SYBASE®

Developer Reference for Mobile Workflow Packages

Sybase Unwired Platform 1.5.2

Contents

Contents

Introduction to Developer Reference for Mobile Workflow Package

This developer reference provides information about using Sybase® Unwired Platform features to create Mobile Workflow packages. The audience is Mobile Workflow developers.

This guide describes requirements for developing a Mobile Workflow package, how to generate Mobile Workflow package code, and how to deploy the Mobile Workflow package to the device or simulator.

Companion guides include:

- *Sybase Unwired WorkSpace – Mobile Business Object*
- *Sybase Unwired WorkSpace – Device Application Development*
- *Tutorial: Mobile Workflow Package Development*
- *Troubleshooting for Sybase Unwired Platform*

Documentation Road Map for Unwired Platform

Learn more about Sybase® Unwired Platform documentation.

Table 1. Unwired Platform documentation

Document	Description
Sybase Unwired Platform Installation Guide	Describes how to install or upgrade Sybase Unwired Platform. Check the *Sybase Unwired Platform Release Bulletin* for additional information and corrections.
	Audience: IT installation team, training team, system administrators involved in planning, and any user installing the system.
	Use: during the planning and installation phase.
Sybase Unwired Platform Release Bulletin	Provides information about known issues, and updates. The document is updated periodically.
	Audience: IT installation team, training team, system administrators involved in planning, and any user who needs up-to-date information.
	Use: during the planning and installation phase, and throughout the product life cycle.

Document	Description
New Features	Describes new or updated features.
	Audience: all users.
	Use: any time to learn what is available.
Fundamentals	Describes basic mobility concepts and how Sybase Unwired Platform enables you design mobility solutions.
	Audience: all users.
	Use: during the planning and installation phase, or any time for reference.
System Administration	Describes how to plan, configure, manage, and monitor Sybase Unwired Platform. Use with the *Sybase Control Center for Sybase Unwired Platform* online documentation.
	Audience: installation team, test team, system administrators responsible for managing and monitoring Sybase Unwired Platform, and for provisioning device clients.
	Use: during the installation phase, implementation phase, and for ongoing operation, maintenance, and administration of Sybase Unwired Platform.
Sybase Control Center for Sybase Unwired Platform	Describes how to use the Sybase Control Center administration console to configure, manage and monitor Sybase Unwired Platform. The online documentation is available when you launch the console (**Start > Sybase > Sybase Control Center**, and select the question mark symbol in the top right quadrant of the screen).
	Audience: system administrators responsible for managing and monitoring Sybase Unwired Platform, and system administrators responsible for provisioning device clients.
	Use: for ongoing operation, administration, and maintenance of the system.

Document	Description
Troubleshooting	Provides information for troubleshooting, solving, or reporting problems.
	Audience: IT staff responsible for keeping Sybase Unwired Platform running, developers, and system administrators.
	Use: during installation and implementation, development and deployment, and ongoing maintenance.
Getting started tutorials	Tutorials for trying out basic development functionality.
	Audience: new developers, or any interested user.
	Use: after installation.

	• Learn mobile business object (MBO) basics, and create a mobile device application:
	   • *Tutorial: Mobile Business Object Development*
	   • *Tutorial: BlackBerry Application Development using Device Application Designer*
	   • *Tutorial: Windows Mobile Device Application Development using Device Application Designer*
	• Create native mobile device applications:
	   • *Tutorial: BlackBerry Application Development using Custom Development*
	   • *Tutorial: iPhone Application Development using Custom Development*
	   • *Tutorial: Windows Mobile Application Development using Custom Development*
	• Create a mobile workflow package:
	   • *Tutorial: Mobile Workflow Package Development*

Sybase Unwired WorkSpace – Mobile Business Object Development	Online help for developing MBOs.
	Audience: new and experienced developers.
	Use: after system installation.

Document	Description
Sybase Unwired WorkSpace – Device Application Development	Online help for developing device applications. Audience: new and experienced developers. Use: after system installation.
Developer references for device application customization	Information for client-side custom coding using the Client Object API. Audience: experienced developers. Use: to custom code client-side applications. • *Developer Reference for BlackBerry* • *Developer Reference for iPhone* • *Developer Reference for Mobile Workflow Packages* • *Developer Reference for Windows and Windows Mobile*
Developer reference for Unwired Server side customization – *Reference: Custom Development for Unwired Server*	Information for custom coding using the Server API. Audience: experienced developers. Use: to customize and automate server-side implementations for device applications, and administration, such as data handling. Dependencies: Use with *Fundamentals* and *Sybase Unwired WorkSpace – Mobile Business Object Development*.
Developer reference for system administration customization – *Reference: Administration APIs*	Information for custom coding using administration APIs. Audience: experienced developers. Use: to customize and automate administration at a coding level. Dependencies: Use with *Fundamentals* and *System Administration*.

Mobile Workflow Development

Mobile workflow forms allow the user to update, delete, or create data even when they are not connected to the network. When they are connected, the data is automatically sent and received.

When designing mobile workflow forms using the Mobile Workflow Application Designer, the data source for the application is supplied by mobile business objects that are designated as messaging mobile business objects when deployed to the server. Using the Mobile Workflow Application Designer allows you to develop mobile workflow screens that can call on the create, update, and delete operations, as well as object queries, of a mobile business object.

The Mobile Workflow package is a lightweight form container consisting of XML files that reference an MBO package, an MBO in that package, and the operation or object query to call along with a mapping of which key values map to parameter values. This enables the creation or modification of MBO data on multiple different device platforms without requiring custom development. Workflow packages are .zip files, which can easily be moved between installations.

On Windows Mobile platforms, Mobile Workflow packages are integrated with the Outlook Mail inbox, and on Symbian devices they are integrated with the Global/SMS Inbox.

Mobile Workflow packages are deployed through the Mobile Workflow Forms Editor and managed through the Sybase Control Center console—no device interaction is required from the administrator. Once a mobile workflow package is deployed into an existing installation, the administrator can configure the mobile workflow package and assign it to any active user in the system.

Architectural Overview

Sybase Unwired Platform is a solution architecture that includes multiple components:

- Sybase Unwired Server: Sybase Unwired Server allows users to package and deploy mobile applications. The runtime server handles enterprise data source and application access, communication between the back-end data source and the mobile device, security, transaction processing, and scheduling.
- Sybase Control Center: Sybase Control Center (SCC) for Unwired Server is a Web-based console used to configure and manage Unwired Server and its components. Because it is a Web console, multiple administrators can access different components from a single access point.
- Sybase Unwired WorkSpace: Sybase Unwired WorkSpace is a development environment designed specifically for mobile application development, testing, and deployment to assist developers in rapidly moving from development to deployment. You can use

Unwired WorkSpace to mobilize data, applications, services, and processes, with support for both online and offline access. Unwired WorkSpace works like a plug-in to your Eclipse development environment, providing the tools you need to create mobile applications.

Experienced developers will already be familiar with WorkSpace's consistent use of Windows, Explorers, Views, Wizards, and Preferences specific to their development environment. Developers new to Eclipse can use online help cheat sheets (Eclipse edition only), samples, and tutorials to quickly becomes familiar.

Workflow Package Overview

These are the basic components of a Workflow package.

Starting points

There are four kinds of starting points:

- Start – initiated manually by the user when they open a Workflow form from the Workflow menu on the device.
- E-mail Subscription – initiated when the user opens an e-mail on the device in which the e-mail fields' contents meet the conditions specified in the Workflow packages' matching rules.
- Credential Request – sent by the server when it needs authentication information for Unwired Platform.
- Activate – initiated when the Workflow package is used for the first time on the user's device.
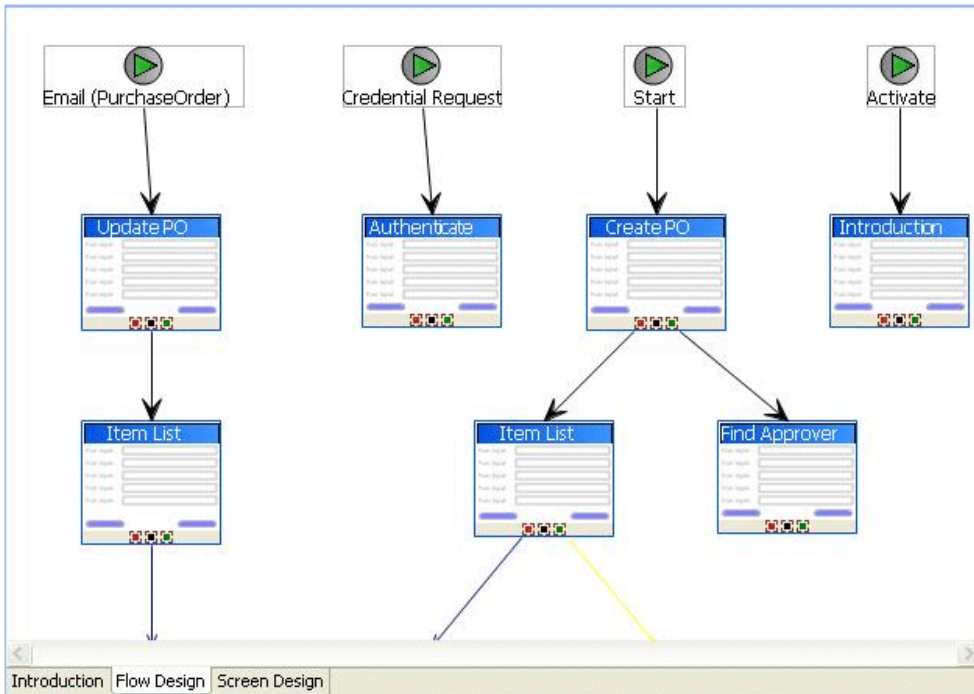
Screens and navigations
Navigations represent transitions from a starting point to a screen, or from one screen to another.

New screens are opened when the user clicks on a menu item or a row in a listview control. Screens can also be opened upon success or failure of an operation.

Series of screens are designed from a starting point. Screens appear one at a time on the device. Screens are opened on a stack, and closed in the reverse of the order in which they were added. Each screen contains one or more controls.

Controls and keys
There are seven types of controls—Checkbox, EditBox, Choice, Slider, Signature, HtmlView and Listview.

HtmlView and Listview controls, if present on a screen, must be the only control on that screen.

EditBox controls have a logical type—Text, Numeric, Date, DateTime or Time. Depending on which logical type is chosen, the control at runtime may behave differently, for example, for Date, a datepicker control is available to the user.

The contents of the controls are bound to keys. When the screen is opened, the value associated with that key determines what appears in that control. When the control's contents are updated, the value associated with that key change accordingly.

For starting points initiated by the server, such as an e-mail subscription, you can specify where the value associated with a given key will come from, for example, as an MBO attribute.

When a menu item is bound to an MBO operation or object query, each parameter of the operation or object query is bound to a key. When the operation or object query is invoked, the value passed into each parameter is the value associated with the corresponding key.

Menu items
There are seven types of menu items:

- Save – closes the current screen, validates the current input and, if validation succeeds, saves it.
- Cancel – discards any changes on the current screen and closes it. No validation occurs.
- Close – discards any changes on any open screens and closes all open screens. No validation occurs.
- Open – opens a different screen.
- Add – opens a different screen, where you can add a new row to a listview.
- Submit – validates the entered data on open screens and sends it to the server. There, the server invokes the specified MBO operation or object query. If the Submit is asynchronous, the client application closes once the request is sent. If the Submit is synchronous, the client application stays open.
- Add/Update/Delete Listview Row – specifies the MBO operation that is associated with the appropriate action on the listview. These operations will not be invoked immediately, but will instead be invoked when a Submit is made on the parent MBO to which this MBO is related. It can be added only to screens that are navigated to as the result of a Listview Details navigation, for example, by clicking on a row in a listview.

Mobile Workflow Development Lifecycle

1. Open or import a mobile application project with pre-created mobile business objects (MBOs).
2. Connect to Unwired Server.
3. Create a new Mobile Workflow Package using the Mobile Workflow Forms Editor.
4. Generate screens by dragging and dropping MBOs and/or MBO operations from WorkSpace Navigator to the Flow Design page.
5. Manually create, delete and/or edit screens, controls, menus, screen navigations, and so on.
6. Generate the Mobile Workflow package and deploy it to Unwired Server.
7. Assign the Mobile Workflow package to the user in Sybase Control Center.
8. Run, test and debug the Mobile Workflow package on the device.
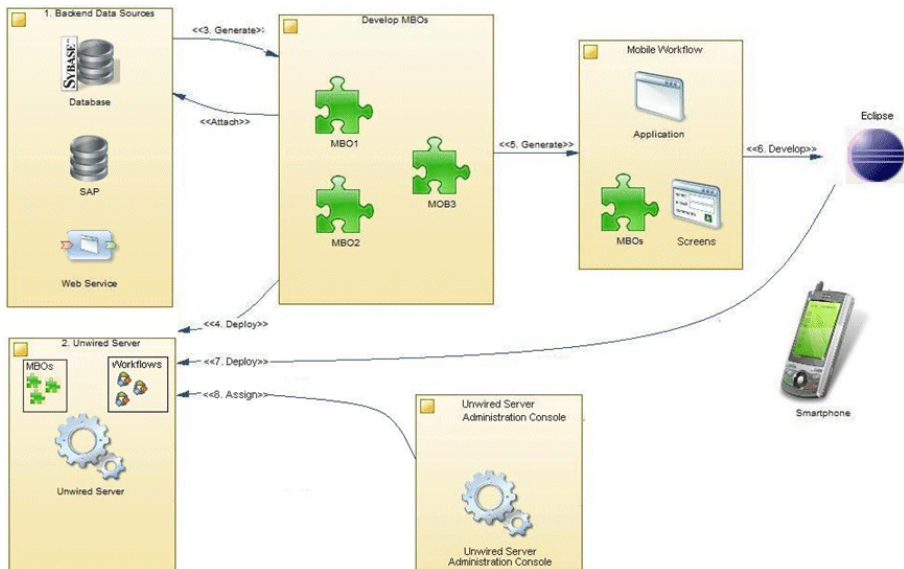
Server-initiated Versus Client-initiated Mobile Workflows

The server-initiated and client-initiated workflow models can co-exist within one workflow package.

A server-initiated workflow is always initiated by an e-mail notification. Unwired Server receives e-mail notifications from a master account and, in turn, delivers a workflow message

to an individual device based on configured distribution and mobile business object (MBO) extraction rules.

With the client, or device-initiated workflow, the user can open the workflow form on his or her mobile device and create an MBO, which is then replayed against the linked server MBO package.

Identify a Business Process for Workflow Development

The first step is identifying whether a workflow package can implement a decision point in a particular business process.

Workflow packages enable a decision step or triggering of a business process, essentially mobilizing a small decision window in a business process. While some business processes require a thick application with business logic and access to reference data, some others do not. Sometimes a business process can be made mobile simply by providing the ability to capture a single "Yes" or "No" from a user, or by providing the ability to send data in structured form into the existing backend systems.

A typical Workflow package allows creating a mobile business object (MBO) and sending it to the Unwired Server, or retrieving an MBO from the Unwired Server and displaying that information in a decision step. A more complex Workflow package could involve an application that uses synchronous Submit menu items to invoke various create, update, or delete operations and/or object queries all in the same flow. Keep in mind that with workflow packages, there is no local data persistence.

An example of a business process that would be a suitable mobile workflow would be the ability of an employee to use a mobile device to submit an expense report while out of office, or to report on their project activities.

Define Mobile Business Objects

Define and develop the mobile business objects to use in the Mobile Workflow package.

Mobile Business Objects

Mobile business objects help form the business logic for mobile applications.

A mobile business object (MBO) is derived from a data source (such as a database server, Web service, or SAP® server). MBOs are deployed to Unwired Server, and accessed from mobile device application clients. MBOs include:

- Implementation-level details – metadata columns that include information about the data from a data source.
- Abstract-level details – attributes that correspond to instance-level properties of a programmable object in the mobile client, and map to data source output columns.

Parameters correspond to synchronization parameters on the mobile client, and map to data source arguments. For example, output of a SQL SELECT query are mapped as attributes, and the arguments in the WHERE clause are mapped as synchronization parameters, so that the client can pass input to the query.

MBO operations include parameters that map to data source input arguments. Operation parameters determine information a client passes to the enterprise information system (EIS).

• Relationships – defined between MBOs by linking attributes and parameters in one MBO, to attributes and parameters in another MBO.

You can define MBOs using either a top-down approach—first designing attributes and parameters, then binding them to a data source; or a bottom-up approach—first specifying a data source, then automatically generating attributes and parameters from it.

A mobile application package includes MBOs, roles. and data source connection mappings, and other artifacts that are delivered to the Unwired Server during package deployment.

MBO Deployment Requirements

When developing a workflow package, the mobile business object must be deployed as a messaging MBO in a Mobile Application project to the Unwired Server.

For more information on the message-based synchronization model, refer to the *Sybase Unwired Platform Fundamentals Guide*.

Performing Server-side Development

This describes creating the server-side code for a mobile application, including creating mobile business objects and binding to a data source.

You can follow similar workflows to create mobile applications using a variety of data sources (like a Web service, database, SAP®, Remedy, or document).

1. *Creating a Data Source Connection Profile* on page 12Creating a Data Source Connection Profi: A connection profile contains the connection property information needed to connect to a server in your enterprise.
2. *Creating a Sybase Unwired Server Connection Profile* on page 12: Create a new Sybase Unwired Server connection profile to supply runtime connection information.
3. *Creating a Mobile Application Project* on page 13: A mobile application project is the container for the mobile business objects that forms the business logic of mobile applications.
4. *Creating a Mobile Business Object by Dragging and Dropping a Data Source* on page 14: Create a mobile business object (MBO), define the attributes and operations, and bind directly to the data source by dragging and dropping the data source onto the Mobile Application Diagram.

5. *Deploying a Mobile Application Project* on page 14: Deploy a Mobile Application project directly to an Unwired Server, and optionally create a reusable deployment profile.
On completing these procedures, the server-side development is complete. You can continue development by creating the workflow package for the client device as described in *Develop a Mobile Workflow Package* on page 17.

Creating a Data Source Connection Profile

A connection profile contains the connection property information needed to connect to a server in your enterprise.

1. In the Enterprise Explorer, right-click one of the following connection categories and select **New**.
    - Database Connections
    - SAP Servers
    - Web Services
    - Rest Web Services
2. Follow the instructions on the wizard pages to create the selected connection.

Creating a Sybase Unwired Server Connection Profile

Create a new Sybase Unwired Server connection profile to supply runtime connection information.

1. In Enterprise Explorer, right-click **Unwired Servers** and select **New**.
2. Enter a name and optional description of the connection profile and click **Next**.
3. Complete the following information on the wizard pages:

Table 2. Specify Connection Details page

Field	Description
Host	The host name on which the server resides. The default is the machine name.
IP domain	(Optional) The domain name. The default is the Windows domain of the local machine.
Port	The port to which you are connecting. The default port is 2000, use 2001 for HTTPS.
User Name	Enter the name for the server login. The default user name is supAdmin.
Password	Enter the password for the server login, if required. For example, s3pAdmin.

Field	Description
Save Password	Select the checkbox to save the password.
Secure	Select the checkbox to enable a secure connection with the server, which is different than an HTTPS connection.
	To establish an HTTPS session with Unwired Server, you must:
	1. Enable **Secure management port** on Unwired Server's administration listener. See the Sybase Control Center help topic for information.
	2. Enter 2001 as the **Port**.
	3. Add the certificate file path to the `<Unwired_Plaform_Install_Dir>\Eclipse\UnwiredWorkSpace.bat` file.
	Note: Unless the Unwired Server administration listener certificate is signed by a trusted certificate authority, or the certificate is imported into the `%JAVA_HOME%\jre\lib\cacerts` trust store, you see an error message when testing the Unwired Server connection: "unable to find valid certification path to requested target".
Cluster information	The read-only properties for this Server's cluster displays Relay Server information, or, if no relay server is set, displays non-cluster Unwired Server connection information.
	Relay Server connection information includes host, port, and URL suffix for messaging-based and replication-based synchronization.

4. Click **Next** to review a summary of this connection profile, or **Finish** to create the connection profile. The connection profile displays under Unwired Servers in the Enterprise Explorer.

Creating a Mobile Application Project

A mobile application project is the container for the mobile business objects that forms the business logic of mobile applications.

You must create a mobile application project before you can create mobile business objects.

1. Select **File > New > Mobile Application Project** from the main menu bar.

    2. Enter a:
- Name
- Location (if other than the default).

    3. Click **Finish**.

An empty Mobile Application Diagram opens.

Creating a Mobile Business Object by Dragging and Dropping a Data Source
Create a mobile business object (MBO), define the attributes and operations, and bind directly to the data source by dragging and dropping the data source onto the Mobile Application Diagram.

Deploying a Mobile Application Project
Deploy a Mobile Application project directly to an Unwired Server, and optionally create a reusable deployment profile.

Prerequisites

A connection profile to at least one Unwired Server must be available before you deploy a Mobile Application project to a server.

Task

1. Right-click the Mobile Application project and select **Deploy Project**.

Alternatively, you can launch the deployment wizard, which automatically sets the Unwired Server portion of the wizard, by dragging a Mobile Application project folder from Workspace Navigator and dropping it on the Unwired Server in Enterprise Explorer to which you are deploying.

> **Note:** As an option, you can press F9 when your cursor is in the Mobile Application Diagram to launch the Deployment wizard for the corresponding project. If a deployment profile exists for the project, F9 performs quick deployment of the project according to the profile.

2. Enter the deployment mode, target version, Package namespace, and click **Next**.

3. Select the contents to be deployed and click **Next.**

4. Select a target server for the project and click **Next**.

If a server connection has been open a long time without activity (a day or two for example), the connection may time out without your knowledge. While you may still be able to select the target server, deployment fails. Verify you have a working connection by pinging the server. If necessary, reconnect to the Unwired Server to which you are deploying from Enterprise Explorer.

5. Map connection profile to server connections – You must map design-time connection profiles to server-side (run-time) enterprise information system (EIS) data sources

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referenced by the MBOs in the project. Deployment fails if the EIS data sources are not running and available to connect to. To map the connection profile to a server connection, select the connection profile from the list of available connection profiles then select the corresponding server connection to which it maps.

Contact the system administrator in cases where your development environment permits access to systems that the Unwired Server prohibits.

Note: You can also modify server connection properties (Web service connections only).

6. If a logical role is defined in your MBO, map logical roles to physical roles. If there are no logical roles defined, this page is skipped. Click **Next**.

7. (Optional) Specify the name and location for the new deployment profile:
   - Save the deployment settings as a deployment profile – if you do not save your settings to a deployment profile, they are lost when you exit the Deploy wizard.
   - Enter or select the parent folder – by default, Deployment is the folder in which the deployment profile is saved.
   - File name – the name of this deployment profile. The deployment profile is assigned a `.deploy` extension.

8. Click **Finish** to deploy the project to the Unwired Server's Packages folder.

Develop a Mobile Workflow Package

Sybase Mobile Workflow Forms Editor enables the creation or modification of mobile business objects on different device platforms without requiring custom device development.

Mobile workflow are useful for supporting the occasionally connected user and solving the replication and synchronization issues the occasionally connected user presents for the back-end system. The user can update, delete, or create data even when they are not connected to the network. When they are connected, the data is automatically sent and received.

A Mobile Workflow application requires an integration module on the server side. This module is responsible for processing the e-mail messages identified by matching rules configured for the e-mail subscription starting point and processing the responses sent to the server from the device. The Mobile Workflow Forms Editor allows you to create the forms that can be assigned to the devices that have the Sybase Mobile Workflow application installed through Sybase Control Center.

When designing mobile workflow forms using the Mobile Workflow Forms Editor, the data source for the application is supplied by mobile business objects that are designated as messaging mobile business objects when deployed to the server. Using the Mobile Workflow Forms Editor allows you to develop 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 generate a mobile workflow form that works on these platforms:

- Apple iPhone and iPod Touch
- Windows Mobile
- Nokia Symbian

See the *Sybase Unwired Platform Installation Guide* for supported version levels.

When designing the user interface for mobile workflow forms for mobile devices, the goal is to keep it simple. The mobile workflow form should deliver clear, concise content with minimal navigation menus. The mobile workflow should be compatible with a wide variety of devices and should support both horizontal and vertical screen layouts. Keep in mind the limitations of mobile devices when designing a mobile workflow form.

The Mobile Workflow Forms Editor

Use the Mobile Workflow Forms Editor to develop mobile workflow forms.

The Mobile Workflow Forms Editor contains these pages:

Introduction

Create a new mobile workflow or double-click an existing one, to open the Introduction page of the Mobile Workflow Forms Editor. This page is the starting point for designing your mobile workflow form. You can access help from this page.

Flow Design

The Flow Design page displays an empty canvas if you did not choose any of starting points in the New Mobile Workflow Forms Editor. If you selected a starting point when creating the new mobile workflow form, the selected starting point appears.

Use this page to specify how starting points and screens link together. The Palette view on the right shows available starting points, screens, and connections. You can drag and drop items from the Palette to the canvas. Screens and starting points that you drag to the Flow Design canvas appear as icons. Double-click a screen to open the Screen Design page.

Right-click anywhere in the Flow Design page to open a context menu.

Screen Design

Use this page to design the screen of your mobile workflow form. The Palette view shows the menu items and controls you can use to design a new screen. Drag controls to design the user interface.

Creating a New Mobile Workflow Form

Access the Sybase Mobile Workflow Forms Editor.

Prerequisites

You must have an existing project in which to create the mobile workflow form.

Task

1. In the Mobile Development perspective, select **File > New > Mobile Workflow Forms Editor**.
2. Follow the instructions in the New Mobile Workflow Forms Editor wizard:

Field	Description
Enter or select the parent folder	Select the mobile application project in which to create the mobile workflow form.
File name	Enter a name for the mobile workflow form. The extension for mobile workflow forms is .xbw.
Advanced	Link the mobile workflow form to an existing file in the file system.

Field	Description
Link to file in the file system	Click **Browse** to locate the file to which to link the mobile workflow form. Linked resources are files or folders that are stored in the file system outside of the project's location. If you link a resource to an editor, when you select the editor, the resource is selected in the WorkSpace Navigator. Conversely, when you select the resource in the WorkSpace Navigator, the editor is selected.

3. In the Starting Points page, select the ways the mobile workflow will start:
   - **Can be started on demand from the client** – allows the user to start the mobile workflow on the device and submit data to the server.
   - **Responds to server-driven e-mail notifications** – when an e-mail message that matches the defined matching rules arrives in the master inbox, it is then sent as a workflow e-mail message to the devices that match those matching rules. When you select this option, you will set up the e-mail subscription starting point in the next screens of the wizard. Follow the procedure for *Creating an E-mail Subscription Starting Point*.
   - **Has setup options that need to be set when the client application is first activated** – the first time the workflow is launched, the screen pointed to by the Activation screen is shown.
   - **Credentials (authentication) may be requested dynamically from the client application** – select to create a credential request starting point with pre-defined username and password keys.
4. (Optional) If you selected the **Responds to server-driven e-mail notifications** option in the previous step, follow the procedure in *Creating an E-Mail Subscription Starting Point*.
5. Click **Finish**.
6. In the Mobile Workflow Forms Editor, click **Flow Design** to start designing the mobile workflow form.

Flow Design Page Properties

These are the Flow Design page properties shown in the Properties view when no objects in the Flow Design page are selected.

General

Property	Description
Module name	The name of the module.

Property	Description
Module version	The version of the module.
Module description	Enter a description for the module.
Module display name	Enter the name that appears on the workflow application when it is viewed on the client.
Delete message after processing	Select to delete the message after it is processed.
Mark message as processed after processing	Select to mark the message as processed after it is processed.
Client icon	Select the icon that appears on the client.

Rulers and grid

Property	Description
Display	- Show ruler - Show grid - Grid in front
Measurement	- Ruler units - Grid spacing
Grid line	- Color - Style
Snap to grid	Automatically align objects to the grid lines on the canvas.
Snap to shapes	Position objects to grid lines that go through the vertical and horizontal edges of other objects.

Localization

Property	Description
New	Launch the New Locale wizard and create a new locale file for the mobile workflow application.
Update	Update the currently loaded locale file.
Load	Load a locale properties file to the Mobile Workflow Designer.

Property	Description
Validate	Select a locale properties file and click to validate.
Edit	Select the locale properties file, then click to edit the locale properties file.
Remove	Select the locale properties file to remove, then click to remove.

Matching rules

Any existing matching rules appear in the matching rules Properties view. Matching rules determine how e-mail messages are redirected at runtime.

Property	Description
New	Create a new matching rule.
Delete	Select a matching rule and click to delete.
Edit	Select a matching rule and click to edit.

Authentication

Property	Description
Use static credentials	Select when the authentication field is the same for all users accessing the resource.
Use SUP server connection profile authentication	Use properties from the connection profile to supply credential data for authentication. This is similar to hard-coded credentials but the credentials are taken from the specified server connection profile instead of being specified in the Mobile Workflow Forms Editor.
Use hard-coded credentials	Specify a user name/password combination for authentication.
User name	This field is editable only if you selected the hard-coded credentials option. Enter the user name to use for authentication.
Password	This field is editable only if you selected the hard-coded credentials option. Enter the password to use for authentication.

Property	Description
Unwired Server domain	Optionally specify the Sybase Unwired Platform domain to use. If specified, a context variable is created in the application for which the initial value is set to this domain. At runtime, when determining authentication, *@<domain>* is added to the user name, thus allowing the user access to that domain.

Flow Design Palette Options

Use the items in the Mobile Workflow Forms Editor Flow Design palette to configure the screens and connections for the mobile workflow application.

Connections

Connection	Description
Go to	Specifies which screen the user goes to upon completing an action on the current screen, such as clicking OK or Next.
Operation success	Specifies which screen the user automatically goes to upon successful completion of an operation.
Operation error	Specifies the screen that the user goes to automatically when an error occurs while attempting to complete an operation.
Listview details	Specifies which screen to open when a row in a listview is clicked. Once on the details screen, you can add, update, or delete rows from the listview.
Listview add	Specifies a screen that can be directly navigated to in order to add a new row to the listview.

Screen

Select the screen ⊞ and click the Flow Design page to create a new empty screen.

Starting points

Starting point	Description
Activate	The Activate starting point indicates a screen that is displayed to the user the only the first time they open the application. It is not displayed the second and subsequent times the application is opened. For example, you might want to use an Activate starting pint to show usage instructions for the application to the user the first time they open the application.
Credential request	Provide the credentials for authentication. During execution, authentication credentials are evaluated in this order: 1. User-defined user name and password keys 2. Credential cache 3. Specified generic credential pair
E-mail subscription	Use this starting point to define the matching rules for the widget and to specify how to extract values from e-mail messages and map them to mobile business object read and search parameters.
Start	The mobile business object referencing starting point.

Screen Design Page Properties

These are the Screen Design page properties shown in the Properties view when no objects in the Screen Design page are selected.

General

These are the general properties for the screen.

Property	Description
Name	The name of the screen.
Key	The key associated with the screen.

Property	Description
Background color	Click **Color picker** to choose a background color for the screen. You can also enter the value manually. The possible values are black, blue, brown, gray, green, orange, pink, purple, red, white, yellow, any string with the format #rrggbb, where rr, gg and bb are the hexadecimal values, in the range 0 to ff(255), for the red, green and blue. **Note:** The background color for screens can be set only for Windows Mobile devices. It is not supported for Symbian or Apple devices.
OK action	Select the action that will be performed when the user clicks OK on the screen.
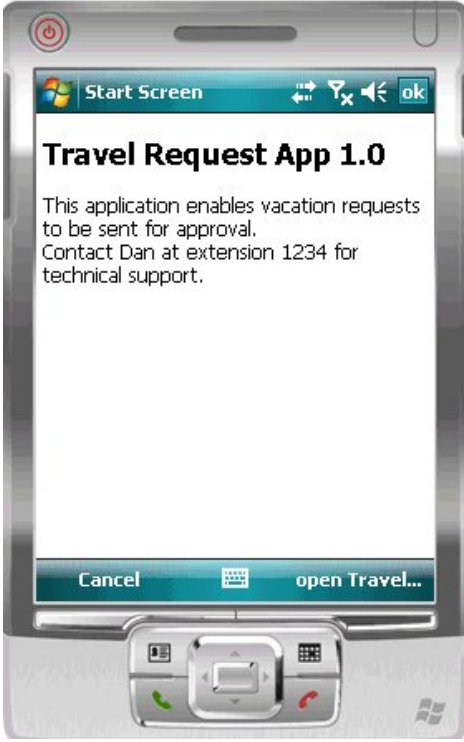
Rulers and grid
The ruler and grid properties are applied to the Screen Design page, or canvas.

Property	Description
Display	• Show ruler • Show grid • Grid in front
Measurement	• Ruler units • Grid spacing
Grid line	• Color • Style
Snap to grid	Automatically align objects to the grid lines on the canvas.
Snap to shapes	Position objects to grid lines that go through the vertical and horizontal edges of other objects.

Screen Design Palette Options

Use the items on the palette to design the screen for the mobile workflow application.

Option	Description
Menu item	Use to provide additional options for the top-level menu on the screen.
Checkbox	Displays a true/false (or yes/no) option on the screen.
Editbox	Select the logical type for the edit box, then enter text and assign values to strings, dates, decimals, integers, and so on.
Choice	Display a collection of items on the screen as a drop-down list from which the user can choose.
Slider	Represent numeric values within a range.
Signature	Add a signature box to the screen. The value is a list of points that, combined, make up the signature that gets or is drawn to the control, for example, -1x-1,5x7,5x8,-1x-1, where -1x-1 is interpreted as an interruption of a line drawn to the screen.

Option	Description
HtmlView	Allows text with HTML markup to display on the screen. For example, this code:

```
<H2>Travel Request App 1.0</H2>
This application enables vaca-
tion requests to be
sent for approval.<br>Contact
Dan at extension 1234
for technical support.
```

displays like this on the device:

Note: The HtmlView control fills the entire screen of a workflow form, so no other controls can be placed on a screen that hosts an HtmlView control.

Option	Description
ListView	Displays lines that can be clicked on to show further details of the selected line. This facilitates the navigation for a one-to-many mobile business object relationship. For example, the listview could contain the items of a sales order. When a line in the sales order is clicked on, a details screen for that sales order appears.
	Note: The ListView control fills the entire screen of a workflow form, so no other controls can be placed on a screen that hosts a ListView control.

Mobile Workflow Forms Editor Context Menus

Right-click in any of the pages (except the Introduction page) of the Mobile Workflow Forms Editor to display a context menu and perform these actions.

Option	Description
Edit	Edit the selected object.
Delete	Delete the selected object.
Mobile Business Object References	Shows current mobile business object references and allows you to create new mobile business object references and edit or delete existing mobile business object references.
	Note: This menu item appears only on the Flow Design page.
Generate Mobile Workflow Package	Generate the mobile workflow form code.
Send an E-mail	Send an e-mail from the Mobile Workflow Forms Editor to a device user. This can be used to quickly test e-mail triggered applications. The test e-mail bypasses the Notification Mailbox.
	Note: The Cc and Bcc fields are used only for matching rules. An e-mail is not sent to the users entered in these fields.

Option	Description
Select	Select: • All – selects all objects on the page. • All shapes – selects all shapes on the page. • All connections – selects all connections on the page.
Arrange All	Arranges the shapes on the page.
View	View: • Grid • Rulers • Page breaks • Recalculate page breaks • Snap to grid
Zoom	Select from the zoom options.
Show Properties View	Shows the Properties view for the selected object.

Sending a Test E-mail

Send a test e-mail from the Mobile Workflow Forms Editor to a device user to test e-mail triggered workflow forms.

1. Right-click in the Flow Design or Screen Design page of the Mobile Workflow Forms Editor and select **Send an e-mail**.
2. Fill out the e-mail form and click **Send**.

   Note: The Cc and Bcc fields are used only for matching rules. An e-mail is not sent to the users entered in these fields.

   The e-mail bypasses the Notification Mailbox.
3. (Optional) Click **Get Device Users** to bring up a list of registered device users to which you can send the e-mail.

Starting Points

Starting points specify which screen on the workflow application a user sees when they perform a certain action.

Starting points include:

- Start – this starting point is activated when the user opens the application using the Widgets menu.
- Activate – this is the starting point that is activated when the user first opens the workflow application. It does not activate on the second and subsequent times the workflow application is started.
- Credential request – this starting point is activated when the workflow application requires a user name and password and the program does not have one in its cache, or the values in the cache are no longer valid.
- E-mail subscription – this starting point is activated when an e-mail message is sent to the device that matches the matching rules specified in the workflow application.

Each starting point has a list of keys with which it is associated. View the keys associated with the starting point in the Properties view for the starting point.

Adding a Starting Point Manually

Every screen must be part of a flow that connects to a starting point.

1. From the palette on the Flow Design page, select a starting point, then click on the Flow Design canvas.
2. Add a screen to the starting point by either:
   - Dragging and dropping a data source, for example, a mobile business object or mobile business object operation, onto the Flow Design canvas, or
   - Selecting an empty screen from the Flow Design palette, then clicking on the Flow Design page.
3. Add a connection between the starting point and the screen.
4. Select **File > Save**.

   You can also automatically create starting points based on selections you make in the New Mobile Workflow Form wizard when you create a new Mobile Workflow form.

Creating an E-mail Subscription Starting Point

Create an e-mail subscription starting point.

Note: Each Mobile Workflow Forms Editor can have only one e-mail subscription starting point.

1. In the Mobile Development perspective, select **File > New > Mobile Workflow Forms Editor**.
2. Follow the instructions in the New Mobile Workflow Forms Editor wizard:

Field	Description
Enter or select the parent folder	Select the mobile application project in which to create the mobile workflow form.

Field	Description
File name	Enter a name for the mobile workflow form. The extension for mobile workflow forms is .xbw.
Advanced	Link the mobile workflow form to an existing file in the file system.
Link to file in the file system	Click **Browse** to locate the file to which to link the mobile workflow form. Linked resources are files or folders that are stored in the file system outside of the project's location. If you link a resource to an editor, when you select the editor, the resource is selected in the Work-Space Navigator. Conversely, when you select the resource in the WorkSpace Navigator, the editor is selected.

3. In the Starting Points page, select **Responds to server-driven e-mail notifications**.

4. In the E-mail Processing wizard, click **Search** to locate the mobile business object with which to associate the e-mail starting point.

5. In the Search for Mobile Business Object wizard, click **Search**.

6. Select the mobile business object from the list, and click **OK**.

7. In the E-mail Processing wizard, select an **Object query** and click **Next**.

Note: Object queries that return result sets are not supported.

8. Enter the contents for a sample e-mail message, and click **Next**.

9. Select the text that will serve as the matching rule, right-click and select **Select as Matching Rule** and click **Next**.

10. From Parameters, select each parameter for which there is a matching rule, and specify from where the parameter receives data in the Parameter Properties.

Note: The supported syntax for the regular expression is that used by the C# Match() methods(s) of the class System.Text.RegularExpressions.Regex.

Property	Description
Field	Select the field from the e-mail message from which the parameter receives data, for example, Subject. Selecting Subject indicates that the parameter receives data from the subject line of the e-mail message.
Start tag	Enter or select the text for the start tag regular expression, for example, "Approval Re-quest\(".

Property	Description
End tag	Enter or select the text for the end tag regular expression, for example, "\)was sent".
Format	Supports locale-specific parameter extraction. For example, you can indicate that a given date parameter will be in the form of YYYY-MM-DD in the e-mail, and another date parameter will be in the form of YYYY-DD-MM. This applies to the DateTime type.
Sample e-mail field contents	The value of the field previously chosen as the matching rule in the Specify Matching Rules page of the wizard.
Value extracted from sample e-mail field contents	The value the start tag and end tag matching rules would arrive at given the sample field value.

11. Click **Finish**.

E-mail Subscription Properties
View and configure the E-mail Subscription starting point properties.

Select the E-mail Subscription starting point in the Flow Design page to view and configure its properties.

Table 3. General properties for the E-mail Subscription starting point

Property	Description
Mobile business object	The mobile business object with which the e-mail subscription starting point is associated.
Object query	When you define an object query in the mobile business object associated with the mobile workflow form, the object query returns the specified instances of the mobile business object. For example, if a travel request to Hawaii is submitted, the object query returns an instance of that mobile business object so the approver can review the travel request details then modify the status and comment fields for that mobile business object.
	Object queries that return multiple instances are supported, as well as object queries that return only one instance.
Error screen	Select the screen to go to if the operation fails.

Property	Description
Jumpstart	Launch the E-mail Processing wizard, where you can compose a sample e-mail message from which to specify parameter value extractin rules and matching rules.
E-mail transformation rules	Shows the e-mail message transformation rules for the e-mail subscription starting point. Select a rule and click **Edit** to change the transformation rule.

Click **Keys** in the left pane of the Properties view to see the keys that are associated with the e-mail subscription starting point.

Table 4. Keys

Property	Description
Key name	The name of the associated key.
Type	The type of the associated key, for example, string.
Data binding	Shows the data source to which the key is bound: • Mobile business object attribute • Mobile business object relationship • MBO object query results If you select an object query that returns multiple MBO instances, you can bind the result set to a Listview control using a key that is of the list type. • User-defined Click **New** to create a new key. Select any key and click **Edit** to edit the information for an existing key. Select a key and click **Remove** to remove an existing key.

E-mail Transformation Rules

E-mail transformation rules are used to extract parameter values from an e-mail message.

Transformation rules include a regular expression that determines from where in the e-mail message the parameter value starts and another regular expression that determines from where

in the e-mail message the parameter value ends. Define the e-mail message transformation rules when you create an e-mail subscription starting point.

Editing E-mail Transformation Rules

Edit e-mail message transformation rules in the E-mail Subscription starting point General properties.

1. On the Flow Design page, select the E-mail Subscription starting point.
2. In the General Properties view, select the e-mail transformation rule to edit and click **Edit**.
3. In the Edit E-mail Transformation Rule dialog:

Property	Description
MBO search parameter	Enter the search parameters for the mobile business object.
Field type	Select the field in the e-mail message from which the parameter value is extracted, for example, , which indicates the parameter value is extracted from the subject line of the e-mail message.
Tag before parameter	Enter the tag to indicate what to extract from the beginning of the field's contents, for example, `"Approval Request\("`.
Tag after parameter	Enter the tag that indicates what to extract from the end of the field's contents, for example, `"\)was sent"`.

Note: The supported syntax for the regular expression is that used by the C# Match() methods(s) of the class System.Text.RegularExpressions.Regex.

4. Click **OK**.

Editing the E-mail Subscription Starting Point

Edit the E-mail Subscription starting point.

1. In the Flow Design page, right-click the **E-mail Subscription starting point** to edit and select **Edit E-mail Subscription starting point**.
2. Make your changes in the E-mail Processing wizard and click **Finish**.
3. From the main menu, select **File > Save**.

Adding Matching Rules
Matching rules determine how e-mail messages are redirected at runtime.

To see the Matching Rules section of the Properties view, verify there are no objects selected on the Flow Design page.

1. In the Properties view, click **Matching Rules**.
2. Click **Add**.
3. In the matching rules dialog, specify the type and regular expression for the matching rule, and click **OK**.

Credentials

You can use either dynamic or static credentials in a mobile workflow form.

The user name and password values are required when the mobile workflow application invokes a mobile business object operation. These authentication values can be provided statically (at design time), or dynamically (by the user at runtime).

Dynamic credentials mean that the user sets the user name and password on a screen that is pointed to by the credential request starting point. The text fields must have the corresponding Credential Cache User Name and Password checkbox checked to indicate the value is to be used to provide the user name and password on the client. When the user logs in, the credentials are authenticated using the stored credentials.

Note: If an e-mail triggered workflow form has dynamic cached credentials, the cached credentials are not cached between invocations of the workflow form through an email trigger.

Static credentials mean that everyone who has access to the resource uses the same user name and password. By default, static credentials are used. The static credential user name and password for the mobile workflow application can be extracted from the selected Sybase Unwired Platform profile user name and password when the mobile workflow application is generated, or they can be hard-coded using the Properties view. After deployment, you can change static credentials in the Sybase Control Center.

The application can also have a credential screen (Credential Request) that appears if the mobile workflow application detects that the cached credentials are empty or incorrect.

Setting Up Static Authentication
With static authentication, everyone who has access to the resource uses the same user name and password.

Set up static credentials in the Authentication section of the Properties tab. To see the Properties page, verify there are no objects selected on the Flow Design page.

1. In the Properties view, click **Authentication**.
2. Select **Use static credentials**.

3. Select from these options:

   - Use SUP Server connection profile authentication – selected by default. When the code is generated for the mobile workflow application, the user name and password associated with the SUP connection profile are used.
   - Use hard-coded credentials – sets the user name and password. When you select this option, the User name and Password fields are activated.

4. (Optional) If you selected the **Use hard-coded credentials** option in the previous step, enter the User name and Password that are to be used for authentication.

5. Select **File > Save**.

Setting Up Dynamic Authentication

Use dynamic authentication when you want the user to set the name and password on the client.

You can create the Credential Request starting point with a Credential screen automatically when you initially create a new mobile workflow, or you can create the Credential Request starting point and associated screen manually. This procedure shows how to create the Credential Request starting point automatically when you create a new mobile workflow.

1. In the Mobile Development perspective, select **File > New > Mobile Workflow Forms Editor**.

2. Follow the instructions in the New Mobile Workflow Forms Editor wizard:

Field	Description
Enter or select the parent folder	Select the mobile application project in which to create the mobile workflow form.
File name	Enter a name for the mobile workflow form. The extension for mobile workflow forms is .xbw.
Advanced	Link the mobile workflow form to an existing file in the file system.
Link to file in the file system	Click **Browse** to locate the file to which to link the mobile workflow form. Linked resources are files or folders that are stored in the file system outside of the project's location. If you link a resource to an editor, when you select the editor, the resource is selected in the Work-Space Navigator. Conversely, when you select the resource in the WorkSpace Navigator, the editor is selected.

3. In the Starting Points page, select **Credentials (authentication) may be requested dynamically from the client application**.

4. Continue with the New Mobile Workflow wizard as appropriate to create the type of mobile workflow application you want to create. Click **Finish**.

5. When the Mobile Workflow Forms Editor opens, click **Flow Design**.

   The Credential Request starting point and its associated Credential Request screen appear on the Flow Design page.

   Select the Credential Request starting point. You will see the two pre-defined keys (cc_username and cc_password) in the Properties view.

6. Double-click the **Credential Request** screen to go to the Screen Design page.

   Two editbox controls, which are bound to the pre-defined cc_username and cc_password keys appear on the screen.

7. Select the **Username** editbox, then click **Advanced** on the left side of the Properties view.

   The Username editbox has the **Credential cache username** checkbox selected. Select the Password editbox and note that is has the **Credential cache password checkbox** checked.

   If you create a Credential Request starting point and screen manually, you must add the editbox controls, create the keys for the username and password, and check the corresponding Credential cache username or password box.

8. Select **File > Save**.

   The first time the mobile workflow is started following deployment, the credential screen is shown. The username and password values are then cached in the credential cache.

   Note: If an e-mail triggered workflow form has dynamic cached credentials, the cached credentials are not cached between invocations of the workflow form through an email trigger.

Creating Keys

Create new keys that can be bound to controls.

1. On the Screen Design page, select the control to which you want to bind the new key.
2. In General Properties, in the Input Data Binding section, click **New key**.
3. In the Key dialog, enter:

Property	Description
Name	Enter a name for the key.
Type	Select the key type.
Sent by server	Select this checkbox to input data binding for the key.
Input Data Binding	

Property	Description
MBO attribute	Select to bind the key to a mobile business object (MBO) attribute: • Name • Convert to UTC
MBO relationship	Bind the key to an MBO relationship.
MBO object query results	Bind the key to MBO object query results.
User defined	Bind the key to user-defined data.

4. Click **OK**.

Keys

Keys are unique identifiers within the scope of a workflow application, used when setting or retrieving a value.

Keys can be bound to the mobile business object (MBO), whether it is to an MBO attribute, an MBO parameter, an MBO operation parameter, a subscription parameter, an object query, or an MBO relationship (list type keys only).

Keys can be of the following types:

- string
- int
- double
- decimal
- bool
- DateTime
- list – can be bound only to relationships, or nothing. Keys of other types cannot be bound to relationships. List type keys have one or more child keys to which they are bound.

This example of an .xml file shows how keys are used in a workflow application. In this example, the keys associated with the editbox control are bound to the parameters of the mobile business object's (TravelRequest) create operation.

```
<screens default="TravelRequestcreate">
    <screen key="TravelRequestcreate" text="TravelRequest_create" >
      <actions>
        <action key="Submit" type="submit" text="Create" />
        <action key="Cancel" type="cancel" text="Cancel" />
      </actions>
      <controls>
        <datepicker  key="TravelRequest_create_trvl_date_paramKey"
value="" label="Trvl date:" labelpos="LEFT" maxlength="32767" />
        <editbox  key="TravelRequest_create_trvl_location_paramKey"
value="" label="Trvl location:" labelpos="LEFT" maxlength="20" />
        <editbox  key="TravelRequest_create_est_cost_paramKey"
value="" label="Est cost:" labelpos="LEFT" numeric="true"
```

```
maxlength="32767" />
        <editbox  key="TravelRequest_create_purpose_paramKey"
value="" label="Purpose:" labelpos="LEFT" maxlength="200" />
      </controls>
    </screen>
</screens>
```

Binding Controls to Keys
Use the Properties view to bind keys to controls.

1. On the Screen Design page, select the control to which you want to bind the key.
2. In General Properties, in the Input Data Binding section, select the key with which to bind the control from the drop-down list.
3. (Optional) In Default Value, enter a default value for the key.
4. Select **File > Save**.

Mobile Business Object Relationships

When you are using two mobile business objects with a one to many or one to one composite relationship defined, use the listview control on the mobile workflow application to show the list of related objects.

The listview control allows you to navigate the one to many or one to one relationship between the two mobile business objects. The one to one cascade relationships use regular controls or keys that bind to the related mobile business object's attributes.

When you create the relationship between the two mobile business objects, you must select the One to many or One to one and Composite options.

Note: Structured mobile business objects and complex parameters are not supported in mobile workflow forms.

Creating Screens Automatically by Dragging and Dropping a Data Source

Drag and drop a data source, for example a mobile business object (MBO) or operation onto the Flow Design page to create screens, controls, keys, menus, and navigations automatically.

Note: Mobile business objects used as the data source must be contained in a deployed mobile application package that is identified as "messaging."

When you use an MBO operation, a screen is created with a menu item that invokes that operation. Controls bound to keys that are bound to that operation's parameters are also created.

When you use an MBO as the data source, screens for the operations are created, along with a details screen for the MBO itself, and also screens for any related MBOs and their operations.

1. From the Flow Design page palette, select a starting point and drag and drop it onto the Flow Design page.
2. From WorkSpace Navigator, expand the project that contains the data source you want to use.
3. Select the data source, for example, a mobile business object, and drag and drop it onto the Flow Design page.

   If the mobile business object you are using as the data source has relationships with other mobile business objects defined, all of the screens and connections between screens for the initial mobile business object and its relationships are automatically created. You can change the order of the screens and create your own connections manually.

   Note: Structured mobile business objects and complex parameters are not supported in mobile workflow forms.

Adding Controls to the Screen

Use the Screen Design palette to add controls to the mobile workflow screen.

1. In the Mobile Workflow Forms Editor, select **Screen Design > Palette > Controls**, then select the control you want to add to the screen and click on the screen.
2. Click the control to select it, then use the Properties page to configure it.

Mobile Workflow Controls

Controls are objects that users can interact with to view, enter, or manipulate data

Supported controls are determined by the selected device. The set of supported controls depends on the target device platform.

Control	Supported Platform
Checkbox	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only

Control	Supported Platform
Editbox	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only
Choice	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only
Slider	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only
Signature	• Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only
HtmlView	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only
Listview	• Apple iPhone and iPod Touch (operating system 3.0 and later) • Windows Mobile Standard • Windows Mobile Professional • Symbian Series 60, Third Edition and Series 60 Fifth Edition only

Adding a Menu Item

Add a menu item to the menu.

1. On the Screen Design page, from Palette, select **Menuitem**, then click the Menu box.
2. Select the menu item to configure the properties in the Properties view.

Menu Items

Menu items function as actions and are associated with mobile business object operations.

Menu items can be one of these types:

- Open – must be associated with another screen. The open menu item is created automatically when a Go To connection is created on the Flow Design page.
- Save – allows the user to close the current open screen and save the input made to the collection of response values to be sent to the server using the submit action. Using the save menu item, a user can navigate back one single screen at a time.
- Cancel – allows the user to close the current open screen without performing any data validation. The cancel action type immediately navigates the user back to the underlying screen.
- Submit (synchronous) – the submit menu item on a screen must be associated with a mobile business object operation or an object query. If the user has multiple screens open during the submit execution, and one of the underlying screens fails validation, the user is prompted with the configured warning message and the submit process stops.
- Submit (asynchronous) – the submit menu item on a screen must be associated with a mobile business object operation.
- Close – allows the user to leave the client-side component no matter which screen the client-side component currently shows.
- Listview – includes AddListView Row, Delete ListView Row, UpdateListView Row, which allows the user to add, delete, or update a listview row. The AddListView Row menu type allows you to navigate directly from the listview details screen and perform an add from the subsequent screen.
- Add – available for ListView controls. The Add menu item type allows you to navigate directly from the listview itself and perform an add from the subsequent screen.

Menu Item Properties

Select the menu item on the Screen Design page to view and configure its properties using the Properties page.

General

Property	Description
Name	Enter a valid name for the menu item.
Key	Select the key with which to bind the menu item.
Default	Select to display the menu item prominently on the screen.

Property	Description

Type	Select the type of action the menu item will perform when selected:
	
	• Save – allows the user to close the current open screen and save the input made to the collection of response values to be sent to the server.
	• Close – allows the user to leave the client-side component no matter which screen the client-side component currently shows.
	• Cancel – allows the user to close the current open screen without performing any data validation. The cancel action type immediately navigates the user back to the underlying screen.
	• Open – indicates the screen to be opened with a GoTo connection. The Open type menu item must be associated with a screen on the Flow Design.
	• Submit – Closes the client application and invokes a mobile business object method using the values of the current flow.
	• The Listview actions can be invoked only within the context of a Listview, for example, on a screen that is arrived at after navigating from a listview. It does not immediately execute the MBO create operation in question, but rather stores it so that later, when the parent MBO is submitted, this, and other, MBO operations will be invoked.
	   • Add Listview Row
	   • Update Listview Row
	   • Delete Listview Row

Details	You can configure menu item actions in the Details section. The properties available depend on the action type. See the topics for configuring the different menu item types for information about configuring these properties.

Parameter Mappings
Use the Parameter Mapping section to defing which keys to map to which parameters.

Communication Style

Property	Description
Asynchronous	Validates the data input on all open screens, closes the application, and sends the data to the server. Enter the confirmation message to submit to the server.
Synchronous	Validates the data input on all open screens, saves it, send it to the server and waits for a response from the server before continuing. Enter: • Submit error message – enter the message the user sees if there is an error. • Timeout – enter the allowed amount of time to wait for the server to respond before timing out and giving an error message. • Success screen – select the screen to go to upon successful communication with the server. • Error screen – select the screen to go to if there is an error when submitting the data to the server.

Creating a Save, Open, Close, or Cancel Menu Item

Create a menu item that performs a save, open, close, or cancel action on the device application screens.

Note: The first screen in each mobile workflow form should have a Close or Cancel menu action assigned to it so that the user can exit from the mobile workflow form on the device. On a Windows Mobile device, the user can exit by clicking the OK button, but not all devices have that function.

1. On the Screen Design page, from Palette, click **Menuitem**, then click the Menu box.
2. Select the menu item to configure the properties in the Properties view.
3. In the Properties view:

Property	Description
Name	Enter a valid name for the menu item.

Property	Description
Key	Select the key with which to bind the menu item.
Default	Select to display the menu item prominently on the screen.
Type	Select the type of action the menu item will perform when selected: • Save – allows the user to close the current open screen and save the input made to the collection of response values to be sent to the server. • Close – allows the user to leave the client-side component no matter which screen the client-side component currently shows. • Cancel – allows the user to close the current open screen without performing any data validation. The cancel action type immediately navigates the user back to the underlying screen. • Open – indicates the screen to be opened with a GoTo connection. The Open type menu item must be associated with a screen on the Flow Design.
Screen	This field appears in the Details section only if the menu item type is Open. Select the screen that will open from the GoTo connection.

4. Select **File > Save**.

Creating a Submit Menu Item

Create a "submit" menu item.

The submit menu item of the first screen in a mobile workflow form must be associated with a mobile business object operation or an object query.

If the user has multiple screens open at the time of the submit execution, and one of the underlying screens fails validation, the user is prompted with the configured warning message and the submit process stops.

1. From the palette on the Screen Design page, click **Menuitem**, then click the Menu box.

2. Select the menu item to configure the properties in the Properties view.

3. In the Properties view, configure the properties for the submit menu item:

Property	Description
Name	Enter a valid name for the menu item.
Key	Select the key with which to bind the submit menu item.
Default	Select to display the menu item prominently on the screen.
Type	Select **Submit** from the drop-down list.

4. If the menu item is an operation associated with a mobile business object, you can configure these properties in Details:

Property	Description
Mobile business object	The mobile business object with which the menu item is associated. Click **Search** to locate the mobile business object with which to associate the menu item.
Invoke parent update	No changes are made to the parent MBO, but the appropriate operations (create, update, delete) are performed on its descendants.
Invoke operation	Invoke the selected mobile business object operation with which the menu item is associated. Select the operation from the drop-down list. The list is populated when you select the mobile business object.
Invoke object query	Invoke the object query from the menu item. **Note:** The menu item must be the Submit type menu item and the communication style must be synchronous.

Configure these properties in Advanced:

Property	Description
Flow-specific username key	User name with which to connect when invoking this operation.
Flow-specific password key	User password with which to connect when invoking this operation.

5. Select **File > Save**.

Configuring Communication Style

Choose whether to make the submit action for the menu item synchronous or asynchronous.

1. In the Properties view for the menu item, select the **Communication Style** tab.
2. Select from the options:

Property	Description
Asynchronous	Validates the data input on all open screens, closes the application, and sends the data to the server. Enter the confirmation message to submit to the server.
Synchronous	Validates the data input on all open screens, saves it, send it to the server and waits for a response from the server before continuing. Enter: • Submit error message – enter the message the user sees if there is an error. When an operation is invoked, the user can receive any error messages that may occur on the client application. The error messages are a single key of the list type with a single key of the string type as its child. Each of the child instances corresponds to an error message. • Timeout – enter the allowed amount of time to wait for the server to respond before timing out and giving an error message. • Success screen – select the screen to go to upon successful communication with the server. • Error screen – select the screen to go to if there is an error when submitting the data to the server. Click **Generate Error Screen** to generate error screens automatically.

3. Select **File > Save**.

Creating a ListView Menu Item

Create and configure a Listview menu item.

1. In the Screen Design page, from the palette, click **Menuitem**, then click the Menu box.
2. Click the menu item to select it and configure the properties in the Properties view.
3. In the Properties view:

Property	Description
Name	Enter a valid name for the menu item.
Key	Select the key with which to bind the Listview menu item.
Default	Select to display the menu item prominently on the screen.
Type	Select one of these types: • Add Listview Row • Update Listview Row • Delete Listview Row

4. If the menu item is an operation associated with a mobile business object, configure these properties in Details.

Property	Description
Mobile business object	The mobile business object with which the menu item is associated. Click **Search** to locate the mobile business object with which to associate the menu item.
Operation	The mobile business object operation with which the menu item is associated. Select the operation from the list, which is populated when you select the mobile business object.
Parameter mapping	Parameter mapping for the selected operation is shown. Click **Edit** to edit the parameter mapping for the operation.
ListView	Select the Listview from the drop-down list.

5. Select **File > Save**.

Configuring Parameter Mappings
Configure mapping between parameters and keys.

Parameter mapping for the selected operation is shown in the Properties view.

1. In the Properties view for the menu item, select the **Parameters Mapping** tab.

2. Click **Add** to map a key to a parameter.

3. Select a key, and click **Edit** to edit mapping between a parameter and a key.

4. Select a key and click **Delete** to delete existing mapping between a key and a parameter.

Configuring Control Properties

Use the Properties page of any control to configure control properties.

1. On the Screen Design page, select the control for which to configure the properties. The configurable properties for the selected control appear in the Properties view.
2. Configure the properties for the control and select **File > Save**.

Checkbox Properties

Select the checkbox on the Screen Design page to view and configure its properties.

General control properties
These are general properties for most controls.

Property	Description
Label	This property applies to all controls except HtmlView and Listview. • Label – enter the text that describes the control on the user interface. • Label position – the position of the label in relation to the control it describes. **Note:** This attribute is not supported on Symbian devices.
Input data binding	• Key – the unique identifier within the scope of the widget, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.
Read only	This property applies to all controls except HtmlView and Listview. Select to make the control read-only.

Advanced
These are the advanced validation properties for the checkbox control.

Property	Description
Required	Specifies that submission is possible only when the checkbox is selected. A submission must have a value.
Validation message	Specifies the error message that appears to the user in case the input validation criteria do not match.

Editbox Properties

Select Editbox on the Screen Design page to view and configure its properties.

General control properties

These are general properties for most controls.

Property	Description
Label	This property applies to all controls except HtmlView and Listview. • Label – enter the text that describes the control on the user interface. • Label position – the position of the label in relation to the control it describes. **Note:** This attribute is not supported on Symbian devices.
Input data binding	• Key – the unique identifier within the scope of the widget, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.
Read only	This property applies to all controls except HtmlView and Listview. Select to make the control read-only.

Editbox general properties

These are the general properties that apply to the editbox control.

Property	Description
Password	If selected (set to true), text entered in the editbox is replaced with asterisks. The default is false.
Logical type	Select the logical type for the editbox: • TEXT • NUMERIC • DATE – uses absolute values or values relative to the current day using simple calculations in days, for example, "2008-05-24" "today" "today+1" "today-1." All values are expected to be in UTC. • DATETIME – uses absolute values or values relative to the current time or day using simple calculations in seconds, for example, "2008-05-24" or "2008-05-24T14:30:15" "today" "today +86400" or "today-86400." In "today+nnn," the nnn means seconds and "today" is interpreted as the current date time 12:00PM. • TIME – uses only absolute values, for example, "14:30" or "14:30:15." Valid values are 00:00:00 to 23.59:59. **Note:** The properties that you can configure depend on the logical type set for the editbox control. Some properties apply only to the numeric type, some apply only to the text type, and so on.

Advanced
These are the advanced properties that apply to the editbox.

Property	Description
Content size	• Maximum length – specify the maximum number of characters allowed for the control. • Number of lines – specify the number of lines for the control. • Number of decimals – specify the number of decimals (the number of digits after the decimal point—valid range is $0 – 28$) for a number. Valid only in conjunction with numeric attributes. The default is zero.
Validation	• Minimum value – specify the minimal value for numeric input. Valid only in conjunction with numeric attributes. • Maximum value – specify the maximum value for numeric input. Valid only in conjunction with numeric attributes. • Required – specify if user input is required. A value is required for submission. • Validation regular expression – if the user enters text in the control, the input has to comply to the provided regular expression. • Validation message – enter the error message the user sees in case the input validation criteria do not match.
Time precision	Specifies the precision of the time portion displayed to the user and calculations. **Note:** This property is used only if the editbox logical type is datetime or time.
Credential cache username	If the widget supports cached credentials, select to specify that the editbox be treated as a user name.
Credential cache password	If the widget supports cached credentials, select to specify that the editbox be treated as a password.

Choice Properties

Select the choice control on the Screen Design page to view and configure its properties.

General control properties

These are general properties for most controls.

Property	Description
Label	This property applies to all controls except HtmlView and Listview. • Label – enter the text that describes the control on the user interface. • Label position – the position of the label in relation to the control it describes. **Note:** This attribute is not supported on Symbian devices.
Input data binding	• Key – the unique identifier within the scope of the widget, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.
Read only	This property applies to all controls except HtmlView and Listview. Select to make the control read-only.

Choice general properties

These are the general properties that apply to the choice control.

Property	Description
Logical type	Select the logical type for the edit box from the drop-down list. Logical types include: • TEXT • NUMERIC **Note:** The properties that you can configure depend on the logical type set for the control. Some properties only apply to the numeric type and some only apply to the text type.

Property	Description
Options	• Static – the choice contents are static. Click **Add** to assign a display name and value pair to the choice item. • Dynamic – the choice contents are dynamic.

Advanced
These are the advanced properties that apply to the choice control.

Property	Description
Content size	Number of decimals – specify the number of decimals (the number of digits after the decimal point—valid range is 0 to 28) for a number. Only valid in conjunction with the numeric attributes. The default is zero. **Note:** This property is used only if the logical type for the choice control is set to numeric.
Validation required	• Required – specify if user input is required. A submission without a value is not possible. • Validation message – enter the error message displayed to the user in case the input validation criteria do not match.

Adding Choice Items to the Choice Control
Add choice items to the choice control.

1. In the General Properties view for the choice control, click **Add**.
2. In the Choice Option Item dialog, enter the Display Name and Value for the choice item, and click **OK**.

Property	Description
Display Name	Enter the name for the choice item as it will appear on the user interface.
Value	Enter the value for the choice item.

Editing Choice Items
Edit choice items for the choice control.

1. In the General Properties view for the choice control, select the choice control item to edit and click **Edit**.
2. In the Choice Option Item dialog, make the changes and click **OK**.

Property	Description
Display Name	Enter the name for the choice item as it will appear on the user interface.
Value	Enter the value for the choice item.

Deleting Choice Items
Delete choice items from the choice control.

1. In the General Properties view for the choice control, select the choice control item to delete.
2. Click **Delete**.

Creating Dynamic Contents for the Choice Control
Specify contents of the choice control dynamically.

1. In the Screen Design page, select the Choice item from **Palette > Controls** and drag it onto the screen.
2. In the General Properties view for the choice control, from the Options section, select **Dynamic**.
3. In **Value key**, enter the value for the key.
4. In **Display name key**, enter the value that the user will see on the device interface.

Note: The display name key and the value name key can be different or the same. The two keys must be children of a key that is a list type.

Slider Properties
Select the slider control on the Screen Design page to view and configure its properties.

General control properties
These are general properties for most controls.

Property	Description
Label	This property applies to all controls except HtmlView and Listview. • Label – enter the text that describes the control on the user interface. • Label position – the position of the label in relation to the control it describes. **Note:** This attribute is not supported on Symbian devices.
Input data binding	• Key – the unique identifier within the scope of the widget, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.
Read only	This property applies to all controls except HtmlView and Listview. Select to make the control read-only.

Slider control general properties
These are the general properties that apply to the slider control.

Table 5. Value constraints

Property	Description
Minimum value	Specify the minimum value.
Maximum value	Specify the maximum value.

Advanced
These are the advanced properties that apply to the slider control.

Property	Description
Validation message	Specifies the error message displayed to the user in case the input validation criteria do not match.

Signature Properties

Select the signature control on the Screen Design page to view and configure its properties.

Note: The signature control is not supported on Apple devices.

General control properties

These are general properties for most controls.

Property	Description
Label	This property applies to all controls except HtmlView and Listview. • Label – enter the text that describes the control on the user interface. • Label position – the position of the label in relation to the control it describes. **Note:** This attribute is not supported on Symbian devices.
Input data binding	• Key – the unique identifier within the scope of the widget, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.
Read only	This property applies to all controls except HtmlView and Listview. Select to make the control read-only.

Advanced

These are the advanced properties that apply to the signature control.

Property	Description
Validation Required	• Required – specify if user input is required. A submission without a value is not possible. • Validation message – enter the error message displayed to the user in case the input validation criteria do not match.

HtmlView Properties

Select the HtmlView control on the Screen Design page to view and configure its properties.

The HtmlView control fills the entire screen of a workflow form, so no other controls can be placed on a screen that hosts an HtmlView control.

Table 6. HtmlView control properties

Property	Description
Input data binding	• Key – the unique identifier within the scope of the workflow form, used when setting or retrieving a value. Click **New key** to create a new key for the control. • Default value – default value for the control.

Listview Properties

Select Listview on the Screen Design page to view and configure its properties.

General Listview properties

Property	Description
Input data binding	Select the key with which to bind the Listview control from the drop-down, or click **New key** to create a new key.
Alternate row color	Click **Color Picker** to select the color for the alternate rows in the list. You can also manually enter the value. The possible values are black, blue, brown, gray, green, orange, pink, purple, red, white, yellow, any string with the format #rrggbb, where rr, gg and bb are the hexadecimal values, in the range 0 to ff(255), for the red, green and blue. **Note:** The alternate row color attribute is supported on Windows Mobile devices only.
On empty list	The text that appears on the screen when the Listview is empty.
Listview details screen	Select the screen that will be opened when the user clicks a row.

Cells

Property	Description
Cell lines	The lines that appear in each row of the control. Click **Add** to add a new line. Select an existing line and click **Delete** to remove a line from the row.
Fields for	Click **Add** to create a new field. Click **Edit** to edit an existing field. Click **Delete** to delete an existing field.

Adding a Listview Field to a Line

Use the Properties view to add fields to Listview lines.

1. Select the **Listview** control to see the Properties view.
2. In Properties, in the left pane, click **Lines**.
3. In **Listview lines**, select the line for which to add the field.
4. In **Fields for** click **Add**.
5. In the Listview Field dialog:

Option	Description
Key	Select the key with which to associate the field.
Field width	Enter the field width. This value is a percentage, so the values entered should be between $1 - 100$ and add up to 100.
Font options	Select the appearance of the font: • Bold • Italics
Field format	Enter the field format. A standard format string contains a format specifier, which is an alphabetic character, for example, G, that defines the string that represents the object to which it is applied. **Note:** This attribute is supported only on Windows Mobile Platforms.

6. Click **OK**.

Editing a ListView Field

Edit ListView control fields in the Properties view.

1. Select the ListView control to see the Properties view.
2. In Properties, in the left pane, click **Lines**.
3. In Fields for ListView Line, select the line for which to edit the field and click **Edit**.
4. In the ListView Field dialog, make your changes and click **OK**.

Adding Connections to Screens

The Start icon appears on the Flow Design page, and its connection is attached to the first screen you add to the Flow Design. You can change the target to any screen in the Flow Design.

1. From the Flow Design Palette, select the connection you want to use:

   Note: Some connections cannot be explicitly created; they can only be implicitly created when creating or editing menu item properties.

Connection	Description
Go to	Specifies which screen the user goes to upon completing an action on the current screen, such as clicking OK or Next.
Operation success	Specifies which screen the user goes to upon successful completion of an operation.
Operation error	Specifies the screen that the user goes to automatically when an operation fails to execute.
Listview details	Specifies which screen to open when a row in a listview is clicked. Once on the details screen you can add, update, or delete rows from the listview.
Listview add	Specifies a screen that can be directly navigated to in order to add a new row to the listview.

2. In the Flow Design canvas, click the source screen and drag to connect it to the target screen.
   The connection line appears between the two screens.

Connections

Use connections to connect screens with actions in the Flow Design.

Connection actions describe the navigation direction the screen should go after the user performs an action, cancels an action, or uses a control. Alert actions use actions defined in the Flow Design.

Note: You can use only one connection of each type from a given source screen, except for the GoTo connection type. You can have as many GoTo connection types as you want to on a source screen.

Connection Properties

Use the Properties view for connections to configure the connection properties.

Select the connection on the Flow Design page to view its properties.

Property	Description
Routing	When a new connection is created, it uses the default style defined in the preferences settings. You can change the style of the connection line individually in the Properties view. • Styles: • Oblique – connection lines are not aligned with the horizontal or vertical axis, and you can create breakpoints any-where on the connection line. If you drag the connection line, a new breakpoint is created at the drag point and two lines are created. • Rectilinear – the connection line always remains either horizontal or vertical. • Tree – arranges the connection lines on the Flow Design in a tree structure. • Avoid obstructions – connection lines go around objects. • Closest distance – connection lines pass through objects to shorten the distance of the connection line.
Lines and arrows	

Property	Description
Smoothness	• None • Less • Normal • More

Jump links	• Status:
	  • None
	  • Below
	  • All
	  • Above
	• Type:
	  • Semicircle
	  • Chamfered
	  • Square
	• Reverse jump links

Localization

You can localize different objects in the Mobile Workflow Forms Editor, such as the names of screen controls, screens, and mobile business objects.

You can localize the mobile workflow by creating locale properties files. You can then load, update, and generate localized device applications.

You can create or update resource bundles for the Mobile Workflow Forms Editor using the resource keys in the locale properties file. The values for the resource keys are defined by the corresponding elements in the current Mobile Workflow Forms Editor. You can also upload specific locale resource bundles into the Mobile Workflow Forms Editor.

Some restrictions for the locale properties files apply:

• When you specify a country for the language, the basic language locale must also be available. For example, if you create a locale and specify English as the language and the United States as the country, then a locale for English (the basic language) must also be available.
• If you create a locale that specifies language, country, and variant, the locale for the basic language and the locale for the basic language and the country must be available. For example, if you create a locale and specify English as the language, United States as the country, and WIN as the variant, then English (United States) and English locales must also be available.

- The language code must be a 2-letter code, and the country code can be either a 2-letter or 3-letter code.
- If you specify a variant, the country code must be a 2-letter code.

All locale properties files are saved in the same directory as the device application.

When localizing the Mobile Workflow Forms Editor:

- Mobile workflow applications that have names that begin with numbers or special characters cannot be localized; you will receive an error when you generate the code. Make sure that any mobile workflow you want to localize does not have a file name that begins with a number or special character.
- If you manually localize the locale properties file using an external editor, you must make sure the file is encoded in ASCII, so that the content can be correctly read and converted to Unicode.

Creating a New Locale

Create a new locale with resource keys and values extracted from localizable strings in the current device application file.

When you create a new locale, keep in mind:

- When you specify a country for the language, the basic language locale must also be available. For example, if you create a locale and specify English as the language, then there must also be a locale for English (the basic language).
- If you create a locale that specifies language, country, and variant, the locale for the basic language and the locale for the basic language and the country must be available. For example, if you create a locale and specify English as the language, United States as the country, and WIN as the variant, then English (United States) and English locales must also be available.

1. In the Properties view, click **Localization** in the left pane.
2. In the Localization page, click **New**.
3. In the New Locale wizard:

Option	Description
Language	Select the language.
Country	Select the country.

Option	Description
Variant	Enter the variant, which is the vendor or browser-specific code. For example, enter "WIN" for Windows, "MAC" for Macintosh and "POSIX" for POSIX. If there are two variants, separate them with an underscore, and put the most important one first. For example, a Traditional Spanish collation might construct a locale with parameters for language, country, and variant as: "es", "ES", "Traditional_WIN".
Overwrite existing file	Overwrite an existing localization file.
Automatically create default locale	Automatically create the default locale properties file. For example, if you specify the language as "English" and the country as the "United States" for a device application called `test`, then both `test_en_uS.properties` and `test.properties` files are created. **Note:** BlackBerry devices require a default locale.

4. Click **Finish**.
   The properties file is created in the same directory as the device application file.

Editing a Locale Properties File

Use the Properties File Editor to edit the localization properties file.

1. In the Screen Design page Properties view, click **Localization**.
2. Select the locale to edit and click **Edit**.

   Note: If you use an external editor to manually edit the locale properties file, make sure the file is encoded in ASCII so that the content can be correctly read and converted to Unicode.

3. Make the changes to the file.
4. Select **File > Save**.

Updating the Current Locale

Update the currently loaded locale properties file with the resource keys from the current Mobile Workflow Designer.

If the locale properties file does not already exist, it is created. If the current locale is not defined in the mobile workflow application file, the updated locale is used as the default, and the file name is *{device_application}*.properties. Otherwise, the locale defined in the mobile workflow application file is updated.

1. In the Screen Design page Properties view, click **Localization**.
2. Click **Update**.

Removing a Locale

Remove locale properties files.

1. In the Screen Design page Properties view, click **Localization**.
2. Select the locale to remove and click **Remove**.
3. Click **Yes** to confirm the deletion.

Loading a Locale Properties File

Load a locale properties file.

1. In the Screen Design page Properties view, click **Localization**.
2. Select the locale properties to load and click **Load**.
    You see a message if there are missing resource keys.
3. (Optional) Click **Yes** to automatically fix the properties file.
    If you choose to not fix the locale properties file, loading does not continue.

    Loading the locale property file updates the current locale of the device application file.

Validating the Locale Properties Files

Validate locale properties files.

Validation verifies that all the resource keys for the current mobile workflow application file exist in the locale properties file.

1. In the Flow Design Properties view, click **Localization**.
2. Select the locale for which to validate the properties file, and click **Validate**.
    You see a message if there are missing resource keys.
3. (Optional) Click **Yes** to automatically fix the properties file.

Generating the Files For a Mobile Workflow Package

Use the Mobile Workflow Package Generation wizard to generate the files for the mobile workflow form, optionally deploy the generated workflow package files to the server, and assign it to one or more users' devices.

1. Right-click in either the Flow Design or Screen Design page of the Mobile Workflow Forms Editor and select **Generate Mobile Workflow Package**, or click the code generation icon 🖼️ on the toolbar.

2. In the Mobile Workflow Package Generation wizard, enter or select:

Option	Description
Favorite configurations	(Optional) Select a configuration.
Code Generation and Deployment	
Generation folder	Select the folder in which to save the `.zip` file containing the application and its generated files.
Deploy to an Unwired Server	Select to deploy the mobile workflow application to an Unwired Server.
Unwired Server Profile	Select the Unwired Server profile with which to associate the mobile workflow application and extract the username and password credentials if you are using static authentication.
Assign workflow to user(s)	The mobile workflow must be assigned to a device user before the mobile workflow is visible on the user's device. It can be assigned to multiple users. Separate multiple users with a comma. Device users must be registered in Sybase Control Center. Click **Get Users** to select device users from the list.
Deploy the Sybase messaging client to a connected Microsoft Windows Mobile device or emulator	Select to deploy the mobile workflow application to a Windows Mobile connected device or emulator. **Note:** This option requires Microsoft Active-Sync 4.5 (if you are using Windows XP) or Windows Mobile Device Center (Windows Vista) to be installed and connected.
Windows Mobile device type	Select the Mobile Windows device type from the drop-down list. • Windows Mobile Professional • Windows Mobile Standard
Perform silent install	Select to perform the deployment on the device without requiring user input.
Deployment timeout (minutes)	Enter the number of minutes allowed before the deployment times out.
Start Device Emulator Manager	Start the Device Emulator Manager. The Device Emulator Manager is used to connect and cradle the selected device.

3. (Optional) Click **Start Device Emulator Manager** to launch the Emulator Manager so you can connect to different Windows Mobile device types.

4. Click **Finish**.

   A `.zip` file containing the application and its generated files is created and placed in the specified location.

Configuring the Workflow Package in Sybase Control Center

After developing and generating the Workflow package, you can use Sybase Control Center to deploy the Workflow package, and to perform the configuration tasks required to make it available to application users on a messaging device.

The Workflow node in Sybase Control Center allows administrators to view deployed Workflow packages, including Workflow display name, module name, and module version. Administrators deploy Workflow packages into the Unwired Platform cluster through this node, as well as manage e-mail settings configuration.

Refer to the identified sections in *Sybase Control Center online help* to perform the following tasks:

- Deploying a Workflow Package: use the Deploy wizard to make workflow packages available on the Unwired Server. See *Sybase Control Center online help: Sybase Control Center > Configure > Configuring Unwired Platform > Workflows > Deploying a Workflow Package*.
- Configuring a Workflow Package (Optional): configure the package if you want the deployed package to have a different set of properties in a production environment. See *Sybase Control Center online help: Sybase Control Center > Configure > Configuring Unwired Platform > Workflows > Configuring a Workflow Package*.
- Registering and Setting Up Messaging Devices: You must manually register application users to messaging devices. Performing this configuration triggers the registration and device activation process, which thereby allows messaging MBOs to handle messages belonging to different datasources. See *Sybase Control Center online help: Sybase Control Center > Configure > Configuring Unwired Platform > Users > Devices > Messaging Devices >Registering and Setting Up Messaging Devices*.
- Assigning the Workflow Package to a User: You must assign the deployed Workflow package to a user. See *Sybase Control Center online help: Sybase Control Center > Configure > Configuring Unwired Platform > Workflows > Configuring a Workflow Package > Assigning and Unassigning Device Users*.
- Enabling and Configuring E-mail Settings: Configure the properties that allow Unwired Server to transform e-mail messages into Workflow notifications. See *Sybase Control Center online help: Sybase Control Center > Configure > Configuring Unwired Platform > Workflows > Enabling and Configuring E-mail Settings*.

Preparing Devices

To enable deploying Workflow packages to a device, you must download, install, and configure a Workflow container on the device.

Refer to the appropriate procedure for your device type.

Preparing iPhone Devices for the Workflow Package

Install the Mobile Workflow package on the device using the App Store, or use the sample Workflow container to deploy to the iPhone simulator from the Xcode project.

Installing the Mobile Workflow Package on the Device Using the Mobile Workflow Container Downloaded From App Store

Install the Mobile Workflow container from the iPhone App Store.

1. On the iPhone home page, tap **App Store**.
2. Search for **Sybase**.
3. When the Sybase Mobile Sales & Workflow application appears, tap **Free**.
4. Tap **Free** again on the Mobile Sales information page.
5. Tap **Install** to download the application.
6. In **Settings > Sybase**, for Connection Info, enter:

    a) In Connection Info, enter:
       - Server Name – your unwiredserver.company.com or your relayserver.company.com
       - Server Port – 5001 your Unwired Server port or relay server port
       - Farm ID – company ID, or Farm ID registered in the relay server
       - User name – the user name you entered for the device in Sybase Control Center
       - Activation Code – the activation code for the device

    b) In Sybase Features, turn the Mobile Workflow option to **On** and the Mobile Sales option to **Off**.
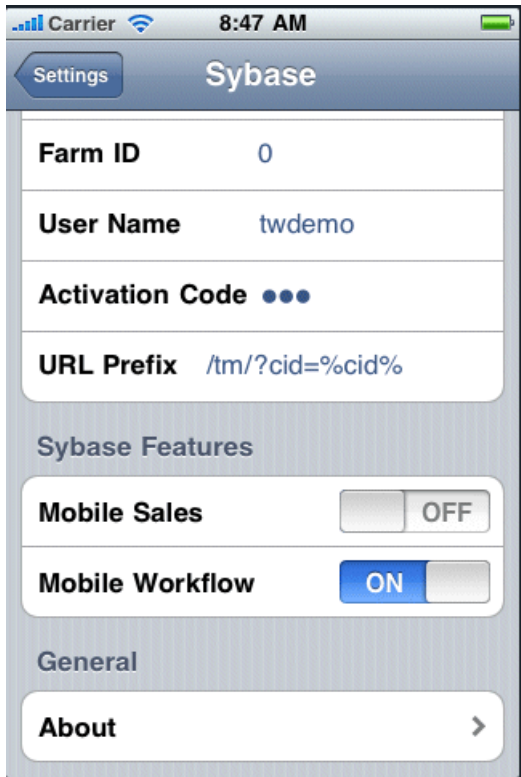
7. Scroll to the page that contains the **Sybase** icon, then tap to launch.
   The **Workflows** page appears.

8. To view the inbox e-mails, click the **Messages** Tab bar, then tap **Messages** to view the Workflows.

Deploying the Mobile Workflow Package to the iPhone Simulator

Deploy the Mobile Workflow package to an iPhone simulator for testing.

Prerequisites

- You must have a registered device user in Sybase Control Center to which to assign the mobile workflow. See the Sybase Control Center online help topic *Configure > Configuring Unwired Platform > Device Users > Devices > Messaging Devices*.
- You must have a Mac with iPhone SDK 3.1.3 installed.
- Generate the Mobile Workflow package.

The Workflow Container referenced in this procedure is a sample container. You can use Xcode to build your own customized user interface and configure other resources.

Task

1. Log into Sybase Control Center and assign the mobile workflow package to registered device users.

   See the Sybase Control Center online help topic *Configure > Configuring Unwired Platform > Mobile Workflows > Configuring a Mobile Workflow Package*.

2. Copy these directories from your Sybase Unwired Platform installation `%Sybase%\UnwiredPlatform\Servers\UnwiredServer\ClientAPI\ObjectiveC` to a location on your Mac:

   - `includes`
   - `libs`
   - `images`
   - `strings`
   - `WorkflowContainer`

   You can copy these files into whatever location you choose, but they should all be at the same directory level.

3. In the `WorkflowContainer` folder, unzip `WorkflowContainer-iPhone.zip` into the same directory level in which you copied the other folders.

   This creates a `SUPWorkflows` folder.

4. In the `images` folder unzip the `WorkflowImages.zip` file in its current location.

   It unzips as a `workflowimages` folder.

5. In the SUPWorkflowContainer folder, double-click **SUPWorkFlows.xcodeproj** so that it opens in the XCode IDE.

6. In XCode, select **Build > Build**.

   The project builds and the iPhone simulator starts.

7. In the Settings for the iPhone simulator, choose SUPWorkflows and verify the connection settings.

   The ServerNameSetting should be the name of the machine on which the mobile workflow package is deployed to Unwired Server.

8. In the iPhone applications screen, open the SUPWorkFlows applications.
   The deployed workflow package is shown in the SUPWorkFlows menu.

Preparing Windows Mobile Devices for the Mobile Workflow Package

Install and configure the container required to prepare a Windows Mobile device to run Mobile Workflow packages.

1. Navigate to `<UnwiredPlatform_InstallDir>\UnwiredPlatform \Servers\UnwiredServer\ClientAPI\MoMessaging\wm`.
2. Copy the appropriate Windows Mobile device file to the device's **My Documents** folder:
   - `SUPMessaging_Pro.cab` – for Pocket PC devices
   - `SUPMessaging_Std.cab` – for Smartphone devices
3. Cradle the Windows Mobile device.
4. Connect a USB cable between the PC and device, and transfer the .cab file.

5. Open the .cab file from the Windows Mobile device. This installs the container.

6. In the Connection screen, enter the connection settings. These settings should match the values you used when you registered the device in Sybase Control Center.

- Name/IP Address – your unwiredserver.company.com or your relayserver.company.com
- Host Port – 5001 your Unwired Server port or relay server port
- CompanyID –company ID, or Farm ID registered in the relay server
- User name – the user name you entered for the device in Sybase Control Center
- Activation Code – the activation code for the device

Note: Select the right arrow icon ( ) to view the container log. This is useful for checking the connection, or retrieving other debugging information.

7. Access your Microsoft Outlook inbox on the device. For example:

- On Windows Mobile Touch Screen devices, tap **Start** > **Messaging**, and then scroll to and tap Outlook Inbox.
- On Windows Mobile Non-touch Screen devices, click **Start** > **Messaging** on the Home screen. Scroll to a Outlook Inbox and press **ENTER**.

8. Select **Menu** > **Workflows**.

9. Select a workflow package from the list of available packages.

Preparing Symbian Devices for the Mobile Workflow Package

Install and configure the container required to prepare a Symbian device to run Mobile Workflow packages.

Prerequisites
You must have Nokia PC Suite or Nokia Ovi Suite installed on your computer. You can download both from *http://www.nokia.com*.

Task

1. Connect your Symbian device to your computer through a USB cable.

   Verify that the DataCable setting is set to "PC Suite."

2. Open Nokia PC or Ovi Suite.

3. In the Sybase Unwired Platform installation, navigate to the directory containing the Symbian . By default, that directory is `<UnwiredPlatform_InstallDir> \Servers\UnwiredServer\ClientAPI\MoMessaging\symbian`.

4. Drag and drop `SybaseMessaging.sis` into Nokia PC Suite. This copies the file to the device for installation.

5. To set up the Mobile Workflow container on Symbian, open **Sybase Settings** and select **Prefs > Connection**.

6. Enter these connection settings:

   - Name/IP Address – your unwiredserver.company.com or your relayserver.company.com
   - Host Port – 5001 your Unwired Server port or relay server port
   - CompanyID –company ID, or farm ID registered in the relay server
   - Connection – your WiFi connection or GPRS provider
   - User Name –device registered name with the Unwired Server
   - Activation Code – code entered when the device registers with Unwired Server.

   Note: Select the right arrow icon (⇨) to view the container log. This is useful for checking the connection, or retrieving other debugging information.

7. Select **Applications** > **Mobile Workflow** to view and select an available Mobile Workflow package.

   Note: To view a Mobile Workflow package with an e-mail subscription, select **Messaging** > **Inbox**.

Testing Mobile Workflow Packages

To test a Mobile Workflow package:

1. Launch and/or connect to the mobile device or emulator.
2. Deploy the Mobile Workflow package to the device.
3. Establish the connection to the server on the device.
4. For user-initiated Mobile Workflow packages, go to the Workflows menu of the e-mail inbox and click on the appropriate Workflow package.
5. For e-mail subscription Mobile Workflow packages, send the e-mail to the device, either automatically, for example, database trigger, or manually, through the Send E-mail dialog; then open that e-mail on the device.
6. Enter data and execute menu items appropriately.
7. Verify that the backend is updated correctly.
8. Check the logs.

Troubleshoot

Use troubleshooting tips to isolate and resolve common issues.

See *Troubleshooting Sybase Unwired Platform* for information about troubleshooting issues for Workflow package and other Sybase Unwired Platform components.

Troubleshoot

Index