStoreAliasPassword ( String aliasPasswd )
```

setKeyStoreLocation(String) method

Syntax

```
void setKeyStoreLocation ( String storeLocation )
```

setKeyStorePassword(String) method

Syntax

```
void setKeyStorePassword ( String storePasswd )
```

setKeyStoreProvider(String) method

Syntax

```
void setKeyStoreProvider ( String provider )
```

setKeyStoreType(String) method

Syntax

```
void setKeyStoreType ( String storeType )
```

setPaddingMaximum(int) method

Syntax

```
void setPaddingMaximum ( int maximum )
```

setPaddingMinimum(int) method

Syntax

```
void setPaddingMinimum ( int minimum )
```

setRandom(SecureRandom) method

Syntax

```
void setRandom ( SecureRandom random )
```

setUseCertKey(String) method

Syntax

```
void setUseCertKey ( String useCert )
```

Parameters

- **useCert –**

ExternalConfigurationService interface

A service that will export the CSI configuration to a specified XML format.

Syntax

```
public interface ExternalConfigurationService
```

Remarks

A service can be written to support one or more XML schemas. These are simply well-established identifiers, but generally should be the XML schema URI. Service implementations must contain a public, no argument constructor.

supportsSchema(String) method

Returns false if the specified schema ID is not supported.

Syntax

```
boolean supportsSchema ( String primarySchema )
```

Parameters

- **primarySchema –** the schema for which support will be tested

Returns

whether or not the schema is supported by this config service

Usage

whether or not the schema is supported by this config service

translateFromInternal(String, Map< String, String >, Map< String, List< ConfigurationProblem >>) method
Translate from Internal CSI configuration to an external configuration format.

Syntax
```
Reader translateFromInternal ( String primarySchema , Map< String, String > internalConfiguration , Map< String, List< ConfigurationProblem >> validationProblems ) throws SecException
```

Parameters

- **primarySchema –** the primary schema to be used for exporting the configuration
- **internalConfiguration –** the internal CSI configuration to be translated to the specified format.
- **validationProblems –** Map containing the provider ID as key and the associated configuration problem collection as the value. These should be added to the return XML document.

Returns
A reader object that contains the configuration data and validation problems in the specified format.

Usage

Add the supplied validation problems to the external XML document.

A reader object that contains the configuration data and validation problems in the specified format.

translateToInternal(String, Reader) method
Translate from an external configuration format to the internal CSI configuration format.

Syntax
```
Map< String, String > translateToInternal ( String primarySchema , Reader externalConfigData ) throws SecException
```

Parameters

- **primarySchema –** schema used in the supplied XML document
- **externalConfigData –** A reader containing the external configuration data

Returns
A map containing the configuration data with keys and values as Strings (CSI internal configuration format)

Usage

A map containing the configuration data with keys and values as Strings (CSI internal configuration format)

FactoryRetriever interface
Concrete factory retrievers must implement this interface in a class with a public, no argument constructor.

Syntax
```
public interface FactoryRetriever
```

Derived classes

- *com.sybase.security.provider.AbstractFactoryRetriever* on page 175

retrieveFactory(Object) method
Factory retriever providers must implement this method to allow for retrieval of SecContextFactory instance stored in the environment.

Syntax
`SecContextFactory retrieveFactory(Object` *environmentObject*`)` throws `SecException`

Parameters

- **environmentObject –**

Returns
the SecContext object or null if none found

Exceptions

- **SecException class –**

Usage

the SecContext object or null if none found

MessageDigest interface
Interface to be implemented by secure data service providers that support message digest.

Syntax
```
public interface MessageDigest
```

Derived classes

- *com.sybase.security.core.JCESecureDataServices* on page 90

getMessageDigest(Map< String, Object >, SecProfile) method

Syntax
```
java.security.MessageDigest getMessageDigest ( Map< String,
Object > context ,  SecProfile  profile ) throws SecException
```

Parameters

- **context –** CSI context
- **profile –** SecProfile object containing the properties to create and initialize a MessageDigest instance.

Returns
MessageDigest object created based on the properties specified in the profile Map and initialized for the digest operation. Returns null if unable to handle the profile.

Exceptions

- **SecException class –**

Usage

MessageDigest object created based on the properties specified in the profile Map and initialized for the digest operation. Returns null if unable to handle the profile.

NamedCredentialProvider interface
This is the interface that the providers can implement so that the configuration validation service can retrieve the names of the NamedCredential(s) the provider adds to an authenticated subject so that it can verify if they conflict with the credentials added by other providers.

Syntax
```
public interface NamedCredentialProvider
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.ClientValuePropagatingLoginModule* on page 74

getCredentialNames(Map< String, String >) method
Returns the set of names associated with the NamedCredentials that the provider may add to an authenticated subject.

Syntax

```
Set< String > getCredentialNames ( Map< String, String >
configuration )
```

Parameters

- **configuration –** provider configuration properties

Returns
the set of names associated with the NamedCredentials that the provider may add to an authenticated subject

Usage

This is used to detect conflicts among the configured providers when validating the configuration so as to avoid duplicate NamedCredentials added by multiple providers.

the set of names associated with the NamedCredentials that the provider may add to an authenticated subject

OptionMapHelper class
Provides some utility methods for retrieving options from a Map where there are default values and different data types involved.

Syntax

```
public class OptionMapHelper
```

Derived classes

- *com.sybase.security.core.XMLFileRoleMapper.RoleMapperConfig* on page 155

getBooleanOption(Map< String,?>, String, boolean) method
Utility method to retrieve a boolean value from a map in the and provide a default value if the key was not found set.

Syntax

```
boolean getBooleanOption ( Map< String,?> props ,  String key ,
boolean dflt )
```

Parameters

- **props –** the Map in which the property values reside
- **key –** property name
- **dflt –** default value if the property is not found.

Returns
the value from the Map or the default.

Usage

the value from the Map or the default.

getDateOption(Map< String,?>, String, Date) method
Utility method to retrieve a Date value from a map and provide a default value if the key was not found set.

Syntax

```
Date getDateOption ( Map< String,?> props ,  String key ,  Date date )
```

Parameters

- **props –** the Map in which the property values reside
- **key –** property name
- **date –** default value if the property is not found.

Returns
the value from the Map or the default.

Usage

the value from the Map or the default.

getIntOption(Map< String,?>, String, int) method
Utility method to retrieve an integer value from a map in the and provide a default value if the key was not found set.

Syntax
```
int getIntOption ( Map< String,?> props ,  String key ,  int dflt )
```

Parameters

- **props –** the Map in which the property values reside
- **key –** property name
- **dflt –** default value if the property is not found.

Returns
the value from the Map or the default.

Usage

the value from the Map or the default.

getLongOption(Map< String,?>, String, long) method
Utility method to retrieve an long value from a map in the and provide a default value if the key was not found set.

Syntax
```
long getLongOption ( Map< String,?> props ,  String key ,  long dflt )
```

Parameters

- **props –** the Map in which the property values reside
- **key –** property name
- **dflt –** default value if the property is not found.

Returns
the value from the Map or the default.

Usage

the value from the Map or the default.

getMultiValuedStringOption(Map< String,?>, String, String[], char) method
Utility method to retrieve a multi-valued string option from a map and provide a default value if the key was not found set.

Syntax

```
String[] getMultiValuedStringOption ( Map< String,?> options ,
String key ,  String[] defaultOption ,  char delimiter )
```

Parameters

- **options –** the Map in which the property values reside
- **key –** property name
- **defaultOption –** default value if the property is not found.
- **delimiter –** the character to use as the delimiter of the string values

Returns

the value from the Map or the default.

Usage

Zero-length values are discarded and whitespace is trimmed.

the value from the Map or the default.

getMultiValuedStringOption(Map< String,?>, Object, String[], char) method
This method is here for backwards compatibility only.

Syntax

```
String[] getMultiValuedStringOption ( Map< String,?> options ,
Object key ,  String[] defaultOption ,  char delimiter )
```

Usage

The key parameter is an Object but can only be a String.

getStringOption(Map< String,?>, String, String) method
Utility method to retrieve an String value from a map in the and provide a default value if the key was not found set.

Syntax

```
String getStringOption ( Map< String,?> options ,  String key ,
String defaultOption )
```

Parameters

- **options –** the Map in which the property values reside
- **key –** property name
- **defaultOption –** default value if the property is not found.

Returns
the value from the Map or the default.

Usage

the value from the Map or the default.

getStringOption(Map< String,?>, Object, String) method
This method is here for backwards compatibility only.

Syntax
```
String getStringOption ( Map< String,?> options ,  Object key ,
String defaultOption )
```

Usage

The key parameter is an Object but can only be a String.

PasswordExpirationWarningImpl class
Simple implementation for PasswordExpirationWarning.

Syntax
```
public class  PasswordExpirationWarningImpl
```

PasswordExpirationWarningImpl(Date) constructor
Constructor to create an instance of the PasswordExpirationWarningImpl with the specified expiration date.

Syntax
```
PasswordExpirationWarningImpl ( Date date )
```

Parameters

- **date –** Password expiration date. Should be set to null, if the password does not expire.

getExpiration() method
Returns the password expiration date.

Syntax
```
Date getExpiration ()
```

Returns
Password expiration date. Null if password does not expire.

Usage

Null is returned if password does not expire. If expiration date is not known, PasswordExpirationWarning is not returned.

Password expiration date. Null if password does not expire.

getMessage() method
Returns the localized message associated with the warning.

Syntax
```
String getMessage ()
```

Returns
Message associated with the warning.

Usage

Message associated with the warning.

_date variable
Password expiration date.

Syntax
```
Date _date
```

Remarks
Set to null if the password does not expire

PrefixMap< T > class
Utility class that extends HashMap that expects keys of type String.

Syntax
```
public class  PrefixMap< T >
```

Remarks
Allows the caller to set a prefix that is prepended to the keys in the map when accessing the entries in the map using the set/getPrefixProperty methods.

This class simplifies access to properties with lengthy package qualifiers. For example, to access the property "com.sybase.security.TestProperty" you could use a regular properties object but the property name is very long. If you use PrefixProperties you could instantiate the PrefixProperties class and initialize properties, then call setPrefix("com.sybase.security"). Then you can access properties within the package using the method getPrefixProperty("TestProperty");

clonePrefix(String) method
Returns a new PrefixMap containing only properties whose values started with the supplied prefix.

Syntax
```
PrefixMap< T > clonePrefix ( String prefix )
```

Parameters

- **prefix –** prefix of the properties that should be in the new PrefixMap

Returns
the new PrefixMap

Usage

In addition, the property names in the newly created object have the specified prefix removed.

the new PrefixMap

getPrefix() method
Allows the user to retrieve the prefix to use at runtime.

Syntax
```
String getPrefix ()
```

Returns
the defined prefix for this object.

Usage

the defined prefix for this object.

getPrefixProperty(String) method
see Map.get(.

Syntax
```
T getPrefixProperty ( String key )
```

Parameters

- **key –** the specified key before being prefixed.

Returns
the object value corresponding to the calculated prefixed key.

Usage

..) The prefix is prepended to the specified key before using it to retrieve the value from the Map.

the object value corresponding to the calculated prefixed key.

PrefixMap(Map< String,?extends T >, String) method
A constructor which accepts a reference to a Typed HashMap and a reference to the package name prefix.

Syntax
```
PrefixMap ( Map< String,?extends T > defaults ,  String prefix )
```

PrefixMap(String) method
A constructor which accepts a reference to the package name prefix.

Syntax
```
PrefixMap ( String prefix )
```

PrefixMap(Map< String,?extends T >) method
A constructor which accepts a reference to a Typed HashMap.

Syntax
```
PrefixMap ( Map< String,?extends T > defaults )
```

PrefixMap() method
Default constructor.

Syntax
```
PrefixMap ()
```

setPrefix(String) method
Allows the user to specify the prefix to use at runtime.

Syntax
```
void setPrefix ( String prefix )
```

Parameters

- **prefix –** the new prefix (usually should include a trailing ".")

setPrefixProperty(String, T) method
Allows a user to set an entry in the Map using the prefix values.

Syntax
```
T setPrefixProperty ( String key ,  T value )
```

Parameters

- **key –** key that should be prepended with the prefix before using it to set the value in the Map.
- **value –** value to be set

Returns
the previous value associated with calculated prefixed key.

Usage

the previous value associated with calculated prefixed key.

Profiler interface
This is the interface that Profile providers must implement.

Syntax
```
public interface  Profiler
```

Derived classes

- *com.sybase.security.core.ProfilerImpl* on page 128
- *com.sybase.security.provider.AbstractProfiler* on page 194

Remarks
Providers implementing this interface may also optionally implement the ProviderInfo interface to expose additional provider information.

getProfile(Map< String, Object >, SecProfile) method
This method should populate the SecProfile object by calling the set methods on it .

Syntax
`boolean getProfile ( Map< String, Object >` *context* `, SecProfile` *profile* `)` throws `SecException`

Parameters

- **context –** CSI context
- **profile –** profile object

Returns
true if the SecProfile is populated; false otherwise

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned false.

Usage

true if the SecProfile is populated; false otherwise

listProfiles(Map< String, Object >) method
Returns the list of all known profiles.

Syntax
`List< Named > listProfiles ( Map< String, Object >` *context* `)` throws `SecException`

Parameters

- **context –** CSI context

Returns
List containing Named objects describing the profiles known to this profiler.

Exceptions

- **SecException class –** Thrown if an error occurs. The exception will be logged and after that it is as if the method returned an empty list.

Usage

List containing Named objects describing the profiles known to this profiler.

ProviderConst interface
Constants that are useful in implementing provider interfaces.

Syntax
```
public interface ProviderConst
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.CertificateValidationLoginModule* on page 71
- *com.sybase.security.core.JCESecureDataServices* on page 90
- *com.sybase.security.core.NoSecAttributer* on page 105
- *com.sybase.security.core.RoleCheckAuthorizer* on page 135
- *com.sybase.security.core.XMLFileRoleMapper* on page 155
- *com.sybase.security.provider.AbstractSecureFileConfiguration* on page 198
- *com.sybase.security.provider.EncryptionTools* on page 244

ALGORITHM_PARAMETERS variable

Syntax
```
final String ALGORITHM_PARAMETERS
```

AUDIT_TOKEN_CONFIG_PROPERTY variable
Configuration property that supplies the audit token to all CSI providers.

Syntax
```
final String AUDIT_TOKEN_CONFIG_PROPERTY
```

CERT_VALIDATION_CRL_PREFIX variable
Prefix for the property specifying the crl URI.

Syntax
```
final String CERT_VALIDATION_CRL_PREFIX
```

Remarks
The later part contains the unique index followed by the URI property suffix

CERT_VALIDATION_DEF_ENABLE_REVOCATION_CHECKING variable
Default value for CERT_VALIDATION_ENABLE_REVOCATION_CHECKING.

Syntax
```
final String CERT_VALIDATION_DEF_ENABLE_REVOCATION_CHECKING
```

CERT_VALIDATION_DEF_VALIDATE_CERTPATH variable
Default value for CERT_VALIDATION_VALIDATE_CERTPATH.

Syntax
```
final String CERT_VALIDATION_DEF_VALIDATE_CERTPATH
```

CERT_VALIDATION_EFFECTIVE_DATE variable
When performing certificate validity checks, this is the date/time that is used for the check.

Syntax
```
final String CERT_VALIDATION_EFFECTIVE_DATE
```

Remarks
If this is not provided then the current date/time is used. The format of this is the XML schema date/time format: 2006-01-01T00:00:00Z (YYYY-MM-DDThh:mm:ssZ) Currently only the Zulu timezone is supported (Z).

CERT_VALIDATION_ENABLE_REVOCATION_CHECKING variable
Name of the property to enable OCSP revocation checking.

Syntax
```
final String CERT_VALIDATION_ENABLE_REVOCATION_CHECKING
```

Remarks
Note that this only enables revocation checking in the PKIXParameters. For revocation checking to take effect, OCSP checking should be enabled at the jvm level. Please refer to java security guide on the relevant properties to enable OCSP checking in the JVM.

CERT_VALIDATION_TRUSTED_CERTSTORE_LOCATION variable
The property to specify the keystore containing the trusted CA certificates.If none is specified then the trust store used by the JVM is used i.e., one defined by the system property javax.net.ssl.trustStoreType.

Syntax
```
final String CERT_VALIDATION_TRUSTED_CERTSTORE_LOCATION
```

Remarks
If the system property is not defined then ${java.home}/lib/security/jssecacerts or if that does not exist ${java.home}/lib/security/cacerts

CERT_VALIDATION_TRUSTED_CERTSTORE_PASSWORD variable
The property to specify the password for the keystore containing trusted CA certificates.

Syntax
```
final String CERT_VALIDATION_TRUSTED_CERTSTORE_PASSWORD
```

CERT_VALIDATION_TRUSTED_CERTSTORE_PROVIDER variable
The name of the property to specify the provider of keystore.

Syntax
```
final String CERT_VALIDATION_TRUSTED_CERTSTORE_PROVIDER
```

CERT_VALIDATION_TRUSTED_CERTSTORE_TYPE variable
The name of the property to specify the type of keystore.

Syntax
```
final String CERT_VALIDATION_TRUSTED_CERTSTORE_TYPE
```

CERT_VALIDATION_URI variable
Suffix for the property specifying the crl URI.

Syntax
```
final String CERT_VALIDATION_URI
```

Remarks
The earlier part contains the crl property prefix followed by an unique index

CERT_VALIDATION_VALIDATE_CERTPATH variable
Name of the property to enable certificate path validation.

Syntax
```
final String CERT_VALIDATION_VALIDATE_CERTPATH
```

CERTIFICATE_SHARED_KEY variable
The shared key to identify the certificate chain stored in shared map to be used when certificate authentication is enabled.

Syntax
```
final String CERTIFICATE_SHARED_KEY
```

CHECK_IMPERSONATION variable
Property to configure impersonation check.

Syntax
```
final String CHECK_IMPERSONATION
```

CONFIG_ATTRIBUTER variable
Provider type identifier used used to identify an attributer in internal configuration properties.

Syntax
```
final String CONFIG_ATTRIBUTER
```

CONFIG_ATTRIBUTER_BASE variable
Configuration property prefix to identify properties for a given attributer.

Syntax
```
final String CONFIG_ATTRIBUTER_BASE
```

CONFIG_AUDIT variable
Provider type identifier used used to identify an audit provider in internal configuration properties.

Syntax
```
final String CONFIG_AUDIT
```

CONFIG_AUDIT_BASE variable
Configuration property prefix to identify properties for a given audit provider.

Syntax
```
final String CONFIG_AUDIT_BASE
```

CONFIG_AUDIT_DESTINATION variable
Configuration property prefix to identify properties for a given audit destination provider.

Syntax
```
final String CONFIG_AUDIT_DESTINATION
```

CONFIG_AUDIT_FILTER variable
Configuration property prefix to identify properties for a given audit filter provider.

Syntax
```
final String CONFIG_AUDIT_FILTER
```

CONFIG_AUDIT_FILTER_PROVIDER_DEFAULT variable
Default audit filter provider.

Syntax
```
final String CONFIG_AUDIT_FILTER_PROVIDER_DEFAULT
```

CONFIG_AUDIT_FORMATTER variable
Configuration property prefix to identify properties for a given audit formatter provider.

Syntax
```
final String CONFIG_AUDIT_FORMATTER
```

CONFIG_AUDIT_FORMATTER_PROVIDER_DEFAULT variable
Default audit formatter provider.

Syntax
```
final String CONFIG_AUDIT_FORMATTER_PROVIDER_DEFAULT
```

CONFIG_AUTHORIZER variable
Provider type identifier used used to identify an authorizer in internal configuration properties.

Syntax
```
final String CONFIG_AUTHORIZER
```

CONFIG_AUTHORIZER_BASE variable
Configuration property prefix to identify properties for a given authorizer.

Syntax
```
final String CONFIG_AUTHORIZER_BASE
```

CONFIG_CONTROLFLAG variable
Property to specify the control flag for a login module or audit destination provider.

Syntax
```
final String CONFIG_CONTROLFLAG
```

CONFIG_CSI variable

Syntax
```
final String CONFIG_CSI
```

CONFIG_CSI_CONFIG_OPTION variable

Syntax
```
final String CONFIG_CSI_CONFIG_OPTION
```

CONFIG_GLOBAL_OPTIONS_BASE variable

Syntax
```
final String CONFIG_GLOBAL_OPTIONS_BASE
```

CONFIG_GLOBAL_PRESERVED_OPTIONS_BASE variable

Syntax
```
final String CONFIG_GLOBAL_PRESERVED_OPTIONS_BASE
```

CONFIG_ID variable
Property to specify the provider identifier.

Syntax
```
final String CONFIG_ID
```

CONFIG_LOGINMODULE variable
Provider type identifier used used to identify a login module in internal configuration properties.

Syntax
```
final String CONFIG_LOGINMODULE
```

CONFIG_LOGINMODULE_BASE variable
Configuration property prefix to identify properties for a given login module.

Syntax
```
final String CONFIG_LOGINMODULE_BASE
```

CONFIG_OPTIONS variable
Property to specify the configuration options for a provider.

Syntax
```
final String CONFIG_OPTIONS
```

CONFIG_PROFILER variable
Provider type identifier used used to identify a profile provider in internal configuration properties.

Syntax
```
final String CONFIG_PROFILER
```

CONFIG_PROFILER_BASE variable
Configuration property prefix to identify properties for a given profile provider.

Syntax
```
final String CONFIG_PROFILER_BASE
```

CONFIG_PROVIDER variable

Syntax
```
final String CONFIG_PROVIDER
```

CONFIG_ROLEMAPPER variable
Provider type identifier used used to identify a role mapper in internal configuration properties.

Syntax
```
final String CONFIG_ROLEMAPPER
```

CONFIG_ROLEMAPPER_BASE variable
Configuration property prefix to identify properties for a given role mapping provider.

Syntax
```
final String CONFIG_ROLEMAPPER_BASE
```

CONFIG_SECURE_DATASERVICE_PROVIDER variable
Provider type identifier used used to identify a SecureDataService provider in internal configuration properties.

Syntax
```
final String CONFIG_SECURE_DATASERVICE_PROVIDER
```

CONFIG_SECURE_DATASERVICE_PROVIDER_BASE variable
Configuration property prefix to identify properties for a given SecureDataService provider.

Syntax
```
final String CONFIG_SECURE_DATASERVICE_PROVIDER_BASE
```

CREDENTIAL_NAME variable
Configuration property to specify the name to be associated with the credential added by a login module.

Syntax
```
final String CREDENTIAL_NAME
```

CURRENT_SUBJECT variable
The SecSubject object associated with this context map.

Syntax
```
final String CURRENT_SUBJECT
```

DEF_CHECK_IMPERSONATION variable
Default value for CHECK_IMPERSONATION.

Syntax
```
final boolean DEF_CHECK_IMPERSONATION
```

DEF_ENABLE_CERTIFICATE_AUTHENTICATION variable
Default value for ENABLE_CERTIFICATE_AUTHENTICATION.

Syntax
```
final String DEF_ENABLE_CERTIFICATE_AUTHENTICATION
```

DEF_VALIDATED_CERT_IS_IDENTITY variable
Default value for VALIDATED_CERT_IS_IDENTITY.

Syntax
```
final String DEF_VALIDATED_CERT_IS_IDENTITY
```

ENABLE_CERTIFICATE_AUTHENTICATION variable
Property to enable certificate authentication when a authentication provider (should be specified as an option to the specific authentication provider) is configured in conjunction with CertificateValidationLoginModule.

Syntax
```
final String ENABLE_CERTIFICATE_AUTHENTICATION
```

ENCRYPTED_OPTIONS variable
Prefix to be used when representing the options in internal format that should be encrypted when writing them out.

Syntax
```
final String ENCRYPTED_OPTIONS
```

Remarks
For example: If the value of the property CSI.LoginModule.0.options.options1 is to be encrypted, then the provider options should contain CSI.LoginModule.
0.options.options1=valueToBeEncrypted CSI.LoginModule.
0.encryptedOptions.options1=true

The configuration providers should follow this when they encounter options when reading in the configuration file that are encrypted and encrypt the options when they are written out.

FACTORY_LEVEL_SHARED_STATE variable
The shared key to identify the factory level shared map stored in a SecContext's shared context.

Syntax
```
final String FACTORY_LEVEL_SHARED_STATE
```

Remarks
This is meant to be used when information needs to be shared by the SecContext objects (and in turn the provider classes) associated with a SecContextFactory instance.

HTTP_PROPERTIESCOOKIES_SHARED_KEY variable
The shared key to identify the map stored in the shared context.

Syntax
```
final String HTTP_PROPERTIESCOOKIES_SHARED_KEY
```

Remarks
This map contains the key/value pairs that are obtained from the http headers/cookies or other means from the environment and in a format so that they may be set in the http headers/cookies for outbound connections. The value is of type Map<String, String>

PRESERVED_OPTIONS variable
Prefix to be used to store the original preserved option.

Syntax
```
final String PRESERVED_OPTIONS
```

Remarks
Some configuration providers may interpret things like system properties or relative locations when processing configuration options. This prefix is used to store the original untouched property value so that it can be stored in the configuration file or supplied to an admin UI. CSI.LoginModule.0.options.options1=valueOfSystemProperty CSI.LoginModule. 0.preservedOptions.options1=${system.property}

PROVIDER_SERVICES variable
Shared key to access ProviderServices in the shared context.

Syntax
```
final String PROVIDER_SERVICES
```

SEC_CONTEXT variable
The actual com.sybase.security.SecContext associated with this context map.

Syntax
```
final String SEC_CONTEXT
```

SECURED_PROPERTY_SUFFIX variable
When specified using properties configuration, a property whose value is encrypted should have this suffix.

Syntax
```
final String SECURED_PROPERTY_SUFFIX
```

Remarks
The configuration providers should detect the suffix and decrypt/encrypt the value when reading/writing the property.

SECURITY_CIPHER_ALIAS_PASSWORD variable
The name of the property to specify the password to access a key alias.

Syntax
```
final String SECURITY_CIPHER_ALIAS_PASSWORD
```

SECURITY_CIPHER_KEYSTORE_ALIAS variable
The name of the property to specify the alias to access the certificate/key in the keystore.

Syntax
```
final String SECURITY_CIPHER_KEYSTORE_ALIAS
```

SECURITY_CIPHER_KEYSTORE_LOCATION variable
The name of the property to specify the path to the keystore.

Syntax
```
final String SECURITY_CIPHER_KEYSTORE_LOCATION
```

SECURITY_CIPHER_KEYSTORE_PASSWORD variable
The name of the property to specify the password to access the key store in which certificate/key is stored.

Syntax
```
final String SECURITY_CIPHER_KEYSTORE_PASSWORD
```

SECURITY_CIPHER_KEYSTORE_PROVIDER variable
The name of the property to specify the type of keystore.

Syntax
```
final String SECURITY_CIPHER_KEYSTORE_PROVIDER
```

SECURITY_CIPHER_KEYSTORE_TYPE variable
The name of the property to specify the provider of keystore.

Syntax
```
final String SECURITY_CIPHER_KEYSTORE_TYPE
```

SECURITY_CIPHER_PROVIDER variable
The name of the property to specify the cipher provider.

Syntax
```
final String SECURITY_CIPHER_PROVIDER
```

SECURITY_CIPHER_USE_CERT variable
The name of the property to specify whether the key or certificate associated with an alias in the keystore is to be used.

Syntax
```
final String SECURITY_CIPHER_USE_CERT
```

SECURITY_CIPHER_XFORM variable
Constants for configuration properties used to initialize cipher profile during bootstrap configuration.

Syntax
```
final String SECURITY_CIPHER_XFORM
```

Remarks
The name of the property to specify the cipher transformation

SECURITY_PROFILE_CIPHER_ALIAS_PASSWORD variable
The name of the property to specify the password to access a key alias.

Syntax
```
final String SECURITY_PROFILE_CIPHER_ALIAS_PASSWORD
```

SECURITY_PROFILE_CIPHER_KEYSTORE_ALIAS variable
The name of the property to specify the alias to access the certificate/key in the key store.

Syntax
```
final String SECURITY_PROFILE_CIPHER_KEYSTORE_ALIAS
```

SECURITY_PROFILE_CIPHER_KEYSTORE_LOCATION variable
The name of the property to specify the path to the key store to retreive certificate or key to initialize the Cipher instance.

Syntax
```
final String SECURITY_PROFILE_CIPHER_KEYSTORE_LOCATION
```

SECURITY_PROFILE_CIPHER_KEYSTORE_PASSWORD variable
The name of the property to specify the password to access the key store in which certificate/key is stored.

Syntax
```
final String SECURITY_PROFILE_CIPHER_KEYSTORE_PASSWORD
```

SECURITY_PROFILE_CIPHER_KEYSTORE_PROVIDER variable
The name of the property to specify the type of key store in which certificate/key is stored.

Syntax
```
final String SECURITY_PROFILE_CIPHER_KEYSTORE_PROVIDER
```

SECURITY_PROFILE_CIPHER_KEYSTORE_TYPE variable
The name of the property to specify the provider of key store in which certificate/key is stored.

Syntax
```
final String SECURITY_PROFILE_CIPHER_KEYSTORE_TYPE
```

SECURITY_PROFILE_CIPHER_PROVIDER variable
The name of the property to specify the provider to be used to get an instance of Cipher.

Syntax
```
final String SECURITY_PROFILE_CIPHER_PROVIDER
```

SECURITY_PROFILE_CIPHER_USE_CERT variable
The name of the property to specify whether the key or certificate associated with an alias in the keystore is to be used.

Syntax
```
final String SECURITY_PROFILE_CIPHER_USE_CERT
```

SECURITY_PROFILE_CIPHER_XFORM variable
The name of the property to specify the transformation to be used to get an instance of Cipher.

Syntax
```
final String SECURITY_PROFILE_CIPHER_XFORM
```

SECURITY_PROFILE_MESSAGEDIGEST_ALGORITHM variable
The name of the property to specify the algorithm to be used to get an instance of MessageDigest.

Syntax
```
final String SECURITY_PROFILE_MESSAGEDIGEST_ALGORITHM
```

SECURITY_PROFILE_MESSAGEDIGEST_PROVIDER variable
The name of the property to specify the provider to be used to get an instance of MessageDigest.

Syntax
```
final String SECURITY_PROFILE_MESSAGEDIGEST_PROVIDER
```

SECURITY_PROFILE_SIGNATURE_ALGORITHM variable
The name of the property to specify the algorithm to be used to get an instance of Signature.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_ALGORITHM
```

SECURITY_PROFILE_SIGNATURE_ALIAS_PASSWORD variable
The name of the property to specify the password to access a key alias to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_ALIAS_PASSWORD
```

SECURITY_PROFILE_SIGNATURE_KEYSTORE_ALIAS variable
The name of the property to specify the alias to access the certificate/key in the key store to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_KEYSTORE_ALIAS
```

SECURITY_PROFILE_SIGNATURE_KEYSTORE_LOCATION variable
The name of the property to specify the path to the key store to retreive certificate or key to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_KEYSTORE_LOCATION
```

SECURITY_PROFILE_SIGNATURE_KEYSTORE_PASSWORD variable
The name of the property to specify the password to access the key store in which certificate/key is stored to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_KEYSTORE_PASSWORD
```

SECURITY_PROFILE_SIGNATURE_KEYSTORE_PROVIDER variable
The name of the property to specify the type of key store in which certificate/key is stored to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_KEYSTORE_PROVIDER
```

SECURITY_PROFILE_SIGNATURE_KEYSTORE_TYPE variable
The name of the property to specify the provider of key store in which certificate/key is stored to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_KEYSTORE_TYPE
```

SECURITY_PROFILE_SIGNATURE_PROVIDER variable
The name of the property to specify the provider to be used to get an instance of Signature.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_PROVIDER
```

SECURITY_PROFILE_SIGNATURE_USE_CERT variable
The name of the property to specify whether the key or certificate associated with an alias in the keystore is to be used to initialize the Signature instance.

Syntax
```
final String SECURITY_PROFILE_SIGNATURE_USE_CERT
```

VALIDATED_CERT_IS_IDENTITY variable
Name of the property to set certificate as the ID for the authenticated subject.

Syntax
```
final String VALIDATED_CERT_IS_IDENTITY
```

VOTE_ABSTAIN variable
Authorizer providers return VOTE_ABSTAIN to allow other providers to make the decision.

Syntax
```
final int VOTE_ABSTAIN
```

VOTE_NO variable
Authorizer providers return VOTE_NO to deny authorization.

Syntax
```
final int VOTE_NO
```

VOTE_YES variable
Authorizer providers return VOTE_YES to permit authorization.

Syntax
```
final int VOTE_YES
```

WARNING_MANAGER variable

Syntax
```
final String WARNING_MANAGER
```

ProviderInfo interface
This interface may optionally implemented by providers of the following types:

Syntax
```
public interface ProviderInfo
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.JCESecureDataServices* on page 90
- *com.sybase.security.core.NamedConfiguration* on page 93
- *com.sybase.security.core.NoSecAttributer* on page 105
- *com.sybase.security.core.NoSecAuthorizer* on page 107
- *com.sybase.security.core.NoSecLoginModule* on page 109
- *com.sybase.security.core.PreConfiguredUserLoginModule* on page 124
- *com.sybase.security.core.ProfilerImpl* on page 128
- *com.sybase.security.core.PropertiesConfiguration* on page 131
- *com.sybase.security.core.RoleCheckAuthorizer* on page 135
- *com.sybase.security.core.XmlConfiguration* on page 149
- *com.sybase.security.core.XMLFileRoleMapper* on page 155

Remarks

- Authentication
- Attribution

- Authorization
- Profile
- Secure Data Service
- Configuration

At various points in the CSI infrastructure additional diagnostic information will be logged if providers implement this interface. In addition to the information provided by the interface, the provider classname will be reported as well.

getProviderDescription() method
Allows a provider to return a string describing itself.

Syntax
```
String getProviderDescription ()
```

Returns
the description

Usage

the description

getProviderVersion() method
Allows a provider to return a string describing the version of the provider.

Syntax
```
String getProviderVersion ()
```

Returns
the version

Usage

the version

ProviderServices interface
Interface that providers can use to access common services without interacting with other providers directly.

Syntax
```
public interface ProviderServices
```

audit(AuditToken , String, String, String, Decision , Map< String, Object >) method
This method is the provider-equivalent of.

Syntax
`void audit ( AuditToken` *token* `, String` *resourceClass* `, String` *resourceID* `, String` *action* `, Decision` *decision* `, Map< String, Object >` *attributes* `)` throws `SecException`

Parameters

- **token –** The provider's audit token. This must be retrieved at provider initialization from the configuration map supplied to the provider. The key to use is ProviderConst.AUDIT_TOKEN_CONFIG_PROPERTY
- **resourceClass –** The resource class to audit. This will have the string "provider." prepended to it to identity audit records generated by providers.
- **resourceID –** The resource ID
- **action –** The action
- **decision –** The decision
- **attributes –** Any extra attributes

Exceptions

- **SecException class –** If a critical error occurred while issuing the audit record.

getCertificateValidationInstance(Map< String, Object >) method
Returns a new instance of the certificate validation module configured with the specified properties.

Syntax
`CertificateValidation getCertificateValidationInstance ( Map< String, Object >` *configProps* `)` throws `Exception`

Parameters

- **configProps –** the configuration properties used by the new instance of the certificate validation module.

Returns
the new instance of the certificate validation module.

Exceptions

- **Exception –** encountered while attempting to obtain the new instance.

Usage

Expected properties are of the format ProviderConst .CERT_VALIDATION_PREFIX. [index].ProviderConst.CERT_VALIDATION_URI i.e., crl.1.uri crl.2.uri etc

the new instance of the certificate validation module.

getProfile(String) method
Returns the specified profile by invoking the configured profilers without the additional role check performed by the SecContext.

Syntax

```
SecProfile getProfile ( String profileName ) throws SecException
```

Parameters

- **profileName –** the name of the profile to retrieve.

Returns

the profile requested.

Exceptions

- **SecException class –** encountered while retrieving the specified profile.

Usage

This is to be used by other providers.

the profile requested.

isAuditEnabled(AuditToken , String, String, Decision) method
This method is the provider-equivalent of.

Syntax

```
boolean isAuditEnabled ( AuditToken token , String resourceClass , String action , Decision decision ) throws SecException
```

Parameters

- **token –** The provider's audit token

- **resourceClass –** The resource class to audit
- **action –** The action
- **decision –** The decision

Returns
true if the record would be written, false otherwise

Exceptions

- **SecException class –** If a critical error occurred while checking the audit filters.

Usage

true if the record would be written, false otherwise

RoleMapAdministrable interface
Interface to aid in managing role mappings.

Syntax
```
public interface RoleMapAdministrable
```

Derived classes

- *com.sybase.security.core.XMLFileRoleMapper* on page 155

Remarks
Providers that allow reading and storing the role mapping information in a store should implement this interface.

getRoleMapperAdmin(SecAdminContext) method
Retrieves the RoleMapperAdmin that can be used to manage the role mapping definitions.

Syntax
```
RoleMapperAdmin getRoleMapperAdmin( SecAdminContext sac)
```

Parameters

- **sac –** SecAdminContext that can be used in managing the security configuration.

Returns
RoleMapperAdmin that can be used to manage the role mapping definitions.

Usage

RoleMapperAdmin that can be used to manage the role mapping definitions.

RoleMapper interface
Interface for providers that implement Role Mapping functionality.

Syntax
```
public interface RoleMapper
```

Derived classes

- *com.sybase.security.provider.AbstractRoleMapper* on page 196

getMapping(String, String) method
Returns a list of physical role the specified logical role maps to.

Syntax
```
List< String > getMapping ( String pkg ,  String logicalRole )
```

Parameters

- **pkg –** package or scope to map roles from
- **logicalRole –** role name to map in this scope

Returns
list of physical roles this logical role maps to

Usage

list of physical roles this logical role maps to

DEFAULT_PACKAGE variable
Use this constant value for the pkg argument when referencing the "Default" package.

Syntax
```
final String DEFAULT_PACKAGE
```

NO_ROLE variable
Use this constant for physicalRole when a logicalRole is explicitly mapped to nothing (disabled).

Syntax
```
final String NO_ROLE
```

SecConfigurationValidatingProvider interface

This is the interface that the providers can implement so that the configuration can be validated and the discovered validation errors can be reported prior to actually using the configuration.

Syntax

```
public interface SecConfigurationValidatingProvider
```

Derived classes

- *com.sybase.security.core.ClientValuePropagatingLoginModule* on page 74
- *com.sybase.security.core.DefaultAuditFilter* on page 78
- *com.sybase.security.core.FileAuditDestination* on page 82
- *com.sybase.security.core.PreConfiguredUserLoginModule* on page 124

validateConfiguration(Map< String, String >) method

Validate the supplied configuration and report any errors.

Syntax

`List< ConfigurationProblem > validateConfiguration ( Map< String, String >` *configuration* `)` throws `SecException`

Parameters

- **configuration –** provider configuration to be validated

Returns

the list of configuration problems.

Exceptions

- **SecException class –** if there is an error validating the specified configuration. *The configuration problems should not be reported using the Exception mechanism.*

Usage

If no errors are discovered an empty set should be returned. If possible, the same runtime checks that are done in the init() method should be performed so that the configuration errors can be fixed prior to deploying the configuration. A

SecException

should not be thrown to report the configuration problems, it should only be thrown in case of an error in validating the specified configuration.

the list of configuration problems.

SecContextProvider interface

Interface that should be implemented by providers that support the notion of a context (i.e., session) and need to perform specific actions when a context is created/destroyed.

Syntax

```
public interface SecContextProvider
```

Derived classes

- *com.sybase.security.provider.Attributer* on page 201
- *com.sybase.security.provider.Authorizer* on page 222
- *com.sybase.security.provider.Profiler* on page 261
- *com.sybase.security.provider.RoleMapper* on page 283
- *com.sybase.security.provider.SecureDataServices* on page 292

destroyContext(Map< String, Object >) method

Subclasses that need to clean up when a SecContext will no longer be used should override this method so they can do their cleanup.

Syntax

```
void destroyContext ( Map< String, Object > context ) throws
SecException
```

Parameters

- **context –** the context from the SecContext that is being destroyed.

Exceptions

- **SecException class –** if any error occurs while destroying the context. This error will be logged but will not be propogated to the client.

initContext(Map< String, Object >) method

Subclasses that would like to initialize each SecContext before any other methods are called may do so in this method.

Syntax

```
void initContext ( Map< String, Object > context ) throws
SecException
```

Parameters

- **context –** the context from the SecContext that is being initialized

Exceptions

- **SecException class –** if any error occurs while creating the context. This will invalidate the context so care should be made about throwing this exception. The exception will be propogated to the client.

Usage

The context object will NOT have the SEC_CONTEXT key because the security context has not been created yet.

SecIDPrincipal interface

Tagging interface that can be used to identify a custom Principal as one that should be mapped to the ID attribute of a SecSubject.

Syntax

```
public interface  SecIDPrincipal
```

Derived classes

- *com.sybase.security.provider.BasicSecIDPrincipal* on page 227

Remarks

This interface does not define any methods to implement.

SecLoginExceptionAuthenticationFailureWarningImpl class

Simple LoginException implementation that implements the AuthenticationFailureWarning interface.

Syntax

```
public class
SecLoginExceptionAuthenticationFailureWarningImpl
```

Remarks

Providers can use this to propagate authentication failure code and associated failure message or exceptions from the login method. These will be added to the context automatically.

SecLoginExceptionAuthenticationFailureWarningImpl(String) constructor

Constructs an instance of SecLoginExceptionAuthenticationFailureWarningImpl with the specified message.

Syntax

```
SecLoginExceptionAuthenticationFailureWarningImpl ( String
msg )
```

Parameters

- **msg –** Message to be associated with the warning.

SecLoginExceptionAuthenticationFailureWarningImpl(Throwable) constructor
Constructs an instance of SecLoginExceptionAuthenticationFailureWarningImpl wrapping the specified Throwable.

Syntax

```
SecLoginExceptionAuthenticationFailureWarningImpl ( Throwable e )
```

Parameters

- **e –** Throwable to be wrapped.

SecLoginExceptionAuthenticationFailureWarningImpl(int, String) constructor
Constructs an instance of SecLoginExceptionAuthenticationFailureWarningImpl with the specified failure code and message.

Syntax

```
SecLoginExceptionAuthenticationFailureWarningImpl ( int code , String msg )
```

Parameters

- **code –** failure code to be set in the SecLoginExceptionAuthenticationFailureWarningImpl
- **msg –** message to be set in the SecLoginExceptionAuthenticationFailureWarningImpl

SecLoginExceptionAuthenticationFailureWarningImpl(int) constructor
Constructs an instance of SecLoginExceptionAuthenticationFailureWarningImpl with the specified failure code.

Syntax

```
SecLoginExceptionAuthenticationFailureWarningImpl ( int code )
```

Parameters

- **code –** failure code to be set in the SecLoginExceptionAuthenticationFailureWarningImpl

getFailureCode() method
Returns the failure code for the failed authentication attempt.

Syntax
```
int getFailureCode ()
```

Returns
Authentication failure code

Usage

Authentication failure code

getMessage() method
Returns the localized message associated with the warning.

Syntax
```
String getMessage ()
```

Returns
Message associated with the warning.

Usage

Message associated with the warning.

_code variable
Authentication failure code.

Syntax
```
int _code
```

SecLoginExceptionWarningImpl class
Simple LoginException implementation that implements the SecWarning interface.

Syntax
```
public class  SecLoginExceptionWarningImpl
```

Derived classes

- *com.sybase.security.provider.SecLoginExceptionAuthenticationFailureWarningImpl* on page 286

Remarks
Providers can use this to propagate exceptions from the login method. These will be added to the context automatically.

SecLoginExceptionWarningImpl(String) constructor
Constructs an instance of SecLoginExceptionWarningImpl with the specified message.

Syntax
```
SecLoginExceptionWarningImpl ( String msg )
```

Parameters

- **msg –** Message to be associated with the warning.

SecLoginExceptionWarningImpl(Throwable) constructor
Constructs an instance of SecLoginExceptionWarningImpl wrapping the specified Throwable.

Syntax
```
SecLoginExceptionWarningImpl ( Throwable le )
```

Parameters

- **le –** Throwable to be wrapped.

getMessage() method
Returns the localized message associated with the warning.

Syntax
```
String getMessage ()
```

Returns
Message associated with the warning.

Usage

Message associated with the warning.

SecNamePrincipal interface

Tagging interface that can be used to identify a custom Principal as one that should be mapped to the NAME attribute of a SecSubject.

Syntax

```
public interface SecNamePrincipal
```

Derived classes

- *com.sybase.security.core.CertificateIDPrincipal* on page 67
- *com.sybase.security.provider.BasicSecNamePrincipal* on page 228

Remarks

This interface does not define any methods to implement.

SecProvider interface

Common interface that should be implemented by all security providers (except authentication providers).

Syntax

```
public interface SecProvider
```

Derived classes

- *com.sybase.security.provider.AuditDestination* on page 216
- *com.sybase.security.provider.AuditFilter* on page 217
- *com.sybase.security.provider.AuditFormatter* on page 218
- *com.sybase.security.provider.DigitalSignature* on page 243
- *com.sybase.security.provider.MessageDigest* on page 252
- *com.sybase.security.provider.SecContextProvider* on page 285

init(Map< String,?>) method

Implementations that care about initialization properties should override this method.

Syntax

```
void init ( Map< String,?> configuration ) throws SecException
```

Parameters

- **configuration –** Provider specific configuration data.

Exceptions

- **SecException class –** if a required property is missing, or a provided property had bad syntax or couldn't be used. If a provider throws this exception it will be printed to the log and the provider will be inaccessible.

SecProviderCapabilities interface
Optional provider interface that allows providers to respond to capability requests.

Syntax
```
public interface SecProviderCapabilities
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.CertificateValidationLoginModule* on page 71

hasCapability(Map< String, Object >, String) method
Called when when building the capability set of a provider.

Syntax
`boolean hasCapability ( Map< String, Object >` *context* `, String` *capability* `)` throws `SecException`

Parameters

- **context –** the context map
- **capability –** the capability to check

Exceptions

- **SecException class –** if some sort of error occurs that should abort the entire capability query.

Usage

The result of this call will not be cached by the

SecContext

implementation.

SecProviderPersistence interface

This interface gives a provider the opportunity to remove elements from the context Map before context serialization occurs and insert them after deserialization.

Syntax

```
public interface  SecProviderPersistence
```

Remarks

This interface does not extend SecProvider because LoginModule's may implement it.

activateContext(Map< String, Object >) method

Called when loading a context.

Syntax

```
void activateContext ( Map< String, Object > map ) throws
SecException
```

Usage

The provider should populate any data items that were removed when deactivateContext was called

deactivateContext(Map< String, Object >) method

Called when storing a context.

Syntax

```
void deactivateContext ( Map< String, Object > map ) throws
SecException
```

Usage

The provider should remove any items that it has placed into the context map that are not serializable. Additionally it may choose to remove items that are serializable but need not be persisted, to save space.

SecureDataServices interface

Interface to be implemented by secure data service providers.

Syntax

```
public interface  SecureDataServices
```

Derived classes

- *com.sybase.security.provider.AbstractSecureDataServices* on page 197

Remarks
Providers implementing this interface may also optionally implement the ProviderInfo interface to expose additional provider information. They may also optionally implement com.sybase.security.provider.MessageDigest interface and (com.sybase.security.provider.DigitalSignature} interface if they wish to support those features. jkrothap

getCipher(Map< String, Object >, SecProfile , String) method

Syntax
`Cipher getCipher ( Map< String, Object >` *context* `, SecProfile` *profile* `, String` *operation* `)` throws `SecException`

Parameters

- **context –** CSI context
- **profile –** SecProfile object containing the properties to create and initialize a Cipher instance.
- **operation –** specifies the operation for which to initialize the Cipher object. Valid values are Const.OP_ENCRYPT and Const.OP_DECRYPT

Returns
Cipher object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

Exceptions

- **SecException class –**

Usage

Cipher object created based on the properties specified in the profile Map and initialized for the specified operation. Returns null if unable to handle the profile.

SecWarningImpl class
Simple implementation for SecWarning.

Syntax
`public class SecWarningImpl`

Derived classes

- *com.sybase.security.provider.AuthenticationFailureWarningImpl* on page 220
- *com.sybase.security.provider.PasswordExpirationWarningImpl* on page 257

SecWarningImpl() constructor
Default constructor with a null warning message.

Syntax
```
SecWarningImpl ()
```

SecWarningImpl(String) constructor
Constructor with a initialized with a message string.

Syntax
```
SecWarningImpl ( String str )
```

getMessage() method
Returns the localized message associated with the warning.

Syntax
```
String getMessage ()
```

Returns
Message associated with the warning.

Usage

Message associated with the warning.

_msg variable
The message associated with the warning.

Syntax
```
String _msg
```

SynchronizedSecAdminContext class
This class synchronizes access to the supplied SecAdminContext instance.

Syntax
```
public class  SynchronizedSecAdminContext
```

SynchronizedSecAdminContext(SynchronizedSecContextImpl , SecAdminContext) constructor
The Constructor for the class which accepts a SynchronizedSecContextImpl reference and a SecAdminContext reference.

Syntax
```
SynchronizedSecAdminContext ( SynchronizedSecContextImpl sctx ,
SecAdminContext actx )
```

getRoleMapperAdmin() method
RoleMapperAdmin allows one to administer the role mappings for the current configuration.

Syntax
```
RoleMapperAdmin getRoleMapperAdmin ()
```

Returns
the role mapper admin object tied to the current role mappings

Usage

If the XMLFileRoleMapper provider is included in the CSI configuration, it will read the RoleMapFile option to find an XML file containing role mapping (the option specifies a file relative to the configuration file).

The information in this file maps between "Logical Roles" as referenced in the consuming application (

SecContext.checkRole

) and "Physical Roles" assigned to subjects in the back-end security stores.

The RoleMapperAdmin class returned from this method is initialized with the role mapping data for the current configuration. Use getMappings to retrieve the RoleMappings data.

The mapping from Logical to Physical roles can be done within different "scopes" or "packages". There is a

RoleMapper.DEFAULT_PACKAGE

and then there are named packages. If a role is mapped in a specific package, and you do a roleCheck in that package, the role mapping from that package is used. If there is no role mapping for the role you are checking in that package, the DEFAULT_PACKAGE is checked. If there is no mapping there, then it may use straight-thru mapping to the physical role name if the XMLFileRoleMapper is configured to allow this.

```
This mapping information is maintained in a hierarchy: RoleMappings -
contains all the Packages RolePackage - a named package (or the
default package) LogicalRole - a mapped logical role PhysicalRole -
```

```
physical role mapped to a logical role.
                  com.sybase.security.core.HierarchialItem for the
methods available on each of these items in the hierarchy.

Here is some sample code that iterates across the entire tree of role
mappings:
 RoleMapperAdmin rma =
SecContextFactory.newAdminContext(ctx).getRoleMapperAdmin();
 RoleMappings mappings = rma.getMappings();
 for (RolePackage rp : mappings)
 {
     for (LogicalRole lr : rp)
     {
         for (PhysicalRole pr : lr)
         {
             System.out.println("In package " + package.getName()
             + " the logical role " + lr.getName() +
             " " is mapped to physical role " + pr.getName());
         }
     }
 }
```

the role mapper admin object tied to the current role mappings

getSecContext() method

Syntax

```
SecContext  getSecContext ()
```

Returns

the SecContext associated with this administrative context

Usage

the SecContext associated with this administrative context

loadExternalConfiguration(String) method

Retrieve current configuration used to create the SecContext associated with this administrative context.The configuration will be retrieved fresh from the persistent storage.

Syntax

`Reader loadExternalConfiguration ( String` *`primarySchema`* `) throws SecException`

Parameters

- **primarySchema –** the expected schema for the external configuration

Returns
Reader that returns the configuration in the XML format specified by the primarySchema.

Usage

This may not be the "active" configuration for factories that exist in-memory at the time this method is called. It will always reflect the last persisted configuration. The returned document is a well-formed XML document and includes the configuration metadata as well, which means that it's essential self-validating. Any configuration errors are embedded in the XML document.

Reader that returns the configuration in the XML format specified by the primarySchema.

storeExternalConfiguration(String, Reader) method
The supplied configuration is validated and written out to persistent storage.

Syntax
`Reader storeExternalConfiguration ( String` *`primarySchema`* `, Reader` *`reader`* `)` throws `SecException`

Parameters

- **primarySchema –** the schema for the supplied external configuration to be stored.
- **reader –** the configuration to be persisted

Returns
the specified configuration with any validation problems (if any) added to it.

Usage

If the configuration is not valid, the validation problems are added to the xml document and returned. The configuration is written to the persistent storage whether valid or not. The configuration will not be made effective immediately. A call to

SecContextFactory.refresh()

should be used to do this.

the specified configuration with any validation problems (if any) added to it.

validateExternalConfiguration(String, Reader) method
The supplied configuration is validated and any validation problems are added to the xml document and returned.

Syntax
`Reader validateExternalConfiguration ( String` *`primarySchema`* `, Reader` *`reader`* `)` throws `SecException`

Parameters

- **primarySchema –** the schema for the supplied external configuration to be validated.
- **reader –** the configuration to be validated

Returns

the specified configuration with any validation problems (if any) added to it.

Usage

the specified configuration with any validation problems (if any) added to it.

SynchronizedSecContextImpl class

This class synchronizes access to the supplied SecContext instance.

Syntax

```
public class SynchronizedSecContextImpl
```

SynchronizedSecContextImpl(SecContext) constructor

Method to get SynchronizedSecContextImpl - use this only if ctx is not already an instance of SynchronizedSecContextImpl.

Syntax

```
SynchronizedSecContextImpl ( SecContext ctx )
```

Usage

It is safer to use getSynchronizedContext instead.

audit(String, String, String, Decision , Map< String, Object >) method

This method allows a client to issue an audit record to the audit trail.

Syntax

```
void audit ( String resourceClass , String resourceID , String action ,
Decision decision , Map< String, Object > attributes ) throws
SecException
```

Parameters

- **resourceClass –** The resource class of the audit record. This string will be prepended by "client." in the audit trail to identify client-supplied audit records.
- **resourceID –** The resource ID
- **action –** The action being performed
- **decision –** The decision

- **attributes –** Any extra attributes to include in the audit request. The default audit record formatting logic specially handles classes such as java.util.Date, java.security.cert.X509Certificate, and most of the classes in the java.util.* collections framework.

Exceptions

- **SecException class –** If a critical error occurred while issuing the audit record. Depending on the configuration of the auditing system, failures to audit to a specific destination may not qualify.
- **IllegalArgumentException –** if a null resource class, resouce ID, action or decision are supplied

Usage

There is no guarantee that the record will actually be added to any of the configured audit destinations or that there are even any destinations configured. The client may wish to call

SecContext.isAuditEnabled

in order to determine if the audit record will actually be written. This can save some time building up extra attributes for the audit record.

checkAccess(String, SecResource) method
This is the primary method of interest to Policy Enforcement Point (PEP) code.

Syntax

```
boolean checkAccess ( String action ,   SecResource  resource )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.

Returns

true if access is allowed, false if access is denied.

Exceptions

- **IllegalArgumentException –** if there are problems with the input parameters
- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

It directs an authorization request to the configured PDP (Policy

Decision

Point) in the security context of the authenticated user of the application.

This is a convenience method when the PEP has no environment information to provide to the PDP.

true if access is allowed, false if access is denied.

checkAccess(String, SecResource , SecEnvironment) method
This is the same as SecContext.checkAccess(String, SecResource), but you may specify environmental attributes.

Syntax

```
boolean checkAccess ( String action ,  SecResource  resource ,
SecEnvironment  env )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.
- **env –** environmental attributes describing additional conditions relevant to the policy decision

Returns
true if access is allowed, false if access is denied.

Exceptions

- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

true if access is allowed, false if access is denied.

checkAccess(String, SecResource , SecSubject , SecEnvironment) method
This method is similar to checkAccess(String, SecResource, SecEnvironment), but you may explicitly present a Subject on whose behalf the access check is to be performed.

Syntax

```
boolean checkAccess ( String action ,  SecResource  resource ,
SecSubject  subject ,  SecEnvironment  env )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.
- **subject –** the subject for whom we are checking access.
- **env –** environmental attributes describing additional conditions relevant to the policy decision

Returns

true if access is allowed, false if access is denied.

Exceptions

- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

true if access is allowed, false if access is denied.

checkAuthorization(AuthzRequest) method

Performs an authorization check with somewhat more complex combination of rules.

Syntax

`AuthzResponse checkAuthorization( AuthzRequest` *request* `)` throws `SecException`

Parameters

- **request –** authorization request to be performed.

Returns

authorization response with a decision, and possibly a reason.

Exceptions

- **SecException class –**

Usage

Refer to

AuthzRequest

and

AuthzResponse

for more details.

authorization response with a decision, and possibly a reason.

checkRole(String) method

When a PEP is defined solely in terms of role-based access (no resource is explicitly defined as the target of an access, and the access type is implicit somehow), then this method just performs the role check.

Syntax

```
boolean checkRole ( String roleName )
```

Parameters

- **roleName –** the name of the role

Returns

true if the current subject has the specified role, false if not.

Exceptions

- **IllegalArgumentException –** if the roleName cannot be resolved
- **IllegalStateException –** if there is no current authenticated subject or if the context has been destroyed..

Usage

true if the current subject has the specified role, false if not.

checkRole(String, SecSubject) method

Same as the checkRole(String roleName) method but you may explicitly identify the subject whose roles are being tested.

Syntax

```
boolean checkRole ( String roleName ,   SecSubject  subject )
```

Parameters

- **roleName –**
- **subject –** the subject to check roles on.

Returns

true if the specified subject has the specified role, false if not.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

true if the specified subject has the specified role, false if not.

checkRole(String, SecSubject , String) method
Same as the checkRole(String roleName, SecSubject subject) method but you may explicitly identify the package scope for mapping roles to be tested.

Syntax

```
boolean checkRole ( String roleName ,  SecSubject  subject ,  String scope )
```

Parameters

- **roleName –**
- **subject –** the subject to check roles on.
- **scope –** the package in which to perform the role check.

Returns

true if the specified subject has the specified role, false if not.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

true if the specified subject has the specified role, false if not.

destroy() method
Release all resources associated with this context.

Syntax

```
void destroy ()
```

Usage

This may include terminating the current session if one has been created either implicitly or explicitly.

getAdminContext() method
Returns an administrative context associated with this context object.

Syntax
`SecAdminContext getAdminContext ()` throws `SecException`

Returns
a SecAdminContext that can be used to administer the configuration this SecContext is associated with.

Exceptions

- **SecException class –** if the AdministratorRole global option has been specified for the current configuration, and the user trying to retrieve a SecAdminContext is *not* in the role specified as the value of this option.

Usage

a SecAdminContext that can be used to administer the configuration this SecContext is associated with.

getCipher(String, String) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax
`Cipher getCipher ( String` *profileName* `, String` *operation* `)` throws `SecException`

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Const.OP_ENCRYPT and Const.OP_DECRYPT

Returns
Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.

- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Cipher to perform the specified operation.

getCipher(String, Operation) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax

```
Cipher getCipher ( String profileName ,  Operation  operation ) throws
SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Operation.ENCRYPT and Operation.DECRYPT.

Returns

Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Cipher to perform the specified operation.

getCipher(String, Operation , AlgorithmParameters) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax

```
Cipher getCipher ( String profileName ,  Operation  operation ,
AlgorithmParameters params ) throws SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Operation.ENCRYPT and Operation.DECRYPT.
- **params –** JCE algorithm parameters that should be supplied when initializing the cipher. An example of the type of data that can be included is the IV data.

Returns

Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

The supplied AlgorithmParameters object is used to complete initialization of the Cipher.

Cipher to perform the specified operation.

getConfigHash() method

Internal use only.

Syntax

```
String getConfigHash ()
```

getEnvironment() method

Syntax

```
SecEnvironment  getEnvironment ()
```

Returns

the SecEnvironment object. This object may be re-used with other SecContext instances.

Usage

the SecEnvironment object. This object may be re-used with other SecContext instances.

getID() method
Retrieve unique context ID.

Syntax
```
String getID ()
```

Returns
unique id

Usage

This ID may safely be used to refer to a

SecContext

instance within a hashtable or other such structure. Additionally, these identifiers are guaranteed to be unique across multiple machines because they include (in part) the machine's IP address.

unique id

getMaxWarningCount() method
Retrieves maximum number of warnings that will be saved.

Syntax
```
int getMaxWarningCount ()
```

Returns
maximum number of warnings that will be saved

Usage

maximum number of warnings that will be saved

getMessageDigest(String) method
Returns an initialized java.security.MessageDigest object instance.

Syntax
```
MessageDigest  getMessageDigest ( String profileName ) throws
SecException
```

Parameters

- **profileName –**

Returns
MessageDigest to perform the digest operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.

Usage

MessageDigest to perform the digest operation.

getProfile(String) method
Returns the profile attributes in a SecProfile object.

Syntax
`SecProfile getProfile ( String` *id* `)` throws `SecException`

Parameters

- **id –** unique identifier of the desired profile. The name of the profile is in general unique and can be used to lookup the profile.

Returns
the SecProfile wrapper for the specified profile if the caller has a role that is required to access the profile or if the profile does not require any roles to access the information.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no such profile exists or the specified profile requires a role to access and if the authenticated subject is not in that role.

Usage

If the profile requires a role to access it and the caller does not have any of the required roles, then

SecException

is thrown.

This method is deprecated, there is no need to retrieve specific profile instances. Instead they are referenced by name when necessary.

the SecProfile wrapper for the specified profile if the caller has a role that is required to access the profile or if the profile does not require any roles to access the information.

getResource(String) method

Syntax

```
SecResource  getResource ( String id ) throws SecException
```

Parameters

- **id –** unique identifier for the desired resource. Some security providers will also be able to return information on a resource if this "id" parameter contains the name of the resource rather than its ID. Since a resource name is not required/guaranteed to be unique, the resource returned may not be deterministic. Pass in resource names to this method at your own peril.

Returns

A SecResource wrapper for the specified resource.

Exceptions

- **SecException class –** if the resource cannot be identified by any providers.
- **IllegalStateException –** if the context has been destroyed.

Usage

A SecResource wrapper for the specified resource.

getSignature(String, String) method

Returns a java.security.Signature object instance initialized for the specified operation.

Syntax

```
Signature getSignature ( String profileName ,  String operation ) throws
SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Signature object. Valid values are Const.OP_SIGN and Const.OP_VERIFY

Returns
Signature object to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Signature object to perform the specified operation.

getSignature(String, Operation) method
Returns a java.security.Signature object instance initialized for the specified operation.

Syntax
`Signature getSignature ( String` *`profileName`* `, Operation` *`operation`* `)` throws `SecException`

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Signature object. Valid values are Operation.SIGN and Operation.VERIFY.

Returns
Signature object to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Signature object to perform the specified operation.

getSubject() method

Syntax

```
SecSubject getSubject()
```

Returns

the SecSubject wrapper for the subject that was current at the time this SecContext instance was created.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

the SecSubject wrapper for the subject that was current at the time this SecContext instance was created.

getSubject(String) method

Lookup some other Subject in the security identity provider.

Syntax

`SecSubject getSubject(String` *id*`)` throws `SecException`

Parameters

- **id –** unique identifier for the desired subject

Returns

the SecSubject wrapper for the specified user.

Exceptions

- **SecException class –** if subject lookup fails.
- **IllegalStateException –** if the context has been destroyed.

Usage

This method may be helpful in some situations of delegated authorization like a RunAs component or similar usage, or if the calling application wants Attributes for a subject different from the current caller.

A trusted component might make use of this to obtain signing certificates for a user it is operating on behalf of.

the SecSubject wrapper for the specified user.

getSynchronizedContext(SecContext) method
Returns SynchronizedSecContextImpl.

Syntax

```
SynchronizedSecContextImpl getSynchronizedContext
( SecContext ctx )
```

Usage

Can be safely used when ctx is already an instance of

SynchronizedSecContextImpl

. Method performs the check and returns accordingly.

getWarnings() method
Returns the list of warnings.

Syntax

```
List< SecWarning > getWarnings ()
```

Returns
List of the warnings stored for this context.

Usage

An empty list is returned if no warnings are in the queue. New warnings are appended at the tail of the list so to receive the most recent warnings use List.ListIterator(List.size()).previous() operation. The client may clear or remove warnings from this list as they see fit. The underlying implementation will enforce the maximum warning count by removing the oldest warning when adding a new warning if the queue size is equal to the max warning count. It will also disallow adding new elements by the CSI client.

List of the warnings stored for this context.

hasCapability(String) method
Returns whether or not context objects created by this factory have the specified capability or not.

Syntax

```
boolean hasCapability ( String capability ) throws SecException
```

Parameters

- **capability –** The capability that we are checking out.

Exceptions

- **SecException class –** if any providers raised an exception during the checks

isAuditEnabled(String, String, Decision) method
Returns whether or not an audit record with the supplied arguments will be written to any audit destinations.

Syntax

```
boolean isAuditEnabled ( String resourceClass ,  String action ,
Decision  decision ) throws SecException
```

Parameters

- **resourceClass –** The resource class of the audit record
- **action –** The action to be performed
- **decision –** The decision

Returns

true if the record will be written, false otherwise

Exceptions

- **SecException class –** if an error occurs while checking the audit filters
- **IllegalArgumentException –** if a null resource class, action or decision are supplied

Usage

true if the record will be written, false otherwise

lateInit(Object, SecConfiguration3 , Map< String, Object >, Map< String, Object >) method
Internal use only.

Syntax

```
void lateInit ( Object o ,  SecConfiguration3 store , Map< String,
Object > selectors ,  Map< String, Object > factoryLevelSharedState ) throws
SecException
```

Parameters

- **o –**

listActions(SecResource) method
Lists the known actions for the specified resource.

Syntax

```
Named[] listActions ( SecResource res )
```

Parameters

- **res –** the security resource to list known actions for

Returns

a list of all known security system actions that apply to the specified resource

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known security system actions that apply to the specified resource

listEnvironmentAttributes() method
Lists all known Environment attributes the security system may consider for policy decisions.

Syntax

```
Named[] listEnvironmentAttributes ()
```

Returns

a list of all known Environment attributes.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known Environment attributes.

listProfiles() method

Syntax

```
Named[] listProfiles ()
```

Returns

a list of all known profiles.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known profiles.

listResources() method

Syntax

```
Named[] listResources ()
```

Returns

a list of all known security system resources

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known security system resources

listResources(String) method

Syntax

```
Named[] listResources ( String resourceTypeName )
```

Parameters

- **resourceTypeName –** the name of the resourcetype

Returns

a list of security system resources that match the specified resourcetype

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of security system resources that match the specified resourcetype

listResourceTypes() method

Syntax

```
Named[] listResourceTypes ()
```

Returns

a list of security system resource types.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of security system resource types.

listRoles() method

Returns a list of all known security roles.

Syntax

```
Named[] listRoles ()
```

Returns

a list of all known security roles by Name

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

This role list will be taken from the configured attributers in addition to the list of any physical roles defined by active role mappers.

The roles will be returned sorted by name, then ID, using the java.lang.String.compareTo() method.

a list of all known security roles by Name

login() method
Forces the context to be authenticated.

Syntax
```
void login () throws LoginException
```

Exceptions

- **javax.security.auth.login.LoginException –** thrown if any errors encountered while performing authentication.
- **IllegalStateException –** if the context has been destroyed.

Usage

If it's already authenticated, throws a LoginException.

reencrypt(String, String, byte[]) method
Convenience method to decrypt a buffer of data using srcProfile and encrypt it using destProfile in one step.

Syntax
```
byte[] reencrypt ( String srcProfileName ,  String destProfileName ,
byte[] data ) throws SecException
```

Parameters

- **srcProfileName –** name of the profile to use for decrypting the data passed in
- **destProfileName –** name of the profile to use for encrypting the decrypted data
- **data –** data encrypted using srcProfileName

Returns
data decrypted using srcProfileName and encrypted using destProfileName

Exceptions

- **IllegalStateException –** if one of the profiles require a role to access and there is no current authenticated subject. Or if none of the configured SecureDataService providers can handle the request. Or if the context has been destroyed.
- **SecException class –** if no profiles with the specified names exist. Or one or both the specified profiles require a role to access and if the authenticated subject is not in that role.

Usage

data decrypted using srcProfileName and encrypted using destProfileName

setMaxWarningCount(int) method
Sets the maximum number of warnings that will be stored for the context.

Syntax

```
void setMaxWarningCount ( int count )
```

Parameters

- **count –** maximum number of warnings that will be stored

WarningManager interface
Interface that providers can use to log and add warnings to the SecContext.

Syntax

```
public interface  WarningManager
```

Derived classes

- *com.sybase.security.provider.ProviderServices* on page 279

addWarning(SecProvider , SecWarning) method
Adds the warning from the provider to the SecContext.

Syntax

```
void addWarning (  SecProvider  provider ,   SecWarning  warning )
```

Parameters

- **provider –** identifies the source of the warning.
- **warning –** Warning to be added to the SecContext.

addWarning(javax.security.auth.spi.LoginModule, SecWarning) method
Adds the warning from the login module to the SecContext.

Syntax

```
void addWarning ( javax.security.auth.spi.LoginModule provider ,
SecWarning  warning )
```

Parameters

- **provider –** identifies the source of the warning.
- **warning –** Warning to be added to the SecContext.

Attributed interface

All objects that have Attributes should implement this interface.

Syntax

```
public interface Attributed
```

Derived classes

- *com.sybase.security.provider.AbstractAttributed* on page 161
- *com.sybase.security.SecEnvironment* on page 375
- *com.sybase.security.SecProfile* on page 378
- *com.sybase.security.SecResource* on page 379
- *com.sybase.security.SecSubject* on page 380

Remarks

Attributes are named by Strings and contain one or more String typed values.

addAttribute(String, String) method

Adds an additional value to an attribute.

Syntax

```
void addAttribute ( String name ,  String value )
```

Parameters

- **name –** the name of the attribute
- **value –** the value to add

Exceptions

- **IllegalStateException –** if called after marked read only

Usage

If the attribute does not exist, it will be created.

addAttributes(String, String[]) method
Adds additional values to an attribute.

Syntax
```
void addAttributes ( String name ,  String[] values )
```

Parameters

- **name –** the name of the attribute
- **values –** the values to add

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

Usage

If the attribute does not exist, it will be created.

commitModifications() method
Commits any changes made to this attributed object.

Syntax
```
void commitModifications () throws SecException
```

getAllAttributes() method
Retrieves a Map containing all the attribute keys and values.

Syntax
```
Map< String, String[]> getAllAttributes ()
```

Returns
a Map object containing all attributes. The key values in the Map will be the attribute names. The values in the Map will each be String[].

Usage

a Map object containing all attributes. The key values in the Map will be the attribute names. The values in the Map will each be String[].

getAttribute(String) method
Convenience method for getting single-valued attributes.

Syntax
```
String getAttribute ( String name )
```

Parameters

- **name –** The name of the attribute whose value should be retrieved.

Returns
The first value for the named attribute. If there are no attribute values with the given name, it returns null.

Usage

The first value for the named attribute. If there are no attribute values with the given name, it returns null.

getAttributes(String) method
Retrieves an array of values for the specified attribute name.

Syntax
```
String[] getAttributes ( String name )
```

Parameters

- **name –** The name of the attribute whose values should be retrieved.

Returns
All the values associated with the named attribute. If there are no attribute values with the given name returns null.

Usage

All the values associated with the named attribute. If there are no attribute values with the given name returns null.

isReadOnly() method
Returns the status of read only mode.

Syntax
```
boolean isReadOnly ()
```

Returns
true if this instance is marked read only

Usage

true if this instance is marked read only

merge(Attributed) method
Merges attributes of another Attributed object into this one.

Syntax
```
void merge ( Attributed other )
```

Parameters

- **other –** the other Attributed object

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

merge(Map< String, String[]>) method
Merges the attributes from a Map object into this Attributed object.

Syntax
```
void merge ( Map< String, String[]> other )
```

Parameters

- **other –** the other Map object

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

Usage

The Map keys must be String objects and the values must be String[] objects.

setAttribute(String, String) method
Convenience method for setting single-valued attributes.

Syntax
```
void setAttribute ( String name , String value )
```

Parameters

- **name –** the name of the attribute
- **value –** the attribute's single value

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

setAttributes(String, String[]) method
Sets all of an attribute's values overwriting any values already set.

Syntax
```
void setAttributes ( String name ,  String[] values )
```

Parameters

- **name –** the name of the attribute
- **values –** the attribute's values

Exceptions

- **IllegalStateException –** if called after the attributed object is marked read only

setReadOnly() method
On Attributed objects supporting this method, permanently disables any operations that would modify the contents of this object.

Syntax
```
void setReadOnly ()
```

Exceptions

- **UnsupportedOperationException –** if the operation is not allowed on this instance

CertificateCredential class
This class exposes the method to retrieve the certificate after a user has been authenticated so that other components can retrieve it for performing SSO.

Syntax
```
public class  CertificateCredential
```

Remarks
This credential is neither refreshable nor destroyable.

CertificateCredential(Certificate) constructor
Creates the credential to hold the specified certificate.

Syntax
```
CertificateCredential ( Certificate cert )
```

Parameters

- **cert –** certificate to store in the credential

getCertificate() method
Returns the certificate stored in the credential.

Syntax
```
Certificate getCertificate ()
```

Returns
certificate stored in the credential

Usage

certificate stored in the credential

getName() method
Returns the name associated with the credential instance.

Syntax
```
String getName ()
```

Returns
credential name

Usage

credential name

getValue() method
Returns the value stored in the credential in base64 encoded format appropriate to relay it to the backend system to perform SSO.

Syntax
```
String getValue ()
```

Returns
base64 encoded certificate value

Usage

base64 encoded certificate value

setName(String) method
Associates the specified name with the credential.

Syntax
```
void setName ( String name )
```

Parameters

- **name –** credential name

DEFAULT_CREDENTIAL_NAME variable

Syntax
```
final String DEFAULT_CREDENTIAL_NAME
```

Const interface
This interface defines constants for use with CSI.

Syntax
```
public interface  Const
```

Derived classes

- *com.sybase.security.core.CertificateAuthenticationLoginModule* on page 60
- *com.sybase.security.core.CertificateValidationLoginModule* on page 71
- *com.sybase.security.core.JCESecureDataServices* on page 90
- *com.sybase.security.core.XMLFileRoleMapper* on page 155

ATT_CERTIFICATE variable
Key to access the certificate converted into String using CertificateTools.toAttributeString() method.

Syntax
```
final String ATT_CERTIFICATE
```

ATT_COMMONNAME variable
Key to retrieve the subject or asset's name.

Syntax
```
final String ATT_COMMONNAME
```

ATT_DESCRIPTION variable
Key to retrieve the description of an Attributed item.

Syntax
```
final String ATT_DESCRIPTION
```

ATT_EMAIL variable
Key to retrieve the subject's email address.

Syntax
```
final String ATT_EMAIL
```

ATT_FIRSTNAME variable
Key to retrieve the subject's first name.

Syntax
```
final String ATT_FIRSTNAME
```

ATT_ID variable
Key to retrieve the ID of an Attributed item.

Syntax
```
final String ATT_ID
```

ATT_LASTNAME variable
Key to retrieve the subject's last name.

Syntax
```
final String ATT_LASTNAME
```

ATT_NAME variable
Key to retrieve the name of the attributed item.

Syntax
```
final String ATT_NAME
```

ATT_PASSWORD variable
Key to access the password for self registration tasks.

Syntax
```
final String ATT_PASSWORD
```

ATT_PHONE variable
Key to retrieve the subject's telephone number.

Syntax
```
final String ATT_PHONE
```

ATT_USERNAME variable
Key to retrieve the username of the subject or in the case of resource-specific attributes, the username stored for that resource.

Syntax
```
final String ATT_USERNAME
```

BUILDTIME variable
Build date/time.

Syntax
```
final String BUILDTIME
```

CAPABILITY_EXPIRED_PASSWORD_CHANGE variable
The capability to change an expired password.

Syntax
```
final String CAPABILITY_EXPIRED_PASSWORD_CHANGE
```

Remarks
Providers should implement this capability themselves.

CAPABILITY_FINE_GRAIN_ACCESS_CONTROL variable
The FineGrainAccessControl capability.

Syntax
```
final String CAPABILITY_FINE_GRAIN_ACCESS_CONTROL
```

Remarks
Providers should implement this capability themselves.

CAPABILITY_PASSWORD_CHANGE variable
The password change capability.

Syntax
```
final String CAPABILITY_PASSWORD_CHANGE
```

Remarks
Providers should implement this capability themselves.

CAPABILITY_PREFIX variable
Prefix reserved for capabilities defined by CSI.

Syntax
```
final String CAPABILITY_PREFIX
```

CAPABILITY_SELF_REGISTRATION variable
The self-registration capability.

Syntax
```
final String CAPABILITY_SELF_REGISTRATION
```

Remarks
Providers should implement this capability themselves.

CAPABILITY_X509_AUTHENTICATION variable
The certificate authentication capability.

Syntax
```
final String CAPABILITY_X509_AUTHENTICATION
```

Remarks
Providers should implement this capability themselves.

CONFIGURATION_PROVIDER_PROPERTY variable
The name of the system property used to override the configuration provider.

Syntax
```
final String CONFIGURATION_PROVIDER_PROPERTY
```

CONFIGURATION_PROVIDER_PROPERTY_DEFAULT variable
The default configuration provider.

Syntax
```
final String CONFIGURATION_PROVIDER_PROPERTY_DEFAULT
```

CONTEXT_RETRIEVER_PROVIDER_PROPERTY variable
The name of the system property that can optionally be used to specify a list of active context retriever providers.

Syntax
```
final String CONTEXT_RETRIEVER_PROVIDER_PROPERTY
```

Remarks
If more than one provider is required, the provider class names must be separated by semicolons.

By default the system will automatically inspect the JVM for available context retrievers so the use of this property is not normally required.

CORE_CAPABILITY_ATTRIBUTION variable
The attribution capability.

Syntax
```
final String CORE_CAPABILITY_ATTRIBUTION
```

CORE_CAPABILITY_AUTHENTICATION variable
The authentication capability.

Syntax
```
final String CORE_CAPABILITY_AUTHENTICATION
```

CORE_CAPABILITY_AUTHORIZATION variable
The authorization capability.

Syntax
```
final String CORE_CAPABILITY_AUTHORIZATION
```

CORE_CAPABILITY_CRYPTOGRAPHY variable
The cryptography capability.

Syntax
```
final String CORE_CAPABILITY_CRYPTOGRAPHY
```

CORE_CAPABILITY_PROVIDER_CLASS variable

This capability is a dynamic capability that can be used to see if a specific provider is active in the provider list for a context.

Syntax

```
final String CORE_CAPABILITY_PROVIDER_CLASS
```

Remarks

To use it, append the class name you want to query for to this capability string when performing the capability check.

FACTORY_RETRIEVER_PROVIDER_PROPERTY variable

The name of the system property that can optionally be used to specify a list of active factory retriever providers.

Syntax

```
final String FACTORY_RETRIEVER_PROVIDER_PROPERTY
```

Remarks

If more than one provider is required, the provider class names must be separated by semicolons.

By default the system will automatically inspect the JVM for available factory retrievers so the use of this property is not normally required.

LOG_WARNINGS_PROPERTY variable

The name of the system property used to enable/disable logging the warnings.

Syntax

```
final String LOG_WARNINGS_PROPERTY
```

LOG_WARNINGS_PROPERTY_DEFAULT variable

The default value for logging warnings.

Syntax

```
final String LOG_WARNINGS_PROPERTY_DEFAULT
```

MAX_WARNINGS_PROPERTY variable

The name of the system property used to override the maximum number of SecWarnings stored in a context.

Syntax

```
final String MAX_WARNINGS_PROPERTY
```

MAX_WARNINGS_PROPERTY_DEFAULT variable
The default maximum number of SecWarnings stored.

Syntax
```
final String MAX_WARNINGS_PROPERTY_DEFAULT
```

OP_DECRYPT variable
The name of the property to specify decryption operation to get an initialized Cipher instance.

Syntax
```
final String OP_DECRYPT
```

OP_ENCRYPT variable
The name of the property to specify encryption operation to get an initialized Cipher instance.

Syntax
```
final String OP_ENCRYPT
```

OP_SIGN variable
The name of the property to specify signing operation to get an initialized Signature instance.

Syntax
```
final String OP_SIGN
```

OP_VERIFY variable
The name of the property to specify verify operation to get an initialized Signature instance.

Syntax
```
final String OP_VERIFY
```

REGEX_AUDIT_ATTRIBUTE_MASK_PROPERTY variable
The name of the system property that can optionally be used to specify the regular expression to match the provider configuration property names whose values should be masked in the audit record.

Syntax
```
final String REGEX_AUDIT_ATTRIBUTE_MASK_PROPERTY
```

REGEX_AUDIT_ATTRIBUTE_MASK_PROPERTY_DEFAULT variable
The default value for the REGEX_AUDIT_ATTRIBUTE_MASK_PROPERTY.

Syntax
```
final String REGEX_AUDIT_ATTRIBUTE_MASK_PROPERTY_DEFAULT
```

RESERVED_CAPABILITY_PREFIX variable
Prefix for standard non-core capabilities, handled by providers.

Syntax
```
final String RESERVED_CAPABILITY_PREFIX
```

RESERVED_CORE_CAPABILITY_PREFIX variable
Prefix for core capabilities, handled by core CSI and not providers.

Syntax
```
final String RESERVED_CORE_CAPABILITY_PREFIX
```

SHORTVERSION variable
Short version string.

Syntax
```
final String SHORTVERSION
```

VERSION variable
Version description (truncated version string).

Syntax
```
final String VERSION
```

VERSIONID variable
Version ID (including the milestone/drop number).

Syntax
```
final String VERSIONID
```

WARNINGS_LOG_LEVEL_PROPERTY variable
The name of the system property used to specify the level at which the warnings should be logged.

Syntax
```
final String WARNINGS_LOG_LEVEL_PROPERTY
```

Remarks
The valid values can be taken from java.util.logging.Level.

WARNINGS_LOG_LEVEL_PROPERTY_DEFAULT variable
The default value for the level at which warnings are logged.

Syntax
```
final String WARNINGS_LOG_LEVEL_PROPERTY_DEFAULT
```

Decision class
Represents decisions within the audit subsystems.

Syntax
```
public class  Decision
```

Remarks
There are no public methods.

toString() method
Returns the string value of a decision.

Syntax
```
String toString ()
```

valueOf(String) method
Returns the Decision object representing the string argument.

Syntax
```
Decision  valueOf ( String decision )
```

Parameters

- **decision –**

Returns
Decision object representing the string argument

Exceptions

- **IllegalArgumentException –** if the supplied argument is null or cannot be converted to a Decision.

Usage

Decision object representing the string argument

ABSTAIN variable
Indicates that a decision cannot be conclusively made for the operation.

Syntax
```
final static Decision ABSTAIN
```

DENY variable
Indicates that the decision is to deny the operation (failure or false).

Syntax
```
final static Decision DENY
```

NOTAPPLICABLE variable
Indicates that the operation does not have an applicable decision.

Syntax
```
final static Decision NOTAPPLICABLE
```

PERMIT variable
Indicates that the decision is to permit the operation (success or true).

Syntax
```
final static Decision PERMIT
```

Named interface
This interface defines a base for objects that have names and unique identifiers.

Syntax
```
public interface Named
```

Derived classes

- *com.sybase.security.provider.BasicNamed* on page 224
- *com.sybase.security.SecProfile* on page 378
- *com.sybase.security.SecResource* on page 379
- *com.sybase.security.SecSubject* on page 380

Remarks
The name attribute of such an object may or may not be unique, but usually makes sense to humans.

The id attribute is unique, but may not be pretty.

getDescription() method
Gets the description of this object.

Syntax
```
String getDescription ()
```

Returns
a description of this Named object

Usage

a description of this Named object

getID() method
Gets the identifier of this object.

Syntax
```
String getID ()
```

Returns
the unique identifier for this object

Usage

the unique identifier for this object

getName() method
Gets the name of this object.

Syntax
```
String getName ()
```

Returns
the name of this object

Usage

the name of this object

NamedCredential interface

This interface associates a name with a credential object added to the JAAS subject.

Syntax

```
public interface NamedCredential
```

Derived classes

- *com.sybase.security.CertificateCredential* on page 323
- *com.sybase.security.core.NamedCredentialImpl* on page 104

Remarks

This can be used by other components interfacing with CSI to retrieve the JAAS credentials and the name of the credentials to perform SSO.

getName() method

Returns Name associated with the credential.

Syntax

```
String getName ()
```

Returns

Name of the credential.

Usage

Name of the credential.

getValue() method

Returns the value stored in the credential.

Syntax

```
String getValue ()
```

Returns

value stored in the credential.

Usage

This should be in the format appropriate to relay to the backend system to perform SSO i.e., base64 encoded certificate, http header/cookie value in the format expected by the backend.

value stored in the credential.

Operation class
Represents operations that can be performed on cryptographic objects.

Syntax
```
public class Operation
```

toString() method
Returns the string value of a operation.

Syntax
```
String toString ()
```

valueOf(String) method

Syntax
```
Operation valueOf ( String operation )
```

Parameters

- **operation –**

Returns
The operation, given the string value

Exceptions

- **IllegalArgumentException –** if the supplied argument is null or cannot be converted to a String

Usage

The operation, given the string value

DECRYPT variable
The decryption operation.

Syntax
```
final static Operation DECRYPT
```

ENCRYPT variable
The encryption operation.

Syntax
```
final static Operation ENCRYPT
```

SIGN variable
The sign operation.

Syntax
```
final static Operation SIGN
```

VERIFY variable
The verify operation.

Syntax
```
final static Operation VERIFY
```

SecAdminContext interface
This interface provides access to administrative CSI services.

Syntax
```
public interface SecAdminContext
```

Derived classes

- *com.sybase.security.provider.SynchronizedSecAdminContext* on page 294

Remarks
To obtain a SecAdminContext, use the SecContext.getAdminContext() method.

getRoleMapperAdmin() method
RoleMapperAdmin allows one to administer the role mappings for the current configuration.

Syntax
```
RoleMapperAdmin getRoleMapperAdmin()
```

Returns
the role mapper admin object tied to the current role mappings

Usage

If the XMLFileRoleMapper provider is included in the CSI configuration, it will read the RoleMapFile option to find an XML file containing role mapping (the option specifies a file relative to the configuration file).

The information in this file maps between "Logical Roles" as referenced in the consuming application (

SecContext.checkRole

) and "Physical Roles" assigned to subjects in the back-end security stores.

The RoleMapperAdmin class returned from this method is initialized with the role mapping data for the current configuration. Use getMappings to retrieve the RoleMappings data.

The mapping from Logical to Physical roles can be done within different "scopes" or "packages". There is a RoleMapper.DEFAULT_PACKAGE and then there are named packages. If a role is mapped in a specific package, and you do a roleCheck in that package, the role mapping from that package is used. If there is no role mapping for the role you are checking in that package, the DEFAULT_PACKAGE is checked. If there is no mapping there, then it may use straight-thru mapping to the physical role name if the XMLFileRoleMapper is configured to allow this.

```
This mapping information is maintained in a hierarchy: RoleMappings -
contains all the Packages RolePackage - a named package (or the
default package) LogicalRole - a mapped logical role PhysicalRole -
physical role mapped to a logical role.
                  com.sybase.security.core.HierarchialItem for the
methods available on each of these items in the hierarchy.

Here is some sample code that iterates across the entire tree of role
mappings:
 RoleMapperAdmin rma =
SecContextFactory.newAdminContext(ctx).getRoleMapperAdmin();
 RoleMappings mappings = rma.getMappings();
 for (RolePackage rp : mappings)
 {
     for (LogicalRole lr : rp)
     {
         for (PhysicalRole pr : lr)
         {
             System.out.println("In package " + package.getName()
             + " the logical role " + lr.getName() +
             " " is mapped to physical role " + pr.getName());
         }
     }
 }
```

the role mapper admin object tied to the current role mappings

getSecContext() method

Syntax

```
SecContext  getSecContext ()
```

Returns

the SecContext associated with this administrative context

Usage

the SecContext associated with this administrative context

loadExternalConfiguration(String) method

Retrieve current configuration used to create the SecContext associated with this administrative context.The configuration will be retrieved fresh from the persistent storage.

Syntax

```
Reader loadExternalConfiguration ( String primarySchema ) throws
SecException
```

Parameters

- **primarySchema –** the expected schema for the external configuration

Returns

Reader that returns the configuration in the XML format specified by the primarySchema.

Usage

This may not be the "active" configuration for factories that exist in-memory at the time this method is called. It will always reflect the last persisted configuration. The returned document is a well-formed XML document and includes the configuration metadata as well, which means that it's essential self-validating. Any configuration errors are embedded in the XML document.

Reader that returns the configuration in the XML format specified by the primarySchema.

storeExternalConfiguration(String, Reader) method

The supplied configuration is validated and written out to persistent storage.

Syntax

```
Reader storeExternalConfiguration ( String primarySchema , Reader
reader ) throws SecException
```

Parameters

- **primarySchema –** the schema for the supplied external configuration to be stored.
- **reader –** the configuration to be persisted

Returns

the specified configuration with any validation problems (if any) added to it.

Usage

If the configuration is not valid, the validation problems are added to the xml document and returned. The configuration is written to the persistent storage whether valid or not. The configuration will not be made effective immediately. A call to

SecContextFactory.refresh()

should be used to do this.

the specified configuration with any validation problems (if any) added to it.

validateExternalConfiguration(String, Reader) method

The supplied configuration is validated and any validation problems are added to the xml document and returned.

Syntax

```
Reader validateExternalConfiguration ( String primarySchema ,
Reader reader ) throws SecException
```

Parameters

- **primarySchema –** the schema for the supplied external configuration to be validated.
- **reader –** the configuration to be validated

Returns

the specified configuration with any validation problems (if any) added to it.

Usage

the specified configuration with any validation problems (if any) added to it.

SecConfiguration interface

The interface that describes the configuration interface for CSI.

Syntax

```
public interface SecConfiguration
```

Derived classes

- *com.sybase.security.provider.AbstractBootstrapConfiguration* on page 172
- *com.sybase.security.SecConfiguration2* on page 342

Remarks

Concrete classes implementing this interface should also provide a public, blank constructor in order to make themselves available to the default configuration provider instantiation

capabilities. This constructor may optionally throw a SecException object in the event of an error.

Providers implementing this interface may also optionally implement the ProviderInfo interface to expose additional provider information.

While not deprecated, the SecConfiguration2 interface is preferred to this one.

getConfiguration() method

This method is used by the CSI infrastructure to retrieve configuration information in a standardized format.

Syntax

```
Map< String, String > getConfiguration () throws SecException
```

Returns

map of configuration options.

Exceptions

- **SecException class –** on a configuration error

Usage

This method will be called once for the creation of EVERY

SecContext

object. Because of this the following guidelines should be followed by any implementation:

1. The return value of this method should not change if the configuration data has not changed. This allows the CSI infrastructure to properly cache configuration data.
2. If the underlying configuration data has changed, the return value should not be modified and returned. Instead a new object should be created from scratch. CSI infrastructure caches based on object identity, not contents, so if this rule is not followed then updated configuration data will not be noticed by CSI.

map of configuration options.

SecConfiguration2 interface

The interface that describes the configuration interface for CSI.

Syntax

```
public interface SecConfiguration2
```

Derived classes

- *com.sybase.security.core.NamedConfiguration.CompatibleConfiguration* on page 95
- *com.sybase.security.SecConfiguration3* on page 345

Remarks

Concrete classes implementing this interface should also provide a public, blank constructor in order to make themselves available to the default configuration provider instantiation capabilities. This constructor may optionally throw a SecException object in the event of an error.

Although the API contract specifies it should be implemented, in reality the SecConfiguration.getConfiguration() method will never be called by the CSI factory. Instead the new SecConfiguration2.getConfiguration(Map) will always be called instead.

Providers implementing this interface may also optionally implement the ProviderInfo interface to expose additional provider information.

getConfiguration(Map< String, Object >) method

This method is used by the CSI infrastructure to retrieve configuration information in a standardized format.

Syntax

`Map< String, String > getConfiguration ( Map< String, Object >` *selectors* `)` throws `SecException`

Parameters

- **selectors –** a map of selectors that dynamically alter the returned configuration. The specific keys and values that are meaningful depend on the underling implementation.

Returns

map of configuration options.

Exceptions

- **SecException class –** on a configuration error

Usage

This method will be called once for the creation of every

SecContext

object. Because of this the following guidelines should be followed by any implementation:

1. The return value of this method should not change if the configuration data has not changed. This allows the CSI infrastructure to properly cache configuration data.
2. If the underlying configuration data has changed, the return value should not be modified and returned. Instead a new object should be created from scratch. CSI infrastructure caches based on object identity, not contents, so if this rule is not followed then updated configuration data will not be noticed by CSI.

map of configuration options.

DEFAULT_CONFIGURATION_NAME variable
The default configuration name used if none is specified in the selectors.

Syntax
```
final String DEFAULT_CONFIGURATION_NAME
```

SELECTOR_ALTERNATE_REPOSITORY variable
Selector key that is used to supply an alternate repository URL.

Syntax
```
final String SELECTOR_ALTERNATE_REPOSITORY
```

Remarks
This repository will be searched first, unless it is prefixed by the prefix specified by the SELECTOR_PRIMARY_REPOSITORY_PREFIX.

The value for this key should of type java.net.URL or java.util.File.

SELECTOR_CONFIGURATION_NAME variable
Selector key that is used to choose a configuration by name.

Syntax
```
final String SELECTOR_CONFIGURATION_NAME
```

Remarks
If this is unspecified then the configuration provider should use a default name.

The value for this key should be a java.lang.String type.

SELECTOR_FRESH_CONFIGURATION variable
Selector key that is used to specify that the configuration that is returned should be loaded from the underlying source and not a cached copy.

Syntax
```
final String SELECTOR_FRESH_CONFIGURATION
```

Remarks
The value for this key should be a java.lang.Boolean type.

SELECTOR_PRIMARY_REPOSITORY_PREFIX variable
There is no default for this property.

Syntax
```
final String SELECTOR_PRIMARY_REPOSITORY_PREFIX
```

SecConfiguration3 interface
The interface that describes the configuration interface for CSI.

Syntax
```
public interface  SecConfiguration3
```

Derived classes

- *com.sybase.security.core.NamedConfiguration* on page 93
- *com.sybase.security.provider.AbstractFileConfiguration* on page 176

Remarks
Concrete classes implementing this interface should also provide a public, blank constructor in order to make themselves available to the default configuration provider instantiation capabilities. This constructor may optionally throw a SecException object in the event of an error.

The configuration provider implementing this interface should support writing the updated configuration.

Providers implementing this interface may also optionally implement the ProviderInfo interface to expose additional provider information.

writeNewConfiguration(Map< String, Object >, Map< String, String >) method
This method is used by the CSI infrastructure to store the configuration information.

Syntax
```
void writeNewConfiguration ( Map< String, Object > selectors ,  Map< String, String > configuration ) throws SecException
```

Parameters

- **selectors –** a map of selectors that specify the location of the configuration file. The specific keys and values that are meaningful depend on the underlying implementation.
- **configuration –** map of configuration options.

Exceptions

- **SecException class –** if an error occurs storing the configuration.

Usage

This method will be called when a CSI client intends to store the updated configuration.

SecContext interface

This interface defines methods available for performing security checks, and factories for Resource, Subject, and Environment classes.

Syntax

```
public interface SecContext
```

Derived classes

- *com.sybase.security.provider.SynchronizedSecContextImpl* on page 298

audit(String, String, String, Decision , Map< String, Object >) method

This method allows a client to issue an audit record to the audit trail.

Syntax

```
void audit ( String resourceClass , String resourceID , String action ,
Decision decision , Map< String, Object > attributes ) throws
SecException
```

Parameters

- **resourceClass –** The resource class of the audit record. This string will be prepended by "client." in the audit trail to identify client-supplied audit records.
- **resourceID –** The resource ID
- **action –** The action being performed
- **decision –** The decision
- **attributes –** Any extra attributes to include in the audit request. The default audit record formatting logic specially handles classes such as java.util.Date, java.security.cert.X509Certificate, and most of the classes in the java.util.* collections framework.

Exceptions

- **SecException class –** If a critical error occurred while issuing the audit record. Depending on the configuration of the auditing system, failures to audit to a specific destination may not qualify.

- **IllegalArgumentException –** if a null resource class, resouce ID, action or decision are supplied

Usage

There is no guarantee that the record will actually be added to any of the configured audit destinations or that there are even any destinations configured. The client may wish to call

SecContext.isAuditEnabled

in order to determine if the audit record will actually be written. This can save some time building up extra attributes for the audit record.

checkAccess(String, SecResource) method
This is the primary method of interest to Policy Enforcement Point (PEP) code.

Syntax

```
boolean checkAccess ( String action ,   SecResource  resource )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.

Returns

true if access is allowed, false if access is denied.

Exceptions

- **IllegalArgumentException –** if there are problems with the input parameters
- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

It directs an authorization request to the configured PDP (Policy

Decision

Point) in the security context of the authenticated user of the application.

This is a convenience method when the PEP has no environment information to provide to the PDP.

true if access is allowed, false if access is denied.

checkAccess(String, SecResource , SecEnvironment) method

This is the same as SecContext.checkAccess(String, SecResource), but you may specify environmental attributes.

Syntax

```
boolean checkAccess ( String action ,  SecResource  resource ,
SecEnvironment  env )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.
- **env –** environmental attributes describing additional conditions relevant to the policy decision

Returns

true if access is allowed, false if access is denied.

Exceptions

- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

true if access is allowed, false if access is denied.

checkAccess(String, SecResource , SecSubject , SecEnvironment) method

This method is similar to checkAccess(String, SecResource, SecEnvironment), but you may explicitly present a Subject on whose behalf the access check is to be performed.

Syntax

```
boolean checkAccess ( String action ,  SecResource  resource ,
SecSubject  subject ,  SecEnvironment  env )
```

Parameters

- **action –** the operation the caller would like to perform on the resource.
- **resource –** target of the operation.
- **subject –** the subject for whom we are checking access.
- **env –** environmental attributes describing additional conditions relevant to the policy decision

Returns
true if access is allowed, false if access is denied.

Exceptions

- **IllegalStateException –** if the configured provider modules do not support the type of access check the caller is trying to perform or if the context has been destroyed.

Usage

true if access is allowed, false if access is denied.

checkAuthorization(AuthzRequest) method
Performs an authorization check with somewhat more complex combination of rules.

Syntax
`AuthzResponse checkAuthorization( AuthzRequest` *request* `)` throws `SecException`

Parameters

- **request –** authorization request to be performed.

Returns
authorization response with a decision, and possibly a reason.

Exceptions

- **SecException class –**

Usage

Refer to

AuthzRequest

and

AuthzResponse

for more details.

authorization response with a decision, and possibly a reason.

checkRole(String) method

When a PEP is defined solely in terms of role-based access (no resource is explicitly defined as the target of an access, and the access type is implicit somehow), then this method just performs the role check.

Syntax

```
boolean checkRole ( String roleName )
```

Parameters

- **roleName –** the name of the role

Returns

true if the current subject has the specified role, false if not.

Exceptions

- **IllegalArgumentException –** if the roleName cannot be resolved
- **IllegalStateException –** if there is no current authenticated subject or if the context has been destroyed..

Usage

true if the current subject has the specified role, false if not.

checkRole(String, SecSubject) method

Same as the checkRole(String roleName) method but you may explicitly identify the subject whose roles are being tested.

Syntax

```
boolean checkRole ( String roleName ,   SecSubject  subject )
```

Parameters

- **roleName –**
- **subject –** the subject to check roles on.

Returns

true if the specified subject has the specified role, false if not.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

true if the specified subject has the specified role, false if not.

checkRole(String, SecSubject , String) method
Same as the checkRole(String roleName, SecSubject subject) method but you may explicitly identify the package scope for mapping roles to be tested.

Syntax

```
boolean checkRole ( String roleName ,  SecSubject  subject ,  String
scope )
```

Parameters

- **roleName –**
- **subject –** the subject to check roles on.
- **scope –** the package in which to perform the role check.

Returns

true if the specified subject has the specified role, false if not.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

true if the specified subject has the specified role, false if not.

destroy() method
Release all resources associated with this context.

Syntax

```
void destroy ()
```

Usage

This may include terminating the current session if one has been created either implicitly or explicitly.

getAdminContext() method
Returns an administrative context associated with this context object.

Syntax

```
SecAdminContext  getAdminContext () throws SecException
```

Returns
a SecAdminContext that can be used to administer the configuration this SecContext is associated with.

Exceptions

- **SecException class –** if the AdministratorRole global option has been specified for the current configuration, and the user trying to retrieve a SecAdminContext is *not* in the role specified as the value of this option.

Usage

a SecAdminContext that can be used to administer the configuration this SecContext is associated with.

getCipher(String, String) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax
`Cipher getCipher ( String` *`profileName`* `, String` *`operation`* `)` throws `SecException`

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Const.OP_ENCRYPT and Const.OP_DECRYPT

Returns
Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Cipher to perform the specified operation.

getCipher(String, Operation) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax
```
Cipher getCipher ( String profileName ,  Operation  operation ) throws
SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Operation.ENCRYPT and Operation.DECRYPT.

Returns
Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Cipher to perform the specified operation.

getCipher(String, Operation , AlgorithmParameters) method
Returns a javax.crypto.Cipher object instance initialized for the specified operation.

Syntax
```
Cipher getCipher ( String profileName ,  Operation  operation ,
AlgorithmParameters params ) throws SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Cipher object. Valid values are Operation.ENCRYPT and Operation.DECRYPT.

- **params –** JCE algorithm parameters that should be supplied when initializing the cipher. An example of the type of data that can be included is the IV data.

Returns
Cipher to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

The supplied AlgorithmParameters object is used to complete initialization of the Cipher.

Cipher to perform the specified operation.

getEnvironment() method

Syntax
```
SecEnvironment  getEnvironment ()
```

Returns
the SecEnvironment object. This object may be re-used with other SecContext instances.

Usage

the SecEnvironment object. This object may be re-used with other SecContext instances.

getID() method
Retrieve unique context ID.

Syntax
```
String getID ()
```

Returns
unique id

Usage

This ID may safely be used to refer to a

SecContext

instance within a hashtable or other such structure. Additionally, these identifiers are guaranteed to be unique across multiple machines because they include (in part) the machine's IP address.

unique id

getMaxWarningCount() method

Retrieves maximum number of warnings that will be saved.

Syntax

```
int getMaxWarningCount ()
```

Returns

maximum number of warnings that will be saved

Usage

maximum number of warnings that will be saved

getMessageDigest(String) method

Returns an initialized java.security.MessageDigest object instance.

Syntax

```
MessageDigest getMessageDigest ( String profileName ) throws
SecException
```

Parameters

- **profileName –**

Returns

MessageDigest to perform the digest operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.

Usage

MessageDigest to perform the digest operation.

getProfile(String) method

Returns the profile attributes in a SecProfile object.

Syntax

```
SecProfile  getProfile ( String id ) throws SecException
```

Parameters

- **id –** unique identifier of the desired profile. The name of the profile is in general unique and can be used to lookup the profile.

Returns

the SecProfile wrapper for the specified profile if the caller has a role that is required to access the profile or if the profile does not require any roles to access the information.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no such profile exists or the specified profile requires a role to access and if the authenticated subject is not in that role.

Usage

If the profile requires a role to access it and the caller does not have any of the required roles, then

SecException

is thrown.

This method is deprecated, there is no need to retrieve specific profile instances. Instead they are referenced by name when necessary.

the SecProfile wrapper for the specified profile if the caller has a role that is required to access the profile or if the profile does not require any roles to access the information.

getResource(String) method

Syntax

```
SecResource  getResource ( String id ) throws SecException
```

Parameters

- **id –** unique identifier for the desired resource. Some security providers will also be able to return information on a resource if this "id" parameter contains the name of the resource

rather than its ID. Since a resource name is not required/guaranteed to be unique, the resource returned may not be deterministic. Pass in resource names to this method at your own peril.

Returns
A SecResource wrapper for the specified resource.

Exceptions

- **SecException class –** if the resource cannot be identified by any providers.
- **IllegalStateException –** if the context has been destroyed.

Usage

A SecResource wrapper for the specified resource.

getSignature(String, String) method
Returns a java.security.Signature object instance initialized for the specified operation.

Syntax
`Signature getSignature ( String` *profileName* `, String` *operation* `)` throws `SecException`

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Signature object. Valid values are Const.OP_SIGN and Const.OP_VERIFY

Returns
Signature object to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Signature object to perform the specified operation.

getSignature(String, Operation) method

Returns a java.security.Signature object instance initialized for the specified operation.

Syntax

```
Signature getSignature ( String profileName ,  Operation  operation )
throws SecException
```

Parameters

- **profileName –**
- **operation –** that will be performed using the returned Signature object. Valid values are Operation.SIGN and Operation.VERIFY.

Returns

Signature object to perform the specified operation.

Exceptions

- **IllegalStateException –** if the specified profile requires a role to access and there is no current authenticated subject or if the context has been destroyed.
- **SecException class –** if no profile with the specified profile name exists or if the specified profile requires a role to access and if the authenticated subject is not in that role. Or if none of the configured SecureDataService providers can handle the request.
- **IllegalArgumentException –** if the specified value for operation parameter is not valid.

Usage

Signature object to perform the specified operation.

getSubject() method

Syntax

```
SecSubject  getSubject ()
```

Returns

the SecSubject wrapper for the subject that was current at the time this SecContext instance was created.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

the SecSubject wrapper for the subject that was current at the time this SecContext instance was created.

getSubject(String) method
Lookup some other Subject in the security identity provider.

Syntax

```
SecSubject  getSubject ( String id ) throws SecException
```

Parameters

- **id –** unique identifier for the desired subject

Returns

the SecSubject wrapper for the specified user.

Exceptions

- **SecException class –** if subject lookup fails.
- **IllegalStateException –** if the context has been destroyed.

Usage

This method may be helpful in some situations of delegated authorization like a RunAs component or similar usage, or if the calling application wants Attributes for a subject different from the current caller.

A trusted component might make use of this to obtain signing certificates for a user it is operating on behalf of.

the SecSubject wrapper for the specified user.

getWarnings() method
Returns the list of warnings.

Syntax

```
List< SecWarning > getWarnings ()
```

Returns

List of the warnings stored for this context.

Usage

An empty list is returned if no warnings are in the queue. New warnings are appended at the tail of the list so to receive the most recent warnings use

List.ListIterator(List.size()).previous() operation. The client may clear or remove warnings from this list as they see fit. The underlying implementation will enforce the maximum warning count by removing the oldest warning when adding a new warning if the queue size is equal to the max warning count. It will also disallow adding new elements by the CSI client.

List of the warnings stored for this context.

hasCapability(String) method

Returns whether or not context objects created by this factory have the specified capability or not.

Syntax

```
boolean hasCapability ( String capability ) throws SecException
```

Parameters

- **capability –** The capability that we are checking out.

Exceptions

- **SecException class –** if any providers raised an exception during the checks

isAuditEnabled(String, String, Decision) method

Returns whether or not an audit record with the supplied arguments will be written to any audit destinations.

Syntax

```
boolean isAuditEnabled ( String resourceClass ,  String action ,
Decision  decision ) throws SecException
```

Parameters

- **resourceClass –** The resource class of the audit record
- **action –** The action to be performed
- **decision –** The decision

Returns

true if the record will be written, false otherwise

Exceptions

- **SecException class –** if an error occurs while checking the audit filters
- **IllegalArgumentException –** if a null resource class, action or decision are supplied

Usage

true if the record will be written, false otherwise

listActions(SecResource) method
Lists the known actions for the specified resource.

Syntax

```
Named[] listActions ( SecResource res )
```

Parameters

- **res –** the security resource to list known actions for

Returns

a list of all known security system actions that apply to the specified resource

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known security system actions that apply to the specified resource

listEnvironmentAttributes() method
Lists all known Environment attributes the security system may consider for policy decisions.

Syntax

```
Named[] listEnvironmentAttributes ()
```

Returns

a list of all known Environment attributes.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known Environment attributes.

listProfiles() method

Syntax

```
Named[] listProfiles ()
```

Returns

a list of all known profiles.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known profiles.

listResources() method

Syntax

```
Named[] listResources ()
```

Returns

a list of all known security system resources

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of all known security system resources

listResources(String) method

Syntax

```
Named[] listResources ( String resourceTypeName )
```

Parameters

- **resourceTypeName –** the name of the resourcetype

Returns

a list of security system resources that match the specified resourcetype

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of security system resources that match the specified resourcetype

listResourceTypes() method

Syntax

```
Named[] listResourceTypes ()
```

Returns

a list of security system resource types.

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

a list of security system resource types.

listRoles() method

Returns a list of all known security roles.

Syntax

```
Named[] listRoles ()
```

Returns

a list of all known security roles by Name

Exceptions

- **IllegalStateException –** if the context has been destroyed.

Usage

This role list will be taken from the configured attributers in addition to the list of any physical roles defined by active role mappers.

The roles will be returned sorted by name, then ID, using the java.lang.String.compareTo() method.

a list of all known security roles by Name

login() method
Forces the context to be authenticated.

Syntax
`void login ()` throws `javax.security.auth.login.LoginException`

Exceptions

- **javax.security.auth.login.LoginException –** thrown if any errors encountered while performing authentication.
- **IllegalStateException –** if the context has been destroyed.

Usage

If it's already authenticated, throws a LoginException.

reencrypt(String, String, byte[]) method
Convenience method to decrypt a buffer of data using srcProfile and encrypt it using destProfile in one step.

Syntax
`byte[] reencrypt ( String` *srcProfileName* `, String` *destProfileName* `, byte[]` *data* `)` throws `SecException`

Parameters

- **srcProfileName –** name of the profile to use for decrypting the data passed in
- **destProfileName –** name of the profile to use for encrypting the decrypted data
- **data –** data encrypted using srcProfileName

Returns
data decrypted using srcProfileName and encrypted using destProfileName

Exceptions

- **IllegalStateException –** if one of the profiles require a role to access and there is no current authenticated subject. Or if none of the configured SecureDataService providers can handle the request. Or if the context has been destroyed.
- **SecException class –** if no profiles with the specified names exist. Or one or both the specified profiles require a role to access and if the authenticated subject is not in that role.

Usage

data decrypted using srcProfileName and encrypted using destProfileName

setMaxWarningCount(int) method
Sets the maximum number of warnings that will be stored for the context.

Syntax

```
void setMaxWarningCount ( int count )
```

Parameters

- **count –** maximum number of warnings that will be stored

ADMIN_ROLE_NAME variable
Configuration property to specify the name of the security role to be checked prior to allowing interactive administration of security data.

Syntax

```
final String ADMIN_ROLE_NAME
```

Remarks
It should be specified at a global level within the configuration.

SecContextFactory class

This class exposes factory methods that other SAP products can use for programmatic security.

Syntax

```
public class  SecContextFactory
```

Remarks
In the lexicon of security, those products are implementing Policy Enforcement Points (PEPs). The purpose of this package is to provide a pluggable and stackable way to propagate these PEP invocations to the appropriate Policy Decision Points (PDPs) based on a customer's configuration of the security aspects of their installation.

The typical consumer of CSI will perform some or all of the following steps in the following order to retrieve a CSI security context object:

1. Call static SecContextFactory.newInstance() to retrieve a factory instance
2. Optionally call setConfiguration and/or setCallbackHandler methods to alter default Context creation behavior
3. Call SecContextFactory object's getContext() method to retrieve the security context.

As part of context creation, a configuration must always be established. If the setConfiguration method is called with a non-null value, then the object specified will be used

when determining configuration of the security context. Otherwise, the global configuration mechanism is used. The global configuration mechanism entails retrieving the appropriate configuration object using the "com.sybase.security.ConfigurationProvider" system property. This property must either be unspecified or must specify the classname of a class that implements the com.sybase.security.SecConfiguration interface. If it is unspecified then the JVM is inspected to retrieve the configuration provider service. If one cannot be found then the com.sybase.security.core.PropertiesConfiguration class is used for configuration.

clone() method

Syntax

```
Object clone () throws CloneNotSupportedException
```

getCallbackHandler() method

Syntax

```
CallbackHandler getCallbackHandler ()
```

Returns

the callback handler

Usage

the callback handler

getCheckConfigurationCompatibility() method

Syntax

```
boolean getCheckConfigurationCompatibility ()
```

Returns

Whether or not the configuration compatibility should be checked when deserializing a security context.

Usage

Whether or not the configuration compatibility should be checked when deserializing a security context.

getConfiguration() method

Syntax

```
SecConfiguration  getConfiguration ()
```

Returns
the configuration instance

Usage

the configuration instance

getConfigurationName() method

Syntax
```
String getConfigurationName ()
```

Returns
name of the default configuration used by the factory.

Usage

name of the default configuration used by the factory.

getConfigurationProvider() method

Syntax
```
String getConfigurationProvider ()
```

Returns
the configuration provider class name

Usage

the configuration provider class name

getConfigurationSelectors() method
Return the map of configuration selectors.

Syntax
```
Map< String, Object > getConfigurationSelectors ()
```

Returns
the configuration selector map

Usage

Classes can modify the objects in this map as desired to establish default configuration selectors.

the configuration selector map

getContext() method
This is the method to create a SecContext object with the properties specified in this factory object.

Syntax
`SecContext getContext ()` throws `SecException`

Returns
a new SecContext object

Exceptions

- **SecException class –** if an error occurs while retrieving the security context

Usage

a new SecContext object

getDefaultMaxWarningCount() method
Retrieve the current default maximum wraning count for security context instances created by this factory.

Syntax
`int getDefaultMaxWarningCount ()`

Returns
the maximum warning count

Usage

the maximum warning count

loadContext(InputStream) method
Reads and reinitializes a security context from a stream.

Syntax
`synchronized SecContext loadContext ( InputStream` *`is`* `)` throws `SecException`

Parameters

- **is –** The input stream from which the context should be read

Returns
The new security context

Exceptions

- **SecException class –** on encountering an error

Usage

The new security context

newContext() method
This is the method to create a new SecContext object with the properties specified in this factory object.

Syntax
```
synchronized SecContext  newContext () throws SecException
```

Returns
a new SecContext object

Exceptions

- **SecException class –** if an error occurs while creating the security context

Usage

a new SecContext object

newContext(CallbackHandler) method
This is the method to retrieve a SecContext object that uses the specified callback handler and the properties specified in this factory object.

Syntax
```
synchronized SecContext  newContext ( CallbackHandler ch ) throws
SecException
```

Parameters

- **ch –** The callback handler to use when authenticating the context.

Exceptions

- **SecException class –** if an error occurs while creating the security context

newContext(CallbackHandler, String) method
Build a new context, applying the specified configuration name to the default configuration selectors and setting the specified callback handler when authenticating the context.

Syntax

```
synchronized SecContext newContext(CallbackHandler ch, String configurationName) throws SecException
```

Parameters

- **ch –** The callback handler to use when authenticating the context.
- **configurationName –** name of the configuration to use for the context.

Exceptions

- **SecException class –** if an error occurs while creating the security context

newContext(CallbackHandler, Map< String, Object >) method
Create a new context with the supplied configuration selectors and the callback handler.

Syntax

```
SecContext newContext(CallbackHandler ch, Map< String, Object > selectors) throws SecException
```

Parameters

- **ch –** The callback handler to use when authenticating the context.
- **selectors –** The configuration selectors to use. This collection is authoritative and overrides the default factory selectors.

Returns

a new context

Exceptions

- **SecException class –**

Usage

a new context

newInstance() method
Retrieves a new instance of the context factory which has a few properties that can be tweaked, altering the results of calling the getContext() method.

Syntax
```
SecContextFactory newInstance ()
```

Returns
the factory instance

Usage

the factory instance

newSubject() method
Create a new subject object that can be committed to one or more of the configured attributers.

Syntax
```
SecSubject newSubject () throws SecException
```

refresh() method
This method causes CSI to re-read its global configuration properties and re-load all global provider modules.

Syntax
```
void refresh () throws SecException
```

Exceptions

- **SecException class –** if any errors occur while refreshing the providers.

Usage

It also clears configuration cache for client-specified configurations.

retrieveContext(Object) method
This method may be used to retrieve an already-created context from the local environment.

Syntax
```
SecContext retrieveContext ( Object environmentObject ) throws
SecException
```

Parameters

- **environmentObject –** The object that is provided to aid in retrieving the stored SecContext object.

Returns

the stored SecContext object

Exceptions

- **SecException class –** if no stored SecContext object was found

Usage

This operation may require the inclusion of some environment data from the local environment. For example, in a servlet it might require the HttpServletRequest object whereas in an EJB implementation it might require the EJBContext object. Other situations may not require any environment object at all.

the stored SecContext object

retrieveFactory(Object) method

This method may be used to retrieve a fully initialized factory instance from the local environment.

Syntax

`SecContextFactory retrieveFactory(Object` *`environmentObject`*`) throws SecException`

Parameters

- **environmentObject –** The object that is provided to aid in retrieving the stored SecContextFactory object.

Returns

the stored SecContextFactory object

Exceptions

- **SecException class –** if no stored SecContextFactory object was found

Usage

This operation may require some environment data from the local environment, although the environment object is not required at all in most cases.

the stored SecContextFactory object

setCallbackHandler(CallbackHandler) method
Sets the callbackhandler to be used when authenticating a context created by this factory instance.

Syntax
```
void setCallbackHandler ( CallbackHandler ch )
```

Parameters

- **ch –** the callbackhandler

Usage

If this method is not called and the auth.login.defaultCallbackHandler system property is defined, the default callback handler will be instantiated with the value of this property. This corresponds to the behavior outlined in the CallbackHandler javadocs.

setCheckConfigurationCompatibility(boolean) method
Sets whether or not the configuration compatibility should be checked when deserializing a security context.

Syntax
```
void setCheckConfigurationCompatibility ( boolean configurationCompatibility )
```

Parameters

- **configurationCompatibility –** The new value of the flag

Usage

The default value of this parameter is true.

setConfiguration(SecConfiguration) method
Sets the SecConfiguration instance to be used when creating a context with this factory instance.

Syntax
```
void setConfiguration ( SecConfiguration config )
```

Parameters

- **config –** the SecConfiguration object

Usage

This property is mutually exclusive with the configuration provider property. If neither of these properties is set, the default static configuration will be used.

setConfigurationName(String) method
Sets the configuration name to be used for creating the contexts.

Syntax

```
void setConfigurationName ( String configName )
```

setConfigurationProvider(String) method
Sets the configuration provider class that should be used when creating a context with this factory instance.

Syntax

```
void setConfigurationProvider ( String provider )
```

Parameters

- **provider –** the configuration provider class name

Usage

This property is mutually exclusive with the configuration property. If neither of these properties is set, the default static configuration will be used.

setContextRetrieverProviders(String) method
Allows a client to specify the context retriever provider list.

Syntax

```
void setContextRetrieverProviders ( String providers )
```

Parameters

- **providers –** semicolon-delimited list of configuration providers

Usage

This value may contain zero or more providers that implement the

com.sybase.security.provider.ContextRetriever

interface. The default value for this property is set by the com.sybase.security.ContextRetriever system property. If this property is null then the JVM

will be searched for available configuration properties using the JAR services discovery mechanism.

setDefaultMaxWarningCount(int) method
Set the default maximum warning count for security context instances created by this factory.

Syntax

```
void setDefaultMaxWarningCount ( int count )
```

Parameters

- **count –** the new count

storeContext(SecContext , OutputStream) method
Write a security context to an output stream.

Syntax

```
void storeContext ( SecContext ctx , OutputStream os ) throws
SecException
```

Parameters

- **ctx –** The context to write
- **os –** The stream to which the context will be written

Exceptions

- **SecException class –** on encountering serialization error or if the context is not a CSI core implementation
- **IllegalArgumentException –** if the context is null, output stream is null

SecEnvironment interface

This interface wraps classes that can convey arbitrary attributes of the execution environment to the PDP.

Syntax

```
public interface SecEnvironment
```

SecException class

Various security exceptions that occur during the use of methods in this package will throw this exception.

Syntax

```
public class SecException
```

SecException(String, Throwable) constructor
Constructs a new SecException exception.

Syntax
```
SecException ( String msg ,  Throwable cause )
```

Parameters

- **msg –** The message describing why this exception was thrown.
- **cause –** The root cause throwable, if any, that resulted in this error.

SecException(String) constructor
Constructs a new SecException exception.

Syntax
```
SecException ( String msg )
```

Parameters

- **msg –** The message describing why this exception was thrown.

SecException(Throwable) constructor
Constructs a new SecException exception.

Syntax
```
SecException ( Throwable cause )
```

Parameters

- **cause –** The root cause throwable, if any, that resulted in this error.

SecException(String, List<?extends Throwable >) constructor
Constructs a new SecException with a list of causes.

Syntax
```
SecException ( String msg ,  List<?extends Throwable > causeList )
```

Parameters

- **msg –** message
- **causeList –** list of causes

Usage

The values in this list are expected to be Throwable objects.

getCause() method

Syntax

```
Throwable getCause ()
```

getCauseList() method

Callers of this method must not rely on the return value of this method being a mutable list.

Syntax

```
List<?extends Throwable > getCauseList ()
```

Returns

list of exception causes, will be zero length if none were stored

Usage

list of exception causes, will be zero length if none were stored

initCause(Throwable) method

Syntax

```
synchronized Throwable initCause ( Throwable cause )
```

initCauseList(List<?extends Throwable >) method

Syntax

```
synchronized List<?extends Throwable > initCauseList ( List<?
extends Throwable > causeList )
```

_cause variable

Stores the root throwable, if any, of this exception.

Syntax

```
Throwable _cause
```

Remarks

Because this was here in CSI 1.0 and it's "protected" we will continue to set this even though we have a collection for multiple exceptions.

_causeList variable
Stores list of multiple causes.

Syntax
```
List<?extends Throwable > _causeList
```

SecProfile interface
This interface defines methods available for obtaining information on profiles.

Syntax
```
public interface  SecProfile
```

setDescription(String) method
Sets the profile description.

Syntax
```
void setDescription ( String description )
```

Parameters

- **description –** profile description

Exceptions

- **IllegalStateException –** if called after marked readonly

setRoles(String[]) method
Sets the roles that are authorized to access the profile.

Syntax
```
void setRoles ( String[] roles )
```

Parameters

- **roles –** roles that are authorized to access this profile

Exceptions

- **IllegalStateException –** if called after marked readonly

SecResource interface

This interface defines classes that can represent a protected resource in a security system.

Syntax

```
public interface SecResource
```

addResourceType(String) method

Allows providers to add a resource type to this resource during resource initialization.

Syntax

```
void addResourceType ( String resourceTypeName )
```

Parameters

- **resourceTypeName –** the resourcetype ID to add to the resource

Exceptions

- **IllegalStateException –** if called after marked readonly

Usage

This method cannot be called by a client after retrieving it using

SecContext.getResource(String)

.

getResourceTypes() method

Retrieve a list of resource type names that this resource implements, in priority order.

Syntax

```
List< String > getResourceTypes ()
```

Returns

list of resource type names

Usage

list of resource type names

SecSubject interface

This interface defines methods available for obtaining information on subjects.

Syntax

```
public interface SecSubject
```

getAttributesForResource(SecResource) method

Gets the attributes for the specified resource.

Syntax

```
Map< String, String[]> getAttributesForResource ( SecResource resource )
```

Parameters

- **resource –** the target resource

Returns

a Map object with the named attributes and their values. The values are of type String[].

Usage

Sometimes users have attributes that relate only to a particular security resource (for example Proxy Authentication Information for an Asset representing some back-end system). This method provides an accessor for this information to the application.

a Map object with the named attributes and their values. The values are of type String[].

getJAASSubject() method

Returns the JAAS subject that stores all the authentication information which includes Principals, public and private credentials added during authentication.

Syntax

```
javax.security.auth.Subject getJAASSubject ()
```

Returns

The authenticated JAAS subject, or an unauthenticated subject if the authentication has not occurred.

Usage

The authenticated JAAS subject, or an unauthenticated subject if the authentication has not occurred.

isAuthenticated() method
Checks if the subject is authenticated.

Syntax
```
boolean isAuthenticated ()
```

Returns
true if this object represents an authenticated user or false otherwise.

Usage

Returns true if this objects represents an authenticated user or false if it just represents some user information, but that user is not currently authenticated in this application as far as this object knows. This method has the side-effect of attempting to authenticate the user if an attempt to authenticate the user is not already triggered.

true if this object represents an authenticated user or false otherwise.

listAttributesForResource(SecResource) method
Lists the attribute names relevant for a specified resource.

Syntax
```
Named[] listAttributesForResource ( SecResource resource )
```

Parameters

- **resource –** the target resource

Returns
a list of attribute descriptions.

Usage

For design-time tooling it is sometimes necessary to know what possible attribute names may be returned from getAttributesForResource. This method enumerates them.

a list of attribute descriptions.

whenAuthenticated() method
Retrieves the time the user was authenticated.

Syntax
```
java.util.Date whenAuthenticated ()
```

Returns
the time when this user's current authentication was made.

Exceptions

- **IllegalStateException –** if this object does not represent an authenticated subject session.

Usage

the time when this user's current authentication was made.

SecWarning interface
An interface to propagate error information from the framework or the provider to the client.

Syntax
```
public interface SecWarning
```

Derived classes

- *com.sybase.security.core.AuthenticationFailureWarning* on page 58
- *com.sybase.security.core.PasswordExpirationWarning* on page 114
- *com.sybase.security.provider.SecLoginExceptionWarningImpl* on page 288
- *com.sybase.security.provider.SecWarningImpl* on page 293
- *com.sybase.security.SecException* on page 375

getMessage() method
Returns the localized message associated with the warning.

Syntax
```
String getMessage ()
```

Returns
Message associated with the warning.

Usage

Message associated with the warning.

SSOTokenCredential interface
This represents a credential that contains Single Sign On (SSO) data that can be retrieved from an authenticated Subject.

Syntax
```
public interface SSOTokenCredential
```

Remarks
Authentication providers that intend to provide access to the Single Sign On data to the components in the server should add a public credential that implements this interface after successfully authenticating the user.

The client could then access the SSO token using

```
javax.security.auth.Subject jaasSubject =
csiSubject.getJAASSubject();



            Set<SSOTokenCredential> credentials =
jaasSubject.getPublicCredentials(SSOTokenCredential.class);



            SSOTokenCredential credential = credentials.toArray(new
SSOTokenCredential[0])[0];
```

getSSOToken() method
Returns the Single Sign On (SSO) token in String format.

Syntax
`String getSSOToken ()`

Returns
SSO token

Usage

SSO token

Management API

This section provides information about using the SAP Mobile Platform Management API to custom code an administration client. The audience is advanced developers who are familiar working with APIs, but who may be new to SAP Mobile Platform.

This section describes the features and usage of the Management API, how to get started with client development, and how to program a custom administration client. Also included is information on how to configure SAP Mobile Platform properties using client metadata, how to use properties, and a listing of error codes.

Introducing Management API

Use the Management API in SAP® Mobile Platform to custom code an administration client. The audience is advanced developers who are familiar working with APIs, but who may be new to SAP Mobile Platform.

This guide describes the features and usage of the Administration API, how to get started with client development, and how to program a custom administration client. Also included is information on how to configure SAP Mobile Platform properties using client metadata, how to use properties, and a listing of error codes.

Companion documentation for Management API includes:

- *Fundamentals*
- *System Administration*
- *SAP Mobile WorkSpace - Mobile Business Object Development*
- *Troubleshooting*

Management API Features

SAP Mobile Platform includes a Java API that opens the administration and configuration of SAP Mobile Platform to Java client applications you create. By building a custom client with the Management API, you can build custom application to support SAP Mobile Platform administration features and functionality within an existing IT management infrastructure.

When creating a custom SAP Mobile Platform administration client, the entry point is the `SUPObjectFactory` class. By calling methods of `SUPObjectFactory`, which require different context objects, you can retrieve administration interfaces to perform administration activities. Should errors occur, they are reported through a `SUPAdminException`, which provides the error code and error message. For details of each administration interface, you can refer to the Javadoc shipped with the Management API.

Management API Javadoc

The Management API installation includes javadoc. Use the SAP Mobile Server javadoc for your complete API reference.

As you review the contents of this document, ensure you review the reference details documented in the javadoc delivered with these APIs. By default, javadoc is installed to *SMP_HOME*\Servers\UnwiredServer\AdminClientAPI\com.sybase.sup.adminapi\docs\api\index.html.

The top left navigation pane lists all packages installed with SAP Mobile Platform. The applicable documentation is available with `com.sybase.sup.admin.client` package. Click this link and navigate through the javadoc as required.

Documentation Roadmap for SAP Mobile Platform

SAP® Mobile Platform documents are available for administrative and mobile development user roles. Some administrative documents are also used in the development and test environment; some documents are used by all users.

See *Documentation Roadmap* in *Fundamentals* for document descriptions by user role.

Check the Product Documentation Web site regularly for updates: *http://sybooks.sybase.com/sybooks/sybooks.xhtml?id=1289&c=firsttab&a=0&p=categories*, then navigate to the most current version.

Management API Changes in Version 2.3

Changes in the Management API between 2.2 and 2.3 include enhancements for Agentry application support and minor changes for deployment, including topic cache.

For Management API changes prior to 2.2, see *Release Bulletin 2.1 ESD #3* on Product Documentation, the *Administration Client API Changes* topic: *http://dcx.sybase.com/index.html#sup0213/en/com.sybase.infocenter.dc00835.0213/doc/html/aro1345156276263.html*

SUPCluster API Changes

API changes for the `SUPCluster` interface, used to manage the cluster to which the SAP Mobile Server instance belongs.

Table 5. New SUPCluster Methods

Methods	Description
• `getHttpProxySetting` • `updateHttpProxySetting`	Manage HTTP proxy settings
• `getServerLogSetting()` • `updateServerLogSetting()`	Manage the SAP Mobile Server logs
• `getBESResponsePortioningLimit` • `setBESResponsePortioningLimit`	Manage the response portioning limit
• `isHttpLogEnable()` • `setHttpLogEnable` • `getMaxHttpLogFileSize()` • `setMaxHttpLogFileSize` • `getHttpLogFileName()` • `setHttpLogFileName` • `isSeparateHttpLogFile()` • `setSeparateHttpLogFile` • `isReuseHttpLogFile()` • `setReuseHttpLogFile` • `getHttpLogArchiveFileName()` • `setHttpLogArchiveFileName` • `isArchiveHttpLog()` • `setArchiveHttpLog` • `isCompressHttpLogArchive()` • `setCompressHttpLogArchive`	Manage the HTTP log settings

Table 6. Deprecated SUPCluster Properties

Property	Description
`sup.admin.maxThreads`	The maximum number of concurrent threads for the management port.
`sup.admin.iiops.maxThreads`	The maximum number of concurrent threads for the secure management port.

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Managing Clusters*

See also

- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPConfiguration API Changes

API changes for the `SUPConfiguration` interface, used to manage the SAP Mobile Platform configuration.

Table 7. New SUPConfiguration Methods

Methods	Description
• `getContext` • `commitClusterConfiguration` • `refreshClusterConfiguration`	Manage the cluster configuration
• `getManagementConfiguration` • `updateManagementConfiguration`	Manage management configurations
• `enableOCSPConfiguration` • `getOCSPConfiguration` • `updateOCSPConfiguration`	Manage the Online Certificate Status Protocol (OCSP) configuration

Methods	Description
• `getPerformanceConfiguration` • `updatePerformanceConfiguration`	Manage the performance configuration
• `getConfigurationCache` • `updateConfigurationCache` • `commitConfigurationCache` • `refreshConfigurationCache`	Manage the cache configuration
• `getReplicationConfiguration()` • `updateReplicationConfiguration()`	Manage replication configuration
• `getMessagingConfiguration()` • `updateMessagingConfiguration()`	Manage messaging configuration
• `getSolutionManagerConfiguration()` • `updateSolutionManagerConfiguration()`	Manage the Solution Manager configuration
• `getDCNConfiguration()` • `updateDCNConfiguration()`	Manage data change notification (DCN) configuration
• `getWebContainerCommonConfiguration` • `updateWebContainerCommonConfiguration` • `commitWebContainerConfiguration` • `refreshWebContainerConfiguration`	Manage the Hybrid Web Container configuration
• `getHTTPListenerConfigurations` • `addHTTPListenerConfiguration` • `deleteHTTPListenerConfiguration` • `updateHTTPListenerConfiguration`	Manage HTTP listener configurations

Methods	Description
• `getSSLSecurityProfileConfigurations()` • `addSSLSecurityProfileConfiguration()` • `deleteSSLSecurityProfileConfiguration()` • `updateSSLSecurityProfileConfiguration()`	Manage the SSL security profile configuration
• `getKeyStoreConfiguration` • `updateKeyStoreConfiguration`	Manage the keystore configuration
• `getTrustStoreConfiguration` • `updateTrustStoreConfiguration`	Manage the truststore configuration
• `refresh` • `commit`	Manage the server configurations locally

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Managing Clusters*

See also

- *SUPCluster API Changes* on page 387
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPServerConfiguration API Changes

API changes for `SUPServerConfiguration`, used to administer the SAP Mobile Server. With this release, most `SUPServerConfiguration` methods have been deprecated, except the `OutboundEnabler` and JVM-related API.

Table 8. New SUP Server Configuration Methods

Methods	Description
• `startOutboundEnablers` • `stopOutboundEnablers` • `getOutboundEnabler` • `getOutboundEnablers` • `saveOutboundEnabler` • `updateOutboundEnabler` • `deleteOutboundEnabler` • `deleteOutboundEnablers` • `addOutboundEnablerCertificates` • `getOutboundEnablerCertificates` • `deleteOutboundEnablerCertificateFile` • `deleteOutboundEnablerCertificateFiles`	Manage outbound enablers.

Table 9. Deprecated SUP Server Configuration Administration Methods

Methods	Description
• `getReplicationSyncServerConfiguration()` • `updateReplicationSyncServerConfiguration()`	Manage the replication synchronization server configuration
• `getMessagingSyncServerConfiguration()` • `updateMessagingSyncServerConfiguration()`	Manage the messaging synchronization server configuration
• `getConsolidatedDatabaseConfiguration()`	Manage the viewing of the consolidated database configuration

Methods	Description
• `getAdministrationListenerConfiguration()` • `updateAdministrationListenerConfiguration()`	Manage the administration listener configuration
• `getHTTPListenerConfigurations()` • `addHTTPListenerConfiguration()` • `deleteHTTPListenerConfiguration()` • `updateHTTPListenerConfiguration()`	Manage the HTTP listener configuration
• `getSecureHTTPListenerConfigurations()` • `addSecureHTTPListenerConfiguration()` • `deleteSecureHTTPListenerConfiguration()` • `updateSecureHTTPListenerConfiguration()`	Manage the HTTPS listener configuration
• `getSSLSecurityProfileConfigurations()` • `addSSLSecurityProfileConfiguration()` • `deleteSSLSecurityProfileConfiguration()` • `updateSSLSecurityProfileConfiguration()`	Manage the SSL security profile configuration
• `getKeyStoreConfiguration()` • `updateKeyStoreConfiguration()`	Manage the key store configuration
• `getTrustStoreConfiguration()` • `updateTrustStoreConfiguration()`	Manage the truststore configuration

Methods	Description
• `getApplePushNotificationConfigurations()` • `addApplePushNotificationConfiguration()` • `deleteApplePushNotificationConfiguration()` • `updateApplePushNotificationConfiguration()`	Manage Apple native notification configuration

Table 10. Deprecated SUPServerConfiguration Methods

Methods	Description
• `ReplicationSyncServer` • `ReplicationNotifier_Push` • `ReplicationPushNotificationGateway`	Manage the replication synchronization server
• `MessagingSyncServer`	Manage the messaging synchronization server
• `AdministrationListener` • `SecureAdministrationListener` • `HTTPListener` • `SecureHTTPListener`	Manage the administration listener
• `SSLSecurityProfile` • `TrustStore` • `ReplicationNotifier_Pull` • `OCSP`	Manage metadata-based server components
• `getSSLSecurityProfileConfiguration` • `addSSLSecurityProfileConfiguration` • `deleteSSLSecurityProfileConfiguration` • `updateSSLSecurityProfileConfiguration`	Manage the security profile configurations
• `getKeyStoreConfiguration` • `updateKeyStoreConfiguration`	Manage the keystore configuration

Methods	Description
• `getTrustStoreConfiguration` • `updateTrustStoreConfiguration`	Manage the truststore configuration
• `getHTTPListenerConfigurations` • `addHTTPListenerConfiguration` • `deleteHTTPListenerConfiguration` • `updateHTTPListenerConfiguration`	Manage HTTP listener configurations

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Controlling SAP Mobile Server (SUPServer Interface)*

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPRelayServer API Changes

API changes for the `SUPRelayServer` interface, used to manage the Relay Server or Relay Server cluster for the SAP Mobile Server.

Table 11. New SUPRelayServer Methods

New Methods	Description
• `getOutboundEnablerProxy` • `getOutboundEnablerProxies` • `saveOutboundEnablerProxy` • `updateOutboundEnablerProxy` • `deleteOutboundEnablerProxy` • `deleteOutboundEnablerProxies`	Manage outbound enabler proxy configurations

New Methods	Description
• `getRelayServer` • `getRelayServers` • `saveRelayServer` • `updateRelayServer` • `deleteRelayServer` • `deleteRelayServers`	Manage relay server configurations
• `getServerFarm` • `saveServerFarm` • `updateServerFarm` • `deleteServerFarm` • `deleteServerFarms`	Manage configurations of server farms
• `getServerNode` • `saveServerNode` • `updateServerNode` • `deleteServerNode` • `deleteServerNodes`	Manage configurations of server nodes

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Managing Relay Servers*

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPDomain API Changes* on page 396
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPDomain API Changes

API changes for `SUPDomain`, used to manage domains and their properties.

Table 12. New SUPDomain Methods

Methods	Description
• `exportPackage` • `importPackage`	Manage the importing and exporting of packages
• `getDefaultSecurityConfiguration` • `setDefaultSecurityConfiguration`	Mange the retrieval and setting of the default security configuration for a domain

Documented in: *Developer Guide: SAP Mobile Server Runtime*, *Managing Domains*

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPMobileWorkflow API Changes

API changes for `SUPMobileWorkflow`, used to administer mobile workflow packages. This API has been deprecated. Use the `SUPMobileHybridApp` API instead.

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPApplication API Changes* on page 398
- *SUPSecurityConfiguration API Changes* on page 399

SUPMobileHybridApp API Changes

API changes for `SUPMobileHybridApp`, used to manage Hybrid Apps and their properties.

Note: `SUPMobileHybridApp` replaces `SUPMobileWorklow`, which has been deprecated.

Table 13. New SUPMobileHybridApp Methods

Methods	Description
• `exportMobileHybridApp` • `importMobileHybridApp`	Manage the importing and exporting of Hybrid Apps
• `setDefaultMobileHybridAppForDevices` • `unsetDefaultMobileHybridAppforDevices` • `getMobileHybridAppCustomIcons`	Manage modifying Hybrid Apps
• `assignMobileHybridAppToTemplates()` • `unassignMobileHybridAppFromTemplates()` • `getTemplateHybridAppAssignments()` • `getTemplateMobileHybridAppStatus()` • `setDefaultMobileHybridAppforTemplates()` • `unsetDefaultMobileHybridAppforTemplates()`	Manage Hybrid App templates
• `getMobileHybridAppClientVariables` • `setMobileHybridAppClientVariables`	Manage client variables for Hybrid Apps

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Managing Mobile Workflows*

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396

SUPApplication API Changes

`SUPApplication` changes help manage applications, application connections, and application connection templates.

Table 14. New SUPApplication Methods

Methods	Description
`createApplication`	Create an Agentry application with or without a package
`deployAgentryApplication`	Deploy an Agentry application to the Agentry server.
• `startAgentryApplication` • `stopAgentryApplication` • `restartAgentryApplication`	Manage the application instance on the Agentry server.
• `getAgentryApplicationLogSetting` • `rollAgentryApplicationlog`	Manage the Agentry application log settings.
• `getAgentryApplication DefinitionFiles` • `getAgentryApplication LocalesFiles` • `getAgentryApplication ResourceFiles` • `getAgentryApplicationConfiguration` • `updateAgentryApplicationConnection-Setting`	Manage the Agentry application settings.
`GetApplicationType`	Retrieve the Agentry client SDK type.
`downloadAgentryApplication`	Download the Agentry client application.
`setAgentryApplicationStatus`	Enable or disable the Agentry application on the Agentry server.

Methods	Description
• `getAgentryActiveUsers` • `disconnectAgentryActiveUsers`	Manage Agentry application users.
• `getOperationSystemInfo` • `getAgentryApplicationNodeStatus`	Get the information from the Agentry server node.

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Managing Applications and Application Connections and Templates*

See also

- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388
- *SUPServerConfiguration API Changes* on page 391
- *SUPRelayServer API Changes* on page 394
- *SUPDomain API Changes* on page 396
- *SUPMobileWorkflow API Changes* on page 396
- *SUPMobileHybridApp API Changes* on page 397
- *SUPSecurityConfiguration API Changes* on page 399

SUPSecurityConfiguration API Changes

API updates for `SUPSecurityConfiguration`, used to define security providers for authentication, authorization, and auditing.

Table 15. New SUPSecurityConfiguration Methods

Methods	Description
• `createLogicalRole` • `deleteLogicalRole` • `getRoleMappings` • `updateLogicalRole`	Manage role mappings

Documented in: *Developer Guide: SAP Mobile Server Runtime*, see *Configuring Security Configurations*

See also

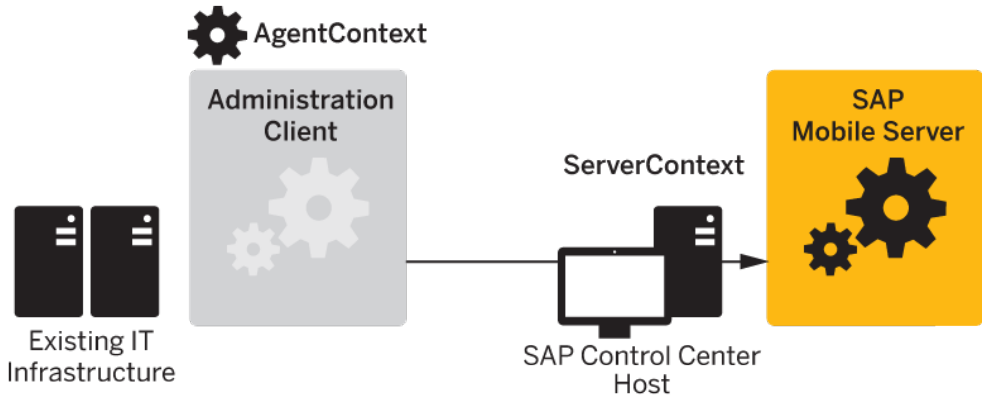
- *SUPCluster API Changes* on page 387
- *SUPConfiguration API Changes* on page 388

Management API

The client you create connects to SAP Mobile Server through SAP Control Center.

For example, as this illustration shows, connections are established using an `AgentContext` and a `ServerContext`:

Figure 1: Establishing Connections Using AgentContext and ServerContext



You do not need to create an instance of `AgentContext`. If none is defined, a default one is created by the `ServerContext` using its host value and default agent port (9999).

Note: Calling deleteXxxx() on a non-existent object causes the API to return silently and not throw an exception.

Contexts

A context is a lightweight, immutable object that is used to retrieve a specific administration interface instance. You create a connection to the SAP Mobile Server when you invoke an API (such as `ping`) on a supported interface (such as `SUPServer`), but not when context objects (such as `AgentContext` or `ServerContext`) are initialized. There is no need to maintain the states of contexts because state changes are not supported.

The administration client API includes these contexts:

Context	Description
`AgentContext`	Optional. Connects to SAP Mobile Platform, which acts as a proxy and manages the connection to the SAP Mobile Server instance identified in the `ServerContext`.
`DefaultAdmin-Context`	The super class of other concrete context classes.
`AdminContext`	The `AdminContext` is an interface that all context classes implement.
`ServerContext`	Required to connect to the SAP Mobile Server instance. If you do not specify an `AgentContext`, the `ServerContext` creates one for you using default values. See *Connecting to an SAP Mobile Server Instance*. Use this context to retrieve the `ClusterContext`.
`ClusterContext`	Required to manage a specific cluster. Use this context to retrieve the `DomainContext`.
`DomainContext`	Required to manage a specific domain. Use this context to retrieve the `PackageContext`.
`PackageContext`	Required to deploy and manage a package. Use this context to retrieve the `MBOContext`.
`MBOContext`	Required to manage a mobile business object. Use this context to retrieve the `OperationContext`.
`OperationCon-text`	Required to manage an operation.
`SecurityContext`	Required to manage the security for the platform.

For details on these classes, and the methods that implement them, see the Javadocs for `com.sybase.sup.admin.client`.

See also

- *Connecting to an SAP Mobile Server Instance* on page 406

Administration Interfaces

The Management API uses several interfaces that contain operations which can be invoked by custom code to perform management of the SAP Mobile Server.

The Management API includes these administration interfaces:

Interface	Includes Methods That
SUPServer	Command and control operations for an SAP Mobile Server instance, for example **start**, **stop**, and **ping**.
SUPCluster	Manage cluster security, monitoring configuration and domain creation for a cluster instance, and so on.
SUPDomain	Manage domains, deploy packages to a domain, set security configurations for a domain, and so on.
SUPPackage	Configure packages by setting up subscriptions, configuring cache groups, configuring endpoint properties, and so on.
SUPMobileBusinessObject	View mobile business object properties, operations, errors, endpoints, and so on.
SUPOperation	View operation properties, errors, endpoints, and so on.
SUPApplication	Manage applications, application connections, and application connection templates
SUPMonitor	Perform monitoring functions like viewing histories, summaries, details, and performance data for various platform components, and export data as required.
SUPServerLog	View, filter, delete and refresh logs, configure appenders, and so on, for SAP Mobile Server and its embedded services like replication and messaging synchronization.
SUPDomainLog	Configure domain log settings and view, filter, delete domain logs entries, and so on.
SUPConfiguration	Configure an SAP Mobile Server cluster.
SUPServerConfiguration	Configure JVM performance, and manage and configure Outbound Enablers.
SUPSecurityConfiguration	Create, manage, and configure a security configuration with at least one authentication provider. You can add other providers (authentication, authorization, attribution, and audit) as required.
SUPMobileWorkflow	This interface has been deprecated. Use the SUPMobileHybridApp interface instead. Manage and configure deployed mobile workflow packages.
SUPMobileHybridApp	Manage and configure deployed Hybrid App packages.
SUPRelayServer	Manage and configure Relay Servers used in SAP Mobile Platform.
SUPDeviceUser	This interface has been deprecated.

For details on these classes, and the methods that implement them, see the Javadocs for `com.sybase.sup.admin.client`.

See also

- *Client Metadata* on page 648

SUPObjectFactory

Once a context has been instantiated, pass it to a specific method of `SUPObjectFactory` to retrieve an administration interface. You can then start administration by calling methods of the interface.

The methods in the `SUPObjectFactory` class can accept an instance of `AdminContext` as a parameter. For example, to get an administration interface of `SUPServer`, you must create an instance of `ServerContext` with the correct information and pass it to `SUPObjectFactory.getSUPServer()`.

`SUPObjectFactory` provides a `shutdown()` method to cleanly shut down an application that uses the API. See the Javadocs for details.

Metadata

Metadata-based configuration is used by these administration components:

- SAP Mobile Server configuration properties
- SAP Mobile Server log configuration properties
- Security configurations and the providers used in those configurations
- Endpoint connection properties

See also

- *Client Metadata* on page 648

Exceptions and Error Codes

The Management API throws only one checked exception, `SUPAdminException`.

An error code is associated with each thrown `SUPAdminException`, so that developers can easily diagnose what happened when the exception is thrown.

Note: See *Developer Guide: SAP Mobile Server Runtime > Management API > Error Code Reference* for a list of predefined error codes.

Best Practices

Observe these best practices.

- **Thread safety –** The admin API client library is not thread safe, so external synchronization is required when calling the APIs concurrently from multiple threads.
- **Performance –** When managing multiple SAP Mobile Platform clusters, for performance considerations, it is best to connect to SAP Control Center co-located with the managed SAP Mobile Platform cluster. Although connecting to another SAP Control Center (as long as they share the same credentials) to perform management is supported, performance may not be as good as the former approach.
- **Commit configuration –** The `SUPServerConfiguration`, `SUPSecurityConfiguration`, and `SUPConfiguration` APIs use a local cache and upload changes later to the SAP Mobile Server. You must perform a commit to upload changes to the SAP Mobile Server and then refresh.
- **Error handling –** For error handling, use the error code returned in the exception. Also, by calling the `getErrorCode()` method of `SUPAdminException`, a string representation of the structured error code can be retrieved, which can further the centralized error code handling.

Getting Started with Client Development

An SAP Mobile Platform development cycle includes several steps.

1. *Required Files*

   The following files are required in your class path.
2. *Starting Required Services*

   Before beginning development, you must start required SAP Mobile Platform services.
3. *Connecting to an SAP Mobile Server Instance*

   AgentContext and ServerContext are lightweight, immutable Java objects.
4. *Developing Client Contexts, Objects, and Operations*

   Once you have an instance of ServerContext, you can create other contexts from it.

Prerequisites

Review this list to understand what prerequisites to consider before starting the development of a custom administration tool within an existing enterprise-level adminstration framework.

- A development environment that supports Java development, for example, Eclipse.
- Optionally, if you want to install SAP Control Center, it must be installed on the same host as SAP Mobile Server.

Required Files

The following files are required in your class path.

- sup-admin-pub-client.jar
- sup-admin-pub-common.jar
- castor-1.2.jar
- commons-beanutils-core-1.7.0.jar
- commons-lang-2.2.jar
- commons-logging-1.1.1.jar
- commons-pool-1.4.jar
- sup-at-lite.jar
- sup-mms-admin-api-lite.jar
- uaf-client.jar
- log4j-1.2.6.jar
- commons-codec-1.3.jar
- log4j.properties (the file residing in the sample folder can be a template)

By default, the sup-admin-pub-client.jar, and sup-admin-pub-common.jar files are installed to the *SMP_HOME*`\Servers\UnwiredServer\AdminClientAPI\com.sybase.sup.adminapi` folder. All other jar files can be found in the *SMP_HOME*`\Servers\UnwiredServer\AdminClientAPI\com.sybase.sup.adminapi\lib` folder.

Note: If you have Xerces J-Parser installed and have xerces.jar (the parser class files) in your class path, the xerces.jar library may cause a class conflict with SAP Mobile Platform. This problem only occurs in certain circumstances when JDK 6 is used with Xerces. If this problem occurs, you must remove this jar from your class path.

Starting Required Services

Before beginning development, you must start required SAP Mobile Platform services.

Prerequisites

Ensure the required services are installed on the same host.

Task

By starting required services, you start the servers and dependent services. For a complete list of SAP Mobile Platform services, see *System Administration > System Reference > SAP Mobile Platform Windows Services*.

1. Click the **Start SAP Mobile Platform Services** desktop shortcut to start SAP Mobile Server and the dependent services.

2. Use the Services Control Panel to verify that the Windows service named SAP Control Center X.X is started. If it has not, start it by selecting the service and clicking **Start**.

Connecting to an SAP Mobile Server Instance

`AgentContext` and `ServerContext` are lightweight, immutable Java objects.

Creating either of these objects does not immediately establish a connection to either SAP Control Center or the SAP Mobile Server.

1. (Optional) Create an `AgentContext` object.

   The default constructor creates an instance with host="localhost", port="9999", user="" and password="". The constructor in this sample creates an instance with host="<host name>", port="9999", user="*supAdmin*" and password="*supPwd*":

   ```
   AgentContext agentContext = new AgentContext();
   agentContext = new AgentContext("<host name>", 9999, "supAdmin",
   "supPwd");
   ```

2. Create a `ServerContext` object.

   Every `ServerContext` instance has an `AgentContext` instance. When you instantiate `ServerContext`, you can pass an instance of `AgentContext` to the constructor. If you do not specify an `AgentContext`, the constructor automatically creates an `AgentContext` with the same host, user name, and password values as those defined in the `ServerContext`.

   It also assigns 9999 as the port number for `AgentContext`, for these reasons:

   - SAP Mobile Server and SAP Control Center are installed on the same host, and they share the same security provider.
   - By default, SAP Control Center listens on port 9999. The administration API connects to SAP Control Center using this port.

   This sample creates a `ServerContext` that uses values of supAdmin and supPwd for the user name and password, and uses secure port (2001) by specifying "true" in the last parameter:

   ```
   ServerContext serverContext = new ServerContext();
   serverContext = new ServerContext("<host name>", 2001, "supAdmin",
   "supPwd", true);
   ```

   The usage of secure port does not require server certificate installation on the client-side. It is assumed that server is configured with a valid and secure certificate for transport level security, and client authentication is done via the security provider assigned to the "admin" security configuration.

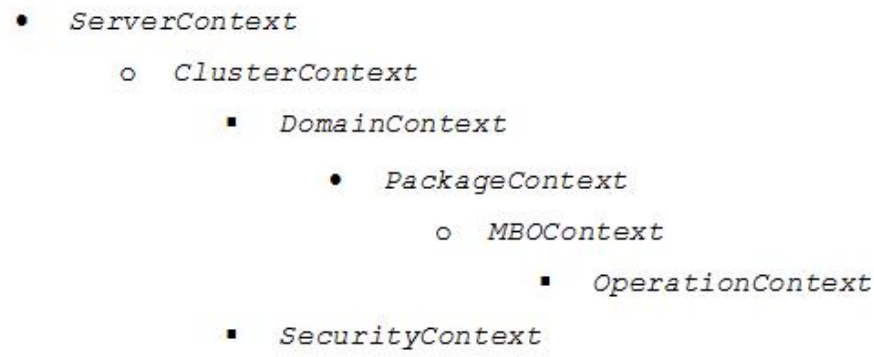
See also

- *Contexts* on page 400

Developing Client Contexts, Objects, and Operations

Once you have an instance of `ServerContext`, you can create other contexts from it.

1. Create required client artifacts.
   - Create the context objects you require. The following diagram illustrates the subclasses of `AdminContext` and their logical hierarchy.

     The following code fragment creates multiple contexts for cluster, security, domain, package, mobile business objects, and operations:

     ```
     ClusterContext clusterContext =
     serverContext.getClusterContext("<cluster name>");
     SecurityContext securityContext =
     clusterContext.getSecurityContext("<security configuration
     name>");
     DomainContext domainContext =
     clusterContext.getDomainContext("<domain name>");
     PackageContext packageContext =
     domainContext.getPackageContext("<package name>");
     MBOContext mboContext = packageContext.getMBOContext("<MBO
     name>");
     OperationContext operationContext =
     mboContext.getOperationContext("<operation name>");
     ```

   - Call methods of `SUPObjectFactory` to create the administration interface required. For example, to create an object of `SUPServer`, pass an instance of `ServerContext` to `SUPObjectFactory` by calling:

     ```
     SUPObjectFactory.getSUPServer(serverContext);
     ```

2. Once the administration session ends, clean the resources held by the API by calling `SUPObjectFactory.shutdown()`. This method is provided only to help your administration application exit cleanly, and is not designed to be called after each administration operation.

   For example:

   ```
   SUPObjectFactory.shutdown();
   ```

3. Build the client application.

Code Samples

Use the javadoc for the Management API package with the interface code samples to understand how to program a custom administration client.

Code samples are organized by the interface used.

Controlling SAP Mobile Server (SUPServer Interface)

The `SUPServer` interface allows you to manage the SAP Mobile Server.

Operations you can perform with this interface include:

- Starting an administration session for an SAP Mobile Server instance.
- Retrieving SAP Mobile Server properties and status.
- Performing command and control actions like starting and stopping.

Session Start-up

Starts the management of an SAP Mobile Server instance.

Syntax

```
public static SUPServer getSUPServer(ServerContext serverContext)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Session Start-up**

  ```
  SUPServer supServer =
  SUPObjectFactory.getSUPServer(serverContext);
  ```

Usage

When an instance of `SUPServer` is returned from the SUPObjectFactory, call its method. The state of the connection to the SAP Mobile Server is automatically managed; an explicit connection to the SAP Mobile Server is not required.

Server Properties Retrieval

Retrieves the general properties of the SAP Mobile Server instance.

Syntax

```
ServerVO getProperties() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Getting properties –** gets the properties for a server instance named ServerVO:

  ```
  ServerVO svo = supServer.getProperties();
  ```

Status Verification

Checks if the SAP Mobile Server instance is available.

Syntax

```
void ping() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Ping –** pings an SAP Mobile Server to see if it is available:

  ```
  supServer.ping();
  ```

Server Start-up

Starts an SAP Mobile Server instance.

Syntax

```
void start() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Startup**

  ```
  supServer.start();
  ```

Server Shutdown

Stops an SAP Mobile Server instance.

Syntax

```
void stop() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Shutdown**

  ```
  supServer.stop();
  ```

Server Restart

Restarts an SAP Mobile Server instance.

Syntax

```
void restart() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Restart**

  ```
  supServer.restart();
  ```

Managing Clusters

The `SUPCluster` interface allows you manage the cluster to which the SAP Mobile Server instance belongs. You can also manage SAP Mobile Server configurations for all nodes in the cluster

Operations you can perform with this interface include:

- Listing member servers, suspending and resuming member servers
- Listing, creating, and deleting domains
- Listing, creating, and deleting security configurations
- Listing, creating, updating, and deleting monitoring configurations, deleting monitoring data

- Listing, creating, updating, and deleting domain administrators
- Listing, updating, and deleting administration users
- Retrieving licensing information.

The SAP Mobile Server configuration consists of the following components, all of which are metadata-based:

- Communication
  - Administration Listener
  - HTTP / HTTPS Listener
  - SSL Security Profile
  - Key Store
  - Trust Store
- Messaging
- Replication

Note: The `SUPCluster` interface also contains methods for managing monitoring profiles in a cluster, and monitoring data store policies and domain log data store policies. These methods are described in *Developer Guide: SAP Mobile Server Runtime > Management API > Code Samples > Monitoring SAP Mobile Platform Components*.

Start Cluster Management

Starts the management of an SAP Mobile Server cluster.

Syntax

```
public static SUPCluster getSUPCluster(ClusterContext
clusterContext) throws SUPAdminException;
```

Examples

- **Cluster startup –** starts the management of the specified cluster.

  ```
  clusterContext = serverContext.getClusterContext("<cluster
  name>");
  SUPCluster supCluster =
  SUPObjectFactory.getSUPCluster(clusterContext);
  ```

Usage

When an instance of `SUPCluster` is returned from the `SUPObjectFactory`, call its method.

SAP Mobile Servers Retrieval

Retrieves a list of servers that are members in a cluster.

Syntax

```
Collection<ServerVO> getServers() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Getting member servers –** lists the servers that are members of a cluster:

  ```
  Collection<ServerVO> svos = supCluster.getServers();
  ```

Resume an SAP Mobile Server

Resumes an SAP Mobile Server in a cluster.

Syntax

```
void resume(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Resume a server –** resumes an SAP Mobile Server in a cluster:

  ```
  supCluster.resume("<member server name>");
  ```

Suspend an SAP Mobile Server

Suspends a member server in a cluster.

Prerequisite: The server must belong to a Relay Server.

Syntax

```
void suspend(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Suspend a server –** suspends an SAP Mobile Server in a cluster:
  ```
  supCluster.suspend("<member server name>");
  ```

Retrieval of Domains

Retrieves the domains in a cluster.

Syntax

```
Collection<String> getDomains() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of domains –** retrieves the domains in a cluster.
  ```
  Collection<String> domains = supCluster.getDomains();
  ```

Creation of Domains

This method has been deprecated. Creates domains in a cluster.

Syntax

```
void createDomain(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Creation of domains –** creates,in the cluster, the domain specified by "<domain name>".
  ```
  supCluster.createDomain("<domain name>");
  ```

Deletion of Domains

Deletes domains from a cluster.

Syntax

```
void deleteDomains(Collection<String> names) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of domains –** deletes, from the cluster, the domains in the specified array.

```
supCluster.deleteDomains(Arrays.asList(new String[] {
"<domain name 1>", "<domain name 2>" }));
```

Retrieval of Security Configurations

Retrieves a list of security configurations in a cluster.

Syntax

```
Collection<String> getSecurityConfigurations() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of security configurations –** lists the security configurations in a cluster.

```
Collection<String> securityConfigurations=
supCluster.getSecurityConfigurations();
```

Creation of a Security Configuration

Creates a security configuration in a cluster.

Syntax

```
void createSecurityConfiguration(String name) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Creation of a security configuration –** creates a security configuration of the specified name in the cluster:

```
supCluster.createSecurityConfiguration("<security configuration
name>");
```

Deletion of a Security Configuration

Deletes a security configuration from the cluster.

Syntax

```
void deleteSecurityConfigurations(Collection<String> names) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of a security configuration –** deletes a security configuration from the cluster.

  ```
  supCluster.deleteSecurityConfigurations(securityConfigurations);
  ```

Retrieval of Domain Administrators

Retrieves a list of domain adminstrators in a cluster.

Syntax

```
Collection<DomainAdministratorVO> getDomainAdministrators() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of domain administrators –** retrieves a list of domain administrators in a cluster:

  ```
  //List domain administrators
  for (DomainAdministratorVO davo :
  supCluster.getDomainAdministrators()) {
      System.out.println(davo.getLoginName());
  }
  ```

Creation of a Domain Administrator

Creates a domain adminstrator in the cluster.

Syntax

```
void createDomainAdministrator(DomainAdministratorVO
domainAdministrator) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Creation of a domain administrator –** creates a domain adminstrator in the cluster:

```
//Create a domain administrator
DomainAdministratorVO davo = new DomainAdministratorVO();
davo.setLoginName("<new domain administrator login name>");
supCluster.createDomainAdministrator(davo);
```

Update of a Domain Administrator

Updates a domain administrator in the cluster.

Syntax

```
void updateDomainAdministrator(DomainAdministratorVO
domainAdministrator) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update of a domain adminstrator –** updates a domain administrator in the cluster by setting the login name and company name:

```
//Update a domain administrator
davo = new DomainAdministratorVO();
davo.setLoginName("<domain administrator login name>");
davo.setCompanyName("SAP");
supCluster.updateDomainAdministrator(davo);
```

Deletion of a Domain Administrator

Deletes a domain administrator from the cluster.

Syntax

```
void deleteDomainAdministrator(DomainAdministratorVO
domainAdministrator) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of a domain administrator –** deletes the specified domain administrator from the cluster:

```
//Delete a domain administrator
davo = new DomainAdministratorVO();
davo.setLoginName("<domain administrator login name>");
supCluster.deleteDomainAdministrator(davo);
```

Retrieval and Setting of Authentication Cache Timeout

Retrieves and sets the authentication cache timeout from a cluster.

Syntax

```
Long timeout getAuthenticationCacheTimeout () throws
SUPAdminException;

void setAuthenticationCacheTimeout(user, timeout);
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve and set authentication cache timeout –** retrieves and sets the specified authentication cache timeout from a cluster:

```
Long timeout = supCluster.getAuthenticationCacheTimeout("admin");
supCluster.setAuthenticationCacheTimeout("admin", 200L);
timeout = supCluster.getAuthenticationCacheTimeout("admin");
assertEquals(new Long(200), timeout);
```

Retrieval and Setting of Cluster Properties

Retrieves and sets the properties of a cluster.

Syntax

```
ClusterPropertiesVO getClusterProperties() throws SUPAdminException;


void setClusterProperties(vo)
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve or set cluster properties**

```
//Get cluster properties
ClusterPropertiesVO vo = supCluster.getClusterProperties();
//change cluster properties
vo.setClusterSyncDataSharedPathEnabled(true);
vo.setClusterSyncDataSharedPath("\\\\myhost\\newSharedPath");
//Set cluster properties
supCluster.setClusterProperties(vo);
```

Retrieval and Setting of Maximum Allowed Authentication Failures

Retrieves and sets the maximum number of allowed authentication failures.

Syntax

```
Integer getMaximumAllowedAuthenticationFailure(String
securityConfiguration) throws SUPAdminException;

void setMaximumAllowedAuthenticationFailure(String
securityConfiguration, Integer maximumAllowed) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve or set cluster properties**

```
//Get maximum allowed authentication failures
Integer threshold=
supCluster.getMaximumAllowedAuthenticationFailure("admin");
//Set maximum allowed authentication failures
supCluster.setMaximumAllowedAuthenticationFailure("admin", 20);
```

Retrieval and Setting of Authentication Lock Duration

Retrieves and sets the duration for authentication lock.

Syntax

```
Integer getAuthenticationLockDuration(String securityConfiguration)
throws SUPAdminException;

void setAuthenticationLockDuration(String securityConfiguration,
Integer duration) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve or set authentication lock duration**

```
Integer duration =
supCluster.getAuthenticationLockDuration("admin");
supCluster.setAuthenticationLockDuration("admin", 3000);
```

Set HTTP Proxy Setting

Set the HTTP proxy setting.

Syntax

```
setHttpProxySetting
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set HTTP Proxy Setting**

```
HttpProxySettingVO vo = cluster.getHttpProxySetting();
vo.setMessagingProxyMaxConnectionsPerHost(5500);
vo.setMessagingProxyThreadCounts(200);
vo.setReplicationProxyThreadCounts(2340);
vo.setMessagingProxyConnectionTimeout(100);
vo.setMessagingProxyConnectionIdleTime(150);
vo.setMessagingProxyResponseTimeout(200);
cluster.updateHttpProxySetting(vo);
```

Retrieve HTTP Proxy Setting

Retrieve the HTTP proxy setting.

Syntax

```
HttpProxySettingVO getHttpProxySetting()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Get HTTP Proxy Setting**

```
HttpProxySettingVO hp = supCluster.getHttpProxySetting();
System.out.println(hp.getMessagingProxyMaxConnectionsPerHost());
System.out.println(hp.getMessagingProxyThreadCounts());
System.out.println(hp.getReplicationProxyThreadCounts());
System.out.println(hp.getMessagingProxyConnectionIdleTime());
System.out.println(hp.getMessagingProxyConnectionTimeout());
System.out.println(hp.getMessagingProxyResponseTimeout());
```

Update HTTP Proxy Setting

Update the HTTP proxy setting.

Syntax

```
void updateHttpProxySetting(HttpProxySettingVO proxySetting)
      throws SUPAdminException;
```

Parameters

- **proxySetting –** The proxy setting that you want to update.

Returns

If successful, returns silently. If unsuccessful, throws `SUPAdminException`.

Examples

- **Update HTTP Proxy Setting**

```
HttpProxySettingVO hp = new HttpProxySettingVO();
hp.setMessagingProxyThreadCounts(20);
hp.setReplicationProxyThreadCounts(17);
hp.setMessagingProxyMaxConnectionsPerHost(3000);
supCluster.updateHttpProxySetting(hp);
```

- **Update HTTP Proxy Setting With Messaging Properties**

```
HttpProxySettingVO vo = cluster.getHttpProxySetting();
vo.setMessagingProxyMaxConnectionsPerHost(5500);
vo.setMessagingProxyThreadCounts(200);
vo.setReplicationProxyThreadCounts(2340);
vo.setMessagingProxyConnectionTimeout(100);
vo.setMessagingProxyConnectionIdleTime(150);
vo.setMessagingProxyResponseTimeout(200);
cluster.updateHttpProxySetting(vo);
```

Update HTTP Log Setting

Update the HTTP log setting.

Syntax

```
setHttpLogSetting
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update HTTP Log Setting**

```
ServerLogSettingVO vo =cluster.getServerLogSetting();
vo.setHttpLogEnable(true);
vo.setArchiveHttpLog(!vo.isArchiveHttpLog());
vo.setCompressHttpLogArchivement(!
vo.isCompressHttpLogArchivement());
vo.setHttpLogArchiveFileName("httpLog.txt");
vo.setMaxHttpLogFileSize("100K");
vo.setReuseHttpLogFile(!vo.isReuseHttpLogFile());
vo.setSeprateHttpLogFile(!vo.isSeprateHttpLogFile());
cluster.updateServerLogSetting(vo);
```

Retrieve Cluster Context for Web Container Configuration

Retrieve the cluster configuration from server and cache it locally. Only a SAP Mobile Platform administrator or the SAP Mobile Platform help desk can perform this.

This refreshes the cluster configurations, which includes following components: Management, Replication, Messaging, SolutionManager, RelayServer, SecurityProfile, KeyStore, TrustStore, OCSP, and Performance. The returned `ConfigurationValidationStatus` contains the validation status of the cluster configuration at server side.

Syntax

```
ConfigurationValidationStatus refreshClusterConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Commit Server Changes in Local Cache Refresh

Deliver the local server configuration to the server to be saved. Only a SAP Mobile Platform administrator can perform this.

All the metadata based configurations are delivered, including cluster configuration, Web container configuration, and configuration cache. The returned `ConfigurationValidationStatus` contains the validation status of the delivered SAP Mobile Platform configuration at server side.

Syntax

```
ConfigurationValidationStatus commit()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Refresh Server Changes from Local Cache

Retrieve all SAP Mobile Platform configurations from server and cache it locally. Only a SAP Mobile Platform administrator or the SAP Mobile Platform help desk can perform this.

This refreshes all meta-data based configurations, including: cluster configuration, web container configuration, and configuration cache. The returned `ConfigurationValidationStatus` contains the validation status of the SAP Mobile Platform configuration at server side.

Syntax

```
ConfigurationValidationStatus refresh()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Retrieve Server Context for Cluster

Retrieve the server context associated with this cluster configuration.

Syntax

```
ClusterContext getContext();
```

Returns

Returns the server context.

Retrieve Management Configuration

Retrieve the management related configuration.

Syntax

```
SUPConfigurationComponentVO getManagementConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException .

Examples

- **Retrieve Management configuration**

```
SUPConfiguration supConf = SUPObjectFactory
        .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf

        .getManagementConfiguration();
System.out.println(confVO.getProperties);
```

Update Management Configurations

Update the properties of the management related configuration.

Syntax

```
void updateManagementConfiguration(SUPConfigurationComponentVO
configurationComponent)
      throws SUPAdminException;
```

Parameters

- **portVO –**

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException

Examples

- **Update Management Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
        .getManagementConfiguration();
confVO.getProperties().put("sup.admin.port", "2003");
```

```
supConf.updateManagementConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Security Profile Configuration

Retrieve a list of SSL security profile configurations.

Syntax

```
Collection<SUPConfigurationComponentVO>
getSSLSecurityProfileConfigurations()
     throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve Security Profiles**

```
SUPConfiguration supConf = SUPObjectFactory
          .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
for(SUPConfigurationComponentVO scvo :
supConf.getSSLSecurityProfileConfigurations()){
   System.out.println(scvo.getID());
   System.out.println(scvo.getType());
   System.out.println(scvo.getProperties());
}
```

Add Security Profile Configuration

Add a new SSL security profile configuration.

Syntax

```
 void addSSLSecurityProfileConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

-
```
scvo = new SUPConfigurationComponentVO(
SUPConfigurationComponentType.SSLSecurityProfile);
```

```
Map<String, String> properties = scvo.getProperties();
properties.put("sup.security.profile.name", name);
properties.put("securityCharacteristics", "intl");
properties.put("certificateLabel", "sample1");
scvo.setProperties(properties);
supConf.addSSLSecurityProfileConfiguration(scvo);
commit(supConf);
```

Delete Security Profile Configuration

Delete a SSL security profile configuration.

Syntax

```
void deleteSSLSecurityProfileConfiguration(String serverComponentID)
      throws SUPAdminException;
```

Parameters

- **serverComponentID –** The ID of the security profile configuration you want to delete.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Update Security Profile Configuration

Update a SSL security profile configuration.

Syntax

```
void
updateSSLSecurityProfileConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponent –** The server component that you want to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Security Profile Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO scvo = supConf
        .getSSLSecurityProfileConfigurations().iterator().next();
scvo.getProperties().put("certificateLabel", "mycertificate");
```

```
supConf.updateSSLSecurityProfileConfiguration(scvo);
supConf.commitClusterConfiguration();
```

Retrieve Keystore Configuration

Retrieve the properties of the key store configuration.

Syntax

```
SUPConfigurationComponentVO getKeyStoreConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException .

Examples

- **Retrieve**

```
 SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getKeyStoreConfiguration();
System.out.println(confVO.getProperties);
```

Update Keystore Configuration

Update the key store configuration.

Syntax

```
void updateKeyStoreConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponent –** The server component you want to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Keystore Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
        .getKeyStoreConfiguration();
```

```
confVO.getProperties().put("sup.sync.sslkeystore_password", "
changeit");
supConf.updateKeyStoreConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Trust Store Configuration

Retrieve the properties of the trust store configuration.

Syntax

```
SUPConfigurationComponentVO getTrustStoreConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException .

Examples

- **Update TrustStore Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getTrustStoreConfiguration();
System.out.println(confVO.getProperties);
```

Update Trust Store Configuration

Update the trust store configuration.

Syntax

```
void updateTrustStoreConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponent –** The server component that you want to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update TrustStore Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
```

```
        .getTrustStoreConfiguration();
confVO.getProperties().put("sup.sync.sslkeystore_password", "
changeit");
supConf.updateTrustStoreConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Enable/Disable OCSP Configuration

Enable or disable OCSP configuration.

Syntax

```
void enableOCSPConfiguration(Boolean flag)
      throws SUPAdminException;
```

Parameters

- **flag –** Set the flag to TRUE to enable and to FALSE to disable.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Enable OCSP Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
          .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
supConf.enableOCSPConfiguration(true);
supConf.commitClusterConfiguration();
```

Retrieve OCSP Configuration

Retrieve the OCSP configuration. Only a SAP Mobile Platform administrator or the SAP Mobile Platform help desk can perform this.

Syntax

```
SUPConfigurationComponentVO getOCSPConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve OCSP Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
```

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getOCSPConfiguration();
System.out.println(confVO.getProperties);
```

Update OCSP Configuration

Update the OCSP configuration. Only a SAP Mobile Platform administrator can perform this.

Syntax

```
void updateOCSPConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponent –** The server component that you want to update.

Returns

If successful, returns silently. If unsuccessful, throws `SUPAdminException`.

Examples

- **Update OCSP Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getOCSPConfiguration();
confVO.getProperties().put("ocsp.responderURL", "http://
apple.com");
supConf.updateOCSPConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Performance Configuration

Retrieve the performance configuration.

Syntax

```
SUPConfigurationComponentVO getPerformanceConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve Performance Configuration**

```
 SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getPerformanceConfiguration();
System.out.println(confVO.getProperties);
```

Update Performance Configuration

Update the properties of the performance configuration.

Syntax

```
void updatePerformanceConfiguration(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponent –** The sever component that you want to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Performance Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getPerformanceConfiguration();
confVO.getProperties().put("sup.msg.inbound_count", "70");
supConf.updatePerformanceConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Cache Configuration

Retrieve the distribution configuration. Only a SAP Mobile Platform administrator and SAP Mobile Platform help desk can perform this.

Syntax

```
 SUPConfigurationComponentVO getConfigurationCache()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve Configuration Cache**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshConfigurationCache();
SUPConfigurationComponentVO confVO = supConf
      .getConfigurationCache();
System.out.println(confVO.getProperties);
```

Update Cache Configuration

Update the properties of the cache configuration. Only a SAP Mobile Platform administrator can do this.

Syntax

```
 void updateConfigurationCache(SUPConfigurationComponentVO
serverComponent)
      throws SUPAdminException;
```

Parameters

- **serverComponentID –** The ID of the server component you want to update.
- **serverComponent –** The server component you want to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Configuration Cache**

```
supConf.refreshConfigurationCache();
SUPConfigurationComponentVO confVO =
supConf.getConfigurationCache();
confVO.getProperties().put("cache.core.pool.size", "100");
supConf.updateConfigurationCache(confVO);
supConf.commitConfigurationCache();
```

Retrieve Web Container Configuration

Retrieve the common web container configuration.

Syntax

```
SUPConfigurationComponentVO getWebContainerCommonConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve Common WebContainer Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf. refreshWebContainerConfiguration();
SUPConfigurationComponentVO confVO = supConf

      . getWebContainerCommonConfiguration();
System.out.println(confVO.getProperties);
```

Update Web Container Configuration

Update the properties of the administration listener configuration.

Syntax

```
void
updateWebContainerCommonConfiguration(SUPConfigurationComponentVO
webContainerComponent)
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Common WebContainer Configuration**

```
supConf.refreshWebContainerConfiguration();
SUPConfigurationComponentVO confVO = supConf

      .getWebContainerCommonConfiguration();
confVO.getProperties().put("maxFormContentSize", "2500000");
confVO.getProperties().put("gzipFilter", "true");
supConf.updateWebContainerCommonConfiguratio(confVO);
supConf.commitWebContainerConfiguration();
```

Update Messaging Configuration

Update the properties of the messaging related configuration.

Syntax

```
void updateMessagingConfiguration(SUPConfigurationComponentVO
configurationComponent)
      throws SUPAdminException;
```

Parameters

- **configurationComponent –** The messaging component configuration properties to update to.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Messaging Configuration**

```
SUPConfigurationComponentVO confVO =
supConf.getMessagingConfiguration();
confVO.getProperties().put("msg.http.server.proxy.ports",
"5002");
supConf.updateMessagingConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Messaging Configuration

Retrieve the messaging related configuration.

Syntax

```
SUPConfigurationComponentVO getMessagingConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Get Messaging Configuration**

```
SUPConfiguration supConf =
SUPObjectFactory.getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO =
supConf.getMessagingConfiguration();
System.out.println(confVO.getProperties);
```

Update Replication Configuration

Update the properties of the replication related configuration.

Syntax

```
void updateReplicationConfiguration(SUPConfigurationComponentVO
configurationComponent)
      throws SUPAdminException;
```

Parameters

- **configurationComponent –** The replication configuration component properties to update to.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update SUP Replication Configuration**

```
supConf.updateReplicationConfiguration(confVO)
confVO.getProperties().put("sup.sync.port", "2480");
confVO.getProperties().put("sup.sync.httpsport", "2481");
confVO.getProperties().put("sup.sync.protocol", "http,https");
confVO.getProperties().put("sup.sync.e2ee_type", "RSA");
confVO.getProperties().put("sup.sync.e2ee_private_key",
"Repository/Certificate/e2ee_private_key.key");
confVO.getProperties().put("sup.sync.e2ee_private_key_password",
"sybase1");
confVO.getProperties().put("sup.sync.e2ee_public_key",
"Repository/Certificate/e2ee_public_key.key");
confVO.getProperties().put("sup.sync.certificate", "Repository/
Certificate/https_server_identity.crt");
confVO.getProperties().put("sup.sync.certificate_password",
"sybase1");
confVO.getProperties().put("sup.sync.public.certificate",
"Repository/Certificate/https_public_cert.crt");
confVO.getProperties().put("relayserver.trusted_certs", "");
confVO.getProperties().put("sup.user.options", "-zf");
supConf.updateReplicationMessagingConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve Replication Configuration

Retrieve the replication related configuration.

Syntax

```
SUPConfigurationComponentVO getReplicationConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve SUP Replication Configuration**

```
SUPConfiguration supConf =
SUPObjectFactory.getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO =
supConf.getReplicationConfiguration();
System.out.println(confVO.getProperties);
```

Retrieve HTTP Listener Configuration

Retrieve a list of HTTP listener configurations.

Syntax

```
Collection<SUPCOnfigurationComponentVO>
getHTTPListenerConfigurations()
      throws SUPAdminException;
```

Returns

If successful, returns a collection of HTTP listener configurations. If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve HTTP Listener Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshWebContainerConfiguration();
for(SUPConfigurationComponentVO scvo :
supConf.getHTTPListenerConfigurations()){
   System.out.println(scvo.getID());
   System.out.println(scvo.getType());
   System.out.println(scvo.getProperties());
}
```

Add HTTP Listener Configuration

Add a new HTTP listener configuration.

Syntax

```
void addHTTPListenerConfiguration(SUPConfigurationComponentVO
webContainerComponent)
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Add HTTP Listener Configuration**

```
supConf.refreshWebContainerConfiguration();
SUPConfigurationComponentVO confVO =
supConf
        .getHTTPListenerConfigurations().iterator().next();
confVO.getProperties().put("port", "8100");
supConf.addHTTPListenerConfiguration(confVO);
supConf.commitWebContainerConfiguration();
```

Delete HTTP Listener Configuration

Delete a HTTP listener configuration .

Syntax

```
 void deleteHTTPListenerConfiguration(String
httpListenerComponentID)
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns SUPAdminException.

Examples

- **Delete HTTP Listener Configuration**

```
supConf.refreshWebContainerConfiguration();
SUPConfigurationComponentVO confVO = supConf
        .getHTTPListenerConfigurations().iterator().next();
supConf.deleteHTTPListenerConfiguration(confVO.getID());
supConf.commitWebContainerConfiguration();
```

Update HTTP Listener Configuration

Update a HTTP listener configuration.

Syntax

```
void updateHTTPListenerConfiguration(SUPConfigurationComponentVO
webContainerComponent)
      throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update HTTP Listener Configuration**

```
supConf.refreshWebContainerConfiguration();
SUPConfigurationComponentVO confVO = supConf
        .getHTTPListenerConfigurations().iterator().next();
confVO.getProperties().put("maxThreads", "50");
supConf.updateHTTPListenerConfiguration(confVO);
supConf.commitWebContainerConfiguration();
```

Retrieve Solution Manager Configuration

Retrieve the solution manager configuration.

Syntax

```
SUPConfigurationComponentVO getSolutionManagerConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve Solution Manager Configuration**

```
SUPConfiguration supConf = SUPObjectFactory
      .getSUPConfiguration(clusterContext);
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getSolutionManagerConfiguration();
System.out.println(confVO.getProperties);
```

Update Solution Manager Configuration

Update the properties of the solution manager configuration.

Syntax

s

```
void updateSolutionManagerConfiguration(SUPConfigurationComponentVO
configurationComponent)
      throws SUPAdminException;
```

Parameters

- **configurationComponent –** The solution manager configuration properties to upgrade to.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Solution Manager Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO = supConf
      .getSolutionManagerConfiguration();
confVO.getProperties().put("com.sap.solutionmanager.url",
"http://solutionManagerHost");
supConf.updateSolutionManagerConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Retrieve DCN Configuration

Retrieve the DCN Configuration.

Syntax

```
SUPConfigurationComponentVO getDCNConfiguration()
      throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Get DCN Configuration**

```
SUPConfiguration supConf =
SUPObjectFactory.getSUPConfiguration(clusterContext);
```

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO =
supConf.getDCNConfiguration();
System.out.println(confVO.getProperties);
```

Update DCN Configuration

Update the DCN configuration properties.

Syntax

```
void updateDCNConfiguration(SUPConfigurationComponentVO
configurationComponent)
      throws SUPAdminException;
```

Parameters

- **configurationComponent –** The DCN configuration properties to update to.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update DCN Configuration**

```
supConf.refreshClusterConfiguration();
SUPConfigurationComponentVO confVO =
supConf.getDCNConfiguration();
confVO.getProperties().put("sup.dcn.http.get.enabled","true");
supConf.updateDCNConfiguration(confVO);
supConf.commitClusterConfiguration();
```

Set Server Log Setting

Update the server log settings.

Syntax

```
void setServerLogLevelSetting
      throws SUPAdminException;
```

Parameters

- **setting –** The server log setting to set.

Returns

If successful, returns silently. If unsuccessful, throws `SUPAdminException`.

Examples

- **Set Server Log Setting**

```
SUPCluster cluster = this.getSUPCluster();
ServerLogSettingVO vo = cluster.getServerLogSetting();
Collection<ServerLogComponentLogLevel> cvos = vo
.getComponentLogLevels();
for (ServerLogComponentLogLevel cvo : cvos) {
cvo.setLoglevel(LOG_LEVEL.WARN);
}
vo.setComponentLogLevels(cvos);
cluster.updateServerLogSetting(vo);
```

Retrieve Server Log Setting

Retrieve the server log settings.

Syntax

```
ServerLogSettingVO getServerLogSetting()
      throws SUPAdminException;
```

Returns

If successful, returns the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Get Server Log Setting**

```
SUPCluster supCluster =
SUPObjectFactory.getSUPCluster(clusterContext);
ServerLogSettingVO sls = supCluster.getServerLogSetting();
System.out.println(sls);
```

Update Server Log Setting

Update the server log settings.

Syntax

```
void updateServerLogSetting(ServerLogSettingVO setting)
      throws SUPAdminException;
```

Parameters

- **setting –** The server log setting to update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Server Log Setting**

```
ServerLogSettingVO sls = supCluster.getServerLogSetting();
sls.setMaxBackupLogs(15);
sls.setMaxLogFileSize("20mb");
sls.setNewLogWhenServerStarted(false);
Collection<ServerLogComponentLogLevel> loglevels =
sls.getComponentLogLevels();
for(ServerLogComponentLogLevel level : loglevels){
      if(level.getComponent().equals(SERVER_LOG_COMPONENT.Other))
{
            level.setLoglevel(LOG_LEVEL.WARN);
            break;
      }
}
supCluster.updateServerLogSetting(sls);
```

Retrieval of Relay Servers

This method is deprecated. Use the SUPRelayServer interface to manage and configure Relay Servers. Retrieves a list of Relay Servers configured for an SAP Mobile Server cluster.

Syntax

```
List<RelayServerVO> getRelayServers() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of Relay Servers –** retrieves a list of relay servers in a cluster:

```
// Get all relay servers configured for the Mobile Server cluster.
List<RelayServerVO> relayServers = supCluster.getRelayServers();
for (RelayServerVO relayServer : relayServers) {
    // Print relay server info
    System.out.println("=========Begin Relay Server
Info=========");
    System.out.println("Host: " + relayServer.getHost());
    System.out.println("HTTP port: " + relayServer.getPort());
    System.out.println("HTTP port: " +
relayServer.getSecurePort());
    System.out.println("URL suffix: " +
relayServer.getUrlSuffix());
    // Print farm info of this relay server
    System.out.println("======Farms within this relays
server======");
    for (FarmVO farm : relayServer.getFarms()) {
        System.out.println("  " + farm);
        // print server node info of this farm
```

```
        System.out.println("===Server nodes within this farm===");
         for (ServerNodeVO serverNode : farm.getServerNodes()) {
             System.out.println("    Server node: " + serverNode);
             // print Outbound Enabler info of this server node
             System.out.println("    Outbound enabler: "
                     + serverNode.getOutboundEnabler());
         }
     }
    System.out.println("=========End Relay Server Info=========");
}
```

Licensing Information Retrieval

Retrieves information about software and device licensing on SAP Mobile Server.

Syntax

```
LicensingInfoVO getLicensingInfo() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves licensing information for SAP Mobile Server.

  ```
  // Get Licensing info.
  LicensingInfoVO infoVO = supCluster.getLicensingInfo();
  System.out.println(infoVO.getAvailableDeviceLicenseCount());
  System.out.println(infoVO.getLicenseType());
  System.out.println(infoVO.getProductionEdition());
  System.out.println(infoVO.getUsedDeviceLicenseCount());
  System.out.println(infoVO.getDevicelicenseExpireDate());
  System.out.println(infoVO.getServerlicenseExpireDate());
  ```

  Note: For more information on SAP Mobile Platform licensing, see *System Administration > Systems Maintenance and Monitoring > Platform Licenses*.

Retrieval and Setting of Trace Configuration

Retrieves and sets the trace configuration settings.

Syntax

```
Collection<TraceConfigVO> getTraceConfigs() throws
SUPAdminException;

void setTraceConfigs(configs) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve and set trace configuration settings**

```
Collection<TraceConfigVO> configs = supCluster.getTraceConfigs();
for (TraceConfigVO config : configs) {
        if
(TRACE_LOG_MODULE.JMS_BRIDGE.equals(config.getModule())) {
            config.setLevel(TRACE_LOG_LEVEL.DEBUG);
        }
}
supCluster.setTraceConfigs(configs);
System.out.println(configs);
```

Setting Time Zone

When the time zone of the administration client is different from that of the SAP Mobile Server, you must format the time zone.

- If a time or date string representation is returned to the client, it must be formatted using the SAP Mobile Server's time zone. This requires the API implementation to perform the formatting; the client is not required to perform it.
- If a time or date string representation is passed to the API, it must be formatted in the SAP Mobile Server's time zone. This requires the client to perform the formatting before passing the time or date to API.
- If a time or date is of `java.util.Date`, `java.util.Calendar`, or `java.sql.Timestamp`, it can be used as it is.

Syntax

```
TimeZone getTimeZone throws SUPAdminException;

void setTimeZone(timezone) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Setting the Time Zone –** This example shows how to meet the time zone requirements.

```
TimeZone tz = supCluster.getTimeZone();
ClusterContext clusterContext = supCluster.getContext();
clusterContext.setTimeZone(tz);
```

```
DomainContext domainContext =
clusterContext.getDomainContext("<domain name>");
```

Usage

Execute these methods before making any timezone related API calls.

SAP License Audit

For SAP® built applications, generate an XML file that contains usage audit data that is then uploaded to SAP License Audit.

Syntax

```
String auditMeasurement =
    supCluster.generateSAPAuditMeasurement(userName);
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Generate audit measurement file: –**

```
String auditMeasurement =
supCluster.generateSAPAuditMeasurement("John Doe");
```

Managing Relay Servers

The `SUPRelayServer` interface allows you to manage the relay server or relay server cluster for the SAP Mobile Server.

Operations you can perform with this interface include:

- Starting an administration session for a relay server.
- Creating, updating and deleting a relay server configuration.
- Creating, updating and deleting a relay server farm configuration.
- Creating, updating and deleting relay server node information.

Start Relay Server Management

Starts the management of a relay server.

Syntax

```
SUPRelayServer getSUPRelayServer(ClusterContext clusterContext)
      throws SUPAdminException;
```

Parameters

- **clusterContext –** The specified relay server to manage.

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, throws SUPAdminException.

Examples

- **Relay server startup –** starts the management of the specified relay server.

```
SUPRelayServer suprs =
SUPObjectFactory.getSUPRelayServer(contextFactory
                .getClusterContext());
```

Usage

When an instance of `SUPRelayServer` is returned from the `SUPObjectFactory`, call its method.

Retrieve Relay Server Configuration

Retrieves one or more relay server configuration.

You can retrieve a list of relay server configurations, or a specific relay server configuration based on a given ID, or a given host name and port number.

Syntax

```
java.util.List<RelayServerVO> getRelayServers()
                                                throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
RelayServerVO getRelayServer(java.lang.Integer relayServerId)
                             throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
RelayServerVO getRelayServer(java.lang.String host,
                             java.lang.Integer port)
                             throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **relayServerId –** The ID of the relay server configuration you want to retrieve.
- **host –** The host name of the relay server configuration you want to retrieve.
- **port –** The port of the relay server configuration you want to retrieve.

Returns

If successful, retrieves a list of relay server configurations, or a specific relay server configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Retrieval of a list of relay servers –** retrieves a list of all relay server configurations.

```
Iterator<RelayServerVO> iter =
suprs.getRelayServers().iterator();
        if (!iter.hasNext())
            return;
        RelayServerVO rsvo = iter.next();
        int id = rsvo.getID();
```

- **Retrieval of a relay server with a given ID –** retrieves the relay server configuration with the given ID.

```
RelayServerVO rsvo_byId = suprs.getRelayServer(id);
```

- **Retrieval of a relay server with a given host and port –** retrieves the relay server configuration with the given host name and port.

```
RelayServerVO rsvo_hostPort =
suprs.getRelayServer(rsvo.getHost(),
                rsvo.getPort());
```

Create Relay Server Configuration

Creates a relay server configuration.

Syntax

```
saveRelayServer(RelayServerVO relayServer) throws
SUPAdminException;
```

Parameters

- **relayServer –** The relay server configuration to be created.

Returns

If successful, creates a new relay server configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Creation of a relay server –** Creates a relay server configuration with server credentials, server farms, and server nodes.

```
RelayServerVO rsvo = new RelayServerVO();

RelayServerVOBuilder bld = new RelayServerVOBuilder(rsvo);
        bld.host("myrelayserver.sybase.com").
```

```
            port(1234).
              credential("supAdmin").password("s3pAdmin").back().

credential("supAdmin2").password("s3pAdmin2").back().
                deleteFarm("supAdmin2.SupAdminAutoTestRBS").
                farm("supAdmin2.SupAdminAutoTestMBS").
                  description("Descrition from API - Messaging").
                    type(SERVER_FARM_TYPE.MESSAGING).
                    name("supAdmin2.SupAdminAutoTestMBS - API").
                    deleteServerNode("node-name").
                    serverNode("node1").
                        token("node1-token").
                        back().
                    back().
                farm("farm - API").
                 description("Descrition from API - Replication").
                    type(SERVER_FARM_TYPE.REPLICATION).
                    serverNode("node2").
                        token("node2-token").
                        back().
                    back().
                back();

        rsvo = bld.build();
        suprs.saveRelayServer(rsvo);
```

Update Relay Server Configuration

Updates an existing relay server configuration with a given ID.

Syntax

```
updateRelayServer(java.lang.Integer relayServerId,
                      RelayServerVO relayServer) throws
SUPAdminException;
```

Parameters

- **relayServerID –** The new ID of the relay server configuration.
- **relayServer –** The relay server configuration to be updated.

Returns

If successful, updates the relay server configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Update of a relay server configuration –** Updates the relay server with the given ID.

```
@Test
public void updateRelayServer() throws Exception {
    List<RelayServerVO> relayServers =
```

```
supRelayServer.getRelayServers();
    if (relayServers.size() == 0) {
        System.out.println("No relay server defined.");
        return;
    }
    RelayServerVO relayServer = relayServers.get(0);
    relayServer.setHost("myRelayServer2.sybase.com");
    relayServer.setPort(8080);
    relayServer
          .setDescription("The relay server host and port has been
updated.");
    supRelayServer.updateRelayServer(relayServer.getID(),
relayServer);
}
```

Delete Relay Server Configurations

Deletes one or more relay server configurations.

You can delete the following:

- a group of relay servers based on a list
- a group of relay servers based on a list of IDs
- a specific relay server based on an ID
- a specific relay server based on a host name and port number

Syntax

```
void deleteRelayServers(java.util.List<RelayServerVO> relayServers)
                        throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
void deleteRelayServer(java.lang.String host,java.lang.Integer port)
                        throws SUPAdminException
```

```
deleteRelayServers(java.util.Set<java.lang.Integer> relayServerIds)
                        throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
deleteRelayServer(java.lang.Integer relayServerId)
                       throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **relayServers –** The list of relay server configurations that you want to delete.
- **relayServerIds –** The list of relay server configuration IDs that you want to delete.
- **relayServerId –** The ID of the relay server configuration you want to delete.
- **host –** The host name of the relay server configuration you want to delete.
- **port –** The port of the relay server configuration you want to delete.

Returns

If successful, deletes a list of relay servers, or a specific relay server. If unsuccessful, returns SUPAdminException.

Examples

- **Deletion of list of relay servers –** deletes all relay server configurations in the list.

```
suprs.deleteRelayServers(suprs.getRelayServers());
```

- **Deletion of list of relay servers by ID –** deletes all relay server configurations with the given IDs.

```
Set<Integer> relayServerIDsToDelete = new HashSet<Integer>();
relayServerIDsToDelete.add(1);
relayServerIDsToDelete.add(2);
supRelayServer.deleteRelayServers(relayServerIDsToDelete);
```

- **Deletion of a relay server with a given ID –** deletes the relay server configuration with the given ID.

```
List<RelayServerVO> rss = suprs.getRelayServers();
        Iterator<RelayServerVO> iter = rss.iterator();
        suprs.deleteRelayServer(iter.next().getID());
```

- **Deletion of a relay server with a given host and port –** deletes the relay server with the given host name and port.

```
supRelayServer.deleteRelayServer("myRelayServer.sybase.com", 80);
```

Retrieve Server Node

Retrieve a server node configuration wtih the given ID.

Syntax

```
ServerNodeVO getServerNode(Integer serverNodeId)
      throws SUPAdminException;
```

Parameters

- **serverNodeId –** The ID of the server node configuration.

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns SUPAdminException.

Examples

- **Retrieve Server Node –** Get the server node with a primary key of 1.

```
@Test
    public void testGetServerNode() throws Exception {
```

```
        ServerNodeVO serverNode = suprs.getServerNode(1);
        if (serverNode != null) {
            String serverNodeName = serverNode.getName();
            System.out.println(serverNodeName);
        }
    }
```

Create Server Node

Create a server node configuration if there is none. Otherwise, the existing one will be updated.

Syntax

```
void saveServerNode(ServerNodeVO serverNode)
      throws SUPAdminException;
```

Parameters

- **serverNode –** The server configuration to be created or updated.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Add Server Node –** Add a server node into a farm with a primary key of 1 in the database.

```
@Test
    public void testSaveServerNode() throws Exception {
        ServerNodeVO serverNode = new ServerNodeVO();
        serverNode.setName("node1");
        serverNode.setToken("myOuboundEnablerToken");
       ServerFarmVO serverFarm = supRelayServer.getServerFarm(1);
        serverNode.setServerFarm(serverFarm);
        supRelayServer.saveServerNode(serverNode);
    }
```

Delete Server Node

Delete a set of server node configurations with the given IDs or a single server node with the given ID.

Syntax

```
void deleteServerNodes(java.util.Set<Integer> serverNodeIds)
      throws SUPAdminException;
void deleteServerNode(Integer serverNodeId)
      throws SUPAdminException;
```

Parameters

- **serverNodeIds –** A set of server node configuration IDs.
- **serverNodeId –** A server node configuration ID.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Delete a Server Node**

```
@org.junit.Test
public void testDeleteServerNode() throws Exception {
    RelayServerVO relayServer = supRelayServer.getRelayServer(
            "myrelayserver.sybase.com", 80);
    if (relayServer == null) {
        System.out.println("myrelayserver.sybase.com:80 does not
configured");
        return;
        }
    List<ServerFarmVO> farms = relayServer.getServerFarms();
    if (farms.size() == 0) {
        System.out.println("No farm defined.");
        return;
    }
    ServerFarmVO farm = farms.get(0);
    List<ServerNodeVO> nodes = farm.getServerNodes();
    if (nodes.size() == 0) {
        System.out.println("No server node defined in farm "
                + farm.getName());
        return;
    }
    ServerNodeVO nodeToDelete = nodes.get(0);
    supRelayServer.deleteServerNode(nodeToDelete.getID());
}
```

Update Server Node

Update an existing server node configuration with the given ID.

Syntax

```
void updateServerNode(java.lang.Integer serverNodeId,
ServerNodeVO serverNode)
      throws SUPAdminException;
```

Parameters

- **serverNodeId –** The server node configuration ID.
- **serverNode –** The value object containing the property values to be updated.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Update Server Node –** Update the name and token value of the server node whose ID is 1.

```
@org.junit.Test
public void testUpdateServerNode() throws Exception {
        ServerNodeVO node = supRelayServer.getServerNode(1);
        if (node == null) {
            System.out.println("There is no server node with ID
1.");
        }
        node.setName("node1_upated");
        node.setToken("token_updated");
        supRelayServer.updateServerNode(node.getID(), node);
    }
```

Retrieve Server Farm Configuration

Retrieve the server farms that belong to this Relay Server.

Syntax

```
ServerFarmVO getServerFarm(Integer serverFarmID)
      throws SUPAdminException;
```

Parameters

- **serverFarmId –** The ID of the server farm you want to retrieve.

Returns

If successful, returns a list of server farms. If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve Server Farm –** Get server farm with a primary key of 1 in the database.

```
@org.junit.Test
    public void testGetServerFarm() throws Exception {
        ServerFarmVO serverFarm = supRelayServer.getServerFarm(1);
        if (serverFarm != null) {
            String farmName = serverFarm.getName();
            System.out.println(farmName);
            SERVER_FARM_TYPE type = serverFarm.getType();
            System.out.println(type);
        }
    }
```

Create Server Farm Configuration

Creates a server farm configuratIon if none exists. Otherwise, the existing one is updated.

Syntax

```
void saveServerFarm(ServerFarmVO serverFarm)
      throws SUPAdminException;
```

Parameters

- **serverFarm –** The server farm configuration to be created or updated..

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException

Examples

- **Add a Server Farm –** Add a new farm specifying a server node.

```
public void testSaveServerFarmReplication() throws
SUPAdminException {
// prepare
if (relayServer.getRelayServer(Constant.RS_HOST,
Constant.RS_PORT) == null) {
addRelayServer();
}
ServerFarmVO svo;
if ((svo = findServerFarmVO(
relayServer.getRelayServer(Constant.RS_HOST, Constant.RS_PORT),
serverFarmReplicationName, SERVER_FARM_TYPE.REPLICATION)) !=
null) {
relayServer.deleteServerFarm(svo.getID());
}
```

Update Server Farm Configuration

Update an existing server farm configuration with the given ID.

Syntax

```
void updateServerFarm(Integer serverFarmId, ServerFarmVO serverFarm)
      throws SUPAdminException;
```

Parameters

- **serverFarmId –** The server farm configuration ID.
- **serverFarm –** The value object containing the property values to be updated.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve and Update Farm Configuration –** Retrieve a farm and update the name and type values.

```
@org.junit.Test
public void testUpdateServerFarm() throws Exception {
        List<RelayServerVO> relayServers =
supRelayServer.getRelayServers();
        if (relayServers.size() == 0) {
            System.out.println("The SUP cluster do not have any
relay server configured.");
            return;
        }
        RelayServerVO relayServer = relayServers.get(0);
        List<ServerFarmVO> farms = relayServer.getServerFarms();
        if (farms.size() == 0) {
            System.out.println("Relay server " +
relayServer.getHost() + ":"
                    + relayServer.getPort() + " do not have any
farm.");
            return;
        }
        ServerFarmVO farm = farms.get(0);
        farm.setName("farm_name_updated");
        farm.setType(SERVER_FARM_TYPE.WEBSERVICE);
       farm.setDescription("This is a farm that name and type has
been updated.");
        supRelayServer.updateServerFarm(farm.getID(), farm);
    }
```

Delete Server Farm Configuration

Delete a server farm configuration or a set of server farm configurations with the given ID or set of IDs.

Syntax

```
void deleteServerFarm(Integer serverFarmId)
      throws SUPAdminException;
void deleteServerFarms(java.util.Set<Integer> serverFarmIds)
      throws SUPAdminException;
```

Parameters

- **serverFarmId –** A server farm configuration ID you want to delete.
- **serverFarmIds –** The set of server farm configuration IDs you want to delete.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Delete a Farm**

```
@org.junit.Test
public void testDeleteFarm() throws Exception {
    RelayServerVO relayServer = supRelayServer.getRelayServer(
            "myrelayserver.sybase.com", 80);
    if (relayServer == null) {
        System.out.println("myrelayserver.sybase.com:80 does not
configured");
        return;
    }
    List<ServerFarmVO> farms = relayServer.getServerFarms();
    if (farms.size() == 0) {
        System.out.println("No farm defined.");
        return;
    }
    ServerFarmVO farm = farms.get(0);
    supRelayServer.deleteServerFarm(farm.getID());
}
```

Retrieve Outbound Enabler Proxy Configuration

Retrieves one or more outbound enabler proxy configurations.

You can retrieve a list of outbound enabler proxy configurations, or a specific outbound enabler proxy configuration based on a given ID, or a given host name and port number.

Syntax

```
java.util.List<OutboundEnablerProxyVO> getOutboundEnablerProxies()
                                                                    throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
OutboundEnablerProxyVO getOutboundEnablerProxy(java.lang.Integer
outboundEnablerProxyId)
                                                 throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
OutboundEnablerProxyVO getOutboundEnablerProxy(java.lang.String
host,
                                               java.lang.Integer port)
                                                 throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **outboundEnablerProxyId –** The ID of the outbound enabler proxy configuration you want to retrieve.

- **host –** The host name of the outbound enabler proxy configuration you want to retrieve.
- **port –** The port of the outbound enabler proxy configuration you want to retrieve.

Returns

If successful, retrieves a list of outbound enabler proxy configurations, or a specific outbound enabler proxy configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Retrieval of a list of outbound enabler proxies –** retrieves a list of all outbound enabler proxy configurations.

```
@Test
public void getOutboundEnablerProxyVOByHostPort() throws
Exception {
    Iterator<OutboundEnablerProxyVO> iterator = supRelayServer
            .getOutboundEnablerProxies().iterator();
    if (!iterator.hasNext()) {
        System.out.println("No Outbound Enabler Proxy
configured.");
        return;
    }
    OutboundEnablerProxyVO proxy1 = iterator.next();
    OutboundEnablerProxyVO proxy2 =
supRelayServer.getOutboundEnablerProxy(
           proxy1.getHost(), proxy1.getPort());
    assertEquals(proxy1, proxy2);
}
```

- **Retrieval of an outbound enabler proxy with a given ID –** retrieves the outbound enabler proxy configuration with the given ID.

```
OutboundEnablerVO rsvo_byId = suprs.getOutboundEnablerProxy(id);
```

- **Retrieval of an outbound enabler proxy with a given host and port –** retrieves the outbound enabler proxy configuration with the given host name and port.

```
OutboundEnablerVO rsvo_hostPort =
suprs.getOutboundEnablerProxy(rsvo.getHost(),
                rsvo.getPort());
```

Create Outbound Enabler Proxy Configuration

Creates an outbound enabler proxy.

Syntax

```
void saveOutboundEnablerProxy(OutboundEnablerProxyVO
outboundEnablerProxy)
                              throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **outboundEnablerProxy –** The outbound enabler proxy configuration to be created.

Returns

If successful, creates a new outbound enabler proxy configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Creation of an outbound enabler proxy –** Creates an outbound server proxy configuration.

```
Iterator<OutboundEnablerVO> iter = supServerConf
                .getOutboundEnablers().iterator();
        if (!iter.hasNext())
            return;

        OutboundEnablerVO oe2 = new OutboundEnablerVO();
        OutboundEnablerVOBuilder bld = new
OutboundEnablerVOBuilder(oe2);
                bld.host ("proxy1").
                    port(4321)
                    credential ("proxy-user-1").
                       password("proxy-password-1")
                       back().
                    credential("proxy-user-2").
                       password("proxy-password-2")
                       back().

                suprs.saveOutboundEnablerProxy (bld.build()):
```

Update Outbound Enabler Proxy

Updates an existing outbound enabler proxy configuration with a given ID.

Syntax

```
void updateOutboundEnablerProxy(java.lang.Integer
outboundEnablerProxyId,
                                OutboundEnablerProxyVO
outboundEnablerProxy)
                                throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **outboundEnablerProxyID –** The new ID of the outbound enabler proxy configuration.
- **outboundEnablerProxy –** The outbound enabler proxy configuration to be updated.

Returns

If successful, updates the outbound enabler proxy configuration. If unsuccessful, returns SUPAdminException.

Examples

- **Update of an outbound enabler proxy configuration –** updates the outbound enabler proxy with the given ID.

```
Iterator<OutboundEnablerVO> iter = supServerConf
                .getOutboundEnablers().iterator();
        if (!iter.hasNext())
            return;

        OutboundEnablerVO oe1 = iter.next();
        oe1.setCertificateFile("4321");

        supServerConf.updateOutboundEnabler(oe1.getID(), oe1);
```

Delete Outbound Enabler Proxy Configuration

Deletes one or more outbound enabler proxy configurations.

You can delete the following:

- a group of outbound enabler proxies based on a list
- a group of outbound enabler proxies based on a list of IDs
- a specific outbound enabler proxy based on an ID
- a specific outbound enabler proxy based on a host name and port number

Syntax

```
void
deleteOutboundEnablerProxies(java.util.List<OutboundEnablerProxyVO>
outboundEnablerProxies)
                                    throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
void deleteOutboundEnablerProxies(java.util.Set<java.lang.Integer>
outboundEnablerProxyIds)
                                    throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
void deleteOutboundEnablerProxy(java.lang.Integer
outboundEnablerProxyId)
                                  throws
com.sybase.sup.admin.exception.SUPAdminException;
```

```
void deleteOutboundEnablerProxy(java.lang.String host,
                                  java.lang.Integer port)
                                  throws
com.sybase.sup.admin.exception.SUPAdminException;
```

Parameters

- **outboundEnablerProxies –** The list of outbound enabler proxy configurations that you want to delete.
- **outboundEnablerProxyIds –** The list of outbound enabler proxy configurations IDs that you want to delete.
- **outboundEnablerProxyId –** The ID of the outbound enabler proxy configuration you want to delete.
- **host –** The host name of the outbound enabler proxy configuration you want to delete.
- **port –** The port of the outbound enabler proxy configurationn you want to delete.

Returns

If successful, deletes a list of outbound enabler proxies, or a specific outbound enabler proxy. If unsuccessful, returns SUPAdminException.

Examples

- **Deletion of a List of Outbound Enabler Proxies –** Deletes all outbound enabler proxy configurations in the list.

```
supRelayServer.deleteOutboundEnablerProxies(supRelayServer
         .getOutboundEnablerProxies());
```

- **Deletion of a List of Outbound Enabler Proxies by ID –** Deletes all outbound enabler proxy configurations with the given IDs.

```
Set<Integer> proxyIDsToDelete = new HashSet<Integer>();
proxyIDsToDelete.add(1);
proxyIDsToDelete.add(2);
supRelayServer.deleteOutboundEnablerProxies(proxyIDsToDelete);
```

- **Deletion of an Outbound Enabler Proxy with a Given ID –** Deletes the outbound enabler proxy configuration with the given ID.

```
Iterator<OutboundEnablerProxyVO> iter = supRelayServer
        .getOutboundEnablerProxies().iterator();
if (!iter.hasNext())
    return;
supRelayServer.deleteOutboundEnablerProxy(iter.next().getID());
```

- **Deletion of an Outbound Enabler Proxy with a Given Host and Port –** Deletes the outbound enabler proxy with the given host name and port.

```
supRelayServer.deleteOutboundEnablerProxy("myProxy.sybase.com",
80);
```

Managing Domains

You can manage domains of SAP Mobile Servers through the `SUPDomain` interface. Operations you can perform with this interface include:

- Enabling or disabling a SAP Mobile Platform domain.
- Packages: listing, creating, deleting, importing, exporting packages.
- Endpoints: listing, creating, deleting, updating endpoints.
- Security configuration: getting and setting associated security configurations.
- Domain administrators: listing administrators.
- Data maintenance: cleaning up accumulated data artifacts.
- Applications: viewing applications and application connections at the domain level.

Start Domain Management

Starts the management of a domain.

Syntax

```
public static SUPDomain getSUPDomain(DomainContext domainContext)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start domain management –** starts the management of the specified domain:

  ```
  DomainContext domainContext =
  serverContext.getDomainContext("<domain name>");
  SUPDomain supDomain =
  SUPObjectFactory.getSUPDomain(domainContext);
  ```

Usage

To manage SAP Mobile Server domains, you must first create an instance of `SUPDomain`.

To perform SAP Mobile Platform domain administration operations, you must be assigned an SAP Mobile Platform administrator or SAP Mobile Platform domain administrator role.

Enable a Domain

Enables a domain.

Syntax

```
void enable(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Enable a domain**

```
supDomain.enable(true);  //Enable domain
```

Disable a Domain

Disables a domain.

Syntax

```
void enable(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Disable a domain**

```
supDomain.enable(false); //Disable domain
```

Package Retrieval

Retrieves a list of packages in a domain.

Syntax

```
Collection<String> getPackages() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Package retrieval –** retrieves a list of packages in a domain:

```
for(String packageName : supDomain.getPackages()){
    System.out.println(packageName);
}
```

Package Deployment

Deploys a package to a domain.

Syntax

```
deployPackage(java.lang.String fileName, DEPLOY_MODE deployMode,
java.lang.String securityConfiguration,
java.util.Collection<RoleMappingVO> roleMappings,
java.util.Map<java.lang.String,java.lang.String> endpointMappings,
java.util.Map<java.lang.String,java.lang.String>
eisManagedCacheEndpointMappings)
void deployPackage(String fileName, DEPLOY_MODE deployMode, String
securityConfiguration, Collection<RoleMappingVO> roleMappings,
Map<String, String> endpointMappings) throws SUPAdminException;

void purgeSyncCacheGroup(SyncCachePurgeOptionVO optionVO,
java.lang.Boolean synchronous)
throws SUPAdminException;
```

Parameters

The deployment mode determines how the deployment process handles the objects in a deployment unit and package. Which value you choose depends on whether or not a package of the same name already exists on SAP Mobile Server. Allowed values are:

- `UPDATE` – updates the target package with updated objects. After deployment, objects in the server's package with the same name as those being deployed are updated. By default, deploymentMode is UPDATE.
- `VERIFY` – do not deploy package. Only return errors, if any. Used to determine the results of the `UPDATE` deploy mode.

If the deployment mode is specified both in the descriptor file and the command-line, the command-line deploymentMode option override the deployment mode specified in the descriptor file.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package deployment –** deploys a package to a domain:

  ```
  Collection<RoleMappingVO> roleMappingVOs = new
  ArrayList<RoleMappingVO>();
  RoleMappingVO rmvo1 = new RoleMappingVO();
  rmvo1.setSourceRole("Role1");
  rmvo1.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);
  RoleMappingVO rmvo2 = new RoleMappingVO();
  rmvo2.setSourceRole("Role2");
  ```

```
rmvo2.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);
RoleMappingVO rmvo3 = new RoleMappingVO();
rmvo3.setSourceRole("Role3");
rmvo3.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);

roleMappingVOs.add(rmvo1);
roleMappingVOs.add(rmvo2);
roleMappingVOs.add(rmvo3);

Map<String, String> endpointMappings = new HashMap<String,
String>();
endpointMappings.put("sampledb", "sampledb2");

supDomain.deployPackage("<deployment unit file name>",
        DEPLOY_MODE.UPDATE,
        "<security configuration name>", roleMappingVOs,
endpointMappings);
```

Package Deletion

Deletes a package from a domain.

Syntax

```
void deletePackage(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package deletion –** deletes the specified package from the domain:

  ```
  supDomain.deletePackage("<package name>");
  ```

Package Import

Imports a package to a domain.

Syntax

```
void importPackage(java.lang.String fileName) throws
SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package import –** imports a package with the specified package file name to the domain:

  ```
  void importPackage("<exported package file name>", true);
  ```

Usage

You can only import package into the same domain as the one you exported from. The API requires that the domain where the package was exported from exists on the server when the import is done. Also, you are required to create domains in the same order in both the export and import server environments, which ensures that an internal ID assigned to the domain in both environment matches.

You can verify the internal ID assigned to a domain by looking at the prefix used in the package folder in the zip.

Package Export

Exports a package from a domain.

Syntax

```
void exportPackage(java.lang.String fileName, java.lang.String
name); throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package Export –** exports a package with the specified file name and package name from a domain:

  ```
  supAdmin.exportPackage("<file name>","<package name>");
  ```

Endpoint Retrieval

Retrieves a list of server connection endpoints in the domain. The supported endpoint types are JDBC, SAP®, and WEBSERVICE.

Syntax

```
Collection<EndpointVO> getEndpoints(ENDPOINT_TYPE type) throws
SUPAdminException;

EndpointVO getEndpoint(ENDPOINT_TYPE type, java.lang.String name)
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint retrieval –** retrieves a list of endpoints for each endpoint type:

```
for(EndpointVO evo : supDomain.getEndpoints(ENDPOINT_TYPE.JDBC)){
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}

for(EndpointVO evo : supDomain.getEndpoints(ENDPOINT_TYPE.SAP)){
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}
for(EndpointVO evo :
supDomain.getEndpoints(ENDPOINT_TYPE.WEBSERVICE)){
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}
```

Note: For detailed information on each of these endpoint types, see *Developer Guide: SAP Mobile Server Runtime > Management API > Property Reference > EIS Data Source Connection Properties Reference*.

Endpoint Creation

Creates a server connection endpoint of the specified endpoint type.

Syntax

```
void createEndpoint(ENDPOINT_TYPE type, String name, String
template, Map<String, String> properties) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint creation –** creates an endpoint for each endpoint type, and sets its properties:

```
Map<String, String> properties = new HashMap<String, String>();

// For Sybase ASA
properties.put("commitProtocol", "<commit protocol>");
properties.put("dataSourceClass", "<data source class>");
properties.put("databaseURL", "<database URL>");
properties.put("user", "<user name>");
properties.put("password", "<password>");
supDomain.createEndpoint(ENDPOINT_TYPE.JDBC, "<endpoint name>",
"<template name>", properties);

properties.clear();
properties.put("jco.client.user", "<jco client user>");
properties.put("jco.client.passwd", "<jco client password>");
properties.put("jco.client.ashost", "<jco client AS host>");
properties.put("jco.client.client", "<jco client>");
supDomain.createEndpoint(ENDPOINT_TYPE.SAP, "<endpoint name>",
"<template name>", properties);
```

```
properties.clear();
properties.put("address", "<address>");
properties.put("user", "<user name>");
properties.put("password", "<password>");
supDomain.createEndpoint(ENDPOINT_TYPE.WEBSERVICE, "<endpoint
name>", "<template name>", properties);
```

Endpoint Deletion

Deletes a specific server connection endpoint of the specified type.

Syntax

```
void deleteEndpoint(ENDPOINT_TYPE type, String name) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint deletion –** deletes an endpoint of each endpoint type:

```
supDomain.deleteEndpoint(ENDPOINT_TYPE.JDBC, "<endpoint name>");
supDomain.deleteEndpoint(ENDPOINT_TYPE.SAP, "<endpoint name>");
supDomain.deleteEndpoint(ENDPOINT_TYPE.WEBSERVICE, "<endpoint
name>");
```

Endpoint Update

Updates the properties of a specific server connection endpoint.

Syntax

```
void updateEndpoint(EndpointVO endpoint) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint update**

```
EndpointVO evo = new EndpointVO();
evo.setName("sampledb2");
evo.setType(ENDPOINT_TYPE.JDBC);
Map<String, String> properties = new HashMap<String, String>();
properties.put("commitProtocol", "pessimistic");
properties.put("dataSourceClass",
"com.sybase.jdbc3.jdbc.SybDataSource");
properties.put("databaseURL", "jdbc:sybase:Tds:localhost:5500/
sampledb2?ServiceName=sampledb2");
```

```
evo.setExtraProps(properties);
supDomain.updateEndpoint(evo);
```

Endpoint Template Retrieval

Retrieves a list of endpoint templates in the domain. The supported endpoint template types are JDBC, SAP®, and WEBSERVICE.

Syntax

```
Collection<EndpointVO> getEndpointTemplates(ENDPOINT_TYPE type)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint template retrieval –** retrieves a list of endpoint templates for each endpoint type:

```
for (EndpointVO evo : supDomain
        .getEndpointTemplates(ENDPOINT_TYPE.JDBC)) {
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}

for (EndpointVO evo :
supDomain.getEndpointTemplates(ENDPOINT_TYPE.SAP)) {
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}
for (EndpointVO evo : supDomain
        .getEndpointTemplates(ENDPOINT_TYPE.WEBSERVICE)) {
    System.out.println(evo.getName());
    System.out.println(evo.getExtraProps());
}
```

Note: For detailed information on each of these endpoint types, see *Developer Guide: SAP Mobile Server Runtime > Management API > Property Reference > EIS Data Source Connection Properties Reference*.

Endpoint Template Creation

Creates a server connection endpoint template for the specified endpoint type.

Syntax

```
void createEndpointTemplate(ENDPOINT_TYPE type, String name, String
template, Map<String, String> properties) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint creation –** creates an endpoint for each endpoint type, and sets its properties:

```
Map<String, String> properties = new HashMap<String, String>();
properties.put("commitProtocol", "<commit protocol>");
properties.put("dataSourceClass", "<data source class>");
properties.put("databaseURL", "<database URL>");
properties.put("user", "<user name>");
properties.put("password", "<password>");
supDomain.createEndpointTemplate(ENDPOINT_TYPE.JDBC,
"myJDBC_template",
                "Sybase_ASA_template", properties);

properties.clear();
properties.put("jco.client.user", "<jco client user>");
properties.put("jco.client.passwd", "<jco client password>");
properties.put("jco.client.ashost", "<jco client AS host>");
properties.put("jco.client.client", "<jco client>");
supDomain.createEndpointTemplate(ENDPOINT_TYPE.SAP,
"mySAP_template",
        "sap_template", properties);

properties.clear();
properties.put("address", "<address>");
properties.put("user", "<user name>");
properties.put("password", "<password>");
supDomain.createEndpointTemplate(ENDPOINT_TYPE.WEBSERVICE,
        "myWS_template", "webservice_template", properties);
```

Endpoint Template Deletion

Deletes a specific server connection endpoint template of the specified type.

Syntax

```
void deleteEndpointTemplate(ENDPOINT_TYPE type, String name) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint template deletion –** deletes an endpoint template of each endpoint type:

```
supDomain.deleteEndpointTemplate(ENDPOINT_TYPE.JDBC,
        "<endpoint template name>");
supDomain.deleteEndpointTemplate(ENDPOINT_TYPE.SAP,
        "<endpoint template name>");
```

```
supDomain.deleteEndpointTemplate(ENDPOINT_TYPE.WEBSERVICE,
        "<endpoint template name>");
```

Endpoint Template Update

Updates the properties of a specific server connection endpoint template.

Syntax

```
void updateEndpointTemplate(EndpointVO endpoint) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint update**

```
EndpointVO evo = new EndpointVO();
evo.setName("<endpoint template name>");
evo.setType(ENDPOINT_TYPE.JDBC);
Map<String, String> properties = new HashMap<String, String>();
properties.put("commitProtocol", "pessimistic");
properties.put("dataSourceClass",
"com.sybase.jdbc3.jdbc.SybDataSource");
properties.put("databaseURL", "jdbc:sybase:Tds:localhost:5500/
sampledb2?ServiceName=sampledb2");
evo.setExtraProps(properties);
supDomain.updateEndpointTemplate(evo);
```

Retrieval of Security Configurations

Retrieves a list of security configurations for a domain.

Syntax

```
Collection<String> getSecurityConfigurations() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of security configurations –** retrieves a list of security configurations for a domain:

```
for (String securityConfiguration : supDomain
        .getSecurityConfigurations()) {
```

```
    System.out.println(securityConfiguration);
}
```

Set Default Security Configuration

Sets the default security configuration for a domain.

Syntax

```
void setDefaultSecurityConfiguration(String security) throws
SUPAdminException;
```

Returns

If successful, returns the default security configuration for a domain. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set default security domain –** gets and sets the default security configuration for a domain.

  ```
  supDomain.setDefaultSecurityConfiguration(defsec);
  ```

Retrieval of Default Security Configuration

Retrieves the default security configuration for a domain.

Syntax

```
String getDefaultSecurityConfiguration() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of default security configuration –** retrieves the default security configuration for a domain:

  ```
  supDomain.getDefaultSecurityConfiguration();
  ```

Update of Security Configurations

Updates security configurations in the domain. You must be assigned a SAP Mobile Platform administrator role to perform this operation.

Syntax

```
void setSecurityConfigurations(Collection<String> names) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update of security configurations –** updates the security configurations specified in an array:

```
supDomain.setSecurityConfigurations(Arrays.asList(new String[] {
        "<security configuration 1>", "<security configuration
2>" }));
```

Retrieve Scheduled Purge Task Status

Checks to see whether domain-level cleanup is scheduled for the specified purge task type.

Syntax

```
Boolean isScheduledPurgeTaskEnable(SCHEDULE_PURGE_TASK task) throws
SUPAdminException;
```

Returns

If successful, returns true or false. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge task status –** retrieves the scheduled data purge task status for synchronization cache, subscription, client log, and error history purge tasks.

```
supDomain.isScheduledPurgeTaskEnable(SCHEDULE_PURGE_TASK.CLIENT_L
OG);
supDomain.isScheduledPurgeTaskEnable(SCHEDULE_PURGE_TASK.ERROR_HI
STORY);
supDomain.isScheduledPurgeTaskEnable(SCHEDULE_PURGE_TASK.SUBSCRIP
TION);
supDomain.isScheduledPurgeTaskEnable(SCHEDULE_PURGE_TASK.SYNC_CAC
HE_GROUP);
```

Enable or Disable Scheduled Purge Tasks

Enables or disables domain-level cleanup using the current scheduled purge task values.

Syntax

```
void enableScheduledPurgeTask(SCHEDULE_PURGE_TASK task, Boolean
enabled) throws SUPAdminException;
```

Returns

If successful, enables or disables cleanup. If unsuccessful, returns `SUPAdminException`.

Examples

- **Enables or disables purge tasks –** enables or disables the scheduled data purge tasks for synchronization cache, subscription, client log, or error history.

```
supDomain.enableScheduledPurgeTask(SCHEDULE_PURGE_TASK.CLIENT_LOG
, true);
supDomain.enableScheduledPurgeTask(SCHEDULE_PURGE_TASK.ERROR_HIST
ORY, false);
supDomain.enableScheduledPurgeTask(SCHEDULE_PURGE_TASK.SUBSCRIPTI
ON, false);
supDomain.enableScheduledPurgeTask(SCHEDULE_PURGE_TASK.SYNC_CACHE
_GROUP, true);
```

Get Purge Task Schedule

Gets the cleanup schedule for the selected purge task type. Getting the purge task schedule is typically used with setting the purge task schedule.

Syntax

```
ScheduleVO getPurgeTaskSchedule(SCHEDULE_PURGE_TASK task) throws
SUPAdminException;
```

Returns

If successful, returns true or false. If unsuccessful, returns `SUPAdminException`.

Examples

- **Get purge task schedule –** gets and sets the purge task schedule for synchronization cache, subscription, client log, or error history.

```

ScheduleVO reschedule =
supDomain.getPurgeTaskSchedule(SCHEDULE_PURGE_TASK.CLIENT_LOG);
reschedule =
supDomain.getPurgeTaskSchedule(SCHEDULE_PURGE_TASK.ERROR_HISTORY)
;
reschedule =
supDomain.getPurgeTaskSchedule(SCHEDULE_PURGE_TASK.SUBSCRIPTION);
reschedule =
supDomain.getPurgeTaskSchedule(SCHEDULE_PURGE_TASK.SYNC_CACHE_GRO
UP);
```

Set Purge Task Schedule

Sets the domain-level cleanup schedule for the selected purge task. Setting the purge task schedule is typically used with getting the purge task schedule.

Syntax

```
void setPurgeTaskSchedule(SCHEDULE_PURGE_TASK task, ScheduleVO
schedule) throws SUPAdminException;
```

Returns

If successful, returns the schedule for the selected type. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set purge task schedule –** gets and sets the purge task schedule for synchronization cache, subscription, client log, or error history.

```
ScheduleVO schedule = new ScheduleVO();
schedule.setDaysofweek(EnumSet.of(DAY_OF_WEEK.MONDAY,DAY_OF_WEEK.
FRIDAY));
schedule.setStartDate(new Date());
schedule.setStartTime(new Date());
schedule.setEndDate(new Date());
schedule.setEndTime(new Date());
schedule.setFreq(SCHEDULE_FREQ.INTERVAL);
schedule.setInterval(50);

supDomain.setPurgeTaskSchedule(SCHEDULE_PURGE_TASK.CLIENT_LOG,
schedule);
supDomain.setPurgeTaskSchedule(SCHEDULE_PURGE_TASK.ERROR_HISTORY,
schedule);
supDomain.setPurgeTaskSchedule(SCHEDULE_PURGE_TASK.SUBSCRIPTION,
schedule);
supDomain.setPurgeTaskSchedule(SCHEDULE_PURGE_TASK.SYNC_CACHE_GRO
UP, schedule);
```

Purge Synchronization Cache at the Domain Level

Purges synchronization cache at the domain level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeSyncCacheGroup(Boolean synchronous) throws
SUPAdminException;
```

Returns

If successful, purges synchronization cache using the schedule. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge sync cache –** purges the synchronization cache using defined settings.

```
supDomain.purgeSyncCacheGroup(false);
```

Manage Synchronization Cache Options

Sets synchronization cache purge at the domain level. The purge can be done synchronously or asynchronously.

Syntax

```
void setSyncCacheGroupOption(SyncCachePurgeOptionVO option) throws
SUPAdminException

SyncCachePurgeOptionVO getSyncCachePurgeOption() throws
SUPAdminException
```

Returns

If successful, synchronizes cache. If unsuccessful, returns `SUPAdminException`.

Examples

- **Manage synchronization cache purge group option –** Manage the synchronization cache group option.

  ```
  public void testSetPurgeSyncCacheOptionVO() throws
  SUPAdminException{
  _log.debug("test set purge sync cache option vo");
  SUPDomain domain = this.getSUPDomain("default");
  SyncCachePurgeOptionVO vo = new SyncCachePurgeOptionVO();
  vo.setNewPartitionThreshold(100);
  vo.setOldPartitionThreshold(200);
  domain.setSyncCacheGroupOption(vo);
  ......
  }
  ```

- **Manage synchronization cache purge option –** Manage the synchronization cache purge option.

  ```
  public void testGetPurgeSyncCacheOptionVO() throws
  SUPAdminException{
  _log.debug("test get purge sync cache option vo");
  SUPDomain domain = this.getSUPDomain("default");
  SyncCachePurgeOptionVO vo = domain.getSyncCachePurgeOption();
  ......
  }
  ```

Purge Client Log

Purges the client log at the domain level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeClientLog(ClientLogPurgeOptionVO purgeOption, Boolean
synchronous) throws SUPAdminException;
```

Returns

If successful, purges the client log using the schedule. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge client log –** purges the client log using current settings.

```
ClientLogPurgeOptionVO purgeOption = new
ClientLogPurgeOptionVO();
purgeOption.setDaysToPreserve(10);
supDomain.purgeClientLog(purgeOption, false);
```

Get Client Log Purge Options

Obtains the current client log purge settings at the domain level.

Syntax

```
ClientLogPurgeOptionVO getClientLogPurgeOption() throws
SUPAdminException;
```

Returns

If successful, gets the current client log purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Gets client log options –** gets the current client log purge options.

```

ClientLogPurgeOptionVO roption =
supDomain.getClientLogPurgeOption();
```

Set Client Log Purge Options

Sets the client log purge options at the domain level using the current settings.

Syntax

```
void setClientLogPurgeOption(ClientLogPurgeOptionVO option) throws
SUPAdminException;
```

Returns

If successful, sets the current client log purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Sets client log options –** sets the current client log purge settings, which includes preserving data for the last 15 days.

```
ClientLogPurgeOptionVO option = new ClientLogPurgeOptionVO();
option.setDaysToPreserve(15);
supDomain.setClientLogPurgeOption(option);
```

Purge Error History

Purges the error history at the domain level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeErrorHistory(ErrorHistoryPurgeOptionVO purgeOption,
Boolean synchronous) throws SUPAdminException;
```

Returns

If successful, purges the error history using the schedule. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge error history –** purges the error history using defined settings.

```
ErrorHistoryPurgeOptionVO purgeOption = new
ErrorHistoryPurgeOptionVO();
purgeOption.setDaysToPreserve(10);
supDomain.purgeErrorHistory(purgeOption, false);
```

Get Error History Purge Options

Gets the current error history purge option settings at the domain level.

Syntax

```
ErrorHistoryPurgeOptionVO getErrorHistoryPurgeOption() throws
SUPAdminException;
```

Returns

If successful, gets the current error history purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Gets error history purge options –** gets the current error history purge settings.

```
ErrorHistoryPurgeOptionVO roption =
supDomain.getErrorHistoryPurgeOption();
```

Set Error History Purge Options

Sets the error history purge options at the domain level using current settings.

Syntax

```
void setErrorHistoryPurgeOption(ErrorHistoryPurgeOptionVO option)
throws SUPAdminException;
```

Returns

If successful, sets the current error history purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set error history purge options –** sets the current error history purge settings.

  ```
  ErrorHistoryPurgeOptionVO option = new
  ErrorHistoryPurgeOptionVO();
  option.setDaysToPreserve(15);
  supDomain.setErrorHistoryPurgeOption(option);
  ```

Purge Subscription

Purges subscriptions at the domain level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeSubscription(SubscriptionPurgeOptionVO purgeOption,
Boolean synchronous) throws SUPAdminException;
```

Returns

If successful, purges subscriptions using the schedule. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge subscription –** purges subscriptions using defined settings.

  ```
  SubscriptionPurgeOptionVO purgeOption = new
  SubscriptionPurgeOptionVO();
  purgeOption.setDaysInactive(10);
  supDomain.purgeSubscription(purgeOption, false);
  ```

Get Subscription Purge Options

Obtains the current subscription purge options at the domain level.

Syntax

```
SubscriptionPurgeOptionVO getSubscriptionPurgeOption() throws
SUPAdminException;
```

Returns

If successful, gets the subscription purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Gets subscription purge options –** gets the current subscription purge settings.

  ```
  SubscriptionPurgeOptionVO roption =
  supDomain.getSubscriptionPurgeOption();
  ```

Set Subscription Purge Options

Sets the subscription purge options at the domain level.

Syntax

```
void setSubscriptionPurgeOption(SubscriptionPurgeOptionVO option)
throws SUPAdminException;
```

Returns

If successful, sets the current subscription purge settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Sets subscription purge options –** sets the subscription purge options, including setting 15 as the number of inactive days.

  ```
  SubscriptionPurgeOptionVO option = new
  SubscriptionPurgeOptionVO();
  option.setDaysInactive(15);
  supDomain.setSubscriptionPurgeOption(option);
  ```

Managing Packages

You can manage MBO packages and their properties through the `SUPPackage` interface. Operations you can perform with this interface include:

- **Security configuration –** getting or setting security configuration.
- **Synchronization group –** getting or setting synchronization group properties.
- **Synchronization tracing –** enabling or disabling synchronization tracing.
- **Message-based sync subscription management –** these subscriptions determine what synchronization messages mobile device users receive on messaging-based devices.
- **Replication-based sync subscription and template management –** these subscriptions determine what synchronization messages mobile device users receive on replication-based devices.
- **Package role mapping –** getting/setting package level role mappings. You can define role mapping for the package to map logical roles in the package to physical roles on the SAP Mobile Server.
- **Applications –** viewing applications, adding or removing application to/from a package, viewing application users.
- **Uncategorized –** enabling and disabling packages, listing MBOs, managing cache groups, listing personalization keys, and retrieving endpoint properties.

Start Package Management

Starts the management of an SAP Mobile Server package.

Syntax

```
public static SUPPackage getSUPPackage(PackageContext
packageContext) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start package management**

```
domainContext = serverContext.getDomainContext("<domain name>");
packageContext = domainContext.getPackageContext("<package
name>");
SUPPackage suppkg =
SUPObjectFactory.getSUPPackage(packageContext);
```

Usage

To manage SAP Mobile Server packages, you must first create an instance of `SUPPackage`.

Enable a Package

Enables a package.

Syntax

```
void enable(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Enable a package –** enables a package and retrieves a list of mobile business objects and personalization keys in the package.

```
//Enable a package.
suppkg.enable(true); //Enable package

//Retrieve a list of MBOs
for (String mboName : suppkg.getMobileBusinessObjects()) {
    System.out.println(mboName);
}
//Retrieve a list of personalization keys
for(PersonalizationKeyVO pvo : suppkg.getPersonalizationKeys()){
    System.out.println(pvo.getKey());
```

Disable a Package

Disables a package.

Syntax

```
void enable(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Disable a package**

```
//Disable a package.
suppkg.enable(false); //Disable package
```

Enable Synchronization Tracing

This method has be deprecated. Enables synchronization tracing.

Syntax

```
void setSyncTracingStatus(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Enable synchronization tracing**

  ```
  suppkg.setSyncTracingStatus(true); //Enable synchronization
  tracing
  ```

Disable Synchronization Tracing

This method has been deprecated. Disables synchronization tracing.

Syntax

```
void setSyncTracingStatus(Boolean flag) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Disable synchronization tracing**

  ```
  suppkg.setSyncTracingStatus(false); //Disable synchronization
  tracing
  ```

Retrieval of Security Configuration

Retrieves the security configuration associated with a package.

Syntax

```
String getSecurityConfiguration() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of security configurations**

```
String securityConfiguration = suppkg.getSecurityConfiguration();
```

Set Security Configuration

Sets the security configuration for a package.

Syntax

```
void setSecurityConfiguration(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set security configuration**

```
suppkg.setSecurityConfiguration("<security configuration name>");
```

Retrieval of Synchronization Group Properties

Retrieves a list of synchronization group properties for a package.

Syntax

```
Collection<SyncGroupVO> getSyncGroups() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of synchronization group properties**

```
for(SyncGroupVO sgvo : suppkg.getSyncGroups()){
    System.out.println(sgvo.getName());
}
```

Set Synchronization Group Properties

Sets properties for a synchronization group in a package.

Syntax

```
void setSyncGroupChangeDetectionInterval(String syncGroup, Integer
checkInterval) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set synchronization group properties –** updates the check interval for the specified synchronization group:

```
suppkg.setSyncGroupChangeDetectionInterval("<sync group name>",
1000);
```

Retrieval of Messaging Package Subscriptions

Retrieves messaging package subscriptions.

Syntax

```
Collection<MBSSubscriptionVO> getMBSSubscriptions() throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of messaging package subscriptions**

```
Collection<MBSSubscriptionVO> mbsSubs =
suppkg.getMBSSubscriptions();
MBSSubscriptionVO mbsSub = suppkg.getMBSSubscription("<client
id>");
```

Note: For more information on managing messaging package subscriptions, see *SAP Control Center for SAP Mobile Platform > Deploy > MBO Packages > MBO Subscription Management > Managing Subscriptions*.

Deletion of Messaging Package Subscriptions

Deletes messaging package subscriptions.

Syntax

```
void removeMBSSubscriptions(Collection<String> clientIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of messaging package subscriptions**

```
suppkg.removeMBSSubscriptions(clientIds);
```

Suspend Package Subscriptions

Suspends messaging package subscriptions, or DOE-C package subscriptions.

Syntax

```
void suspendMBSSubscriptions(Collection<String> clientIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Suspend messaging (or DOE-C) package subscriptions**

```
suppkg.suspendMBSSubscriptions(clientIds);
```

Resume Package Subscriptions

Resumes messaging package subscriptions, or DOE-C package subscriptions.

Syntax

```
void resumeMBSSubscriptions(Collection<String> clientIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Resume messaging (or DOE-C) package subscriptions**

```
suppkg.resumeMBSSubscriptions(clientIds);
```

Reset Messaging Package Subscriptions

Resets messaging package subscriptions.

Syntax

```
void resetMBSSubscriptions(Collection<String> clientIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Reset messaging package subscriptions**

```
suppkg.resetMBSSubscriptions(clientIds);
```

Retrieval of Replication Package Subscriptions

Retrieves replication package subscriptions.

Syntax

```
Collection<RBSSubscriptionVO> getRBSSubscriptions(String syncGroup,
String user) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of replication package subscriptions**

```
for (RBSSubscriptionVO rbsSub : suppkg
        .getRBSSubscriptions("<sync group name>")) {
    System.out.println(rbsSub.getSyncGroup() + ":"
            + rbsSub.getClientId());
}
for (RBSSubscriptionVO rbsSub : suppkg.getRBSSubscriptionVOs(
        "<sync group name>", "<user name>")) {
    System.out.println(rbsSub.getSyncGroup() + ":"
            + rbsSub.getClientId());
}
```

Note: For more information on managing messaging package subscriptions, see *SAP Control Center for SAP Mobile Platform > Deploy > MBO Packages > MBO Subscription Management > Managing Subscriptions*.

Update of Replication Package Subscriptions

Updates replication package subscriptions.

Syntax

```
void updateRBSSubscription(RBSSubscriptionVO rbsSub) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update of replication package subscriptions –** updates subscriptions of replication packages and sets the properties:

```
RBSSubscriptionVO rbsSub = new RBSSubscriptionVO();
//Client id, sync group, package and domain can uniquely
//identify a RBS subscription
rbsSub.setClientId("<client id>");
rbsSub.setSyncGroup("<sync group>");
//Bellow are the modifiable properties of a RBS subscription
//Please refer to Java doc for detailed information.
rbsSub.setAdminLocked(false);
rbsSub.setPushEnabled(true);
rbsSub.setSyncIntervalMinutes(5);
suppkg.updateRBSSubscription(rbsSub);
```

Removal of Replication Package Subscriptions

Removes a subscription or a list of subscriptions for a package.

Syntax

```
void removeRBSSubscription(String syncGroup, String clientId) throws
SUPAdminException;

void removeRBSSubscriptions(String syncGroup) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Removal of replication package subscriptions –** shows how to remove a list of subscriptions, or a single subscription, for a replication package:

```
//Remove one subscription
suppkg.removeRBSSubscription("<sync group name>", "<client id>"

//Remove a list of subscriptions
suppkg.removeRBSSubscriptions(Arrays.asList(new String[] {
        "<client id 1>", "<client id 2>" }));
suppkg.removeRBSSubscriptions("<sync group>");
suppkg.removeRBSSubscriptions("<sync group>", "<user name>");
```

Purge RBS and MBS Subscriptions

Purges replication-based and message-based synchronization (RBS and MBS) subscriptions at the package level using the number of inactive days. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeSubscription(SubscriptionPurgeOptionVO purgeOption,
Boolean synchronous) throws SUPAdminException;
```

Returns

If successful, purges RBS and MBS subscriptions based on the number of inactive days specified. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge subscriptions –** purges RBS and MBS subscriptions.

  ```
  SubscriptionPurgeOptionVO purgeOption = new
  SubscriptionPurgeOptionVO();
  purgeOption.setDaysInactive(10);
  suppkg.purgeSubscription(purgeOption, false);
  ```

Create Subscription Templates

Creates a subscription template for replication packages.

Syntax

```
RBSSubscriptionVO createRBSSubscriptionTemplate(String syncGroup,
Boolean isPushEnabled, Boolean isAdminLocked, Integer
minimumSyncMinutes) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Creation of a subscription template –** creates a subscription template for replication packages:

  ```
  suppkg.createRBSSubscriptionTemplate("<sync group name>", false,
  false,    5);
  ```

Retrieval of Role Mappings

Retrieves role mappings for a package.

Role mappings map logical roles in the package to physical roles on the SAP Mobile Server.

Syntax

```
Collection<RoleMappingVO> getRoleMappings() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of role mappings**

```
Collection<RoleMappingVO> roleMappingVOs =
suppkg.getRoleMappings();
```

Note: See the *SAP Control Center for SAP Mobile Platform > Administer > Security Configurations > Creating a Security Configuration > Roles and Mappings*.

Set Role Mappings

Sets role mappings for a package.

Syntax

```
void setRoleMappings(Collection<RoleMappingVO> rmvos) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set role mappings**

```
roleMappingVOs = new ArrayList<RoleMappingVO>();
RoleMappingVO rmvo1 = new RoleMappingVO();
rmvo1.setSourceRole("Role1");
rmvo1.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);
RoleMappingVO rmvo2 = new RoleMappingVO();
rmvo2.setSourceRole("Role2");
rmvo2.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);
RoleMappingVO rmvo3 = new RoleMappingVO();
rmvo3.setSourceRole("Role3");
rmvo3.setRoleMappingType(ROLE_MAPPING_TYPE.AUTO);

roleMappingVOs.add(rmvo1);
roleMappingVOs.add(rmvo2);
roleMappingVOs.add(rmvo3);

suppkg.setRoleMappings(roleMappingVOs);
```

Cache Groups

A cache group specifies the data refresh behavior for every mobile business object (MBO) within that group.

You can perform these management tasks for cache groups:

- Retrieving a list of cache groups
- Managing schedule properties of a cache group
- Listing the MBOs associated with a cache group
- Purging or clearing a cache group

Cache Groups Retrieval

Retrieves a list of cache groups for a package.

Syntax

```
Collection<CacheGroupVO> getCacheGroups() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of cache groups**

  ```
  for(CacheGroupVO cgvo : suppkg.getCacheGroups()){
      System.out.println(cgvo.getName());
  }
  ```

Schedule Properties Retrieval

Retrieves the schedule properties of a cache group for a package.

Syntax

```
CacheGroupScheduleVO getCacheGroupSchedule(String cacheGroupName)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of schedule properties –** retrieves a list of cache groups for a package:

```
CacheGroupScheduleVO cgsvo = suppkg
        .getCacheGroupSchedule("<cache group name>");
```

Set Schedule Properties

Sets the schedule properties of a cache group for a package.

Syntax

```
void setCacheGroupSchedule(String cacheGroupName,
CacheGroupScheduleVO cacheGroupSchedule) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Set schedule properties –** retrieves a list of cache groups for a package:

```
CacheGroupScheduleVO cgsvo = new CacheGroupScheduleVO();
cgsvo.setFrequency(SCHEDULE_FREQ.DAILY);

EnumSet<DAY_OF_WEEK> daysOfWeek =
EnumSet.noneOf(DAY_OF_WEEK.class);
daysOfWeek.add(DAY_OF_WEEK.MONDAY);
daysOfWeek.add(DAY_OF_WEEK.THURSDAY);
cgsvo.setDayOfWeek(daysOfWeek);

//start date: 2009-12-03
//start time: 18:31:45
//end date: 2009-12-23
//end time: 21:34:47
Calendar cal = Calendar.getInstance();
cal.set(Calendar.YEAR, 2009);
cal.set(Calendar.MONTH, 11);
cal.set(Calendar.DAY_OF_MONTH, 3);
Date startDate = cal.getTime();
cgsvo.setStartDate(startDate);

cal.set(Calendar.YEAR, 2009);
cal.set(Calendar.MONTH, 11);
cal.set(Calendar.DAY_OF_MONTH, 23);
Date endDate = cal.getTime();
cgsvo.setEndDate(endDate);

cal.set(Calendar.HOUR_OF_DAY, 18);
cal.set(Calendar.MINUTE, 31);
cal.set(Calendar.SECOND, 45);
Date startTime = cal.getTime();
cgsvo.setStartTime(startTime);

cal.set(Calendar.HOUR_OF_DAY, 21);
cal.set(Calendar.MINUTE, 34);
cal.set(Calendar.SECOND, 47);
Date endTime = cal.getTime();
```

```
cgsvo.setEndTime(endTime);

suppkg.setCacheGroupSchedule("<cache group name>", cgsvo);
```

- **Set cache group interval**

```
CacheGroupScheduleVO cgsvo = new CacheGroupScheduleVO();
cgsvo.setFrequency(SCHEDULE_FREQ.INTERVAL);
cgsvo.setInterval(CacheGroupScheduleVO.NEVER_EXPIRE);
suppkg.setCacheGroupSchedule("<cache group name>", cgsvo);
```

Associated Mobile Business Objects

Retrieves a list of the mobile business objects associated with a cache group.

Syntax

```
Collection<String> getCacheGroupMBOs(String cacheGroupName) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Getting associated mobile business objects**

```
for(String mboName : suppkg.getCacheGroupMBOs("<cache group
name>")){
    System.out.println(mboName);
}
```

Cache Group Purge

Physically deletes rows in the cache group that are marked as logically deleted and are older than the specified date.

Syntax

```
void purgeCacheGroup(String cacheGroupName, Date date) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Cache group purge –** physically deletes data that is marked as deleted and older than the `dateThreshold`:

```
Calendar cal = Calendar.getInstance();
cal.clear();
```

```
cal.set(Calendar.YEAR, 2009);
cal.set(Calendar.MONTH, 11);
cal.set(Calendar.DAY_OF_MONTH, 3);
Date dateThreshold = cal.getTime();
// Physically delete data that is marked as deleted and older than
the
// dateThreshold
suppkg.purgeCacheGroup("<cache group name>", dateThreshold);
```

Usage

Ensure that all devices have synchronized at least once before the specified purge date.

Mobile Business Objects

Packages contain mobile business objects that are deployed to SAP Mobile Server to facilitate access to back-end data and transactions from mobile devices.

Note: See the *SAP Control Center for SAP Mobile Platform > Get Started > About SAP Control Center for SAP Mobile Platform > MBO Package Management Overview*.

Mobile Business Object Retrieval

Retrieves a list of mobile business objects for a package.

Syntax

```
Collection<String> getMobileBusinessObjects() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile business object retrieval**

```
//Retrieve a list of MBOs
for (String mboName : suppkg.getMobileBusinessObjects()) {
    System.out.println(mboName);
}
```

Personalization Keys

Personalization keys are created by the MBO developer for use as client parameters (user data, such as user name and password), to be validated by the EIS.

Personalization Key Retrieval
Retrieves a list of personalization keys for a package.

Syntax

```
Collection<PersonalizationKeyVO> getPersonalizationKeys() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Personalization key retrieval**

```
//Retrieve a list of personalization keys
for(PersonalizationKeyVO pvo : suppkg.getPersonalizationKeys()){
    System.out.println(pvo.getKey());
}
```

Client Logs

Client logs record errors, history, and informational messages for mobile clients. Logs include data change notification logs, device notification logs, error logs, messaging logs, replication logs, and subscription logs.

You can perform these management tasks for client logs:

- Retrieving client logs
- Deleting client logs
- Exporting client logs

Retrieval of Client Logs
Retrieves the client logs specified in the search and sort criteria.

Syntax

```
PaginationResult<LogEntryVO>
getClientLogs(ClientLogSearchCriteriaVO searchCriteria, Integer
skip, Integer take, ClientLogSortVO sortInfo) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Client log retrieval**

```
//Prepare the search and sort criteria
ClientLogSearchCriteriaVO searchCriteria = new
ClientLogSearchCriteriaVO();
searchCriteria.setUserName("*sup*");
searchCriteria.setLevel("*N?O");
searchCriteria.setOperation("*up*");
ClientLogSortVO sortInfo = new ClientLogSortVO();
sortInfo.setAscending(false);
sortInfo.setSortField(ClientLogSortVO.SortField.device);

//Get client Log
PaginationResult<LogEntryVO> result = suppkg.getClientLogs(
searchCriteria, 0, 5, sortInfo);
```

Deletion of Client Logs

Deletes client logs.

Syntax

```
void deleteClientLogs(List<Long> messageIDs) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Client log deletion**

```
//Delete Client Log
List<Long> messageIDs = new ArrayList<Long>();
messageIDs.add(310004L);
suppkg.deleteClientLogs(messageIDs);

Map<CLIENT_LOG_FIELD, String> map = new HashMap<CLIENT_LOG_FIELD,
String>();
map.put(CLIENT_LOG_FIELD.USER, "supAdmin");
map.put(CLIENT_LOG_FIELD.START_TIME, "2011-07-07");
map.put(CLIENT_LOG_FIELD.END_TIME, "2011-07-08");
suppkg.deleteClientLogs(map);
```

Export of Client Logs
Exports client logs.

Syntax

```
void exportClientLogs(File file, ClientLogSearchCriteriaVO
searchCriteria, Integer skip, Integer take, ClientLogSortVO
sortInfo) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Client log export**

```
//Export client Log
suppkg.exportClientLogs(new File("F:/tmp/out.txt"),
searchCriteria, 0,
        3, sortInfo);
```

Purge Client Log
Purges the client log at the package level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeClientLog(ClientLogPurgeOptionVO purgeOption, Boolean
synchronous) throws SUPAdminException;
```

Returns

If successful, purges the client log using current settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge client log –** purges the client log, except for data from the last 10 days.

```
ClientLogPurgeOptionVO purgeOption = new
ClientLogPurgeOptionVO();
purgeOption.setDaysToPreserve(10);
suppkg.purgeClientLog(purgeOption, false);
```

Purge Synchronization Cache at the Package Level

Purges synchronization cache at the package level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeSyncCacheGroup(Boolean synchronous) throws
SUPAdminException;

void purgeSyncCacheGroup(SyncCachePurgeOptionVO
optionVO,java.lang.Boolean synchronous) throws SUPAdminException
```

Returns

If successful, purges synchronization cache using current settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge sync cache –** purges the synchronization cache using defined settings.

  ```
  suppkg.purgeSyncCacheGroup(false);
  ```

Purge Error History

Purges the error history at the package level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeErrorHistory(ErrorHistoryPurgeOptionVO purgeOption,
Boolean synchronous) throws SUPAdminException;
```

Returns

If successful, purges the error history using current settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge error history –** purges the error history, except for data from the last 10 days.

  ```
  ErrorHistoryPurgeOptionVO purgeOption = new
  ErrorHistoryPurgeOptionVO();
  purgeOption.setDaysToPreserve(10);
  suppkg.purgeErrorHistory(purgeOption, false);
  ```

Purge Subscription

Purges subscriptions at the package level. The purge can be done synchronously or asynchronously.

Syntax

```
void purgeSubscription(SubscriptionPurgeOptionVO purgeOption,
Boolean synchronous) throws SUPAdminException;
```

Returns

If successful, purges subscriptions using current settings. If unsuccessful, returns `SUPAdminException`.

Examples

- **Purge subscription –** purges subscriptions, except for data from the last 10 days.

```
SubscriptionPurgeOptionVO purgeOption = new
SubscriptionPurgeOptionVO();
purgeOption.setDaysInactive(10);
suppkg.purgeSubscription(purgeOption, false);
```

Add Applications to the Package

Adds existing applications to the package.

Syntax

```
void addApplications(Collection<String> appIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Addition of applications to the package**

```
Collection<String> apps = new ArrayList<String>();
apps.add("app1");
suppkg.addApplications(apps);
```

Remove Applications from the Package

Removes existing applications from the package.

Syntax

```
void removeApplications (Collection<String> appIds) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Remove applications from the package**

```
Collection<String> apps = new ArrayList<String>();
apps.add("app1");
suppkg.removeApplications(apps);
```

Retrieval of a List of Applications

Retrieves a list of applications for a package.

Syntax

```
Collection<ApplicationVO> getApplications() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of role mappings**

```
Collection<ApplicationVO> apps = suppkg.getApplications();
```

Retrieval of a List of Package Users

Retrieves a list of package users for a package.

Syntax

```
PaginationResult<PackageUserVO> getPackageUsers(PackageUser_SortVO
filter, Long offset, Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of role mappings**

```
PackageUser_SortVO filter = new PackageUser_SortVO();
filter.setSortField(PACKAGE_USER.REGISTRATION_TIME);
filter.setSortOrder(SORT_ORDER.ASCENDING);
```

```
PaginationResult<PackageUserVO> apps =
suppkg.getPackageUsers(filter, 0L, 100);
```

Managing Mobile Business Objects

You can manage mobile business objects and their properties through the `SUPMobileBusinessObject` interface. Operations you can perform with this interface include:

- **Mobile business objects –** retrieving properties and data refresh history, and listing operations.
- **Endpoints –** retrieving properties.

Start Mobile Business Object Management

Starts the management of a mobile business object.

Syntax

```
public static SUPMobileBusinessObject
getSUPMobileBusinessObject(MBOContext mboContext) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start mobile business object management**

```
domainContext = clusterContext.getDomainContext("<domain name>");
packageContext = domainContext.getPackageContext("<package
name>");
mboContext = packageContext.getMBOContext("<MBO name>");
SUPMobileBusinessObject supmbo =
SUPObjectFactory.getSUPMobileBusinessObject(mboContext);
```

Usage

To manage SAP Mobile Server mobile business objects, you must first create an instance of `SUPMobileBusinessObject`.

Import MBO Package

Imports a package to a domain. Only a SAP Mobile Platform administrator or a SAP Mobile Platform domain administrator can perform this.

Syntax

```
void importPackage(String fileName) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package import –** imports a package with the specified package file name to the domain:
  ```
  supDomain.importPackage(fileName);
  ```

Properties Retrieval

Retrieves properties for a mobile business object.

Syntax

```
MobileBusinessObjectVO getProperties() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Properties retrieval –** retrieves properties for a mobile business object, including name, package, creation date, and roles used:
  ```
  MobileBusinessObjectVO mbovo = supmbo.getProperties();
  System.out.println(mbovo.getName());
  System.out.println(mbovo.getPackage());
  System.out.println(mbovo.getCreationDate());
  System.out.println(mbovo.getUsedRoles());
  ```

Endpoints

Endpoint connection information allows applications to retrieve data from back-end production systems.

Note: For more information, see *System Administration > EIS Connection Management > Data Source Connections > Changing Connections to Production Data Sources*.

Endpoint Properties Retrieval

Retrieves the properties of an endpoint used by a mobile business object.

Syntax

```
EndpointVO getEndpoint() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint properties retrieval**

```
EndpointVO evo = supmbo.getEndpoint();
System.out.println(evo.getName());
System.out.println(evo.getType());
for(Map.Entry<String, String> entry :
evo.getExtraProps().entrySet()){
    System.out.println(entry.getKey() + " --> " +
entry.getValue());
}
```

Retrieval of Data Refresh Error History

Retrieves the data refresh error history for a mobile business object.

Syntax

```
Collection<DataRefreshErrorVO> getDataRefreshErrors(Date startDate,
Date endDate) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **History retrieval**

```
for(DataRefreshErrorVO drevo : supmbo.getDataRefreshErrors(null,
null)){
    System.out.println(drevo.getErrorMessage());
}
```

Deletion of Data Refresh Error History

Deletes the data refresh error history for a mobile business object.

Syntax

```
void deleteDataRefreshErrors(Date startDate, Date endDate) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **History deletion**

```
supmbo.deleteDataRefreshErrors(null, null);
```

Operations Retrieval

Retrieves a list of the operations of a mobile business object.

Syntax

```
Collection<String> getOperations() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Operations retrieval**

```
for (String op : supmbo.getOperations()) {
    System.out.println(op);
}
```

Managing Operations

You can manage operations and endpoints used by those operations through the `SUPOperation` interface. Operations you can perform with this interface include:

- **Operations –** retrieving properties.
- **Endpoints –** retrieving properties.

Start Operations Management

Starts the management of an SAP Mobile Server operation.

Syntax

```
public static SUPOperation getSUPOperation(OperationContext
operationContext) throws SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start operation management**

```
domainContext = serverContext.getDomainContext("<domain name>");
packageContext = domainContext.getPackageContext("<package
name>");
mboContext = packageContext.getMBOContext("<MBO name>");
operationContext = mboContext.getOperationContext("<operation
name>");
SUPOperation supOperation =
SUPObjectFactory.getSUPOperation(operationContext);
```

Usage

To manage SAP Mobile Server operations, you must first create an instance of `SUPOperation`.

Operation Properties Retrieval

Retrieves the properties of an operation.

Syntax

```
OperationVO getProperties() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Operation properties retrieval**

```
OperationVO ovo = supOperation.getProperties();
```

Endpoint Properties Retrieval

Retrieves the properties of an endpoint used by an operation.

Syntax

```
EndpointVO getEndpoint() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Endpoint properties retrieval**

```
EndpointVO evo = supOperation.getEndpointVO();

System.out.println(evo.getExtraProps());
```

Retrieval of Playback Error History

Retrieves the playback error history of an operation.

Syntax

```
Collection<PlaybackErrorVO> getPlaybackErrors(Date startDate, Date
endDate) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Playback history retrieval**

```
for(PlaybackErrorVO pbevo : supOperation.getPlaybackErrors(null,
null)){
    System.out.println(pbevo.getErrorMessage());
}
```

Managing Applications and Application Connections and Templates

You can manage applications, application connections, and application connection templates through the `SUPApplication` method. Operations you can perform with this interface include:

- **Managing applications –** creating, deleting, and updating applications. Retrieving a list of applications or application users. Deleting application users. Assigning or unassigning domains to an application. Adding or removing packages from an application, or retrieving a list of packages from an application.
- **Managing application connections –** retrieving, cloning, registering, updating, locking, unlocking, and deleting application connections.
- **Managing application connection templates –** managing, listing, and updating application connection templates.

Start Application Management

Starts the management of SAP Mobile Server applications, application connections, and application connection templates.

Syntax

```
public static SUPApplication getSUPApplication(ClusterContext
clusterContext) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start application management**

  ```
  app = SUPObjectFactory.getSUPApplication(clusterContext);
  ```

Usage

To manage SAP Mobile Server applications, you must first create an instance of `SUPApplication`.

Managing Applications

Use the `SUPApplication` interface to manage applications. Operations you can perform with this interface include:

- Creating an application
- Deleting an application
- Updating an application
- Retrieving a list of applications
- Retrieving a list of application users
- Deleting application users
- Assigning or unassigning domains from an application
- Retrieving domains assigned to an application
- Adding packages to or removing packages from an application
- Retrieving a list of packages from an application

Application Creation

Creates an application.

Syntax

```
void createApplication(String appID, String displayName, String
description) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create application**

```
supApplication.createApplication("app1", "app1display", "app1
description");
```

Application Deletion
Deletes applications.

Syntax

```
void deleteApplications(Collection<String> appIDs) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Delete application**

```
Collection<String> appIDs = new ArrayList<String>();
appIDs.add("app1");

supApplication.deleteApplications(appIDs);
```

Application Update
Updates the application's display name and description.

Syntax

```
void updateApplication(String appId, String displayName, String
description) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supApplication.updateApplication("app1", "updated display
name","updated desc");
```

Retrieval of a List of Applications
Retrieves a list of applications that satisfy the filter. The return result is paginated.

Syntax

```
PaginationResult<ApplicationVO>
getApplications(ApplicationFilterSortVO filter,
Long offset, Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
ApplicationFilterSortVO filter = new ApplicationFilterSortVO();
FilterExpression<APPLICATION> resultExpression = new
FilterExpression<APPLICATION>();
FilterExpression<APPLICATION> expression1 = new
FilterExpression<APPLICATION>();
FilterExpression<APPLICATION> expression2 = new
FilterExpression<APPLICATION>();
expression1 = expression1.eq(APPLICATION.APPLICATION_USER,
"WM2@admin");
expression2 = expression2.eq(APPLICATION.APPLICATION_USER,
"abc@admin");
resultExpression = expression1.or(expression2);

filter.setFilterExpression(resultExpression);
filter.setSortField(APPLICATION.APPLICATION_ID);
filter.setSortOrder(SORT_ORDER.ASCENDING);
PaginationResult<ApplicationVO> apps =
supApplication.getApplications(filter, 01, 100);
```

Retrieval of a List of Application Users
Retrieves a list of application users.

Syntax

```
PaginationResult<ApplicationVO>
getApplicationUsers(ApplicationUser_FilterSortVO filter, Long
offset, Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
ApplicationUserFilterSortVO filter = new
ApplicationUserFilterSortVO();

filter.setFilterExpression(null);
filter.setSortField(APPLICATION_USER.APPLICATION_ID);
filter.setSortOrder(SORT_ORDER.ASCENDING);
PaginationResult<ApplicationUserVO> apps =
supApplication.getApplicationUsers(filter, 0l,
100);
```

Application Users Deletion

Deletes a list of application users.

Syntax

```
void deleteApplicationUsers(Collection<ApplicationUserVO> users)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
Collection<ApplicationUserVO> users = new
ArrayList<ApplicationUserVO>();
ApplicationUserVO user1 = new ApplicationUserVO();
user1.setApplicationId("app1");
user1.setSecurityConfiguration("admin");
user1.setUserName("user1");
users.add(user1);
supApplication.deleteApplicationUsers(users);
```

Export Hybrid App

Export a Hybrid App from the server. Only a SAP Mobile Platform administrator or a SAP Mobile Platform domain administrator can perform this.

Syntax

```
void exportMobileHybridApp(String fileName, MobileHybridAppIDVO
hybridAppID)
      throws SUPAdminException;
```

Parameters

- **fileName –** The name of the file which stores the exported Hybrid App.
- **hybridAppID –** The Hybrid App ID.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Export Hybrid App**

```
SUPMobileHybridApp hybridApp =
SUPObjectFactory.getSUPMobileHybridApp(clusterContext);
hybridApp.exportMobileHybridApp(fileName, hybridappID);
```

Import Hybrid App

Import an exported Hybrid App to the server. Only a SAP Mobile Platform administrator or a SAP Mobile Platform domain administrator can perform this.

Syntax

```
void importMobileHybridApp(String fileName)
      throws SUPAdminException;
```

Parameters

- **fileName –** The file name of the exported Hybrid App.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Import Hybrid App**

```
SUPMobileHybridApp hybridApp =
SUPObjectFactory.getSUPMobileHybridApp(clusterContext);
hybridApp.importMobileHybridApp(fileName);
```

Export Application

Export an application.

Syntax

```
void exportApplication(String fileName, String id)
      throws SUPAdminException;
```

Parameters

- **fileName –** The name of the file which stores the exported application.
- **id –** The application ID.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Export Application**

```
SUPApplication app =
SUPObjectFactory.getSUPApplication(clusterContext);
app.exportApplication(fileName, appID);
```

Import Application

Import an application archive.

Syntax

```
void importApplication(String fileName)
      throws SUPAdminException;
```

Parameters

- **fileName –** The file name of the exported application archive.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException. If the import fails, the thrown exception will contain the proper error message.

Examples

- **Import Application**

```
SUPApplication app =
SUPObjectFactory.getSUPApplication(clusterContext);
app.importApplication(fileName);
```

Assign Domains to an Application

Assigns domains to the specified application.

Syntax

```
void assignDomainsToApplication(String appID, Collection<String>
domains) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Assign Domains**

```
Collection<String> domains = new ArrayList<String>();
domains.add("default");
domains.add("domain1");
supApplication.assignDomainsToApplication("app1", domains);
```

Unassign Domains from an Application

Unassigns domains from the specified application.

Syntax

```
void unassignDomainsToApplication(String appID, Collection<String>
domains) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Unassign domains**

```
Collection<String> domains = new ArrayList<String>();
domains.add("default");
domains.add("domain1");
supApplication.unassignDomainsFromApplication("app1", domains);
```

Retrieval of Assigned Domains

Retrieves the domains assigned to an application.

Syntax

```
Collection<String> getApplicationDomainAssignments(String appId)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
Collection<String> domains =

supApplication.getApplicationDomainAssignments("app1");
```

Add Packages to an Application

Adds packages to the specified application.

Syntax

```
void addApplicationPackages(String appID, String domain,
Collection<String> pkgs) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add packages**

```
String domain = "default";
Collection<String> pkgs = new ArrayList<String>();
pkgs.add("pkg1");
supApplication.addApplicationPackages("app1", domain, pkgs);
```

Remove Packages from an Application

Removes packages from the specified application.

Syntax

```
void removeApplicationPackages(String appID, String domain,
Collection<String> pkgs) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Removal**

```
String domain = "default";
Collection<String> pkgs = new ArrayList<String>();
pkgs.add("pkg1");
supApplication.removeApplicationPackages("app1", domain, pkgs);
```

Retrieval of a List of Packages from an Application

Retrieves a list of packages from an application that satisfy the filter. The return result is paginated

Syntax

```
PaginationResult<ApplicationPackageVO>
getApplicationPackages(Application_FilterSortVO filter, Long offset,
Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
Package_FilterSortVO filter = new Package_FilterSortVO();
FilterExpression<APPLICATION_PACKAGE> expression1 = new
FilterExpression<APPLICATION_PACKAGE>();
expression1 = expression1.eq(APPLICATION_PACKAGE.APPLICATION_ID,
"app1");
filter.setFilterExpression(expression1);
filter.setSortField(APPLICATION_PACKAGE.DOMAIN);
filter.setSortOrder(SORT_ORDER.ASCENDING);
PaginationResult<ApplicationPackageVO> apps =
supApplication.getApplicationPackages(filter, 0l, 100);
```

Managing Agentry Applications

Use the `SUPApplication` interface to manage Agentry applications.

Create Agentry Shell Application

Creates and deploys an Agentry application without a package.

Syntax

```
 void creatApplication(String applicationId, String displayName,
String description,
      CLIENTSDK_TYPE type, boolean enabled)  throws
SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.
- **displayName –** the disaplay name for the application.
- **description –** (optional) the string that describes the application.

- **type –** must be of type AGENTRY. All other types are ignored.
- **enable –** enable the application immediately after its creation.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create application –** the client invokes SUPapplication:

```
createApplication("agentryapp1", "agentryapp1Display",
     "DescribeAgentry",CLIENT_SDK_TYPE.Agentry,true);
```

See also

- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
- *Download Agentry Application* on page 517
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Create Agentry Application with Package

Creates and deploys an Agentry application with a package.

Syntax

```
void createApplication (String appID, String
       displayName, String description,CLIENT_SDK_TYPE type,Boolean
enable,String
       appPackage,Boolean immediate,Date time)
                  throws  SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.
- **displayName –** the display name for the application.
- **description –** (optional) the string that describes the application.
- **type –** must be of type AGENTRY. All other types are ignored.
- **appPackage –** the application package file for the application. Agentry packages must be saved to the server's `agp/agpz/zip` directory.
- **immediate –** include this parameter to immediately activate the application.
- **time –** the time to activate the application, when you do not immediately activate it.
- **enable –** include this parameter to immediately enable the application. Otherwise, it remains disabled.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create application with package**

```
createApplication("agentryapp1", "agentryapp1Display",
      "DescribeAgentry","c:\\app.agentry2.agp",true,null)
```

See also

- *Create Agentry Shell Application* on page 513
- *Deploy Agentry Application* on page 516
- *Download Agentry Application* on page 517
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Deploy Agentry Application

Deploys an Agentry application to the Agentry server. SAP Mobile Server parses the application manifest to decide which deployment mode to use; new or update.

You can use this method only to deploy Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void deployAgentryApplication (String appId,String
       fileLocation ,boolean
       immediate,Date time)
                     throws  SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.
- **packageZIP –** the application package file for the application. Agentry packages must be saved to the server's `agp/agpz/zip` directory.
- **immediate –** include this parameter to immediately activate the application.
- **time –** the time to activate the application, when you do not immediately activate it.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deploy application**

```
deployAgentryApplication("testApp","c:\
\app.agentry2.agp",true,null )
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Download Agentry Application* on page 517
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Download Agentry Application

Downloads the application definition, locale, and resource files according to the file list.

This method can be used only by Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
 void
        downloadAgentryApplication(String fileName, String
appId,List<String> files)
                throws SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.
- **fileName –** The name of the application file to be downloaded.
- **files –** the list of files to be downloaded (application definition files, locale files, resource files).

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create application**

```
ArrayList<String> files=new ArrayList<String>();
files.add("enLocale");
files.add("cnLocale");
supApplication.downloadAgentryApplication("agentryapp1.zip",
"agentry.app1", files);
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516

Get Client SDK Type

Gets the type of SDK client for the application: Object API, Hybrid App, OData, REST API, or Agentry.

Syntax

```
CLIENTSDK_TYPE getClientSDKType(String appId)
 throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

The client SDK type according to application ID used.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Get SDK type**

```
SupApplication.getClientSDKType("agentry.app1");
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516

Enable or Disable Agentry Application

Enables or disables an Agentry application that is deployed on the Agentry server.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void setAgentryApplicationStatus (String appId,Boolean flag)
                     throws  SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.
- **flag –** if set to true, enables the application; otherwise, it remains disabled.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Enable the application**

```
SupApplication.setAgentryApplicationStatus
(“syclo.application”,true)
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514

Start, Stop, or Restart Agentry Application

Starts, stops, or restarts an Agentry application on the Agentry server node instance.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void startAgentryApplication (String appId)
                        throws  SUPAdminException;
```

```
void stopAgentryApplication (String appId)
                        throws  SUPAdminException;
```

```
void restartAgentryApplication (String appId)
                        throws  SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start the application**

```
SupApplication.startAgentryApplication ("syclo.application")
```

- **Stop the application**

```
SupApplication.stopAgentryApplication ("syclo.application")
```

- **Restart the Application**

```
SupApplication.restartAgentryApplication ("syclo.application")
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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Disconnect Active Agentry Application Users

Disconnects active users.

This method can be used only by Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void  disconnectAgentryActiveUsers  (String appId, List<String>
userIds)
               throws SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.
- **userID –** the unique ID for the active application user.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Disconnect active application user**

```
 SupApplication.disconnectAgentryActiveUsers
("syclo.application", users);
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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List Active Agentry Application Users

Retrieves a list of active Agentry application users.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void List<AgentryActiveUserVO> getAgentryActiveUsers  (String
appId)throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Active Agentry user list**

```
 SupApplication.getAgentryActiveUsers
("syclo.application")
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
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Roll Agentry Application Log

As the log file reaches its limit, rolls the log file over.

This method can be used only by Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void rollAgentryApplicationLog (String appId)
                    throws SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Roll log**

```
SupApplication.rollAgentryApplicationlog ("syclo.application")
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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Get Agentry Application Log Properties

Gets the configuration properties for the Agentry application server instance log files.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void AgentryApplicationLogSettingVO
getAgentryApplicationLogSetting(String appId)
  throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

The Agentry application server instance log settings object.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve log settings**

```
SupApplication.getAgentryApplicationLogSetting
("syclo.application");
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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Update Agentry Application Log Properties

Updates the configuration properties for the Agentry application server instance log files. Settings must be retrieved before they can be updated.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void updateAgentryApplicationLogSetting(String appId,
AgentryApplicationLogSettingVO
      setting)
  throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update settings**

  ```
  SupApplication.updateAgentryApplicationLogSetting
  (“syclo.application”,setting);
  ```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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Get Agentry Application Configuration

Retrieves the configuration properties of the Agentry application. You can also list properties by category or list only the categories.

This method can be used only by Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void AgentryApplicationConfigurationVO
getAgentryApplicationConfiguration(String
        appId) throws SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Get oroperties**

  ```
  AgentryApplicationConfigurationVO
  setting=SupApplication.getAgentryApplicationConfiguration
  (“syclo.application”);
  ```

- **Get properties by category**

  ```
  setting.getPropertiesByCategory (“ANGEL Front End”);
  ```

- **Get category**

  ```
  setting.getCategories(“ANGEL Front End”);
  ```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
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- *List Active Agentry Application Users* on page 522

Update Application Configuration

Updates the application's configuration. The client must get the properties before they can be updated.

This method can only be used only by Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
void updateAgentryApplicationConfiguration(String
appId,AgentryApplicationConfigurationVO
      vo)  throws SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.
- **AgentryApplicationConfigurationVO –** the application configuration object.

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update retrieved properties**

```
SupApplication.updateAgentryApplicationConnectionSetting
(“syclo.application”,setting);
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
- *Download Agentry Application* on page 517
- *Get Client SDK Type* on page 518
- *Enable or Disable Agentry Application* on page 519

Get Status of Agentry Application from Server Node

Gets Agentry application related properties, such as application node status and application server information, for each node.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
Collection<AgentryApplicationNodeStatusVO>
getAgentryApplicationNodeStatuses(String
        appId)
                        throws  SUPAdminException;
```

Parameters

- **appId –** the unique ID for the application.

Returns

Returns list of application node status values.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Get status of node**

```
public class AgentryApplicationNodeStatusVO {
     // retrieve agentry server info
     public Map<String,String> getAgentryServerInfo();
```

```
//Get the node name
     public String getNodeName();
```

```
//Get the status for an agentry application host by this node
     public APPLICATION_STATUS getStatus();
```

```
//Get the message
     public String getMessage()
```

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
- *Download Agentry Application* on page 517
- *Get Client SDK Type* on page 518
- *Enable or Disable Agentry Application* on page 519
- *Start, Stop, or Restart Agentry Application* on page 520
- *Disconnect Active Agentry Application Users* on page 521
- *List Active Agentry Application Users* on page 522
- *Roll Agentry Application Log* on page 523
- *Get Agentry Application Log Properties* on page 524
- *Update Agentry Application Log Properties* on page 525
- *Get Agentry Application Configuration* on page 527
- *Update Application Configuration* on page 528
- *List Agentry Application Definition Files* on page 530
- *List Agentry Application Local Files* on page 531
- *List Agentry Application Resource Files* on page 532

List Agentry Application Definition Files

Returns a list of application definition files for the Agentry application.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
List<String> getAgentryApplicationDefinitionFiles(String appId)
 throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

A list of definition files by application ID used.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516
- *Download Agentry Application* on page 517
- *Get Client SDK Type* on page 518
- *Enable or Disable Agentry Application* on page 519
- *Start, Stop, or Restart Agentry Application* on page 520
- *Disconnect Active Agentry Application Users* on page 521
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- *Roll Agentry Application Log* on page 523
- *Get Agentry Application Log Properties* on page 524
- *Update Agentry Application Log Properties* on page 525
- *Get Agentry Application Configuration* on page 527
- *Update Application Configuration* on page 528
- *Get Status of Agentry Application from Server Node* on page 529
- *List Agentry Application Local Files* on page 531
- *List Agentry Application Resource Files* on page 532

List Agentry Application Local Files

Returns a list of application locale files for the Agentry application.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
List<String> getAgentryApplicationLocalesFiles (String appId)
 throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

A list of locale files used by the application.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

See also

- *Create Agentry Shell Application* on page 513
- *Create Agentry Application with Package* on page 514
- *Deploy Agentry Application* on page 516

List Agentry Application Resource Files

Returns a list of application resource files for the Agentry application.

This method can be used only for Agentry applications; for other application types, the method throws a not supported exception.

Syntax

```
List<String> getAgentryApplicationResourceFiles(String appId)
 throws SUPAdminException;
```

Parameters

- **applicationId –** the unique ID for the application.

Returns

A list of resource files used by the application.

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

See also

Managing Application Connections

Use the `SUPApplication` interface to manage registration of application connections.

Operations you can perform with this interface include:

- Retrieving a list of application connections
- Cloning application connections
- Registering or re-registering an application connection
- Updating application connection settings
- Deleting an application connection
- Locking or unlocking an application connection

Retrieve Application Connections

Retrieves a list of application connections that satisfy the given filter. You can filter application connections by: `APPLICATION_ID`, `APPLICATION_CONNECTION_ID`, `NUMERIC_ID`, `SECURITY_CONF`, and `USER_ID`. The return result is paginated.

Syntax

```
PaginationResult<ApplicationConnectionVO>
getApplicationConnections(AppConnectionFilterSortVO filter, Long
offset, Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
AppConnectionFilterSortVO filter = new
AppConnectionFilterSortVO();
FilterExpression<APPCONNECTION> fe = new FilterExpression<
```

```
APPCONNECTION >();
FilterExpression<APPCONNECTION> fe1 =
fe.eq(APPCONNECTION.USER_ID, "user");
filter.setFilterExpression(fe1);

PaginationResult<ApplicationConnectionVO> result = app
        .getApplicationConnections(filter, 0L, 10);
for (ApplicationConnectionVO appConn : result.getItems()) {
    System.out.println(appConn.getId());
}
```

Cloning Application Connections

Registers an application connection by cloning an existing application connection.

Syntax

```
java.util.Collection<java.lang.Integer>
cloneApplicationConnections(java.util.Collection<AppConnectionClone
RequestVO> cloneRequests,
AppConnectionSettingVO settings)throws SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Clone application connection**

```
AppConnectionCloneRequestVO accrvo = new
AppConnectionCloneRequestVO();
Map<APPCONNECTION_CLONE, Object> req1 = new
HashMap<APPCONNECTION_CLONE, Object>();
req1.put(APPCONNECTION_CLONE.EXISTING_NUMERIC_ID, "8");
req1.put(APPCONNECTION_CLONE.ACTIVATION_CODE, "345");
req1.put(APPCONNECTION_CLONE.EXPIRATION_HOUR, "3");
req1.put(APPCONNECTION_CLONE.USER_ID, "river");
accrvo.setRequest(req1);

Collection<AppConnectionCloneRequestVO> reqs = new
ArrayList<AppConnectionCloneRequestVO>();
reqs.add(accrvo);

AppConnectionSettingVO acsvo = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF, "admin2");
setting.put(APPCONNECTION_SETTING_FIELD.ALLOW_ROAMING, "true");
acsvo.setSetting(setting);
app.cloneApplicationConnections(reqs, acsvo);
```

Register an Application Connection
Registers a batch of application connections.

Syntax

```
java.util.Collection<java.lang.Integer>
registerApplicationConnections(java.lang.String
templateName,java.util.Collection<AppConnectionRegistrationRequestV
O> registrationRequests,
AppConnectionSettingVO settings)throws SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Register application connection**

```
AppConnectionRegistrationRequestVO acrrvo1 = new
AppConnectionRegistrationRequestVO();
AppConnectionRegistrationRequestVO acrrvo2 = new
AppConnectionRegistrationRequestVO();

Map<APPCONNECTION_REGISTRATION, Object> req1 = new
HashMap<APPCONNECTION_REGISTRATION, Object>();
req1.put(APPCONNECTION_REGISTRATION.USER_ID,
        contextFactory.getProperty("sup.app.user.1"));
req1.put(APPCONNECTION_REGISTRATION.ACTIVATION_CODE, "1234");
req1.put(APPCONNECTION_REGISTRATION.EXPIRATION_HOUR, "1");
acrrvo1.setRequest(req1);

Map<APPCONNECTION_REGISTRATION, Object> req2 = new
HashMap<APPCONNECTION_REGISTRATION, Object>();
req2.put(APPCONNECTION_REGISTRATION.USER_ID,
        contextFactory.getProperty("sup.app.user.2"));
req2.put(APPCONNECTION_REGISTRATION.ACTIVATION_CODE, "5678");
req2.put(APPCONNECTION_REGISTRATION.EXPIRATION_HOUR, "1");
acrrvo2.setRequest(req2);

Collection<AppConnectionRegistrationRequestVO> reqs = new
ArrayList<AppConnectionRegistrationRequestVO>();
reqs.add(acrrvo1);
reqs.add(acrrvo2);

AppConnectionSettingVO settings = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF,
        contextFactory.getProperty("sup.secconf.1"));
setting.put(APPCONNECTION_SETTING_FIELD.ALLOW_ROAMING, "true");
setting.put(APPCONNECTION_SETTING_FIELD.SERVER_NAME,
"localhost");
```

```
settings.setSetting(setting);
app.registerApplicationConnections(templateName, reqs, settings);
```

Re-register an Application Connection

Re-registers an application connection.

Syntax

```
java.util.Collection<java.lang.Integer>
reregisterApplicationConnections(java.util.Collection<AppConnection
ReregistrationRequestVO>
reregistrationRequests,AppConnectionSettingVO settings)throws
SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Re-registration**

```
AppConnectionReregistrationRequestVO acrrvo1 = new
AppConnectionReregistrationRequestVO();

Map<APPCONNECTION_REREGISTRATION, Object> req1 = new
HashMap<APPCONNECTION_REREGISTRATION, Object>();
req1.put(APPCONNECTION_REREGISTRATION.EXISTING_NUMERIC_ID, "5");
req1.put(APPCONNECTION_REREGISTRATION.ACTIVATION_CODE, "15");
req1.put(APPCONNECTION_REREGISTRATION.EXPIRATION_HOUR, "2");
req1.put(APPCONNECTION_REREGISTRATION.USER_ID, "hel");
acrrvo1.setRequest(req1);

Collection<AppConnectionReregistrationRequestVO> reqs = new
ArrayList<AppConnectionReregistrationRequestVO>();
reqs.add(acrrvo1);

AppConnectionSettingVO settings = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SERVER_NAME, "helxp-
vm1");
setting.put(APPCONNECTION_SETTING_FIELD.SERVER_PORT, "8888");
setting.put(APPCONNECTION_SETTING_FIELD.FARM_ID, "1");
setting.put(APPCONNECTION_SETTING_FIELD.DOMAIN, "default");
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF, "admin1");
settings.setSetting(setting);
app.reregisterApplicationConnections(reqs, settings);
```

Retrieve Application Connection Setting

Retrieve the application connection setting for the specified field.

Syntax

```
Object getApplicationConnectionSettings(Integer numericId,
APPCONNECTION_SETTING_FIELD field)
            throws SUPAdminException;

AppConnectionSettingVO
getApplicationConnectionSettings(java.lang.Integer numericId) throws
SUPAdminException
```

Parameters

- **field –** the field for the setting.

Returns

If successful, returns the field setting. If unsuccessful, throws SUPAdminException. If the field is invalid, returns null.

Examples

- **Retrieve Notification Behavior –** Retrieves the NOTIFICATION_MODE setting:

```
public enum
com.sybase.sup.admin.enumeration.application.APPCONNECTION_SETTIN
G_FIELD {
...
/**
* Identifies the notification behaviour of the application
connection.
* <p>
* <br>
* Type is {@link APPCONNECTION_SETTING_FIELD_TYPE}.INTEGER 0: Only
Native
* Notifications 1: Only Online/Payload Push 2: Online/Payload Push
with
* Native Notifications
*/
@EnumAnn(alias = "Notification Mode")
NOTIFICATION_MODE(APPCONNECTION_SETTING_CATEGORY.APPLICATION,
APPCONNECTION_SETTING_FIELD_TYPE.INTEGER, 2907) {
},
...
}
```

Application Connection Settings Update

Updates the settings of a list of application connections.

Syntax

```
void
updateApplicationConnectionSettings(java.util.Collection<java.lang.
Integer> numericIds, AppConnectionSettingVO settings)throws
SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
PaginationResult<ApplicationConnectionVO> result = app
.getApplicationConnections(filter, 0L, NULL);
Collection<Integer> appConnIds = new ArrayList<Integer>();

for (ApplicationConnectionVO appConn : result.getItems()) {
appConnIds.add(appConn.getNumericId());
}

AppConnectionSettingVO settings = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF, "admin");
settings.setSetting(setting);
app.updateApplicationConnectionSettings(appConnIds, settings);
```

Application Connection Deletion

Deletes a list of application connections.

Syntax

```
void deleteApplicationConnections(Collection<Integer> numericIds)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create registration template –** deletes the specified registration templates ("Default" and "testTemplate2"):

```
Collection<Integer> appConnIds = new ArrayList<Integer>();
appConnIds.add(7);
appConnIds.add(8);

app.deleteApplicationConnections(appConnIds);
```

Lock or Unlock Application Connection

Locks or unlocks a list of application connections.

Syntax

```
void lockApplicationConnections(Collection<String>
applicationConnectionIds) throws SUPAdminException;
```

```
void unlockApplicationConnections(Collection<String>
applicationConnectionIds) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Lock or Unlock Application Connection**

```
PaginationResult<ApplicationConnectionVO> result =
app.getApplicationConnections(filter, 0L, NULL);
Collection<String> appConnIds = new ArrayList<String>();

for (ApplicationConnectionVO appConn : result.getItems()) {
  appConnIds.add(appConn.getId());
}

app.lockApplicationConnection(appConnIds);
app.unlockApplicationConnection(appConnIds);
```

Usage

This API requires the application connection ID of the application connection (and not the numeric ID of the application connection).

Managing Application Connection Templates

Use the `SUPApplication` interface to manage application connection templates.

Operations you can perform with this interface include:

- Retrieving a list of application connection templates
- Creating an application connection template
- Updating application connection template settings
- Deleting an application connection template

Assign a Hybrid App to Application Connection Templates

Assign a Hybrid App to a list of application connection templates.

Syntax

```
void assignMobileHybridAppToTemplates(MobileHybridAppIDVO
hybridAppID, List<Integer> templateIDs)
      throws SUPAdminException;
```

Parameters

- **hybridAppID –** The Hybrid App ID.

- **templateIDs –** The list of application connection template IDs to assign to the Hybrid App.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Assign Hybrid App to Templates**

```
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setWID(1);
hybridAppID.setVersion(1);
List<Integer> templateIDs = new ArrayList<Integer>();
templateIDs.add(1);
hybridApp.assignMobileHybridAppToTemplates(hybridAppID,
templateIDs);
```

Unassign a Hybrid App from Application Connection Templates

Unassigns a Hybrid App from a list of application connection templates.

Syntax

```
void unassignMobileHybridAppFromTemplates(MobileHybridAppIDVO
hybridAppID, List<Integer> templateIDs)
          throws SUPAdminException;
```

Parameters

- **hybridAppID –** The Hybrid App ID.
- **templateIDs –** The list of application connection templates to unassign from the Hybrid App.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Unassign Hybrid App from Templates**

```
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setWID(1);
hybridAppID.setVersion(1);
List<Integer> templateIDs = new ArrayList<Integer>();
templateIDs.add(1);
hybridApp.unassignMobileHybridAppFromTemplates(hybridAppID,
templateIDs);
```

Retrieve List of Hybrid Apps Assigned to an Application Connection Template

Retrieve the Hybrid App assignment information for an application connection template. This can only be done by the SAP Mobile Platform help desk or a SAP Mobile Platform administrator.

Syntax

```
List<MobileHybridAppAssignmentVO>
getTemplateHybridAppAssignments(int templateID)
          throws SUPAdminException;
```

Parameters

- **templateID –** The application connection template ID.

Returns

If successful, returns a list of Hybrid Apps. If unsuccessful, throws SUPAdminException.

Examples

- **Get Template Hybrid App Assignments**

  ```
  int templateID = 1;
  List<MobileHybridAppAssignmentVO> list =
  hybridApp.getTemplateHybridAppAssignments(templateID);
  System.out.println(list.size());
  ```

Retrieve Status of Application Connection Templates for a Hybrid App

Retrieves a template status for a Hybrid App. This can only be done by the SAP Mobile Platform helpdesk or a SAP Mobile Platform administrator.

Syntax

```
 List<TemplateMobileHybridAppStatusVO>
getTemplateMobileHybridAppStatus(MobileHybridAppIDVO hybridAppID)
      throws SUPAdminException;
```

Parameters

- **hybridAppID –** The Hybrid App ID.

Returns

If successful, returns a list of application connection statuses. If unsuccessful, throws SUPAdminException.

Examples

- **Get Template Hybrid App Status**

```
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setWID(1);
hybridAppID.setVersion(1);
List<TemplateMobileHybridAppStatusVO> list =
hybridApp.getTemplateMobileHybridAppStatus(hybridAppID);
System.out.println(list.size());
```

Set Default Hybrid App for an Application Connection Template

Set the default Hybrid App for a list of application connection templates.

Syntax

```
 void setDefaultMobileHybridAppforTemplates(MobileHybridAppIDVO
hybridAppID, List<Integer> templateIDs)
          throws SUPAdminException;
```

Parameters

- **hybridAppID –** The Hybrid App ID.
- **templateIDs –** The list of application connection templates to set the default Hybrid App.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Set Default Hybrid App for Templates**

```
 MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setWID(1);
hybridAppID.setVersion(1);
List<Integer> templateIDs = new ArrayList<Integer>();
templateIDs.add(1);
hybridApp.setDefaultMobileHybridAppforTemplates(hybridAppID,
templateIDs);
```

Unset Default Hybrid App for an Application Connection Template

Remove the default Hybrid App for a list of application connection templates.

Syntax

```
void unsetDefaultMobileHybridAppforTemplates(List<Integer>
templateIDs)
      throws SUPAdminException
```

Parameters

- **templateIDs –** The list of application connection templates to remove the default Hybrid App.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Unset Default Hybrid App for Templates**

```
 List<Integer> templateIDs = new ArrayList<Integer>();
templateIDs.add(1);
hybridApp.unsetDefaultMobileHybridAppforTemplates(templateIDs);
```

Application Connection Template Retrieval

Retrieves a list of application connection templates.

Syntax

```
PaginationResult<ApplicationConnectionTemplateVO>
getApplicationConnectionTemplates(AppConnectionTemplateFilterSortVO
filter, Long offset, Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
AppConnectionTemplateFilterSortVO filter = new
AppConnectionTemplateFilterSortVO();
FilterExpression<APPCONNECTION_TEMPLATE> fe = new
FilterExpression<APPCONNECTION_TEMPLATE>();

FilterExpression<APPCONNECTION_TEMPLATE> fe1 =
fe.eq(APPCONNECTION_TEMPLATE.DOMAIN, "default");

FilterExpression<APPCONNECTION_TEMPLATE> fe2 =
fe.eq(APPCONNECTION_TEMPLATE.SECURITY_CONF, "admin");

fe = fe1.and(fe2);
filter.setFilterExpression(fe);
PaginationResult<ApplicationConnectionTemplateVO> result = app
        .getApplicationConnectionTemplates(filter, 0L, 10);
for (ApplicationConnectionTemplateVO appConnT :
result.getItems()) {
```

```
    System.out.println(appConnT.getName());
}
```

Application Connection Template Creation
Creates an application connection templates with the specified settings.

Syntax

```
void
createApplicationConnectionTemplate(ApplicationConnectionTemplateVO
applicationConnectionTemplate, Map settings) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Creation**

```
AppConnectionSettingVO acsvo = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF,
"mySecurity");
acsvo.setSetting(setting);

app.createApplicationConnectionTemplate("MyTemplate",
        "Short description", acsvo);
```

Update of Application Connection Template Settings
Updates application connection template settings.

Syntax

```
void updateApplicationConnectionTemplateSettings(java.lang.String
templateName, AppConnectionSettingVO settings)throws
SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
AppConnectionSettingVO settings = new AppConnectionSettingVO();
Map<APPCONNECTION_SETTING_FIELD, Object> setting = new
HashMap<APPCONNECTION_SETTING_FIELD, Object>();
setting.put(APPCONNECTION_SETTING_FIELD.SECURITY_CONF, "admin");
```

```
setting.put(APPCONNECTION_SETTING_FIELD.ACTIVATION_CODE_LENGTH,
"9");
setting.put(APPCONNECTION_SETTING_FIELD.ALLOW_ROAMING, "true");
settings.setSetting(setting);
app.updateApplicationConnectionTemplateSettings("template 1",
settings);
```

Application Connection Template Deletion

Deletes a list of application connection templates.

Syntax

```
void deleteApplicationConnectionTemplates(List<String>
templateNames) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
Collection<String> names = new ArrayList<String>();
names.add("MyTemplate");

app.deleteApplicationConnectionTemplates(names);
```

Managing Application Customization Resource Bundles

Use the `SUPApplication` interface to manage customization resource bundles for OData SDK Android and iOS applications.

Retrieve an Application Customization Resource Bundle ID

Retrieves a customization resource bundle identifier from its binaries.

Syntax

```
String getCustomizationResourceBundleId(byte[]
customizationResourceBundleBytes)
  throws SUPAdminException;
```

Returns

If successful, returns the ID of the supplied customization resource bundle binaries. If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
File file = new File("C:\\CustomizationResourceBundle.jar");
InputStream is = new FileInputStream(file);
byte[] bytes = new byte[is.available()];
is.read(bytes);
app.getCustomizationResourceBundleId(bytes);
```

Deploy an Application Customization Resource Bundle

Deploys a customization resource bundle to an application.

Syntax

```
void deployCustomizationResourceBundle(java.lang.String
applicationId,
  byte[] customizationResourceBundleBytes)
  throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deploy**

```
File file = new File("C:\\CustomizationResourceBundle.jar");
InputStream is = new FileInputStream(file);
byte[] bytes = new byte[is.available()];
is.read(bytes);
app.deployCustomizationResourceBundle("<application ID>", bytes);
```

Export an Application Customization Resource Bundle

Exports a customization resource bundle from an application to a JAR file.

Syntax

```
void exportCustomizationResourceBundle(java.io.File file,
  java.lang.String applicationId,
  java.lang.String customizationResourceBundleId)
  throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Export**

```
File file = new File("C:\\ExportedCRB.jar");
app.exportCustomizationResourceBundle(file, "<application ID>",
"<customization resource bundle ID>");
```

Assign an Application Customization Resource Bundle

Assigns a customization resource bundle to all qualified application connections or application connection templates for the application ID.

Syntax

```
void assignCustomizationResourceBundle(java.lang.String
applicationId,
  java.lang.String customizationResourceBundleId,
  CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL referral)
  throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Assign to all application connections with the defined application ID**

```
app.assignCustomizationResourceBundle("<application ID>",
"<customization resource bundle ID>",
CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL.APPCONNECTION);
```

- **Assign to all application connection templates with the defined application ID**

```
app.assignCustomizationResourceBundle("<application ID>",
"<customization resource bundle ID>",
CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL.APPCONNECTION_TEMPLATE);
```

Unassign an Application Customization Resource Bundle

Unassigns a customization resource bundle from all applicable application connections or application connection templates for the application ID.

Syntax

```
void unassignCustomizationResourceBundle(java.lang.String
applicationId,
  java.lang.String customizationResourceBundleId,
  CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL referral)
  throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Unassign from all application connections with the defined application ID**

```
app.unassignCustomizationResourceBundle("<application ID>",
"<customization resource bundle ID>",
CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL.APPCONNECTION);
```

- **Unassign from all application connection templates with the defined application ID**

```
app.unassignCustomizationResourceBundle("<application ID>",
"<customization resource bundle ID>",
CUSTOMIZATION_RESOURCE_BUNDLE_REFERRAL.APPCONNECTION_TEMPLATE);
```

Delete an Application Customization Resource Bundle

Deletes a customization resource bundles from an application. You cannot delete a customization resource bundle if it is assigned to an application connection or application connection template; you must unassign it first.

Syntax

```
void deleteCustomizationResourceBundle(java.lang.String
applicationId,
  java.lang.String customizationResourceBundleId)
  throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Delete**

```
app.deleteCustomizationResourceBundle("<application ID>",
"<customization resource bundle ID>");
```

Managing Application Push Configuration

Methods for managing application push configurations.

Create a push configuration

Creates a push configuration if there is not such a one, otherwise updates the existing one.

Syntax

```
public void
saveApplicationPushConfiguration(ApplicationPushConfigurationVO
      pushConfiguration) throws SUPAdminException;
```

Parameters

- **pushConfiguration –** Application push configuration to create or update.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Create an application push configuration**

  ```
  app.saveApplicationPushConfiguration( "<ApplicationPushConfigurat
  ionVO>" );
  ```

Delete a list of push configurations

Delete a list of push configurations from the specified application.

Syntax

```
 public void
deleteApplicationPushConfiguration(List<ApplicationPushConfiguratio
nVO> list)
      throws SUPAdminException;
```

Parameters

- **list –** Application push configuration objects.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Examples

- **Delete a list of push configurations**

```
app.deleteApplicationPushConfiguration("List<ApplicationPushConfi
gurationVO>");
```

Retrieve a list of push application configurations
Retrieves a list of push application configurations.

Syntax

```
 public List<ApplicationPushConfigurationVO>
getApplicationPushConfigurations(String applicationId,
APPLICATION_PUSH_CONFIGURATION_TYPE type)
            throws SUPAdminException;
```

Parameters

- **applicationId –** Application Identifier
- **type –** See APPLICATION_PUSH_CONFIGURATION_TYPE

Returns
If successful, returns a list of application push configurations. If unsuccessful, throws SUPAdminException.

Examples

- **Retrieve a list of push application configurations –** Retrieves a list of push application configurations for app.

```
 app.getApplicationPushConfigurations("<application ID>",
"<APPLICATION_PUSH_CONFIGURATION_TYPE>");
```

Monitoring SAP Mobile Platform Components

`SUPMonitor` provides most of the operations related to monitoring of SAP Mobile Platform components. `SUPCluster` provides additional operations.

Start Monitoring Management
Starts the management of an SAP Mobile Server monitoring operations.

Syntax

```
public static SUPMonitor getSUPMonitor(ClusterContext
clusterContext) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start monitoring management**

```
clusterContext = serverContext.getClusterContext("<cluster
name>");
SUPMonitor supMonitor =
SUPObjectFactory.getSUPMonitor(clusterContext);
```

Usage

To manage SAP Mobile Server monitoring operations, you must create an instance of `SUPMonitor`.

Retrieval of Monitoring Profiles Using SUPCluster

Retrieves the monitoring profiles in a cluster.

Syntax

```
Collection<MonitoringProfileVO> getMonitoringProfiles() throws
SUPAdminException;

MonitoringProfileVO getMonitoringProfile(String name) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
Collection<MonitoringProfileVO> mpvos = supCluster
        .getMonitoringProfiles();
MonitoringProfileVO mpvo = supCluster
        .getMonitoringProfile("<monitoring configuration name>");
System.out.println(mpvo.getName());
```

Creation of a Monitoring Profile Using SUPCluster

Creates a monitoring profile in a cluster.

Syntax

```
void createMonitoringProfile(MonitoringProfileVO mpvo) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Create monitoring profile**

```
//Create a monitoring profile
MonitoringProfileVO mpvo_new = new MonitoringProfileVO();
mpvo_new.setName("<monitoring configuration new name>");
mpvo_new.setDurationType(MONITORING_DURATION_TYPE.SCHEDULED);
mpvo_new.setEnabled(true);

MonitoredDomain md = new MonitoredDomain("<domain name>");
md.setName("<domain name>");
MonitoredPackage mp1 = new MonitoredPackage("<package name 1>");
MonitoredPackage mp2 = new MonitoredPackage("<package name 2>");
md.setMonitoredPackages(Arrays
        .asList(new MonitoredPackage[] { mp1, mp2 }));
mpvo_new.setMonitoredDomains(Arrays.asList(new MonitoredDomain[]
{ md }));

ScheduleVO svo = new ScheduleVO();
svo.setEndDate(new Date());
svo.setEndTime(new Date());
svo.setStartDate(new Date(0));
svo.setStartTime(new Date(0));
svo.setInterval(1234);
svo.setFreq(SCHEDULE_FREQ.INTERVAL);
EnumSet<DAY_OF_WEEK> dayofweeks =
EnumSet.noneOf(DAY_OF_WEEK.class);
svo.setDaysofweek(dayofweeks);
dayofweeks.add(DAY_OF_WEEK.MONDAY);
mpvo_new.setSchedule(svo);
supCluster.createMonitoringProfile(mpvo_new);
```

Update of a Monitoring Profile Using SUPCluster

Updates a monitoring profile in a cluster.

Syntax

```
void updateMonitoringProfile(MonitoringProfileVO monitoringProfile)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update monitoring profile**

```
// Update monitoring profile
MonitoringProfileVO mpvo = supCluster
```

```
        .getMonitoringProfile("<monitoring configuration name>");
mpvo.getSchedule().setFreq(SCHEDULE_FREQ.INTERVAL);
mpvo.getSchedule().setInterval(200000);
supCluster.updateMonitoringProfile(mpvo);
```

Usage

A monitoring profile you create with this method replaces a profile with the same name on the SAP Mobile Server.

Deletion of a Monitoring Profile Using SUPCluster

Deletes a monitoring profiles from a cluster.

Syntax

```
void deleteMonitoringProfile(String name) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Delete monitoring profile**

  ```
  // Delete monitoring profile
  supCluster.deleteMonitoringProfile("<monitoring configuration
  name>");
  ```

Deletion of Monitoring Data Using SUPCluster

Deletes monitoring data.

Syntax

```
void deleteMonitoringData(Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Delete monitoring data –** deletes monitoring data for the specified time period (between the `startTime` and the `endTime`):

  ```
  Date startTime = new Date(0);
  Date endTime = new Date();
  supCluster.deleteMonitoringData(startTime, endTime);
  ```

Construct a Path to the Monitored Object

To retrieve monitoring data, you must provide an instance or collection of `MonitoredObject` to specify the data that gets returned.

`MonitoredObject` contains subclasses in this logical hierarchy:

- `MonitoredCluster`
  - `MonitoredDomain`
    - `MonitoredPackage`
      - `MonitoredSyncGroup`
      - `MonitoredCacheGroup`
        - `MonitoredMBO`
          - `MonitoredOperation`

With this hierarchy, an object can be identified using a path-like structure. Such a path acts as a context against which monitoring data is searched and returned. Follow these rules when constructing a path:

- Start with `MonitoredCluster`.
- Except for `MonitoredCluster`, if `Monitored*` appears in a path, then the class logically above it is in the path.
- `MonitoredSyncGroup` and `MonitoredCache` are mutual exclusive in a path.

Retrieval of a Large Volume of Monitoring Data

Retrieves a specified portion of a large volume of monitoring data (for example, user access histories).

Syntax

```
Long getSecurityLogHistoryCount(Collection<MonitoredObject>
monitoredObjects, Boolean accessResult, Date startTime, Date
endTime) throws SUPAdminException;

Collection<SecurityLogHistoryVO>
getSecurityLogHistory(Collection<MonitoredObject> monitoredObjects,
Boolean accessResult, Date startTime, Date endTime, Long offset,
Integer length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });

long count = supMonitor.getSecurityLogHistoryCount(mos, null,
null, null);
Collection<SecurityLogHistoryVO> slhvos =
supMonitor.getSecurityLogHistory(mos, null,
        null, null, null, null, null);
for (SecurityLogHistoryVO slhvo : slhvos) {
    System.out.println(slhvo.getUserName());
}
long offset = slhvos.size();
while(offset<count){
    slhvos = supMonitor.getSecurityLogHistory(mos, null,
            null, null, offset, null, null);
    for (SecurityLogHistoryVO slhvo : slhvos) {
        System.out.println(slhvo.getUserName());
    }
    offset += slhvos.size();
```

Usage

When monitoring a large volume of data, a paginated API allows you to get a total row count for retrieving the data in chunks. `Offset` specifies where the returned data starts for this call. `Length` specifies the maximum number of records returned for this call.

Specify Result Sorting

You can specify an instance of SortedField to sort the returned result on the given field in the given order (ascending or descending).

Each type of monitoring data has a different set of sortable fields.

- Data change notification
  - DOMAIN
  - NOTIFICATION_TIME
  - PACKAGE
  - PROCESS_TIME
  - PUBLICATION
- Device notification
  - DEVICE_ID
  - DOMAIN
  - NOTIFICATION_TIME
  - PACKAGE

    - PUBLICATION
    - SUBSCRIPTION_ID
    - USER_NAME
- Messaging summary
    - DOMAIN_NAME
    - LAST_TIME_IN
    - LAST_TIME_OUT
    - PACKAGE
    - SUBSCRIPTION_COMMAND_COUNT
    - TOTAL_ERRORS
    - TOTAL_MESSAGES_RECEIVED
    - TOTAL_MESSAGES_SENT
    - TOTAL_OPERATION_REPLAYS
    - TOTAL_PAYLOAD_RECEIVED
    - TOTAL_PAYLOAD_SENT
- Messaging details
    - DEVICE
    - DOMAIN_NAME
    - ERROR
    - FINISH_TIME
    - MBO
    - MESSAGE_TYPE
    - OPERATION_NAME
    - PACKAGE
    - PAYLOAD_SIZE
    - PROCESS_TIME
    - START_TIME
    - USER
- Replication summary
    - DOMAIN_NAME
    - PACKAGE
    - START_TIME
    - SYNC_TIME
    - TOTAL_BYTES_RECEIVED
    - TOTAL_BYTES_SENT
    - TOTAL_ERRORS
    - TOTAL_OPERATION_REPLAYS
    - TOTAL_ROWS_SENT
- Replication details

  - BYTES_TRANSFERRED
  - DEVICE
  - DOMAIN_NAME
  - ERROR
  - FINISH_TIME
  - OPERATION_NAME
  - OPERATION_NAME
  - PACKAGE
  - START_TIME
  - SYNC_PHASE
  - TOTAL_BYTES_SENT
  - TOTAL_ROWS_SENT
  - USER
- Security access
  - DEVICE_ID
  - DOMAIN
  - OUTCOME
  - PACKAGE
  - SECURITY_CONFIGURATION
  - TIME
  - USER

Retrieval of Security Log History

Retrieves a security log history for specified monitored objects, determines how many records are available, and specifies how to retrieve and sort the data.

Syntax

```
Long getSecurityLogHistoryCount(Collection<MonitoredObject>
monitoredObjects, Boolean accessResult, Date startTime, Date
endTime) throws SUPAdminException;

Collection<SecurityLogHistoryVO>
getSecurityLogHistory(Collection<MonitoredObject> monitoredObjects,
Boolean accessResult, Date startTime, Date endTime, Long offset,
Integer length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
// Prepare monitored objects
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
mc.addMonitoredDomain(new MonitoredDomain("test"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });

// Prepare time range
Date startTime = new Date(0);
Date endTime = new Date();

// Should only return successful access
Boolean accessResult = true;

// Starting from 10th record
Long offset = 10L;
// Try to retrieve 10000 records
Integer target = 10000;

// Specify sorting field and sorting order
SortedField<SortedField.SECURITY_ACCESS> sf = new
SortedField<SortedField.SECURITY_ACCESS>(
        SECURITY_ACCESS.DOMAIN, SORT_ORDER.ASCENDING);

// See how many records are available
long count = supMonitor.getSecurityLogHistoryCount(mos,
accessResult,
        startTime, endTime);
long available = Math.min(count - offset, target);
if (available < 1) {
    System.out.println("No monitoring data found at offset " +
offset);
    return;
} else {
    System.out.println("There " + available
            + " records monitoring data at offset " + offset);
}

// Specify the preferred record number to be fetched from server
in one
// call.
// Management server has imposed a upper limit of 500 for sake of
// performance.
Integer length = new Integer(new Long(Math.min(500, available))
        .intValue());
Collection<SecurityLogHistoryVO> slhvos =
supMonitor.getSecurityLogHistory(mos,
        accessResult, startTime, endTime, offset, length, sf);
// All the available records can be fetched at one call.
if (slhvos.size() == available) {
    System.out.println("Fetched " + available + " of " + available
            + " records of monitoring data.");
```

```
    return;
}
long read = slhvos.size();
offset += read;
while (read < available) {
    slhvos = supMonitor.getSecurityLogHistory(mos, accessResult,
            startTime, endTime, offset, length, sf);
    System.out.println("Fetched " + slhvos.size() + " of " +
available
            + " records of monitoring data.");
    read += slhvos.size();
    offset += read;
}
```

Retrieval of Current Messaging Requests

Retrieves current messaging requests for the specified domains and packages.

Syntax

```
Collection<MessagingRequestVO>
getMessagingRequests(Collection<MonitoredObject> monitoredObjects)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
for (MessagingRequestVO mrvo :
supMonitor.getMessagingRequests(mos)) {
    System.out.println(mrvo.getPackageName());
}
```

Retrieval of Detailed Messaging History

Retrieves a detailed messaging history for the specified domains and packages.

Syntax

```
Collection<MessagingHistoryDetailVO>
getMessagingHistoryDetail(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves a detailed messaging history for the specified domains and packages (the "test_mbs:1.0" and "test_mbs:2.0" packages from the "default" domain, and the "test_mbs:3.0" and "test_mbs:4.0" packages from the "test" domain):

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md_def = new MonitoredDomain("default");
  MonitoredDomain md_tst = new MonitoredDomain("test");
  md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
  md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
  md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
  md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
  mc.addMonitoredDomain(md_def);
  mc.addMonitoredDomain(md_tst);
  Collection<MonitoredObject> mos = Arrays
          .asList(new MonitoredObject[] { mc });
  System.out.println(supMonitor.getMessagingHistoryDetail(mos,
  null, null, null, null, null));
  ```

  Note: See *Developer Guide: SAP Mobile Server Runtime > Management API > Code Samples > Monitoring SAP Mobile Platform Components > Retrieval of a Large Volume of Monitoring Data* for handling the large volume of data that this method may retrieve.

Retrieval of Summary Messaging History

Retrieves a summary of the messaging history for the specified domains and packages.

Syntax

```
Collection<MessagingHistorySummaryVO>
getMessagingHistorySummary(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves a summary of the messaging history for the specified domains and packages (the "test_mbs:1.0" and "test_mbs:2.0" packages from the "default" domain, and the "test_mbs:3.0" and "test_mbs:4.0" packages from the "test" domain):

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getMessagingHistorySummary(mos,
null, null, null, null, null));
```

Note: See *Developer Guide: SAP Mobile Server Runtime > Management API > Code Samples > Monitoring SAP Mobile Platform Components > Retrieval of a Large Volume of Monitoring Data* for handling the large volume of data that this method may retrieve.

Messaging Performance Retrieval

Retrieves the messaging performance data for the specified domains and packages.

Syntax

```
MessagingPerformanceVO
getMessagingPerformance(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves the messaging performance data for the specified domains and packages (the "test_mbs:1.0" and "test_mbs:2.0" packages from the "default" domain, and the "test_mbs:3.0" and "test_mbs:4.0" packages from the "test" domain):

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
```

```
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
MessagingPerformanceVO mpvo =
supMonitor.getMessagingPerformance(mos,
        null, null);
System.out.println(mpvo.getMboForMaxProcessTime());
```

Messaging Statistics Retrieval

Retrieves the messaging statistics for a cluster, a domain, a package, or a specific mobile business object.

Syntax

```
MessagingStatisticsVO getMessagingStatistics(MonitoredObject
monitoredObject, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Cluster-level messaging statistics –** retrieves the messaging statistics for all domains in a cluster:

  ```
  MonitoredCluster mc = new MonitoredCluster();

  // Retrieve cluster-level messaging statistics (statistics for all
  domains).
  supMonitor.getMessagingStatistics(mc, null, null);
  ```

- **Domain-level messaging statistics –** retrieves the messaging statistics for all packages in a domain:

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md = new MonitoredDomain("default");

  // Retrieve domain-level messaging statistics (statistics for all
  packages).
  mc.addMonitoredDomain(md);
  supMonitor.getMessagingStatistics(mc, null, null);
  ```

- **Package-level messaging statistics –** retrieves the messaging statistics for all MBOs in a package:

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md = new MonitoredDomain("default");
  ```

```
MonitoredPackage mp = new MonitoredPackage("test_mbs:1.0");

// Retrieve package-level messaging statistics (statistics for all
MBOs).
md.addMonitoredPackage(mp);
supMonitor.getMessagingStatistics(mc, null, null);
```

- **MBO messaging statistics –** retrieves the messaging statistics for a specific mobile business object:

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md = new MonitoredDomain("default");
MonitoredPackage mp = new MonitoredPackage("test_mbs:1.0");
// Monitored cache does not contribute to messaging statistics,
but in
// order to retain the validity of the monitored object path, it
should be
// part of the path.
MonitoredCacheGroup mcg = new MonitoredCacheGroup("Default");
MonitoredMBO mmbo = new MonitoredMBO("Customer");

// Retrieve messaging statistics for a specific MBO.
mcg.addMonitoredMBO(mmbo);
supMonitor.getMessagingStatistics(mc, null, null);
```

Retrieval of Current Replication Requests

Retrieves current replication requests for the specified domains and packages.

Syntax

```
Collection<ReplicationRequestVO>
getReplicationRequests(Collection<MonitoredObject>
monitoredObjects) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
```

```
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getReplicationRequests(mos));
```

Retrieval of Detailed Replication History

Retrieves a detailed replication history for the specified domains and packages.

Syntax

```
Collection<ReplicationHistoryDetailVO>
getReplicationHistoryDetail(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getReplicationHistoryDetail(mos,
null, null, null, null, null));
```

Retrieval of Summary Replication History

Retrieves a summary of replication history for the specified domains and packages.

Syntax

```
Collection<ReplicationHistorySummaryVO>
getReplicationHistorySummary(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getReplicationHistorySummary(mos,
null, null, null, null, null));
```

Replication Performance Retrieval

Retrieves replication performance data for the specified domains and packages.

Syntax

```
ReplicationPerformanceVO
getReplicationPerformance(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
ReplicationPerformanceVO rpvo =
supMonitor.getReplicationPerformance(mos, null, null);
System.out.println(rpvo.getMaxSyncTime());
```

Replication Statistics Retrieval

Retrieves the replication statistics for a cluster, a domain, a package, a mobile business object, or a specific user.

Syntax

```
ReplicationStatisticsVO getReplicationStatistics(MonitoredObject
monitoredObject, Date startTime, Date endTime) throws
SUPAdminException;

ReplicationStatisticsVO getReplicationStatistics(java.lang.String
user, java.util.Date startTime, java.util.Date endTime)
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Cluster-level replication statistics –** retrieves the replication statistics for all domains in a cluster:

  ```
  MonitoredCluster mc = new MonitoredCluster();

  //Retrieve cluster-level replication statistics (for all domains).
  supMonitor.getReplicationStatistics(mc, null, null);
  ```

- **Domain-level replication statistics –** retrieves the replication statistics for all packages in a domain:

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md = new MonitoredDomain("default");

  //Retrieve domain-level replication statistics (for all packages).
  mc.addMonitoredDomain(md);
  supMonitor.getReplicationStatistics(mc, null, null);
  ```

- **Package-level replication statistics –** retrieves the replication statistics for all MBOs in a package:

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md = new MonitoredDomain("default");
  MonitoredPackage mp = new MonitoredPackage("test_mbs:1.0");

  //Retrieve package-level replication statistics (for all MBOs) .
  md.addMonitoredPackage(mp);
  supMonitor.getReplicationStatistics(mc, null, null);
  ```

- **MBO replication statistics –** retrieves the replication statistics for a specific mobile business object:

  ```
  MonitoredCluster mc = new MonitoredCluster();
  MonitoredDomain md = new MonitoredDomain("default");
  ```

```
MonitoredPackage mp = new MonitoredPackage("test_mbs:1.0");
// Monitored cache does not contribute to replication statistics,
however
// to retain the validity of the monitored object path, it should
be part of the path.
MonitoredCacheGroup mcg = new MonitoredCacheGroup("Default");
MonitoredMBO mmbo = new MonitoredMBO("Customer");

//Retrieve replication statistics for a specific MBO.
mcg.addMonitoredMBO(mmbo);
supMonitor.getReplicationStatistics(mc, null, null);
```

Retrieval of Data Change Notification History

Retrieves data change notification history for a monitored cluster.

Syntax

```
Collection<DataChangeNotificationHistoryVO>
getDataChangeNotificationHistory(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getDataChangeNotificationHistory(mo
s,
null, null, null, null, null));
```

Retrieval of Data Change Notification Performance

Retrieves data change notification performance for monitored objects in a cluster.

Syntax

```
DataChangeNotificationPerformanceVO
getDataChangeNotificationPerformance(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
DataChangeNotificationPerformanceVO npvo = supMonitor
        .getDataChangeNotificationPerformance(mos, null, null);
System.out.println(npvo.getMinProcessingTime());
```

Retrieval of Device Notification History

Retrieves device notification history for the monitored objects in a cluster.

Syntax

```
Collection<DeviceNotificationHistoryVO>
getDeviceNotificationHistory(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime, Long offset, Integer
length, SortedField<? extends Enum> sortedField) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves device notification history for the "default" domain in a cluster:

```
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
System.out.println(supMonitor.getDeviceNotificationHistory(mos,
null, null, null, null, null));
```

Retrieval of Device Notification Performance

Retrieves device notification performance for the monitored objects in a cluster.

Syntax

```
DeviceNotificationPerformanceVO
getDeviceNotificationPerformance(Collection<MonitoredObject>
```

```
monitoredObjects, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves device notification performance for the monitored "default" domain in a cluster:

```
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
DeviceNotificationPerformanceVO dnpvo = supMonitor
        .getDeviceNotificationPerformance(mos, null, null);
System.out.println(dnpvo.getDistinctDevices());
```

Retrieval of Cache Group Performance

Retrieves cache group perfomance data of the monitored objects within a specified time range.

Syntax

```
Collection<CacheGroupPerformanceVO>
getCacheGroupPerformance(Collection<MonitoredObject>
monitoredObjects, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval –** retrieves cache group perfomance data for the specified domains and packages:

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredDomain md_tst = new MonitoredDomain("test");
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:1.0"));
md_def.addMonitoredPackage(new MonitoredPackage("test_mbs:2.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:3.0"));
md_tst.addMonitoredPackage(new MonitoredPackage("test_mbs:4.0"));
mc.addMonitoredDomain(md_def);
mc.addMonitoredDomain(md_tst);
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
for (CacheGroupPerformanceVO cpvo : supMonitor
```

```
        .getCacheGroupPerformance(mos, null, null)) {
    System.out.println(cpvo.getMaxCacheHits());
}
```

Retrieval of Cache Group Statistics

Retrieves cache group statistics for a package or for an MBO within the specified time range.

Syntax

```
Collection<CacheGroupPackageStatisticsVO>
getCacheGroupPackageStatistics(MonitoredObject monitoredObject, Date
startTime, Date endTime) throws SUPAdminException;

Collection<CacheGroupMBOStatisticsVO>
getCacheGroupMBOStatistics(MonitoredObject monitoredObject, Date
startTime, Date endTime) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Package –** retrieves cache group statistics for the specified package in a domain:

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
MonitoredPackage mp = new MonitoredPackage("jdbc:1.0");
md_def.addMonitoredPackage(mp);
mc.addMonitoredDomain(md_def);
for (CacheGroupPackageStatisticsVO cgpsvo : supMonitor
        .getCacheGroupPackageStatistics(mc, null, null)) {
    System.out.println(cgpsvo.getRowCount());
}

mp.addMonitoredCacheGroup(new MonitoredCacheGroup("default"));
for (CacheGroupPackageStatisticsVO cgpsvo : supMonitor
        .getCacheGroupPackageStatistics(mc, null, null)) {
    System.out.println(cgpsvo.getRowCount());
}
```

- **MBO –** retrieves cache group statistics for the specified package, cache group, and MBO:

```
MonitoredCluster mc = new MonitoredCluster();
MonitoredDomain md_def = new MonitoredDomain("default");
mc.addMonitoredDomain(md_def);
for (CacheGroupMBOStatisticsVO cgmsvo : supMonitor
        .getCacheGroupMBOStatistics(mc, null, null)) {
    System.out.println(cgmsvo.getAccessCount());
}

MonitoredPackage mp = new MonitoredPackage("jdbc:1.0");
md_def.addMonitoredPackage(mp);
for (CacheGroupMBOStatisticsVO cgmsvo : supMonitor
```

```
        .getCacheGroupMBOStatistics(mc, null, null)) {
    System.out.println(cgmsvo.getAccessCount());
}

MonitoredCacheGroup mcg = new MonitoredCacheGroup("default");
mp.addMonitoredCacheGroup(mcg);
for (CacheGroupMBOStatisticsVO cgmsvo : supMonitor
        .getCacheGroupMBOStatistics(mc, null, null)) {
    System.out.println(cgmsvo.getAccessCount());
}

MonitoredMBO mmbo = new MonitoredMBO("Customer");
mcg.addMonitoredMBO(mmbo);
for (CacheGroupMBOStatisticsVO cgmsvo : supMonitor
        .getCacheGroupMBOStatistics(mc, null, null)) {
    System.out.println(cgmsvo.getAccessCount());
}
```

Retrieval of Queue Monitoring Data and Statistics

Retrieves a list of the monitoring statistics of Java Message Service (JMS) queues of the SAP Mobile Server within the specified time range.

Syntax

```
Collection<MessagingQueueStatisticsVO>
getMessagingQueueStatistics(Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
for (MessagingQueueStatisticsVO mqsvo : supMonitor
        .getMessagingQueueStatistics(null, null)) {
    System.out.println(mqsvo.getQueueName());
}
```

Monitoring Data Export

Export access history of the monitored objects during the specified time range.

Exporting monitoring data is similar to retrieving monitoring data, with these differences:

- Exporting monitoring data requries an instance of `java.io.File`.
- You specify length to set the number of rows of records to be exported to a specified file. There is no server-side limitation on length.

Syntax

```
void exportSecurityLogHistory(File file, Collection<MonitoredObject>
monitoredObjects, Boolean accessResult, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportMessagingQueueStatistics(File file, Date startTime, Date
endTime) throws SUPAdminException;

void exportMessagingRequests(File file, Collection<MonitoredObject>
monitoredObjects) throws SUPAdminException;

void exportMessagingHistorySummary(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportMessagingHistoryDetail(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportMessagingPerformance(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime) throws SUPAdminException;

void exportMessagingStatistics(File file, String user, Date
startTime, Date endTime) throws SUPAdminException;

void exportReplicationRequests(File file,
Collection<MonitoredObject> monitoredObjects) throws
SUPAdminException;

void exportReplicationHistorySummary(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportReplicationHistoryDetail(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportReplicationPerformance(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime) throws SUPAdminException;

void exportReplicationStatistics(File file, MonitoredObject
monitoredObject, Date startTime, Date endTime) throws
SUPAdminException;

void exportMessagingOperationStatistics(file, mc, null, null) throws
SUPAdminException;

void exportReplicationOperationStatistics(file, mc, null, null)
```

```
throws SUPAdminException;

void exportDataChangeNotificationHistory(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportDataChangeNotificationPerformance(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime) throws SUPAdminException;

void exportDeviceNotificationHistory(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime, Long offset, Integer length, SortedField<? extends Enum>
sortedField) throws SUPAdminException;

void exportDeviceNotificationPerformance(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime) throws SUPAdminException;

void exportCacheGroupPerformance(File file,
Collection<MonitoredObject> monitoredObjects, Date startTime, Date
endTime) throws SUPAdminException;

void exportCacheGroupPackageStatistics(File file, MonitoredObject
monitoredObject, Date startTime, Date endTime) throws
SUPAdminException;

void exportCacheGroupMBOStatistics(File file, MonitoredObject
monitoredObject, Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Export Security Log History –** exports records for a monitored domain to `access.log`:

```
File file = new File("D:\\tmp\\access.log");
MonitoredCluster mc = new MonitoredCluster();
mc.addMonitoredDomain(new MonitoredDomain("default"));
Collection<MonitoredObject> mos = Arrays
        .asList(new MonitoredObject[] { mc });
// when the method returns, the access.log contains the exported
records.
supMonitor.exportSecurityLogHistory(file, mos, null, null, null,
        null, null, null);
```

Managing SAP Mobile Server Logs

You can enable logging, filter logs, and manage log appenders and buckets through the `SUPServerLog` interface. Operations you can perform with this interface include:

- Starting administration of logging.
- Constructing filters for a log.
- Filtering and retrieving log entries.
- Deleting a log.
- Managing log appenders and buckets.

Start Log Management

Starts the management of logging for SAP Mobile Server.

Syntax

```
public static SUPServerLog getSUPServerLog(ServerContext
serverContext);
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start log management**

  ```
  SUPServerLog supServerLog =
  SUPObjectFactory.getSUPServerLog(serverContext);
  ```

Usage

When an instance of `SUPServerLog` is returned from the `SUPObjectFactory`, call its method.

Log Filter Construction

You can define and compose filters to form a log fetching pattern. All the filters are subclasses of `FieldFilter`. There are two types of filters: those that act directly on log fields, and those that connect other filters.

These are the supported filters in `FieldFilter` for server logging:

- Direct Field Filters
  - FieldEqualityFilter
  - FieldRangeFilter
  - FieldRegexpFilter
  - FieldSetFilter

    - FieldWildcardFilter
- Connecting Filters
    - LogicalAndFilter
    - LogicalNotFilter
    - LogicalOrFilter

You cannot directly instantiate filters through a `new` operator. You must acquire them by calling methods of `SUPServerLog`.

```
FieldEqualityFilter bucket_eq = supServerLog.getFieldEqualityFilter(
        SERVER_LOG_FIELD.BUCKET, "MMS");

FieldSetFilter thread_set = supServerLog.getFieldSetFilter(
        SERVER_LOG_FIELD.THREAD_NAME, Arrays.asList(new String[] {
                "main", "dispatcher" }));

FieldWildcardFilter logger_wild =
supServerLog.getFieldWildcardFilter(
        SERVER_LOG_FIELD.LOGGER_NAME, "com.sybase.sup*");

FieldRangeFilter time_range = supServerLog.getFieldRangeFilter(
        SERVER_LOG_FIELD.TIMESTAMP, new Date(0), new Date());
FieldRegexpFilter regexp = supServerLog.getFieldRegexpFilter(
        SERVER_LOG_FIELD.THREAD_NAME, "^RMI");

LogicalNotFilter notFilter = supServerLog
        .getLogicalNotFilter(bucket_eq);
LogicalOrFilter orFilter = supServerLog.getLogicalOrFilter(Arrays
        .asList(new FieldFilter[] { time_range, regexp }));
LogicalAndFilter andFilter = supServerLog.getLogicalAndFilter(Arrays
        .asList(new FieldFilter[] { thread_set, logger_wild }));

FieldFilter filter = supServerLog.getLogicalAndFilter(Arrays
        .asList(new FieldFilter[] { notFilter, orFilter,
andFilter }));

supServerLog.setLogFilter(filter);
```

Log Entry Retrieval

Filters and retrieves entries from an SAP Mobile Server log.

Syntax

```
void setLogPosition(LogPositionVO logPosition) throws
SUPAdminException;

Collection<LogEntryVO> getLogEntries(Integer start, Integer end)
throws SUPAdminException;

Collection<LogEntryVO> getLogEntries(Integer start, Integer end,
Boolean includingBackup) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Filter from the start of a log –** returns log entries from the start of the log (the 100th through 250th entries after the start of the log):

```
supServerLog.setLogPosition(LogPositionVO.START);
for (LogEntryVO levo : supServerLog.getLogEntries(100, 250)) {
    System.out.println(levo.getBucket());
}
for (LogEntryVO levo : supServerLog.getLogEntries(100, 250, true))
{
    System.out.println(levo.getBucket());
}
```

- **Filter from the end of a log –** returns log entries from the end of the log (the 100th to 250th entries before the end of the log):

```
supServerLog.setLogPosition(LogPositionVO.END);
for (LogEntryVO levo : supServerLog.getLogEntries(-100, -250)) {
    System.out.println(levo.getBucket());
}
for (LogEntryVO levo : supServerLog.getLogEntries(-100, -250,
true)) {
    System.out.println(levo.getBucket());
}
```

Log Deletion

Truncates a server log.

Syntax

```
void deleteLog() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
supServerLog.deleteLog();
```

Managing Log Appenders and Buckets

SAP Mobile Platform server logs are managed through metadata-based configuration and consist of one or more log appenders. Each log appender has one or more log buckets. They are represented by `LogAppenderVO` and `LogBucketVO` respectively.

These rules apply when managing server log appenders and buckets:

- Each instance of `SUPServerLog` is a local object that holds values for all metadata based configuration. All of its methods perform against those values. The values are refreshed when `commit()` and `refresh()` are called.
- After getting an instance of `SUPServerLog`, call `refresh()` to populate the values, before calling any other methods.
- Changes made through these methods are cached locally unless you call the `commit()` method. `Commit()` sends all cached values (changed or not) to SAP Mobile Server.

Populate Server Log Configuration

Populates the server log configuration values to SAP Mobile Server.

Syntax

```
ConfigurationValidationStatus refresh() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Populate server log configuration**

  ```
  supServerLog.refresh();
  ```

LogAppenderVO and LogBucketVO

The `LogAppenderVO` and `LogBucketVO` classes have two read-only properties that you must initialize at construction time.

- **ID –** a unique ID within the locally cached log configuration.
- **Type –** specifies the type of appender or bucket. The types of appenders and buckets are described in *Developer Guide: SAP Mobile Server Runtime > Management API > Client Metadata > Server Log Configuration*.

Retrieval of a List of Active Log Appenders

Retrieves a list of active log appenders.

Syntax

```
Collection<LogAppenderVO> getActiveLogAppenders() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
supServerLog.refresh();
for(LogAppenderVO lavo: supServerLog.getActiveLogAppenders()){
    System.out.println(lavo.getType());
    System.out.println(lavo.getProperties());
}
```

Update of an Active Log Appender

Updates an active log appender.

Syntax

```
void updateActiveLogAppender(String logAppenderID, LogAppenderVO
logAppender) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerLog.refresh();
LogAppenderVO lavo =
supServerLog.getActiveLogAppenders().iterator().next();
LogAppenderVO lavo_new = new LogAppenderVO(lavo.getID(),
lavo.getType());
Map<String, String> properties = new HashMap<String, String>();
properties.put("async", "true");
lavo_new.setProperties(properties);
supServerLog.updateActiveLogAppender(lavo_new.getID(), lavo_new);
supServerLog.commit();
```

Retrieval of a List of Active Log Buckets

Retrieves a list of active log appenders.

Syntax

```
Collection<LogAppenderVO> getActiveLogAppenders() throws
SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null). If unsuccessful, returns `SUPAdminException`

Examples

- **Retrieve Active Log Buckets**

```
supServerLog.refresh();
LogAppenderVO lavo =
supServerLog.getActiveLogAppenders().iterator().next();
for(LogBucketVO lbvo : lavo.getChildren()){
    System.out.println(lbvo.getType());
    System.out.println(lbvo.getProperties());
}
```

Update of an Active Log Bucket

Updates an active log bucket of an active log appender with the specified properties.

Syntax

```
void updateActiveLogBucket(String logAppenderID, String logBucketID,
LogBucketVO logBucket) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerLog.refresh();
LogAppenderVO lavo =
supServerLog.getActiveLogAppenders().iterator().next();
LogBucketVO lbvo = lavo.getChildren().iterator().next();
LogBucketVO lbvo_new = new LogBucketVO(lbvo.getID(),
lbvo.getType());
Map<String, String> properties = new HashMap<String, String>();
properties.put("LogLevel", "INFO");
lbvo_new.setProperties(properties);
supServerLog.updateActiveLogBucket (lavo.getID(),
lbvo_new.getID(), lbvo_new);
supServerLog.commit();
```

Retrieval and Export of Trace Entries

Retrieves and exports trace entries to allow you to identify and resolve server-side issues while debugging a device application.

Syntax

```
PaginationResult<TraceEntryVO> getTraceEntries() throws
SUPAdminException;

void exportTraceEntries(exportFile, filter, sort) through
SUPAdminException
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve and export trace entries**

```
TraceFilterVO filter = new TraceFilterVO();
Calendar c = Calendar.getInstance();
c.set(2011, 10, 1);

filter.setStartTime(c.getTime());
filter.setEndTime(new Date());
filter.setLevel(TRACE_LOG_LEVEL.DEBUG);
Collection<TRACE_LOG_MODULE> modules =
Arrays.asList(TRACE_LOG_MODULE.MO);
filter.setModules(modules);
TraceSortVO sort = null;
PaginationResult<TraceEntryVO> entries =
supServerLog.getTraceEntries(
filter, 0L, 100, sort);

System.out.println(entries.getTotalAvailableRecords());

File exportFile = new File("D:\\temp\\jmsBridge.zip");
supServerLog.exportTraceEntries(exportFile, filter, sort);
```

Managing Domain Logs

You can define log filtering and fetching behavior and change log settings for a domain through the `SUPDomainLog` interface.

Start Managing Domain Logs

Starts the management of logging for a domain.

Syntax

```
public static SUPDomainLog getSUPDomainLog(DomainContext
domainContext);
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Security configuration**

  ```
  SUPDomainLog domainLog =
  SUPObjectFactory.getSUPDomainLog(domainContext);
  ```

Usage

When an instance of `SUPDomainLog` is returned from the `SUPObjectFactory`, call its method.

Retrieval of a List of Domain Log Profiles

Retrieves a list of domain log profiles.

Syntax

```
Collection<DomainLogProfileVO> getDomainLogProfiles() throws
SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

  ```
  for (DomainLogProfileVO dlpvo : domainLog.getDomainLogProfiles())
  {
  System.out.println(dlpvo.getName());
  }
  ```

Creation of a Domain Log Profile

Creates a domain log profile.

Syntax

```
trap5.setValues(Arrays.asList(new DOMAIN_LOG_CATEGORY[]
{ DOMAIN_LOG_CATEGORY.DATA_SYNC,
DOMAIN_LOG_CATEGORY.GENERAL_DCN }));
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- ```
  String profileName = "profile1";
  Collection<DomainLogTrapVO<? extends Enum>> traps = new
  ArrayList<DomainLogTrapVO<? extends Enum>>();
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PACKAGE_TRAP> trap1 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PACKAGE_TRAP>(
  DOMAIN_LOG_PROFILE_PACKAGE_TRAP.APPLICATION_ID);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_SECURITY_TRAP> trap2 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_SECURITY_TRAP>(
  DOMAIN_LOG_PROFILE_SECURITY_TRAP.SECURITY_CONF);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_ENDPOINT_TRAP> trap3 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_ENDPOINT_TRAP>(
  DOMAIN_LOG_PROFILE_ENDPOINT_TRAP.ENDPOINT);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP> trap4 =
  new DomainLogTrapVO<DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP>(
  DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP.APPLICATION_CONNECTION_ID);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PAYLOAD_TRAP> trap5 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PAYLOAD_TRAP>(
  DOMAIN_LOG_PROFILE_PAYLOAD_TRAP.PAY_LOAD);

  trap1.setEnabled(true);
  trap1.setValues(Arrays.asList(new String[] { "app1:1.0",
  "app2:2.0" }));

  trap2.setEnabled(true);
  trap2.setValues(Arrays.asList(new String[] { "admin", "test" }));

  trap3.setEnabled(true);
  EndpointTrapVO etvo1 = new EndpointTrapVO();
  etvo1.setName("sampledb");
  etvo1.setType(ENDPOINT_TYPE.JDBC);
  EndpointTrapVO etvo2 = new EndpointTrapVO();
  etvo2.setName("sap_crm:1.0");
  etvo2.setType(ENDPOINT_TYPE.DOEC);
  trap3.setValues(Arrays.asList(new EndpointTrapVO[] { etvo1,
  etvo2 }));

  trap4.setEnabled(true);
  trap4.setValues(Arrays.asList(new String[] { "emulator1",
  "bb2" }));

  trap5.setEnabled(true);
  trap5.setValues(Arrays
                  .asList(new DOMAIN_LOG_CATEGORY[] {
                          DOMAIN_LOG_CATEGORY.DATA_SYNC,
                          DOMAIN_LOG_CATEGORY.GENERAL_DCN }));
  ```
  ```

```
traps.add(trap1);
traps.add(trap2);
traps.add(trap3);
traps.add(trap4);
traps.add(trap5);

domainLog.createDomainLogProfile(profileName, description, traps,
            false);
```

Update of a Domain Log Profile

Updates a domain log profile.

Syntax

```
void updateDomainLogProfile(String profileName, String description,
Collection<DomainLogTrapVO> traps) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- ```
  String profileName = ”profile1”;
  String description = "domain log profile description updated";

  Collection<DomainLogTrapVO<? extends Enum>> traps = new
  ArrayList<DomainLogTrapVO<? extends Enum>>();
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PACKAGE_TRAP> trap1 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_PACKAGE_TRAP>(
  DOMAIN_LOG_PROFILE_PACKAGE_TRAP.APPLICATION_ID);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_SECURITY_TRAP> trap2 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_SECURITY_TRAP>(
  DOMAIN_LOG_PROFILE_SECURITY_TRAP.SECURITY_CONF);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_ENDPOINT_TRAP> trap3 = new
  DomainLogTrapVO<DOMAIN_LOG_PROFILE_ENDPOINT_TRAP>(
  DOMAIN_LOG_PROFILE_ENDPOINT_TRAP.ENDPOINT);

  DomainLogTrapVO<DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP> trap4 =
  new DomainLogTrapVO<DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP>(
  DOMAIN_LOG_PROFILE_APPCONNECTION_TRAP.APPLICATION_CONNECTION_ID);

  trap1.setEnabled(true);
  trap2.setEnabled(true);
  trap3.setEnabled(true);
  trap4.setEnabled(true);

  traps.add(trap1);
  traps.add(trap2);
  traps.add(trap3);
  ```
  ```

```
traps.add(trap4);

domainLog.updateDomainLogProfile(profileName, description,
traps);
```

Deletion of a Domain Log Profile

Deletes a domain log profile.

Syntax

```
void deleteDomainLogProfiles(Collection<String> profileNames) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- ```
  domainLog.deleteDomainLogProfiles(Arrays.asList(new String[]
  { profileName }));
  ```

Retrieval of a List of Domain Log Filters

Retrieves a list of domain log filters.

Syntax

```
Collection<DomainLogFilterVO> getDomainLogFilters() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

  ```
  for (DomainLogFilterVO dlfvo : domainLog.getDomainLogFilters()) {
      System.out.println (dlfvo.getName());
  }
  ```

Creation or Update of a Correlation Log Filter

Persists the domain log filters for later usage.
  ```

Syntax

```
void saveDomainLogFilters(Collection<DomainLogFilterVO> filters)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- ```
  DomainLogFilterVO dlfvo = new
  DomainLogFilterVO(DOMAIN_LOG_CATEGORY.ALL);
  FilterExpression<DOMAIN_LOG_FILTER> fe = new FilterExpression<
  DOMAIN_LOG_FILTER >();
  FilterExpression< DOMAIN_LOG_FILTER > fe1 = new FilterExpression<
  DOMAIN_LOG_FILTER >();
  fe1 = fe.eq(DOMAIN_LOG_FILTER.APPLICATION_CONNECTION_ID,
  "emulator1").and(
  fe.eq(DOMAIN_LOG_FILTER.DOMAIN,
  "default")).or(fe.eq(DOMAIN_LOG_FILTER.PACKAGE, "sap_crm:1.0"));
  dlfvo.setFilterExpression(fe1);
  domainLog.saveDomainLogFilters(Arrays.asList(new
  DomainLogFilterVO[]{dlfvo}));
  ```

Deletion of a Domain Log Filter

Deletes a domain log filter.

Syntax

```
void deleteDomainLogFilters(Collection<String> filterNames) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- ```
  domainLog.deleteDomainLogFilters(Arrays
  .asList(new String[] { "filter1" }));
  ```

Retrieval of a List of Log Entries

Retrieves the domain log entries with the given filters, time range, offset and length.

Syntax

```
List<DomainLogEntryVO>
getDomainLogEntry(Collection<DomainLogFilterVO> filters, Date
```

```
StartTime, Date EndTime, Long offset, Integer length) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
DomainLogFilterVO dlfvo =
domainLog.getDomainLogFilter("filter1");
List<DomainLogEntryVO> logEntries = domainLog.getDomainLogEntry(
        Arrays.asList(new DomainLogFilterVO[] { dlfvo }), null,
        null, null, null);
for(DomainLogEntryVO dlevo : logEntries){
        for(Map.Entry<String, Object> entry :
dlevo.getEntry().entrySet()){
            System.out.println(entry.getKey() + ":" +
entry.getValue());
        }
}
```

Deletion of Domain Log Entries

Deletes the domain log entries within the specified time range.

Syntax

```
void deleteLog(Date startTime, Date endTime) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
domainLog.deleteLog(new Date(0), new Date());
```

Retrieval of Log Store Policy

Retrieves the properties of the domain log store policy.

Syntax

```
DomainLogStorePolicyVO getDomainLogStorePolicy() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
DomainLogStorePolicyVO dlspvo = supCluster
        .getDomainLogStorePolicy();
System.out.println(dlspvo.getCurrentDomainLogDataSource());
System.out.println(dlspvo.getAvailableDomainLogDataSource());
System.out.println(dlspvo.getDomainLogFlushBatchSize());
System.out.println(dlspvo.getLazyWriteEnabled());
System.out.println(dlspvo.getLazyWriteRowThreshold());
System.out.println(dlspvo.getLazyWriteTimeThreshold());
System.out.println(dlspvo.getPurgeTimeThreshold());
```

Usage

These methods are only accessible to the Platform Administrator.

Update of Log Store Policy

Updates the properties of the domain log store policy.

Syntax

```
void setDomainLogAutoPurgeTimeThreshold(Integer days) throws
SUPAdminException;

void setDomainLogDataSource(String datasource) throws
SUPAdminException;

void setDomainLogFlushBatchSize(Integer rows) throws
SUPAdminException;

void setDomainLogLazyWriteRowThreshold(Integer rowcount) throws
SUPAdminException;

void setDomainLogLazyWriteStatus(Boolean flag) throws
SUPAdminException;

void setDomainLogLazyWriteTimeThreshold(Integer minutes) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supCluster.setDomainLogAutoPurgeTimeThreshold(7);
supCluster.setDomainLogDataSource("newDomainLogDB");
supCluster.setDomainLogFlushBatchSize(100);
supCluster.setDomainLogLazyWriteRowThreshold(200);
supCluster.setDomainLogLazyWriteStatus(true);
supCluster.setDomainLogLazyWriteTimeThreshold(100);
```

Usage

These methods are only accessible to the Platform Administrator.

Export of Log Entries

Exports the domain log entries to a file.

Syntax

```
File exportDomainLogEntry(file, Date StartTime, Date EndTime,
Integer length) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Export**

```
File file = new File("D:\\domainlog.txt");
domainLog.exportDomainLogEntry(file, Date StartTime, Date
EndTime, Integer length);
```

Configuring SAP Mobile Platforms

Administration of the SAP Mobile Server configuration is provided through the `SUPServerConfiguration` interface.

The SAP Mobile Server configuration consists of Java Virtual Machine (JVM) startup options and Outbound Enabler Proxy management, which are metadata-based configuration. All other components have been deprecated and are now performed on the cluster.

The metadata-based configurations have these characteristics:

- Each of these components is represented by `ServerComponentVO`.

- The properties of `ServerComponentVO` differentiate these components. See *Developer Guide: SAP Mobile Server Runtime > SAP Mobile Server Management API > Client Metadata*.
- Each instance of `SUPServerConfiguration` is a local object which holds values of all metadata-based configurations. All of its methods perform against those values. The values are refreshed when you call the `commit()` and `refresh()` methods. After you receive an instance of `SUPServerConfiguration`, call the `refresh()` method to populate the values, before calling any other methods.
- Changes made through these methods are cached locally unless the `commit()` method is called. `Commit()` sends all the cached values (whether changed or not) to the SAP Mobile Server. A server restart may be required for some changes to take effect.

ServerComponentVO

The `ServerComponentVO` class has a read-only property that you must initialize at construction time.

The type property specifies the server component type. The server component types are described in *Developer Guide: SAP Mobile Server Runtime > Management API > Client Metadata > Server Configuration*.

Start Management of SAP Mobile Server Configuration

Starts the management of SAP Mobile Server configuration information.

Syntax

```
public static SUPServerConfiguration
getSUPServerConfiguration(ServerContext serverContext) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **SAP Mobile Server configuration**

```
SUPServerConfiguration supServerConf = SUPObjectFactory
        .getSUPServerConfiguration(serverContext);
```

Usage

When an instance of `SUPServerConfiguration` is returned from the SUPObjectFactory, call its method.

Populate Server Configuration

Retrieves the server configuration from the SAP Mobile Server and caches it locally. This method refreshes all metadata-based configuration. The returned

`ConfigurationValidationStatus` contains the validation status of the security configuration on the server.

Syntax

```
ConfigurationValidationStatus refresh() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Populate server configuration**

  ```
  supServerConf.refresh();
  ```

Usage

When you call `SUPServerConfiguration.refresh()`, any data in the local cache is overwritten.

Each call to `commit()` and `refresh()` expire all previous `ServerComponentVOs`, because all the IDs are regenerated.

Commit Local Changes to SAP Mobile Server

Commits local changes to SAP Mobile Server. The returned `ConfigurationValidationStatus` contains the validation status of the delivered security configuration on the SAP Mobile Server.

Syntax

```
ConfigurationValidationStatus commit() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

  ```
  ConfigurationValidationStatus cvs = supServerConf.commit();
  if(cvs.isValid()){
      //succeed.
  }
  else{
  ```

```
    //fail.
}
```

Retrieval of Replication Sync Server Configuration

This method has been deprecated. Retrieves the properties of the replication synchronization server configuration.

Syntax

```
ServerComponentVO getReplicationSyncServerConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getReplicationSyncServerConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Update of Replication Sync Server Configuration

This method has been deprecated. Updates the properties of the replication synchronization server configuration.

Syntax

```
void updateReplicationSyncServerConfiguration(ServerComponentVO
serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getReplicationSyncServerConfiguration();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
```

```
Map<String, String> properties = scvo.getProperties();
properties.put("sup.sync.protocol", "http");
properties.put("ml.threadcount", "50");
scvo_new.setProperties(properties);
supServerConf.updateReplicationSyncServerConfiguration(scvo_new);
supServerConf.commit();
```

Retrieval of Messaging Sync Server Configuration

This method has been deprecated. Retrieves the properties of the messaging synchronization configuration from the SAP Mobile Server.

Syntax

```
ServerComponentVO getMessagingSyncServerConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getMessagingSyncServerConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Update of Messaging Sync Server Configuration

This method has been deprecated. Updates the properties of the messaging synchronization configuration on the SAP Mobile Server.

Syntax

```
void updateMessagingSyncServerConfiguration(ServerComponentVO
serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update –** updates the messaging synchronization configuration on the SAP Mobile Serverby specifying the ID, Type, and Properties:

```
supServerConf.refresh();
ServerComponentVO scvo = supServerConf
        .getMessagingSyncServerConfiguration();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("msg.admin.webservices.port", "5100");
properties.put("msg.http.server.ports", "5001,80");
scvo_new.setProperties(properties);
supServerConf.updateMessagingSyncServerConfiguration(scvo_new);
supServerConf.commit();
```

Retrieval of Consolidated Database Configuration

This method has been deprecated. Retrieves the properties of the consolidated database configuration.

Syntax

```
ServerComponentVO getConsolidatedDatabaseConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getConsolidatedDatabaseConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Retrieval of Administration Listener Configuration

This method has been deprecated. Retrieves the configuration of the administration listener.

Syntax

```
ServerComponentVO getAdministrationListenerConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getAdministrationListenerConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Update of Administration Listener Configuration

This method has been deprecated. Updates the properties of the administration listener configuration.

Syntax

```
void updateAdministrationListenerConfiguration(String
serverComponentID, ServerComponentVO serverComponent) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getAdministrationListenerConfiguration();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.socket.listener.port", "2000");
properties.put("sup.socket.listener.enabled", "true");
scvo_new.setProperties(properties);
supServerConf.updateAdministrationListenerConfiguration(scvo_new.
getID(), scvo_new);
supServerConf.commit();
```

Retrieval of HTTP Listener Configuration

This method has been deprecated. Retrieves a list of HTTP listener configurations.

Syntax

```
Collection<ServerComponentVO> getHTTPListenerConfigurations() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
for(ServerComponentVO scvo :
supServerConf.getHTTPListenerConfigurations()){
    System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
}
```

Addition of HTTP Listener Configuration

This method has been deprecated. Adds a new HTTP listener configuration.

Syntax

```
void addHTTPListenerConfiguration(ServerComponentVO serverComponent)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add configuration**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getHTTPListenerConfigurations()
        .iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.socket.listener.port", "8000");
properties.put("sup.socket.listener.enabled", "true");
scvo_new.setProperties(properties);
supServerConf.addHTTPListenerConfiguration(scvo_new);
supServerConf.commit();
```

Deletion of HTTP Listener Configuration

This method has been deprecated. Deletes the configuration for an HTTP listener.

Syntax

```
void deleteHTTPListenerConfiguration(String serverComponentID)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getHTTPListenerConfigurations()
        .iterator().next();
supServerConf.deleteHTTPListenerConfiguration(scvo.getID());
supServerConf.commit();
```

Update of HTTP Listener Configuration

This method has been deprecated. Updates the configuration of an HTTP listener.

Syntax

```
void updateHTTPListenerConfiguration(String serverComponentID,
ServerComponentVO serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getHTTPListenerConfigurations()
        .iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.socket.listener.port", "8000");
properties.put("sup.socket.listener.enabled", "true");
scvo_new.setProperties(properties);
supServerConf.updateHTTPListenerConfiguration(scvo_new.getID(),
scvo_new);
supServerConf.commit();
```

Retrieval of HTTPS Listener Configuration

This method has been deprecated. Retrieves a list of HTTPS listener configurations.

Syntax

```
Collection<ServerComponentVO> getSecureHTTPListenerConfigurations()
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
for(ServerComponentVO scvo :
supServerConf.getSecureHTTPListenerConfigurations()){
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
}
```

Addition of HTTPS Listener Configuration

This method has been deprecated. Adds a new HTTPS listener configuration.

Syntax

```
void addSecureHTTPListenerConfiguration(ServerComponentVO
serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add configuration**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getSecureHTTPListenerConfigurations()
        .iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.socket.listener.port", "8001");
properties.put("sup.socket.listener.enabled", "true");
```

```
scvo_new.setProperties(properties);
supServerConf.addSecureHTTPListenerConfiguration(scvo_new);
supServerConf.commit();
```

Deletion of HTTPS Listener Configuration

This method has been deprecated. Deletes the configuration for a secure HTTP (HTTPS) listener.

Syntax

```
void deleteSecureHTTPListenerConfiguration(String serverComponentID)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getSecureHTTPListenerConfigurations ()
        .iterator().next();
supServerConf.deleteSecureHTTPListenerConfiguration(scvo.getID())
;
supServerConf.commit();
```

Update of HTTPS Listener Configuration

This method has been deprecated. Updates the configuration of an HTTP listener.

Syntax

```
void updateSecureHTTPListenerConfiguration(String serverComponentID,
ServerComponentVO serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getHTTPListenerConfigurations()
        .iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
```

```
Map<String, String> properties = scvo.getProperties();
properties.put("sup.socket.listener.port", "8000");
properties.put("sup.socket.listener.enabled", "true");
scvo_new.setProperties(properties);
supServerConf.updateHTTPListenerConfiguration(scvo_new.getID(),
scvo_new);
supServerConf.commit();
```

Retrieval of SSL Security Profile Configuration

This method has been deprecated. Retrieves the list of all the SSL security profiles and their properties.

Syntax

```
Collection<ServerComponentVO> getSSLSecurityProfileConfigurations()
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
for(ServerComponentVO scvo :
supServerConf.getSSLSecurityProfileConfigurations()){
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
}
```

Addition of SSL Security Profile Configuration

This method has been deprecated. Adds configuration for an SSL security profile.

Syntax

```
void addSSLSecurityProfileConfiguration(ServerComponentVO
serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add configuration –** adds configuration for an SSL security profile, including the authentication profile, profile name, and key alias:

```
supServerConf.refresh();
ServerComponentVO scvo = supServerConf
        .getSSLSecurityProfileConfigurations().iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.security.profile.auth", "domestic");
properties.put("sup.security.profile.name",
        "<SSL security profile name>");
properties.put("sup.security.profile.key.alias",
        "<SSL security key alias>");
scvo_new.setProperties(properties);
supServerConf.addSSLSecurityProfileConfiguration(scvo_new);
supServerConf.commit();
```

Deletion of SSL Security Profile Configuration

This method has been deprecated. Deletes the configuration for an SSL security profile.

Syntax

```
void deleteSSLSecurityProfileConfiguration(String serverComponentID)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion**

```
supServerConf.refresh();
ServerComponentVO scvo = supServerConf
        .getSSLSecurityProfileConfigurations().iterator().next();
supServerConf.deleteSSLSecurityProfileConfiguration(scvo.getID())
;
supServerConf.commit();
```

Update of SSL Security Profile Configuration

This method has been deprecated. Updates the configuration of an SSL security profile.

Syntax

```
void updateSSLSecurityProfileConfiguration(String serverComponentID,
ServerComponentVO serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update –** updates the configuration of an SSL security profile, including the authentication profile, profile name, and key alias:

```
supServerConf.refresh();
ServerComponentVO scvo = supServerConf
        .getSSLSecurityProfileConfigurations().iterator().next();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.security.profile.auth", "domestic");
properties.put("sup.security.profile.name",
        "<SSL security profile name>");
properties.put("sup.security.profile.key.alias",
        "<SSL security key alias>");
scvo_new.setProperties(properties);
supServerConf.updateSSLSecurityProfileConfiguration(scvo_new.getI
D(), scvo_new);
supServerConf.commit();
```

Key Store Configuration Retrieval

This method has been deprecated. Retrieves the properties of the key store configuration.

Syntax

```
ServerComponentVO getKeyStoreConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getKeyStoreConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Key Store Configuration Update

This method has been deprecated. Updates the configuration of the key store.

Syntax

```
void updateKeyStoreConfiguration(ServerComponentVO serverComponent)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update –** updates the configuration of the key store, including the key store file path, and key store password:

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getKeyStoreConfiguration();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.sync.sslkeystore", "<key store file path>");
properties.put("sup.sync.sslkeystore_password", "<key store
password>");
scvo_new.setProperties(properties);
supServerConf.updateKeyStoreConfiguration(scvo_new);
supServerConf.commit();
```

Trust Store Configuration Retrieval

This method has been deprecated. Retrieves the properties of the trust store configuration.

Syntax

```
ServerComponentVO getTrustStoreConfiguration() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getTrustStoreConfiguration();
System.out.println(scvo.getID());
System.out.println(scvo.getType());
System.out.println(scvo.getProperties());
```

Trust Store Configuration Update

This method has been deprecated. Updates the configuration of the trust store.

Syntax

```
void updateTrustStoreConfiguration(ServerComponentVO
serverComponent) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update –** updates the configuration of the trust store, including the trust store file path and trust store password:

```
supServerConf.refresh();
ServerComponentVO scvo =
supServerConf.getTrustStoreConfiguration();
ServerComponentVO scvo_new = new ServerComponentVO(scvo.getID(),
scvo.getType());
Map<String, String> properties = scvo.getProperties();
properties.put("sup.sync.ssltruststore", "<trust store file
path>");
properties.put("sup.sync.ssltruststore_password", "<trust store
password>");
scvo_new.setProperties(properties);
supServerConf.updateTrustStoreConfiguration(scvo_new);
supServerConf.commit();
```

Retrieval of Apple Push Notification Configurations

This method has been deprecated. Retrieves Apple Push Notification configurations.

Syntax

```
List<APNSApplicationSettingsVO>
getApplePushNotificationConfigurations(boolean getPendingConfig)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval: getPendingConfig is true –** retrieves Apple Push Notification application settings that are applied to the Unwired Server the next time the Unwired Server starts:

```
// List Apple push configuration
List<APNSAppSettingsVO> list =
supServerConf.getApplePushNotificationConfigurations(true);
```

- **Retrieval: getPendingConfig is false –** retrieves current Apple Push Notification application settings:

```
// List Apple push configuration
List<APNSAppSettingsVO> list =
supServerConf.getApplePushNotificationConfigurations(false);
```

Addition of an Apple Push Notification Configuration

This method has been deprecated. Adds a configuration for Apple Push Notification.

Syntax

```
void
addApplePushNotificationConfiguration(APNSApplicationSettingsVO
settings, byte[] p12Certificate, boolean overwrite, boolean restart)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful (for example, if a certificate of the same name exists and `overwrite` is false), returns `SUPAdminException`.

Examples

- **Add configuration**

```
// Add Apple push configuration
APNSAppSettingsVO settings = buildAPNSSettings();
byte[] certificate = getCertificate();
supServerConf.addApplePushNotificationConfiguration(settings,
certificate, false, false);
```

Deletion of an Apple Push Notification Configuration

This method has been deprecated. Deletes an Apple Push Notification configuration.

Syntax

```
Boolean deleteApplePushNotificationConfiguration(String
apnsConfigName, boolean restart) throws SUPAdminException;
```

Returns

If successful, returns true if the specified APNS configuration has been removed, or false if the specified APNS configuration does not exist. If unsuccessful, returns `SUPAdminException`.

Examples

- **Removal**

```
// Delete Apple push configuration
supServerConf.deleteApplePushNotificationConfiguration("smithj_AP
NS_configuration1", false);
```

Update of an Apple Push Notification Configuration

This method has been deprecated.Updates an Apple Push Notification configuration.

Syntax

```
void
updateApplePushNotificationConfiguration(APNSApplicationSettingsVO
settings, byte[] p12Certificate, boolean overwrite, boolean restart)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update –** updates an Apple Push Notification configuration including the feedback gateway and the Apple Push Notification settings:

```
// Update Apple push configuration
APNSAppSettingsVO settings = buildAPNSSettings();
settings.setFeedbackGateway("testfeedback.push2.example.com ");
byte[] certificate = getCertificate();
supServerConf.updateApplePushNotificationConfiguration(settings,
certificate, true, false);
```

Retrieval of Certificate Names

This method is deprecated. Retrieves a list of file names for the .p12 certificates on the SAP Mobile Server.

Syntax

```
List<String> getApplePushNotificationCertificateNames() throws
SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
// List APNS certificate names
List<String> list =
supServerConf.getApplePushNotificationCertificateNames();
```

Set Apple Notification Values

Constructs a value object, `APNSAppSettingsVO`, which sets values for Apple Push Notification Service settings used for iPhone push notifications.

Syntax

```
public java.lang.String getCertificateFileName()
public void setCertificateFileName(java.lang.String value)
public java.lang.String getCertificatePassword()
public void setCertificatePassword(java.lang.String value)
public java.lang.String getPushGateway()
public void setPushGateway(java.lang.String value)
public int getPushGatewayPort()
public void setPushGatewayPort(int value)
public int getNumberOfChannels()
public void setNumberOfChannels(int value)
public java.lang.String getFeedbackGateway()
public void setFeedbackGateway(java.lang.String value)
public int getFeedbackGatewayPort()
public void setFeedbackGatewayPort(int value)
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update**

```
// construct an APNSAppSettingsVO
private APNSAppSettingsVO buildAPNSSettings() {
    APNSAppSettingsVO settings = new APNSAppSettingsVO();
    settings.setCertificateFileName("C:/
PushDevCertificate_smithj.p12");
    settings.setCertificatePassword("iM0;APNS");
    settings.setFeedbackGateway("testfeedback.push.example.com");
    settings.setFeedbackGatewayPort(123);
    settings.setName("smithj_APNS_configuration1");
    settings.setNumberOfChannels(3);
    settings.setPushGateway("testgateway.push.example.com ");
    settings.setPushGatewayPort(456);
    return settings;
}
```

Start or Stop Outbound Enablers

Starts or stops Relay Server outbound enablers.

Syntax

```
void startOutboundEnablers (List<OutboundEnablerVO> outBoundEnabler)
throws SUPAdminException;
void stopOutboundEnablers (List<OutboundEnablerVO> outBoundEnabler)
throws SUPAdminException;
```

Parameters

- **outBoundEnabler –** The list of outbound enablers to start or stop.

Returns

If successful, starts or stops all the outbound enablers of the server. If unsuccessful, throws SUPAdminException.

Examples

- **Start all outbound enablers –** Start and stop all outbound enablers.

```
@Test
public void testStartAndStopOutboundEnabler() throws Exception {
    AgentContext agentContext = new
AgentContext("mySCC.sybase.com", 9999,
            "supAdmin", "s3pAdmin");
    ServerContext context = new ServerContext("mySUP.sybase.com",
2000,
            "supAdmin", "s3pAdmin", false, agentContext);
    SUPServerConfiguration serverConfig = SUPObjectFactory
            .getSUPServerConfiguration(context);
    // Get all Outbound Enablers of this Mobile Server node.
    List<OutboundEnablerVO> outBoundEnablers = serverConfig
            .getOutboundEnablers();
    // Start all the Outbound Enablers
    serverConfig.startOutboundEnablers(outBoundEnablers);
    // Stop all the Outbound Enablers
    serverConfig.stopOutboundEnablers(outBoundEnablers);
}
```

Retrieval of Relay Server Outbound Enablers

Retrieves one or more Relay Server outbound enabler configurations for the SAP Mobile Server.

Syntax

```
List<OutboundEnablerVO> getOutboundEnablers() throws
SUPAdminException;
```

```
OutboundEnablerVO getOutboundEnabler() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of all outbound enablers**

```
// get all Outbound Enablers of this server
List<OutboundEnablerVO> outboundEnablers = serverConfiguration
        .getOutboundEnablers();
```

- **Retrieval of a specific outbound enabler**

```
// get Outbound Enabler by specified ID.
OutboundEnablerVO outboundEnabler = serverConfiguration
        .getOutboundEnabler(3);
```

Creation or Update of Relay Server Outbound Enabler

Creates a new outbound enabler configuration if it does not exist; otherwise updates the existing one.

Syntax

```
void saveOutboundEnabler(OutboundEnablerVO outboundEnabler) throws
com.sybase.sup.admin.exception.SUPAdminException
```

Parameters

- **outboundEnabler –** the outbound enabler configuration to be created or updated.

Returns

If successful, creates or updates the specified outbound enabler configuration. If unsuccessful, returns `SUPAdminException` .

Examples

- **Update an outbound enabler configuration**

```
Iterator<OutboundEnablerVO> iter = supServerConf
        .getOutboundEnablers().iterator();
if (!iter.hasNext())
    return;

//update a outbound enabler configuration
OutboundEnablerVO oe1 = iter.next();
oe1.setUnwiredServerHost("<new host>");
supServerConf.saveOutboundEnabler(oe1);
```

- **Create an outbound enabler configuration**

```
//create a outbound enabler configuration
OutboundEnablerVO oe2 = new OutboundEnablerVO();
OutboundEnablerVOBuilder bld = new OutboundEnablerVOBuilder(oe2);
//copy setting from a existing one
bld.copy(oe1);
oe2.getServerNode().
    setName("<a different host name from the one copied>");
supServerConf.saveOutboundEnabler(oe2);
```

Update of Relay Server Outbound Enabler

Updates an existing Relay Server outbound enabler configuration.

Syntax

```
void updateOutboundEnabler(int outboundEnablerId, OutboundEnablerVO
outboundEnabler) throws
com.sybase.sup.admin.exception.SUPAdminException
```

Parameters

- **outboundEnablerId –** the ID of the outbound enabler configuration to be updated.
- **outboundEnabler –** the outbound enabler configuration containing the property values to be updated.

Returns

If successful, updates the specified outbound enabler configuration(s). If unsuccessful, returns `SUPAdminException`.

Examples

- **Update an outbound enabler configuration**

```
Iterator<OutboundEnablerVO> iter = supServerConf
        .getOutboundEnablers().iterator();
if (!iter.hasNext())
    return;

OutboundEnablerVO oe1 = iter.next();
oe1.setCertificateFile("4321");

supServerConf.updateOutboundEnabler(oe1.getID(), oe1);
```

Deletion of Relay Server Outbound Enabler

Deletes one or more Relay Server outbound enabler configurations.

You can delete the following:

- a group of outbound enabler configurations based on a list of IDs
- a specific outbound enabler configuration based on an ID

Syntax

```
void deleteOutboundEnablers(java.util.Set<java.lang.Integer>
outboundEnablerIds) throws
com.sybase.sup.admin.exception.SUPAdminException
```

```
void deleteOutboundEnabler(java.lang.Integer outboundEnablerId)
throws com.sybase.sup.admin.exception.SUPAdminException
```

Parameters

- **outboundEnablerIds –** The list of outbound enabler configuration IDs that you want to delete.
- **outboundEnablerId –** The ID of the outbound enabler configuration you want to delete.

Returns

If successful, deletes a list of outbound enabler configurations, or a specific outbound enabler configuration. If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of a list of outbound enabler configurations by ID –** Deletes all outbound enabler configurations with the given IDs.

  ```
  serverConfiguration.deleteOutboundEnabler(1);
  Set<Integer> outboundEnablerIds=new HashSet<Integer>();
  outboundEnablerIds.add(2);
  outboundEnablerIds.add(3);
  serverConfiguration.deleteOutboundEnablers(outboundEnablerIds);
  ```

Addition of Relay Server Outbound Enabler Certificate Files

Adds a new certificate file to be used by Relay Server outbound enablers.

Syntax

```
void addOutboundEnablerCertificateFile(java.lang.String fileName,
byte[] certificateBlob, java.lang.Boolean overwrite) throws
com.sybase.sup.admin.exception.SUPAdminException
```

Parameters

- **fileName –** the file name to be used to save the certificate blob.
- **certificateBlob –** the certificate blob.

- **overwrite –** TRUE to overwrite existing file with the same name, FALSE to preserve the old one.

Returns

If successful, creates the specified certificate file. If unsuccessful, returns `SUPAdminException`.

Examples

- **Addition of an outbound enabler certificate file**

```
File file = new File("D:\\rsoe.cer");
byte[] blob = new byte[(int)file.length()];
new DataInputStream(new FileInputStream(file)).readFully(blob);
supServerConf.addOutboundEnablerCertificateFile(file.getName(),
blob, true);
```

Retrieval of Relay Server Outbound Enabler Certificate Files

Retrieve a list of Relay Server outbound enabler certificate files.

Syntax

```
List<java.lang.String> getOutboundEnablerCertificateFiles() throws
com.sybase.sup.admin.exception.SUPAdminException
```

Returns

If successful, returns a list of objects of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of outbound enabler certificate files**

```
List<String>
fileNames=serverConfiguration.getOutboundEnablerCertificateFiles(
);
```

Deletion of Relay Server Outbound Enabler Certificate Files

Deletes one or more Relay Server outbound enabler certificate files.

You can delete the following:

- a group of outbound enabler certificate files based on a list of file names.
- a specific outbound enabler certificate file based on a file name.

Syntax

```
void
deleteOutboundEnablerCertificateFiles(java.util.Set<java.lang.Strin
```

```
g> fileNames) throws
com.sybase.sup.admin.exception.SUPAdminException
```

```
void deleteOutboundEnablerCertificateFile(java.lang.String fileName)
throws com.sybase.sup.admin.exception.SUPAdminException
```

Parameters

- **fileNames –** The list of outbound enabler certificate file names that you want to delete.
- **fileName –** The file name of the outbound enabler certificate file you want to delete.

Returns

If successful, delete the specified file(s). If unsuccessful, returns `SUPAdminException`.

Examples

- **Deletion of a List of Outbound Enabler Certificate Files –** Deletes all outbound enabler certificates with the given file names.

```
serverConfiguration.deleteOutboundEnablerCertificateFile("rsoe.ce
r");
Set<String> certFileNames = new HashSet<String>();
certFileNames.add("rsoe2.cer");
certFileNames.add("rsoe3.cer");
serverConfiguration.deleteOutboundEnablerCertificateFiles(certFil
eNames);
```

Configuring Security Configurations

The SAP Mobile Platform security configuration is a metadata-based configuration that includes several components.

- Authentication provider
- Authorization provider
- Audit provider
- Attribution provider (only if one has been developed with the CSI SDK)

Each of these components is a security provider, and is represented by `SecurityProviderVO`. The properties of `SecurityProviderVO` differentiate the components. See *Developer Guide: SAP Mobile Server Runtime > Management API > Client Metadata*.

Manage the SAP Mobile Platform security configuration using the `SUPSecurityConfiguration` interface. This interface provides different methods for the components. The changes made through these methods are cached locally unless the `commit()` method is called to send the cached configuration of all the components to the SAP Mobile Server.

Start Security Configuration Management

Starts the management of an SAP Mobile Server security configuration.

Syntax

```
public static SUPSecurityConfiguration
getSUPSecurityConfiguration(SecurityContext securityContext) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Security configuration**

```
//Retrieve a list of security configuration names currently
defined
Collection<String> securityConfigurations=
supCluster.getSecurityConfigurations();

//Start administration on one of the security configurations
securityContext = clusterContext.getSecurityContext("<security
configuration name>");
SUPSecurityConfiguration supSecConf =
SUPObjectFactory.getSUPSecurityConfiguration(securityContext);
```

Usage

When an instance of `SUPSecurityConfiguration` is returned from the `SUPObjectFactory`, call its method.

SecurityProviderVO

The `ServerProviderVO` class has a read-only property that you must initialize at construction time.

The type property specifies the provider type, as described in *Developer Guide: SAP Mobile Server Runtime > Management API > Client Metadata > Security Configuration*.

Populate Security Configuration

Populates an SAP Mobile Server security configuration with the currently effective configuration. The returned `ConfigurationValidationStatus` contains the validation status of the security configuration on the SAP Mobile Server.

Syntax

```
ConfigurationValidationStatus refresh() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Populate security configuration**

```
supSecConf.refresh();
```

Usage

Each call to `commit()` and `refresh()` expires all the previous `ServerProviderVO`, because all the IDs are regenerated.

`supSecConf.refresh()` retrieves from the SAP Mobile Server the current configuration, which does not include any committed changes that are pending a server restart, and caches it locally.

Commit Local Changes to SAP Mobile Server

Commits local changes to the SAP Mobile Server. The returned `ConfigurationValidationStatus` contains the validation status of the security configuration on the SAP Mobile Server.

Syntax

```
ConfigurationValidationStatus commit() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Commit local changes**

```
ConfigurationValidationStatus cvs = supServerConf.commit();
if(cvs.isValid()){
    //succeed.
}
else{
    //fail.
}
```

Active Security Providers

Active security providers are those that are currently effective on the SAP Mobile Server. Each active security provider has a location in the respective active security provider stack. These

locations are reflected in the sequence when iterating through the returned collection. You can retrieve, update, add, or delete active security providers.

Retrieval of Active Security Providers
Retrieves one or more active security providers.

Syntax

```
public SecurityProviderVO getActiveAuditProvider(String
auditProviderID) throws SUPAdminException;

public SecurityProviderVO getActiveAuthenticationProvider(String
authenticationProviderID) throws SUPAdminException;

public SecurityProviderVO getActiveAuthorizationProvider(String
authorizationProviderID) throws SUPAdminException;

public SecurityProviderVO getActiveAttributionProvider(String
attributionProviderID) throws SUPAdminException;

java.util.Collection<SecurityProviderVO>
getActiveAttributionProviders()

java.util.Collection<SecurityProviderVO> getActiveAuditProviders()

java.util.Collection<SecurityProviderVO>
getActiveAuthenticationProviders()

java.util.Collection<SecurityProviderVO>
getActiveAuthorizationProviders()
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval**

```
supSecConf.refresh();

Collection<SecurityProviderVO> spvos_audit =
supSecConf.getActiveAuditProviders();
SecurityProviderVO spvo_audit =
supSecConf.getActiveAuditProvider("<security provider id>");

Collection<SecurityProviderVO> spvos_authentication =
supSecConf.getActiveAuthenticationProviders();
SecurityProviderVO spvo_authentication =
supSecConf.getActiveAuthenticationProvider("<security provider
id>");
```

```
Collection<SecurityProviderVO> spvos_authorization =
supSecConf.getActiveAuthorizationProviders();
SecurityProviderVO spvo_authorization =
supSecConf.getActiveAuthorizationProvider("<security provider
id>");

Collection<SecurityProviderVO> spvos_attribution =
supSecConf.getActiveAttributionProviders();
SecurityProviderVO spvo_attribution =
supSecConf.getActiveAttributionProvider("security provider id");
```

Update of Active Security Providers

Updates the active security providers, including the active attribution provider, audit provider, authentication provider, or authorization provider.

Syntax

```
public void updateActiveAuditProvider(String auditProviderID,
SecurityProviderVO securityProvider) throws SUPAdminException;

public void updateActiveAuthenticationProvider(String
authenticationProviderID, SecurityProviderVO securityProvider)
throws SUPAdminException;

public void updateActiveAuthorizationProvider(String
authorizationProviderID, SecurityProviderVO securityProvider) throws
SUPAdminException;

void updateActiveAttributionProvider(java.lang.String
attributionProviderID, SecurityProviderVO securityProvider) throws
SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Update audit providers**

```
supSecConf.refresh();
SecurityProviderVO spvo_audit =
supSecConf.getActiveAuditProviders()
        .iterator().next();
SecurityProviderVO spvo_authentication = supSecConf
        .getActiveAuthenticationProviders().iterator().next();
SecurityProviderVO spvo_authorization = supSecConf
        .getActiveAuthorizationProviders().iterator().next();
supSecConf.updateActiveAuditProvider("<security provider id>",
spvo_audit);
supSecConf.updateActiveAuthenticationProvider("<security provider
id>", spvo_authentication);
```

```
supSecConf.updateActiveAuthorizationProvider("<security provider
id>",    spvo_authorization);
supSecConf.commit();
```

- **Update attribution providers**

```
SecurityProviderVO spvo_attribution =
supSecConf.getActiveAttributionProviders().iterator().next();
supSecConf.updateActiveAttributionProvider("<security provider
id>",spvo_attribution);
```

Addition of an Active Authentication Provider

Adds an active authentication provider.

Syntax

```
public void addActiveAuthenticationProvider(SecurityProviderVO
securityProvider) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add active authentication provider**

```
supSecConf.refresh();

SecurityProviderVO spvo = new SecurityProviderVO(
        "com.sybase.security.ldap.LDAPLoginModule");
Map<String, String> properties = new HashMap<String, String>();
spvo.setProperties(properties);
//Mandatory properties.
properties.put("implementationClass",
        "com.sybase.security.ldap.LDAPLoginModule");
properties.put("providerType", "LoginModule");
properties.put("ProviderURL", "ldap://localhost:389");
properties.put("controlFlag", "optional");
//Optional properties.
properties.put("ServerType", "sunone5");

spvo.setProperties(properties);
supSecConf.addActiveAuthenticationProvider(spvo);
supSecConf.commit();
```

Addition of an Active Authorization Provider

Adds an active authorization provider.

Syntax

```
public void addActiveAuthorizationProvider(SecurityProviderVO
securityProvider) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add active authorization provider**

```
supSecConf.refresh();

SecurityProviderVO spvo = new SecurityProviderVO(
        "com.sybase.security.ldap.LDAPAuthorizer");
Map<String, String> properties = new HashMap<String, String>();
spvo.setProperties(properties);
// Mandatory properties.
properties.put("implementationClass",
        "com.sybase.security.ldap.LDAPAuthorizer");
properties.put("providerType", "Authorizer");
// Optional properties.
properties.put("ProviderURL", "ldap://localhost:389");
properties.put("ServerType", "sunone5");

spvo.setProperties(properties);
supSecConf.addActiveAuthorizationProvider(spvo);
supSecConf.commit();
```

Addition of an Active Attribution Provider

Adds an active attribution provider.

Syntax

```
public void addActiveAttributionProvider(SecurityProviderVO
securityProvider) throws SUPAdminException
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add active attribution provider**

```
supSecConf.refresh();
SecurityProviderVO spvo = new SecurityProviderVO(
"com.sybase.security.core.NoSecAttributer");
Map<String, String> props = MapUtil.newMap(new String[][] {
{ "implementationClass",
"com.sybase.security.core.NoSecAttributer" },
{ "providerType", "Attributer" } });
spvo.setProperties(props);
supSecConf.addActiveAttributionProvider(spvo);
supSecConf.commit();
```

Addition of an Active Audit Provider
Adds an active audit provider.

Syntax

```
public void addActiveAuditProvider(SecurityProviderVO
securityProvider) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Add active audit provider**

```
supSecConf.refresh();

SecurityProviderVO spvo = new SecurityProviderVO("auditor");

SecurityProviderVO spvo_dest = new SecurityProviderVO(
        "auditDestination");
SecurityProviderVO spvo_filter = new
SecurityProviderVO("auditFilter");
SecurityProviderVO spvo_formatter = new SecurityProviderVO(
        "auditFormatter");

Map<String, String> properties_dest = new HashMap<String,
String>();
Map<String, String> properties_filter = new HashMap<String,
String>();
Map<String, String> properties_formatter = new HashMap<String,
String>();

properties_dest.put("controlFlag", "optional");
properties_dest.put("implementationClass", "");
properties_dest.put("providerType", "AuditDestination");

properties_filter.put("implementationClass", "");
properties_filter.put("providerType", "AuditFilter");

properties_formatter.put("implementationClass", "");
properties_formatter.put("providerType", "AuditFormatter");

spvo_dest.setProperties(properties_dest);
spvo_filter.setProperties(properties_filter);
spvo_formatter.setProperties(properties_formatter);

spvo.setChildren(Arrays.asList(new SecurityProviderVO[]
{ spvo_dest, spvo_filter, spvo_formatter }));
```

```
supSecConf.addActiveAuditProvider(spvo);
supSecConf.commit();
```

Deletion of an Active Security Provider

Deletes an active security provider.

Syntax

```
public void deleteActiveAuditProvider(String auditProviderID) throws
SUPAdminException;

public void deleteActiveAuthenticationProvider(String
authenticationProviderID) throws SUPAdminException;

public void deleteActiveAuthorizationProvider(String
authorizationProviderID) throws SUPAdminException;

void deleteActiveAttributionProvider(java.lang.String
attributionProviderID)
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Delete**

```
supSecConf.refresh();

supSecConf.deleteActiveAuditProvider("<security provider id>");
supSecConf.deleteActiveAuthenticationProvider("<security provider
id>");
supSecConf.deleteActiveAuthorizationProvider("<security provider
id>");
supSecConf.deleteActiveAttributionProvider("<security provider
id>");

supSecConf.commit();
```

Security Configuration Validation

Delivers modified SAP Mobile Platform security configuration to the SAP Mobile Server for validation. The current SAP Mobile Server security configuration is not affected.

Syntax

```
ConfigurationValidationStatus validate() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Validation**

```
ConfigurationValidationStatus cvs = supSecConf.validate();
if(cvs.isValid()){
    //valid.
}
else{
    //invalid.
}
```

Adjustment of the Sequence of Active Security Providers

Security provider instances are grouped together by their provider types (attribution provider, audit provider, authentication provider, and authorization provider) and ordered in a sequence.

The following methods adjust the sequence of security providers in each group.

Syntax

```
public void moveDownActiveAuditProvider(String auditProviderID)
throws SUPAdminException;

public void moveDownActiveAuthenticationProvider(String
authenticationProviderID) throws SUPAdminException;

public void moveDownActiveAuthorizationProvider(String
authorizationProviderID) throws SUPAdminException;



public void moveUpActiveAuditProvider(String auditProviderID) throws
SUPAdminException;

public void moveUpActiveAuthenticationProvider(String
authenticationProviderID) throws SUPAdminException;

public void moveUpActiveAuthorizationProvider(String
authorizationProviderID) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Adjust sequence**

```
supSecConf.refresh();

supSecConf.moveDownActiveAuditProvider("<security provider id>");
supSecConf.moveDownActiveAuthenticationProvider("<security
provider id>");
supSecConf.moveDownActiveAuthorizationProvider("<security
provider id>");
supSecConf.commit();

supSecConf.moveUpActiveAuditProvider("<security provider id>");
supSecConf.moveUpActiveAuthenticationProvider("<security provider
id>");
supSecConf.moveUpActiveAuthorizationProvider("<security provider
id>");
supSecConf.commit();

supSecConf.moveDownActiveAttributionProvider("<security provider
id>");
supSecConf.moveUpActiveAttributionProvider("<security provider
id>")
```

Retrieval of Installed Security Providers

Retrieves a list of the security providers installed in the SAP Mobile Server.

Syntax

```
public Collection<String> getInstalledAuditDestinationProviders()
throws SUPAdminException;

public Collection<String> getInstalledAuditFilterProviders() throws
SUPAdminException;

public Collection<String> getInstalledAuditFormatterProviders()
throws SUPAdminException;

public Collection<String> getInstalledAuthenticationProviders()
throws SUPAdminException;

public Collection<String> getInstalledAuthorizationProviders()
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieval of installed security providers**

```
supSecConf.refresh();

Collection<String> spvos_audit_dest = supSecConf
        .getInstalledAuditDestinationProviders();
Collection<String> spvos_audit_filter = supSecConf
        .getInstalledAuditFilterProviders();
Collection<String> spvos_audit_formatter = supSecConf
        .getInstalledAuditFormatterProviders();
Collection<String> spvos_authentication = supSecConf
        .getInstalledAuthenticationProviders();
Collection<String> spvos_authorization = supSecConf
        .getInstalledAuthorizationProviders();
```

- **Retrieval of attribution provider**

```
java.util.Collection<java.lang.String>
getInstalledAttributionProviders()
Collection<String> spvos_attribution = supSecConf
        .getInstalledAttributionProviders();
```

Create Logical Role for Security Configuration

Creates logical role and sets the role mappings for this logical role.

Syntax

```
public void createLogicalRole(String logicalRole, ROLE_MAPPING_TYPE
type,
            List<String> physicalRoles) throws SUPAdminException;
```

Parameters

- **logicalRole –** The logical role name.
- **type –** One of the role mapping types: ROLE_MAPPING_TYPE.AUTO, ROLE_MAPPING_TYPE.MAPPED, or ROLE_MAPPING_TYPE.NONE.
- **physicalRoles –** The physical roles list if the type parameter is ROLE_MAPPING_TYPE.MAPPED, otherwise this parameter will be ignored.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Delete logical role for security configuration

Deletes logical role.

Syntax

```
public void deleteLogicalRole(String logicalRole) throws
SUPAdminException;
```

Parameters

- **logicalRole –** The logical role name to delete.

Returns

If successful, returns silently. If the logical role is already referred to by the application connection templates, throws SUPAdminException.

Retrieve role mappings for security configuration logical roles

Returns cluster level role mappings.

Syntax

```
public Collection<RoleMappingVO> getRoleMappings() throws
SUPAdminException;
```

Returns

If successful, returns the list of RoleMappingVO objects. If unsuccessful, returns SUPAdminException.

Update Role Mapping for Security Configuration Logical Role

Updates role mappings for security configuration.

Syntax

```
public void updateLogicalRole(String logicalRole, ROLE_MAPPING_TYPE
type,
            List<String> physicalRoles) throws SUPAdminException;
```

Parameters

- **logicalRole –** The logical role name.
- **type –** One of the role mapping types: ROLE_MAPPING_TYPE.AUTO, ROLE_MAPPING_TYPE.MAPPED, or ROLE_MAPPING_TYPE.NONE.
- **physicalRoles –** The physical roles list if the type parameter is ROLE_MAPPING_TYPE.MAPPED, otherwise this parameter will be ignored.

Returns

If successful, returns silently. If unsuccessful, throws SUPAdminException.

Managing Mobile Workflows

This interface has been deprecated. Mobile workflow packages, typically created through the Mobile Workflow Application Designer, allow a developer to design mobile workflow

screens that can call on the create, update, and delete operations, as well as object queries, of a mobile business object.

You can manage mobile workflow packages through the `SUPMobileWorkflow` interface. Operations you can perform with this interface include:

- Starting administration of mobile workflow packages
- Package management and installation: listing packages, installing packages, and deleting packages
- Retrieving matching rules, context variables, error lists, and queue items
- Updating properties, matching rules, and context variables
- Managing mobile workflow device assignment
- Managing e-mail settings

Start Management of Mobile Workflow Packages

This method has been deprecated. Starts the management of mobile workflow packages.

Syntax

```
public static SUPMobileWorkflow getSUPMobileWorkflow(ClusterContext
clusterContext) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start mobile workflow package management**

```
...
private SUPMobileWorkflow workflow;
...
ServerContext serverContext = new ServerContext("wangf-dell",
2000, "supAdmin", "supPwd", false);
clusterContext = serverContext.getClusterContext("wangf's
cluster");
workflow = SUPObjectFactory.getSUPMobileWorkflow(clusterContext);
```

Usage

To manage SAP Mobile Server mobile workflow packages, you must create an instance of `ServerContext` with the correct information, and pass it to `SUPObjectFactory.getSUPMobileWorkflow()`. When an instance of `SUPMobileWorkflow` is returned, you can call its method as a typical Java method call.

Mobile Workflow Package Retrieval

This method has been deprecated. Retrieves a list of mobile workflow packages.

Syntax

```
List<MobileWorkflowVO> getMobileWorkflowList() throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow package retrieval**

  ```
  // List workflows
  List<WorkflowVO> workflows = workflow.getMobileWorkflowList();
  ```

Installation of a Mobile Workflow Package

This method has been deprecated. Installs a mobile workflow package.

Syntax

```
MobileWorkflowIDVO installMobileWorkflow(byte[]
zippedWorkflowPackage) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow package installation –** This code fragment installs a mobile workflow package named `ActivitiesPackage.zip`, and returns the package name once it is successfully installed:

  ```
  // Install workflow
  byte[] workflowBytes= getWorkflowBytes();
  MobileWorkflowIDVO workflowID = workflow
                  .installMobileWorkflow(zippedWorkflowPackage);

  private byte[] getWorkflowBytes() throws URISyntaxException,
  IOException {
      String ZIP_NAME = "C:/ActivitiesPackage.zip";
      File zipFile = new File(ZIP_NAME);
      byte[] zippedWorkflowPackage = new byte[(int)
  zipFile.length()];
  ```

```
    DataInputStream inputStream = new DataInputStream(new
FileInputStream(
            zipFile));
    inputStream.readFully(zippedWorkflowPackage);
    return zippedWorkflowPackage;
}
```

Deletion of a Mobile Workflow Package

This method has been deprecated. Deletes the specified mobile workflow package.

Syntax

```
void deleteMobileWorkflow(MobileWorkflowIDVO workflowID) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow package deletion –** This code fragment deletes a mobile workflow package with the specified workflow ID:

  ```
  // delete workflow
  workflow.deleteMobileWorkflow(workflowID);
  ```

Retrieval of Matching Rules

This method has been deprecated. Retrieves matching rules for the specified mobile workflow package.

Matching rules are used by the email listener to identify e-mails that match the rules specified by the administrator. When an e-mail message matches the rule, Unwired Server sends the e-mail message as a workflow to the device that matches the rule.

Syntax

```
MobileWorkflowMatchingRulesVO
getMobileWorkflowMatchingRule(MobileWorkflowIDVO workflowID) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow matching rules**

  ```
  // Get workflow Matching rule
  MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
  ```

```
workflowID.setVersion(1);
workflowID.setWID(6);
MobileWorkflowMatchingRulesVO vo =
workflow.getMobileWorkflowMatchingRule(workflowID);
```

Retrieval of Context Variables

This method has been deprecated. Retrieves context variables for the specified mobile workflow package.

Context variables customize how data is loaded into the SAP Mobile Server cache. You can use context variables to create a smaller, more focused data set that may yield improved performance.

Syntax

```
List<MobileWorkflowContextVariableVO>
getMobileWorkflowContextVariables(MobileWorkflowIDVO workflowID)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow context variables –** This code fragment retrieves context variables for the specified mobile workflow package:

```
// Get workflow context variables
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(1);
workflowID.setWID(6);
List<WorkflowContextVariableVO> list = workflow
        .getMobileWorkflowContextVariables(workflowID);
```

Retrieval of an Error List

This method has been deprecated. Retrieves an error list for the specified mobile workflow package for the specified time period, and paginates the results.

Syntax

```
PaginationResult<MobileWorkflowErrorVO>
getMobileWorkflowErrorList(int startIndex, int maxRecordsToReturn,
MobileWorkflowIDVO id, String userName, Calendar startDate, Calendar
endDate, String orderByField, boolean bAscending) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow error list –** retrieves an error list for the mobile workflow package starting from the date September 30, 2009:

```
// Get workflow error list
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(1);
workflowID.setWID(7);
Calendar startDate = Calendar.getInstance();
startDate.set(2009, 9, 30);
Calendar endDate = Calendar.getInstance();
PaginationResult<WorkflowErrorVO> list = workflow
                .getMobileWorkflowErrorList(0, 1, workflowID,
"TEST4", startDate,
                        endDate, null, true);
```

Retrieval and Management of Queue Items

This method has been deprecated. Retrieves a list of queue items for the specified Mobile Workflow package, and deletes the specified queue items.

Syntax

```
PaginationResult<MobileWorkflowQueueItemVO>
getMobileWorkflowQueueItems(int startIndex, int maxRecordsToReturn,
MobileWorkflowIDVO id, List<Integer> deviceIDs, List<String>
userNames, String orderByField, boolean ascending) throws
SUPAdminException;

void deleteMobileWorkflowQueueItem(Integer queueItemID, Boolean
forTransformQueue) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow queue items**

```
// Get workflow queue items
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(1);
workflowID.setWID(1);
List<Integer> deviceIds = new ArrayList<Integer>();
deviceIds.add(4);
PaginationResult<MobileWorkflowQueueItemVO> list = workflow
```

```
        .fetchWorkflowQueueItems(0, 2, workflowID, null, null,
null, false);

//Delete MobileWorkflow queue items.
workflow.deleteMobileWorkflowQueueItem(1, true);
```

Update of Properties

This method has been deprecated. Updates the properties for the specified Mobile Workflow package.

Syntax

```
void updateMobileWorkflowDisplayName(MobileWorkflowIDVO workflowID,
String displayName) throws SUPAdminException;

void updateMobileWorkflowIconIndex(MobileWorkflowIDVO workflowID,
int iconIndex) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow properties –** updates the display name and icon index for the specified Mobile Workflow package:

  ```
  MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
  workflowID.setVersion(1);
  workflowID.setWID(6);

  // Update workflow display name
  workflow.updateMobileWorkflowDisplayName(workflowID, ":)");

  // Update workflow icon index
  workflow.updateMobileWorkflowIconIndex(workflowID, 100);
  ```

Update of Matching Rules

This method has been deprecated. Updates a matching rule for the specified Mobile Workflow package.

Syntax

```
void updateMobileWorkflowMatchingRule(MobileWorkflowIDVO workflowID,
MobileWorkflowMatchingRulesVO matchRule) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow matching rules**

```
// Update workflow matching rule
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(1);
workflowID.setWID(6);
MobileWorkflowMatchingRulesVO matchRule = workflow
        .getWorkflowMatchingRule(workflowID);
matchRule.setBODYExpressionType(MobileWorkflowMatchingRulesVO.EXP
RESSION_TYPE_REGULAREXPRESSION);
matchRule.setBODYExpression(".*wang.*");
workflow.updateMobileWorkflowMatchingRule(workflowID, matchRule);
```

Update of Context Variables

This methods has been deprecated. Updates context variables for the specified Mobile Workflow package.

Syntax

```
void updateMobileWorkflowContextVariables(MobileWorkflowIDVO
workflowID, List<MobileWorkflowContextVariableVO> contextVariables)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow context variables –** updates context variables for an existing mobile workflow package with workflow ID 2:

```
// Update MobileWorkflow context variables
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
// ID 2 version 1 is a existing Mobile Workflow on the server
workflowID.setVersion(1);
workflowID.setWID(2);
List<MobileWorkflowContextVariableVO> contextVariables = workflow
        .getMobileWorkflowContextVariables(workflowID);
contextVariables.get(0).setValue("string value updated");
workflow.updateMobileWorkflowContextVariables(workflowID,contextV
ariables);
```

Usage

For mobile workflow packages that do not support certificate-based authentication, use the following context variables to specify credentials:

- SupUser
- SupPassword

For mobile workflow packages that support certificate-based authentication, use the above variables and the following additional context variables:

- SupCertificateIssuer
- SupCertificateSubject
- SupCertificateNotAfter
- SupCertificateNotBefore

Note: In this case, all the context variables are read-only.

Retrieval of Mobile Workflow Device Status

This method has been deprecated. Retrieves mobile workflow status for a device from the value object `DeviceMobileWorkflowStatusVO`.

Syntax

```
List<DeviceMobileWorkflowStatusVO>
getDeviceMobileWorkflowStatus(MobileWorkflowIDVO workflowID) throws
SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow device assignments**

```
// get MobileWorkflow assignment info
List<DeviceMobileWorkflowStatusVO> list = workflow
        .getDeviceMobileWorkflowStatus(workflowID);
```

Assignment of a Workflow Package

This method has been deprecated. Defines a mobile workflow package and devices, and assigns the package to the devices.

Syntax

```
void assignMobileWorkflowToDevices(MobileWorkflowIDVO workflowID,
List<Integer> deviceIDs) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package assignment**

```
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(1);
workflowID.setWID(2);
List<Integer> deviceIDs = new ArrayList<Integer>();
deviceIDs.add(64);
// assign MobileWorkflow to devices
workflow.assignMobileWorkflowToDevices(workflowID, deviceIDs);
```

Unassignment of a Workflow Package

This method has been deprecated. Unassigns a Mobile Workflow package from devices.

Syntax

```
void unassignMobileWorkflowFromDevices(MobileWorkflowIDVO
workflowID, List<Integer> deviceIDs) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package unassignment**

```
// unassign MobileWorkflow to devices
workflow.unassignMobileWorkflowFromDevices(workflowID,
deviceIDs);
```

Retrieval of Device Workflow Assignments

This method has been deprecated. Retrieves all mobile workflow packages that are assigned to the specified device.

Syntax

```
List<MobileWorkflowAssignmentVO>
getDeviceWorkflowAssignments(Integer
applicationConnectionNumericID) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve mobile workflow device assignments**

```
// get all MobileWorkflows that assign to the device. Where 3 is a
// existing application connection numeric ID.
```

```
List<MobileWorkflowAssignmentVO> assignments = workflow
        .getDeviceWorkflowAssignments(3);
```

E-mail Settings Configuration

This method has been deprecated. Updates or retrieves the e-mail settings for a mobile workflow package.

E-mail settings allow the administrator to configure a listener to scan all incoming e-mail messages delivered to an inbox that the administrator indicates during configuration.

Syntax

```
Boolean testEmailConnection(String configXml) throws
SUPAdminException;

void configureEmail(String configurationXML) throws
SUPAdminException;

void enableEmail(boolean enable) throws SUPAdminException;

String getEmailConfiguration() throws SUPAdminException;

Boolean isEmailEnabled() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow e-mail settings**

```
String configXmlString = readEmailConfig();

// Test Email Multicast connection
Boolean test = workflow.testEmailConnection(config);

// Config Email Multicast
workflow.configureEmail(config);

// Enable Email Multicast
workflow.enableEmail(true);

// Get Email Multicast configuration
String config = workflow.getEmailConfiguration();

// Check if Email Multicast enabled
boolean enable = workflow.isEmailEnabled();

// Read Email Multicast config XML string from file
private String readEmailConfig() throws IOException {
StringBuffer sb = new StringBuffer();
    InputStream in = getClass().getResourceAsStream(
```

```
        "/com/sybase/sup/example/email/EmailMulticastConfig.xml");
    BufferedReader reader = new BufferedReader(new
InputStreamReader(in));
    String line;
    while ((line = reader.readLine()) != null) {
        sb.append(line);
        System.out.println(line);
    }
    reader.close();
    return sb.toString();
}
```

Unblock Mobile Workflow Queue

This method has been deprecated. Unblocks the mobile workflow queue for the selected workflows and devices.

Syntax

```
void unblockWorkflowQueueForDevices(MobileWorkflowIDVO workflowID,
List<Integer> applicationConnectionNumericIDs, Boolean
forTransformQueue) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile workflow queue**

```
// prepare mobile workflow ID
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setVersion(100);
workflowID.setWID(2);
// prepare application connection numeric ids
List<Integer> applicationConnectionNumericIDs = new
ArrayList<Integer>();
applicationConnectionNumericIDs.add(1);
applicationConnectionNumericIDs.add(2);
// Unblock mobile workflow queue for application connections
workflow.unblockWorkflowQueueForDevices(workflowID,
applicationConnectionNumericIDs, true);
```

Replace Mobile Workflow Certificate

This method has been deprecated. Replaces the certificate for a mobile workflow package.

Syntax

```
void replaceMobileWorkflowCertificate(workflowID,
    baos.toByteArray(), "password");
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Replace certificate**

```
InputStream is = workflowRL.getResourceAsStream("sybase101.p12");
ByteArrayOutputStream baos = new ByteArrayOutputStream();
byte[] buf = new byte[512];
int count;
while ((count = is.read(buf)) != -1) {
    baos.write(buf, 0, count);
}
is.close();
baos.flush();
baos.close();
MobileWorkflowIDVO workflowID = new MobileWorkflowIDVO();
workflowID.setWID(4);
workflowID.setVersion(1);

workflow.replaceMobileWorkflowCertificate(workflowID,
    baos.toByteArray(), "password");
```

Managing Hybrid Apps

Hybrid App packages, typically created through the Hybrid App Designer, allow a developer to design Hybrid App screens that can call on the create, update, and delete operations, as well as object queries, of a mobile business object.

You can manage Hybrid App packages through the `SUPMobileHybridApp` interface. Operations you can perform with this interface include:

- Starting administration of Hybrid App packages
- Package management and installation: listing packages, installing packages, and deleting packages
- Retrieving matching rules, context variables, error lists, and queue items
- Updating properties, matching rules, and context variables
- Managing Hybrid App device assignment
- Managing e-mail settings

Start Management of Hybrid App Packages

Starts the management of Hybrid App packages.

Syntax

```
public static SUPMobileHybridApp
getSUPMobileHybridApp(ClusterContext clusterContext) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Start Hybrid App package management**

```
...
private SUPMobileHybridApp mobileHybridApp;
...
ServerContext serverContext = new ServerContext("wangf-dell",
2000, "supAdmin", "supPwd", false);
clusterContext = serverContext.getClusterContext("my cluster");
mobileHybridApp =
SUPObjectFactory.getSUPMobileHybridApp(clusterContext);
```

Usage

To manage SAP Mobile Server Hybrid App packages, you must create an instance of `ServerContext` with the correct information, and pass it to `SUPObjectFactory.getSUPMobileHybridApp()`. When an instance of `SUPMobileHybridApp` is returned, you can call its method as a typical Java method call.

Hybrid App Package Retrieval

Retrieves a list of Hybrid App packages.

Syntax

```
List<MobileHybridAppVO> getMobileHybridAppList() throws
SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null).

Examples

- **Hybrid App package retrieval**

```
List<MobileHybridAppVO>
hybridApps=mobileHybridApp.getMobileHybridAppList();
```

Installation of a Hybrid App Package

Installs a Hybrid App package.

Syntax

```
MobileHybridAppIDVO installMobileHybridApp(byte[]
zippedWorkflowPackage) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App package installation –** This code fragment installs a Hybrid App package named `ActivitiesPackage.zip`, and returns the package name once it is successfully installed:

```
// Install workflow
    byte[] hybridAppBytes= getHybridAppBytes();
    MobileHybridAppIDVO hybridAppID = mobileHybridApp
                    .installMobileHybridApp(hybridAppBytes);

   private byte[] getHybridAppBytes() throws URISyntaxException,
IOException {
        String ZIP_NAME = "C:/ActivitiesPackage.zip";
        File zipFile = new File(ZIP_NAME);
        byte[] zippedWorkflowPackage = new byte[(int)
zipFile.length()];
        DataInputStream inputStream = new DataInputStream(new
FileInputStream(
                zipFile));
        inputStream.readFully(zippedWorkflowPackage);
        return zippedWorkflowPackage;
    }
}
```

Deletion of a Hybrid App Package

Deletes the specified Hybrid App package.

Syntax

```
void deleteMobileHybridApp(MobileHybridAppIDVO hybridAppID) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App package deletion –** This code fragment deletes a Hybrid App package with the specified Hybrid App ID:

```
mobileHybridApp.deleteMobileHybridApp(hybridAppID);
```

Retrieval of Hybrid App Matching Rules

Retrieves matching rules for the specified Hybrid App package.

Matching rules are used by the e-mail listener to identify e-mails that match the rules specified by the administrator. When an e-mail message matches the rule, SAP Mobile Server sends the e-mail message as a workflow to the device that matches the rule.

Syntax

```
MobileHybridAppMatchingRulesVO
getMobileHybridAppMatchingRule(MobileHybridAppIDVO hybridAppID)
throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Mobile Hybrid App matching rules**

```
// Get HybridApp Matching rule
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(6);
MobileHybridAppMatchingRulesVO vo =
mobileHybridApp.getMobileHybridAppMatchingRule(hybridAppID);
```

Retrieval of Hybrid App Context Variables

Retrieves context variables for the specified Hybrid App package.

Context variables customize how data is loaded into the SAP Mobile Server cache. You can use context variables to create a smaller, more focused data set that may yield improved performance.

Syntax

```
List<MobileHybridAppContextVariableVO>
getMobileHybridAppContextVariables(MobileHybridAppIDVO hybridAppID)
throws SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null).

Examples

- **Hybrid App context variables –** This code fragment retrieves context variables for the specified Hybrid App package:

```
// Get HybridApp context variables
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(6);
List<MobileHybridAppContextVariableVO> list = mobileHybridApp
        .getMobileHybridAppContextVariables(hybridAppID);
```

Retrieval of a Hybrid App Error List

Retrieves an error list for the specified Hybrid App package for the specified time period, and paginates the results.

Syntax

```
PaginationResult<MobileHybridAppErrorVO>
getMobileHybridAppErrorList(int startIndex, int maxRecordsToReturn,
MobileHybridAppIDVO id, String userName, Calendar startDate,
Calendar endDate, String orderByField, boolean bAscending) throws
SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null).

Examples

- **Hybrid App error list –** retrieves an error list for the Hybrid App package starting from the date September 30, 2009:

```
// Get HybridApp error list
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(6);
Calendar startDate = Calendar.getInstance();
startDate.set(2009, 9, 30);
Calendar endDate = Calendar.getInstance();
PaginationResult<MobileHybridAppErrorVO> result = mobileHybridApp
                .getMobileHybridAppErrorList(0, 1, hybridAppID,
"TEST4", startDate,
                        endDate, null, true);
```

Retrieval and Management of Hybrid App Queue Items

Retrieves a list of queue items for the specified Hybrid App package, and deletes the specified queue items.

Syntax

```
PaginationResult<MobileHybridAppQueueItemVO>
getMobileHybridAppQueueItems(int startIndex, int maxRecordsToReturn,
```

```
MobileHybridAppIDVO id, List<Integer> deviceIDs, List<String>
userNames, String orderByField, boolean ascending) throws
SUPAdminException;
   void deleteMobileHybridAppQueueItem(Integer queueItemID, Boolean
forTransformQueue) throws SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null).

Examples

- **Hybrid App queue items**

```
// Get HybridApp queue items
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(1);
List<Integer> deviceIds = new ArrayList<Integer>();
deviceIds.add(4);
PaginationResult<MobileHybridAppQueueItemVO> list =
mobileHybridApp
        .getMobileHybridAppQueueItems(0, 2, hybridAppID, null,
null, null, false);

//Delete HybridApp queue items.
mobileHybridApp.deleteMobileHybridAppQueueItem(1, true);
```

Update of Hybrid App Properties

Updates the properties for the specified Hybrid App package.

Syntax

```
void updateMobileHybridAppDisplayName(MobileHybridAppIDVO
hybridAppID, String displayName) throws SUPAdminException;
void updateMobileHybridAppIconIndex(MobileHybridAppIDVO hybridAppID,
int iconIndex) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App properties –** updates the display name and icon index for the specified Hybrid App package:

```
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(6);

// Update workflow display name
mobileHybridApp.updateMobileHybridAppDisplayName(hybridAppID, "My
```

```
Hybrid App");

// Update workflow icon index
mobileHybridApp.updateMobileHybridAppIconIndex(hybridAppID, 100);
```

Update of Hybrid App Matching Rules

Updates a matching rule for the specified Hybrid App package.

Syntax

```
void updateMobileHybridAppMatchingRule(MobileHybridAppIDVO
hybridAppID, MobileHybridAppMatchingRulesVO matchRule) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App matching rules**

```
// Update HybridApp matching rule
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(6);
MobileHybridAppMatchingRulesVO matchRule = mobileHybridApp
        .getMobileHybridAppMatchingRule(hybridAppID);
matchRule.setBODYExpressionType(MobileHybridAppMatchingRulesVO.EX
PRESSION_TYPE_REGULAREXPRESSION);
matchRule.setBODYExpression(".*wang.*");
mobileHybridApp.updateMobileHybridAppMatchingRule(hybridAppID,
matchRule);
```

Update of Hybrid App Context Variables

Updates context variables for the specified Hybrid App package.

Syntax

```
void updateMobileHybridAppContextVariables(MobileHybridAppIDVO
hybridAppID,List<MobileHybridAppContextVariableVO>
contextVariables) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App context variables –** updates context variables for an existing Hybrid App package with workflow ID 2:

```
// Update HybridApp context variables
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
// ID 2 version 1 is a existing HybridApp on the server
hybridAppID.setVersion(1);
hybridAppID.setWID(2);
List<MobileHybridAppContextVariableVO> contextVariables =
mobileHybridApp
        .getMobileHybridAppContextVariables(hybridAppID);
contextVariables.get(0).setValue("string value updated");
mobileHybridApp.updateMobileHybridAppContextVariables(hybridAppID
,contextVariables);
```

Usage

For Hybrid App packages that do not support certificate-based authentication, use the following context variables to specify credentials:

- SupUser
- SupPassword

For Hybrid App packages that support certificate-based authentication, use the above variables and the following additional context variables:

- SupCertificateIssuer
- SupCertificateSubject
- SupCertificateNotAfter
- SupCertificateNotBefore

Note: In this case, all the context variables are read-only.

Retrieval of Hybrid App Device Status

Retrieves Hybrid App status for a device from the value object `DeviceMobileHybridAppStatusVO`.

Syntax

```
List<MobileHybridAppAssignmentVO>
getDeviceHybridAppAssignments(Integer
applicationConnectionNumericID) throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App device assignments**

```
// get all HybridApp that assign to the device. Where 3 is a
// existing application connection numeric ID.
```

```
List<MobileHybridAppAssignmentVO> assignments = mobileHybridApp
        .getDeviceHybridAppAssignments(3);
```

Assignment of a Hybrid App Package

Defines a Hybrid App package and devices, and assigns the package to the devices.

Syntax

```
void assignMobileHybridAppToDevices(MobileHybridAppIDVO
hybridAppID,List<Integer> applicationConnectionNumericIDs) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package assignment**

```
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(2);
List<Integer> deviceIDs = new ArrayList<Integer>();
deviceIDs.add(64);
// assign Hybrid App to devices
hybridApp.assignMobileHybridAppToDevices(hybridAppID, deviceIDs);
```

Unassignment of a Hybrid App Package

Unassigns a Hybrid App package from devices.

Syntax

```
void unassignMobileHybridAppFromDevices(MobileHybridAppIDVO
hybridAppID,List<Integer> applicationConnectionNumericIDs) throws
SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Package unassignment**

```
// unassign Hybrid App to devices
hybridApp.unassignMobileHybridAppFromDevices(HybridAppID,
deviceIDs);
```

Retrieval of Device Hybrid App Assignments

Retrieves all Hybrid App packages that are assigned to the specified device.

Syntax

```
List<MobileHybridAppAssignmentVO>
getDeviceHybridAppAssignments(Integer
applicationConnectionNumericID) throws SUPAdminException;
```

Returns

If successful, returns a list of objects of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Retrieve mobile workflow device assignments**

  ```
  // get all Mobile Hybrid App that assign to the device. Where 3 is
  a
  // existing application connection numeric ID.
  List<MobileHybridAppAssignmentVO> assignments =
  hybridApp.getDeviceHybridAppAssignments(3);
  ```

E-mail Settings Configuration for Hybrid Apps

Updates or retrieves the e-mail settings for a Hybrid App package.

E-mail settings allow the administrator to configure a listener to scan all incoming e-mail messages delivered to an inbox that the administrator indicates during configuration.

Syntax

```
Boolean testEmailConnection(String configXml) throws
SUPAdminException;

void configureEmail(String configurationXML) throws
SUPAdminException;

void enableEmail(boolean enable) throws SUPAdminException;

String getEmailConfiguration() throws SUPAdminException;

Boolean isEmailEnabled() throws SUPAdminException;
```

Returns

If successful, returns an object of the specified type (can be null). If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App e-mail settings**

```
String configXmlString = readEmailConfig();

// Test Email Multicast connection
Boolean test = mobileHybridApp.testEmailConnection(config);

// Config Email Multicast
mobileHybridApp.configureEmail(config);

// Enable Email Multicast
mobileHybridApp.enableEmail(true);

// Get Email Multicast configuration
String config = mobileHybridApp.getEmailConfiguration();

// Check if Email Multicast enabled
boolean enable = mobileHybridApp.isEmailEnabled();

// Read Email Multicast config XML string from file
private String readEmailConfig() throws IOException {
StringBuffer sb = new StringBuffer();
    InputStream in = getClass().getResourceAsStream(
       "/com/sybase/sup/example/email/EmailMulticastConfig.xml");
    BufferedReader reader = new BufferedReader(new
InputStreamReader(in));
    String line;
    while ((line = reader.readLine()) != null) {
        sb.append(line);
        System.out.println(line);
    }
    reader.close();
    return sb.toString();
}
```

Unblock Hybrid App Queue

Unblocks the Hybrid App queue for the selected Hybrid Apps and devices.

Syntax

```
void unblockHybridAppQueueForDevices(MobileHybridAppIDVO
hybridAppID, List<Integer> applicationConnectionNumericIDs, Boolean
forTransformQueue) throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Hybrid App queue**

```
// prepare mobile HybridApp ID
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setVersion(1);
hybridAppID.setWID(2);
// prepare application connection numeric ids
List<Integer> applicationConnectionNumericIDs = new
ArrayList<Integer>();
applicationConnectionNumericIDs.add(1);
applicationConnectionNumericIDs.add(2);
// Unblock mobile HybridApp queue for application connections
mobileHybridApp.unblockHybridAppQueueForDevices(hybridAppID,
applicationConnectionNumericIDs, true);
```

Replace Hybrid App Certificate

Replaces the certificate for a Hybrid App package.

Syntax

```
void replaceMobileHybridAppCertificate(MobileHybridAppIDVO
hybridAppID, byte[] certificateBlob, String certificatePassword)
throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Replace certificate**

```
InputStream is = getClass().getResourceAsStream("sybase101.p12");
ByteArrayOutputStream baos = new ByteArrayOutputStream();
byte[] buf = new byte[512];
int count;
while ((count = is.read(buf)) != -1) {
    baos.write(buf, 0, count);
}
is.close();
baos.flush();
baos.close();
MobileHybridAppIDVO hybridAppID = new MobileHybridAppIDVO();
hybridAppID.setWID(4);
hybridAppID.setVersion(1);

mobileHybridApp.replaceMobileHybridAppCertificate(hybridAppID,
        baos.toByteArray(), "password");
```

Management Client Application Shutdown

Releases resources currently held by the API. This method only needs to be called on the termination of the management client application.

Syntax

```
public static void shutdown() throws SUPAdminException;
```

Returns

If successful, returns silently. If unsuccessful, returns `SUPAdminException`.

Examples

- **Shutdown**

  ```
  SUPObjectFactory.shutdown();
  ```

Client Metadata

Use metadata to add values the administrator can use to configure SAP Mobile Platform properties.

See also

- *Administration Interfaces* on page 401
- *Metadata* on page 403

Security Configuration

The security configuration for SAP Mobile Platform consists of the several types of security providers.

- Audit provider
- Authentication provider
- Authorization provider
- Attribution provider

Each of these provider types can have multiple instances in the security configuration. For example, a security configuration could have two audit providers, four authentication providers, and five authorization providers. Each security provider instance has a unique ID.

Security provider instances are grouped together by type; the instance stack sequence in each group can be adjusted.

Audit Provider

An auditor consists of one destination, one filter, and one formatter:

- The supported value for destination is `com.sybase.security.core.FileAuditDestination`. Optionally, you can develop a custom provider and configure it as the audit destination, formatter, and filter.
- The only supported value for the filter is `com.sybase.security.core.DefaultAuditFilter`.
- The only supported value for the formatter is `com.sybase.security.core.XmlAuditFormatter`.

com.sybase.security.core.FileAuditDestination

The com.sybase.security.core.FileAuditDestination class contains the following configurable properties:

Marking an audit destination required or requisite means all operations being audited (authorization, authentication, role check, and so on) will fail if the event cannot successfully be logged to that audit destination.

Table 16. controlFlag

Datatype	String (enumerated)
Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 17. implementationClass

Datatype	String
Default	com.sybase.security.core.FileAuditDestination
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 18. providerType

Datatype	String
Default	AuditDestination
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 19. auditFile

Datatype	String
Default	${djc.home}/logs/{security configuration name}-audit.log, where {security configuration name} is the name of the security configuration in which the audit destination is configured.
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 20. compressionThreshold

Datatype	int
Required?	No
Requires server restart?	No
Read-only?	No

Table 21. deleteThreshold

Datatype	int
Required?	No
Requires server restart?	No
Read-only?	No

Table 22. encoding

Datatype	String
Default	utf-8

Required?	No
Requires server restart?	No
Read-only?	No

Table 23. errorThreshold

Datatype	int
Required?	No
Requires server restart?	No
Read-only?	No

Table 24. logSize

Datatype	long
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.core.DefaultAuditFilter

The com.sybase.security.core.DefaultAuditFilter class contains the following configurable properties:

Table 25. implementationClass

Datatype	String
Default	com.sybase.security.core.DefaultAuditFilter
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 26. providerType

Datatype	String
Default	AuditFilter
Required?	Yes
Requires server restart?	No

Read-only?	Yes

Table 27. caseSensitiveFiltering

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 28. filter

Datatype	String
Default	(ResourceClass=core.subject, Action=authorization.role) (ResourceClass=core.subject, Action=authorization.resource) (ResourceClass=core.subject, Action=authentication) (ResourceClass=core.subject, Action=logout) (ResourceClass=core.profile) (ResourceClass=providers.*) (ResourceClass=clients.*)
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.core.XmlAuditFormatter

The com.sybase.security.core.XmlAuditFormatter class contains the following configurable properties:

Table 29. implementationClass

Datatype	String
Default	com.sybase.security.core.XmlAuditFormatter
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 30. providerType

Datatype	String

Default	AuditFormatter
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Authentication Provider

Supported authenticators.

- com.sybase.security.core.NoSecLoginModule
- com.sybase.security.core.CertificateValidationLoginModule
- com.sybase.security.ldap.LDAPLoginModule
- com.sybase.security.os.NTProxyLoginModule
- com.sybase.security.sap.SAPSSOTokenLoginModule
- com.sybase.security.core.CertificateAuthenticationLoginModule
- com.sybase.security.core.PreConfiguredUserLoginModule
- com.sybase.security.http.HttpAuthenticationLoginModule
- com.sybase.security.core.ClientValuePropagatingLoginModule
- com.sybase.security.radius.RadiusLoginModule

com.sybase.security.core.NoSecLoginModule

The com.sybase.security.core.NoSecLoginModule package includes the following configurable properties:

Table 31. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 32. controlFlag

Datatype	String (enumerated)

Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 33. identity

Datatype	String
Default	nosec_identity
Required?	No
Requires server restart?	No
Read-only?	No

Table 34. implementationClass

Datatype	String
Default	com.sybase.security.core.NoSecLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 35. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 36. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 37. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 38. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 39. useUsernameAsIdentity

Datatype	boolean
Default	TRUE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.core.CertificateValidationLoginModule
The com.sybase.security.core.CertificateValidationLoginModule package contains the following configurable properties:

Table 40. controlFlag

Datatype	String (enumerated)
Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 41. implementationClass

Datatype	String
Default	com.sybase.security.core.CertificateValidationLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 42. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 43. validatedCertificateIsIdentity

Datatype	boolean

Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 44. enableRevocationChecking

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 45. trustedCertStore

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 46. trustedCertStorePassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 47. trustedCertStoreProvider

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 48. trustedCertStoreType

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 49. validateCertPath

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.ldap.LDAPLoginModule

The com.sybase.security.ldap.LDAPLoginModule package contains the following configurable properties:

Table 50. AuthenticationFilter

Datatype	String.
Required?	No
Requires server restart?	No
Read-only?	No

Table 51. AuthenticationMethod

Datatype	String
Default	simple
Required?	No
Requires server restart?	No
Read-only?	No

Table 52. AuthenticationScope

Datatype	String (enumerated)

Alllowable values	• onelevel • subtree
Default	onelevel
Required?	No
Requires server restart?	No
Read-only?	No

Table 53. AuthenticationSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 54. BindDN

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 55. BindPassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	Yes

Table 56. CertificateAuthenticationFilter

Datatype	String
Required?	No
Requires server restart?	No

Read-only?	No

Table 57. ConnectTimeout

Datatype	Int
Default	0
Required?	No
Requires server restart?	No
Read-only?	No

Table 58. DefaultSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 59. DigestMD5AuthenticationFormat

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 60. EnableLDAPConnectionTrace

Datatype	Boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 61. InitialContextFactory

Datatype	String
Default	com.sun.jndi.ldap.LdapCtxFactory

Required?	No
Requires server restart?	No
Read-only?	No

Table 62. LDAPPoolMaxActive

Datatype	Int
Default	8
Required?	No
Requires server restart?	No
Read-only?	No

Table 63. ProviderURL

Datatype	String
Default	ldap://localhost:389
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 64. ReadTimeout

Datatype	Int
Required?	No
Requires server restart?	No
Read-only?	No

Table 65. Referral

Datatype	String (enumerated)
Allowable values	• ignore • follow • throw
Default	ignore
Required?	No

Requires server restart?	No
Read-only?	No

Table 66. RoleFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 67. RoleMemberAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 68. RoleNameAttributes

Datatype	String
Default	cn
Required?	No
Requires server restart?	No
Read-only?	No

Table 69. RoleScope

Datatype	String (enumerated)
Allowable values	• onelevel • subtree
Required?	No
Requires server restart?	No
Read-only?	No

Table 70. RoleSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 71. SecurityProtocol

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 72. SelfRegistrationSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 73. SerializationKey

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 74. ServerType

Datatype	String (enumerated)
Allowable values	• sunone5 • msad2k • nsds4 • openldap
Required?	No

Requires server restart?	No
Read-only?	No

Table 75. SkipRoleLookup

Datatype	Boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 76. UnmappedAttributePrefix

Datatype	String
Default	LDAP
Required?	No
Requires server restart?	No
Read-only?	No

Table 77. UseUserAccountControlAttribute

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 78. UserFreeformRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 79. UserRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 80. certificateAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 81. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 82. controlFlag

Datatype	String (enumerated)
Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 83. enableCertificateAuthentication

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 84. implementationClass

Datatype	String
Default	com.sybase.security.ldap.LDAPLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 85. ldapAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 86. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 87. storePass

Datatype	boolean
Default	FALSE
Required?	No

Requires server restart?	No
Read-only?	No

Table 88. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 89. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.os.NTProxyLoginModule

The com.sybase.security.os.NTProxyLoginModule package contains the following configurable properties:

Table 90. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 91. controlFlag

Datatype	String (enumerated)

Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 92. defaultAuthenticationServer

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 93. defaultDomain

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 94. extractDomainFromUsername

Datatype	boolean
Default	TRUE
Required?	No
Requires server restart?	No
Read-only?	No

Table 95. failAuthenticationIfNoRoles

Datatype	boolean
Default	FALSE

Required?	No
Requires server restart?	No
Read-only?	No

Table 96. implementationClass

Datatype	String
Default	com.sybase.security.os.NTProxyLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 97. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 98. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 99. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No

Read-only?	No

Table 100. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.sap.SAPSSOTokenLoginModule

The SAPSSOTokenLoginModule has been deprecated, Use the HttpAuthenticationLoginModule when SAP SSO2 token authentication is required. This authentication module will be removed in a future release.

The com.sybase.security.sap.SAPSSOTokenLoginModule package contains the following configurable properties:

Table 101. DisableServerCertificateValidation

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 102. SapSSOTokenPersistenceDataStore

Datatype	String
Default	jdbc/default
Required?	No
Requires server restart?	No
Read-only?	Yes

Table 103. SapServerCertificate

Datatype	String
Required?	No

Requires server restart?	No
Read-only?	No

Table 104. SapServerCertificatePassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 105. SapServerURL

Datatype	String
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 106. TokenExpirationInterval

Datatype	long
Default	120
Required?	No
Requires server restart?	No
Read-only?	No

Table 107. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 108. controlFlag

Datatype	String (enumerated)

Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 109. implementationClass

Datatype	String (enumerated)
Default	com.sybase.security.sap.SAPSSOTokenLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 110. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 111. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 112. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 113. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.core.CertificateAuthenticationLoginModule

The com.sybase.security.core.CertificateAuthenticationLoginModule package contains the following configurable properties:

Table 114. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 115. controlFlag

Datatype	String (enumerated)
Allowable values	• optional • sufficient • required • requisite
Default	optional

Required?	Yes
Requires server restart?	No
Read-only?	No

Table 116. enableRevocationChecking

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 117. implementationClass

Datatype	String (enumerated)
Default	com.sybase.security.core.CertificateAuthenticationLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 118. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 119. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No

Read-only?	No

Table 120. trustedCertStore

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 121. trustedCertStorePassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 122. trustedCertStoreProvider

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 123. trustedCertStoreType

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 124. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No

Read-only?	No

Table 125. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 126. validateCertPath

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.core.PreConfiguredUserLoginModule

The com.sybase.security.core.PreConfiguredUserLoginModule package contains the following configurable properties:

Table 127. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 128. controlFlag

Datatype	String (enumerated)

Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 129. implementationClass

Datatype	String (enumerated)
Default	com.sybase.security.core.PreConfiguredUserLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 130. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 131. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 132. trustedCertStore

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 133. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 134. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 135. username

Datatype	String. Cannot contain , = : ' " * ? &.
Default	supAdmin
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 136. Password

Datatype	String
Default	“”
Required?	Yes

Requires server restart?	No
Read-only?	No

Table 137. roles

Datatype	String
Default	SUP Administrator
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.http.HttpAuthenticationLoginModule

The com.sybase.security.http.HttpAuthenticationLoginModule package contains the following configurable properties:

Table 138. implementationClass

Datatype	String (enumerated)
Default	com.sybase.security.http.HttpAuthenticationLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 139. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Table 140. controlFlag

Datatype	String (enumerated)

Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 141. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 142. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 143. storePass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 144. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 145. URL

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 146. DisableServerCertificateValidation

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 147. RolesHTTPHeader

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 148. SSOCookieNames

Datatype	String
Default	None

Required?	No
Requires server restart?	No
Read-only?	No

Table 149. SuccessfulConnectionStatusCode

Datatype	int
Default	200
Required?	No
Requires server restart?	No
Read-only?	No

Table 150. CredentialName

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 151. SendPasswordAsCookie

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 152. ClientHttpValuesToSend

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No

Read-only?	No

Table 153. SendClientHttpValueAs

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 154. UsernameHttpHeader

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 155. TokenExpirationTimeHttpHeader

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 156. RegexForUsernameMatch

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 157. TryBasicAuthIfTokenAuthFails

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 158. HttpConnectionTimeoutInterval

Datatype	int
Default	60000
Required?	No
Requires server restart?	No
Read-only?	No

Table 159. TokenExpirationalInterval

Datatype	int
Default	0
Required?	No
Requires server restart?	No
Read-only?	No

com.sybase.security.radius.RadiusLoginModule

The com.sybase.security.radius.RadiusLoginModule package contains the following configurable properties:

Table 160. implementationClass

Datatype	String
Default	com.sybase.security.radius.RadiusLoginModule
Required?	Yes
Requires server restart?	No
Read-only?	No

Encrypted?	No

Table 161. providerType

Datatype	String
Default	LoginModule
Required?	Yes
Requires server restart?	No
Read-only?	Yes
Encrypted?	No

Table 162. controlFlag

Datatype	String (enumerated)
Allowable values	• optional • sufficient • required • requisite
Default	optional
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 163. AuthenticationMethod

Datatype	String
Allowable values	• PAP • CHAP
Default	PAP
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 164. SharedSecret

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No
Encrypted?	Yes

Table 165. RadiusServerHostName

Datatype	String
Default	None
Required?	Yes
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 166. RadiusServerAuthPort

Datatype	int
Default	1812
Required?	Yes
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 167. RadiusServerAuthPort

Datatype	int
Default	3
Required?	No
Requires server restart?	No
Read-only?	No

Encrypted?	No

Table 168. caseSensitiveMatching

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 169. useFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 170. tryFirstPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 171. storePass

Datatype	boolean
Default	FALSE
Required?	No

Requires server restart?	No
Read-only?	No
Encrypted?	No

Table 172. clearPass

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No
Encrypted?	No

Authorization Provider

Supported authorizers.

- com.sybase.security.core.NoSecAuthorizer
- com.sybase.security.ldap.LDAPAuthorizer

com.sybase.security.core.NoSecAuthorizer

The com.sybase.security.core.NoSecAuthorizer package contains the following configurable properties:

Table 173. implementationClass

Datatype	String
Default	com.sybase.security.core.NoSecAuthorizer
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 174. providerType

Datatype	String
Default	Authorizer
Required?	Yes

Requires server restart?	No
Read-only?	Yes

com.sybase.security.ldap.LDAPAuthorizer

The com.sybase.security.ldap.LDAPAuthorizer package contains the following configurable properties:

Table 175. AuthenticationFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 176. AuthenticationMethod

Datatype	String
Default	simple
Required?	No
Requires server restart?	No
Read-only?	No

Table 177. AuthenticationScope

Datatype	String (enumerated)
Alllowable values	• onelevel • subtree
Default	onelevel
Required?	No
Requires server restart?	No
Read-only?	No

Table 178. AuthenticationSearchBase

Datatype	String
Required?	No

Requires server restart?	No
Read-only?	No

Table 179. BindDN

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 180. BindPassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 181. CertificateAuthenticationFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 182. ConnectTimeout

Datatype	Int
Default	0
Required?	No
Requires server restart?	No
Read-only?	No

Table 183. DefaultSearchBase

Datatype	String
Required?	Yes (if RoleSearchBase is not provided)

Requires server restart?	No
Read-only?	No

Table 184. DigestMD5AuthenticationFormat

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 185. EnableLDAPConnectionTrace

Datatype	Boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 186. InitialContextFactory

Datatype	String
Default	com.sun.jndi.ldap.LdapCtxFactory
Required?	No
Requires server restart?	No
Read-only?	No

Table 187. LDAPPoolMaxActive

Datatype	Int
Default	8
Required?	No
Requires server restart?	No
Read-only?	No

Table 188. ProviderURL

Datatype	String
Default	ldap://localhost:389
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 189. ReadTimeout

Datatype	Int
Required?	No
Requires server restart?	No
Read-only?	No

Table 190. Referral

Datatype	String (enumerated)
Allowable values	• ignore • follow • throw
Default	ignore
Required?	No
Requires server restart?	No
Read-only?	No

Table 191. RoleFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 192. RoleMemberAttributes

Datatype	String

Required?	No
Requires server restart?	No
Read-only?	No

Table 193. RoleNameAttributes

Datatype	String
Default	cn
Required?	No
Requires server restart?	No
Read-only?	No

Table 194. RoleScope

Datatype	String (enumerated)
Allowable values	• onelevel • subtree
Required?	No
Requires server restart?	No
Read-only?	No

Table 195. RoleSearchBase

Datatype	String
Required?	Yes (if DefaultSearchBase is not provided)
Requires server restart?	No
Read-only?	No

Table 196. SecurityProtocol

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 197. SelfRegistrationSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 198. ServerType

Datatype	String (enumerated)
Allowable values	• sunone5 • msad2k • nsds4 • openldap
Required?	No
Requires server restart?	No
Read-only?	No

Table 199. SkipRoleLookup

Datatype	Boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 200. UnmappedAttributePrefix

Datatype	String
Default	LDAP
Required?	No
Requires server restart?	No
Read-only?	No

Table 201. UseUserAccountControlAttribute

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 202. UserFreeformRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 203. UserRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 204. certificateAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 205. enableCertificateAuthentication

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 206. implementationClass

Datatype	String
Default	com.sybase.security.ldap.LDAPAuthorizer
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 207. ldapAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 208. providerType

Datatype	String
Default	Authorizer
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Attribution Provider

Supported attributions.

- com.sybase.security.core.NoSecAttributer
- com.sybase.security.ldap.LDAPAttributer

com.sybase.security.core.NoSecAttributer

The com.sybase.security.core.NoSecAttributer package contains the following configurable properties:

Table 209. implementationClass

Datatype	String
Default	com.sybase.security.core.NoSecAttributer

Required?	Yes
Requires server restart?	No
Read-only?	No

Table 210. providerType

Datatype	String
Default	Attributer
Required?	Yes
Requires server restart?	No
Read-only?	Yes

com.sybase.security.ldap.LDAPAttributer

The com.sybase.security.ldap.LDAPAttributer package contains the following configurable properties:

Table 211. AuthenticationFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 212. AuthenticationMethod

Datatype	String
Default	simple
Required?	No
Requires server restart?	No
Read-only?	No

Table 213. AuthenticationScope

Datatype	String (enumerated)
Alllowable values	• onelevel • subtree

Default	onelevel
Required?	No
Requires server restart?	No
Read-only?	No

Table 214. AuthenticationSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 215. BindDN

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 216. BindPassword

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 217. CertificateAuthenticationFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 218. ConnectTimeout

Datatype	Int

Default	0
Required?	No
Requires server restart?	No
Read-only?	No

Table 219. DefaultSearchBase

Datatype	String
Required?	Yes (if RoleSearchBase is not provided)
Requires server restart?	No
Read-only?	No

Table 220. DigestMD5AuthenticationFormat

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 221. EnableLDAPConnectionTrace

Datatype	Boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 222. InitialContextFactory

Datatype	String
Default	com.sun.jndi.ldap.LdapCtxFactory
Required?	No
Requires server restart?	No
Read-only?	No

Table 223. LDAPPoolMaxActive

Datatype	Int
Default	8
Required?	No
Requires server restart?	No
Read-only?	No

Table 224. ProviderURL

Datatype	String
Default	ldap://localhost:389
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 225. ReadTimeout

Datatype	Int
Required?	No
Requires server restart?	No
Read-only?	No

Table 226. Referral

Datatype	String (enumerated)
Allowable values	• ignore • follow • throw
Default	ignore
Required?	No
Requires server restart?	No
Read-only?	No

Table 227. RoleFilter

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 228. RoleMemberAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 229. RoleNameAttributes

Datatype	String
Default	cn
Required?	No
Requires server restart?	No
Read-only?	No

Table 230. RoleScope

Datatype	String (enumerated)
Allowable values	• onelevel • subtree
Required?	No
Requires server restart?	No
Read-only?	No

Table 231. RoleSearchBase

Datatype	String
Required?	Yes (if DefaultSearchBase is not provided)

Requires server restart?	No
Read-only?	No

Table 232. SecurityProtocol

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 233. SelfRegistrationSearchBase

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 234. ServerType

Datatype	String (enumerated)
Allowable values	• sunone5 • msad2k • nsds4 • openldap
Required?	No
Requires server restart?	No
Read-only?	No

Table 235. SkipRoleLookup

Datatype	Boolean
Default	False
Required?	No
Requires server restart?	No
Read-only?	No

Table 236. UnmappedAttributePrefix

Datatype	String
Default	LDAP
Required?	No
Requires server restart?	No
Read-only?	No

Table 237. UseUserAccountControlAttribute

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 238. UserFreeformRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 239. UserRoleMembershipAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 240. certificateAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 241. enableCertificateAuthentication

Datatype	boolean
Default	FALSE
Required?	No
Requires server restart?	No
Read-only?	No

Table 242. implementationClass

Datatype	String
Default	com.sybase.security.ldap.LDAPAttributer
Required?	Yes
Requires server restart?	No
Read-only?	No

Table 243. ldapAttributes

Datatype	String
Required?	No
Requires server restart?	No
Read-only?	No

Table 244. providerType

Datatype	String
Default	Attributer
Required?	Yes
Requires server restart?	No
Read-only?	Yes

Cluster Configuration

You can configure the following cluster components through metadata.

- ReplicationSyncserver
- MessagingSyncserver

- AdministrationListener
- SecureAdministrationListener
- HTTPListener
- SecureHTTPListener
- SSLSecurityProfile
- KeyStore
- TrustStore
- OCSP
- SolutionManager
- DCN Performance
- WebContainer
- ConfigurationCache

ReplicationSyncServer

The `ReplicationSyncServer` component contains the following configurable properties:

Table 245. ml.cachesize

Datatype	String
Default	50M
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 246. ml.threadcount

Datatype	int
Default	5
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 247. sup.sync.certificate

Datatype	String
Required?	Yes
Requires server restart?	Yes

Read-only?	No

Table 248. sup.sync.certificate_password

Datatype	String
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 249. sup.sync.httpsport

Datatype	int
Default	2481
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 250. sup.sync.port

Datatype	int
Default	2480
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 251. sup.sync.protocol

Datatype	String
Allowable values	• http • https
Default	http
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 252. sup.user.options

Datatype	String
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 253. sup.sync.e2ee_type

Datatype	String
Allowable values	• rsa • <empty>
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 254. sup.sync.e2ee_private_key

Datatype	String
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 255. sup.sync.e2ee_private_key_password

Datatype	String
Required?	No
Requires server restart?	Yes
Read-only?	No

MessagingSyncServer

The `MessagingSyncServer` component contains the following configurable properties.

Table 256. msg.http.server.proxy.ports

Datatype	String
Default	5001

Required?	No
Requires server restart?	Yes
Read-only?	No

Table 257. sup.msg.outbound_count

Datatype	int
Default	5
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 258. sup.msg.outbound_queue_prefix

Datatype	String
Default	sup.mbs.moca.
Required?	No
Requires server restart?	Yes
Read-only?	No

AdministrationListener

The `AdministrationListener` component contains the following configurable properties:

Table 259. sup.admin.port

Datatype	int
Default	null
Required?	Yes
Requires server restart?	Yes
Read-only?	No

SecureAdministrationListener

The `SecureAdministrationListener` component contains the following configurable properties:

Table 260. sup.admin.iiopsport

Datatype	int
Default	null
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 261. sup.admin.iiops.profile

Datatype	String
Default	iiop
Required?	Yes
Requires server restart?	Yes
Read-only?	No

HTTPListener

The `HTTPListener` component contains the following configurable properties:

Table 262. sup.socket.listener.enabled

Datatype	boolean
Default	TRUE
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 263. sup.socket.listener.port

Datatype	int
Default	null

Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 264. sup.socket.listener.protocol

Datatype	String
Default	iiop
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 265. sup.socket.listener.maxthreads

Datatype	int
Default	30
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 266. sup.socket.listener.maxIdleTime

Datatype	int
Default	3600000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 267. sup.socket.listener.numberOfAcceptors

Datatype	int
Default	3
Required?	No
Requires server restart?	Yes

Read-only?	No

Table 268. sup.socket.listener.lowResourcesConnections

Datatype	int
Default	3600000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 269. sup.socket.listener.includeServerInfoInSession

Datatype	int
Default	FALSE
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 270. sup.socket.listener.headerBufferSize

Datatype	boolean
Default	8092
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 271. sup.socket.listener.soLingerTime

Datatype	Int
Default	1000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 272. sup.socket.listener.acceptorPriority

Datatype	string
Default	0
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 273. sup.socket.listener.securityProfile

Datatype	string
Default	null
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 274. sup.socket.listener.responseBufferSize

Datatype	int
Default	65536
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 275. sup.socket.listener.statsOn

Datatype	int
Default	FALSE
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 276. sup.socket.listener.listenBacklog

Datatype	boolean
Default	50

Required?	No
Requires server restart?	Yes
Read-only?	No

Table 277. sup.socket.listener.requestBufferSize

Datatype	int
Default	32768
Required?	No
Requires server restart?	Yes
Read-only?	No

SecureHTTPListener

The `SecureHTTPListener` component contains the following configurable properties:

Table 278. sup.socket.listener.enabled

Datatype	boolean
Default	TRUE
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 279. sup.socket.listener.port

Datatype	int
Default	null
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 280. sup.socket.listener.protocol

Datatype	String
Default	iiop

Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 281. sup.socket.listener.security.profile

Datatype	String
Default	default
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 282. sup.socket.listener.maxthreads

Datatype	int
Default	30
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 283. sup.socket.listener.maxIdleTime

Datatype	int
Default	3600000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 284. sup.socket.listener.numberOfAcceptors

Datatype	int
Default	3
Required?	No
Requires server restart?	Yes

Read-only?	No

Table 285. sup.socket.listener.lowResourcesConnections

Datatype	int
Default	3600000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 286. sup.socket.listener.includeServerInfoInSession

Datatype	int
Default	FALSE
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 287. sup.socket.listener.headerBufferSize

Datatype	boolean
Default	8092
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 288. sup.socket.listener.soLingerTime

Datatype	Int
Default	1000
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 289. sup.socket.listener.acceptorPriority

Datatype	string
Default	0
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 290. sup.socket.listener.securityProfile

Datatype	string
Default	null
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 291. sup.socket.listener.responseBufferSize

Datatype	int
Default	65536
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 292. sup.socket.listener.statsOn

Datatype	int
Default	FALSE
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 293. sup.socket.listener.listenBacklog

Datatype	boolean
Default	50

Required?	No
Requires server restart?	Yes
Read-only?	No

Table 294. sup.socket.listener.requestBufferSize

Datatype	int
Default	32768
Required?	No
Requires server restart?	Yes
Read-only?	No

SSLSecurityProfile

The `SSLSecurityProfile` component contains the following configurable properties:

Table 295. securityCharacteristics

Datatype	String
Allowable values	• intl • intl_mutual • strong • strong_mutual • domestic • domestic_mutual
Default	intl
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 296. certificateLabel

Datatype	String
Default	null
Required?	Yes
Requires server restart?	Yes

Read-only?	No

Table 297. sup.security.profile.name

Datatype	String
Default	null
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

KeyStore

The `KeyStore` component contains the following configurable properties:

Table 298. sup.sync.sslkeystore

Datatype	String
Default	Repository/Security/keystore.jks
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 299. sup.sync.sslkeystore_password

Datatype	String
Default	changeit
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

TrustStore

The `TrustStore` component contains the following configurable properties:

Table 300. sup.sync.ssltruststore

Datatype	String
Default	Repository/Security/truststore.jks
Required?	Yes

Requires server restart?	Yes
Read-only?	Yes

Table 301. sup.sync.ssltruststore_password

Datatype	String
Default	changeit
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

OCSP

The `OCSP (Online Certificate Status Protocol)` component contains the following configurable properties:

Table 302. ocsp.enable

Datatype	Boolean
Default	False
Required?	No
Requires server restart?	No
Read-only?	No

Table 303. ocsp.responderURL

Datatype	String
Default	None
Required?	No
Requires server restart?	No
Read-only?	No

Table 304. ocsp.responderCertIssuerName

Datatype	String
Default	None
Required?	No

Requires server restart?	No
Read-only?	No

Table 305. ocsp.responderCertSerialNumber

Datatype	String
Default	None
Required?	No
Requires server restart?	No
Read-only?	No

Table 306. ocsp.responderCertSubjectName

Datatype	String
Default	None
Required?	No
Requires server restart?	No
Read-only?	No

SolutionManager

The `SolutionManager` component contains the following configurable properties.

Table 307. com.sap.solutionmanager.url

Datatype	string
Default	
Required?	Yes
Requires Server Restart?	Yes
Read-only?	No

DCN

The `DCN` component contains the following configurable properties.

Table 308. sup.dcn.http.get.enabled

Datatype	boolean
Default	False

Required?	Yes
Requires server restart?	Yes
Read-only?	No

Performance

The `Performance` component contains the following configurable properties.

Table 309. sup.msg.inbound_count

Datatype	int
Default	25
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 310. sup.msg.outbound_count

Datatype	int
Default	5
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 311. sup.msg.subscribe.receiver.count

Datatype	int
Default	5
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 312. sup.msg.proxy.connections.pool.max

Datatype	int
Default	1000

Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 313. ml.threadcount

Datatype	int
Default	10
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 314. ml.cachesize

Datatype	string
Default	70p
Required?	Yes
Requires server restart?	Yes
Read-only	No

Table 315. webservices.connections.max.total

Datatype	int
Default	250
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 316. webservices.connections.max.per.host

Datatype	int
Default	50
Required?	Yes
Requires server restart?	Yes

Read-only?	No

Table 317. webservices.connection.manager.timeout

Datatype	long
Default	180000
Required?	Yes
Requires server restart?	Yes
Read-only?	No

WebContainer

The `WebContainer` component contains the following configurable properties.

Table 318. gzipFilter

Datatype	boolean
Default	False
Required?	No
Requires server restart?	Yes
Read-only?	No

Table 319. maxFormContentSize

Datatype	string
Default	10000000
Required?	No
Requires server restart?	Yes
Read-only?	No

ConfigurationCache

The `ConfigurationCache` component contains the following configurable properties.

Table 320. cache.core.pool.size

Datatype	int
Default	40
Required?	Yes

Requires server restart?	Yes
Read-only?	No

Table 321. cache.max.pool.size

Datatype	int
Default	40
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 322. cache.keep.alive.time

Datatype	int
Default	300
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 323. cache.network.encrypt

Datatype	boolean
Default	False
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 324. cache.port.autoinc

Datatypes	boolean
Default	False
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 325. cache.port

Datatype	int
Default	5701
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Server Configuration

You can configure the following components through metadata:

- ConsolidatedDB
- JVM

Note: Properties you configure for an SAP Mobile Server are cluster-affecting. Therefore, to make sure they are propagated correctly, SAP recommends that you set them only on a primary cluster server.

ConsolidatedDB

The `ConsolidatedDB` component contains the following configurable properties:

Table 326. cdb.asa.mode

Datatype	String
Default	primary
Required?	No
Requires server restart?	Yes
Read-only?	Yes

Table 327. cdb.databasename

Datatype	String
Default	default
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 328. cdb.dnsname

Datatype	String
Default	default-cdb
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 329. cdb.install_type

Datatype	String
Default	default
Required?	No
Requires server restart?	Yes
Read-only?	Yes

Table 330. cdb.password

Datatype	String
Default	sql
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 331. cdb.serverhost

Datatype	String
Default	gma
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 332. cdb.servername

Datatype	String
Default	gma_primary

Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 333. cdb.serverport

Datatype	int
Default	5200
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 334. cdb.threadcount

Datatype	int
Default	20
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 335. cdb.type

Datatype	String
Allowable values	• Sybase_ASA • Sybase_ASE
Default	Sybase_ASA
Required?	Yes
Requires server restart?	Yes
Read-only?	Yes

Table 336. cdb.user.options

Datatype	String
Required?	Yes

Requires server restart?	Yes
Read-only?	No

Table 337. cdb.username

Datatype	String
Default	dba
Required?	Yes
Requires server restart?	Yes
Read-only?	No

JVM

The `JVM` component contains the following configurable properties:

Table 338. DJC_JVM_MINHEAP

Datatype	String
Default	64M
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 339. DJC_JVM_MAXHEAP

Datatype	String
Default	256M
Required?	Yes
Requires server restart?	Yes
Read-only?	No

Table 340. DJC_JVM_STACKSIZE

Datatype	String
Default	400K
Required?	Yes

Requires server restart?	Yes
Read-only?	No

Table 341. DJC_JVM_USEROPTIONS

Datatype	String
Default	""
Required?	No
Requires server restart?	Yes
Read-only?	No

Server Log Configuration

You can perform log configuration through the `LocalFileAppender` log appenders. The log appender can contain one or more of the following log buckets:

- MSG
- Trace
- MMS
- Security
- Mobilink
- DataServices
- Proxy
- Other

LocalFileAppender

The `LocalFileAppender` log appender contains the following configurable properties:

Table 342. LogLevel

Datatype	String
Allowable values	• TRACE • DEBUG • INFO • WARN • ERROR • OFF
Default	WARN

Required?	No
Requires server restart?	No
Read-only?	No

Table 343. async

Datatype	boolean
Default	FALSE
Required?	No
Requires Server Restart?	No
Read Only?	No

Table 344. dateRollover

Datatype	String
Allowable Values	• NONE • HOURLY • DAILY • WEEKLY • MONTHLY • YEARLY
Default	NONE
Required?	No
Requires Server Restart?	No
Read Only?	No

Table 345. filename

Datatype	String
Default	null
Required?	Yes
Requires Server Restart?	No

Read Only?	No

Table 346. maximumRolloverFiles

Datatype	int
Default	1
Required?	No
Requires Server Re-start?	No
Read Only?	No

Table 347. sizeRollover

Datatype	String
Default	10mb
Required?	No
Requires Server Re-start?	No
Read Only?	No

Property Reference

Review properties of the Management API.

Application Connection Properties

Application Connection properties fall into various categories.

- Apple Push Notifications
- Application Settings
- BlackBerry Push Notifications
- Connection
- Custom Settings
- Device Advanced
- Device Info
- Proxy
- Security Settings
- User registration

Apple Push Notification Properties

Apple Push Notification properties allow iPhone users to install messaging client software on their devices. This requires you to create different e-mail activation messages using the appropriate push notification properties.

ID: property name (type)	Description	Default
2600: Enable (boolean)	Enables if push notification using APNs is enabled or not.	True
2601: Alert (boolean)	Use the iOS standard alert.	True
2602: Badges (boolean)	Use the badge of the application icon.	True
2603: Sounds (boolean)	Use a if a sound is a made when a notification is received. The sound files must reside in the main bundle of the client application. Because custom alert sounds are played by the iOS system-sound facility, they must be in one of the supported audio data formats. See the iOS developer documentation.	True
2605: Alert Message (string)	The message that appears on the client device when alerts are enabled.	New items available
2606: APNS Device Token (string)	The Apple push notification service token. An application must register with Apple push notification service for the iOS to receive remote notifications sent by the application's provider. After the device is registered for push properly, this should contain a valid device token. See the iOS developer documentation.	n/a

Application Settings Properties

Application settings display details that identify the Application Identifier, Domain, Security Configuration of an application connection template.

ID: property name (type)	Description	Default
Domain	The domain selected for the connection template.	
Security Configuration	The security configuration defined for the connection template.	

ID: property name (type)	Description	Default
Automatic Registration Enabled	The value is set to **True** when the application connection registration is carried out automatically.	
Application Identifier	The application identifier registered on SAP Control Center.	
Customization Resource	The application configuration (customization resource bundles) associated with the application.	

BlackBerry Push Notification Properties

BlackBerry push notification properties enable the server to send notifications to BlackBerry devices using Blackberry Enterprise Server (BES).

Property	Description
Enabled	Enables notifications to the device if the device is offline. This feature sends a push notification over an IP connection only long enough to complete the Send/Receive data exchange. BlackBerry Push notifications overcome issues with always-on connectivity and battery life consumption over wireless networks. Acceptable values: true (enabled) and false (disabled). If this setting is false, all other related settings are ignored. Default: true
BES Push Listener Port	The listener port for BES notifications. The port is discovered and set by the client, and is read-only on the server.
Device PIN	Every Blackberry device has a unique permanent PIN. During initial connection and settings exchange, the device sends this information to the server. SAP Mobile Server uses this PIN to address the device when sending notifications, by sending messages through the BES/MDS using an address such as: Device="Device PIN" + Port="Push Listener port". Default: 0

Connection Properties

Connection properties define the connection information for a client application so it can locate the appropriate SAP Mobile Server synchronization service.

ID: property name (type)	Description	Default
1: Server Name (string)	The DNS name or IP address of the SAP Mobile Server, such as "myserver.mycompany.com". If using Relay Server, the server name is the IP address or fully qualified name of the Relay Server host.	n/a

ID: property name (type)	Description	Default
2: Server Port (integer)	The port used for messaging connections between the device and SAP Mobile Server. If using Relay Server, this is the Relay Server port.	5001
3: Farm ID (string)	The string associated with the Relay Server farm ID. Can contain only letters A – Z (uppercase or lowercase), numbers 0 – 9, or a combination of both.	0
6: Activation Code (string)	The original code sent to the user in the activation e-mail. Can contain only letters A – Z (uppercase or lowercase), numbers 0 – 9, or a combination of both. Acceptable range: 1 to 10 characters.	n/a

Custom Settings Properties

Define one of four available custom strings that are retained during reregistration and cloning.

Change the property name and value according to the custom setting you require. The custom settings can be of variable length, with no practical limit imposed on the values. You can use these properties to either manually control or automate how Hybrid App-related messages are processed:

- Manual control – an administrator can store an employee title in one of the custom fields. This allows employees of a specific title to respond to a particular message.
- Automated – a developer stores the primary key of a back-end database using a custom setting. This key allows the database to process messages based on messaging device ID.

ID: property name (type)	Description	Default
2300: Custom 1(string)	A custom string which is retained during reregistration and cloning.	n/a
2301: Custom 2(string)	A custom string which is retained during reregistration and cloning.	n/a
2302: Custom 3(string)	A custom string which is retained during reregistration and cloning.	n/a
2303: Custom 4(string)	A custom string which is retained during reregistration and cloning.	n/a

Device Information Properties

Information properties display details that identify the mobile device, including International Mobile Subscriber identity (IMSI), phone number, device subtype, and device model.

ID: property name (type)	Description	Default
1200: Model (string)	The manufacturer of the registered mobile device.	n/a
1201: Device Subtype (string)	The device subtype of the messaging device. For example, if the device model is a BlackBerry, the subtype is the form factor (for example, BlackBerry Bold).	n/a
1202: Phone Number (string)	The phone number associated with the registered mobile device.	n/a
1203: IMSI (string)	The International Mobile Subscriber identity, which is a unique number associated with all Global System for Mobile communication (GSM) and Universal Mobile Telecommunications System (UMTS) network mobile phone users. To locate the IMSI, check the value on the SIM inside the phone.	n/a

Advanced Device Properties

Advanced properties set specific behavior for messaging devices.

ID: property name (type)	Description	Default
1300: Keep Alive (sec) (integer)	The Keep Alive frequency used to maintain the wireless connection, in seconds. Acceptable values: 30 to 1800.	240
1301: Device Log Items(integer)	The number of items persisted in the device status log. Acceptable values: 5 to 100.	50
1302: Debug Trace Level (integer)	The amount of detail to record to the device log. Acceptable values: 1 to 5, where 5 has the most level of detail and 1 the least. • 1: Basic information, including errors • 2: Some additional details beyond basic • 3: Medium amount of information logged • 4: Maximum tracing of debugging and timing information • 5: Maximum tracing of debugging and timing information (currently same as level 4)	1

ID: property name (type)	Description	Default
1303: Debug Trace Size (KB) (integer)	The size of the trace log on the device (in KB). Acceptable values: 50 to 10,000.	50
1304: Allow Roaming (boolean)	Use ifdevice is allowed to connect to server while roaming. Acceptable values: true and false.	True
1305: Relay Server URL Prefix (string)	The URL prefix to be used when the device client is connecting through Relay Server. The prefix you set depends on whether Relay Server is installed on IIS or Apache. For IIS, this path is relative. Acceptable values include: • For IIS – use `/ias_relay_server/client/rs_client.dll`. • For Apache – use `/cli/iasrelayserver`. **Note:** The value used in the client application connection for the URL suffix must match what the administrator configures in the URL suffix. Otherwise, the connection fails. Use the Diagnostic Tool command line utility to test these values. See *Diagnostic Tool Command Line Utility (diagtool.exe) Reference* in *System Administration*.	n/a

Proxy Properties

Proxy properties define parameters to connect Relay Server Outbound Enabler to a Relay Server through a proxy server.

ID: property name (type)	Description	Default
Application Endpoint	The application endpoint.	n/a
Push Endpoint	The URL for the push endpoint.	http://<server_host-name>:8000/GWC/SUP-Notification

Security Settings Properties

Security settings display the device security configuration.

ID: property name (type)	Description	Default
E2E Encryption Enabled	Allows you to indicate whether end-to-end encryption is enabled or not: true indicates encryption is enabled; false indicates encryption is disabled.	
E2E Encryption Type	Allows you to use RSA as the asymmetric cipher used for key exchange for end-to-end encryption.	
TLS Type	Allows you to use RSA as the TLS type for device to SAP Mobile Server communication.	

User Registration Properties

Device user registration properties allow you to customize the registration request that is delivered to the device.

ID: property name (type)	Description	Default
900: Activation code length (integer)	The number of characters to be contained in the activation code. Acceptable values: 1 to 10.	3
901: Activation code expiration (hours) (integer)	Defines how long a user has to activate their account, in hours, before the account activation period expires. Acceptable values: 1 to 10,000 hours.	72

EIS Data Source Connection Properties Reference

Name and configure connection properties when you create connection pools in SAP Control Center to enterprise information systems (EIS) .

JDBC Properties

Configure Java Database Connectivity (JDBC) connection properties.

This list of properties can be used by all datasource types. SAP does not document native properties used only by a single driver. However, you can also use native driver properties, naming them using this syntax:

```
jdbc:<NativeConnPropName>=<Value>
```

Note: If SAP Mobile Server is connecting to a database with a JDBC driver, ensure you have copied required JAR files to correct locations. See *Installation Guide for Runtime*.

Name	Description	Supported values
afterInsert	Changes the value to `into` if a database requires `insert into` rather than the abbreviated `into`.	`into`
batchDelimiter	Sets a delimiter, for example, a semicolon, that can be used to separate multiple SQL statements within a statement batch.	`<delimiter>`
blobUpdater	Specifies the name of a class that can be used to update database BLOB (long binary) objects when the BLOB size is greater than psMaximumBlobLength.	`<class name>` The class must implement the `com.sybase.djc.sql.BlobUpdater` interface.
compactColumnAlias	An expression that uses the nested variables "${index}" and "${column}" for shortening column names in result sets. This can reduce the data transmitted between the database server and the application server.	An expression. For example: `_${index}=${column} ${column} AS _${index}`
clobUpdater	Specifies the name of a class that can be used to update database CLOB (long string) objects when the CLOB size is greater than psMaximumClobLength.	`<class name>` The class must implement the `com.sybase.djc.sql.ClobUpdater` interface.
codeSet	Specifies how to represent a repertoire of characters by setting the value of CS_SYB_CHARSET for this datasource. Used when the data in the datasource is localized. If you do not specify the correct code set, characters may be rendered incorrectly.	`[server]` If the value is server, the value of the current application server's defaultCodeSet property is used.

Name	Description	Supported values
commitProtocol	Specifies how SAP Mobile Server handles connections for a datasource at commit time, specifically when a single transaction requires data from multiple endpoints. If you use XA, the recovery log is stored in the tx_manager datasource, and its commit protocol must be optimistic. If tx_manager is aliased to another datasource (that is, one that is defined with the aliasFor property), the commit protocol for that datasource must be optimistic. A last-resource optimization ensures full conformance with the XA specification. The commit protocol for all other datasources should be XA_2PC. Alternately, a transaction that accesses multiple datasources for which the commit protocols are optimistic is permitted.	`[optimistic| pessimistic | XA_2PC]` Choose only one of these protocols: • Optimistic – enables connections to be committed without regard for other connections enlisted in the transaction, assuming that the transaction is not marked for rollback and will successfully commit on all resources. Note: if a transaction accesses multiple data sources with commit protocol of "optimistic", atomicity is not guaranteed. • Pessimistic – specifies that you do not expect any multi-resource transactions. An exception will be thrown (and transaction rolled back) if any attempt is made to use more than one "pessimistic" data source in the same transaction. • XA_2PC – specifies use of the XA two phase commit protocol. If you are using two phase commit, then the recovery log is stored in the "tx_manager" data source, and that data source (or the one it is aliased to) must have the commit protocol of "optimistic" or "pessimistic". All other data sources for which atomicity must be ensured should have the "XA_2PC" commit protocol.

Name	Description	Supported values
dataSourceClass	Sets the class that implements the JDBC datasource. Use this property (along with the driverClass property) only if you do not have a predefined database-type entry in SAP Mobile Server for the kind of SQL database you are connecting to. For example, you must use this property for MySQL database connections. You can implement a datasource class to work with a distributed transaction environment. Because SAP Mobile Server supports distributed transactions, some datasources may require that a datasource class be implemented for SAP Mobile Server to interact with it. For two-phase transactions, use the xaDataSourceClass connection property instead.	`<com.`*`mydata-source`*`.jdbc.Driver>`
databaseCommandEcho	Echoes a database command to both the console window and the server log file. Use this property to immediately see and record the status or outcome of database commands. When you enable this property, SAP Mobile Server echoes every SQL query to `ml.log`, which may help you debug your application.	`[true|false]` Set a value of 1 to echo the database commands like `databaseStartCommand`, and `databaseStopCommand`. Otherwise, do not set this property, or use a value of 0 to disable the echo.

Name	Description	Supported values
databaseCreateCommand	Specifies the operating system command used to create the database for this datasource. If this command is defined and the file referenced by ${databaseFile} does not exist, the command is run to create the database when an application component attempts to obtain the first connection from the connection pool for this datasource.	`<command>` Example: `SMP_HOME\Servers\SQLAnywhere11\BIN32\dbinit -q ${databaseFile}`
databaseFile	Indicates the database file to load when connecting to a datasource. Use this property when the path to the database file differs from the one normally used by the database server. If the database you want to connect to is already running, use the databaseName connection parameter.	`<string>` Supply a complete path and file name. The database file you specify must be on the same host as the server.

Name	Description	Supported values
databaseName	Identifies a loaded database with which to establish a connection, when connecting to a datasource. Set a database name, so you can refer to the database by name in other property definitions for a datasource. If the database to connect to is not already running, use the databaseFile connection parameter so the database can be started. **Note:** For SAP Mobile Server, you typically do not need to use this property. Usually, when you start a database on a server, the database is assigned a name. The mechanism by which this occurs varies. An administrator can use the DBN option to set a unique name, or the server may use the base of the file name with the extension and path removed.	`[DBN|default]` If you set this property to default, the name is obtained from the DBN option set by the database administrator. If no value is used, the database name is inherited from the database type.
databaseStartCommand	Specifies the operating system command used to start the database for this datasource. If this command is defined and the database is not running, the command is run to start the database when the datasource is activated.	`<command>` Example: `SMP_HOME\Servers\SQLAnywhere11\BIN32\dbsrv`*`XX`*`.exe`

databaseStopCommand	Specifies the operating system command used to stop the database for this datasource. If this property is defined and the database is running, this command executes during shutdown.	`<command>`
		For a SQL Anywhere® database, where the user name and password are the defaults (dba and sql), enter:
		`SMP_HOME\Servers\SQLAny-where11\BIN32\dbsrv`*`XX`*`.exe`

databaseType	Specifies the database type.	`<database type>`

Name	Description	Supported values
databaseURL	Sets the JDBC URL for connecting to the database if the datasource requires an Internet connection. Typically, the server attempts to construct the database URL from the various connection properties you specify (for example, portNumber, databaseName). However, because some drivers require a special or unique URL syntax, this property allows you to override the server defaults and instead provide explicit values for this URL.	`<JDBCurl>` The database URL is JDBC driver vendor-specific. For details, refer to the driver vendor's JDBC documentation.
disableAutoCommit	Enables or disables calling auto-commit mode. Auto-commit means that every update to the database is immediately made permanent.	`[true|false]` The default is false.
disablePrefetch	Enables or disables prefetch. Prefetch optimizes container-managed persistence by batching queries from a parent to its children (for example, from a customer to orders), to reduce the calls from the application server to the database.	`[true|false]` The default is true.
disableTriggers	Select to deactivate database triggers, on a per-connection basis, when the application server accesses the database. If selected, the database must support both the `set triggers on` and `set triggers off` commands.	`[true|false]` The default is false.

Name	Description	Supported values
driverClass	Sets the name of the class that implements the JDBC driver. Use this property (along with the dataSourceClass property) only if you do not have a predefined database-type entry in SAP Mobile Server for the kind of SQL database you are connecting to. For example, MySQL database connections require you to use this connection property. To create a connection to a database system, you must use the compatible JDBC driver classes. SAP does not provide these classes; you must obtain them from the database manufacturer.	*<Class.forName("foo.bar.Driver")>* Replace <Class.forName("foo.bar.Driver")> with the name of your driver.
driverDebug	Enables debugging for the driver.	`[true|false]` Set to true to enable debugging, or false to disable.
driverDebugSettings	Configures debug settings for the driver debugger.	`[default|<setting>]` The default is STATIC:ALL.
endpointName	The JDBC datasource name.	JDBC datasource name.
getDateAndTime	A SQL query to get the date and time.	A valid SQL query. The default is `select getdate()`.

Name	Description	Supported values
InitialPoolSize	Sets the initial number of connections in the pool for a datasource. In general, holding a connection causes a less dramatic performance impact than creating a new connection. Keep your pool size large enough for the number of concurrent requests you have; ideally, your connection pool size should ensure that you never run out of available connections. The initialPoolSize value is applied to the next time you start SAP Mobile Server.	`<int>` Replace <int> with an integer to preallocate and open the specified number of connections at start-up. The default is 0. SAP suggests that you start with 0, and create additional connections as necessary. The value you choose allows you to create additional connections before client synchronization requires the server to create them.
isDownloadZipped	Specifies whether the driver file downloaded from jdbcDriverDownloadURL is in `.ZIP` format. This property is ignored if the value of jdbcDriverDownloadURL connection is an empty string.	`[True|False]` The default is false. The file is copied, but not zipped to *`SMP_HOME`*`\lib\jdbc`. Set isDownloadZipped to true to save the file to *`SMP_HOME`*`\lib\jdbc` and unzip the archived copy.
jdbc:DISABLE_UNPROCESSED_PARAM_WARNINGS	All properties starting with “jdbc:” are used to pass the suffix (such as DISABLE_UNPROCESSED_PARAM_WARNINGS) to the JDBC driver while getting a connection. This property is used for the jConnect driver. Set this property to true can disable the warning of “An output parameter was received and ignored”.	`[True|False]` The default is false. This property is for SAP ASA or SAP ASE databases only.

Name	Description	Supported values
jdbc:IS_CLOSED_TEST	As above, this property is used for the jConnect driver. You can force jConnect to follow the standard JDBC behavior for `isClosed()` by setting the IS_CLOSED_TEST connection property to the special value 'INTERNAL'. The INTERNAL setting means that jConnect returns true for `isClosed()` only when `Connection.close()` has been called, or when jConnect has detected an IOException that has disabled the Connection. You can specify a query other than `sp_mda` to use when `isClosed()` is called. For example, if you want jConnect to try *select 1* when `isClosed()` is called, you can set the IS_CLOSED_TEST connection property to *select 1*.	The default is INTERNAL.
jdbc:DriverType	The driverType property to be passed to the JDBC driver class. For example, for Oracle, you can set this property to “thin”.	The driverType property. For an Oracle database type, use "thin".
jdbcDriverDownloadURL	Specifies the URL from which you can download a database driver. Use this property with isDownloadZipped to put the driver in an archive file before the download starts.	`<URL>` Replace <URL> with the URL from which the driver can be downloaded.
jit:imageParameterType	Defines the SQL type of the image parameter. All properties that start with “jit:” are used for the SAP JIT DataSource only.	A varbinary (16384) value. For example, varbinary(255).
jit:textParameterType	Defines the SQL type of the text parameter. Used for the SAP JIT DataSource only.	A varchar (16384) value.

Name	Description	Supported values
jit:unitextParameterType	Defines the SQL type of the unicode text parameter. Used for the SAP JIT DataSource only.	A univarchar (16384) value.
language	For those interfaces that support localization, this property specifies the language to use when connecting to your target database. When you specify a value for this property, SAP Mobile Server: • Allocates a CS_LOCALE structure for this connection • Sets the CS_SYB_LANG value to the language you specify • Sets the Microsoft SQL Server CS_LOC_PROP connection property with the new locale information SAP Mobile Server can access Unicode data in an Adaptive Server® 12.5 or later, or in Unicode columns in Adaptive Server 12.5 or later. SAP Mobile Server automatically converts between double-byte character set (DBCS) data and Unicode, provided that the Language and CodeSet parameters are set with DBCS values.	`<language>` Replace <language> with the language being used.
maxIdleTime	Specifies the number of seconds an idle connection remains in the pool before it is dropped.	`<int>` If the value is 0, idle connections remain in the pool until the server shuts down. The default is 60.

Name	Description	Supported values
maxPoolSize	Sets the maximum number of connections allocated to the pool for this datasource. Increase the maxPoolSize property value when you have a large user base. To determine whether a value is high enough, look for ResourceMonitorTimeoutException exceptions in `<hostname>-server.log`. Continue increasing the value, until this exception no longer occurs. To further reduce the likelihood of deadlocks, configure a higher value for maxWaitTime. To control the range of the pool size, use this property with minPoolSize.	`<int>` A value of 0 sets no limit to the maximum connection pool size. The default is 10.
maxWaitTime	Sets the maximum number of seconds to wait for a connection before the request is cancelled.	`<int>` The default is 60.
maxStatements	Specifies the maximum number of JDBC prepared statements that can be cached for each connection by the JDBC driver. The value of this property is specific to each JDBC driver.	`<int>` A value of 0 (default) sets no limit to the maximum statements.
minPoolSize	Sets the minimum number of connections allocated to the pool for this datasource.	`<int>` A value of 0 (default) sets no limit to the minimum connection pool size.

Name	Description	Supported values
networkProtocol	Sets the protocol used for network communication with the datasource. Use this property (along with the driverClass, and dataSourceClass properties) only if you do not have a predefined database-type entry in SAP Mobile Server for the kind of SQL database you are connecting to. For example, you may be required to use this property for MySQL database connections.	The network protocol is JDBC driver vendor-specific. There are no predefined values. See the driver vendor's JDBC documentation.
ownerPrefix	The owner prefix for stored procedures and table names in this datasource. A prefix is used by the EJB persistence manager and JIT driver wrappers to qualify database identifiers for stored procedures and tables.	An owner prefix.
password	Specifies the password for connecting to the database.	`[default|<password>]`
pingAndSetSessionAuth	Runs the ping and session-authorization commands in a single command batch; may improve performance. You can only enable the Ping and Set Session Auth property if you have enabled the Set Session Auth property so database work runs under the effective user ID of the client.	`[True|False]` Set to true to enable, or false to disable.
pingConnections	Pings connections before attempting to reuse them from the connection pool.	`[True|False]` Set to true to enable ping connections, or false to disable.
pingSQL	Specify the SQL statement to use when testing the database connection with ping.	`[default|<statement>]` Replace <statement> with the SQL statement identifier. The default is "select 1".

Name	Description	Supported values
portNumber	Sets the server port number where the database server listens for connection requests.	`[default|<port>]` Replace <port> with the TCP/IP port number to use (that is, 1 – 65535). If you set the value as default, the default protocol of the datasource is used.
psMaximumBlobLength	Indicates the maximum number of bytes allowed when updating a BLOB datatype using PreparedStatement.setBytes.	`[default|<int>]` Replace <int> with the number of bytes allowed during an update. The default is 16384.
psMaximumClobLength	Indicates the maximum number of characters allowed when updating a CLOB datatype using PreparedStatement.setString.	`[default|<int>]` Replace <int> with the number of bytes allowed during an update. The default is 16384.
roleName	Sets the database role that the user must have to log in to the database.	`[default|<name>]` If you set this value to default, the default database role name of the datasource is used.
selectWithSharedLock	A template SQL statement for selecting rows and acquiring a shared lock. If your database server does not support shared locks, specify a template for acquiring exclusive locks.	A template SQL statement. For example, for a SAP ASA database type: `${selectList}${intoClause}${fromClause} holdlock${whereClause}`

selectWithUpdateLock	A template SQL statement for selecting rows and acquiring an exclusive lock. The configuration property name is `selectWithUpdateLock`. If your database server does not support exclusive locks, specify a template for acquiring shared locks.	A template SQL statement.
		For example, for a SAP ASA database type:
		`update ${mainTable} set ${touchColumn} = 1 -${touchColumn}${fromClause}${whereClause};;`
		`${selectList}${intoClause}${fromClause}${whereClause}`

Name	Description	Supported values
serializableSelect	A template SQL statement for selecting rows and acquiring a lock that ensures strict serializability, in terms of equivalence with serial schedules.	A template SQL statement. For example, for a SAP database type: `${selectList}${intoClause}${fromClause} holdlock${whereClause}`
serverName	Defines the host where the database server is running.	`<name>` Replace <name> with an appropriate name for the server.
serviceName	Defines the service name for the datasource. For SQL Anywhere servers, use this property to specify the database you are attaching to.	`<name>` Replace <name> with an appropriate name for the service.
setSessionAuth	Establishes an effective database identity that matches the current mobile application user. If you use this property, you must also use setSessionAuthSystemID to set the session ID. Alternately you can pingAndSetSessionAuth if you are using this property with pingConnection. The pingAndSetSessionAuth property runs the ping and session-authorization commands in a single command batch, which may improve performance.	`[true|false]` Choose a value of 1 to use an ANSI SQL set session authorization command at the start of each database transaction. Set to 0 to use session-based authorizations.
setSessionAuthSystemID	If Set Session Authorization is enabled, specifies the database identity to use when the application server accesses the database from a transaction that runs with "system" identity.	`<database identity>` Replace <database identity> with the database identifier.

Name	Description	Supported values
startWait	Sets the wait time (in seconds) before a connection problem is reported. If the start command completes successfully within this time period, no exceptions are reported in the server log. startWait time is used only with the databaseStartCommand property.	`<int>` Replace <int> with the number of seconds SAP Mobile Server waits before reporting an error.
truncateNanos	Sets a divisor/multiplier that is used to round the nanoseconds value in a java.sql.Timestamp to a granularity that the DBMS supports.	`[default|<int>]` The default is 10 000 000.
useQuotedIdentifiers	Specifies whether or not SQL identifiers are quoted.	`[True|False]` Set to true to enable use of quoted identifiers, or false to disable.
useTransactionalPing	Enables or disables the attempt to ping a connection from within a new transaction.	`[True|False]` The default is true.
user/User	Identifies the user who is connecting to the database.	`[default|<user name>]` Replace <user name> with the database user name. For DB2 and SQL Server databases, this property is `user`. For Informix, Oracle, and SQL Anywhere databases, this property is `User`.
xaDataSourceClass	Specifies the class name or library name used to support two-phase commit transactions, and the name of the XA resource library.	`<class name>` Replace <class name> with the class or library name. • SQL Anywhere database: `com.sybase.jdbc3.jdbc.SybXADataSource` • Oracle database: `oracle.jdbc.xa.client.OracleXADataSource`

SAP Java Connector Properties

Configure SAP Java Connector (JCo) connection properties.

For a comprehensive list of SAP JCo properties you can use to create an instance of a client connection to a remote SAP system, see *http://help.sap.com/javadocs/NW04/current/jc/com/sap/mw/jco/JCO.html#createClient(java.util.Properties)*.

This list of properties can be used by all datasource types.

Note: SAP does not document all native endpoint properties. However, you can add native endpoint properties, naming them using this syntax:

```
<NativeConnPropName>=<SupportedValue>
```

Standard properties that can be configured within SAP Control Center include:

Table 348. General Connection Parameters for Standard JCo Properties

Name	Description	Supported Values
jco.client.abap_debug	Enables or disables ABAP debugging. If enabled, the connection is opened in debug mode and you can step through the invoked function module in the debugger. For debugging, an SAP graphical user interface (SAPGUI) must be installed on the same machine the client program is running on. This can be either a normal Windows SAPGUI or a Java GUI on Linux/UNIX systems.	Not supported. Do not set this parameter.
jco.client.use_sapgui	Specifies whether a remote SAP graphical user interface (SAPGUI) should be attached to the connection. Some older BAPIs need an SAPGUI because they try to send screen output to the client while executing.	Not supported. Do not set this parameter.
jco.client.getsso2	Generates an SSO2 ticket for the user after login to allow single sign-on. If RfcOpenConnection() succeeds, you can retrieve the ticket with RfcGetPartnerSSOTicket() and use it for additional logins to systems supporting the same user base.	Not accessible by the customer. Do not set this parameter or leave it set to 0.

Name	Description	Supported Values
jco.client.x509cert	SAP Mobile Platform sets this property when a client uses an X509 certificate as the login credential.	If an EIS RFC operation is flagged for SSO (user name and password personalization keys selected in the authentication parameters) then SAP Mobile Platform automatically sets the appropriate properties to use X.509, SSO2, or user name and password SSO credentials. The corresponding properties should not be set by the administrator on the SAP endpoint.
jco.client.grt_data	Provides additional data for graphical user interface (GUI) to specify the SAP router connection data for the SAPGUI when it is used with RFC.	Not supported.
jco.client.use_guihost	Identifies which host to redirect the remote graphical user interface to.	Not supported.
jco.client.use_guiserv	Identifies which service to redirect the remote graphical user interface to.	Not supported.
jco.client.use_guiprogid	Indicates the program ID of the server that starts the remote graphical user interface.	Not supported.

Properties that can be configured manually within SAP Control Center include:

Table 349. General Connection Parameters for Manual JCo Properties

Name	Description	Supported Values
jco.client.cpic_trace	Enables and disables CPIC trace	• -1 - take over environment value <CPIC_TRACE>] • 0 - no trace • 1, 2, 3 - different trace levels
jco.client.delta	Enables and disables table parameter delta management	• 1 - enable (default) • 0 - disable

Name	Description	Supported Values
jco.client.deny_initial_password	Deny usage of initial passwords	• 0 - default • 1
jco.client.extid_data	External identification user login data	
jco.client.extid_type	Type of external identification user login data	
jco.client.msserv	SAP message server port to use instead of the default sapms<sysid>	
jco.client.saprouter	SAP router string to use for a system protected by a firewall	
jco.client.snc_sso	Turns on or off SSO of SNC mechanism	• 1 - yes (default) • 0 - no If set to 0, use user and password credentials instead
jco.destination.auth_type	Authentication type	Configured user or current user
jco.destination.expiration_check_period	Interval, in milliseconds, with which the timeout checker thread checks the connections in the pool for expiration	
jco.destination.expiration_time	Time, in milliseconds, after which the connections held by the internal pool may be closed	
jco.destination.max_get_client_time	Maximum time, in milliseconds, to wait for a connection, if the maximum allowed number of connections is allocated by the application	

Name	Description	Supported Values
jco.destination.one_round-trip_repository	If the property is not set, the destination makes a remote call to check if RFC_METADATA_GET is available, and when available uses it	• 1 - forces the usage of RFC_METADATA_GET in the ABAP system • 0 - deactivates RFC_METADATA_GET in the ABAP system
jco.destination.peak_limit	Maximum number of active connections that can be created for a destination simultaneously	
jco.destination.pool_capacity	Maximum number of idle connections kept open by the destination	A value of 0 sets no connection pooling, so connections are closed after each request
jco.destination.repository.passwd	The password for a repository user	Mandatory if a repository user is used
jco.destination.repository.snc_mode	(Optional) If SNC is used for this destination, it is possible to turn it off for repository connections, if this property is set to 0	Defaults to the value of jco.client.snc_mode
jco.destination.repository.user	(Optional) If the repository destination is not set, and this property is set, it acts as a user for repository queries, enabling a different user for repository lookups and restriction of permissions accordingly	
jco.destination.repository_destination	Specifies which destination should be used for repository queries	
jco.destination.user_id	Login user that identifies the user when not using user and password for login	The parameter is only required if neither user nor user alias is provided

SAP DOE-C Properties

Configure SAP® Data Orchestration Engine Connector (DOE-C) properties. This type of connection is available in the list of connection templates only when you deploy a SAP® Data Orchestration Engine Connector package. No template exists for these types of connections.

Note: If you change the username or password property of a DOE-C connection, you must reopen the same dialog and click `Test Connection` after saving. Otherwise the error state of this DOE-C package is not set properly, and an error message is displayed. This will not work if you click `Test Connection` before saving the properties.

Name	Description	Supported values
techuser-name	Specifies the SAP user account ID. The SAP user account is used during interaction between the connected SAP system and client for certain administrative activities, such as sending acknowledgment messages during day-to-day operations or "unsubscribe" messages if a subscription for this connection is removed. This account is not used for messages containing business data; those types of messages are always sent within the context of a session authenticated with credentials provided by the mobile client. The technical user name and password or certificateAlias must be set to perform actions on subscriptions. The certificateAlias is mutually exclusive with and overrides the technical user name and password fields if set. The technical user name and password fields can be empty, but only if `certificateAlias` is set.	Valid SAP login name for the DOE host system.
techuser-password	Specifies the password for the SAP user account.	Valid password.
doe-soap-timeout	Specifies a timeout window during which unresponsive DOE requests are aborted.	Positive value (in seconds). The default is 420 (7 minutes).

Name	Description	Supported values
doe-extract-window	Specifies the number of messages allowed in the DOE extract window.	Positive value (in messages). The minimum value is 10. The maximum value is 2000. The default is 50. When the number of messages in the DOE extract window reaches 50% of this value, DOE-C sends a `StatusReqFromClient` message, to advise the SAP DOE system of the client's messaging status and acknowledge the server's state.
doe-packetDropsize	Specifies the size, in bytes, of the largest JavaScript Object Notation (JSON) message that the DOE connector processes on behalf of a JSON client. The packet drop threshold size should be carefully chosen, so that it is larger than the largest message sent from the DOE to the client, but smaller than the maximum message size which may be processed by the client.	Positive value (in bytes). The default is 1048576 bytes (1MB). Do not set lower than 4096 bytes; there is no maximum limitation.
service-address	Specifies the DOE URL.	Valid DOE URL. If you are using DOE-C with SSL: • Modify the port from the standard `http://host:8000` to `https://host:8001/`. • Add the certificate being used as the technical user and DOE-C endpoint security profile certificate to the SAP DOE system's SSL Server certificate list by using the STRUST transaction. See your SAP documentation for details.
listener-url	Specifies the DOE-C server listener URL.	Valid DOE-C listener URL, for example `http://<sup_hostname>:8000/doe/publish`.

Name	Description	Supported values
certificateAlias	Sets the alias for the SAP Mobile Platform keystore entry that contains the X.509 certificate for SAP Mobile Server's SSL peer identity. If you do not set a value, mutual authentication for SSL is not used when connecting to the Web service. If you are using DOE-C with SSO use the "SAP Technical User Certificate Alias" only for configurations which require the technical user to identify itself using an X.509 certificate; it specifies the Certificate Alias to be used as the technical user. This overrides the "Username" and "Password" settings normally used.	Valid certificate alias.
login-required	Indicates whether authentication credentials are required to login. The default value is true. For upgraded packages, "login-required=false" gets converted to "login-required=true" and a No-Auth security configuration "DOECNoAuth" is assigned to the upgraded package.	A read-only property with a value of true.

Web Services Properties

Configure connection properties for the Simple Object Access Protocol (SOAP) and Representational State Transfer (REST) architectures.

Name	Description	Supported Values
password	Specifies the password for HTTP basic authentication, if applicable.	Password
address	Specifies a different URL than the port address indicated in the WSDL document at design time.	HTTP URL address of the Web service. A backslash is appended to the address URL, if it does not already exist in the URL you specify.
user	Specifies the user name for HTTP basic authentication, if applicable.	User name

Name	Description	Supported Values
certificateAlias	Sets the alias for the SAP Mobile Platform keystore entry that contains the X.509 certificate for SAP Mobile Server's SSL peer identity. If you do not set a value, mutual authentication for SSL is not used when connecting to the Web service.	Use the alias of a certificate stored in the SAP Mobile Server certificate keystore.
authentication-Preemptive	When credentials are available and this property is set to the default of false, it allows SAP Mobile Server to send the authentication credentials only in response to the receipt of a server message in which the HTTP status is 401 (UNAUTHORIZED) and the WWW-Authenticate header is set. In this case, the message exchange pattern is: request, UNAUTHORIZED response, request with credentials, service response. When set to true and basic credentials are available, this property allows SAP Mobile Server to send the authentication credentials in the original SOAP or REST HTTP request message. The message exchange pattern is: request with credentials, a service response.	False (default) True
Socket Timeout	The socket timeout value controls the maximum time, in milliseconds, after a Web service operation (REST or SOAP) is allowed to wait for a response from the remote system; if the EIS does not respond in that time, the operation fails and the SMP thread is unblocked.	Time in milliseconds (default: 6000). Range of [0 – 2147483647], where 0 is interpreted as infinity.

Name	Description	Supported Values
credential.<X>.name	Defines the EIS connection definition to identify the NamedCredential. For more information on token-based SSO using NamedCredential, see *Single Sign-on Using NamedCredential* in *Security*.	• `credential.<X>.name=credential name` • `header:<HTTP header name>` • `cookie: <HTTP cookie name>`
credential.<X>.mapping	Defines how the NamedCredential should be propagated to the EIS. For more information on token-based SSO using NamedCredential, see *Single Sign-on Using NamedCredential*.	`credential.<X>.mapping=credential mapping to header/cookie`
http.header.X.set	Specifies the name of the static header to add to the Web service request (SOAP or REST).	Header name
http.header.X.value	Specifies the content of the header to add to the Web service request (SOAP or REST).	Header value
http.cookie.X.set	Specifies the name of the static cookie to add to the Web service request (SOAP or REST).	Cookie name
http.cookie.X.value	Specifies the content of the cookie to add to the Web service request (SOAP or REST).	Cookie value

Proxy Endpoint Properties

Configure connection properties for the SAP Gateway proxy connection.

Name	Description	Supported values
password	Specifies the password for authentication.	Password
address	URL address of the Gateway Proxy endpoint.	URL
user	Specifies the username for authentication.	User name

Name	Description	Supported values
certificateAlias	Sets the alias for the SAP Mobile Platform keystore entry that contains the X.509 certificate for SAP Mobile Server's SSL peer identity. If you do not set a value, mutual authentication for SSL is not used when connecting to the Web service.	Use the alias of a certificate stored in the SAP Mobile Server certificate keystore.
poolSize	An integer value representing the number of connections that can be made in the connection pool.	An integer.

Error Code Reference

Error codes are thrown with each `SUPAdminException`, to allow developers to diagnose what occurred when the exception is thrown. `${error_sub}` and `${reason_sub_x}` are placeholders for additonal information which will be provided at runtime.

Numeric Error Code	Message
00001	Failed to retrieve cluster properties (${error_sub}).
00002	Failed to authenticate the user (${error_sub}) as SUP administrator.
00003	Failed to validate the security configuration (${error_sub}).
00004	Failed to create the security configuration (${error_sub}).
00005	Cannot create the security provider (${error_sub}). The security configuration (${reason_sub}) is no longer valid or viable.
00006	Failed to delete the security configuration (${error_sub}).
00007	Cannot delete the selected security provider (${error_sub}). The security configuration (${reason_sub}) is no longer valid or viable.
00008	Failed to retrieve the selected security configuration (${error_sub}).
00009	Failed to retrieve the security configuration (${error_sub}) for the selected package. The package (${reason_sub_1}) is of the wrong type and therefore this operation (${reason_sub_2}) is not supported.
00010	Failed to update the selected security configuration (${error_sub}).

Numeric Error Code	Message
00011	Cannot delete the selected security provider (${error_sub}). The security configuration (${reason_sub}) is no longer valid or viable.
00012	Failed to create the authentication provider (${error_sub}). The authentication provider (${reason_sub}) cannot be located.
00013	Failed to retrieve the authentication provider (${error_sub}). The selected provider (${reason_sub}) does not exist.
00014	Failed to retrieve the authentication provider (${error_sub}). The authentication provider (${reason_sub}) cannot be located.
00015	Failed to create the authorization provider (${error_sub}). The authorization provider (${reason_sub}) cannot be located.
00016	Failed to retrieve the authorization provider (${error_sub}). The selected provider (${reason_sub}) does not exist.
00017	Failed to retrieve the authorization provider (${error_sub}). The authorization provider (${reason_sub}) cannot be located.
00018	Failed to created the attribution provider (${error_sub}). The attribution provider (${reason_sub}) cannot be located.
00019	Failed to retrieve the attribution provider (${error_sub}). The selected provider (${reason_sub}) does not exist.
00020	Failed to retrieve the attribution provider (${error_sub}). The attribution provider (${reason_sub}) cannot be located.
00021	Failed to create the audit provider (${error_sub}). The audit provider (${reason_sub}) cannot be located.
00022	Failed to retrieve the audit provider (${error_sub}). The selected provider (${reason_sub}) does not exist.
00023	Failed to create the audit destination (${error_sub}). The audit provider (${reason_sub}) cannot be located.
00024	Failed to retrieve the audit destination (${error_sub}).
00025	Failed to create the audit filter (${error_sub}). The audit provider (${reason_sub}) cannot be located.
00026	Failed to retrieve the audit filter (${error_sub}). The audit provider (${reason_sub}) cannot be located.

Numeric Error Code	Message
00027	Failed to create the audit formatter (${error_sub}). The audit provider (${reason_sub}) cannot be located.
00028	Failed to retrieve the audit formatter (${error_sub}). The audit provider (${reason_sub}) cannot be located.
00029	Cannot delete the selected security provider (${error_sub}). This security provider (${reason_sub}) does not exist.
00030	Cannot update the selected security provider (${error_sub}). This security provider (${reason_sub}) does not exist.
00031	Failed to enable the domain (${error_sub}).
00032	Failed to create the domain (${error_sub}).
00033	Failed to delete the domain (${error_sub}).
00034	Failed to retrieve the domain (${error_sub}).
00035	Failed to update the domain (${error_sub}) properties.
00036	Failed to retrieve the domain log configuration (${error_sub}).
00037	Failed to retrieve the domain log (${error_sub}). A configuration property (${reason_sub}) is not supported.
00038	Cannot retrieve the domain log configuration (${error_sub}).
00039	Failed to update the domain log configuration (${error_sub}).
00040	Failed to retrieve the domain log purge time threshold value (${error_sub}).
00041	Failed to update the domain log purge time threshold value (${error_sub}).
00042	Package deployment failed (${error_sub}).
00043	Failed to deploy selected package (${error_sub}). You must select a security configuration.
00044	Failed to deploy the selected package (${error_sub}). The package (${reason_sub}) is the wrong type and this operation is not supported.
00045	Failed to deploy package (${error_sub}). Either the deployment unit (${reason_sub_1}) does not exist, or the file (${reason_sub_2}) may be invalid or corrupted.
00046	Failed to deploy package (${error_sub}). The deployment unit may be invalid or corrupted.

Numeric Error Code	Message
00047	Failed to deploy package (${error_sub}). The deployment descriptor may be invalid or corrupted.
00048	Failed to deploy package (${error_sub}). A required property (${reason_sub}) has not been configured.
00049	Failed to deploy package (${error_sub}). A required property (${reason_sub}) has not been configured.
00050	Package export failed (${error_sub}).
00051	Failed to export the selected package (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00052	Failed to export package (${error_sub}). The file (${reason_sub}) does not exist.
00053	Package import failed (${error_sub}).
00054	Failed to enable package (${error_sub}).
00055	Failed to enable the selected package (${error_sub}). The package (${reason_sub}) is the wrong type and this operation (${reason_sub}) is not supported.
00056	Failed to delete the selected package (${error_sub}).
00057	Failed to retrieve package(s).
00058	Failed to retrieve cache group(s) (${error_sub}).
00059	Failed to retrieve the cache group (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00060	Failed to update cache group(s) (${error_sub}).
00061	Failed to update the cache group (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00062	Failed to retrieve the cache group schedule (${error_sub}).
00063	Failed to retrieve the cache group schedule (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00064	Failed to update the cache group schedule (${error_sub}).
00065	Failed to update the cache group schedule (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00066	Failed to retrieve the personalization key (${error_sub}).

Numeric Error Code	Message
00067	Failed to retrieve the personalization key (${error_sub}). The package (${reason_sub_2}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00068	Failed to retrieve the package role mapping (${error_sub}).
00069	Failed to retrieve the package role mappings (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00070	Failed to updated the package role mapping (${error_sub}).
00071	Failed to update the package role mapping (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00072	Failed to retrieve the synchronization group (${error_sub}).
00073	Failed to retrieve the synchronization group (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00074	Failed to update the synchronization group (${error_sub}).
00075	Failed to update the synchronization group (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00076	Failed to retrieve the MBO(s).
00077	Failed to retrieve the MBO(s). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00078	Failed to retrieve the configured MBO server connection (${error_sub}).
00079	Failed to delete error history of the MBO (${error_sub}).
00080	Failed to retrieve the error history of the MBO (${error_sub}).
00081	Failed to retrieve the last valid playback timestamp for the MBO (${error_sub}).
00082	Failed to retrieve the operation(s) (${error_sub}).
00083	Failed to retrieve the configured server connection of the operation (${error_sub}).
00084	Failed to delete the error history of the operation (${error_sub}).
00085	Failed to retrieve the error history of the operation (${error_sub}).
00086	Failed to retrieve the last valid playback timestamp for the operation (${error_sub}).
00087	Failed to retrieve package log configuration (${error_sub}).
00088	Failed to update package log configuration (${error_sub}).

Numeric Error Code	Message
00089	Failed to enable package synchronization tracing (${error_sub}).
00090	Failed to enable package synchronization tracing (${error_sub}). The package (${reason_sub_1}) is the wrong type and this operation (${reason_sub_2}) is not supported.
00091	Failed to retrieve the package log level (${error_sub}).
00092	Failed to update the package log level (${error_sub}).
00093	Failed to ping the replication package subscription (${error_sub}).
00094	Failed to ping the replication package subscription (${error_sub}). The selected subscription (${reason_sub}) does not exist.
00095	Failed to delete the replication package subscription (${error_sub}).
00096	Failed to delete the replication package subscription(s) (${error_sub}). The selected subscription(s) (${reason_sub}) does(do) not exist.
00097	Failed to retrieve the replication package subscription(s) (${error_sub}).
00098	Failed to update the replication package subscription (${error_sub}).
00099	Failed to create the replication package subscription template (${error_sub}).
00100	Failed to delete the replication package subscription template(s) (${error_sub}).
00101	Failed to retrieve the replication package subscription template(s) (${error_sub}).
00102	Failed to suspend the messaging package subscription(s) (${error_sub}).
00103	Failed to resume the messaging package subscription(s) (${error_sub}).
00104	Failed to delete the messaging package subscription(s) (${error_sub}).
00105	Failed to retrieve the messaging package subscription(s) (${error_sub}).
00106	Failed to reset the messaging package subscription(s) (${error_sub}).
00107	Failed to re-synchronize the DOEC package subscription(s) (${error_sub}).
00108	Failed to reset the DOEC package subscription(s) (${error_sub}).
00109	Failed to delete the DOEC package subscription(s) (${error_sub}).
00110	Failed to retrieve the DOEC package subscription(s) (${error_sub}).
00111	Failed to update the DOEC package subscription(s) (${error_sub}).

Numeric Error Code	Message
00112	Failed to reset the DOEC package subscription(s) (${error_sub}).
00113	Failed to retrieve the log level for DOEC package subscription (${error_sub}). The package (${reason_sub_1}) is of the wrong type and therefore this operation (${reason_sub_2}) is not supported.
00114	Failed to update the log level for DOEC package subscription(s) (${error_sub}).
00115	Failed to retrieve the log level for DOEC package subscription(s) (${error_sub}). The package (${reason_sub_1}) is of the wrong type and therefore this operation (${reason_sub_2}) is not supported.
00116	Failed to connect to the configured server connection (${error_sub}).
00117	Failed to create the server connection (${error_sub}).
00118	Failed to create the server connection (${error_sub}). The server connection (${reason_sub_1}) is of the wrong type and therefore this operation (${reason_sub_2}) is not supported.
00119	Failed to delete the server connection (${error_sub}).
00120	Failed to delete the server connection (${error_sub}). The server connection (${reason_sub_1}) is of the wrong type and therefore this operation (${reason_sub_2}) is not supported.
00121	Failed to retrieve the server connection(s) (${error_sub}).
00122	Failed to update the server connection (${error_sub}).
00123	Failed to retrieve the domain-level role mapping (${error_sub}).
00124	Failed to update the domain-level role mapping (${error_sub}).
00125	Failed to create the domain administrator (${error_sub}).
00126	Failed to delete the domain administrator (${error_sub}).
00127	Failed to retrieve the domain administrator(s) (${error_sub}).
00128	Failed to update the domain administrator (${error_sub}).
00129	Failed to authenticate the user as SUP domain administrator (${error_sub}).
00130	Failed to create the monitoring profile (${error_sub}).
00131	Failed to delete the monitoring profile (${error_sub}).

Numeric Error Code	Message
00132	Failed to retrieve the monitoring profile(s) (${error_sub}).
00133	Failed to update the monitoring profile (${error_sub}).
00134	Failed to update the monitoring profile (${error_sub}). A property (${reason_sub}) uses an incorrect value.
00135	Failed to export monitoring data (${error_sub}).
00136	Failed to delete monitoring data (${error_sub}).
00137	Failed to retrieve monitoring data (${error_sub}). A required parameter (${reason_sub}) is missing.
00138	Failed to retrieve monitoring data (${error_sub}). A required parameter (${reason_sub}) is not expected.
00139	Failed to retrieve monitoring data (${error_sub}). A required parameter (${reason_sub}) is empty
00140	Failed to retrieve the replication package monitoring data (${error_sub}).
00141	Failed to retrieve the replication package history (${error_sub}).
00142	Failed to retrieve the replication package performance (${error_sub}).
00143	Failed to retrieve the messaging package monitoring data (${error_sub}).
00144	Failed to retrieve the messaging package history (${error_sub}).
00145	Failed to retrieve the messaging package performance data (${error_sub}).
00146	Failed to retrieve the messaging queue statistics (${error_sub}).
00147	Failed to retrieve the data change notfication history data (${error_sub}).
00148	Failed to retrieve the data change notification performance data (${error_sub}).
00149	Failed to retrieve the package statistics (${error_sub}).
00150	Failed to retrieve the operation statistics (${error_sub}).
00151	Failed to retrieve user access history (${error_sub}).
00152	Failed to retrieve the package-level cache group performance data (${error_sub}).
00153	Failed to retrieve the package-level cache group statistics (${error_sub}).
00154	Failed to retrieve MBO-level cache group statistics (${error_sub}).

Numeric Error Code	Message
00155	Failed to start SAP Mobile Server (${error_sub}). The path (${reason_sub}) to the server does not exist.
00156	Failed to start SAP Mobile Server (${error_sub}). SAP Control Center is not installed on the same host computer, and this operation (${reason_sub}) cannot be performed remotely.
00157	Failed to connect to SAP Mobile Server (${error_sub}).
00158	Failed to stop SAP Mobile Server (${error_sub}).
00159	Failed to stop SAP Mobile Server (${error_sub}). The path (${reason_sub}) to the server does not exist.
00160	Failed to stop SAP Mobile Server (${error_sub}). SAP Control Center is not installed on the same host computer, and this operation (${reason_sub}) cannot be performed remotely.
00161	Failed to restart SAP Mobile Server (${error_sub}).
00162	Failed to restart SAP Mobile Server (${error_sub}). The path (${reason_sub}) to the server does not exist.
00163	Failed to restart SAP Mobile Server (${error_sub}). SAP Control Center is not installed on the same host computer, and this operation (${reason_sub}) cannot be performed remotely.
00164	Failed to suspend SAP Mobile Server (${error_sub}).
00165	Failed to resume SAP Mobile Server (${error_sub}).
00166	Failed to retrieve SAP Mobile Server properties (${error_sub}).
00167	Failed to create the SAP Mobile Server configuration (${error_sub}). The specified configuration type (${reason_sub}) does not exist.
00168	Failed to create the SAP Mobile Server configuration (${error_sub}). A parameter (${reason_sub}) is not expected.
00169	Failed to delete the SAP Mobile Server configuration (${error_sub}). The specified configuration (${reason_sub}) does not exist.
00170	Failed to update the SAP Mobile Server configuration (${error_sub}).
00171	Failed to update the SAP Mobile Server configuration (${error_sub}).The selected SAP Mobile Server (${reason_sub}) does not exist.

Numeric Error Code	Message
00172	Failed to update the SAP Mobile Server configuration (${error_sub}). A property value (${reason_sub}) in the configuration is not supported.
00173	Failed to initialize the administration listener (${error_sub}). The listener (${reason_sub}) has not been configured.
00174	Failed to secure the administration listener (${error_sub}). The listener (${reason_sub}) has not been configured.
00175	Failed to retrieve the key store configuration (${error_sub}). The key store (${reason_sub}) has not been configured.
00176	Failed to retrieve the key store configuration (${error_sub}). The key store configuration (${reason_sub}) is corrupted.
00177	Failed to retrieve the trust store configuration (${error_sub}). The trust store (${reason_sub}) is not configured.
00178	Failed to retrieve the trust store configuration (${error_sub}). The key store configuration (${reason_sub}) is corrupted.
00179	Failed to retrieve the cache database configuration (${error_sub}). The cache database (${reason_sub}) has not been configured.
00180	Failed to retrieve the replication synchronization server configuration (${error_sub}). The synchronization server (${reason_sub}) is not configured.
00181	Failed to retrieve the messaging synchronization server configuration (${error_sub}). The synchronization server (${reason_sub}) is not configured.
00182	Failed to retrieve the replication push notification configuration (${error_sub}). The replication push component (${reason_sub}) is not configured.
00183	Failed to retrieve the replication push notification gateway configuration (${error_sub}). The gateway (${reason_sub}) is not available.
00184	Failed to validate the SAP Mobile Server log configuration (${error_sub}).
00185	Failed to retrieve the SAP Mobile Server log configuration (${error_sub}).
00186	Failed to update the SAP Mobile Server log configuration (${error_sub}).
00187	Failed to create the SAP Mobile Server log appender (${error_sub}). The log appender type is not installed.

Numeric Error Code	Message
00188	Failed to create the SAP Mobile Server log appender (${error_sub}). The log bucket type (${reason_sub}) is not installed.
00189	Failed to delete the SAP Mobile Server log appender (${error_sub}). The log appender (${reason_sub}) does not exist.
00190	Failed to update the SAP Mobile Server log appender (${error_sub}). The log appender (${reason_sub}) does not exist.
00191	Failed to update the SAP Mobile Server log appender (${error_sub}). The log bucket type (${reason_sub}) is not installed.
00192	Failed to create the SAP Mobile Server log bucket (${error_sub}). The log appender (${reason_sub}) does not exist.
00193	Failed to create the SAP Mobile Server log file (${error_sub}). The log appender type is not installed.
00194	Failed to delete the SAP Mobile Serverlog bucket (${error_sub}). The log bucket (${reason_sub}) does not exist.
00195	Failed to update the SAP Mobile Server log bucket (${error_sub}). The log bucket (${reason_sub}) does not exist.
00196	Failed to delete the SAP Mobile Server log (${error_sub}).
00197	Failed to retrieve the SAP Mobile Server log (${error_sub}).
00198	Failed to create the SAP Mobile Server log filter (${error_sub}).
00199	Failed to retrieve the SAP Mobile Server log filter (${error_sub}).
00200	Failed to connect to the SAP Control Center (${error_sub}).
00201	Failed to borrow a connection from the connection pool of SAP Control Center (${error_sub}).
00202	Failed to return a connection to the connection pool of SAP Control Center (${error_sub}).
00203	Cannot retrieve the SAP Mobile Server location (${error_sub}). The login has not authenticated.
00204	Cannot retrieve the SAP Mobile Server location (${error_sub}). The login is not authorized to access this server.

Numeric Error Code	Message
00205	Cannot retrieve the SAP Mobile Server location (${error_sub}). The SAP Control Center connection has failed.
00206	Failed to load the file (${error_sub}). The file does not exist.
00207	Failed to load the the administration interface (${error_sub}).
00208	Failed to initialize the administration interface (${error_sub}).
00209	Failed to retreive data for administration interface (${error_sub}).
00210	Failed to validate the property (${error_sub}). A value other than NULL is required.
00211	Failed to validate the property (${error_sub}). A monitored target is required.
00212	The value entered exceeds the maximum value allowed (${error_sub}).
00213	The value entered exceeds the minimum value allowed (${error_sub}).
00214	Failed to invoke method (${error_sub}). The parameter (${reason_sub}) is either the wrong type or uses the wrong value.
00215	Failed to invoke method (${error_sub}). The parameter (${reason_sub}) requires a value.
00216	Failed to invoke method (${error_sub}). The method (${reason_sub}) is not implemented.
00217	Failed to invoke method (${error_sub}). Access to the method (${reason_sub}) is denied.
00218	Monitoring data retrieve failed.
00219	Messaging-based synchronization server Hybrid App (${error_sub}) retrieve failed.
00220	Messaging-based synchronization server Hybrid App error (${error_sub}) delete failed.
00221	Java virtual machine start up options retrieve failed because java virtual machine start up options does not exist.
00222	Object (${error_sub}) create failed because parameter (${reason_sub}) not supported.
00223	Messaging-based synchronization server apple push notification certificate (${error_sub}) list failed.
00224	Device (${error_sub}) list failed.
00225	Messaging-based synchronization server email (${error_sub}) retrieve failed.

Numeric Error Code	Message
00226	Device (${error_sub}) retrieve failed.
00227	SSL Security profile (${error_sub}) delete failed because parameter (${reason_sub}) null value not allowed.
00228	Messaging-based synchronization server template (${error_sub}) list failed.
00229	Secure administration listener (${error_sub}) update failed because parameter (${reason_sub}) null value not allowed.
00230	Messaging-based synchronization server Hybrid App context variable (${error_sub}) update failed.
00231	Messaging-based synchronization server template (${error_sub}) retrieve failed.
00232	User (${error_sub}) delete failed.
00233	Replication notification gateway update failed because parameter (${reason_sub}) null value not allowed.
00234	HTTP listener(s) (${error_sub}) delete failed because parameter (${reason_sub}) null value not allowed.
00235	SSL Security profile (${error_sub}) update failed because parameter (${reason_sub}) null value not allowed.
00236	Replication notification gateway enbale failed because parameter (${reason_sub}) null value not allowed.
00237	Messaging-based synchronization server Hybrid App error (${error_sub}) list failed.
00238	Messaging-based synchronization server Hybrid App (${error_sub}) update failed.
00239	Messaging-based synchronization server Hybrid App (${error_sub}) delete failed.
00240	Java virtual machine start up options retrieve failed because java virtual machine start up options corrupted.
00241	HTTP listener(s) (${error_sub}) update failed because parameter (${reason_sub}) null value not allowed.
00242	Messaging-based synchronization server Hybrid App (${error_sub}) create failed.
00243	Messaging-based synchronization server (${error_sub}) list failed.
00244	Messaging-based synchronization server apple push notification certificate (${error_sub}) update failed.

Numeric Error Code	Message
00245	Messaging-based synchronization server email (${error_sub}) update failed.
00246	Messaging-based synchronization server apple push notification certificate (${error_sub}) delete failed.
00247	Device (${error_sub}) update failed.
00248	Device (${error_sub}) delete failed.
00249	Secure HTTP listener(s) (${error_sub}) delete failed because parameter (${reason_sub}) null value not allowed.
00250	Messaging-based synchronization server Hybrid App display name (${error_sub}) update failed.
00251	Messaging-based synchronization server apple push notification certificate (${error_sub}) create failed.
00252	Messaging-based synchronization server email (${error_sub}) create enabled.
00253	Device (${error_sub}) create failed.
00254	Monitored object (${error_sub}) update failed because parameter (${reason_sub}) invalid.
00255	License retrieve failed.
00256	Monitored object (${error_sub}) update failed because parameter (${reason_sub}) null value not allowed.
00257	Object (${error_sub}) create failed because parameter (${reason_sub}) null value not allowed.
00258	Messaging-based synchronization server Hybrid App context variable (${error_sub}) list failed.
00259	Messaging-based synchronization server template (${error_sub}) delete failed.
00260	User (${error_sub}) list failed.
00261	Secure HTTP listener(s) (${error_sub}) update failed because parameter (${reason_sub}) null value not allowed.
00262	Messaging-based synchronization server email (${error_sub}) validate failed.
00263	Administration listener update failed because parameter (${reason_sub}) null value not allowed.

Numeric Error Code	Message
00264	Replication notifier retrieve failed because parameter (${reason_sub}) null value not allowed.
00265	Messaging-based synchronization server Hybrid App (${error_sub}) list failed.
00266	Failed to start SAP Mobile Server (${error_sub}). Server command and control (${reason_sub}) is in progress.
00267	Failed to stop SAP Mobile Server (${error_sub}). Server command and control (${reason_sub}) is in progress.
00268	Failed to restart SAP Mobile Server (${error_sub}). Server command and control (${reason_sub}) is in progress.
00269	Cannot deploy the package as (${reason_sub}) type. When deployment unit contains an Online Cache Group, the package must be deployed as a MESSAGING package.
00270	Failed to delete the selected package (${error_sub}) because of invalid SAP credentials.
00271	Failed to delete the Hybrid App (${error_sub}) because of invalid SAP credentials.
00272	Failed to delete the DOEC package subscription(s) (${error_sub}) because of invalid SAP credentials.
00273	Failed to re-synchronize the DOEC package subscription(s) (${error_sub}) because of invalid SAP credentials.
00274	Failed to enable the scheduled purge task (${error_sub}).
00275	Failed to retrieve the scheduled purge task (${error_sub}) enable status.
00276	Failed to purge the synchronization cache.
00277	Failed to purge the online cache.
00278	Failed to purge the client log.
00279	Failed to purge the error history.
00280	Failed to purge the subscription.
00281	Failed to retrieve the purge option (${error_sub}).
00282	Failed to set the purge option (${error_sub}).
00283	Failed to retrieve the purge task (${error_sub}) schedule.
00284	Failed to update the purge task (${error_sub}) schedule.

Numeric Error Code	Message
00285	Failed to purge the package's synchronization cache.
00286	Failed to purge the package's online cache.
00287	Failed to purge the package's client log.
00288	Failed to purge the package's error history.
00289	Failed to purge the package's subscription.
00290	Failed to purge devices.
00291	Failed to purge users.
00292	Failed to replace Hybrid App (${error_sub}) certificate.
00293	Failed to replace Hybrid App certificate. The Hybrid App does not support certificate-based authentication.
00294	Messaging-based synchronization server Hybrid App context variable (${error_sub}) update failed. The parameter is invalid.
00297	Failed to do the operation, because the login user does not have authorization to do the operation.

Backward Compatibility

When upgrading from a previous version of SAP Mobile Platform, certain APIs are no longer supported, or are supported with limitations.

These APIs are no longer supported:

- `SUPMobileWorkflow`: all methods of this class throw an UnsupportedOperationException when called. Use the new`SUPMobileHybridApp` API instead.
- `SUPDeviceUser`: all methods of this class throw an UnsupportedOperationException when called.
- `SUPApplication`: the following methods of this class throw an exception when called.
  - getApplicationConnectionTemplateSettings
  - getApplicationConnectionSettings
  - createApplicationConnectionTemplate
- `SUPServerConfiguration`: the following methods of this class throw an UnsupportedOperationException when called.

- getReplicationSyncServerConfiguration
- updateReplicationSyncServerConfiguration
- getMessagingSyncServerConfiguration
- updateMessagingSyncServerConfiguration
- getConsolidatedDatabaseConfiguration
- getAdministrationListenerConfiguration
- updateAdministrationListenerConfiguration
- getHTTPListenerConfigurations
- addHTTPListenerConfiguration
- deleteHTTPListenerConfiguration
- updateHTTPListenerConfiguration
- getSecureHTTPListenerConfigurations
- addSecureHTTPListenerConfiguration
- deleteSecureHTTPListenerConfiguration
- updateSecureHTTPListenerConfiguration
- getSSLSecurityProfileConfigurations
- addSSLSecurityProfileConfiguration
- deleteSSLSecurityProfileConfiguration
- updateSSLSecurityProfileConfiguration
- getKeyStoreConfiguration
- updateKeyStoreConfiguration
- getTrustStoreConfiguration
- updateTrustStoreConfiguration
- getApplePushNotificationConfigurations
- addApplePushNotificationConfiguration
- deleteApplePushNotificationConfiguration
- updateApplePushNotificationConfiguration

These APIs are supported with limitations:

Table 350. SUPDomain

Method	Reason	Notes
Deploy	Package unification	You can still deploy the deployment units of the previous version. However, the package type passed to this method is ignored. Clients of the previous version see the newly deployed package as an RBS package, however, the SAP Mobile Server treats it as a unified package. Packages deployed prior to the upgrade retain their type information for the older version of the client.

Table 351. SUPPackage

Method	Reason	Notes
getProperties()	Package unification	Clients of the previous version see the newly deployed package as an RBS package, however, the SAP Mobile Server treats it as a unified package. Packages deployed prior to the upgrade retain their type information for the older version of the client.

Note: If using the 2.0 version of the Management API client to connect to a SAP Mobile Platform 2.1 installation, you must get the uaf-client.jar shipped with SAP Mobile Platform 2.0.1 in the Management API client libraries folder.

Notification API

You can use the Notification API to make requests from the EIS for SAP Mobile Platform to send push notifications to devices. The Notification API is an HTTP API that consists of a URL and, depending on notification mode may contain HTTP headers and a body. The header fields send notification data from the backend as a generic HTTP header for any device, or as device-specific HTTP headers.

Notification Mode

The notification mode specifies how native notifications or payload push notifications to registered devices are delivered. You select the notification mode when you create an application connection.

- Only native notifications – allows third party applications or EIS to deliver native notifications directly through the HTTP notification channel: BlackBerry (BES), Apple (APNS), or Android (GCM) to the device.

  In this notification mode, you send notification data through the request headers. There is no body in this notification mode.
- Only online/payload push – allows third party applications or EIS to deliver data payload push notifications to an online device.

  In this notification mode, no headers are required, and you send the business payload through the HTTP body.
- Online/payload push with native notifications – allows both payload and native notifications to be delivered to the device.

  In this notification mode, no headers are required, and you send the business payload through the HTTP body.

Note: Apple and Google do not recommend payload delivery over their systems:

- Data may not be delivered.
- Data is delivered out of sequence.
- If enabled, the actual payloads must be small.

  For example, GCM makes no guarantees about delivery or order of messages. While you might use this feature to inform an instant messaging application that the user has new messages, you probably would not use it to pass actual messages.

RIM supports guaranteed delivery, including callbacks to notify SAP Mobile Server that the message was delivered or when it failed. However, this is a different message format. RIM messaging has many limitations including packet size, number of packets for a single user that BES keeps, number of packets BES keeps for all users, and so on. Therefore, BES should also only be used to send the notification, but not to send payloads.

Refer to the appropriate platform documentation (APNS, BES, or GCM) for additional information.

Notification URL

Send a push notification request from the EIS using an HTTP POST to the push notification URL.

```
 http://{unwired_server_name}:{unwired_server_port}/notifications/
v1/{appcid}
```

Parameters:

- **appcid –** The application connection ID of the application instance interacting with the service.

Note: You can also send the Application Connection ID as the "x-sap-push-deviceID" header.

Notification Headers

You can send notification data from the backend as a generic HTTP header for any device, or as device-specific HTTP headers.

Apple Header Fields

The structure of HTTP headers for sending Apple Push Notification Service (APNS) notifications through SAP Mobile Platform.

- **< x-sup-apns-alert> –** The alert can consist of either a JSON-formatted request, or as these separate headers:
  - **<x-sup-apns-alert-body> –** The text of the alert message.
  - **<x-sup-apns-alert-action-loc-key> –** If a string is specified, displays an alert with two buttons, Close and View. iOS uses the string as a key to get a localized string in the current localization to use for the right button's title instead of "View." If the value is null, the system displays an alert with a single OK button that dismisses the alert when tapped.
  - **<x-sup-apns-alert-loc-key> –** A key to an alert-message string in a `Localizable.strings` file for the current localization.
  - **<x-sup-apns-alert-loc-args> –** Variable string values to appear in place of format specifiers in `<x-sup-apns-alert-action-loc-key>`.
  - **<x-sup-apns-alert-launch-image> –** The filename of an image file in the application bundle; it may include the extension or omit it. The image is used as the launch image when users tap the action button or move the action slider. If this property is not specified, the system either uses the previous snapshot, uses the image identified by the

`UILaunchImageFile` key in the application's `Info.plist` file, or falls back to `Default.png`. This property was added in iOS 4.0.

- **<x-sup-apns-badge> –** Number to be displayed as the badge on the application icon.
- **<x-sup-apns-sound> –** Name of the sound file in the application bundle.
- **<x-sup-apns-data> –** Custom payload data values that must use the JSON structured and primitive types: dictionary (object), array, string, number, and Boolean.

For more information on APNS headers, see *http://developer.apple.com/library/mac/#documentation/NetworkingInternet/Conceptual/RemoteNotificationsPG/ApplePushService/ApplePushService.html*

Google Header Fields

The list of HTTP headers to be used in the HTTP request for sending Google Cloud Messaging (GCM) notifications.

- **<x-sup-gcm-collapsekey> –** An arbitrary string (such as "Updates Available") that is used to collapse a group of like messages when the device is offline, so that only the last message gets sent to the client.
- **<x-sup-gcm-data> –** Payload data, expressed as parameters prefixed with data and suffixed as the key.
- **<x-sup-gcm-delaywhileidle> –** Optional. Requests that messages not be delivered until the device becomes active Represented as `1` for true, or any other value for false. The default value is false.
- **<x-sup-gcm-timetolive> –** Specifies how long (in seconds) the message should be kept on GCM storage if the device is offline.
- When you do not send the the collapse key, the default 'Collapse_Key' value is used, "Updates Available."

BlackBerry Header Fields

The list of HTTP headers to be used in the HTTP request for sending BlackBerry notifications.

- **<x-sup-rim-data> –** A binary value (base64 encoded).

Generic Header Fields

You can use the generic header in the HTTP request to send any type of notification. Unless you require platform-specific features in your notification (for example, the display of a button with specific text), you can more easily use the generic header.

- **<x-sup-data> –** The notification data.

SAP Mobile Platform interprets the header for each device type as follows:

- APNS: custom payload data values that use the JSON structured and primitive types: dictionary (object), array, string, number, and Boolean.

- GCM: payload data, expressed as parameters prefixed with data and suffixed as the key.
- Blackberry: a binary value (base64 encoded).

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