SeeBeyond™ eBusiness Integration Suite

Secure Messaging Extension User's Guide

Release 4.5.2

Java Version

SEEBEYOND™

Version 20020308114806.

Contents

Chapter 1

Introduction

This document describes how to install and configure the Secure Messaging Extension.

1.1 Overview

The Secure Messaging Extension enables e*Gate to process Events utilizing the S/MIME (Secure Multipurpose Internet Mail Extensions) message format. The Secure Messaging Extension supports encryption, decryption and authentication of messages and is interoperable with any other client applications that support the S/MIME standard.

This adds the following features to a transaction:

- privacy
- message (Event) authentication
- sender authentication
- nonrepudiation

1.1.1 Intended Reader

The reader of this guide is presumed to be a developer or system administrator with responsibility for maintaining the e*Gate system; to have expert-level knowledge of Windows NT and/or UNIX operations and administration; and to be thoroughly familiar with Windows-style GUI operations.

1.1.2 Components

The following components comprise Secure Messaging Extension:

- stcsme.jar
- smime.jar
- Java collaborations that load and run the Java class functions.

A complete list of the installed files appears in **Table 1 on page 14**.

1.2 Introducing S/MIME

Secure Multipurpose Internet Mail Extension (S/MIME) is a type of MIME message format that supports digital signatures and encryption of messages. S/MIME uses Public Key Cryptography Standards (PKCS) developed by Baltimore Technology, based on the RSA algorithm which determined that there is no efficient way to factor very large numbers, making it nearly impossible to derive the private (decryption) key based solely on the public (encryption) key.

The public-key encryption system uses two keys: a public key available to everyone, and a private key known only to the recipient of the message. A public key can be published openly allowing the user to send secure messages that can only be decrypted by owner of the private key.

Only the public key can be used to encrypt messages, and only the corresponding private key can be used to decrypt them. In addition, a message encrypted with the private key can only be properly decrypted by the public key. This process known as *digital signing* guarantees to the receiver that the response genuinely came from the stated source.

MIME offers a standardized way to represent and encode a wide variety of media types for transmission via the internet. Many e-Mail clients now support MIME, which enables sending and receiving of graphics, audio, and video files via the Internet. MIME also supports messages in character sets other than ASCII.

When using MIME, messages can contain the following data types:

- Text messages in US-ASCII
- Messages of unlimited length

Due to limitations associated with the Baltimore SMIME library, to support the following files Base64 format must be specified:

- Binary files.
- Character sets other than US-ASCII
- Multi-media: Image, Audio, and Video messages
- Multiple objects in a single message

With the implementation of S/MIME, the protocol is available that adds digital signatures and encryption to these messages. These messages consist of two parts: the header and the body. The header forms a collection of field/value pairs structured to provide information necessary for the transmission of the message. MIME defines how the body of a message is structured. This format permits the inclusion of the above mentioned data types in a standardized manner. S/MIME defines the security services, adding digital signatures and encryption, thus preventing forgery and interception.

For more information regarding S/MIME, please see *Baltimore Technology, Developers Zone, S/MIME Protocols and Standards,* available online at: **http://www.baltimore.com/devzone/standards/smime.html.** Also available is *Internet Engineering Task Force S/MIME Message Specification (proposed standard)* at: **http://www.ietf.org/rfc/rfc2633.txt**.

1.3 Introducing Secure Messaging Extension

The Secure Messaging Extension provides security features, allowing the protected transmission of exchanges over public domains such as the Internet. Secure Messaging Extension adds the ability to use Public Key Infrastructure (PKI) technology to ensure the confidentiality of exchanges by digitally signing and encrypting messages as they are sent, and decrypting and authenticating messages when they are received.

The Secure Messaging Extension performs the encryption and decryption of messages using the S/MIME standard. The standard one-way hash algorithms ensure data integrity by verifying that no modifications are made to the message while in transit. The message sender’s identity is verified through the use of digital signatures, proving that the message actually originated from the entity who claims to have sent it.

The following flowcharts show the processing of the data from receipt to destination.

Figure 1 Inbound Signed/Encrypted Message

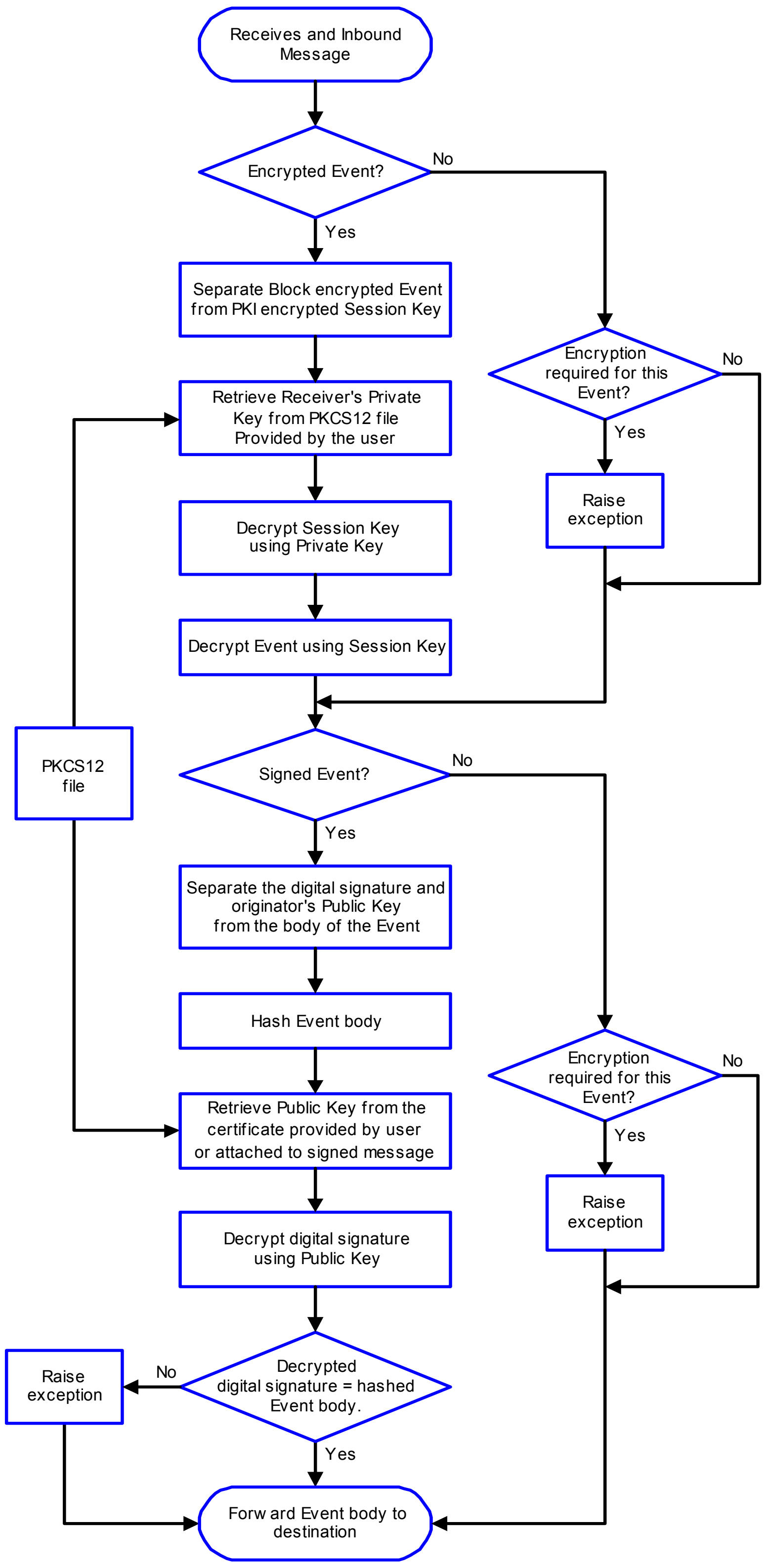
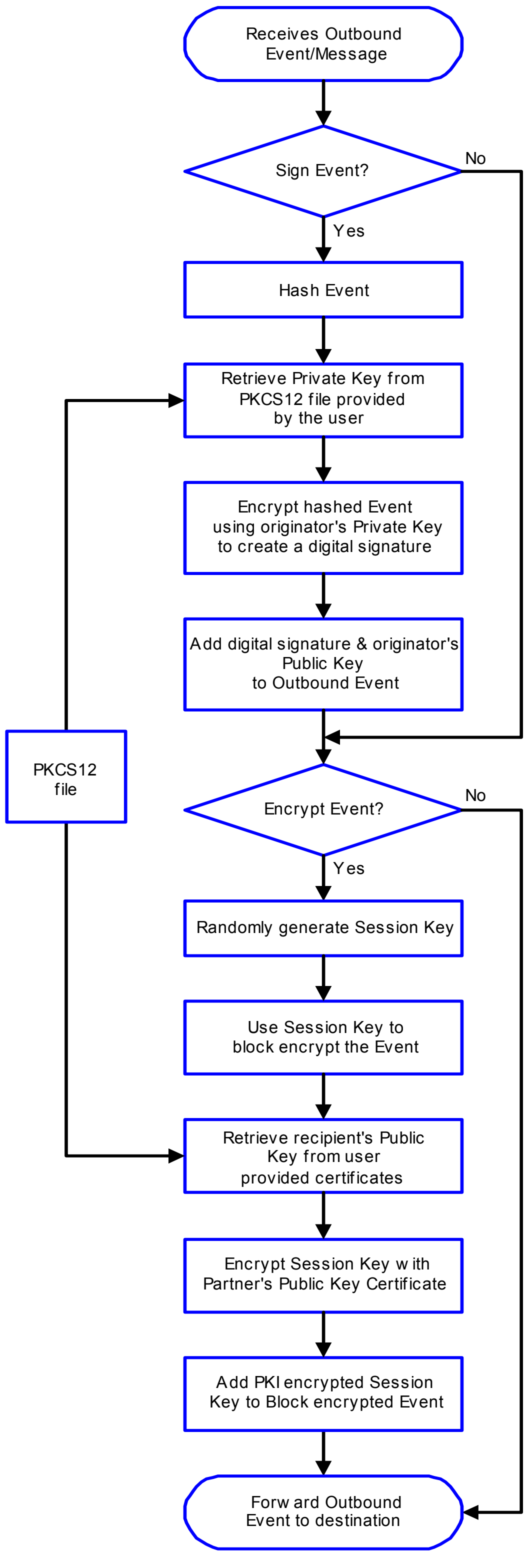

Receives and Inbound Message
Encrypted Event?
No
Yes
Separate Block encrypted Event from PKI encrypted Session Key
Encryption required for this Event?
No
Yes
Retrieve Receiver's Private Key from PKCS12 file Provided by the user
Raise exception
Decrypt Session Key using Private Key
Decrypt Event using Session Key
PKCS12 file
Signed Event?
No
Yes
Separate the digital signature and originator's Public Key from the body of the Event
Hash Event body
Encryption required for this Event?
No
Yes
Retrieve Public Key from the certificate provided by user or attached to signed message
Raise exception
Decrypt digital signature using Public Key
Raise exception
No
Decrypted digital signature = hashed Event body.
Yes
Forw ard Event body to destination

Figure 2 Outbound Signed/Encrypted Message


Receives Outbound Event/Message
Sign Event?
No
Yes
Hash Event
Retrieve Private Key from PKCS12 file provided by the user
Encrypt hashed Event using originator's Private Key to create a digital signature
Add digital signature & originator's Public Key to Outbound Event
PKCS12 file
Encrypt Event?
No
Yes
Randomly generate Session Key
Use Session Key to block encrypt the Event
Retrieve recipient's Public Key from user provided certificates
Encrypt Session Key w ith Partner's Public Key Certificate
Add PKI encrypted Session Key to Block encrypted Event
Forw ard Outbound Event to destination

1.4 Supported Operating Systems

The Secure Messaging Extension (Java) is supported on the following operating systems:

- Windows 2000, Windows 2000 SP1, and Windows 2000 SP2
- Windows NT 4.0 SP6a
- Solaris 2.6, 7, and 8
- AIX 4.3.3
- HP-UX 11.0 and HP-UX 11i

1.5 System Requirements

To use the Secure Messaging Extension, you will need the following:

1. An e*Gate Participating Host, version 4.5.1 or higher.
2. 250 KB free disk space

Note: *Additional disk space will be required to process and queue the data that the Secure Messaging Extension processes; the amount necessary will vary based on the type and size of the data being processed, and any external applications performing the processing.*

3. A TCP/IP network or other network connection.
4. A fast CPU, if secure message volume is expected to be high. (The public-key operations associated with encryption and signing are computationally expensive.)

1.5.1 Host System Requirements

The external system requirements are different for a GUI host machine—specifically a machine running the ETD Editor and the Java Collaboration Editor GUIs—versus a participating host which is used solely to run the e*Gate schema.

GUI Host Requirements

To enable the GUI editors to communicate with the external system, the following items must be installed on any host machines running the GUI editors:

- Java JDK 1.3. The JDK can be installed during the e*Gate GUI installation process if it hasn't been installed already.
- Microsoft Data Access Components (MDAC) RTM version 2.6 or greater. This component is included in the Windows 2000 installation routine. Windows NT users can obtain MDAC 2.6 RTM from the following location:

  http://www.microsoft.com/data/download.htm

Chapter 2

Installation

This chapter describes how to install the Secure Messaging Extension.

2.1 Windows NT or 2000

2.1.1 Pre-installation

1. Exit all Windows programs before running the setup program, including any anti-virus applications.
2. You must have Administrator privileges to install this extension.

2.1.2 Installation Procedure

To install the Secure Messaging Extension on a Windows NT or 2000 system

1. Log in as an Administrator on the workstation on which you want to install the extension.
2. Insert the installation CD-ROM into the CD-ROM drive.
3. If the CD-ROM drive's "Autorun" feature is enabled, the setup application should launch automatically; skip ahead to step 4. Otherwise, use the Windows NT Explorer or the Control Panel's **Add/Remove Applications** feature to launch the file **setup.exe** on the CD-ROM drive.
4. The InstallShield setup application will launch. Follow the on-screen instructions to install the extension.

Note: *Be sure to install the extension files in the suggested "client" installation directory. The installation utility detects and suggests the appropriate installation directory.* ***Unless you are directed to do so by SeeBeyond support personnel, do not change the suggested "installation directory" setting.***

2.2 UNIX

2.2.1 Pre-installation

1. Root privileges are not required to install this e*Way. Log in under the user name that will own the e*Way files. Be sure that this user has sufficient privilege to create files in the e*Gate directory tree.

2.2.2 Installation Procedure

To install the Secure Messaging Extension on a UNIX system

1. Log in on 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. A menu of options will appear. Select the "install Agents" option. Then, follow any additional on-screen directions.

Note: *Be sure to install the extension files in the suggested "client" installation directory. The installation utility detects and suggests the appropriate installation directory.* ***Unless you are directed to do so by SeeBeyond support personnel, do not change the suggested "installation directory" setting.***

2.3 Files/Directories Created by the Installation

The Secure Messaging Extension installation process will install the following files within the e*Gate directory tree. Files will be installed within the “egate\client” tree on the Participating Host and committed to the “default” schema on the Registry Host.

Table 1 Files created by the installation

e*Gate Directory	File(s)
client\classes	stcsme.jar
client\ThirdParty\baltimore\classes\	KeyToolsPro_All1.2.jar smime.jar
etd\smeclient\	smeinputmsg.dtd smemessage.xsc

Chapter 3

Multi-Mode e*Way Configuration

This chapter describes how to configure the Multi-Mode e*Way.

3.1 Multi-Mode e*Way

Multi-Mode e*Way properties are set using the Enterprise Manager.

To create and configure a New Multi-Mode e*Way:

1. Select the Navigator's Components tab.
2. Open the host on which you want to create the e*Way.
3. On the Palette, click on the icon to create a new **e*Way**.
4. Enter the name of the new e*Way, then click **OK**.
5. Select the new component, then click to edit its properties.
6. When the e*Way Properties window opens, click on the **Find** button beneath the *Executable File* field, and select an executable file. (**stceway.exe** is located in the "bin\" directory.)
7. Under the *Configuration File* field, click on the **New** button. When the Settings page opens, set the configuration parameters for this configuration file.
8. After selecting the desired parameters, save the configuration file. Close the **.cfg** file and select **OK** to close the e*Way Properties Window.

The Multi-Mode e*Way configuration parameters are organized into the following section:

- JVM Settings

3.1.1 JVM Settings

The JVM Settings control basic Java Virtual Machine settings.

JNI DLL Absolute Pathname

Description

Specifies the absolute pathname to where the JNI DLL installed by the *Java 2 SDK 1.2.2 or higher* is located on the Participating Host. This parameter is **mandatory**.

Required Values

A valid pathname.

Additional Information

The JNI dll name varies on different O/S platforms:

OS	Java 2 JNI DLL Name
NT 4.0/ Windows 2000	jvm.dll
Solaris 2.6, 2.7, 2.8	libjvm.so
Linux 6	libjvm.so
HP-UX	libjvm.sl
AIX 4.3	libjvm.a

The value assigned can contain a reference to an environment variable, by enclosing the variable name within a pair of % symbols. For example:

```
%MY_JNIDLL%
```

Such variables can be used when multiple Participating Hosts are used on different platforms.

To ensure that the JNI DLL loads successfully, the Dynamic Load Library search path environment variable must be set appropriately to include all the directories under the Java 2 SDK (or JDK) installation directory that contain shared libraries (UNIX) or DLLs (NT).

CLASSPATH Prepend

Description

Specifies the paths to be prepended to the CLASSPATH environment variable for the Java VM.

Required Values

An absolute path or an environmental variable. This parameter is optional.

Additional Information

If left unset, no paths will be prepended to the CLASSPATH environment variable.

Existing environment variables may be referenced in this parameter by enclosing the variable name in a pair of % signs. For example:

```
%MY_PRECLASSPATH%
```

CLASSPATH Override

Description

Specifies the complete CLASSPATH variable to be used by the Java VM. This parameter is optional. If left unset, an appropriate CLASSPATH environment variable (consisting of required e*Gate components concatenated with the system version of CLASSPATH) will be set.

Note: *All necessary JAR and ZIP files needed by both e*Gate and the Java VM must be included. It is advised that the **CLASSPATH Prepend** parameter should be used.*

Required Values

An absolute path or an environmental variable. This parameter is optional.

Additional Information

Existing environment variables may be referenced in this parameter by enclosing the variable name in a pair of % signs. For example:

```
%MY_CLASSPATH%
```

Initial Heap Size

Description

Specifies the value for the initial heap size in bytes. If set to 0 (zero), the preferred value for the initial heap size of the Java VM will be used.

Required Values

An integer between 0 and 2147483647. This parameter is optional.

Maximum Heap Size

Description

Specifies the value of the maximum heap size in bytes. If set to 0 (zero), the preferred value for the maximum heap size of the Java VM will be used.

Required Values

An integer between 0 and 2147483647. This parameter is optional.

Maximum Stack Size for Native Threads

Description

Specifies the value of the maximum stack size in bytes for native threads. If set to 0 (zero), the default value will be used.

Required Values

An integer between 0 and 2147483647. This parameter is optional.

Maximum Stack Size for JVM Threads

Description

Specifies the value of the maximum stack size in bytes for JVM threads. If set to 0 (zero), the preferred value for the maximum heap size of the Java VM will be used.

Required Values

An integer between 0 and 2147483647. This parameter is optional.

Class Garbage Collection

Description

Specifies whether the Class Garbage Collection will be done automatically by the Java VM. The selection affects performance issues.

Required Values

YES or **NO**.

Garbage Collection Activity Reporting

Description

Specifies whether garbage collection activity will be reported for debugging purposes.

Required Values

YES or **NO**.

Asynchronous Garbage Collection

Description

Specifies whether asynchronous garbage collection activity will be reported for debugging purposes.

Required Values

YES or **NO**.

Report JVM Info and all Class Loads

Description

Specifies whether the JVM information and all class loads will be reported for debugging purposes.

Required Values

YES or **NO**.

Disable JIT

Description

Specifies whether the Just-In-Time (JIT) compiler will be disabled.

Required Values

YES or **NO**.

Note: *This parameter is not supported for Java Release 1.*

Allow Remote Debugging of JVM

Description

Specifies whether to allow remote debugging of the JVM.

Required Values

YES or **NO**.

Chapter 4

e*Way Connection Configuration

This chapter describes how to configure the SME e*Way Connection Configuration.

4.1 Configuring e*Way Connections

e*Way Connections are set using the Enterprise Manager.

To create and configure e*Way Connections:

1. In the Enterprise Manager's **Component** editor, select the **e*Way Connections** folder.
2. On the palette, click on the icon to create a new **e*Way Connection**.
3. The **New e*Way Connection Component** dialog box opens, enter a name for the **e*Way Connection**. Click **OK**.
4. Double-click on the new **e*Way Connection**. For this example, the connection has been defined as **ecSME**.
5. The **e*Way Connection Properties** dialog box opens.
6. From the **e*Way Connection Type** drop-down box, select **SME**.
7. Enter the **Event Type "get"** interval in the dialog box provided.
8. From the **e*Way Connection Configuration File**, click **New** to create a new Configuration File for this e*Way Connection. (To use an existing file, click **Find**.)

The SME e*Way Connection configuration parameters are organized into the following sections:

- connector
- encrypt
- decrypt
- sign
- verify
- Certificate
- CRL

4.1.1 Connector

This section contains a set of top level parameters:

- type
- class
- Property.Tag

Type

Description

Specifies the type of connection.

Required Values

SME. The value defaults to SME.

Class

Description

Specifies the class name of the SME Client connector object.

Required Values

A valid package name. The default is **com.stc.sme.eway.SMEClientConnector**.

Property.Tag

Description

Specifies the data source identity. This parameter is required by the current EBobConnectorFactory.

Required Values

A valid data source package name.

4.1.2 Encrypt

This section contains a set of top level parameters:

- Certificate
- format
- algorithm
- MessageFormat
- EncodingFormat

Certificate

Description

Specifies the certificate of the partner to which encrypted messages will be sent.

Required Values

A valid certificate.

Format

Description

Specifies the certificate format.

Required Values

The appropriate certificate format. One of three provided: DER, PEM, or PK7. The default is DER.

Algorithm

Description

Specifies the algorithm used for encryption.

Required Values

A string. The appropriate encryption algorithm. One of four provided: DES_EDE3_CBC, RC2_CBC_40, RC2_CBC_64, RC2_CBC_128. The default is DES_EDE3_CBC.

MessageFormat

Description

Specifies the format used for the encrypted message.

Required Values

The appropriate message format. One of two provided: PKCS7, or SMIME2. The default is SMIME2.

EncodingFormat

Description

Specifies the format used to encode the output message. This setting is only applied if MessageFormat is set to SMIME2.

Required Values

The appropriate encoding format. One of two provided: BASE64, or BINARY. The default is BASE64.

4.1.3 Decrypt

This section contains a set of top level parameters:

- Message Format
- Encoding Format
- PKCS12
- PassPhrase

MessageFormat

Description

Specifies the format used for encrypting the message.

Required Values

The appropriate encryption format. One of two provided: PKCS7, or SMIME2. The default is SMIME2.

EncodingFormat

Description

Specifies the encoding format for the output message. This setting is only applied if MessageFormat is set to SMIME2.

Required Values

The appropriate encoding format. One of two provided: BASE64, or BINARY. The default is BASE64.

PKCS12

Description

Specifies the PKCS12 file. The PKCS12 file is where the private key is stored.

Required Values

The valid path and PKCS12 file.

PassPhrase

Description

Specifies the PassPhrase (password) used to protect/access the PKCS12 file.

Required Values

A valid PassPhrase.

4.1.4 Sign

This section contains a set of top level parameters:

- algorithm
- detached
- MessageFormat
- EncodingFormat
- PKCS12
- PassPhrase

Algorithm

Description

Specifies the signing algorithm, the algorithm used to sign the message.

Required Values

The appropriate algorithm type. One of two provided: RSA_MD5, or RSA_SHA1. The default is RSA_SHA1.

Detached

Description

Specifies whether the signature will be separated from the original message.

Required Values

Yes or No. Yes detaches the signature.

MessageFormat

Description

Specifies the format used for encrypting the message.

Required Values

The appropriate encryption format. One of two provided: PKCS7, or SMIME2. The default is SMIME2.

EncodingFormat

Description

Specifies the encoding format for the output message. This setting is only applied if MessageFormat is set to SMIME2.

Required Values

The appropriate encoding format. One of two provided: BASE64, or BINARY. The default is BASE64.

PKCS12

Description

Specifies the PKCS12 file. The PKCS12 file is where the private key is stored.

Required Values

The valid path and PKCS12 file.

PassPhrase

Description

Specifies the PassPhrase (password) used to protect/access the PKCS12 file.

Required Values

A valid PassPhrase.

4.1.5 Verify

This section contains a set of top level parameters:

- MessageFormat
- EncdoingFormat
- Certificate
- format

MessageFormat

Description

Specifies the format used for encrypting the message.

Required Values

The appropriate encryption format. One of two provided: PKCS7, or SMIME2. The default is SMIME2.

EncodingFormat

Description

Specifies the encoding format for the output message. This setting is only applied if MessageFormat is set to SMIME2.

Required Values

The appropriate encoding format. One of two provided: BASE64, or BINARY. The default is BASE64.

Certificate

Description

Specifies the certificate used to verify the signed message. If not set, the certificate attached to the signed message will be used to verify the signed message.

Required Values

A valid certificate.

Format

Description

Specifies the certificate format.

Required Values

The appropriate certificate format. One of three provided: DER, PEM, or PK7. The default is DER.

4.1.6 Certificate

This section contains a set of top level parameters:

- Checking
- TrustedCA
- format

Checking

Description

Specifies the method used to check the certificate. Three options are available for checking:

- **Direct**: The certificate used in the program has been checked and should be trusted.
- **CA**: Only those certificates issued by the trusted CAs can be used in the program.
- **CA_CRL**: Certificates issued from the trusted CAs will be checked with CRLs. If this one is selected, a CRL catalog, needs to be configured for the purpose of locating the CRL.

Required Values

The appropriate checking method. One of three options provided: CA, CA_CRL, or DIRECT. The default is CA

TrustedCA

Description

Specifies the trusted CAs. Certificates of the designated CA are used to check the certificates use within the program. Multiple CAs may be selected.

Required Values

One or more trusted CAs.

Format

Description

Specifies the format of the CA's certificate. If PK7 is selected, the end entity will be regarded as the CA's Certificate.

Required Values

The appropriate certificate format. One of three provided: DER, PEM, or PK7. The default is DER.

4.1.7 CRL

This section contains a set of top level parameters:

- filename
- CACRLCertifciate
- CACRLformat
- CACertifciate
- format

Filename

Description

Specifies the file name of the stored CRL, DER is the required format.

Required Values

The path and file name of the stored CRL.

CACRLCertificate

Description

Specifies the certificate of the CA that was used to sign the CRL.

Required Values

A valid certificate name.

CACRLformat

Specifies the format of the CA’s certificate. If PK7 is selected, the end entity will be regarded as the CA’s Certificate.

Required Values

The appropriate certificate format. One of three provided: DER, PEM, or PK7. The default is DER.

CACertificate

Description

Specifies the certificate of the CA that was used to sign user's certificate. This certificate will be regarded as the trusted CA certificate. If it is the same as the one used to sign the CRL, leave this parameter blank.

Required Values

A valid certificate name.

Format

Description

Specifies the format of the CA’s certificate. If PK7 is selected, the end entity will be regarded as the CA’s Certificate.

Required Values

The appropriate certificate format. One of three provided: DER, PEM, or PK7. The default is DER.

Chapter 5

Implementation

This chapter includes information pertinent to implementing the Java-enabled SME e*Way in a production environment. Also included is a sample schema. The sample schema can be located in the root directory of the Installation CD under:

```
samples/ewsme
```

The following assumptions are applicable to this implementation: 1) The SME e*Way has been successfully installed. 2) The executable and the configuration files have been appropriately assigned. 3) All necessary .jar files are accessible.

5.1 SME Sample Implementation Overview

During installation, the host and Control Broker are automatically created and configured. The default name of each is the name of the host on which you are installing the e*Gate Enterprise Manager GUI. To complete the implementation of the Java-enabled SME e*Way, do the following:

- Make sure that the Control Broker is activated.
- In the e*Gate Enterprise Manager, define and configure the following as necessary:
  - Inbound e*Way using **stcewfile.exe**
  - Outbound e*Way using **stcewfile.exe**
  - The Multi-Mode e*Way component.
  - Event Type Definitions used to package the data to be exchanged with the external system.
  - Collaboration Rules to process Events.
  - The e*Way Connection to be created as described in **Chapter 4**.
  - Collaborations, to be associated with each e*Way component, to apply the required Collaboration Rules.
  - The destination to which data will be published prior to being sent to the external system.

The following sections describe how to define and associate each of the above components. However, the section **“Sample Schema” on page 45** provides the details necessary to create the components of a specific schema consisting of three e*Ways, three Event Types, one Collaboration Rule, two Intelligent Queues and three Collaborations.

5.1.1 Creating the New Schema

The first task in deploying the sample implementation is to create a new schema name. While it is possible to use the default schema for the sample implementation, it is recommended that you create a separate schema for testing purposes. After you install the SME e*Way, do the following:

1. Start the e*Gate Enterprise Manager GUI.
2. When the Enterprise Manager prompts you to log in, select the host that you specified during installation, and enter your password.
3. When prompted to select a schema, click **New**.
4. Enter a name for the new schema; In this case, enter **SMESample**, or any name as desired.

The e*Gate Enterprise Manager opens under your new schema. You are now ready to begin creating the necessary components for this sample schema.

5.1.2 Event Types

The SME e*Way installation includes the file “**smemessage.xsc**” which represents a standard SME Event Type template.

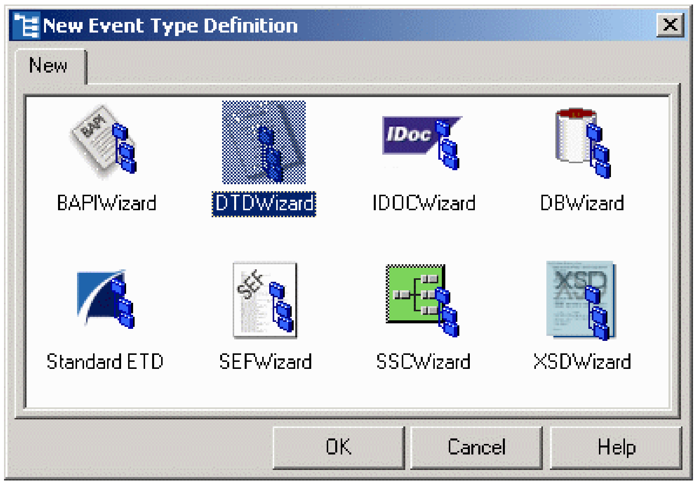
Creating an Event Type from an Existing DTD

For the purpose of this example, the following procedure shows how to create an Event Type Definition (ETD) from an existing Document Type Definition (DTD) using (smeinputmsg.dtd located in the <eGate root directory>/client/etd/smeclient) as the input file.

1. Highlight the **Event Types** folder on the **Components** tab of the e*Gate Navigator.
2. On the palette, click the **Create a New Event Type** button to create a new **Event Type**.
3. Enter the name of the **Event**, then click **OK.** (For the purpose of this sample, the first Event Type is defined as “input”.)
4. Double-click the new **Event Type** to edit its properties.
5. When the **Properties** window opens, click the **New** button. The ETD Editor opens.
6. Select **New** from the **File** menu on **Task Manager**.

7 The Event Type Definition Wizard opens.

Figure 3 Event Type Definition Wizard



8 Select the proper wizard. (For this Event Type, select DTDWizard.)

9 Enter a package name where the DTD builder can place all the generated Java classes associated with the created ETD. (For this sample use **SME**.)

10 Select a DTD file to be used by the DTD builder to generate an ETD file. (Using the browse button, navigate to an existing DTD. For this sample, the file **smeinputmsg.dtd** was used.)

11 Click **Next**. and review the summary information.

12 Click **Back** to edit, otherwise, click **Finish**.

13 The ETD Editor opens displaying the newly converted **.xsc** file. An ETD is a graphical representation of the layout of data in an Event.

14 Save the file as **inputmsg.xsc**, and **Promote to Run Time**.

Note: For more information on the creation and modification of Java-enabled ETDs, please see the "Java-based ETD Editor" guide.

Creating an Event Type Without an Existing DTD

For the purpose of this example, the following procedure shows how to create an ETD without using an existing DTD file as the input file.

1 Highlight the **Event Types** folder on the **Components** tab of the e*Gate Navigator.

2 On the palette, click the **Create a New Event Type** button to create a new **Event Type**.

3 Enter the name of the **Event**, then click **OK.** (For the purpose of this sample, the first Event Type is defined as "outevent")

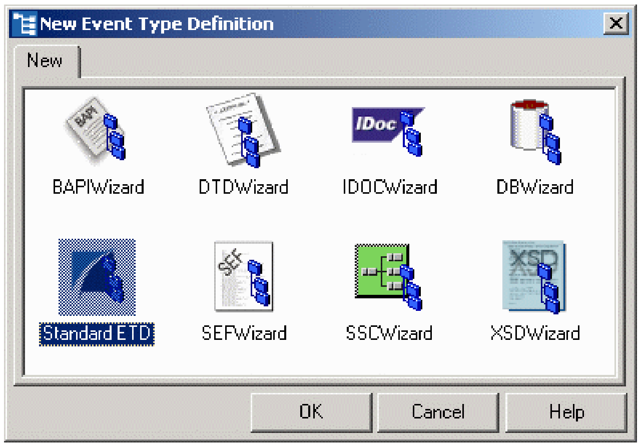
4 Double-click the new **Event Type** to edit its properties.

5 When the **Properties** window opens, click the **New** button. The ETD Editor opens.

6 Select **New** from the **File** menu on **Task Manager**.

7 The Event Type Definition Wizard opens.

Figure 4 Event Type Definition Wizard



8 Select the desired wizard. (For this Event Type, select StandardETD.)

9 Enter a package name where the DTD builder can place all the generated Java classes associated with the created ETD. (For this sample, use **SMESample** as the package name.)

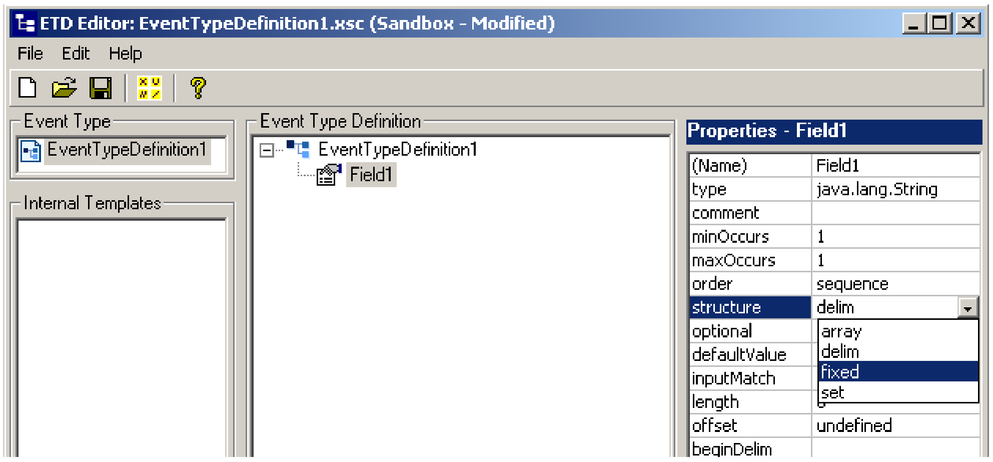
10 The ETD Editor opens, select **New** from the **File** menu.

11 Select **EventTypeDefintion1**.

12 Right click, and select **Add Field, as Child Node**.

13 Select **Field1** and change the structure type to **fixed** in the Properties window.

Figure 5

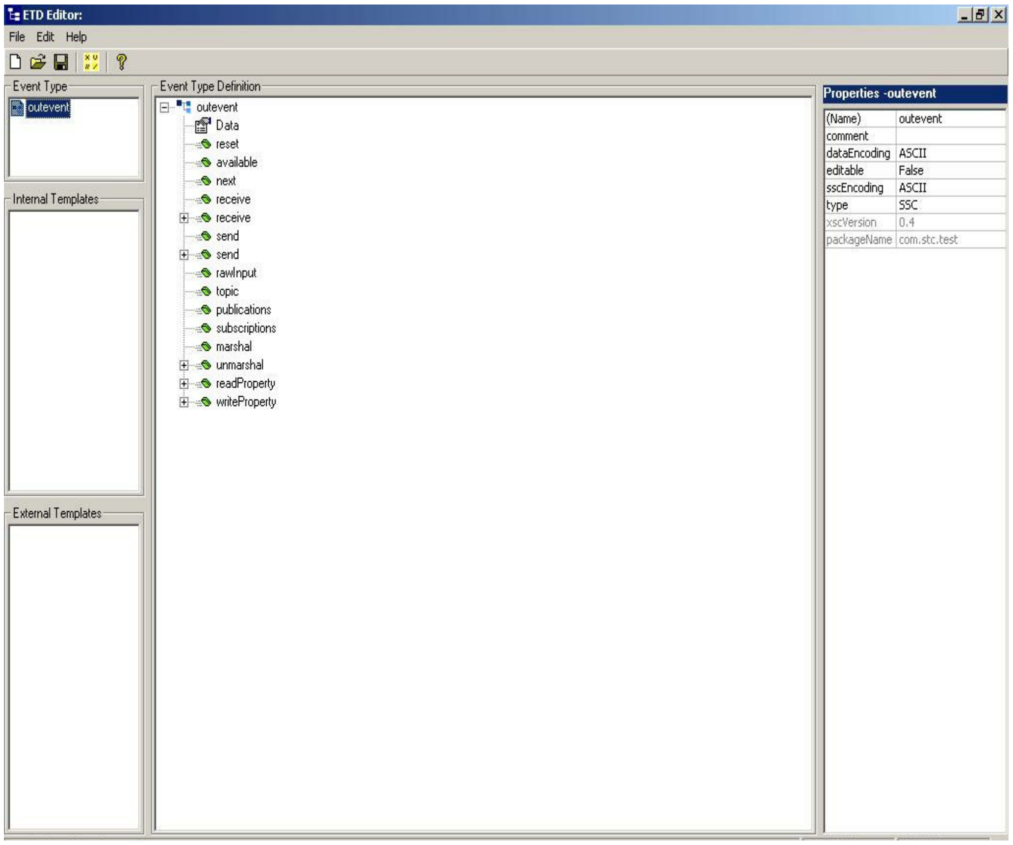


(Name)	Field1
type	java.lang.String
comment	
minOccurs	1
maxOccurs	1
order	sequence
structure	delim
optional	
defaultValue	
inputMatch	
length	
offset	undefined
beginDelim	

14 Triple-click on **EventTypeDefinition1** in the Event Type Definition window, and rename it **outevent**.

15 Triple-click on **Field1**, and rename it **Data**.

Figure 6 SMEMessage.xsc



```
outevent
    Data
    reset
    available
    next
    receive
  + receive
    send
  + send
    rawInput
    topic
    publications
    subscriptions
    marshal
  + unmarshal
  + readProperty
  + writeProperty
```

(Name)	outevent
comment	
dataEncoding	ASCII
editable	False
sscEncoding	ASCII
type	SSC
xscVersion	0.4
packageName	com.stc.test

16 Save the file as **smemessage.xsc**, and Promote to Run Time.

Creating an Event Type From an Existing .xsc

For the purpose of this example, the following procedure shows how to create an Event Type Definition (ETD) from an existing .xsc file using (smemessage.xsc) as the input file.

1 Highlight the **Event Types** folder on the **Components** tab of the e*Gate Navigator.

2 On the palette, click the **Create a New Event Type** button to create a new **Event Type**.

3 Enter the name of the **Event**, then click **OK.** (For the purpose of this sample, the first Event Type is defined as "**smemessage**").

4 Double-click the new **Event Type** to edit its properties.

5 When the **Properties** window opens, click the **Find** button.

6 Select **smemessage.xsc** (provided as the default destination .xsc file).

7 Click **OK** to continue.

5.1.3 Creating and Configuring the e*Ways

The first components to be created are the following e*Ways:

- Inbound_eWay
- Outbound_eWay
- Multi-Mode_eWay

The following sections provide instructions for creating each e*Way.

Inbound e*Way

1 Select the Navigator's **Components** tab.

2 Open the host on which you want to create the e*Ways.

3 Select the **Control Broker** that will manage the new e*Ways.

4 On the palette, click the **Create a New e*Way** button.

5 Enter the name of the new e*Way, (in this case, **inbound)**, then click **OK**.

6 Right-click **inbound**, and select Properties to edit its properties.

7 When the e*Way Properties window opens, click on the **Find** button beneath the **Executable File** field, and select **stcewfile.exe** as the executable file.

8 Under the **Configuration File** field, click on the **New** button. When the **Settings** page opens, set the following for this configuration file:

:

Table 2 Configuration Parameters for the Inbound e*Way

Parameter	Value
General Settings (unless otherwise stated, leave settings as default)	
AllowIncoming	Yes
AllowOutgoing	No
Outbound Settings	Default
Poller Inbound Settings	
PollDirectory	C:Indata (input file folder)
InputFileExtension	*.fin (input file extension)
PollMilliseconds	Default
Remove EOL	Default
MultipleRecordsPerFile	No
MaxBytesPerLine	Default
BytesPerLineIsFixed	Default
Performance Testing	Default

9 After selecting the desired parameters, save the configuration file (inbound.cfg) and Promote to Run Time. Close the **.cfg** file.

10 Use the Startup, Advanced, and Security tabs to modify the default settings for each e*Way you configure.

A Use the **Startup** tab to specify whether the e*Way starts automatically, or restarts after abnormal termination or due to scheduling, and so forth.

B Use the **Advanced** tab to specify or view the activity and error logging levels, as well as the Event threshold information.

C Use **Security** to view or set privilege assignments.

11 Select **OK** to close the **e*Way Properties** window.

Outbound e*Way

1 Select the Navigator's **Components** tab.

2 Open the host on which you want to create the e*Ways.

3 Select the **Control Broker** that will manage the new e*Ways.

4 On the palette, click the **Create a New e*Way** button.

5 Enter the name of the new e*Way, (in this case, **outbound)**, then click **OK**.

6 Select **outbound**, then right-click and select Properties to edit its properties.

7 When the e*Way Properties window opens, click the **Find** button beneath the **Executable File** field, and select **stcewfile.exe** as the executable file.

8 Under the **Configuration File** field, click the **New** button. When the **Settings** page opens, set the following for this configuration file:

:

Table 3 Configuration Parameters for the Outbound e*Way

Parameter	Value
General Settings (unless otherwise stated, leave settings as default)	
AllowIncoming	No
AllowOutgoing	Yes
Outbound Settings	
OutputDirectory	C:\DATA
OutputFileName	output%d.dat
MultipleRecordsPerFile	No
MaxRecordsPerFile	10000
AddEOL	Yes
Poller Inbound Settings	Default
Performance Testing	Default

9 Save the **.cfg** file (outbound.cfg), Promote to Run Time, close Settings. Click **OK** to close **e*Way Properties** window.

Multi-Mode e*Way

1 Select the **Navigator's Components** tab.

2 Open the host on which you want to create the e*Way.

3 Select the **Control Broker** that will manage the new e*Way.

4 On the palette, click the **Create a New e*Way** button.

5 Enter the name of the new e*Way (in this case, **ew_java**), then click **OK**.

6 Right-click the new e*Way and select Properties to edit its properties.

7 When the e*Way Properties window opens, click the **Find** button beneath the **Executable File** field, and select **stceway.exe** as the executable file.

8 To edit the JVM Settings, select **New** under Configuration file.

See **"Multi-Mode e*Way Configuration" on page 15** for details on the parameters associated with the Multi-Mode e*Way.

:

Table 4 Configuration Parameters for the MultiMode e*Way

Parameter	Value
JVM Settings (unless otherwise stated, leave settings as default)	
JNI DLL absolute pathname	C:\eGate\client\bin\Jre\jvm.dll (or absolute path to proper JNI DLL)
CLASSPATH Prepend	C:\eGate\client\classes\stcsme.jar C:\eGate\client\classes\ThirdParty\baltimore\classes\smime.jar C:\eGate\client\classesThirdParty\baltimore\classes\KeyToolsPro_All_1.2.jar (or absolute path to stcsme.jar, smime.jar, and KeyToolsPro_All1.2.jar)

9 Save the **.cfg** file, Promote to Run Time.

10 In the **e*Way Properties** window, use the **Startup**, **Advanced**, and **Security** tabs to modify the default settings for each.

D Use the **Startup** tab to specify whether the e*Way starts automatically, restarts after abnormal termination or due to scheduling, etc.

E Use the **Advanced** tab to specify or view the activity and error logging levels, as well as the Event threshold information.

F Use **Security** to view or set privilege assignments.

11 Click **OK** to close **e*Way Properties** window.

5.1.4 Create the e*Way Connection

The e*Way Connection configuration file contains the connection information along with the information needed to communicate using SME.

To create and configure a New e*Way Connection

1 Highlight the **e*Way Connection** folder on the **Components** tab of the e*Gate Navigator.

2 On the palette, click the **Create a New e*Way Connection** button.

3 Enter the name of the **e*Way Connection**, then click **OK.** (For the purpose of this sample, the e*Way Connection is defined as "con_sme".)

4 Double-click the new **e*Way Connection** to edit its properties.

5 When the **e*Way Connection Properties** window opens, select **SME** from the e*Way Connection Type drop-down menu.

6 Under e*Way Connection Configuration File, click the **New** button.

7 The e*Way Connection editor opens, select the necessary parameters.

For more information on the SME e*Way Connection Type parameters, see **"e*Way Connection Configuration" on page 20**.

8 Save the .cfg file and Promote to Run Time.

5.1.5 Intelligent Queues

The next step is to create and associate Intelligent Queues (IQs). IQs manage the exchange of information between components within the e*Gate system, providing non-volatile storage for data as it passes from one component to another. IQs use IQ Services to transport data. IQ Services provide the mechanism for moving Events between IQs, handling the low-level implementation of data exchange (such as system calls to initialize or reorganize a database).

To create and modify an Intelligent Queue for the SME e*Way:

1 Select the Navigator's **Components** tab.

2 Open the host on which you want to create the IQ.

3 Open a **Control Broker**.

4 Select an **IQ Manager**.

5 On the palette, click the **Create a New IQ** button.

6 Enter the name of the new IQ (in this case, **iq1**), then click **OK.**

7 Double-click the new **IQ** to edit its properties.

8 On the **General** tab, specify the **Service** and the **Event Type Get Interval**.

The **STC_Standard** IQ Service provides sufficient functionality for most applications. If specialized services are required, custom IQ Service DLLs may be created.

The default **Event Type Get Interval** of 100 Milliseconds is satisfactory for the purposes of this initial implementation.

9 On the **Advanced** tab, make sure that **Simple publish/subscribe** is checked under the **IQ behavior** section.

10 Click OK to close the **IQ Properties** window

11 For this schema, repeat steps 1 through 10 to create an additional IQ (**iq2**).

5.1.6 Collaboration Rules

The next step is to create the Collaboration Rules that will extract and process selected information from the source Event Type defined above, according to its associated Collaboration Service. The **Default Editor** can be set to either **Monk** or **Java**.

From the **Enterprise Manager Task Bar,** select **Options** and click **Default Editor**. The default should be set to **Java**.

The sample schema call for the creation of three collaboration Rules files

- Pass_in (Pass Through)
- Pass_out (Pass Through)
- cor_java (Java)

Creating Collaboration Rules files

Pass Through (inbound)

1 Select the Navigator's **Components** tab in the e*Gate Enterprise Manager.

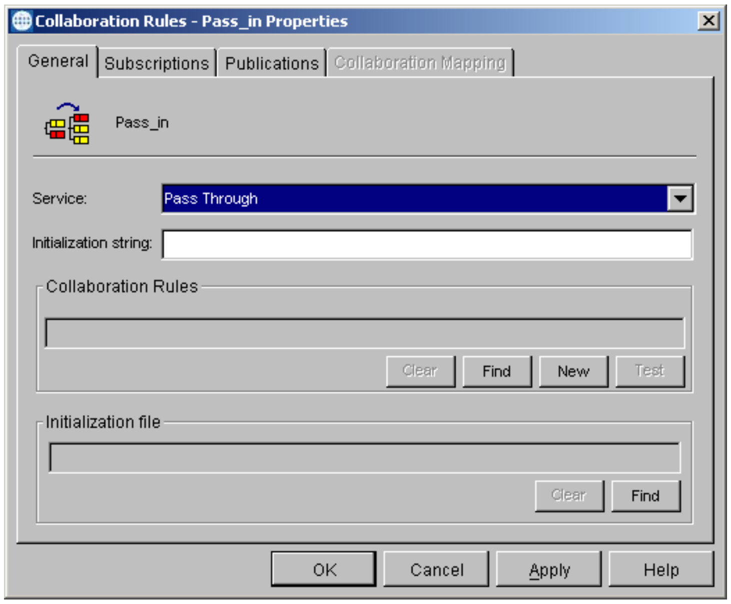
2 In the **Navigator**, select the **Collaboration Rules** folder.

3 On the palette, click the **Create New Collaboration Rules** button.

4 Enter the name of the new Collaboration Rule Component, then click **OK** (for this case, use **Pass_in**).

5 Double-click the new Collaboration Rules Component. The **Collaboration Rules Properties** window opens.

Figure 7 Collaboration Properties


Collaboration Rules - Pass_in Properties

Pass_in

Service: Pass Through

Initialization string:

6 The **Service** field defaults to **Pass Through**.

7 Go to the **Subscriptions** tab. Select **input** under **Available Input Event Types**, and click the right arrow to move it to **Selected Input Event Types**. The box under **Triggering Event** should be checked.

8 Go to the **Publications** tab. Select **input** under **Available Output Event Types**, and click the right arrow to move it to **Selected Output Event Types**. The Radio button under **Default** will be enabled.

9 Click **OK** to close the **Collaboration Rules - passin Properties** window.

Pass Through (outbound)

1 Select the Navigator's **Components** tab in the e*Gate Enterprise Manager.

2 In the **Navigator**, select the **Collaboration Rules** folder.

3 On the palette, click the **Create New Collaboration Rules** button.

4 Enter the name of the new Collaboration Rule Component, then click **OK** (for this case, use **Pass_out**).

5 Double-click the new Collaboration Rules Component. The **Collaboration Rules Properties** window opens.

6 The **Service** field defaults to **Pass Through**.

7 Go to the **Subscriptions** tab. Select **outevent** under **Available Input Event Types**, and click the right arrow to move it to **Selected Input Event Types**. The box under **Triggering Event** should be checked.

8 Go to the **Publications** tab. Select **outevent** under **Available Output Event Types**, and click the right arrow to move it to **Selected Output Event Types**. The Radio button under **Default** will be enabled.

9 Click **OK** to close the **Collaboration Rules - passin Properties** window.

10 Click **OK** to close the **Collaboration Properties** window.

Java (cor_java)

1 Select the Navigator's **Components** tab in the e*Gate Enterprise Manager.

2 In the **Navigator**, select the **Collaboration Rules** folder.

3 On the palette, click the **Create New Collaboration Rules** button.

4 Enter the name of the new Collaboration Rule, then click **OK** (for this case, use **cor_java**).

5 Double-click the new Collaboration Rules Component to edit its properties. The **Collaboration Rules Properties** window opens.

6 From the **Service** field drop-down box, select **Java**. The **Collaboration Mapping** tab is now enabled, and the **Subscriptions** and **Publications** tabs are disabled.

7 In the **Initialization string** box, enter any required initialization string that the Collaboration Service may require. This field can be left blank.

8 Select the **Collaboration Mapping** tab.

9 Using the **Add Instance** button, create instances to coincide with the Event Types.

For this sample, do the following:

10 In the Instance Name column, enter **in1** for the instance name.

11 Click **Find**, navigate to **etd\inputmsg.xsc**, double-click to select.

inputmsg.xsc is added to the ETD column of the instance row.

12 In the Mode column, select **In** from the drop–down menu available.

13 In the Trigger column, click the box to enable trigger mechanism.

14 Repeat steps 9–13 using the following values:

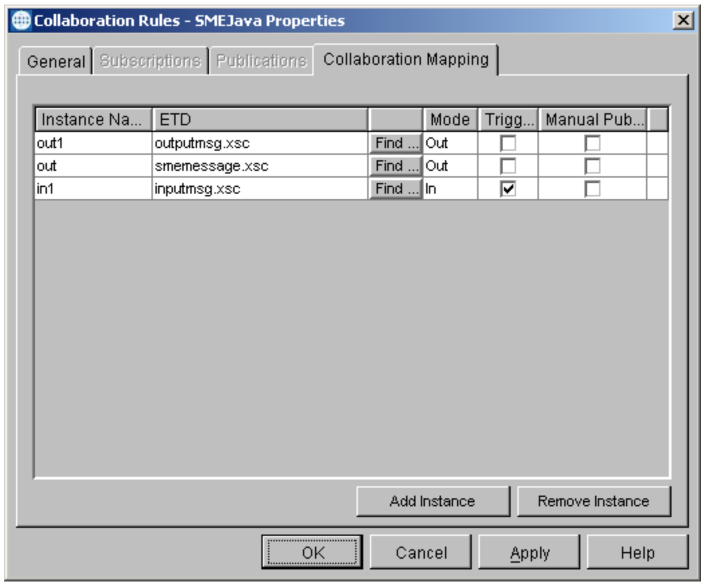
- Instance Name — **out1**
- ETD — **outputmsg.xsc**
- Mode — **Out**
- Trigger — do not select

15 Repeat steps 9–13 again using the following values:

- Instance Name — **out**
- ETD — **smemessage.xsc**
- Mode — **Out**

16 Trigger — do not select

Figure 8 Collaboration Rules - Collaboration Mapping Properties



Instance Na...	ETD		Mode	Trigg...	Manual Pub...
out1	outputmsg.xsc	Find ...	Out	☐	☐
out	smemessage.xsc	Find ...	Out	☐	☐
in1	inputmsg.xsc	Find ...	In	☑	☐

Select the **General** tab, under the Collaboration Rule box, select **New**. The **Collaboration Rules Editor** opens.

17 Expand to full size for optimum viewing, expanding the Source and Destination Events as well.

Creating the Collaboration Rules Class

1 Highlight **retBoolean** in the **Business Rules** pane.

All of the user–defined business rules are added as part of this method.

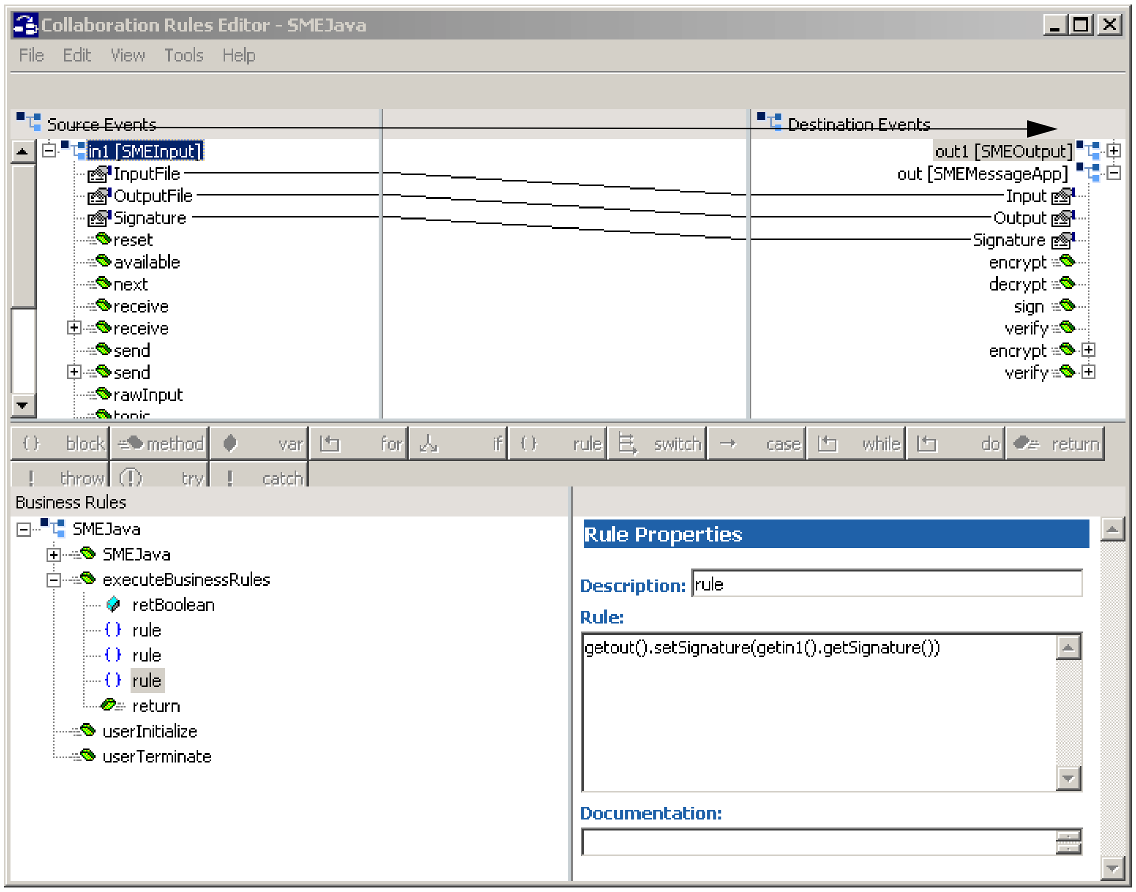
2 Select **InputFile** from the **Source Events** pane. Drag–and–drop onto **Input** in the **Destination Events** pane. A connecting line appears between the properties objects.

3 In the **Business Rules** pane, a rule expression appears, with the properties of that rule displayed in the **Rule Properties** pane.

4 Select **OutputFile** from the **Source Events** pane. Drag–and–drop onto **Output** in the **Destination Events** pane.

5 Select **Signature** from the **Source Events** pane. Drag–and–drop onto **Signature** in the **Destination Events** pane.

Figure 9 Collaboration Rules — Collaboration Mapping Properties



Description: rule

Rule:

```
getout().setSignature(getin1().getSignature())
```

6 Choose the appropriate function (encrypt/sign/verify/decrypt) from the method SMEMessageAp by dragging it to the Rule panel.

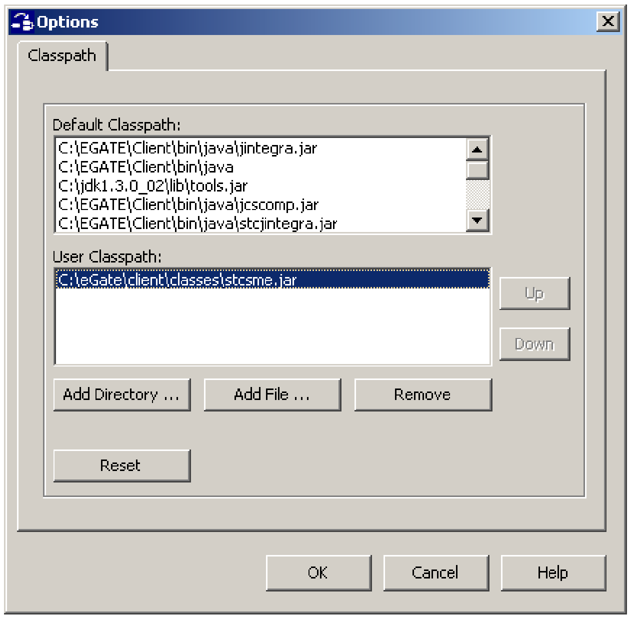
For example, to add an encryption rule, from the Destination Event:

```
getout1().setData(new String(getout().encrypt()))
```

7 Before compiling the code, select **Tools**, **Options**,.

8 Verify that all necessary **.jar** files are included. Add **stcsme.jar**.

Figure 10 Business Rules



Default Classpath:

```
C:\EGATE\Client\bin\java\jintegra.jar
C:\EGATE\Client\bin\java
C:\jdk1.3.0_02\lib\tools.jar
C:\EGATE\Client\bin\java\jcscomp.jar
C:\EGATE\Client\bin\java\stcjintegra.jar
```

User Classpath:

```
C:\eGate\client\classes\stcsme.jar
```

9 When all the business logic has been defined, the code can be compiled by selecting **Compile** from the **File** menu. The **Save** menu opens, provide a name for the **.xpr** file. For the sample, use **SMESample.xpr**. Promote to Run time.

5.1.7 Collaborations

Collaborations are the components that receive and process Event Types, then forward the output to other e*Gate components or an external. Collaborations consist of the Subscriber, which “listens” for Events of a known type (sometimes from a given source), and the Publisher, which distributes the transformed Event to a specified recipient.

Create the SME_Multi_Mode collaboration

1 In the e*Gate Enterprise Manager, select the Navigator's **Components** tab.

2 Open the host on which you want to create the Collaboration.

3 Select a **Control Broker.**

4 Select the **ew_java** e*Way to assign the Collaboration.

5 On the palette, click the **Create a New Collaboration** button.

6 Enter the name of the new Collaboration, then click **OK.** (For the sample, “**cl_java**”.)

7 Double -click the new **Collaboration** to edit its properties.

8 From the **Collaboration Rules** list, select the **Collaboration Rules** file that you created previously. (For the sample, “**cor_java**”.)

9 In the **Subscriptions** area, click **Add** to define the input Event Types to which this Collaboration will subscribe.

A From the **Instance Name** list, select the Instance Name that you previously defined **in1.**

B From the **Event Type** list, select the **Event Type** that you previously defined (**input**).

C Select the **Source** from the **Source** list. In this case, it should be **cr_inbound**.

10 In the **Publications** area, click **Add** to define the output **Event Types** that this Collaboration will publish.

A From the **Instance Name** list, select the **Instance Name** that you previously defined **out1.**

B From the **Event Types** list, select the **Event Type** that you previously defined (**outevent**).

C Select the publication destination from the **Destination** list. In this case, it should be **iq2**.

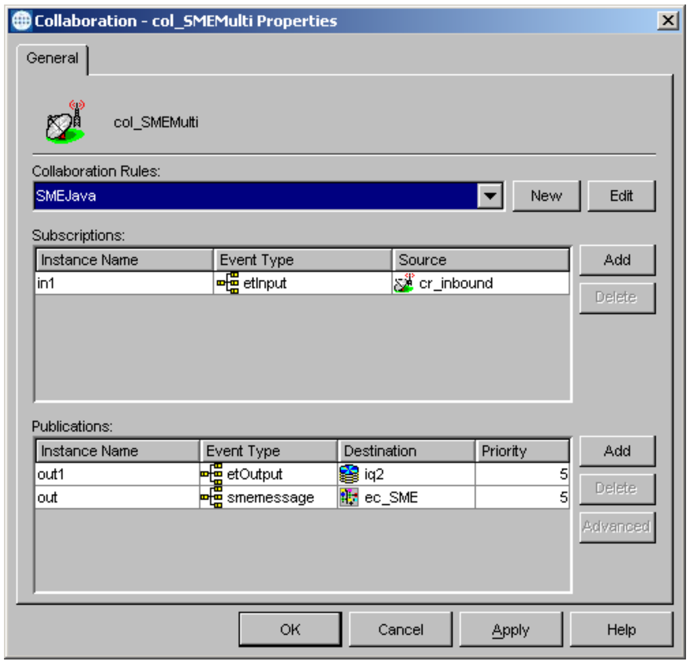
11 In the **Publications** area, click **Add** again to define the output **Event Types** that this Collaboration will publish.

A From the **Instance Name** list, select the **Instance Name** that you previously defined **out.**

B From the **Event Types** list, select the **Event Type** that you previously defined (**smemessage**).

C Select the publication destination from the **Destination** list. In this case, it should be **con_sme**.

Figure 11 Collaboration Properties


Collaboration - col_SMEMulti Properties

General

col_SMEMulti

Collaboration Rules: SMEJava

Subscriptions:

Instance Name	Event Type	Source
in1	etInput	cr_inbound

Publications:

Instance Name	Event Type	Destination	Priority
out1	etOutput	iq2	5
out	smemessage	ec_SME	5

12 Click **OK** to exit.

Create the Inbound_eWay collaboration

1. In the e*Gate Enterprise Manager, select the Navigator's **Components** tab.
2. Open the host on which you want to create the Collaboration.
3. Select a **Control Broker.**
4. Select the **inbound** e*Way to assign the Collaboration.
5. On the palette, click the **Create a New Collaboration** button.
6. Enter the name of the new Collaboration, then click **OK.** (For the sample, “PassIn”.)
7. Double-click the new **Collaboration** to edit its properties.
8. From the **Collaboration Rules** list, select the **Collaboration Rules** file that you created previously. (For the sample, “PassIn”.)
9. In the **Subscriptions** area, click **Add** to define the input Event Types to which this Collaboration will subscribe.
   - A From the **Event Type** list, select the **Event Type** that you previously defined (**input**).
   - B Select the **Source** from the **Source** list. In this case, it should be <External>.
10. In the **Publications** area, click **Add** to define the output **Event Types** that this Collaboration will publish.
    - A From the **Event Types** list, select the **Event Type** that you previously defined (**input**).
    - B Select the publication destination from the **Destination** list. In this case, it should be **iq1**.

Create the Outbound_eWay collaboration

1. In the e*Gate Enterprise Manager, select the Navigator's **Components** tab.
2. Open the host on which you want to create the Collaboration.
3. Select a **Control Broker.**
4. Select the **Outbound_eWay** to assign the Collaboration.
5. On the palette, click the **Create a New Collaboration** button.
6. Enter the name of the new Collaboration, then click **OK.** (For the sample, “**PassOut**”.)
7. Double-click the new **Collaboration** to edit its properties.
8. From the **Collaboration Rules** list, select the **Collaboration Rules** file that you created previously. (For the sample, “**PassOut**”.)
9. In the **Subscriptions** area, click **Add** to define the input Event Types to which this Collaboration will subscribe.
   - A From the **Event Type** list, select the **Event Type** that you previously defined (**outevent**).

B Select the **Source** from the **Source** list. In this case, it should be **cl_java**.

10 In the **Publications** area, click **Add** to define the output **Event Types** that this Collaboration will publish.

A From the **Event Types** list, select the **Event Type** that you previously defined (**outevent**).

B Select the publication destination from the **Destination** list. In this case, it should be **<External>**.

5.2 Sample Schema

The previous sections provided the basics for implementing the SME e*Way. This section describes how to use the SME e*Way within a sample Schema. It is assumed that the SME e*Way has been installed properly, and that all of the necessary files and scripts are located in the default location.

This implementation will consist of two file-based e*Ways, one Multi-Mode e*Way, three Event Types, three Collaboration Rules, two Intelligent Queues and three Collaboration, as follows:

- **inbound** - This e*Way will receive input from an external source, apply pass through Collaboration Rules, and publish the information to an Intelligent Queue.
- **ew_java** - This Multi-Mode e*Way applies extended Java Collaboration Rules to an inbound Event to perform the desired business logic, in this case encryption and decryption.
- **outbound -** This e*Way will receive information from the Multi-Mode e*Way and publish to the external system.
- **smemessage** - This Event Type contains the methods to be used to perform the necessary transformation.
- **input** - This Event Type describes an Event that is input to the extended Java Collaboration Service.
- **outevent** - This Event Type describes an Event that contains the transformed data.
- **PassIn** - This Collaboration Rule is associated with the *inbound* e*Way, and is used for receiving the input Event.
- **cor_java** - The Collaboration Rule is associated with the *ew_java* Multi-Mode e*Way, and is used to perform the transformation process.
- **PassOut** - This Collaboration Rule is associated with the *outbound* e*Way, and is used for sending the Event to the External.
- **iq1** - This Intelligent Queue is a STC_Standard IQ, and forwards data to the *ew_java* Multi-Mode e*Way.
- **iq2** - This Intelligent Queue is a STC_Standard IQ, and forwards data to the *outbound* e*Way.

5.2.1 Execute the Schema

To execute the SMESample schema, do the following:

1. Go to the command line prompt, and enter the following:

   ```
   stccb -rh hostname -rs SMESample -un username -up user password
   -ln hostname_cb
   ```

   Substitute ***hostname***, ***username*** and ***user password*** as appropriate.

2. Exit from the command line prompt, and start the e*Gate Monitor GUI.
3. When prompted, specify the ***hostname*** which contains the Control Broker you started in Step 1 above.
4. Select the SMESample schema.
5. After you verify that the Control Broker is connected (the message in the Control tab of the console will indicate command *succeeded* and status as *up*), highlight the IQ Manager, ***hostname***_igmgr, then click on the right button of the mouse, and select **Start**.
6. Highlight each of the e*Ways, right-click the mouse, and select **Start**.
7. To view the output, copy the output file (specified in the Outbound_eWay configuration file). Save to a convenient location, open.

Note: *While the schema is running, opening the destination file, will cause errors.*

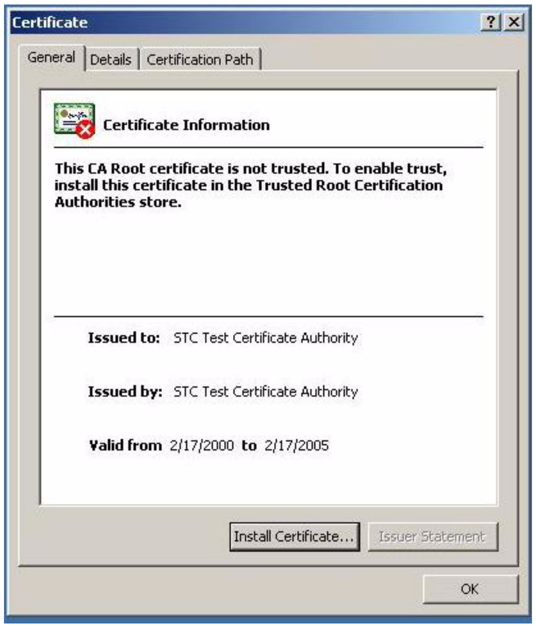
5.3 Certificate Formats

The SMIME/C library accepts certificates in PKCS#7 format. DER encoded binary X.509 and Base64 encoded X.509 format certificates are also popular.

Windows 2000 and Internet Explorer provide a tool to transfer between formats. To change formats, perform the following:

1. On Windows 2000, double click the certificate file.

Figure 12 Windows 2000 Certificate Files



Certificate Information

This CA Root certificate is not trusted. To enable trust, install this certificate in the Trusted Root Certification Authorities store.

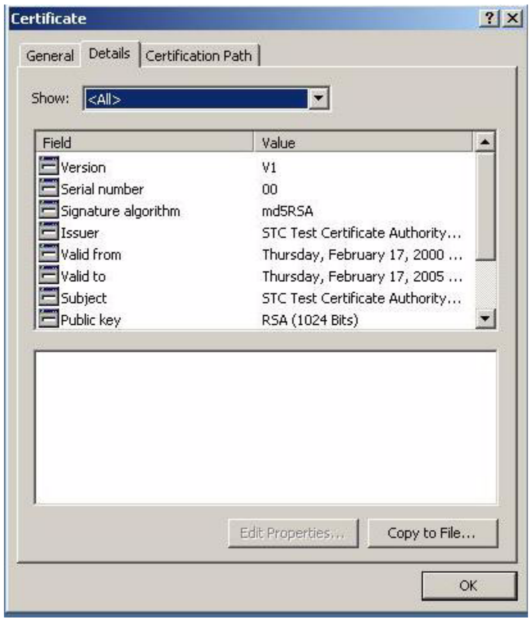
Issued to: STC Test Certificate Authority

Issued by: STC Test Certificate Authority

Valid from 2/17/2000 to 2/17/2005

2 Select the Detail tab.

Figure 13 Windows 2000 Detail Tab

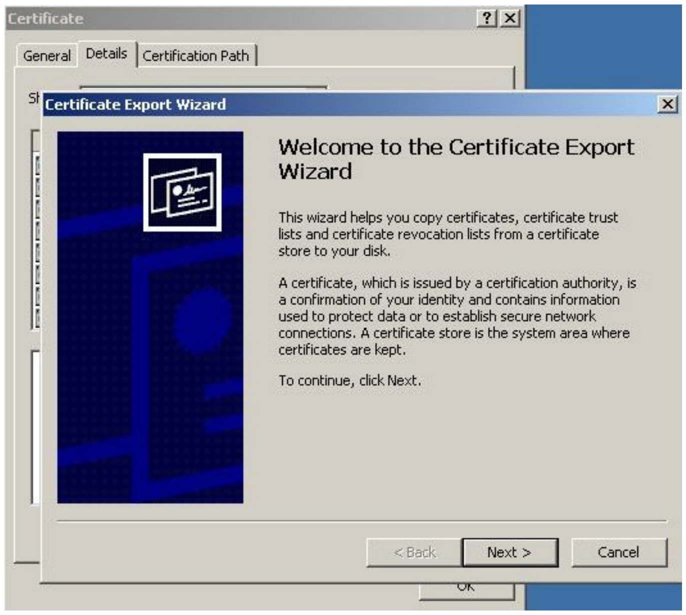


Show: <All>

Field	Value
Version	V1
Serial number	00
Signature algorithm	md5RSA
Issuer	STC Test Certificate Authority...
Valid from	Thursday, February 17, 2000 ...
Valid to	Thursday, February 17, 2005 ...
Subject	STC Test Certificate Authority...
Public key	RSA (1024 Bits)

3 Click on “copy to file” button.

Figure 14 Windows 2000 Copy to File



Welcome to the Certificate Export Wizard

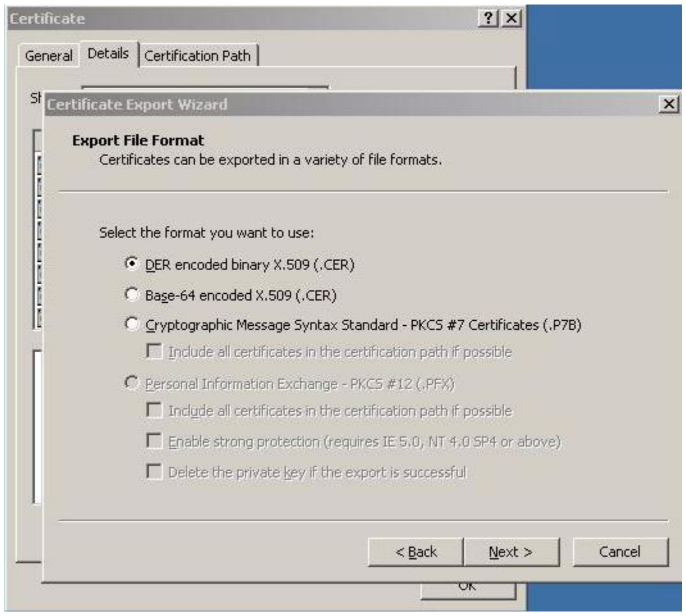
This wizard helps you copy certificates, certificate trust lists and certificate revocation lists from a certificate store to your disk.

A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.

To continue, click Next.

4 Click Next. Choose the format.

Figure 15 Windows 2000 Copy to File



Export File Format
Certificates can be exported in a variety of file formats.

Select the format you want to use:

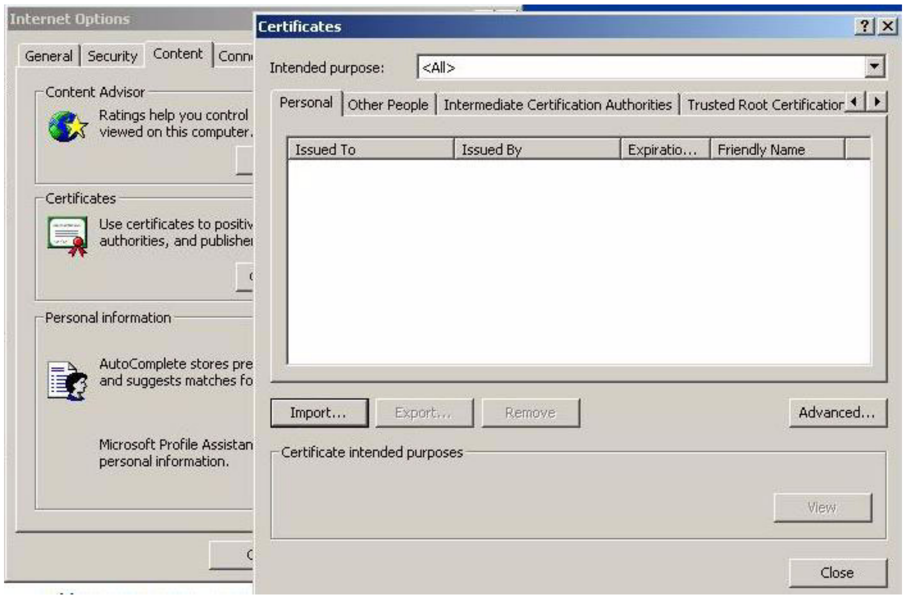
- [✓ DER encoded binary X.509 (.CER)]
- Base-64 encoded X.509 (.CER)
- Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
  - Include all certificates in the certification path if possible
- Personal Information Exchange - PKCS #12 (.PFX)
  - Include all certificates in the certification path if possible
  - Enable strong protection (requires IE 5.0, NT 4.0 SP4 or above)
  - Delete the private key if the export is successful

For Internet Explorer:

1 Select Tools-->Internet option.

2 Choose Content Tab, click on Certificates.

Figure 16 Windows 2000 Copy to File



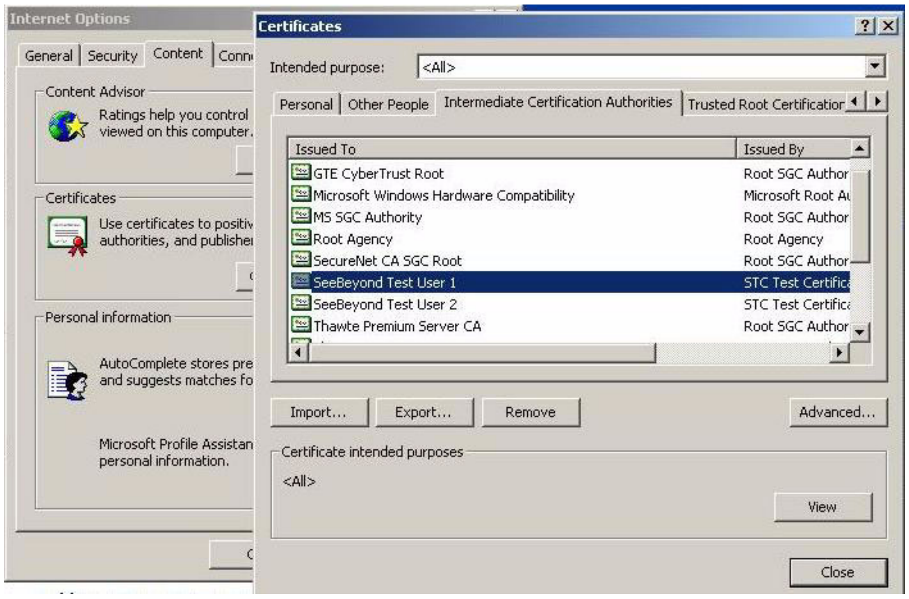
Intended purpose: <All>

Issued To	Issued By	Expiratio...	Friendly Name

3 Click on Import, to import your certificate.

4 Click on “Intermediate Certification Authorities” Tab to choose the certificate to import, and click on the “export” button.

Figure 17 Windows 2000 Copy to File



Intended purpose: <All>

Issued To	Issued By
GTE CyberTrust Root	Root SGC Author
Microsoft Windows Hardware Compatibility	Microsoft Root Au
MS SGC Authority	Root SGC Author
Root Agency	Root Agency
SecureNet CA SGC Root	Root SGC Author
SeeBeyond Test User 1	STC Test Certific
SeeBeyond Test User 2	STC Test Certific
Thawte Premium Server CA	Root SGC Author

<All>

5 Select the format, and save the file.

Chapter 6

Secure Messaging Extension Functions

This chapter details the Secure Messaging Extension Functions. The

6.1 SMEMessage Functions

The following static methods of the **SMEMessage class** are available to all Java e*Ways. The **SMEMessage class** is found in the **com.stc.sme** package:

- **encrypt** on page 51
- **encrypt** on page 52
- **decrypt** on page 52
- **sign** on page 54
- **verify** on page 55
- **verify** on page 56

base64Decode

Syntax

```
public byte[] base64Decode(byte[] input)
```

Description

base64Decode is used obtain the base64 decoded result of the input message.

Parameters

Parameter name	Type	Description
input	byte array	byte array of the message.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

base64Encode

Syntax

```
public byte[] base64Encode(byte[] input)
```

Description

base64Encode is used obtain the base64 encoded result of the input message.

Parameters

Parameter name	Type	Description
input	byte array	byte array of the message.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

encrypt

Syntax

```
public byte[] encrypt()
```

Description

encrypt is used to encrypt the message for the specified recipients. The input field of SMEMessageAPP ETD needs to be set to the filename which contains the message.

Parameters

None.

Return Values

byte array
Returns an encrypted message, if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the encryption process.

Location

stcsme.jar

encrypt

Syntax

```
public byte[] encrypt(byte[] input)
```

Description

encrypt is used to encrypt the message for the specified recipients.

Parameters

Parameter name	Type	Description
input	byte array	The original message for encryption.

Return Values

byte array
Returns an encrypted message, if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the encryption process.

Location

stcsme.jar

decrypt

Syntax

```
public byte[] decrypt()
```

Description

decrypt is used to decrypt the encrypted input message. The input field of SMEMessageAPP ETD needs to be set to the filename which contains the message.

Parameters

None.

Return Values

byte array
Returns the original message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the decryption process.

Location

stcsme.jar

decrypt

Syntax

```
public byte[] decrypt(byte[] input)
```

Description

decrypt is used to decrypt the encrypted input message.

Parameters

Parameter name	Type	Description
input	byte array	The encrypted message.

Return Values

byte array
Returns the original message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the decryption process.

Location

stcsme.jar

getMD5Hash

Syntax

```
public byte[] getMD5Hash(byte[] input)
```

Description

getMD5Hash is used obtain the hash code of the input message using MD5.

Parameters

Parameter name	Type	Description
input	byte array	byte array of the message.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

getSHA1Hash

Syntax

```
public byte[] getSHA1Hash(byte[] input)
```

Description

getMD5Hash is used obtain the hash code of the input message using SH1.

Parameters

Parameter name	Type	Description
input	byte array	byte array of the message.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

sign

Syntax

```
public byte[] sign()
```

Description

sign is used to sign a message with a detached or inline signature. The input field of SMEMessageAPP ETD needs to be set to the filename which contains the message.

Parameters

None.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

sign

Syntax

```
public byte[] sign(byte[] input)
```

Description

sign is used to sign a message with a detached or inline signature.

Parameters

Parameter name	Type	Description
input	byte array	The message used for signing.
clearSign	boolean	If true, signature is a detached signature. If false, signature is an inline signature.

Return Values

byte array
Returns the signed message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the signing process.

Location

stcsme.jar

verify

Syntax

```
public byte[] verify()
```

Description

verify is used to verify the signed message and return the original message , provided the signed message is verified. The content of the specified input field is used as the byte array message that needs to be authenticated, if the message is in SMIME2 format or in PKCS7 format with inline signature. If the message to be verified is in PKCS7 format, and has a detached signature, the input field is used to indicate the file that contains the original message, and the Signature field is used to indicate that the file contains the detached signature.

Parameters

None.

Return Values

byte array
Returns the original message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the verification process.

Location

stcsme.jar

verify

Syntax

```
public byte[] verify(byte[]input1 byte[] input2)
```

Description

verify is used for verification of the detached PKCS7 signature, in which case, the signature portion and the original content is separated.

Parameters

Parameter name	Type	Description
input1	byte[]	Byte array for the original message.
input2	byte[]	byte array of the detached signature.

Return Values

byte array
Returns the original message if successful.

Throws

com.stc.sme.exception.SMEException, indicating an error occurred during the verification process.

Location

stcsme.jar

Index