



MSMQ Adapter Guide

Sybase CEP Option R4

DOCUMENT ID: DC01192-01-0400-01

LAST REVISED: March 2010

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Contents

- Introduction1
- Supported Platforms3
- Installation5
- Guaranteed Delivery7
- Properties9
 - MSMQ Receive Messages9
 - MSMQ Send Adapter10
- MSMQ Input Adapter Example11
- MSMQ Output Adapter Example13
- MSMQ GD Input Adapter Example15
- MSMQ GD Output Adapter Example17
- MSMQ GD Adapters Recovery Test19

Introduction

Microsoft Message Queuing (MSMQ) technology enables applications running at different times to communicate across heterogeneous networks and systems that may be temporarily offline. MSMQ provides efficient routing, security, and priority-based messaging. You can use it to implement solutions for both asynchronous and synchronous messaging scenarios.

Sybase® CEP provides two MSMQ adapters that enable you to send and receive messages from your Sybase CEP application using either UTF8 or Unicode:

- MSMQ Receive Adapter.
- MSMQ Send Adapter.

The MSMQ adapters send and receive messages represented by rows containing one or more columns. Each adapter is available in guaranteed delivery mode. Adapters in guaranteed delivery mode have a "GD" designation.

MSMQ and its adapters work only on Microsoft Windows platforms. You must install MSMQ on systems participating in MSMQ activity. While Sybase CEP strongly recommends using Active Directory, it is not required. If you are not using Active Directory, the Sybase CEP adapters can only communicate with private MSMQ queues.

Sybase CEP provides sample projects demonstrating how to use the MSMQ adapters in the Sybase CEP Repository directory, under `\examples\EnterpriseAdapters`.

Supported Platforms

The Sybase CEP adapters for Microsoft Message Queuing (MSMQ) are available on platforms and operating systems supported by the CEP R3 server.

Supported platform and operating systems:

Platform	Supported OS	Compiler	JDK Version
Windows (32-bit, 64-bit)	Windows 2003 Server (64-bit), XP Professional (32-bit, 64-bit)	MSDEV 2005 SP1	5.0 Update 12

Installation

Installing the Sybase CEP adapters involves unzipping or untarring the installation package and running an installation command.

The installation files for the Sybase CEP MSMQ adapters are provided on the adapter CD.

1. Ensure you have installed Sybase CEP server and Studio and the MSMQ software.
2. Locate the installation package, located at the root of the adapter CD, and copy this package to a temporary directory. Installation packages are named based on operating system. All packages begin with either **c8-server-msmq** or **c8-studio-msmq** and end in either **.tar.gz** or **.zip**. Ensure you select the appropriate package for your platform.
3. Run the appropriate command (depending on your operating system) to unpack the installation files.
4. Locate and run the installation scripts to perform the installation. The scripts are located in the target directory you selected when unpacking the installation files, under `SybaseC8/addon-installers/msmq`.
 - For UNIX, run **install-server.sh** and **install-studio.sh**.
 - For Windows, run **install-server.bat** and **install-studio.bat**.

Guaranteed Delivery

A guaranteed delivery (GD) system ensures that messages are processed exactly once, completely, in order, and with resiliency to failure. Sybase CEP provides GD functionality for MSMQ input and output adapters.

The GD mode MSMQ input adapter performs the following actions:

- Initializes a MSMQ transaction queue.
- Establishes a connection to Sybase CEP Engine with a unique session ID.
- Receives messages from the transaction queue; sends messages in a batch, each with a unique batch ID, and waits for acknowledgment of that batch from the subscriber.
- Uses transactions to commit or rollback queue operations:
 - If Sybase CEP Engine successfully receives the batch, commits the queue operations.
 - If Sybase CEP Engine does not receive the batch, performs rollback on the queue operations.
- In cases of connection failure, and CEP Engine crash and restart:
 - Detects a return after the failure and re-establishes the connection to Sybase CEP Engine with the same session ID.
 - If there are duplicate messages, skips and commits the messages.

The GD mode MSMQ output adapter performs the following actions:

- Initializes a MSMQ transaction queue.
- Establishes a connection to Sybase CEP Engine with a unique session ID.
- Subscribes to messages with unique batch IDs in Sybase CEP Engine, and sends messages to transaction queue.
- Uses transactions to commit or rollback queue operations:
 - If queue successfully receives the batch, commits the queue operations.
 - If queue does not receive the batch, performs rollback on the queue operations.
- Uses CEP persistence to store the messages with a unique batch ID.
- In cases of connection failure, and Sybase CEP Engine crash and restart:
 - Detects a return after the failure and re-establishes the connection to Sybase CEP Engine with the same session ID.
 - Restores messages from CEP persistence, and sends the messages to the transaction queue.

MS queues created with GD mode MSMQ adapters are transaction queues. You cannot reuse transaction queues with non-GD mode MSMQ adapters. You also can not reuse regular queues created with non-GD mode MSMQ adapters with the GD mode MSMQ adapters.

Guaranteed Delivery

Persistence in Sybase CEP does not support all crash scenarios. In some instances of Sybase CEP Engine crash and restart, duplicate messages are sent to an outsource application. The outsource application should filter the duplicate messages.

Guaranteed processing asks to confirm each input and output message in Sybase CEP Engine. As a result, guaranteed processing-enabled adapters have lower performance speed than adapters without guaranteed delivery enabled.

Properties

The following tables describe the MSMQ adapter properties.

MSMQ Receive Messages

Descriptions for MSMQ Receive Messages properties, including Queue Path Name, Unicode Strings, CSV Delimiters, CSV escape characters, CSV quote characters, and Perform CSV Trimming.

Property Name (screen)	Property Name (Attach Adapter)	Type	Description
Queue Path Name	QueuePathName	String	Name of the MSMQ queue. The queue is created if it does not already exist.
Unicode Strings	Unicode	Boolean	If true, the message is Unicode encoded, otherwise it is UTF8.
CSV Delimiters	CsvSeparators	String	Characters that separate fields in the input message. Defaults to a comma. You can specify multiple characters, each of which causes a field break. A separator character at the end of the string (followed by nothing) creates a NULL field.
CSV escape characters	CsvEscapeChars	String	Characters that escape the meaning of special characters. Defaults to a backslash. You can specify multiple characters.
CSV quote characters	CsvQuoteChars	String	Characters that delineate the contents of a field, which can contain anything except for a character matching the initial quote character. You can include the initial quote character if escaped. Default to a single quote and a double quote.
Perform CSV Trimming	CsvTrimming	Boolean	If true (the default), trims leading and trailing spaces from fields. When true, a field containing nothing but spaces between quote characters is interpreted as NULL.

MSMQ Send Adapter

Descriptions for MSMQ Send Adapter properties, including Queue Path Name, Unicode Strings, CSV Field Separator, CSV escape characters, and CSV quote characters.

Property Name (screen)	Property Name (Attach Adapter)	Type	Description
Queue Path Name	QueuePathName	String	Name of the MSMQ queue. The queue is created if it does not already exist.
Unicode Strings	Unicode	Boolean	If true, the message is Unicode encoded, otherwise it is UTF8.
CSV Field Separator	CsvSeparatorChar	String	The character that separates fields in the output message. Defaults to a comma. You can only specify a single character.
CSV escape characters	CsvEscapeChar	String	The character that escapes the meaning of special characters. Defaults to a backslash. You can only specify a single character.
CSV quote characters	CsvQuoteChar	String	The character that delineates a field. Defaults to a double quote.

MSMQ Input Adapter Example

Run this example to read messages from a Microsoft messaging queue and send the messages to a CSV file.

Locate the example file in `\examples\EnterpriseAdapters\MSMQInputAdapter`. Before you run the example, you may modify the MSMQ input adapter “`QUEUEPATHNAME`” property in CCL to match the environment.

MSMQ Output Adapter Example

Run this example to read messages from a CSV file and send the messages to a Microsoft messaging queue.

Locate the example file in `\examples\EnterpriseAdapters\MsmqOutputAdapter`. Before you run the example, you may modify the MSMQ output adapter “QUEUEPATHNAME” property in CCL to match the environment.

MSMQ GD Input Adapter Example

Run this example to read messages from a Microsoft translation queue and send the messages to a CSV file.

Locate the example file in `\examples\EnterpriseAdapters\MsmqGDInputAdapter`. Before you run the example, you may modify the MSMQ GD input adapter “QUEUEPATHNAME” property in CCL to match the environment.

MSMQ GD Output Adapter Example

Run this example to read messages from a CSV file and send the messages to a Microsoft translationqueue.

Locate the example file in `\examples\EnterpriseAdapters\MsmqGDOutputAdapter`. Before you run the example, you may modify the MSMQ GD output adapter “QUEUEPATHNAME” property in CCL to match the environment.

MSMQ GD Adapters Recovery Test

Run this example to test guaranteed delivery of MSMQ messages in the event of system crash.

Locate the example file in `\examples\EnterpriseAdapters\MsmqGDAdapter`.

In this example, the MSMQ GD input adapter reads messages from a Microsoft translation queue, and the MSMQ GD output adapter sends the messages to another Microsoft translation queue.

Before you run the example, you may modify the MSMQ input/output adapter “QUEUEPATHNAME” property in CCL to match the environment.

To complete the recovery test:

1. Prepare messages in one queue as the input data. You can use the "MSMQ Output GD Adapter example" to prepare the input data.
2. Crash and restart the CEP Server several times; each time you restart the Server, verify that no messages are lost. You can use the “MSMQ GD Input Adapter example” to complete verification.

