SeeBeyond™ eBusiness Integration Suite

e*Gate API Kit Developer's Guide

Release 4.5.3

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Chapter 1

Introduction

The e*Gate API Kit enables you to create custom applications or modify existing external applications to interface with the e*Gate system. The API Kit provides the following interfaces:

SeeBeyond Java Message Service (JMS)

- Java
- COM +
- C/C++, RPG

SeeBeyond Multiplexer (MUX) e*Way

- ActiveX
- C/C++
- COBOL
- Java

1.1 Overview

The e*Gate API Kit provides two distinct IQ delivery service mechanisms:

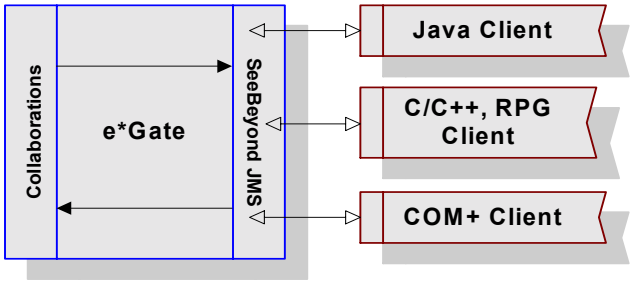
- SeeBeyond JMS
- Multiplexer e*Way

1.1.1. SeeBeyond JMS Functionality

The SeeBeyond implementation of JMS provides applications with an API set for a common and elegant programming model that is portable across messaging systems. Enterprise messaging systems are used to send notification of events and data between software applications.

The basic SeeBeyond JMS data flow is illustrated in **Figure 1 on page 29**.

Figure 1 Basic SeeBeyond Message Service Data Flow



Several common programming models are supported by the SeeBeyond JMS API, including the following:

- **Publish/subscribe (pub/sub)**
- **Point-to-point (P2P)**
- **Request/reply**
- **Message selector**

Each of these programming models are briefly described below.

Publish-and-Subscribe (Pub/Sub)

In a publish-and-subscribe scenario, one producer can send a single message to multiple consumers via a virtual channel called a *topic*. Consumers must *subscribe* to a topic to be able to receive it. Any messages addressed to a specific topic are delivered to all of that topic's consumers (*subscribers*).

The pub/sub model is predominantly a push-based model, in that messages are automatically broadcast to consumers without the consumers having to request or poll the topic for new messages.

Point-to-Point (P2P)

In point-to-point messaging systems, messages are routed to an individual consumer which maintains a *queue* of incoming messages. Messaging applications *send* messages to a specified queue, and clients *retrieve* messages from a queue. In a point-to-point scenarios, each message is delivered to exactly one client. JMS uses the term Queue for P2P MessageQueues.

Request/Reply

When the client sends a message and expects to receive a message in return, request/reply messaging (a synchronous object-messaging format) can be used. Request/reply uses either pub/sub or point-to-point to enable the functionality.

JMS does not explicitly support request/reply messaging, although it allows it in the context of the other methods.

Message Selector

Many messaging applications require the additional functionality of filtering and categorization of the messages they produce. If a message is sent to a single receiver, this can be done by including the criteria in the message. The receiving client can then discard the messages not required.

However, when a message must be distributed to many clients, the JMS provider can handle much of the filtering and routing (without impacting each client application) if the criteria is included in the message header.

Clients include application-specific selection criteria in messages via the message properties. Clients specify message selection criteria via JMS message selector expressions.

Additional Supported Resources

The SeeBeyond implementation of JMS supports certain external resources that you can use when developing your messaging systems, including:

- **Java Naming and Directory Interface (JNDI)**
- **Compensating Resource Manager**

These resources are described below.

Java Naming and Directory Interface (JNDI)

The Java Naming and Directory Interface (JNDI) provides naming and directory functionality to applications written using Java. JNDI consists of the following:

- **An API set**
- **A service provider interface (SPI)**

Java applications use the JNDI API to access naming and directory services. The SPI allows the naming and directory services to be accessed transparently, thus providing the JNDI API access to their services.

JNDI is included in the Java 2 SDK, v 1.3 and later releases. It is also available as a Java Standard Extension for use with JDK 1.1 and Java 2 SDK, v1.2.

To use the JNDI functionality, the JNDI classes are required, along with one or more service providers (such as, LDAP, CORBA, or RMI).

Compensating Resource Manager

The Compensating Resource Manager (CRM) provides support for distributed transaction with multiple resource managers. These COM+ objects perform non-database operations as part of a distributed transaction. A distributed transaction involves multiple independent resource managers. If any part of the transactions fail, the whole transaction fails.

Important: *CRM is only supported on Windows 2000.*

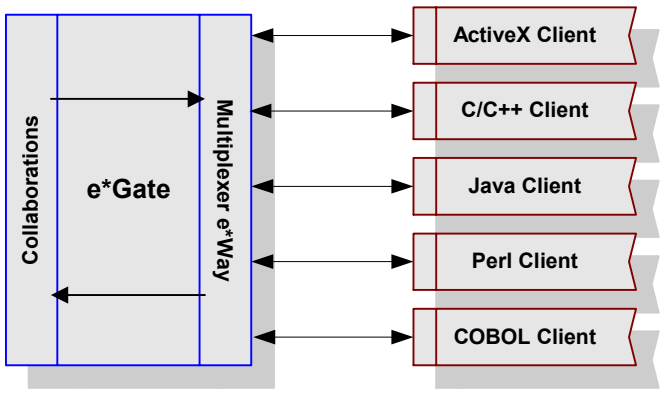
1.1.2. SeeBeyond Multiplexer e*Way Functionality

The multiplexer provides support for both synchronous and asynchronous data transfer. The end user also has the ability to perform real-time data queries and online transactions via back-office applications.

This back-end connectivity extends application, trading partner, and business process integration to the World Wide Web environment.

The multiplexer data flow is illustrated in Figure 2.

Figure 2 SeeBeyond Multiplexer Data Flow



The e*Gate API Kit Multiplexer supports three basic architectures:

- **Request/reply**
- **Send-only**
- **Receive**

Each architecture type is described below.

Request/Reply

In the request/reply architecture, data is sent to the e*Gate system and a response is returned, as follows:

1. A client submits data (a **request)** to the e*Gate system.
2. The e*Gate system processes the data as required.
3. The e*Gate system returns data (a **reply/response)** to the same external application that submitted the request.

The e*Gate API kit uses a multiplexing e*Way that uses a proprietary IP-based protocol to multi-thread Event exchange between the e*Way and external systems or other e*Gate components.

Send-Only

Send-only uses the same multiplexing e*Way component as request/reply. However, in this model, data is sent to the e*Gate system but no data is returned.

Receive

Receive, also known as Push-Port, uses the same multiplexing e*Way component. In this architecture, an external system connects to the e*Gate system and allows for the delivery of unsolicited Events from an external system.

1.2 Intended Reader

The reader of this guide is presumed to be a developer or system administrator responsible for maintaining the e*Gate system, and to possess the following:

- Expert-level knowledge of Windows and UNIX operations and administration
- Thorough familiarity with the programming and/or scripting language (C/C++, Java, Visual Basic, ASP, COBOL, RPG, or Perl) in which the client component is written
- Thorough familiarity with Windows-style GUI operations

1.3 Supported Operating Systems

The Java Message Service (JMS) APIs are available on the following operating systems:

- Windows XP
- Windows 2000, Windows 2000 SP1, Windows 2000 SP2, Windows 2000 SP3
- Windows NT 4.0 SP6a
- Solaris 2.6, 7, and 8
- AIX 4.3.3 and 5.1
- HP-UX 11.0 and HP-UX 11i
- Compaq *Tru64* UNIX V4.0F, V5.0A, and V5.1A
- Red Hat Linux (Intel only)
- OS/390 V2R10 client only
- z/OS 1.2, 1.3, and 1.4 client only
- AS/400 client only, at V5R1
- Japanese Windows XP

- Japanese Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Japanese Windows NT 4.0 SP6a
- Japanese Solaris 2.6, 7, and 8
- Japanese AIX 5.1
- Japanese HP-UX 11.0
- Korean Windows XP
- Korean Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Korean Windows NT 4.0 SP6a
- Korean Solaris 8
- Korean HP-UX 11.0
- Korean AIX 4.3.3

The Java Message Service COM+ APIs are available on the following operating systems:

- Windows XP
- Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Japanese Windows 2000, Windows 2000 SP1, Windows 2000 SP2, Windows 2000 SP3
- Korean Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3

The Multiplexer APIs are available on the following operating systems:

- Windows XP
- Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Windows NT 4 SP6a
- Solaris 2.6, 7, and 8
- AIX 4.3.3 and 5.1
- HP-UX 11 and HP-UX 11i
- Compaq *Tru64* V4.0F , V5.0A, and V5.1A
- Red Hat Linux (Intel only)
- OS/390 V2R10 client only
- z/OS 1.2, 1.3, 1.4 client only
- Japanese Windows XP
- Japanese Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Japanese Windows NT 4.0 SP6a

- Japanese Solaris 2.6, 7, and 8
- Japanese AIX 5.1
- Japanese HP-UX 11.0
- Korean Windows 2000, Windows 2000 SP1, Windows 2000 SP2, and Windows 2000 SP3
- Korean Windows NT 4.0 SP6a
- Korean Solaris 8
- Korean HP-UX 11.0
- Korean AIX 4.3.3

1.4 System Requirements

1.4.1. For Using Java Message Service APIs

To use the Java Message Service Java APIs, you need the following:

- A TCP/IP network connection
- Java: Version 1.3.0 or later
- A development environment with a compiler that is compatible with platforms supported by e*Gate; for example, Sun Java Compiler 1.3.0 or later.

1.4.2. For Using Java Message Service COM+ APIs

To use the Java Message Service COM+ APIs, you need the following:

- A TCP/IP network connection
- A development environment with a compiler that is compatible with platforms supported by e*Gate; for example, Microsoft Visual Basic on Windows NT or Windows 2000.

1.4.3. For Using Java Message Service C/C++ and RPG APIs

To use the Java Message Service for C/C++ and RPG with the UNIX, OS/390, z/OS, and the AS/400 samples included with this kit, you will need GNUMake. All of the samples were created using this program.

When creating executables, you will need to select option **-k** within GNUMake to assure that if any errors are encountered, the error will be skipped and the program will continue.

1.4.4. For Using Multiplexer e*Gate APIs

To use the Multiplexer e*Gate API Kit, you need the following:

- A TCP/IP network connection
- Java: Version 1.2.2 or later
- A client system capable of executing an application that uses the e*Gate multiplexer APIs. The requirements for the client applications are as follows:
  - C/C++ software program with a compiler that is compatible with the platform supported by e*Gate. For example:
    - Windows NT/Windows 2000: Microsoft Visual C++ 6.0
    - UNIX: C Compiler or Sun C++
- Visual Basic or other application capable of using ActiveX components: The e*Gate libraries **stdole32.tlb** and **stdole2.tlb** must be installed on the client system. ActiveX support is available under Windows operating systems only.
- Perl: The following Perl libraries are supported:

OS	Perl
AIX	5.005_03 patch level ML10
HP-UX 11	5.005_03 patch level March 2002 Quality Pack
HP-UX 11i	5.005_03 patch level June 2002 Gold Base
Solaris	5.005_03 J2SE(5/22/02) Recommended (5/8/2002) 105181-31
Red Hat Linux	5.005_03 patch level None
Compaq *Tru64*	5.003_03 with patch level DUV40FB18AS0007-20020102
Windows NT/2000	5.003_03

HP-UX clients also require that the Perl executable must be linked against the p-thread library (using the flag **-lpthread**) when it is built.

The above versions are the only versions that are officially supported and tested.

Note: *With the many compilers available, it is possible that some will not be compatible with the e*Gate environment.*

1.5 OS/390 and z/OS System Requirements

OS/390 and z/OS system requirements and installation procedures are covered in the *e*Gate Integrator Installation Guide*.

OS/390 and z/OS systems use the EBCDIC character set. As a consequence, ASCII-based systems cannot directly transport data to an EBCDIC-based system. ASCII to EBCDIC data conversion is necessary when data is sent from UNIX or Windows to OS/390. This data conversion should take place within a Collaboration.

To transport any EBCDIC data to an ASCII-based system (UNIX or Windows), you must first convert the data by using the ebcdic->ascii Monk function. Refer to the *Monk Developer's Reference Guide* for details about this function.

- IBM OS/390 or z/OS or equivalent hardware
- Physical access CD-ROM
- TCP/IP connectivity
- Appropriate terminal for access to system

1.6 External System Requirements for OS/390

1.6.1. For Using CICS

To enable the e*Way to communicate properly with the Server system, the following are required:

- Cobol for OS/390 compiler must be available for use in the OS/390 Language Environment (LE), with the CICS TCP/IP socket elements available for inclusion in the link step. A DD statement pointing to the socket library should be added to the compile procedure (usually DFHYITVL).

  See below for a link to the IP CICS Sockets manual, which describes setup procedures:

  http://www-1.ibm.com/servers/s390/os390/bkserv/r10pdf/secureway.html

Select book SC31-8518-01 to access the *IP CICS Sockets Guide*. This book explains the setup of TCP/IP Sockets for CICS, which is a requirement for the Cobol component of the e*Gate API Kit to function properly.

- OS/390 V2R10
- Security package - install script RACF - ready
- CICS TS 1.x or higher
- CICS TCP/IP socket interface must be installed and configuration for each region in which the Cobol API will be run.
- COBOL for OS/390
- Optional - UNIX System Services (VSS) installed, configured, and operational.

1.6.2. For Using IMS

To enable the e*Way to communicate properly with the Server system, the following are required:

- Cobol for OS/390 compiler must be available for use in the OS/390 Language Environment (LE), with the MVS TCP/IP socket elements available for inclusion in

the link step. A DD statement pointing to the socket library should be added to the compile procedure.

For additional information, consult the IBM website, document number SG24-5229-01, *"OS/390 eNetwork Communications Server TCP/IP Implementation Guide, Volume 3: MVS Applications"*

This book explains the setup of TCP/IP Sockets for MVS, which is a requirement for the IMS and Batch Cobol components of the e*Gate API Kit to function properly.

- OS/390 V2R10
- Security package - install script RACF - ready
- IMS 6.1 or higher
- MVS TCP/IP socket interface must be installed, configured, and operational
- COBOL for OS/390
- Optional - Open Multiple Virtual System (OMVS) installed, configured, and operational.

1.6.3. For Using Batch

To enable the e*Way to communicate properly with the Server system, the following are required:

- Cobol for OS/390 compiler must be available for use in the OS/390 Language Environment (LE), with the MVS TCP/IP socket elements available for inclusion in the link step. A DD statement pointing to the socket library should be added to the compile procedure.

For additional information, consult the IBM Web site, document number SG24-5229-01, *"OS/390 eNetwork Communications Server TCP/IP Implementation Guide, Volume 3: MVS Applications"*

Note: *This book explains the setup of TCP/IP Sockets for MVS, which is a requirement for the IMS and Batch Cobol components of the e*Gate API Kit to function properly.*

- OS/390 V2R10
- Security package - install script RACF - ready
- MVS TCP/IP socket interface must be installed, configured, and operational
- COBOL for OS/390
- Optional - Open Multiple Virtual System (OMVS) installed, configured, and operational.

Chapter 2

Installing the e*Gate API Kit

This chapter describes the procedures necessary to install the e*Gate API Kit from the e*Gate installation CD-ROM. The following platform types are discussed:

For a list of the files the e*Gate API Kit will install on your system, see **"Directories and Files Created by the Installation" on page 46**.

After the product is installed, you must customize it to execute your site-specific business logic and to interact with your other systems as required.

Supporting Documents

Along with the *e*Gate API Kit User's Guide*, the following documents may prove useful to you.

- *e*Gate Integrator Installation Guide*
- *e*Gate Integrator System Administration and Operations Guide*
- *e*Gate Integrator User's Guide*
- *SeeBeyond JMS Intelligent Queue User's Guide*
- The **Readme.txt** file on the e*Gate installation CD-ROM.

2.1 Installing the e*Gate API Kit on Windows

Note that you must have Administrator privileges to successfully install e*Gate, and that the e*Gate API Kit can only be installed after successfully completing the installation of the e*Gate Registry Host. For more information about installing the Registry Host, see the *e*Gate Integrator Installation Guide*.

2.1.1. To install the e*Gate API Kit

1 Log in as an Administrator on the workstation on which you want to install the Kit.

2 Exit all Windows programs, including any anti-virus applications.

3 Insert the e*Way installation CD-ROM into the CD-ROM drive.

If the CD-ROM drive's **Autorun** feature is enabled, the setup application should launch automatically, and you can skip ahead to step 4. Otherwise, use Windows Explorer (or the Control Panel's **Add/Remove Applications** feature) to launch the file **setup.exe** on the CD-ROM drive.

The InstallShield setup application launches.

4 When the **Select Components** dialog box appears, click the **Change** button. Then, in the **Select Sub-components** dialog box, select **e*Gate API Kit**.

5 Follow the on-screen instructions to install the Kit.

Note that the InstallShield program detects and suggests the appropriate **client** installation directory. **Unless you are directed to do so by SeeBeyond support personnel, do not change the suggested installation directory setting.**

6 From the **Addons** directory located on the e*Gate installation CD-ROM, navigate to the **ewmux** folder.

7 From the **ewmux** folder, select the **eGate_API_win32.taz** file. Expand the file.

8 Extract these files to the computer that you have installed the e*Gate API Kit and plan to build your application on.

9 If you are running your application from another directory other than where the .dlls reside, you will need to prepend your path to point to the directory that you have extracted your .dlls to, e.g. path c:\mydlls\debug;%path%.

For a list of items installed on the Participating Host machine and committed to the Registry Host, see **"Directories and Files Created by the Installation" on page 46**.

2.2 Installing the e*Gate API Kit on UNIX

2.2.1. Pre-installation

Before installing the e*Way on your UNIX system, please read the following sections to ensure a smooth and error-free installation.

You will need non-root user access to begin the e*Gate installation.

2.2.2. Installing the e*Gate API Kit

To install the e*Gate API Kit on a UNIX system

1 Log in to the workstation containing the CD-ROM drive and insert the CD-ROM into the drive.

2 If necessary, mount the CD-ROM drive.

3 At the shell prompt, type

```
cd  /cdrom
```

4 Start the installation script by typing:

```
setup.sh
```

5 Follow the prompts to accept user license information and so forth.

6 A menu of options opens. Enter the number corresponding to the "e*Gate Add-on Applications" option (1). Then, follow any additional on-screen directions.

7 Enter the number corresponding to "eWays" (1)

8 Enter the number corresponding to the "e*Gate API Kit" (number may vary).

9 Be sure to install support for any additional platform support.

Be sure to install the e*Way files in the suggested **client** installation directory. The installation utility detects and suggests the appropriate installation directory.

Caution: *Unless you are directed to do so by SeeBeyond support personnel, do not change the suggested* ***installation directory*** *setting.*

10 From the **Addons** directory located on the e*Gate installation CD-ROM, navigate to the **ewmux** folder.

11 From the **ewmux** folder, select the **eGate_API_*xxx*.taz** file where xxx is the name of your operating system. Expand the file.

12 Extract these files to the computer that you have installed the e*Gate API Kit and plan to build your application on.

13 If you are running your application from another directory other than where the .dlls reside, you will need to prepend your path to point to the directory that you have extracted your .dlls to, e.g. path /mydlls/debug;%path%.

14 Add execute permissions to the extracted .dlls and .jar files, e.g. **stc_ewipmpclnt.dll**.

For a list of items installed on the Participating Host machine and committed to the Registry Host, see **"Directories and Files Created by the Installation" on page 46**.

2.3 Installing the e*Gate API Kit Connecting to an OS/400

Note: *To install the API Kit on your AS/400 system, you must be able to sign on as the security officer.*

2.3.1. Pre-installation

To verify prerequisite software

1 From the **Command Entry** screen, enter:

```
go licpgm
```

2 From the **Work with Licensed Programs** screen, enter:

```
10
```

3 In the **Display Installed Licensed Programs** screen, press F11 and verify that *both* of the following are installed:

- 5722SS1 at V5R1, *BASE option: Operating System/400.
- 5722WDS at V5R1, *BASE option: WebSphere Development ToolSet.

4 In the **Display Installed Licensed Programs** screen, press F11 and verify that *at least one* of the following Integrated Language Environment (ILE) programs is installed:

- 5722WDS, option 31: Compiler - ILE RPG IV
- 5722WDS, option 41: Compiler - ILE COBOL.
- 5722WDS, option 51: Compiler - ILE C.
- 5722WDS, option 52: Compiler - ILE C++. (Note that this product option requires 5722SS1, option 33: OS/400 - Portable App Solutions Environment.)

5 When you have verified the prerequisites, press F3 to exit.

2.3.2. Installing the e*Gate API Kit

To install the e*Gate C API for JMS on an AS/400 system

1 If you have not already done so, sign on to the AS/400 system as the security officer.

2 Insert the CD-ROM into a drive and enter the following command to load the code and samples, replacing *OPT01* with the name of the drive:

```
rstlib savlib(egateinst) dev(OPT01)
```

3 Enter the following command to run the install program:

```
call pgm(egateinst/install)
```

The install program (EGATEINST/INSTALL) should end with the following message:

```
e*Gate API Kit successfully installed
```

4 If you do not receive the "successfully installed" message, issue the **dspjoblog** command and check the job log for errors that occurred during installation.

5 Take any necessary corrective actions and repeat from step 3.

To verify the installation

- Issue the following commands:

```
dsplib egateapi
dsplib egatesamp
```

The **Display Library** screen lists the content of each library.

If the libraries exist, and if no error messages were sent during the installation process, then the installation has completed successfully.

For a list of libraries and objects installed, see Table 1.

Table 1 Libraries and Objects Installed to the AS/400 System

Library/Object	Type
EGATEAPI/MSAPI	*SRVPGM (CPPLE)
EGATEAPI/MSCAPI	*SRVPGM (CPPLE)
EGATEAPI/MSCLIENT	*SRVPGM (CPPLE)
EGATEAPI/MSCOMMON	*SRVPGM
EGATEAPI/MSRPGAPI	*SRVPGM (CPPLE)
EGATEAPI/JMSMSGF	*MSGF
EGATESAMP/JMSDEMO	*PGM
EGATESAMP/MAKE	*PGM
EGATESAMP/JMSDEMO	*MODULE
EGATESAMP/JMSUTILS	*MODULE
EGATESAMP/H	*FILE
EGATESAMP/QCLSRC	*FILE
EGATESAMP/QCMDSRC	*FILE
EGATESAMP/QCPPSRC	*FILE
EGATESAMP/QCSRC	*FILE
EGATESAMP/QRPGLESRC	*FILE
EGATESAMP/JMSDEMO	*CMD

2.4 Installing the e*Gate API Kit on an OS/390 or z/OS

2.4.1. Installing from Tape

Submit the following JCL to copy the **STC.RESTORE.JCL** file to disk changing the JCL as required for your installation rules.

```
//JOB Card
//*****************************************************************
//* COPY e*Gate RESTORE JCL FROM TAPE
//*****************************************************************
//IEBGENER EXEC PGM=IEBGENER
//SYSPRINT DD   SYSOUT=*
//SYSUT1   DD   DISP=OLD,DSN=STC.RESTORE.JCL,,VOL=SER=STC390,
//              LABEL=(1,SL),UNIT=TAPE
//SYSUT2   DD   DISP=(NEW,KEEP),
//              DSN=custpfx.STC.RESTORE.JCL,
//              UNIT=SYSDA,SPACE=(TRK,(1,1)),
//              DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
//SYSIN    DD   DUMMY
```

To copy the load libraries to disk, modify and submit the following JCL (as provided in **STC.RESTORE.JCL**):

```
// JOB CARD
//* CHANGE &TAPEUNIT TO THE NAME OR DEVICE NUMBER OF YOUR TAPE DRIVE
//IEBCOPY  EXEC PGM=IEBCOPY
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  DUMMY
//*************************************************************
//* COPY MUX OBJECT FILES TO DISK
//*************************************************************
//INOBJ    DD  DSN=STC.MUX.OBJECT,DISP=OLD,UNIT=&TAPEUNIT,
//             VOL=(,RETAIN,SER=STC390),LABEL=(2,SL)
//OUTOBJ   DD  DSN=&PREFIX..STC.MUX.OBJECT,
//             DISP=(NEW,CATLG,DELETE),
//             UNIT=SYSDA,
//             SPACE=(TRK,(45,15,10),RLSE)
//*************************************************************
//* COPY MUX JCL LIBRARY TO DISK
//*************************************************************
//INJCL    DD  DSN=STC.MUX.JCL,DISP=OLD,UNIT=&TAPEUNIT,
//             VOL=(,RETAIN,SER=STC390),LABEL=(3,SL)
//OUTJCL   DD  DSN=&PREFIX..STC.MUX.JCL,
//             DISP=(NEW,CATLG,DELETE),
//             UNIT=SYSDA,
//             SPACE=(TRK,(45,15,10),RLSE)
//SYSIN DD *
 COPY    INDD=((INOBJ,R)),OUTDD=OUTOBJ
 COPY    INDD=((INJCL,R)),OUTDD=OUTJCL
/*
//
```

The installation tape contains the data sets listed in Table 2.

Table 2 Installation Tape Data Sets

Dataset Name	Contents	File Sequence Number
STC.RESTORE.JCL	JCL Sample that is used to unload the remaining two files on the tape.	1
STC.MUX.OBJECT	Compiled object modules.	2
STC.MUX.JCL	Sample JCL to link edit COBOL MUX object modules.	3

2.4.2. Installing from CD

The CD_ROM contains two MVS datasets in **..\setup\addons\ewmux\CobolMUX**:

- **STC.XMIT.MUX.OBJECT**
- **STC.XMIT.MUX.JCL**

Send these datasets, which are in XMIT format, to the mainframe for installation via FTP as follows:

1. Allocate MVS datasets to receive the files (for example, **HLQ.XMIT.MUX.OBJECT** and **HLQ.XMIT.MUX.JCL**) with the following:
   - **RECFM=FB**

- **LRECL=80**
- **BLKSIZE=3120**
- **DSORG=PS**

2 Send **STC.XMIT.MUX.OBJECT** and **STC.XMIT.MUX.JCL** to the MVS datasets allocated above via FTP, using a binary transfer method. Do not use CRLF or ASCII translation.

3 Issue the TSO Receive command in MVS to restore the files to PDS format: **TSO RECEIVE INDATASET(uploaded.dataset)**.

4 When prompted by the *"INMR906A Enter restore parameters or 'DELETE' or 'END' +"* message, enter the following:
DATASET(name.of.your.library) UNIT(unit) VOLUME(volume)

Note: *The UNIT() and VOLUME() operands in step 4 above are optional.*

2.4.3. Link Editing the COBOL API Object Modules

The shipped object modules must be linked with the version of TCP/IP on the target operating system.

The JCL shown in the samples is located in STC.MUX.JCL and can be modified as necessary to accommodate your system.

Modify the SYSLIB and SYSLMOD datasets to reflect your installation's names for LE, TCP/IP and CICS file names.

Note: *If TCP/IP Maintenance is applied to the EZASOKET, the MUX API programs must be relinked.*

Sample JCL to Link MUXBAT

```
//LINKMUX JOB()
*********************************************************************
//*                                                                 *
//* LINK MUXBAT   - BATCH COBOL CALLING MUX API KIT                 *
//*                                                                 *
//
*********************************************************************
//STCLINK EXEC  PGM=IEWL,REGION=1024K,PARM='MAP,LET,LIST'
//SYSLIB   DD  DSN=STC.MUX.LOADLIB,DISP=SHR
//         DD  DSN=TCPIP.SEZATCP,DISP=SHR
//         DD  DSN=CEE.SCEELKED,DISP=SHR
//SYSLIN   DD  DSN=STC.MUX.OBJECT(MUXBAT),DISP=SHR
//         DD  DDNAME=SYSIN
//SYSLMOD  DD  DSN=STC.MUX.LOADLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSIN    DD *
   INCLUDE SYSLIB(EZASOKET)
   NAME MUXBAT(R)
/*
```

Sample JCL to Link MUXAPI for CICS

```
//MUXLNKC  JOB   (),
```

```
//*******************************************************************
//* LINK MUXAPI   - CICS COBOL CALLING MUX API KIT                  *
//
//*******************************************************************
//LKED   EXEC  PGM=IEWL,REGION=1024K,PARM='MAP,LET,LIST,RENT'
//SYSLIB   DD  DSN=CICSTS13.CICS.SDFHLOAD,DISP=SHR
//         DD  DSN=TCPIP.SEZATCP,DISP=SHR
//         DD  DSN=CEE.SCEELKED,DISP=SHR
//SYSLIN   DD  DSN=STC.MUX.OBJECT(MUXAPI),DISP=SHR
//         DD  DDNAME=SYSIN
//SYSLMOD  DD  DSN=CICSTS13.CICS.SDFHLOAD,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSIN    DD *
   INCLUDE SYSLIB(EZACICAL)
   NAME MUXAPI(R)
/*
```

Sample to link MUXIMS for IMS

```
//MUXLNKI  JOB   (),
//*******************************************************************
//* LINK MUXIMS   - IMS/TS COBOL CALLING MUX API KIT                *
//
//*******************************************************************
//LKED   EXEC  PGM=IEWL,REGION=1024K,PARM='MAP,LET,LIST'
//SYSLIB   DD  DSN=STC.MUX.LOADLIB,DISP=SHR
//         DD  DSN=TCPIP.SEZATCP,DISP=SHR
//         DD  DSN=CEE.SCEELKED,DISP=SHR
//SYSLIN   DD  DSN=STC.MUX.OBJECT(MUXIMS),DISP=SHR
//         DD  DDNAME=SYSIN
//SYSLMOD  DD  DSN=STC.PROD.MUX.V453.LOADLIB,DISP=SHR
//SYSPRINT DD  SYSOUT=*
//SYSUT1   DD  UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSIN    DD *
   INCLUDE SYSLIB(EZASOKET)
   NAME MUXIMS(R)
/*
```

2.4.4. Linking the COBOL API Load Models

To link the COBOL API in the link-editor step of the compile for the calling program, include the following lines:

```
//LKED.SYSINN DD *
//   INCLUDE SYSLIB(MUXxxx)
//   ...
//   NAME ...
/*
```

where MUX*xxx* is one of the following:

- MUX**API** (for CICS)
- MUX**IMS** (for IMS)
- MUX**BAT** (for Batch)

2.4.5. Verifying the CICS Transaction Server Environment for e*Gate

For CICS only: To verify that CICS Sockets Support and Language Environment is enabled, look for the following messages at the CICS startup:

CICS Sockets Initialization

```
DFHSO0100I applid Sockets domain initialization has started.
DFHSO0101I applid Sockets domain initialization has ended.
```

Language Environment Initialization

```
DFHAP1203I applid Language Environment/370 is being initialized.
```

You should ***not*** see:

```
DFHAP1200 applid A CICS request to the Language Environment/370 has
failed. Reason code rc.
```

2.5 Directories and Files Created by the Installation

This section provides the names and locations of files installed during the e*Gate API Kit installation process. It includes information for the following system types:

- **Windows** (page 46)
- **Solaris** (page 48)
- **OS/390 Tape Install** (page 58)
- **Linux OS390** (page 68)
- **Other systems** (page 68)

2.5.1. Files and Directories - Windows

The e*Gate API Kit installer will install the files listed in **Table 3** on your **Windows** system.

Table 3 Files Installed on a Windows System

Location	File
jms\c_api	ms.h
jms\c_api	msc_const.h
jms\c_api	mscapi.h
jms\c_api	msdate.h
jms\c_api	msdll.h
jms\c_api	mslocale.h
jms\c_api	mstypes.h
jms\c_api	msxa.h
jms\c_api	msxid.h

Table 3 Files Installed on a Windows System

Location	File
jms\c_api	RTTI.h
jms\c_api	wstring.h
JMS\C_API\Debug	stc_msapi.dll
JMS\C_API\Debug	stc_msapi.lib
JMS\C_API\Debug	stc_mscapi.dll
JMS\C_API\Debug	stc_mscapi.lib
JMS\C_API\Debug	stc_msclient.dll
JMS\C_API\Debug	stc_msclient.lib
JMS\C_API\Debug	stc_mscommon.dll
JMS\C_API\Debug	stc_mscommon.lib
JMS\C_API\Release	stc_msapi.dll
JMS\C_API\Release	stc_msapi.lib
JMS\C_API\Release	stc_mscapi.dll
JMS\C_API\Release	stc_mscapi.lib
JMS\C_API\Release	stc_msclient.dll
JMS\C_API\Release	stc_msclient.lib
JMS\C_API\Release	stc_mscommon.dll
JMS\C_API\Release	stc_mscommon.lib
jms\com	stc_mscom.dll
JMS\Java	jms.jar
JMS\Java	jta.jar
JMS\Java	stcjms.jar
mux\c	ewipmpclnt.h
mux\c	gendefs.h
mux\c	generror.h
mux\c	stc_common.dll
mux\c	stc_common.lib
mux\c	stc_ewipmpclnt.dll
mux\c	stc_ewipmpclnt.lib
MUX\Cobol	stc.xmit.mux.cicsload
MUX\Cobol	stc.xmit.mux.load
mux\com	stc_xipmpclnt.dll
mux\com	stcxipmptest.exe
MUX\Java	stcph.jar
MUX\Perl	stc_ewipmpclntperl.dll

Table 3 Files Installed on a Windows System

Location	File
MUX\Perl	stc_ewipmpclntperl.pm

2.5.2. Files and Directories - Solaris

The e*Gate API Kit installer will install the files listed in **Table 4** on your **Solaris** system.

Table 4 Files Installed on a Solaris System

Location	File
jms\c_api	ms.h
jms\c_api	msc_const.h
jms\c_api	mscapi.h
jms\c_api	msdate.h
jms\c_api	msdll.h
jms\c_api	mslocale.h
jms\c_api	mstypes.h
jms\c_api	msxa.h
jms\c_api	msxid.h
jms\c_api	RTTI.h
jms\c_api	stc_msapi.dll
jms\c_api	stc_mscapi.dll
jms\c_api	stc_msclient.dll
jms\c_api	stc_mscommon.dll
jms\c_api	wstring.h
JMS\C_API\stlport	algorithm
JMS\C_API\stlport	bitset
JMS\C_API\stlport	cassert
JMS\C_API\stlport	cctype
JMS\C_API\stlport	cerrno
JMS\C_API\stlport	cfloat
JMS\C_API\stlport	climits
JMS\C_API\stlport	clocale
JMS\C_API\stlport	cmath
JMS\C_API\stlport	complex
JMS\C_API\stlport	csetjmp
JMS\C_API\stlport	csignal
JMS\C_API\stlport	cstdarg

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API\stlport	cstddef
JMS\C_API\stlport	cstdio
JMS\C_API\stlport	cstdlib
JMS\C_API\stlport	cstring
JMS\C_API\stlport	cstring.h
JMS\C_API\stlport	ctime
JMS\C_API\stlport	ctype.h
JMS\C_API\stlport	cwchar
JMS\C_API\stlport	cwctype
JMS\C_API\stlport	deque
JMS\C_API\stlport	exception
JMS\C_API\stlport	exception.h
JMS\C_API\stlport	fstream
JMS\C_API\stlport	fstream.h
JMS\C_API\stlport	functional
JMS\C_API\stlport	hash_map
JMS\C_API\stlport	hash_set
JMS\C_API\stlport	iomanip
JMS\C_API\stlport	iomanip.h
JMS\C_API\stlport	ios
JMS\C_API\stlport	ios.h
JMS\C_API\stlport	iosfwd
JMS\C_API\stlport	iostream
JMS\C_API\stlport	iostream.h
JMS\C_API\stlport	istream
JMS\C_API\stlport	istream.h
JMS\C_API\stlport	iterator
JMS\C_API\stlport	limits
JMS\C_API\stlport	list
JMS\C_API\stlport	locale
JMS\C_API\stlport	locale.h
JMS\C_API\stlport	map
JMS\C_API\stlport	math.h
JMS\C_API\stlport	mem.h
JMS\C_API\stlport	memory

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API\stlport	memory.new
JMS\C_API\stlport	mmemory.h
JMS\C_API\stlport	new
JMS\C_API\stlport	new.h
JMS\C_API\stlport	numeric
JMS\C_API\stlport	ostream
JMS\C_API\stlport	ostream.h
JMS\C_API\stlport	pthread_alloc
JMS\C_API\stlport	queue
JMS\C_API\stlport	rope
JMS\C_API\stlport	set
JMS\C_API\stlport	setjmp.h
JMS\C_API\stlport	signal.h
JMS\C_API\stlport	slist
JMS\C_API\stlport	sstream
JMS\C_API\stlport	stack
JMS\C_API\stlport	stdarg.h
JMS\C_API\stlport	stddef.h
JMS\C_API\stlport	stedxcept
JMS\C_API\stlport	stdio.h
JMS\C_API\stlport	stdlib.h
JMS\C_API\stlport	stl_user_config.h
JMS\C_API\stlport	streambuf
JMS\C_API\stlport	streambuf.h
JMS\C_API\stlport	string
JMS\C_API\stlport	string.h
JMS\C_API\stlport	strstream
JMS\C_API\stlport	strstream.h
JMS\C_API\stlport	time.h
JMS\C_API\stlport	typeinfo
JMS\C_API\stlport	typeinfo.h
JMS\C_API\stlport	utility
JMS\C_API\stlport	valarray
JMS\C_API\stlport	vector
JMS\C_API\stlport	wchar.h

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API\stlport	wctype.h
JMS\C_API\stlport\config	_epilog.h
JMS\C_API\stlport\config	_msvc_warnings_off.h
JMS\C_API\stlport\config	_prolog.h
JMS\C_API\stlport\config	stl_apcc.h
JMS\C_API\stlport\config	stl_apple.bak.h
JMS\C_API\stlport\config	stl_apple.h
JMS\C_API\stlport\config	stl_as400.h
JMS\C_API\stlport\config	stl_bc.h
JMS\C_API\stlport\config	stl_como.h
JMS\C_API\stlport\config	stl_confix.h
JMS\C_API\stlport\config	stl_dec.h
JMS\C_API\stlport\config	stl_dec_vms.h
JMS\C_API\stlport\config	stl_gcc.h
JMS\C_API\stlport\config	stl_hpacc.h
JMS\C_API\stlport\config	stl_ibm.h
JMS\C_API\stlport\config	stl_intel.h
JMS\C_API\stlport\config	stl_kai.h
JMS\C_API\stlport\config	stl_mlc.h
JMS\C_API\stlport\config	stl_msvc.h
JMS\C_API\stlport\config	stl_mwerks.h
JMS\C_API\stlport\config	stl_mycomp.h
JMS\C_API\stlport\config	stl_sco.h
JMS\C_API\stlport\config	stl_select_lib.h
JMS\C_API\stlport\config	stl_sgi.h
JMS\C_API\stlport\config	stl_sunpro.h
JMS\C_API\stlport\config	stl_symantec.h
JMS\C_API\stlport\config	stl_watcom.h
JMS\C_API\stlport\config	stl_wince.h
JMS\C_API\stlport\config	stlcomp.h
JMS\C_API\stlport\config	vc_select_lib.h
JMS\C_API\stlport\config\new_compiler	confdefs.h
JMS\C_API\stlport\config\new_compiler	config.log
JMS\C_API\stlport\config\new_compiler	configure
JMS\C_API\stlport\config\new_compiler	configure.in

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API\stlport\config\new_compiler	readme
JMS\C_API\stlport\config\new_compiler	stlconf.h
JMS\C_API\stlport\config\new_compiler	stlconf.h.in
JMS\C_API\stlport\config\new_compiler	test.cpp
JMS\C_API\stlport\config\new_compiler	unconfigure
JMS\C_API\stlport\old_hp	algo.h
JMS\C_API\stlport\old_hp	algobase.h
JMS\C_API\stlport\old_hp	alloc.h
JMS\C_API\stlport\old_hp	bvector.h
JMS\C_API\stlport\old_hp	defalloc.h
JMS\C_API\stlport\old_hp	deque.h
JMS\C_API\stlport\old_hp	function.h
JMS\C_API\stlport\old_hp	hash_map.h
JMS\C_API\stlport\old_hp	hash_set.h
JMS\C_API\stlport\old_hp	hashtable.h
JMS\C_API\stlport\old_hp	heap.h
JMS\C_API\stlport\old_hp	iterator.h
JMS\C_API\stlport\old_hp	list.h
JMS\C_API\stlport\old_hp	map.h
JMS\C_API\stlport\old_hp	multimap.h
JMS\C_API\stlport\old_hp	multiset.h
JMS\C_API\stlport\old_hp	numeric.h
JMS\C_API\stlport\old_hp	pair.h
JMS\C_API\stlport\old_hp	pthread_alloc.h
JMS\C_API\stlport\old_hp	queue.h
JMS\C_API\stlport\old_hp	rope.h
JMS\C_API\stlport\old_hp	set.h
JMS\C_API\stlport\old_hp	slist.h
JMS\C_API\stlport\old_hp	stack.h
JMS\C_API\stlport\old_hp	tempbuf.h
JMS\C_API\stlport\old_hp	tree.h
JMS\C_API\stlport\old_hp	vector.h
JMS\C_API_stlport\stl	_algo.c
JMS\C_API_stlport\stl	_algo.h
JMS\C_API_stlport\stl	_algobase.c

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API_stlport\stl	_algobase.h
JMS\C_API_stlport\stl	_alloc.c
JMS\C_API_stlport\stl	_alloc.h
JMS\C_API_stlport\stl	_bitset.c
JMS\C_API_stlport\stl	_bitset.h
JMS\C_API_stlport\stl	_bvector.h
JMS\C_API_stlport\stl	_check_config.h
JMS\C_API_stlport\stl	_codecvt.h
JMS\C_API_stlport\stl	_collate.h
JMS\C_API_stlport\stl	_complex.c
JMS\C_API_stlport\stl	_complex.h
JMS\C_API_stlport\stl	_config.h
JMS\C_API_stlport\stl	_construct.h
JMS\C_API_stlport\stl	_ctraits_fns.h
JMS\C_API_stlport\stl	_ctype.h
JMS\C_API_stlport\stl	_deque.c
JMS\C_API_stlport\stl	_deque.h
JMS\C_API_stlport\stl	_epilog.h
JMS\C_API_stlport\stl	_exception.h
JMS\C_API_stlport\stl	_fstream.c
JMS\C_API_stlport\stl	_fstream.h
JMS\C_API_stlport\stl	_function.h
JMS\C_API_stlport\stl	_hash_fun.h
JMS\C_API_stlport\stl	_hash_map.h
JMS\C_API_stlport\stl	_hash_set.h
JMS\C_API_stlport\stl	_hashtable.c
JMS\C_API_stlport\stl	_hashtable.h
JMS\C_API_stlport\stl	_heap.c
JMS\C_API_stlport\stl	_heap.h
JMS\C_API_stlport\stl	_ios.c
JMS\C_API_stlport\stl	_ios.h
JMS\C_API_stlport\stl	_ios_base.h
JMS\C_API_stlport\stl	_iosfwd.h
JMS\C_API_stlport\stl	_istream.c
JMS\C_API_stlport\stl	_istream.h

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API_stlport\stl	_iterator.h
JMS\C_API_stlport\stl	_iterator_base.h
JMS\C_API_stlport\stl	_limits.c
JMS\C_API_stlport\stl	_limits.h
JMS\C_API_stlport\stl	_list.c
JMS\C_API_stlport\stl	_list.h
JMS\C_API_stlport\stl	_locale.c
JMS\C_API_stlport\stl	_locale.h
JMS\C_API_stlport\stl	_map.h
JMS\C_API_stlport\stl	_messages_facets.h
JMS\C_API_stlport\stl	_monetary.c
JMS\C_API_stlport\stl	_monetary.h
JMS\C_API_stlport\stl	_null_stream.h
JMS\C_API_stlport\stl	_numeric.c
JMS\C_API_stlport\stl	_numeric.h
JMS\C_API_stlport\stl	_numeric_facets.c
JMS\C_API_stlport\stl	_numeric_facets.h
JMS\C_API_stlport\stl	_ostream.c
JMS\C_API_stlport\stl	_ostream.h
JMS\C_API_stlport\stl	_pair.h
JMS\C_API_stlport\stl	_prolog.h
JMS\C_API_stlport\stl	_ptrs_specialize.h
JMS\C_API_stlport\stl	_queue.h
JMS\C_API_stlport\stl	_range_errors.h
JMS\C_API_stlport\stl	_raw_storage_iter.h
JMS\C_API_stlport\stl	_relops.h
JMS\C_API_stlport\stl	_relops_cont.h
JMS\C_API_stlport\stl	_relops_template.h
JMS\C_API_stlport\stl	_rope.c
JMS\C_API_stlport\stl	_rope.h
JMS\C_API_stlport\stl	_set.h
JMS\C_API_stlport\stl	_set_operators.h
JMS\C_API_stlport\stl	_site_config.h
JMS\C_API_stlport\stl	_slist.c
JMS\C_API_stlport\stl	_slist.h

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API_stlport\stl	_slist_base.c
JMS\C_API_stlport\stl	_slist_base.h
JMS\C_API_stlport\stl	_sstream.c
JMS\C_API_stlport\stl	_sstream.h
JMS\C_API_stlport\stl	_stack.h
JMS\C_API_stlport\stl	_stdio_file.h
JMS\C_API_stlport\stl	_stream_iterator.h
JMS\C_API_stlport\stl	_streambuf.c
JMS\C_API_stlport\stl	_streambuf.h
JMS\C_API_stlport\stl	_string.c
JMS\C_API_stlport\stl	_string.h
JMS\C_API_stlport\stl	_string_fwd.c
JMS\C_API_stlport\stl	_string_fwd.h
JMS\C_API_stlport\stl	_string_hash.h
JMS\C_API_stlport\stl	_string_io.c
JMS\C_API_stlport\stl	_string_io.h
JMS\C_API_stlport\stl	_strstream.h
JMS\C_API_stlport\stl	_tempbuf.c
JMS\C_API_stlport\stl	_tempbuf.h
JMS\C_API_stlport\stl	_threads.c
JMS\C_API_stlport\stl	_threads.h
JMS\C_API_stlport\stl	_time_facets.c
JMS\C_API_stlport\stl	_time_facets.h
JMS\C_API_stlport\stl	_tree.c
JMS\C_API_stlport\stl	_tree.h
JMS\C_API_stlport\stl	_uninitialized.h
JMS\C_API_stlport\stl	_valarray.c
JMS\C_API_stlport\stl	_valarray.h
JMS\C_API_stlport\stl	_vector.c
JMS\C_API_stlport\stl	_vector.h
JMS\C_API_stlport\stl	c_locale.h
JMS\C_API_stlport\stl	char_traits.h
JMS\C_API_stlport\stl	concept_checks.h
JMS\C_API_stlport\stl	container_concepts.h
JMS\C_API_stlport\stl	msl_string.h

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API_stlport\stl	stdio_streambuf
JMS\C_API_stlport\stl	type_traits.h
JMS\C_API_stlport\stl\debug	_debug.c
JMS\C_API_stlport\stl\debug	_debug.h
JMS\C_API_stlport\stl\debug	_deque.h
JMS\C_API_stlport\stl\debug	_hashtable.h
JMS\C_API_stlport\stl\debug	_iterator.h
JMS\C_API_stlport\stl\debug	_list.h
JMS\C_API_stlport\stl\debug	_slist.h
JMS\C_API_stlport\stl\debug	_string.h
JMS\C_API_stlport\stl\debug	_tree.h
JMS\C_API_stlport\stl\debug	_vector.h
JMS\C_API_stlport\stl\wrappers	_deque.h
JMS\C_API_stlport\stl\wrappers	_hash_map.h
JMS\C_API_stlport\stl\wrappers	_hash_set.h
JMS\C_API_stlport\stl\wrappers	_list.h
JMS\C_API_stlport\stl\wrappers	_map.h
JMS\C_API_stlport\stl\wrappers	_mmap.h
JMS\C_API_stlport\stl\wrappers	_set.h
JMS\C_API_stlport\stl\wrappers	_slish.h
JMS\C_API_stlport\stl\wrappers	_vector.h
JMS\C_API_stlport\using	cstring
JMS\C_API_stlport\using	fstream
JMS\C_API_stlport\using	iomanip
JMS\C_API_stlport\using	ios
JMS\C_API_stlport\using	iosfwd
JMS\C_API_stlport\using	iostream
JMS\C_API_stlport\using	istream
JMS\C_API_stlport\using	locale
JMS\C_API_stlport\using	ostream
JMS\C_API_stlport\using	sstream
JMS\C_API_stlport\using	streambuf
JMS\C_API_stlport\using	strstream
JMS\C_API_stlport\using\h	fstream.h
JMS\C_API_stlport\using\h	iomanip.h

Table 4 Files Installed on a Solaris System

Location	File
JMS\C_API_stlport\using\h	iostream.h
JMS\C_API_stlport\using\h	ostream.h
JMS\C_API_stlport\using\h	strstream.h
JMS\C_API_stlport\wrap_std	complex
JMS\C_API_stlport\wrap_std	fstream
JMS\C_API_stlport\wrap_std	iomanip
JMS\C_API_stlport\wrap_std	ios
JMS\C_API_stlport\wrap_std	iosfwd
JMS\C_API_stlport\wrap_std	iostream
JMS\C_API_stlport\wrap_std	istream
JMS\C_API_stlport\wrap_std	locale
JMS\C_API_stlport\wrap_std	ostream
JMS\C_API_stlport\wrap_std	sstream
JMS\C_API_stlport\wrap_std	streambuf
JMS\C_API_stlport\wrap_std	strstream
JMS\C_API_stlport\wrap_std\h	fstream.h
JMS\C_API_stlport\wrap_std\h	iostream.h
JMS\C_API_stlport\wrap_std\h	streambuf.h
JMS\C_API_stlport\wrap_std\h	strstream.h
JMS\Java	jms.jar
JMS\Java	jta.jar
JMS\Java	stcjms.jar
mux\c	ewipmpclnt.h
mux\c	gendefs.h
mux\c	generror.h
mux\c	stc_common.dll
mux\c	stc_ewipmpclnt.dll
MUX\Cobol	stc.xmit.mux.cicsload
MUX\Cobol	stc.xmit.mux.load
MUX\Java	stcph.jar
MUX\Perl	stc_ewipmpclntperl.dll
MUX\Perl	stc_ewipmpclntperl.pm

2.5.3. Files and Directories - OS390 CD Install

The e*Gate API Kit installer will install the files listed in **Table 5** on your **OS390** system.

Table 5 Files Installed on an OS390 System

Location	File
jms\c_api	ms.h
jms\c_api	msc_const.h
jms\c_api	mscapi.h
jms\c_api	msdate.h
jms\c_api	msdll.h
jms\c_api	mslocale.h
jms\c_api	mstypes.h
jms\c_api	msxa.h
jms\c_api	msxid.h
jms\c_api	OS390.h
jms\c_api	RTTI.h
jms\c_api	stc_msapi.dll
jms\c_api	stc_msapi.x
jms\c_api	stc_mscapi.dll
jms\c_api	stc_mscapi.x
jms\c_api	stc_msclient.dll
jms\c_api	stc_msclient.x
jms\c_api	stc_mscommon.dll
jms\c_api	stc_mscommon.x
JMS\C_API\stlport	algorithm
JMS\C_API\stlport	bitset
JMS\C_API\stlport	cassert
JMS\C_API\stlport	cctype
JMS\C_API\stlport	cerrno
JMS\C_API\stlport	cfloat
JMS\C_API\stlport	climits
JMS\C_API\stlport	clocale
JMS\C_API\stlport	cmath
JMS\C_API\stlport	complex
JMS\C_API\stlport	csetjmp
JMS\C_API\stlport	csignal
JMS\C_API\stlport	cstdarg
JMS\C_API\stlport	cstddef
JMS\C_API\stlport	cstdio
JMS\C_API\stlport	cstdlib

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API\stlport	cstring
JMS\C_API\stlport	cstring.h
JMS\C_API\stlport	ctime
JMS\C_API\stlport	ctype.h
JMS\C_API\stlport	cwchar
JMS\C_API\stlport	cwctype
JMS\C_API\stlport	deque
JMS\C_API\stlport	exception
JMS\C_API\stlport	exception.h
JMS\C_API\stlport	fstream
JMS\C_API\stlport	fstream.h
JMS\C_API\stlport	functional
JMS\C_API\stlport	hash_map
JMS\C_API\stlport	hash_set
JMS\C_API\stlport	iomanip
JMS\C_API\stlport	iomanip.h
JMS\C_API\stlport	ios
JMS\C_API\stlport	ios.h
JMS\C_API\stlport	iosfwd
JMS\C_API\stlport	iostream
JMS\C_API\stlport	iostream.h
JMS\C_API\stlport	istream
JMS\C_API\stlport	istream.h
JMS\C_API\stlport	iterator
JMS\C_API\stlport	limits
JMS\C_API\stlport	list
JMS\C_API\stlport	locale
JMS\C_API\stlport	locale.h
JMS\C_API\stlport	map
JMS\C_API\stlport	math.h
JMS\C_API\stlport	mem.h
JMS\C_API\stlport	memory
JMS\C_API\stlport	memory.new
JMS\C_API\stlport	mmemory.h
JMS\C_API\stlport	new

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API\stlport	new.h
JMS\C_API\stlport	numeric
JMS\C_API\stlport	ostream
JMS\C_API\stlport	ostream.h
JMS\C_API\stlport	pthread_alloc
JMS\C_API\stlport	queue
JMS\C_API\stlport	rope
JMS\C_API\stlport	set
JMS\C_API\stlport	setjmp.h
JMS\C_API\stlport	signal.h
JMS\C_API\stlport	slist
JMS\C_API\stlport	sstream
JMS\C_API\stlport	stack
JMS\C_API\stlport	stdarg.h
JMS\C_API\stlport	stddef.h
JMS\C_API\stlport	stedxcept
JMS\C_API\stlport	stdio.h
JMS\C_API\stlport	stdlib.h
JMS\C_API\stlport	stl_user_config.h
JMS\C_API\stlport	streambuf
JMS\C_API\stlport	streambuf.h
JMS\C_API\stlport	string
JMS\C_API\stlport	string.h
JMS\C_API\stlport	strstream
JMS\C_API\stlport	strstream.h
JMS\C_API\stlport	time.h
JMS\C_API\stlport	typeinfo
JMS\C_API\stlport	typeinfo.h
JMS\C_API\stlport	utility
JMS\C_API\stlport	valarray
JMS\C_API\stlport	vector
JMS\C_API\stlport	wchar.h
JMS\C_API\stlport	wctype.h
JMS\C_API\stlport\config	_epilog.h
JMS\C_API\stlport\config	_msvc_warnings_off.h

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API\stlport\config	_prolog.h
JMS\C_API\stlport\config	stl_apcc.h
JMS\C_API\stlport\config	stl_apple.bak.h
JMS\C_API\stlport\config	stl_apple.h
JMS\C_API\stlport\config	stl_as400.h
JMS\C_API\stlport\config	stl_bc.h
JMS\C_API\stlport\config	stl_como.h
JMS\C_API\stlport\config	stl_confix.h
JMS\C_API\stlport\config	stl_dec.h
JMS\C_API\stlport\config	stl_dec_vms.h
JMS\C_API\stlport\config	stl_gcc.h
JMS\C_API\stlport\config	stl_hpacc.h
JMS\C_API\stlport\config	stl_ibm.h
JMS\C_API\stlport\config	stl_intel.h
JMS\C_API\stlport\config	stl_kai.h
JMS\C_API\stlport\config	stl_mlc.h
JMS\C_API\stlport\config	stl_msvc.h
JMS\C_API\stlport\config	stl_mwerks.h
JMS\C_API\stlport\config	stl_mycomp.h
JMS\C_API\stlport\config	stl_sco.h
JMS\C_API\stlport\config	stl_select_lib.h
JMS\C_API\stlport\config	stl_sgi.h
JMS\C_API\stlport\config	stl_sunpro.h
JMS\C_API\stlport\config	stl_symantec.h
JMS\C_API\stlport\config	stl_watcom.h
JMS\C_API\stlport\config	stl_wince.h
JMS\C_API\stlport\config	stlcomp.h
JMS\C_API\stlport\config	vc_select_lib.h
JMS\C_API\stlport\config\new_compiler	confdefs.h
JMS\C_API\stlport\config\new_compiler	config.log
JMS\C_API\stlport\config\new_compiler	configure
JMS\C_API\stlport\config\new_compiler	configure.in
JMS\C_API\stlport\config\new_compiler	readme
JMS\C_API\stlport\config\new_compiler	stlconf.h
JMS\C_API\stlport\config\new_compiler	stlconf.h.in

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API\stlport\config\new_compiler	test.cpp
JMS\C_API\stlport\config\new_compiler	unconfigure
JMS\C_API\stlport\old_hp	algo.h
JMS\C_API\stlport\old_hp	algobase.h
JMS\C_API\stlport\old_hp	alloc.h
JMS\C_API\stlport\old_hp	bvector.h
JMS\C_API\stlport\old_hp	defalloc.h
JMS\C_API\stlport\old_hp	deque.h
JMS\C_API\stlport\old_hp	function.h
JMS\C_API\stlport\old_hp	hash_map.h
JMS\C_API\stlport\old_hp	hash_set.h
JMS\C_API\stlport\old_hp	hashtable.h
JMS\C_API\stlport\old_hp	heap.h
JMS\C_API\stlport\old_hp	iterator.h
JMS\C_API\stlport\old_hp	list.h
JMS\C_API\stlport\old_hp	map.h
JMS\C_API\stlport\old_hp	multimap.h
JMS\C_API\stlport\old_hp	multiset.h
JMS\C_API\stlport\old_hp	numeric.h
JMS\C_API\stlport\old_hp	pair.h
JMS\C_API\stlport\old_hp	pthread_alloc.h
JMS\C_API\stlport\old_hp	queue.h
JMS\C_API\stlport\old_hp	rope.h
JMS\C_API\stlport\old_hp	set.h
JMS\C_API\stlport\old_hp	slist.h
JMS\C_API\stlport\old_hp	stack.h
JMS\C_API\stlport\old_hp	tempbuf.h
JMS\C_API\stlport\old_hp	tree.h
JMS\C_API\stlport\old_hp	vector.h
JMS\C_API_stlport\stl	_algo.c
JMS\C_API_stlport\stl	_algo.h
JMS\C_API_stlport\stl	_algobase.c
JMS\C_API_stlport\stl	_algobase.h
JMS\C_API_stlport\stl	_alloc.c
JMS\C_API_stlport\stl	_alloc.h

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API_stlport\stl	_bitset.c
JMS\C_API_stlport\stl	_bitset.h
JMS\C_API_stlport\stl	_bvector.h
JMS\C_API_stlport\stl	_check_config.h
JMS\C_API_stlport\stl	_codecvt.h
JMS\C_API_stlport\stl	_collate.h
JMS\C_API_stlport\stl	_complex.c
JMS\C_API_stlport\stl	_complex.h
JMS\C_API_stlport\stl	_config.h
JMS\C_API_stlport\stl	_construct.h
JMS\C_API_stlport\stl	_ctraits_fns.h
JMS\C_API_stlport\stl	_ctype.h
JMS\C_API_stlport\stl	_deque.c
JMS\C_API_stlport\stl	_deque.h
JMS\C_API_stlport\stl	_epilog.h
JMS\C_API_stlport\stl	_exception.h
JMS\C_API_stlport\stl	_fstream.c
JMS\C_API_stlport\stl	_fstream.h
JMS\C_API_stlport\stl	_function.h
JMS\C_API_stlport\stl	_hash_fun.h
JMS\C_API_stlport\stl	_hash_map.h
JMS\C_API_stlport\stl	_hash_set.h
JMS\C_API_stlport\stl	_hashtable.c
JMS\C_API_stlport\stl	_hashtable.h
JMS\C_API_stlport\stl	_heap.c
JMS\C_API_stlport\stl	_heap.h
JMS\C_API_stlport\stl	_ios.c
JMS\C_API_stlport\stl	_ios.h
JMS\C_API_stlport\stl	_ios_base.h
JMS\C_API_stlport\stl	_iosfwd.h
JMS\C_API_stlport\stl	_istream.c
JMS\C_API_stlport\stl	_istream.h
JMS\C_API_stlport\stl	_iterator.h
JMS\C_API_stlport\stl	_iterator_base.h
JMS\C_API_stlport\stl	_limits.c

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API_stlport\stl	_limits.h
JMS\C_API_stlport\stl	_list.c
JMS\C_API_stlport\stl	_list.h
JMS\C_API_stlport\stl	_locale.c
JMS\C_API_stlport\stl	_locale.h
JMS\C_API_stlport\stl	_map.h
JMS\C_API_stlport\stl	_messages_facets.h
JMS\C_API_stlport\stl	_monetary.c
JMS\C_API_stlport\stl	_monetary.h
JMS\C_API_stlport\stl	_null_stream.h
JMS\C_API_stlport\stl	_numeric.c
JMS\C_API_stlport\stl	_numeric.h
JMS\C_API_stlport\stl	_numeric_facets.c
JMS\C_API_stlport\stl	_numeric_facets.h
JMS\C_API_stlport\stl	_ostream.c
JMS\C_API_stlport\stl	_ostream.h
JMS\C_API_stlport\stl	_pair.h
JMS\C_API_stlport\stl	_prolog.h
JMS\C_API_stlport\stl	_ptrs_specialize.h
JMS\C_API_stlport\stl	_queue.h
JMS\C_API_stlport\stl	_range_errors.h
JMS\C_API_stlport\stl	_raw_storage_iter.h
JMS\C_API_stlport\stl	_relops.h
JMS\C_API_stlport\stl	_relops_cont.h
JMS\C_API_stlport\stl	_relops_template.h
JMS\C_API_stlport\stl	_rope.c
JMS\C_API_stlport\stl	_rope.h
JMS\C_API_stlport\stl	_set.h
JMS\C_API_stlport\stl	_set_operators.h
JMS\C_API_stlport\stl	_site_config.h
JMS\C_API_stlport\stl	_slist.c
JMS\C_API_stlport\stl	_slist.h
JMS\C_API_stlport\stl	_slist_base.c
JMS\C_API_stlport\stl	_slist_base.h
JMS\C_API_stlport\stl	_sstream.c

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API_stlport\stl	_sstream.h
JMS\C_API_stlport\stl	_stack.h
JMS\C_API_stlport\stl	_stdio_file.h
JMS\C_API_stlport\stl	_stream_iterator.h
JMS\C_API_stlport\stl	_streambuf.c
JMS\C_API_stlport\stl	_streambuf.h
JMS\C_API_stlport\stl	_string.c
JMS\C_API_stlport\stl	_string.h
JMS\C_API_stlport\stl	_string_fwd.c
JMS\C_API_stlport\stl	_string_fwd.h
JMS\C_API_stlport\stl	_string_hash.h
JMS\C_API_stlport\stl	_string_io.c
JMS\C_API_stlport\stl	_string_io.h
JMS\C_API_stlport\stl	_strstream.h
JMS\C_API_stlport\stl	_tempbuf.c
JMS\C_API_stlport\stl	_tempbuf.h
JMS\C_API_stlport\stl	_threads.c
JMS\C_API_stlport\stl	_threads.h
JMS\C_API_stlport\stl	_time_facets.c
JMS\C_API_stlport\stl	_time_facets.h
JMS\C_API_stlport\stl	_tree.c
JMS\C_API_stlport\stl	_tree.h
JMS\C_API_stlport\stl	_uninitialized.h
JMS\C_API_stlport\stl	_valarray.c
JMS\C_API_stlport\stl	_valarray.h
JMS\C_API_stlport\stl	_vector.c
JMS\C_API_stlport\stl	_vector.h
JMS\C_API_stlport\stl	c_locale.h
JMS\C_API_stlport\stl	char_traits.h
JMS\C_API_stlport\stl	concept_checks.h
JMS\C_API_stlport\stl	container_concepts.h
JMS\C_API_stlport\stl	msl_string.h
JMS\C_API_stlport\stl	stdio_streambuf
JMS\C_API_stlport\stl	type_traits.h
JMS\C_API_stlport\stl\debug	_debug.c

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API_stlport\stl\debug	_debug.h
JMS\C_API_stlport\stl\debug	_deque.h
JMS\C_API_stlport\stl\debug	_hashtable.h
JMS\C_API_stlport\stl\debug	_iterator.h
JMS\C_API_stlport\stl\debug	_list.h
JMS\C_API_stlport\stl\debug	_slist.h
JMS\C_API_stlport\stl\debug	_string.h
JMS\C_API_stlport\stl\debug	_tree.h
JMS\C_API_stlport\stl\debug	_vector.h
JMS\C_API_stlport\stl\wrappers	_deque.h
JMS\C_API_stlport\stl\wrappers	_hash_map.h
JMS\C_API_stlport\stl\wrappers	_hash_set.h
JMS\C_API_stlport\stl\wrappers	_list.h
JMS\C_API_stlport\stl\wrappers	_map.h
JMS\C_API_stlport\stl\wrappers	_mmap.h
JMS\C_API_stlport\stl\wrappers	_set.h
JMS\C_API_stlport\stl\wrappers	_slish.h
JMS\C_API_stlport\stl\wrappers	_vector.h
JMS\C_API_stlport\using	cstring
JMS\C_API_stlport\using	fstream
JMS\C_API_stlport\using	iomanip
JMS\C_API_stlport\using	ios
JMS\C_API_stlport\using	iosfwd
JMS\C_API_stlport\using	iostream
JMS\C_API_stlport\using	istream
JMS\C_API_stlport\using	locale
JMS\C_API_stlport\using	ostream
JMS\C_API_stlport\using	sstream
JMS\C_API_stlport\using	streambuf
JMS\C_API_stlport\using	strstream
JMS\C_API_stlport\using\h	fstream.h
JMS\C_API_stlport\using\h	iomanip.h
JMS\C_API_stlport\using\h	iostream.h
JMS\C_API_stlport\using\h	ostream.h
JMS\C_API_stlport\using\h	strstream.h

Table 5 Files Installed on an OS390 System

Location	File
JMS\C_API_stlport\wrap_std	complex
JMS\C_API_stlport\wrap_std	fstream
JMS\C_API_stlport\wrap_std	iomanip
JMS\C_API_stlport\wrap_std	ios
JMS\C_API_stlport\wrap_std	iosfwd
JMS\C_API_stlport\wrap_std	iostream
JMS\C_API_stlport\wrap_std	istream
JMS\C_API_stlport\wrap_std	locale
JMS\C_API_stlport\wrap_std	ostream
JMS\C_API_stlport\wrap_std	sstream
JMS\C_API_stlport\wrap_std	streambuf
JMS\C_API_stlport\wrap_std	strstream
JMS\C_API_stlport\wrap_std\h	fstream.h
JMS\C_API_stlport\wrap_std\h	iostream.h
JMS\C_API_stlport\wrap_std\h	streambuf.h
JMS\C_API_stlport\wrap_std\h	strstream.h
JMS\Java	jms.jar
JMS\Java	jta.jar
JMS\Java	stcjms.jar
mux\c	ewipmpclnt.h
mux\c	gendefs.h
mux\c	generror.h
mux\c	stc_common.dll
mux\c	stc_ewipmpclnt.dll
MUX\Cobol	stc.xmit.mux.cicsload
MUX\Cobol	stc.xmit.mux.load
MUX\Java	stcph.jar

2.5.4. Files and Directories - Linux OS390

The e*Gate API Kit installer will install the files listed in Table 6 on your **Linux OS390** system.

Table 6 Files Installed on a Linux OS390 System

Location	File
jms\c_api	ms.h

Table 6 Files Installed on a Linux OS390 System

Location	File
jms\c_api	msc_const.h
jms\c_api	mscapi.h
jms\c_api	msdate.h
jms\c_api	msdll.h
jms\c_api	mslocale.h
jms\c_api	mstypes.h
jms\c_api	msxa.h
jms\c_api	msxid.h
jms\c_api	RTTI.h
jms\c_api	stc_msapi.dll
jms\c_api	stc_mscapi.dll
jms\c_api	stc_msclient.dll
jms\c_api	stc_mscommon.dll
jms\c_api	wstring.h

2.5.5. Files and Directories - Other Systems

The e*Gate API Kit installer will install the files listed in **Table 7** on the following systems:

- **AIX**
- **Compaq Tru64**
- **HP UNIX**
- **Linux (6x86)**

Table 7 Files Installed on AIX, Compaq 64,HP UNIX, and Linux (6x86)Systems

Location	File
jms\c_api	ms.h
jms\c_api	msc_const.h
jms\c_api	mscapi.h
jms\c_api	msdate.h
jms\c_api	msdll.h
jms\c_api	mslocale.h
jms\c_api	mstypes.h
jms\c_api	msxa.h
jms\c_api	msxid.h

Table 7 Files Installed on AIX, Compaq 64,HP UNIX, and Linux (6x86)Systems

Location	File
jms\c_api	RTTI.h
jms\c_api	wstring.h
JMS\Java	jms.jar
JMS\Java	jta.jar
JMS\Java	stcjms.jar
mux\c	ewipmpclnt.h
mux\c	gendefs.h
mux\c	generror.h
mux\c	stc_common.dll
mux\c	stc_ewipmpclnt.dll
MUX\Cobol	stc.xmit.mux.cicsload
MUX\Cobol	stc.xmit.mux.load
MUX\Java	stcph.jar
MUX\Perl	stc_ewipmpclntperl.dll
MUX\Perl	stc_ewipmpclntperl.pm

2.5.6. Configuring Perl

If you are using the Multiplexer e*Way, and you wish to use Perl, you will need to configure your PATH environment as follows:

Follow the instructions given in **"Installing the e*Gate API Kit on UNIX" on page 39**. Once installed, you will need to create a link setup for Perl and set an environment variable as indicated in Table 8.

Table 8 Link Setup

Operating System	Link Command	Library PATH
hpux11	ln -f -s stc_ewimpmpcIntperl.dll stc_ewipmpcIntperl.sl	SHLIB_PATH
sparc26	ln -f -s stc_ewimpmpcIntperl.dll stc_ewimpmpcIntperl.so	LD_LIBRARY_PATH
aix43	ln -f -s stc_ewimpmpcIntperl.dll stc_ewimpmpcIntperl.so	LIBPATH
linux6x86	ln -f -s stc_ewipmpcIntperl.dll stc_ewimpmpcIntperl.so	LD_LIBRARY_PATH
ctru64_4	ln -f -s stc_ewipmpcIntperl.dll stc_ewipmpcIntperl.dll	LD_LIBRARY_PATH

Chapter 3

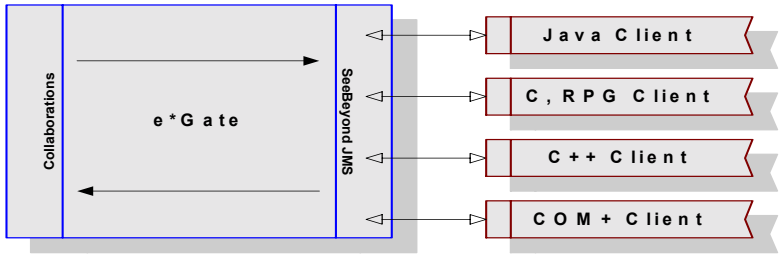
Configuring the Message Service

This chapter explains how to configure the three separate components that constitute SeeBeyond's implementation of the Java Message Service:

- Message Service Client: the external application
- Message Server: the data container and router
- e*Way Connection: the link between e*Gate and the external system

The following diagram illustrates the communication between each component.

Figure 3 Message Service Communication Architecture

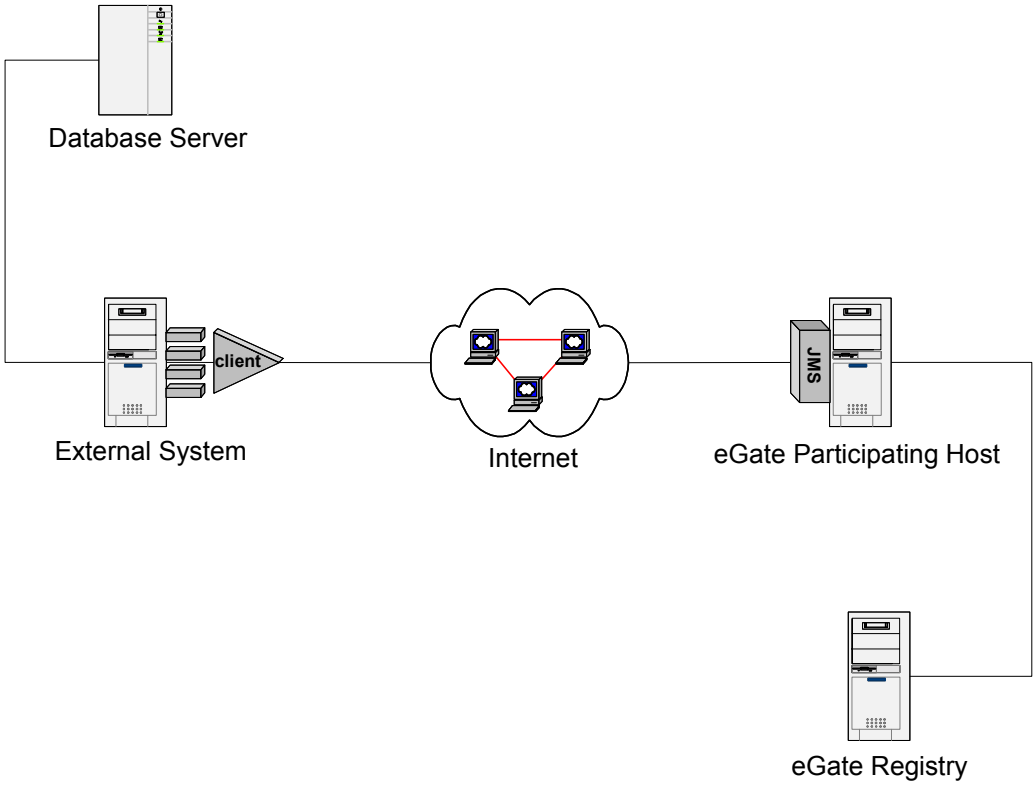


3.1 Configuring the Message Service Clients

The current SeeBeyond Message service supports both Java and COM+ clients. The sections that follow provide the information necessary to configure both of these clients.

In the diagram that follows all of the necessary components have been isolated onto a separate machine. While this separation is not mandatory, the combinations of components that reside together on various machines, change depending upon the needs of the customer.

Figure 4 TCP/IP Communication Architecture



In some form, the following components must exist:

- e*Gate Registry Host (e*Gate Server)
- e*Gate Participating Host (e*Gate Client)
- External System (SeeBeyond Message Service Client file)
- Database Server (Data Repository)

Important: *From this point forward, when referring to a machine, the above naming conventions are used. Remember that multiple components may reside on the same machine. For example, the e*Gate Participating Host and the External System may exist on one physical machine.*

3.1.1. Java Client

Once the e*Gate API Kit has been installed successfully, additional steps are required to run Java JMS client programs. Both the Java client, which represents the machine where the external code resides, and the Java server, which represents the machine where the Message Server (also referred to as the SeeBeyond JMS IQ Manager) resides requiring handling. In this section, the setup steps are included for setting up the Message Service to use Java.

Setting up the Java Client

To begin using the Message Service for Java, do the following:

Locate the **jms.jar, jta.jar, stcjms.jar** files in the directory on the external machine that you have installed the e*Gate API Kit on.

Modify the CLASSPATH on your external system to include the **jms.jar** and **stcjms.jar** files. For XA support, you will also need to include the **jta.jar** in your path.

3.1.2. COM+ Client

Once the e*Gate API Kit has been installed successfully, additional steps are required to finish the setup, before data exchange can begin. Both the COM+ client, which represents the machine where the external code resides, and the Java server, which represents the machine where the Message Server (also referred to as the SeeBeyond JMS IQ Manager) resides requiring handling. In this section, the setup steps are included for setting up the Message Service to use COM+.

Setting up the COM+ Client

For all COM+ implementations, to begin using the Message Service for COM+, do the following:.

Locate the **stc_mscom.dll**, **stc_msclient.dll**, **stc_mscommon.dll**, **stc_msapi.dll** files in the directory on the external system that you have installed the e*Gate API Kit on. From the command prompt of the external system, register the file **stc_mscom.dll** into the Windows Registry by doing the following:

regsvr32 your_path_location\stc_mscom.dll

Viewing the Message Service COM+ APIs

You can view the JMS COM+ APIs using any application that is capable of viewing COM+ APIs. For this illustration on how to view the APIs, we have chosen Microsoft Visual Basic 6.0 as the viewing application.

To begin viewing the APIs

1. Start Microsoft Visual Basic 6.0.
2. In the **New Project** dialog box, click **Standard EXE** and then click **Open**.
3. On the **Project** toolbar, click **References**.
4. In the **References** dialog box, select **SeeBeyond Message Service 1.0**, and then click **OK**.
5. On the **View** toolbar, click **Object Browser**.
6. From the **All Libraries** list box, select **STC_MSCOM**.
7. Press the F2 button to open the **Object Browser** dialog box.
8. From the **All Libraries** drop-down button, select **STC_MSCOM** to view the supported classes and methods.

9 Highlight the class to view the member methods and properties.

Compensating Resource Manager (CRM)

A *Compensating Resource Manager* can be described as a COM+ object that uses a set of tools (CRM facility) enabling the user to create resource managers. This allows the user to perform non-database operations (such as generating a file) as part of a transaction.

A *distributed transaction* is a transaction that involves multiple independent resource managers. For example, it might include an Oracle database at the corporate office and a SQL Server database at the partner's warehouse. The involved resource managers attempt to complete and commit their part of the transaction. If any part of the transaction fails, all resource managers roll back their respective updates.

This is accomplished using the two-phase commit protocol. In this protocol, the activity of one or more resource managers is controlled by a separate piece of software called a transaction coordinator.

CRM Architecture

A minimum of two COM components must be implemented to create a CRM scenario. At least one CRM Worker, and a CRM Compensator are required. The COM+ CRM functionality provides the CRM clerk and a durable log file. The CRM Worker contains the application-level code that directs the business logic employed by the Compensating Resource Manager. If the CRM writes XML files, the CRM Worker is likely to contain a WriteToFile method, along with a COM+ implementation of JMS interfaces to the message service. The CRM Worker acts as a transacted COM+ component that is configured to require a transaction. When an application activates a CRM Worker component, the CRM Worker instantiates the CRM clerk object, and uses that CRM clerk to register a compensator component.

The functionality provided by SeeBeyond's implementation of CRM is contained within the COM+ library, **stc_mscom.dll**.

The CRM Worker is implemented via the following classes:

- XAConnection
- XAConnectionFactory
- XAQueueConnection
- XAQueueConnectionFactory
- XAQueueSession
- XARecord
- XASession
- XATopicConnection
- XATopicConnectionFactory
- XATopicSession

The CRM Compensator is implemented in the Compensator file.

When the transaction in which the CRM Worker is participating commits, the DTC calls methods contained within the CRM Compensator interface that the CRM Compensator must implement. The DTC makes these calls at each step of a two-phase commit protocol. If the prepare phase is successful, the updates are made permanent by committing the changes. If any part of the complete transaction fails, the transaction rolls back the information, aborting the transaction.

Two-phase Commit Protocol

Implementing distributed transactions is the key to the two-phase commit protocol. The activity of one or more resource managers is controlled by the transaction coordinator. There are five steps in the two-phase commit protocol.

1. An application invokes the commit method in the transaction coordinator.
2. The transaction coordinator contacts the various resource managers relevant to the transaction, and directs them to prepare to commit the transaction. (Begin phase one.)
3. The resource manager must be able to guarantee the ability to commit the transaction, or perform a rollback. Most resource managers write a journal file, containing the intended changes to durable storage. If unable to prepare the transaction, a negative response is set to the transaction coordinator.
4. All responses from the involved resource managers are collected.
5. The transaction coordinator informs the involved resource managers. (Phase Two) If any of resource managers responded negatively, the transaction coordinator sends a rollback command. If all of the resource managers responded affirmatively, the transaction coordinator directs all of the resource managers to commit the transaction. The transaction cannot fail after this point.

Compensating Resource Manager (CRM) Setup

To enable SeeBeyond's CRM functionality, the following steps are required.

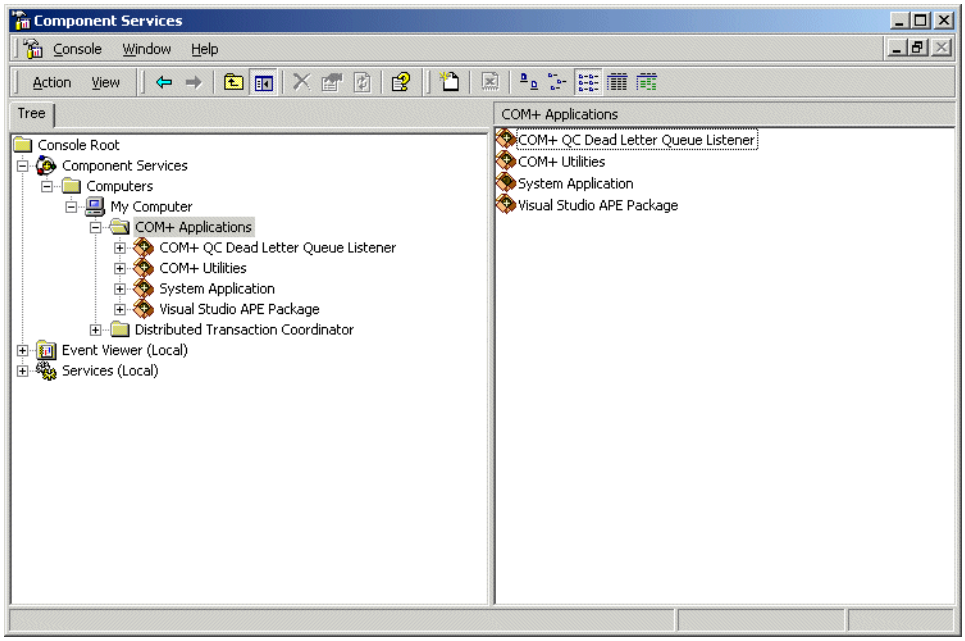
1. From a command prompt of the external system, register the file **stc_mscom.dll** into the Windows Registry by entering the following command

```
regsvr32 your_path_location\stc_mscom.dll
```

2 Open the Component Services applet (**Start -> Settings->Control Panel -> Administrative Tools -> Component Services**).

3 Expand the **Component Services** folder (see Figure 5) and right-click **COM+ Applications**.

Figure 5 Component Services Folder

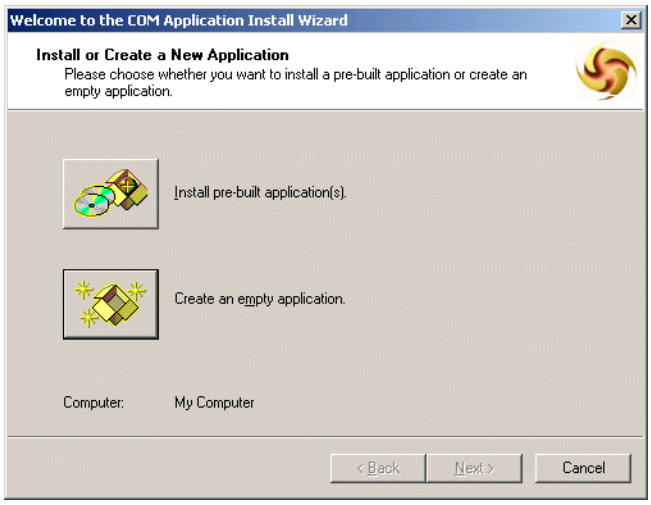


4 On the shortcut menu, click **New\Application**. The COM Application Install Wizard opens (see Figure 6). Click **Next** to continue.

Figure 6 COM Application Install Wizard

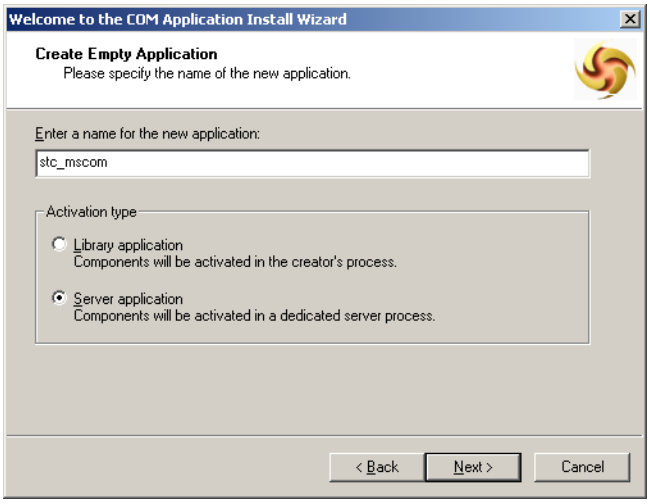
5 In the **Install or Create** step (see Figure 7), click **Create an empty application**.

Figure 7 COM Application Install Wizard



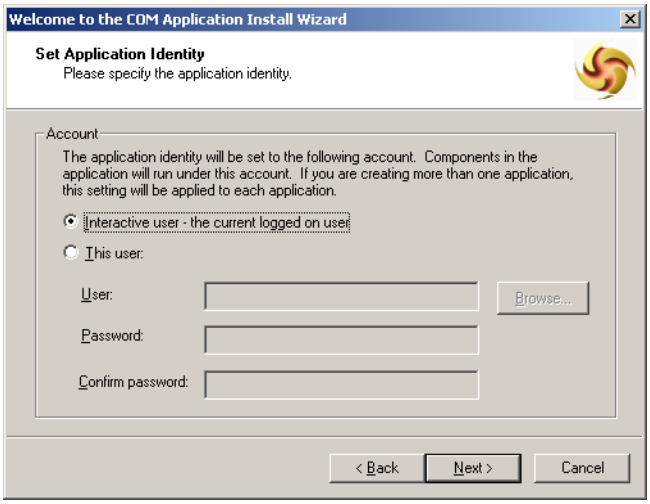
6 In the **Create Empty Application** step, enter the name **stc_mscom** and click the option button **Server application** (as in Figure 8), and then click **Next**.

Figure 8 COM Application Install Wizard: New Application



7 In the **Set Application Identity** step, click **Interactive User** (as in Figure 9), and then click **Next**.

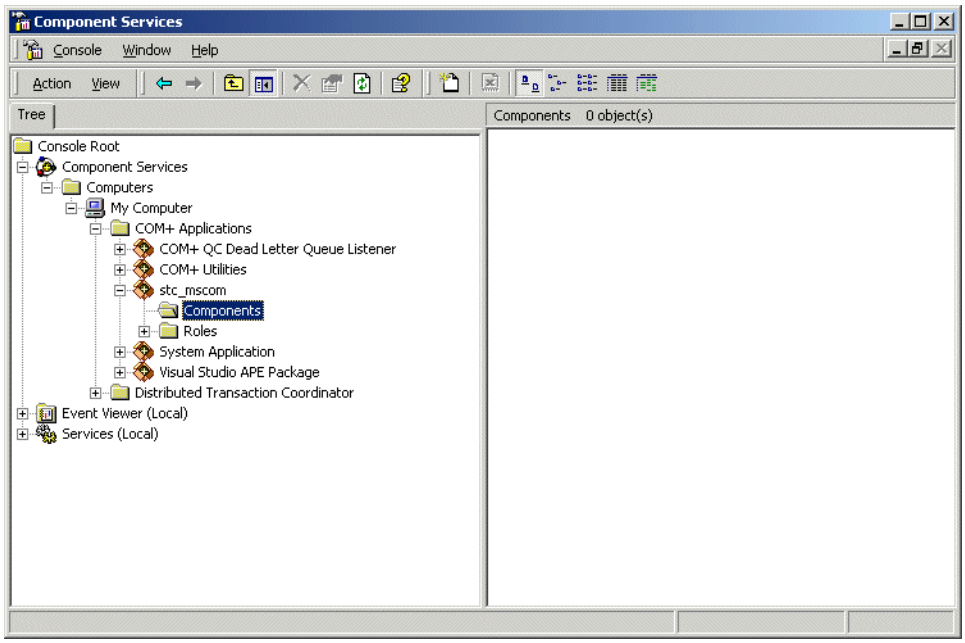
Figure 9 COM Application Install Wizard: Set Application Identity



8 Click **Finish**.

9 Expand the **stc_mscom** component; see Figure 10.

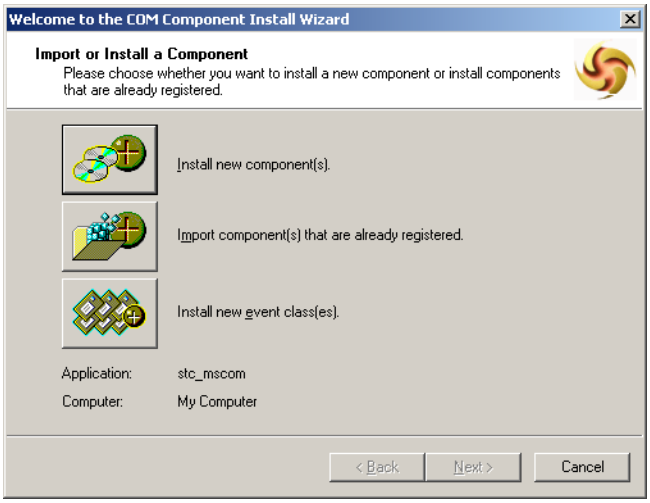
Figure 10 Component Services: stc_mscom Component



10 Right-click the **Components** folder. On the shortcut menu, click **New Component**.

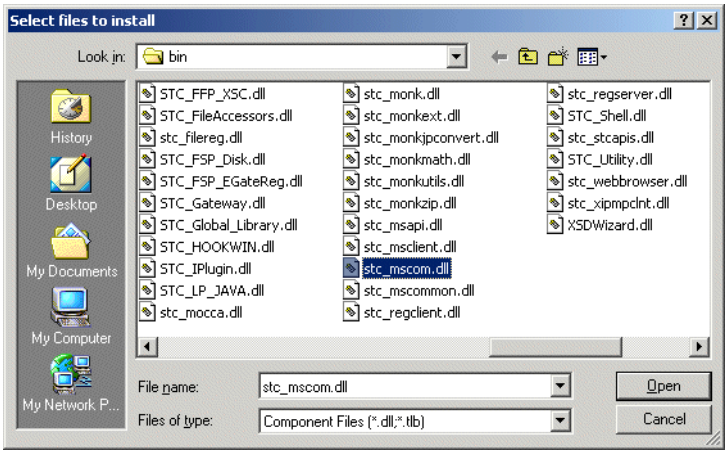
11 The COM Component Install Wizard opens (see Figure 11). Click **Install new component(s)**.

Figure 11 COM Component Install Wizard



12 In the **Install new components** step, click **Add** to open the **Select Files to Install** dialog box (see Figure 12). Locate and open the file **stc_mscom.dll**.

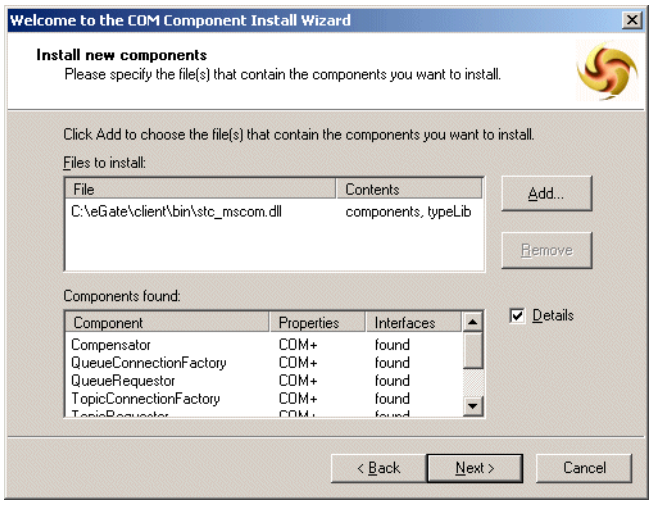
Figure 12 COM Component Install Wizard



- If you are running the **.dll** on the same machine where e*Gate was installed, the file is located in *<eGate>***client\bin** directory.
- If **stc_mscom.dll** has been copied to another system, the file is located in the directory where you pasted it previously.

13 Once the component appears in the **Components found** pane, ensure that the **Details** box is selected (as in Figure 13), and then click **Next** to continue.

Figure 13 COM Component Install Wizard: Add

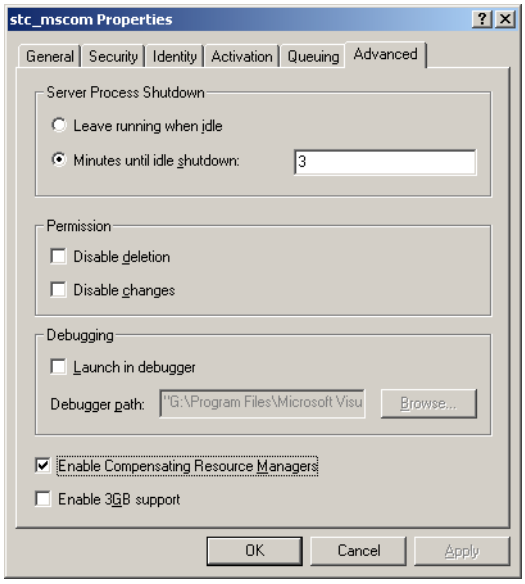


14 Click **Finish**.

15 Right-click the **stc_mscom** component and, on the shortcut menu, click **Properties**.

16 The **stc_mscom Properties** dialog box appears. In the Advanced tab, ensure **Enable Compensating Resource Manager** is selected (as in Figure 14), and then click **OK**.

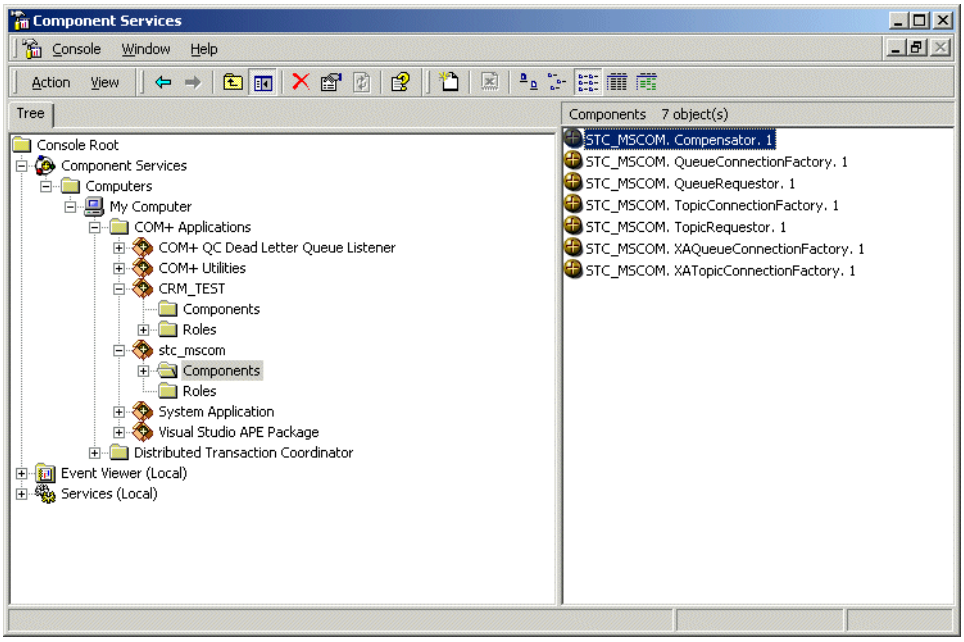
Figure 14 stc_mscom Properties: Advanced



17 Expand the **stc_mscom** component and click the **Components** folder to view the objects it contains.

18 In the **Components** pane (on the right side of the window; see Figure 15), right-click **STC_MSCOM.Compensator**, and, on the shortcut menu, click **Properties**.

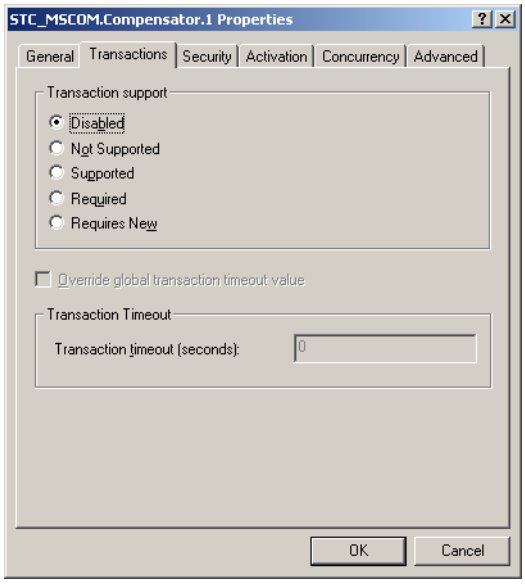
Figure 15 STC_MSCOM.Compensator Properties



The **STC_MSCOM.Compensator Properties** dialog box appears.

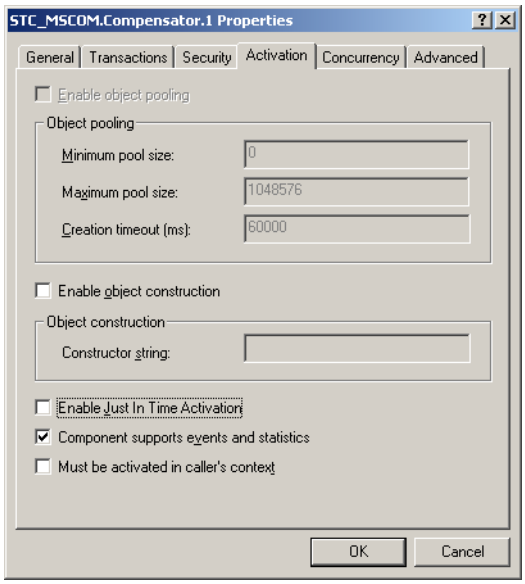
19 In the Transactions tab: For **Transaction support**, click **Disabled** (as in Figure 16).

Figure 16 STC_MSCOM.Compensator Properties:Transaction Support



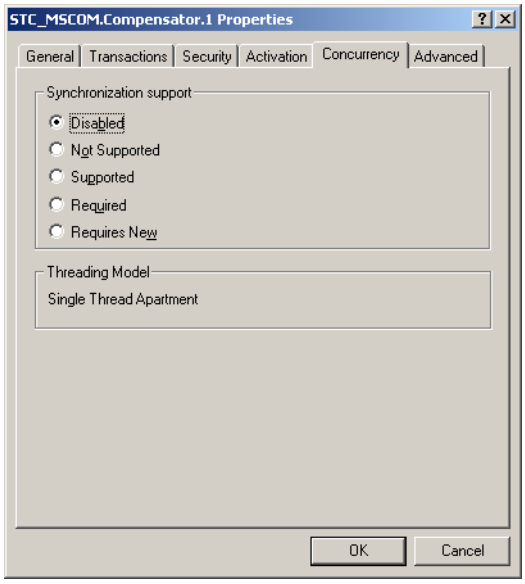
20 In the Activation tab: Clear **Enable Just In Time Activation** (as in Figure 17).

Figure 17 STC_MSCOM.Compenstator Properties:Activation



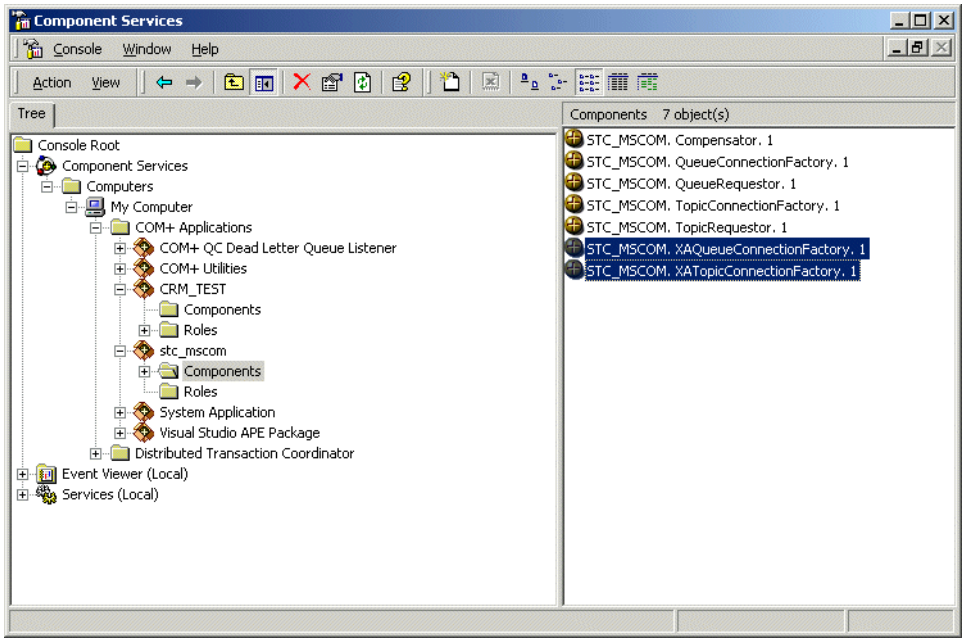
21 In the Concurrency tab: For **Synchronization support**, click **Disabled** (as in Figure 18), and then click **OK**.

Figure 18 STC_MSCOM.Compensator Properties:Concurrency



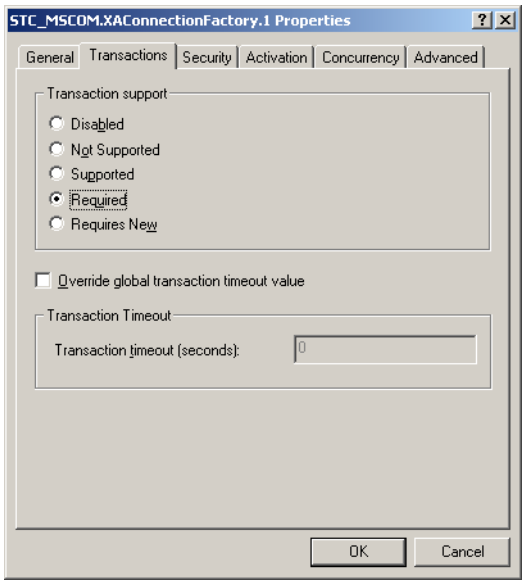
22 In the **Components** pane right-click **STC_MSCOM.XAQueueConnectionFactory** and **STC_MSCOM.XATopicConnectionFactory** (as in Figure 19) and, on the shortcut menu, click **Properties**.

Figure 19 STC_MSCOM.XAConnectionFactory Properties



23 In the Transactions tab: For **Transaction support**, click **Required** (as in Figure 20).

Figure 20 STC_MSCOM.XAConnectionFactory Properties:Transaction Support



24 In the Activation tab: Ensure that **Enable Just In Time Activation** is selected.

25 In the Concurrency tab: For **Synchronization support**, click **Required**, and then click **OK**.

3.2 Configuring the Message Server

For information about the architecture and specific operation of the JMS IQ Manager (Message Server), see the *SeeBeyond JMS Intelligent Queue User's Guide.*

The SeeBeyond JMS IQ Manager is compliant with JMS version 1.0.2, and provides persistent nonvolatile storage of messages (Events), along with the necessary routing. The SeeBeyond JMS IQ Manager acts as a Message Server.

3.2.1. Considerations

The JMS Topic/Queue names and the e*Gate Event Types must coincide.

The individual writing any external JMS code must know the expected data format (byte or text), the name of the Topic/Queue (which must coincide with the Event Type name), the name of host and port number of the JMS client.

Segment size (512 bytes/page for Windows, 1024 bytes for UNIX) must always be larger than the largest expected Event, preferably by an order of magnitude.

For more information about the JMS IQ Managers, see the *SeeBeyond JMS Intelligent Queue User's Guide*.

Chapter 4

Implementing JMS

This chapter describes the implementation models, along with a sample implementation for the SeeBeyond Message Service (SeeBeyond JMS).

To implement JMS in Java or COM+

- For information on what you need to use the APIs, see **"Implementing JMS Models in Java or COM+" on page 85**.
- For sample code, see **"Sample Code for Using JMS in Java and COM+" on page 88**.
- For a discussion of the sample schema, see **"Sample Schema Implementation" on page 131**.

To implement JMS in C or RPG

- For information on what you need to use the APIs, see **"Implementing JMS Models in C or RPG" on page 138**.
- For explanations of the wrapper programs, see **"Wrapper Functions for C and RPG" on page 138**.
- For sample code, see **"Sample Code for Using JMS in C or RPG" on page 139**.
- For a discussion of the sample schema, see **"Sample Schema Implementation" on page 131**.

To implement JMS in C++

- For information on what you need to use the APIs, see **"Implementing JMS Models in C++" on page 166**.
- For sample code, see **"Sample Code for Using JMS in C++" on page 167**.
- For a discussion of the sample schema, see **"Sample Schema Implementation" on page 131**.

4.1 Implementing JMS Models in Java or COM+

This section discusses how to use the JMS Java APIs and the JMS COM+ APIs to exchange data with an e*Gate system.

Considerations

To enable the client system to communicate with the e*Gate API Kit, you must do the following:

1. The JMS Topic/Queue names and the e*Gate Event Types names must coincide.
2. The individual writing any external JMS code must know the expected data format, the name of the Topic/Queue, the name of host and port number of the JMS server.
3. The methods used must correspond to the expected data format.
4. For a list of e*Gate supported Java/COM+ classes, interfaces and methods, please see **"Client Libraries for the SeeBeyond JMS API" on page 189**.
5. The client code samples provided are intended to work directly with the sample schema provided. These are only samples created as a demonstration of possible behavior.

4.1.1. Message Overview

The message is defined by the message structure, the header and the properties. All of the data and Events in a JMS application are expressed using messages, while the additional components exist to facilitate the transferal of messages.

Message Structure

Message Service messages are composed of the following:

- **Header** - All messages support the same set of header fields. These header fields contain values used by both clients and providers to identify and route messages.
- **Properties** - Properties provide a way to add optional header fields to messages
  - Application-specific
  - Standard properties
  - Provider-specific
- **Body** (or **Payload**) - JMS provides for supporting different types of payload. The current JMS e*Way Connection supports bytes and text messaging.

Message Header Fields

When a message is received by the client, the message's header is transmitted in its entirety.

JMSDestination

The JMSDestination header field provides the destination to which the message is being sent.

JMSDeliveryMode

The JMSDeliveryMode header field provides the mode of delivery when the message was sent. The two modes of delivery are *non-persistent* and *persistent*. Non-persistent

mode causes the lowest overhead, because it does not require the message to be logged to stable storage; however, non-persistent messages can be lost. Persistent mode instructs the provider to ensure that messages are not lost in transit due to provider failure.

JMSMessageID

The JMSMessageID header field contains a value intended to uniquely identify each message sent by a provider. The JMSMessageID is a String value, that should contain a unique key for identifying messages in a historical repository. The provider must provide the scope of uniqueness.

The JMSMessageID must start with the **ID:** prefix.

JMSTimestamp

The JMSTimestamp header field contains the specific time that a message is handed off to a provider to be sent. It is not the actual transmission time, because the send may occur later, due to pending transactions.

JMSExpiration

The JMSExpiration is the time that is calculated as the sum of the time-to-live value specified on the send method and the current GMT value. After the send method is returned, the message's JMSExpiration header field contains this value. If the time-to-live is specified as zero, expiration is also set to zero, and the message does not expire.

JMSRedelivered

The JMSRedelivered header filed contains the information that the message was re-delivered to the consumer. If the header is "true", the message is re-delivered, and false if it's not. The message may be marked as re-delivered if a consumer fails to acknowledge delivery of the message, or if the JMS provider is uncertain that the consumer received the message.

```
boolean isRedelivered = message.getJMSRedelivered()
```

JMSPriority

The JMSPriority header field provides the message's priority. There is a ten-level priority value system, with 0 as the lowest priority and 9 as the highest. Priorities between 0-4 are gradations of normal priority, while 5-9 are expedited priorities.

JMSReplyTo

To enable the consumer to reply to a message associated with a specific producer, the JMSReplyTo header contains the javax.jms.Destination, indicating the address to which to reply.

```
message.setJMSReplyTo(topic);
...
Topic topic = (Topic) message.getJMSReplyTo();
```

JMSCorrelationID

The JMSCorrelationID header field provides a header field used to associate the current message with some previous message or application-specific ID. Usually the JMSCorrelationID is used to tag a message as a reply to a previous message identified by a JMSMessageID. The JMSCorrelationID can contain any value, it is not limited to JMSMessageID.

```
message.setJMSCorrelationID(identifier)
...
String correlationid = message.getJMSCorrelationID();
```

JMSType

The JMSType header field is optionally set by the JMS client. The main purpose is to identify the message structure and the payload type. Not all vendors support this header.

Message Properties

Properties allow a client, via message selectors, to have the JMS provider select messages based on application-specific criteria. The property values must be set prior to sending a message.

Message Body (Payload)

The full JMS specification defines six types of message body, also called *payload*. Each form is defined by a message interface. Currently, the following interfaces are supported by e*Gate:

- TextMessage - A message whose payload is a **java.lang.String**. It is expected that String messages will be used extensively. This type can be used to exchange both simple text messages and more complex data, such as XML documents.
- BytesMessage - A message whose payload is a stream of uninterpreted bytes. This message type is for literally encoding a body to match an existing message format. It can be used for exchanging data in an application's native format or when JMS is being used purely as a transport between two systems.

4.2 Sample Code for Using JMS in Java and COM+

Code samples are provided on the product CD-ROM as shown in Table 9.

Table 9 Sample Code for Using JMS in Java and COM+

Location	Contents
samples\jmsapi	File **jmsdemo.zip** (sample schema): See **"Sample Schema Implementation" on page 131**.

Table 9 Sample Code for Using JMS in Java and COM+

Location	Contents
samples\jmsapi\java	Java source code samples: ▪ Publisher.java: See **"Java Publish" on page 90**. ▪ Subscriber.java: See **"Java Subscribe" on page 92**. ▪ Sender.java: See **"Java Point-to-Point Sender" on page 96**. ▪ Receiver.java: See **"Java Point-to-Point Receiver" on page 97**. ▪ SampleTopicRequestor.java: See **"Java TopicRequestor" on page 102**. ▪ SampleQueueRequestor.java: See **"Java QueueRequestor" on page 104**. ▪ SelectorPublisher.java: See **"Java Message Selector Publisher" on page 114**. ▪ SelectorSubscriber.java: See **"Java Message Selector Subscriber" on page 116**. ▪ XAPublisher.java: See **"Java XA Publisher" on page 118**. ▪ XASubscriber.java: See **"Java XA Subscriber" on page 120**.
samples\jmsapi\com	Samples for COM+: ▪ CRM_Sample: See **"The Compensating Resource Manager" on page 124**. ▪ MessageSelector_Sample: See **"COM VB Message Selector" on page 117**. ▪ Point2Point_Sample: See **"COM VB Point-to-Point" on page 100**. ▪ PublishSubscribe_Sample: See **"COM VB Publish/Subscribe" on page 93**. ▪ QueueRequestor_Sample: See **"COM VB QueueRequestor" on page 106**. ▪ TopicRequestor_Sample: See **"COM VB TopicRequestor" on page 106**. ▪ XA_Sample: See **"COM VB XA Sample" on page 123**.

The external source code provided must be compiled and run, making sure that the host name and port number point to the Participating Host on which the JMS IQ Manager is running.

4.2.1. The Publish/Subscribe Model

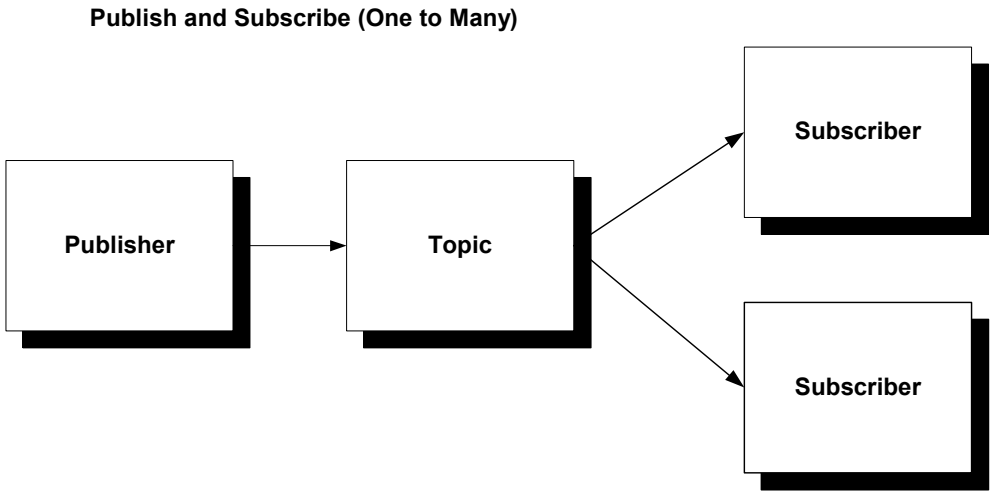
The Publish/Subscribe model provides the means for a message producer or publisher, to distribute a message to one or more consumers or subscribers. There are three important points to the Publish/Subscribe model:

- Messages are delivered to consumers without having to request them. They are pushed via a channel referred to as a topic. This topic is considered a destination to which producers publish and consumers subscribe. Messages are automatically pushed to all qualified consumers.
- There is no coupling of the producers to the consumers. Both subscribers and publishers can be dynamically added at runtime, allowing the system to change as needed.

- Each client receives a copy of the messages that have been published to those topics to which it subscribes. Multiple subscribers can receive messages published by one producer.

Figure 21 below illustrates a basic Publish/Subscribe schema.

Figure 21 The Publish/Subscribe Schema



The Producer publishes a TopicA, which is stored on the Message Server. The Consumers subscribe to TopicA, which is then pushed to the consumers.

Java Publish

The code sample below illustrates the following steps:

1. Create the connection.
2. Create the session from connection (true indicates that the session is transacted).
3. Create the publisher and the bytesmessage or textmessage.
4. Send messages, varying the bytes or text if desired.
5. When all messages have been sent, close the connection.

The following code demonstrates a sample scenario using the "Publish" functionality.

```
import javax.jms.*;
import com.seebeyond.jms.client.STCTopicConnectionFactory;

class Publisher {

    public static void main(String args[])
    {
        String hostName = "localhost";
        int port = 7555;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
                if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
```

```
                else if (args[i].startsWith("-p") || args[i].startsWith("-port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
        String topicName = "PubSubSample";
        TopicConnectionFactory tcf = null;
        TopicConnection topicConnection = null;
        TopicSession topicSession = null;
        Topic topic = null;
        TopicPublisher topicPublisher = null;
        TextMessage message = null;
        final int MAX_MESSAGE_SIZE = 60;

        System.out.println("pub topic name is " + topicName);
        /*
         * Create connection.
         * Create session from connection; true means session is
         * transacted.
         * Create publisher and text message.
         * Send messages, varying text slightly.
         * Finally, close connection.
         */
        try {
            tcf = new STCTopicConnectionFactory(hostName, port);
            topicConnection = tcf.createTopicConnection();
            topicConnection.start();
            topicSession = topicConnection.createTopicSession(true,
            Session.AUTO_ACKNOWLEDGE);
            topic = topicSession.createTopic(topicName);
            topicPublisher = topicSession.createPublisher(topic);

            message = topicSession.createTextMessage();
            String s = new String("This is message.");
            message.setText(s);
            try {
                System.out.println("... Publishing message: " +
                    s);
                topicPublisher.publish(message);
                topicSession.commit();
            }
            catch (Exception exx) {
                exx.printStackTrace();
            }

        }
        catch (JMSException e) {
            System.out.println("Exception occurred: " + e.getMessage());
        }
        finally {
            if(topicConnection != null) {
                try {
                    System.out.println("... Closing connection ...");
                    topicConnection.close();
                }
                catch (JMSException e) {
                    e.printStackTrace();
                }
            }
        }
    }
}
```

Java Subscribe

The code sample below illustrates the following steps:

1. Create the connection.
2. Create the session from connection (true indicates that the session is transacted).
3. Create the subscriber.
4. Register message listener (TextListener).
5. When all messages have been received, enter "Q" to quit.
6. Close the connection.

The following code sample demonstrates use of "subscribe" functionality.

```
import javax.jms.*;
import java.io.*;
import com.seebeyond.jms.client.*;
import com.seebeyond.jms.message.*;

public class Subscriber {

    public static void main(String args[]) {
        String hostName = "localhost";
        int port = 7555;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
                if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
        String topicName = "eGatePubSubSample";
        TopicConnectionFactory tcf = null;
        TopicConnection topicConnection = null;
        TopicSession topicSession = null;
        Topic topic = null;
        TopicSubscriber topicSubscriber = null;
        STCBytesMessage message = null;
        InputStreamReader inputStreamReader = null;
        char answer = '\0';

        System.out.println("Topic name is " + topicName);

        /*
         * Create connection.
         * Create session from connection; true means session is
         * transacted.
         * Create subscriber.
         * Register message listener (TextListener).
         * Receive text messages from topic.
         * When all messages have been received, enter Q to quit.
         * Close connection.
         */
        try {
            tcf = new STCTopicConnectionFactory(hostName, port);
            topicConnection = tcf.createTopicConnection();
            topicConnection.start();
```

```
                topicSession = topicConnection.createTopicSession(true,
                Session.AUTO_ACKNOWLEDGE);
                topic = topicSession.createTopic(topicName);
                topicSubscriber = topicSession.createSubscriber(topic);

                /*
                 * Inner anonymous class that implements onMessage method
                 * of MessageListener interface.
                 *
                 */
                topicSubscriber.setMessageListener(new MessageListener(){
                    public void onMessage(Message message) {
                        STCTextMessage msg = null;
                        final int MAX_MESSAGE_SIZE = 60;
                        try {
                            if (message instanceof TextMessage) {
                                msg = (STCTextMessage) message;
                                System.out.println("... Reading message: " +
                                    msg.getText());
                            }
                            else {
                                System.out.println("Message of wrong type: " +
                                message.getClass().getName());
                            }
                        }
                        catch (Exception e) {
                            System.out.println("JMSException in onMessage(): "
                            + e.toString());
                        }
                        catch (Throwable te) {
                            System.out.println("Exception in onMessage():" +
                            te.getMessage());
                        }
                    }
                });
                topicSession.commit();
                System.out.println("To end program, enter Q or q, then <return>");
                inputStreamReader = new InputStreamReader(System.in);
                while (!((answer == 'q') || (answer == 'Q'))) {
                    try {
                        answer = (char)inputStreamReader.read();
                    }
                    catch (IOException e) {
                        System.out.println("I/O exception: " + e.toString());
                    }
                }
            }
            catch (JMSException e) {
                System.out.println("Exception occurred: " + e.toString());
                System.exit(1);
            }
            finally {
                if (topicConnection != null) {
                    try {
                        System.out.println("... Closing connection ...");
                        topicSession.commit();
                        topicConnection.close();
                    }
                    catch (JMSException e) {}
                }
            }
        }
    }
```

COM VB Publish/Subscribe

```
Option Explicit

Dim topicConnectionFactory As New topicConnectionFactory
Dim topicConnection As topicConnection
```

```
Dim topicSession As topicSession
Dim topic, topic2 As topic
Dim publisher As TopicPublisher
Dim subscriber As TopicSubscriber
Dim MessagePublished  As TextMessage
Dim MessageReceived As TextMessage

Private Sub Form_Load()
' You should replace the host name and port number with the actual values
    topicConnectionFactory.HostName = "localhost"
    topicConnectionFactory.Port = 24053
' Create a topic connection
    Set topicConnection = topicConnectionFactory.CreateTopicConnection()
' Create a session
    Set topicSession = topicConnection.CreateTopicSession(True,
msAutoAcknowledge)
' Start the session
    topicConnection.Start
' Create a topic
    Set topic = topicSession.CreateTopic(txtTopicName)
    Set topic2 = topicSession.CreateTopic("eGate" & txtTopicName)

' Create a publisher
    Set publisher = topicSession.CreatePublisher(topic)
' Create a subscriber
    Set subscriber = topicSession.CreateSubscriber(topic2)
End Sub

Private Sub cmdPublish_Click()
' Create a text message
    Set MessagePublished =
topicSession.CreateTextMessage(txtPublished.Text)
' Publish a message
    publisher.Publish MessagePublished
' Commit the message
    topicSession.Commit
End Sub

Private Sub cmdReceive_Click()
' Receive the message
    Set MessageReceived = subscriber.ReceiveNoWait
    If MessageReceived Is Nothing Then
        txtReceived = "No Message Received"
    Else
    ' Commit the message
        topicSession.Commit
        txtReceived = MessageReceived.Text
    End If
End Sub
```

ASP Publish

```
<%@ Language=VBScript %>


<%
          'Ensure that this page is not cached.
          Response.Expires = 0
%>

<HTML>
<HEAD>
<META NAME="GENERATOR" Content="Microsoft FrontPage 4.0">
```

```
</HEAD>
<BODY>
<%

set topicConnectionFactory =
server.CreateObject("STC_MSCOM.TopicConnectionFactory")

topicConnectionFactory.hostname = "JMS_Server_Machine"

'topicConnectionFactory.port = "JMS_Server_Port_Number"

Set topicConnection = topicConnectionFactory.CreateTopicConnection()

Set topicSession = topicConnection.CreateTopicSession(True,
AUTO_ACKNOWLEDGE)

topicConnection.Start

Set topic = topicSession.CreateTopic("test")

Set Publisher = topicSession.CreatePublisher(topic)

Set subscriber = topicSession.CreateSubscriber(topic)

Set MessagePublished = topicSession.CreateTextMessage("Hello World")

Publisher.Publish MessagePublished

topicSession.Commit

Set MessageReceived = subscriber.Receive()

topicSession.Commit

Response.write ("Answer : " & MessageReceived.Text)

%>

<P></P>

</BODY>
</HTML>
```

4.2.2. The Point-to-Point Model

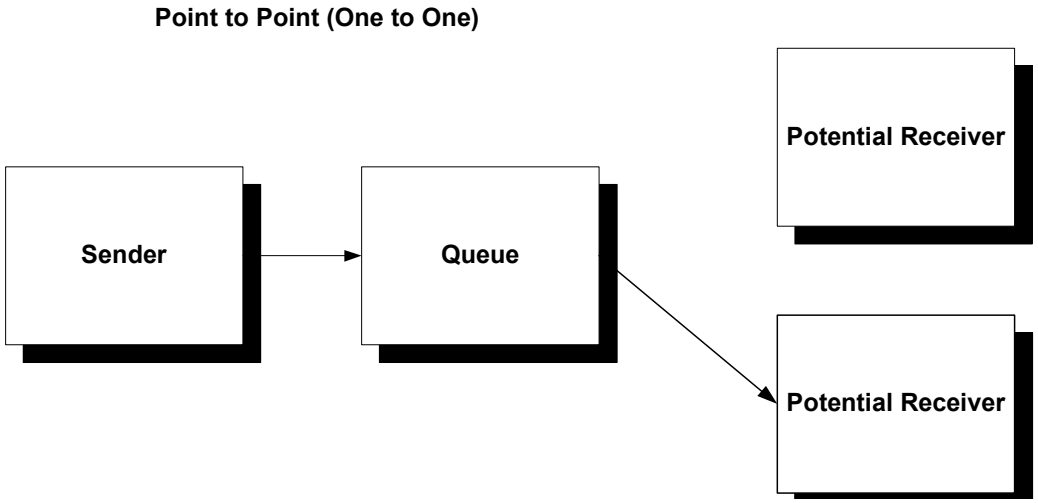
Point-to-Point messaging is based on the sending of a message to a named destination (as is the publish/subscribe model). There is no direct coupling of the producers to the consumers. One main difference between point-to-point and publish/subscribe messaging is that in the first, messages are delivered, without consideration of the current connection status of the receiver.

In a point-to-point model, the producer is referred to as a sender, while the consumer is referred to as a receiver. The following characteristics apply:

- Message exchange takes place via a queue. The queue acts as a destination to which producers send messages, and a source from which receivers consume messages.

- Each message is delivered to only one receiver. Multiple receivers may connect to a queue, but each message in the queue may only be consumed by one of the queue's receivers.
- The queue delivers messages to consumers in the order that they were placed in the queue by the message server. As messages are consumed, they are removed form the "front of the line".
- Receivers and senders can be added dynamically at runtime, allowing the system to grow as needed.

Figure 22 Point to Point



Java Point-to-Point Sender

```
import javax.jms.*;
import com.seebeyond.jms.client.STCQueueConnectionFactory;


class Sender {

    public static void main(String args[]) {
        String hostName = "localhost";
        int port = 24053;
        try
        {
System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
               if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
```

```
            String queueName = "P2PSample";
            QueueConnectionFactory qcf = null;
            QueueConnection queueConnection = null;
            QueueSession queueSession = null;
            Queue queue = null;
            QueueSender queueSender = null;
            TextMessage message = null;
            final int MAX_MESSAGE_SIZE = 60;

            System.out.println("pub queue name is " + queueName);
            /*
             * Create connection.
             * Create session from connection; true means session is
             * transacted.
             * Create sender and text message.
             * Send messages, varying text slightly.
             * Finally, close connection.
             */
            try {
                qcf = new STCQueueConnectionFactory(hostName, port);
                queueConnection = qcf.createQueueConnection();
                queueConnection.start();
                queueSession = queueConnection.createQueueSession(true,
                    Session.AUTO_ACKNOWLEDGE);
                queue = queueSession.createQueue(queueName);
                queueSender = queueSession.createSender(queue);

                message = queueSession.createTextMessage();
                String s = new String("This is message ");
                message.setText(s);
                try {
                    System.out.println("... Sending message: " +
                        s);
                    queueSender.send(message);
                    queueSession.commit();
                }
                catch (Exception exx) {
                    exx.printStackTrace();
                }

            }
            catch (JMSException e) {
                System.out.println("Exception occurred: " + e.getMessage());
            }
            finally {
                if(queueConnection != null) {
                    try {
                        System.out.println("... Closing connection ...");
                        queueConnection.close();
                    }
                    catch (JMSException e) {
                        e.printStackTrace();
                    }
                }
            }
        }
    }
```

Java Point-to-Point Receiver

```
import javax.jms.*;
import java.io.InputStreamReader;
import java.io.IOException;
```

```
import com.seebeyond.jms.client.STCQueueConnectionFactory;

public class Receiver {

    public static void main(String args[]) {
        String hostName = "localhost";
        int port = 24053;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
               if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
        String queueName = "eGateP2PSample";
        QueueConnectionFactory qcf = null;
        QueueConnection queueConnection = null;
        QueueSession queueSession = null;
        Queue queue = null;
        QueueReceiver queueReceiver = null;
        TextMessage message = null;
        InputStreamReader inputStreamReader = null;
        final Object syncObject = new Object();
        char answer = '\0';

        System.out.println("Queue name is " + queueName);

        /*
         * Create connection.
         * Create session from connection; true means session is
         * transacted.
         * Create receiver.
         * Register message listener (TextListener).
         * Receive text messages from queue.
         * When all messages have been received, enter Q to quit.
         * Close connection.
         */
        try {
            qcf = new STCQueueConnectionFactory(hostName, port);
            queueConnection = qcf.createQueueConnection();
            queueConnection.start();
            queueSession = queueConnection.createQueueSession(true,
                Session.AUTO_ACKNOWLEDGE);
            queue = queueSession.createQueue(queueName);
            queueReceiver = queueSession.createReceiver(queue);

            /*
             * Inner anonymous class that implements onMessage method
             * of MessageListener interface.
             *
             */
            queueReceiver.setMessageListener(new MessageListener(){
                public void onMessage(Message message) {
                    STCTextMessage msg = null;
```

```
                        final int MAX_MESSAGE_SIZE = 60;
                        try {
                            if (message instanceof TextMessage) {
                                msg = (STCTextMessage) message;
                                System.out.println("... Reading message: " +
                                msg.getText());
                            }
                            else {
                                System.out.println("Message of wrong type: " +
                                message.getClass().getName());
                            }
                            synchronized(syncObject)
                            {
                                syncObject.wait();
                            }
                        }
                        catch (InterruptedException ie)
                        {
                        }
                        catch (Exception e) {
                            System.out.println("JMSException in onMessage(): "
                            + e.toString());
                        }
                        catch (Throwable te) {
                            System.out.println("Exception in onMessage():" +
                            te.getMessage());
                        }
                    }
                });
                queueSession.commit();
                System.out.println("-----To receive again, enter R or r, then
<return>");
                System.out.println("-----To end program, enter Q or q, then
<return>");
                inputStreamReader = new InputStreamReader(System.in);
                while (!((answer == 'q') || (answer == 'Q'))) {
                    try {
                        answer = (char)inputStreamReader.read();
                        if (answer == 'r' || answer == 'R')
                        {
                            synchronized(syncObject)
                            {
                              syncObject.notifyAll();
                            }
                        }
                    }
                    catch (IOException e) {
                        System.out.println("I/O exception: " + e.toString());
                    }
                }
            }
            catch (JMSException e) {
                System.out.println("Exception occurred: " + e.toString());
                System.exit(1);
            }
            finally {
                if (queueConnection != null) {
                    try {
                        System.out.println("... Closing connection ...");
                        queueSession.commit();
                        queueConnection.close();
                    }
                    catch (JMSException e) {}
                }
```

```
            }
        }
    }
```

COM VB Point-to-Point

```
Option Explicit

Dim QueueConnectionFactory As New QueueConnectionFactory
Dim queueConnection As queueConnection
Dim queueSession As queueSession
Dim queue, queue2 As queue
Dim queuesender As queuesender
Dim queuereceiver, queuereceiver2 As queuereceiver
Dim MessagePublished  As BytesMessage
Dim MessageReceived As TextMessage
Dim length As Integer

Private Sub Form_Load()
' You should replace the host name and port number with the actual values
    QueueConnectionFactory.HostName = "localhost"
    QueueConnectionFactory.Port = 24053
' Create a queue Connection
    Set queueConnection = QueueConnectionFactory.CreateQueueConnection()
' Create a queue session
    Set queueSession = queueConnection.CreateQueueSession(True,
msAutoAcknowledge)
' Start the session
    queueConnection.Start
' Create a queue
    Set queue = queueSession.CreateQueue(txtQueueName)
' Create a queue sender
    Set queuesender = queueSession.CreateSender(queue)


' This is for the reply
    Set queue2 = queueSession.CreateQueue("eGate" & txtQueueName)
' Create a queue receiver
    Set queuereceiver2 = queueSession.CreateReceiver(queue2)


End Sub



Private Sub cmdSend_Click()
' Create a bytes message
    Set MessagePublished = queueSession.CreateBytesMessage
    MessagePublished.ClearBody
    length = Len(txtPublished.Text)
    MessagePublished.WriteBytes txtPublished.Text
' Send this message
    queuesender.Send MessagePublished
' Commit this message
    queueSession.Commit
End Sub

Private Sub cmdReceive_Click()
' Receive the message
    Set MessageReceived = queuereceiver2.ReceiveNoWait
    If MessageReceived Is Nothing Then
        txtReceived = "No Message Received"
    Else
    ' Commit this message
```

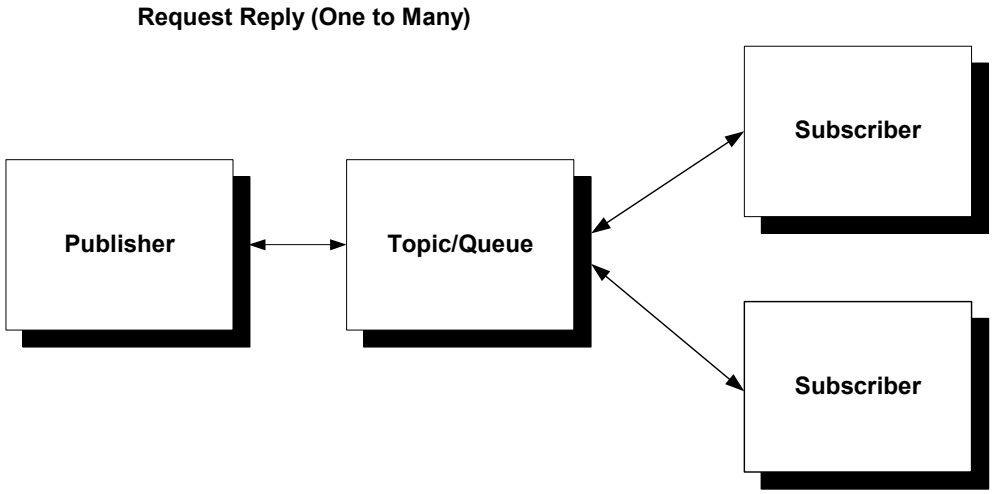
```
            queueSession.Commit
            Dim data As Variant
            txtReceived.Text = MessageReceived.Text
        End If
    End Sub
```

4.2.3. The Request-Reply Model

JMS provides the JMSReplyTo message header field for specifying the destination to which the reply to a message is to be sent. The JMSCorrelationID header field of the reply can be used to reference the original request. Temporary queues and topics can be used as unique destinations for replies. It can be implemented so that one message yields one reply, or one message yields many replies.

Figure 21 below illustrates a basic Request-Reply schema.

Figure 23 The Request-Reply Schema



1. A request is received by the **JMS Connection,** which is controlled by the JMS IQ Manager, the JMSReplyTo property is read into the internally directed by the Collaboration.
2. e*Gate reads in the request from **SampleTopicRequestor**, and appends a message to the end of the message for verification's sake.
3. The **SeeBeyond JMS IQ Manager** sends the message to a Temporary Topic via the JMS Connection.
4. The reply subscriber receives the message.
5. When the **Message Service** users disconnect, the temporary topic is destroyed.

The scenario discussed above need not be configured exactly in this manner. This is just an example that demonstrates a possible scenario.

Java Request-Reply

The code sample below illustrates the following steps:

1. Create the connection.
2. Create the session from connection (true indicates that the session is transacted).
3. Create the topic/queue and byte or text message.
4. Send messages, varying the bytes or text if desired.
5. When all messages have been sent, close the connection.

Java TopicRequestor

```
import javax.jms.*;
import com.seebeyond.jms.client.STCTopicRequestor;
import com.seebeyond.jms.client.STCTopicConnectionFactory;
import java.io.*;


class SampleTopicRequestor
implements ExceptionListener
{

/**
 * Main fuction create TopicRequestor and reply Subscriber.
 * Send reqeust message and wait for reply message.
 */

    public static void main(String args[])
    {

        SampleTopicRequestor listener = new SampleTopicRequestor();
        TopicConnectionFactory factory;
        TopicConnection requestConnection;
        String filename = null;
        File thisFile = null;
        String topicName = "TopicRequestorSample";
        String messageToSend = "SampleMessage";
        char[] myCharMessage = null;
        int fileLength = 0;
        BufferedReader stream = null;
        boolean output = true;
        String host = "localhost";
        int port = 24053;
        byte[] bytesFromEgate= new byte[64];
        String byteArrayStr = "";
        String usage = "Usage: java SampleTopicRequestor [-f/-m file/message] " +
                       "[-topic topic] [-host host] [-port port] " +
                       "[-help] [-output true/false]";
             String help = usage + "\n\n" +
                       "-f <file name>\n" +
                          "-m <message: default SampleMessage>\n" +
                       "-topic <topic name: default TopicRequestor>\n" +
                       "-host <host name where ms server is running: default
localhost>\n" +
                       "-port <port where ms server is running: default 24053>\n" +
                       "-output <display output message or not: default true>\n" +
                         "-help <this screen>\n";


        for(int i = 0; i < args.length; i++) {
            if( args[i].equals("-f") ) {
               filename = args[++i];
               thisFile = new File(filename);
               if( thisFile.canRead() ) {
                   try {
```

```
                        fileLength = (int) thisFile.length();
                        myCharMessage = new char[fileLength + 1];
                        stream = new BufferedReader(new InputStreamReader(new
FileInputStream(filename)));
                        stream.read(myCharMessage, 0, fileLength);
                        messageToSend = new String( myCharMessage );
                    }
                    catch( IOException e) {
                       e.printStackTrace();
                    }
                }
            }
            else if( args[i].equals("-m") )
               messageToSend = args[++i];
            else if ( args[i].equals("-topic") )
               topicName = args[++i];
            else if ( args[i].equals("-host") )
               host = args[++i];
            else if( args[i].equals("-port") )
               port = Integer.parseInt(args[++i]);
            else if( args[i].equals("-output") )
                output = Boolean.getBoolean(args[++i]);
            else if( args[i].equals("-help") ) {
                System.out.println(help);
                System.exit(0);
            }
            else {
                System.out.println(usage);
                System.exit(1);
            }
        }

        try
        {
             // Create TopicConnection
             factory = new STCTopicConnectionFactory(host,port);
             requestConnection = factory.createTopicConnection();
             requestConnection.start();

             // Set the ExceptionListener
             requestConnection.setExceptionListener(listener);

             // Create TopicSession
            TopicSession topicSession = requestConnection.createTopicSession
(false,
                 Session.AUTO_ACKNOWLEDGE);
             // Create Topic
             Topic topic = topicSession.createTopic(topicName);
             // Create TopicRequestor
             STCTopicRequestor requestor = new STCTopicRequestor
(topicSession,topic);

             // Create TextMessage
             TextMessage textMessage = topicSession.createTextMessage();
             textMessage.setText(messageToSend);
             TextMessage replyTextMessage = (TextMessage)
requestor.request(textMessage);
             if( output )
              System.out.println("... Got message: " + replyTextMessage.getText());


            System.out.println("... SampleTopicRequestor finished.");
            requestConnection.close();
        }
        catch(JMSException je)
        {
            je.printStackTrace();
        }
    }
```

```
    public void onException(JMSException e)
    {
        e.printStackTrace();
    }
}
```

Java QueueRequestor

```
import javax.jms.*;
import com.seebeyond.jms.client.STCQueueRequestor;
import com.seebeyond.jms.client.STCQueueConnectionFactory;
import java.io.*;


class SampleQueueRequestor
implements ExceptionListener
{

/**
 * Main function create QueueRequestor and reply Subscriber.
 * Send reqeust message and wait for reply message.
 */

    public static void main(String args[])
    {

        SampleQueueRequestor listener = new SampleQueueRequestor();
        QueueConnectionFactory factory;
        QueueConnection requestConnection;
        String filename = null;
        File thisFile = null;
        String queueName = "QueueRequestorSample";
        String messageToSend = "SampleMessage";
        char[] myCharMessage = null;
        int fileLength = 0;
        BufferedReader stream = null;
        boolean output = true;
        String host = "localhost";
        int port = 24053;
        byte[] bytesFromEgate= new byte[64];
        String byteArrayStr = "";
        String usage = "Usage: java SampleQueueRequestor [-f/-m file/
message] " +
                       "[-queue queue] [-host host] [-port port]" +
                       "[-help] [-output true/false]";
            String help = usage + "\n\n" +
                       "-f <file name>\n" +
                        "-m <message: default SampleMessage>\n" +
                       "-queue <queue name: default QueueRequestor>\n" +
                      "-host <host name where ms server is running: default
localhost>\n" +
                       "-port <port where ms server is running: default
24053>\n" +
                       "-output <display output message or not: default
true>\n" +
                       "-help <this screen>\n";


        for(int i = 0; i < args.length; i++) {
            if( args[i].equals("-f") ) {
               filename = args[++i];
               thisFile = new File(filename);
               if( thisFile.canRead() ) {
                   try {
```

```
                        fileLength = (int) thisFile.length();
                        myCharMessage = new char[fileLength + 1];
                       stream = new BufferedReader(new InputStreamReader(new
FileInputStream(filename)));
                        stream.read(myCharMessage, 0, fileLength);
                        messageToSend = new String( myCharMessage );
                    }
                    catch( IOException e) {
                       e.printStackTrace();
                    }
                }
            }
            else if( args[i].equals("-m") )
               messageToSend = args[++i];
            else if ( args[i].equals("-queue") )
               queueName = args[++i];
            else if ( args[i].equals("-host") )
               host = args[++i];
            else if( args[i].equals("-port") )
               port = Integer.parseInt(args[++i]);
            else if( args[i].equals("-output") )
                output = Boolean.getBoolean(args[++i]);
            else if( args[i].equals("-help") ) {
                System.out.println(help);
                System.exit(0);
            }
            else {
                System.out.println(usage);
                System.exit(1);
            }
        }

        try
        {
            // Create QueueConnection
            factory = new STCQueueConnectionFactory(host,port);
            requestConnection = factory.createQueueConnection();
            requestConnection.start();

            // Set the ExceptionListener
            requestConnection.setExceptionListener(listener);

            // Create QueueSession
           QueueSession queueSession = requestConnection.createQueueSession
(false,
                Session.AUTO_ACKNOWLEDGE);
            // Create Queue
            Queue queue = queueSession.createQueue(queueName);
            // Create QueueRequestor
            STCQueueRequestor requestor = new STCQueueRequestor
(queueSession,queue);

            // Create TextMessage
            TextMessage textMessage = queueSession.createTextMessage();
            textMessage.setText(messageToSend);
            TextMessage replyTextMessage = (TextMessage)
requestor.request(textMessage);
            if( output )
                System.out.println("... Got message: " +
replyTextMessage.getText());


            System.out.println("... SampleQueueRequestor finished.");
            requestConnection.close();
```

```
            }
            catch(JMSException je)
            {
                je.printStackTrace();
            }
        }

        public void onException(JMSException e)
        {
            e.printStackTrace();
            System.exit(1);
        }
    }
```

COM VB TopicRequestor

```
Option Explicit

Dim topicConnectionFactory As New topicConnectionFactory
Dim topicConnection As topicConnection
Dim topicSession As topicSession
Dim topic As topic
Dim topicRequestor As New topicRequestor
Dim MessagePublished  As TextMessage
Dim MessageReceived  As TextMessage

Private Sub Form_Load()
' You should replace the host name and port number with the actual values
    topicConnectionFactory.HostName = "localhost"
    topicConnectionFactory.Port = 24053
' Create a topic connection
    Set topicConnection = topicConnectionFactory.CreateTopicConnection()
' Create a topic session
    Set topicSession = topicConnection.CreateTopicSession(False,
msAutoAcknowledge)
' Start the session
    topicConnection.Start
End Sub

Private Sub cmdStart_Click()
    cmdStart.Enabled = False
' Create a topic
    Set topic = topicSession.CreateTopic(txtTopicName)
' Create a topic requestor
    topicRequestor.Create topicSession, topic
' Create a text message
    Set MessagePublished =
topicSession.CreateTextMessage(txtPublished.Text)
' Request a message
    Set MessageReceived = topicRequestor.Request(MessagePublished)
    txtReceived = MessageReceived.Text
    cmdStart.Enabled = True
End Sub
```

COM VB QueueRequestor

```
Option Explicit

Dim queueConnectionFactory As New queueConnectionFactory
Dim queueConnection As queueConnection
Dim queueSession As queueSession
Dim queue As queue
Dim queueRequestor As New queueRequestor
```

```
Dim MessagePublished  As TextMessage
Dim MessageReceived  As TextMessage

Private Sub Form_Load()
' You should replace the host name and port number with the actual
' values
    queueConnectionFactory.HostName = "localhost"
    queueConnectionFactory.Port = 24053
' Create a queue connection
    Set queueConnection =
queueConnectionFactory.CreateQueueConnection()
' Create a queue session
    Set queueSession = queueConnection.CreateQueueSession(False,
msAutoAcknowledge)
' Start the session
    queueConnection.Start
End Sub

Private Sub cmdStart_Click()
' Create a queue
    cmdStart.Enabled = False
    Set queue = queueSession.CreateQueue(txtQueueName)
' Create a text message
    Set MessagePublished =
queueSession.CreateTextMessage(txtPublished.Text)
' Create a queue requestor
    queueRequestor.Create queueSession, queue
' Request a message
    Set MessageReceived = queueRequestor.Request(MessagePublished)
    txtReceived = MessageReceived.Text
    cmdStart.Enabled = True
End Sub
```

4.2.4. JNDI

To use JNDI in your programs, you need to set up its compilation and execution environments. The following are the JNDI packages:

- `javax.naming`: Provides the classes and interfaces for accessing naming services.
  - `Context`: Represents a naming context, which consists of a set of name-to-object bindings.
  - `Name`: Represents a generic name for an ordered sequence of components.
  - `NameParser`: Used for parsing names from a hierarchical namespace.
  - `NamingEnumeration`: Used for enumerating lists returned by methods in the `javax.naming` and `javax.naming.directory` packages.
  - `Referenceable`: Implemented by an object that provides a Reference to itself.
    - `BinaryRefAddr`: Binary form of the address for a communications end-point
    - `Binding`: Name/Object binding found as found in a context.
    - `CompositeName`: Composite name, as a sequence of names spanning multiple name spaces.
    - `CompoundName`: Compound name, as a name contained in a name space.

- `InitialContext`: Starting context for performing naming operations.
- `LinkRef`: A reference whose contents is a link name, which is bound to the atomic name in a context.
- `NameClassPair`: Object name and class name pair as found in a context.
- `RefAddr`: Address of a communications end-point.
- `Reference`: Reference to an object as found in the naming/directory system.
- `StringRefAddr`: String for of the address for a communications end-point.

- `javax.naming.directory`: Extends the `javax.naming` package to provide functionality for accessing directory services.
  - `Attribute`:Represents an attribute associated with a named object.
  - `Attributes`: Represents a collection of attributes.
  - `DirContext`: Directory service interface, contains the methods for examining and updating attributes associated with objects, and for searching the directory.
    - `BasicAttribute`: Class provides basic implementation of `Attribute` interface.
    - `BasicAttributes`: Class provides a basic implementation of the `Attributes` interface.
    - `InitialDirContext`: Class is the starting context for performing directory operations.
    - `ModificationItem`: Class represents a modification item.
    - `SearchControls`: Class encapsulates factors that determine the scope of the search, along with the returns from that search.
    - `SearchResult`: Class represents an item in the `NamingEnumeration` returned as a result of the `DirContext.search()` methods.
- `javax.naming.event:` Provides support for event notification when accessing naming and directory services.
  - `EventContext`: Contains the methods for registering/de registering listeners to be notified of events fired, when objects named in a context change.
  - `EventDirContext`: Contains methods for registering listeners to be notified of events fired when objects named in a directory context change.
  - `NamespaceChangeListener`: The root of listener interfaces that handle `NamingEvents`.
  - `NamingListener`: The root of listener interfaces that handle `NamingEvents`.
  - `ObjectChangeListener`: Specifies the method that a listener of a `NamingEvent` with event type of `OBJECT_CHANGED` must implement.
    - `NamingEvent`: Class represents an event fired by a naming/directory service.

- `NamingExceptionEvent`: Class represents an event fired when the procedures/processes are used to collect information from listeners of `NamingEvents` that throw a `NamingException`.

- `javax.naming.ldap`: Provides support for LDAPv3 extended operations and controls.
  - `Control`: Represents an LDAPv3 control as defined in **RFC2251**
  - `ExtendedRequest`: Represents an LDAPv3 extended operation request as defined in **RFC2251**
  - `HasControls`: Used for returning controls with objects returned in NamingEnumerations.
  - `LdapContext`: Represents a context in which you can perform operations with LDAPv3-style controls and perform LDAPv3-style extended operations.
  - `UnsolicitedNotification`: Represents an unsolicited notification as defined in **RFC2251**
  - `UnsolicitedNotificationListener`: Handles `UnsolicitedNotificationEvent`.
    - `ControlFactory`: An abstract class that represents a factory for creating LDAPv3 controls.
    - `InitialLdapContext`: The class is the starting context for performing LDAPv3 style extended operations and controls.
    - `StartTlsRequest`: The class implements the LDAPv3 Extended Request for StartTLS as defined in *Lightweight Directory Access Protocol (v3): Extension for Transport Layer Security.*
    - `StartTlsResponse`: The class implements the LDAPv3 Extended Response for StartTLS as defined in *Lightweight Directory Access Protocol (v3): Extension for Transport Layer Security.*
    - `UnsolicitedNotificationEvent`: This class represents an event fired in response to an unsolicited notification sent by the LDAP server.
- `javax.naming.spi`: Provides the means for dynamic plug-in to naming and directory services via `javax.naming` and related packages.

To compile programs that use JNDI, access to JNDI classes are required. If you are using Java 2 SDK v1.3 or higher, the JNDI classes are already included, and no further action is required. If you are using an older version of the Java SDK, then you need to download the JNDI classes from the JNDI Web site (**http://java.sun.com/products/jndi/**).

At runtime, you will also require access to the classes for any service providers that your program uses. The Java 2 Runtime Environment (JRE) v1.3 already includes the JNDI classes and service providers for LDAP, COS naming, and the RMI registry. If you are using some other service Providers, then you need to download and install the associated archive files in the classpath, JAVA_HOME/jre/lib/ext directory, where JAVA_HOME is the directory containing the JRE (**http://java.sun.com/j2se/1.3/**).

If you are not using JNDI as an installed extension or are using the JRE v1.1, then copy the JNDI and service provider archive files to their permanent location and add that location to your classpath. You can do that by a setting the `CLASSPATH` variable to include the absolute filenames of the archive files.

Initial Context

Before performing any operation on a naming or directory service, an initial context must be acquired, providing a starting point into the name space. All methods used to access naming and directory services are performed relative to some context. To obtain an initial context, perform the following:

1. Select the service provider of the corresponding service to which to access.

   Specify the service provider to use for the initial context by creating a set of environment properties (a `Hash table`) and adding the name of the service provider class to it.

2. Specify any configuration required by the initial context.

   Different clients might require various information for contacting the desired directory. For example, the machine upon which the server is running, and the user identity, might be required. This information is passed to the service provider via environment properties. Consult your service provider documentation for more information.

3. Call the `InitialContext` constructor (**http://java.sun.com/j2se/1.3/docs/api/javax/naming/InitialContext.html#constructor_detail**).

   The environment properties, previously created are passed to the `InitialContext` constructor. A reference to a **Context** object is now available to access the naming service. To perform directory operations, **InitialDirContext** is used.

Naming Operations

JNDI can be used to perform various naming operations. The most common operation are:

- Looking up an object
- Listing the contents of a context
- Adding, overwriting, and removing a binding
- Renaming an object
- Creating and destroying subcontexts

Looking Up an Object

In the following JNDI sample code, the naming operation `lookup()`. The name of the object to be "looked up" is passed in, relative to the current context, and the object is retrieved. JMS provider implementations of administered objects should be both `javax.jndi.Referenceable` and `java.io.Serializable` so that they can be stored in all JNDI naming contexts.

JNDI Samples

This sample requires edits be made to generic information. See the code samples below in **bold** typeface.

To run, you need to set up the classpath to include the file system service provider classes (`fscontext.jar` and `providerutil.jar`). (Samples can be downloaded from **http://java.sun.com/products/jndi/tutorial/getStarted/examples/naming.html**). For this example the following was used, and should be modified to suit your needs:

```
C:\temp>set CLASSPATH=
  %CLASSPATH%;
  C:\jndi\fscontext1_2beta3\lib\fscontext.jar;
  C:\jndi\fscontext1_2beta3\lib\providerutil.jar
```

Each of the following samples requires the following imports:

```
import javax.jms.*;
import javax.naming.*;
import com.seebeyond.jms.client.*;
import java.util.Properties;
```

A sample class is declared:

```
public class queuereply
{
    public static void main( String[] args )
    {
    try {
```

The definition of JNDI properties is made here, but could also be made using `jndi.properties` file:

```
// JNDI parameters - you will probably use jndi.properties with values
//specific to your own JNDI provider.
//
        Properties env = new Properties();
        env.put(Context.INITIAL_CONTEXT_FACTORY,
            "com.sun.jndi.fscontext.RefFSContextFactory");
        env.put(Context.PROVIDER_URL, "file:/tmp/tutorial");
        Context jndi = new InitialContext(env);
```

QueueConnectionFactory Sample

In addition to the above, the following is included in the QueueConnectionFactory sample:

```
// Instantiate a SeeBeyond QueueConnectionFactory object and bind to
// JNDI
        STCQueueConnectionFactory qcf = new
STCQueueConnectionFactory("myhostname", 24056);
        try {
        jndi.bind("QueueConnectionFactory", (QueueConnectionFactory)
qcf);
        }
        catch (javax.naming.NameAlreadyBoundException e) {
        }
```

Once the `bind` has been established, a `NameAlreadyBoundException` will be returned if bind is called again. `rebind` is used to overwrite the binding.

```
// Lookup the object in JNDI, and print some info for verification
        Object obj = jndi.lookup("QueueConnectionFactory");
        qcf = (STCQueueConnectionFactory) obj;
        System.out.println ("Looked up QueueConnectionFactory host:"
+ qcf.getHost());
        System.out.println ("Looked up QueueConnectionFactory port:"
+ qcf.getPort());
```

Queue Sample

In addition to the above, the following is included in the Queue sample:

```
// Instantiate a SeeBeyond Queue object and bind to JNDI
        STCQueue que = new STCQueue("AccountsPayableQueue");
        try {
        jndi.bind("APQueue", (Queue) que);
        }
        catch (javax.naming.NameAlreadyBoundException e) {
        }

// Lookup the object in JNDI, and print some info for verification
        obj = jndi.lookup("APQueue");
        String s = new String(obj.getClass().getName());
        System.out.println ("APQueue class:"+s);
```

TopicConnectionFactory Sample

In addition to the above, the following is included in the TopicConnectionFactory sample:

```
// Instantiate a SeeBeyond TopicConnectionFactory object and bind to
// JNDI
        STCTopicConnectionFactory tcf = new
STCTopicConnectionFactory("anotherhost", 24053);
        try {
        jndi.rebind("TopicConnectionFactory",
(TopicConnectionFactory) tcf);
        }
        catch (javax.naming.NameAlreadyBoundException e) {
        }

// Lookup the object in JNDI, and print some info for verification
        obj = jndi.lookup("TopicConnectionFactory");
        tcf = (STCTopicConnectionFactory) obj;
        System.out.println ("Looked up TopicConnectionFactory host:"
+ tcf.getHost());
        System.out.println ("Looked up TopicConnectionFactory port:"
+ tcf.getPort());
```

Topic Sample

In addition to the above, the following is included in the Topic sample:

```
// Instantiate a SeeBeyond Topic object and bind to JNDI
        STCTopic top = new STCTopic("AccountsPayableTopic");
        try {
        jndi.bind("APTopic", (Topic) top);
        }
        catch (javax.naming.NameAlreadyBoundException e) {
        }

// Lookup the object in JNDI, and print some info for verification
        obj = jndi.lookup("APTopic");
        s = new String(obj.getClass().getName());
```

```
            System.out.println ("APTopic class:"+s);

        } catch( Exception e ) {
            e.printStackTrace();
        }
        }
    }
```

At this point the retrieved objects can now communicate with the SeeBeyond Message Service and e*Gate.

4.2.5. The Message Selector

A message selector allows a client to specify, via the message header, those messages in which the client is interested. Only messages for which the headers and properties match the selector are delivered. The semantics of not delivered differ depending on the MessageConsumer implemented. Message selectors cannot reference message body values.

The message selector matches a message, provided the selector evaluates to "true", when the message's header field and the property values are substituted for the corresponding identifiers within the selector.

For more information about Message Selection, see chapter *3.8, Message Selection*, of the *Java Message Service Version 1.0.2.b* available at:

http://java.sun.com/products/jms/docs.html

Message Selector Syntax

A message selector is defined as a String, wherein the syntax is composed, according to a subset of the SQL92* conditional expression syntax. If the value of a message selector is provided as an empty string, the value is treated as "null" and indicates that there is no message selector for the message consumer.

The order of evaluation for message selectors is from left to right within precedence level. Parentheses can be used to change this order. Predefined selector literals and operator names are written here in upper case; however, they are case-insensitive.

Identifiers

An identifier is that part of the expression that provides the information by which to make the comparison. For example, the identifiers in the following expression are Age, Weight, and LName:

```
Age < 35 AND Weight >= 110.00 and LName = `Jones'
```

Identifiers can be any application-defined, JMS-defined, or provider-specific property, or one of several JMS headers. Identifiers must match the property or JMS header name exactly (they are also case sensitive).

The following JMS headers can be used as identifiers:

- JMSDeliveryMode
- JMSPriority

- JMSMessageID
- JMSTimestamp
- JMSCorrelationID
- JMSType

The following JMS headers cannot be used as identifiers because their corresponding values are Destination objects, whose underlying value is proprietary, and therefore undefined:

- JMSDestination
- JMSReplyTo

The JMSRedelivered value may be changed during delivery. For example, if a consumer uses a message selector where "JMSRedelivered = FALSE", and there was a failure delivering a message, the JMSRedelivered flag might be set to TRUE. JMSExpiration is not supported as an identifier, because JMS providers may choose to implement this value in different manners. (Some may store it with the message, while others calculate it as needed.)

Literals

Expression values that are hard-coded into the message selector are referred to as literals. In the message selector shown here, 35, 110.00, and 'Jones' are all literals:

```
Age < 35 AND Weight >= 110.00 AND LName = 'Jones'
```

String literals are enclosed in single quotes. An apostrophe or single quote can be included in a String literal by using two single quotes. For example: O''Leary''s

Numeric literals are expressed using exact numerical (+35, 30, -450), approximate numerical with decimal (-22.33, 110.00, +8.0), or scientific (-7E4) notation.

Declaring a Message Selector

When a consumer is created to implement a message selector, the JMS provider must validate that the selector statement is syntactically correct. If the selector is not correct, the javax.jms.InvalidSelectorException is thrown.

```
protected void writeMessage(String text) throws JMSException{
    TextMessage message = session.createTextMessage();
    message.setText(text);
    message.setStringProperty("username",username);
    publisher.publish(message);
}
```

JMS clients would then use that property to filter messages. Message selectors are declared when the message consumer is created:

```
TopicSubscriber subscriber =
session.createSubscriber(xTopic, "username <> 'John' ", false);
```

The message selector ("username <> 'John' ") tells the message server to deliver to the consumer only those messages that do NOT have the username property equal to 'John'.

Java Message Selector Publisher

```
import javax.jms.*;
```

```
import com.seebeyond.jms.client.STCTopicConnectionFactory;
import com.seebeyond.jms.util.*;

public class SelectorPublisher
{

    private static final String HOST = "localhost";
    private static final int PORT = 24053;
    private static final String PROP_NAME = "property";
    private static final String TOPIC_NAME = "Selector";

    public static void main(String[] args)
    throws Exception
    {
        String hostName = HOST;
        int port = PORT;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
               if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }

        try
        {
            TopicConnectionFactory factory = new
STCTopicConnectionFactory(hostName, port);
            TopicConnection conn = factory.createTopicConnection();
            conn.start();
            TopicSession topicSession = conn.createTopicSession(true,
Session.AUTO_ACKNOWLEDGE);

            // create temporary queue
            Topic topic = topicSession.createTopic(TOPIC_NAME);

            // create sender
            TopicPublisher publisher = topicSession.createPublisher(topic);
            publisher.setDeliveryMode(DeliveryMode.PERSISTENT);

            // put messages on queue
            for(int ii=0; ii<10 ;ii++)
            {
                TextMessage msg = topicSession.createTextMessage();
                int index = ii%10;
                msg.setStringProperty(PROP_NAME, ""+index);
                msg.setText("This is message body.");
                publisher.publish(msg);
                System.out.println("... Published 1 message with
"+PROP_NAME+" = "+ii);
            }
            topicSession.commit();
            conn.close();
```

```
        } catch(Exception ex)
        {
            ex.printStackTrace();
            System.exit(1);
        }
    }


}
```

Java Message Selector Subscriber

```
import javax.jms.*;
import com.seebeyond.jms.client.STCTopicConnectionFactory;
import com.seebeyond.jms.util.*;

public class SelectorSubscriber
{

    private static final String HOST = "localhost";
    private static final int PORT = 24053;
    private static final String PROP_NAME = "property";
    private static final String TOPIC_NAME = "eGateSelector";

    public static void main(String[] args)
    throws Exception
    {
              String hostName = HOST;
              int port = PORT;
        int selector = 7;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number -
s(elector) property-value-from-0-to-9");
            for (int i = 0; i < args.length; i++)
            {
               if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
                else if (args[i].startsWith("-s") || args[i].startsWith("-
selector"))
                    selector = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
        try
        {
            TopicConnectionFactory factory = new
STCTopicConnectionFactory(hostName, port);
            TopicConnection conn = factory.createTopicConnection();
            conn.start();
            TopicSession topicSession = conn.createTopicSession(true,
Session.AUTO_ACKNOWLEDGE);

            // create temporary queue
            Topic topic = topicSession.createTopic(TOPIC_NAME);

            // create subscriber
```

```
            String selectorString = PROP_NAME+" = '"+selector+"'";
            TopicSubscriber subscriber =
topicSession.createDurableSubscriber(topic,
                "SelectorSubscriber"+selector, selectorString, false);
            System.out.println("selector: " +
subscriber.getMessageSelector());

            // receive message
            for (Message msg = subscriber.receive();
                msg != null;
                msg = subscriber.receive(1000))
            {
               System.out.println("... Received 1 message with "+ PROP_NAME
+ " = " + msg.getStringProperty(PROP_NAME));
            }
            topicSession.commit();
            subscriber.close();
            topicSession.unsubscribe("SelectorSubscriber"+selector);

            conn.close();
        }
        catch(Exception ex)
        {
            ex.printStackTrace();
            System.exit(1);
        }
    }


}
```

COM VB Message Selector

```
Option Explicit

Dim MessageSelector As String
Dim topicConnectionFactory As New topicConnectionFactory
Dim topicConnection As topicConnection
Dim topicSession As topicSession
Dim topic As topic
Dim Publisher As TopicPublisher
Dim subscriber As TopicSubscriber
Dim MessagePublished  As TextMessage
Dim MessageReceived As TextMessage

Private Sub Form_Load()
' You should replace the host name and port number with the actual values
    topicConnectionFactory.HostName = "localhost"
    topicConnectionFactory.Port = 24053
' Create a topic connection
    Set topicConnection = topicConnectionFactory.CreateTopicConnection()
' Create a session
    Set topicSession = topicConnection.CreateTopicSession(True,
msAutoAcknowledge)
' Start the session
    topicConnection.Start
' Create a topic
    Set topic = topicSession.CreateTopic(txtTopicName)
' Create a publisher
    Set Publisher = topicSession.CreatePublisher(topic)
' Set message selector
    MessageSelector = "Name = 'John'"
' Create a subscriber with the message selector
    Set subscriber = topicSession.CreateSubscriber(topic, MessageSelector)
```

```
End Sub

Private Sub cmdPublish_Click()
' Create a text message
    Set MessagePublished =
topicSession.CreateTextMessage(txtPublished.Text)
    If chkMessageSelector Then
    ' Set the corresponding user property in the message, and subscriber
    ' should receive this message because it matches the message selector
        MessagePublished.SetProperty "Name", "John"
    End If
    ' Otherwise, don't set the user property in this message, and subscriber
    ' should not receive this message
' Publish this message
    Publisher.Publish MessagePublished
' Commit this message
    topicSession.Commit
End Sub

Private Sub cmdReceive_Click()
' Receive the message
    Set MessageReceived = subscriber.ReceiveNoWait
    If MessageReceived Is Nothing Then
        txtReceived = "No Message Received"
    Else
    ' Commit this message
        topicSession.Commit
        txtReceived = MessageReceived.Text
    End If

End Sub
```

4.2.6. XA Sample

XA compliance is achieved when cooperating software systems contain sufficient logic to ensure that the transfer of a single unit of data between those systems is neither lost nor duplicated because of a failure condition in one or more of the cooperating systems. e*Gate 4.5 and later satisfies this requirement via utilization of the XA Protocol, from the X/Open Consortium.

For more information on XA, see the *e*Gate Integrator User's Guide*.

Java XA Publisher

```
import java.io.InputStreamReader;
import javax.jms.*;
import javax.transaction.xa.*;
import com.seebeyond.jms.client.STCXATopicConnectionFactory;
import com.seebeyond.jms.util.XidImpl;

class XAPublisher {

    public static void main(String args[]) {
        String hostName = "localhost";
        int port = 24053;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
```

```
                if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                 else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
            }
        }
        catch(Exception e)
        {
            System.out.println("Error in arguments");
            System.exit(1);
        }
        String topicName = "XAPubSubSample";
        XATopicConnectionFactory tcf = null;
        XATopicConnection topicConnection = null;
        XATopicSession xaTopicSession = null;
        XAResource resource = null;
        TopicSession topicSession = null;
        Topic topic = null;
        TopicPublisher topicPublisher = null;
        TextMessage message = null;
        final int MAX_MESSAGE_SIZE = 60;
        InputStreamReader inputStreamReader = null;
        char answer = '\0';

        System.out.println("pub topic name is " + topicName);
        /*
         * Create connection.
         * Create session from connection; true means session is
         * transacted.
         * Create publisher and text message.
         * Send messages, varying text slightly.
         * Finally, close connection.
         */
        try {
            tcf = new STCXATopicConnectionFactory(hostName, port);
            topicConnection = tcf.createXATopicConnection();
            topicConnection.start();
            xaTopicSession = topicConnection.createXATopicSession();
            resource = xaTopicSession.getXAResource();
            topicSession = xaTopicSession.getTopicSession();
            topic = topicSession.createTopic(topicName);
            topicPublisher = topicSession.createPublisher(topic);
            Xid xid = new XidImpl();

            byte[] mydata = new byte[MAX_MESSAGE_SIZE];

            message = topicSession.createTextMessage();
            String s = new String("This is message ");
            message.setText(s);
            inputStreamReader = new InputStreamReader(System.in);
            try {
                System.out.println("... XAResource start");
                resource.start(xid, XAResource.TMNOFLAGS);
                System.out.println("... Publishing message: " +
                    s);
                topicPublisher.publish(message);
                System.out.println("... XAResource end");
                resource.end(xid, XAResource.TMSUCCESS);
                System.out.println("XAResource prepare ....");
                resource.prepare(xid);
                System.out.println("C or c to commit and R or r to
rollback");
                while (true)
```

```
                {
                    answer = (char) inputStreamReader.read();
                    if (answer == 'c' || answer == 'C')
                    {
                        System.out.println("... XAResource commit");
                        resource.commit(xid, false);
                        break;
                    }
                    else if (answer == 'r' || answer == 'R')
                    {
                        System.out.println("... XAResource rollback");
                        resource.rollback(xid);
                        break;
                    }
                }
            }
            catch (Exception exx) {
                exx.printStackTrace();
            }

        }
        catch (JMSException e) {
            System.out.println("Exception occurred: " + e.getMessage());
        }
        finally {
            if(topicConnection != null) {
                try {
                    System.out.println("... Closing connection");
                    topicConnection.close();
                }
                catch (JMSException e) {
                    e.printStackTrace();
                }
            }
        }
    }
}
```

Java XA Subscriber

```
import java.io.InputStreamReader;
import java.io.IOException;
import java.io.BufferedReader;
import javax.jms.*;
import javax.transaction.xa.*;
import com.seebeyond.jms.client.STCXATopicConnectionFactory;
import com.seebeyond.jms.util.XidImpl;

public class XASubscriber {

    public static void main(String args[]) {
        String hostName = "localhost";
        int port = 24053;
        try
        {
            System.out.println("-h(ost) host-name -p(ort) port-number");
            for (int i = 0; i < args.length; i++)
            {
               if (args[i].startsWith("-h") || args[i].startsWith("-host"))
                    hostName = args[++i];
                else if (args[i].startsWith("-p") || args[i].startsWith("-
port"))
                    port = Integer.parseInt(args[++i]);
            }
```

```
}
catch(Exception e)
{
    System.out.println("Error in arguments");
    System.exit(1);
}
String topicName = "eGateXAPubSubSample";
XATopicConnectionFactory tcf = null;
XATopicConnection topicConnection = null;
XATopicSession xaTopicSession = null;
XAResource resource = null;
TopicSession topicSession = null;
Topic topic = null;
TopicSubscriber topicSubscriber = null;
TextMessage message = null;
Xid xid = null;
InputStreamReader inputStreamReader = null;

char answer = '\0';

System.out.println("Topic name is " + topicName);

/*
 * Create connection.
 * Create session from connection; true means session is
 * transacted.
 * Create subscriber.
 * Register message listener (TextListener).
 * Receive text messages from topic.
 * When all messages have been received, enter Q to quit.
 * Close connection.
 */
try {
    tcf = new STCXATopicConnectionFactory(hostName, port);
    topicConnection = tcf.createXATopicConnection();
    topicConnection.start();
    xaTopicSession = topicConnection.createXATopicSession();
    resource = xaTopicSession.getXAResource();
    topicSession = xaTopicSession.getTopicSession();
    topic = topicSession.createTopic(topicName);
    xid = new XidImpl();
    System.out.println("... XAResource start");
    resource.start(xid, XAResource.TMNOFLAGS);
    topicSubscriber = topicSession.createSubscriber(topic);

    /*
     * Inner anonymous class that implements onMessage method
     * of MessageListener interface.
     *
     */
    topicSubscriber.setMessageListener(new MessageListener(){
        public void onMessage(Message message) {
            TextMessage msg = null;
            try {
                if (message instanceof TextMessage) {
                    msg = (TextMessage) message;
                    System.out.println("... Reading message: " +
                        msg.getText());
                }
                else {
                    System.out.println("Message of wrong type: " +
                    message.getClass().getName());
                }
            }
```

```
                    catch (Exception e) {
                        System.out.println("JMSException in onMessage(): "
                        + e.toString());
                    }
                    catch (Throwable te) {
                        System.out.println("Exception in onMessage():" +
                        te.getMessage());
                    }
                }
            });

            BufferedReader reader = new BufferedReader(new
InputStreamReader(System.in));
            while (!((answer == 'q') || (answer == 'Q'))) {
                try {
                    System.out.println("C or c to commit and R or r to
rollback after prepare");
                    answer = (char)reader.readLine().charAt(0);
                    System.out.println("... XAResource end");
                    resource.end(xid, XAResource.TMSUCCESS);
                    System.out.println("... XAResource prepare");
                    resource.prepare(xid);
                    if (answer == 'c' || answer == 'C')
                    {
                        System.out.println("... XAResource commit");
                        resource.commit(xid, false);
                    }
                    else
                    {
                        System.out.println("... XAResource rollback");
                        resource.rollback(xid);
                    }
                    System.out.println("... XAResource start");
                resource.start(xid, XAResource.TMNOFLAGS);
                    System.out.println("To end program, enter Q or q, then
<return>. To continue receive, enter r or R");
                    answer = (char)reader.readLine().charAt(0);
                }
                catch (IOException e) {
                    System.out.println("I/O exception: " + e.toString());
                }
            }

        }
        catch (Exception e) {
            System.out.println("Exception occurred: " + e.toString());
            System.exit(1);
        }
        finally {
           if (topicConnection != null && resource != null && xid != null) {
                try {
                    System.out.println("... XAResource end");
                    resource.end(xid, XAResource.TMSUCCESS);
                    System.out.println("... XAResource prepare");
                    resource.prepare(xid);
                    System.out.println("... XAResource commit");
                    resource.commit(xid, false);
                    System.out.println("... Closing connection");
                    topicConnection.close();
                }
                catch (Exception e) {}
            }
        }
    }
```

```
}
```

COM VB XA Sample

```
Option Explicit
Dim TopicObj As TopicTask
Dim QueueObj As QueueTask

Private Sub cmdPublish_Click()
    If chkTopic Then
        PublishTopic
    Else
        SendQueue
    End If
End Sub

Private Sub cmdReceive_Click()
    If chkTopic Then
        ReceiveTopic
    Else
        ReceiveQueue
    End If
End Sub

Private Sub PublishTopic()
    Set TopicObj = New TopicTask
    TopicObj.Send txtDestination, txtPublished, chkCommit
End Sub

Private Sub ReceiveTopic()
    Dim msg As String
    Set TopicObj = New TopicTask
    TopicObj.Receive txtDestination, msg, chkCommit
    If chkCommit Then
        txtReceived = msg
    Else
        txtReceived = "Aborted"
    End If
End Sub

Private Sub SendQueue()
    Set QueueObj = New QueueTask
    QueueObj.Send txtDestination, txtPublished, chkCommit
End Sub

Private Sub ReceiveQueue()
    Dim msg As String
    Set QueueObj = New QueueTask
    QueueObj.Receive txtDestination, msg, chkCommit
    If chkCommit Then
        txtReceived = msg
    Else
        txtReceived = "Aborted"
    End If
End Sub
```

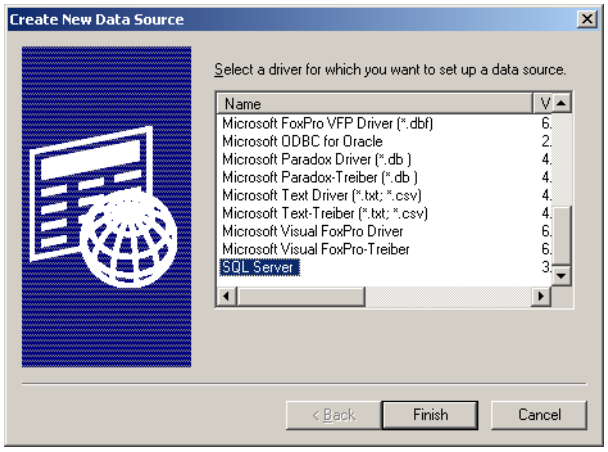
4.2.7. The Compensating Resource Manager

Creating a SQL Server Database

The samples provided are designed using an SQL Server Database.

1. Create a SQL Server database, using the name “CRM” for the purpose of testing the samples.
2. Create a table, using the name “Messages”.
3. Create two columns in the table, “UID” and “Message”.
4. From Settings->ControlPanel->AdministrativeTools->DataSources, Add an SQL Database source.

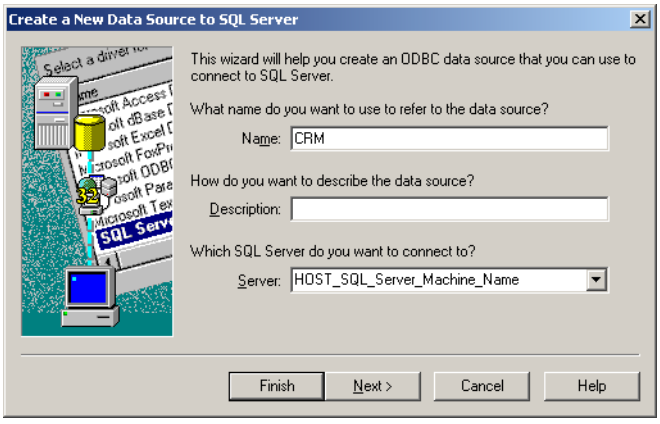
Figure 24 SQL Database Source



5. Provide the name of the data source, a description if desired, and the machine name on which SQL Server is running.

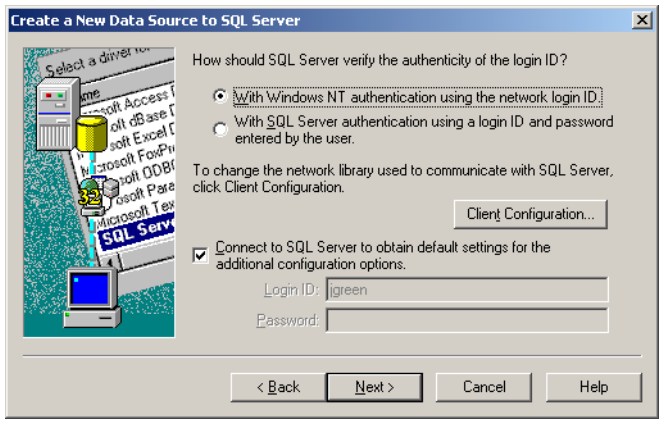
Important: *You will not be able to continue until a successful connection is made.*

Figure 25 SQL Datasource



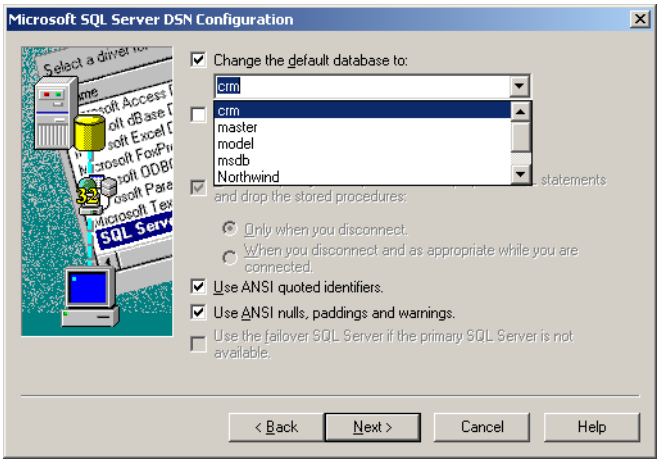
6 Ensure that the authentication and login settings correspond to Figure 26 below.

Figure 26 Login Settings



7 Select the recently created database as the default from the drop-down list, as shown in Figure 27 below. Click Next to continue.

Figure 27 Default SQL Server Database



8 Click Finish.

Configuring the Compensating Resource Manager (CRM)

When planning your CRM implementation, you cannot assume that the same instance of the CRM Compensator that processes the set of method calls in the prepare phase will process the method calls in the commit phase. If one of the clients attempts to commit a transaction, and someone inadvertently disconnects the power source during the commit phase, the prepare method calls will not be repeated during recovery, and the Compensator receives a set of abort or commit method calls.

Both the CRM Worker and Compensator are COM+ components and they must be configured using the Windows 2000 Component Services Explorer function properly. The CRM Worker and CRM Compensator must be installed into the same COM+ application that was completed above. (See **"Configuring the Compensating Resource Manager (CRM)" on page 125** for more information.)

Note: *You must create the "CRM" database before attempting to use any sample code. See* **"Creating a SQL Server Database" on page 124** *for more information.*

For this section, two sample files will be used, the samples can be found on the Installation CD under Samples\jmsapi\com

CRMTest.vdb

CRMTest.dll

1. Open CRMTest.vdp. Four files open in the project. Follow the comments in the code to modify the sample to your system requirements. The comments appear in **bold** typeface in the code samples that follow.

InsertMessage.cls

```
Option Explicit

Sub Add(message As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If

' Before start this CRM sample dll, you should create a database
' called "crm", and create a table named "Messages" with two
' columns, one column is "ID", and the other one is "Message"

' You can replace the following steps to use another resource manager
' i.e., the Oracle DBMS

    Dim adoPrimaryRS As Recordset
    Dim db As ADODB.Connection
    Set db = New ADODB.Connection
    db.CursorLocation = adUseClient
' Create a data source name
    db.Open "PROVIDER=MSDASQL;dsn=CRM;uid=sa;pwd=sa;"
    Set adoPrimaryRS = New ADODB.Recordset
    adoPrimaryRS.Open "select Message from Messages", db, adOpenStatic,
         adLockOptimistic
    adoPrimaryRS.AddNew "Message", message
    db.Close
    Set db = Nothing
    Set adoPrimaryRS = Nothing
     If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
         Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub
```

TwoTasks.cls

```
Option Explicit
' In this CRM sample, there are two tasks that must either both succeed
' or both abort
```

```
' The TopicTask is to send a message to the JMS server
Dim topicObj As TopicTask
' The InsertMessage task is to insert a message into a SQL table
Dim MessageObj As InsertMessage

Sub Send(topicName As String, msg As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()

    Set topicObj = New TopicTask
    Set MessageObj = New InsertMessage
' First task is to send a message to the JMS server
    topicObj.Send topicName, msg, True
' Second task is to add this message into the "Messages" table
    MessageObj.Add msg, True
    If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub

Sub Receive(topicName As String, msg As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If
    Set topicObj = New TopicTask
' Receive a message
    topicObj.Receive topicName, msg, True
    If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub
```

TopicTask.cls

```
Option Explicit

Dim XATopicConnectionFactory As XATopicConnectionFactory
Dim XATopicConnection As XATopicConnection
Dim XATopicSession As XATopicSession
Dim TopicSession As TopicSession
Dim Topic As Topic
Dim subscriber As TopicSubscriber
Dim Publisher As TopicPublisher
Dim MessagePublished  As TextMessage
Dim MessageReceived As TextMessage

Sub Send(topicName As String, msg As String, commit As Boolean)
```

```
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If
' Create a XA topic connection factory
    Set XATopicConnectionFactory = New XATopicConnectionFactory
' You should replace the host name and port number with the actual values
    XATopicConnectionFactory.HostName = "localhost"
    XATopicConnectionFactory.Port = 24053
' Create a XA topic connection
    Set XATopicConnection =
XATopicConnectionFactory.CreateXATopicConnection()
' Create a XA topic session
    Set XATopicSession = XATopicConnection.CreateXATopicSession()
    Set TopicSession = XATopicSession.TopicSession
' Create a topic
    Set Topic = TopicSession.CreateTopic(topicName)
' Start the XA topic session
    XATopicConnection.Start
' Create a publisher
    Set Publisher = TopicSession.CreatePublisher(Topic)
' Create a text message
    Set MessagePublished = TopicSession.CreateTextMessage(msg)
' Publish the message
    Publisher.Publish MessagePublished
    If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub

Sub Receive(topicName As String, msg As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If
' Create a XA topic connection factory
    Set XATopicConnectionFactory = New XATopicConnectionFactory
' You should replace the host name and port number with the actual values
    XATopicConnectionFactory.HostName = "localhost"
    XATopicConnectionFactory.Port = 24053
' Create a XA topic connection
    Set XATopicConnection =
XATopicConnectionFactory.CreateXATopicConnection()
' Create a XA topic session
    Set XATopicSession = XATopicConnection.CreateXATopicSession()
    Set TopicSession = XATopicSession.TopicSession
' Create a topic
    Set Topic = TopicSession.CreateTopic(topicName)
' Start the XA topic session
    XATopicConnection.Start
' Create a subscriber
```

```
    Set subscriber = TopicSession.CreateDurableSubscriber(Topic,
"TopicSubscriber")
' receive a message
    Set MessageReceived = subscriber.ReceiveNoWait
    If MessageReceived Is Nothing Then
        msg = "No Message Received"
    Else
        msg = MessageReceived.Text
    End If
    If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub
```

QueueTasks.cls

```
Option Explicit

Dim XAQueueConnectionFactory As XAQueueConnectionFactory
Dim XAQueueConnection As XAQueueConnection
Dim XAQueueSession As XAQueueSession
Dim QueueSession As QueueSession
Dim Queue As Queue
Dim QueueReceiver As QueueReceiver
Dim QueueSender As QueueSender
Dim MessagePublished  As TextMessage
Dim MessageReceived As TextMessage

Sub Send(QueueName As String, msg As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If
' Create a XA queue connection factory
    Set XAQueueConnectionFactory = New XAQueueConnectionFactory
' You should replace the host name and port number with the actual values
    XAQueueConnectionFactory.HostName = "localhost"
    XAQueueConnectionFactory.Port = 24053
' Create a XA queue connection
    Set XAQueueConnection =
XAQueueConnectionFactory.CreateXAQueueConnection()
' Create a XA queue session
    Set XAQueueSession = XAQueueConnection.CreateXAQueueSession()
    Set QueueSession = XAQueueSession.QueueSession
' Create a queue
    Set Queue = QueueSession.CreateQueue(QueueName)
' Start the XA queue session
    XAQueueConnection.Start
' Create a queue sender
    Set QueueSender = QueueSession.CreateSender(Queue)
' Create a text message
    Set MessagePublished = QueueSession.CreateTextMessage(msg)
' Send a message
    QueueSender.Send MessagePublished
    If Not commit Then
```

```
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub

Sub Receive(QueueName As String, msg As String, commit As Boolean)
    On Error GoTo errHandler
    Dim ObjCtx As ObjectContext
    Set ObjCtx = GetObjectContext()
    If ObjCtx Is Nothing Then
        MsgBox "Application is not running in COM+"
        Exit Sub
    End If
' Create a XA Queue connection factory
    Set XAQueueConnectionFactory = New XAQueueConnectionFactory
' You should replace the host name and port number with the actual values
    XAQueueConnectionFactory.HostName = "localhost"
    XAQueueConnectionFactory.Port = 24053
' Create a XA queue connection
    Set XAQueueConnection =
XAQueueConnectionFactory.CreateXAQueueConnection()
' Create a XA queue session
    Set XAQueueSession = XAQueueConnection.CreateXAQueueSession()
    Set QueueSession = XAQueueSession.QueueSession
' Create a queue
    Set Queue = QueueSession.CreateQueue(QueueName)
' Start the XA queue session
    XAQueueConnection.Start
' Create a queue receiver
    Set QueueReceiver = QueueSession.CreateReceiver(Queue)
' Receive a message
    Set MessageReceived = QueueReceiver.ReceiveNoWait
    If MessageReceived Is Nothing Then
        msg = "No Message Received"
    Else
        msg = MessageReceived.Text
    End If
     If Not commit Then
        ObjCtx.SetAbort
        Err.Raise vbObjectError + 1024, , "Instruction to Abort the
Transaction"
    End If
    Exit Sub
errHandler:
    ObjCtx.SetAbort
    Err.Raise Err
End Sub
```

2 Copy **client.exe** (located in the CRM sample folder) to the machine upon which the external code is to run.

3 Register **CRMTest.dll** by performing the following:

From the command prompt of the external system, register the file **CRMTest.dll** into the Windows 2000 registry by doing the following:

```
regsvr32 your_path_location\stc_mscom.dll
```

4 From the following location:

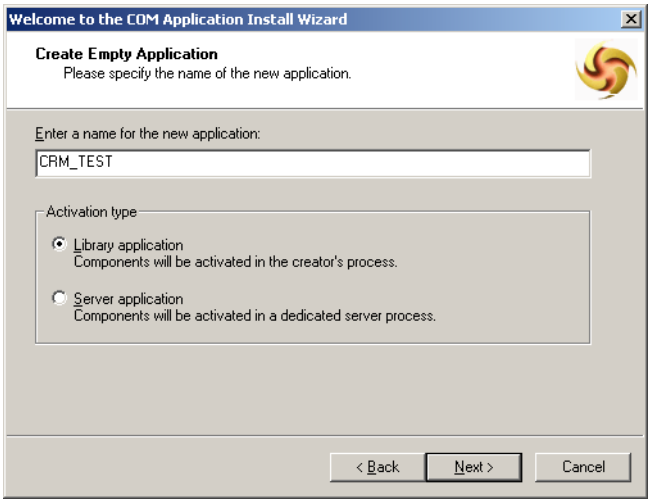
`Settings->Control Panel->Administrative Tools->Component Services`

Expand the Component Services folder. Right click on Com+ Applications.

Select New**->**Application. The COM Application Install Wizard opens. Click Next to continue.

5 Enter a CRM_TEST as the name of the new application. (Any name could be used.) Select Library application as the Application Type.

Figure 28 CRM_TEST Application



6 Click Next to continue, and then click Finish.

7 Expand the CRM_TEST component, right- click the Components folder, and then click New Component. The COM Component Install Wizard opens. Click Next to continue.

8 Click Install New Component(s). Browse to the location of the recently compiled CRMTest.dll. Click Open. Accept the remainder of the default settings.

4.3 Sample Schema Implementation

The sample schema implementation is available in the **samples\jmsapi** directory of the product media. You can import this schema to Enterprise Manager either when you initially log in, or when you are already running an active session.

To import the schema upon logging in

1 Enter values for Server, Login ID, and Password, and then click **Log In**.

2 In the **Open Schema on Registry Host** dialog box, click **New**.

3 In the **New Schema** dialog box, select **Create from export**, and then click **Find**.

4 In the **Import from File** dialog box, navigate to **samples\jmsapi** directory, select **jmsdemo.zip**, click **Open**, enter your name for the schema, and then click **Open**.

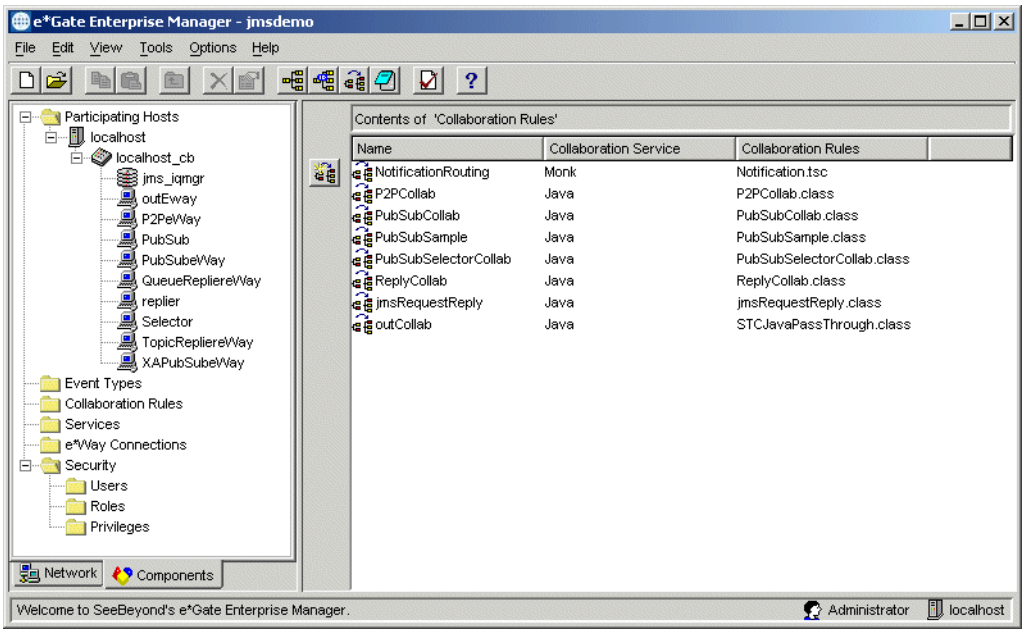
To import the sample schema during an active session

1. In Enterprise Manager, on the **File** menu, click **New Schema** (Ctrl+N).
2. In the **New Schema** dialog box, select **Create from export**, and then click **Find**.
3. In the **Import from File** dialog box, navigate to **samples\jmsapi** directory, select **jmsdemo.zip**, click **Open**, enter your name for the schema, and then click **Open**.

4.3.1. e*Gate Sample JMS Schema Overview

The schema is designed to be combined with the code samples provided to separate paradigm behavior into individual e*Ways.

Figure 29 JMS Sample Schema Enterprise Manager View



The e*Gate schema created to perform with the above code sample contains the following:

- SeeBeyond JMS IQ Manager
- Event Types
- Event Type Definition
- JMS e*Way Connections
- Java Collaboration Rules
- Multi-Mode e*Ways
- File e*Ways
- Java Collaborations

SeeBeyond JMS IQ Manager

The IQ Manager defaults to the SeeBeyond JMS IQ Manager. For more information see the *SeeBeyond JMS Intelligent Queue User's Guide*.

Event Type

When creating the Event Type, the name of the Event must correspond to the Topic or Queue being used in the code sample. For the samples provided, a Topics or Queues are created for each of the demonstration. The number of Event Types created is dependant on the number of desired Topics or Queues to be used.

Event Type Definition

For the sample, no specific ETDs have been created, a single node .xsc (root.xsc) has been used. Whether or not you require a specific ETD will depend completely on the parsing intended. For more information on creating ETDs, see the *e*Gate Integrator User's Guide*.

JMS e*Way Connections

In the sample schema provided, e*Way Connections are created to communicate with the external system, and configured. It is important to set the Connection Type (Topic or Queue), the expected Output Message Type (bytes or text), and ensure that both values correspond in the code. The additional parameters values are left to default (in the sample). For more information on configuring JMS e*Way Connections see the *JMS Intelligent Queue User's Guide*.

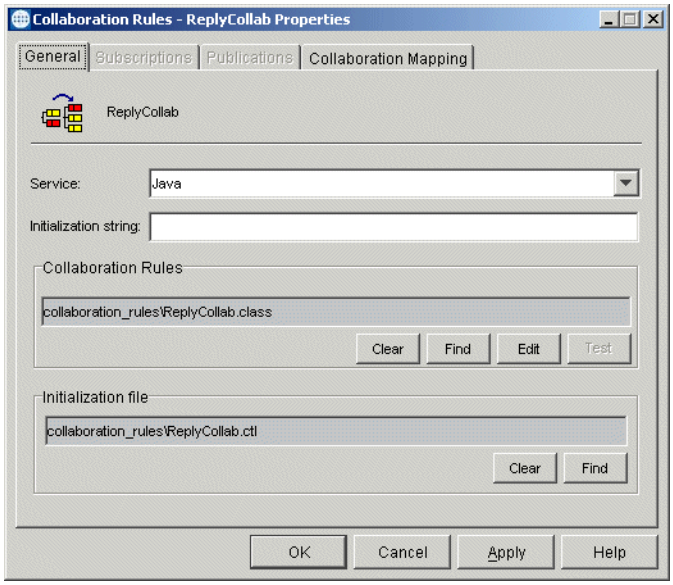
Java Collaboration Rules

In the sample schema, a Collaboration, and a separate Java Collaboration Rule are created for each sample e*Way.

Note: *The read and write method calls must correspond to the expected data types. For example, if the Message Type is set for byte, the corresponding methods would be one of the readByte and writeByte methods.*

For **jmsRequestReply**, the Java Service is selected.

Figure 30 jmsRequestReply



For the Collaboration Mapping, the Instance Names “In” and “Out” are designated respectively. The **root.xsc** ETD is assigned to both. The trigger is set for the inbound instance, while Manual Publish is set for the outbound. Return to the General Tab, and select **New** for the Collaboration Rule. The Collaboration Editor opens showing the Source Event as the created “In” instance, with the “Out” instance as the Destination Event.

Create a rule below the retBoolean variable. To enable the “Reply” functionality, add the following line in the Rule dialog box:

```
String topic = getin().readProperty("JMSReplyTo");
```

This line obtains the readProperty (“JMSReplyTo”) from the inbound TopicRequestor, providing a “return address”.

The additional functionality was added:

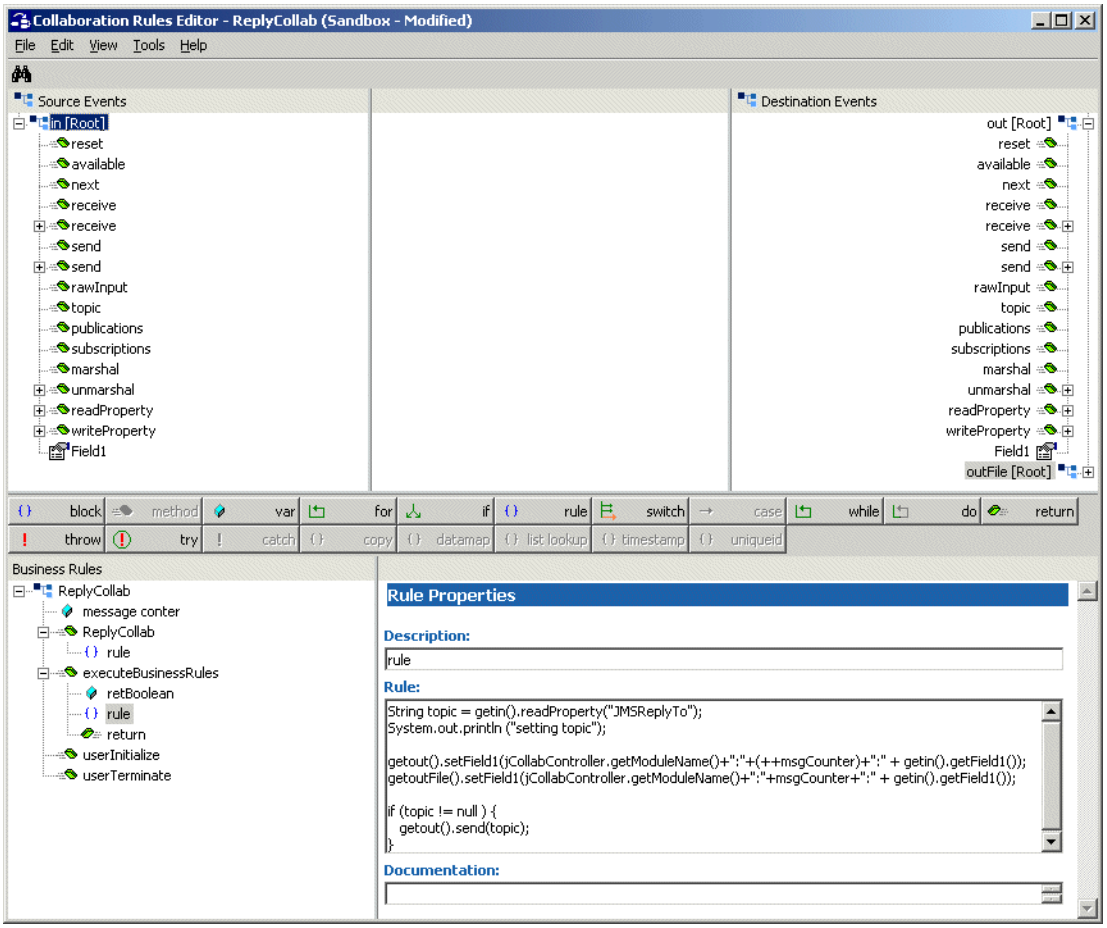
```
getout().setField1(jCollabController.getModuleName()+":"+(++msgCounte
r)+":" + getin().getField1());

getoutFile().setField1(jCollabController.getModuleName()+":"+msgCount
er+":" + getin().getField1());

if( topic != null )
  getout().send(topic);
```

The sample provides one scenario. The Collaboration Rule appears below:

Figure 31 ReplyCollab Rule



Compile, Save and Promote to run time.

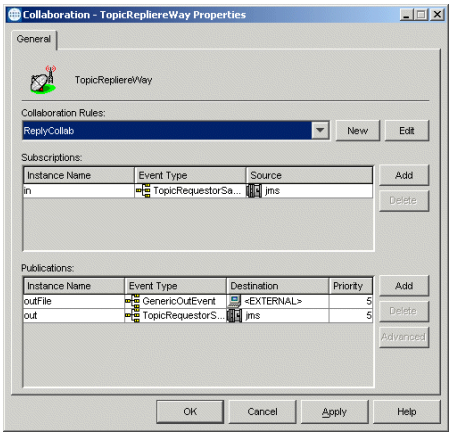
Multi-Mode e*Way

The Multi-Mode e*Way (replier and outEway), along with the e*Way Connection, provides connectivity to the external system via the SeeBeyond JMS IQ Manager. The executable required is stceway.exe. For more information about configuring the Multi-Mode e*Way, see the *Standard e*Way Intelligent Adapter User's Guide*.

Java Collaboration

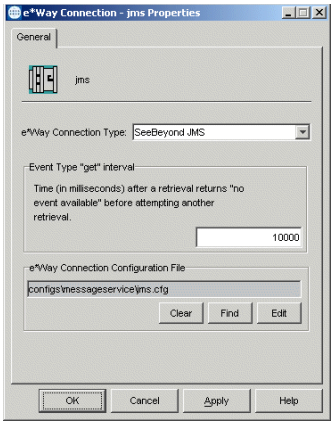
Associated with the e*Way, the Collaboration designates the functionality as defined in the Collaboration Rule with the e*Way. The Collaboration displays the Event Type and Source for both the Subscription(s) and Publication(s). It is very important that these values be set according to the expected behavior. In the sample, the Collaboration, TopicReplierWay appears below:

Figure 32 TopicReplieWay Collaboration



By selecting the jmsRequestReply Collaboration Rule, the Instance Names, Event Types the Source and the Destination for both the Subscription and Publication (as related to the Collaboration), the schema is now ready to execute.

Figure 33 e*Way Connection



4.3.2. Executing the Schema

From the command line, start the Control Broker by entering the following:

```
stccb.exe -rh <host> -rs <schema_name> -un Administrator -up STC
-ln localhost_cb
```

At this point the schema will auto-start all the components. The external code provided must be compiled and run, making sure that the host name and port number point to the Participating Host on which the JMS IQ Manager is running.

Running the Schema - UNIX, OS390, and z/OS

Before you compile the sample code on a UNIX system (including OS390), set the correct path in the GNUMakefile by completing the following steps:

1 Set **include_dir** to **<eGATEAPI_install>/ JMS/C_API**.

2 Set **lib_dir** to **<eGATEAPI_install>/ JMS/C_API**.

3 Set **bin_dir** to **<eGATEAPI_install>/ JMS/C_API.**

If you are compiling the sample code on a Solaris or OS390 system, the C/C++ e*Gate API kit must use a third-party Standard Library Template package. Before compiling on either of those system types, perform an additional step of setting **sbyn_stl_inc_dir** to **<eGATEAPI_install>/ JMS/C_API_stlport**.

Running the Schema - AS400

Some of the components of the AS400 sample code have been renamed to conform to the 10-character limitation.

The complete list of sample code components for the AS400 is as follows:

- **XA_c.c**
- **q_req_c.c** (formerly **Queue_requestor_c.c**)
- **sel_c.c** (formerly **selector_c.c**)
- **t_req_c.c** (formerly **topic_requestor_c.c**)
- **XA_cpp.cpp**
- **q_req_cpp.cpp** (formerly **Queue_requestor_cpp.cpp**)
- **sel_cpp.cpp** (formerly **selector_cpp.cpp**)
- **t_req_cpp.cpp** (formerly **topic_requestor_cpp.cpp**)
- **q_cpp.cpp** (formerly **queue_cpp.cpp**)
- **queue_c.cpp**
- **t_cpp.cpp** (formerly **topic_cpp.cpp**)
- **topic_c.c**

Therefore, you must use the commands listed in **Table 10 on page 137** to run the C/C++ samples on your AS400 system.

Table 10 AS400 Commands For Running The Sample Code

Command	Sample Invoked
`CALL PGM(T_REQ_C) PARM('-r' '-h' '<hostname>' '-p' '<port number>')`	C topic requestor
`CALL PGM(T_REQ_CPP) PARM('-r' '-h' '<hostname>' '-p' '<port number>')`	C++ topic requestor
`CALL PGM(Q_REQ_C) PARM('-r' '-h' '<hostname>' '-p' '<port number>')`	C queue requestor
`CALL PGM(Q_REQ_CPP) PARM('-r' '-h' '<hostname>' '-p' '<port number>')`	C++ queue requestor
`CALL PGM(T_CPP) PARM('-c' '-h' '<hostname>' '-p' '<port number>')`	C topic subscriber

Table 10 AS400 Commands For Running The Sample Code

Command	Sample Invoked
`CALL PGM(TOPIC_C) PARM('-c' '-h' '<hostname>' '-p' '<port number>')`	C++ topic subscriber
`CALL PGM(QUEUE_C) PARM('-c' '-h' '<hostname>' '-p' '<port number>')`	C queue subscriber sample
`CALL PGM(Q_CPP) PARM('-c' '-h' '<hostname>' '-p' '<port number>')`	C++ queue subscriber sample
`CALL PGM(T_CPP) PARM('-u' '-h' '<hostname>' '-p' '<port number>')`	C topic publisher sample
`CALL PGM(TOPIC_C) PARM('-u' '-h' '<hostname>' '-p' '<port number>')`	C++ topic publisher sample
`CALL PGM(QUEUE_C) PARM('-u' '-h' '<hostname>' '-p' '<port number>')`	C queue publisher sample
`CALL PGM(Q_CPP) PARM('-u' '-h' '<hostname>' '-p' '<port number>')`	C++ queue publisher sample

Additionally, you can print the synopsis by using the following command:

```
CALL PGM(T_REQ_C)

SYNOPSIS
EGATE_BLD/T_REQ_C [ -r ] [ -p port ] [ -h hostname ]
        -r        run as a requestor
        -p        port number
        -h        hostname
```

Finally, to run the RPG example, type **`jmsdemo`** in the command entry window.

4.4 Implementing JMS Models in C or RPG

This section discusses how to use the JMS C APIs and their wrappers in C and RPG to exchange data with an e*Gate system.

4.4.1. Wrapper Functions for C and RPG

For C and RPG, the API Kit supplies a set of JMS wrapper functions. The purpose of this layer is to help developers focus on the programming task rather than on the details of JMS. Thus, while the wrapper functions are sufficient for most applications, they do not provide a complete function set; for details on the complete C API, see **"The C API for SeeBeyond JMS" on page 347**.

At this higher level of abstraction, you need only manage a few types of structures:

- **Session**—Characterized by a hostname, port number, session type (either a pub/sub "topic session" or a point-to-point "queue session"), and connection parameters such as acknowledgment mode, transaction mode, delivery mode, and client ID.
- **Destination**—Either a topic (for pub/sub messaging) or else a queue (for point-to-point messaging). Characterized by session and destination name.
- Message **Producer**—Either a topic publisher or a queue sender. Characterized by session and destination.
- Message **Consumer**—Either a topic subscriber or a queue receiver. Characterized by session and destination (and, in pub/sub messaging only, by the name of the durable subscriber, if designated).
- **Requestor**—In request/reply messaging, either a topic requestor or a queue requestor. Characterized by session, destination, message, and time-to-live value expressed in milliseconds.
- **Message**—Characterized by the message type and payload. The payload is also called the message *body*, or message *content*:
  - For messages of type BytesMessage, the payload is an array of bytes.
  - For messages of type TextMessage, the payload is a string of text characters. Native encoding is used; for example, text on AS/400 systems uses EBCDIC encoding, but ASCII is used on most other systems.

For each of these structures, the wrapper provides the equivalent of a constructor (**Crt***Obj* or **Opn***Obj*) and a destructor (**Close***Obj* or **Dlt***Obj*). The other wrapper functions allow you to write/read/send/receive messages, to set up request/reply messaging, and to commit a transacted session.

The wrapper functions use parameters *err* and *errBuf* to handle error codes and error message text; see **"Differences Between Java and C in Error Handling" on page 464**.

4.5 Sample Code for Using JMS in C or RPG

From the **Samples** directory located on the e*Gate installation CD-ROM, navigate to the **jmsapi** folder. Select the **C** folder and extract the sample files from this folder to the computer that you have installed the e*Gate API Kit on. The samples were built using Microsoft Visual Studio 6.0.

For the JMS API in C and RPG, the following sample programs are provided on the product CD-ROM:

Note: *For multi byte data processing on non-English operating systems, use the following method to set your locale leaving the double quote blank. This will allow the program to pick up your system's default locale setting.*

```
setlocale(LC_CTYPE,"");
```

4.5.1. Publish/Subscribe Messaging Using C

```
(1)   *-------------------------------------------------------------------
(2)   * Sample code to demonstrate JMS Pub/Sub Messaging.
(3)   *-------------------------------------------------------------------
(4)   *
(5)   *  Disclaimer:
(6)   *
(7)   *  Copyright 2002 by SeeBeyond Technology Corporation.
(8)   *  All Rights Reserved.
(9)   *   Unless otherwise stipulated in a written agreement for this
(10)  *  software, duly executed by SeeBeyond Technology Corporation, this
(11)  *  software is provided as is without warranty of any kind.  The
(12)  *  entire risk as to the results and performance of this software
(13)  *  is assumed by the user.SeeBeyond Technology Corporation disclaims
(14)  *  all warranties, either express or implied, including but not
(15)  *  limited, the implied warranties of merchantability, fitness for a
(16)  *  particular purpose, title and non-infringement, with respect to
(17)  *  this software.
(18)  *
(19)  * ------------------------------------------------------------------*/
(20)  #include "mscapi.h"
(21)  #include <stdlib.h>
(22)  #include <stdio.h>
(23)  #include <string.h>
(24)  #ifndef WIN32
(25)  #include <unistd.h>
(26)  #endif
(27)  #if defined(WIN32)
(28)  #include "sbyn_getopt.h"
(29)  #endif
(30)
(31)  #if defined(OS400)
(32)  extern char *optarg;
(33)  #endif
(34)
(35)  #if defined(__gnu__)
(36)  #include <getopt.h>
(37)  #endif
(38)
(39)  char                    optionProducer[] = "[ -u ] [ -p port ]
(40)                          [ -h hostname ]";
(41)  char                    optionConsumer[] = "[ -c ] [ -p port ]
(42)                          [ -h hostname ]";
(43)  char                    optdescription[] = "\t-u   run as a
(44)                          producer\n\t-c run as a consumer\n\t-p
(45)                          port number\n\t-h   hostname\n";
(46)  static char             localHost[] = "localhost";
(47)  static unsigned short   susPort = 24053; /* default port number */
(48)  unsigned long           sulMessageSize = 16; /* default host name */
(49)  static char*            spHostName;
(50)  static void             subscriber();
(51)  static void             publisher();
(52)
(53)  /* Check for errors. */
(54)  static void check_error(int err, char* errBuf, int exitnow)
```

```
(55) {
(56)      if (err){
(57)           printf("ERROR:0x%x - %s\n", err, errBuf);
(58)           if (exitnow)
(59)                exit(1);
(60)      }
(61) }
(62)
(63) int main(int argc, char *argv[]) {
(64)      int           c;
(65)      char          cOption = 0;
(66)
(67)      spHostName = localHost;
(68)
(69)      while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(70)           switch(c){
(71)           case 'p':
(72)           case 'P':
(73)                susPort = atoi(optarg);  /* setup the port number */
(74)                break;
(75)           case 'h':
(76)           case 'H':
(77)                spHostName = optarg;     /* setup the hostname */
(78)                break;
(79)           case 'U':
(80)           case 'u':
(81)                cOption = 'u';           /* run as a producer */
(82)                break;
(83)           case 'c':
(84)           case 'C':
(85)                cOption = 'c';           /* run as a consumer */
(86)                break;
(87)           case ':':
(88)           case '?':
(89)                printf("\nSYNOPSIS\n");
(90)                printf("%s %s\n", argv[0], optionProducer);
(91)                printf("%s %s\n", argv[0], optionConsumer);
(92)                printf("%s\n", optdescription);
(93)                exit(1);
(94)                break;
(95)           }
(96)      }
(97)
(98)      if (cOption == 'u'){
(99)           publisher();          /* invoke producer */
(100)     } else if (cOption == 'c'){
(101)          subscriber();         /* invoke consumer */
(102)     } else {
(103)          printf("\nSYNOPSIS\n");
(104)          printf("%s %s\n", argv[0], optionProducer);
(105)          printf("%s %s\n", argv[0], optionConsumer);
(106)          printf("%s\n", optdescription);
(107)          exit(1);
(108)     }
(109)}
(110)
(111)
(112)/*
(113) * ========================================================
(114) * Topic Publisher
(115) * This routine demonstrates how to publish to a topic.
(116) * ========================================================
(117)*/
(118)static void publisher() {
```

```
(119)     SBYN_TopicPublisher*    pTopicPublisher;
(120)     SBYN_Session*           pTopicSession;
(121)     SBYN_Destination*       pTopic;
(122)     SBYN_Message*           pTextMessage;
(123)     SBYN_Connection*        pTopicConnection;
(124)     SBYN_TopicConnectionFactory* pTcf;
(125)     int                     iErr;
(126)     char                    szErrBuf[256];
(127)     char                    pBuffer[] = "This is a text message";
(128)     char                    pTopicName[] = "PubSubSample";
(129)     int                     iMessagePriority = 4;
(130)     long                    iTimeToLive = 0;
(131)
(132)     /* Create a topic factory. */
(133)     pTcf = CreateTopicConnectionFactory(spHostName, susPort, &iErr,
(134)     szErrBuf);
(135)     check_error(iErr, szErrBuf, 1);
(136)     if(!pTcf) {
(137)          printf("CreateTopicConnectionFactory
(138)     failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(139)          exit(2);
(140)     }
(141)
(142)     /* Create a topic connection. */
(143)     pTopicConnection = CreateTopicConnection(pTcf,&iErr, szErrBuf);
(144)     check_error(iErr, szErrBuf, 1);
(145)
(146)     /* Set the client ID. */
(147)     ConnectionSetClientID(pTopicConnection,
(148)     (char*)"TopicTestPublisher", &iErr, szErrBuf);
(149)     check_error(iErr, szErrBuf, 1);
(150)
(151)     /* Start the connection. */
(152)     ConnectionStart(pTopicConnection,&iErr, szErrBuf);
(153)     check_error(iErr, szErrBuf, 1);
(154)
(155)     /* Create a topic session. */
(156)     pTopicSession = ConnectionCreateTopicSession (pTopicConnection,
(157)     SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(158)     check_error(iErr, szErrBuf, 1);
(159)     if(!pTopicSession) {
(160)          printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
(161)     iErr, szErrBuf);
(162)          exit(2);
(163)     }
(164)
(165)     /* Create a topic. */
(166)     pTopic = SessionCreateTopic(pTopicSession, pTopicName, &iErr,
(167)     szErrBuf);
(168)     check_error(iErr, szErrBuf, 1);
(169)
(170)     /* Create a topic publisher. */
(171)     pTopicPublisher = SessionCreatePublisher(pTopicSession, pTopic,
(172)     &iErr, szErrBuf);
(173)     check_error(iErr, szErrBuf, 1);
(174)
(175)     /* Create a text message. */
(176)     pTextMessage = SessionCreateTextMessage(pTopicSession, &iErr,
(177)     szErrBuf);
(178)     check_error(iErr, szErrBuf, 1);
(179)
(180)     /* Clear the body (payload) of the message. */
(181)     ClearBody(pTextMessage, &iErr, szErrBuf);/* set the mode to r/w */
(182)     check_error(iErr, szErrBuf, 1);
```

```
(183)
(184)      /* Copy in the text to be sent. */
(185)      SetText(pTextMessage, pBuffer, &iErr, szErrBuf);
(186)      check_error(iErr, szErrBuf, 1);
(187)
(188)      /* Set the JMSType of the message to "ASCII". */
(189)      SetJMSType(pTextMessage, (char*)"ASCII",&iErr, szErrBuf);
(190)      check_error(iErr, szErrBuf, 1);
(191)      printf("Sending Text Message: %s\n", pBuffer);
(192)
(193)      /* Publish the message. */
(194)      TopicPublisherPublish(pTopicPublisher, pTextMessage, &iErr,
(195)      szErrBuf);
(196)      check_error(iErr, szErrBuf, 1);
(197)
(198)      /* Commit the session. */
(199)      SessionCommit(pTopicSession, &iErr, szErrBuf);
(200)      check_error(iErr, szErrBuf, 1);
(201)
(202)      /* Close and clean up. */
(203)      TopicPublisherClose(pTopicPublisher, &iErr, szErrBuf);
(204)      check_error(iErr, szErrBuf, 1);
(205)      SessionClose(pTopicSession, &iErr, szErrBuf);
(206)      check_error(iErr, szErrBuf, 1);
(207)      ConnectionClose(pTopicConnection, &iErr, szErrBuf);
(208)      check_error(iErr, szErrBuf, 1);
(209)      DeleteMessage(pTextMessage, &iErr, szErrBuf);
(210)      DeleteTopicPublisher(pTopicPublisher, &iErr, szErrBuf);
(211)      DeleteSession(pTopicSession, &iErr, szErrBuf);
(212)      DeleteDestination(pTopic, &iErr, szErrBuf);
(213)      DeleteConnection(pTopicConnection, &iErr, szErrBuf);
(214)      DeleteTopicConnectionFactory(pTcf, &iErr, szErrBuf);
(215) }
(216)
(217)
(218) /*
(219)  * ============================================================
(220)  * Topic Subscriber
(221)  * This routine demonstrates how to subsribe a message from
(222)  * a topic.
(223)  * ============================================================
(224) */
(225) static void subscriber() {
(226)      SBYN_Session*           pTopicSession;
(227)      SBYN_Destination*       pTopic;
(228)      SBYN_Message*           pReceivedMessage = 0;
(229)      SBYN_TopicSubscriber*   pTopicSubscriber;
(230)      SBYN_Connection*        pTopicConnection;
(231)      SBYN_TopicConnectionFactory* pTcf;
(232)      unsigned long           ulMessageSize = 1024;
(233)      unsigned long           ulMessageCount = 10;
(234)      int                     iErr;
(235)      char                    szErrBuf[256];
(236)      char                    szUserInput[80];
(237)      char                    pTopicName[] = "eGatePubSubSample";
(238)
(239)      /* create a topic connection */
(240)      pTcf = CreateTopicConnectionFactory(spHostName, susPort, &iErr,
(241)      szErrBuf);
(242)      check_error(iErr, szErrBuf, 1);
(243)      if(!pTcf) {
(244)           printf("CreateTopicConnectionFactory
(245)      failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(246)           exit(2);
```

```
(247)      }
(248)
(249)      /* create a topic connection */
(250)      pTopicConnection = CreateTopicConnection(pTcf,&iErr, szErrBuf);
(251)      check_error(iErr, szErrBuf, 1);
(252)
(253)      /* set client ID */
(254)      ConnectionSetClientID(pTopicConnection,
(255)      (char*)"TopicTestSubConnection",&iErr, szErrBuf);
(256)      check_error(iErr, szErrBuf, 1);
(257)
(258)      /* start connection */
(259)      ConnectionStart(pTopicConnection,&iErr, szErrBuf);
(260)      check_error(iErr, szErrBuf, 1);
(261)
(262)      /* create a topic session */
(263)      pTopicSession = ConnectionCreateTopicSession (pTopicConnection,
(264)      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(265)      check_error(iErr, szErrBuf, 1);
(266)      if(!pTopicSession) {
(267)           printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
(268)      iErr, szErrBuf);
(269)           exit(2);
(270)      }
(271)
(272)      /* create a topic */
(273)      pTopic = SessionCreateTopic(pTopicSession, pTopicName, &iErr,
(274)      szErrBuf);
(275)      check_error(iErr, szErrBuf, 1);
(276)
(277)      /* create a subscriber */
(278)      pTopicSubscriber = SessionCreateDurableSubscriber(pTopicSession,
(279)      pTopic, (char*)"TopicTestSubscriber",&iErr, szErrBuf);
(280)      check_error(iErr, szErrBuf, 1);
(281)
(282)      printf("Waiting for message ... \n");
(283)      do {
(284)           /* waiting for incoming messages */
(285)           pReceivedMessage = TopicSubscriberReceive(pTopicSubscriber,
(286)      &iErr, szErrBuf);
(287)           check_error(iErr, szErrBuf, 1);
(288)           if (pReceivedMessage->type == SBYN_MESSAGE_TYPE_TEXT){
(289)                char *pReturnedBuf;
(290)                SBYN_WString *pWstr;
(291)                char* pMessageType;
(292)                /* retrive the JMS message type */
(293)                pWstr = GetJMSType(pReceivedMessage, &iErr, szErrBuf);
(294)                check_error(iErr, szErrBuf, 1);
(295)                pMessageType = WStringToChar(pWstr);
(296)                check_error(iErr, szErrBuf, 1);
(297)
(298)                /* retrive the text from message */
(299)               pReturnedBuf = GetText(pReceivedMessage, &iErr, szErrBuf);
(300)                printf("Received text message (JMSType:%s):  %s\n",
(301)      pMessageType, pReturnedBuf);
(302)                free(pReturnedBuf);
(303)                DeleteWString(pWstr);
(304)                free((void*)pMessageType);
(305)            SessionCommit(pTopicSession, &iErr, szErrBuf);
(306)           }
(307)           printf("Enter 'r' for receiving more message, 'q' for
(308)      exit\n");
(309)           scanf("%s", szUserInput);
(310)      } while ( szUserInput[0] != 'q' && szUserInput[0] != 'Q' );
```

```
(311)
(312)      check_error(iErr, szErrBuf, 1);
(313)
(314)      /* close subscriber, session ... */
(315)      TopicSubscriberClose(pTopicSubscriber, &iErr, szErrBuf);
(316)      SessionClose(pTopicSession, &iErr, szErrBuf);
(317)      ConnectionClose(pTopicConnection, &iErr, szErrBuf);
(318)
(319)      /* delete objects */
(320)      DeleteMessage(pReceivedMessage, &iErr, szErrBuf);
(321)      DeleteDestination(pTopic, &iErr, szErrBuf);
(322)      DeleteTopicSubscriber(pTopicSubscriber, &iErr, szErrBuf);
(323)      DeleteSession(pTopicSession, &iErr, szErrBuf);
(324)      DeleteConnection(pTopicConnection, &iErr, szErrBuf);
(325)      DeleteTopicConnectionFactory(pTcf, &iErr, szErrBuf);
(326) }
```

4.5.2. Queue Messaging (Sending/Receiving) Using C

```
(1)   /* ---------------------------------------------------------------------
(2)    *   Sample code to demonstrate JMS Queue Messaging using C.
(3)    *
(4)   * ---------------------------------------------------------------------
(5)    *
(6)    *  Disclaimer:
(7)    *
(8)    *   Copyright 2002 by SeeBeyond Technology Corporation.
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(10)   *
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(14)   *      the results and performance of this software is assumed by the user.
(15)   *   SeeBeyond Technology Corporation disclaims all warranties, either
(16)   *   express or implied, including but not limited, the implied warranties
(17)   *   of merchantability, fitness for a particular purpose, title and
(18)   *   non-infringement, with respect to this software.
(19)   *
(20)   * ---------------------------------------------------------------------*/
(21)
(22)  #include <mscapi.h>
(23)  #include <stdlib.h>
(24)  #include <stdio.h>
(25)  #include <string.h>
(26)  #ifndef WIN32
(27)  #include <unistd.h>
(28)  #endif
(29)
(30)  #if defined(OS400)
(31)  extern char *optarg;
(32)  #endif
(33)
(34)  #if defined(__gnu__)
(35)  #include <getopt.h>
(36)  #endif
(37)
(38)  char                        optionProducer[] = "[ -u ] [ -p port ]
(39)                              [ -h hostname ]";
(40)  char                        optionConsumer[] = "[ -c ] [ -p port ]
(41)                              [ -h hostname ]";
(42)  char                        optdescription[] = "\t-u run as a
(43)                              producer\n\t-c run as a consumer\n\t-p port
(44)                              number\n\t-h hostname\n";
(45)  char*                       spHostName;
```

```
(46)  char                        localHost[] = "localhost";
(47)  static unsigned short       susPort = 24053;
(48)  int                         iErr;
(49)  char                        szErrBuf[256];
(50)
(51)  /* Routine for checking errors.*/
(52)  static void check_error(int err, char* errBuf, int exitnow)
(53)  {
(54)       if (err){
(55)            printf("ERROR:0x%x - %s\n", err, errBuf);
(56)            if (exitnow)
(57)                 exit(1);
(58)       }
(59)  }
(60)
(61)  int main(int argc, char *argv[]) {
(62)       int           c;
(63)       char          cOption = 0;
(64)
(65)       spHostName = localHost;
(66)
(67)       while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(68)            switch(c){
(69)            case 'p':
(70)            case 'P':
(71)                 susPort = atoi(optarg);  /* setup the port number */
(72)                 break;
(73)            case 'h':
(74)            case 'H':
(75)                 spHostName = optarg;     /* setup the hostname */
(76)                 break;
(77)            case 'U':
(78)            case 'u':
(79)                 cOption = 'u';           /* run as a producer */
(80)                 break;
(81)            case 'c':
(82)            case 'C':
(83)                 cOption = 'c';           /* run as a consumer */
(84)                 break;
(85)            case ':':
(86)            case '?':
(87)                 printf("\nSYNOPSIS\n");
(88)                 printf("%s %s\n", argv[0], optionProducer);
(89)                 printf("%s %s\n", argv[0], optionConsumer);
(90)                 printf("%s\n", optdescription);
(91)                 exit(1);
(92)                 break;
(93)            }
(94)       }
(95)
(96)       if (cOption == 'u'){
(97)            sender();/* invoke producer */
(98)       } else if (cOption == 'c'){
(99)            receiver();/* invoke consumer */
(100)      } else {
(101)           printf("\nSYNOPSIS\n");
(102)           printf("%s %s\n", argv[0], optionProducer);
(103)           printf("%s %s\n", argv[0], optionConsumer);
(104)           printf("%s\n", optdescription);
(105)           exit(1);
(106)      }
(107) }
(108)
(109)
```

```
(110) void receiver(){
(111)      char                              pQueueName[] = "eGateP2PSample";
(112)      SBYN_QueueConnectionFactory*      pQcf = NULL;
(113)      SBYN_Connection*                  pQueueConnection = NULL;
(114)      SBYN_Session*                     pQueueSession = NULL;
(115)      SBYN_Destination*                 pQueue = NULL;
(116)      SBYN_QueueReceiver*               pQueueReceiver = NULL;
(117)      SBYN_Message*                     pMessage = NULL;
(118)      unsigned int                      iBufLen = 0;
(119)      char                              szUserInput[80];
(120)
(121)      printf("Queue name is %s\n", pQueueName);
(122)
(123)      /* Create a queue connection factory */
(124)      pQcf = CreateQueueConnectionFactory(spHostName, susPort, &iErr,
      szErrBuf);
(125)      check_error(iErr, szErrBuf, 1);
(126)      if(!pQcf) {
(127)   printf("CreateQueueConnectionFactory failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(128)   exit(2);
(129)      }
(130)
(131)      /* Create a queue connection */
(132)      pQueueConnection = CreateQueueConnection(pQcf,&iErr, szErrBuf);
(133)      check_error(iErr, szErrBuf, 1);
(134)
(135)      /* Set the client ID */
(136)      ConnectionSetClientID(pQueueConnection, (char*)"RECEIVER", &iErr,
      szErrBuf);
(137)      check_error(iErr, szErrBuf, 1);
(138)
(139)      /* Start the connection */
(140)      ConnectionStart(pQueueConnection,&iErr, szErrBuf);
(141)      check_error(iErr, szErrBuf, 1);
(142)
(143)      /* Create a queue session */
(144)      pQueueSession = ConnectionCreateQueueSession (pQueueConnection,
      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(145)      check_error(iErr, szErrBuf, 1);
(146)      if(!pQueueSession) {
(147)   printf("CreateTopicSession failed\nError:%0X\nReason:%s\n", iErr,
      szErrBuf);
(148)   exit(2);
(149)      }
(150)
(151)      /* Create a queue */
(152)      pQueue = SessionCreateQueue(pQueueSession, pQueueName, &iErr,
      szErrBuf);
(153)      check_error(iErr, szErrBuf, 1);
(154)
(155)      /* Create a queue receiver */
(156)      pQueueReceiver = SessionCreateReceiver(pQueueSession, pQueue,
      &iErr, szErrBuf);
(157)      check_error(iErr, szErrBuf, 1);
(158)
(159)      do {
(160)           /* Blocking for the message */
(161)   pMessage = QueueReceiverReceive(pQueueReceiver, &iErr, szErrBuf);
(162)   check_error(iErr, szErrBuf, 1);
(163)   if (pMessage->type == SBYN_MESSAGE_TYPE_TEXT){
(164)        char *rtbuf;
(165)        rtbuf = GetText(pMessage, &iErr, szErrBuf);
(166)        printf("Received message:  %s\n", rtbuf);
```

```
(167)       free(rtbuf);
(168)   }
(169)   printf("Enter 'r' for receiving more message, 'q' for exit\n");
(170)   scanf("%s", szUserInput);
(171)      } while ( szUserInput[0] != 'q' && szUserInput[0] != 'Q' );
(172)
(173)      /* now close the connections */
(174)      QueueReceiverClose(pQueueReceiver, &iErr, szErrBuf);
(175)      check_error(iErr, szErrBuf, 1);
(176)      SessionClose(pQueueSession, &iErr, szErrBuf);
(177)      check_error(iErr, szErrBuf, 1);
(178)      ConnectionStop(pQueueConnection, &iErr, szErrBuf);
(179)      check_error(iErr, szErrBuf, 1);
(180)      ConnectionClose(pQueueConnection, &iErr, szErrBuf);
(181)      check_error(iErr, szErrBuf, 1);
(182)
(183)      /* delete the objects */
(184)      DeleteMessage(pMessage, &iErr, szErrBuf);
(185)      DeleteQueueReceiver(pQueueReceiver, &iErr, szErrBuf);
(186)      DeleteDestination(pQueue, &iErr, szErrBuf);
(187)      DeleteSession(pQueueSession, &iErr, szErrBuf);
(188)      DeleteConnection(pQueueConnection, &iErr, szErrBuf);
(189)      DeleteQueueConnectionFactory(pQcf, &iErr, szErrBuf);
(190) }
(191)
(192)
(193)
(194) void sender(){
(195)      char                           pQueueName[] = "P2PSample";
(196)      SBYN_QueueConnectionFactory* pQcf = NULL;
(197)      SBYN_Connection*             pQueueConnection = NULL;
(198)      SBYN_Session*                pQueueSession = NULL;
(199)      SBYN_Destination*            pQueue = NULL;
(200)      SBYN_QueueSender*            pQueueSender = NULL;
(201)      SBYN_Message*                textMessage = NULL;
(202)      const int                    MAX_MESSAGE_SIZE = 60;
(203)      char                         pBuffer[] = "This is a text message";
(204)
(205)      /* Create a queue connection factory */
(206)      pQcf = CreateQueueConnectionFactory(spHostName, susPort, &iErr,
      szErrBuf);
(207)      check_error(iErr, szErrBuf, 1);
(208)      if(!pQcf) {
(209)   printf("CreateQueueConnectionFactory failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(210)   exit(2);
(211)      }
(212)
(213)      /* Create a queue connection */
(214)      pQueueConnection = CreateQueueConnection(pQcf,&iErr, szErrBuf);
(215)      check_error(iErr, szErrBuf, 1);
(216)
(217)      /* Set the client ID */
(218)      ConnectionSetClientID(pQueueConnection, (char*)"SENDER", &iErr,
      szErrBuf);
(219)      check_error(iErr, szErrBuf, 1);
(220)
(221)      /* Start the connection */
(222)      ConnectionStart(pQueueConnection,&iErr, szErrBuf);
(223)      check_error(iErr, szErrBuf, 1);
(224)
(225)      /* Create a queue session */
(226)      pQueueSession = ConnectionCreateQueueSession (pQueueConnection,
      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
```

```
(227)      check_error(iErr, szErrBuf, 1);
(228)      if(!pQueueSession) {
(229)   printf("CreateTopicSession failed\nError:%0X\nReason:%s\n", iErr,
      szErrBuf);
(230)   exit(2);
(231)      }
(232)
(233)      /* Create a queue */
(234)      pQueue = SessionCreateQueue(pQueueSession, pQueueName, &iErr,
      szErrBuf);
(235)      check_error(iErr, szErrBuf, 1);
(236)
(237)      /* Create a queue sender */
(238)      pQueueSender = SessionCreateSender(pQueueSession, pQueue, &iErr,
      szErrBuf);
(239)      check_error(iErr, szErrBuf, 1);
(240)
(241)      /* Create a text message */
(242)      textMessage = SessionCreateTextMessage(pQueueSession, &iErr,
      szErrBuf);
(243)      check_error(iErr, szErrBuf, 1);
(244)
(245)      /* set the mode to r/w */
(246)      ClearBody(textMessage, &iErr, szErrBuf);
(247)      check_error(iErr, szErrBuf, 1);
(248)
(249)      /* put in text */
(250)      SetText(textMessage, pBuffer, &iErr, szErrBuf);
(251)      check_error(iErr, szErrBuf, 1);
(252)      printf("Sending Message %s\n", pBuffer);
(253)
(254)      /* send out the message */
(255)      QueueSenderSend(pQueueSender, textMessage, &iErr, szErrBuf);
(256)      check_error(iErr, szErrBuf, 1);
(257)
(258)      /* session commit */
(259)      SessionCommit(pQueueSession, &iErr, szErrBuf);
(260)      check_error(iErr, szErrBuf, 1);
(261)
(262)      /* now close the connections */
(263)      QueueSenderClose(pQueueSender, &iErr, szErrBuf);
(264)      check_error(iErr, szErrBuf, 1);
(265)      SessionClose(pQueueSession, &iErr, szErrBuf);
(266)      check_error(iErr, szErrBuf, 1);
(267)      ConnectionStop(pQueueConnection, &iErr, szErrBuf);
(268)      check_error(iErr, szErrBuf, 1);
(269)      ConnectionClose(pQueueConnection, &iErr, szErrBuf);
(270)      check_error(iErr, szErrBuf, 1);
(271)
(272)      /* delete the objects */
(273)      DeleteMessage(textMessage, &iErr, szErrBuf);
(274)      DeleteQueueSender(pQueueSender, &iErr, szErrBuf);
(275)      DeleteDestination(pQueue, &iErr, szErrBuf);
(276)      DeleteSession(pQueueSession, &iErr, szErrBuf);
(277)      DeleteConnection(pQueueConnection, &iErr, szErrBuf);
(278)      DeleteQueueConnectionFactory(pQcf, &iErr, szErrBuf);
(279)}
```

4.5.3. Request-Reply Messaging Using C

```
(1)   /* ----------------------------------------------------------------
(2)    *   Sample code to demonstrate JMS Request-Reply messaging using C.
(3)    *
```

```
(4)   * ------------------------------------------------------------------------
(5)    *
(6)    *  Disclaimer:
(7)    *
(8)    *   Copyright 2002 by SeeBeyond Technology Corporation.
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(10)   *
(11)   *   Unless otherwise stipulated in a written agreement for this software,
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(13)   *   provided as is without warranty of any kind.  The entire risk as to
(14)   *      the results and performance of this software is assumed by the user.
(15)   *   SeeBeyond Technology Corporation disclaims all warranties, either
(16)   *   express or implied, including but not limited, the implied warranties
(17)   *   of merchantability, fitness for a particular purpose, title and
(18)   *   non-infringement, with respect to this software.
(19)   *
(20)   * ------------------------------------------------------------------------*/
(21)
(22)  #include "mscapi.h"
(23)  #include <stdlib.h>
(24)  #include <stdio.h>
(25)  #include <string.h>
(26)
(27)  #ifndef WIN32
(28)  #include <unistd.h>
(29)  #endif
(30)  #if defined(WIN32)
(31)  #include <sbyn_getopt.h>
(32)  #endif
(33)
(34)  #if defined(OS400)
(35)  extern char *optarg;
(36)  #endif
(37)
(38)  #if defined(__gnu__)
(39)  #include <getopt.h>
(40)  #endif
(41)
(42)  static void requestor();
(43)
(44)  /* Routine for checking errors.*/
(45)  static void check_error(int err, char* errBuf, int exitnow)
(46)  {
(47)       if (err){
(48)            printf("ERROR:0x%x - %s\n", err, errBuf);
(49)            if (exitnow)
(50)                 exit(1);
(51)       }
(52)  }
(53)
(54)  char                    optionRequestor[] = "[ -r ] [ -p port ]
(55)                          [ -h hostname ]";
(56)  char                    optdescription[] = "\t-r run as a
(57)                          requestor\n\t-p port number\n\t-h
(58)                          hostname\n";
(59)  char*                   spHostName;
(60)  char                    localHost[] = "localhost";
(61)  static unsigned short   susPort = 24053;
(62)  int                     iErr;
(63)  char                    szErrBuf[256];
(64)  char                    pQueueName[] = "QueueRequestorSample";
(65)
(66)  int main(int argc, char *argv[]) {
(67)       int           c;
(68)       char          cOption = 0;
```

```
(69)
(70)       spHostName = localHost;
(71)
(72)       while((c = getopt(argc, argv, ":p:h:P:H:rR")) != -1) {
(73)            switch(c){
(74)            case 'p':
(75)            case 'P':
(76)                 susPort = atoi(optarg);  /* setup the port number */
(77)                 break;
(78)            case 'h':
(79)            case 'H':
(80)                 spHostName = optarg;     /* setup the hostname */
(81)                 break;
(82)            case 'R':
(83)            case 'r':
(84)                 cOption = 'r';           /* run as a requestor */
(85)                 break;
(86)            case ':':
(87)            case '?':
(88)                 printf("\nSYNOPSIS\n");
(89)                 printf("%s %s\n", argv[0], optionRequestor);
(90)                 printf("%s\n", optdescription);
(91)                 exit(1);
(92)             }
(93)       }
(94)
(95)       if (cOption == 'r'){
(96)            requestor();/* invoke requestor */
(97)       } else {
(98)            printf("\nSYNOPSIS\n");
(99)            printf("%s %s\n", argv[0], optionRequestor);
(100)           printf("%s\n", optdescription);
(101)           exit(1);
(102)      }
(103)}
(104)
(105)
(106)
(107)/*
(108) * ============================================================
(109) * Queue Requestor
(110) *   This routine demonstrates how to do request/reply.
(111) * ============================================================
(112)*/
(113)void requestor(){
(114)      SBYN_QueueConnectionFactory *pQcf     = NULL;
(115)      SBYN_Connection *pQueueConnection     = NULL;
(116)      SBYN_Session *pQueueSession           = NULL;
(117)      SBYN_Destination *pQueue              = NULL;
(118)      SBYN_QueueSender *pQueueSender        = NULL;
(119)      SBYN_Message *textMessage             = NULL;
(120)      SBYN_Message *pReplyMessage           = NULL;
(121)      SBYN_QueueRequestor *pQueueRequestor  = 0;
(122)      char pBuffer[] = "This is a text message";
(123)
(124)      /* Create a queue connection factory */
(125)      pQcf = CreateQueueConnectionFactory(spHostName, susPort, &iErr,
      szErrBuf);
(126)      check_error(iErr, szErrBuf, 1);
(127)      if(!pQcf) {
(128)           printf("CreateQueueConnectionFactory
      failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(129)           exit(2);
(130)      }
```

```
(131)
(132)      /* Create a queue connection */
(133)      pQueueConnection = CreateQueueConnection(pQcf,&iErr, szErrBuf);
(134)      check_error(iErr, szErrBuf, 1);
(135)
(136)      /* Set the client ID */
(137)      ConnectionSetClientID(pQueueConnection, (char*)"REQUESTOR",&iErr,
      szErrBuf);
(138)      check_error(iErr, szErrBuf, 1);
(139)
(140)      /* Start the connection */
(141)      ConnectionStart(pQueueConnection,&iErr, szErrBuf);
(142)      check_error(iErr, szErrBuf, 1);
(143)
(144)      /* Create a queue session */
(145)      pQueueSession = ConnectionCreateQueueSession (pQueueConnection,
      SBYN_NON_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(146)      check_error(iErr, szErrBuf, 1);
(147)      if(!pQueueSession) {
(148)           printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(149)           exit(2);
(150)      }
(151)
(152)      /* Create a queue */
(153)      pQueue = SessionCreateQueue(pQueueSession, pQueueName, &iErr,
      szErrBuf);
(154)      check_error(iErr, szErrBuf, 1);
(155)
(156)      /* Create a queue requestor */
(157)      pQueueRequestor = CreateQueueRequestor(pQueueSession,pQueue,
      &iErr, szErrBuf);
(158)      check_error(iErr, szErrBuf, 1);
(159)
(160)      /* Create a text message and make a request */
(161)      textMessage = SessionCreateTextMessage(pQueueSession, &iErr,
      szErrBuf);
(162)      check_error(iErr, szErrBuf, 1);
(163)
(164)      /* set the mode to r/w */
(165)      ClearBody(textMessage, &iErr, szErrBuf);
(166)      check_error(iErr, szErrBuf, 1);
(167)
(168)      /* Copy in the text to be sent. */
(169)      SetText(textMessage, pBuffer, &iErr, szErrBuf);
(170)      check_error(iErr, szErrBuf, 1);
(171)      printf("Sending Message: %s\n", pBuffer);
(172)
(173)      /* Set ReplyTo destination */
(174)      SetJMSReplyTo(textMessage, pQueue, &iErr, szErrBuf);
(175)      check_error(iErr, szErrBuf, 1);
(176)
(177)      /* Make a request and wait for a reply */
(178)      pReplyMessage = QueueRequestorRequestTimeOut(pQueueRequestor,
      textMessage, 100000, &iErr, szErrBuf);
(179)      check_error(iErr, szErrBuf, 1);
(180)
(181)      /* Extract the message type */
(182)      if (GetMessageType(pReplyMessage, &iErr, szErrBuf) ==
      SBYN_MESSAGE_TYPE_TEXT){
(183)           char *rtbuf;
(184)   check_error(iErr, szErrBuf, 1);
(185)   /* Extract the text */
(186)           rtbuf = GetText(pReplyMessage, &iErr, szErrBuf);
```

```
(187)   check_error(iErr, szErrBuf, 1);
(188)           printf("Received message:  %s\n", rtbuf);
(189)           free(rtbuf);
(190)      }
(191)      DeleteMessage(pReplyMessage, &iErr, szErrBuf);
(192)      check_error(iErr, szErrBuf, 1);
(193)
(194)      /* now close the connections */
(195)      SessionClose(pQueueSession, &iErr, szErrBuf);
(196)      check_error(iErr, szErrBuf, 1);
(197)      ConnectionStop(pQueueConnection, &iErr, szErrBuf);
(198)      check_error(iErr, szErrBuf, 1);
(199)      ConnectionClose(pQueueConnection, &iErr, szErrBuf);
(200)      check_error(iErr, szErrBuf, 1);
(201)
(202)      /* delete the objects */
(203)      DeleteMessage(textMessage, &iErr, szErrBuf);
(204)      DeleteQueueSender(pQueueSender, &iErr, szErrBuf);
(205)      DeleteDestination(pQueue, &iErr, szErrBuf);
(206)      DeleteSession(pQueueSession, &iErr, szErrBuf);
(207)      DeleteConnection(pQueueConnection, &iErr, szErrBuf);
(208)      DeleteQueueConnectionFactory(pQcf, &iErr, szErrBuf);
(209) }
(210)
(211)
(212)
(213) void receiver(){
(214)      SBYN_QueueConnectionFactory* pQcf = NULL;
(215)      SBYN_Connection* pQueueConnection = NULL;
(216)      SBYN_Session* pQueueSession = NULL;
(217)      SBYN_Destination* pQueue = NULL;
(218)      SBYN_Destination* pReplyToQueue = NULL;
(219)      SBYN_QueueReceiver* pQueueReceiver = NULL;
(220)      SBYN_QueueSender* pReplyQueueSender = NULL;
(221)      SBYN_Message *pMessage = NULL;
(222)      char szUserInput[80];
(223)
(224)      printf("Queue name is %s\n", pQueueName);
(225)      pQcf = CreateQueueConnectionFactory(spHostName, susPort, &iErr,
      szErrBuf);
(226)      if(!pQcf) {
(227)           printf("CreateQueueConnectionFactory
      failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(228)           exit(2);
(229)      }
(230)
(231)      pQueueConnection = CreateQueueConnection(pQcf,&iErr, szErrBuf);
(232)      ConnectionSetClientID(pQueueConnection, (char*)"RECEIVER",&iErr,
      szErrBuf);
(233)      ConnectionStart(pQueueConnection,&iErr, szErrBuf);
(234)      pQueueSession = ConnectionCreateQueueSession (pQueueConnection,
      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(235)      if(!pQueueSession) {
(236)           printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(237)           exit(2);
(238)      }
(239)      pQueue = SessionCreateQueue(pQueueSession, pQueueName, &iErr,
      szErrBuf);
(240)      pQueueReceiver = SessionCreateReceiver(pQueueSession, pQueue,
      &iErr, szErrBuf);
(241)
(242)      do {
```

```
(243)          pMessage = QueueReceiverReceive(pQueueReceiver, &iErr,
     szErrBuf);
(244)          if (pMessage->type == SBYN_MESSAGE_TYPE_TEXT){
(245)               char *rtbuf;
(246)               rtbuf = GetText(pMessage, &iErr, szErrBuf);
(247)               printf("Reading message:  %s\n", rtbuf);
(248)               free(rtbuf);
(249)          } else {
(250)               printf("Error: Received invalid message format\n");
(251)          }
(252)          pReplyToQueue = GetJMSReplyTo(pMessage, &iErr, szErrBuf);
(253)          pReplyQueueSender = SessionCreateSender(pQueueSession,
     pReplyToQueue, &iErr, szErrBuf);
(254)          ClearBody(pMessage, &iErr, szErrBuf);
(255)          SetText(pMessage, (char*)"This is reply message", &iErr,
     szErrBuf);
(256)         QueueSenderSend(pReplyQueueSender, pMessage, &iErr, szErrBuf);
(257)          SessionCommit(pQueueSession, &iErr, szErrBuf);
(258)          printf("Enter 'r' for receiving more message, 'q' for
     exit\n");
(259)          scanf("%s", szUserInput);
(260)     } while ( szUserInput[0] != 'q' && szUserInput[0] != 'Q' );
(261)
(262)     /* now close the connections */
(263)     QueueReceiverClose(pQueueReceiver, &iErr, szErrBuf);
(264)     SessionClose(pQueueSession, &iErr, szErrBuf);
(265)     ConnectionStop(pQueueConnection, &iErr, szErrBuf);
(266)     ConnectionClose(pQueueConnection, &iErr, szErrBuf);
(267)
(268)     /* delete the objects */
(269)     DeleteMessage(pMessage, &iErr, szErrBuf);
(270)     DeleteQueueReceiver(pQueueReceiver, &iErr, szErrBuf);
(271)     DeleteDestination(pQueue, &iErr, szErrBuf);
(272)     DeleteSession(pQueueSession, &iErr, szErrBuf);
(273)     DeleteConnection(pQueueConnection, &iErr, szErrBuf);
(274)     DeleteQueueConnectionFactory(pQcf, &iErr, szErrBuf);
(275)}
```

4.5.4. Message Selector Using C

```
(1)   /* ------------------------------------------------------------------
(2)    *   Sample code to demonstrate JMS Message Selectors using C.
(3)    *
(4)   * ------------------------------------------------------------------
(5)    *
(6)    *  Disclaimer:
(7)    *
(8)    *   Copyright 2002 by SeeBeyond Technology Corporation.
(9)    *   All Rights Reserved.
(10)   *
(11)   *   Unless otherwise stipulated in a written agreement for this software,
(12)   *   duly executed by SeeBeyond Technology Corporation, this software is
(13)   *   provided as is without warranty of any kind.  The entire risk as to
(14)   *      the results and performance of this software is assumed by the user.
(15)   *   SeeBeyond Technology Corporation disclaims all warranties, either
(16)   *   express or implied, including but not limited, the implied warranties
(17)   *   of merchantability, fitness for a particular purpose, title and
(18)   *   non-infringement, with respect to this software.
(19)   *
(20)   * ------------------------------------------------------------------*/
(21)
(22)  #include <mscapi.h>
(23)  #include <stdlib.h>
(24)  #include <stdio.h>
```

```
(25)  #include <string.h>
(26)
(27)  #ifndef WIN32
(28)  #include <unistd.h>
(29)  #endif
(30)  #if defined(WIN32)
(31)  #include <sbyn_getopt.h>
(32)  #endif
(33)
(34)  #if defined(OS400)
(35)  extern char *optarg;
(36)  #endif
(37)
(38)  #if defined(__gnu__)
(39)  #include <getopt.h>
(40)  #endif
(41)
(42)  char                    optionProducer[] = "[ -u ] [ -p port ]
(43)                          [ -h hostname ]";
(44)  char                    optionConsumer[] = "[ -c ] [ -p port ]
(45)                          [ -h hostname ]";
(46)  char                    optdescription[] = "\t-u run as a
(47)                          producer\n\t-c run as a consumer\n\t-p
(48)                          port number\n\t-h hostname\n";
(49)  static char             localHost[] = "localhost";
(50)  static unsigned short   susPort = 24053; /* default port number */
(51)  unsigned long           sulMessageSize = 16; /* default host name */
(52)  static char*            spHostName;
(53)  static char             PROP_NAME[] = "property";
(54)  int                     iErr;
(55)  char                    szErrBuf[256];
(56)
(57)  static void selector_publisher();
(58)  static void selector_subscriber();
(59)
(60)  /* Check for errors. */
(61)  static void check_error(int err, char* errBuf, int exitnow)
(62)  {
(63)       if (err){
(64)            printf("ERROR:0x%x - %s\n", err, errBuf);
(65)            if (exitnow)
(66)                 exit(1);
(67)       }
(68)  }
(69)
(70)
(71)  int main(int argc, char *argv[]) {
(72)       int           c;
(73)       char          cOption = 0;
(74)
(75)       spHostName = localHost;
(76)
(77)       while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(78)            switch(c){
(79)            case 'p':
(80)            case 'P':
(81)                 susPort = atoi(optarg);  /* setup the port number */
(82)                 break;
(83)            case 'h':
(84)            case 'H':
(85)                 spHostName = optarg;     /* setup the hostname */
(86)                 break;
(87)            case 'U':
(88)            case 'u':
```

```
(89)                cOption = 'u';          /* run as a producer */
(90)                break;
(91)           case 'c':
(92)           case 'C':
(93)                cOption = 'c';          /* run as a consumer */
(94)                break;
(95)           case ':':
(96)           case '?':
(97)                printf("\nSYNOPSIS\n");
(98)                printf("%s %s\n", argv[0], optionProducer);
(99)                printf("%s %s\n", argv[0], optionConsumer);
(100)               printf("%s\n", optdescription);
(101)               exit(1);
(102)               break;
(103)          }
(104)     }
(105)
(106)     if (cOption == 'u'){
(107)          selector_publisher();          /* invoke producer */
(108)     } else if (cOption == 'c'){
(109)          selector_subscriber();         /* invoke consumer */
(110)     } else {
(111)          printf("\nSYNOPSIS\n");
(112)          printf("%s %s\n", argv[0], optionProducer);
(113)          printf("%s %s\n", argv[0], optionConsumer);
(114)          printf("%s\n", optdescription);
(115)          exit(1);
(116)     }
(117)}
(118)
(119)static void selector_publisher(){
(120)     SBYN_TopicConnectionFactory*        pTcf;
(121)     SBYN_Connection*                    pTopicConnection = NULL;
(122)     SBYN_Session*                       pTopicSession = NULL;
(123)     SBYN_Destination*                   pTopic = NULL;
(124)     SBYN_TopicPublisher*                pTopicPublisher = NULL;
(125)     int                                 ii;
(126)     SBYN_Message                        msglist[10];
(127)     static char                         TOPIC_NAME[] = "Selector";
(128)
(129)     /* Create a topic factory. */
(130)     pTcf = CreateTopicConnectionFactory(spHostName, susPort, &iErr,
     szErrBuf);
(131)     if(!pTcf) {
(132)          printf("CreateTopicConnectionFactory
     failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(133)          exit(2);
(134)     }
(135)
(136)     /* Create a topic connection. */
(137)     pTopicConnection = CreateTopicConnection(pTcf,&iErr, szErrBuf);
(138)     check_error(iErr, szErrBuf, 1);
(139)
(140)     /* Set the client ID. */
(141)     ConnectionSetClientID(pTopicConnection, (char*)"Publisher",&iErr,
     szErrBuf);
(142)     check_error(iErr, szErrBuf, 1);
(143)
(144)     /* Start the connection. */
(145)     ConnectionStart(pTopicConnection, &iErr, szErrBuf);
(146)     check_error(iErr, szErrBuf, 1);
(147)
(148)     /* Create a topic session. */
```

```
(149)      pTopicSession = ConnectionCreateTopicSession (pTopicConnection,
      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(150)      check_error(iErr, szErrBuf, 1);
(151)      if(!pTopicSession) {
(152)           printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(153)           exit(2);
(154)      }
(155)
(156)      /* Create a topic. */
(157)      pTopic = SessionCreateTopic(pTopicSession, TOPIC_NAME, &iErr,
      szErrBuf);
(158)      check_error(iErr, szErrBuf, 1);
(159)
(160)      /* Create a topic publisher. */
(161)      pTopicPublisher = SessionCreatePublisher(pTopicSession, pTopic,
      &iErr, szErrBuf);
(162)      check_error(iErr, szErrBuf, 1);
(163)
(164)      /* Set delivery mode as persistent */
(165)      TopicPublisherSetDeliveryMode(pTopicPublisher, SBYN_PERSISTENT,
      &iErr, szErrBuf);
(166)      check_error(iErr, szErrBuf, 1);
(167)
(168)      /* publish 10 messages to the topic */
(169)      for(ii=0; ii<10 ;ii++){
(170)           int index;
(171)           char buf[80];
(172)           /* Create a text message. */
(173)          msglist[ii].message = SessionCreateTextMessage(pTopicSession,
      &iErr, szErrBuf);
(174)    /* Clear the body (payload) of the message. */
(175)           ClearBody((SBYN_Message*)msglist[ii].message, &iErr,
      szErrBuf);
(176)           check_error(iErr, szErrBuf, 1);
(177)           msglist[ii].type = SBYN_MESSAGE_TYPE_TEXT;
(178)           index = ii%10;
(179)           sprintf(buf, "%d", index);
(180)           /* Set the string property */
(181)           SetStringProperty((SBYN_Message*)msglist[ii].message,
      PROP_NAME, buf, &iErr, szErrBuf);
(182)           check_error(iErr, szErrBuf, 1);
(183)           /* Copy in the text to be sent. */
(184)          SetText((SBYN_Message*)msglist[ii].message, (char*)"This is a
      text message", &iErr, szErrBuf);
(185)           check_error(iErr, szErrBuf, 1);
(186)           /* Publish the message. */
(187)           TopicPublisherPublish(pTopicPublisher,
      (SBYN_Message*)msglist[ii].message, &iErr, szErrBuf);
(188)           check_error(iErr, szErrBuf, 1);
(189)           printf("... Published 1 message with property %s = %d\n",
      PROP_NAME, ii);
(190)      }
(191)      /* Commit the session. */
(192)      SessionCommit(pTopicSession,  &iErr, szErrBuf);
(193)      check_error(iErr, szErrBuf, 1);
(194)
(195)      /* close and delete objects */
(196)      TopicPublisherClose(pTopicPublisher, &iErr, szErrBuf);
(197)      check_error(iErr, szErrBuf, 1);
(198)      SessionClose(pTopicSession, &iErr, szErrBuf);
(199)      check_error(iErr, szErrBuf, 1);
(200)      ConnectionClose(pTopicConnection, &iErr, szErrBuf);
(201)      check_error(iErr, szErrBuf, 1);
```

```
(202)      DeleteTopicPublisher(pTopicPublisher, &iErr, szErrBuf);
(203)      DeleteSession(pTopicSession, &iErr, szErrBuf);
(204)      DeleteConnection(pTopicConnection, &iErr, szErrBuf);
(205)      DeleteTopicConnectionFactory(pTcf, &iErr, szErrBuf);
(206) }
(207)
(208)
(209) static void selector_subscriber(){
(210)      SBYN_TopicConnectionFactory *pTcf;
(211)      SBYN_Connection *pTopicConnection = 0;
(212)      SBYN_Session *pTopicSession = 0;
(213)      SBYN_Destination *topic = 0;
(214)      SBYN_TopicSubscriber *pTopicSubscriber = 0;
(215)      SBYN_Message *pMessage = 0;
(216)      char selectorString[80];
(217)      char selectorSubscriberName[80];
(218)      int selector = 7;
(219)      char* selectorName;
(220)      static char TOPIC_NAME[] = "eGateSelector";
(221)
(222)
(223)      /* create a topic connection */
(224)      pTcf = CreateTopicConnectionFactory(spHostName, susPort, &iErr,
      szErrBuf);
(225)      check_error(iErr, szErrBuf, 1);
(226)      if(!pTcf) {
(227)           printf("CreateTopicConnectionFactory
      failed\nError:%0X\nReason:%s\n", iErr, szErrBuf);
(228)           exit(2);
(229)      }
(230)
(231)      /* create a topic connection */
(232)      pTopicConnection = CreateTopicConnection(pTcf,&iErr, szErrBuf);
(233)      check_error(iErr, szErrBuf, 1);
(234)
(235)      /* set client ID */
(236)     ConnectionSetClientID(pTopicConnection, (char*)"Publisher", &iErr,
      szErrBuf);
(237)      check_error(iErr, szErrBuf, 1);
(238)
(239)      /* start connection */
(240)      ConnectionStart(pTopicConnection,&iErr, szErrBuf);
(241)      check_error(iErr, szErrBuf, 1);
(242)
(243)      /* create a topic session */
(244)      pTopicSession = ConnectionCreateTopicSession (pTopicConnection,
      SBYN_TRANSACTED, SBYN_CLIENT_ACKNOWLEDGE, &iErr, szErrBuf);
(245)      check_error(iErr, szErrBuf, 1);
(246)      if(!pTopicSession) {
(247)           printf("CreateTopicSession failed\nError:%0X\nReason:%s\n",
      iErr, szErrBuf);
(248)           exit(2);
(249)      }
(250)
(251)      /* create a topic */
(252)      topic = SessionCreateTopic(pTopicSession, TOPIC_NAME, &iErr,
      szErrBuf);
(253)      check_error(iErr, szErrBuf, 1);
(254)
(255)      /* create subscriber  with selector*/
(256)      sprintf(selectorString, "%s = '%d'", PROP_NAME, selector);
(257)      selectorString[strlen(selectorString)] = '\0';
(258)      sprintf(selectorSubscriberName, "SelectorSubscriber%d", selector);
```

```
(259)     pTopicSubscriber =
     SessionCreateDurableSubscriberMessageSelector(pTopicSession, topic,
     selectorSubscriberName, selectorString, 0, &iErr, szErrBuf);
(260)     check_error(iErr, szErrBuf, 1);
(261)
(262)     /* Get message using selector */
(263)    selectorName = TopicSubscriberGetMessageSelector(pTopicSubscriber,
     &iErr, szErrBuf);
(264)     check_error(iErr, szErrBuf, 1);
(265)     printf("using selector: %s\n", selectorName);
(266)     for (pMessage = TopicSubscriberReceive(pTopicSubscriber, &iErr,
     szErrBuf);
(267)          pMessage != 0;
(268)          pMessage = TopicSubscriberReceiveTimeOut(pTopicSubscriber,
     1000, &iErr, szErrBuf))
(269)     {
(270)          char* property = WStringToChar(GetStringProperty(pMessage,
     PROP_NAME, &iErr, szErrBuf));
(271)          printf("Received 1 message with %s = %s\n", PROP_NAME,
     property);
(272)     }
(273)     check_error(iErr, szErrBuf, 1);
(274)
(275)     /* Session commit */
(276)     SessionCommit(pTopicSession, &iErr, szErrBuf);
(277)     check_error(iErr, szErrBuf, 1);
(278)
(279)     /* close and delete objects */
(280)     TopicSubscriberClose(pTopicSubscriber, &iErr, szErrBuf);
(281)     check_error(iErr, szErrBuf, 1);
(282)     SessionClose(pTopicSession, &iErr, szErrBuf);
(283)     check_error(iErr, szErrBuf, 1);
(284)     ConnectionClose(pTopicConnection, &iErr, szErrBuf);
(285)     check_error(iErr, szErrBuf, 1);
(286)
(287)     DeleteTopicSubscriber(pTopicSubscriber, &iErr, szErrBuf);
(288)     DeleteSession(pTopicSession, &iErr, szErrBuf);
(289)     DeleteConnection(pTopicConnection, &iErr, szErrBuf);
(290)     DeleteTopicConnectionFactory(pTcf, &iErr, szErrBuf);
(291) }
```

4.5.5. Publish/Subscribe Messaging Using XA in C

```
(1)   /*-------------------------------------------------------------------
(2)   * Sample code to demonstrate JMS Pub/Sub using XA.
(3)   *-------------------------------------------------------------------
(4)   *
(5)   *  Disclaimer:
(6)   *
(7)   *  Copyright 2002 by SeeBeyond Technology Corporation.
(8)   *  All Rights Reserved.
(9)   *   Unless otherwise stipulated in a written agreement for this
(10)  *  software, duly executed by SeeBeyond Technology Corporation, this
(11)  *  software is provided as is without warranty of any kind.  The
(12)  *  entire risk as to the results and performance of this software
(13)  *  is assumed by the user.SeeBeyond Technology Corporation disclaims
(14)  *  all warranties, either express or implied, including but not
(15)  *  limited, the implied warranties of merchantability, fitness for a
(16)  *  particular purpose, title and non-infringement, with respect to
(17)  *  this software.
(18)  *
(19)  * -------------------------------------------------------------------*/
(20)  #include "mscapi.h"
(21)  #include <stdlib.h>
```

```
(22) #include <stdio.h>
(23) #include <string.h>
(24)
(25) #ifndef WIN32
(26) #include <unistd.h>
(27) #endif
(28) #if defined(WIN32)
(29) #include "sbyn_getopt.h"
(30) #endif
(31)
(32) #if defined(OS400)
(33) extern char *optarg;
(34) #endif
(35)
(36) #if defined(__gnu__)
(37) #include <getopt.h>
(38) #endif
(39)
(40)
(41) char                    optionProducer[] = "[ -u ] [ -p port ]
(42)                        [ -h hostname ]";
(43) char                    optionConsumer[] = "[ -c ] [ -p port ]
(44)                        [ -h hostname ]";
(45) char                    optdescription[] = "\t-u  run as a
(46)                        producer\n\t-c run as a consumer\n\t-p port
(47)                        number\n\t-h  hostname\n";
(48) static char            localHost[] = "localhost";
(49) static unsigned short  susPort = 24053; /* default port number */
(50) unsigned long          sulMessageSize = 16; /* default host name */
(51) static char*           spHostName;
(52) static int             iErr;
(53) static char            szErrBuf[256];
(54) static int             iNumMessages = 10;
(55) static char            szText[] = "This is a text message";
(56)
(57) static void XATopicPub();
(58) static void XATopicSub();
(59)
(60) #define MSCLIENT_DLL_NAME "stc_msclient.dll"
(61)
(62) /* Check for errors. */
(63) static void check_error(int err, char* errBuf, int exitnow)
(64) {
(65)      if (err){
(66)           printf("ERROR:0x%x - %s\n", err, errBuf);
(67)           if (exitnow)
(68)                exit(1);
(69)      }
(70) }
(71)
(72)
(73) int main(int argc, char *argv[]) {
(74)      int           c;
(75)      char          cOption = 0;
(76)
(77)      spHostName = localHost;
(78)
(79)      while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(80)           switch(c){
(81)           case 'p':
(82)           case 'P':
(83)                susPort = atoi(optarg);  /* setup the port number */
(84)                break;
(85)           case 'h':
```

```
(86)            case 'H':
(87)                 spHostName = optarg;     /* setup the hostname */
(88)                 break;
(89)            case 'U':
(90)            case 'u':
(91)                 cOption = 'u';           /* run as a producer */
(92)                 break;
(93)            case 'c':
(94)            case 'C':
(95)                 cOption = 'c';           /* run as a consumer */
(96)                 break;
(97)            case ':':
(98)            case '?':
(99)                 printf("\nSYNOPSIS\n");
(100)                printf("%s %s\n", argv[0], optionProducer);
(101)                printf("%s %s\n", argv[0], optionConsumer);
(102)                printf("%s\n", optdescription);
(103)                exit(1);
(104)                break;
(105)           }
(106)      }
(107)
(108)      if (cOption == 'u'){
(109)           XATopicPub();          /* invoke producer */
(110)      } else if (cOption == 'c'){
(111)           XATopicSub();         /* invoke consumer */
(112)      } else {
(113)           printf("\nSYNOPSIS\n");
(114)           printf("%s %s\n", argv[0], optionProducer);
(115)           printf("%s %s\n", argv[0], optionConsumer);
(116)           printf("%s\n", optdescription);
(117)           exit(1);
(118)      }
(119) }
(120)
(121) /*
(122)  * ========================================================
(123)  * Publish Message
(124)  * This routine publishes iNumMessages to the topic
(125)  * ========================================================
(126) */
(127) static void PublishMessage(SBYN_TopicPublisher* pPublisher,
(128) SBYN_Message* pMessage, int iNumMessages)
(129) {
(130)      int ii;
(131)      for ( ii = 0; ii < iNumMessages; ii++){
(132)           SetIntProperty(pMessage, (char*)"Sequence", ii, &iErr,
(133)           szErrBuf);
(134)           check_error(iErr, szErrBuf, 1);
(135)           printf("Sending Message: Sequence number %d\n", ii);
(136)           TopicPublisherPublish(pPublisher, pMessage, &iErr, szErrBuf);
(137)           check_error(iErr, szErrBuf, 1);
(138)      }
(139) }
(140)
(141)
(142) /*
(143)  * ========================================================
(144)  * Receive Message
(145)  * This routine block on receiving message for maximum iWait
(146)  *   seconds before return.
(147)  * ========================================================
(148) */
(149) static int SubscriberReceiveMessage(SBYN_TopicSubscriber* pSub)
```

```
(150){
(151)     int iMsgCount = 0;
(152)     SBYN_Message* pRMsg = 0;
(153)     char szUserInput[8];
(154)     printf("Waiting for message ... \n");
(155)     do {
(156)          pRMsg = TopicSubscriberReceive(pSub, &iErr, szErrBuf);
(157)          printf("Received Message %d\n", iMsgCount);
(158)          check_error(iErr, szErrBuf, 1);
(159)          iMsgCount++;
(160)          if (iMsgCount >= iNumMessages){
(161)               printf("Enter 'r' for receiving more message, 'q' for
(162)               exit\n");
(163)               scanf("%s", szUserInput);
(164)               iMsgCount = 0;
(165)          }
(166)
(167)     } while(szUserInput[0] != 'q' && szUserInput[0] != 'Q');
(168)     return iMsgCount;
(169)}
(170)
(171)/*
(172) * ========================================================
(173) * Topic Publisher
(174) * This routine demonstrates how to publish to a topic.
(175) * ========================================================
(176)*/
(177)void XATopicPub()
(178){
(179)     SBYN_XATopicConnectionFactory* pXATcf = 0;
(180)     SBYN_Connection*               pConnection = 0;
(181)     SBYN_Session*                  pXATopicSession = 0;
(182)     SBYN_Session*                  pTopicSession = 0;
(183)     SBYN_Destination*              pTopic = 0;
(184)     SBYN_XAResource*               pXATopicResource;
(185)     SBYN_XAResource*               pXATopicResourceTmp;
(186)     SBYN_TopicPublisher*           pTopicPublisher;
(187)     SBYN_Message*                  pMessage;
(188)     SBYN_Xid*                      pXid;
(189)     char                           pTopicName[] = "XAPubSubSample";
(190)
(191)     /* create XA connection factory */
(192)     pXATcf = CreateXATopicConnectionFactory(spHostName, susPort, &iErr,
(193)     szErrBuf);
(194)     check_error(iErr, szErrBuf, 1);
(195)
(196)     /* create XA connection */
(197)     pConnection = CreateXATopicConnection(pXATcf, &iErr, szErrBuf);
(198)     check_error(iErr, szErrBuf, 1);
(199)
(200)     /* set client ID */
(201)     ConnectionSetClientID(pConnection, (char*)"eGate{7E527692-770A-
(202)     11D5-B139-935EB6E85DBD}", &iErr, szErrBuf);
(203)     check_error(iErr, szErrBuf, 1);
(204)
(205)     /* create XA session */
(206)     pXATopicSession = XAConnectionCreateXATopicSession(pConnection,
(207)     &iErr, szErrBuf);
(208)     check_error(iErr, szErrBuf, 1);
(209)
(210)     /* get session */
(211)     pTopicSession = XASessionGetTopicSession(pXATopicSession, &iErr,
(212)     szErrBuf);
(213)     check_error(iErr, szErrBuf, 1);
```

```
(214)
(215)       /* get XA resource */
(216)       pXATopicResource = XASessionGetXAResource(pXATopicSession, &iErr,
(217)       szErrBuf);
(218)       check_error(iErr, szErrBuf, 1);
(219)
(220)       /* get XA resource */
(221)       pXATopicResourceTmp = XASessionGetXAResource(pXATopicSession,
(222)       &iErr, szErrBuf);
(223)       check_error(iErr, szErrBuf, 1);
(224)
(225)       /* create a Topic */
(226)       pTopic = SessionCreateTopic(pTopicSession, pTopicName, &iErr,
(227)       szErrBuf);
(228)       check_error(iErr, szErrBuf, 1);
(229)
(230)       /* create a publisher */
(231)       pTopicPublisher = SessionCreatePublisher(pTopicSession, pTopic,
(232)       &iErr, szErrBuf);
(233)       check_error(iErr, szErrBuf, 1);
(234)
(235)       /* connection start */
(236)       ConnectionStart(pConnection, &iErr, szErrBuf);
(237)       check_error(iErr, szErrBuf, 1);
(238)
(239)       /* create xa id */
(240)       pXid = XACreateXid((char*)MSCLIENT_DLL_NAME, &iErr, szErrBuf);
(241)       check_error(iErr, szErrBuf, 1);
(242)
(243)       /* associate the global transaction with the resource */
(244)       XAResourceStart(pXATopicResource, pXid, SBYN_TMNOFLAGS, &iErr,
(245)       szErrBuf);
(246)       check_error(iErr, szErrBuf, 1);
(247)
(248)       /* create a meesage */
(249)       pMessage = SessionCreateTextMessage(pXATopicSession, &iErr,
(250)       szErrBuf);
(251)       check_error(iErr, szErrBuf, 1);
(252)
(253)       /* set mode to r/w */
(254)       ClearBody(pMessage, &iErr, szErrBuf);
(255)       check_error(iErr, szErrBuf, 1);
(256)
(257)       /* write bytes */
(258)       SetText(pMessage, (char*)szText, &iErr, szErrBuf);
(259)       check_error(iErr, szErrBuf, 1);
(260)
(261)       /* publish message */
(262)       printf("Sending %d messages\n", iNumMessages);
(263)       PublishMessage(pTopicPublisher, pMessage, iNumMessages);
(264)
(265)       /* xaEnd */
(266)       XAResourceEnd(pXATopicResource, pXid, SBYN_TMSUCCESS, &iErr,
(267)       szErrBuf);
(268)       check_error(iErr, szErrBuf, 1);
(269)
(270)       /* ================================================
(271)        * Prepare-Rollback
(272)        * ================================================
(273)        */
(274)       /* xaPrepare */
(275)       XAResourcePrepare(pXATopicResource, pXid, &iErr, szErrBuf);
(276)       check_error(iErr, szErrBuf, 1);
(277)
```

```
(278)      /* xaRollBack */
(279)      printf("Rolling back %d message\n", iNumMessages);
(280)      XAResourceRollback(pXATopicResource, pXid, &iErr, szErrBuf);
(281)      check_error(iErr, szErrBuf, 1);
(282)
(283)
(284)      /* ================================================
(285)       * Prepare-Commit
(286)       * ================================================
(287)       */
(288)
(289)      /* xa start */
(290)      XAResourceStart(pXATopicResource, pXid, SBYN_TMNOFLAGS, &iErr,
(291)      szErrBuf);
(292)      check_error(iErr, szErrBuf, 1);
(293)
(294)      /* send message */
(295)      printf("Sending %d messages\n", iNumMessages);
(296)      PublishMessage(pTopicPublisher, pMessage, iNumMessages);
(297)
(298)      /* xaEnd */
(299)      XAResourceEnd(pXATopicResource, pXid, SBYN_TMSUCCESS, &iErr,
(300)      szErrBuf);
(301)      check_error(iErr, szErrBuf, 1);
(302)
(303)      /* xaPrepare */
(304)      if (SBYN_XA_OK != XAResourcePrepare(pXATopicResource, pXid, &iErr,
(305)      szErrBuf))
(306)      {
(307)           printf("ERROR: XAResourcePrepare failed\n");
(308)      }
(309)      check_error(iErr, szErrBuf, 1);
(310)
(311)      /* xa commit */
(312)      printf("Session Commit...\n");
(313)      XAResourceCommit(pXATopicResource, pXid, TRUE, &iErr, szErrBuf);
(314)      check_error(iErr, szErrBuf, 1);
(315)
(316)      /* Close and clean up. */
(317)      TopicPublisherClose(pTopicPublisher, &iErr, szErrBuf);
(318)      check_error(iErr, szErrBuf, 1);
(319)      SessionClose(pXATopicSession, &iErr, szErrBuf);
(320)      check_error(iErr, szErrBuf, 1);
(321)      ConnectionClose(pConnection, &iErr, szErrBuf);
(322)      check_error(iErr, szErrBuf, 1);
(323)      DeleteMessage(pMessage, &iErr, szErrBuf);
(324)      DeleteTopicPublisher(pTopicPublisher, &iErr, szErrBuf);
(325)  DeleteXAResource(pXATopicResource, &iErr, szErrBuf);
(326)      DeleteXid(pXid, &iErr, szErrBuf);
(327)      DeleteSession(pXATopicSession, &iErr, szErrBuf); /* delete session
(328)      & resource */
(329)      DeleteDestination(pTopic, &iErr, szErrBuf);
(330)      DeleteConnection(pConnection, &iErr, szErrBuf);
(331)      DeleteXATopicConnectionFactory(pXATcf, &iErr, szErrBuf);
(332) }
(333)
(334) /*
(335)  * ========================================================
(336)  * Topic Subscriber
(337)  * This routine demonstrates how to subsribe a message from a
(338)  *  topic.
(339)  * ========================================================
(340) */
(341) void XATopicSub()
```

```
(342) {
(343)      SBYN_XATopicConnectionFactory* pXATcf = 0;
(344)      SBYN_Connection*               pConnection = 0;
(345)      SBYN_Session*                  pXATopicSession = 0;
(346)      SBYN_Session*                  pTopicSession = 0;
(347)      SBYN_XAResource*               pTopicResource = 0;
(348)      SBYN_Destination*              pTopic = 0;
(349)      SBYN_Message*                  pReceivedMessage = 0;
(350)      SBYN_XAResource*               pXATopicResource = 0;
(351)      SBYN_TopicSubscriber*          pTopicSubscriber = 0;
(352)      SBYN_Message*                  pMessage = 0;
(353)      SBYN_Xid*                      pXid = 0;
(354)      char                          pTopicName[] = "eGateXAPubSubSample";
(355)      int                            iNumReceived = 0;
(356)      char                           szUserInput[8];
(357)      /* create XA connection factory */
(358)     pXATcf = CreateXATopicConnectionFactory(spHostName, susPort, &iErr,
(359)      szErrBuf);
(360)      check_error(iErr, szErrBuf, 1);
(361)
(362)      /* create XA connection */
(363)      pConnection = CreateXATopicConnection(pXATcf, &iErr, szErrBuf);
(364)      check_error(iErr, szErrBuf, 1);
(365)
(366)      /* set client ID */
(367)      ConnectionSetClientID(pConnection, (char*)"eGate{7E527692-770A-
(368)      11D5-B139-3456789}", &iErr, szErrBuf);
(369)      check_error(iErr, szErrBuf, 1);
(370)
(371)      /* create XA session */
(372)      pXATopicSession = XAConnectionCreateXATopicSession(pConnection,
(373)      &iErr, szErrBuf);
(374)      check_error(iErr, szErrBuf, 1);
(375)
(376)      /* get session */
(377)      pTopicSession = XASessionGetTopicSession(pXATopicSession, &iErr,
(378)      szErrBuf);
(379)      check_error(iErr, szErrBuf, 1);
(380)
(381)      /* get XA resource */
(382)      pXATopicResource = XASessionGetXAResource(pXATopicSession, &iErr,
(383)      szErrBuf);
(384)      check_error(iErr, szErrBuf, 1);
(385)
(386)      /* create a Topic */
(387)      pTopic = SessionCreateTopic(pTopicSession, pTopicName, &iErr,
(388)      szErrBuf);
(389)      check_error(iErr, szErrBuf, 1);
(390)
(391)      /* create a subscriber */
(392)      //pTopicSubscriber = SessionCreateDurableSubscriber(pTopicSession,
(393)      pTopic, (char*)"XATopicSubscriber", &iErr, szErrBuf);
(394)      pTopicSubscriber = SessionCreateSubscriber(pTopicSession, pTopic,
(395)      &iErr, szErrBuf);
(396)      check_error(iErr, szErrBuf, 1);
(397)
(398)      /* connection start */
(399)      ConnectionStart(pConnection, &iErr, szErrBuf);
(400)      check_error(iErr, szErrBuf, 1);
(401)
(402)      /* start xa resource */
(403)      pXid = XACreateXid((char*)MSCLIENT_DLL_NAME, &iErr, szErrBuf);
(404)      check_error(iErr, szErrBuf, 1);
(405)
```

```
(406)
(407)
(408)      /* Receive all the messages on the topic and return the number of
(409)      messages received */
(410)      //iNumReceived = SubscriberReceiveMessage(pTopicSubscriber);
(411)      printf("Receiving messages...\n");
(412)      do {
(413)   int iMsgCount = 0;
(414)           SBYN_Message* pRMsg = 0;
(415)           /* associate the global transaction with the resource */
(416)   XAResourceStart(pXATopicResource, pXid, SBYN_TMNOFLAGS, &iErr,
(417)   szErrBuf);
(418)   check_error(iErr, szErrBuf, 1);
(419)           while(iMsgCount < iNumMessages){
(420)                pRMsg = TopicSubscriberReceive(pTopicSubscriber, &iErr,
(421)                szErrBuf);
(422)                printf("Received Message %d\n", iMsgCount);
(423)                iMsgCount++;
(424)           }
(425)
(426)           /* xaEnd */
(427)   XAResourceEnd(pXATopicResource, pXid, SBYN_TMSUCCESS, &iErr,
(428)   szErrBuf);
(429)   check_error(iErr, szErrBuf, 1);
(430)           XAResourceCommit(pXATopicResource, pXid, TRUE, &iErr,
(431)   szErrBuf);
(432)           printf("Enter 'r' for receiving more message, 'q' for
(433)   exit\n");
(434)           scanf("%s", szUserInput);
(435)           iMsgCount = 0;
(436)      } while(szUserInput[0] != 'q' && szUserInput[0] != 'Q');
(437)
(438)      /* Session commit */
(439)      SessionCommit(pTopicSession,  &iErr, szErrBuf);
(440)
(441)      /* close and delete objects */
(442)      TopicSubscriberClose(pTopicSubscriber, &iErr, szErrBuf);
(443)      SessionUnsubscribe(pXATopicSession, (char*)"TopicSubscriber",
(444)      &iErr, szErrBuf);
(445)      SessionClose(pXATopicSession, &iErr, szErrBuf);
(446)      ConnectionClose(pConnection, &iErr, szErrBuf);
(447)
(448)      /* delete objects */
(449)      DeleteDestination(pTopic, &iErr, szErrBuf);
(450)      DeleteTopicSubscriber(pTopicSubscriber, &iErr, szErrBuf);
(451)  DeleteXAResource(pXATopicResource, &iErr, szErrBuf);
(452)      DeleteXid(pXid, &iErr, szErrBuf);
(453)      DeleteSession(pXATopicSession, &iErr, szErrBuf); /* delete XA
(454)      resource and session */
(455)      DeleteConnection(pConnection, &iErr, szErrBuf);
(456)      DeleteXATopicConnectionFactory(pXATcf, &iErr, szErrBuf);
(457) }
```

4.6 Implementing JMS Models in C++

This section discusses how to use the JMS C++ APIs to exchange data with an e*Gate system.

- **Session**—Characterized by a hostname, port number, session type (either a pub/sub "topic session" or a point-to-point "queue session"), and connection parameters such as acknowledgment mode, transaction mode, delivery mode, and client ID.
- **Destination**—Either a topic (for pub/sub messaging) or else a queue (for point-to-point messaging). Characterized by session and destination name.
- Message **Producer**—Either a topic publisher or a queue sender. Characterized by session and destination.
- Message **Consumer**—Either a topic subscriber or a queue receiver. Characterized by session and destination (and, in pub/sub messaging only, by the name of the durable subscriber, if designated).
- **Requestor**—In request/reply messaging, either a topic requestor or a queue requestor. Characterized by session, destination, message, and time-to-live value expressed in milliseconds.
- **Message**—Characterized by the message type and payload. The payload is also called the message *body*, or message *content*:
  - For messages of type BytesMessage, the payload is an array of bytes.
  - For messages of type TextMessage, the payload is a string of text characters. Native encoding is used; for example, text on AS/400 systems uses EBCDIC encoding, but ASCII is used on most other systems.

4.7 Sample Code for Using JMS in C++

From the **Samples** directory located on the e*Gate installation CD-ROM, navigate to the **jmsapi** folder. Select the **C** folder and extract the sample files from this folder to the computer that you have installed the e*Gate API Kit on. The samples were built using Microsoft Visual Studio 6.0.

For the JMS API in C++, the following sample programs are provided on the product CD-ROM:

- **Publish/Subscribe Messaging Using C++** on page 167
- **Queue Messaging (Sending/Receiving) Using C++** on page 171
- **Request-Reply Messaging Using C++** on page 175
- **Message Selector Using C++** on page 178
- **XA Publish/Subscribe Messaging For JMS Using C++** on page 183

4.7.1. Publish/Subscribe Messaging Using C++

```
(1)   *------------------------------------------------------------------
(2)   * Sample code to demonstrate JMS Pub/Sub.
(3)   *------------------------------------------------------------------
(4)   *
(5)   *  Disclaimer:
(6)   *
```

```
(7)    *  Copyright 2002 by SeeBeyond Technology Corporation.
(8)    *  All Rights Reserved.
(9)    *   Unless otherwise stipulated in a written agreement for this
(10)   *  software, duly executed by SeeBeyond Technology Corporation, this
(11)   *  software is provided as is without warranty of any kind.  The
(12)   *  entire risk as to the results and performance of this software
(13)   *  is assumed by the user.SeeBeyond Technology Corporation disclaims
(14)   *  all warranties, either express or implied, including but not
(15)   *  limited, the implied warranties of merchantability, fitness for a
(16)   *  particular purpose, title and non-infringement, with respect to
(17)   *  this software.
(18)   *
(19)   * ------------------------------------------------------------------*/
(20)  #include    <ms.h>
(21)  #include    <mslocale.h>
(22)
(23)  #define                 MSCLIENT_DLL_NAME     "stc_msclient.dll"
(24)  char                   option1[] = "[ -u ] [ -p port ] [ -h hostname ]";
(25)  char                   option2[] = "[ -c ] [ -p port ] [ -h hostname ]";
(26)  char                   optdescription[] = "\t-u run as a
(27)                         producer\n\t-c run as a consumer\n\t-p port
(28)                         number\n\t-h       hostname\n";
(29)  static char            localHost[] = "localhost";
(30)  static unsigned short   susPort = 24053;       /* default port number */
(31)  unsigned long           sulMessageSize = 16;   /* default host name */
(32)  static char*            spHostName;
(33)  static void             subscriber();
(34)  static void             publisher();
(35)
(36)
(37)  #ifndef WIN32
(38)  #include <unistd.h>
(39)  #endif
(40)  #if defined(WIN32)
(41)  #include "sbyn_getopt.h"
(42)  #endif
(43)
(44)  #if defined(OS400)
(45)  extern char *optarg;
(46)  #endif
(47)
(48)  #if defined(__gnu__)
(49)  #include <getopt.h>
(50)  #endif
(51)
(52)
(53)  int main(int argc, char *argv[]) {
(54)      int           c;
(55)      char          cOption = 0;
(56)
(57)      spHostName = localHost;
(58)
(59)      while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(60)          switch(c){
(61)          case 'p':
(62)          case 'P':
(63)              susPort = atoi(optarg); /* setup the port number */
(64)              break;
(65)          case 'h':
(66)          case 'H':
(67)              spHostName = optarg; /* setup the hostname */
(68)              break;
(69)          case 'U':
(70)          case 'u':
```

```
(71)             cOption = 'u';/* run as a producer */
(72)             break;
(73)         case 'c':
(74)         case 'C':
(75)             cOption = 'c';/* run as a consumer */
(76)             break;
(77)         case ':':
(78)         case '?':
(79)             printf("\nSYNOPSIS\n");
(80)             printf("%s %s\n", argv[0], option1);
(81)             printf("%s %s\n", argv[0], option2);
(82)             printf("%s\n", optdescription);
(83)             exit(1);
(84)             break;
(85)         }
(86)     }
(87)
(88)     if (cOption == 'u'){
(89)         publisher();/* invoke producer */
(90)     } else if (cOption == 'c'){
(91)         subscriber();/* invoke consumer */
(92)     } else {
(93)         printf("\nSYNOPSIS\n");
(94)         printf("%s %s\n", argv[0], option1);
(95)         printf("%s %s\n", argv[0], option2);
(96)         printf("%s\n", optdescription);
(97)         exit(1);
(98)     }
(99)     return 0;
(100)}
(101)
(102)
(103)/*
(104) * ========================================================
(105) * Topic Publisher
(106) * This routine demonstrates how to publish to a topic.
(107) * ========================================================
(108)*/
(109)static void publisher()
(110){
(111)    char                    pBuffer[] = "This is a text message";
(112)    char                    pTopicName[] = "PubSubSample";
(113)    int                     iMessagePriority = 4;
(114)    long                    iTimeToLive = 0;
(115)
(116)    try {
(117)    /* Create a topic factory. */
(118)    TopicConnectionFactory* pTopicConnectionFactory =
(119)        LookupTopicConnectionFactory(MSCLIENT_DLL_NAME, "",
(120)        spHostName, susPort, 0, 0);
(121)
(122)    /* Create a topic connection. */
(123)    TopicConnection* pTopicConnection = pTopicConnectionFactory-
(124)    >createTopicConnection();
(125)
(126)    /* Set the client ID. */
(127)    pTopicConnection->setClientID("TopicPublisher");
(128)
(129)    /* Start the connection. */
(130)    pTopicConnection->start();
(131)
(132)    /* Create a topic session. */
(133)    TopicSession* pTopicSession = pTopicConnection-
(134)    >createTopicSession(true, Session::AUTO_ACKNOWLEDGE);
```

```
(135)
(136)     /* Create a topic. */
(137)     WString wsTopicName(pTopicName);
(138)     Topic* pTopic = pTopicSession->createTopic(wsTopicName);
(139)
(140)     /* Create a topic publisher. */
(141)     TopicPublisher* pTopicPublisher = pTopicSession-
(142)     >createPublisher(pTopic);
(143)
(144)     /* Create a text message. */
(145)     TextMessage* pTextMessage = pTopicSession->createTextMessage();
(146)
(147)     /* Clear the body (payload) of the message. */
(148)     pTextMessage->clearBody();
(149)
(150)     /* Copy in the text to be sent. */
(151)     pTextMessage->setText(pBuffer);
(152)
(153)     /* Set the JMSType of the message to "ASCII". */
(154)     pTextMessage->setJMSType("ASCII");
(155)
(156)     /* Publish the message. */
(157) cout << "Sending Message: " << pBuffer << endl;
(158)     pTopicPublisher->publish(pTextMessage);
(159)
(160)     /* Commit the session. */
(161)     pTopicSession->commit();
(162)
(163)     /* Close and clean up. */
(164)     pTopicPublisher->close();
(165)     pTopicSession->close();
(166)     pTopicConnection->close();
(167)     delete(pTextMessage);
(168)     delete(pTopicPublisher);
(169)     delete(pTopicSession);
(170)     delete(pTopicConnection);
(171)     delete(pTopicConnectionFactory);
(172)     }
(173)     catch (JMSException &e)
(174)     {
(175)        printf("JMS error: %s\n", e.getMessage());
(176)     }
(177) }
(178)
(179) /*
(180)  * ========================================================
(181)  * Topic Subscriber
(182)  * This routine demonstrates how to subsribe a message from
(183)  * a topic.
(184)  * ========================================================
(185) */
(186) static void subscriber() {
(187)     char                    szUserInput[80];
(188)     char                    pTopicName[] = "eGatePubSubSample";
(189)
(190)     try {
(191)     /* create a topic connection factory*/
(192)     TopicConnectionFactory*     pTopicConnectionFactory =
(193)         LookupTopicConnectionFactory(MSCLIENT_DLL_NAME, "", spHostName,
(194)         susPort, 0, 0);
(195)
(196)     /* create a topic connection */
(197)     TopicConnection* pTopicConnection = pTopicConnectionFactory-
(198)     >createTopicConnection();
```

```
(199)
(200)     /* set client ID */
(201)     pTopicConnection->setClientID("TopicSubscriber");
(202)
(203)     /* start connection */
(204)     pTopicConnection->start();
(205)
(206)     /* create a topic session */
(207)     TopicSession* pTopicSession = pTopicConnection-
(208)     >createTopicSession(true, Session::AUTO_ACKNOWLEDGE);
(209)
(210)
(211)     /* create a topic */
(212)     WString wsTopicName(pTopicName);
(213)     Topic* pTopic = pTopicSession->createTopic(wsTopicName);
(214)
(215)     /* create a subscriber */
(216)     TopicSubscriber* pTopicSubscriber = pTopicSession-
(217)     >createDurableSubscriber(pTopic, (char*)"TopicPublisher");
(218)
(219)     printf("Waiting for message ... \n");
(220)     TextMessage* pReceivedTextMessage;
(221)     do {
(222)         /* waiting for incoming messages */
(223)         Message* pReceivedMessage = pTopicSubscriber->receive();
(224)         pReceivedTextMessage = DYNAMIC_CAST(TextMessage,
(225)         pReceivedMessage);
(226) pTopicSession->commit();
(227)         if (pReceivedTextMessage){
(228)             WString wsJMSType = pReceivedTextMessage->getJMSType();
(229)             WString wsText = pReceivedTextMessage->getText();
(230)             string  strText;
(231)             strText = MsLocale::WideStringToString(wsText).c_str();
(232)             cout << "Received Text Message " << strText << endl;
(233)         }
(234)         printf("Enter 'r' for receiving more message, 'q' for exit\n");
(235)         scanf("%s", szUserInput);
(236)     } while ( szUserInput[0] != 'q' && szUserInput[0] != 'Q' );
(237)
(238)     /* close and delete objects */
(239)     pTopicSubscriber->close();
(240)     pTopicSession->close();
(241)     pTopicConnection->close();
(242)     delete(pReceivedTextMessage);
(243)     delete(pTopicSubscriber);
(244)     delete(pTopicSession);
(245)     delete(pTopicConnection);
(246)     delete(pTopicConnectionFactory);
(247)     }
(248)     catch (JMSException &e)
(249)     {
(250)          printf("JMS error: %s\n", e.getMessage());
(251)     }
(252) }
```

4.7.2. Queue Messaging (Sending/Receiving) Using C++

```
(1)   /* ---------------------------------------------------------------------
(2)    *   Sample code to demonstrate JMS Queue Messaging using C++.
(3)    *
(4)   * ---------------------------------------------------------------------
(5)    *
(6)    *  Disclaimer:
(7)    *
```

```
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(14)   *   The entire risk as to the results and performance of this software
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(17)   *   limited, the implied warranties of merchantability, fitness for
(18)   *   a particular purpose, title and non-infringement, with respect
(19)   *   to this software.
(20)   * ------------------------------------------------------------------*/
(21)  #include    <ms.h>
(22)  #include    <mslocale.h>
(23)
(24)  #ifndef WIN32
(25)  #include <unistd.h>
(26)  #endif
(27)  #if defined(WIN32)
(28)  #include "sbyn_getopt.h"
(29)  #endif
(30)
(31)  #if defined(OS400)
(32)  extern char *optarg;
(33)  #endif
(34)
(35)  #if defined(__gnu__)
(36)  #include <getopt.h>
(37)  #endif
(38)
(39)  #define   MSCLIENT_DLL_NAME     "stc_msclient.dll"
(40)
(41)  static    void sender();
(42)  static    void receiver();
(43)  char                            optionProducer[] = "[ -u ] [ -p port ]
(44)                                  [ -h hostname ]";
(45)  char                            optionConsumer[] = "[ -c ] [ -p port ]
(46)                                  [ -h hostname ]";
(47)  char                            optdescription[] = "\t-u run as a
(48)                                  producer\n\t-c run as a consumer\n\t-p
(49)                                  port number\n\t-h hostname\n";
(50)  char*                           spHostName;
(51)  char                            localHost[] = "localhost";
(52)  static unsigned short           susPort = 24053;
(53)  int                             iErr;
(54)  char                            szErrBuf[256];
(55)
(56)  int main(int argc, char *argv[]) {
(57)       int           c;
(58)       char          cOption = 0;
(59)
(60)       spHostName = localHost;
(61)
(62)       while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(63)            switch(c){
(64)            case 'p':
(65)            case 'P':
(66)                 susPort = atoi(optarg);  /* setup the port number */
(67)                 break;
(68)            case 'h':
(69)            case 'H':
(70)                 spHostName = optarg;     /* setup the hostname */
(71)                 break;
```

```
(72)            case 'U':
(73)            case 'u':
(74)                 cOption = 'u';           /* run as a producer */
(75)                 break;
(76)            case 'c':
(77)            case 'C':
(78)                 cOption = 'c';           /* run as a consumer */
(79)                 break;
(80)            case ':':
(81)            case '?':
(82)                 printf("\nSYNOPSIS\n");
(83)                 printf("%s %s\n", argv[0], optionProducer);
(84)                 printf("%s %s\n", argv[0], optionConsumer);
(85)                 printf("%s\n", optdescription);
(86)                 exit(1);
(87)                 break;
(88)            }
(89)       }
(90)
(91)       if (cOption == 'u'){
(92)            sender();              /* invoke producer */
(93)       } else if (cOption == 'c'){
(94)            receiver();            /* invoke consumer */
(95)       } else {
(96)            printf("\nSYNOPSIS\n");
(97)            printf("%s %s\n", argv[0], optionProducer);
(98)            printf("%s %s\n", argv[0], optionConsumer);
(99)            printf("%s\n", optdescription);
(100)           exit(1);
(101)      }
(102) return 0;
(103)}
(104)
(105)
(106)/*
(107) * ============================================================
(108) * Queue Sender
(109) * This routine demonstrates how to send message to a queue.
(110) * ============================================================
(111)*/
(112)static void sender()
(113){
(114)     char                          pQueueName[] = "P2PSample";
(115)     const int                     MAX_MESSAGE_SIZE = 60;
(116)     char                          pBuffer[] = "This is a text message";
(117)
(118)     try {
(119)     /* Create a queue connection factory */
(120)     QueueConnectionFactory* pQueueConnectionFactory =
(121)          LookupQueueConnectionFactory(MSCLIENT_DLL_NAME, "",
     spHostName, susPort, 0, 0);
(122)
(123)     /* Create a queue connection */
(124)     QueueConnection* pQueueConnection = pQueueConnectionFactory-
     >createQueueConnection();
(125)
(126)     /* Set the client ID */
(127)     pQueueConnection->setClientID("SENDER");
(128)
(129)     /* Start the connection */
(130)     pQueueConnection->start();
(131)
(132)     /* Create a queue session */
```

```
(133)     QueueSession* pQueueSession = pQueueConnection-
     >createQueueSession(true, Session::CLIENT_ACKNOWLEDGE);
(134)
(135)     /* Create a queue */
(136)     WString wsQueueName(pQueueName);
(137)     Queue* pQueue = pQueueSession->createQueue(wsQueueName);
(138)
(139)     /* Create a queue sender */
(140)     QueueSender* pQueueSender = pQueueSession->createSender(pQueue);
(141)
(142)     /* Create a text message */
(143)     TextMessage* pTextMessage = pQueueSession->createTextMessage();
(144)
(145)     /* set the mode to r/w */
(146)     pTextMessage->clearBody();
(147)
(148)     /* Set the JMSType of the message to "ASCII". */
(149)     pTextMessage->setJMSType("ASCII");
(150)
(151)     /* Copy in the text to be sent. */
(152)     pTextMessage->setText(pBuffer);
(153)
(154)     /* send out the message */
(155) cout << "Sending Text Message: " << pBuffer << endl;
(156)     pQueueSender->send(pTextMessage);
(157)
(158)     /* session commit */
(159)     pQueueSession->commit();
(160)
(161)
(162)     /* close and delete the objects */
(163)     pQueueSender->close();
(164)     pQueueSession->close();
(165)     pQueueConnection->close();
(166)     delete(pTextMessage);
(167)     delete(pQueueSender);
(168)     delete(pQueue);
(169)     delete(pQueueSession);
(170)     delete(pQueueConnection);
(171)     delete(pQueueConnectionFactory);
(172)     }
(173)     catch (JMSException &e)
(174)     {
(175)         printf("JMS error: %s\n", e.getMessage());
(176)     }
(177)}
(178)
(179)/*
(180) * ========================================================
(181) *  Queue Receiver
(182) *  This routine demonstrates how to receive a message from a
(183) *  queue.
(184) * ========================================================
(185)*/
(186)static void receiver() {
(187)     char                    szUserInput[80];
(188)     char                    pQueueName[] = "eGateP2PSample";
(189)
(190)     try {
(191)     /* Create a queue connection factory */
(192)     QueueConnectionFactory* pQueueConnectionFactory =
(193)          LookupQueueConnectionFactory(MSCLIENT_DLL_NAME, "",
     spHostName, susPort, 0, 0);
(194)
```

```
(195)     /* Create a queue connection */
(196)     QueueConnection* pQueueConnection = pQueueConnectionFactory-
     >createQueueConnection();
(197)
(198)     /* Set the client ID */
(199)     pQueueConnection->setClientID("RECEIVER");
(200)
(201)     /* Start the connection */
(202)     pQueueConnection->start();
(203)
(204)     /* Create a queue session */
(205)     QueueSession* pQueueSession = pQueueConnection-
     >createQueueSession(true, Session::CLIENT_ACKNOWLEDGE);
(206)
(207)     /* Create a queue */
(208)     WString wsQueueName(pQueueName);
(209)     Queue* pQueue = pQueueSession->createQueue(wsQueueName);
(210)
(211)     /* Create a queue receiver */
(212)     QueueReceiver* pQueueReceiver = pQueueSession-
     >createReceiver(pQueue);
(213)
(214)     printf("Waiting for message ... \n");
(215)     TextMessage* pReceivedTextMessage;
(216)     do {
(217)          /* waiting for incoming messages */
(218)          Message* pReceivedMessage = pQueueReceiver->receive();
(219)          pReceivedTextMessage = DYNAMIC_CAST(TextMessage,
     pReceivedMessage);
(220)          if (pReceivedTextMessage){
(221)               WString wsJMSType = pReceivedTextMessage->getJMSType();
(222)               WString wsText = pReceivedTextMessage->getText();
(223)               string  strText;
(224)               strText = MsLocale::WideStringToString(wsText).c_str();
(225)               cout << "Received Text Message " << strText << endl;
(226)          }
(227)          printf("Enter 'r' for receiving more message, 'q' for
     exit\n");
(228)          scanf("%s", szUserInput);
(229)     } while ( szUserInput[0] != 'q' && szUserInput[0] != 'Q' );
(230)
(231)     /* close and delete objects */
(232)     pQueueReceiver->close();
(233)     pQueueSession->close();
(234)     pQueueConnection->close();
(235)     delete(pReceivedTextMessage);
(236)     delete(pQueueReceiver);
(237)     delete(pQueueSession);
(238)     delete(pQueueConnection);
(239)     delete(pQueueConnectionFactory);
(240)     }
(241)     catch (JMSException &e)
(242)     {
(243)         printf("JMS error: %s\n", e.getMessage());
(244)     }
(245)}
```

4.7.3. Request-Reply Messaging Using C++

```
(1)   /* ---------------------------------------------------------------------
(2)    * Sample code to demonstrate JMS Request-Reply messaging using C++
(3)   * ---------------------------------------------------------------------
(4)   *
(5)   *  Disclaimer:
```

```
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(11)  *   software,
(12)  *   duly executed by SeeBeyond Technology Corporation, this software is
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(14)  *   the results and performance of this software is assumed by the
(15)  *   user. SeeBeyond Technology Corporation disclaims all warranties,
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(17)  *   express or implied, including but not limited, the implied
(18)  *   warranties
(19)  *   of merchantability, fitness for a particular purpose, title and
(20)  *   non-infringement, with respect to this software.
(21)  * ------------------------------------------------------------------*/
(22)
(23)  #include    <ms.h>
(24)  #include    <mslocale.h>
(25)
(26)  #ifndef WIN32
(27)  #include <unistd.h>
(28)  #endif
(29)  #if defined(WIN32)
(30)  #include "sbyn_getopt.h"
(31)  #endif
(32)
(33)  #if defined(OS400)
(34)  extern char *optarg;
(35)  #endif
(36)
(37)  #if defined(__gnu__)
(38)  #include <getopt.h>
(39)  #endif
(40)
(41)  #define                 MSCLIENT_DLL_NAME     "stc_msclient.dll"
(42)
(43)  static void requestor();
(44)
(45)  char                      optionRequestor[] = "[ -r ] [ -p port ]
(46)                            [ -h hostname ]";
(47)  char                      optdescription[] = "\t-r   run as a
(48)                            requestor\n\t-
(49)                            p port number\n\t-h  hostname\n";
(50)  char*                     spHostName;
(51)  char                      localHost[] = "localhost";
(52)  static unsigned short     susPort = 24053;
(53)  char                      pQueueName[] = "QueueRequestorSample";
(54)
(55)  int main(int argc, char *argv[]) {
(56)       int           c;
(57)       char          cOption = 0;
(58)
(59)       spHostName = localHost;
(60)
(61)       while((c = getopt(argc, argv, ":p:h:P:H:rR")) != -1) {
(62)            switch(c){
(63)            case 'p':
(64)            case 'P':
(65)                 susPort = atoi(optarg);  /* setup the port number */
(66)                 break;
(67)            case 'h':
(68)            case 'H':
(69)                 spHostName = optarg;     /* setup the hostname */
```

```
(70)                 break;
(71)            case 'R':
(72)            case 'r':
(73)                 cOption = 'r';           /* run as a requestor */
(74)                 break;
(75)            case ':':
(76)            case '?':
(77)                 printf("\nSYNOPSIS\n");
(78)                 printf("%s %s\n", argv[0], optionRequestor);
(79)                 printf("%s\n", optdescription);
(80)                 exit(1);
(81)             }
(82)       }
(83)
(84)       if (cOption == 'r'){
(85)            requestor();/* invoke requestor */
(86)       } else {
(87)            printf("\nSYNOPSIS\n");
(88)            printf("%s %s\n", argv[0], optionRequestor);
(89)            printf("%s\n", optdescription);
(90)            exit(1);
(91)       }
(92)  return 0;
(93) }
(94)
(95)
(96)
(97) /*
(98)  * ============================================================
(99)  * Queue Requestor
(100) * This routine demonstrates how to do Request/Reply.
(101) * ============================================================
(102)*/
(103)void requestor(){
(104)     char pBuffer[] = "This is a text message";
(105)
(106)     try {
(107)     /* Create a queue connection factory */
(108)     QueueConnectionFactory* pQueueConnectionFactory =
(109)          LookupQueueConnectionFactory(MSCLIENT_DLL_NAME, "",
(110)          spHostName, susPort, 0, 0);
(111)
(112)     /* Create a queue connection */
(113)     QueueConnection* pQueueConnection = pQueueConnectionFactory-
(114)     >createQueueConnection();
(115)
(116)     /* Set the client ID */
(117)     pQueueConnection->setClientID("REQUESTOR");
(118)
(119)     /* Start the connection */
(120)     pQueueConnection->start();
(121)
(122)
(123)     /* Create a queue session */
(124)     QueueSession* pQueueSession = pQueueConnection-
(125)     >createQueueSession(false, Session::CLIENT_ACKNOWLEDGE);
(126)
(127)     /* Create a queue */
(128)     WString wsQueueName(pQueueName);
(129)     Queue* pQueue = pQueueSession->createQueue(wsQueueName);
(130)
(131)     /* Create a queue requestor */
(132)     QueueRequestor* pQueueRequestor = new QueueRequestor(pQueueSession,
(133)     pQueue);
```

```
(134)
(135)
(136)      /* Create a text message */
(137)      TextMessage* pTextMessage = pQueueSession->createTextMessage();
(138)
(139)      /* set the mode to r/w */
(140)      pTextMessage->clearBody();
(141)
(142)       /* Copy in the text to be sent. */
(143)      pTextMessage->setText(pBuffer);
(144)
(145)      /* Set ReplyTo destination */
(146)      pTextMessage->setJMSReplyTo(pQueue);
(147)
(148)      /* Make a request and wait for a reply */
(149)      Message* pReplyMessage = pQueueRequestor->request(pTextMessage,
(150)      100000);
(151)      TextMessage* pReplyTextMessage = DYNAMIC_CAST(TextMessage,
(152)      pReplyMessage);
(153)      if (pReplyTextMessage){
(154)        WString wsText = pReplyTextMessage->getText();
(155)        string  strText;
(156)        strText = MsLocale::WideStringToString(wsText).c_str();
(157)        cout << "Received Text Message " << strText << endl;
(158)      }
(159)      delete(pReplyTextMessage);
(160)
(161)       /* close and delete objects */
(162)      pQueueSession->close();
(163)      pQueueConnection->close();
(164)      delete(pTextMessage);
(165)      delete(pQueueRequestor);
(166)      delete(pQueue);
(167)      delete(pQueueSession);
(168)      delete(pQueueConnection);
(169)      delete(pQueueConnectionFactory);
(170)      }
(171)      catch (JMSException &e)
(172)      {
(173)          printf("JMS error: %s\n", e.getMessage());
(174)      }
(175)}
(176)
```

4.7.4. Message Selector Using C++

```
(1)    *------------------------------------------------------------------------
(2)    * Sample code to demonstrate JMS pub/sub messaging with selector.
(3)    *------------------------------------------------------------------------
(4)    *
(5)    *  Disclaimer:
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(10)   *  software, duly executed by SeeBeyond Technology Corporation, this
(11)   *  software is provided as is without warranty of any kind.  The
(12)   *  entire risk as to the results and performance of this software
(13)   *  is assumed by the user.SeeBeyond Technology Corporation disclaims
(14)   *  all warranties, either express or implied, including but not
(15)   *  limited, the implied warranties of merchantability, fitness for a
(16)   *  particular purpose, title and non-infringement, with respect to
(17)   *  this software.
(18)   *
```

```
(19)   * --------------------------------------------------------------------*/
(20)
(21)  #include    <ms.h>
(22)  #include    <mslocale.h>
(23)
(24)  #ifndef WIN32
(25)  #include <unistd.h>
(26)  #endif
(27)  #if defined(WIN32)
(28)  #include "sbyn_getopt.h"
(29)  #endif
(30)
(31)  #if defined(OS400)
(32)  extern char *optarg;
(33)  #endif
(34)
(35)  #if defined(__gnu__)
(36)  #include <getopt.h>
(37)  #endif
(38)
(39)  #define                 MSCLIENT_DLL_NAME     "stc_msclient.dll"
(40)  char                    optionProducer[] = "[ -u ] [ -p port ]
(41)                          [ -h hostname ]";
(42)  char                    optionConsumer[] = "[ -c ] [ -p port ]
(43)                          [ -h hostname ]";
(44)  char                    optdescription[] = "\t-u run as a
(45)                          producer\n\t-c run as a consumer\n\t-p
(46)                          port number\n\t-h hostname\n";
(47)  static char             localHost[] = "localhost";
(48)  static unsigned short   susPort = 24053; /* default port number */
(49)  unsigned long           sulMessageSize = 16; /* default host name */
(50)  static char*            spHostName;
(51)  static char PROP_NAME[] = "property";
(52)
(53)
(54)  static void selector_publisher();
(55)  static void selector_subscriber();
(56)
(57)
(58)  int main(int argc, char *argv[]) {
(59)       int           c;
(60)       char          cOption = 0;
(61)
(62)       spHostName = localHost;
(63)
(64)       while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(65)            switch(c){
(66)            case 'p':
(67)            case 'P':
(68)                 susPort = atoi(optarg);  /* setup the port number */
(69)                 break;
(70)            case 'h':
(71)            case 'H':
(72)                 spHostName = optarg;     /* setup the hostname */
(73)                 break;
(74)            case 'U':
(75)            case 'u':
(76)                 cOption = 'u';           /* run as a producer */
(77)                 break;
(78)            case 'c':
(79)            case 'C':
(80)                 cOption = 'c';           /* run as a consumer */
(81)                 break;
(82)            case ':':
```

```
(83)            case '?':
(84)                 printf("\nSYNOPSIS\n");
(85)                 printf("%s %s\n", argv[0], optionProducer);
(86)                 printf("%s %s\n", argv[0], optionConsumer);
(87)                 printf("%s\n", optdescription);
(88)                 exit(1);
(89)                 break;
(90)            }
(91)       }
(92)
(93)       if (cOption == 'u'){
(94)            selector_publisher();          /* invoke producer */
(95)       } else if (cOption == 'c'){
(96)            selector_subscriber();         /* invoke consumer */
(97)       } else {
(98)            printf("\nSYNOPSIS\n");
(99)            printf("%s %s\n", argv[0], optionProducer);
(100)           printf("%s %s\n", argv[0], optionConsumer);
(101)           printf("%s\n", optdescription);
(102)           exit(1);
(103)      }
(104) return 0;
(105)}
(106)
(107)/*
(108) * ============================================================
(109) * Topic Publisher
(110) * This routine demonstrates how to publish to a topic.
(111) * ============================================================
(112)*/
(113)static void selector_publisher(){
(114)     int                                ii;
(115)     static char                        pTopicName[] = "Selector";
(116)
(117)     try {
(118)     /* Create a topic factory. */
(119)     TopicConnectionFactory* pTopicConnectionFactory =
(120)          LookupTopicConnectionFactory(MSCLIENT_DLL_NAME, "",
(121)          spHostName, susPort, 0, 0);
(122)
(123)     /* Create a topic connection. */
(124)     TopicConnection* pTopicConnection = pTopicConnectionFactory-
(125)     >createTopicConnection();
(126)
(127)     /* Set the client ID. */
(128)     pTopicConnection->setClientID("TopicPublisher");
(129)
(130)     /* Start the connection. */
(131)     pTopicConnection->start();
(132)
(133)     /* Create a topic session. */
(134)     TopicSession* pTopicSession = pTopicConnection-
(135)     >createTopicSession(true, Session::AUTO_ACKNOWLEDGE);
(136)
(137)     /* Create a topic. */
(138)     WString wsTopicName(pTopicName);
(139)     Topic* pTopic = pTopicSession->createTopic(wsTopicName);
(140)
(141)     /* Create a topic publisher. */
(142)     TopicPublisher* pTopicPublisher = pTopicSession-
(143)     >createPublisher(pTopic);
(144)
(145)
(146)     /* Set delivery mode as persistent */
```

```
(147)      pTopicPublisher->setDeliveryMode(DeliveryMode::PERSISTENT);
(148)
(149)
(150)      /* publish 10 messages to the topic */
(151)      TextMessage* msglist[10];
(152)      for(ii=0; ii<10 ;ii++){
(153)           int index;
(154)           char buf[80];
(155)
(156)           /* Create a text message. */
(157)           msglist[ii] = pTopicSession->createTextMessage();
(158)
(159)           /* Clear the body (payload) of the message. */
(160)           msglist[ii]->clearBody();
(161)           index = ii % 10;
(162)           sprintf(buf, "%d", index);
(163)
(164)           /* Set the string property */
(165)           msglist[ii]->setStringProperty(PROP_NAME, buf);
(166)
(167)           /* Copy in the text to be sent. */
(168)           msglist[ii]->setText("This is a text message");
(169)
(170)           /* Publish the message. */
(171)           pTopicPublisher->publish(msglist[ii]);
(172)           printf("... Published 1 message with property %s = %d\n",
(173)           PROP_NAME, ii);
(174)      }
(175)
(176)      /* Commit the session. */
(177)      pTopicSession->commit();
(178)
(179)
(180)      /* close and delete objects */
(181)      pTopicPublisher->close();
(182)      pTopicSession->close();
(183)      pTopicConnection->close();
(184)      for (ii = 0; ii < 10; ii++){
(185)           delete(msglist[ii]);
(186)      }
(187)      delete(pTopicPublisher);
(188)      delete(pTopicSession);
(189)      delete(pTopicConnection);
(190)      delete(pTopicConnectionFactory);
(191)      }
(192)      catch (JMSException &e)
(193)      {
(194)          printf("JMS error: %s\n", e.getMessage());
(195)      }
(196) }
(197)
(198) /*
(199)  * ========================================================
(200)  * Topic Subscriber
(201)  * This routine demonstrates how to subsribe a message from a
(202)  * topic.
(203)  * ========================================================
(204)  */
(205) static void selector_subscriber(){
(206)      char                 selectorString[80];
(207)      char                 selectorSubscriberName[80];
(208)      int                  selector = 7;
(209)      char*                selectorName;
(210)      char                 pTopicName[] = "eGateSelector";
```

```
(211)
(212)      try {
(213)      /* create a topic connection factory */
(214)      TopicConnectionFactory* pTopicConnectionFactory =
(215)           LookupTopicConnectionFactory(MSCLIENT_DLL_NAME, "",
(216)      spHostName, susPort, 0, 0);
(217)
(218)      /* Create a topic connection. */
(219)      TopicConnection* pTopicConnection = pTopicConnectionFactory-
(220)      >createTopicConnection();
(221)
(222)      /* Set the client ID. */
(223)      pTopicConnection->setClientID("Publisher");
(224)
(225)      /* Start the connection. */
(226)      pTopicConnection->start();
(227)
(228)      /* Create a topic session. */
(229)      TopicSession* pTopicSession = pTopicConnection-
     >createTopicSession(true, Session::AUTO_ACKNOWLEDGE);
(230)
(231)      /* Create a topic. */
(232)      WString wsTopicName(pTopicName);
(233)      Topic* pTopic = pTopicSession->createTopic(wsTopicName);
(234)
(235)
(236)      /* Create subscriber  with selector*/
(237)      sprintf(selectorString, "%s = '%d'", PROP_NAME, selector);
(238)      sprintf(selectorSubscriberName, "SelectorSubscriber%d", selector);
(239)      TopicSubscriber* pTopicSubscriber = pTopicSession-
(240)      >createDurableSubscriber(pTopic, selectorSubscriberName,
(241)      selectorString, 0);
(242)
(243)      /* Get message using selector */
(244)      selectorName = pTopicSubscriber->getMessageSelector();
(245)      printf("using selector: %s\n", selectorName);
(246)
(247)      Message* pMessage;
(248)      for (pMessage = pTopicSubscriber->receive();
(249)           pMessage != 0;
(250)           pMessage = pTopicSubscriber->receive(1000))
(251)      {
(252)           string strProperty =  MsLocale::WideStringToString(pMessage-
(253)           >getStringProperty(PROP_NAME)).c_str();
(254)           cout << "Received 1 message with " << PROP_NAME << " = " <<
(255)           strProperty << endl;;
(256)           delete(pMessage);
(257)      }
(258)
(259)      /* Session commit */
(260)      pTopicSession->commit();
(261)
(262)      /* Close and delete objects */
(263)      pTopicSubscriber->close();
(264)      pTopicSession->close();
(265)      pTopicConnection->close();
(266)      delete(pTopicSubscriber);
(267)      delete(pTopicSession);
(268)      delete(pTopicConnection);
(269)      delete(pTopicConnectionFactory);
(270)      }
(271)      catch (JMSException &e)
(272)      {
(273)          printf("JMS error: %s\n", e.getMessage());
```

```
(274)     }
(275)}
```

4.7.5. XA Publish/Subscribe Messaging For JMS Using C++

```
(1)    *-------------------------------------------------------------------
(2)    * Sample code to demonstrate JMS Pub/Sub in XA.
(3)    *-------------------------------------------------------------------
(4)    *
(5)    *  Disclaimer:
(6)    *
(7)    *  Copyright 2002 by SeeBeyond Technology Corporation.
(8)    *  All Rights Reserved.
(9)    *   Unless otherwise stipulated in a written agreement for this
(10)   *  software, duly executed by SeeBeyond Technology Corporation, this
(11)   *  software is provided as is without warranty of any kind.  The
(12)   *  entire risk as to the results and performance of this software
(13)   *  is assumed by the user.SeeBeyond Technology Corporation disclaims
(14)   *  all warranties, either express or implied, including but not
(15)   *  limited, the implied warranties of merchantability, fitness for a
(16)   *  particular purpose, title and non-infringement, with respect to
(17)   *  this software. *
(18)   * -------------------------------------------------------------------
(19)  #include    <ms.h>
(20)  #include    <msxa.h>
(21)  #include    <mslocale.h>
(22)
(23)  #ifndef WIN32
(24)  #include <unistd.h>
(25)  #endif
(26)  #if defined(WIN32)
(27)  #include "sbyn_getopt.h"
(28)  #endif
(29)
(30)  #if defined(OS400)
(31)  extern char *optarg;
(32)  #endif
(33)
(34)  #if defined(__gnu__)
(35)  #include <getopt.h>
(36)  #endif
(37)
(38)  char                    optionProducer[] = "[ -u ] [ -p port ] [ -h
      hostname ]";
(39)  char                    optionConsumer[] = "[ -c ] [ -p port ] [ -h
      hostname ]";
(40)  char                    optdescription[] = "\t-u        run as a
      producer\n\t-c run as a consumer\n\t-p port number\n\t-h
      hostname\n";
(41)  static char             localHost[] = "localhost";
(42)  static unsigned short   susPort = 24053; /* default port number */
(43)  unsigned long           sulMessageSize = 16; /* default host name */
(44)  static char*            spHostName;
(45)  static int              iNumMessages = 10;
(46)  static char             szText[] = "This is a text message";
(47)
(48)  static void XATopicPub();
(49)  static void XATopicSub();
(50)
(51)  #define MSCLIENT_DLL_NAME "stc_msclient.dll"
(52)
(53)
(54)  int main(int argc, char *argv[]) {
(55)       int           c;
```

```
(56)      char          cOption = 0;
(57)
(58)      spHostName = localHost;
(59)
(60)      while((c = getopt(argc, argv, ":p:h:P:H:cCUu")) != -1) {
(61)           switch(c){
(62)           case 'p':
(63)           case 'P':
(64)                susPort = atoi(optarg);  /* setup the port number */
(65)                break;
(66)           case 'h':
(67)           case 'H':
(68)                spHostName = optarg;     /* setup the hostname */
(69)                break;
(70)           case 'U':
(71)           case 'u':
(72)                cOption = 'u';           /* run as a producer */
(73)                break;
(74)           case 'c':
(75)           case 'C':
(76)                cOption = 'c';           /* run as a consumer */
(77)                break;
(78)           case ':':
(79)           case '?':
(80)                printf("\nSYNOPSIS\n");
(81)                printf("%s %s\n", argv[0], optionProducer);
(82)                printf("%s %s\n", argv[0], optionConsumer);
(83)                printf("%s\n", optdescription);
(84)                exit(1);
(85)                break;
(86)           }
(87)      }
(88)
(89)      if (cOption == 'u'){
(90)           XATopicPub();          /* invoke producer */
(91)      } else if (cOption == 'c'){
(92)           XATopicSub();         /* invoke consumer */
(93)      } else {
(94)           printf("\nSYNOPSIS\n");
(95)           printf("%s %s\n", argv[0], optionProducer);
(96)           printf("%s %s\n", argv[0], optionConsumer);
(97)           printf("%s\n", optdescription);
(98)           exit(1);
(99)      }
(100)     return 0;
(101)}
(102)
(103)/*
(104) * ========================================================
(105) * Publish Message
(106) *   This routine publishes iNumMessages to the topic
(107) * ========================================================
(108)*/
(109)static void PublishMessage(TopicPublisher* pPublisher, Message*
      pMessage, int iNumMessages)
(110){
(111)     int ii;
(112)     for ( ii = 0; ii < iNumMessages; ii++){
(113)          pMessage->setIntProperty("Sequence", ii);
(114)          printf("Sending Message: Sequence number %d\n", ii);
(115)          pPublisher->publish(pMessage);
(116)     }
(117)}
(118)
```

```
(119)
(120)/*
(121) * ========================================================
(122) * Receive Message
(123) *   This routine block on receiving message for maximum iWait
(124) *   seconds before return.
(125) * ========================================================
(126)*/
(127)static int SubscriberReceiveMessage(TopicSubscriber* pSub,
     TopicSession* pSession)
(128){
(129)     int iMsgCount = 0;
(130)     Message* pRMsg = 0;
(131)     char szUserInput[8];
(132)     printf("Waiting for message ... \n");
(133)     do {
(134)          pRMsg = pSub->receive();
(135)          printf("Received Message %d\n", iMsgCount);
(136)          iMsgCount++;
(137)          if (iMsgCount >= iNumMessages){
(138)               printf("Enter 'r' for receiving more message, 'q' for
     exit\n");
(139)               scanf("%s", szUserInput);
(140)               pSession->commit();
(141)               iMsgCount = 0;
(142)          }
(143)
(144)     } while(szUserInput[0] != 'q' && szUserInput[0] != 'Q');
(145)     return iMsgCount;
(146)}
(147)
(148)/*
(149) * ========================================================
(150) * Topic Publisher
(151) *   This routine demonstrates how to publish to a topic.
(152) * ========================================================
(153)*/
(154)void XATopicPub()
(155){
(156)     char                              pTopicName[] = "XAPubSubSample";
(157)     Xid *pXid;
(158)
(159)     try {
(160)     /* Create a topic factory. */
(161)     XATopicConnectionFactory* pXATopicConnectionFactory =
(162)          LookupXATopicConnectionFactory(MSCLIENT_DLL_NAME, "",
(163)     spHostName, susPort, 0, 0);
(164)
(165)     /* Create a topic connection. */
(166)     XATopicConnection* pXATopicConnection = pXATopicConnectionFactory-
(167)     >createXATopicConnection();
(168)
(169)     /* set client ID */
(170)     pXATopicConnection->setClientID("eGate{7E527692-770A-11D5-B139-
(171)     935EB6E85DBD}");
(172)
(173)     /* create XA session */
(174)     XATopicSession* pXATopicSession = pXATopicConnection-
(175)     >createXATopicSession();
(176)
(177)     /* get session */
(178)     TopicSession* pTopicSession = pXATopicSession->getTopicSession();
(179)
(180)     /* get XA resource */
```

```
(181)      XAResource* pXATopicResource = pXATopicSession->getXAResource();
(182)
(183)      /* create a Topic */
(184)      Topic* pTopic = pTopicSession->createTopic(pTopicName);
(185)
(186)      /* create a publisher */
(187)      TopicPublisher* pTopicPublisher = pTopicSession-
(188)      >createPublisher(pTopic);
(189)
(190)      /* connection start */
(191)      pXATopicConnection->start();
(192)
(193)      /* create xa id */
(194)      pXid = CreateXid(MSCLIENT_DLL_NAME);
(195)
(196)      /* associate the global transaction with the resource */
(197)      pXATopicResource->start(pXid, XAResource::TMNOFLAGS);
(198)
(199)      /* create a meesage */
(200)      TextMessage* pMessage = pXATopicSession->createTextMessage();
(201)
(202)      /* set mode to r/w */
(203)      pMessage->clearBody();
(204)
(205)      /* write bytes */
(206)      pMessage->setText((char*)szText);
(207)
(208)      /* publish message */
(209)      printf("Sending %d messages\n", iNumMessages);
(210)      pTopicPublisher->publish(pMessage);
(211)
(212)      /* xaEnd */
(213)      pXATopicResource->end(pXid, XAResource::TMSUCCESS);
(214)
(215)      /* ================================================
(216)       * Prepare-Rollback
(217)       * ================================================
(218)       */
(219)      /* xaPrepare */
(220)      pXATopicResource->prepare(pXid);
(221)
(222)      /* xaRollBack */
(223)      printf("Rolling back %d message\n", iNumMessages);
(224)      pXATopicResource->rollback(pXid);
(225)
(226)
(227)      /* ================================================
(228)       * Prepare-Commit
(229)       * ================================================
(230)       */
(231)
(232)      /* xa start */
(233)      pXATopicResource->start(pXid, XAResource::TMNOFLAGS);
(234)
(235)      /* send message */
(236)      printf("Sending %d messages\n", iNumMessages);
(237)      PublishMessage(pTopicPublisher, pMessage, iNumMessages);
(238)
(239)      /* xaEnd */
(240)      pXATopicResource->end(pXid, XAResource::TMSUCCESS);
(241)
(242)      /* xaPrepare */
(243)      if (XAResource::XA_OK != pXATopicResource->prepare(pXid))
(244)      {
```

```
(245)          printf("ERROR: XAResourcePrepare failed\n");
(246)      }
(247)
(248)      /* xa commit */
(249)      printf("Resource Commit...\n");
(250)      pXATopicResource->commit(pXid, true);
(251)
(252)      /* Close and clean up. */
(253)      pTopicPublisher->close();
(254)      pXATopicSession->close();
(255)      pXATopicConnection->close();
(256)      delete(pMessage);
(257)      delete(pTopicPublisher);
(258)      delete(pXid);
(259)      delete(pXATopicSession);
(260)      delete(pTopic);
(261)      delete(pXATopicConnection);
(262)      delete(pXATopicConnectionFactory);
(263)      }
(264)      catch (JMSException &e)
(265)      {
(266)          printf("JMS error: %s\n", e.getMessage());
(267)      }
(268) }
(269)
(270) /*
(271)  * ========================================================
(272)  *      Topic Subscriber
(273)  *   This routine demonstrates how to subsribe a message from a
(274)  *   topic.
(275)  * ========================================================
(276) */
(277) void XATopicSub()
(278) {
(279)      char                          pTopicName[] = "eGateXAPubSubSample";
(280)      int                             iNumReceived = 0;
(281)      char                            szUserInput[8];
(282)
(283)      try {
(284)      /* Create a topic factory. */
(285)      XATopicConnectionFactory* pXATopicConnectionFactory =
(286)           LookupXATopicConnectionFactory(MSCLIENT_DLL_NAME, "",
(287)      spHostName, susPort, 0, 0);
(288)
(289)      /* Create a topic connection. */
(290)      XATopicConnection* pXATopicConnection = pXATopicConnectionFactory-
(291)      >createXATopicConnection();
(292)
(293)
(294)      /* set client ID */
(295)      pXATopicConnection->setClientID("eGate{7E527692-770A-11D5-B139-
(296)      3456789}");
(297)
(298)      /* create XA session */
(299)      XATopicSession* pXATopicSession = pXATopicConnection-
(300)      >createXATopicSession();
(301)
(302)      /* get session */
(303)      TopicSession* pTopicSession = pXATopicSession->getTopicSession();
(304)
(305)      /* get XA resource */
(306)      XAResource* pXATopicResource = pXATopicSession->getXAResource();
(307)
(308)      /* create a Topic */
```

```
(309)      Topic* pTopic = pTopicSession->createTopic(pTopicName);
(310)
(311)      /* create a subscriber */
(312)      TopicSubscriber* pTopicSubscriber = pTopicSession-
(313)      >createDurableSubscriber(pTopic, (char*)"XATopicSubscriber");
(314)
(315)      /* connection start */
(316)      pXATopicConnection->start();
(317)
(318)      /* start xa resource */
(319)      Xid* pXid = CreateXid(MSCLIENT_DLL_NAME);
(320)
(321)
(322)      int iMsgCount = 0;
(323)      do {
(324)           Message* pRMsg = 0;
(325)           /* associate the global transaction with the resource */
(326)           pXATopicResource->start(pXid, XAResource::TMNOFLAGS);
(327)           while(iMsgCount < iNumMessages){
(328)                pRMsg = pTopicSubscriber->receive();
(329)                printf("Received Message %d\n", iMsgCount);
(330)                iMsgCount++;
(331)           }
(332)           /* xaEnd */
(333)           pXATopicResource->end(pXid, XAResource::TMSUCCESS);
(334)           pXATopicResource->commit(pXid, true);
(335)           printf("Enter 'r' for receiving more message, 'q' for
(336)           exit\n");
(337)           scanf("%s", szUserInput);
(338)
(339)           //pTopicSession->commit();
(340)           iMsgCount = 0;
(341)      } while(szUserInput[0] != 'q' && szUserInput[0] != 'Q');
(342)
(343)
(344)
(345)      /* close and delete objects */
(346)      pTopicSubscriber->close();
(347)      //pTopicSession->unsubscribe((char*)"TopicSubscriber");
(348)      pXATopicSession->close();
(349)      pXATopicConnection->close();
(350)
(351)      /* delete objects */
(352)      delete(pTopic);
(353)      delete(pTopicSubscriber);
(354)      delete(pXid);
(355)      delete(pXATopicSession);
(356)      delete(pXATopicConnection);
(357)      delete(pXATopicConnectionFactory);
(358)      }
(359)      catch (JMSException &e)
(360)      {
(361)          printf("JMS error: %s\n", e.getMessage());
(362)      }
(363) }
```

Chapter 5

Client Libraries for the SeeBeyond JMS API

This chapter provides a detailed discussion of the Application Program Interfaces (APIs) for SeeBeyond JMS. It is divided by language into the following sections:

For Java

For COM+

For C

For C++

5.1 The Standard Specification for the JMS API

The JMS API specification defined by Sun is available as a Javadoc. It can be downloaded from:

http://java.sun.com/products/jms/docs.html

5.2 Supported Java Classes for SeeBeyond JMS

The SeeBeyond JMS e*Way contains Java methods that are used to extend the functionality of the e*Way. These methods are contained in the following classes:

The current implementation of JMS Java APIs within the e*Gate API Kit supports the following classes:

5.2.1. com.seebeyond.jms.client.STCTopicRequestor

Helper class to simplify making service requests.

The STCTopicRequestor Method

Constructs the TopicRequestor.

```
STCTopicRequestor(Session session, Topic topic)
```

Name	Description
session	The name of the topic session.
topic	The name of the topic.

The Request Method

Send a request and wait for a reply

```
public com.seebeyond.jms.client.Message
    request(com.seebeyond.jms.client.Message message)
    throws com.seebeyond.jms.client.JMSException
```

Name	Description
message	The message text.

Throws

com.seebeyond.jms.client.JMSException

The Request Method

Send a request and wait for a reply

```
public com.seebeyond.jms.client.Message
    request(com.seebeyond.jms.client.Message message long l)
    throws com.seebeyond.jms.client.JMSException
```

Name	Description
message	The message text.
l	The amount of time to wait for a message in milliseconds.

The Close Method

Since a provide may allocate resources on behalf of an STCTopicRequestor outside of the JVM, clients should close them, when they are not needed.

```
void close( )
    throws com.seebeyond.jms.client.JMSException
```

5.2.2. com.seebeyond.jms.STCQueueRequestor

Helper class to simplify making service requests.

The STCQueueRequestor Method

Construct the QueueRequestor.

```
STCQueueRequestor(com.seebeyond.jms.client.QueueSession queuesession,
com.seebeyond.jms.client.Queue queue1)
```

Name	Description
queuesession	The QueueSession.
queue1	Queue name.

The Request Method

The Request method sends a request and waits for a reply.

```
public com.seebeyond.jms.client.Message
    request(com.seebeyond.jms.client.Message message)
   throws com.seebeyond.jms.client.JMSException
```

Name	Description
message	The message.

The Request Method

The Request method sends a request and waits for a reply.

```
public com.seebeyond.jms.client.Message
    request(com.seebeyond.jms.client Message message, long l)
```

Name	Description
message	The message.
l	The amount of time to wait for a message in milliseconds.

5.2.3. class javax.jms.JMSException

```
public class JMSException
   extends java.lang.Exception
```

This is the root class of all JMS API exceptions.

This class provides the following information:

- A provider-specific string describing the error. This string is the standard exception message and is available via the getMessage method.
- A provider-specific string error code

- A reference to another exception. Often a JMS API exception will be the result of a lower-level problem. If appropriate, this lower-level exception can be linked to the JMS API exception.

The JMSException Method

Construct a JMSException with reason and errorCode for the exception.

```
public JMSException(java.lang.String reason,
                    java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The JMSException Method

Construct a JMSException with a reason and with error code defaulting to null.

```
public JMSException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

The getErrorCode Method

Gets the vendor specific error code.

```
public java.lang.String getErrorCode()
```

The getLinkedException

Gets the exception linked to this exception.

```
public java.lang.Exception getLinkedException()
```

The setLinkedException

Adds a linked exception.

```
public void setLinkedException(java.lang.Exception ex)
```

Name	Description
ex	The linked exception.

5.2.4. class javax.jms.IllegalStateException

```
public class IllegalStateException
```

```
extends JMSException.
```

This exception is thrown when a method is invoked at an illegal or inappropriate time or if the JMS IQ server is not in an appropriate state for the requested operation.

The IllegalStateException Method

Constructs an IllegalStateException with reason and errorCode for exception.

```
public IllegalStateException(java.lang.String reason,
                             java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The IllegalStateException Method

Constructs an IllegalStateException with reason. Error code defaults to null.

```
public IllegalStateException(java.lang.String reason)
```

5.2.5. class.javax.jms.InvalidClientIDException

```
public class InvalidClientIDException
   extends JMSException.
```

This exception is thrown when a client attempts to set a connection's client ID to a value that is rejected by JMS IQ server.

The InvalidClientIDException

Constructs an InvalidClientIDException with reason and errorCode for exception.

```
public InvalidClientIDExceptin(java.lang.String reason,
                               java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The InvalidClientIDException

Constructs an InvalidClientIDException with reason. The error code defaults to null.

```
public InvalidClientIDException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.6. class javax.jms.InvalidDestinationException

```
public class InvalidDestinationException
   extends JMSException.
```

This exception is thrown when a destination either is not understood by the JMS IQ server or is no longer valid.

The InvalidDestinationException Method

Constructs an InvalidDestinationException with reason and errorCode for exception.

```
public InvalidDestinationException(java.lang.String reason,
                                   java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The InvalidDestinationException Method

Constructs an InvalidDestinationException with reason. The error code defaults to null.

```
public InvalidDestinationException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.7. class javax.jms.InvalidSelectorException

```
public class InvalidSelectorException
   extends JMSException.
```

This exception is thrown when a JMS client attempts to give the JMS IQ server a message selector with invalid syntax.

The InvalidSelectorException Method

Constructs an InvalidSelectorException with reason and errorCode for exception.

```
public InvalidSelectorException(java.lang.String reason,
                                java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The InvalidSelectorException Method

Constructs an InvalidSelectorException with reason. The error code defaults to null.

```
public InvalidSelectorException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.8. class javax.jms.JMSSecurityException

```
public class JMSSecurityException
   extends JMSException
```

This exception is thrown when JMS IQ server rejects a user name/password submitted by a client. It is also thrown when any case of a security restriction prevents a method from completing.

The JMSSecurityException Method

Constructs a JMSSecurityException with reason.

```
public JMSSecurityExcpetion(java.lang.String reason,
                            java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The JMSSecurityException Method

Constructs a JMSSecurityException with reason. Error code default to null.

Name	Description
reason	A description of the exception

5.2.9. class javax.jms.MessageEOFException

```
public class MessageEOFException
   extends JMSException
```

This exception is thrown when an unexpected end of stream has been reached when a StreamMessage or BytesMessage is being read.

The MessageEOFException Method

Constructs a MessageEOFException with reason and errorCode for exception.

```
public MessageEOFExceptin(java.lang.String reason,
                          java.lang.String errorCode)
```

Name	Description
reason	A description of the exception

Name	Description
errorCode	A string specifying the vendor specific error code.

The MessageEOFException

Constructs a MessageEOFException with reason. The error code defaults to null.

```
public MessageEOFExcpetion(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.10. class javax.jms.MessageFormatException

```
public class MessageFormatException
   extends JMSException
```

This exception is thrown when a JMS client attempts to use a data type not supported by a message or attempts to read data in a message as the wrong type. It is also thrown when equivalent type errors are made with message property values. For example, this exception is thrown if `StreamMessage.writeObject` is given an unsupported class or if `StreamMessage.readShort` is used to read a `boolean` value. Note that the special case of a failure caused by an attempt to read improperly formatted `String` data as numeric values throw a java.lang.NumberFormatException.

The MessageFormatException Method

Constructs a MessageFormatException with reason and errorCode for exception.

```
public MessageFormatException(java.lang.String reason,
                              java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The MessageFormatException

Constructs a MessageFormatException with reason. The error code defaults to null.

```
public MessageFormatException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.11. class javax.jms.MessageNotReadableException

```
public class MessageNotReadableException
```

```
extends JMSException.
```

This exception is thrown when a JMS client attempts to read a write-only message.

The MessageNotReadableException Method

Constructs a MessageNotReadable with reason and errorCode for exception.

```
public MessageNotReadable(java.lang.String reason,
                          java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The MessageNotReadable Method

Constructs a MessageNotReadable with reason. The error code defaults to null.

```
public MessageNotReadable(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.12. class javax.jms.MessageNotWriteableException

```
public class MessageNotWriteableException
   extends JMSException
```

This exception is thrown when a JMS client attempts to write to a read-only message.

The MessageNotWriteableException Method

Constructs a MessageNotWriteableException with reason and errorCode for exception.

```
public MessageNotWriteableException(java.lang.String reason,
                          java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The MessageNotWriteableException Method

Constructs a MessageNotWriteableException with reason. The error code defaults to null.

```
public MessageNotWriteableException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.13. class javax.jms.ResourceAllocationException

```
public class ResourceAllocationException
   extends JMSException
```

This exception is thrown when the JMS IQ server is unable to allocate the resources required by a method. For example, this exception is thrown when a call to TopicConnectionFactory.createTopicConnection fails due to a lack of JMS provider resources.

The ResourceAllocationException Method

Constructs a ResourceAllocationException with reason and errorCode for exception.

```
public ResourceAllocationException(java.lang.String reason,
                                   java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The ResourceAllocationException Method

Constructs a ResourceAllocationException with reason. The error code defaults to null.

```
public ResourceAllocationException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.14. class javax.jms.TransactionInProgressException

```
public class TransactionInProgressException
   extends JMSException
```

This exception is thrown when an operation is invalid because a transaction is in progress. For instance, an attempt to call Session.commit when a session is part of a distributed transaction will throw a TransactionInProgressException.

The TransactionInProgressException Method

Constructs a TransactionInProgressException with reason and errorCode for exception.

```
public TransactionInProgressException(java.lang.String reason,
                                      java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The TransactionInProgressException Method

Constructs a TransactionInProgressException with reason. The error code defaults to null.

```
public TransactionInProgressException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.15. class javax.jms.TransactionRolledBackException

```
public class TransactionRolledBackException
   extends JMSException
```

This exception is thrown when a call to Session.commit results in a rollback of the current transaction.

The TransactionRolledBackException Method

Constructs a TransactionRolledBackException with reason and errorCode for exception.

```
public TransactionRolledBackException(java.lang.String reason,
                                      java.lang.String errorCode)
```

Name	Description
reason	A description of the exception
errorCode	A string specifying the vendor specific error code.

The TransactionRolledBackException Method

Constructs a TransactionRolledBackException with reason. The error code defaults to null.

```
public TransactionRolledBackException(java.lang.String reason)
```

Name	Description
reason	A description of the exception

5.2.16. Unsupported JMS Classes

The current implementation of JMS Java APIs within the e*Gate API Kit DO NOT support the following classes:

- class javax.jms.QueueRequestor
- class javax.jms.TopicRequestor

5.3 Supported JMS Interfaces

The current implementation of JMS APIs within the e*Gate API Kit support the following interfaces:

5.3.1. interface javax.jms.Connection

```
public interface Connection
```

A Connection object is a client's active connection to the JMS IQ manager. It typically allocates JMS IQ manager resources outside the Java virtual machine (JVM).

A Connection serves several purposes:

- It encapsulates an open connection with a JMS provider. It typically represents an open TCP/IP socket between a client and a provider service daemon.
- Client authenticating takes place at it's creation.
- It can specify an unique client identifier.
- It provides ConnectionMetaData.
- It supports an optional ExceptionListener.

The close Method

Closes the connection.

```
close()
```

The getClientID Method

Gets the client identifier for this connection.

```
public java.lang.String getClientID()
   throwsJMSException
```

The getExceptionListener Method

Gets the `ExceptionListener` object for this connection.

```
public ExceptionListener getExceptionListener()
```

```
    throws JMSException
```

The getMetaData Method

Gets the metadata for this connection.

```
public ConnectionMetaData getMetaData()
   throws JMSException
```

The setClientID Method

Sets the client identifier for this connection.

```
public void setClientID(java.lang.String clientID)
   throws JMSException
```

Name	Description
clientID	The unique client identifier.

The setExceptionListener Method

Sets an exception listener for this connection.

```
public void setExceptionListener(ExceptionListener listener)
   throws JMSException
```

Name	Description
listener	The exception listener.

The Start Method

Starts (or restarts) a connection's delivery of incoming messages. A call to `start` a connection that has already been started is ignored.

```
public void start()
   throws JMSException
```

The Stop Method

Temporarily stops a connection's delivery of incoming messages. Delivery can be restarted using the connection's `start` method.

```
public void stop()
   throws JMSException
```

5.3.2. interface javax.jms.QueueConnection

```
public interface QueueConnection
extends Connection
```

A QueueConnection is an active connection to a JMS PTP provider. A client uses a QueueConnection to create one or more QueueSessions for producing and consuming messages.

The createQueueSession Method

Creates a QueueSession.

```
public QueueSession createQueueSession(boolean transacted,int
acknowledgeMode)
   throws JMSException
```

Name	Description
transacted	If true, the session is transacted.
acknowledgeMode	Indicates whether the consumer or the client will acknowledge any messages that it receives. This parameter is ignored if the session is transacted. Legal values are: `Session.AUTO_ACKNOWLEDGE`, `Session.CLIENT_ACKNOWLEDGE` and `Session.DUPS_OK_ACKNOWLEDGE`.

Throws JMSException if JMS Connection fails to create a session due to some internal error or lack of support for specific transaction and acknowledgement mode.

5.3.3. interface javax.jms.XAQueueConnection

```
public interface XAQueueConnection
extends XAConnection, QueueConnection
```

XAQueueConnection provides the same create options as QueueConnection (optional). The only difference is that an XAConnection is by definition transacted.

createXAQueueSession

```
public XAQueueSession createXAQueueSession()
   throws JMSException
```

Create an XAQueueSession.

Throws JMSException if JMS Connection fails to create a XA queue session due to some internal error.

createQueueSession

```
public QueueSession createQueueSession(boolean transacted, int
acknowledgeMode)
   throws JMSException
```

Create an XAQueueSession.

Specified by

createQueueSession in interface QueueConnection

Name	Description
transacted	ignored
acknowledgeMode	ignored.

Throws JMSException if JMS Connection fails to create a XA queue session due to some internal error.

5.3.4. interface javax.jms.TopicConnection

```
public interface TopicConnection
   extends Connection
```

A TopicConnection object is an active connection to the JMS IQ server, used in the Pub/Sub mode. A client uses a TopicConnection object to create one or more TopicSession objects for producing and consuming messages.

The createTopicSession Method

Creates a `TopicSession` object.

```
public TopicSession createTopicSession(boolean transacted, int
acknowledgeMode)
   throws JMSException
```

Name	Description
transacted	Indicates whether the session is transacted.
acknowledgeMode	Indicates whether the consumer or the client will acknowledge any messages it receives; ignored if the session is transacted. Legal values are: ▪ Session.AUTO_ACKNOWLEDGE ▪ Session.CLIENT_ACKNOWLEDGE ▪ Session.DUPS_OK_ACKNOWLEDGE

Throws JMSException if JMS Connection fails to create a session due to some internal error or lack of support for specific transaction and acknowledgement mode.

5.3.5. interface javax.jms.XATopicConnection

```
public interface XATopicConnection
   extends XAConnection, TopicConnection
```

An XATopicConnection provides the same create options as TopicConnection (optional). The only difference is that an XAConnection is by definition transacted.

The createTopicSession Method

Creates an XATopicSession object.

```
public TopicSession createTopicSession(boolean transacted, int
acknowledgeMode)
   throws JMSException
```

Name	Description
transacted	Ignored; an XA TopicConnection is transacted by definition.
acknowledgeMode	Ignored.

Throws JMSException if JMS Connection fails to create a XA topic session due to some internal error.

createXATopicSession

Creates an XATopicSession.

```
public XATopicSession createXATopicSession()
   throws JMSException
```

Throws JMSException if JMS Connection fails to create a XA topic session due to some internal error.

Throws JMSException if JMS Connection fails to create a XA topic session due to some internal error.

5.3.6. interface javax.jms.ConnectionFactory

```
public interface ConnectionFactory
```

A ConnectionFactory encapsulates a set of connection configuration parameters that has been defined by an administrator. A client uses it to create a Connection with a JMS provider. ConnectionFactory objects support concurrent use. A ConnectionFactory is a JMS administered object.

JMS administered objects are objects containing JMS configuration information that are created by a JMS administrator and later used by JMS clients. They make it practical to administer JMS in the enterprise. Although the interfaces for administered objects do not explicitly depend on JNDI, JMS establishes the convention that JMS clients find them by looking them up in a JNDI namespace.

An administrator can place an administered object anywhere in a namespace. JMS does not define a naming policy. It is expected that JMS providers will provide the tools that the administrator needs to create and configure administered objects in a JNDI namespace. JMS provider implementations of administered objects should be both `javax.jndi.Referenceable` and `java.io.Serializable` so that they can be stored in all JNDI naming contexts. In addition, it is recommended that these implementations follow the JavaBeans design patterns.

This strategy provides several benefits:

- It hides provider-specific details from JMS clients.

- It abstracts JMS administrative information into Java objects that are easily organized and administrated from a common management console.
- Since there will be JNDI providers for all popular naming services, this means JMS providers can deliver one implementation of administered objects that will run everywhere.

An administered object should not hold on to any remote resources. Its lookup should not use remote resources other than those used by JNDI itself. Clients should think of administered objects as local Java objects. Looking them up should not have any hidden side affects or use surprising amounts of local resources.

5.3.7. interface javax.jms.QueueConnectionFactory

```
public interface QueueConnectionFactory
extends ConnectionFactory
```

A client uses a QueueConnectionFactory to create QueueConnections with a JMS PTP provider.

The createQueueConnection Method

```
public QueueConnection createQueueConnection()
   throws JMSException
```

Create a queue connection with default user identity. The connection is created in stopped mode. No messages will be delivered until Connection.start method is explicitly called.

Throws JMSException if JMS Provider fails to create Queue Connection due to some internal error. required resources for a Queue Connection.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

The createQueueConnection Method

```
public QueueConnection createQueueConnection(java.lang.String
userName, java.lang.String password)
   throws JMSException
```

Create a queue connection with specified user identity. The connection is created in stopped mode. No messages will be delivered until Connection.start method is explicitly called.

Name	Description
userName	The caller's user name.
password	The caller's password.

Throws JMSException if JMS Provider fails to create Queue Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

5.3.8. interface javax.jms.XAConnectionFactory

```
public interface XAConnectionFactory
```

To include JMS transactions in a JTS transaction, an application server requires a JTS aware JMS provider. A JMS provider exposes its JTS support using a JMS XAConnectionFactory which an application server uses to create XASessions.

XAConnectionFactory's are JMS administered objects just like ConnectionFactory objects. It is expected that application servers will find them using JNDI.

5.3.9. interface javax.jms.TopicConnectionFactory

```
public interface TopicConnectionFactory
   extends ConnectionFactory
```

A client uses a TopicConnectionFactory object to create TopicConnection objects with the JMS IQ manager, while implementing Pub/Sub mode.

The createTopicConnection Method

Creates a topic connection with the default user identity. The connection is created in stopped mode. No messages will be delivered until the `Connection.start` method is explicitly called.

```
public TopicConnection createTopicConnection()
   throws JMSException
```

Throws JMSException if JMS Provider fails to create a Topic Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

The createTopicConnection Method

Creates a topic connection with the specified user identity. The connection is created in stopped mode. No messages will be delivered until the Connection.start method is explicitly called.

```
public TopicConnection createTopicConnection(java.lang.String
userName, java.lang.String password)
   throws JMSException
```

Name	Description
userName	The caller's user name.
password	The caller's password

Throws JMSException if JMS Provider fails to create a Topic Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

5.3.10. interface javax.jms.XATopicConnectionFactory

```
public interface XATopicConnectionFactory
   extends XAConnectionFactory, TopicConnectionFactory
```

An XATopicConnectionFactory provides the same create options as a TopicConnectionFactory (optional).

The createXATopicConnection Method

Creates a XA topic connection with the default user identity. The connection is created in stopped mode. No messages will be delivered until the `Connection.start` method is explicitly called.

```
public XATopicConnection createXATopicConnection()
   throws JMSException
```

Throws JMSException if JMS Provider fails to create XA topic Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

The createXATopicConnection Method

Creates a XA topic connection with the specified user identity. The connection is created in stopped mode. No messages will be delivered until the Connection.start method is explicitly called.

```
public XATopicConnection createXATopicConnection(java.lang.String
userName, java.lang.String password)
   throws JMSException
```

Name	Description
userName	The caller's user name.
password	The caller's password

Throws JMSException if JMS Provider fails to create XA topic connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

5.3.11. interface javax.jms.ConnectionMetaData

```
public interface ConnectionMetaData
```

A ConnectionMetaData object provides information describing the Connection object.

The getJMSVersion Method

```
public java.lang.String getJMSVersion()
   throws JMSException
```

Get the JMS version.

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getJMSMajorVersion Method

Gets the JMS major version number.

```
public int getJMSMajorVersion()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getJMSMinorVersion Method

Gets the JMS minor version number.

```
public int getJMSMinorVersion()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getJMSProviderName Method

Gets the JMS provider name.

```
public java.lang.String getJMSProviderName()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getProviderVersion Method

Gets the JMS provider version.

```
public java.lang.String getProviderVersion()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getProviderMajorVersion Method

Gets the JMS provider major version number.

```
public int getProviderMajorVersion()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getProviderMinorVersion Method

Gets the JMS provider minor version number.

```
public int getProviderMinorVersion()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the metadata retrieval.

The getJMSXPropertyNames Method

Gets an enumeration of the JMSX property names.

```
public java.util.Enumeration getJMSXPropertyNames()
   throws JMSException
```

Throws JMSException if some internal error occurs in JMS implementation during the property names retrieval.

5.3.12. interface javax.jms.DeliveryMode

```
public interface DeliveryMode
```

The delivery modes supported by the JMS API are PERSISTENT and NON_PERSISTENT.

A client marks a message as persistent if it feels that the application will have problems if the message is lost in transit. A client marks a message as non-persistent if an occasional lost message is tolerable. Clients use delivery mode to tell the JMS IQ manager how to balance message transport reliability throughput.

Delivery mode only covers the transport of the message to its destination. Retention of a message at the destination until its receipt is acknowledged is not guaranteed by a PERSISTENT delivery mode. Clients should assume that message retention policies are set administratively. Message retention policy governs the reliability of message delivery from destination to message consumer. For example, if a client's message storage space is exhausted, some messages as defined by a site specific message retention policy may be dropped.

A message is guaranteed to be delivered once-and-only-once by a JMS Provider if the delivery mode of the message is persistent and if the destination has a sufficient message retention policy.

NON_PERSISTENT Field

This is the lowest overhead delivery mode because it does not require that the message be logged to stable storage. The level of JMS provider failure that causes a NON_PERSISTENT message to be lost is not defined.

A JMS provider must deliver a NON_PERSISTENT message with an at-most-once guarantee. This means it may lose the message but it must not deliver it twice.

```
public static final int NON_PERSISTENT
```

PERSISTENT Field

This mode instructs the JMS provider to log the message to stable storage as part of the client's send operation. Only a hard media failure should cause a PERSISTENT message to be lost.

5.3.13. interface javax.jms.Destination

```
public interface Destination
```

A Destination object encapsulates a JMS IQ manager-specific address. public interface.

5.3.14. interface javax.jms.Queue

```
public interface Queue
   extends Destination
```

A Queue object encapsulates a provider-specific queue name. In this manner, a client specifies the identity of queue to JMS methods. The actual length of time messages are held by a queue and the consequences of resource overflow are not defined by JMS.

The getQueueName Method

```
public java.lang.String getQueueName()
   throws JMSException
```

Get the name of this queue. Clients that depend upon the name, are not portable.

Throws JMSException if JMS implementation for Queue fails to return queue name due to some internal error.

The toString Method

```
public java.lang.String toString()
```

Return a pretty printed version of the queue name

Overrides:

toString in class java.lang.Object

5.3.15. interface javax.jms.TemporaryQueue

```
public interface TemporaryQueue
   extends Queue
```

A TemporaryQueue is a unique Queue object created for the duration of a QueueConnection. It is a system defined queue that can only be consumed by the QueueConnection that created it.

The delete Method

```
public void delete()
   throws JMSException
```

Delete this temporary queue. If there are still existing senders or receivers still using it, then a JMSException will be thrown.

Throws JMSException if JMS implementation fails to delete a Temporary topic due to some internal error.

5.3.16. interface javax.jms.Topic

```
public interface Topic
   extends Destination
```

A Topic object encapsulates a provider-specific topic name. The topic object provides the means for a client to specify the identity of a topic to JMS methods.

Many Pub/Sub implementations group topics into hierarchies and provide various options for subscribing to parts of the hierarchy. JMS places no restriction on what a Topic object represents.

The getTopicName Method

Gets the name of this topic.

```
public java.lang.String getTopicName()
   throws JMSException
```

Throws JMSException if JMS implementation for Topic fails to return topic name due to some internal error.

The toString Method

Returns a string representation of this object.

```
public java.lang.String toString()
```

Overrides:

`toString` in class `java.lang.Object`

5.3.17. interface javax.jms.TemporaryTopic

```
public interface TemporaryTopic
   extends Topic
```

A TemporaryTopic object is a unique Topic object created for the duration of a TopicConnection. It is a system-defined topic that can be consumed only by the TopicConnection that created it.

The delete Method

Deletes this temporary topic. If there are existing subscribers still using it, a `JMSException` will be thrown.

```
public void delete()
   throws JMSException
```

Throws JMSException if JMS implementation fails to delete a Temporary queue due to some internal error.

5.3.18. interface javax.jms.ExceptionListener

```
public interface ExceptionListener
```

If the JMS IQ manager detects a serious problem with a Connection object, it informs the Connection object's ExceptionListener, if one has been registered. It does this by calling the listener's onException method, passing it a JMSException argument describing the problem.

This allows a client to be asynchronously notified of a problem. Some Connections only consume messages so they would have no other way to learn their Connection has failed.

A JMS provider should attempt to resolve connection problems themselves prior to notifying the client of them.

The onException Method

Notifies user of a JMS exception.

```
public void onException(JMSException exception)
```

Name	Description
exception	The JMS exception.

5.3.19. interface javax.jms.Message

```
public interface Message
   getJMSMessageID
```

The Message interface is the base interface of all JMS messages. It defines the message header and the acknowledge method used for all messages.

JMS Messages are composed of the following parts:

- Header - All messages support the same set of header fields. Header fields contain values used by both clients and providers to identify and route messages.
- Properties - Each message contains a built-in facility for supporting application defined property values. Properties provide an efficient mechanism for supporting application defined message filtering.
- Body - JMS defines several types of message body which cover the majority of messaging styles currently in use.

JMS defines five types of message body:

- Stream - a stream of Java primitive values. It is filled and read sequentially.
- Map - a set of name-value pairs where names are Strings and values are Java primitive types. The entries can be accessed sequentially or randomly by name. The order of the entries is undefined.

- Text - a message containing a java.util.String. The inclusion of this message type is based on our presumption that XML will likely become a popular mechanism for representing content of all kinds including the content of JMS messages.
- Object - a message that contains a Serializable java object
- Bytes - a stream of uninterpreted bytes. This message type is for literally encoding a body to match an existing message format. In many cases, it will be possible to use one of the other, easier to use, body types instead. Although JMS allows the use of message properties with byte messages it is typically not done since the inclusion of properties may affect the format.

The JMSCorrelationID header field is used for linking one message with another. It typically links a reply message with its requesting message. JMSCorrelationID can hold either a provider-specific message ID, an application-specific String or a provider-native byte[] value.

A Message contains a built-in facility for supporting application-defined property values. In effect, this provides a mechanism for adding application specific header fields to a message. Properties allow an application, via message selectors, to have a JMS provider select/filter messages on its behalf using application-specific criteria. Property names must obey the rules for a message selector identifier. Property values can be boolean, byte, short, int, long, float, double, and String.

Property values are set prior to sending a message. When a client receives a message, its properties are in read-only mode. If a client attempts to set properties at this point, a MessageNotWriteableException is thrown. If clearProperties is called, the properties can now be both read from and written to. Note that header fields are distinct from properties. Header fields are never in a read-only mode.

A property value may duplicate a value in a message's body or it may not. Although JMS does not define a policy for what should or should not be made a property, application developers should note that JMS providers will likely handle data in a message's body more efficiently than data in a message's properties. For best performance, applications should only use message properties when they need to customize a message's header. The primary reason for doing this is to support customized message selection.

In addition to the type-specific set/get methods for properties, JMS provides the setObjectProperty and getObjectProperty methods. These support the same set of property types using the objectified primitive values. Their purpose is to allow the decision of property type to made at execution time rather than at compile time. They support the same property value conversions.

The setObjectProperty method accepts values of class Boolean, Byte, Short, Integer, Long, Float, Double and String. An attempt to use any other class must throw a JMSException.

The getObjectProperty method only returns values of class Boolean, Byte, Short, Integer, Long, Float, Double and String.

The order of property values is not defined. To iterate through a message's property values, use getPropertyNames to retrieve a property name enumeration and then use the various property get methods to retrieve their values.

A message's properties are deleted by the clearProperties method. This leaves the message with an empty set of properties.

Getting a property value for a name which has not been set returns a null value. Only the getStringProperty and getObjectProperty methods can return a null value. The other property get methods must throw a java.lang.NullPointerException if they are used to get a non-existent property.

JMS reserves the **JMSX** property name prefix for JMS-defined properties. The full set of these properties is defined in the Java Message Service specification. New JMS-defined properties may be added in later versions of JMS. Support for these properties is optional. The String[] ConnectionMetaData.getJMSXPropertyNames method returns the names of the JMSX properties supported by a connection.

JMSX properties can be referenced in message selectors regardless of whether they are supported by a connection. If they are not present in a message, they are treated like any other absent property.

JSMX properties that are set by provider on *send* are available to both the producer and the consumers of the message. JSMX properties that are set by provider on *receive* are only available to the consumers.

JMSXGroupID and JMSXGroupSeq are simply standard properties clients should use if they want to group messages. All providers must support them. Unless specifically noted, the values and semantics of the JMSX properties are undefined.

JMS reserves the **JMS_** property name prefix for provider-specific properties; it is up to each provider to define specific values. This is the mechanism a JMS provider uses to make its special per-message services available to a JMS client.

The purpose of provider-specific properties is to provide special features needed to support JMS use with provider-native clients. These properties should ***not*** be used for JMS-to-JMS messaging.

JMS provides a set of message interfaces that define the JMS message model. It does not provide implementations of these interfaces.

Each JMS provider supplies a set of message factories with its Session object for creating instances of these messages. This allows a provider to use implementations tailored to their specific needs.

A provider must be prepared to accept message implementations that are not its own. They may not be handled as efficiently as their own implementations; however, they must be handled.

A JMS message selector allows a client to specify by message header the messages it's interested in. Only messages whose headers match the selector are delivered. The semantics of not delivered differ a bit depending on the MessageConsumer being used (see QueueReceiver and TopicSubscriber).

Message selectors cannot reference message body values.

A message selector matches a message when the selector evaluates to true when the message's header field and property values are substituted for their corresponding identifiers in the selector.

A message selector is a String, whose syntax is based on a subset of the SQL92 conditional expression syntax.

The order of evaluation of a message selector is from left to right within precedence level. Parentheses can be used to change this order.

Predefined selector literals and operator names are written here in upper case; however, they are case-insensitive.

A selector can contain:

- Literals
  - A *string literal* is enclosed in single quotes with single quote represented by doubled single quote such as `literal' and `literal''s'; like Java **String** literals, these use the Unicode character encoding.
  - An *exact numeric literal* is a numeric value without a decimal point, such as **57**, **-957**, or **+62**; numbers in the range of Java **long** are supported. Exact numeric literals use the Java integer literal syntax.
  - An *approximate numeric literal* is a numeric value in scientific notation, such as **7E3** or **-57.9E2**, or a numeric value with a decimal such as **7.**, **-95.7**, or +6.2; numbers in the range of Java **double** are supported. Approximate literals use the Java floating-point literal syntax.
  - The *Boolean* literals **TRUE**, **true**, **FALSE**, and **false**.
- Identifiers
  - An *identifier* is an unlimited-length sequence of Java letters and Java digits, the first of which must be a Java letter. A letter is any character for which the method **Character.isJavaLetter** returns **true.** This includes both _ (underscore) and $ (dollar sign). A letter or digit is any character for which the method **Character.isJavaLetterOrDigit** returns **true**.
  - Identifiers cannot be the names **NULL**, **TRUE**, or **FALSE**.
  - Identifiers cannot be any of the following: **NOT**, **AND**, **OR**, **BETWEEN**, **LIKE**, **IN**, or **IS**.
  - Identifiers are either header field references or property references.
  - Identifiers are case-sensitive.
  - Message header field references are restricted to JMSDeliveryMode, MSPriority, JMSMessageID, JMSTimestamp, JMSCorrelationID, and JMSType. JMSMessageID, JMSCorrelationID, and JMSType values may be null and if so are treated as a **NULL** value.
  - Any name beginning with **JMSX** is a JMS-defined property name.
  - Any name beginning with **JMS_** is a provider-specific property name.
  - Any name that does not begin with **JMS** is an application-specific property name. If a property is referenced that does not exist in a message its value is **NULL**. If it does exist, its value is the corresponding property value.
- Whitespace is the same as that defined for Java: space, horizontal tab, form feed and line terminator.

- Expressions:
  - A selector is a conditional expression; a selector that evaluates to true matches; a selector that evaluates to false or unknown does not match.
  - Arithmetic expressions are composed of themselves, arithmetic operations, identifiers (whose value is treated as a numeric literal) and numeric literals.
  - Conditional expressions are composed of themselves, comparison operations and logical operations.
- Standard bracketing () for ordering expression evaluation is supported.
- Logical operators in precedence order: **NOT**, **AND**, **OR**
- Comparison operators: =, >, >=, <, <=, <> (not equal)
  - Only like type values can be compared. One exception is that it is valid to compare exact numeric values and approximate numeric values (the type conversion required is defined by the rules of Java numeric promotion). If the comparison of non-like type values is attempted, the selector is always false.
  - String and boolean comparison is restricted to = and <>. Two strings are equal if and only if they contain the same sequence of characters.
- Arithmetic operators in precedence order:
  - +, - (unary)
  - *, / (multiplication and division)
  - +, - (addition and subtraction)
  - Arithmetic operations on a **NULL** value are not supported; if they are attempted, the complete selector is always **false**.
  - Arithmetic operations must use Java numeric promotion.
- arithmetic-expr1 [NOT] BETWEEN arithmetic-expr2 and arithmetic-expr3 comparison operator
  - age BETWEEN 15 and 19 is equivalent to age >= 15 AND age <= 19
  - age NOT BETWEEN 15 and 19 is equivalent to age < 15 OR age > 19
  - If any of the expressions of a BETWEEN operation is **NULL**, then the value of the operation is **false**; if any of the expressions of a NOT BETWEEN operation is **NULL**, then the value of the operation is **true**.
- identifier [NOT] IN (*string-literal1*, *string-literal2*, ...) comparison operator where identifier has a String or NULL value:
  - Country IN (` UK', `US', `France') is **true** for `UK' and **false** for `Peru'. It is equivalent to the expression (Country = ` UK') OR (Country = ` US') OR (Country = ` France')
  - Country NOT IN (` UK', `US', `France') is **false** for `UK' and **true** for `Peru'. It is equivalent to the expression NOT ((Country = ` UK') OR (Country = ` US') OR (Country = ` France'))

- If identifier of an IN or NOT IN operation is NULL the value of the operation is unknown.

- identifier [NOT] LIKE pattern-value [ESCAPE escape-character] comparison operator, where identifier has a String value; pattern-value is a string literal where `_' stands for any single character; `%' stands for any sequence of characters (including the empty sequence); and all other characters stand for themselves. The optional escape-character is a single character string literal whose character is used to escape the special meaning of the `_' and `%' in pattern-value.
  - phone LIKE `12%3' is **true** for `123' `12993' and **false** for `1234'
  - word LIKE `l_se' is **true** for `lose' and **false** for `loose'
  - underscored LIKE `\_%' ESCAPE `\' is **true** for `_this' and **false** for `that'
  - phone NOT LIKE `12%3' is **false** for `123' `12993' and **true** for `1234'
  - If identifier of a LIKE or NOT LIKE operation is **NULL**, then the value of the operation is unknown.
- identifier IS NULL comparison operator tests for a null header field value, or a missing property value.
  - prop_name IS NULL
- identifier IS NOT NULL comparison operator tests for the existence of a non null header field value or a property value.
  - prop_name IS NOT NULL

JMS providers are required to verify the syntactic correctness of a message selector at the time it is presented. A method providing a syntactically incorrect selector must result in a JMSException.

The following message selector selects messages with a message type of car and color of blue and weight greater than 2500:

```
"JMSType = `car' AND color = `blue' AND weight > 2500"
```

As noted above, property values may be NULL. The evaluation of selector expressions containing NULL values is defined by SQL 92 NULL semantics. A brief description of these semantics is provided here.

SQL treats a NULL value as unknown. Comparison or arithmetic with an unknown value always yields an unknown value.

The IS NULL and IS NOT NULL operators convert an unknown value into the respective TRUE and FALSE values.

When used in a message selector JMSDeliveryMode is treated as having the values `PERSISTENT' and `NON_PERSISTENT'.

Although SQL supports fixed decimal comparison and arithmetic, JMS message selectors do not. This is the reason for restricting exact numeric literals to those without a decimal (and the addition of numerics with a decimal as an alternate representation for an approximate numeric values). SQL comments are not supported.

DEFAULT_DELIVERY_MODE

The message producer's default delivery mode is persistent.

```
public static final int DEFAULT_DELIVERY_MODE
```

DEFAULT_PRIORITY

The message producer's default priority is 4.

```
public static final int DEFAULT_PRIORITY
```

DEFAULT_TIME_TO_LIVE

The message producer's default time to live is unlimited, the message never expires.

```
public static final long DEFAULT_TIME_TO_LIVE
```

The getJMSMessageID Method

Gets the message ID. The messageID header field contains a value that uniquely identifies each message sent by a provider. When a message is sent, messageID can be ignored. When the send method returns it contains a provider-assigned value.

A JMSMessageID is a String value which should function as a unique key for identifying messages in a historical repository. The exact scope of uniqueness is provider defined. It should at least cover all messages for a specific installation of a provider where an installation is some connected set of message routers.

All JMSMessageID values must start with the prefix `ID:'. Uniqueness of message ID values across different providers is not required.

Since message IDs take some effort to create and increase the message size, some JMS providers may be able to optimize message overhead if they are given a hint that message ID is not used by an application. JMS message Producers provide a hint to disable message ID. When a client sets a Producer to disable message ID they are saying that they do not depend on the value of message ID for the messages it produces. These messages must either have message ID set to null or, if the hint is ignored, messageID must be set to its normal unique value.

```
public java.lang.String getJMSMessageID()
   throws JMSException
```

Throws JMSException if JMS fails to get the message Id due to internal JMS error.

The setJMSMessageID Method

Sets this message's ID. Providers set this field when a message is sent. This operation can be used to change the value of a message that's been received.

```
public void setJMSMessageID(java.lang.String id)
   throws JMSException
```

Name	Description
id	The identifier of the message.

Throws JMSException if JMS fails to set the message Id due to internal JMS error.

The getJMSTimestamp Method

Gets this message's timestamp. The JMSTimestamp header field contains the time a message was handed off to a provider to be sent. It is not the time the message was actually transmitted because the actual send may occur later due to transactions or other client side queueing of messages.

```
public long getJMSTimestamp()
   throws JMSException
```

Throws JMSException if JMS fails to get the Timestamp due to internal JMS error.

The setJMSTimestamp Method

Sets this message's timestamp.

```
public void setJMSTimestamp(long timestamp)
   throws JMSException
```

Name	Description
long timestamp	Returns the messages timestamp.

Throws JMSException if JMS fails to set the Timestamp due to internal JMS error.

The getJMSCorrelationIDAsBytes Method

Gets the correlation ID as an array of bytes for this message.

```
public byte[] getJMSCorrelationIDAsBytes()
   throws JMSException
```

Throws JMSException if JMS fails to get correlationId due to some internal JMS error.

The setJMSCorrelationIDAsBytes Method

Sets the correlation ID as an array of bytes for this message. The array is copied before the method returns, so future modifications to the array will not alter this message header.

```
public void setJMSCorrelationIDAsBytes(byte[] correlationID)
   throws JMSException
```

Name	Description
correlationID	The correlation identifier value as an array of bytes.

Throws JMSException if JMS fails to set correlationId due to some internal JMS error.

The setJMSCorrelationID Method

Sets the correlation ID for the message.

```
public void setJMSCorrelationID(java.lang.String correlationID)
   throws JMSException
```

JMSCorrelationID can hold one of the following:

- A provider-specific message ID
- An application-specific String
- A provider-native byte[] value

Since each message sent by the JMS IQ manager is assigned a message ID value, it is convenient to link messages via message ID. All message ID values must start with the 'ID:' prefix.

Name	Description
correlationID	The message identifier of the message being referred to.

Throws JMSException if JMS fails to set correlationId due to some internal JMS error.

The getJMSCorrelationID Method

Gets the correlation ID for the message.

```
public java.lang.String getJMSCorrelationID()
   throws JMSException
```

Throws JMSException if JMS fails to get correlationId due to some internal JMS error.

The getJMSReplyTo Method

Gets the Destination object to which a reply to this message should be sent.

```
public Destination getJMSReplyTo()
   throws JMSException
```

Throws JMSException if JMS fails to get ReplyTo Destination due to some internal JMS error.

The setJMSReplyTo Method

Sets the Destination object to which a reply to this message should be sent. The replyTo header field contains the destination where a reply to the current message should be sent. If it is null no reply is expected. The destination may be either a Queue or a Topic.

```
public void setJMSReplyTo(Destination replyTo)
   throws JMSException
```

Name	Description
replyTo	The `destination` to send the response to for this message.

Throws JMSException if JMS fails to set ReplyTo Destination due to some internal JMS error.

The getJMSDestination Method

Gets the Destination object for this message. The destination field contains the destination to which the message is being sent. When a message is sent this value is ignored. After completion of the send method it holds the destination specified by the send. When a message is received, its destination value must be equivalent to the value assigned when it was sent.

```
public Destination getJMSDestination()
   throws JMSException
```

Throws JMSException if JMS fails to get JMS Destination due to some internal JMS error.

The setJMSDestination Method

The JMS IQ manager sets this field when a message is sent. This method can be used to change the value for a message that has been received.

```
public void setJMSDestination(Destination destination)
   throws JMSException
```

Name	Description
destination	The `destination` for this message.

Throws JMSException if JMS fails to set JMS Destination due to some internal JMS error.

The getJMSDeliveryMode Method

Gets the DeliveryMode value specified for this message.

```
public int getJMSDeliveryMode()
   throws JMSException
```

Throws JMSException if JMS fails to get JMS DeliveryMode due to some internal JMS error.

The setJMSDeliveryMode Method

Sets the DeliveryMode value for this message.

```
public void setJMSDeliveryMode(int deliveryMode)
   throws JMSException
```

Name	Description
deliveryMode	The delivery mode for this message.

Throws JMSException if JMS fails to set JMS DeliveryMode due to some internal JMS error.

The getJMSRedelivered Method

Gets an indication of whether this message is being redelivered. If a client receives a message with the redelivered indicator set, it is likely, but not guaranteed, that this message was delivered to the client earlier but the client did not acknowledge its receipt at that earlier time.

```
public boolean getJMSRedelivered()
   throws JMSException
```

Throws JMSException if JMS fails to get JMS Redelivered flag due to some internal JMS error.

The setJMSRedelivered Method

Specifies whether this message is being redelivered. This field is set at the time the message is delivered. This operation can be used to change the value of a message that's been received.

```
public void setJMSRedelivered(boolean redelivered)
   throws JMSException
```

Name	Description
redelivered	An indication of whether this message is being redelivered.

Throws JMSException if JMS fails to set JMS Redelivered flag due to some internal JMS error.

The getJMSType Method

Gets the message type identifier supplied by the client when the message was sent.

```
public java.lang.String getJMSType()
   throws JMSException
```

The setJMSType Method

Sets the message type.

```
public void setJMSType(java.lang.String type)
   throws JMSException
```

Name	Description
type	The message type.

Throws JMSException if JMS fails to get JMS message type due to some internal JMS error.

The setJMSType Method

Set the message type.

```
public void setJMSType(java.lang.String type)
   throws JMSException
```

Name	Description
type	The class of the message.

Throws JMSException if JMS fails to set JMS message type due to some internal JMS error.

The getJMSExpiration Method

Gets the message's expiration value. When a message is sent, expiration is left unassigned. After completion of the send method, it holds the expiration time of the message. This is the sum of the time-to-live value specified by the client and the GMT at the time of the send.

If the time-to-live is specified as zero, expiration is set to zero which indicates the message does not expire. When a message's expiration time is reached, a provider should discard it. JMS does not define any form of notification of message expiration.

```
public long getJMSExpiration()
   throws JMSException
```

Throws JMSException if JMS fails to get JMS message expiration due to some internal JMS error.

The setJMSExpiration Method

Sets the message's expiration value.

```
public void setJMSExpiration(long expiration)
   throws JMSException
```

Name	Description
expiration	The messages expiration time.

Throws JMSException if JMS fails to set JMS message expiration due to some internal JMS error.

The getJMSPriority Method

Gets the message's priority value. JMS defines a ten level priority value with 0 as the lowest priority and 9 as the highest. In addition, clients should consider priorities 0-4 as gradations of normal priority and priorities 5-9 as gradations of expedited priority.

```
public long getJMSPriority()
   throws JMSException
```

Throws JMSException if JMS fails to get JMS message priority due to some internal JMS error.

The setJMSPriority Method

Sets the priority level for this message.

```
public void setJMSPriority(int priority)
   throws JMSException
```

Name	Description
priority	The default priority of this message.

Throws JMSException if JMS fails to set JMS message priority due to some internal JMS error.

The clearProperties Method

Clears a message's properties. The message header fields and body are not cleared.

```
public void clearProperties()
   throws JMSException
```

Throws JMSException if JMS fails to clear JMS message properties due to some internal JMS error.

The propertyExists Method

Queries whether a property value exists.

```
public boolean propertyExists(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the property to test.

Throws JMSException if JMS fails to check if property exists due to some internal JMS error.

The getBooleanProperty Method

Returns the value of the boolean property with the specified name.

```
public boolean getBooleanProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the boolean property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException - if this type conversion is invalid.

The getByteProperty Method

Returns the value of the byte property with the specified name.

```
public byte getByteProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the byte property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException - if this type conversion is invalid.

The getShortProperty Method

Returns the value of the short property with the specified name.

```
public short getShortProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the short property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getIntProperty Method

Returns the value of the int property with the specified name.

```
public int getIntProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the int property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throw MessageFormatException if this type conversion is invalid.

The getLongProperty Method

Returns the value of the long property with the specified name.

```
public long getLongProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the long property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException- if this type conversion is invalid.

The getFloatProperty Method

Returns the value of the float property with the specified name.

```
public float getFloatProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the float property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throw MessageFormatException if this type conversion is invalid.

The getDoubleProperty Method

Returns the value of the double property with the specified name.

```
public double getDoubleProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the double property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getStringProperty Method

Returns the value of the String property with the specified name.

```
public java.lang.String getStringProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the String property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getObjectProperty Method

Returns the value of the Java object property with the specified name.

This method can be used to return, in objectified format, an object that has been stored as a property in the message with the equivalent setObjectProperty method call, or its equivalent primitive settypeProperty method.

```
public java.lang.Object getObjectProperty(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the Java object property.

Throws JMSException if JMS fails to get Property due to some internal JMS error.

The getPropertyNames Method

Returns an Enumeration of all the property names.

Note: *The JMS standard header fields are not considered properties and are not returned in this enumeration.*

```
public java.util.Enumeration getPropertyNames()
   throws JMSException
```

Throws JMSException if JMS fails to get Property names due to some internal JMS error.

The setBooleanProperty Method

Sets a boolean property value with the specified name into the message.

```
public void setBooleanProperty(java.lang.String name,boolean value)
   throws JMSException
```

Name	Description
name	The name of the boolean property.
value	The boolean property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException - if properties are read-only

The setByteProperty Method

Sets a byte property value with the specified name into the message.

```
public void setByteProperty(java.lang.String name, byte value)
   throws JMSException
```

Name	Description
name	The name of the byte property.
value	The byte property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setShortProperty Method

Sets a short property value with the specified name into the message.

```
public void setShortProperty(java.lang.String name, short value)
   throws JMSException
```

Name	Description
name	The name of the short property.
value	The short property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setIntProperty Method

Sets an int property value with the specified name into the message.

```
public void setIntProperty(java.lang.String name, int value)throws
   JMSException
```

Name	Description
name	The name of the int property.
value	The int property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setLongProperty Method

Sets a long property value with the specified name into the message.

```
public void setLongProperty(java.lang.String name, long value)
   throws JMSException
```

Name	Description
name	The name of the long property.
value	The long property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setFloatProperty Method

Sets a float property value with the specified name into the message.

```
public void setFloatProperty(java.lang.String name, float value)
   throws JMSException
```

Name	Description
name	The name of the float property.
value	The float property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setDoubleProperty Method

Sets a double property value with the specified name into the message.

```
public void setDoubleProperty(java.lang.String name, double value)
   throws JMSException
```

Name	Description
name	The name of the double property.
value	The double property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setStringProperty Method

Sets a String property value with the specified name into the message.

```
public void setStringProperty(java.lang.String name, java.lang.String
value)
   throws JMSException
```

Name	Description
name	The name of the String property.
value	The String property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageNotWriteableException if properties are read-only

The setObjectProperty Method

Sets a Java object property value with the specified name into the message.

Note: *This method only works for the objectified primitive object types (Integer, Double, Long, and so forth) and Strings.*

```
public void setObjectProperty(java.lang.String name, java.lang.Object
value)
   throws JMSException
```

Name	Description
name	The name of the Java object property.
value	The Java object property value to set.

Throws JMSException if JMS fails to set Property due to some internal JMS error.

Throws MessageFormatException if object is invalid.

Throws MessageNotWriteableException if properties are read-only.

The acknowledge Method

Acknowledges all consumed messages of the session of this consumed message. All JMS messages support the acknowledge() method for use when a client has specified that a JMS consumers messages are to be explicitly acknowledged.

JMS defaults to implicit message acknowledgement. In this mode, calls to acknowledge() are ignored.

Acknowledgment of a message automatically acknowledges all messages previously received by the session. Clients may individually acknowledge messages or they may choose to acknowledge messages in application defined groups (which is done by acknowledging the last received message in the group).

Messages that have been received but not acknowledged may be redelivered to the consumer.

```
public void acknowledge()
   throws JMSException
```

Throws JMSException if JMS fails to acknowledge due to some internal JMS error.

Throws IllegalStateException if this method is called on a closed session.

The clearBody Method

Clears out the message body. Clearing a message's body does not clear its header values or property entries.

If this message body was read-only, calling this method leaves the message body in the same state as an empty body in a newly created message.

```
public void clearBody()
   throws JMSException
```

Throws JMSException if JMS fails to due to some internal JMS error.

5.3.20. interface javax.jms.BytesMessage

```
public interface BytesMessage
extends Message
```

A BytesMessage is used to send a message containing a stream of uninterpreted bytes. It inherits Message and adds a bytes message body. The receiver of the message supplies the interpretation of the bytes.

The readBoolean Method

Reads a boolean from the bytes message stream.

```
public boolean readBoolean()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if end of bytes stream

The readByte Method

Reads a signed 8-bit value from the bytes message stream.

```
public byte readByte()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readUnsignedByte Method

Reads an unsigned 8-bit number from the bytes message stream.

```
public int readUnsignedByte()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readShort Method

Reads a signed 16-bit number from the bytes message stream.

```
public short readShort()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readUnsignedShort Method

Reads an unsigned 16-bit number from the bytes message stream.

```
public int readUnsignedShort()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readChar Method

Reads a Unicode character value from the bytes message stream.

```
public char readChar()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if the end of the message stream is encountered.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readInt Method

Reads a signed 32-bit integer from the bytes message stream.

```
public int readInt()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readLong Method

Reads a signed 64-bit integer from the bytes message stream.

```
public long readLong()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readFloat Method

Reads a float from the bytes message stream.

```
public float readFloat()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if end of message stream

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readDouble Method

Reads a double from the bytes message stream.

```
public double readDouble()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if the end of the message stream is encountered.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readUTF Method

Reads a string that has been encoded using a modified UTF-8 format from the bytes message stream.

```
public java.lang.String readUTF()
   throws JMSException
```

Throws MessageNotReadableException if message in write-only mode.

Throws MessageEOFException if the end of the message stream is encountered.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readBytes Method

Reads a byte array from the bytes message stream. If the length of array value is less than the bytes remaining to be read from the stream, the array should be filled. A subsequent call reads the next increment, and so on.

If the bytes remaining in the stream is less than the length of array value, the bytes should be read into the array. The return value of the total number of bytes read will be less than the length of the array, indicating that there are no more bytes left to be read from the stream. The next read of the stream returns -1.

```
public int readBytes(byte[] value)
   throws JMSException
```

Name	Description
value	The buffer into which the data is read.

Throws MessageNotReadableException if message in write-only mode.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The readBytes Method

Reads a portion of the bytes message stream. If the length of array value is less than the bytes remaining to be read from the stream, the array should be filled. A subsequent call reads the next increment, etc.

If the bytes remaining in the stream is less than the length of array value, the bytes should be read into the array. The return value of the total number of bytes read will be less than the length of the array, indicating that there are no more bytes left to be read from the stream. The next read of the stream returns -1.

If length is negative, or length is greater than the length of the array value, then an IndexOutOfBoundsException is thrown. No bytes will be read from the stream for this exception case.

```
public int readBytes(byte[] value, int length)
   throws JMSException
```

Name	Description
value	The buffer into which the data is read.
length	The number of bytes to read; must be less than or equal to value.length

Throws MessageNotReadableException if message in write-only mode.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The writeBoolean Method

Writes a boolean to the bytes message stream as a 1-byte value. The value true is written as the value (byte)1; the value false is written as the value (byte)0.

```
public void writeBoolean(boolean value)
   throws JMSException
```

Name	Description
value	The `boolean` value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeByte Method

Writes a byte to the bytes message stream as a 1-byte value.

```
public void writeByte(byte value)
   throws JMSException
```

Name	Description
value	The byte value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeShort Method

Writes a short to the bytes message stream as two bytes, high byte first.

```
public void writeShort(short value)
   throws JMSException
```

Name	Description
value	The short to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeChar Method

Writes a char to the bytes message stream as a 2-byte value, high byte first.

```
public void writeChar(char value)
   throws JMSException
```

Name	Description
value	The char value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeInt Method

Writes an int to the bytes message stream as four bytes, high byte first.

```
public void writeInt(int value)
   throws JMSException
```

Name	Description
value	The int to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeLong Method

Writes a long to the bytes message stream as eight bytes, high byte first.

```
public void writeLong(long value)
   throws JMSException
```

Name	Description
value	The long to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeFloat Method

Converts the float argument to an int using the floatToIntBits method in class Float, and then writes that int value to the bytes message stream as a 4-byte quantity, high byte first.

```
public void writeFloat(float value)
   throws JMSException
```

Name	Description
value	The float value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeDouble Method

Converts the double argument to a long using the doubleToLongBits method in class Double, and then writes that long value to the bytes message stream as an 8-byte quantity, high byte first.

```
public void writeDouble(double value)
   throws JMSException
```

Name	Description
value	The double value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeUTF Method

Writes a string to the bytes message stream using UTF-8 encoding in a machine-independent manner.

```
public void writeUTF(java.lang.String value)
   throws JMSException
```

Name	Description
value	The String value to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeBytes Method

Writes a byte array to the bytes message stream.

```
public void writeBytes(byte[] value)
   throws JMSException
```

Name	Description
value	The byte array to be written.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeBytes Method

Writes a portion of a byte array to the bytes message stream.

```
public void writeBytes(byte[] value, int offset, int length)
   throws JMSException
```

Name	Description
value	The byte array value to be written.
offset	The initial offset within the byte array.
length	The number of bytes to use.

Throws MessageNotWriteableException if message in read-only mode.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The writeObject Method

Writes an object to the bytes message stream.

Note: *This method only works for the objectified primitive object types (Integer, Double, Long, and so forth), Strings, and byte arrays.*

```
public void writeObject(java.lang.Object value)
   throws JMSException
```

Name	Description
value	The object in the Java programming language (“Java object”) to be written; it must not be null.

Throws NullPointerException if parameter value is null.

Throws MessageNotWriteableException if message in read-only mode.

Throws MessageFormatException if object is invalid type.

Throws JMSException if JMS fails to write message due to some internal JMS error.

The reset Method

Puts the message body in read-only mode and repositions the stream of bytes to the beginning.

```
public void reset()
   throws JMSException
```

Throws JMSException if JMS fails to reset the message due to some internal JMS error.

Throws MessageFormatException if message has an invalid format

5.3.21. interface javax.jms.MapMessage

```
public interface MapMessage
extends Message.
```

A MapMessage is used to send a set of name-value pairs, where names are Strings, and values are Java primitive types. The entries are accessed sequentially or randomly by name. The order of the entries is undefined. It inherits from Message, and adds a map message body.

The primitive types can be read or written explicitly using methods for each type. They may also be read or written generically as objects. For instance, a call to MapMessage.**setInt(**"parm", 6**)** is equivalent to MapMessage.**setObject(**"parm", new Integer(6)**)**. Both forms are provided because the explicit form is convenient for static programming and the object form is needed when types are not known at compile time.

When a client receives a MapMessage, it is in read-only mode. At this time, if the client attempts to write to the message, a MessageNotWriteableException is thrown. If clearBody is called, the message can now be both read from and written to.

The getBoolean Method

Returns the boolean value with the specified name.

```
public boolean getBoolean(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the boolean.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getByte Method

Returns the byte value with the specified name.

```
public byte getByte(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the byte.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getShort Method

Returns the short value with the specified name.

```
public short getShort(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the short.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getChar Method

Returns the Unicode character value with the specified name.

```
public char getChar(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the Unicode character.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getInt Method

Returns the int value with the specified name.

```
public int getInt(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the int.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getLong Method

Returns the long value with the specified name.

```
public long getLong(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the long.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getFloat Method

Returns the float value with the specified name.

```
public float getFloat(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the float.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getDouble Method

Returns the double value with the specified name.

```
public double getDouble(java.lang.String name)
   throws JMSException
```

Name	Description
name	The double value with the specified name.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getString Method

Returns the String value with the specified name.

```
public java.lang.String getString(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the String.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getBytes Method

Returns the byte array value with the specified name.

```
public byte[] getBytes(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the byte array.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The getObject Method

Returns the Java object value with the specified name.

```
public java.lang.Object getObject(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the Java object.

Throws JMSException if JMS fails to read message due to some internal JMS error.

The getMapNames Method

Returns an Enumeration of all the names in the MapMessage object.

```
public java.util.Enumeration getMapNames()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

The setBoolean Method

Sets a boolean value with the specified name into the Map.

```
public void setBoolean(java.lang.String name, boolean value)
   throws JMSException
```

Name	Description
name	The name of the boolean.
value	The boolean value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if this type conversion is invalid.

The setByte Method

Sets a byte value with the specified name into the Map.

```
public void setByte(java.lang.String name, byte value)
   throws JMSException
```

Name	Description
name	The name of the byte.
value	The byte value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setShort Method

Sets a short value with the specified name into the Map.

```
public void setShort(java.lang.String name, short value)
```

```
throws JMSException
```

Name	Description
name	The name of the short.
value	The short value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setChar Method

Sets a Unicode character value with the specified name into the Map.

```
public void setChar(java.lang.String name, char value)
   throws JMSException
```

Name	Description
name	The name of the Unicode character.
value	The Unicode character value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setInt Method

Sets an int value with the specified name into the Map.

```
public void setInt(java.lang.String name, int value)
   throws JMSException
```

Name	Description
name	The name of the int.
value	The int value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setLong Method

Sets a long value with the specified name into the Map.

```
public void setLong(java.lang.String name, long value)
   throws JMSException
```

Name	Description
name	The name of the long.

Name	Description
value	The long value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setFloat Method

Sets a float value with the specified name into the Map.

```
public void setFloat(java.lang.String name, float value)
   throws JMSException
```

Name	Description
name	The name of the float.
value	The float value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setDouble Method

Sets a double value with the specified name into the Map.

```
public void setDouble(java.lang.String name, double value)
   throws JMSException
```

Name	Description
name	The name of the double.
value	The double value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setString Method

Sets a String value with the specified name into the Map.

```
public void setString(java.lang.String name, java.lang.String value)
   throws JMSException
```

Name	Description
name	The name of the String.
value	The String value to set in the Map.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setBytes Method

Sets a byte array value with the specified name into the Map.

```
public void setBytes(java.lang.String name, byte[] value)
   throws JMSException
```

Name	Description
name	The name of the byte array.
value	The byte array value to set in the Map. The array is copied so that the value for name will not be altered by future modifications.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setBytes Method

Sets a portion of the byte array value with the specified name into the Map.

```
public void setBytes(java.lang.String name, byte[] value, int offset,
int length)
   throws JMSException
```

Name	Description
name	The name of the byte array.
value	The byte array value to set in the Map.
offset	The initial offset within the byte array
length	The number of bytes to use

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The setObject Method

Sets a Java object value with the specified name into the Map.

```
public void setObject(java.lang.String name, java.lang.Object value)
   throws JMSException
```

Name	Description
name	The name of the Java object.
value	The Java object value to set in the Map.

Note: *This method only works for the objectified primitive object types (Integer, Double, Long, and so forth), Strings, and byte arrays.*

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if the object is invalid.

Throws MessageNotWriteableException if the message is in read-only mode.

The itemExists Method

Queries whether an item exists in this MapMessage object.

```
public boolean itemExists(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name of the item to test.

Throws JMSException if JMS fails to read message due to some internal JMS error.

5.3.22. interface javax.jms.ObjectMessage

public interface ObjectMessage

extends Message

An ObjectMessage is used to send a message that contains a serializable Java object. It inherits from Message and adds a body containing a single Java reference. Only Serializable Java objects can be used.

When a client receives an ObjectMessage, the object is in read-only mode. If an attempt is made to write to the message, a MessageNotWriteableException is thrown. If clearBody is called, the message can be both read from and written to.

The setObject Method

Sets the serializable object containing this message's data.

Important: *An ObjectMessage contains a snapshot of the object at the time setObject is called. Subsequent modifications of the object have no affect on the ObjectMessage body.*

```
public void setObject(java.io.Serializable object)
   throws JMSException
```

Name	Description
object	The message data.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotWriteableException if the message is in read-only mode.

The getObject Method

Gets the serializable object containing this message's data. The default value is null.

```
public java.io.Serializable getObject()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MesssageFormatException if the object serialization fails.

5.3.23. interface javax.jms.StreamMessage

public interface StreamMessage

extends Message

A StreamMessage is used to send a stream of Java primitives. It is populated and read sequentially. It inherits from Message and adds a stream message body.

The primitive types can be read or written explicitly using methods for each type. They may also be read or written generically as objects. For instance, a call to StreamMessage.writeInt(6) is equivalent to StreamMessage.writeObject(new Integer(6)). Both forms are provided because the explicit form is convenient for static programming and the object form is needed when types are not known at compile time.

When the message is created, and also when clearBody is called, the body of the message is in write-only mode. After the first call to reset has been made, the message body is in read-only mode. When a message has been sent, by definition, the provider calls reset in order to read the content. When a message has been received, the provider calls reset, and sets the message body is in read-only mode for the client.

If clearBody is called on a message in read-only mode, the message body is cleared and the message body is in write-only mode. If a client attempts to read a message in write-only mode, a MessageNotReadableException is thrown. If a client attempts to write a message in read-only mode, a MessageNotWriteableException is thrown.

The readBoolean Method

Reads a boolean from the stream message.

```
public boolean readBoolean()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readByte Method

Reads a byte value from the stream message.

```
public byte readByte()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readShort Method

Reads a 16-bit integer from the stream message.

```
public short readShort()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readChar Method

Reads a Unicode character value from the stream message.

```
public char readChar()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readInt Method

Reads a 32-bit integer from the stream message.

```
public int readInt()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readLong Method

Reads a 64-bit integer from the stream message.

```
public long readLong()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readFloat Method

Reads a float from the stream message.

```
public float readFloat()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readDouble Method

Reads a double from the stream message.

```
public double readDouble()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readString Method

Reads a String from the stream message.

```
public java.lang.String readString()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readBytes Method

Reads a byte array field from the stream message into the specified byte[] object (the read buffer).

To read the field value, readBytes should be successively called until it returns a value less than the length of the read buffer. The value of the bytes in the buffer following the last byte read is undefined.

If readBytes returns a value equal to the length of the buffer, a subsequent readBytes call must be made. If there are no more bytes to be read, this call returns -1.

If the byte array field value is null, readBytes returns -1.

If the byte array field value is empty, readBytes returns 0.

Once the first readBytes call on a byte[] field value has been made, the full value of the field must be read before it is valid to read the next field. An attempt to read the next field before that has been done will throw a MessageFormatException.

To read the byte field value into a new byte[] object, use the readObject method.

```
public int readBytes(byte[] value)
   throws JMSException
```

Name	Description
value	The buffer into which the data is read.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MesssageFormatException if the object serialization fails.

Throws MessageNotReadableException if the message is in write-only mode.

The readObject Method

Reads an object from the stream message. This method can be used to return in objectified format, an object that had been written to the Stream with the equivalent writeObject method call, or the equivalent primitive write method.

```
public java.lang.Object readObject()
   throws JMSException
```

Note: *Byte values are returned as byte[], not Byte[].*

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageEOFException if an end of message stream.

Throws MessageNotReadableException if the message is in write-only mode.

The writeBoolean Method

Writes a boolean to the stream message. The value true is written as the value (byte)1; the value false is written as the value (byte)0.

```
public void writeBoolean(boolean value)
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeByte Method

Writes a byte to the stream message.

```
public void writeByte(byte value)
   throws JMSException
```

Name	Description
value	The byte value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeShort Method

Writes a short to the stream message.

```
public void writeShort(short value)
   throws JMSException
```

Name	Description
value	The short value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeChar Method

Writes a char to the stream message.

```
public void writeChar(char value)
   throws JMSException
```

Name	Description
value	The char value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeInt Method

Writes an int to the stream message.

```
public void writeInt(int value)
   throws JMSException
```

Name	Description
value	The int value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeLong Method

Writes a long to the stream message.

```
public void writeLong(long value)
   throws JMSException
```

Name	Description
value	The long value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeFloat Method

Writes a float to the stream message.

```
public void writeFloat(float value)
   throws JMSException
```

Name	Description
value	The float value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeDouble Method

Writes a double to the stream message.

```
public void writeDouble(double value)
   throws JMSException
```

Name	Description
value	The double value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeString Method

Writes a string to the stream message.

```
public void writeString(java.lang.String value)
   throws JMSException
```

Name	Description
value	The String value to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeBytes Method

Writes a byte array field to the stream message. The byte array value is written as a byte array field into the StreamMessage. Consecutively written byte array fields are treated as two distinct fields when reading byte array fields.

```
public void writeByte(byte[] value)
   throws JMSException
```

Name	Description
value	The byte array to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeBytes Method

Writes a portion of a byte array as a byte array field to the stream message. The portion of the byte array value is written as a byte array field into the StreamMessage. Consecutively written byte array fields are treated as two distinct fields when reading byte array fields.

```
public void writeBytes(byte[] value, int offset, int length)
   throws JMSException
```

Name	Description
value	The byte array value to be written.

Name	Description
offset	The initial offset within the byte array.
length	The number of bytes to use.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

The writeObject Method

Writes a Java object to the stream message. This method only works for the objectified primitive object types (Integer, Double, Long, and so forth), Strings, and byte arrays.

```
public void writeObject(java.lang.Object value)
   throws JMSException
```

Name	Description
value	The Java object to be written.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

Throws MessageFormatException if the object is invalid.

The reset Method

Puts the message body in read-only mode, and repositions the stream to the beginning.

```
public void reset()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageFormatException if the message has an invalid format.

5.3.24. interface javax.jms.TextMessage

public interface TextMessage

extends Message

A TextMessage is used to send a message containing a java.lang.String. It inherits from Message and adds a text message body.

When a client receives a TextMessage, it is in read-only mode. If an attempt is made to write to the message, while in read-only mode, a MessageNotWriteableException is thrown. If clearBody is called, the message can be then read from and written to.

Refer to **interface javax.jms.Message** on page 212

The getText Method

Gets the string containing the data associated with the message. The default value is null.

```
public java.lang.String getText()
   throws JMSException
```

Throws JMSException if JMS fails to read message due to some internal JMS error.

The setText Method

Sets the string containing the data associated with the message.

```
public void setText(java.lang.String string)
   throws JMSException
```

Name	Description
string	The String containing the message data.

Throws JMSException if JMS fails to read message due to some internal JMS error.

Throws MessageNotWriteableException if the message is in read-only mode.

5.3.25. interface javax.jms.MessageConsumer

public interface MessageConsumer

A client uses a MessageConsumer object to receive messages from a destination. A MessageConsumer object is created by passing a Destination object to a message-consumer creation method supplied by a session.

MessageConsumer is the parent interface for all message consumers.

A message consumer can be created with a message selector. This allows the client to restrict the messages delivered to the message consumer to those that match the selector criteria.

A client may either synchronously receive a message consumer's messages, or have the consumer asynchronously deliver them as they arrive. A client can request the next message from a message consumer using one of the associated receive methods. There are several variations of receive that allow a client to poll, or wait for the next message.

A client can register a messageListener object with a message consumer. As messages arrive at the message consumer, it delivers them by calling the MessageListener's onMessage method.

It is a client programming error for a MessageListener to throw and exception.

The getMessageSelector Method

Gets this message consumer's message selector expression.

```
public java.lang.String getMessageSelector()
   throws JMSException
```

Throws JMSException if JMS fails to get the message selector due to some JMS error.

The getMessageListener Method

Gets the message consumer's `MessageListener`.

```
public MessageListener getMessageListener()
   throws JMSException
```

Throws JMSException if JMS fails to get the message listener due to some JMS error.

The setMessageListener Method

Sets the message consumer's MessageListener. Setting the message listener to null is the equivalent of unsetting the message listener for the message consumer.

Calling the setMessageListener method of MessageConsumer while messages are being consumed by an existing listener, or the consumer is being used to synchronously consume messages is undefined.

```
public void setMessageListener(MessageListener listener)
   throws JMSException
```

Name	Description
listener	The listener that the messages are to be delivered to.

Throws JMSException if the JMS fails to set the message listener due to some JMS error.

The receive Method

Receives the next message produced for this message consumer. This call blocks indefinitely until a message is produced or until this message consumer is close. If this receive is done within a transaction, the message remains on the consumer until the transaction commits.

```
public Message receive()
   throws JMSException
```

Throws JMSException if JMS fails to receive the next message due to some error.

The receive Method

Receives the next message that arrives within the specified timeout interval. This call blocks until a message arrives, the timeout expires, or this message consumer is closed. A timeout of zero never expires and the call blocks indefinitely.

```
public Message receive(long timeout)
   throws JMSException
```

Name	Description
timeout	The timeout value (in milliseconds).

The receiveNoWait Method

Receives the next message if one is immediately available.

```
public Message receiveNoWait()
   throws JMSException
```

Throws JMSException if JMS fails to receive the next message due to some error.

The close Method

Closes the message consumer. Since a provider may allocate some resources on behalf of a MessageConsumer outside the JVM, clients should close them when they are not needed. Relying on garbage collection to eventually reclaim these resources may not be effective enough.

This call blocks until a receive or message listener in progress has completed. A blocked message consumer receive call returns null when this message consumer is close.

```
public void close()
   throws JMSException
```

Throws JMSException if JMS fails to close the consumer due to some error.

5.3.26. interface javax.jms.QueueReceiver

public interface QueueReceiver

extends MessageConsumer

A client uses a QueueReceiver for receiving messages that have been delivered to a queue. Although it is possible to have multiple QueueReceivers for the same queue, JMS does not define how messages are distributed between the QueueReceivers.

The getQueue Method

Get the queue associated with this queue receiver.

```
public Queue getQueue()
                 throws JMSException
```

Throws JMSException if JMS fails to get queue for this queue receiver due to some internal error.

5.3.27. interface javax.jms.TopicSubscriber

public interface TopicSubscriber

extends MessageConsumer.

A client uses a TopicSubscriber for receiving messages that have been published to a topic. TopicSubscriber is the Pub/Sub variant of a JMS message consumer.

A topic session allows for the creation of multiple topic subscribers per Destination. It delivers each message for a destination to each topic subscriber that is eligible to receive it. Each copy of the message is treated as a completely separate message. Work performed on one copy has no affect on another, acknowledging one does not acknowledge the other, one message may be delivered immediately, while another waits for the consumer to process messages ahead of it.

Regular TopicSubscribers are not durable. They only receive messages that are published while they are active. Messages filtered out by a subscriber's message selector, will never be delivered to the subscriber. From the subscriber's perspective, they do not exist.

In some cases, a connection both publishes and subscribes to a topic. The subscriber NoLocal attribute allows a subscriber to inhibit the delivery of messages published by its own connection.

If a client needs to receive all of the messages published on a topic, including those published while the subscriber is inactive, a durable TopicSubscriber is used. JMS retains a record of this durable subscription and insures that all messages from the topic's associated publishers are retained until they are either acknowledged by the durable subscriber, or they have expired.

Sessions with durable subscribers must always provide the same client identifier. In addition, each client must specify a name that uniquely identifies (within the client identifier) each durable subscription it creates. Only one session at a time can have a TopicSubscriber for particular durable subscription.

A client can change an exiting durable subscription, by creating a durable TopicSubscriber with the same name, and a new topic and/or message selector. Changing a durable subscription is equivalent to deleting and re-creating it.

TopicSessions provide the unsubscribe method for deleting a durable subscription created by their client. This deletes the state being maintained on behalf of the subscriber by its provider.

Refer to **interface javax.jms.MessageConsumer** on page 255

The getTopic Method

```
public Topic getTopic()
                throws JMSException
```

Get the topic associated with this subscriber.

Throws JMSException if JMS fails to get topic for this topic subscriber due to some internal error.

The getNoLocal Method

```
public boolean getNoLocal()
                    throws JMSException
```

Get the NoLocal attribute for this TopicSubscriber. The default value for this attribute is false.

Throws JMSException if JMS fails to get noLocal attribute for this topic subscriber due to some internal error.

5.3.28. interface javax.jms.MessageListener

```
public interface MessageListener
```

A MessageListener is used to receive asynchronously delivered messages. Each session must insure that it passes messages serially to the listener. This means that a listener assigned to one or more consumers of the same session, can assume that the onMessage method is not called with the next message until the session has completed the last call.

The onMessage Method

Passes a message to the listener.

```
public void onMessage(Message message)
```

Name	Description
message	The message passed to the listener.

5.3.29. interface javax.jms.MessageProducer

```
public interface MessageProducer
```

A client uses a message producer to send messages to a Destination. The message is created by passing a Destination to a create message producer method, supplied by a Session.

A client also can optionally create a message producer, without supplying a Destination. In this case, a Destination must be input on every send operation. A typical use for this style of message producer, is to send replies to requests, using the request's replyToDestination.

A client can specify a time-to-live value, in milliseconds, for each message sent. This value defines a message expiration time, which is the sum of the message's time-to-live, and the GMT at which it is sent (for transacted sends, this is the time the client sends the message, not the time the transaction is committed).

A JMS provider should attempt to accurately expire message, as the means to acquire this accuracy is not pre-defined.

The setDisableMessageID Method

Sets whether message IDs are disabled. Since message IDs take some effort to create, and increase the size of a message, some JMS providers may choose to optimize message overhead, if they suspect that the message ID is not going to be used by an application. JMS message Producers provide a hint to disable message ID. When a client sets a Producer to disable message ID, they are saying that they do not depend on

the value of the message ID for the messages it then produces. These messages must either have the message ID set to null, or if the hint is ignored, the message ID must be set to the normal unique value. Message IDs are enabled by default.

```
public void setDisableMessageID(boolean value)
   throws JMSException
```

Name	Description
value	Indicates if this messages identifiers are disabled.

Throws JMSException if JMS fails to set the disabled message ID due to some internal error.

The getDisableMessageID Method

Gets an indication of whether message IDs are disabled.

```
public boolean getDisableMessageID()
   throws JMSException
```

Throws JMSException if JMS fails to get the disabled message ID due to some internal error.

The setDisableMessageTimestamp Method

Sets whether message timestamps are disabled. Since timestamps require effort to create and increase a message's size, some JMS providers may optimize overhead by not enabling the timestamp, if they suspect that it is not going to be used by an application. JMS message Producers provide a hint to disable timestamps. When a client sets a producer to disable timestamps, they are not depending on the value of the timestamp, for the messages produced. These messages must either have timestamp set to null, or if the hint is ignored, the timestamp must be set to its normal value. Message timestamps are enabled by default.

```
public void setDisableMessageTimestamp(boolean value)
   throws JMSException
```

Name	Description
value	Indicates if this messages timestamps are disabled.

Throws JMSException if JMS fails to set the disabled message timestamp due to some internal error.

The getDisableMessageTimestamp Method

Gets an indication of whether message timestamps are disabled.

```
public boolean getDisableMessageTimestamp()
   throws JMSException
```

Throws JMSException if JMS fails to get and indication of whether the message timestamp is disabled due to some internal error.

The setDeliveryMode Method

Sets the producer's default delivery mode. Delivery mode is set to PERSISTENT by default.

```
public void setDeliveryMode(int deliveryMode)
   throws JMSException
```

Name	Description
deliveryMode	The message delivery mode for this message producer; acceptable values are DeliveryMode.NON_PERSISTENT and DeliveryMode.PERSISTENT.

Throws JMSException if JMS fails to set delivery mode due to some internal error.

The getDeliveryMode Method

Gets the producer's default delivery mode.

```
public int getDeliveryMode()
   throws JMSException
```

Throws JMSException if JMS fails to get the delivery mode due to some internal error.

The setPriority Method

Sets the producer's default priority. The JMS API defines ten levels of priority value, with 0 as the lowest priority and 9 as the highest. Clients should consider priorities 0-4 as gradations of normal priority, and priorities 5-9 as gradations of expedited priority. Priority is set to 4 by default.

```
public void setPriority(int defaultPriority)
   throws JMSException
```

Name	Description
defaultPriority	The message priority for this message producer; must be a value between 0 and 9.

Throws JMSException if JMS fails to set the priority due to some internal error.

The getPriority Method

Gets the producer's default priority.

```
public int getPriority()
   throws JMSException
```

Throws JMSException if JMS fails to get the priority due to some internal error.

The setTimeToLive Method

Sets the default length of time, in milliseconds, from its dispatch, time that a produced message should be retained by the message system. Time-to-live is set to zero by default.

```
public void setTimeToLive(long timeToLive)
  throws JMSException
```

Name	Description
timeToLive	The message time to live in milliseconds; zero is unlimited.

Throws JMSException if JMS fails to set Time to Live due to some internal error.

The getTimeToLive Method

Gets the default length of time, in milliseconds, from its dispatch, time that a produced message should be retained by the message system.

```
public void getTimeToLive()
   throws JMSException
```

Throws JMSException if JMS fails to get Time to Live due to some internal error.

The close Method

```
public void close()
   throws JMSException
```

Since a provider may allocate some resources on behalf of a MessageProducer outside the JVM, clients should close them when they are not needed. Relying on garbage collection to eventually reclaim these resources may not be timely enough.

Throws JMSException if JMS fails to close the producer due to some error.

5.3.30. interface javax.jms.QueueSender

```
public interface QueueSender
extends MessageProducer
```

A client uses a QueueSender to send messages to a queue. Normally the Queue is specified when a QueueSender is created and in this case, attempting to use the methods for an unidentified QueueSender will throws an UnsupportedOperationException. In the case that the QueueSender with an unidentified Queue is created, the methods that assume the Queue has been identified throw an UnsupportedOperationException.

The getQueue Method

Get the queue associated with this queue sender.

```
public Queue getQueue()
```

```
                    throws JMSException
```

Throws JMSException if JMS fails to get queue for this queue sender due to some internal error.

The send Method

Send a message to the queue. Use the QueueSender's default delivery mode, timeToLive and priority.

```
public void send(Message message)
          throws JMSException
```

Name	Description
message	The message to be sent

Throws JMSException if JMS fails to send the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with a Queue sender with an invalid queue.

The send Method

Send a message specifying delivery mode, priority and time to live to the queue.

```
public void send(Message message, int deliveryMode, int priority,
long timeToLive)
   throws JMSException
```

Name	Description
message	The message to be sent
deliveryMode	The delivery mode to use.
priority	The priority for this message.
timeToLive	The message's lifetime (in milliseconds)

Throws JMSException if JMS fails to send the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with a QueueSender with an invalid queue.

The send Method

Send a message to a queue for an unidentified message producer. Use the QueueSender's default delivery mode, timeToLive and priority.

Typically a JMS message producer is assigned a queue at creation time; however, JMS also supports unidentified message producers which require that the queue be supplied on every message send.

```
public void send(Queue queue, Message message)
   throws JMSException
```

Name	Description
queue	The queue to which this message should be sent.
message	The message to be sent.

Throws JMSException if JMS fails to send the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with an invalid queue.

The send Method

Send a message to a queue for an unidentified message producer, specifying delivery mode, priority and time to live.

Typically a JMS message producer is assigned a queue at creation time; however, JMS also supports unidentified message producers which require that the queue be supplied on every message send.

```
public void send(Queue queue, Message message, int deliveryMode, int
priority, long timeToLive)
   throws JMSException
```

Name	Description
queue	The queue to which this message should be sent.
message	The message to be sent.
deliveryMode	The delivery mode to use.
priority	The priority for this message.
timeToLive	The message's lifetime (in milliseconds).

Throws JMSException if JMS fails to send the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with an invalid queue.

5.3.31. interface javax.jms.TopicPublisher

```
public interface TopicPublisher
extends MessageProducer
```

A client uses a TopicPublisher for publishing messages on a topic. TopicPublisher is the Pub/Sub variant of a JMS message producer. Normally the Topic is specified when a TopicPublisher is created and in this case, attempting to use the methods for an unidentified TopicPublisher will throws an UnsupportedOperationException.

In the case that the TopicPublisher with an unidentified Topic is created, the methods that assume the Topic has been identified throw an UnsupportedOperationException.

The getTopic Method

Get the topic associated with this publisher.

```
public Topic getTopic()
   throws JMSException
```

Throws JMSException if JMS fails to get topic for this topic publisher due to some internal error.

The publish Method

Publish a Message to the topic using the topic's default values for deliveryMode, timeToLive, and priority.

```
public void publish(Message message)
   throws JMSException
```

Name	Description
message	The message to publish.

Throws JMSException if JMS fails to publish the message due to some internal error.

Throws MessageFormatException if invalid message specified.

Throws InvalidDestinationException if a client uses this method with a Topic Publisher with an invalid topic.

The publish Method

Publish a Message to the topic, specifying values for deliveryMode, priority, and timeToLive.

```
public void publish(Message message, int deliveryMode, int priority,
long timeToLive)
   throws JMSException
```

Name	Description
message	The message to publish.
deliveryMode	The delivery mode to use.
priority	The priority for this message.
timeToLive	The message's lifetime (in milliseconds).

Throws JMSException if JMS fails to publish the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with a Topic Publisher with an invalid topic.

The publish Method

Publish a Message to a topic for an unidentified message producer. Use the topics default delivery mode, timeToLive and priority.

Typically a JMS message producer is assigned a topic at creation time; however, JMS also supports unidentified message producers which require that the topic be supplied on every message publish.

```
public void publish(Topic topic, Message message)
   throws JMSException
```

Name	Description
topic	The topic to which to publish the message.
message	The message to publish.

Throws JMSException if JMS fails to publish the message due to some internal error.

Throws MessageFormatException if invalid message specified.

Throws InvalidDestinationException if a client uses this method with an invalid topic.

The publish Method

Publishes a Message to a topic for an unidentified message producer, specifying values for deliveryMode, priority, and timeToLive. Typically a JMS message producer is assigned a topic at creation time; however, JMS also supports unidentified message producers which require that the topic be supplied on every message publish.

```
public void publish(Topic topic, Message message,int deliveryMode,
int priority, long timeToLive)
   throws JMSException
```

Name	Description
topic	The topic to which to publish this message.
message	The message to be sent.
deliveryMode	The delivery mode to use.
priority	The priority for this message.
timeToLive	The message's lifetime (in milliseconds).

Throws JMSException if JMS fails to publish the message due to some internal error.

Throws MessageFormatException if invalid message specified

Throws InvalidDestinationException if a client uses this method with an invalid topic.

5.3.32. interface java.lang.Runnable

5.3.33. interface javax.jms.Session

```
public interface Session
   extends java.lang.Runnable
```

A Session object is a single-threaded context for producing and consuming messages. Although it may allocate provider resources outside the Java Virtual Machine (JVM), it is considered a lightweight JMS object.

A session serves several purposes:

- It is a factory for its message producers and consumers.
- It supplies provider-optimized message factories.
- It supports a single series of transactions that combine work spanning its producers and consumers into atomic units.
- It defines a serial order for the messages it consumes and the messages it produces.
- It retains messages it consumes until they have been acknowledged.
- It serializes execution of message listeners registered with its message consumers.

A session can create and service multiple message producers and consumers.

One typical use is to have a thread block on a synchronous MessageConsumer, until a message arrives. The thread may then use one or more of the Session's Message Producers.

For a client to have one thread producing messages, while others consume them, the client should use a separate Session for the producing thread.

Once a connection has been established, any session with one or more registered listeners is dedicated to the thread of control that delivers messages to it. It is erroneous for the client code to use this session, or any of it's constituent objects from another thread of control. The only exception to this, is the use of the session or connection close method.

Most clients can partition their work naturally into Sessions. This model allows clients to start simply, and incrementally, adding message processing complexity as the need for concurrency grows.

The close method is the only session method, that can be called while some other session method is being executed in another thread.

A session may be optionally specified as transacted. Each transacted session supports a single series of transactions. Each transaction groups a set of message sends, and a set of message receives, into an atomic unit of work. In effect, transactions organize a session's input message stream, and output message stream, into a series of atomic units. When a transaction commits, the atomic unit of input is acknowledged, and the associated atomic unit of output is sent. If a transaction rollback is performed, the associated sent messages are destroyed, and the session's input is automatically recovered.

The content of a transaction's input and output units, is that of the messages that have been produced and consumed within the session's current transaction. A transaction is completed by using either the session's commit or rollback method. The completion of a session's current transaction automatically begins the next. In this manner, a transacted session always has a current transaction within which the work is done.

The createBytesMessage Method

Creates a BytesMessage object. A BytesMessage object is used to send a message containing a stream of uninterpreted bytes.

```
public BytesMessage createBytesMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createMapMessage Method

Creates a MapMessage object. A MapMessage object is used to send a self-defining set of name-value pairs, where names are String objects and values are primitive values in the Java programming language.

```
public MapMessage createMapMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createMessage Method

Creates a Message object. The Message interface is the root interface of all JMS messages. A Message object holds all the standard message header information. It can be sent when a message containing only header information is sufficient.

```
public Message createMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createObjectMessage Method

Creates an ObjectMessage object. An ObjectMessage object is used to send a message that contains a serializable Java object.

```
public ObjectMessage createObjectMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createObjectMessage Method

Creates an initialized ObjectMessage object. An ObjectMessage object is used to send a message that contains a serializable Java object.

```
public ObjectMessage createObjectMessage(java.io.Serializable object)
   throws JMSException
```

Name	Description
object	The object to use to initialize this message.

Throws JMSException if JMS fails to create this message due to some internal error.

The createStreamMessage Method

Creates a StreamMessage object. A StreamMessage object is used to send a self-defining stream of primitive values in the Java programming language.

```
public StreamMessage createStreamMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createTextMessage Method

Creates a TextMessage object. A TextMessage object is used to send a message containing a String object.

```
public TextMessage createTextMessage()
   throws JMSException
```

Throws JMSException if JMS fails to create this message due to some internal error.

The createTextMessage Method

Creates an initialized TextMessage object. A TextMessage object is used to send a message containing a String.

```
public TextMessage createTextMessage(java.lang.String text)
   throws JMSException
```

Name	Description
text	The string used to initialize this message.

Throws JMSException if JMS fails to create this message due to some internal error.

The getTransacted Method

Queries whether the session is in transacted mode.

```
public boolean getTransacted()
   throws JMSException
```

Throws JMSException if JMS fails to return the transaction mode due to internal error in JMS Provider.

The commit Method

Commits all messages done in this transaction and releases any locks currently held.

```
public void commit()
   throws JMSException
```

Throws JMSException if the JMS implementation fails to commit the transaction due to some internal error.

Throws TransactionRolledBackException if the transaction gets rolled back due to some internal error during commit.

Throws IllegalStateException if the method is not called by a transacted session.

The rollback Method

Rolls back any messages done in this transaction and releases any locks currently held.

```
public void rollback()
   throws JMSException
```

Throws JMSException if the JMS implementation fails to rollback the transaction due to some internal error.

Throws IllegalStateException if the method is not called by a transacted session.

The close Method

Closes the session. A provider may allocate some resources on behalf of a Session outside the JVM, clients therefore, should close them when they are not needed. Relying on garbage collection to eventually reclaim these resources may not be timely enough.

There is no need to close the producers and consumers of a closed session. This call will block until a receive or message listener in progress has completed. A blocked message consumer receive call returns null when this session is closed. Closing a transacted session must rollback the in-progress transaction. This method is the only session method that can be concurrently called.

Invoking any other session method on a closed session must throw JMSException.IllegalStateException. Closing a closed session must NOT throw an exception.

```
public void close()
   throws JMSException
```

Throws JMSException if JMS implementation fails to close a Session due to some internal error.

The recover Method

Stops message delivery in this session, and restarts sending messages with the oldest unacknowledged message. All consumers deliver messages in a serial order. Acknowledging a received message automatically acknowledges all messages that have been delivered to the client.

Restarting a session causes it to take the following actions:

- Stops message delivery
- Marks all messages that might have been delivered but not acknowledged as `redelivered'
- Restart the delivery sequence including all unacknowledged messages that had been previously delivered.

Redelivered messages do not have to be delivered in exactly their original delivery order.

Throws JMSException if JMS implementation fails to stop message delivery and restart message send due to due to some internal error.

Throws IllegalStateException if method is called by a transacted session.

```
public void recover()
   throws JMSException
```

The getMessageListener Method

Return the session's distinguished message listener (optional).

Throws JMSException if JMS fails to get the message listener due to an internal error in JMS Provider.

```
public MessageListener getMessageListener()
   throws JMSException
```

Throws JMSException if JMS fails to get the message listener due to an internal error in JMS Provider.

The setMessageListener Method

Sets the session's distinguished message listener (optional). When it is set, no other form of message receipt in the session can be used; however, all forms of sending messages are still supported. This is an expert facility not used by regular JMS clients.

```
public void setMessageListener(MessageListener listener)
   throws JMSException
```

Name	Description
listener	The message listener to associate with this session.

Throws JMSException if JMS fails to set the message listener due to an internal error in JMS Provider.

run

Only intended to be used by Application Servers (optional operation).

```
public void run()
```

Specified by

run in interface java.lang.Runnable

5.3.34. interface javax.jms.QueueSession

```
public interface QueueSession
extends Session
```

A QueueSession provides methods for creating QueueReceiver's, QueueSender's, QueueBrowser's and TemporaryQueues. If there are messages that have been received but not acknowledged when a QueueSession terminates, these messages will be retained and redelivered when a consumer next accesses the queue.

The createQueue Method

Creates a queue identity given a Queue name. This facility is provided for the rare cases where clients need to dynamically manipulate queue identity. This allows the creation of a queue identity with a provider specific name. Clients that depend on this ability are not portable.

Note: *This method is not for creating the physical topic. The physical creation of topics is an administration task and not to be initiated by the JMS interface. The one*

exception is the creation of temporary topics is done using the createTemporaryTopic method.

```
public Queue createQueue(java.lang.String queueName)
   throws JMSException
```

Name	Description
queueName	The name of this queue.

Throws JMSException if a session fails to create a queue due to some JMS error.

The createReceiver Method

Creates a QueueReceiver to receive messages from the specified queue.

```
public QueueReceiver createReceiver(Queue queue)
   throws JMSException
```

Name	Description
queue	The name of the queue to access.

Throws JMSException - if a session fails to create a receiver due to some JMS error.

Throws InvalidDestinationException if invalid Queue specified.

The createReceiver Method

Creates a QueueReceiver to receive messages from the specified queue.

```
public QueueReceiver createReceiver(Queue queue, java.lang.String
messageSelector)
   throws JMSException
```

Name	Description
queue	The name of the queue to access.
messageSelector	Only messages with properties matching the message selector expression are delivered.

Throws JMSException if a session fails to create a receiver due to some JMS error.

Throws InvalidDestinationException if invalid Queue specified.

Throws InvalidSelectorException if the message selector is invalid.

The createSender Method

Creates a QueueSender to send messages to the specified queue.

```
public QueueSender createSender(Queue queue)
   throws JMSException
```

Name	Description
queue	The name of the queue to access, or null if this is an unidentified producer.

Throws JMSException if a session fails to create a sender due to some JMS error.

Throws InvalidDestinationException if invalid Queue specified.

The createTemporaryQueue Method

Creates a temporary queue. It's lifetime will be that of the QueueConnection unless deleted earlier.

```
public TemporaryQueue createTemporaryQueue()
   throws JMSException
```

Throws JMSException if a session fails to create a Temporary Queue due to some JMS error.

5.3.35. interface javax.jms.TopicSession

```
public interface TopicSession
extends Session
```

A TopicSession provides methods for creating TopicPublishers, TopicSubscribers and TemporaryTopics. Also provided are methods for deleting the associated client's durable subscribers.

The createTopic Method

Create a topic identity given a Topic name. This facility is provided for the rare cases where clients need to dynamically manipulate topic identity. This allows the creation of a topic identity with a provider specific name. Clients that depend on this ability are not portable.

Note: *This method is not for creating the physical topic. The physical creation of topics is an administration task and not to be initiated by the JMS interface. The one exception is the creation of temporary topics is done using the createTemporaryTopic method.*

```
public Topic createTopic(java.lang.String topicName)
   throws JMSException
```

Name	Description
topicName	The name of this topic.

Throws JMSException if a session fails to create a topic due to some JMS error.

The createSubscriber Method

Creates a non-durable Subscriber to the specified topic. A client uses a TopicSubscriber for receiving messages that have been published to a topic. Regular TopicSubscriber's are not durable. They only receive messages that are published while they are active.

In some cases, a connection may both publish and subscribe to a topic. The subscriber NoLocal attribute allows a subscriber to inhibit the delivery of messages published by its own connection. The default value for this attribute is false.

```
public TopicSubscriber createSubscriber(Topic topic)
   throws JMSException
```

Name	Description
topic	The topic to which to subscribe.

Throws JMSException if a session fails to create a subscriber due to some JMS error.

Throws InvalidDestinationException if invalid Topic specified.

The createSubscriber Method

Create a non-durable Subscriber to the specified topic. A client uses a TopicSubscriber for receiving messages that have been published to a topic. Regular TopicSubscriber's are not durable. They only receive messages that are published while they are active.

Messages filtered out by a subscriber's message selector will never be delivered to the subscriber. From the subscriber's perspective they simply don't exist. In some cases, a connection may both publish and subscribe to a topic. The subscriber NoLocal attribute allows a subscriber to inhibit the delivery of messages published by its own connection.

```
public TopicSubscriber createSubscriber(Topic topic,java.lang.String
messageSelector, boolean noLocal)
   throws JMSException
```

Name	Description
topic	The topic to which to subscribe.
messageSelector	Only messages with properties matching the message selector expression are delivered. This value may be null.
noLocal	If set, inhibits the delivery of messages published by it's own connection.

Throws JMSException if a session fails to create a subscriber due to some JMS error or invalid selector.

Throws InvalidDestinationException if invalid Topic specified.

Throws InvalidSelectorException if the message selector is invalid.

The createDurableSubscriber Method

Create a durable Subscriber to the specified topic. If a client needs to receive all the messages published on a topic including the ones published while the subscriber is inactive, it uses a durable TopicSubscriber. JMS retains a record of this durable subscription and insures that all messages from the topic's publishers are retained until they are either acknowledged by this durable subscriber or they have expired.

Sessions with durable subscribers must always provide the same client identifier. In addition, each client must specify a name which uniquely identifies (within client identifier) each durable subscription it creates. Only one session at a time can have a TopicSubscriber for a particular durable subscription.

A client can change an existing durable subscription by creating a durable TopicSubscriber with the same name and a new topic and/or message selector. Changing a durable subscriber is equivalent to unsubscribing (deleting) the old one and creating a new one.

```
public TopicSubscriber createDurableSubscriber(Topic topic,
java.lang.String name)
   throws JMSException
```

Name	Description
topic	The non-temporary topic to which to subscribe.
name	The name used to identify this subscription.

Throws JMSException if a session fails to create a subscriber due to some JMS error.

Throws InvalidDestinationException if invalid Topic specified.

The createDurableSubscriber Method

Create a durable Subscriber to the specified topic.

If a client needs to receive all the messages published on a topic including the ones published while the subscriber is inactive, it uses a durable TopicSubscriber. JMS retains a record of this durable subscription and insures that all messages from the topic's publishers are retained until they are either acknowledged by this durable subscriber or they have expired.

Sessions with durable subscribers must always provide the same client identifier. In addition, each client must specify a name which uniquely identifies (within client identifier) each durable subscription it creates. Only one session at a time can have a TopicSubscriber for a particular durable subscription. An inactive durable subscriber is one that exists but does not currently have a message consumer associated with it.

A client can change an existing durable subscription by creating a durable TopicSubscriber with the same name and a new topic and/or message selector. Changing a durable subscriber is equivalent to unsubscribing (deleting) the old one and creating a new one.

```
public TopicSubscriber createDurableSubscriber(Topic topic,
java.lang.String name, java.lang.String messageSelector, boolean
noLocal)
   throws JMSException
```

Name	Description
topic	The name of the non-temporary topic to which to subscribe.
name	The name used to identify this subscription.
messageSelector	Only messages with properties matching the message selector expression are delivered. This value may be null.
noLocal	If set, inhibits the delivery of messages published by its own connection.

Throws JMSException if a session fails to create a subscriber due to some JMS error or invalid selector.

Throws InvalidDestinationException if invalid Topic specified.

Throws InvalidSelectorException if the message selector is invalid.

The createPublisherMethod

Create a Publisher for the specified topic. A client uses a TopicPublisher for publishing messages on a topic. Each time a client creates a TopicPublisher on a topic, it defines a new sequence of messages that have no ordering relationship with the messages it has previously sent.

```
public TopicPublisher createPublisher(Topic topic)
   throws JMSException
```

Name	Description
topic	The topic to which to publish, or null if this is an unidentified producer.

Throws JMSException if a session fails to create a publisher due to some JMS error.

Throws InvalidDestinationException if invalid Topic specified.

The createTemporaryTopic Method

Create a temporary topic. It's lifetime will be that of the TopicConnection unless deleted earlier.

Throws JMSException if a session fails to create a temporary topic due to some JMS error.

```
public TemporaryTopic createTemporaryTopic()
   throws JMSException
```

The unsubscribe Method

Unsubscribe a durable subscription that has been created by a client. This deletes the state being maintained on behalf of the subscriber by its provider. It is erroneous for a client to delete a durable subscription while it has an active TopicSubscriber for it, or while a message received by it is part of a transaction or has not been acknowledged in the session.

```
public void unsubscribe(java.lang.String name)
   throws JMSException
```

Name	Description
name	The name used to identify this subscription

Throws JMSException if JMS fails to unsubscribe to durable subscription due to some JMS error.

Throws InvalidDestinationException if an invalid subscription name is specified.

5.3.36. interface javax.jms.XASession

```
public interface XASession
extends Session
```

The XASession interface extends the capability of Session by adding access to a JMS provider's support for the Java Transaction API (JTA) (optional). This support takes the form of a javax.transaction.xa.XAResource object. The functionality of this object closely resembles that defined by the standard X/Open XA Resource interface.

An application server controls the transactional assignment of an XASession by obtaining its XAResource. It uses the XAResource to assign the session to a transaction; prepare and commit work on the transaction; etc.

An XAResource provides some fairly sophisticated facilities for interleaving work on multiple transactions; recovering a list of transactions in progress; etc. A JTA aware JMS provider must fully implement this functionality. This could be done by using the services of a database that supports XA or a JMS provider may choose to implement this functionality from scratch.

A client of the application server is given what it thinks is a regular JMS Session. Behind the scenes, the application server controls the transaction management of the underlying XASession.

The getXAResource Method

Returns an XA resource to the caller.

```
public javax.transaction.xa.XAResource getXAResource()
```

The getTransacted Method

Queries whether the session is in transacted mode.

```
public boolean getTransacted()
   throws JMSException
```

Throws JMSException if JMS fails to return the transaction mode due to internal error in JMS Provider.

Specified by getTransacted in interface Session

Throws JMSException if JMS fails to return the transaction mode due to internal error in JMS Provider.

The commit Method

Throws a TransactionInProgressException, since it should not be called for an XASession object.

```
public void commit()
   throws JMSException
```

Throws TransactionInProgressException if method is called on a XASession.

Specified by commit in interface Session

Throws TransactionInProgressException if method is called on a XASession.

The rollback Method

Throws a TransactionInProgressException, since it should not be called for an XASession object.

```
public void rollback()
   throws JMSException
```

Specified by rollback in interface Session

Throws TransactionInProgressException if method is called on a XASession.

5.3.37. interface javax.jms.XAQueueSession

```
public interface XAQueueSession
extends XASession
```

An XAQueueSession provides a regular QueueSession which can be used to create QueueReceivers, QueueSenders and QueueBrowsers (optional).

The getQueueSession Method

Gets the queue session associated with this XAQueueSession.

```
public QueueSession getQueueSession()
   throws JMSException
```

Throws JMSException if a JMS error occurs.

5.3.38. interface javax.jms.XATopicSession

```
public interface XATopicSession
```

```
extends XASession
```

An XATopicSession provides a regular TopicSession. which can be used to create TopicSubscriber and TopicPublisher objects (optional).

The getTopicSession Method

```
public TopicSession getTopicSession()
   throws JMSException
```

Gets the topic session associated with this XATopicSession.

Throws JMSException - if a JMS error occurs.

5.3.39. interface javax.jms.XAConnection

```
public interface XAConnection
```

XAConnection extends the capability of Connection by providing an XASession (optional).

5.3.40. interface javax.jms.XAQueueConnection

```
public interface XAQueueConnection
extends XAConnection, QueueConnection
```

XAQueueConnection provides the same create options as QueueConnection (optional). The only difference is that an XAConnection is by definition transacted.

The createXAQueueSession Method

Creates an XAQueueSession.

```
public XAQueueSession createXAQueueSession()
   throws JMSException
```

Throws JMSException if JMS Connection fails to create a XA queue session due to some internal error.

The createQueueSession Method

Creates an XAQueueSession.

```
public QueueSession createQueueSession(boolean transacted, int
acknowledgeMode)
throws JMSException
```

Specified by createQueueSession in interface QueueConnection

Name	Description
transacted	Ignored; XA sessions are transacted by definition.
acknowledgeMode	Ignored.

Throws JMSException if JMS Connection fails to create a XA queue session due to some internal error.

5.3.41. interface javax.jms.XATopicConnection

An XATopicConnection provides the same create options as TopicConnection (optional). The only difference is that an XAConnection is by definition transacted.

The createXATopicSession Method

Creates an XATopicSession.

```
public XATopicSession createXATopicSession()
   throws JMSException
```

Throws JMSException if JMS Connection fails to create a XA topic session due to some internal error.

The createTopicSession Method

Creates an XATopicSession

```
public TopicSession createTopicSession(boolean transacted, int
acknowledgeMode)
   throws JMSException
```

Name	Description
transacted	ignored.
acknowledgeMode	ignored.

Specified by createTopicSession in interface TopicConnection

Throws JMSException if JMS Connection fails to create a XA topic session due to some internal error.

5.3.42. interface javax.jms.XAConnectionFactory

```
public interface XAConnectionFactory
```

The XAConnectionFactory interface is a base interface for the XAQueueConnectionFactory and XATopicConnectionFactory interfaces.

5.3.43. interface javax.jms.XAQueueConnectionFactory

```
public interface XAQueueConnectionFactory
extends XAConnectionFactory, QueueConnectionFactory
```

An XAQueueConnectionFactory provides the same create options as a QueueConnectionFactory (optional).

The createXAQueueConnection Method

Creates an XA queue connection with default user identity. The connection is created in stopped mode. No messages will be delivered until Connection.start method is explicitly called.

```
public XAQueueConnection createXAQueueConnection()
   throws JMSException
```

Throws JMSException if JMS Provider fails to create XA queue Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

The createXAQueueConnection Method

Creates an XA queue connection with specific user identity. The connection is created in stopped mode. No messages will be delivered until `Connection.start` method is explicitly called.

```
public XAQueueConnection createXAQueueConnection(java.lang.String
userName, java.lang.String password)
   throws JMSException
```

Name	Description
userName	The caller's username
password	The caller's password.

Throws JMSException if JMS Provider fails to create XA queue Connection due to some internal error.

Throws JMSSecurityException if client authentication fails due to invalid user name or password.

5.3.44. interface javax.jms.XATopicConnectionFactory

```
public interface XATopicConnectionFactory
```

An XATopicConnectionFactory provides the same create options as a TopicConnectionFactory (optional).

5.4 Unsupported Java JMS Classes

- class javax.jms.QueueRequestor
- class javax.jms.TopicRequestor

5.5 Unsupported Java JMS Interfaces

- interface javax.jms.ConnectionConsumer
- interface javax.jms.QueueBrowser
- interface javax.jms.ServerSession
- interface javax.jms.ServerSessionPool

5.6 Unsupported JMS Methods

Of the classes that are currently supported, the following methods are NOT supported:

- Interface QueueConnection
  - createConnectionConsumer(Queue *queue*, java.lang.String *messageSelector*, ServerSessionPool *sessionPool*, int *maxMessages*)
- Interface TopicConnection
  - createConnectionConsumer(Topic *topic*, java.lang.String *messageSelector*, ServerSessionPool *sessionPool*, int *maxMessages*)
  - createDurableConnectionConsumer(Topic *topic*, java.lang.String *subscriptionName*, java.lang.String *messageSelector*, ServerSessionPool *sessionPool*, int *maxMessages*)
- Interface TopicSubscriber
  - createBrowser(Queue *queue*)
  - createBrowser(Queue *queue*, java.lang.String *messageSelector*)
- Interface TopicSubscriber
  - getNoLocal()
- Interface XAResource
  - forget(Xid *xid*)

5.7 The Message Service COM+ APIs

5.7.1. Supported Java Message Service (JMS) Classes for COM+

e*Gate supports the following list of the Java Message Service (JMS) COM+ APIs. If you need additional information for each of the classes and methods, please refer to Sun Microsystems web site at:

http://java.sun.com/products/jms/javadoc-102a/javax/jms/package-summary.html

You may also find useful the following books:

- *Java Message Service*, O'Reilly, December 2000, ISBN: 0596000685
- *Professional JMS*, Wrox Press, March 2001, ISBN: 1861004931
- *Professional Java Server Programming - J2EE Edition*, Wrox Press, September 2000, ISBN: 1861004656

5.7.2. The BytesMessage Object

A **BytesMessage** is used to send a message containing a stream of uninterrupted bytes. It inherits Message and adds a bytes message body. The receiver of the message supplies the interpretation of the bytes. Member of the Message Object.

The Acknowledge Method

Acknowledges the receipt of current and previous messages.

```
BytesMessage.acknowledge
```

The ClearBody Method

Clears the body of a message, leaving the message header values and property entries intact.

```
BytesMessage.ClearBody
```

The ClearProperties Method

Clears the properties from a message, leaving the message header fields and body intact.

```
BytesMessage.ClearProperties
```

The GetProperty Method

Returns the Visual Basic data type property value with the given name, into the Message.

```
BytesMessage.GetProperty(name As String)
```

Name	Description
name	The name of the property.

The PropertyExists Method

Checks whether a value for a specific property exists.

```
BytesMessage.PropertyExists(name as String)
```

Name	Description
name	The name of the property to check.

The ReadBoolean Method

Reads a Boolean value from the bytes message stream.

```
BytesMessage.ReadBoolean() As Boolean
```

The ReadByte Method

Reads a signed 8-bit value from the bytes message stream.

```
BytesMessage.ReadByte()As Byte
```

The ReadBytes Method

Reads a portion of the bytes message stream.

```
BytesMessage.ReadBytes(value, [length])As Long
```

Name	Description
value	The buffer the data is read into.
length	The number of bytes read.

The ReadChar Method

Reads a Unicode character value from the bytes message stream.

```
BytesMessage.ReadChar() As Integer
```

The ReadDouble Method

Reads a double from the bytes message stream.

```
BytesMessage.ReadDouble() As Double
```

The ReadFloat Method

Reads a float from the bytes message stream.

```
BytesMessage.ReadFloat() As Single
```

The ReadInt Method

Reads a signed 32-bit integer from the bytes message stream.

```
BytesMessage.ReadInt() As Long
```

The ReadLong Method

Reads a signed 64-bit integer from the bytes message stream.

```
BytesMessage.ReadLong() As Currency
```

The ReadShort Method

Reads a signed 16-bit number from the bytes message stream.

```
BytesMessage.ReadShort() As Integer
```

The ReadUnsignedByte Method

Reads an unsigned 8-bit number from the bytes message stream.

```
BytesMessage.ReadUnsignedByte() As Long
```

The ReadUnsignedShort Method

Reads an unsigned 16-bit number from the bytes message stream

```
BytesMessage.ReadUnsignedShort() As Long
```

The ReadUTF Method

ReadUTF reads the string that was encoded using a modified UTF-8 format from the bytes message stream.

```
BytesMessage.ReadUTF() As String
```

The Reset Method

The Reset method puts the message body in read-only mode, and repositions the stream of bytes to the beginning.

```
BytesMessage.Reset
```

The SetProperty Method

The SetProperty method sets a Visual Basic data type property value with the given name, into the Message.

```
BytesMessage.SetProperty(name As String, value)
```

Name	Description
name	Name of the property.
value	Value to set.

The WriteBoolean Method

WriteBoolean writes to the bytes message stream as a 1-byte value.

```
BytesMessage.WriteBoolean(value as Boolean)
```

Name	Description
value	Write a boolean to the bytes message stream as a 1 byte value. The value true is written out as the value (byte)1; the value false is written out as the value (byte)0.

The WriteByte Method

WriteByte writes to the bytes message stream as a 1-byte value

```
BytesMessage.WriteByte(value As Byte)
```

Name	Description
value	The byte value to be written

The WriteBytes Method

WriteBytes writes a byte array, or a portion of the byte array, to the bytes message stream

```
BytesMessage.WriteBytes(value, [offset], [length])
```

Name	Description
value	The byte array value to be written.
offset	The initial offset within the byte array.
length	The number of bytes to use.

The WriteChar Method

WriteChar writes a char to the bytes message stream as a 2-byte value, high byte first

```
BytesMessage.WriteChar(value As integer)
```

Name	Description
value	The Char value to be written.

The WriteDouble Method

Convert the double parameter value to a long, and then writes an 8-byte long value to the bytes message stream (high byte is written first).

```
BytesMessage.WriteDouble(value As Double)
```

Name	Description
value	The double value to write to the message stream.

The WriteFloat Method

Convert the float argument to an long, and then writes that long value to the bytes message stream as a 4-byte quantity, high byte first

```
BytesMessage.WriteFloat(Value As Single)
```

Name	Description
value	The float value to be written.

The WriteInt Method

Write an int to the bytes message stream as four bytes, high byte first.

```
BytesMessage.WriteInt(value As Long)
```

Name	Description
value	The float value to be written.

The WriteLong Method

WriteLong writes a long to the bytes message stream as eight bytes, high byte first

```
BytesMessage.WriteLong(value As Currency)
```

Name	Description
value	The WriteLong is written as a currency.

The WriteObject Method

Currently not supported

The WriteShort Method

WriteShort writes a short to the bytes message stream as two bytes, high byte first

```
BytesMessage.WriteShort(value As Integer)
```

Name	Description
value	The short that is written.

The WriteUTF Method

WriteUTF writes a string to the bytes message stream using UTF-8 encoding in a machine-independent manner

```
BytesMessage.WriteUTF(value As String)
```

Name	Description
value	The `String` value that is written.

5.7.3. Properties of the BytesMessage Object

The CorrelationID Property

The CorrelationID property sets or returns correlation id values that are either JMS IQ Manager specific message ID's or application-specific strings.

```
BytesMessage.CorrelationID = String
String = BytesMessage.CorrelationID
```

The CorrelationIDAsBytes Property

Currently not supported.

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = BytesMessageConstant
BytesMessageConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.

Name	Description
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The Destination Property

Currently not supported.

The Expiration Property

The Expiration property sets or returns the message expiration time in milliseconds.

```
BytesMessage.Expiration = Currency
Currency = BytesMessage.Expiration
```

The MessageID Property

The MessageID property sets or returns the value of the uniquely assigned identifier in the message header.

```
BytesMessage.MessageID = String
String = BytesMessage.MessageID
```

The Priority Property

```
Currently not supported.
```

The Redelivered Property

The Redelivered property sets or returns an indication as to whether this message is redelivered.

```
BytesMessage.Redelivered = Boolean
Boolean = BytesMessage.Redelivered
```

The ReplyTo Property

The ReplyTo property sets or returns were a reply to this message will be sent. Destination can be a Topic, Queue, Temporary Topic, or a Temporary Queue.

```
BytesMessage.ReplyTo = Destination
Destination = BytesMessage.ReplyTo
```

The Timestamp Property

The TimeStamp property sets or returns the message timestamp.

```
BytesMessage.Timestamp = Currency
Currency = BytesMessage.Timestamp
```

The Type Property

The Type property sets or returns the message type.

```
BytesMessage.Type = String
String = BytesMessage.Type
```

5.7.4. The Connection Object

A Connection is a client's active connection to its provider. This is an abstract interface.

The Start Method

The Start method starts or restarts the delivery of a transaction connection's incoming messages.

```
Connection.Start
```

The Stop Method

The Stop methods temporarily stops the delivery of incoming messages from a transaction connection.

```
Connection.Stop
```

5.7.5. Properties of the Connection Object

The ClientID Property

ClientID sets or returns the client identifier for this connection. This value is JMS IQ Manager specific.

```
Connection.ClientID = String
String = Connection.ClientID
```

The MetaData Property

This property is not currently supported.

5.7.6. The ConnectionFactory Object

A ConnectionFactory encapsulates a set of connection configuration parameters that has been defined by your administrator. This is an abstract interface.

There are no methods currently associated with this object.

5.7.7. Properties of the ConnectionFactory Object

The HostName Property

HostName is a property that sets or returns the name of the host where Message server is running.

```
ConnectionFactory.HostName = String
String = ConnectionFactory.HostName
```

The Port Property

The Port property sets or returns the port number at which the Message Server is listening, default value is 24053

```
ConnectionFactory.Port = Long
Long = ConnectionFactory.Port
```

The PortOffset Property

The PortOffset property sets or returns the port offset number of the Message Server if more then one Message Server is running on the same host machine and using the same port number

```
ConnectionFactory.PortOffset = Long
Long = ConnectionFactory.PortOffset
```

5.7.8. The Connection MetaData Object

This Object is currently not supported.

5.7.9. The MapMessage Object

The MapMessage is used to send a set of name-value pairs where names are Strings and values are primitive data types. Member of the Message Object.

The Acknowledge Method

Acknowledges the receipt of current and previous messages.

```
MapMessage.Acknowledge
```

The ClearBody Method

Clears the body of a message, leaving the message header values and property entries intact.

```
MapMessage.ClearBody
```

The ClearProperties Method

Clears the properties from a message, leaving the message header fields and body intact.

```
MapMessage.ClearProperties
```

The GetBoolean Method

The GetBoolean method returns the boolean value with the given name

```
MapMessage.GetBoolean() As Boolean
```

Name	Description
name	The name of the Boolean property.

The GetByte Method

The GetByte method returns the byte value with the given name.

```
MapMessage.GetByte(name as a String) As Byte
```

Name	Description
name	The name of the byte.

The GetBytes Methods

The GetBytes method returns the byte array value with the given name as a variable.

```
MapMessage.GetBytes(name As String, length As Long)
```

Name	Description
name	The name of the byte property.
length	The length of the property

The GetChar Method

The GetChar property returns the Unicode character value with the given name.

```
MapMessage.GetChar(name As String) As Integer
```

Name	Description
name	The name of the Unicode character.

The GetDouble Method

The GetDouble method returns the double value with the given name.

```
MapMessage.GetDouble(name As String) As Double
```

Name	Description
name	The name of the double property.

The GetFloat Method

The GetFloat method returns the float value with the given name.

```
MapMessage.GetFloat(name As String)
```

Name	Description
name	The name of the float property.

The GetInt Method

The GetInt method returns the long value with the given name

```
MapMessage.GetInt(name as a String) As Long
```

Name	Description
name	The name of the integer.

The GetLong Method

The GetLong method returns the currency value with the given name.

```
MapMessage.GetLong(name As String)As Currency
```

Name	Description
name	The name of the currency property.

The GetObject Method

The GetObject method is currently not supported.

The GetProperty Method

The GetProperty method returns the Visual Basic data type property value with the given name, into the Message.

```
MapMessage.GetProperty(name As String)
```

Name	Description
name	Name of the currency property.

The GetShort Method

The GetShort method returns the short value with the given name.

```
MapMessage.GetShort (name As String) As Integer
```

Name	Description
name	The name of the short currency property.

The GetString Method

Return the String value with the given name

```
MapMessage.GetString(name As String) As String
```

Name	Description
name	The name of the String property.

The ItemExists Method

The ItemExists method checks to verify if an item exists in the MapMessage.

```
MapMessage.ItemExists(name As String) As Boolean
```

Name	Description
name	The name of the item to check.

The PropertyExists Method

The PropertyExists method checks if a property value exists.

```
MapMessage.PropertyExists (name As String) As Boolean
```

Name	Description
name	The name of the property value.

The SetBoolean Method

The SetBoolean method sets a boolean property value with the given name, into the Message.

```
MapMessage.SetBoolean (name As String, value As Boolean)
```

Name	Description
name	The name of the property value.
value	The value to set in the message.

The SetByte Method

The SetByte method sets a byte value with the given name, into the Map.

```
MapMessage.SetByte(name As String, value As Byte)
```

Name	Description
name	The name of the byte property.
value	The byte property value to set in the message.

The SetBytes Method

The SetBytes method sets a byte array or a portion of value with the given name, into the Map.

```
MapMessage.SetBytes(name As String, value, [offset], [length])
```

Name	Description
name	The name of the Bytes property.
value	The byte array value to set in the Map.
offset	The initial offset within the byte array.
length	The number of bytes to use.

The SetChar Method

The SetChar method sets a Unicode character value with the given name, into the Map.

```
MapMessage.SetChar(name As String, value As Integer)
```

Name	Description
name	The name of the Unicode character.
value	The Unicode character value to set in the Map.

The SetDouble Method

The SetDouble method sets a double value with the given name, into the Map.

```
MapMessage.SetDouble(name As String, value As Double)
```

Name	Description
name	The name of the double property.
value	The double property value to set in the map.

The SetFloat Methods

The SetFloat method sets a float value with the given name, into the Map.

```
MapMessage.SetFloat(name As String, value As Single)
```

Name	Description
name	The name of the float property.
value	The the float value to set in the map.

The SetInt Method

Set an long value with the given name, into the Map

```
MapMessage.SetInt(name As String, value As Long)
```

Name	Description
name	The name of the long property.
value	The long property value to set in the message.

The SetLong Method

The SetLong method sets a currency value with the given name, into the Map.

```
MapMessage.SetLong(name As String, value As Currency)
```

Name	Description
name	The name of the currency property.
value	The currency property value to set in the message.

The SetObject Method

This method is currently not supported.

The SetProperty Method

Sets a Visual Basic data type property value with the given name, into the Message.

```
MapMessage.SetProperty(name As String, value)
```

Name	Description
name	The name of the property.
value	The value to set.

The SetShort Method

The SetShort method sets a short value with the given name, into the Map.

```
MapMessage.SetShort(name As String, value As Integer)
```

Name	Description
name	The name of the short property.
value	The integer property value to set in the map.

The SetString Method

The SetString method sets a String value with the given name, into the Map.

```
MapMessage.SetString(name As String, value As String)
```

Name	Description
name	The name of the string property.
value	The string value to set into the map.

5.7.10. Properties of the MapMessage Object

The CorrelationID Property

The CorrelationID property sets or returns correlation id values that are either JMS IQ Manager specific message ID's or application-specific strings.

```
Mapessage.CorrelationID = String
String = MapMessage.CorrelationID
```

The CorrelationIDAsBytes Property

Currently not supported.

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode= DeliveryModeConstant
DeliveryModeConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The Destination Property

Currently not supported.

The Expiration Property

The Expiration property sets or returns the message expiration time in milliseconds.

```
MapMessage.Expiration = Currency
Currency = MapMessage.Expiration
```

The MapNames Property

The MapNames property returns the Map message's names as an array of String. (read-only)

```
MapMessage.MapNames = Variant
Variant = MapMessage.MapNames
```

The MessageID Property

The MessageID property sets or returns the value of the uniquely assigned identifier in the message header.

```
MapMessage.MessageID = String
String = MapMessage.MessageID
```

The Priority Property

Currently not supported.

The Redelivered Property

The Redelivered property sets or returns an indication as to whether this message is redelivered.

```
MapMessage.Redelivered = Boolean
Boolean = MapMessage.Redelivered
```

The ReplyTo Property

The ReplyTo property sets or returns were a reply to this message will be sent. Destination object could be a Topic, Queue, TemporaryTopic, or a TemporaryQueue.

```
MapMessage.ReplyTo = Destination
Destination = MapMessage.ReplyTo
```

The Timestamp Property

The TimeStamp property sets or returns the message timestamp.

```
MapMessage.Timestamp = Currency
Currency = MapMessage.Timestamp
```

The Type Property

The Type property sets or returns the message type.

```
MapMessage.Type = String
String = MapMessage.Type
```

5.7.11. The Message Object

The Message interface is the root interface of all JMS messages. It defines the JMS header and the acknowledge method used for all messages.

Subclasses of the Message Object include: BytesMessage, MapMessage, TextMessage, and StreamMessage.

The Acknowledge Method

Acknowledges the receipt of current and previous messages.

```
Message.acknowledge
```

The ClearBody Method

Clears the body of a message, leaving the message header values and property entries intact.

```
Message.ClearBody
```

The ClearProperties Method

Clears the properties from a message, leaving the message header fields and body intact.

```
Message.ClearProperties
```

The GetProperty Method

Returns the Visual Basic data type property value with the given name, into the Message.

```
Message.GetProperty(name As String)
```

Name	Description
name	The name of the property.

The PropertyExists Method

Checks whether a value for a specific property exists.

```
Message.PropertyExists(name) As Boolean
```

Name	Description
name	The name of the property to check.

The SetProperty Method

The SetProperty method sets a Visual Basic data type property value with the given name, into the Message.

```
Message.SetProperty(name As String, value)
```

Name	Description
name	The name of the byte property.
value	The value to set.

5.7.12. Properties of the Message Object

The CorrelationID Property

The CorrelationID property sets or returns correlation id values that are either JMS IQ Manager specific message ID's or application-specific strings.

```
Message.CorrelationID = String
String = Message.CorrelationID
```

The CorrelationIDAsBytes Property

The CorrelationIDAsBytes is not currently supported.

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = MessageConstant
MessageConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The Destination Property

Currently not supported.

The Expiration Property

The Expiration property sets or returns the message expiration time in milliseconds.

```
Message.Expiration = Currency
Currency = Message.Expiration
```

The MessageID Property

The MessageID property sets or returns the value of the uniquely assigned identifier in the message header.

```
Message.MessageID = String
String = Message.MessageID
```

The Priority Property

Currently not supported.

The Redelivered Property

The Redelivered property sets or returns an indication as to whether this message is redelivered.

```
Message.Redelivered = Boolean
Boolean = Message.Redelivered
```

The ReplyTo Property

The ReplyTo property sets or returns were a reply to this message will be sent. Destination could be a Topic, Queue, TemporaryTopic, or a TemporaryQueue.

```
Message.ReplyTo = Destination
Destination = Message.ReplyTo
```

The Timestamp Property

The TimeStamp property sets or returns the message timestamp.

```
Message.Timestamp = Currency
Currency = Message.Timestamp
```

The Type Property

The Type property sets or returns the message type.

```
Message.Type = String
String = Message.Type
```

5.7.13. The MessageConsumer Object

The MessageConsumer receives messages from a destination. This is an abstract interface.

The Close Method

The Close method closes resources on behalf of a MessageConsumer. A Message Server may allocate resources on behalf of a MessageConsumer, it is recommended that you close any unused resources.

```
MessageConsumer.Close
```

The Receive Message Method

The ReceiveMessage method receives the next message produced or that arrives within the specified timeout interval for this message consumer.

```
MessageConsumer.Receive([timeOut]) As message
```

Name	Description
timeout	The timeout value (in milliseconds) of the MessageConsumer.

The ReceiveNoWait Method

The ReceiveNoWait method receives the next message if one is immediately available.

```
MessageConsumer.ReceiveNoWait() As message
```

5.7.14. Properties of the MessageConsumer Object

The MessageListener Property

This property is currently not supported.

The MessageSelector Property

The MessageSelector property returns this message consumer's message selector expression.

```
MessageConsumer.MessageSelector = String
String = MessageConsumer.MessageSelector
```

5.7.15. The MessageListener Object

This object is currently not supported.

The OnMessage Property

This function is currently not supported.

5.7.16. The MessageProducer Object

The MessageProducer sends messages to a destination. Sub interfaces of the MessageProducer Object include QueueSender and TopicPublisher. This is an abstract interface.

There are no methods associated with this object.

5.7.17. Properties of the MessageProducer Object

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = MessageProducerConstant
MessageProducerConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The DisableMessageID Property

The DisableMessageID property sets or returns whether message IDs are disabled.

```
MessageProducer.DisableMessageID = Boolean
Boolean = MessageProducer.DisableMessageID
```

The DisableMessageTimestamp Property

The DisableMessageTimestamp property sets or returns whether a messages timestamps are disabled.

```
MessageProducer.DisableMessageTimestamp = Boolean
Boolean = MessageProducer.DisableMessageTimestamp
```

The Priority Method

Currently not supported.

The TimeToLive Method

Returns or sets the default length of time in milliseconds from its dispatch time that a produced message should be retained by the message system, default value is msDefaultTimeToLive i.e. zero which is unlimited.

```
MessageProducer.TimeToLive = Currency
Currency = MessageProducer.TimeToLive
```

5.7.18. The Queue Object

A Queue object encapsulates a Message Server specific queue name.

The ToString Method

The ToString method returns a printed version of the queue name.

```
Queue.ToString() As String
```

5.7.19. Properties of the Queue Object

The QueueName Property

Returns the name of this queue. Read-only.

5.7.20. The QueueBrowser Object

This object is currently not supported.

5.7.21. The QueueConnection Object

A QueueConnection is an active connection to a PTP Message Server.

The CreateQueueSession Method

Create a QueueSession, where the possible values of acknowledgeMode are: msAutoAcknowledge, msClientAcknowledge and msDupsOkAcknowledge.

```
QueueConnection.CreateQueueSession(Transacted As Boolean,
acknowledgeMode As AcknowledgeModeConstants) As QueueSession
```

Name	Description
Transacted	If true, session is transacted.

Name	Description
acknowledgeMode	**msAutoAcknowledge** = 1 : The session automatically acknowledges a client's receipt of a message when it has either successfully returned from a call to **receive** or the MessageListener it has called to process the message successfully returns. **msClientAcknowledge** = 2 : A client acknowledges a message by calling the message's **acknowledge** method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session. **msDupsOkAcknowledge** = 3 : Instructs the session to lazily acknowledge the delivery of messages. This is likely to result in the delivery of some duplicate messages if the Message Service fails. It should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

The Start Method

Start (or restart) a Connection's delivery of incoming messages.

```
QueueConnection.Start
```

The Stop Method

Used to temporarily stop a Connection's delivery of incoming messages.

```
QueueConnection.Stop
```

5.7.22. Properties of QueueConnection Object

The ClientID Property

Returns or sets client identifier for this connection.

```
QueueConnection.ClientID = String
String = QueueConnection.ClientID
```

The MetaData Property

Not currently supported.

5.7.23. The QueueConnectionFactory Object

A client uses a QueueConnectionFactory to create QueueConnections with a PTP Message Server.

The CreateQueueConnection Method

Create a queue connection with a default user identity.

```
QueueConnectionFactory.CreateQueueConnection() As QueueConnection
```

5.7.24. Properties of the QueueConnectionFactory Object

The HostName Property

Returns or sets host name of the machine where Message Server is running.

```
QueueConnectionFactory.HostName = String
String = QueueConnectionFactory.HostName
```

The Port Property

Returns or sets port number at which Message Server is listening, default value is 24053.

```
QueueConnectionFactory.Port = Long
Long = QueueConnectionFactory
```

The PortOffset Property

Returns or sets port offset number of Message Server if more then one Message Server is running on same host machine and using same port number.

```
QueueConnectionFactory.PortOffset = Long
Long = QueueConnectionFactory.PortOffset
```

5.7.25. The QueueReceiver Object

A client uses a QueueReceiver for receiving messages that have been delivered to a queue.

The Close Method

Since a Message Server may allocate some resources on behalf of a MessageConsumer, you should close them when they are not needed.

```
QueueReceiver.Close
```

The Receive Method

Receive the next message produced or that arrives within the specified timeout interval for this message consumer

```
QueueReceiver.Receive([timeOut]) As message
```

Name	Description
timeout	The timeout value (in milliseconds) of the MessageConsumer.

The ReceiveNoWait Method

Receive the next message if one is immediately available.

```
QueueReceiver.ReceiveNoWait As message
```

5.7.26. Properties of the QueueReceiver Object

The MessageListener Property

This property is not currently supported.

The MessageSelector Property

Returns this message consumer's message selector expression.

```
QueueReceiver.MessageSelector = String
String = QueueReceiver.MessageSelector
```

The Queue Property

Returns the queue associated with this queue receiver.

```
QueueReceiver.Queue = Queue read only
Queue read only = QueueReceiver.Queue
```

5.7.27. The QueueRequestor Object

The QueueRequestor object provides a helper class to simplify making service requests.

The Create Method

Constructs the QueueRequestor.

```
QueueRequestor.Create(session As QueueSession, Queue As Queue)
```

Name	Description
session	The QueueSession.
queue	Queue name.

The Request Method

The Request method sends a request and waits for a reply.

```
QueueRequestor.Request(message As message) As message
```

Name	Description
message	The message.

5.7.28. The QueueSender Object

A client uses a QueueSender to send messages to a queue.

The Send Method

Sends a message to a queue for an unidentified message producer, specifying delivery mode, priority and time to live.

```
QueueSender.Send(message As message, [DeliveryMode], [Priority],
[TimeToLive], [Queue])
```

Name	Description
message	The message to be sent.
deliveryMode	The delivery mode to use.
priority	The priority for this message. Although not currently supported, it is suggested that you include the priority so as not to have to modify the code at a later date.
timeToLive	The message's lifetime (in milliseconds).
queue	The queue that this message should be sent to.

5.7.29. Properties of the QueueSender Object

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode= DeliveryModeConstant
DeliveryModeConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.

Name	Description
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The DisableMessageID Property

Returns or sets an indication of whether message IDs are disabled

```
QueueSender.DisableMessageID = Boolean
Boolean = QueueSender.DisableMessageID
```

The DisableMessageTimestamp Property

Returns or sets an indication of whether message timestamps are disabled.

```
QueueSender.DisableMessageTimestamp = Boolean
Boolean = QueueSender.DisableMessageTimestamp
```

The Priority Property

Currently not supported. It is recommended that you pass in the parameter as if supported, to prevent the need to modify code at a later date.

The Queue Property

Returns the queue associated with this queue sender (read-only).

```
QueueSender.Queue = read only
read only = QueueSender.Queue
```

The TimeToLive Property

Returns or sets the default length of time in milliseconds, from its dispatch time that a produced message should be retained by the message system. The default value is msDefaultTimeToLive, zero, which is unlimited.

```
QueueSender.TimeToLive = Currency
Currency = QueueSender.TimeToLive
```

5.7.30. The QueueSession Object

A QueueSession provides methods for creating QueueReceivers, QueueSenders, QueueBrowsers, and TemporaryQueues.

The Commit Method

Commit all messages done in this transaction and releases any locks currently held.

```
QueueSession.Commit
```

The CreateBrowser Method

Create a QueueBrowser to peek at the messages on the specified queue

```
QueueSession.CreateBrowser.(Queue As Queue, [MessageSelector]) As
QueueBrowser
```

Name	Description
queue	The queue to access.
messageSelector	Only messages with properties matching the message selector expression are delivered.

The CreateBytesMessage Method

Create a BytesMessage.

```
QueueSession.CreateBytesMessage() As BytesMessage
```

The CreateMapMessage Method

Create a MapMessage.

```
QueueSession.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
QueueSession.CreateMessage() As message
```

The CreateQueue Method

Create a queue identity given a Queue name.

```
QueueSession.CreateQueue(QueueName As String) As Queue
```

Name	Description
QueueName	The name of the queue.

The CreateReceiver Method

Create a QueueReceiver to receive messages for the specified queue.

```
QueueSession.CreateReceiver(Queue As Queue, [MessageSelector]) As
QueueReceiver
```

Name	Description
Queue	The queue to access.
MessageSelector	Only messages with properties matching the message selector expression are delivered.

The CreateSender Method

Create a QueueSender to send messages to the specified queue.

```
QueueSession.CreateSender(Queue As Queue) As QueueSender
```

Name	Description
Queue	The name of the queue.

The CreateStreamMessage Method

Create a StreamMessage.

```
QueueSession.StreamMessage() As StreamMessage
```

The CreateTemporaryQueue Method

Create a temporary queue.

```
QueueSession.CreateTemporaryQueue() As TemporaryQueue
```

The CreateTextMessage Method

Create a TextMessage.

```
QueueSession.CreateTextMessage([Text]) As TextMessage
```

Name	Description
Text	The string used to initialize this message.

The Recover Method

Stops message delivery int his session, and restart sending messages with the oldest unacknowledged message.

```
QueueSession.Recover()
```

The Rollback Method

Rolls back any messages done in this transaction and releases any lock currently held.

```
QueueSession.Rollback()
```

The Run Method

Only intended to be used by Application Servers (optional operation).

```
QueueSession.Run()
```

5.7.31. Properties of the QueueSender Object

The MessageListener Property

This property is not currently supported.

The Transacted Property

Returns an indication that the session is in transacted mode.

```
QueueSession.Transacted = Boolean
Boolean = QueueSession.Transacted
```

5.7.32. The Session Object

The Session object is a single threaded context for producing and consuming messages

The Commit Method

Commit all messages done in this transaction and releases any locks currently held.

```
Session.Commit
```

The CreateBytesMessage Method

The CreateBytesMessage method creates a BytesMessage.

```
Session.CreateBytesMessage() As BytesMessage
```

The CreateMapMessage Method

The CreateMapMessage method creates a MapMessage.

```
Session.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
Session.CreateMessage() As message
```

The CreateStreamMessage Method

Create a StreamMessage.

```
Session.CreateStreamMessage() As StreamMessage
```

The CreateTextMessage Method

Create a TextMessage.

`Session.CreateTextMessage([`*`Text`*`])`

Name	Description
Text	The string used to initialize this message.

The Recover Method

The Recover method stops message delivery in this session, and restarts sending messages beginning with the oldest unacknowledged message.

```
Session.Recover
```

The Rollback Method

The Rollback method rollbacks any messages done in this transaction and releases any locks currently held.

```
Session.Rollback
```

The Run Method

The Run method is an optional operation that is only intended to be used by the JMS IQ Manager.

```
Session.Run
```

5.7.33. Properties of the Session Object

The MessageListener Property

This property is currently not supported.

The Transacted Property

The Transacted property returns an indication that the session is in transacted mode.

```
Session.Transacted = Boolean
Boolean = Session.Transacted
```

5.7.34. The StreamMessage Object

The StreamMessage object is used to send a stream of primitive data types.

The Acknowledge Method

Acknowledges the receipt of current and previous messages.

```
StreamMessage.acknowledge
```

The ClearBody Method

Clears the body of a message, leaving the message header values and property entries intact.

```
StreamMessage.ClearBody
```

The ClearProperties Method

Clears the properties from a message, leaving the message header fields and body intact.

```
StreamMessage.ClearProperties
```

The GetProperty Method

Returns the Visual Basic data type property value with the given name, into the Message.

```
StreamMessage.GetProperty(name As String)
```

Name	Description
name	The name of the property.

The PropertyExists Method

Checks whether a value for a specific property exists.

```
StreamMessage.PropertyExists(name As String) As Boolean
```

Name	Description
name	The name of the property to check.

The ReadBoolean Method

Reads a Boolean value from the bytes message stream.

```
StreamMessage.ReadBoolean() As Boolean
```

The ReadByte Method

Reads a signed 8-bit value from the bytes message stream.

```
StreamMessage.ReadByte() As Byte
```

The ReadBytes Method

Reads a portion of the bytes message stream.

```
StreamMessage.ReadBytes(value, [length As Long]) As Long
```

Name	Description
value	The buffer the data is read into.
length	The number of bytes array read. This number must be less than or equal to value.length.

The ReadChar Method

Reads a Unicode character value from the bytes message stream.

```
StreamMessage.ReadChar() As Integer
```

The ReadDouble Method

Reads a double from the bytes message stream.

```
StreamMessage.ReadDouble() As Double
```

The ReadFloat Method

Reads a float from the bytes message stream.

```
StreamMessage.ReadFloat() As Single
```

The ReadInt Method

Reads a signed 32-bit integer from the bytes message stream.

```
StreamMessage.ReadInt() As Long
```

The ReadLong Method

Reads a signed 64-bit integer from the bytes message stream.

```
SteamMessage.ReadLong() As Currency
```

The ReadObject Method

Currently not supported.

The ReadShort Method

Reads a signed 16-bit number from the bytes message stream.

```
StreamMessage.ReadShort() As Integer
```

The ReadString Method

The ReadString method reads in a string from the stream message.

```
StreamMessage.ReadString() As String
```

The Reset Method

The Reset method puts the message body in read-only mode, and repositions the stream of bytes to the beginning.

```
StreamMessage.Reset
```

The SetProperty Method

Set a Visual Basic data type property value with the given name, into the Message.

```
StreamMessage.SetProperty(name As String, value)
```

Name	Description
name	The name of the property.
value	The value to set.

The WriteBoolean Method

WriteBoolean writes to the bytes message stream as a 1-byte value.

```
StreamMessage.WriteBoolean(value as Boolean)
```

Name	Description
value	The boolean value to be written.

The WriteByte Method

WriteByte writes to the bytes message stream as a 1-byte value

```
StreamMessage.WriteByte(value As Byte)
```

Name	Description
value	The byte value to be written.

The WriteBytes Method

WriteBytes writes a byte array or string to the bytes message stream

```
StreamMessage.WriteBytes(value, [offset], [length])
```

Name	Description
value	The byte array value to be written.
offset	The initial offset within the byte array.
length	The number of bytes to use.

The WriteChar Method

WriteChar writes a char to the bytes message stream as a 2-byte value, high byte first

```
StreamMessage.WriteChar(value As Integer)
```

Name	Description
value	The char value to be written.

The WriteDouble Method

Uses the doubleToLongBits method (class Double) to convert the double parameter value to a long, and then writes an 8-byte long value to the bytes message stream (high byte is written first).

```
StreamMessage.WriteDouble(value As Double)
```

Name	Description
value	The double value to write to the message stream.

The WriteFloat Method

Convert the float argument to an long, and then writes that long value to the bytes message stream as a 4-byte quantity, high byte first

```
StreamMessage.WriteFloat(value As Single)
```

Name	Description
value	The float value to be written.

The WriteInt Method

Write an int to the bytes message stream as four bytes, high byte first.

```
StreamMessage.WriteInt(value As Long)
```

Name	Description
value	The int value to be written.

The WriteLong Method

WriteLong writes a long to the bytes message stream as eight bytes, high byte first

```
StreamMessage.WriteLong(value As Currency)
```

Name	Description
value	The long value to be written as currency.

The WriteObject Method

Currently not supported

The WriteShort Method

WriteShort writes a short to the bytes message stream as two bytes, high byte first

```
StreamMessage.WriteShort(value As Integer)
```

Name	Description
value	The short that is written.

The WriteString Method

Write a string to the message stream.

```
StreamMessage.WriteString(value as String)
```

Name	Description
value	The String value that is written.

5.7.35. Properties of the StreamMessage Object

The CorrelationID Property

The CorrelationID property sets or returns correlation id values that are either JMS IQ Manager specific message ID's or application-specific strings.

```
StreamMessage.CorrelationID = String
String = StreamMessage.CorrelationID
```

The CorrelationIDAsBytes Property

The CorrelationIDAsBytes property sets or returns the correlation ID as an array of bytes for the message.

```
StreamMessage.CorrelationIDAsBytes = Variant
Variant = StreamMessage.CorrelationIDAsBytes
```

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = StreamMessageConstant
StreamMessageConstant = DeliveryMode
```

Name	Description
msDefaultDeliveryMode	Default DeliveryMode delivery mode.
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The Destination Property

The Destination property sets or returns the destination for this message.

```
StreamMessage.Destination = Destination
Destination = StreamMessage.Destination
```

The Expiration Property

The Expiration property sets or returns the message expiration time in milliseconds.

```
StreamMessage.Expiration = Currency
Currency = StreamMessage.Expiration
```

The MessageID Property

The MessageID property sets or returns the value of the uniquely assigned identifier in the message header.

```
StreamMessage.MessageID = String
String = StreamMessage.MessageID
```

The Priority Property

The Priority property sets or returns the priority that is assigned to this message. Possible numbers are 1 - 9.

```
StreamMessage.Priority = PriorityConstant
PriorityConstant = StreamMessage.Priority
```

Name	Description
msPriorityZero through msPriorityNine	Level of a messages priority. Values are 0-9 with 0 being the lowest priority and 9 the highest. Four is the message priority default value.

The Redelivered Property

The Redelivered property sets or returns an indication as to whether this message is redelivered.

```
StreamMessage.Redelivered = Boolean
Boolean = StreamMessage.Redelivered
```

The ReplyTo Property

The ReplyTo property sets or returns were a reply to this message will be sent.

```
StreamMessage.ReplyTo = Destination
Destination = StreamMessage.ReplyTo
```

The Timestamp Property

The TimeStamp property sets or returns the message timestamp.

```
StreamMessage.Timestamp = Currency
Currency = StreamMessage.Timestamp
```

The Type Property

The Type property sets or returns the message type.

```
StreamMessage.Type = String
String = StreamMessage.Type
```

5.7.36. The TemporaryQueue Object

A TemporaryQueue is a unique Queue object created for the duration of a QueueConnection.

The Delete Method

The Delete method deletes the temporary queue.

```
TemporaryQueue.Delete
```

The ToString Method

The ToString method returns a printed version of the queue name

```
TemporaryQueue.ToString() As String
```

5.7.37. Properties of the TemporaryQueue Object

The QueueName Property

The QueueName property returns the name of this queue.

```
TemporaryQueue.QueueName = String
String = TemporaryQueue.QueueName
```

5.7.38. The TemporaryTopic Object

A TemporaryTopic is a unique Topic object created for the duration of a TopicConnection.

The Delete Method

The Delete method deletes the temporary topic.

```
TemporaryTopic.Delete
```

The ToString Method

The ToString method returns a printed version of the topic name

```
TemporaryTopic.ToString
```

5.7.39. Properties of the TemporaryTopic Object

The TopicName Property

The TopicName property returns the name of this topic.

```
TemporaryTopic.TopicName = String
String = TemporaryTopic.TopicName
```

5.7.40. The TextMessage Object

A TextMessage is used to send a message containing a String.

The Acknowledge Method

Acknowledges the receipt of current and previous messages.

```
TextMessage.acknowledge
```

The ClearBody Method

Clears the body of a message, leaving the message header values and property entries intact.

```
TextMessage.ClearBody
```

The ClearProperties Method

Clears the properties from a message, leaving the message header fields and body intact.

```
TextMessage.ClearProperties
```

The GetProperty Method

Returns the Visual Basic data type property value with the given name, into the Message.

```
TextMessage.GetProperty(name As String)
```

Name	Description
name	The name of the property.

The PropertyExists Method

Checks whether a value for a specific property exists.

```
TextMessage.PropertyExists(name As String) As Boolean
```

Name	Description
name	The name of the property to check.

The SetProperty Method

Set a Visual Basic data type property value with the given name, into the Message.

```
TextMessage.SetProperty(name As String, value)
```

Name	Description
name	The name of the byte property.
value	The value to set.

5.7.41. Properties of the Message Object

The CorrelationID Property

The CorrelationID property sets or returns correlation id values that are either JMS IQ Manager specific message ID's or application-specific strings.

```
TextMessage.CorrelationID = String
String = TextMessage.CorrelationID
```

The CorrelationIDAsBytes Property

The CorrelationIDAsBytes property sets or returns the correlation ID as an array of bytes for the message.

```
Message.CorrelationIDAsBytes = Variant
Variant = Message.CorrelationIDAsBytes
```

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = BytesMessageConstant
BytesMessageConstant = DeliveryMode
```

Name	Description
msDefaultBytesMessage	Default BytesMessage delivery mode.
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The Destination Property

The Destination property sets or returns the destination for this message.

```
TextMessage.Destination = Destination
Destination = TextMessage.Destination
```

The Expiration Property

The Expiration property sets or returns the message expiration time in milliseconds.

```
Message.Expiration = Currency
Currency = Message.Expiration
```

The MessageID Property

The MessageID property sets or returns the value of the uniquely assigned identifier in the message header.

```
TextMessage.MessageID = String
String = TextMessage.MessageID
```

The Priority Property

The Priority property sets or returns the priority that is assigned to this message. Possible numbers are 1 - 9. (Not currently supported, but suggested that the value be entered, to prevent code changes later.)

```
TextMessage.Priority = PriorityConstant
PriorityConstant = TextMessage.Priority
```

Name	Description
msPriorityZero through msPriorityNine	Level of a messages priority. Values are 0-9 with 0 being the lowest priority and 9 the highest. Four is the message priority default value.

The Redelivered Property

The Redelivered property sets or returns an indication as to whether this message is redelivered.

```
TextMessage.Redelivered = Boolean
Boolean = TextMessage.Redelivered
```

The ReplyTo Property

The ReplyTo property sets or returns where a reply to this message will be sent.

```
TextMessage.ReplyTo = Destination
Destination = TextMessage.ReplyTo
```

The Text Property

The Text property sets or returns the string containing the message's data.

```
TextMessage.Text = String
String = TextMessage.Text
```

The Timestamp Property

The TimeStamp property sets or returns the message timestamp.

```
TextMessage.Timestamp = Currency
Currency = TextMessage.Timestamp
```

The Type Property

The Type property sets or returns the message type.

```
TextMessage.Type = String
String = TextMessage.Type
```

5.7.42. The Topic Object

A Topic object encapsulates a Message Server specific topic name.

The ToString Method

The ToString method returns a printed version of the topic name

```
Topic.ToString() As String
```

5.7.43. Properties of the Topic Object

The TopicName Property

The TopicName property returns the name of this topic.

```
Topic.TopicName = String
String = Topic.TopicName
```

5.7.44. The TopicConnection Object

A TopicConnection is an active connection to a Pub/Sub Message Server.

The CreateTopicSession Method

Create a TopicSession

```
TopicConnection.CreateTopicSession(Transacted As Boolean,
acknowledgeMode As AcknowledgeModeConstants) As TopicSession
```

Name	Description
Transacted	If true, session is transacted.
acknowledgeMode	**msAutoAcknowledge** = 1 : The session automatically acknowledges a client's receipt of a message when it has either successfully returned from a call to receive or the MessageListener it has called to process the message successfully returns. **msClientAcknowledge** = 2 : A client acknowledges a message by calling the message's acknowledge method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session. **msDupsOkAcknowledge** = 3 : Instructs the session to lazily acknowledge the delivery of messages. This is likely to result in the delivery of some duplicate messages if the Message Service fails. It should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

The Start Method

The Start method starts or restarts a connection's delivery of incoming messages.

```
TopicConnection.Start
```

The Stop Method

The Stop method temporarily stops a Connection's delivery of incoming messages.

TopicConnection.Stop

5.7.45. Properties of the TopicConnection

The ClientID Property

The ClientID property sets or returns a client identifier for this connection.

```
TopicConnection.ClientID = String
String = TopicConnection.ClientID
```

The MetaData Property

This property is currently not supported.

5.7.46. The TopicConnectionFactory Object

A client uses a TopicconnectionFactory to create TopicConnections with a Pub/Sub Message Server.

The CreateTopicConnection Method

Create a topic connection with default user identity.

```
TopicConnectionFactory.CreateTopicConnection() As TopicConnection
```

5.7.47. Properties of the TopicConnectionFactory

The HostName Property

The HostName property sets or returns the host name of the machine that the JMS IQ Server is running on.

```
TopicConnectionFactory.HostName = String
String = TopicConnectionFactory.HostName
```

The Port Property

The Port property sets or returns the port number that the JMS IQ Server is listening on, default value is 7555

```
TopicConnectionFactory = Long
Long = TopicConnectionFactory
```

The PortOffset Property

The PortOffset sets or returns the port offset number of the JMS IQ Server if more then one Message Server is running on same host machine and using same port number.

```
TopicConnectionFactory.PortOffset = Long
Long = TopicConnectionFactory
```

5.7.48. The TopicPublisher Object

A Client uses a TopicPublisher for publishing messages on a topic.

The Publish Method

The Publish method publishes a Message to a topic for an unidentified message producer, specifying delivery mode, priority and time to live.

```
TopicPublisher.Publish(message As message, [DeliveryMode],
[Priority], [TimeToLive], [Topic])
```

Name	Description
message	The message to publish.
deliveryMode	The delivery mode to use.
priority	The priority for this message. While not currently supported, it is recommended to implement now, to prevent code changes later.
timeToLive	The message's lifetime (in milliseconds).
topic	The topic to publish this message to.

5.7.49. Properties of TopicPublisher

The DeliveryMode Property

The DeliveryMode property sets or returns the delivery mode for this message as either msNonPersistent, or msPersistent. The default value is msDefaultDeliveryMode (msPersistent).

```
DeliveryMode = BytesMessageConstant
BytesMessageConstant = DeliveryMode
```

Name	Description
msPersistent	This mode instructs the JMS IQ Manager to log the message to storage as part of the client's send operation.
msNon_Persistent	This is the lowest overhead delivery mode because it does not require the message to be logged to storage. the JMS IQ Manager delivers a Non_Persistent message with a one-time-only delivery. If the JMS IQ Manager goes down, the message will be lost.

The DisableMessageID Property

The DisableMessageID property sets or returns whether message IDs are disabled.

```
TopicPublisher.DisableMessageID = Boolean
Boolean = TopicPublisher.DisableMessageID
```

The DisableMessageTimestamp Property

The DisableMessageTimestamp sets or returns an indication of whether message timestamps are disabled.

```
TopicPublisher.DisableMessageTimestamp = Boolean
Boolean = TopicPublisher.DisableMessageTimestamp
```

The Priority Property

The Priority property sets or returns the priority that is assigned to this message. Possible numbers are 1 - 9. While not currently supported, it is suggested that the desired value be entered now, to prevent code changes later.

```
TopicPublisher.Priority = PriorityConstant
PriorityConstant = TopicPublisher.Priority
```

Name	Description
msPriorityZero through msPriorityNine	Level of a messages priority. Values are 0-9 with 0 being the lowest priority and 9 the highest. Four is the message priority default value.

The TimeToLive Property

The TimeToLive property sets and returns the default length of time in milliseconds from its dispatch time that a produced message should be retained by the message system.

```
TopicPublisher.TimeToLive = MessageConstant
MessageConstant = TopicPublisher.TimeToLive
```

Name	Description
msDefaultTimeToLive	The default value of 0 = Unlimited

The Topic Property

The Topic property returns the topic associated with this publisher.

```
TopicPublisher.Topic = read-only
read-only = TopicPublisher.Topic
```

5.7.50. The TopicRequestor Object

The TopicRequestor object provides a helper class to simplify making service requests.

The Create Method

Constructs the TopicRequestor.

```
TopicRequestor.Create(session As TopicSession, Topic As Topic)
```

Name	Description
session	The name of the topic session.
topic	The name of the topic.

The Request Method

Send a request and wait for a reply

```
TopicRequestor.Request(message As message) As message
```

Name	Description
message	The message text.

5.7.51. The TopicSession Object

A TopicSession provides methods for creating TopicPublishers, TopicSubscribers, and TemporaryTopics.

The Commit Method

The Commit method commits all messages done in this transaction and releases any resources, currently held.

```
TopicSession.Commit
```

The CreateBytesMessage Method

The CreateBytesMessage method creates a BytesMessage.

```
TopicSession.CreateBytesMessage() As BytesMessage
```

The CreateDurableSubscriber Method

The CreateDurableSubscriber method creates a durable Subscriber to the specified topic.

```
TopicSession.CreateDurableSubscriber(Topic As Topic, name As String,
[MessageSelector], [NoLocal] As TopicSubscriber
```

Name	Description
`topic`	The non-temporary topic to subscribe to.
name	The name used to identify this subscription.
messageSelector	Only messages with properties matching the message selector expression are delivered. You may use a null.
noLocal	If set, noLocal inhibits the delivery of messages published by its own connection.

The CreateMapMessage Method

The CreateMapMessage method creates a MapMessage.

```
TopicSession.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
TopicSession.CreateMessage() As message
```

The CreatePublisher Method

Create a Publisher for the specified topic.

```
TopicSession.CreatePublisher(Topic As Topic) As TopicPublisher
```

Name	Description
`topic`	The topic to which to publish, or null, if this is an unidentified producer.

The CreateStreamMessage Method

Create a StreamMessage.

```
TopicSession.CreateStreamMessage() As StreamMessage
```

The CreateSubscriber Method

Create a non-durable Subscriber to the specified topic

```
TopicSession.CreateSubscriber(Topic As Topic, [MessageSelector],
[NoLocal]) As TopicSubscriber
```

Name	Description
`topic`	The topic to subscribe to.
`messageSelector`	Only messages with properties matching the message selector expression are delivered. This value may be null.
`noLocal`	If set, inhibits the delivery of messages published by its own connection.

The CreateTemporaryTopic Method

The CreateTemporaryTopic method creates a temporary topic.

```
TopicSession.CreateTemporaryTopic() As TemporaryTopic
```

The CreateTextMessage Method

The CreateTextMessage method creates TextMessage.

```
TopicSession.CreateTextMessage([Text]) As TextMessage
```

Name	Description
`text`	The string used to initialize this message.

The CreateTopic Method

Create a topic identity given a Topic name.

```
TopicSession.CreateTopic(TopicName As String) As Topic
```

Name	Description
`topicName`	The name of this topic.

The Recover Method

The Recover method creates a topic identity given a Topic name.

```
TopicSession.Recover
```

The Rollback Method

The Rollback method rolls back any messages done in this transaction and releases any locks currently held.

```
TopicSession.Rollback
```

The Run Method

The Run method is an optional method

```
TopicSession.Run
```

The Unsubscribe Method

The Unsubscribe method unsubscribes a durable subscription that has been created by a client.

```
TopicSession.Unsubscribe(name As String)
```

Name	Description
name	The name used to identify this subscription.

5.7.52. Properties of the TopicSession Object

The MessageListener Property

This property is currently not supported.

The Transacted Property

The Transacted property returns an indication that the session is in transacted mode.

```
TopicSession.Transacted = Boolean
Boolean = TopicSession.Transacted
```

5.7.53. The TopicSubscriber Object

A client uses a TopicSubscriber for receiving messages that have been published to a topic.

The Close Method

Since a Message Server may allocate resources on behalf of a MessageConsumer, clients should close any unneeded resources.

```
TopicSubscriber.Close
```

The Receive Method

The Receive method receives the next message produced or that arrives within the specified timeout interval for this message consumer

```
TopicSubscriber.Receive([timeOut]) As message
```

Name	Description
timeout	The timeout value (in milliseconds).

The ReceiveNoWait Method

The ReceiveNoWait method receives the next message if one is immediately available.

```
TopicSubscriber.ReceiveNoWait() As message
```

5.7.54. Properties of the TopicSubscriber Object

The MessageListener Property

This property is currently not supported.

The MessageSelector Property

The MessageSelector property returns this message consumer's message selector expression.

```
TopicSubscriber.MessageSelector = String
String = TopicSubscriber.MessageSelector
```

The NoLocal Property

The NoLocal property returns the NoLocal attribute for this TopicSubscriber.

```
TopicSubscriber.NoLocal = Boolean
Boolean = TopicSubscriber.NoLocal
```

The Topic Property

The Topic property returns the topic associated with this subscriber.

```
TopicSubscriber.Topic = Topic (read-only)
Topic (read-only) = TopicSubscriber.Topic
```

5.7.55. The XAQueueConnection Object

An XAQueueConnection provides the same create options as QueueConnection. The only difference is that an XAQueueConnection is by definition transacted.

The CreateQueueSession Method

Create a QueueSession, where the possible values of acknowledgeMode are: msAutoAcknowledge, msClientAcknowledge and msDupsOkAcknowledge.

```
XAQueueConnection.CreateQueueSession(Transacted As Boolean,
acknowledgeMode As AcknowledgeModeConstants) As QueueSession
```

Name	Description
Transacted	If true, session is transacted.
acknowledgeMode	**msAutoAcknowledge** = 1 : The session automatically acknowledges a client's receipt of a message when it has either successfully returned from a call to receive or the MessageListener it has called to process the message successfully returns. **msClientAcknowledge** = 2 : A client acknowledges a message by calling the message's acknowledge method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session. **msDupsOkAcknowledge** = 3 : Instructs the session to lazily acknowledge the delivery of messages. This is likely to result in the delivery of some duplicate messages if the Message Service fails. It should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

The CreateXAQueueSession Method

Create an XAQueueSession.

```
XAQueueConnection.CreateXAQueueSession() As XAQueueSession
```

The Start Method

Start (or restart) a Connection's delivery of incoming messages.

```
XAQueueConnection.Start
```

The Stop Method

Used to temporarily stop a Connection's delivery of incoming messages.

```
XAQueueConnection.Stop
```

5.7.56. Properties of XAQueueConnection Object

The ClientID Property

Returns or sets client identifier for this connection.

```
XAQueueConnection.ClientID = String
String = XAQueueConnection.ClientID
```

The MetaData Property

Not currently supported.

5.7.57. The XAQueueConnectionFactory Object

An XAQueueConnectionFactory provides the same create options as a QueueConnectionFactory, by definition, it is transacted.

The CreateQueueConnection Method

Create a queue connection with a default user identity.

```
XAQueueConnectionFactory.CreateQueueConnection() As QueueConnection
```

The CreateXAQueueConnection Method

Create an XA queue connection with a default user identity.

```
XAQueueConnectionFactory.CreateXAQueueConnection() As
XAQueueConnection
```

5.7.58. Properties of the QueueConnectionFactory Object

The HostName Property

Returns or sets host name of the machine where Message Server is running.

```
XAQueueConnectionFactory.HostName = String
String = XAQueueConnectionFactory.HostName
```

The Port Property

Returns or sets port number at which Message Server is listening, default value is 24053.

```
XAQueueConnectionFactory.Port = Long
Long = XAQueueConnectionFactory
```

The PortOffset Property

Returns or sets port offset number of Message Server if more then one Message Server is running on same host machine and using same port number.

```
XAQueueConnectionFactory.PortOffset = Long
Long = XAQueueConnectionFactory.PortOffset
```

5.7.59. The XAQueueSession Object

An XAQueueSession provides a regular QueueSession, which can be used to create QueueReceivers, QueueSenders, and QueueBrowsers.

The Commit Method

Commit all messages done in this transaction and releases any locks currently held.

```
XAQueueSession.Commit
```

The CreateBytesMessage Method

Create a BytesMessage.

```
XAQueueSession.CreateBytesMessage() As BytesMessage
```

The CreateMapMessage Method

Create a MapMessage.

```
XAQueueSession.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
XAQueueSession.CreateMessage() As message
```

The CreateStreamMessage Method

Create a StreamMessage.

```
XAQueueSession.StreamMessage() As StreamMessage
```

The CreateTextMessage Method

Create a TextMessage.

```
XAQueueSession.CreateTextMessage([Text]) As TextMessage
```

Name	Description
Text	The string used to initialize this message.

The Recover Method

Stops message delivery int his session, and restart sending messages with the oldest unacknowledged message.

```
XAQueueSession.Recover()
```

The Rollback Method

Rolls back any messages done in this transaction and releases any lock currently held.

```
XAQueueSession.Rollback()
```

The Run Method

Only intended to be used by Application Servers (optional operation).

```
XAQueueSession.Run()
```

5.7.60. Properties of the QueueSender Object

The MessageListener Property

This property is not currently supported.

The QueueSession Property

Returns the queue session associated with this XAQueueSession.

```
XAQueueSession.QueueSession = QueueSession (read-only)
QueueSession (read-only)= XAQueueSession.QueueSession
```

The Transacted Property

Returns an indication that the session is in transacted mode.

```
XAQueueSession.Transacted = Boolean
Boolean = XAQueueSession.Transacted
```

5.7.61. The XASession Object

The XASession extends the capability of Session by adding access to a Message Server's support for Transaction, using the Compensating Resource Manager (CRM), handled under the Distributed Transaction Coordinator (DTC).

The Commit Method

Commit all messages done in this transaction and releases any locks currently held.

```
XASession.Commit
```

The CreateBytesMessage Method

The CreateBytesMessage method creates a BytesMessage.

```
XASession.CreateBytesMessage() As BytesMessage
```

The CreateMapMessage Method

The CreateMapMessage method creates a MapMessage.

```
XASession.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
XASession.CreateMessage() As message
```

The CreateStreamMessage Method

Create a StreamMessage.

```
XASession.CreateStreamMessage() As StreamMessage
```

The CreateTextMessage Method

Create a TextMessage.

```
XASession.CreateTextMessage([Text])
```

Name	Description
Text	The string used to initialize this message.

The Recover Method

The Recover method stops message delivery in this session, and restarts sending messages beginning with the oldest unacknowledged message.

```
XASession.Recover
```

The Rollback Method

The Rollback method rollbacks any messages done in this transaction and releases any locks currently held.

```
XASession.Rollback
```

The Run Method

The Run method is an optional operation that is only intended to be used by the JMS IQ Manager.

```
XASession.Run
```

5.7.62. Properties of the Session Object

The MessageListener Property

This property is currently not supported.

The Transacted Property

The Transacted property returns an indication that the session is in transacted mode.

```
XASession.Transacted = Boolean
Boolean = XASession.Transacted
```

5.7.63. The XATopicConnection Object

An XATopicConnection provides the same create options as TopicConnection, but by definition is transacted.

The CreateTopicSession Method

Create a TopicSession

```
XATopicConnection.CreateTopicSession(Transacted As Boolean,
acknowledgeMode As AcknowledgeModeConstants) As TopicSession
```

Name	Description
Transacted	If true, session is transacted.
acknowledgeMode	**msAutoAcknowledge** = 1 : The session automatically acknowledges a client's receipt of a message when it has either successfully returned from a call to receive or the MessageListener it has called to process the message successfully returns. **msClientAcknowledge** = 2 : A client acknowledges a message by calling the message's acknowledge method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session. **msDupsOkAcknowledge** = 3 : Instructs the session to lazily acknowledge the delivery of messages. This is likely to result in the delivery of some duplicate messages if the Message Service fails. It should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

The Start Method

The Start method starts or restarts a connection's delivery of incoming messages.

```
XATopicConnection.Start
```

The Stop Method

The Stop method temporarily stops a Connection's delivery of incoming messages.

```
XATopicConnection.Stop
```

5.7.64. Properties of the TopicConnection

The ClientID Property

The ClientID property sets or returns a client identifier for this connection.

```
XATopicConnection.ClientID = String
String = XATopicConnection.ClientID
```

The MetaData Property

This property is currently not supported.

5.7.65. The XATopicConnectionFactory Object

An XATopicConnectionFactory provides the same create options as TopicConnectionFactory, but by definition is transacted.

The CreateTopicConnection Method

Create a topic connection with default user identity.

```
XATopicConnectionFactory.CreateTopicConnection() As TopicConnection
```

The CreateXATopicConnection Method

Create an XA topic connection with default user identity.

```
XATopicConnectionFactory.CreateTopicConnection() As TopicConnection
```

5.7.66. Properties of the TopicConnectionFactory

The HostName Property

The HostName property sets or returns the host name of the machine that the JMS IQ Server is running on.

```
XATopicConnectionFactory.HostName = String
String = XATopicConnectionFactory.HostName
```

The Port Property

The Port property sets or returns the port number that the JMS IQ Server is listening on, default value is 7555

```
XATopicConnectionFactory = Long
Long = XATopicConnectionFactory
```

The PortOffset Property

The PortOffset sets or returns the port offset number of the JMS IQ Server if more then one Message Server is running on same host machine and using same port number.

```
XATopicConnectionFactory.PortOffset = Long
Long = XATopicConnectionFactory
```

5.7.67. The XATopicSession Object

An XA TopicSession provides a regular TopicSession which can be used to create TopicSubscribers and TopicPublishers.

The Commit Method

The Commit method commits all messages done in this transaction and releases any resources, currently held.

```
XATopicSession.Commit
```

The CreateBytesMessage Method

The CreateBytesMessage method creates a BytesMessage.

```
XATopicSession.CreateBytesMessage() As BytesMessage
```

The CreateMapMessage Method

The CreateMapMessage method creates a MapMessage.

```
XATopicSession.CreateMapMessage() As MapMessage
```

The CreateMessage Method

Create a Message.

```
XATopicSession.CreateMessage() As message
```

The CreateStreamMessage Method

Create a StreamMessage.

```
XATopicSession.CreateStreamMessage() As StreamMessage
```

The CreateTextMessage Method

The CreateTextMessage method creates TextMessage.

```
XATopicSession.CreateTextMessage([Text]) As TextMessage
```

Name	Description
`text`	The string used to initialize this message.

The Recover Method

The Recover method creates a topic identity given a Topic name.

```
XATopicSession.Recover
```

The Rollback Method

The Rollback method rolls back any messages done in this transaction and releases any locks currently held.

```
TopicSession.Rollback
```

The Run Method

The Run method is an optional method

```
TopicSession.Run
```

5.7.68. Properties of the TopicSession Object

The MessageListener Property

This property is currently not supported.

The TopicSession Property

Returns the topic session associated with this XATopicSession.

```
XATopicSession.TopicSession = TopicSession (read-only)
TopicSession (read-only) = TopicSession.TopicSession
```

The Transacted Property

The Transacted property returns an indication that the session is in transacted mode.

```
TopicSession.Transacted = Boolean
Boolean = TopicSession.Transacted
```

5.8 The C API for SeeBeyond JMS

The **C** API for SeeBeyond JMS, in the library **stc_msclient.dll**, is a wrapper around the **C++** API for SeeBeyond JMS. This section provides the following information:

- **Architectural Overview** on page 348
- **Structures** on page 349
- **Interfaces** on page 352
- Detailed information on the following:
  - Function prototypes for each interface
  - **Destructor Methods** on page 438
  - **The WString Helper Interface** on page 444
  - **The WStringList Helper Interface** on page 446
- **Error Codes and Messages in the C API for JMS** on page 447.

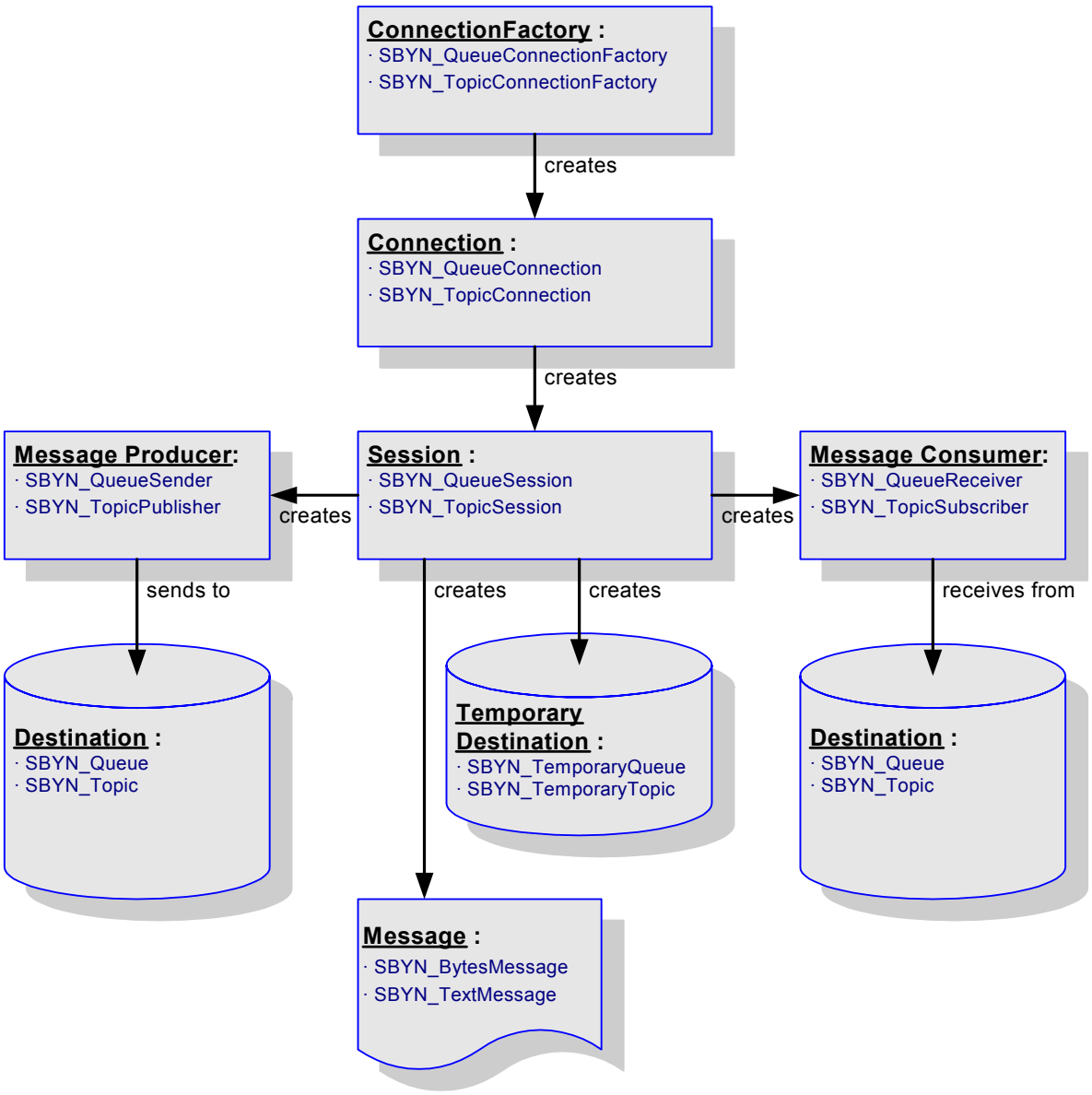
Also see:

- **Sample Code for Using JMS in C or RPG** on page 139.

5.8.1. Architectural Overview

The standard JMS API object model is followed in **C**, as illustrated in Figure 34.

Figure 34 JMS **C** Object Model



5.8.2. Structures

The **C** API for SeeBeyond JMS comprises the following structures:

Table 11 Structures in **C** API for SeeBeyond JMS

For Point-to-Point (P2P) Messaging	For Publish/Subscribe (Pub/Sub) Messaging
struct SBYN_QueueConnectionFactory	struct SBYN_TopicConnectionFactory
struct SBYN_QueueConnection	struct SBYN_TopicConnection
struct SBYN_QueueSession	struct SBYN_TopicSession
struct SBYN_QueueSender	struct SBYN_TopicPublisher
struct SBYN_QueueReceiver	struct SBYN_TopicSubscriber
struct SBYN_Queue	struct SBYN_Topic
struct SBYN_TemporaryQueue	struct SBYN_TemporaryTopic
struct SBYN_QueueRequestor	struct SBYN_TopicRequestor
For P2P and Pub/Sub Messaging	
struct SBYN_Destination	
struct SBYN_Message	
struct SBYN_BytesMessage	
struct SBYN_TextMessage	
struct SBYN_ConnectionMetaData	
struct SBYN_WString	
struct SBYN_WStringList	

5.8.3. Constants

The **C** API for SeeBeyond JMS defines values for the following types of constants:

- **DeliveryMode Constants** on page 350
- **DestinationType Constants** on page 350
- **MessageType Constants** on page 350
- **Session Constants** on page 350
- **Transacted Constants** on page 351
- **Miscellaneous Constants Setting Message Class Defaults** on page 352
- **Other Miscellaneous Constants** on page 352

DeliveryMode Constants

Table 12 Values for DeliveryMode Constants

Name	
SBYN_NON_PERSISTENT	0
SBYN_PERSISTENT	1

NON_PERSISTENT

0 signifies non-persistent delivery mode. This mode maximizes performance, and should be used if an occasional lost message is tolerable.

PERSISTENT

1 signifies persistent delivery mode. This mode maximizes reliability, and should be used if the application will have problems if the message is lost in transit.

DestinationType Constants

Table 13 Values for DestinationType Constants

Name	
SBYN_DESTINATION_TYPE_QUEUE	0
SBYN_DESTINATION_TYPE_TEMPORARYQUEUE	1
SBYN_DESTINATION_TYPE_TOPIC	2
SBYN_DESTINATION_TYPE_TEMPORARYTOPIC	3

MessageType Constants

Table 14 Values for MessageType Constants

Name	
SBYN_MESSAGE_TYPE_MESSAGE	0
SBYN_MESSAGE_TYPE_TEXT	1
SBYN_MESSAGE_TYPE_BYTES	2

Session Constants

Table 15 Values for Session Constants

Name	
SBYN_AUTO_ACKNOWLEDGE	1
SBYN_CLIENT_ACKNOWLEDGE	2

Table 15 Values for Session Constants

Name	
SBYN_DUPS_OK_ACKNOWLEDGE	3

AutoAcknowledge Mode

1 signifies auto-acknowledgment: The session automatically acknowledges a client's receipt of a message either upon its successful return from a call to **receive** or upon successful return of the MessageListener it has called to process the message.

ClientAcknowledge Mode

2 signifies acknowledgment by client: A client acknowledges a message by calling the message's **acknowledge** method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session.

DupsOKAcknowledge Mode

3 indicates that duplicates are acceptable, and instructs the session to lazily acknowledge message delivery This setting is likely to cause delivery of some duplicate messages if JMS fails, and should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

Transacted Constants

Table 16 Values for Transacted Constants

Name	
SBYN_NON_TRANSACTED	0
SBYN_TRANSACTED	1

If a session is specified as being *transacted*, it supports a single series of transactions. A set of messages-received is grouped into an atomic unit of input, and a set of staged messages-to-be-sent is grouped into an atomic unit of output. When a transaction performs a *commit*, the atomic unit of input is acknowledged and the associated atomic unit of output is sent. If, instead, the transaction performs a *rollback*, all messages in the atomic unit of output are destroyed and the session's input is automatically recovered.

A transaction is completed only by a commit or by a rollback. The completion of a session's current transaction automatically begins the next transaction. In this way, a transacted session always has a current transaction within which work is done.

Miscellaneous Constants Setting Message Class Defaults

Table 17 Values for Miscellaneous Constants Setting Message Class Defaults

Name	
SBYN_DEFAULT_DELIVERY_MODE	1
SBYN_DEFAULT_PRIORITY	4
SBYN_DEFAULT_TIME_TO_LIVE	0

Default Setting for DeliveryMode

See **"DeliveryMode Constants" on page 350**.

Default Setting for Priority

JMS defines a ten-level priority value: **0** is lowest priority (least expedited) and **9** is highest. Clients should consider priorities **0** through **4** as gradations of normal priority and priorities **5** through **9** as gradations of expedited priority.

Default Setting for TimeToLive

Length of time that a produced message should be retained by the message system. Measured in milliseconds elapsed since its dispatch time. The default, **0**, has the special meaning of "retain forever"—that is, the message never expires on its own.

Other Miscellaneous Constants

Table 18 Values for Other Miscellaneous Constants

Name	Value
DEFAULT_PORT	7555
DEFAULT_SERVER_NAME	"localhost"
MSCLIENT_DLL_NAME	"stc_msclient.dll"
FALSE	0
TRUE	1

5.8.4. Interfaces

The following interfaces have defined prototypes:

- **The Message Interface** on page 353
- **The Extended Message Interface** on page 373
- **BytesMessage Methods** on page 374
- **TextMessage Methods** on page 386
- **The QueueConnectionFactory Interface** on page 387

5.8.5. The Message Interface

The **Message** interface defines methods for working with a **Message** object. The interface includes the following methods:

Acknowledge

Syntax

```
Acknowledge(pMsg, iError, pczError)
```

Description

Acknowledges the receipt of current and previous messages.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.

Name	Type	Description
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ClearBody

Syntax

```
ClearBody(pMsg, iError, pczError)
```

Description

Clears the body of a message, leaving the message header values and property entries intact.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ClearProperties

Syntax

```
ClearProperties(pMsg, iError, pczError)
```

Description

Clears the properties from a message, leaving the message header fields and body intact.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

PropertyExists

Syntax

```
PropertyExists(pMsg, pczName, iError, pczError)
```

Description

Checks whether a value for a specific property exists.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

bool
Returns **true** if the property value is defined; otherwise, returns **false**.

GetBooleanProperty

Syntax

```
GetBooleanProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified Boolean property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
The value of the property.

GetByteProperty

Syntax

```
GetByteProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified byte property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

unsigned char
The value of the property.

GetDoubleProperty

Syntax

```
GetDoubleProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

double
The value of the property.

GetFloatProperty

Syntax

```
GetFloatProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified floating-point (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

float
The value of the property.

GetIntProperty

Syntax

```
GetIntProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified integer (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
The value of the property.

GetLongProperty

Syntax

```
GetLongProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long
The value of the property.

GetShortProperty

Syntax

```
GetShortProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

short
The value of the property.

GetStringProperty

Syntax

```
GetStringProperty(pMsg, pczName, iError, pczError)
```

Description

Reads the value of the specified text property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the name of the property to check.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*

Pointer to a **WString** (wide string) object containing the value of the property.

SetBooleanProperty

Syntax

```
SetBooleanProperty(pMsg, pczName, bValue, iError, pczError)
```

Description

Writes a value for the specified Boolean property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
bValue	bool	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetByteProperty

Syntax

```
SetByteProperty(pMsg, pczName, cValue, iError, pczError)
```

Description

Writes a value for the specified byte property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
cValue	unsigned char	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetDoubleProperty

Syntax

```
SetDoubleProperty(pMsg, pczName, dblValue, iError, pczError)
```

Description

Writes a value for the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
dblValue	double	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetFloatProperty

Syntax

```
SetFloatProperty(pMsg, pczName, fltValue, iError, pczError)
```

Description

Writes a value for the specified floating-point (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
fltValue	float	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetIntProperty

Syntax

```
SetIntProperty(pMsg, pczName, iValue, iError, pczError)
```

Description

Writes a value for the specified integer (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
iValue	int	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetLongProperty

Syntax

```
SetLongProperty(pMsg, pczName, lValue, iError, pczError)
```

Description

Writes a value for the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
lValue	long	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetShortProperty

Syntax

```
SetShortProperty(pMsg, pczName, nValue, iError, pczError)
```

Description

Writes a value for the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
nValue	short	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetStringProperty

Syntax

```
SetStringProperty(pMsg, pczName, pczValue, iError, pczError)
```

Description

Writes a value for the specified text property in the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczName	char*	Pointer to the property name.
pczValue	char*	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

GetJMSCorrelationID

Syntax

```
GetJMSCorrelationID(pMsg, iError, pczError)
```

Description

Retrieves the correlation ID for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

GetJMSCorrelationIDAsBytes

Syntax

```
GetJMSCorrelationIDAsBytes(pMsg, iError, pczError)
```

Description

Retrieves the correlation ID for the specified message as an array of characters.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

char*

Pointer to an array of characters containing the text.

GetJMSDeliveryMode

Syntax

```
GetJMSDeliveryMode(pMsg, iError, pczError)
```

Description

Retrieves the value of the **DeliveryMode** property for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int

See **"DeliveryMode Constants" on page 350**.

GetJMSExpiration

Syntax

```
GetJMSExpiration(pMsg, iError, pczError)
```

Description

Retrieves the value of the timestamp set for the expiration of the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long
Timestamp.

GetJMSMessageID

Syntax

```
GetJMSMessageID(pMsg, iError, pczError)
```

Description

Retrieves the message ID of the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

GetJMSPriority

Syntax

```
GetJMSPriority(pMsg, iError, pczError)
```

Description

Retrieves the priority level for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.

Name	Type	Description
pczError	char*	Pointer to the error message text.

Return Value

int
The priority level.

Also see **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

GetJMSRedelivered

Syntax

```
GetJMSRedelivered(pMsg, iError, pczError)
```

Description

Retrieves an indication of whether the specified message is being redelivered.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
Returns **true** if the message is being redelivered; otherwise, returns **false**.

GetJMSReplyTo

Syntax

```
GetJMSReplyTo(pMsg, iError, pczError)
```

Description

Retrieves the **Destination** object where a reply to the specified message should be sent (for request/reply messaging).

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the **Destination** object.

GetJMSTimestamp

Syntax

```
GetJMSTimestamp(pMsg, iError, pczError)
```

Description

Retrieves the timestamp of the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long
Timestamp.

GetJMSType

Syntax

```
GetJMSType(pMsg, iError, pczError)
```

Description

Gets the message type identifier supplied by the client when the message was sent.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

SetJMSCorrelationID

Syntax

```
SetJMSCorrelationID(pMsg, pczValue, iError, pczError)
```

Description

Sets the correlation ID for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	char*	Pointer to the text string containing the correlation ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSCorrelationIDAsBytes

Syntax

```
SetJMSCorrelationIDAsBytes(pMsg, pczValue, iError, pczError)
```

Description

Sets the correlation ID for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	char*	Pointer to the character array containing the bytes for the correlation ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSDeliveryMode

Syntax

```
SetJMSDeliveryMode(pMsg, value, iValue, iError, pczError)
```

Description

Sets the delivery mode for the specified message. See **"DeliveryMode Constants" on page 350**.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iValue	int	Value corresponding to the delivery mode.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSExpiration

Syntax

```
SetJMSExpiration(pMsg, lValue, iError, pczError)
```

Description

Sets the timestamp at which the specified message is due to expire.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
lValue	long	Timestamp of the expiration.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSMessageID

Syntax

```
SetJMSMessageID(pMsg, pczValue, iError, pczError)
```

Description

Sets the message ID of the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	char*	Pointer to the text string containing the message ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSPriority

Syntax

```
SetJMSPriority(pMsg, iValue, iError, pczError)
```

Description

Sets the priority level for the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iValue	int	The priority level.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSRedelivered

Syntax

```
SetJMSRedelivered(pMsg, fValue, iError, pczError)
```

Description

Determines whether to flag the specified message as being redelivered. Used, for example, to specify redelivery for a message that has been sent but not acknowledged.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
fValue	SBYN_BOOL	Flag: If **true**, the message is being redelivered.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSReplyTo

Syntax

```
SetJMSReplyTo(pMsg, pDest, iError, pczError)
```

Description

Sets the **Destination** object where a reply to the specified message should be sent.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSTimestamp

Syntax

```
SetJMSTimestamp(pMsg, lValue, iError, pczError)
```

Description

Sets the timestamp (JMSTimestamp header field) that the specified message was handed off to a provider to be sent. Note that this is not necessarily the time the message is actually transmitted; the actual **send** can occur later because of transactions or other client-side queueing of messages.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
lValue	long	Timestamp to be set.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SetJMSType

Syntax

```
SetJMSType(pMsg, pczJMSType, iError, pczError)
```

Description

Sets the JMSType header field, which is often used to identify the message structure and the payload type.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczJMSType	char*	Pointer to the text string containing the data.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.6. The Extended Message Interface

The extended message interface includes the following function:

- **GetMessageType** on page 373

GetMessageType

Syntax

```
GetMessageType(pMsg)
```

Description

Retrieves the message type (bytesmessage, textmessage, and so forth).

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.

Return Value

MessageType_t
See **"MessageType Constants" on page 350**.

5.8.7. BytesMessage Methods

A **BytesMessage** object is used for messages containing a stream of uninterpreted bytes. The receiver of the message supplies the interpretation of the bytes.

If you are familiar with the Java implementation, note that methods **ReadBytes** and **WriteBytes** differ from the standard JMS specification; see **Differences Between Java and C in the BytesMessage Interface** on page 463.

The **BytesMessage** methods include the following:

ReadBoolean

Syntax

```
ReadBoolean(pMsg, iError, pczError)
```

Description

Reads a Boolean value from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
The value read from the **BytesMessage** stream.

ReadByte

Syntax

```
ReadByte(pMsg, iError, pczError)
```

Description

Reads a single unsigned character from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

unsigned char
The value read from the **BytesMessage** stream.

ReadBytes

Syntax

```
ReadBytes(pMsg, pczValue, iLength, iError, pczError)
```

Description

Reads a portion of the **BytesMessage** stream into a buffer. If the length of array value is less than the bytes remaining to be read from the stream, the array is filled.
A subsequent call reads the next increment, and so on.

If there are fewer bytes remaining in the stream than the length of array value, the bytes are read into the array, and the return value (total number of bytes read) is less than the length of the array, indicating that there are no more bytes left to be read from the stream. The next read of the stream returns **-1**.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	unsigned char*	Pointer to the buffer into which the bytes are read.
iLength	int	The number of bytes to read; must be less than the length of the buffer.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int

Number of bytes read into the buffer; or **-1** if all bytes were read previously.

ReadChar

Syntax

```
ReadChar(pMsg, iError, pczError)
```

Description

Reads a single Unicode character from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

unsigned short
The value read from the **BytesMessage** stream.

ReadDouble

Syntax

```
ReadDouble(pMsg, iError, pczError)
```

Description

Reads a double numeric value from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

double
The value read from the **BytesMessage** stream.

ReadFloat

Syntax

```
ReadFloat(pMsg, iError, pczError)
```

Description

Reads a floating-point numeric value from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

float
The value read from the **BytesMessage** stream.

ReadInt

Syntax

```
ReadInt(pMsg, iError, pczError)
```

Description

Reads a signed integer value from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
The value read from the **BytesMessage** stream.

ReadLong

Syntax

```
ReadLong(pMsg, iError, pczError)
```

Description

Reads a signed long integer from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long
The value read from the **BytesMessage** stream.

ReadShort

Syntax

```
ReadShort(pMsg, iError, pczError)
```

Description

Reads a signed short integer from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

short
The value read from the **BytesMessage** stream.

ReadUnsignedByte

Syntax

```
ReadUnsignedByte(pMsg, iError, pczError)
```

Description

Reads an unsigned short integer from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
The value read from the **BytesMessage** stream.

ReadUnsignedShort

Syntax

```
ReadUnsignedShort(pMsg, iError, pczError)
```

Description

Reads an unsigned short integer from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
The value read from the **BytesMessage** stream.

ReadUTF

Syntax

```
ReadUTF(pMsg, iError, pczError)
```

Description

Reads the value of a string that has been encoded using a modified UTF-8 format from the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text from the **BytesMessage** stream.

Reset

Syntax

```
Reset(pMsg, iError, pczError)
```

Description

Puts the message body into read-only mode and repositions the stream of bytes to the beginning.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteBoolean

Syntax

```
WriteBoolean(pMsg, fValue, iError, pczError)
```

Description

Writes a Boolean value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
fValue	SBYN_BOOL	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteByte

Syntax

```
WriteByte(pMsg, cValue, iError, pczError)
```

Description

Writes a single byte (unsigned char) to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
cValue	unsigned char	The value to be written.
iError	int*	Pointer to the error number.

Name	Type	Description
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteBytes

Syntax

```
WriteBytes(pMsg, pczValue, iError, pczError)
```

Description

Writes an array of bytes (unsigned char values) to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	unsigned char*	Pointer to the value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteBytesEx

Syntax

```
WriteBytesEx(pMsg, pczValue, iOffset, iLength, iError, pczError)
```

Description

Writes a portion of a byte array (unsigned char values) to the **BytesMessage** stream. For example, to extract “nag” from “manager”, set iOffset=2 and iLength=3.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	unsigned char*	Pointer to the value to be written.
iOffset	int	The initial offset within the byte array.
iLength	int	The number of bytes to use.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteChar

Syntax

```
WriteChar(pMsg, cValue, iError, pczError)
```

Description

Writes an unsigned short integer to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
cValue	unsigned short	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteDouble

Syntax

```
WriteDouble(pMsg, dblValue, iError, pczError)
```

Description

Writes a double numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
dblValue	double	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteFloat

Syntax

```
WriteFloat(pMsg, fltValue, iError, pczError)
```

Description

Writes a floating-point numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
fltValue	float	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteInt

Syntax

```
WriteInt(pMsg, iValue, iError, pczError)
```

Description

Writes an integer numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iValue	int	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteLong

Syntax

```
WriteLong(pMsg, lValue, iError, pczError)
```

Description

Writes a long numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
lValue	int	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteShort

Syntax

```
WriteShort(pMsg, nValue, iError, pczError)
```

Description

Writes a short numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
nValue	short	The value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

WriteUTF

Syntax

```
WriteUTF(pMsg, pczValue, iError, pczError)
```

Description

Writes a character string to the BytesMessage stream using UTF-8 encoding.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczValue	char*	Pointer to the value to be written.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.8. TextMessage Methods

A TextMessage is used to send a message containing text. It adds a text message body. When a client receives a TextMessage, it is in read-only mode. If an attempt is made to write to the message while in read-only mode, an error is returned. However, if ClearBody is called first, then message can be then read from and written to.

The TextMessage functions include the following:

- **GetText** on page 386
- **SetText** on page 387

GetText

Syntax

```
GetText(pMsg, iError, pczError)
```

Description

Retrieves the string containing the data associated with the message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

char*
Pointer to the string. The default value is **0** (null).

SetText

Syntax

```
SetText(pMsg, pczBuffer, iError, pczError)
```

Description

Sets the string containing the data associated with the message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
pczBuffer	char*	Pointer to the text string.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.9. The QueueConnectionFactory Interface

Using point-to-point messaging, a client uses a **QueueConnectionFactory** object to create **QueueConnection** objects.

The **QueueConnectionFactory** interface includes the following methods:

- **CreateQueueConnectionFactory** on page 387
- **CreateQueueConnection** on page 388

CreateQueueConnectionFactory

Syntax

```
CreateQueueConnectionFactory(pczHost, iPort, iError, pczError)
```

Description

Constructs a **QueueConnectionFactory** object for the specified host and port. Once constructed, it can create **QueueConnection** objects for a point-to-point JMS provider.

Parameters

Name	Type	Description
pczHost	char*	Pointer to the text of the host name.
iPort	int	Port number.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_QueueConnectionFactory*
Pointer to the **QueueConnectionFactory** object that was created.

CreateQueueConnection

Syntax

```
CreateQueueConnection(pQueCxnFac, iError, pczError)
```

Description

Constructs a **Connection** object; see **"The Connection Interface" on page 388**.

Parameters

Name	Type	Description
pQueCxnFac	SBYN_QueueConnectionFactory*	Pointer to the **QueueConnectionFactory** object creating the QueueConnection.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Connection* pointer.

5.8.10. The Connection Interface

A **Connection** object is an active connection to a JMS point-to-point provider or an active connection to a JMS pub/sub provider. A client uses a Connection to create one or more Sessions for producing and consuming messages.

The **Connection** interface includes the following methods:

ConnectionClose

Syntax

```
ConnectionClose(pConn, iError, pczError)
```

Description

Closes the specified connection.

Parameters

Name	Type	Description
pConnn	SBYN_Connection*	Pointer to the **Connection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ConnectionGetClientID

Syntax

```
ConnectionGetClientID(pConn, iError, pczError)
```

Description

Retrieves the client ID associated with the specified **Connection** object.

Parameters

Name	Type	Description
pConn	SBYN_Connection*	Pointer to the **Connection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

ConnectionSetClientID

Syntax

```
ConnectionSetClientID(pConn, pczClientID, iError, pczError)
```

Description

Sets the client ID to be associated with the specified **Connection** object. In other words, this method allows you to name the connection.

Parameters

Name	Type	Description
pConn	SBYN_Connection*	Pointer to the **Connection** object.
pczClientID	char*	Pointer to the text string for the client ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ConnectionStart

Syntax

```
ConnectionStart(pConn, iError, pczError)
```

Description

Starts (or restarts) delivering incoming messages via the specified **Connection** object. If the connection is already started, the call is ignored without error.

Parameters

Name	Type	Description
pConn	SBYN_Connection*	Pointer to the **Connection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ConnectionStop

Syntax

```
ConnectionStop(pConn, iError, pczError)
```

Description

Temporarily halts delivering incoming messages via the specified **Connection** object. If the connection is already stopped, the call is ignored without error.

Parameters

Name	Type	Description
pConn	SBYN_Connection*	Pointer to the **Connection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

ConnectionCreateQueueSession

Syntax

```
ConnectionCreateQueueSession(pConn, fTransacted, iAckMode,
                             iError, pczError)
```

Description

Creates a **Session** object; see **"The Session Interface" on page 392**.

Parameters

Name	Type	Description
pConn	SBYN_Connection*	Pointer to the **Connection** object.
fTransacted	SBYN_BOOL	Flag: If **true**, the session is transacted.
iAckMode	int	Ignored if the session is transacted. If the session is not transacted, indicates whether the consumer or client acknowledges messages that it receives; see **Session Constants** on page 350.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Session* pointer.

ConnectionCreateTopicSession

Syntax

```
ConnectionCreateTopicSession(pCxn, fTransacted, iAckMode,
                             iError, pczError)
```

Description

Creates a **TopicSession** object.

Parameters

Name	Type	Description
pCxn	SBYN_Connection*	Pointer to the **Connection** object.
fTransacted	SBYN_BOOL	Flag: If **true**, the session is transacted
iAckMode	int	Ignored if the session is transacted. If the session is not transacted, indicates whether the consumer or client acknowledges messages that it receives; see **Session Constants** on page 350.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Session* pointer.

5.8.11. The Session Interface

The Session interface includes the following methods:

- **SessionClose** on page 393
- **SessionCommit** on page 393
- **SessionGetTransacted** on page 394
- **SessionRecover** on page 394
- **SessionRollback** on page 394
- **SessionCreateBytesMessage** on page 395
- **SessionCreateTextMessage** on page 395
- **SessionCreateTextMessageEx** on page 396
- **SessionCreateQueue** on page 396
- **SessionCreateReceiver** on page 397
- **SessionCreateReceiveMessageSelector** on page 397
- **SessionCreateSender** on page 398
- **SessionCreateTemporaryQueue** on page 398
- **SessionCreateDurableSubscriber** on page 399
- **SessionCreateDurableSubscriberMessageSelector** on page 400
- **SessionCreatePublisher** on page 400
- **SessionCreateSubscriber** on page 401
- **SessionCreateSubscriberMessageSelector** on page 401
- **SessionCreateTemporaryTopic** on page 402

- **SessionCreateTopic** on page 403
- **SessionUnsubscribe** on page 403

SessionClose

Syntax

```
SessionClose(pSessn, iError, pczError)
```

Description

Closes the specified session.

Note: *Sessions should be closed when they are no longer needed.*

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SessionCommit

Syntax

```
SessionCommit(pSessn, iError, pczError)
```

Description

Commits all messages done in this transaction and releases any locks currently held.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SessionGetTransacted

Syntax

```
SessionGetTransacted(pSessn, iError, pczError)
```

Description

Queries whether the specified session is or is not transacted.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
Returns **true** if the session is transacted; otherwise, returns **false**.

SessionRecover

Syntax

```
SessionRecover(pSessn, iError, pczError)
```

Description

Stops message delivery in the specified session, causes all messages that might have been delivered but not acknowledged to be marked as **redelivered**, and restarts message delivery with the oldest unacknowledged message. Note that redelivered messages need not be delivered in the exact order they were originally delivered.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SessionRollback

Syntax

```
SessionRollback(pSessn, iError, pczError)
```

Description

Rolls back any messages done in this transaction and releases any locks currently held.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

SessionCreateBytesMessage

Syntax

```
SessionCreateBytesMessage(pSessn, iError, pczError)
```

Description

Creates a **BytesMessage**— an object used to send a message containing a stream of uninterpreted bytes.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the created message object.

SessionCreateTextMessage

Syntax

```
SessionCreateTextMessage(pSessn, iError, pczError)
```

Description

Creates an uninitialized **TextMessage**— an object used to send a message containing a string to be supplied. Also see **"SessionCreateTextMessageEx" on page 396**.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the created message object.

SessionCreateTextMessageEx

Syntax

```
SessionCreateTextMessageEx(pSessn, pczText, iError, pczError)
```

Description

Creates an initialized **TextMessage**— an object used to send a message containing the supplied string. Also see **"SessionCreateTextMessage" on page 395**.

Parameters

Name	Type	Description
pQueSessn	SBYN_QueueSession*	Pointer to the **QueueSession** object.
pczText	char*	Pointer to the text string with which to initialize the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the created message object.

SessionCreateQueue

Syntax

```
SessionCreateQueue(pSessn, pczQueName, iError, pczError)
```

Description

Creates an identity with a specific queue name; does not create a physical queue.

This functionality is provided for rare cases where clients need to dynamically create a queue identity with a provider-specific name. Clients that depend on this functionality are not portable.

To create a physical session, see **"SessionCreateTemporaryQueue" on page 398**.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pczQueName	char*	Pointer to the name of the queue.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination* pointer.

SessionCreateReceiver

Syntax

```
SessionCreateReceiver(pSessn, pDest, iError, pczError)
```

Description

Creates a **Receiver** object to receive messages;

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the queue.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Receiver* pointer.

SessionCreateReceiveMessageSelector

Syntax

```
SessionCreateReceiveMessageSelector(pSessn, pDest,
                                    pczSelector, iError, pczError)
```

Description

Creates a **Receiver** object to receive messages using a message selector. Also see **"SessionCreateReceiver" on page 397**.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the object.
pDest	SBYN_Destination*	Pointer to the queue.
pczSelector	char*	Pointer to the text of the message selector.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_QueueReceiver* pointer.

SessionCreateSender

Syntax

```
SessionCreateSender(pSessn, pDest, iError, pczError)
```

Description

Creates a **Sender** object to send messages.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the queue.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Sender* pointer.

SessionCreateTemporaryQueue

Syntax

```
SessionCreateTemporary(pSessn, iError, pczError)
```

Description

Creates a **Temporary** object for a specified session.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.

Name	Type	Description
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination* pointer.

SessionCreateDurableSubscriber

Syntax

```
SessionCreateDurableSubscriber(pSessn, pDest, pczName,
                               iError, pczError)
```

Description

Creates a durable subscriber to the specified topic, specifying whether messages published by its own connection should be delivered to it.

Using pub/sub messaging, if a client needs to receive all the messages published on a topic, including messages published while the subscriber is inactive, it uses a *durable subscriber*. The JMS provider retains a record of this durable subscription and ensures that each message from the topic's publishers is retained until either it has been acknowledged by this durable subscriber or else it has expired.

Sessions with durable subscribers must always provide the same client ID, and each client must specify a name that (within the given client ID) uniquely identifies each durable subscription it creates. Only one session at a time can have a TopicSubscriber for a particular durable subscription. An *inactive* durable subscriber is one that exists but does not currently have a message consumer associated with it.

A client can change an existing durable subscription by creating a durable TopicSubscriber with the same name and a new topic (and/or *message selector*). Changing a durable subscriber is equivalent to deleting the old one and creating a new one.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the topic.
pczName	char*	Pointer to the text string containing the client ID of the durable subscriber.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicSubscriber*
Pointer to the created **TopicSubscriber** object.

SessionCreateDurableSubscriberMessageSelector

Syntax

```
TopicSessionCreateDurableSubscriberMessageSelector(pSessn, pDest,
                        pDest, pczName, pczSelector, iError, pczError)
```

Description

Creates a durable subscriber to the specified topic, using a message selector (*pczSelector*) and/or specifying whether messages published by its own connection should be delivered to it (*fNoLocal*).

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the **Destination** object.
pczName	char*	Pointer to the text string containing the client ID of the durable subscriber.
pczSelector	char*	Pointer to the string containing the text of the message selector; only messages with properties matching the message selector expression are delivered. A value of null or an empty string indicates that there is no message selector for the message consumer.
fNoLocal	SBYN_BOOL	Flag, default **false**. If **true**, inhibits the delivery of messages published by its own connection.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicSubscriber*
Pointer to the created **TopicSubscriber** object.

SessionCreatePublisher

Syntax

```
TopicSessionCreatePublisher(pSessn, pDest, iError, pczError)
```

Description

Creates a publisher for the specified topic.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicPublisher*
Pointer to the created **TopicPublisher** object.

SessionCreateSubscriber

Syntax

```
SessionCreateSubscriber(pSessn, pDest, iError, pczError)
```

Description

Creates a *nondurable* subscriber to the specified topic—in other words, a subscriber that receives only those messages that are published while the subscriber is active.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicSubscriber*
Pointer to the **TopicSubscriber** object.

SessionCreateSubscriberMessageSelector

Syntax

```
SessionCreateSubscriberMessageSelector(pSessn, pDest,
                    pczSelector, fNoLocal, iError, pczError)
```

Description

Creates a *nondurable* subscriber to the specified topic—in other words, a subscriber that receives only those messages that are published while the subscriber is active

In some cases, a connection may both publish and subscribe to a topic. The NoLocal parameter allows a subscriber to inhibit the delivery of messages published by its own connection. The default value for this attribute is **false**.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pDest	SBYN_Destination*	Pointer to the **Destination** object.
pczSelector	char*	Pointer to the string containing the text of the message selector; only messages with properties matching the message selector expression are delivered. A value of null or an empty string indicates that there is no message selector for the message consumer.
fNoLocal	SBYN_BOOL	Flag, default **false**. If **true**, inhibits the delivery of messages published by its own connection.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicSubscriber*
Pointer to the **TopicSubscriber** object.

SessionCreateTemporaryTopic

Syntax

```
SessionTopicSessionCreateTemporaryTopic(pSessn,
                                        iError, pczError)
```

Description

Creates a temporary topic that lives only as long as the specified TopicConnection does (unless the topic is deleted earlier).

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the created **TemporaryTopic** object.

SessionCreateTopic

Syntax

```
SessionCreateTopic(pSessn, pczTopName, iError, pczError)
```

Description

Creates a topic identity with a specific topic name; does ***not*** create a physical topic.

This functionality is provided for rare cases where clients need to dynamically create a topic identity with a provider-specific name. Clients that depend on this functionality are not portable.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pczTopName	char*	Pointer to the text string containing the name of the topic.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the created **Destination** object.

SessionUnsubscribe

Syntax

```
SessionUnsubscribe(pSessn, pczName, iError, pczError)
```

Description

Unsubscribes a durable subscription that has been created by a client. Note that it is an error to delete a durable subscription while there is an active TopicSubscriber for the subscription, or while a consumed message is part of a pending transaction or has not been acknowledged in the session.

Parameters

Name	Type	Description
pSessn	SBYN_Session*	Pointer to the **Session** object.
pczName	char*	Pointer to the text string containing the name used to identify this subscription.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.12. The TopicConnectionFactory Interface

Using pub/sub messaging, a client uses a **TopicConnectionFactory** object to create **TopicConnection** objects.

The **TopicConnectionFactory** interface includes the following methods:

- **CreateTopicConnectionFactory** on page 404
- **CreateTopicConnection** on page 404

CreateTopicConnectionFactory

Syntax

```
CreateTopicConnectionFactory(pczHost, iPort, iError, pczError)
```

Description

Constructs a **TopicConnectionFactory** for the specified host and port. Once constructed, it can create **TopicConnection** objects for a pub/sub JMS provider.

Parameters

Name	Type	Description
pczHost	char*	Pointer to the text of the host name.
iPort	int	Port number.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicConnectionFactory*
Pointer to the **TopicConnectionFactory** object that was created.

CreateTopicConnection

Syntax

```
CreateTopicConnection(pTopCxnFac, iError, pczError)
```

Description

Constructs a **TopicConnection** object.

Parameters

Name	Type	Description
pTopCxnFac	SBYN_TopicConnectionFactory*	Pointer to the **TopicConnectionFactory** object creating the TopicConnection.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicConnection*
Pointer to the **TopicConnection** object that was created.

5.8.13. The Destination Interface

A **Destination** object encapsulates an address for a destination provided by SeeBeyond JMS. It can also include other data, such as configuration information or metadata.

The **Destination** interface includes the following methods:

- **GetDestinationName** on page 405
- **SetDestinationName** on page 406
- **DestinationToString** on page 406
- **DeleteDestination** on page 406

GetDestinationName

Syntax

```
GetDestinationName(pDest, iError, pczError)
```

Description

Retrieves the name of the specified **Destination** object.

Parameters

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

SetDestinationName

Syntax

```
SetDestinationName(pDest, pczName, iError, pczError)
```

Description

Sets the name of the specified **Destination** object.

Parameters

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the **Destination** object.
pczName	char*	Pointer to the text string containing the name of the destination.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DestinationToString

Syntax

```
DestinationToString(pDest, iError, pczError)
```

Description

Retrieves a text string representation of the specified **Destination** object.

Parameters

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

DeleteDestination

Syntax

```
DeleteDestination(pDest, iError, pczError)
```

Description

Deletes the specified **Destination** object.

Parameters

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the **Destination** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.14. The QueueReceiver Interface

Using point-to-point messaging, a client uses a **QueueReceiver** object to receive messages that have been delivered to a queue.

The **QueueReceiver** interface includes the following methods:

QueueReceiverClose

Syntax

```
QueueReceiverClose(pQueRecvr, iError, pczError)
```

Description

Closes the specified queue receiver.

Note: *When a message consumer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueReceiverGetMessageSelector

Syntax

```
QueueReceiverGetMessageSelector(pQueRecvr, iError, pczError)
```

Description

Retrieves the message selector expression associated with this queue receiver.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

char*
Pointer to the string containing the message selector text. Returns null if no message selector exists, or if the message selector was set to null or the empty string.

QueueReceiverReceive

Syntax

```
QueueReceiverReceive(pQueRecvr, iError, pczError)
```

Description

Receives the next message produced for this queue. If the called within a transaction, the queue retains the message until the transaction commits.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message.

QueueReceiverReceiveTimeout

Syntax

```
QueueReceiverReceiveTimeout(pQueRecvr, lTimeout, iError, pczError)
```

Description

Receives the next message that arrives within the specified timeout interval. A timeout value of 0 makes this function equivalent to **"QueueReceiverReceive" on page 408**.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
lTimeout	long	The timeout value.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message, or null if no message is available.

QueueReceiverReceiveNoWait

Syntax

```
QueueReceiverReceiveNoWait(pQueRecvr, iError, pczError)
```

Description

Receives the next message produced for this queue if one is immediately available.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message, or null if no message is available.

QueueReceiverGetQueue

Syntax

```
QueueReceiverGetQueue(pQueRecvr, iError, pczError)
```

Description

Retrieves the queue associated with the specified queue receiver.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the queue.

5.8.15. The TopicSubscriber Interface

The TopicSubscriber interface includes the following methods:

TopicSubscriberClose

Syntax

```
TopicSubscriberClose(pTopSub, iError, pczError)
```

Description

Closes the specified topic subscriber.

Note: *When a message consumer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicSubscriberGetMessageSelector

Syntax

```
TopicSubscriberGetMessageSelector(pTopSub, iError, pczError)
```

Description

Retrieves the message selector expression associated with the specified topic subscriber.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

char*
Pointer to the string containing the message selector text. Returns null if no message selector exists, or if the message selector was set to null or the empty string.

TopicSubscriberGetNoLocal

Syntax

```
TopicSubscriberGetNoLocal(pTopSub, iError, pczError)
```

Description

Queries whether the NoLocal flag is set for the specified topic subscriber.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
If **false** (the default), the subscriber can also publish via the same connection.
If **true**, delivery of messages published via its own connection is inhibited.

TopicSubscriberGetTopic

Syntax

```
TopicSubscriberGetTopic(pTopSub, iError, pczError)
```

Description

Retrieves the topic associated with the specified topic subscriber.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the topic.

TopicSubscriberReceive

Syntax

```
TopicSubscriberReceive(pTopSub, iError, pczError)
```

Description

Receives the next message produced for this topic. If called within a transaction, the topic retains the message until the transaction commits.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message.

TopicSubscriberReceiveTimeout

Syntax

```
TopicSubscriberReceiveTimeout(pTopSub, lTimeout, iError, pczError)
```

Description

Receives the next message that arrives within the specified timeout interval. A timeout value of 0 makes this function equivalent to **"TopicSubscriberReceive" on page 412**.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
lTimeout	long	The timeout value
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message, or null if no message is available.

TopicSubscriberReceiveNoWait

Syntax

```
TopicSubscriberReceiveNoWait(pTopSub, iError, pczError)
```

Description

Receives the next message produced for this topic if one is immediately available.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the received message, or null if no message is available.

Syntax

```
TopicSubscriberReceiveNoWait(pTopSub, iError, pczError)
```

5.8.16. The QueueSender Interface

Using point-to-point messaging, a client uses a **QueueSender** object to send messages to a queue. After sending a message to a queue, a client may retain the message and modify it without affecting the message that has been sent. The same message object may be sent multiple times.

The **QueueSender** interface includes the following methods:

QueueSenderClose

Syntax

```
QueueSenderClose(pQueSender, iError, pczError)
```

Description

Closes the specified queue sender.

Note: *When a message producer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderGetDeliveryMode

Syntax

```
QueueSenderGetDeliveryMode(pQueSender, iError, pczError)
```

Description

Retrieves the value of the **DeliveryMode** property of the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int

See **"DeliveryMode Constants" on page 350**.

QueueSenderGetDisableMessageID

Syntax

```
QueueSenderGetDisableMessageID(pQueSender, iError, pczError)
```

Description

Queries whether message IDs are or are not disabled for the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL

Returns **true** if message IDs are disabled; otherwise, returns **false**.

QueueSenderGetDisableMessageTimestamp

Syntax

```
QueueSenderGetDisableMessageTimestamp(pQueSender, iError, pczError)
```

Description

Queries whether message timestamping is or is not disabled for the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL
Returns **true** if message timestamping is disabled; otherwise, returns **false**.

QueueSenderGetJMS_ProducerID

Syntax

```
QueueSenderGetJMS_ProducerID(pQueSender, iError, pczError)
```

Description

Retrieves the value of the **ProducerID** property for the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

QueueSenderGetPriority

Syntax

```
QueueSenderGetPriority(pQueSender, iError, pczError)
```

Description

Queries the value of the message **Priority** property of the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
Message priority level, from **0** (least expedited) through **9** (most expedited). See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

QueueSenderGetQueue

Syntax

```
QueueSenderGetQueue(pQueSender, iError, pczError)
```

Description

Retrieves the queue associated with the queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the queue.

QueueSenderGetTimeToLive

Syntax

```
QueueSenderGetTimeToLive(pQueSender, iError, pczError)
```

Description

Queries the value of the **TimeToLive** property of the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long
Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

QueueSenderSend

Syntax

```
QueueSenderSend(pQueSender, pMsg, iError, pczError)
```

Description

Sends the specified message to the queue, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified queue sender. If you need to override the default values, see **"QueueSenderSendEx" on page 418**.

To specify the queue destination, see **"QueueSenderSendToQueue" on page 419**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
pMsg	SBYN_Message*	Pointer to the message to send.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSendEx

Syntax

```
QueueSenderSendEx(pQueSender, pMsg,
                  iDelivMode, iPriority, lMilSecToLive,
                  iError, pczError)
```

Description

Sends the specified message to the queue, overriding one or more default values for properties of the specified queue sender. Compare to **"QueueSenderSend" on page 418**.

To specify the queue destination, see **"QueueSenderSendToQueueEx" on page 420**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
pMsg	SBYN_Message*	Pointer to the message to send.
iDelivMode	int	Value to be used for **DeliveryMode**; see **"DeliveryMode Constants" on page 350**.
iPriority	int	Value to be used for **Priority**; see **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
lMilSecToLive	long	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSendToQueue

Syntax

```
QueueSenderSendToQueue(pQueSender, pDest, pMsg, iError, pczError)
```

Description

Sends the specified message to the specified queue, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified queue sender. Compare to **"QueueSenderSendToQueueEx" on page 420**.

Typically, a message producer is assigned a queue at creation time; however, the JMS API also supports unidentified message producers, which require that the queue be supplied every time a message is sent. Compare to **"QueueSenderSend" on page 418**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.

Name	Type	Description
pDest	SBYN_Destination*	Pointer to the queue.
pMsg	SBYN_Message*	Pointer to the message to send.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSendToQueueEx

Syntax

```
QueueSenderSendToQueueEx(pQueSender, pDest, pMsg,
                         iDelivMode, iPriority, lMilSecToLive,
                         iError, pczError)
```

Description

Sends the specified message to the specified queue, overriding one or more default values for properties of the specified queue sender. Compare to **"QueueSenderSendToQueue" on page 419**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
pDest	SBYN_Destination*	Pointer to the queue.
pMsg	SBYN_Message*	Pointer to the message to send.
iDelivMode	int	Value to be used for **DeliveryMode**; see **"DeliveryMode Constants" on page 350**.
iPriority	int	Value to be used for **Priority**; see **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
lMilSecToLive	long	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetDeliveryMode

Syntax

```
QueueSenderSetDeliveryMode(pQueSender, iDelivMode, iError, pczError)
```

Description

Sets the value of the **DeliveryMode** property of the specified queue sender.
See **"DeliveryMode Constants" on page 350**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iDelivMode	int	Value for the **DeliveryMode** property.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetDisableMessageID

Syntax

```
QueueSenderSetDisableMessageID(pQueSender, fDisabled,
                               iError, pczError)
```

Description

Determines whether message IDs are disabled for this queue sender. Default **false**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
fDisabled	SBYN_BOOL	Flag, default **false**; if **true**, message IDs are disabled.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetDisableMessageTimestamp

Syntax

```
QueueSenderSetDisableMessageTimestamp(pQueSender, fDisabled,
                                      iError, pczError)
```

Description

Determines whether message timestamping is disabled for this queue sender. Default **false**.

Since message timestamps take effort to create and increase the size of a message, this flag can be set **true** to reduce overhead if message IDs are not used by an application.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
fDisabled	SBYN_BOOL	Flag, default **false**; if **true**, message timestamping is disabled.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetJMS_ProducerID

Syntax

```
QueueSenderSetJMS_ProducerID(pQueSender, pczProdID, iError, pczError)
```

Description

Sets the value of the **ProducerID** property for the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
pczProdID	char*	Pointer to text string containing the Producer ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetPriority

Syntax

```
QueueSenderSetPriority(pQueSender, iPriority, iError, pczError)
```

Description

Sets the value of the message **Priority** property, from **0** (least expedited) through **9** (most expedited). See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iPriority	int	Message priority level.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueSenderSetTimeToLive

Syntax

```
QueueSenderSetTimeToLive(pQueSender, lMilSecToLive, iError, pczError)
```

Description

Sets the value of the **TimeToLive** property of the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
lMilSecToLive	long	Value to be used for TimeToLive: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.17. The TopicPublisher Interface

The TopicPublisher interface includes the following methods:

TopicPublisherClose

Syntax

```
TopicPublisherClose(pTopPub, iError, pczError)
```

Description

Closes the specified topic publisher.

Note: *When a message producer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherGetDeliveryMode

Syntax

```
TopicPublisherGetDeliveryMode(pTopPub, iError, pczError)
```

Description

Retrieves the value of the **DeliveryMode** property of the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int

See **"DeliveryMode Constants" on page 350**.

TopicPublisherGetDisableMessageID

Syntax

```
TopicPublisherGetDisableMessageID(pTopPub, iError, pczError)
```

Description

Queries whether message IDs are or are not disabled for the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_BOOL

Returns **true** if message IDs are disabled; otherwise, returns **false**.

TopicPublisherGetDisableMessageTimestamp

Syntax

```
TopicPublisherGetDisableMessageTimestamp(pTopPub, iError, pczError)
```

Description

Queries whether message IDs are or are not disabled for the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int
Returns **true** if message timestamping is disabled; otherwise, returns **false**.

TopicPublisherGetJMS_ProducerID

Syntax

```
TopicPublisherGetJMS_ProducerID(pTopPub, iError, pczError)
```

Description

Retrieves the value of the **ProducerID** property for the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

TopicPublisherGetPriority

Syntax

```
TopicPublisherGetPriority(pTopPub, iError, pczError)
```

Description

Queries the value of the message **Priority** property of the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

int

Message priority level, from **0** (least expedited) through **9** (most expedited). See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

TopicPublisherGetTimeToLive

Syntax

```
TopicPublisherGetTimeToLive(pTopPub, iError, pczError)
```

Description

Queries the value of the **TimeToLive** property of the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

long

Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.

TopicPublisherGetTopic

Syntax

```
TopicPublisherGetTopic(pTopPub, iError, pczError)
```

Description

Retrieves the topic associated with the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Destination*
Pointer to the topic.

TopicPublisherPublish

Syntax

```
TopicPublisherPublish(pTopPub, pMsg, iError, pczError)
```

Description

Publishes the specified message to the topic, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified topic publisher. If you need to override the default values, see **"TopicPublisherPublishEx" on page 428**.

To specify the topic destination, see **"TopicPublisherPublishToTopic" on page 429**.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
pMsg	SBYN_Message*	Pointer to the message to be published.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherPublishEx

Syntax

```
TopicPublisherPublishEx(pTopPub, pMsg,
                        iDelivMode, iPriority, lMilSecToLive,
                        iError, pczError)
```

Description

Publishes the specified message to the topic, overriding one or more default values for properties of the specified topic publisher. Compare to **"TopicPublisherPublish" on page 428**.

To specify the topic destination, see "TopicPublisherPublishToTopicEx" on page 430.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
pMsg	SBYN_Message*	Pointer to the message to be published.
iDelivMode	int	Value to be used for **DeliveryMode**; see "DeliveryMode Constants" on page 350.
iPriority	int	Value to be used for **Priority**; see "Miscellaneous Constants Setting Message Class Defaults" on page 352.
lMilSecToLive	long	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See "Miscellaneous Constants Setting Message Class Defaults" on page 352.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherPublishToTopic

Syntax

```
TopicPublisherPublishToTopic(pTopPub, pDest, pMsg, iError, pczError)
```

Description

Publishes the specified message to the specified topic, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified topic publisher. Compare to "TopicPublisherPublishToTopicEx" on page 430.

Typically, a message producer is assigned a topic at creation time; however, the JMS API also supports unidentified message producers, which require that the topic be supplied every time a message is sent. Compare to "TopicPublisherPublishEx" on page 428.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
pDest	SBYN_Destination*	Pointer to the topic.
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherPublishToTopicEx

Syntax

```
TopicPublisherPublishToTopicEx(pTopPub, pDest, pMsg,
                               iDelivMode, iPriority, lMilSecToLive,
                               iError, pczError)
```

Description

Publishes the specified message to the specified topic, overriding one or more default values for properties of the specified topic publisher. Compare to **"TopicPublisherPublishToTopic" on page 429**.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
pDest	SBYN_Destination*	Pointer to the topic.
pMsg	SBYN_Message*	Pointer to the message to publish.
iDelivMode	int	Value to be used for **DeliveryMode**; see **"DeliveryMode Constants" on page 350**.
iPriority	int	Value to be used for **Priority**; see **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
lMilSecToLive	long	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetDeliveryMode

Syntax

```
TopicPublisherSetDeliveryMode(pTopPub, iDelivMode, iError, pczError)
```

Description

Sets the value of the **DeliveryMode** property of the specified topic publisher. See **"DeliveryMode Constants" on page 350**.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iDelivMode	int	Value for the **DeliveryMode** property.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetDisableMessageID

Syntax

```
TopicPublisherSetDisableMessageID(pTopPub, fDisabled,
                                  iError, pczError)
```

Description

Determines whether to disable message IDs for this topic publisher. Default **false**.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iDisable	SBYN_BOOL	Flag, default **false**; if **true**, message IDs are disabled.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetDisableMessageTimestamp

Syntax

```
TopicPublisherSetDisableMessageTimestamp(pTopPub, fDisabled,
                                         iError, pczError)
```

Description

Determines whether message timestamping is disabled for this topic publisher. Default **false**.

Since message timestamps take effort to create and increase the size of a message, this flag can be set **true** to reduce overhead if message IDs are not used by an application.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
fDisabled	SBYN_BOOL	Flag, default **false**; if **true**, message timestamping is disabled.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetJMS_ProducerID

Syntax

```
TopicPublisherSetJMS_ProducerID(pTopPub, pczProdID, iError, pczError)
```

Description

Sets the value of the **ProducerID** property for the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
pczProdID	char*	Pointer to the text string containing the Producer ID.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetPriority

Syntax

```
TopicPublisherSetPriority(pTopPub, iPriority09, iError, pczError)
```

Description

Sets the value of the message **Priority** property of the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iPriority09	int	Message priority, from 0 (least expedited) through 9 (most expedited). See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

TopicPublisherSetTimeToLive

Syntax

```
TopicPublisherSetTimeToLive(pTopPub, lMSecToLive, iError, pczError)
```

Description

Sets the value of the **TimeToLive** property for the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
lMilSecToLive	long	Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS. See **"Miscellaneous Constants Setting Message Class Defaults" on page 352**.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.18. The TopicRequestor Interface

The **TopicRequestor** object is used in request/reply messaging to simplify making service requests. Given a non-transacted **TopicSession** object and a destination **Topic**, it creates a **TemporaryTopic** object for the responses and provides a request method that sends the request message and waits for its reply.

The **TopicRequestor** interface includes the following methods:

CreateTopicRequestor

Syntax

```
CreateTopicRequestor(pTopSessn, pDest, iError, pczError)
```

Description

Constructs a **TopicRequestor** object. This implementation assumes that the parent topic session is non-transacted and that the value of its **DeliveryMode** property is either AUTO_ACKNOWLEDGE or DUPS_OK_ACKNOWLEDGE.

Parameters

Name	Type	Description
pTopSessn	SBYN_TopicSession*	Pointer to the parent **TopicSession** object.
pDest	SBYN_Destination*	Pointer to the destination topic.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_TopicRequestor*
Pointer to the constructed **TopicRequestor** object.

TopicRequestorRequest

Syntax

```
TopicRequestorRequest(pTopReq, pMsg, iError, pczError)
```

Description

Sends a request and waits for a reply, without any upper limit on the time to wait (compare **"TopicRequestorRequestTimeout" on page 435**). The temporary topic is used for the **JMSReplyTo** destination; the first reply is returned, and any following replies are discarded.

Parameters

Name	Type	Description
pTopReq	SBYN_TopicRequestor*	Pointer to the **TopicRequestor** object.
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the reply message.

TopicRequestorRequestTimeout

Syntax

```
TopicRequestorRequestTimeout(pTopReq, pMsg, lTimeout,
                             iError, pczError)
```

Description

Sends a request and waits for a reply, but only during the specified period of time. Compare to **"TopicRequestorRequest" on page 434**.

Parameters

Name	Type	Description
pTopReq	SBYN_TopicRequestor*	Pointer to the **TopicRequestor** object.
pMsg	SBYN_Message*	Pointer to the message.
lTimeout	long	Timeout value, in milliseconds.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the reply message, or **0** if no reply arrives before the waiting period ends.

TopicRequestorClose

Syntax

```
TopicRequestorClose(pTopReq, iError, pczError)
```

Description

Closes the specified topic requestor.

Note: *When a message producer or consumer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pTopReq	SBYN_TopicRequestor*	Pointer to the **TopicRequestor** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.19. The QueueRequestor Interface

The **QueueRequestor** object is used in request/reply messaging to simplify making service requests. Given a non-transacted **QueueSession** object and a destination **Queue**, it creates a **TemporaryQueue** object for the responses and provides a request method that sends the request message and waits for its reply.

The **QueueRequestor** interface includes the following methods:

- **CreateQueueRequestor** on page 436
- **QueueRequestorClose** on page 437
- **QueueRequestorRequest** on page 437
- **QueueRequestorRequestTimeout** on page 438

CreateQueueRequestor

Syntax

```
CreateQueueRequestor(pQueSessn, pDest, iError, pczError)
```

Description

Constructs a **QueueRequestor** object. This implementation assumes that the parent queue session is non-transacted and that the value of its **DeliveryMode** property is either AUTO_ACKNOWLEDGE or DUPS_OK_ACKNOWLEDGE.

Parameters

Name	Type	Description
pQueSessn	SBYN_QueueSession*	Pointer to the parent **QueueSession** object.
pDest	SBYN_Destination*	Pointer to the destination queue.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_QueueRequestor*
Pointer to the constructed **QueueRequestor** object.

QueueRequestorClose

Syntax

```
QueueRequestorClose(pQueReq, iError, pczError)
```

Description

Closes the specified queue requestor.

Note: *When a message producer or consumer is no longer needed, it should be closed.*

Parameters

Name	Type	Description
pQueReq	SBYN_QueueRequestor*	Pointer to the **QueueRequestor** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

QueueRequestorRequest

Syntax

```
QueueRequestorRequest(pQueReq, pMsg, iError, pczError)
```

Description

Sends a request and waits for a reply, without any upper limit on the time to wait (compare **"QueueRequestorRequestTimeout" on page 438**). The temporary queue is used for the **JMSReplyTo** destination. Only one reply per request is expected.

Parameters

Name	Type	Description
pTopReq	SBYN_TopicRequestor*	Pointer to the **TopicRequestor** object.
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the reply message.

QueueRequestorRequestTimeout

Syntax

```
QueueRequestorRequestTimeout(pQueReq, pMsg, lTimeout,
                             iError, pczError)
```

Description

Sends a request and waits for a reply, but only during the specified period of time. Compare to **"QueueRequestorRequest" on page 437**.

Parameters

Name	Type	Description
pQueReq	SBYN_QueueRequestor*	Pointer to the **QueueRequestor** object.
pMsg	SBYN_Message*	Pointer to the message.
lTimeout	long	Timeout value, in milliseconds.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_Message*
Pointer to the reply message, or **0** if no reply arrives before the waiting period ends.

5.8.20. Destructor Methods

Destructor methods include the following:

DeleteQueueConnectionFactory

Syntax

```
DeleteQueueConnectionFactory(pQueCxnFac, iError, pczError)
```

Description

Deletes the specified queue connection factory.

Parameters

Name	Type	Description
pQueCxnFac	SBYN_QueueConnectionFactory*	Pointer to the **QueueConnectionFactory** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteQueueConnection

Syntax

```
DeleteQueueConnection(pQueCxn, iError, pczError)
```

Description

Deletes the specified queue connection.

Parameters

Name	Type	Description
pQueCxn	SBYN_QueueConnection*	Pointer to the **QueueConnection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteQueueReceiver

Syntax

```
DeleteQueueReceiver(pQueRecvr, iError, pczError)
```

Description

Deletes the specified queue receiver.

Parameters

Name	Type	Description
pQueRecvr	SBYN_QueueReceiver*	Pointer to the **QueueReceiver** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteQueueRequestor

Syntax

```
DeleteQueueRequestor(pQueReq, iError, pczError)
```

Description

Deletes the specified queue requestor.

Parameters

Name	Type	Description
pQueReq	SBYN_QueueRequestor *	Pointer to the **QueueRequestor** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteQueueSender

Syntax

```
DeleteQueueSender(pQueSender, iError, pczError)
```

Description

Deletes the specified queue sender.

Parameters

Name	Type	Description
pQueSender	SBYN_QueueSender*	Pointer to the **QueueSender** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteQueueSession

Syntax

```
DeleteQueueSession(pQueSessn, iError, pczError)
```

Description

Deletes the specified queue session.

Parameters

Name	Type	Description
pQueSessn	SBYN_QueueSession*	Pointer to the **QueueSession** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicConnectionFactory

Syntax

```
DeleteTopicConnectionFactory(pTopCxnFac, iError, pczError)
```

Description

Deletes the specified topic connection factory.

Parameters

Name	Type	Description
pTopCxnFac	SBYN_TopicConnectionFactory*	Pointer to the **TopicConnectionFactory** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicConnection

Syntax

```
DeleteTopicConnection(pTopCxn, iError, pczError)
```

Description

Deletes the specified topic connection.

Parameters

Name	Type	Description
pTopCxn	SBYN_TopicConnection*	Pointer to the **TopicConnection** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicSession

Syntax

```
DeleteTopicSession(pTopSession, iError, pczError)
```

Description

Deletes the specified topic session.

Parameters

Name	Type	Description
pTopSessn	SBYN_TopicSession*	Pointer to the **TopicSession** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicSubscriber

Syntax

```
DeleteTopicSubscriber(pTopSub, iError, pczError)
```

Description

Deletes the specified topic subscriber.

Parameters

Name	Type	Description
pTopSub	SBYN_TopicSubscriber*	Pointer to the **TopicSubscriber** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicRequestor

Syntax

```
DeleteTopicRequestor(pTopReq, iError, pczError)
```

Description

Deletes the specified topic requestor.

Parameters

Name	Type	Description
qTopReq	SBYN_TopicRequestor*	Pointer to the **TopicRequestor** object.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteTopicPublisher

Syntax

```
DeleteTopicPublisher(pTopPub, iError, pczError)
```

Description

Deletes the specified topic publisher.

Parameters

Name	Type	Description
pTopPub	SBYN_TopicPublisher*	Pointer to the **TopicPublisher** object.
iError	int*	Pointer to the error number.

Name	Type	Description
pczError	char*	Pointer to the error message text.

Return Value

None.

DeleteMessage

Syntax

```
DeleteMessage(pMsg, iError, pczError)
```

Description

Deletes the specified message.

Parameters

Name	Type	Description
pMsg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

None.

5.8.21. The WString Helper Interface

The **WString** structure (wide string—not part of the standard JMS API), is used to facilitate the handling of text strings.

The **WString** helper interface includes the following methods:

- **CharToWString** on page 444
- **DeleteWString** on page 445
- **WStringToChar** on page 445

Also see **"The WStringList Helper Interface" on page 446**.

CharToWString

Syntax

```
CharToWString(pczStr, iError, pczError)
```

Description

Translates the specified character array to a **WString** (wide string) object.

Parameters

Name	Type	Description
pczStr	const char*	Pointer to the character array.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_WString*
Pointer to the **WString** object containing the translation of the character array.

DeleteWString

Syntax

```
DeleteWString(WStr, iError, pczError)
```

Description

Deletes the specified **WString** (wide string) object.

Parameters

Name	Type	Description
WStr	SBYN_WString*	Pointer to the WString object.

Return Value

None.

WStringToChar

Syntax

```
WStringToChar(WStr, iError, pczError)
```

Description

Translates the specified **WString** (wide string) object to a character array.

Parameters

Name	Type	Description
WStr	SBYN_WString*	Pointer to the WString object.

Return Value

char*
Pointer to the character array holding the translation.

5.8.22. The WStringList Helper Interface

The **WStringList** structure (wide string list—not part of the standard JMS API), is used to facilitate the handling of text strings.

The **WStringList** helper interface includes the following methods:

- **DeleteWStringList** on page 446
- **GetPropertyName** on page 446

Also see **"The WString Helper Interface" on page 444**.

DeleteWStringList

Syntax

```
DeleteWString(WStrList)
```

Description

Deletes the specified **WStringList** object (list of wide strings).

Parameters

Name	Type	Description
WStrList	SBYN_WString*	Pointer to the WStringList object.

Return Value

None.

GetPropertyName

Syntax

```
GetPropertyName(msg, iError, pczError)
```

Description

Retrieves a list of property names defined for the specified message.

Parameters

Name	Type	Description
msg	SBYN_Message*	Pointer to the message.
iError	int*	Pointer to the error number.
pczError	char*	Pointer to the error message text.

Return Value

SBYN_WStringList*
Pointer to the **WStringList** object (a list of wide strings) holding the property names.

5.8.23. Error Codes and Messages in the C API for JMS

The **C** API for JMS defines error codes as shown in Table 19.

Table 19 Error Codes Defined in the C API for JMS

Error Code	Explanation
0x80040300 = 2147746560 decimal JE_CODE_E_GENERAL	JMS exception, unspecified.
0x80040301 = 2147746561 decimal JE_CODE_E_REALLOC	A JMS exception occurred as a result of memory reallocation.
0x80040302 = 2147746562 decimal JE_CODE_E_MALLOC	A JMS exception occurred as a result of memory allocation.
0x80040303 = 2147746563 decimal JE_CODE_E_CONNECTION	A JMS exception occurred in setting up a connection.
0x80040304 = 2147746564 decimal JE_CODE_E_CREATION	A JMS exception occurred while creating a JMS object.
0x80040305 = 2147746565 decimal JE_CODE_E_CLOSED_SOCKET	A JMS exception occurred because of a closed socket.
0x80040306 = 2147746566 decimal JE_CODE_E_EOF	Processing ended because the BytesMessage or StreamMessage ended unexpectedly.
0x80040307 = 2147746567 decimal JE_CODE_E_NOTREADABLE	Processing ended because the message could not be read.
0x80040308 = 2147746568 decimal JE_CODE_E_NOTWRITEABLE	Processing ended because the message could not be written.
0x80040309 = 2147746569 decimal JE_CODE_E_FORMAT	Processing ended because the JMS client attempted to use a data type not supported by the message (or a message property), or attempted to read message data (or a message property) as the wrong type.
0x8004030A = 2147746570 decimal JE_CODE_E_ROLLBACK	The attempt to commit the session was unsuccessful of a transaction being rolled back.
0x8004030B = 2147746571 decimal JE_CODE_E_STATE	Processing ended because a method was invoked at an illegal or inappropriate time or because the provider was not in an appropriate state for the requested operation.
0x8004030C = 2147746572 decimal JE_CODE_E_DESTINATION	Processing ended because the destination could not be understood or was found to be invalid.
0x8004030D = 2147746573 decimal JE_CODE_E_NOTIMPL	Processing ended because a feature or interface was not implemented.
0x8004030E = 2147746574 decimal JE_CODE_E_INDEX_OUT_OF_BOUNDS	Processing ended because an index of some sort (such as to an array, to a string, or to a vector) was found to be outside the valid range.
0x8004030F = 2147746575 decimal JE_CODE_E_NULL_POINTER	Processing ended because the pointer in a case where an object was required.
0x80040310 = 2147746576 decimal JE_CODE_E_INVLD_CLIENT_ID	Processing ended because the connection's client ID was rejected by the provider.

Table 19 Error Codes Defined in the C API for JMS (Continued)

Error Code	Explanation
0x80040311 = 2147746577 decimal JE_CODE_E_INVLD_SELECTOR	Processing ended because the message selector was found to be syntactically invalid.
0x80040312 = 2147746578 decimal JE_CODE_E_JMS_SECURITY	Processing was ended by JMS Security — for example, the provider rejected a name/password combination submitted by a client.
0x80040313 = 2147746579 decimal JE_CODE_E_RESOURCE_ALLOC	Processing ended because of the provider was unable to allocate resources required for the method/function.
0x80040314 = 2147746580 decimal JE_CODE_E_XA_IN_PROGRESS	Processing ended because a transaction was in progress.

5.9 RPG Wrapper Methods

The following wrapper methods are described in the following sections:

jmsCloseCons

Syntax

```
jmsCloseCons(consumer, err, errBuf)
```

Description

Closes the specified Message Consumer object. In pub/sub messaging, a consumer is a topic subscriber; in point-to-point messaging, it is a queue receiver.

Parameters

Name	Type	Description
consumer	jmsConsumer*	Pointer to the topic subscriber or queue receiver.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsCloseDest

Syntax

```
jmsCloseDest(dest, err, errBuf)
```

Description

Closes the specified Destination object. In pub/sub messaging, a destination is a topic; in point-to-point messaging, it is a queue.

Parameters

Name	Type	Description
dest	jmsDest*	Pointer to the topic or queue.
err	int*	Pointer to the error number.

Name	Type	Description
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsCloseProd

Syntax

```
jmsCloseProd(producer, err, errBuf)
```

Description

Closes the specified Message Producer object. In pub/sub messaging, a producer is a topic publisher; in point-to-point messaging, it is a queue sender.

Parameters

Name	Type	Description
producer	jmsProducer*	Pointer to the topic publisher or queue sender.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsCloseSess

Syntax

```
jmsCloseSess(session, err, errBuf)
```

Description

Closes the specified Session object.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsCmtSess

Syntax

```
jmsCmtSess(session, err, errBuf)
```

Description

Commits all messages done in this transaction and releases any locks currently held.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsCrtBytesMsg

Syntax

```
jmsCrtBytesMsg(session, err, errBuf)
```

Description

Creates a message of type BytesMessage—in other words, an uninterpreted stream of bytes.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsMessage*
Pointer to the created message.

jmsCrtCons

Syntax

```
jmsCrtCons(session, dest, subName, isDurable, err, errBuf)
```

Description

Creates a Message Consumer object. In point-to-point messaging, a consumer is a queue receiver. In pub/sub messaging, a consumer is a topic subscriber, which can be either non-durable (the default) or durable:

- A *non-durable* subscriber only receives messages published while it is active.
- If a topic has one or more *durable* subscribers, JMS retains each message until it has either been acknowledged by all durable subscribers or until the message expires.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
dest	jmsDest*	Pointer to the topic or queue.
subName	char*	For pub/sub messaging only: Name of the durable subscriber. Ignored if *isDurable* is set to **0**.
isDurable	int*	For pub/sub messaging only: Integer code indicating whether the subscriber is durable: ▪ **0** indicates a regular (non-durable) subscriber. ▪ **1** indicates a durable subscriber.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsConsumer*
Pointer to the created topic subscriber or queue receiver.

jmsCrtDest

Syntax

```
jmsCrtDest(sess, destName, err, errBuf)
```

Description

Creates a Destination object. In pub/sub messaging, a destination is a topic; in point-to-point messaging, it is a queue.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
destName	char*	Pointer to the name of the topic or queue.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsDest*
Pointer to the created topic or queue.

jmsCrtProd

Syntax

```
jmsCrtProd(session, dest, err, errBuf)
```

Description

Creates a Message Producer object. In pub/sub messaging, a producer is a topic publisher; in point-to-point messaging, it is a queue sender.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
dest	jmsDest*	Pointer to the topic or queue.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsProducer*
Pointer to the created topic publisher or queue receiver.

jmsCrtRqst

Syntax

```
jmsCrtRqst(session, dest, err, errBuf)
```

Description

Creates a Requestor object. In pub/sub messaging, this is a topic requestor; in point-to-point messaging, it is a queue requestor.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
dest	jmsDest*	Pointer to the topic or queue.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsRequestor*
Pointer to the created topic requestor or queue requestor.

jmsCrtTxtMsg

Syntax

```
jmsCrtTxtMsg(session, buf, err, errBuf)
```

Description

Creates a Message object and initializes it with the text in the specified buffer.

Parameters

Name	Type	Description
session	jmsSession*	Pointer to the session.
buf	char*	Pointer to a text buffer containing the text to write.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsMessage*
Pointer to the created message.

jmsDltMsg

Syntax

```
jmsDltMsg(msg, err, errBuf)
```

Description

Deletes the specified Message object.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the message.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsDltRqst

Syntax

```
jmsDltRqst(requestor, err, errBuf)
```

Description

Deletes the specified Requestor object (a topic requestor or queue requestor).

Parameters

Name	Type	Description
requestor	jmsRequestor*	Pointer to the topic requestor or queue requestor.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsGetRpyTo

Syntax

```
jmsGetRpyTo(msg, err, errBuf)
```

Description

Learns the Destination object where a reply to specified request should be sent. In pub/sub messaging, a destination is a topic; in point-to-point messaging, it is a queue.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the request message.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsDest*
Pointer to the topic or queue designated to receive the reply.

jmsGetTxtMsg

Syntax

```
jmsGetTxtMsg(msg, err, errBuf)
```

Description

Reads the content of the specified TextMessage object.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the request message.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

char*

Pointer to the text string that was read from the message.

jmsOpnSess

Syntax

```
jmsOpnSess(host, port, sessionType, clientID, transactMode, ackMode,
           err, errBuf)
```

Description

This method first creates a ConnectionFactory object—an object that encapsulates a set of connection configuration parameters. It then creates a Connection object—an active connection for a client). Finally, if both of these are created successfully, it creates a Session object—a single-threaded context for producing and consuming messages.

Parameters

Name	Type	Description
host	char*	Pointer to the name of the host where the JMS server is running.
port	int*	Pointer to the port number where the JMS server is listening.
sessionType	in*	Pointer to an integer code indicating what type of session to create: ▪ **0** (topic type, for pub/sub messaging) ▪ **1** (queue type, for point-to-point messaging)
clientID	char*	Pointer to the connection client ID name. Allows you to associate a name with the connection.
transactMode	int*	Pointer to an integer code indicating whether the session is transacted. Default: **0** (non-transacted session). See **"Transacted Constants" on page 351**.

Name	Type	Description
ackMode	int*	Pointer to an integer code indicating whether and how messages are acknowledged. Default: **0** (auto-acknowledge mode). See **"Session Constants" on page 350**.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsSession*
Pointer to the created session.

jmsRcvMsg

Syntax

```
jmsRcvMsg(consumer, timeout, err, errBuf)
```

Description

Receives the next message produced for the specified Message Consumer object. In pub/sub messaging, a consumer is a topic subscriber; in point-to-point messaging, it is a queue receiver.

Parameters

Name	Type	Description
consumer	jmsConsumer*	Pointer to the topic subscriber or queue receiver.
timeout	long*	Pointer to the length of time, in milliseconds, before the message is considered expired.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsMessage*
Pointer to the returned message.

jmsReadBytes

Syntax

```
jmsReadBytes(msg, buffer, length, err, errBuf)
```

Description

Reads a specified portion of the specified BytesMessage stream into a buffer.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
buffer	unsigned char*	Pointer to the buffer into which to read the bytes.
length	int*	Pointer to the number of bytes to read.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

int

The total number of bytes that were read into the buffer; or **-1** if t here is no more data to be read (because the end of the stream has been reached).

jmsReadFloat

Syntax

```
jmsReadFloat(msg, err, errBuf)
```

Description

Reads a floating-point number from the next four bytes of the specified BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

float

The next four bytes of the BytesMessage stream, interpreted as a floating-point real.

jmsReadLong

Syntax

```
jmsReadLong(msg, err, errBuf)
```

Description

Reads a long integer (signed 64-bit integer) from the next eight bytes of the specified BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

long
The next eight bytes of the BytesMessage stream, interpreted as a signed 64-bit integer.

jmsReadShort

Syntax

```
jmsReadShort(msg, err, errBuf)
```

Description

Reads a short integer (signed 16-bit integer) from the next two bytes of the specified BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

short
The next two bytes of the BytesMessage stream, interpreted as a signed 16-bit integer.

jmsReqRpy

Syntax

```
jmsReqRpy(requestor, inMsg, timeout, err, errBuf)
```

Description

Sends a request message and waits for a reply message.

Parameters

Name	Type	Description
requestor	jmsRequestor*	Pointer to the topic requestor or queue requestor.
inMsg	jmsMessage*	Pointer to the request message.
timeout	long*	Pointer to the length of time, in milliseconds, before the message is considered expired.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

jmsMessage*

Pointer to the reply message.

jmsReset

Syntax

```
Reset(msg, err, errBuf)
```

Description

For a message of type BytesMessage, puts the message body into read-only mode and repositions the stream of bytes to the beginning.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the message.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsSetRpyTo

Syntax

```
Reset(msg, dest, err, errBuf)
```

Description

Designates the Destination object to receive a reply to the specified request message. In pub/sub messaging, a destination is a topic; in point-to-point messaging, it is a queue.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the request message.
dest	jmsDest*	Pointer to the designated topic or queue.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsSndMsg

Syntax

```
jmsSndMsg(prod, msg, err, errBuf)
```

Description

Sends the specified message from the specified Message Producer object. In pub/sub messaging, a producer is a topic publisher; in point-to-point messaging, it is a queue sender.

Parameters

Name	Type	Description
prod	jmsProducer*	Pointer to the topic publisher or queue receiver.
msg	jmsMessage*	Pointer to the message.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsWriteBytes

Syntax

```
jmsWriteBytes(msg, buffer, offset, length, err, errBuf)
```

Description

Writes a portion of the specified byte array to the BytesMessage stream. For example:

- To write the first two bytes of the BytesMessage stream: Set *offset*=**0** and *length*=**2**.
- To skip the first four bytes and write the next sixteen: Set *offset*=**4** and *length*=**16**.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
buffer	unsigned char*	Pointer to the buffer from which to write the bytes.
offset	int*	Pointer to the number of initial bytes to skip.
length	int*	Pointer to the total number of bytes to write.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsWriteFloat

Syntax

```
jmsWriteFloat(msg, value, err, errBuf)
```

Description

Writes the specified floating-point real number (four bytes) to the BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
value	float	Pointer to the number to be written.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsWriteLong

Syntax

```
jmsWriteLong(msg, value, err, errBuf)
```

Description

Writes the specified long integer (eight bytes) to the BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
value	long	Pointer to the number to be written.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

jmsWriteShort

Syntax

```
jmsWriteShort(msg, value, err, errBuf)
```

Description

Writes the specified short integer (two bytes) to the BytesMessage stream.

Parameters

Name	Type	Description
msg	jmsMessage*	Pointer to the BytesMessage stream.
value	short	Pointer to the number to be written.
err	int*	Pointer to the error number.
errBuf	char*	Pointer to the error message text.

Return Value

None.

5.9.1. Differences Between JMS Java API and SeeBeyond JMS C API

The **C** API has a few differences compared to the Java API for JMS, as noted below.

Differences Between Java and C in the BytesMessage Interface

For methods **ReadBytes()** and **WriteBytes()**, Java defines one signature to read or write the entire array (making use of Java's ability to easily determine the length of the given array), and another to read/write a portion of the array. Because **C** has no easy way to determine array length, the **C** API implements only the second functionality (reading or writing a portion of the array), and also provides a facility to see if more data exists.

Differences Between Java and C in the MapMessage Interface

The **C** API has not defined any equivalent for the Java **MapMessage** interface.

Differences Between Java and C in the MessageProducer Interface

The **C** API provides functions **GetJMS_ProducerID()** and **SetJMS_ProducerID**, which have no equivalent in the Java API.

Differences Between Java and C in Error Handling

Although C does not support exception-handling, the supplied wrappers for C and RPG use an error-handling scheme allows a JMS C++ exception to propagate to the application.

For each JMS C/RPG API, the final two parameters are an integer (*iErr*) and a text buffer (*szErrBuf*). Check the value of *iErr* after making any C API call; if the value is nonzero, it indicates that the underlying code has thrown an exception, and you should check the error description contained in the buffer.

For example:

```
pTopicConnection = CreateTopicConnection(pTcf, &iErr, szErrBuf);
if (iErr){
    printf("ERROR %d: %s\n", iErr, szErrBuf);
}
```

5.10 The Supported C++ APIs for Seebeyond JMS

The e*Gate API Kit contains C++ APIs that are used to extend the functionality of e*Gate. These APIs are contained in the following classes:

5.11 The C++ API for Seebeyond JMS

5.11.1. The Message Interface for JMS in C++

The `Message` interface is the root interface of all JMS messages. It defines the message header and the `acknowledge` method used for all messages.

Most message-oriented middleware (MOM) products treat messages as lightweight entities that consist of a header and a payload. The header contains fields used for message routing and identification; the payload contains the application data being sent.

Within this general form, the definition of a message varies significantly across products. It would be quite difficult for the JMS API to support all of these message models.

With this in mind, the JMS message model has the following goals:

- Provide a single, unified message API
- Provide an API suitable for creating messages that match the format used by provider-native messaging applications
- Support the development of heterogeneous applications that span operating systems, machine architectures, and computer languages
- Support messages containing objects in the Java programming language ("Java objects")
- Support messages containing Extensible Markup Language (XML) pages

The Message methods are:

acknowledge

Syntax

```
void acknowledge()
```

Description

Acknowledges the receipt of current and previous messages.

Return Value

None.

clearBody

Syntax

```
void clearBody()
```

Description

Clears the body of a message, leaving the message header values and property entries intact.

Return Value

None.

clearProperties

Syntax

```
void clearProperties()
```

Description

Clears the properties from a message, leaving the message header fields and body intact.

Return Value

None.

propertyExists

Syntax

```
STCBOOL propertyExists(name)
```

Description

Checks whether a value for a specific property exists.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

STCBOOL

Returns **true** if the property value is defined; otherwise, returns **false**.

getBooleanProperty

Syntax

```
STCBOOL getBooleanProperty(name)
```

Description

Checks whether a value for a specific property exists.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

STCBOOL

Returns **true** if the property value is defined; otherwise, returns **false**.

getByteProperty

Syntax

```
unsigned getByteProperty(name)
```

Description

Reads the value of the specified byte property in the specified message.

Parameters

Name	Type	Description
named	WString&	The name of the property to check.

Return Value

unsigned char

The value of the property.

getDoubleProperty

Syntax

```
double getDoubleProperty(name)
```

Description

Reads the value of the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

Double

The value of the property.

getFloatProperty

Syntax

```
float getFloatProperty(name)
```

Description

Reads the value of the specified floating-point (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

float

The value of the property.

getIntProperty

Syntax

```
int getIntProperty(name)
```

Description

Reads the value of the specified integer (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

int

The value of the property.

getLongProperty

Syntax

```
int64_t getLongProperty(name)
```

Description

Reads the value of the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

int64_t

The long value of the property.

getPropertyName

Syntax

```
wNamesList getPropertyName(name)
```

Description

Returns a list of WStrings for the specified message.

Parameters

Name	Type	Description
name	wNamesList	Returns a list of the property names.

Return Value

wNamesList

Returns a list.

getShortProperty

Syntax

```
short getShortProperty(name)
```

Description

Reads the value of the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.

Return Value

short

The value of the property.

getStringProperty

Syntax

```
WString getStringProperty(name)
```

Description

Reads the value of the specified text property in the specified message.

Parameters

Name	Type	Description
name	WString	The name of the property to check.

Return Value

WString

A WString (wide string) object containing the value of the property.

setBooleanProperty

Syntax

```
void setBooleanProperty(name, value)
```

Description

Writes a value for the specified Boolean property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	STCBool	The value to be written.

Return Value

None

setByteProperty

Syntax

```
void setByteProperty(name, value)
```

Description

Writes a value for the specified byte property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	unsigned char	The value to be written.

Return Value

None

setDoubleProperty

Syntax

```
void setDoubleProperty(name, value)
```

Description

Writes a value for the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	double	The value to be written.

Return Value

None

setFloatProperty

Syntax

```
void setFloatProperty(name, value)
```

Description

Writes a value for the specified byte property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	float	The value to be written.

Return Value

None

setIntProperty

Syntax

```
void setIntProperty(name, value)
```

Description

Writes a value for the specified byte property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	int	The value to be written.

Return Value

None

setLongProperty

Syntax

```
void setLongProperty(name, value)
```

Description

Writes a value for the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
User defined	long	The value to be written.

Return Value

None

setObjectProperty

Syntax

```
void setObjectProperty(name, value)
```

Description

Writes a value for the specified object property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
User defined	SerialObject	The value to be written.

Return Value

None

setShortProperty

Syntax

```
void setShortProperty(name, value)
```

Description

Writes a value for the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	short	The value to be written.

Return Value

None

setStringProperty

Syntax

```
void setStringProperty(name, value)
```

Description

Writes a value for the specified text property in the specified message.

Parameters

Name	Type	Description
name	WString&	The name of the property to check.
value	char *	The value to be written.

Return Value

None

propertyExists

Syntax

```
STCBOOL propertyExists(name)
```

Description

Checks whether a value for a specific property exists.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

STCBOOL

Returns **true** if the property value is defined; otherwise, returns **false**.

getBooleanProperty

Syntax

```
STCBOOL getBooleanProperty(name)
```

Description

Reads the value of the specified Boolean property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

STCBOOL

The value of the property.

getByteProperty

Syntax

```
unsigned char getByteProperty(name)
```

Description

Reads the value of the specified byte property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

unsigned char
The value of the property.

getDoubleProperty

Syntax

```
double getDoubleProperty(name)
```

Description

Reads the value of the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

double
The value of the property.

getFloatProperty

Syntax

```
float getFloatProperty(name)
```

Description

Reads the value of the specified floating-point (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

float
The value of the property.

getIntProperty

Syntax

```
int getIntProperty(name)
```

Description

Reads the value of the specified integer (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

int
The value of the property.

getLongProperty

Syntax

```
int64_t getLongProperty(name)
```

Description

Reads the value of the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

int64_t
The long value of the property.

getObjectProperty

Syntax

```
SerialObject getObjectProperty(name)
```

Description

Reads the value of the specified object property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the object property to check.

Return Value

SerialObject
The serialized value of the property.

getShortProperty

Syntax

```
short getShortProperty(name)
```

Description

Reads the value of the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

short
The value of the property.

getStringProperty

Syntax

```
WString getStringProperty(name)
```

Description

Reads the value of the specified text property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the name of the property to check.

Return Value

WString*

Pointer to a **WString** (wide string) object containing the value of the property.

setBooleanProperty

Syntax

```
void setBooleanProperty(name, value)
```

Description

Writes a value for the specified Boolean property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	STCBOOL	The value to be written.

Return Value

None.

setByteProperty

Syntax

```
void setByteProperty(name, value)
```

Description

Writes a value for the specified byte property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	unsigned char	The value to be written.

Return Value

None.

setDoubleProperty

Syntax

```
void setDoubleProperty(name, value)
```

Description

Writes a value for the specified double (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	double	The value to be written.

Return Value

None.

setFloatProperty

Syntax

```
void setFloatProperty(name, value)
```

Description

Writes a value for the specified floating-point (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
Value	float	The value to be written.

Return Value

None.

setIntProperty

Syntax

```
void setIntProperty(name, value)
```

Description

Writes a value for the specified integer (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	int	The value to be written.

Return Value

None.

setLongProperty

Syntax

```
void setLongProperty(name, value)
```

Description

Writes a value for the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	int64_t	The value to be written.

Return Value

None.

setObjectProperty

Syntax

```
void setObjectProperty(name, value)
```

Description

Writes a value for the specified long (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	SerialObject	The value to be written.

Return Value

None.

setShortProperty

Syntax

```
void setShortProperty(name, value)
```

Description

Writes a value for the specified short (numeric) property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	short	The value to be written.

Return Value

None.

setStringProperty

Syntax

```
void setStringProperty(name, value)
```

Description

Writes a value for the specified text property in the specified message.

Parameters

Name	Type	Description
name	char*	Pointer to the property name.
value	char*	The value to be written.

Return Value

None.

getJMSCorrelationID

Syntax

```
WString getJMSCorrelationID()
```

Description

Retrieves the correlation ID for the specified message.

Return Value

WString*

Pointer to a **WString** (wide string) object containing the text.

getJMSCorrelationIDAsBytes

Syntax

```
char* getJMSCorrelationIDAsBytes()
```

Description

Retrieves the correlation ID for the specified message as an array of characters.

Return Value

None

getJMSDeliveryMode

Syntax

```
int getJMSDeliveryMode()
```

Description

Retrieves the value of the **DeliveryMode** property for the specified message.

Return Value

None

getJMSExpiration

Syntax

```
int64_t getJMSExpiration()
```

Description

Retrieves the value of the timestamp set for the expiration of the specified message.

Return Value

int64_t
Long timestamp.

getJMSMessageID

Syntax

```
WString getJMSMessageID()
```

Description

Retrieves the message ID of the specified message.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

getJMSPriority

Syntax

```
int getJMSPriority()
```

Description

Retrieves the priority level for the specified message.

Return Value

int
The priority level.

getJMSRedelivered

Syntax

```
STCBOOL getJMSRedelivered()
```

Description

Retrieves an indication of whether the specified message is being redelivered.

Return Value

STCBOOL
Returns **true** if the message is being redelivered; otherwise, returns **false**.

getJMSReplyTo

Syntax

```
Destination* getJMSReplyTo()
```

Description

Retrieves the **Destination** object where a reply to the specified message should be sent (for request/reply messaging).

Return Value

SBYN_Destination*
Pointer to the **Destination** object.

getJMSTimestamp

Syntax

```
int64_t getJMSTimestamp()
```

Description

Retrieves the timestamp of the specified message.

Return Value

int64_t
Long timestamp.

getJMSType

Syntax

```
WString getJMSType()
```

Description

Gets the message type identifier supplied by the client when the message was sent.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text.

setJMSCorrelationID

Syntax

```
void setJMSCorrelationID(correlationID)
```

Description

Sets the correlation ID for the specified message.

Parameters

Name	Type	Description
correlationID	WString	The text string containing the correlation ID.

Return Value

None.

setJMSCorrelationIDAsBytes

Syntax

```
void setJMSCorrelationIDAsBytes(deliveryMode)
```

Description

Sets the correlation ID for the specified message.

Parameters

Name	Type	Description
deliveryMode	char *	Pointer to the character array containing the bytes for the correlation ID.

Return Value

None.

setJMSDeliveryMode

Syntax

```
void setJMSDeliveryMode(destination)
```

Description

Sets the delivery mode for the specified message.

Parameters

Name	Type	Description
destination	Destination*	Pointer to the value corresponding to the delivery mode.

Return Value

None.

setJMSExpiration

Syntax

```
void setJMSExpiration(expiration)
```

Description

Sets the timestamp at which the specified message is due to expire.

Parameters

Name	Type	Description
expiration	int64_t	Timestamp of the expiration.

Return Value

None.

setJMSMessageID

Syntax

```
void setJMSMessageID(id)
```

Description

Sets the message ID of the specified message.

Parameters

Name	Type	Description
id	WString	The text string containing the message ID.

Return Value

None.

setJMSPriority

Syntax

```
void setJMSPriority(priority)
```

Description

Sets the priority level for the specified message.

Parameters

Name	Type	Description
priority	int	The priority level.

Return Value

None.

setJMSRedelivered

Syntax

```
void setJMSRedelivered(redelivered)
```

Description

Determines whether to flag the specified message as being redelivered. Used, for example, to specify redelivery for a message that has been sent but not acknowledged.

Parameters

Name	Type	Description
redelivered	STCBOOL	Flag: If **true**, the message is being redelivered.

Return Value

None.

setJMSReplyTo

Syntax

```
void setJMSReplyTo(replyTo)
```

Description

Sets the **Destination** object where a reply to the specified message should be sent.

Parameters

Name	Type	Description
replyto	Destination*	Pointer to the **Destination** object.

Return Value

None.

setJMSTimestamp

Syntax

```
void setJMSTimestamp(timestamp)
```

Description

Sets the timestamp (JMSTimestamp header field) that the specified message was handed off to a provider to be sent. Note that this is not necessarily the time the message is actually transmitted; the actual **send** can occur later because of transactions or other client-side queueing of messages.

Parameters

Name	Type	Description
timestamp	int64_t	Timestamp to be set.

Return Value

None.

setJMSType

Syntax

```
void setJMSType(type)
```

Description

Sets the JMSType header field, which is often used to identify the message structure and the payload type.

Parameters

Name	Type	Description
type	WString	The text string containing the data.

Return Value

None.

setJMSCorrelationIDAsBytes

Syntax

```
void setJMSCorrelationIDAsBytes(correlationID)
```

Description

Sets the correlation ID for the specified message.

Parameters

Name	Type	Description
correlationID	char*	Pointer to the character array containing the bytes for the correlation ID.

Return Value

None.

setJMSMessageID

Syntax

```
void setJMSMessageID(id)
```

Description

Sets the message ID of the specified message.

Parameters

Name	Type	Description
id	char*	Pointer to the text string containing the message ID.

Return Value

None.

setJMSType

Syntax

```
void setJMSType(type)
```

Description

Sets the JMSType header field, which is often used to identify the message structure and the payload type.

Parameters

Name	Type	Description
pczJMSType	char*	Pointer to the text string containing the data.

Return Value

None.

5.11.2. The BytesMessage Interface for JMS in C++

A **BytesMessage** object is used for messages containing a stream of uninterpreted bytes. The receiver of the message supplies the interpretation of the bytes.

The BytesMessage methods are:

readBoolean on page 491
readByte on page 491
readChar on page 491
readDouble on page 491
readFloat on page 492
readInt on page 492
readLong on page 492
readShort on page 492
readUnsignedByte on page 493
readUnsignedShort on page 493
readUTF on page 493
reset on page 494
writeBoolean on page 494
writeByte on page 494
writeBytes on page 495
writeBytes on page 495
writeChar on page 495
writeDouble on page 496
writeFloat on page 496
writeInt on page 497
writeLong on page 497
writeShort on page 497

readBoolean

Syntax

```
STCBOOL readBoolean()
```

Description

Reads a Boolean value from the **BytesMessage** stream.

Return Value

STCBOOL
The value read from the **BytesMessage** stream.

readByte

Syntax

```
unsigned char readByte()
```

Description

Reads a single unsigned character from the **BytesMessage** stream.

Return Value

unsigned char
The value read from the **BytesMessage** stream.

readChar

Syntax

```
unsigned short readChar()
```

Description

Reads a single Unicode character from the **BytesMessage** stream.

Return Value

unsigned short
The value read from the **BytesMessage** stream.

readDouble

Syntax

```
double readDouble()
```

Description

Reads a double numeric value from the **BytesMessage** stream.

Return Value

double
The value read from the **BytesMessage** stream.

---

readFloat

Syntax

```
float readFloat()
```

Description

Reads a floating-point numeric value from the **BytesMessage** stream.

Return Value

float
The value read from the **BytesMessage** stream.

---

readInt

Syntax

```
int readInt()
```

Description

Reads a signed integer value from the **BytesMessage** stream.

Return Value

int
The value read from the **BytesMessage** stream.

---

readLong

Syntax

```
int64_t readLong(pMsg, iError, pczError)
```

Description

Reads a signed long integer from the **BytesMessage** stream.

Return Value

long
The value read from the **BytesMessage** stream.

---

readShort

Syntax

```
short readShort(pMsg, iError, pczError)
```

Description

Reads a signed short integer from the **BytesMessage** stream.

Return Value

short
The value read from the **BytesMessage** stream.

readUnsignedByte

Syntax

```
readUnsignedByte()
```

Description

Reads an unsigned short integer from the **BytesMessage** stream.

Return Value

int
The value read from the **BytesMessage** stream.

readUnsignedShort

Syntax

```
int readUnsignedShort()
```

Description

Reads an unsigned short integer from the **BytesMessage** stream.

Return Value

int
The value read from the **BytesMessage** stream.

readUTF

Syntax

```
WString readUTF()
```

Description

Reads the value of a string that has been encoded using a modified UTF-8 format from the **BytesMessage** stream.

Return Value

WString*
Pointer to a **WString** (wide string) object containing the text from the **BytesMessage** stream.

reset

Syntax

```
void reset()
```

Description

Puts the message body into read-only mode and repositions the stream of bytes to the beginning.

Return Value

None.

writeBoolean

Syntax

```
void writeBoolean(value)
```

Description

Writes a Boolean value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	STCBOOL	The value to be written.

Return Value

None.

writeByte

Syntax

```
void writeByte(value)
```

Description

Writes a single byte (unsigned char) to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	unsigned char	The value to be written.

Return Value

None.

writeBytes

Syntax

```
void writeBytes(value)
```

Description

Writes an array of bytes (unsigned char values) to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	unsigned char*	Pointer to the value to be written.

Return Value

None.

writeBytes

Syntax

```
WriteBytesEx(value, offset, length)
```

Description

Writes a portion of a byte array (unsigned char values) to the **BytesMessage** stream. For example, to extract "nag" from "manager", set iOffset=2 and iLength=3.

Parameters

Name	Type	Description
pczValue	unsigned char*	Pointer to the value to be written.
offset	int	The initial offset within the byte array.
length	int	The number of bytes to use.

Return Value

None.

writeChar

Syntax

```
void writeChar(value)
```

Description

Writes an unsigned short integer to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	unsigned short	The value to be written.

Return Value

None.

writeDouble

Syntax

```
void writeDouble(value)
```

Description

Writes a double numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	double	The value to be written.

Return Value

None.

writeFloat

Syntax

```
writeFloat(value)
```

Description

Writes a floating-point numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	float	The value to be written.

Return Value

None.

writeInt

Syntax

```
void writeInt(value)
```

Description

Writes an integer numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	int	The value to be written.

Return Value

None.

writeLong

Syntax

```
void writeLong(value)
```

Description

Writes a long numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	int	The value to be written.

Return Value

None.

writeShort

Syntax

```
void writeShort(value)
```

Description

Writes a short numeric value to the **BytesMessage** stream.

Parameters

Name	Type	Description
value	short	The value to be written.

Return Value

None.

5.11.3. The TextMessage Class

A TextMessage is used to send a message containing text. It adds a text message body. When a client receives a TextMessage, it is in read-only mode. If an attempt is made to write to the message while in read-only mode, an error is returned. However, if ClearBody is called first, then message can be then read from and written to.

The TextMessage functions include the following:

GetText on page 498

SetText on page 498

SetText on page 499

GetText

Syntax

```
WString getText()
```

Description

Retrieves the string containing the data associated with the message.

Return Value

WString
Wide string.

SetText

Syntax

```
void SetText(buffer)
```

Description

Sets the string containing the data associated with the message.

Parameters

Name	Type	Description
Buffer	WString	The text string.

Return Value

None.

SetText

Syntax

```
void SetText(buffer)
```

Description

Sets the string containing the data associated with the message.

Parameters

Name	Type	Description
Buffer	char*	Pointer to the text string.

Return Value

None.

5.11.4. The Connection Interface for JMS in C++

A **Connection** object is an active connection to a JMS point-to-point provider or an active connection to a JMS pub/sub provider. A client uses a Connection to create one or more Sessions for producing and consuming messages.

The **Connection** interface includes the following methods:

close on page 499

getClientID on page 500

setClientID on page 500

start on page 500

stop on page 500

---

close

Syntax

```
void close()
```

Description

Closes the specified connection.

Return Value

None.

getClientID

Syntax

```
WString getClientID()
```

Description

Retrieves the client ID associated with the specified **Connection** object.

Return Value

WString*
WString (wide string) object containing the text.

setClientID

Syntax

```
void setClientID(ClientID)
```

Description

Sets the client ID to be associated with the specified **Connection** object. In other words, this method allows you to name the connection.

Parameters

Name	Type	Description
clientID	WString	Text string for the client ID.

Return Value

None.

start

Syntax

```
void start()
```

Description

Starts (or restarts) delivering incoming messages via the specified **Connection** object. If the connection is already started, the call is ignored without error.

Return Value

None.

stop

Syntax

```
void stop()
```

Description

Temporarily halts delivering incoming messages via the specified **Connection** object. If the connection is already stopped, the call is ignored without error.

Return Value

None.

5.11.5. The QueueConnection Interface for JMS in C++

A QueueConnection is an active connection to a JMS PTP provider. A client uses a QueueConnection to create one or more QueueSessions for producing and consuming messages.

The QueueConnection Interface methods:

createQueueSession on page 501

---

createQueueSession

Syntax

```
QueueSession* createQueueSession(transacted, acknowledgeMode)
```

Description

Creates a **Session** object.

Parameters

Name	Type	Description
transacted	SBYN_BOOL	Flag: If **true**, the session is transacted.
acknowledgeMode	int	Ignored if the session is transacted. If the session is not transacted, indicates whether the consumer or client acknowledges messages that it receives.

Return Value

SBYN_Session* pointer.

5.11.6. The Session Interface for JMS in C++

The Session Interface methods:

close on page 502

commit on page 502

getTransacted on page 502

recover on page 502

rollback on page 503

bytesMessage on page 503

createTextMessage on page 503

createTextMessage on page 504

close

Syntax

```
void close()
```

Description

Closes the specified session.

Note: *Sessions should be closed when they are no longer needed.*

Return Value

None.

commit

Syntax

```
void commit()
```

Description

Commits all messages done in this transaction and releases any locks currently held.

Return Value

None.

getTransacted

Syntax

```
STCBOOL getTransacted()
```

Description

Queries whether the specified session is or is not transacted.

STCBOOL

Returns **true** if the session is transacted; otherwise, returns **false**.

recover

Syntax

```
void recover()
```

Description

Stops message delivery in the specified session, causes all messages that might have been delivered but not acknowledged to be marked as **redelivered**, and restarts message delivery with the oldest unacknowledged message. Note that redelivered messages need not be delivered in the exact order they were originally delivered.

Return Value

None.

rollback

Syntax

```
rollback(pSessn, iError, pczError)
```

Description

Rolls back any messages done in this transaction and releases any locks currently held.

Return Value

None.

bytesMessage

Syntax

```
BytesMessage* bytesMessage()
```

Description

Creates a **BytesMessage**— an object used to send a message containing a stream of uninterpreted bytes.

Return Value

BytesMessage*
Pointer to the created message object.

createTextMessage

Syntax

```
TextMessage createTextMessage()
```

Description

Creates an uninitialized **TextMessage**— an object used to send a message containing a string to be supplied.

Return Value

TextMessage
The created message object.

createTextMessage

Syntax

```
TextMessage createTextMessage(stringBuffer)
```

Description

Creates an initialized **TextMessage**— an object used to send a message containing the supplied string.

Parameters

Name	Type	Description
stringBuffer	WString	stringBuffer to the Text message.

Return Value

TextMessage

5.11.7. The TopicConnection Interface for JMS in C++

The TopicConnection Interface methods are:

createTopicSession on page 504

close on page 505

getClientID on page 505

setClientID on page 506

setClientID on page 506

getExceptionListener on page 506

createTopicSession

Description

```
ConnectionConsumer createTopicSession(transacted, acknowledgeMode)
```

Syntax

Create a TopicSession

Parameters

Name	Description
transacted	If true, session is transacted.

Name	Description
acknowledgeMode	**msAutoAcknowledge** = 1 : The session automatically acknowledges a client's receipt of a message when it has either successfully returned from a call to receive or the MessageListener it has called to process the message successfully returns. **msClientAcknowledge** = 2 : A client acknowledges a message by calling the message's acknowledge method. Acknowledging a consumed message automatically acknowledges the receipt of all messages that have been delivered by its session. **msDupsOkAcknowledge** = 3 : Instructs the session to lazily acknowledge the delivery of messages. This is likely to result in the delivery of some duplicate messages if the Message Service fails. It should only be used by consumers that are tolerant of duplicate messages. The benefit is the reduction of session overhead, achieved by minimizing the work done to prevent duplicates.

Return Value

ConnectionConsumer

close

Syntax

```
void close()
```

Description

Closes the specified session.

Note: *Sessions should be closed when they are no longer needed.*

Return Value

None.

getClientID

Syntax

```
WString getClientID()
```

Description

Retrieves the client ID associated with the specified **Connection** object.

Return Value

WString*

Pointer to a **WString** (wide string) object containing the text.

setClientID

Syntax

```
void setClientID(clientID)
```

Description

Sets the client ID to be associated with the specified **Connection** object. In other words, this method allows you to name the connection.

Parameters

Name	Type	Description
clientID	void	The text string for the client ID.

Return Value

None.

setClientID

Syntax

```
void setClientID(clientID)
```

Description

Sets the client ID to be associated with the specified **Connection** object. In other words, this method allows you to name the connection.

Parameters

Name	Type	Description
clientID	char*	Pointer to the text string for the client ID.

Return Value

char *

Pointer to the text string to the client ID.

getExceptionListener

Syntax

```
ExceptionListener getExceptionListener()
```

Description

Gets the `ExceptionListener` object for this connection.

Return Value

ExceptionListener

5.11.8. The QueueConnectionFactory Interface for JMS in C++

Using point-to-point messaging, a client uses a **QueueConnectionFactory** object to create **QueueConnection** objects.

The **QueueConnectionFactory** interface includes the following methods:

- **createQueueConnection** on page 507
- **createQueueConnection** on page 507

createQueueConnection

Syntax

```
QueueConnection* createQueueConnection()
```

Description

Constructs a **QueueConnection** object.

Return Value

QueueConnection*
Pointer to the **QueueConnection** object that was created.

createQueueConnection

Syntax

```
QueueConnection createQueueConnection(userName, password)
```

Description

Constructs a **Connection** object

Parameters

Name	Type	Description
userName	char*	Pointer to the userName.
password	char*	Pointer to the password.

Return Value

QueueConnection* pointer.

5.11.9. The TopicConnectionFactory Interface for JMS in C++

Using pub/sub messaging, a client uses a **TopicConnectionFactory** object to create **TopicConnection** objects.

The **TopicConnectionFactory** interface includes the following methods:

createTopicConnectionFactory

Syntax

```
TopicConnection* createTopicConnectionFactory()
```

Description

Constructs a **TopicConnectionFactory** for the specified host and port. Once constructed, it can create **TopicConnection** objects for a pub/sub JMS provider.

Return Value

TopicConnection*
Pointer to the **TopicConnection** object that was created.

5.11.10. The ExceptionListener Interface for JMS in C++

If the JMS IQ manager detects a serious problem with a Connection object, it informs the Connection object's ExceptionListener, if one has been registered. It does this by calling the listener's onException method, passing it a JMSException argument describing the problem.

This allows a client to be asynchronously notified of a problem. Some Connections only consume messages so they would have no other way to learn their Connection has failed.

A JMS provider should attempt to resolve connection problems themselves prior to notifying the client of them.

The ExceptionListener Interface methods:

OnException

Syntax

```
void OnException(exception)
```

Description

Notifies user of a JMS exception.

Parameters

Name	Description
exception	The JMS exception.

Returns

None.

5.11.11. The DeliveryMode Interface for JMS in C++

The delivery modes supported by the JMS API are PERSISTENT and NON_PERSISTENT.

A client marks a message as persistent if it feels that the application will have problems if the message is lost in transit. A client marks a message as non-persistent if an occasional lost message is tolerable. Clients use delivery mode to tell the JMS IQ manager how to balance message transport reliability throughput.

Delivery mode only covers the transport of the message to its destination. Retention of a message at the destination until its receipt is acknowledged is not guaranteed by a PERSISTENT delivery mode. Clients should assume that message retention policies are set administratively. Message retention policy governs the reliability of message delivery from destination to message consumer. For example, if a client's message storage space is exhausted, some messages as defined by a site specific message retention policy may be dropped.

A message is guaranteed to be delivered once-and-only-once by a JMS Provider if the delivery mode of the message is persistent and if the destination has a sufficient message retention policy.

NON_PERSISTENT Field

This is the lowest overhead delivery mode because it does not require that the message be logged to stable storage. The level of JMS provider failure that causes a NON_PERSISTENT message to be lost is not defined.

A JMS provider must deliver a NON_PERSISTENT message with an at-most-once guarantee. This means it may lose the message but it must not deliver it twice.

```
public static final int NON_PERSISTENT
```

PERSISTENT Field

This mode instructs the JMS provider to log the message to stable storage as part of the client's send operation. Only a hard media failure should cause a PERSISTENT message to be lost.

5.11.12. The Queue Interface for JMS in C++

A Queue object encapsulates a provider-specific queue name. In this manner, a client specifies the identity of queue to JMS methods. The actual length of time messages are held by a queue and the consequences of resource overflow are not defined by JMS.

The Queue Interface methods are:

getQueueName

Syntax

```
WString getQueueName()
```

Description

Get the name of this queue. Clients that depend upon the name, are not portable.

Returns

WString
Wide string object.

toString

Syntax

```
WString toString()
```

Description

Return a pretty printed version of the queue name

Returns

WString
Wide string object.

5.11.13. The TemporaryQueue Interface for JMS in C++

A TemporaryQueue is a unique Queue object created for the duration of a QueueConnection. It is a system defined queue that can only be consumed by the QueueConnection that created it.

The TemporaryQueue Interface methods are:

Delete

Syntax

```
void Delete()
```

Description

Delete this temporary queue. If there are still existing senders or receivers still using it, then a JMSException will be thrown.

Throws JMSException if JMS implementation fails to delete a Temporary topic due to some internal error.

Returns

Nothing.

5.11.14. The Topic Interface for JMS in C++

A Topic object encapsulates a provider-specific topic name. The topic object provides the means for a client to specify the identity of a topic to JMS methods.

Many Pub/Sub implementations group topics into hierarchies and provide various options for subscribing to parts of the hierarchy. JMS places no restriction on what a Topic object represents.

The Topic Interface methods:

getTopicName on page 511

toString on page 511

getTopicName

Syntax

```
WString getTopicName()
```

Description

Gets the name of this topic.

Returns

WString
Wide string object.

toString

Syntax

WString **toString**()

Description

Returns a string representation of this object.

Returns

WString
Wide string object.

5.11.15. The TemporaryTopic Interface for JMS in C++

A TemporaryTopic object is a unique Topic object created for the duration of a TopicConnection. It is a system-defined topic that can be consumed only by the TopicConnection that created it.

The TemporaryTopic Interface methods are:

Delete on page 512

Delete

Syntax

```
void Delete()
```

Description

Deletes this temporary topic. If there are existing subscribers still using it, a `JMSException` will be thrown.

Returns

None.

5.11.16. The MessageProducer Interface for JMS in C++

The **MessageProducer** interface includes the following methods:

- **close** ON PAGE 513
- **getDeliveryMode** ON PAGE 513
- **getDisableMessageID** on page 513
- **getDisableMessageTimestamp** on page 513
- **getJMS_ProducerID** on page 514
- **getPriority** on page 514
- **getTimeToLive** on page 514
- **setDeliveryMode** on page 514
- **setDisableMessageID** on page 515
- **setDisableMessageTimestamp** on page 515
- **setJMS_ProducerID** on page 516
- **setPriority** on page 516
- **setTimeToLive** on page 516

close

Syntax

```
void close()
```

Description

Closes the specified message producer.

Note: *When a message producer is no longer needed, it should be closed.*

Return Value

None.

getDeliveryMode

Syntax

```
int QueueSenderGetDeliveryMode()
```

Description

Retrieves the value of the **DeliveryMode** property of the specified message producer.

Return Value

int

getDisableMessageID

Syntax

```
STCBOOL getDisableMessageID()
```

Description

Queries whether message IDs are or are not disabled for the specified message producer.

Return Value

SBYN_BOOL
Returns **true** if message IDs are disabled; otherwise, returns **false**.

getDisableMessageTimestamp

Syntax

```
STCBOOL getDisableMessageTimestamp()
```

Description

Queries whether message timestamping is or is not disabled for the specified message producer.

Return Value

SBYN_BOOL
Returns **true** if message timestamping is disabled; otherwise, returns **false**.

getJMS_ProducerID

Syntax

```
void getJMS_ProducerID(ProducerID)
```

Description

Retrieves the value of the **ProducerID** property for the specified message producer.

Return Value

None.

getPriority

Syntax

```
int getPriority()
```

Description

Queries the value of the message **Priority** property of the specified message producer.

Return Value

int
Message priority level, from **0** (least expedited) through **9** (most expedited).

getTimeToLive

Syntax

```
int64_t getTimeToLive()
```

Description

Queries the value of the **TimeToLive** property of the specified message producer.

Return Value

int64_t
Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

setDeliveryMode

Syntax

```
void setDeliveryMode(DeliveryMode)
```

Description

Sets the value of the **DeliveryMode** property of the specified message producer.

Parameters

Name	Type	Description
DeliveryMode	int	Value for the **DeliveryMode** property.

Return Value

None.

setDisableMessageID

Syntax

```
void setDisableMessageID(value)
```

Description

Determines whether message IDs are disabled for this queue sender. Default **false**.

Parameters

Name	Type	Description
value	STC_BOOL	Flag, default **false**; if **true**, message IDs are disabled.

Return Value

None.

setDisableMessageTimestamp

Syntax

```
void setDisableMessageTimestamp(value)
```

Description

Determines whether message timestamping is disabled for this message producer. Default **false**.

Since message timestamps take effort to create and increase the size of a message, this flag can be set **true** to reduce overhead if message IDs are not used by an application.

Parameters

Name	Type	Description
value	STC_BOOL	Flag, default **false**; if **true**, message timestamping is disabled.

Return Value

None.

setJMS_ProducerID

Syntax

```
void setJMS_ProducerID(ProducerID)
```

Description

Sets the value of the **ProducerID** property for the specified message producer.

Parameters

Name	Type	Description
ProducerID	char*	Pointer to text string containing the Producer ID.

Return Value

None.

setPriority

Syntax

```
void setPriority(deliveryMode)
```

Description

Sets the value of the message **Priority** property, from **0** (least expedited) through **9** (most expedited).

Parameters

Name	Type	Description
deliverMode	int	Message priority level.

Return Value

None.

setTimeToLive

Syntax

```
void setTimeToLive(TimeToLive)
```

Description

Sets the value of the **TimeToLive** property of the specified message producer.

Parameters

Name	Type	Description
TimeToLive	long	Value to be used for TimeToLive: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

5.11.17. The QueueSender Interface for JMS in C++

Using point-to-point messaging, a client uses a **QueueSender** object to send messages to a queue. After sending a message to a queue, a client may retain the message and modify it without affecting the message that has been sent. The same message object may be sent multiple times.

The **QueueSender** interface includes the following methods:

- **send** ON PAGE 517
- **send** on page 518
- **send** on page 518
- **send** on page 518
- **send** on page 519
- **send** on page 519
- **send** on page 520
- **send** on page 520

---

send

Syntax

```
void send(message)
```

Description

Sends the specified message to the queue.

Parameters

Name	Type	Description
message	Message*	Pointer to the message to send.

Return Value

None.

send

Syntax

```
void send(message)
```

Description

Sends the specified message to the queue.

Parameters

Name	Type	Description
message	BytesMessage*	Pointer to the message to send.

Return Value

None.

send

Syntax

```
void send(message)
```

Description

Sends the specified message to the queue.

Parameters

Name	Type	Description
message	TextMessage*	Pointer to the message to send.

Return Value

None.

send

Syntax

```
void send(message, DeliveryMode, priority, timeToLive)
```

Description

Sends the specified message to the queue, overriding one or more default values for properties of the specified queue sender.

Parameters

Name	Type	Description
message	message*	Pointer to the message to send.

Name	Type	Description
deliveryMode	int	Value to be used for **DeliveryMode.**
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

send

Syntax

```
void send(message, DeliveryMode, priority, timeToLive)
```

Description

Sends the specified message to the queue, overriding one or more default values for properties of the specified queue sender.

Parameters

Name	Type	Description
message	BytesMessage*	Pointer to the message to send.
deliveryMode	int	Value to be used for **DeliveryMode.**
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

send

Syntax

```
void send(message, DeliveryMode, priority, timeToLive)
```

Description

Sends the specified message to the queue, overriding one or more default values for properties of the specified queue sender.

Parameters

Name	Type	Description
message	TextMessage*	Pointer to the message to send.
deliveryMode	int	Value to be used for **DeliveryMode.**
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

send

Syntax

```
void send(queue, message)
```

Description

Sends the specified message to the specified queue, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified queue sender.

Typically, a message producer is assigned a queue at creation time; however, the JMS API also supports unidentified message producers, which require that the queue be supplied every time a message is sent.

Parameters

Name	Type	Description
queue	Queue*	Pointer to the **QueueSender** object.
message	Message*	Pointer to the message to send.

Return Value

None.

send

Syntax

```
send(queue, message, deliveryMode, priority, timeToLive)
```

Description

Sends the specified message to the specified queue, overriding one or more default values for properties of the specified queue sender.

Parameters

Name	Type	Description
queue	Queue*	Pointer to the **QueueSender** object.
message	Message*	Pointer to the message to send.
deliveryMode	int	Value to be used for **DeliveryMode.**
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

5.11.18. The TopicPublisher Interface

The **TopicPublisher** interface includes the following methods:

---

getTopic

Syntax

```
Topic* getTopic()
```

Description

Gets the specified topic.

Returns

Topic*
Pointer to the specified topic.

publish

Syntax

```
void publish(message)
```

Description

Publishes the specified message to the topic, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified topic publisher.

Parameters

Name	Type	Description
message	Message*	Pointer to the message to be published.

Return Value

None.

publish

Syntax

```
void publish(message)
```

Description

Publishes the specified message to the topic, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified topic publisher.

Parameters

Name	Type	Description
message	BytesMessage*	Pointer to the message to be published.

Return Value

None.

publish

Syntax

```
void publish(message)
```

Description

Publishes the specified message to the topic, using default values for properties (**DeliveryMode**, **Priority**, and **TimeToLive**) of the specified topic publisher.

Parameters

Name	Type	Description
message	TextMessage*	Pointer to the message to be published.

Return Value

None.

publish

Syntax

```
void publish(message, deliveryMode, priority, timeToLive)
```

Description

Publishes the specified message to the topic, overriding one or more default values for properties of the specified topic publisher.

Parameters

Name	Type	Description
message	Message*	Pointer to the message to be published.
deliveryMode	int	Value to be used for **DeliveryMode**.
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

publish

Syntax

```
void publish(message, deliveryMode, priority, timeToLive)
```

Description

Publishes the specified message to the topic, overriding one or more default values for properties of the specified topic publisher.

Parameters

Name	Type	Description
message	BytesMessage*	Pointer to the message to be published.
deliveryMode	int	Value to be used for **DeliveryMode**.

Name	Type	Description
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

publish

Syntax

```
void publish(message, deliveryMode, priority, timeToLive)
```

Description

Publishes the specified message to the topic, overriding one or more default values for properties of the specified topic publisher.

Parameters

Name	Type	Description
message	TextMessage*	Pointer to the message to be published.
deliveryMode	int	Value to be used for **DeliveryMode**.
priority	int	Value to be used for **Priority**.
timeToLive	int64_t	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

publish

Syntax

```
void publish(topic, message)
```

Description

Publishes the specified message to the specified topic.

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **TopicPublisher** object.
message	Message*	Pointer to the message.

Return Value

None.

---

publish

Syntax

```
void publish(topic, message, deliveryMode, priority, timeToLive)
```

Description

Publishes the specified message to the specified topic, overriding one or more default values for properties of the specified topic publisher.

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **TopicPublisher** object.
message	Message*	Pointer to the message to publish.
delivery	int	Value to be used for **DeliveryMode**.
priority	int	Value to be used for **Priority**.
timeToLive	long	Value to be used for **TimeToLive**: Length of time (milliseconds elapsed since dispatch time) that a produced message should be retained by JMS.

Return Value

None.

5.11.19. The QueueSession Interface for JMS in C++

The QueueSession Interface methods are:

---

createQueue

Syntax

```
queue createQueue(queueName)
```

Description

Creates an identity with a specific queue name; does not create a physical queue.

This functionality is provided for rare cases where clients need to dynamically create a queue identity with a provider-specific name. Clients that depend on this functionality are not portable.

Parameters

Name	Type	Description
queueName	WString	The name of the queue.

Return Value

WString.

createReceiver

Syntax

```
QueueReceiver* createReceiver(queue)
```

Description

Creates a **Receiver** object to receive messages;

Parameters

Name	Type	Description
queue	queue*	Pointer to the queue.

Return Value

QueueReceiver* pointer.

createReceiver

Syntax

```
QueueReceiver* createReceive(queue, messageSelector)
```

Description

Creates a **Receiver** object to receive messages using a message selector.

Parameters

Name	Type	Description
queue	Queue*	Pointer to the queue.
messageSelector	char*	Pointer to the text of the message selector.

Return Value

QueueReceiver* pointer.

createSender

Syntax

```
QueueSender createSender(queue)
```

Description

Creates a **Sender** object to send messages.

Parameters

Name	Type	Description
queue	queue*	Pointer to the queue.

Return Value

QueueSender* pointer.

createTemporaryQueue

Syntax

```
TemporaryQueue createTemporaryQueue()
```

Description

Creates a **Temporary** object for a specified session.

Return Value

TemporaryQueue.

5.11.20. The TopicSession Interface for JMS in C++

The TopicSession Interface methods are:

createDurableSubscriber

Syntax

```
TopicSubscriber* createDurableSubscriber(topic, name)
```

Description

Creates a durable subscriber to the specified topic, specifying whether messages published by its own connection should be delivered to it.

Using pub/sub messaging, if a client needs to receive all the messages published on a topic, including messages published while the subscriber is inactive, it uses a *durable subscriber*. The JMS provider retains a record of this durable subscription and ensures that each message from the topic's publishers is retained until either it has been acknowledged by this durable subscriber or else it has expired.

Sessions with durable subscribers must always provide the same client ID, and each client must specify a name that (within the given client ID) uniquely identifies each durable subscription it creates. Only one session at a time can have a TopicSubscriber for a particular durable subscription. An *inactive* durable subscriber is one that exists but does not currently have a message consumer associated with it.

A client can change an existing durable subscription by creating a durable TopicSubscriber with the same name and a new topic (and/or *message selector*). Changing a durable subscriber is equivalent to deleting the old one and creating a new one.

Parameters

Name	Type	Description
topic	Queue*	Pointer to the topic.
name	char*	Pointer to the text string containing the client ID of the durable subscriber.

Return Value

TopicSubscriber*
Pointer to the created **TopicSubscriber** object.

createDurableSubscriber

Syntax

```
TopicSubscriber* createDurableSubscriber(topic, name,
messageSelector, noLocal)
```

Description

Creates a durable subscriber to the specified topic, using a message selector (*messageSelector*) and/or specifying whether messages published by its own connection should be delivered to it (*noLocal*).

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **topic**.
name	char*	Pointer to the text string containing the client ID of the durable subscriber.
messageSelector	char*	Pointer to the string containing the text of the message selector; only messages with properties matching the message selector expression are delivered. A value of null or an empty string indicates that there is no message selector for the message consumer.
noLocal	STCBOOL	Flag, default **false**. If **true**, inhibits the delivery of messages published by its own connection.

Return Value

TopicSubscriber*
Pointer to the created **TopicSubscriber** object.

createPublisher

Syntax

```
TopicPublisher createPublisher(topic)
```

Description

Creates a publisher for the specified topic.

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **topic**.

Return Value

TopicPublisher*
Pointer to the created **TopicPublisher** object.

createSubscriber

Syntax

```
TopicSubscriber* createSubscriber(topic)
```

Description

Creates a *nondurable* subscriber to the specified topic—in other words, a subscriber that receives only those messages that are published while the subscriber is active.

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **topic**.

Return Value

TopicSubscriber*
Pointer to the **TopicSubscriber** object.

createSubscriber

Syntax

```
TopicSubscriber* createSubscriber(topic, messageSelector, noLocal)
```

Description

Creates a *nondurable* subscriber to the specified topic—in other words, a subscriber that receives only those messages that are published while the subscriber is active

In some cases, a connection may both publish and subscribe to a topic. The NoLocal parameter allows a subscriber to inhibit the delivery of messages published by its own connection. The default value for this attribute is **false**.

Parameters

Name	Type	Description
topic	Topic*	Pointer to the **topic**.
messageSelector	char*	Pointer to the string containing the text of the message selector; only messages with properties matching the message selector expression are delivered. A value of null or an empty string indicates that there is no message selector for the message consumer.
noLocal	STCBOOL	Flag, default **false**. If **true**, inhibits the delivery of messages published by its own connection.

Return Value

TopicSubscriber*
Pointer to the **TopicSubscriber** object.

createTemporaryTopic

Syntax

```
TemporaryTopic* createTemporaryTopic()
```

Description

Creates a temporary topic that lives only as long as the specified TopicSession does (unless the topic is deleted earlier).

Return Value

TemporaryTopic*

Pointer to the created **TemporaryTopic** object.

createTopic

Syntax

```
Topic createTopic(topicName)
```

Description

Creates a topic identity with a specific topic name; does ***not*** create a physical topic.

This functionality is provided for rare cases where clients need to dynamically create a topic identity with a provider-specific name. Clients that depend on this functionality are not portable.

Parameters

Name	Type	Description
topicName	WString	The text string containing the name of the topic.

Return Value

Topic

unsubscribe

Syntax

```
void unsubscribe(name)
```

Description

Unsubscribes a durable subscription that has been created by a client. Note that it is an error to delete a durable subscription while there is an active TopicSession for the subscription, or while a consumed message is part of a pending transaction or has not been acknowledged in the session.

Parameters

Name	Type	Description
name	void	The name used to identify this subscription.

Return Value

None.

5.11.21. The Xid Interface for JMS in C++

The Xid Interface has the following methods:

getBranchQualifier

Syntax

```
const unsigned char* getBranchQualifier(&pl)
```

Description

Obtain the transaction branch identifier part of XID as an array of bytes.

Parameters

Name	Type	Description
&pl	long	Returns the long address.

Return Value

const unsigned char*

getFormatId

Syntax

```
uint64_t getFormatId()
```

Description

Obtain the format identifier part of the XID.

Return Value

uint64_t

getGlobalTransactionId

Syntax

```
const unsigned char* getGlobalTransactionId(&pl)
```

Description

Obtain the global transaction identifier part of XID as an array of bytes.

Parameters

Name	Type	Description
&pl	long	Returns the long address.

Return Value

const unsigned char*

5.11.22. The XAResource Interface for JMS in C++

The XAResource Interface has the following methods:

commit on page 533
Xidrecover** on page 534
rollback on page 534
getTransactionTimeout on page 535
setTransactionTimeout on page 535
isSameRM on page 535
prepare on page 536
start on page 536
end on page 537

Flag definitions

TMENDRSCAN	End a recovery scan
TMFAIL	Disassociates the caller and mark the transaction branch rollback-only.
TMJOIN	Caller is joining existing transaction branch.
TMNOFLAGS	Use TMNOFLAGS to indicate no flags value is selected.
TMONEPHASE	Caller is using one-phase optimization.
TMRESUME	Caller is resuming association with suspended transaction branch.
TMSTARTRSCAN	Start a recovery scan.
TMSUCCESS	Disassociate caller from transaction branch
TMSUSPEND	Caller is suspending (not ending) association with transaction branch.
XA_OK	The transaction work has been prepared normally.
XA_RDONLY	The transaction branch has been read-only and has been committed.

---

commit

Syntax

```
void commit(Xid, onePhase)
```

Description

Commits the global transaction specified by xid

Parameters

Name	Type	Description
xid	Xid*	A pointer to the global transaction identifier.
onePhase	STCBOOL	Flag; if true, a one-phase commit protocol is used to commit the work done on behalf of xid.

Returns

void.

Xid**recover

Syntax

```
void Xid**recover(flag)
```

Description

This method is used during recovery to obtain the list of transaction branches that are currently in prepared or heuristically completed states.

Parameters

Name	Type	Description
flag	int	One of TMSTARTRSCAN, TMENDRSCAN, TMNOFLAGS. TMNOFLAGS must be used when no other flags are set in flags.

Returns

int.

rollback

Syntax

```
void rollback(xid)
```

Description

Roll back work done on behalf of a transaction branch.

Parameters

Name	Type	Description
xid	Xid*	A global transaction identifier

Returns

None.

getTransactionTimeout

Syntax

```
int getTransactionTimeout()
```

Description

Obtain the current transaction timeout value set for this XAResource instance. If `XAResource.setTransactionTimeout` was not used prior to calling this method, the return value is the default timeout set for the resource manager; otherwise, the value used in the previous `setTransactionTimeout` call is returned.

Returns

None.

setTransactionTimeout

Syntax

```
STCBOOL setTransactionTimeout()
```

Description

Sets the current transaction timeout value for this `XAResource` instance. Once set, this timeout value is effective until `setTransactionTimeout` is invoked again with a different value. To reset the timeout value to the default value used by the resource manager, set the value to zero. If the timeout operation is performed successfully, the method returns *true*; otherwise *false*. If a resource manager does not support transaction timeout value to be set explicitly, this method returns *false*

Returns

STCBOOL

isSameRM

Syntax

int isSameRM(xares)

Description

This method is called to determine if the resource manager instance represented by the target object is the same as the resource manager instance represented by the parameter *xares*.

Parameters

Name	Type	Description
xid	Xid*	A global transaction identifier

Returns

int

---

prepare

Syntax

```
Xid* prepare(xid)
```

Description

Asks the resource manager to prepare for a transaction commit of the transaction specified in xid.

Parameters

Name	Type	Description
xid	Xid*	A global transaction identifier

Returns

int

A value indicating the resource manager's decision on the outcome of the transaction. The possible values are XA_RDONLY or XA_OK.

---

start

Syntax

```
void start(xid, flags)
```

Description

Start work on behalf of a transaction branch specified in xid. If TMJOIN is specified, the start is for joining a transaction previously seen by the resource manager. If TMRESUME is specified, the start is to resume a suspended transaction specified in the parameter xid. If neither TMJOIN or TMRESUME is specified and the transaction specified by xid has previously been seen by the JMS, the resource manager throws the XAException exception.

Parameters

Name	Type	Description
xid	Xid*	A global transaction identifier
flags	int	One of TMNOFLAGS, TMJOIN, or TMRESUME

Returns

None

end

Syntax

```
void end(xid, flags)
```

Description

Ends the work performed on behalf of a transaction branch. The JMS IQ manager disassociates the XA resource from the transaction branch specified and allows the transaction be completed.

If TMSUSPEND is specified in flags, the transaction branch is temporarily suspended in an incomplete state. The transaction context must then be resumed by specifying TMRESUME.

If TMFAIL is specified, the message failed. The JMS IQ manager may mark the transaction as rollback-only.

If TMSUCCESS is specified, the message has completed successfully.

Parameters

Name	Type	Description
xid	Xid*	A global transaction identifier
flags	int	One of TMSUCCESS, TMFAIL, or TMSUSPEND

Returns

None.

5.11.23. MSGSRVC_API *Lookup

The methods for the MSGSRVC_API *Lookup are:

*LookupQueueConnectionFactory

Syntax

```
*LookupQueueConnectionFactory(dllname, initString, hostname, port,
usPortOffset, iMaxRetires)
```

Description

Constructs a QueueConnectionFactory for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.

Returns

QueueConnectionFactory

*LookupXAQueueConnectionFactory

Syntax

```
*LookupXAQueueConnectionFactory(dllname, initString, hostname, port,
usPortOffset, iMaxRetires)
```

Description

Constructs a QueueXAConnectionFactory for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.

Returns

XAQueueConnectionFactory

*LookupQueue

Syntax

```
*LookupQueue(const char*, const char*)
```

Description

Constructs a topic using the given topicName.

Parameters

Name	Type	Description
User defined	const char*	User defined string.
User defined	const char*	User defined string.

Returns

Queue

*LookupTopicConnectionFactory

Syntax

```
*LookupTopicConnectionFactory(dllname, initString, hostname, port,
usPortOffset, iMaxRetires)
```

Description

Constructs a TopicConnectionFactory for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.

Returns

TopicConnectionFactory

*LookupXATopicConnectionFactory

Syntax

```
*LookupXATopicConnectionFactory(dllname, initString, hostname, port,
usPortOffset, iMaxRetires)
```

Description

Constructs a XATopicConnectionFactory for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.

Returns

XATopicConnectionFactory

*LookupTopic

Syntax

```
*LookupTopic(dllname, topicName)
```

Description

Constructs a topic using the given topicName.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
topicName	const char*	Name of the topic.

Returns

Topic

*CreateXid

Syntax

```
*CreateXid(dllname)
```

Description

Constructs an Xid.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.

Returns

Xid

*LookupXADataSource

Syntax

```
*LookupXADataSource(const char*, const char*)
```

Description

Used to retrieve the XADataSource using a thirdparty library. For example, call LookupXADataSource(ORACLE_DLL_Name, “myname”) to get and instance of XADataSource

Parameters

Name	Type	Description
User defined	const char*	User defined String.
User defined	const char*	User defined String.

Returns

XADataSource

*LookupQueueConnectionFactoryExt

Syntax

```
*LookupQueueConnectionFactoryExt(dllname, initString, hostname, port,
usPortOffset, iMaxRetires, iInterval)
```

Description

Constructs QueueConnectionFactoryExt for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.
iInterval	int	The default retry interval is 100 millisecond if you do not define the retry interval.

Returns

QueueConnectionFactory

*LookupXAQueueConnectionFactoryExt

Syntax

```
*LookupXAQueueConnectionFactoryExt(dllname, initString, hostname,
port, usPortOffset, iMaxRetires, iInterval)
```

Description

Constructs XAQueueConnectionFactoryExt for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.
iInterval	int	The default retry interval is 100 millisecond if you do not define the retry interval.

Returns

XAQueueConnectionFactory

*LookupXATopicQueueConnectionFactoryExt

Syntax

```
*LookupXATopicConnectionFactoryExt(dllname, initString, hostname,
port, usPortOffset, iMaxRetires, iInterval)
```

Description

Constructs XATopicConnectionFactoryExt for the specified host and port using the given <iniString> name. You can replace this method if you are using your own naming service lookup API call.

Parameters

Name	Type	Description
dllname	const char*	dllname should always be set to MSCLIENT_DLL_NAME unless you rename the default libraries shipped with the API Kit.
initString	const char*	User defined name.
hostName	const char*	The default is DEFAULT_SERVER_NAME if you do not define a name.
port	unsigned short	The default is DEFAULT_PORT if you do not define a port.
usPortOffset	unsigned short	The default port offset is 0 if you do not define an offset.
iMaxRetries	int	The default number of maximum retries is 30 if you do not define a maximum number of retries.
iInterval	int	The default retry interval is 100 millisecond if you do not define the retry interval.

Returns

XATopicQueueConnectionFactory

Chapter 6

Configuring the Multiplexer e*Way

6.1 Configuring the Multiplexer Client

After the e*Gate API Kit is installed, additional steps are required to finish the setup before data exchange can begin. Both the multiplexer client, which represents the machine upon which the external application resides, and the multiplexer server, which is the machine upon which the Participating Host resides, require handling.

This section provides steps for setting up the Multiplexer and Muxpooler.

6.1.1. Before You Begin

To allow the client system to communicate with the e*Gate API Kit, you must do the following:

1. Install the required client files on the external system.
2. Configure the client components as necessary to use the TCP/IP port you will specify in **"Push IP Port" on page 548**.

6.1.2. Setting up the Multiplexer

To begin using the Multiplexer, do the following:

1. Copy the following files from your *<eGate>***\client\bin** folder to a folder on your external system:
   - stc_xipmpclnt.dll
   - stc_common.dll
   - stc_ewipmpclnt.dll
2. From the command prompt of the external system, register all three files into Windows Registry by using the following command:

```
regsvr32 <path>\<filename>
```

6.1.3. Setting up the Muxpooler

To begin using the Muxpooler, do the following:

1. Copy the following files from your *<eGate>***client****bin** folder to a folder on your external system:
   - stc_common.dll
   - stcph.jar
2. Be sure that **stcph.jar** is included in your classpath and then, from a command prompt of the external system, register **stc_common.dll** in the Windows Registry with the following command:

```
regsvr32 <path>\stc_common.dll
```

This remainder of this chapter describes the e*Way configuration parameters and the external configuration requirements for the e*Gate API Kit.

Important: *From the perspective of the e*Gate GUIs, the e*Gate API Kit e*Way is not a system of components distributed between the web server and a Participating Host, but a single component that runs an executable file—the multiplexer* ***stcewipmp.exe****. Whenever this guide discusses procedures within the context of an e*Gate GUI (such as this chapter, which deals in part with the e*Way Editor), the term "e*Way" refers only to the Participating Host component of the e*Way system.*

6.2 Configuring the Multiplexer Server

6.2.1. Multiplexer e*Way Configuration Parameters

e*Way configuration parameters are set using the e*Way Editor.

To change e*Way configuration parameters:

1. In the Enterprise Manager's Component editor, select the e*Way you want to configure and display its properties.
2. Under **Configuration File**, click **New** to create a new file, **Find** to select an existing configuration file, or **Edit** to edit the currently selected file.
3. In the **Additional Command Line Arguments** box, type any additional command line arguments that the e*Way may require, taking care to insert them *at the end* of the existing command-line string. Be careful not to change any of the default arguments unless you have a specific need to do so.

For more information about how to use the e*Way Editor, see the e*Way Editor's online Help or the *e*Gate Integrator User's Guide*.

The e*Way's configuration parameters are contained in a single section: **General Settings**.

General Settings

Request Reply IP Port

Description

Specifies the IP port that the e*Way will listen (bind) to for client connections. This parameter is used for Request/Reply behavior.

Required Values

A valid TCP/IP port number between 1 and 65536. The default is **26051**. Normally, you only need to change the default number if the specified TCP/IP port is in use, or you have other requirements for a specific port number.

Push IP Port

Description

Specifies the IP port through which this e*Way allows an external system to connect and receive unsolicited (without submitting a request) Events.

Required Values

A valid TCP/IP port number between 0 and 65536. The default is **0**.

Additional Information

If an Event received by this e*Way has **0** for all fields in the 24-byte MUX header, it is sent to all callers of the **WaitForUnsolicited**. This parameter is optional. If set to **0**, the e*Way follows the request/reply scenario and does not accept unsolicited Events.

Rollback if no Clients on Push Port

Description

Specifies whether Events continually roll back if no push clients are connected.

Required Values

Yes or **No**. If set to **Yes**, Events continually roll back if no push client is connected.

Wait For IQ Ack

Description

Specifies whether the send client function is to wait for an acknowledgment (that the Event was committed to the IQ) before returning.

Required Values

Yes or **No**. If set to **Yes**, the send client function does NOT return until the Event is committed to the IQ.

Caution: *The **Wait for IQ Ack** parameter should be set to **Yes** only if the data must be committed to the IQ on every transaction before the API returns to the client. A setting of **Yes** causes significant performance impact. If normal request/reply type transactions are being sent/received, and the data can be recreated at the client, this parameter should not be set.*

Send Empty MSG When External Disconnect

Description

Specifies whether the e*Way sends an empty incoming Event (containing only the multiplexer header) when an external client disconnects.

Required Values

Yes or **No**. If set to **Yes**, the e*Way sends an empty incoming Event when an external client disconnects.

MUX Instance ID

Description

Specifies an 8-byte header to prepend to the 24-byte session ID of an Event received from an external connection before sending to e*Gate; see **"Notes on Session ID, Instance ID, and Recovery ID" on page 549**.

Required Values

A string. The default is **0**. If set to a value other than **0**, the first eight bytes are prepended to the 24-byte session ID when the Event is sent to e*Gate.

Note: *The strings **00**, **000**, and so forth (up to **00000000**) are valid, although inadvisable. However, the single-byte string **0** has a special meaning: "Do not use this option."*

MUX Recovery ID

Description

Specifies an 8-byte header to prepend to the 24-byte session ID of an Event to republish back to e*Gate if the multiplexer finds that the session has been dropped.

Required Values

A string. The default is **0**. If set to a value other than **0**, the first eight bytes are prepended to the 24-byte session ID when the Event is republished to e*Gate.

6.2.2. Notes on Session ID, Instance ID, and Recovery ID

When an external system connects to the multiplexer, the e*Way prepends a 24-byte header, called the *session ID*, to each Event before sending it into e*Gate. e*Gate then performs the processing and returns the result to the multiplexer, which expects this 24-byte header to remain prepended to the Event after it is returned from e*Gate.

However, because many implementations involve more than one multiplexer, there can be a need to know which one of the multiplexers generated the request—for example, to allow a single Collaboration Rule to process or route Events from different multiplexers, to recover undelivered Events due to dropped sessions, or even to facilitate a second delivery channel for the undelivered Events. To allow for such interfaces, the multiplexer can be configured to prepend a *further* 8-byte header before the session ID on Events it sends into e*Gate. This 8-byte header is the value specified by the configuration parameter **MUX Instance ID**. If no value is specified for this parameter, only the 24-byte session ID is prepended. Upon successful back-end processing, e*Gate does *not* return the MUX Instance ID; it returns only the session ID.

If the multiplexer receiving this Event finds that the corresponding session has been dropped, it can republish the Event into e*Gate, prepending a different 8-byte header. This "backup" header is the value specified by the configuration parameter **MUX Recovery ID**. If no value is specified for this parameter, the multiplexer can drop the Event if the session has been dropped.

Chapter 7

Implementing the Multiplexer e*Way

This chapter describes the e*Way configuration parameters, the external configuration requirements, and the implementation for the e*Gate API Kit Multiplexer e*Way.

Important: *From the perspective of the e*Gate GUIs, the e*Gate API Kit e*Way is not a system of components distributed between the web server and a Participating Host, but a single component that runs an executable file (the multiplexer* ***stcewipmp.exe****). When this manual discusses procedures within the context of any e*Gate GUI (such this chapter, which deals in part with the e*Way Editor), the term "e*Way" refers only to the Participating Host component of the e*Way system.*

7.1 Implementing the Multiplexer Models

The e*Gate API kit Multiplexer supports three basic architectures:

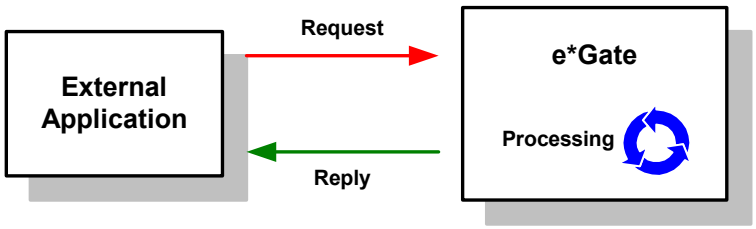
1. Request/Reply, where data is sent to the e*Gate system and a response is returned
2. Send-only, where data is sent to the e*Gate system but no data is returned
3. Receive, where an external system connects to the e*Gate system and allows for the delivery unsolicited Events

This section discusses how to use the Multiplexer to exchange data with an e*Gate system.

7.1.1. Multiplexer Overview

Request Reply

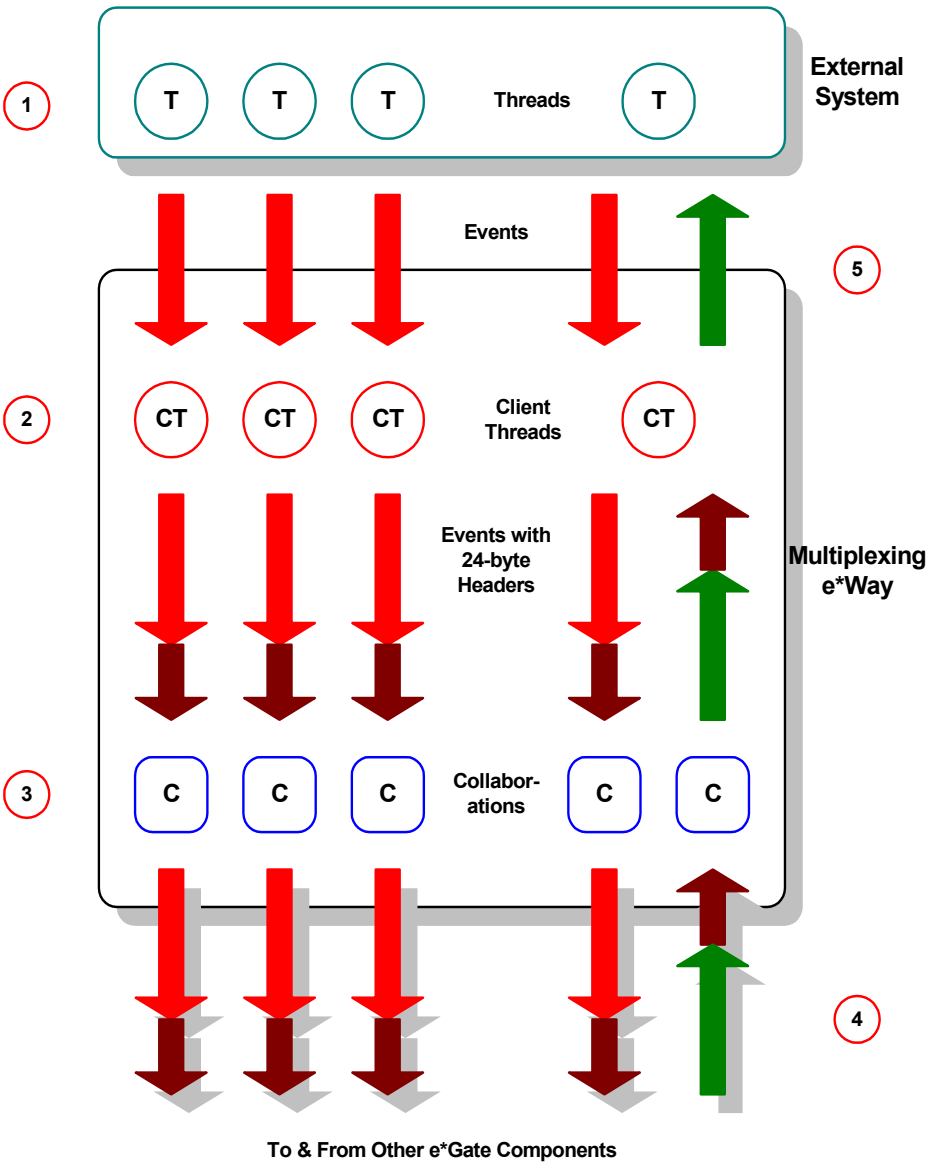
Figure 35 The Multiplexer concept



The external system uses API-kit client components to send the data to the multiplexing e*Way using an SeeBeyond-proprietary IP-based protocol. Depending on the external system's requirements and capabilities, these client components can be single- or multi-threaded.

Figure 36 illustrates how the multiplexing e*Way receives data from an external application and returns processed data to the same application.

Figure 36 Data flow through the Multiplexing e*Way



Client threads within the e*Way package the data as e*Gate Events, adding a 24-byte header. Among other functions, this header provides "return address" information that can optionally be used to return data to the client thread that originated it.

Each e*Way can handle up to 1,000 client threads at once. If your requirements demand more processing power, you can define more multiplexing e*Ways.

Collaborations within the e*Way perform any appropriate processing that may be required, and route the processed Events to other destinations.

Note: *The 24-byte header **must** be preserved as the Events are processed through the e*Gate system.*

The e*Way can also route information back to the thread on the external system that sent the original data.

Processed data, still containing the original 24-byte header, is returned to the multiplexing e*Way.

The e*Way uses the 24-byte "return address" to identify the destination of the data to be returned to the external system.

The e*Way returns the data, minus the 24-byte header, to the external system.

7.1.2. Multiplexer Request/Reply Sample Schema

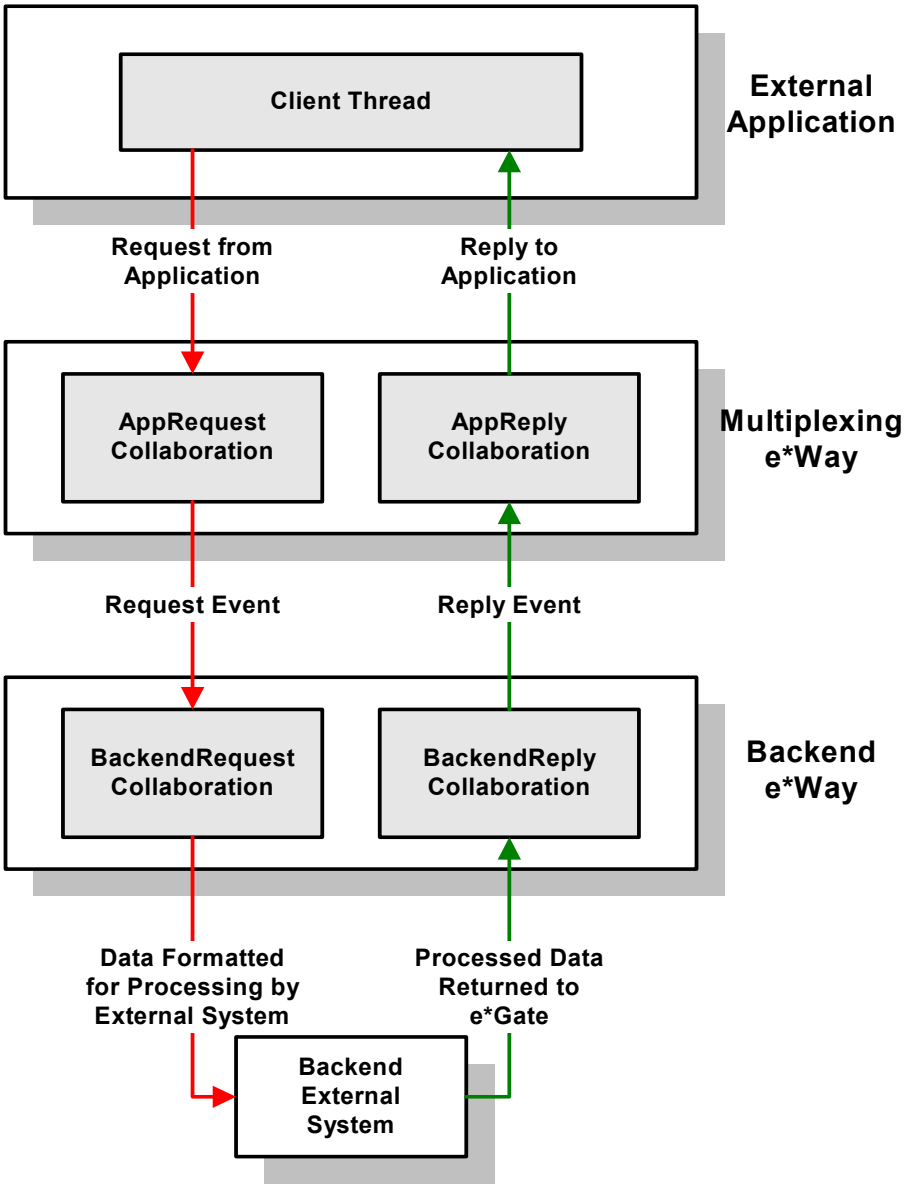
Request/Reply schemas have two classes of components:

1. "Front end" components that handle communications with the external application. These components receive requests and route replies to the correct destination.
2. "Back end" components that process the requests and compose the replies. These components also provide the bridge between the e*Gate system and your existing systems.

The multiplexing e*Way and its related Collaborations comprise the front-end components. Additional e*Ways and their related Collaborations comprise the back-end components. The backend e*Way(s) can be of any type required to communicate with the external system(s).

Figure 37 below illustrates a Request/Reply schema.

Figure 37 The Request/Reply schema



1. Data enters the e*Gate system through the multiplexing e*Way via the **Request** Collaboration.
2. The **Request** Collaboration publishes the Request Event.
3. The **BackendRequest** Collaboration within the back-end e*Way subscribes to the Request Event, and routes or processes the data as appropriate.
4. After the data has been processed, the back-end e*Way's **BackendReply** Collaboration publishes the data as the Reply Event.

5 The **Reply** Collaboration within the multiplexing e*Way subscribes to the Reply Event.

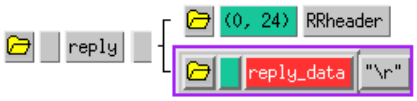
6 The multiplexing e*Way returns the processed data to the requesting thread in the external application.

7.1.3. ETDs, Collaboration Rules, and the "Return Address" Header

As discussed in **"Request/Reply" on page 31**, the multiplexing e*Way maintains "return address" information in a 24-byte header that must be preserved as the data flows through the e*Gate system.

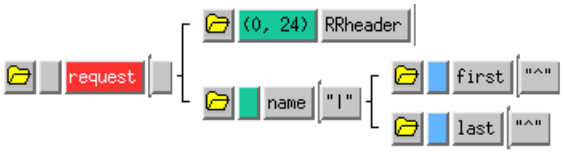
The simplest Event Type Definition (ETD) that can be used within a Request/Reply schema has two nodes: one for the header, the second for the remainder of the Event data.

Figure 38 The simplest Request/Reply ETD



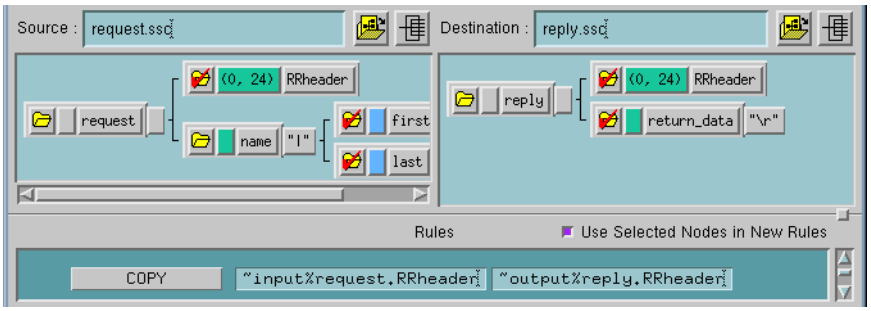
This ETD is sufficient if you wish to send data through the e*Gate system simply as a blob. If your data has a more complex structure, add subnodes to the "data" node, then describe the structure of the data within those subnodes. Figure 38 below illustrates an ETD that describes delimited data (for example, as in the data "First name^Last name").

Figure 39 A Request/Reply ETD for delimited data



Collaboration Rules that manipulate data between ETDs must preserve the Request/Reply header (in the figures above, "RRheader"). Be sure that each Collaboration Rule that manipulates Request/Reply data copies the contents of the Request/Reply header from the source ETD to the target ETD (as shown in Figure 40 below).

Figure 40 Copying the Request/Reply header



7.1.4. Using the C APIs

The C application must do the following:

1. Load the following header files, located on the installation CD-ROM in the root **\sdk** directory:

   ```
   gendefs.h, tracelog.h, ewipmpclnt.h
   ```

2. Link the **stc_ewipmpclnt.dll** and the **stc_common.dll** libraries at compile time.
3. Use the **EWIPMP_Open** function (see **"EWIPMP_Open" on page 562**) to open a connection to the multiplexer e*Way.
4. Get the data from the user.
5. Format the data as appropriate to be processed by e*Gate.
6. Use the **EWIPMP_Send** function (see **"EWIPMP_Send" on page 563**) to send data to the e*Gate system.
7. Use the **EWIPMP_Wait** function (see **"EWIPMP_Wait" on page 563**) to cause execution to pause long enough for e*Gate to process and return the data.
8. Use the **EWIPMP_Free** function (see **"EWIPMP_Free" on page 561**) to free the memory associated with the returned data in the message buffer.
9. Use the **EWIPMP_Close** function (see **"EWIPMP_Close" on page 560**) to close the connection.

7.1.5. Using the Java APIs

The Java application must do the following:

1. Load the **com.stc.ewip** package.
2. Create an instance of the IPMPReqReply **mux** object.
3. Use the various **set** methods (described beginning with **"setDebug" on page 580**) to define the host name, TCP/IP port, expiration time, and timeout.
4. Use the **connect** method (see **"connect" on page 575**) to open a connection to the multiplexing e*Way.
5. Get the data from the user.

6 Assemble the data to be sent to e*Gate in an appropriate format.

7 Use the **sendMessage** method (see **"sendMessage" on page 579**) to send the request to the e*Gate system.

8 Use one of the **getResponse** methods (such as **"getResponse" on page 577**) to retrieve the response from the e*Gate system.

9 Use the **disconnect** method (see **"disconnect" on page 575**) to close the connection.

A commented **sample.java** file is available on the e*Gate installation CD-ROM; for more information, see **"Sample Implementation" on page 559**.

7.1.6. Using the ActiveX Control Within Visual Basic Applications

The Visual Basic application must do the following:

1 Create an instance of the ActiveX **MUX** object.

2 Define the host name and TCP/IP port numbers.

3 Use the **Connect** method (see **"Connect" on page 570**) to open a connection to the e*Gate system.

4 Get the data from the user.

5 Format the data as appropriate to be processed by e*Gate.

6 Use the **Send** method (see **"Send" on page 573**) to send data to the e*Gate system.

7 Use the **Wait** method (see **"Wait" on page 573**) to cause the executing thread to pause long enough for e*Gate to process and return the data.

8 Use one of the **ReplyMessageAs** methods (such as **"ReplyMessageAsString" on page 572**) to display the returned data.

9 Use one of the **LastError** methods (such as **"LastErrorText" on page 571**) to handle errors.

10 Use the **Disconnect** method (see **"Disconnect" on page 570**) to close the connection.

Additional information can be found in commented sample files; for more information, see **"Sample Implementation" on page 559**.

7.1.7. Using Perl APIs

The Perl script must do the following:

1 Use the **Multiplexer_Init** subroutine (see **"Multiplexer_Init" on page 592**) to specify the location of the **stc_ewipmpclntperl.pm** and **stc_ewipmpclntjperl.so** files.

2 Define the host name and TCP/IP port numbers.

3 Format the user data as appropriate for processing within e*Gate.

4 Use the **Multiplexer_Open** subroutine (see **"Multiplexer_Open" on page 593**) to open a connection to the e*Gate Participating Host.

5 Use the **Multiplexer_Send** subroutine (see **"Multiplexer_Send" on page 594**) to send data to the e*Gate Participating Host.

6 Use the **Multiplexer_Wait** subroutine (see **"Multiplexer_Wait" on page 595**) to cause the Perl script to pause long enough for e*Gate to process and return the data.

7 Use the **Multiplexer_ToString** subroutine (see **"Multiplexer_ToString" on page 594**) to obtain the returned data and display it within the user's browser.

8 Use the **Multiplexer_Free** subroutine (see **"Multiplexer_Free" on page 592**) to free the memory associated with the returned data.

9 Use the **Multiplexer_Close** subroutine (see **"Multiplexer_Close" on page 591**) to close the connection.

7.2 Using the COBOL APIs

The following code demonstrates a sample set of actions. The string **MUX***xxx* means: MUXAPI (for CICS); MUXIMS (for IMS); or MUXBAT (for Batch).

1 The **MUX***xxx* load module must be included in the link step when the calling program is compiled. For CICS only: the CICS IP socket routines should be included in the same link step.

2 Call **MUX***xxx* with the appropriate parameters to establish a connection to the multiplexer e*Way.

3 Call **MUX***xxx***S** to SEND data to e*Gate, passing the data and its length as specified in the parameter list.

4 Call **MUX***xxx***R** to RECEIVE data from e*Gate; the length of the data received is returned by the API. Use the MUXAPI-hsecs-to-wait parameter to cause the execution to pause long enough for e*Gate to process and return the data.

5 Repeat the SEND and RECEIVE as desired to continue passing and receiving data.

6 Call **MUX***xxx***C** to close the connection.

Note: *Once the connection has been opened successfully, if any of the subsequent functions fail, the connection must be closed before continuing.*

Note: *If the data you are sending is larger then 32KB, you need to break the data up into smaller packets adding a unique identifier to each. To identify the data packets and assure their delivery, assign each packet a unique identifier. Assign each packet a sequence number and the total number of data packets to the first message. By breaking up the message into individual packets, ELS can reassemble the packets into the complete message. An algorithm needs to be developed for splitting the original message, coordinating the number of data packets and reconstituting the original message on the client side.*

The following COBOL "client" program illustrates a simple Open-Send-Receive-Close scenario, in which a seventeen character text message (hardcoded in working storage in this example), is sent to the e*Gate "server", and waits one second to receive a response.

MUX*xxx* means: MUXAPI (for CICS); MUXIMS (for IMS); or MUXBAT (for Batch).

```
000011 Identification Division.
000012*================================================================*
000013 Program-id.  MUXCLI.
000014
000015*================================================================*
000016 Environment Division.
000017*================================================================*
000018
000019*================================================================*
000020 Data Division.
000021*================================================================*
000022
000030 WORKING-STORAGE SECTION.
000031
000670*================================================================*
000680* Variables used for the MUXAPI function calls                   *
000690*================================================================*
000691
000693 01  MUXAPI-handle           pic s9(8)  binary value +0.
000694* move host name to this field:
000695 01  MUXAPI-remote-host      pic  x(24) value 'remote.host.name'.
000696* default port:
000697 01  MUXAPI-remote-port      pic  9(8)  binary value 26051.
000698 01  MUXAPI-message-len      pic  9(8)  binary.
000700 01  MUXAPI-secs-to-expire   pic  9(8)  binary.
000701 01  MUXAPI-returnmsg-len    pic  9(8)  binary.
000703 01  MUXAPI-hsecs-for-ack pic  9(8)  binary value 100.
000710 01  MUXAPI-errno            pic  9(8)  binary value 0.
000711 01  MUXAPI-retcode          pic s9(8)  binary value +0.
000712
000713*================================================================*
000714* misc
000720*================================================================*
000730
000740 01  test-message            pic x(17) value 'Hello From MUXCLI'.
000741 01  MUXAPI-message          pic  x(32727) value spaces.
000742 01  MUXAPI-returnmsg        pic  x(32727) value spaces.
000750
000760*================================================================*
002002 PROCEDURE DIVISION.
002003*================================================================*
002004
002005 Main.
002010     perform MUXAPI-open-connection
002011     if MUXAPI-retcode < 0
002012         go to exit-program
002013     end-if
002014
002015     move test-message to MUXAPI-message
002016     move 17 to MUXAPI-message-len
002017
002020     perform MUXAPI-send-message
002022     if MUXAPI-retcode >= 0
002030         perform MUXAPI-receive-response
002040     end-if
002041
002050     perform MUXAPI-close-connection.
002051
002052 exit-program.
002053     exec CICS return
002060     end-exec
002061     exit program.
002070
002090 MUXAPI-open-connection.
```

```
002102     call "MUXxxx" using
002105          MUXAPI-handle
002106          MUXAPI-remote-host
002107          MUXAPI-remote-port
002108          MUXAPI-errno
002109          MUXAPI-retcode.
002200
005200 MUXAPI-send-message.
005221     call "MUXxxxS" using
005223          MUXAPI-handle
005240          MUXAPI-message-len
005241          MUXAPI-message
005243          MUXAPI-hsecs-for-ack
005244          MUXAPI-errno
005250          MUXAPI-retcode.
005291
005300 MUXAPI-receive-response.
005311     call "MUXxxxR" using
005313          MUXAPI-handle
005314          MUXAPI-returnmsg-len
005315          MUXAPI-returnmsg
005318          MUXAPI-hsecs-to-wait
005319          MUXAPI-errno
005320          MUXAPI-retcode.
005330
005500 MUXAPI-close-connection.
005503     call "MUXxxxC" using
005505          MUXAPI-handle
005506          MUXAPI-errno
005509          MUXAPI-retcode
```

7.3 Sample Implementation

A sample implementation is available in the **samples** directory of the e*Gate CD-ROM. Follow the directions in the **samples\ewmux\Readme.txt** file.

In the demonstration schema, the back end is provided by a TCP/IP e*Way that applies data-manipulation Collaboration Rules and a Loopback e*Way that sends the TCP/IP e*Way's output back into the e*Gate system.

If you use the Enterprise Manager to examine the sample schema, note that the Loopback e*Way has no Collaborations; the Loopback e*Way requires none to perform its "loopback" function.

Note: *The TCP/IP e*Way used in the demonstration schema was developed specifically for this use. A general-purpose TCP/IP e*Way is also available for other uses; contact SeeBeyond for more information.*

Chapter 8

Client Libraries for the Multiplexer e*Way

The e*Gate API Kit Multiplexer e*Way contains the following types of function sets:

8.1 C API Function Prototypes

The file **ewipmpclnt.h** defines the following function prototypes:

Note: *The comments within the ewipmpclnt.h header file contain the same information as this chapter.*

EWIPMP_Close

Syntax

```
EWIPMP_Close(hIPMP)
```

Description

EWIPMP_Close closes an IPMP connection and frees all resources associated with the HEWIPMP handle.

Parameters

Name	Type	Description
hIPMP	HEWIPMP	An IPMP connection handle.

Return Values

Boolean

Returns **true** if the connection was successfully closed; otherwise, returns **false**. Use **getlasterror()** to obtain any error codes.

Examples

```
//close connection handle
if(hIPMP)
{
    EWIPMP_Close(hIPMP)
}
```

EWIPMP_Free

Syntax

`EWIPMP_Free(`*`hIPMP`*`,`*`pbReturnMessage`*`)`

Description

EWIPMP_Free frees the memory associated with the pbReturnMessage in the EWIMP_Wait call.

Parameters

Name	Type	Description
hIPMP	HEWIPMP	An IPMP connection handle.
pbReturnMessage	byte *	A message, as a blob.

Return Values

Returns **true** if the operation was performed successfully; otherwise, returns **false**. Use **getlasterror()** to obtain any error codes.

Examples

```
// free message buffer
    //
    if (!EWIPMP_Free(hIPMP, (BYTE*)pBuffer))
    {
        pBuffer = NULL;
        goto FreeFailed;
    }
```

EWIPMP_Open

Syntax

```
EWIPMP_Open(phIPMP,pcszServerHost,dwServerPort,dwflags,
            pvReserved)
```

Description

EWIPMP_Open creates and initializes an IPMP connection with a remote host.

Parameters

Name	Type	Optional	Description
phIPMP	pointer		A pointer to the connection handle. Pass this function an address of an empty handle, and the function returns the handle for use by other IPMP functions.
pcszServerHost	char	yes	The name of the remote host. If this parameter is null, “localhost” is used.
dwServerPort	dword	yes	The TCP/IP port number. If this parameter is zero, the default 26051 is used.
dwflags	dword		Reserved for future use and ***must*** be set to zero.
pvReserved	void		Reserved for future use and ***must*** be set to null.

Return Values

Boolean

Returns **true** and creates an IPMP connection handle if the connection was successfully established; otherwise, returns **false**. Use **getlasterror()** to obtain any error messages.

Additional Notes

The caller must call the EWIMP_Close method (See **EWIPMP_Close** on page 560) to release the connection and any resources associated with the handle.

Examples

```
// open connection to the multiplexer e*way
    //

    if (pszServerHost == NULL)
    {
        if (!EWIPMP_Open(&hIPMP, "localhost", dwServerPort, 0, NULL))
        {
            goto OpenConnectionFailed;
        }
    }
    else
    {
        if (!EWIPMP_Open(&hIPMP, pszServerHost, dwServerPort, 0, NULL))
        {
            goto OpenConnectionFailed;
        }
    }
```

EWIPMP_Send

Syntax

```
EWIPMP_Send(hIPMP,cbMessage,pbMessage,cSecondsToExpire,dwflags,
pvReserved)
```

Description

EWIPMP_Send sends the specified message, optionally with the specified expiration time.

Parameters

Name	Type	Optional	Description
hIPMP	handle		An open IPMP connection handle
cbMessage	dword		The count, in bytes, of the message pointed to by pbMessage
pbMessage	byte		The message content to send into e*Gate
cSecondsToExpire	dword	yes	The number of **seconds** this request "lives" within the e*Gate system before being dropped as an "expired" Event. If it is set to EWIPMP_NOEXPIRE, the message never expires.
dwflags	dword		Bit flags reserved for future use. This field ***must*** be set to zero.
pvReserved	void		Reserved for future use and ***must*** be set to null.

Return Values

Returns **true** if the message was successfully sent; otherwise, returns **false**. Use **getlasterror()** to obtain any error code.

Examples

```
// send the message to multiplexer e*way
    //

    dwMessageLength = dwCurrentBuffLen;

    if (!EWIPMP_Send(hIPMP, dwMessageLength, (BYTE*)pBuffer,
                     cSecondsToExpire, 0, NULL))
    {
        goto SendFailed;
```

EWIPMP_Wait

Syntax

```
EWIPMP_Wait(hIPMP,pcbReturnMessage,ppbReturnMessage,
            cMillisecondToExpire,dwflags,pvReserved)
```

Description

EWIPMP_Wait causes the application to wait the specified number of milliseconds for a response to be received via the specified message handle. A message must have been sent on the same HEWIPMP handle for which EWIPMP_Wait is invoked.

Parameters

Name	Type	Description
hIPMP	HEWIPMP	An IPMP connection handle.
pcbReturnMessage	dword	A pointer to a DWORD that receives the count, in bytes, of the returned message pointed to by ppbReturnMessage.
ppbReturnMessage	dword	The address of a **byte** pointer that is allocated and filled out by this API of the message content received. The caller must free the returned pointer using EWIPMP_Free (see **EWIPMP_Free** on page 561).
cMillisecondToExpire	dword	The number of **milliseconds** to wait to receive a message from the remote host. If the caller sets this parameter to EWIPMP_BLOCKWAIT, this API is not returned until a message is received or the connection is closed.
dwflags	dword	Bit flags reserved for future use. This ***must*** be set to zero.
pvReserved	void	Reserved for future use. This ***must*** be set to null.

Return Values

Returns **true** if the message was received properly; returns **false** if an error occurred or if the timeout expired. Use **getlasterror()** to obtain any error codes.

If the timeout expires, the error code is set to GENERROR_TIMEOUT. Other uncommon error codes that it might return from GETLASTERROR are:

GENERROR_TIMEOUT	0x20000040
GENERROR_INVALID_PARAM	0x20000002
GENERROR_BADFORMAT	0x20000050
GENERROR_MEMORY_ALLOCATION	0x20001000

Examples

```
// wait for reply
    //

    if (!EWIPMP_Wait(hIPMP, &dwMessageLength, (BYTE**)&pBuffer,
                     cMillisecondsToWait, 0, NULL))
    {
        goto WaitFailed;
    }
```

8.2 COBOL APIs

Open

Syntax

```
call "MUXAPI" using
     MUXAPI-handle
     MUXAPI-remote-host
     MUXAPI-remote-port
     MUXAPI-errno
     MUXAPI-retcode.
```

Description

This function creates a socket connection to the MUX server e*Way running on the specified remote host and TCP/IP port. This socket connection is defined by a unique identifier, or "handle," that is returned by the OPEN. Note this allows multiple connections to be opened and maintained by a single CICS application to a single or multiple MUX server e*Ways.

Sample

Sample working storage definitions:

```
01   MUXAPI-handle         pic s9(8)    binary value +0.
01   MUXAPI-remote-host    pic  x(24)   value 'remote.host.name'.
01   MUXAPI-remote-port    pic  9(8)    binary value 26051.
01   MUXAPI-errno          pic  9(8)    binary value 0.
01   MUXAPI-retcode        pic s9(8)    binary value +0.
```

Parameters and returns set by the application

MUXAPI - handle
A 4-byte binary number, initialized to zero.

Returns
TCP/IP socket number for the established connection.

MUXAPI - remote-host
A 24-byte character field, containing the DNS name of the remote host on which the MUX server e*Way is listening.

Returns
Unchanged.

MUXAPI - remote-port
A 4-byte binary number, containing the TCP/IP port number to which the MUX server e*Way is listening.

Returns
Unchanged

MUXAPI - errno
A 4-byte binary number, initialized to zero.

Returns
If **MUXAPI - retcode** is negative (see below), **MUXAPI-errno** contains an error number.

MUXAPI - retcode
A 4-byte signed binary number, initialized to zero.

Returns
A value of zero or greater indicates a successful call. A negative value signifies an error; the error number is contained in **MUXAPI-errno**.

Send

Syntax

```
call "MUXAPIS" using
     MUXAPI-handle
     MUXAPI-message-len
     MUXAPI-message
     MUXAPI-hsecs-for-ack
     MUXAPI-errno
     MUXAPI-retcode.
```

Description

This function sends a message or block of data to the MUX server e*Way. The function will then wait a specified time (expressed in hundredths of seconds) for an acknowledgment to arrive on the socket connection identified by the passed handle.

Sample

Sample working storage definitions:

```
01   MUXAPI-handle          pic s9(8)       binary.
01   MUXAPI-message-len     pic  9(8)       binary.
01   MUXAPI-message         pic  x(32703)   value spaces.
01   MUXAPI-hsecs-for-ack   pic  9(8)       binary.
01   MUXAPI-errno           pic  9(8)       binary value 0.
01   MUXAPI-retcode         pic s9(8)       binary value +0.
```

Parameters and returns set by the application

MUXAPI - handle
A 4-byte binary number containing the socket number returned by the OPEN.

Returns
Unchanged.

MUXAPI - message-len
A 4-byte binary number containing the length, in bytes, of the message to be sent to the MUX server e*Way. The maximum size is 32K - 40 bytes, or 32727 bytes.

Returns
Unchanged.

MUXAPI - message
A 32727-byte character field containing the actual data to be sent to the MUX server e*Way. The contents of this field will be transmitted without conversion of any kind.

Returns
Unchanged.

MUXAPI - hsecs-for-ack
A 4-byte binary number, initialized to zero. Hundredths of seconds to wait for an acknowledgment (ACK) from e*Gate after a SEND.

Returns
Unchanged.

MUXAPI - errno
A 4-byte binary number, initialized to zero.

Returns
If **MUXAPI - retcode** is negative (see below), **MUXAPI-errno** contains an error number.

MUXAPI - retcode
A 4-byte signed binary number, initialized to zero.

Returns
A value of zero or greater indicates a successful call. A negative value signifies an error; the error number is contained in **MUXAPI-errno**.

Receive

Syntax

```
call "MUXAPIR" using
     MUXAPI-handle
     MUXAPI-returnmsg-len
     MUXAPI-returnmsg
     MUXAPI-hsecs-to-wait
     MUXAPI-errno
     MUXAPI-retcode.
```

Description

This function receives a message or block of data from the MUX server e*Way. The function will wait a specified time (expressed in hundredths of seconds) for a message to arrive on the socket connection identified by the passed handle.

Sample

Sample working storage definitions:

```
01   MUXAPI-handle          pic s9(8)       binary.
01   MUXAPI-returnmsg-len   pic  9(8)       binary.
01   MUXAPI-returnmsg       pic  x(32727)   value spaces.
01   MUXAPI-hsecs-to-wait   pic  9(8)       binary value 100.
01   MUXAPI-errno           pic  9(8)       binary value 0.
01   MUXAPI-retcode         pic s9(8)       binary value +0.
```

Parameters and returns set by the application

MUXAPI - handle
A 4-byte binary number, containing the socket number returned by the OPEN.

Returns
Unchanged.

MUXAPI - returnmsg-len
A 4-byte binary number, initialized to zero.

Returns
The length, in bytes, of the data received from the MUX server e*Way.

MUX API - returnmsg
A 32727-byte character field.

Returns
The data received from the MUX server e*Way.

MUXAPI - hsecs-to-wait
A 4-byte binary number, representing the hundredths of seconds to wait for a response from e*Gate.

Returns
Unchanged.

MUXAPI - errno
A 4-byte binary number, initialized to zero.

Returns
If **MUXAPI - retcode** is negative (see below), **MUXAPI-errno** contains an error number.

MUXAPI - retcode
A 4-byte signed binary number, initialized to zero.

Returns
A value of zero or greater indicates a successful call. A negative value signifies an error; the error number is contained in **MUXAPI-errno**.

Close

Syntax

```
call "MUXAPIC" using
     MUXAPI-handle
     MUXAPI-errno
     MUXAPI-retcode.
```

Description

The **Close** function shuts down the socket connection with the MUX server e*Way and frees any resources associated with it.

Sample

Sample working storage definitions:

```
01   MUXAPI-handle    pic s9(8)   binary.
01   MUXAPI-errno     pic  9(8)   binary value 0.
01   MUXAPI-retcode   pic s9(8)   binary value +0.
```

Parameters and returns set by the application

MUXAPI - handle
A 4-byte binary number, containing the socket number returned by the OPEN.

Returns
Unchanged.

MUXAPI - errno
A 4-byte binary number, initialized to zero.

Returns
If **MUXAPI - retcode** is negative (see below), **MUXAPI-errno** contains an error number.

MUXAPI - retcode
A 4-byte signed binary number, initialized to zero.

Returns
A value of zero or greater indicates a successful call. A negative value signifies an error; the error number is contained in **MUXAPI-errno**.

8.3 ActiveX APIs

The e*Gate API Kit ActiveX control supports the following methods:

Connect

Syntax

```
Connect bstrMUXHost, lMUXListenPort
```

Description

Connect opens a connection to the specified host using the specified port.

Parameters

Name	Type	Description
bstrMUXHost	BSTR	The name of a network host.
lMUXListenPort	long	The TCP/IP port number over which to establish the connection.

Return Values

None.

Examples

```
rr.Connect strHost, dwPort
```

Disconnect

Syntax

```
Disconnect
```

Description

Disconnect closes an open connection.

Parameters

None.

Return Values

None.

Examples

```
rr.Disconnect()
```

LastErrorCode

Syntax

```
LastErrorCode
```

Description

LastErrorCode returns the last error code.

Parameters

None.

Return Values

Returns an error code.

Examples

```
rr.Send strSend, 1000

  if rr.LastErrorCode() > 0 then
    ShowError(rr)
  else
    rr.Wait 10000

  if rr.LastErrorCode() > 0 then
    ShowError(rr)
  else
    Response.Write "<H1 align=center>MUX e*Way Response string</H1>"
    Response.Write "<P>"
```

LastErrorText

Syntax

```
LastErrorText
```

Description

LastErrorText returns the text of the last error code.

Parameters

None.

Return Values

Returns an error message.

Examples

```
rr.Send strSend, 1000

  if rr.LastErrorCode() > 0 then
    ShowError(rr)
  else
    rr.Wait 10000

  if rr.LastErrorCode() > 0 then
    ShowError(rr)
```

```
  else
    Response.Write "<H1 align=center>MUX e*Way Response string</H1>"
    Response.Write "<P>"
```

ReplyMessageAsArray

Syntax

```
ReplyMessageAsArray
```

Description

ReplyMessageAsArray returns the outbound data as an array.

Parameters

None.

Return Values

Returns an array.

ReplyMessageAsString

Syntax

```
ReplyMessageAsString
```

Description

ReplyMessageAsString returns the outbound data as a string.

Parameters

None.

Return Values

Returns a string.

Examples

```
rr.Wait 10000

  if rr.LastErrorCode() > 0 then
    ShowError(rr)
  else
    Response.Write "<H1 align=center>MUX e*Way Response string</H1>"
    Response.Write "<P>"
    Response.Write(rr.ReplyMessageAsString)
    Response.Write "</P>"
```

ReplyMessageSize

Syntax

```
ReplyMessageSize
```

Description

ReplyMessageSize returns the length in bytes of the outbound data.

Parameters

None.

Return Values

Returns a long integer.

Send

Syntax

```
Send bstrRequestMessage, cSecondsAlive
```

Description

Send sends data into the e*Gate system.

Parameters

Name	Type	Description
bstruRequestMessage	BSTR	The message to send into the e*Gate system.
cSecondsAlive	long	The number of **seconds** this request "lives" within e*Gate before being dropped as an expired Event.

Return Values

None.

Examples

```
rr.Send strSend, 1000
```

Wait

Syntax

```
Wait cBlockMilliseconds
```

Description

Wait causes the application to wait the specified number of milliseconds for a message to be received.

Parameters

Name	Type	Description
cBlockMilliseconds	BSTR	The number of milliseconds to wait to receive a message from the remote host.

Return Values

None.

Examples

```
rr.Wait 10000
```

8.3.1. ActiveX Class ID

The ID for the IP Multiplexing ActiveX control is

xipmpclnt.MUX

8.4 Java Methods

The Java class file **IPMPReqReply.java** defines the following classes:

Defaults

The **IPMPReqReply** class establishes the following default variables and values:

Variable	Type	Value	Meaning
port	long	26051	The TCP/IP port over which the connection to the remote host is established.

Variable	Type	Value	Meaning
host	String	"" (null string)	The name of the remote host.
timeOut	long	10000	The number of milliseconds the application waits to receive a message from the remote host.
connectionHandle	long	0	A connection handle to the remote host.
secondsToExpire	long	10	The number of seconds that the message may travel within the e*Gate system before e*Gate marks it as "expired."

connect

Syntax

```
connect()
```

Description

connect establishes an IPMP connection with a remote host.

Type

Boolean

Parameters

None.

Return Values

Boolean

Returns **true** if the connection was established properly; otherwise, returns **false**.

Examples

```
// attempt to connect
    result = mux.connect();
    if (result == false)
            System.out.println("Unable to connect");
```

disconnect

Syntax

```
disconnect()
```

Description

disconnect closes an IPMP connection.

Type

Boolean

Parameters

None.

Return Values

Boolean
Returns **true** if the connection was broken properly; otherwise, returns **false**.

Examples

```
// close our connection
        result = mux.disconnect();
        if (result == false)
            System.out.println("Unable to close");

    System.exit(0);
```

getHost

Syntax

```
getHost()
```

Description

getHost returns the name of the current host as defined by the class file's global variable **host**. If no host name is defined, **getHost** returns a null string.

Type

java.lang.String

Parameters

None.

Return Values

java.lang.String
Returns a host name if one is defined; otherwise, returns a null string.

Examples

```
host = mux.getHost();
```

getPort

Syntax

```
getPort()
```

Description

getPort returns the TCP/IP port number defined by the class file's global variable **port**.

Type

long

Parameters

None.

Return Values

long
Returns a port number.

Examples

```
port = mux.getPort();
```

getResponse

Syntax

```
getResponse()
```

Description

getResponse polls the remote system and returns that system's response.

Type

java.lang.String

Parameters

None.

Return Values

java.lang.String
Returns the remote system's response. If no response is received or there is no connection handle, returns a null string.

Examples

```
// retrieve our response
    message = mux.getResponse();
```

getResponseBytes

Syntax

```
getResponseBytes()
```

Description

getResponseBytes polls the remote system and returns that system's response. The response is returned as a blob (unlike **getResponse** on page 577, which packages the response as a string).

Type

byte[]

Parameters

None.

Return Values

byte array
Returns the remote system's response as a byte array. If no response is received or there is no connection handle, returns a null string.

Examples

```
byte[] returnBytest = mux.getResponseByte();
```

getSecondsToExpire

Syntax

```
getSecondsToExpire()
```

Description

getSecondsToExpire returns the expiration time (in seconds) as defined by the class file's global variable **secondsToExpire**. See **"Defaults" on page 574** for more information.

Type

long

Parameters

None.

Return Values

long
Returns the expiration time (in seconds).

Examples

```
secondsToExpire = mux.getSecondsToExpire();
```

getSleepDuration

Syntax

```
getSleepDuration()
```

Description

getSleepDuration obtains the current internal sleep interval for MUX reply waiting.

Type

long

Parameters

None.

Return Values

long
Returns the sleep interval (in milliseconds).

Examples

```
long sleepduration = mux.getSleepDuration();
```

getTimeout

Syntax

```
getTimeout()
```

Description

getTimeout returns the timeout period (in milliseconds) as defined by the class file's global variable **timeOut**. See **"Defaults" on page 574** for more information.

Type

long

Parameters

None.

Return Values

long
Returns the timeout period (in milliseconds).

Examples

```
timeOut = mux.getTimeout();
```

sendMessage

Syntax

```
sendMessage(byte[] message_bytes)
```

Description

sendMessage sends the specified message to the remote host.

Type

Boolean

Parameters

Name	Type	Description
message_bytes	byte[ ] or String	The message to send.

Return Values

Boolean

Returns **true** if a non-null message was sent successfully; otherwise, returns **false**.

Examples

```
  message = new String("Hello");
  result = mux.sendMessage(message);
if (result == false)
  System.out.println("Message was not sent successfully");
else
  System.out.println("Message was sent successfully");
```

setDebug

Syntax

`setDebug(`*`mode`*`)`

Description

setDebug controls the print capability for debugging messages to **System.out**. By default, it is not enabled.

Type

void

Parameters

Name	Type	Description
mode	boolean	Set this to **true** to enable debugging methods. The default, **false**, suppresses debugging.

Return Values

None.

Examples

```
mux.setDebug(true);
```

setHost

Syntax

```
setHost(host_name)
```

Description

setHost sets the name of the remote host to the specified value.

Type

void

Parameters

Name	Type	Description
host_name	String	The new host name.

Return Values

None.

Examples

```
mux.setHost("localhost");
```

setPort

Syntax

```
setPort(port_number)
```

Description

setPort sets the TCP/IP port number to the specified value.

Type

void

Parameters

Name	Type	Description
port_number	long	The new port number.

Return Values

None.

Examples

```
mux.setPort(26051);
```

setSecondsToExpire

Syntax

```
setSecondsToExpire(seconds)
```

Description

setSecondsToExpire sets the expiration time to the specified value. See **"Defaults" on page 574** for more information.

Type

void

Parameters

Name	Type	Description
seconds	long	The new expiration time.

Return Values

None.

Examples

```
mux.setSecondsToExpire(10);
```

setSleepDuration

Syntax

```
setSleepDuration(milliseconds)
```

Description

setSleepDuration changes the current internal sleep interval for MUX reply waiting.

Type

void

Parameters

Name	Type	Description
milliseconds	long	The time (in milliseconds) that MUX waits for each phase of reply processing.

Return Values

None.

Examples

```
long sleepduration = mux.setSleepDuration(1000);
```

setTimeout

Syntax

```
setTimeout(milliseconds)
```

Description

setTimeout sets the timeout to the specified value. See **"Defaults" on page 574** for more information.

Type

void

Parameters

Name	Type	Description
milliseconds	long	The new timeout.

Return Values

None.

Examples

```
mux.setTimeout(10000);  // this is in milliseconds
```

8.5 com.stc.MUXPooler

The **MUXPooler** class operates between the multi-plexing e*Way and the external application. The **MUXPooler** is opened with the configured number of connections regardless of the number of connected applications. These connections are maintained by the e*Way to improve performance (connection/disconnection overhead is removed). The applications connected to the **MUXPooler** share these connections. If all of the connections are occupied, when another application tries to connect to the **MUXPooler**, a "Waiting for a free MUX" or "No MUX Available" message is produced.

8.5.1. Constructors

The **MUXPooler** class has three Constructors for instantiating an object:

- `public MUXPooler()`: Instantiates the object only. Each of the additional attributes must be called individually.
  - **setHost** on page 589
  - **setPort** on page 590
  - **setTimeout** on page 590
  - **setSecondsToExpire** on page 590
- `public MUXPooler(String host, int port, int connectionCount,int timeout, int secondsToExpire)`: Instantiates the object and sets the values of the specified attributes.
- `public MUXPooler(String host, int port, int connectionCount,int timeout, int secondsToExpire, boolean debug)`: Instantiates the object and sets the values of the specified attributes. Included in these attributes is the ability to print debugging code to System.out. By default it is not enabled.

8.5.2. Methods

This class will create a user-defined number of MUX (multiplexer) connections to e*Gate and send/receive Events to e*Gate:

- **connect** on page 585
- **disconnect** on page 585
- **disconnect** on page 585
- **getConnectionCount** on page 586
- **getHost** on page 586
- **getPort** on page 587
- **getSecondsToExpire** on page 587
- **getTimeout** on page 587

connect

Syntax

```
connect()
```

Description

connect opens a connection to the Participating Host that is running the MUX e*Way.

Parameters

None.

Return Values

Boolean
Returns **true** if the command executed successfully; otherwise, returns **false.**

disconnect

Syntax

```
disconnect()
```

Description

disconnect closes the connection to the Participating Host that is running the MUX e*Way and waits for each connection to finish the associated transaction.

Parameters

None.

Return Values

Boolean
Returns **true** if the command executed successfully; otherwise, returns **false.**

disconnect

Syntax

```
disconnect(WaitOnMux)
```

Description

disconnect disconnects all connections to the MUX e*Way.

Parameters

Name	Type	Description
WaitOnMux	Boolean	Determines whether to wait for current transactions to complete before disconnecting.

Return Values

Boolean
Returns **true** if the command executed successfully; otherwise, returns **false.**

getConnectionCount

Syntax

```
getConnectionCount()
```

Description

getConnectionCount returns the number of MUX connections currently available.

Parameters

None.

Return Values

integer
Returns the total number of connections available within the **`MUXPooler`**. This includes free, non-used connections as well as the occupied connections.

getHost

Syntax

```
getHost()
```

Description

getHost returns the host name.

Parameters

None.

Return Values

string
Returns the host name.

getPort

Syntax

```
getPort()
```

Description

getPort returns the port number of the host machine.

Parameters

None.

Return Values

integer
Returns the port number.

getSecondsToExpire

Syntax

```
getSecondsToExpire()
```

Description

getSecondsToExpire returns the expiration time in seconds.

Parameters

None.

Return Values

integer
Returns the number of milliseconds.

getTimeout

Syntax

```
getTimeout()
```

Description

getTimeout returns the number of milliseconds to wait for a response before timeout.

Parameters

None.

Return Values

integer
Returns the number of milliseconds.

resizeMUXPool

Syntax

```
resizeMUXPool(newSize)
```

Description

resizeMUXPool resizes the muxPool to the specified size.

Parameters

Name	Type	Description
newSize	integer	The number of connections of the muxPool

Return Values

Boolean
Returns **true** if the command executed successfully; otherwise, returns **false.**

Additional Information

resizeMUXPool is used to change the pool size at runtime (as necessary).

sendBytes

Syntax

```
sendBytes(bytes_array)
```

Description

sendBytes takes the message (Event) that is to be delivered into e*Gate, and returns e*Gate's response. A null string is returned if there is no response.

Parameters

Name	Type	Description
bytes_array	byte array	The message (Event) as a byte array

Return Values

byte array
Returns a byte array containing e*Gate's response if available; otherwise, returns null.

sendMessage

Syntax

```
sendMessage(message)
```

Description

sendMessage takes the message (Event) that is to be delivered into e*Gate, and returns e*Gate's response. A null string is returned if there is no response.

Parameters

Name	Type	Description
message	string	The message (Event) to send

Return Values

string
Returns string containing e*Gate's response; otherwise, returns null if there was no response.

setConnectionCount

Syntax

```
setConnectionCount(count)
```

Description

setConnectionCount sets the number of MUX connections created.

Parameters

Name	Type	Description
count	integer	The number of MUX connections

Return Values

None.

Additional Information

setConnectionCount is used to initialize the Class.

setHost

Syntax

```
setHost(host)
```

Description

setHost specifies the host name with which to establish connection.

Parameters

Name	Type	Description
host	string	The host name.

Return Values

None.

setPort

Syntax

```
setPort(integer)
```

Description

setPort specifies the port number with which to establish connection.

Parameters

Name	Type	Description
port	integer	The port name.

Return Values

None.

setSecondsToExpire

Syntax

```
setSecondsToExpire(seconds)
```

Description

setSecondsToExpire sets the expiration time to the specified value.

Parameters

Name	Type	Description
seconds	integer	The number of seconds

Return Values

None.

setTimeout

Syntax

```
setTimeout(timeout)
```

Description

setTimeout sets the timeout to the specified value.

Parameters

Name	Type	Description
timeout	integer	The number of seconds

Return Values

None.

8.6 Perl Subroutines

The e*Gate API Kit supports the following Perl extension subroutines:

Multiplexer_Close

Syntax

```
Multiplexer_Close(handle)
```

Description

Multiplexer_Close closes the connection on the specified handle.

Parameters

Name	Type	Description
handle	handle	The handle returned by **Multiplexer_Open**.

Return Values

integer
Returns **1** if the command executed successfully; otherwise, returns **0**.

Example

```
$result = Multiplexer_Close($handle);
if(!$result)
{
    print "Multiplexer_Close failed.\n";
}
```

Multiplexer_Free

Syntax

`Multiplexer_Free(`*`handle, message-pointer`*`)`

Description

Multiplexer_Free frees the memory associated with the message pointer.

Parameters

Name	Type	Description
handle	handle	The handle returned by **Multiplexer_Open**.
message-pointer	pointer	The message pointer.

Return Values

integer
Returns **1** if the command executed successfully; otherwise, returns **0**.

Examples

```
$message_ptr = Multiplexer_Wait($handle,$message_length,3000, 0, 0);

$result = Multiplexer_Free($handle, $message_ptr);

if(!$result)
{
    print "Multiplexer_Free failed.\n";
}
```

Multiplexer_Init

Syntax

`Multiplexer_Init(`*`dll-path`*`)`

Description

Multiplexer_Init specifies the path that contains the e*Way's library files. This function is required in every Perl script that communicates with the Participating Host.

Parameters

Name	Type	Description
dll-path	string	The path that contains the e*Way's **.dll** files. The path can be a relative or absolute path to the script that calls the function.

Return Values

integer
Returns **1** if the command executed successfully; otherwise, returns **0**.

Examples

```
# this is where stc_ewipmpclntperl.dll is located.
use lib ("xxx/xxx/xxx"); Where xxx represents your file location.

use CGI qw/:standard/;
use stc_ewipmpclntperl.dll;

# call Multiplexer_Init to define the dll path
Multiplexer_Init("xxx/xxx/xxx"); Where xxx represents your file
location.
```

Multiplexer_Open

Syntax

`Multiplexer_Open(`*`server-name, server-port, flags, reserved`*`)`

Description

Multiplexer_Open opens a connection to the Participating Host that is running the IPMP e*Way.

Parameters

Name	Type	Description
server-name	string	The name of the e*Gate Participating Host.
server-port	integer	The port through which to communicate with the multiplexing e*Way. If this value is **0** (zero), the default port **26051** is used.
flags	integer	Command flags. Always set to **0** (zero) unless directed otherwise by SeeBeyond support personnel.
reserved	integer	Reserved for future SeeBeyond use. Always set to **0** (zero) unless directed otherwise by SeeBeyond support personnel.

Return Values

Returns a connection handle.

Examples

```
$handle = Multiplexer_Open(“server.mycompany.com”, 26051, 0, 0);
  if(!$handle)
  { print "Multiplexer_Open failed.\n"; }
```

Multiplexer_Send

Syntax

```
Multiplexer_Send(handle, message-length, message,seconds-to-expire,
flags, reserved)
```

Description

Multiplexer_Send sends the specified message to the e*Gate Participating Host.

Parameters

Name	Type	Description
handle	handle	The handle returned by **Multiplexer_Open**.
message-length	integer	The length of the message, in bytes.
message	string	The data to send to the e*Gate Participating Host.
seconds-to-expire	integer	The number of seconds after which the data within the e*Gate system expires.
flags	integer	Command flags. Always set to **0** unless directed otherwise by SeeBeyond support personnel.
reserved	integer	Reserved for future SeeBeyond use. Always set to **0** (zero) unless directed otherwise by SeeBeyond support personnel.

Return Values

integer

Returns **1** if the command executed successfully; otherwise, returns **0**.

Examples

```
$result = Multiplexer_Send($handle, $message_length,$message,0,0,0);
if(!$result)
{
    print "STC_MUX::Multiplexer_Send failed.\n";
}
```

Multiplexer_ToString

Syntax

```
Multiplexer_ToString(message-pointer)
```

Description

Multiplexer_ToString returns the data associated with the specified message pointer as a string.

Parameters

Name	Type	Description
message-pointer	pointer	The pointer returned by **Multiplexer_Wait**.

Return Values

integer
Returns **1** if the command executed successfully; otherwise, returns **0**.

Additional Notes

In the current implementation, the null character ("\0") terminates a response message, and any information that follows a null character is discarded when you use **Multiplexer_ToString** to convert the response message to a string.

Examples

```
$message_received = Multiplexer_ToString($message_ptr);
$result = Multiplexer_Free($handle, $message_ptr);
if(!$result)
{
    print "Multiplexer_Free failed.\n";
}
```

See **LastErrorCode** on page 571 for more information.

Multiplexer_Wait

Syntax

```
Multiplexer_Wait(handle, message-length,millsecond-timeout, flags,
reserved)
```

Description

Multiplexer_Wait causes the application to wait up to the specified number of milliseconds for a message to be received.

Parameters

Name	Type	Description
handle	handle	The handle returned by **Multiplexer_Open**.
message-length	integer	The length of the message received, in bytes (assigned as an output parameter).
millisecond-timeout	integer	The number of milliseconds to wait
flags	integer	Command flags. Always set to **0** (zero) unless directed otherwise by SeeBeyond support personnel.
reserved	integer	Reserved for future SeeBeyond use. Always set to **0** (zero) unless directed otherwise by SeeBeyond support personnel.

Return Values

Returns a message pointer.

Examples

```
$message_ptr = Multiplexer_Wait($handle,$message_length,3000, 0, 0);
if(!$message_ptr)
{
    print "Multiplexer_Wait failed.\n";
}
```

Appendix

A.1 Cobol API Return Codes

The following error codes have been created for the e*Gate API Kit's Cobol support.

Error Code	Description	Programmer Response
3001	Get Host Name error.	Be sure that the host name and port number are correct.
3002	Error on return from ezacic08.	Internal error. Call your system administrator.
3003	Something other than an acknowledgment (ACK) was received in response to a SEND.	Internal error. Call your system administrator.
3004	Timed out waiting for an ACK after a SEND.	Increase the value of **MUXAPI-hsecs-for-ack**.
3005	Timed out waiting for a RECEIVE.	Increase the value of **MUXAPI-hsecs-to-wait**. Note: The units for timeout values are hundredths of a second. For example, to set the timeout value to one second, pass the value **100**.

A.2 Cobol Error Return Codes

The following return codes can be found in the *IP CICS Sockets Guide Version 2 Release 8 and 9, OS/390 SecureWay Communications Server*. As of the date of the creation of this document, it can be downloaded from:

http://www-1.ibm.com/servers/s390/os390/bkserv/r10pdf/commserv.html

A.2.1 TCP/IP for MVS Return Codes

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
1	EPERM	All	Permission is denied. No owner exists.	Check that TCP/IP is still active; Check the protocol value of the socket call.
1	EDOM	All	Argument is too large.	Check parameter values of the function call.
2	ENOENT	All	The data set or directory was not found.	Check files used by the function call.
2	ERANGE	All	The result is too large.	Check parameter values of the function call.
3	ESRCH	All	The process was not found. A table entry was not located.	Check parameter values and structures pointed to by the function parameters.
4	EINTR	All	A system call was interrupted.	Check that the socket connection and TCP/IP are still active.
5	EIO	All	An I/O error occurred.	Check status and contents of source database if this occurred during a file access.
6	ENXIO	All	The device or driver was not found.	Check status of the device attempting to access.
7	E2BIG	All	The argument list is too long.	Check the number of function parameters.
8	ENOEXEC	All	An EXEC format error occurred.	Check that the target module on an exec call is a valid executable module.
9	EBADF	All	An incorrect socket descriptor was specified.	Check socket descriptor value. It might be currently not in use or incorrect.
9	EBADF	Givesocket	The socket has already been given. The socket domain is not AF_INET.	Check the validity of function parameters.
9	EBADF	Select	One of the specified descriptor sets is an incorrect socket descriptor.	Check the validity of function parameters.
9	EBADF	Takesocket	The socket has already been taken.	Check the validity of function parameters.
10	ECHILD	All	There are no children.	Check if created subtasks still exist.
11	EAGAIN	All	There are no more processes.	Retry the operation. Data or condition might not be available at this time.
12	ENOMEM	All	There is not enough storage.	Check validity of function parameters.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
13	EACCES	All	Permission denied, caller not authorized.	Check access authority of file.
13	EACCES	Takesocket	The other application (listener) did not give the socket to your application. Permission denied, caller not authorized.	Check access authority of file.
14	EFAULT	All	An incorrect storage address or length was specified.	Check validity of function parameters.
15	ENOTBLK	All	A block device is required.	Check device status and characteristics.
16	EBUSY	All	Listen has already been called for this socket. Device or file to be accessed is busy.	Check if the device or file is in use.
17	EEXIST	All	The data set exists.	Remove or rename existing file.
18	EXDEV	All	This is a cross-device link. A link to a file on another file system was attempted.	Check file permissions.
19	ENODEV	All	The specified device does not exist.	Check file name and if it exists.
20	ENOTDIR	All	The specified device does not exist.	Use a valid file that is a directory.
21	EISDIR	All	The specified directory is a directory.	Use a valid file that is not a directory.
22	EINVAL	All types	An incorrect argument was specified.	Check validity of function parameters.
23	ENFILE	All	Data set table overflow occurred.	Reduce the number of open files.
24	EMFILE	All	The socket descriptor table is full.	Check the maximum sockets specified in MAXDESC().
25	ENOTTY	All	An incorrect device call was specified.	Check specified IOCTL() values.
26	ETXTBSY	All	A text data set is busy.	Check the current use of the file.
27	EFBIG	All	The specified data set is too large.	Check size of accessed dataset.
28	ENOSPC	All	There is no space left on the device.	Increase the size of accessed file.
29	ESPIPE	All	An incorrect seek was attempted.	Check the offset parameter for seek operation.
30	EROFS	All	The data set system is Read only.	Access data set for read only operation.
31	EMLINK	All	There are too many links.	Reduce the number of links to the accessed file.
32	EPIPE	All	The connection is broken. For socket write/send, peer has shutdown one or both directions.	Reconnect with the peer.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
33	EDOM	All	The specified argument is too large.	Check and correct function parameters.
34	ERANGE	All	The result is too large.	Check parameter values.
35	EWOULDBLOCK	Accept	The socket is in nonblocking mode and connections are not queued. This is not an error condition.	Reissue Accept( ).
35	EWOULDBLOCK	Read Recvfrom	The socket is in nonblocking mode and read data is not available. This is not an error condition.	Issue a select on the socket to determine when data is available to be read or reissue the Read( )/Recvfrom( ).
35	EWOULDBLOCK	Send Sendto Write	The socket is in nonblocking mode and buffers are not available.	Issue a select on the socket to determine when data is available to be written or reissue the Send( ), Sendto( ), or Write( ).
36	EINPROGRESS	Connect	The socket is marked nonblocking and the connection cannot be completed immediately. This is not an error condition.	See the Connect( ) description for possible responses.
37	EALREADY	Connect	The socket is marked nonblocking and the previous connection has not been completed.	Reissue Connect( ).
37	EALREADY	Maxdesc	A socket has already been created calling Maxdesc( ) or multiple calls to Maxdesc( ).	Issue Getablesize( ) to query it.
37	EALREADY	Setibmopt	A connection already exists to a TCP/IP image. A call to SETIBMOPT (IBMTCP_IMAGE), has already been made.	Only call Setibmopt( ) once.
38	ENOTSOCK	All	A socket operation was requested on a nonsocket connection. The value for socket descriptor was not valid.	Correct the socket descriptor value and reissue the function call.
39	EDESTADDRREQ	All	A destination address is required.	Fill in the destination field in the correct parameter and reissue the function call.
40	EMSGSIZE	Sendto Sendmsg Send Write	The message is too long. It exceeds the IP limit of 64K or the limit set by the setsockopt( ) call.	Either correct the length parameter, or send the message in smaller pieces.
41	EPROTOTYPE	All	The specified protocol type is incorrect for this socket.	Correct the protocol type parameter.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
42	ENOPROTOOPT	Getsockopt Setsockopt	The socket option specified is incorrect or the level is not SOL_SOCKET. Either the level or the specified optname is not supported.	Correct the level or optname.
42	ENOPROTOOPT	Getibmsocket opt Setibmsocket opt	Either the level or the specified optname is not supported.	Correct the level or optname.
43	EPROTONOSUPPORT	Socket	The specified protocol is not supported.	Correct the protocol parameter.
44	ESOCKTNOSUPPORT	All	The specified socket type is not supported.	Correct the socket type parameter.
45	EOPNOTSUPP	Accept Givesocket	The selected socket is not a stream socket.	Use a valid socket.
45	EOPNOTSUPP	Listen	The socket does not support the Listen call.	Change the type on the Socket( ) call when the socket was created. Listen( ) only supports a socket type of SOCK_STREAM.
45	EOPNOTSUPP	Getibmopt Setibmopt	The socket does not support this function call. This command is not supported for this function.	Correct the command parameter. See Getibmopt( ) for valid commands. Correct by ensuing a Listen( ) was not issued before the Connect( ).
46	EPFNOSUPPORT	All	The specified protocol family is not supported or the specified domain for the client identifier is not AF_INET=2.	Correct the protocol family.
47	EAFNOSUPPORT	Bind Connect Socket	The specified address family is not supported by this protocol family.	For Socket( ), set the domain parameter to AF_INET. For Bind( ), and Connect( ), set Sin_Family in the socket address structure to AF_INET.
47	EAFNOSUPPORT	Getclient Givesocket	The socket specified by the socket descriptor parameter was not created in the AF_INET domain.	The Socket( ) call used to create the socket should be changed to use AF_INET for the domain parameter.
48	EADDRINUSE	Bind	The address is in a timed wait because a LINGER delay from a previous close or another process is using the address.	If you want to reuse the same address, use Setsocketopt( ) with SO_REUSEADDR. See Setsockopt( ). Otherwise, use a different address or port in the socket address structure.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
49	EADDRNOTAVAIL	Bind	The specified address is incorrect for this host.	Correct the function address parameter.
49	EADDRNOTAVAIL	Connect	The calling host cannot reach the specified destination.	Correct the function address parameter.
50	ENETDOWN	All	The network is down.	Retry when the connection path is up.
51	ENETUNREACH	Connect	The network cannot be reached.	Ensure that the target application is active.
52	ENETRESET	All	The network dropped a connection on a reset.	Reestablish the connection between the applications.
53	ECONNABORTED	All	The software caused a connection abend.	Reestablish the connection between the applications.
54	ECONNRESET	All	The connection to the destination host is not available.	
54	ECONNRESET	Send Write	The connection to the destination host is not available.	The socket is closing. Issue Send( ) or Write( ) before closing the socket.
55	ENOBUFS	All	No buffer space is available.	Check the application for massive storage allocation call.
55	ENOBUFS	Accept	Not enough buffer space is available to create the new socket.	Call your system administrator.
55	ENOBUFS	Send Sendto Write	Not enough buffer space is available to send the new message.	Call your system administrator.
56	EISCONN	Connect	The socket is already connected.	Correct the socket descriptor on Connect( ) or do not issue a Connect( ) twice for the socket.
57	ENOTCONN	All	The socket is not connected.	Connect the socket before communicating.
58	ESHUTDOWN	All	A Send cannot be processed after socket shutdown.	Issue read/receive before shutting down the read side of the socket.
59	ETOOMANYREFS	All	There are too many references. A splice cannot be completed.	Call your system administrator.
60	ETIMEDOUT	Connect	The connection timed out before it was completed.	Ensure the server application is available.
61	ECONNREFUSED	Connect	The requested connection was refused.	Ensure server application is available and at specified port.
62	ELOOP	All	There are too many symbolic loop levels.	Reduce symbolic links to specified file.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
63	ENAMETOOLONG	All	The file name is too long.	Reduce size of specified file name.
64	EHOSTDOWN	All	The host is down.	Restart specified host.
65	EHOSTUNREACH	All	There is no route to the host.	Set up network path to specified host and verify that host name is valid.
66	ENOTEMPTY	All	The directory is not empty.	Clear out specified directory and reissue call.
67	EPROCLIM	All	There are too many processes in the system.	Decrease the number of processes or increase the process limit.
68	EUSERS	All	There are to many users on the system.	Decrease the number of users or increase the user limit.
69	EDQUOT	All	The disk quota has been exceeded.	Call your system administrator.
70	ESTALE	All	An old NFS** data set handle was found.	Call your system administrator.
71	EREMOTE	All	There are too many levels of remote in the path.	Call your system administrator.
72	ENOSTR	All	The device is not a stream device.	Call your system administrator.
73	ETIME	All	The timer has expired.	Increase timer values or reissue function.
74	ENOSR	All	There are no more stream resources.	Call your system administrator.
75	ENOMSG	All	There is no message of the desired type.	Call your system administrator.
76	EBADMSG	All	The system cannot read the file message.	Verify that CS for OS/390 installation was successful and that message files were properly loaded.
77	EIDRM	All	The identifier has been removed.	Call your system administrator.
78	EDEADLK	All	A deadlock condition has occurred.	Call your system administrator.
78	EDEADLK	Select Selectex	None of the sockets in the socket descriptor sets is either AF_NET or AF_IUCV sockets, and there is no timeout or no ECB specified. The select/selectex would never complete.	Correct the socket descriptor sets so that an AF_NET or AF_IUCV socket is specified. A timeout of ECB value can also be added to avoid the select/selectex from waiting indefinitely.
79	ENOLCK	All	No record locks are available.	Call your system administrator.
80	ENONET	All	The requested machine is not on the network.	Call your system administrator.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
81	ERREMOTE	All	The object is remote.	Call your system administrator.
82	ENOLINK	all	The link has been severed.	Release the sockets and re initialize the client-server connection.
83	EADV	All	An ADVERTISE error has occurred.	Call your system administrator.
84	ESRMNT	All	An SRMOUNT error has occurred.	Call your system administrator.
85	ECOMM	All	A communication error has occurred on a Send call.	Call your system administrator.
86	EPROTO	All	A protocol error has occurred.	Call your system administrator.
87	EMULTIHOP	All	A multi hop address link was attempted.	Call your system administrator.
88	EDOTDOT	All	A cross-mount point was detected. This is not an error.	Call your system administrator.
89	EREMCHG	all	The remote address has changed.	Call your system administrator.
90	ECONNCLOSED	All	The connection was closed by a peer.	Check that the peer is running.
113	EBADF	All	Socket descriptor is not in correct range. The maximum number of socket descriptors is set by MAXDESC( ). The default range is 0 - 49.	Reissue function with corrected socket descriptor.
113	EBADF	Bind socket	The socket descriptor is already being used.	Correct the socket descriptor.
113	EBADF	Givesocket	The socket has already been given. The socket domain is not AF_INET.	Correct the socket descriptor.
113	EBADF	Select	One of the specified descriptor sets is an incorrect socket descriptor.	Correct the socket descriptor. Set on Select( ) or Selectex( ).
113	EBADF	Takesocket	The socket has already been taken.	Correct the socket descriptor.
113	EBADF	Accept	A Listen( ) has not been issued before the Accept( )	Issue Listen( ) before Accept( ).
121	EINVAL	All	An incorrect argument was specified.	Check and correct all function parameters.
145	E2BIG	All	The argument list is too long.	Eliminate excessive number of arguments.
156	EMVSINITIAL	All	Process initialization error.	Attempt to initialize again.
1002	EIBMSOCKOUTOFRANGE	Socket	A socket number assigned by the client interface code is out of range.	check the socket descriptor parameter.
1003	EIBMSOCKINUSE	Socket	A socket number assigned by the client interface code is already in use.	Use a different socket descriptor.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
1004	EIBMIUCVERR	All	The request failed because of an IUCV error. This error is generated by the client stub code.	Ensure IUCV/VMCF is functional.
1008	EIBMCONFLICT	All	This request conflicts with a request already queued on the same socket.	Cancel the existing call or wait for its completion before reissuing this call.
1009	EIMBCANCELLED	All	The request was cancelled by the CANCEL call.	Informational, no action needed.
1011	EIBMBADTCPNAME	All	A TCP/IP name that is not valid was detected.	Correct the name specified in the IBM_TCPIMAGE structure.
1011	EIBMBADTCPNAME	Setibmopt	A TCP/IP name that is not valid was detected.	Correct the name specified in the IBM_TCPIMAGE.
1011	EIBMBADTCPNAME	INITAPI	A TCP/IP name that is not valid was detected.	Correct the name specification the IDENT option TCPNAME field.
1012	EIBMBADREQUESTCODE	All	A request code that is not valid was detected.	Contact your system administrator.
1013	EIBMBADCONNECTIONSTATE	All	A connection token that is not valid was detected; bad state.	Verify TCP/IP is active.
1014	EIBMUNAUTHORIZED CALLER	All	An unauthorized caller specified an authorized keyword.	Ensure user ID has authority for the specified operation.
1015	EIBMBADCONNECTIONMATCH	All	A connection token that is not valid was detected. There is no such connection.	Verify TCP/IP is active.
1016	EIBMTCPABEND	All	An abend occurred when TCP/IP was processing this request.	Verify that TCP/IP has restarted.
1026	EIBMINVDELETE	All	Delete requestor did not create the connection.	Delete the request from the process that created it.
1027	EIBMINVSOCKET	All	A connection token that is not valid was detected. No such socket exists.	Call your system programmer.
1028	EIBMINVTCPCONNECTION	All	Connection terminated by TCP/IP. The token was invalidated by TCP/IP.	Reestablish the connection to TCP/IP.
1032	EIBMCALLINPROGRESS	All	Another call was already in progress.	Reissue after previous call has completed.
1036	EIBMNOACTIVETCP	Getibmopt	No TCP/IP image was found.	Ensure TCP/IP is active.
1037	EIBMINVTSRBUSERDATA	All	The request control block contained data that is not valid.	check your function parameters and call your system programmer.
1038	EIBMINVUSERDATA	All	The request control block contained user data that is not valid.	Check your function parameters and call your system programmer.

Error Number	Message Name	Socket Type	Error Description	Programmer's Response
1040	EIBMSELECTEXPOST	SELECTEX	SELECTEX passed an ECB that was already posted.	Check whether the user's ECB was already posted.
2001	EINVALIDRXSOCKETCALL	REXX	A syntax error occurred in the RXSOCKET parameter list.	Correct the parameter list passed to the REXX socket call.
2002	ECONSOLEINTERRUPT	REXX	A console interrupt occurred.	Retry the task.
2003	ESUBTASKINVALID	REXX	The subtask ID is incorrect.	Correct the subtask ID on the INITIALIZE call.
2004	ESUBTASKALREADYACTIVE	REXX	The subtask is already active.	Only issue the INITIALIZE call once in your program.
2005	ESUBTASKALNOTACTIVE	REXX	The subtask is not active.	Issue the INITIALIZE call before any other socket call.
2006	ESOCKETNOTALLOCATED	REXX	The specified socket could not be allocated.	Increase the user storage allocation for this job.
2007	EMAXSOCKETSREACHED	REXX	The maximum number of sockets has been reached.	Increase the number of allocate sockets, or decrease the number of sockets used by your program.
2009	ESOCKETNOTDEFINED	REXX	The socket is not defined.	Issue the SOCKET call before the call that fails.
2011	EDOMAINSERVERFAILURE	REXX	A Domain Name Server failure occurred.	Call your MVS system programmer.
2012	EINVALIDNAME	REXX	An incorrect name was received from the TCP/IP server.	Call your MVS system programmer.
2013	EINVALIDCLIENTID	REXX	An incorrect clientid was received from the TCP/IP server.	Call your MVS server.
2014	EINVALIDFILENAME	REXX	An error occurred during NUCEXT processing.	Specify the correct translation table file name, or verify that the translation table is valid.
2016	EHOSTNOTFOUND	REXX	The host is not found.	Call your MVS system programmer.
2017	EIPADDRNOTFOUND	REXX	Address not found.	Call your MVS system programmer.

A.2.2 Sockets Extended Return Codes

Error Code	Problem Description	System Action	Programmer's Response
10100	An ESTATE macro did not complete normally.	End the call.	Call your MVS system programmer.
10101	A STORAGE OBTAIN failed.	End the call.	Increase MVS storage in the application's address space.

Error Code	Problem Description	System Action	Programmer's Response
10108	The first call from TCP/IP was not INITAPI or TAKESOCKET.	End the call.	Change the first TCP/IP call to INITAPI or TAKESOCKET.
10110	LOAD of EZBSOH03 (alias EZASOH03) failed.	End the call.	Call the IBM Software Support Center.
10154	Errors were found in the parameter list for an IOCTL call.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the IOCTL call. You might have incorrect sequencing of socket calls.
10155	The length parameter for an IOCTL call is 3200 (32 x 100).	Disable the subtask for interrupts. Return an error code to the caller.	Correct the IOCTL call. You might have incorrect sequencing of socket calls.
10159	A zero or negative data length was specified for a READ or READV call.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the length in the READ call.
10161	The REQARG parameter in the IOCTL parameter list is zero.	End the call.	Correct the program.
10163	A 0 or negative data length was found for a RECV, RECVFROM, or RECVMSG call.	Disable the subtask for interrupts. Sever the DLC path. Return an error code to the caller.	Correct the data length.
10167	The descriptor set size for SELECT or SELECTEX call is less than or equal to zero.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the SELECT or SELECTEX call. You might have incorrect sequencing of socket calls.
10168	The descriptor set size in bytes for a SELECT or SELECTEX call is greater than 252. A number greater than the maximum number of allowed sockets (2000 is maximum) has been specified.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the descriptor set size.
10170	A zero or negative data length was found for a SEND or SENDMSG call.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the data length in the SEND call.
10174	A zero or negative data length was found for a SENDTO call.	Disable the subtask for interrupts. Return an error code to the caller.	correct the data length in the SENDTO call.
10178	The SETSOCKOPT option length is less than the minimum length.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the OPTLEN parameter.
10179	The SETSOCKOPT option length is greater than the maximum length.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the OPTLEN parameter.
10184	A data length of zero was specified for a WRITE call.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the data length in the WRITE call.
10186	A negative data length was specified for a WRITE or WRITEV call.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the data length in the WRITE call.
10190	The GETHOSTNAME option length is less than 24 or greater than the maximum length.	Disable the subtask for interrupts. Return an error code to the caller.	Correct the length parameter.

Error Code	Problem Description	System Action	Programmer's Response
10193	The GETSOCKOPT option length is less than the minimum or greater than the maximum length.	End the call.	Correct the length parameter.
10197	The application issued an INITAPI call after the connection was already established.	Bypass the call.	Correct the logic that produces the INITAPI call that is not valid.
10198	The maximum number of sockets specified for an INITAPI exceeds 2000.	Return to the user.	Correct the INITAPI call.
10200	The first call issued was not a valid first call.	End the call.	For a list of valid first calls, refer to the section on special considerations in the chapter on general programming.
10202	The RETARG parameter in the IOCTL call is zero.	End the call.	Correct the parameter list. You might have incorrect sequencing of socket calls.
10203	The requested socket number is a negative value.	End the call.	Correct the requested socket number.
10205	The requested socket number is a negative value.	End the call.	Correct the requested socket number.
10208	the NAMELEN parameter for a GETHOSTYNAME call was not specified.	End the call.	Correct the NAMELEN parameter. You might have incorrect sequencing of socket calls.
10209	The NAME parameter on a GETHOSTBYNAME call was not specified.	End the call.	Correct the NAME parameter. You might have incorrect sequencing of socket calls.
10210	The HOSTENT parameter on a GETHOSTBYNAME call was not specified.	End the call.	Correct the HOSTENT parameter. You might have incorrect sequencing of socket calls.
10211	The HOSTADDR parameter on a GETHOSTBYNAME or GETHOSTBYADDR call is incorrect.	End the call.	Correct the HOSTENT parameter. You might have incorrect sequencing of socket calls.
10212	The resolver program failed to load correctly for GETHOSTBYNAME or GETHOSTBYADDR call.	End the call.	Check the JOBLIB, STEPLIB, and link lib datasets and rerun the program.
10213	Not enough storage is available to allocate the HOSTENT structure.	End the call.	Increase the use storage allocation for this job.
10214	The HOSTENT structure was not returned by the resolver program.	End the call.	Ensure that the domain name server is available. This can be a non error condition indicating that the name or address specified in a GETHOSTBYADDR or GETHOSTBYNAME call could not be matched.

Error Code	Problem Description	System Action	Programmer's Response
10215	The APITYPE parameter on an INITAPI call instruction was not 2 or 3.	End the call.	Correct the APITYPE parameter.
10218	The application programming interface (API) cannot locate the specified TCP/IP.	End the call.	Ensure that an API that supports the performance improvements related to CPU conservation is installed on the system and verify that a valid TCP/IP name was specified on the INITAPI call. This error call might also mean that EZASOKIN could not be loaded.
10219	The NS parameter is greater than the maximum socket for this connection.	End the call.	Correct the NS parameter on the ACCEPT, SOCKET or TAKESOCKET call.
10221	The AF parameter of a SOCKET call is not AF_INET.	End the call.	Set the AF parameter equal of AF_INET.
10222	the SOCTYPE parameter of a SOCKET call must be stream, datagram, or raw (1, 2, or 3).	End the call.	Correct the SOCTYPE parameter.
10223	No ASYNC parameter specified for INITAPI with APITYPE=3 call.	End the call.	Add the ASYNC parameter to the INITAPI call.
10224	The IOVCNT parameter is less than or equal to zero, for a READV, RECVMSG, SENDMSG, or WRITEV call.	End the call.	correct the IOVCNT parameter.
10225	The IOVCNT parameter is greater than 120, for a READV, RECVMSG, SENDMSG, or WRITEV call.	End the call.	Correct the IOVCNT parameter.
10226	Invalid COMMAND parameter specified for a GETIBMOPT call.	End the call.	Correct the IOVCNT parameter.
10229	A call was issued on an APITYPE=3 connection without an ECB or REQAREA parameter.	End the call.	Add an ECB or REQAREA parameter to the call.
10300	Termination is in progress for either the CICS transaction or the sockets interface.	End the call.	None.
10331	A call that is not valid was issued while in SRB mode.	End the call.	Get out of SRB mode and reissue the call.
10332	A SELECT call is invoked with a MAXSOC value greater than that which was returned in the INITAPI function (MAXSNO field).	End the call.	Correct the MAXSOC parameter and reissue the call.
10999	An abend has occurred in the subtask.	Write message EZY1282E to the system console. End the subtask and post the TRUE ECB.	If the call is correct, call your system programmer.

Error Code	Problem Description	System Action	Programmer's Response
20000	An unknown function code was found in the call.	End the call.	Correct the SOC-FUNCTION parameter.
20001	The call passed an incorrect number of parameters.	End the call.	Correct the parameter list.
20002	The CICS Sockets Interface is not in operation.	End the call.	Start the CICS Sockets Interface before executing this call.

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