SYBASE®

Release Bulletin

**Sybase Aleri Streaming Platform
3.1.11**

agencies.

Table of Contents

Chapter 1. Introduction

This document describes the new features, enhancements, and noteworthy bug fixes, along with known issues and limitations (including any backward compatibility issues) for Release 3.1.11 of the Sybase Aleri Streaming Platform. Please refer to the other documents described in Section 1.2, "Related Documents" for more in-depth information about the new features.

1.1. Package Contents

Release 3.1.11 contains:

- Sybase Aleri Streaming Platform software executables, scripts, utilities, libraries, and examples

- User Documentation (PDF format)

- Release Notes (this document in PDF format)

- Installation Guide (PDF format)

- Installation Tools: an `install.sh` shell script for UNIX® systems and a *package_name*`.exe` executable installation package for Microsoft Windows® systems

1.2. Related Documents

This guide is part of a set. The following list briefly describes each document in the set.

Product Overview	Introduces the Aleri Streaming Platform and related Aleri products.
Getting Started - the Aleri Studio	Provides the necessary information to start using the Aleri Studio for defining data models.
Release Bulletin	Describes the features, known issues and limitations of the latest Aleri Streaming Platform release.
Installation Guide	Provides instructions for installing and configuring the Streaming Processor and Aleri Studio, which collectively are called the Aleri Streaming Platform.
Authoring Guide	Provides detailed information about creating a data model in the Aleri Studio. Since this is a comprehensive guide, you should read the *Introduction to Data Modeling and the Aleri Studio*. first.
Authoring Reference	Provides detailed information about creating a data model for the Aleri Streaming Platform.
Guide to Programming Interfaces	Provides instructions and reference information for developers who want to use Aleri programming interfaces to create their own applications to work with the Aleri Streaming Platform.
	These interfaces include:
	- the Publish/Subscribe (Pub/Sub) Application Programming Interface (API) for Java
	- the Pub/Sub API for C++

- the Pub/Sub API for .NET

- a proprietary Command & Control interface

- an on-demand SQL query interface

Utilities Guide	Collects usage information (similar to UNIX® man pages) for all Aleri Streaming Platform command line tools.
Administrators Guide	Provides instructions for specific administrative tasks related to the Aleri Streaming Platform.
Introduction to Data Modeling and the Aleri Studio	Walks you through the process of building and testing an Aleri data model using the Aleri Studio.
SPLASH Tutorial	Introduces the SPLASH programming language and illustrates its capabilities through a series of examples.
Frequently Asked Questions	Answers some frequently asked questions about the Aleri Streaming Platform.

1.3. Upgrading From a Previous Release

If you are running Release 2.4.1 or earlier of the Sybase Aleri Streaming Platform for the Windows operating system, you should remove that version of the software before you install Release 3.1.11. If you are running Release 2.4.1b or higher, this is not necessary.

If you are running a previous release of the Sybase Aleri Streaming Platform on a UNIX® system, you can simply install Release 3.1.11. without first removing the earlier release.

1.4. Upgrading Data Model Files

The format of the data model files was changed between the 2.4 release and the 3.0 release.

The Aleri Studio will automatically upgrade any 2.x data model files when it reads them in. This is a one-way conversion; so if you want to preserve your 2.x data model files, you should make a copy before reading them into the Aleri Studio.

You can also manually upgrade data model files using the new **sp_upgrade** tool.

1.5. Building Pub/Sub Clients

Building client applications using the Pub/Sub API requires the following third-party tools:

- C++

  - Certified with GNU g++ compiler version 4.2.1 on Linux and Solaris.

  - Certified with Microsoft Visual C++ compiler 2005 on Windows.

  - The example makefiles for Linux and Solaris require GNU gmake version 3.80 in addition to the specified compiler.

- Java

  - Certified for use with Java version 1.5.0_06 or later.

- Includes scripts that start the Java Pub/Sub API examples using the Sybase-supplied Java version.

- To build the included examples, you also need ant 1.6.3 or later.

- .NET

  - Certified with Microsoft Visual C++ compiler 2005.

Chapter 2. Major Features and Fixes In Release 3.1.11

- Notwithstanding any references to the AleriRT for Microsoft Excel® component elsewhere in the documentation, AleriRT for Microsoft Excel® is not currently available with the Sybase Aleri Streaming Platform. Please contact your local Sybase support center to inquire about access to this component. The contact numbers can be found here: http://www.sybase.com/contacts/support.

- Placed the complete text of the licenses for all third-party open-source software used by the Sybase Aleri Streaming Platform in a `license` directory beneath the directory where the software is installed.

- Added a new document, *Notes on Third-Party Software*, that identifies each license and provides a pointer to the file containing the complete text of the license.

Chapter 3. Major Features and Fixes In Release 3.1.10

3.1. Aleri Studio

- The Sybase Aleri Streaming Platform can handle exceptionally wide streams, (for example, 20,000 columns per stream). You can now set preferences for the maximum number of children to display for an outline node, and maximum number of shape compartment items to display for a diagram shape. While these settings affect all parent-to-child relationships in the outline and diagrams, it is mostly to control the number of displayed columns for very wide streams.

For more information, see the *Authoring Guide*.

3.2. Utilities

- **sp_archive** has a new option, -W, which sets a base drain timeout period in milliseconds. The default value is 30 seconds.

For more information, see the *Utilities Guide*.

3.3. Fixes for Release 3.1.10

- The new version of the Oracle JDBC driver shipped with the Sybase Aleri Streaming Platform correctly converts datetime values.

- JDBC Input connectors, operating in polling mode, now attempt to reconnect if a connection is lost.

- Large expressions in models (for instance, involving many "and"s) no longer causes problems on startup.

- The Sybase Aleri Streaming Platform no longer halts when the "string" function and the SQL query interface are given large double values.

- Users can now set a preference to tune the redrawing of a diagram after a semantic change has occurred. Previously, any semantic change to the model would cause the user interface to draw elements and highlight errors on the shape.

- The **sp_upload** and **sp_playback** utilities now consistently honor the transaction block size passed using the -t option.

- When **sp_archive** fails to write to the database and exits, it now exits cleanly.

- The **sp_stream2olap** utility's memory consumption no longer grows when running with large data sets.

- Patterns with "and" in PatternStreams no longer produce too many matches.

- When an unrelated workbook is opened and closed in AleriRT, the connection to the Sybase Aleri Streaming Platform does not drop anymore.

Chapter 4. Major Features and Fixes In Release 3.1.9

4.1. Connectors

- The Inbound Sybase Aleri Streaming Platform connector now has a `Maximum Buffer Size` parameter that lets you control the subscription buffer size for slow subscriptions.

  See the *Authoring Reference Guide* for more information.

4.2. Gateway (Client Connections)

- The Sybase Aleri Streaming Platform has a new adjustable timeout for **XMLRPC** commands, so if a command hangs, other commands will time out and report the failure.

  For more information, see the *Utilities Guide*.

4.3. Log Store

- The new checkpointing count parameter, `ckcount`, now controls the maximum number of records inserted into the log store before metadata is written to disk. This new feature substantially improves the space usage efficiency of the log store.

- The new `reservePct` parameter allows you to set a free-space reserve size. The log store will keep this many bytes free, using it only during cleaning.

4.4. Enhanced Performance Monitoring

- The Sybase Aleri Streaming Platform now checks the values of environment variables `LC_ALL`, `LC_COLLATE` and `LANG` at startup. It either prints a log message at WARNING level if the settings will result in degraded performance due to unicode string comparisons or a message at DEBUG level indicating no such speed degradation will take place.

4.5. Security

- Role-based authorization with Kerberos authentication is now exclusively driven by the userID portion of the authentication identifier, userID@REALM.

  For more information, see the *Authoring Guide* and the *Administrators Guide*.

4.6. Fixes for Release 3.1.9

- You can make dynamic changes without deleting streams with running connectors.

- You can now use the log store and clustering at the same time without causing data corruption.

- The log store compaction now correctly interoperates with stream monitoring.

- The performance monitor no longer fails to change the amount of CPU reported.

- SQL client failures no longer cause other SQL client connections to be locked out.

- Streams no longer stop reading data when a subscriber does not keep up and is subsequently closed.

- Fatal errors no longer occur when restarting the Sybase Aleri Streaming Platform with a modified model, for example, when removing a stream from the model that had stored its content in a log store

- The Sybase Aleri Streaming Platform no longer fails when storing the same dictionary or vector in another dictionary or vector.

- **sp_subscribe** now shuts down properly when the `-S` and `-Q` flags are simultaneously used.

- The authentication system now works with a valid Kerberos authentication ID; previously, it would sometimes fail on the first attempt.

- The C++ Publish/Subscribe internal buffer resize no longer causes corruption.

Chapter 5. Major Features and Fixes In Release 3.1.8

5.1. Documentation

- The *Authoring Reference Guide* has a more detailed description of the "list" index type and search order for shared libraries on Windows.

- The description of `patindex` was enhanced with more details in the *Authoring Reference Guide* .

5.2. Publish/Subscribe

- Two new methods have been added to the Java Pub/Sub API to help resolve issues that arise when the Sybase Aleri Streaming Platform is running on a machine without Domain Name System (DNS) entries. These methods are:

  - `public void setGatewayHost(String host);`

  - `public String getGatewayHost();`

- The .NET Pub/Sub API library, pubsubnet.dll, now includes version information. The "ProductVersion" string contains the release version, and "FileVersion" has the revision build number.

  See the *Guide to Programming Interfaces* for more information.

5.3. Streams

- A new mergeKeys attribute allows Union Streams to handle inserts or deletes for the same keys from different input streams.

5.4. Utilities

- The command line utility **sp_stream2olap** provides the ability to migrate streaming data from the Sybase Aleri Streaming Platform to the V-OLAP system.

5.5. Fixes for Release 3.1.8

- The syslog mechanism can now be used with the Sybase Aleri Streaming Platform log without corrupting the process name field.

- The file names relative to the start directory with the Sybase Aleri Streaming Platform now work in the daemon mode in the same way as non-daemon mode.

- Combinations of SQL subscriptions with pulsing no longer cause fatal errors.

- More specific error messages are reported when there are type errors in Local or Global blocks.

- The `commons-codec-1.1.jar` has replaced the Java library `commons-codec-1.3.jar`, which is no longer being shipped.

- SQL subscriptions now wait to send new rows until after the base data has been sent.

- If an error occurs with one SQL statement in an ODBC/JDBC connection, the next query will be processed successfully.

- The `activemq-all-5.0.0.jar` Java class file was upgraded (in Release 3.1.7.) to `activemq-all-5.2.0.jar`.

- The `kdb_in.cnxml` file was renamed (in Release 3.1.7); it is now `kdbin.cnxml`.

Chapter 6. Major Features and Fixes In Release 3.1.7

6.1. Aleri Studio

- The new Selection Dialog for editing Connections and DataLocations displays DataLocations in a tree format.

- A new Playback File History feature allows you to add and remove items.

- You can now use copy and paste to save data from a Streamviewer window.

- The new *configFilename* connector parameter allows plug-in Adapter configuration files to be edited directly from within the Aleri Studio using a text editor.

See the *Authoring Guide* for more information about these new features.

6.2. Connectors

- There is a new framework to create and add custom user plug-in connectors in addition to the set included with the Sybase Aleri Streaming Platform. See the *Guide to Programming Interfaces* for more information.

- There are new plug-in connectors for ActivFinancial, IDC (Interactive Data Corp.), Reuters Marketfeed, Reuters Open Message Model (OMM), Tibco Rendezvous and HTTP.

  The new profile for the Reuters Marketfeed connector is `rmdsMFPlugin.cnxml`, and the Reuters OMM connector profile is `rmdsOMMPlugin.cnxml`. Earlier versions of these connector profiles were `rmdsinplugin.cnxml` and `omminplugin.cnxml`.

- ActivFinancial, Bloomberg, IDC, Reuters Marketfeed, Reuters OMM, and Wombat plug-in connectors now support discovery.

- The native kdb Input plug-in connector now supports two modes of operation:

  - streaming with kdb+tick

  - query with regular kdb

  It has also been enhanced to support discovery, polling and more complex K queries. Models built using the previous version of the Sybase Aleri Streaming Platform that included the connector need to be modified in order to use the newer version. See the *Authoring Reference Guide* for more specific information.

- Sybase Aleri Streaming Platform Output, Socket (As Client) CSV Output, Socket (As Server) CSV Output, Socket (As Client) XML Output and Socket (As Server) XML Output connectors can now be configured to send only base data (that is, to send no deltas after base).

- The SMTP Output Connector now supports CC and BCC for emails. You can also select the columns you want to be emailed.

- The Database Output connector has new rules for timestamp and date columns, making it easier for users to format date and time values.

- The Database Input connector has been enhanced to obtain input records from a user-specified SQL query or all rows in a user-specified table.

- The Database Output connector now supports batch updates for increased performance.

- The Sybase Aleri Streaming Platform Input connector now lets you set a maximum time allowed to absorb the base data for a stream with the new *Base Drain Timeout* parameter.

See the *Authoring Reference Guide* for more information about new connector features.

6.3. Documentation

- There is a new document, *Frequently Asked Questions,* that provides answers to many common questions about the Sybase Aleri Streaming Platform and related topics.

- A list of the Sybase Aleri Streaming Platform's error messages with descriptions is now available in the *Administrators Guide*.

6.4. Gateway (Client Connections)

- A new metadata stream, Aleri_Clients_Monitor, provides information about the performance of all currently active gateway client connections.

6.5. Publish/Subscribe

- Three new methods have been added to the .NET and CPP Pub/Sub API to publish data:

  - `publish()`

  - `publishtransaction()`

  - `publishenvelope()`

  These methods accept an extra *SpPlatformStatus* parameter.

- SQL subscribers can now use the full range of SQL available to on-demand queries, including group-by and order-by.

- The new sp_stream2olap Adapter is used to migrate streaming data from the Sybase Aleri Streaming Platform to the V-OLAP system.

6.6. SPLASH

- FlexStream can now be assigned to a Stateless Store; this can be used to save memory.

- Variable declarations can now occur anywhere inside curly braces in SPLASH.

- The new aggregate function, "count_distinct", can be used to count the number of distinct non-null values in a group.

6.7. Utilities

- **sp_cli**

- The new command, **wait quiesced**, causes the server to wait until all input data propagates through the model. New input is buffered until the propagation of data is completed. Afterward, the Sybase Aleri Streaming Platform resumes normal operation.

- The new **wait quiesced gateway** command causes the server to wait until all publishing clients disconnect and all received input fully propagates. This command essentially waits for the condition when the command **quiesced** returns 1. If any new clients send data while this command is waiting for the data to propagate, the data is buffered until the wait completes.

6.8. Fixes for Release 3.1.7

- Binary data received by the Sybase Aleri Streaming Platform server is now more closely validated. For example, data with the wrong byte order is detected and rejected.

- Trace lock is now consistent when resynchronizing a stream.

- Aggregated rows are now deleted with GroupFilter in Aggregate Streams when all incoming rows are taken out by the filter.

- CSV input connectors now correctly recognize the first empty field during discovery.

- The daemon mode now works correctly with subscriptions.

- The server is now more aggressive in searching for a join strategy in a Join Stream. In prior releases, the join algorithm was sensitive to the order of the input streams.

- In XML output from **sp_subscribe**, when the shine-through flag is set, the output records now have the form `<streamName ... ALERI_FLAGS='s' .../>` rather than `<streamName ... _FLAGS=shine .../>` to be consistent with **sp_convert**.

- The Dynamic services modification of streams with expiry now works correctly.

- Logging Fixes:

  - Error messages are now logged when the Sybase Aleri Streaming Platform exits with a registered finalizer.

  - If the Sybase Aleri Streaming Platform server stops with a fatal error, an attempt is now made to print more information about the thread in which the error occurred.

  - The specified authentication mechanism (PAM, Kerberos, RSA) is now reported when the server stops.

  - Streams that have duplicate columns are now detected and rejected by the Sybase Aleri Streaming Platform.

- SPLASH Fixes:

  - "Return" statements inside "switch" statements now produce correct results.

  - "Return" statements inside "for" loop over now do not cause the Sybase Aleri Streaming Platform server to deadlock.

  - The "replace" function now terminates properly if the second argument is the empty string.

  - A locally declared function using "for" loops over streams no longer causes fatal errors.

- Globally declared functions that manipulate records have been made thread-safe.

Chapter 7. Major Features and Fixes In Release 3.1.6

7.1. Aleri Studio

- Added the capability to specify the pulse interval in seconds, from 1 to 99, for a pulsed subscribe in Streamviewer.

7.2. Connectors

- Enhanced the robustness of the SMTP Output connector: added support for multiple recipients and re-send attempts (up to a user-specified number).

7.3. Fixes for Release 3.1.6

- Fixed a problem with **load_config** taking too long to report that the `nocompat` option is required by having it run the checks right away rather than waiting for the model to quiesce first.

- Fixed a problem with dynamic service modification of a running model causing a fatal exception.

- Eliminated the commas from numeric values greater than 999 when saving them from the Streamviewer to a CSV file in the Aleri Studio.

- Fixed a problem where a model appeared to be leaking memory until it hit the ulimit and terminated.

- Fixed a memory leak that affected the performance of the built-in JMS connectors.

- Fixed a problem with entering backspaces when editing long (>80 characters) commands after invoking **sp_cli** on a Solaris™ system.

- Fixed a problem with **sp_kdbin** not exiting cleanly when the connection to the Sybase Aleri Streaming Platform is dropped.

Chapter 8. Major Features and Fixes In Release 3.1.5

8.1. Fixes for Release 3.1.5

- This release fixes a problem with declaration of dictionaries and vectors within Method blocks leading to fatal Sybase Aleri Streaming Platform errors.

- This release resolves a problem with **sp_subscribe** taking snapshots of multiple tables.

- This release resolves the issue with **sp_upload** improperly handling data, such as XML or CSV, that is not binary.

Chapter 9. Major Features and Fixes In Release 3.1.4

9.1. Aleri Studio

- Two new gestures were added in the Outline view to make it easier to find streams in large models. Rather than bringing up the **context menu** and selecting **Show On Current Diagram**, you can use either of these gestures:

  - right-click **Stream Object**

  - double-click **Stream Object**.

- There is a new button in the Properties Window on the tool bar **Restore Default Value** that you can press to restore the property's defined default value in platform.xsd. If there isn't a defined default value, then the property is removed for the item, which means it won't be visible in the saved XML file.

9.2. Connectors

- There are new Coral8 Inbound and Outbound connectors to link the Sybase Aleri Streaming Platform with its Coral8 counterpart, C8 version 5.6.0 or higher. These connectors require installing a separate overlay available on the Sybase download web site.

- There is a new external connector to write streaming data to a kdb+ tick database.

- There is a new Reuters Marketfeed inbound plug-in connector.

- There is a new Reuters Open Message Model (OMM) inbound plug-in connector.

- JMS built-in connectors now support the Oracle Advanced Queuing (AQ) message broker.

- The JMS selector mechanism now supports message filtering at the server side.

- The stream-coded address of an email recipient is now enabled in the SMTP built-in connector.

For more information on connectors, see the *Authoring Reference*.

9.3. Dynamic Modifications

- Dynamic Stream modification now clearly marks when it starts and stops in all log levels.

- An incompatible change of a stream now leads to regeneration of the streams that depend on it, rather than all streams.

9.4. Publish/Subscribe

API

A new method to set the base drain timeout has been added to the Pub/Sub API.

sp_subscribe has a new parameter, $-W<limit>$ to set this base drain timeout value, where $<limit>$ is an unsigned integer that specifies a maximum timeout in milliseconds. If **sp_subscribe** cannot read all base data for the subscribe stream in $<limit>$ milliseconds, the connection between the Sybase Aleri

Streaming Platform and **sp_subscribe** will be closed. When *-W<limit>* is not specified, the default timeout is 8,000 ms or 8 seconds.

Utilities

The new *-q* parameter for **sp_archive** lets you set a subscription buffer size to an appropriate value to prevent the buffer from getting filled when data arrives in a burst.

For more information on the *-q* parameter, see the *Utilities Guide*.

9.5. Gateway (Client Connections)

- When a client is connected in lossy mode, if data is dropped, a message is immediately sent to the client indicating that data has been lost. This message is delivered only once to the client.

- The tracking of queue growth in the Gateway has been improved for subscribing clients. A log message is printed when any client's queue exceeds 99% of the configured capacity. A message is also printed if the queue size drops below 51% of capacity. Your logging level must be set at Warning Level (Level 4) or higher to receive these messages.

- The client's hostname and connecting port is now reported in a log message along with the client handle and thread ID when connecting to the Sybase Aleri Streaming Platform.

9.6. Security

- The restrictAccess attribute can now prevent specified users from accessing privileged XMLRPC commands. XMLRPC commands are available to all listed groups with any access type (control, query, publish, subscribe). SQL update, insert, and delete commands require both **query** and **publish** permissions.

  See the *Authoring Reference* for more details about the restrictAccess attribute.

- PAM authentication now takes into account a user's primary group listed in /etc/passwd, as well as the secondary groups.

9.7. SPLASH

You can now use hexadecimal or octal values to create escape sequences in SPLASH.

9.8. Fixes for Release 3.1.4

- The default value for expiry time is now set to 0, which fixes the problem of the Aleri Studio resetting it to an invalid value.

- A problem has been resolved involving **sp_cli** reading a snapshot with large envelopes.

- When doing discovery from a database connector or SybaseIQ database, connection handles are closed so that the maximum number of concurrent logins is not exhausted.

- If you are connecting to the Sybase Aleri Streaming Platform in droppable mode and a large amount of base data needs to be delivered to the client, the connection no longer drops during base data delivery.

- The Sybase Aleri Streaming Platform would sometimes hang if a client subscribed to a stream and, while reading the base data, it blocked or stopped reading. This problem has been rectified by imple-

menting a timeout for all clients to fully read the base data for a stream. Now the droppable mode only takes effect once base data is read and delta processing begins or the specified base drain timeout has been reached.

- You can now send an SQL statement greater than 4096 bytes to the Sybase Aleri Streaming Platform via the Sybase ODBC driver.

- A small memory leak in SQL queries was fixed.

- A problem converting the lowest possible negative money value (-922337203685477.5808 for a money precision of 4) to the string representation has been fixed.

- The Database Input Connector for kdb now returns NULL for a field value with an empty list, shown as (), in the kdb database.

- During data discovery, a minimal rowset for each table is now retrieved to determine the table's metadata and provide a few sample data values for the row. Previously, the data for the entire table was fetched, which led to long discovery times and high memory utilization.

- The function `ln` now returns the natural logarithm (logarithm base e) instead of logarithm base 2.

Chapter 10. Major Features and Fixes In Release 3.1.3

10.1. Connectors

- There is a new Bloomberg Plug-in connector to receive market data.

- There is a new Wombat Plug-in connector that receives real-time Level 1 and Level 2 market data.

- You can now create custom formats for the JMS connector.

- JMS connectors now support IBM MQ JMS brokers in addition to Glassfish OpenMQ and ActiveMQ brokers.

10.2. Aleri Studio

- A new user preference was added that allows you to start a Streamviewer subscription using pulsed subscribe.

- A new user preference was added to set the SQL Query Output for more than the current default of 25 characters.

10.3. Publish/Subscribe

API

A new option was added to explicitly specify the machine name on which the gateway server is running. If it is set by the user, API will ignore the value returned from the Sybase Aleri Streaming Platform. It is particularly useful when the Sybase Aleri Streaming Platform is running on a machine without Domain Name System (DNS) entries.

10.4. Documentation

A section on C++ Usage Restrictions was added to the *Guide to Programming Interfaces*

10.5. Fixes for Release 3.1.3

- Various memory leaks in the vector/dictionary in SPLASH (Streaming Platform LAnguage SHell) programming language were fixed.

- An issue with **sp_archive** generating an error on exit with Solaris® was resolved.

- If the connection to the Sybase Aleri Streaming Platform drops, **sp_kdbin** now exits cleanly on the next data tick from kdb.

- An issue with the "valueInserted" function, causing erroneous results in Aggregate streams, was fixed.

- An issue with the Expiry timer continuing if a record was deleted has been resolved.

- A memory leak in lossy subscription mode was fixed.

- In output statements, FlexStreams and PatternStreams now reject records with null key fields.

- Previously, **sp_archive** was only able to process INSERTS in a bulk mode before the first UPDATE/ DELETE was received. Now sp_archive can always process INSERTS in a bulk mode.

- Two issues with event caches were fixed: sorting where the sort field could be null and deletes sent to event caches with the coalesce option choosing the wrong bucket.

- An issue with "switch" statements with fall-through cases was fixed.

- A thread handle leak related to stream monitoring on Microsoft Windows® was fixed.

- A problem with referencing a FlexStream's record variable was fixed.

Chapter 11. Major Features and Fixes In Release 3.1.2

11.1. Connectors

- The Database input connector now sets the driver hint of setFetchSize to 128 records. It lets you read in large tables more efficiently for modern JDBC drivers that support use of this hint.

- A new driver has been included for the Microsoft SQL Server® database used with Database Input and Output connectors. It vastly improves performance and support for SQL Server's adaptive response buffering.

- There are new JMS Custom Format Input and Output connectors for handling Java object messages.

11.2. Publish/Subscribe

API

- SpSubscription has a new method to use for setting the size of the internal queue in the output gateway. This queue front ends the connected socket buffering data to be delivered to the client. The default queue size is 8192 records.

- SpSubscription now can be started with a SHINE flag that causes the Sybase Aleri Streaming Platform to deliver update records that contain only the fields that have changed since the last insert or update. Null values will appear in fields that haven't changed. This flag only affects update records as insert and delete records always contain all field values.

- SpPublication has a new method for setting the Sybase Aleri Streaming Platform to exit on a dropped publication connection. There is also a new method to drop the connection with slow data without a heartbeat message.

Utilities

- A new flag (-z queuesize) for **sp_subscribe** sets the internal queue size of the output gateway connection.

- A new flag (-R) for **sp_subscribe** which activates the SHINE function described above.

11.3. Fixes for Release 3.1.2

1. The sweepamount logstore parameter is now checked, and if necessary, forced to be between 5% and 20% of the store's maximum size (fullsize).

2. Solaris/SPARC systems would occasionally return an error from the pselect() system call, indicating it as a "success" error code. Because the XMLRPC library was not expecting this, it treated it as a fatal error and then crashed during the error handling. The fix specifically treats the "success error" condition as non-fatal and prevents the crash.

3. The problem with **sp_kdbin** not starting **sp-opt** successfully has been resolved.

4. The performance decrease in end-of-day jobs has been resolved.

5. The overhead in the establishment of the Command and Control connections has been reduced.

6. A few memory issues in SPLASH, particularly "for" loops over streams, have been resolved.

Chapter 12. Major Features and Fixes In Release 3.1.1

12.1. Connectors

- The FIX Plug-in is a new convenience connector for the FIX adapter that provides improved integration with the Sybase Aleri Streaming Platform.

- The Database In and Database Out connectors now support connections to PostgreSQL databases.

12.2. Studio

The Aleri Studio has been enhanced with a set of "templates." These templates can be used to ease the construction of data models that receive or send data to the FIX Plug-in connector.

12.3. SPLASH (Streaming Platform LAnguage SHell) Programming Language

- In SPLASH, switch statements can now take any base type values, including strings.

- A new SPLASH tutorial guide has been added to the documentation set to help users learn the embedded programming language.

- A new function `uniqueID`, for generating new int64 values, has been added to SPLASH.

12.4. Fixes for Release 3.1.1

1. Examples for the Java publish/subscribe API have separated into a file `examples.jar`.

2. A couple of problems have been resolved relating to startup with the kdb+ connector.

3. The -m flag to the Sybase Aleri Streaming Platform, to set a maximum memory size in megabytes, did not work with values over 4095; it has been fixed.

4. Dictionaries or vectors declared in a Local block, that themselves held dictionaries or vectors created via `new`, could cause the Sybase Aleri Streaming Platform to stop. That has been fixed.

5. The playback library, which includes the **sp_playback** tool and Aleri Studio, now supports the *safedelete* operation.

Chapter 13. Major Features and Fixes In Release 3.1

13.1. Security

The Sybase Aleri Streaming Platform can now be started with authentication checks provided by Kerberos V5 through the GSSAPI SASL mechanism. You also have the option of using RSA private/public key authentication or PAM authentication. The Sybase Aleri Streaming Platform ships with a GSSAPI SASL plug-in, but you can substitute your own version.

The following tools support Kerberos authentication:

• **sp_upload**

• **sp_subscribe**

• **sp_convert**

• **sp_archive**

• **sp_histexport**

• **sp_viewer**

• **sp_playback**

• **sp_kdbin**

• **sp_monitor**

• **sp_query**

The following also support Kerberos authentication:

• AleriRT for Microsoft Excel®

• Publish/subscribe APIs

• JDBC® driver for on-demand SQL queries into the Sybase Aleri Streaming Platform using the **sp_query** utility.

• Some external plug-in connectors, such Sybase®IQOut.

Pub/Sub examples have been modified to show Kerberos authentication.

13.2. SQL Enhancements

On-Demand SQL support used to be limited to "select", but now it also supports "insert", "update", and "delete" statements. You can use these statements to modify the content of source streams directly.

13.3. Stale Data Handling Enhancements

When a publishing source stops sending data to the Sybase Aleri Streaming Platform, the previously published data is retained. Depending on how long it has been since the last update, you may not want this data to be used as if it were current.

Two functions were added to the publish/subscribe APIs to enable publishers to handle this. One function specifies how long to wait before considering data "stale" and what to do when it is. The second function provides a method to keep the connection alive and prevent the first function from taking the prescribed action.

The "setFinalizer" function sets a timeout value (in milliseconds) and an SQL statement action. If the Sybase Aleri Streaming Platform receives no data on this connection within the specified time, the SQL statement is run. This SQL statement can perform any of the following actions:

- Delete previously published data.

- Mark previously published data as stale (via a field for that purpose in the data).

- Perform some other determined action on the source streams (and, consequently, the derived streams from these source streams).

The "sendHeartbeat" function sends a keep-alive message to the Sybase Aleri Streaming Platform. This function can be used to keep the connection alive and prevent the SQL statement from running, if "setFinalizer" has been previously called.

Pub/Sub examples now illustrate stale data handling.

13.4. kdb+ Connectivity

Connectivity and playback to kdb+ were enhanced to include the kdb+ datatypes "char" and "list of char."

13.5. Aleri Studio

Errors are now marked dynamically in tabbed editors (expression, splash, sql and scripts). Syntax checking will occur as you make changes inside the editor. And line numbering has been added to Aleri Studio text editors.

13.6. SPLASH (Streaming Platform LAnguage SHell) Programming Language

Two functions, "clear" and "empty", have been added to clear the contents of a dictionary and determine whether the dictionary is empty or not.

Variable declarations can now have multiple variables, (for example, int32 x,y;).

You can now get a matching value from a stream using { record }. This will return a record in the stream whose fields (not necessarily key fields) are equal to the fields in the specified record. If no such record exists, the result is null.

13.7. JMS Connectors/Glassfish OpenMQ

The following eight JMS connectors now support Glassfish OpenMQ brokers in addition to ActiveMQ brokers:

- JMS CSV Input

- JMS CSV Output

- JMS FIX Input

- JMS FIX Output

- JMS Object Array Input

- JMS Object Array Output

- JMS XML Input

- JMS XML Output

13.8. Fixes for Release 3.1

1. The Teradata® Output connector now works with Log Stores.

2. AleriRT for Microsoft Excel® 2007 now updates after a few minutes.

3. The problem of fatal errors has been resolved when AleriRT for Microsoft Excel® is closed with active publications or subscriptions.

4. In SPLASH:

   - A number of memory leaks and problems with functions have been fixed, including a problem with the CONTINUE statement not working inside of a "for" loop.

   - The problem with dictionary key of null records has been fixed.

   - There is added support for drive letter in path of foreign functions.

   - Run-time exceptions in Timers to FlexStreams are now handled properly.

Chapter 14. Major Features and Fixes In Release 3.0

14.1. Connectors

Connectors are data sources and sinks that you can configure directly from the Aleri Studio when authoring a data model. This makes it easy to connect to a variety of data sources (databases, files, JMS queues, and others). Many of these connectors support "discovery", or the ability to browse the data location directly in the Aleri Studio, identifying table, stream or file names and schemas. Before you drag the connector into the model to create a source stream for the data source, you can use the Data Location Explorer to look for this information. For those connectors that support discovery, you get the schema when you drag and drop the connector into the model.

Highlights of this new feature include:

- representation of data sources and sinks directly in the model

- discovery of data via a powerful and easy to use Data Location Explorer

- stream field mapping

- publisher start-up sequencing

- shared data templates that enable you to set up connection parameters once and use them many times

- auto-configuration of a source stream from a parameterized data location

Input connectors include:

- JDBC (one time and periodically polled) which can connect to Sybase Adaptive Server® (ASE), IBM DB2®, Oracle®, Netezza®, Kx Systems kdb+, Teradata®, and Microsoft SQL Server® databases

- XML file/socket

- CSV file/socket

- Sybase Aleri Streaming Platform

- JMS CSV/XML/Object Array/FIX

- FIX file/socket

- kdb+tick (streaming)

- simple external

Outbound connectors include:

- JDBC (continuous) which can connect to Sybase Adaptive Server® (ASE), IBM DB2®, Oracle®, Netezza®, Kx Systems kdb+, Teradata®, and Microsoft SQL Server® databases

- XML file/socket

- CSV file/socket

- Sybase Aleri Streaming Platform Output

- JMS CSV/XML/Object Array/FIX

- FIX file/socket

- Mail server (SMTP)

- Sybase® IQ™

- simple external

- Teradata® TPump access module

14.2. Enhanced Subscriptions

The following enhancements have been added to the subscription interface.

Lossy Subscription	A subscription started in "lossy" mode now sheds the oldest data when a client falls behind and the gateway queue is full. Thus, when the client does read gateway data, it is always the most recent data that the Sybase Aleri Streaming Platform has delivered to the output gateway.
Pulsed Subscription	This new subscription method lets a client ask the Sybase Aleri Streaming Platform to deliver changes periodically, in optimally coalesced blocks. This is useful when the data stream contains few items with a high volume of changes to them. One example is a subscription for three ticker symbols (with a pulse period of five seconds), and the Sybase Aleri Streaming Platform is generating thousands of updates to these tickers every second. The subscription would deliver at most one update record for each of the three symbols every five seconds.
Select/project before queuing	The SQL selection on subscription is now done as data is delivered to the output gateway from the Sybase Aleri Streaming Platform. This prevents data that does not pass the selection criteria from entering the gateway's subscription queue, which ensures the queue won't fill up unnecessarily.
Droppable Subscription	This new subscription method has the Sybase Aleri Streaming Platform drop the subscribed client when the client falls behind and the gateway queue fills up.
Preserve transaction blocks	This new subscription mode enables the client to receive transaction blocks as produced by the Sybase Aleri Streaming Platform, instead of transaction blocks grouped to use the communication channel efficiently.

14.3. Playback

The Playback feature lets you record in-flowing data to a playback file and play the captured data back into a running Sybase Aleri Streaming Platform instance. You can select the format of the playback file and control the rate of playback (even modifying the rate during playback).

You can use the Playback feature with the following data sources:

- Sybase ASE®

- ODBC®

- Teradata®

- kdb+

- Netezza®

14.4. Aleri Studio Changes and Enhancements

14.4.1. Connectivity Support

- Added the Data Location Explorer.

- Added the ability to discover table/stream schema from Data Locations.

- Added the ability to drag and drop discovered types (such as database tables and xml files) from Data Location Explorer to diagram to Create Source Streams.

- Added ability to Configure Connection Parameters on a stream.

14.4.2. Visual Authoring

- Upgraded to Eclipse 3.3.

- Enhanced and simplified stream authoring.

- Added visual confirmation of selecting a stream for connectors.

- Added verbose and iconic layout for all shapes.

- Added the ability to collapse/expand iconic or verbose layout.

- Added the ability to collapse/expand compartments.

- Added verbose shape to the toolbar and DropDown Menu for quick editing.

- Added double-click gesture to invoke default editing on shapes.

- Enabled user to pick the Advanced editor for expressions (dialog or full tabbed editor).

- Categorized properties in property browser by Basic and Advanced.

- Added support for new Pattern Stream and Extend Stream.

- Improved artwork and color palette for Aleri Studio shapes.

- Added the ability to show Streamviewer from stream authoring.

14.4.3. File Open and New

- Simplified File New Menu choices.

- Added automatic conversion of pre-3.0 models on File Open.

- Added automatic populating of diagrams when opening existing XML files.

14.4.4. Run-Test

- Simplified Run toolbar button to Run the current context (.notation model or .sql model).

- Added Run Options Dialog (replaces old Command View)

- Enhanced Streamviewer to get streams by pattern or show only selected streams.

- Enhanced Playback and Record to play back from more sources.

14.5. Stream Changes

- Added global and local variable declarations.

- Enabled users to write their own functions in SPLASH. (Functions replace the old Rule elements.)

- Added Source Stream, which replaces the old Auto and Base streams.

- Added Pattern Stream for pattern matching.

- Added Extend Stream for adding or overriding columns in an existing stream.

- Added the "permitKeyChange" attribute to Compute Stream to allow the user to have a different key from the input stream.

- Added a pattern matching feature that allows a user to detect patterns of events in one or more streams.

- Renamed the Aleri_Connections metadata stream to Aleri_Clients.

- Added a new metadata stream: Aleri_Connectors.

- Now sending monitoring data through the Aleri_Streams_Monitor metadata stream.

- FlexStreams can now have an optional Timer block. The Timer has an "interval" in seconds. A block of SPLASH code within is run every "interval" seconds. For example,

```
<Timer interval="10">
   print('Still alive!\n');
 </Timer>
```

will print "Still alive!" every ten seconds.

14.6. Aleri SQL Changes and Enhancements

- The SQL data types (for example, varchar, int, long, float and datetime) are no longer supported for consistency reasons. If your code uses these types, change them to the corresponding Sybase Aleri Streaming Platform types: string, int32, int64, double and date.

- Added support for dictionaries and vectors.

- Language extensions for new features (for example, Pattern Streams, event cache, Local and Global Variables and Functions, Connections and Connection Groups) have been added to SQL Authoring.

14.7. AleriML Changes and Enhancements

AleriML is the new name for the XML tags and structure defined in the Sybase schema.

- Eliminated tedium in both AleriML and Aleri Studio authoring.

- Expiring data function for eventCaches.

- Enabled AleriML files to preserve the formatting of expressions.

- Eliminated RowDefinitions; use "Column" within Source, Flex, and Pattern Streams, with automatic inference of column types.

- Automated the inference of keys when possible.

- Removed Aggregate Stream: <Group > expressions; use the expressions for the keys to do the group-by.

- Changed the name of RetentionWindow to InputWindow

- Removed RowLocalStorage in favor of simpler eventCache type (see below).

- Removed <LeftJoin> in favor of more general <Join> elements in the Join Stream.

- Added <Global> and <Local> block of variables and user-defined functions for Compute, Join, Aggregate, Flex, and Pattern Streams.

- Removed <Parameter> and added <Global> block of variables and user-defined functions (which can now be set from inside streams).

- Removed <Rule> and <Expr>.

- Removed Base and Auto Streams; replaced with Source Stream.

14.8. SPLASH Changes and Enhancements

- Added a data structure, "vector", which is a sequence of values, all of which must have the same type, with an ability to access elements of the sequence by an integer index.

- Added a new data structure, "dictionary", that associates keys to values. (It's an old and very familiar data structure: called maps in C++ and Java, arrays in AWK, and association lists in LISP.) You can declare a dictionary in a <Global> or <Local> block just like a vector.

- Added a new data structure, "xml", that allows for manipulation of XML data within a model. You can use the SQL/XML functions `xmlagg`, `xmlattribute`, `xmlconcat`, `xmlelement`, `xmlparse`, and `xmlserialize` to build and manipulate XML data.

- Added a new data structure, "eventCache", to replace RowLocalStorage.

- Added syntax for looking up records by key in streams (similar to dictionary syntax).

- Added getData function for SQL queries. This function takes an SQL query, and gets rows from a database table and puts them into a vector of records.

- Added user-defined SPLASH functions.

- Added `typedef` to define aliases for complicated type expressions.

- Added five new primitive functions.

stddev_samp(<value>)	compute the sample standard deviation
stddev_pop(<value>)	compute the population standard deviation
lwm_avg(<value>)	compute the linearly weighted moving average
valueInserted(<value>)	return the last value that was inserted
replace(<string>, <substring>, <new substring>)	replace substring with a new substring in the first string argument

- Added two assignment forms, `v := exp` and `v.field := exp`, that can be used as expressions. The return value is the new value of `v` or `v.field`.

- Added pre and post increment and decrement operations: `++v, v++, --v, v--` The return value is the new or old value of `v`.

- Replaced the "sequence" operator (for example, `sequence(v := 3, v+1)`) with a sequence of expressions, separated by semicolons, inside of parentheses (for example, `(v := 3; v+1)`).

- Added `switch` statement. You can write

```
switch (input.field) {
  case 0: ...
  case 1: ...
  default: ...
}
```

as in C/C++ and Java, to eliminate cascading `if` statements.

- Added a constant of type "money" consisting of a decimal number followed by a "d" or "D".

- Implemented automatic type-casting of records in assignments.

14.9. Documentation Changes and Enhancements

- Improved initial search and load time for online help.

- Improved hyperlinking within and between documents.

- Added a *Getting Started* guide.

- Added indexes to the *Authoring Guide* and *Authoring Reference Manual*.

14.10. Other Changes and Enhancements

- Red Hat Enterprise Linux 5 support

- Sybase® RAP integration (migration, playback, conditional model-based queries)

- Teradata® integration (migration, playback, conditional model-based queries)

- Ability to kill the Streaming Processor from the Aleri Studio if the user starts it with a bad username or password.

- Pub/Sub connections can be tagged with a user-readable name (see the `conn_tag` field in Aleri_Clients) using the Pub/Sub function `setName()` or the `-m` option to the **sp_upload** or **sp_subscribe** commands. This name can then be used with the **kill every** command from **sp_cli** to kill a client.

- Ability to flush stream data using the command line interface (**sp_cli**)

- This release implements a new format for log stores. Existing log stores will be automatically converted. Older versions of the Sybase Aleri Streaming Platform won't be able to read them after that.

- ODBC Connection resiliency has been added to the **sp_archive** utility. So now you can specify, for example, retry connection 5 times and wait 60 seconds between each retry.

- A new playback utility has been added, which is capable of loading data in a variety of formats such as ODBC, Teradata, Aleri XML, Aleri Delimited, Aleri Binary and Aleri Recorder. This utility is also capable of playing data at a fixed rate, such as N Rows/Second, or at a variable rate, depending on the value in a datetime/timestamp column in the input data.

- Regeneration on start-up or from dynamic changes is now done in the correct sequence.

- You can now use the attribute "secondary" within <Join> elements.

- You can now globally change the number of decimal digits (digits to the right of the decimal point) for the model in the <Platform> declaration. For example,

```
<Platform moneyPrecision="6">
```

Since the range of the "money" type is still governed by 64-bit arithmetic, having more digits to the right of the decimal point means you can have fewer digits to the left of the decimal point, and, therefore, a smaller range of values.

There are new API functions to retrieve this setting so that clients can appropriately scale the values.

Chapter 15. General Information

This chapter contains general information about the Sybase Aleri Streaming Platform. There is no new information for Release 3.1.10.

- Due to a known error in Eclipse versions prior to Release 3.5, displaying the online help for the Aleri Studio with Microsoft Internet Explorer® set as the default browser and its advanced settings enabled for script debugging can produce error messages such as the one below:

```
Object does not support this property or method
```

  If Internet Explorer is your default browser, you can use one of the following ways to avoid this situation:

  - Switch your default browser to Mozilla Firefox.

  - Make sure the following Internet Explorer options are set to checked:

    - **Disable script debugging** (Internet Explorer)

    - **Disable script debugging** (Other)

- You can use Sybase ASE, Netezza, and Teradata databases to send and receive data with Database input and output connectors, but you must first obtain the JDBC driver from the vendor to install for the Sybase Aleri Streaming Platform. For more information, refer to the *Administrators Guide*

Chapter 16. Known Issues and Limitations

- While `dictionary` and `vector` data structures can be defined globally, global use should be limited to reading them. Only one stream should write to a `dictionary` or `vector` data structure. Allowing multiple streams to write to the same data structure can result in server failure.

- StreamViewer only displays the first 300 columns, and Query Panel only displays the first 500 columns of a stream on Linux and UNIX operating systems.

- Manual input does not work with streams that have more than 200 columns.

- The Java adapter scripts do not work if an adapter is installed in a folder with a name that includes spaces. This applies if you are running the adapter from the Aleri Studio plug-in or command line.

- Values outside of the representable range of numeric types are silently truncated on input without printed error messages.

- AleriRT automatic publishing is not certified for Microsoft Excel® 2007. It will soon be certified in an upcoming release.

- Kerberos Authentication is not supported for:

  - The Teradata Output external connector

  - The ODBC driver

  - AleriRT when using Microsoft Excel 2003.

- If the Sybase Aleri Streaming Platform dies while **sp_playback** is playing back data, it does not stop the playback. Instead, it continues to try to publish the data and generates an error message for each record that fails (in this case - all of them).

- When using the JDBC connector for a Sybase® database it will only connect to the user's default database; even when another database is specified.

- There is an inconsistency between the Java and C++/C# Pub/Sub interface in how money type data is returned to the client. The Java interface returns the money type data as a double, C++/C# returns it as int64 with implied `precision = platform.getMoneyPrecision();`. To get a double value when using the C++/C# Pub/Sub interface the client needs to call

```
double platform.moneyToDouble( int64 money );
```

to convert the money value to a double. When publishing a money type value using the C++/C# Pub/Sub interface the client needs to call

```
int64 platform.doubleToMoney( double money );
```

to convert a double value to the Sybase Aleri Streaming Platform Money type.

- Data Location discovery to JDBC can take a long time to report "Connection errors" if network connectivity is disabled.

- The **sp_playback** tool for Teradata® sources works only from Microsoft Windows® 32-bit environments.

- Currently no validation is done on the SPLASH stream code in SQL Authoring when creating Pattern Views. The Sybase Aleri Streaming Platform will catch these errors during run time.

- In the Aleri Studio, when using a log store, no checks are done to ensure that the log store has the required file attribute set. If it is not set, the Sybase Aleri Streaming Platform fails with an error but does not provide any more details.

- To play back Sybase ODBC sources on Solaris® servers, you must set the buffer size to 1. This is a known issue with Sybase ODBC drivers for the Solaris operating system.

- The input and output JDBC connectors for kdb+ databases do not handle all of the datatypes that may be present in the databases. Both input and output connectors handle short, int, long, real, float, symbol, date, and datetime. They do not handle boolean, byte, char, month, minute, second, and time.

- The Sybase ASE, Netezza, and Teradata drivers required to use the Playback feature with those databases, are not distributed with the Sybase Aleri Streaming Platform. You must obtain the appropriate driver from the vendor. For more information on how to configure these databases with the Sybase Aleri Streaming Platform, refer to the *Administrators Guide*.

- Playback from kdb+ does not work on systems running the Solaris® x86 operating system.

- The outbound connector for the Teradata® TPump access module does not work across different architectures. For example, if the Teradata® database is running on a big-endian architecture such as a Sun Microsystems™ SPARC® server and the connector is run on a little- endian architecture such as an Intel® machine, or vice versa, the connector does not work.