Hermes 2 Installation Guide

Version 0.9

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The University of Hong Kong

Status of This Document

1.1. Version History

Ver. No.	Date	Revised By	Description	Filename
0.1	31 October 2005	KO Chiu	Initial draft	Hermes 2 Installation Guide.doc
0.2	11 November 2005	KO Chiu	Partnership maintenance and loop back test section added	Hermes 2 Installation Guide 0_2.doc
0.3	17 November 2005	KO Chiu	Updated the description	Hermes 2 Installation Guide 0_3.doc
0.4	28 November 2005	Ronnie Kwok	Content revise	Hermes 2 Installation Guide 0_4.doc
0.5	23 May 2007	Twinsen Tsang	Content revise for new H2O	Hermes 2 Installation Guide 0_5.doc
0.6	29 May 2008	Philip Wong	Change instruction of loopback test	Hermes 2 Installation Guide.doc
0.7	1 Aug 2008	Patrick Yip	H2O installer update and web service usage sample is included	Hermes 2 Installation Guide.doc
0.8	30 Jan 2009	Steve Chan	Added tomcat-user and partnership configuration Added JDK 1.6 & Tomcat 6.0 Support Updated references	Hermes 2 Installation Guide.doc
0.9	8 Jan 2010	Jumbo Cheung	Updated to lastest installer screen Added section to explain Message Signing and Secure Channel	Hermes 2 Installation Guide.doc

2. Table of Contents

3. Procedures

This document is to describe how to install and run open-source business-to-business messaging gateway Hermes 2.0 (codenamed Corvus).

3.1. Introduction

The application is packaged in the form of a self-extracted java archive (JAR). Upon proper invocation, you will see an installation wizard, either in graphical or text format. Following through the steps will have the following components installed,

- Hermes 2 Core
- Hermes 2 plugins
- Database tables of Hermes 2 plugins for either one of the following database:
    - Postgres 8.0 or later
    - Oracle 9i or later
    - MySQL 5.0 or later with InnoDB storage engine supported
- Web service usage sample

3.2. Prerequisite

1. Java 2 SDK version 5.0 or above
2. A security patch, Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files, is also required for the java cryptography extension.
3. Tomcat 5.5 or above with port 8080, TOMCAT_HOME is used for referring to the home directory of tomcat in the remaining parts of document.

   Note: To access the admin page, you will need to have a Tomcat user with an admin role. One way is to define the user in "**tomcat-users.xml**". Please refer to the Realm Configuration section in the Tomcat documentation for more details.

   ***Sample**:

   Tomcat-users.xml

```
<?xml version='1.0' encoding='utf-8'?>

<tomcat-users>

  <role rolename="tomcat"/>

  <role rolename="admin"/>

  <user username="corvus" password="corvus" roles="tomcat,admin"/>

</tomcat-users>
```

4. One of the following database installed on any server:
   - PostgreSQL 8.0 or later, POSTGRES_HOME is referring to the home directory of PostgreSQL in the remaining parts of the document.
   - MySQL 5.0 or later, MYSQL_HOME is referring to the home directory of MySQL in the remaining parts of the document.
   - Oracle 9i or later, ORACLE_HOME is referring to the home directory of Oracle in the remaining parts of the document.

3.3. Step 1 – Environment setup

Install all the prerequisite items. It is assumed that they are all running on the same machine in the rest of this guide.

3.4. Step 2 – Configuration

3.4.1. Database

- *Postgres*

1 Create database user with username "**corvus**" and password "**corvus**".

1.1 Open a command prompt

1.2 Go to POSTGRES_HOME/bin

1.3 Type "**createuser -A -d -P -U <*postgres_admin*>**" where <*postgres_admin*> representing the name of administrator / super-user in PostgreSQL database. This value is "**postgres**" if not specified. It may require super user or Postgres owner to execute in Linux.

1.4 Create a user named "**corvus**"

1.5 Enter the password "**corvus"**"

1.6 Enter the password again for confirmation

1.7 Enter "n" for question "Shall the new role be allowed to create more new roles?"

1.8 Enter the PostgreSQL administrator password for creating a new user role.

2 Create two databases named "**as2**" and "**ebms**" with "**corvus**" user

2.1 Open a command prompt

2.2 Go to POSTGRES_HOME/bin

2.3 Type "**createdb –U corvus –W as2**"

2.4 Enter the password "**corvus**"

2.5 Repeat 2.3 - 2.4 for ebms database.

- *MySQL*

1. Create two database named "**as2**" and "**ebms**" with username "**corvus**" and password "**corvus**".
   1.1 Open a command prompt
   1.2 Go to MYSQL_HOME/bin
   1.3 Type "**mysql –u *<mysql_admin>* -p**" where <mysql_admin> representing the name of administrator / super-user in mySQL database. This is "**root**" by default. It may require super user or mySQL owner to execute in Linux.
   1.4 Enter command below to create as2 database. Notice that specifying collate to "latin1_general_cs" is essential.

   create database as2 collate=latin1_general_cs;

   1.5 Enter command below to create and assign access privileges to user "**corvus**".

   grant all on as2.* to 'corvus'@'localhost' identified by 'corvus';

   1.6 Repeat 1.4 – 1.5 for ebMS database.

- *Oracle*

For Oracle database creation, since it involve a number of steps and custom parameters for different requirement for the database server. We propose the following reference for the guideline of creating an Oracle database for Hermes 2:

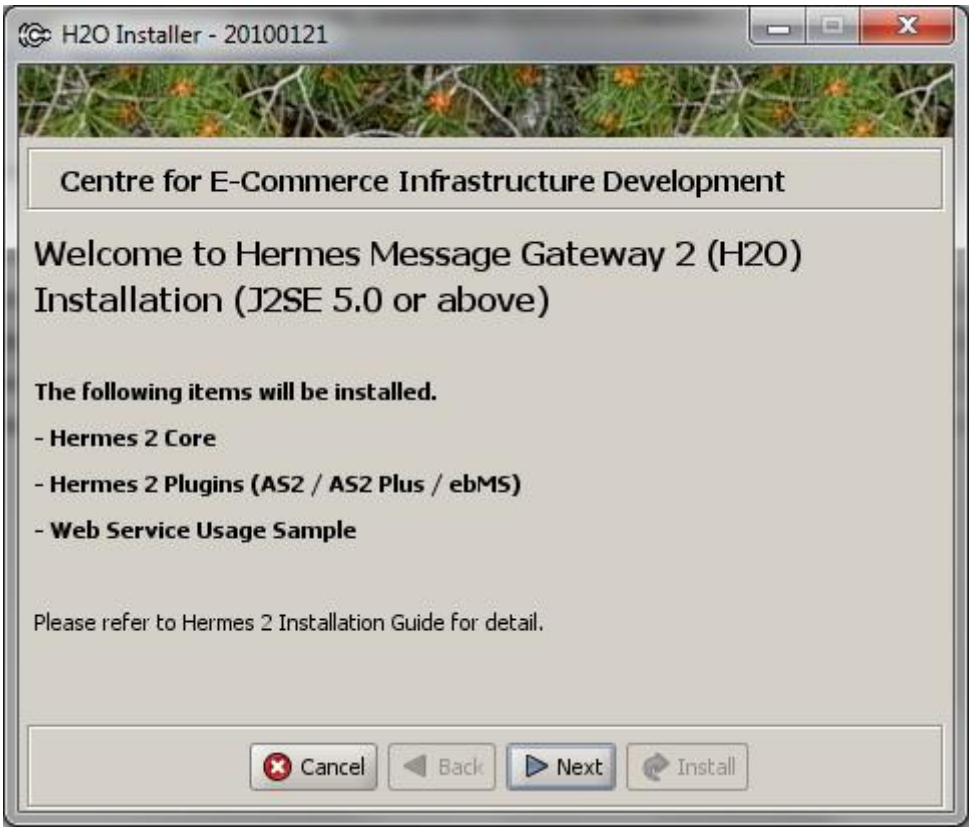
http://www.peacetech.com/flipper/oracle9i/901_doc/server.901/a90117/create.htm

Step 3 – Hermes 2 Deployment

1. In Windows platform, open a command prompt and type "**java –jar hermes2_installer.jar**" or if java is not set in your environment path, specify the full path.
2. In Unix/Linux platform, open **xterm** and follow the same procedure as above.

OR

3. In Windows platform, you can execute by double-click or right-click on the .jar file and selecting "**open with**" and choosing **javaw** (located where you installed java, in the bin folder).



4. Click **next** until you get to Step 1 of the installation.

5. Step 1 - Configure Hermes 2 Core:

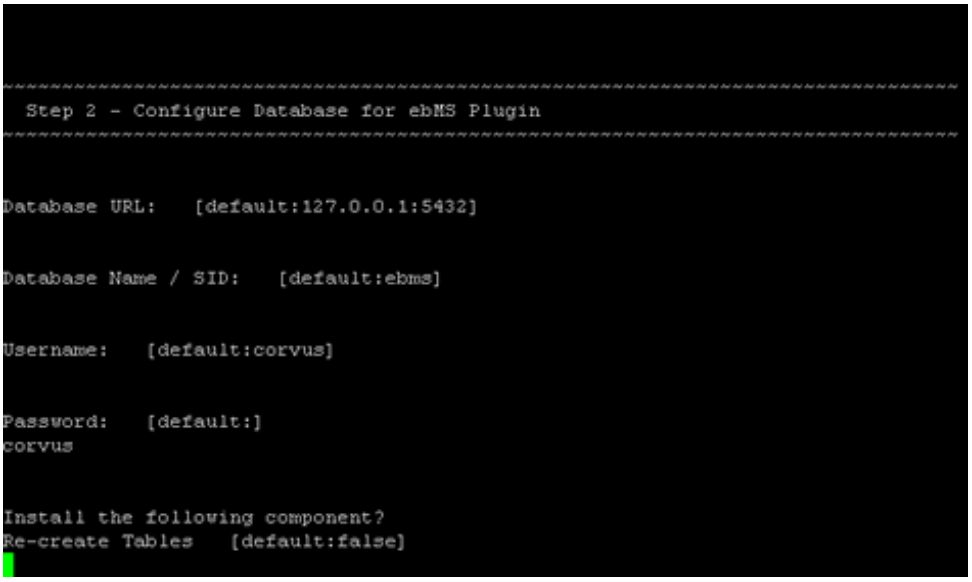
```
Hermes 2 Home:   [default:/home/hermes2]
/home/corvus/hermes2

JDBC Driver:
  view available options
  1) Postgres 8.2-508 JDBC 3 [default]
  2) Oracle 10g Release 2 (10.2.0.4)
  3) MySQL Connector J 5.0.8
  Enter a number
1


Install the following component?
Hermes2 ebMS Plugin   [default:true]


Install the following component?
Hermes2 AS2 Plugin   [default:true]


Install the following component?
Web Service Usage Sample   [default:true]
```

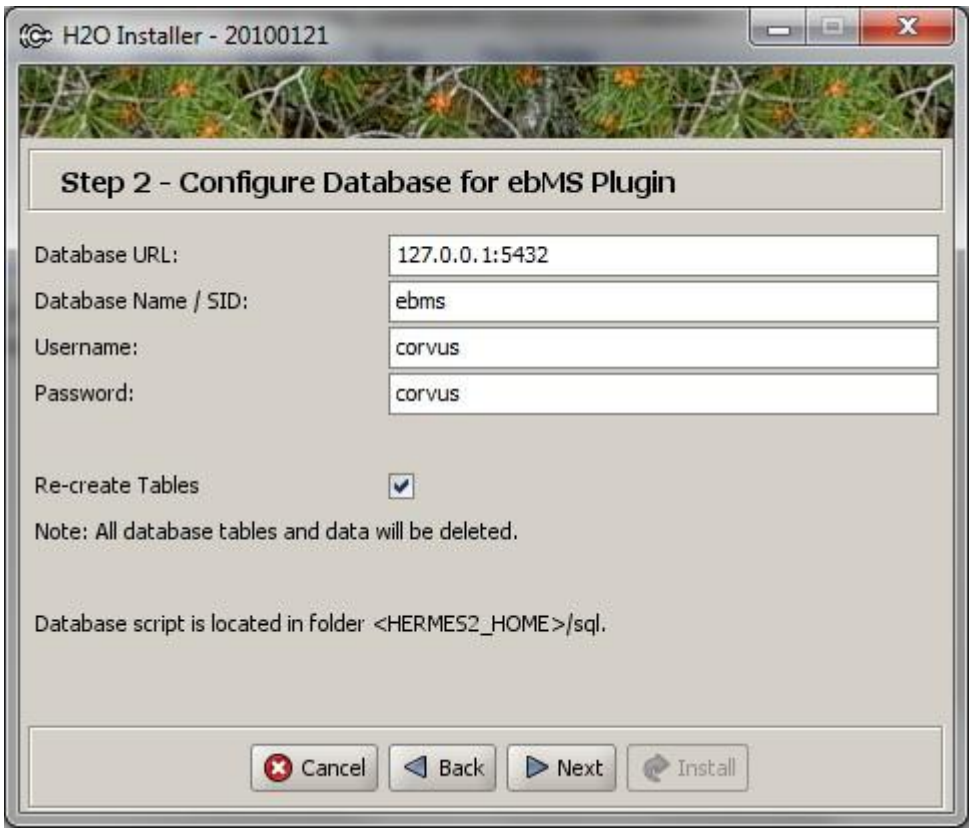
Setting description

Web Application Folder	Folder to place the web application (e.g. *webapps*) in Tomcat
Hermes 2 Home	Location to place the Hermes 2 core library and some related files
JDBC Driver	Specify which database vendor to connect to One of these 3 database vendors can be chosen: • Postgres • Oracle • MySQL
Hermes 2 ebMS Plugin	Whether to install the ebMS component
Hermes 2 AS2 Plugin	Whether to install the AS2 component
Web Service Usage Sample	Whether to install the sample program of web service client

6. Click **next** and press **yes** if the installer prompts you to create a new directory.

7. Step 2 - Configure Database for ebMS Plugin (Optional)



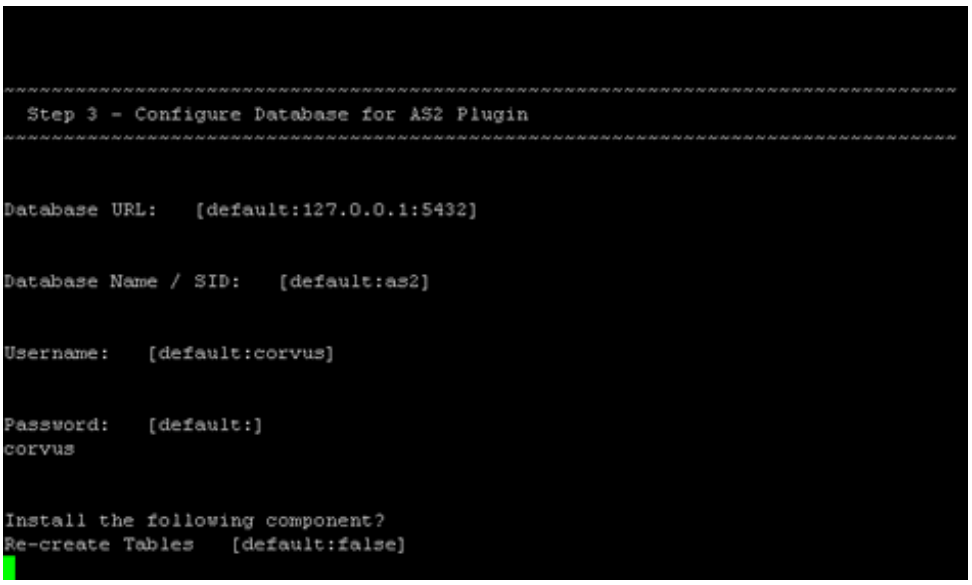


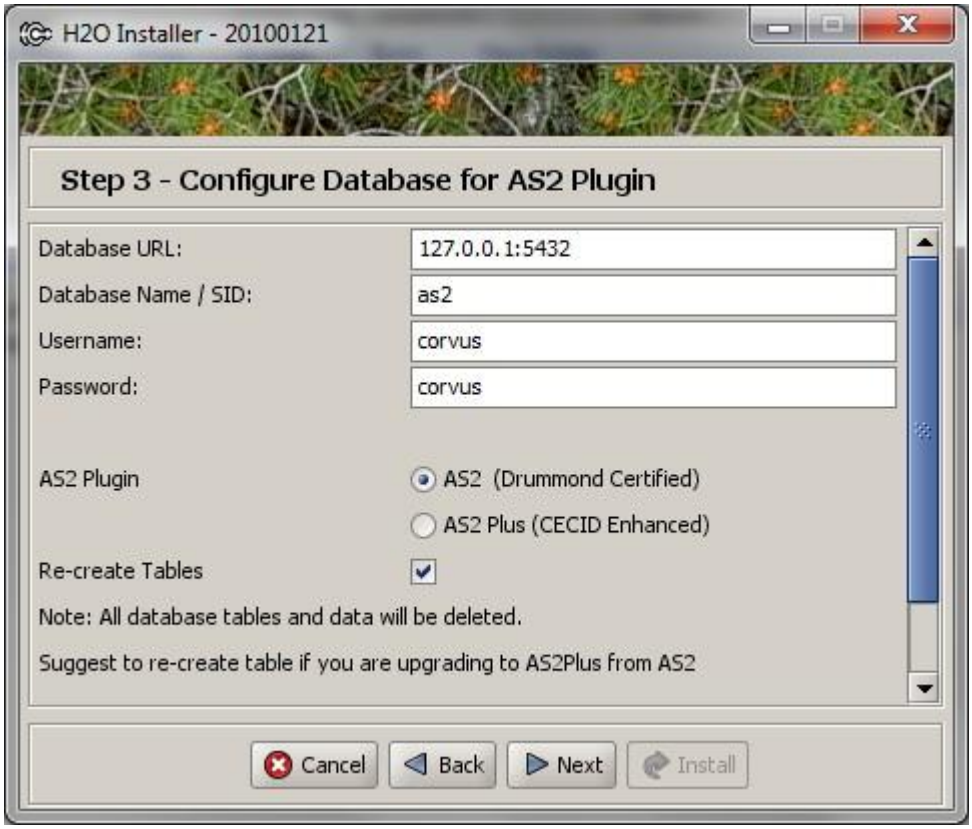
Setting description

Database URL	The URL address of the database server located. Port number may attached to the address as the format <host_address>:<port> where <host_address> is the address of the database server and <port > is the port number of the database server address
Database Name / SID	For Postgres and MySQL, please specify the name of the database. For Oracle, please specify the Oracle System ID (SID)
Username	Username to access database
Password	Password to access database
Re-create Tables	Whether to re-create all the table in the specified database **Important Notes:** If this is your first **time to install hermes,** please check this option. If choose to re-create the tables, all of the existing data in the specified database will remove at the later step of installation. Please backup all the data on the selected database before choose to re-create tables.

8. If you followed the prerequisite install procedures from above, you can just leave it as the default.
9. Then click **next.**
10. If AS2 Plugin was not selected, click **next** and then click on **install** and you're done!

11. Step 3 – Configure Database for AS2 Plugin (Optional)





Setting description

Database URL	The URL address of the database server located. Port number may attached to the address as the format <host_address>:<port> where <host_address> is the address of the database server and <port> is the port number of the database server address
Database Name / SID	For Postgres and MySQL, please specify the name of the database. For Oracle, please specify the Oracle System ID (SID)
Username	Username to access database
Password	Password to access database
AS2 Plugin	AS2 : Original AS2 plugin certified by Drummond Group Inc. AS2 Plus: Built based on AS2 plugin with new/enhanced features.
Re-create Tables	Whether to re-create all the table in the specified database **Important Notes:** If this is your first **time to install hermes,** pleas check this option. If you purposely switch your plugin from AS2 to AS2 Plus, or versus. We highly recommend you **checked this option**. If choose to re-create the tables, all of the existing data on the specified database will remove at the later step of installation. Please backup all the data on the selected database before choose to re-create tables.

12. If you followed the prerequisite install procedures from above, you can just leave it as the default.
13. Then click **next** and then click on **install** and you're done!

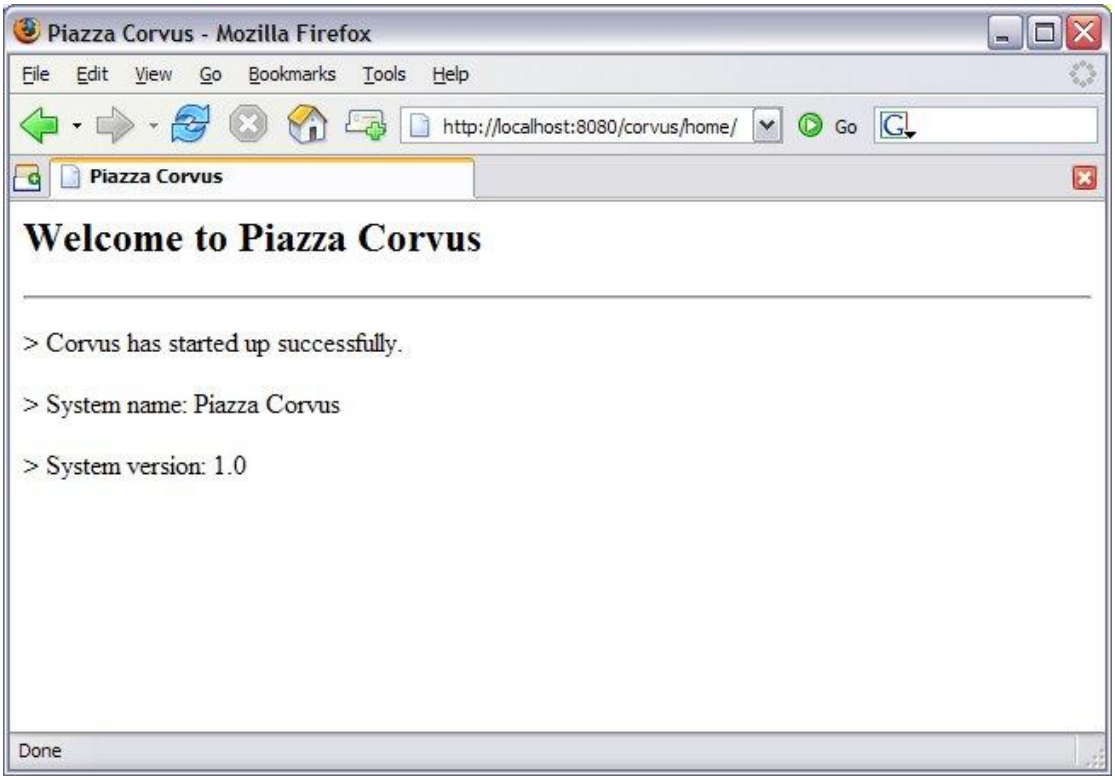
3.5. Step 4 – Start Hermes 2

Check list:

1. Java 2 SDK 5.0 or above with Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 5.0.
2. Apache Tomcat 5.5 or above Servlet/JSP Container
3. Database server is running with ebMS/AS2 database instance and tables created.
4. If you are running Unix/Linux, make sure that at least read permissions are set to the core directory and read/write for AS2 repository directory in Hermes 2 Home.
5. Start Tomcat.
6. To verify Hermes 2 is running, access the following URL from browser.

   http://localhost:8080/corvus/home

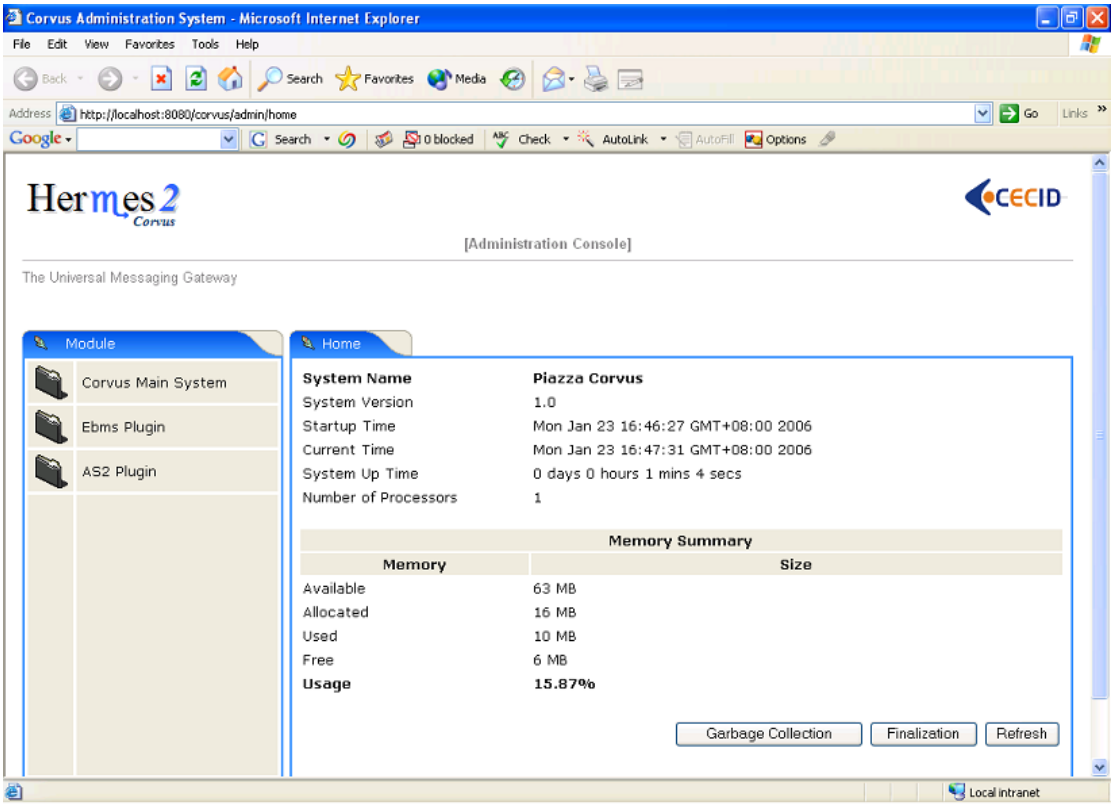
Welcome page should be displayed as below:



7. To access the admin page, go to the following URL. The login user and password is the same as the Tomcat user with admin privileges specified in Section 3.2.

   http://localhost:8080/corvus/admin/home

8. Once you have gained access to the admin page, you should see the Hermes 2 Administration Console page like this:



That's it! Your Hermes 2 should now be up and running. You can test your setup by running our web service usage sample in Section!.

4. Partnership Maintenance and Web Service Usage Sample

A tool kit called **Web Service Usage Sample** was installed under Hermes 2, "<HERMES2_HOME>/sample" folder. It contains tools to test the installed Hermes, demonstrate messaging flow and provided a set of sample code for user to write web service client application to connect to the Hermes 2.

4.1. Directory Organization

Directory / File	Description
config/*	Contains the configuration file for the sample programs. The folders inside this directory contain related files for specific sample program.
config/ ebms-partnership.xml and as2-partnership.xm	These two files contain the setting of the partnership for ebMS and AS2 commonly used by sample programs.
logs/*	A set of logs contains the output from each sample program.
lib/*	The library files required for the sample programs.
*.bat / *.sh	The scripts for executing the sample programs.

4.2. Preparation

4.2.1. Windows environment

1. Set environment variable **JAVA_HOME** to the directory installed the java.

4.2.2. UNIX environment

1. Set environment variable **JAVA_HOME** to the directory installed the java.
2. Change the permission of all shell-script files to 755 by following command.

   chown 755 *.sh

4.3. Partnership Maintenance

Users need to define a "**Partnership**", which contains the relationship of messaging in transport level between a sender and a recipient. It is required to specify the "**Partnership**" in sender the recipient.

A web service sample program is provided to manage "Partnership" (to add, update or delete). Partnership configuration for AS2/ebMS loopback test is placed in *<HERMES2_HOME>/sample/config*/as2(ebms)-partnership.xml.

Usage:

as2-partnership ebms-partnership	Maintain a specified AS2 / ebMS partnership in Hermes 2.

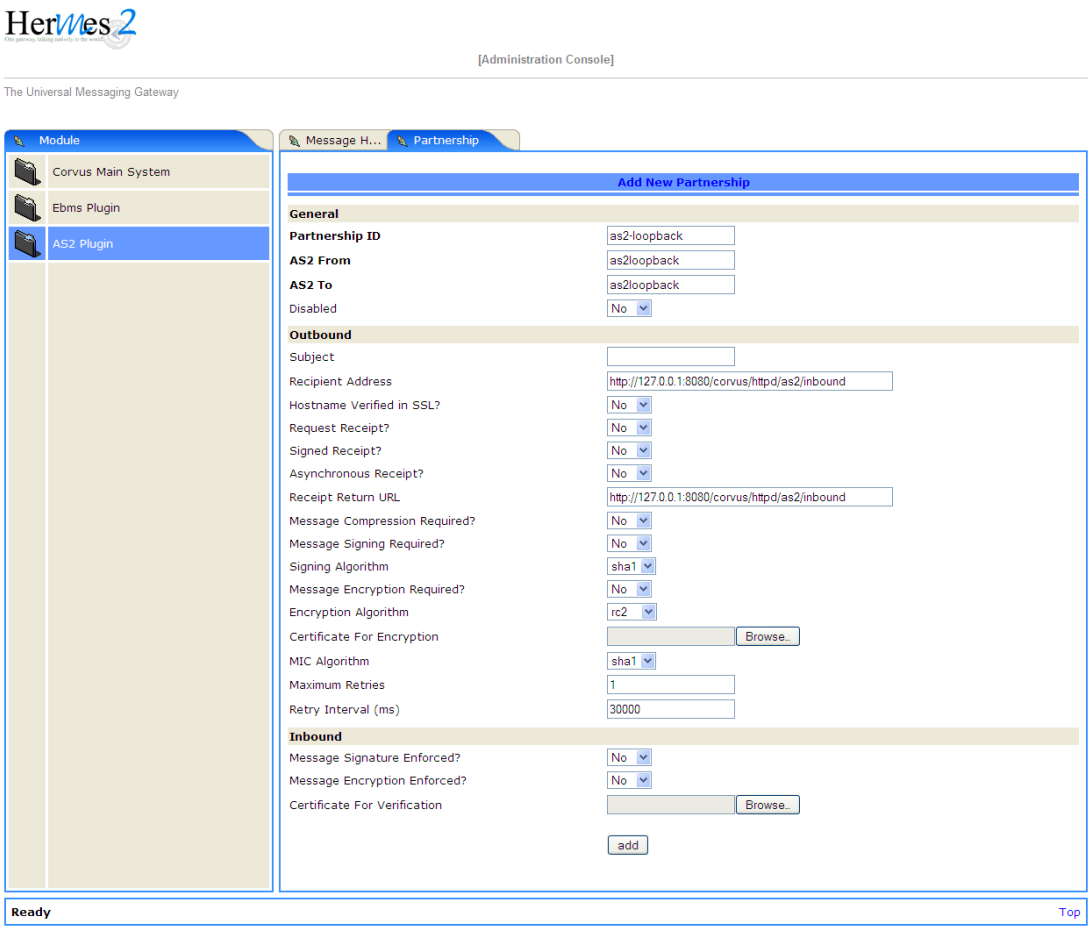
4.3.1. Creating AS2 Partnership

To create the partnership required to perform the AS2 messaging loopback test using Web Service Usage Sample in next step, you just need to execute the following command.

```
as2-partnership
```

OR

Access http://localhost:8080/corvus/admin/as2/partnership to configure the partnership manually. Below is a simple loop-back configuration sample.



Partnership ID	as2-loopback
AS2 From	as2loopback
AS2 To	as2loopback
Disabled	No
Subject	
Recipient Address	http://127.0.0.1:8080/corvus/httpd/as2/inbound
Hostname Verified in SSL?	No
Request Receipt?	No
Signed Receipt?	No
Asynchronous Receipt?	No
Receipt Return URL	http://127.0.0.1:8080/corvus/httpd/as2/inbound
Message Compression Required?	No
Message Signing Required?	No
Signing Algorithm	sha1
Message Encryption Required?	No
Encryption Algorithm	rc1
Certificate For Encryption	none
MIC Algorithm	sha1
Maximum Retries	1
Retry Interval (ms)	30000
Message Signature Enforced?	No
Message Encryption Enforced?	No
Certificate For Verification	none

4.3.2. Creating AS2 Plus Partnership

Please reference the procedures of section 4.3.1 to create AS2 Plus partnership.

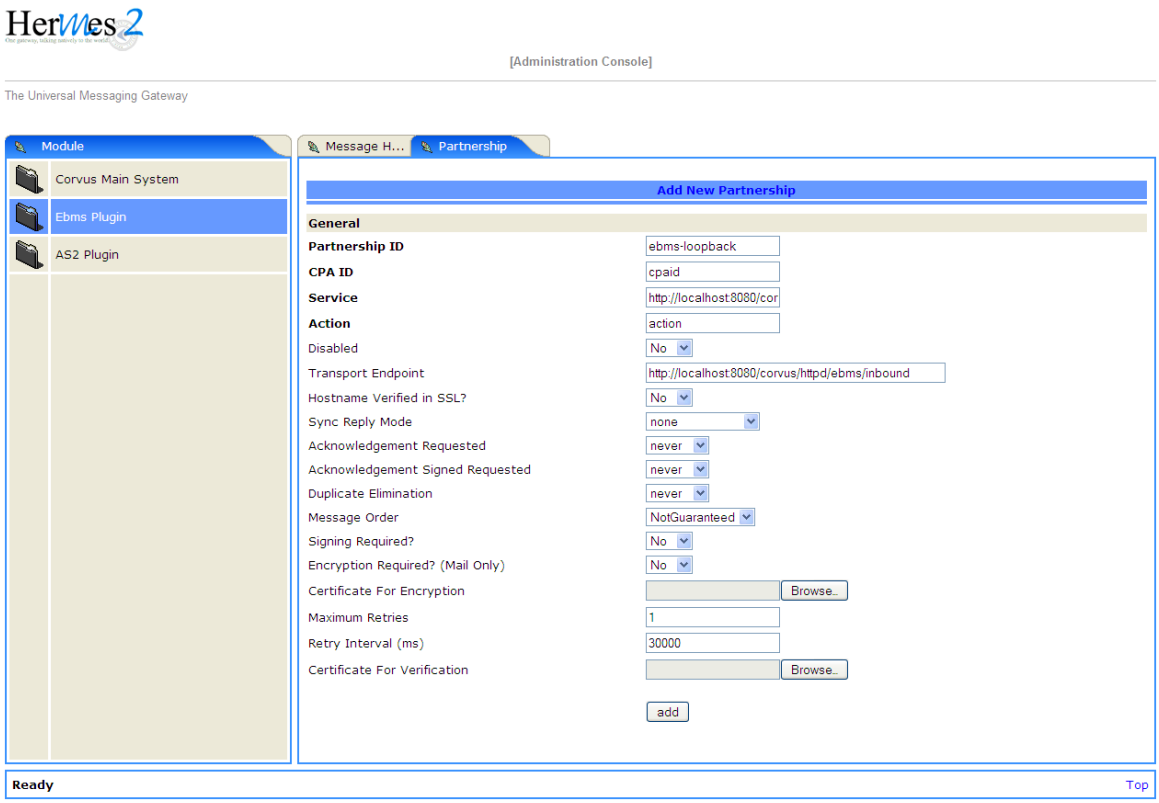
4.3.3. Creating ebMS Partnership

To create the partnership required to perform the ebMS messaging loopback test using Web Service Usage Sample in next step, you need to execute the following command.

```
ebms-partnership
```

OR

Access http://localhost:8080/corvus/admin/ebms/partnership to configure the partnership manually. Below is a simple loop-back configuration sample.



Partnership ID	ebms-loopback
CPA ID	cpaid
Service	http://localhost:8080/corvus/httpd/ebms/inbound
Action	Action
Disabled	No
Transport Endpoint	http://localhost:8080/corvus/httpd/ebms/inbound
Hostname Verified in SSL?	No
Sync Reply Mode	none
Acknowledgement Requested	never
Acknowledgement Signed Requested	never
Duplicate Elimination	never
Message Order	NotGuaranteed
Signing Required?	No

Encryption Required? (Mail Only)	No
Certificate For Encryption	none
Maximum Retries	1
Retry Interval (ms)	30000
Certificate For Verification	none

4.4. Web Service Usage Sample Flow

In order to validate the installation of Hermes 2, a web service usage sample program is provided. It can be simply executed by running the following command in a command prompt.

Usage:

as2-send ebms-send	Send a AS2 / ebMS message to the local Hermes 2. installed
as2-history ebms-history	Show the message history in the Hermes 2. This program will list the inbox and outbox message stored in the Hermes 2 data storage. User can view the details of inbox and outbox. For inbox message, user can also download the payload received in the Hermes 2 repository, if it is available.

In order to test whether the Hermes 2 are installed success or not, we suggest to run sample programs in following steps:

1. Add a partnership by running **ebms-partnership** / **as2-partnership**.
2. Send message to the local Hermes 2 by running **ebms-send** / **as2-send**.
3. Check the status of sent message by running **ebms-history** / **as2-history** and select the message from outbox.
4. Check the received message by running **ebms-history** / **as2-history** and select the message from inbox, download the payload.

4.4.1. AS2 Web Service Usage Sample

You are required to execute section 4.3.1 successfully before executing the following AS2 web service usage sample. Next we illustrate the steps to run the test described in section 4.4

Send message to the local Hermes 2

```
as2-send
```

This program creates and sends the request attached with payload named "**testpayload**" under the directory **"/config/as2-send"** to Hermes2.

Upon successful execution, you should be able to see the similar output shown as follow:

```
--------------------------------------------------

           AS2 Message Sender

--------------------------------------------------

Initialize Logger ...

Importing AS2 sending parameters ... ./config/as2-send/as2-
        request.xml

Importing AS2 partnership parameters ... ./config/as2-
        partnership.xml

Initialize AS2 message sender...

Adding payload in the AS2 message...

Sending AS2 sending request ...


                    Sending Done:

--------------------------------------------------

New message id: 20080722-133931-01300@127.0.1.1


Please view log for details ..
```

Check the sent message

```
as2-history
```

This program retrieves the list of sent/received message from Hermes 2.

```
--------------------------------------------------

         AS2 Message History Web Service Client

--------------------------------------------------

Initialize Logger ...

Importing AS2 config parameters ... ./config/as2-history/as2-
        request.xml

Initialize AS2 messsage history queryer ...

Sending AS2 message history query request ...


                    Sending Done:

--------------------------------------------------

         AS2 Message that are matched

--------------------------------------------------

No. of message: 2

0 | Message id : 20080722-133931-01300@127.0.1.1  MessageBox: outbox

1 | Message id : 20080722-133931-01300@127.0.1.1  MessageBox: inbox

--------------------------------------------------

Select message (0 - 1), -1 to exit:
```

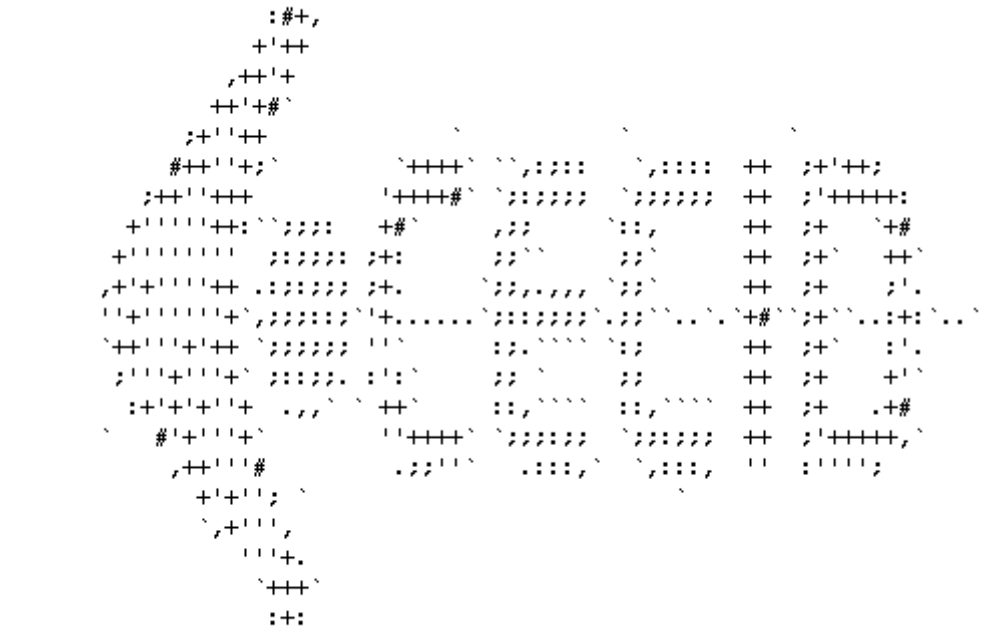
Enter 0 to check the sent message, the screen silimiar as following will show:

```
Select message (0 - 1), -1 to exit: 0
Query Message ID         : 20080722-133931-01300@127.0.1.1
Query Message Status     : DL
Query Message Status Desc : null
ACK   Message ID         : null
ACK   Message Status     : null
ACK   Message Status Desc : null
```

Check the received message, download the payload

From the select message screen of **as2-history**, enter 1 to select the inbox message, then it will prompt for "*Please provide the folder to store the payload(s):*", press enter to save in the current folder. Then there should be a file named "**as2.*<timestamp>*@127.0.1.1.Payload.0**", where *<timestamp>* is the time you just execute **as2-send** before. Open that file and you will see the follow content:

```
This is an sample message.
```



```
This is an sample message.
```

Finally, the test for AS2 plugin installation has been done after executed the above steps successfully.

4.4.2. ebMS Web Service Usage Sample

You are required to execute section 4.3.2 successfully before executing the following ebMS web service usage sample. Next we illustrate the steps to run the test described in section 4.4

Send message to the local Hermes 2 server

```
ebms-send
```

This program creates and sends the request attached with payload named **"testpayload"** under the directory **"/config/ebms-send"** to Hermes2.

Upon successful execution, you should be able to see the similar output shown in following:

```
-----------------------------------------------------
          EbMS sender web service client
-----------------------------------------------------
Initialize Logger ...
Importing  ebMS sending parameters ... ./config/ebms-send/ebms-request.xml
Importing  ebMS partnership parameters ... ./config/ebms-partnership.xml
Initialize ebMS web service client...
Adding     payload in the ebMS message...
Sending    ebMS sending request ...


                    Sending Done:
-----------------------------------------------------
New message id: 20080722-143157-97302@127.0.1.1


Please view log for details ..
```

Check the sent message

```
ebms-history
```

This program retrieves the list of sent/received message from Hermes 2.

```
-----------------------------------------------------
      EbMS Message History Queryer
-----------------------------------------------------
Initialize Logger ...
Importing  ebMS config parameters ... ./config/ebms-history/ebms-request.xml
Initialize ebMS messsage history queryer ...
Sending ebMS message history query request ...
```

```
                Sending Done:
-----------------------------------------------------
-----------------------------------------------------
        EbMS Message Query Result
-----------------------------------------------------
0       | Message id : 20080722-143157-97302@127.0.1.1 | MessageBox: outbox
1       | Message id : 20080722-143157-97302@127.0.1.1 | MessageBox: inbox
-----------------------------------------------------

Select message (0 - 1), -1 to exit:
```

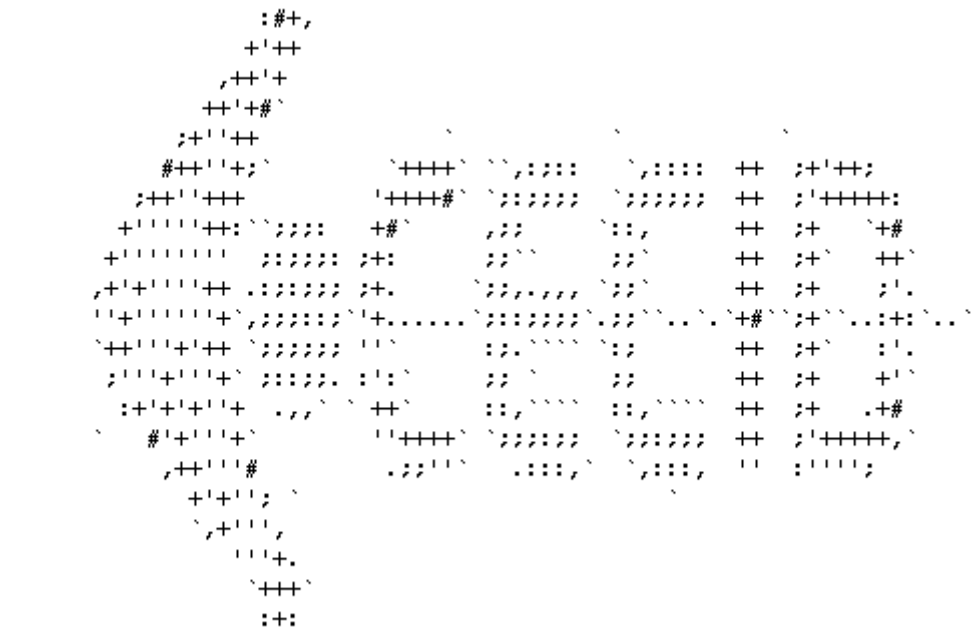
Enter 0 to check the sent message, the screen similar as follow will show:

```
                Sending Done:
-----------------------------------------------------
Query Message ID         : 20080722-143157-97302@127.0.1.1
Query Message Status     : DL
Query Message Status Desc : Message was sent.
ACK   Message ID         : null
ACK   Message Status     : null
ACK   Message Status Desc : null

-----------------------------------------------------

Please view log for details ..
```

Check the received message, download the payload

From the select message screen of **ebms-history**, enter 1 to select the inbox message, then it will prompt for "*Please provide the folder to store the payload(s):*", press enter to save in the current folder. Then there should a file named "**ebms.*<timestamp>*@127.0.1.1.Payload.0**", where *<timestamp>* is the time you just execute **ebms-send** before. Open that file and you will see the follow content:

```
This is an sample message.
```



```
This is an sample message.
```

Finally, the test for ebMS plugin installation has been done after executed the above steps successfully.

5. Configuration for Secure Messaging & Secure Channel

In order to store private key for message signing, keystore is needed. Under current implementation, only PKCS12 keystore is supported.
If you are running Hermes Installer, there are keystore files put under folder called "security" under both ebMS and AS2/AS2 Plus plugins.

5.1. Message Signing

To enable message signing, please configure the plugin with corresponding keystore. A default keystore setting are set through the installer. Or make a new customized keystore. To learn more about generating a keystore, please refer to article about "Generate Certificate".

Article on "Generate Certificate":
http://community.cecid.hku.hk/index.php/product/article/configuration_for_message_signning_and_secure_channel/#generate_cert

Sender Setting for Message Signing

To instruct Hermes to perform message signing with correct private-key, the corresponding Keystore Manager should be configured with correct parameters.

- *ebMS Sender-SideSetting*

Open the configuration file named **"ebms.module.xml"**, which is placed in the conf folder of ebMS plugin. A component named **"keystore-manager-for-signature"** is defined to manage the keystore.

```
<component id="keystore-manager-for-signature"
                    name="Key Store Manager for Digital Signature">
    <class>hk.hku.cecid.piazza.commons.security.KeyStoreManager</class>
       <parameter name="keystore-location"
              value="/corvus/plugins/hk.hku.cecid.ebms/security/corvus.p12" />
       <parameter name="keystore-password" value="password" />
       <parameter name="key-alias" value="corvus" />
       <parameter name="key-password" value="password" />
       <parameter name="keystore-type" value="PKCS12" />
       <parameter name="keystore-provider"
              value="org.bouncycastle.jce.provider.BouncyCastleProvider" />
</component>
```

- *AS2/AS2 Plus Sender-Side Setting*

Open the configuration file named **"as2.module.core.xml"**, which is placed in the conf folder of AS2/AS2 Plus plugin. A component named **"keystore-manager"** is defined to manage the keystore.

```
<component id="keystore-manager" name=" AS2 Key Store Manager">
    <class>hk.hku.cecid.piazza.commons.security.KeyStoreManager</class>
       <parameter name="keystore-location" value="corvus.p12" />
       <parameter name="keystore-password" value="password" />
       <parameter name="key-alias" value="corvus" />
       <parameter name="key-password" value="password" />
       <parameter name="keystore-type" value="PKCS12" />
       <parameter name="keystore-provider"
              value="org.bouncycastle.jce.provider.BouncyCastleProvider" />
</component>
```

Here are descriptions of parameters.

keystore-location	Absolute file path pointed to keystore file.
keystore-password	Pass phrase to get access to keystore.
key-alias	Name of the private key stored.
key-password	Pass phrase to retrieve the private key. (**PKCS12** standard: key-password is equal to key-password)
keystore-type	The type of the keystore.

	PKCS12 (MUST)
keystore-provider	The class provider to handle the keystore. **org.bouncycastle.jce.provider.BouncyCastleProvider**

5.1.2. Receiver Setting for Message Signing

For receiver to verify the signature, a public certificate should be provided by the sender through the partnership maintenance page.

After that, set the value of **"Signing Required"** to **"true"**. For detail setting of the partnership, please refer to as2 partnership reference or ebMS partnership reference.

AS2 partnership reference:
http://community.cecid.hku.hk/index.php/product/article/reference_of_as2_partnership_configuration/

ebMS Partnership reference:
http://community.cecid.hku.hk/index.php/product/article/reference_of_ebms_2_0_partnership_configuration/

5.2. Message Tranfer with Secure Channel

To further ensure security of message transfer, secure channel is preferable. For more detail on the configuration that have to do, please visit our community site for the article **"Configuration for Message Signning and Secure Channel"**.

Article "Configuration for Message Signning and Secure Channel":
http://community.cecid.hku.hk/index.php/product/article/configuration_for_message_signning_and_secure_channel/#send_msg_thur_https

6. FAQ

6.1. Hermes 2 Deployment

Q1.From the corvus.log show,

hk.hku.cecid.piazza.commons.spa.PluginException: **Error in processing activation by handler**:

hk.hku.cecid.ebms.spa.EbmsProcessor which is caused by java.io.IOException: **exception decrypting data - java.lang.SecurityException: Unsupported keysize or algorithm parameters**

A1. Please check whether the Java 2 SDK is patched by JCE or not.

Q2. From any one of logs show: hk.hku.cecid.piazza.commons.dao.DAOException: **Unable to begin transaction**.

A2. Please check whether:

PostgreSQL OR MySQL OR Oracle was installed properly.

AND

Check the following file(s):

For AS2

plugins\hk.hku.cecid.edi.as2\conf\hk\hku\cecid\edi\as2\conf\as2.module.core.xml under Hermes 2 installation directory. There have a tag named "parameter" with attribute "name=url" and check the "value" attribute to see whether it is reference to the correct server address. The format of the value attribute is the same as the JDBC connection string.

For ebMS

plugins\hk.hku.cecid.ebms\conf\hk\hku\cecid\ebms\spa\conf\ebms.module.xml under Hermes 2 installation directory. There have a tag named "parameter" with attribute "name=url" and check the "value" attribute to see whether it is reference to the correct server address. The format of the value attribute is the same as the JDBC connection string.

6.2. Web Service Usage Sample

Q1. Exception in thread "main" **java.lang.UnsupportedClassVersionError**: xxx (Unsupported major.minor version 49.0)

A1. It is very likely you are using an incompatible java version. The web service usage sample requires J2SE 5.0 or above for running properly. In command prompt, enter "**java –version**" to see whether you are using J2SE 5.0 or above.

Q2. Sending ebMS/AS2 sending request ...

java.net.ConnectException: **Connection refused: connect**

A2. Check whether the Application Container (Tomcat) has been started up or not.

7. Reference

Java 2 SE SDK version 5.0: http://java.sun.com/j2se/1.5.0/index.jsp

Java 2 SE SDK version 1.6: http://java.sun.com/javase/6/

Java cryptography extension: http://java.sun.com/products/jce/

Download java cryptography extension for J2SE 5.0:
http://java.sun.com/j2se/5.0/download.html

Apache Tomcat version 5.5 / 6.0: http://tomcat.apache.org/

Apache Tomcat version 5.5 Realm Configuration Guideline:
http://tomcat.apache.org/tomcat-5.5-doc/realm-howto.html

Apache Tomcat version 6.0 Realm Configuration Guideline:
http://tomcat.apache.org/tomcat-6.0-doc/realm-howto.html

Postgres database version 8.0: http://www.postgresql.org/

MySQL database version 5.0: http://www.mysql.com

Oracle database version 9i: http://www.oracle.com

Create Oracle database:
http://www.peacetech.com/flipper/oracle9i/901_doc/server.901/a90117/create.htm

Center for E-Commerce Infrastructure Development: http://www.cecid.hku.hk/