

Sentences Installation Guide for IBM iSeries

Sentences™ Version 3.5



A publication of:

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Sentences Version 3.5

Installation Guide for IBM iSeries

Overview

This document describes the procedure for installing Sentences Version 3.5 on the IBM iSeries application server. Sentences is written in Java, and the Sentences installation for the IBM iSeries uses an installer which is also written in Java. Java program execution on the iSeries is significantly faster when preceded by use of IBM's Java Transformer command, CRTJVPAGM. Use of this command introduces additional stages to the installation process which are not required on other platforms.

The overall process for Sentences installation on the iSeries should consist of the following four steps:

- **transformation of the installation jar file**
- **running of the installer**
- **transformation of the installed server jar files**
- **testing of the installation.**

This document is intended to complement the principal Sentences documentation not to replace it. It covers only the initial installation and system checkout.

Sentences License file

Sentences Version 3.5 requires the presence of a License file on the Sentences server. You cannot run Sentences if the License file is not present.

The License file is supplied to customers on payment of the appropriate license fee. The License file lists the licensed components and includes a digital key for verification. In the case of evaluation versions of Sentences the digital key also verifies the evaluation expiry date. If you choose to purchase additional components, Lazy Software supplies you with an updated License file.

The License file is named `SentencesLicense.txt`, and should be placed in the home directory of your Sentences server installation. If you have any question regarding your License file, please contact Lazy Software Sales Administration (<mailto:sales@lazysoft.com>).

Sentences components and their installation

A range of additional components are available with Sentences Version 3.5.

- **LazyView**

The Sentences LazyView tool enables you to view data in one or more relational databases alongside data from Sentences chapters in one integrated view.

LazyView does not require any additional installation.

LazyView is only enabled when an appropriate License file is present on your system. The appropriate License file is supplied on payment of an additional license fee.

LazyView is available in Sentences Personal Edition.

For more information, please see the *Sentences LazyView Guide*.

- **Lazy Analytics**

The Lazy Analytics OLAP engine allows you to dynamically retrieve data from your Sentences database and analyse it using the PivotTable feature in Microsoft Excel 2000 or Microsoft Excel XP.

Lazy Analytics requires the installation of additional files and directories. When you install Sentences you must select the **Custom** installation option and select **Lazy Analytics** from the list of optional components.

Lazy Analytics is only enabled when an appropriate License file is present on your system. The appropriate License file is supplied on payment of an additional license fee.

Lazy Analytics is not available with Sentences Personal Edition.

For more information, please see the *Sentences Lazy Analytics Guide*.

- **Application Suite**

The Sentences Application Suite is a set of modular applications that introduce Sentences' features and showcase its potential. The applications within the suite centre on core business functions, and use both the native Sentences Explorer interface and additional custom HTML interfaces.

The Application Suite requires the installation of additional files and directories, which are installed automatically when you select the **Typical** installation option. If you select the **Custom** installation option you may choose to include or omit the Application Suite from the list of optional components. The Application Suite is always enabled when the appropriate files and directories have been installed.

The Application Suite is not available with Sentences Personal Edition.

For more information, please see the *Sentences Application Suite Guide*.

What is installed?

The Sentences 3.5 installer for the IBM iSeries installs the following software and components:

- **Sentences server-side software**
- **example Sentences databases**
- **example web pages to start Sentences client applets**
- **a copy of the Tomcat servlet container configured to run Sentences**

The installer does not configure any existing web server or servlet container installation to host Sentences.

Sentences may optionally be configured to run in an alternative operational environment such as IBM WebSphere. For details of supported configurations please contact Lazy Software Technical Support (<mailto:support@lazysoft.com>).

Requirements

Before installing Sentences Version 3.5 make sure your system meets the following requirements:

- **OS version:**

The minimum version of OS/400 supported by Lazy Software for Sentences is currently V5R1.

- **Java environment:**

The IBM Java Development Kit (JDK) Version 1.3, or above, must be installed and operational on your iSeries machine. See, for example, http://www-919.ibm.com/developer/java/deploy/installguide_v4r5.html.

Note that the Sentences iSeries installer assumes that your JDK installation uses the standard location for its version, for example that the Java executable for Java 1.3 will be found as: `/QIBM/ProdData/Java400/jdk13/bin/java`.

Note also that the latest group PTFs for Java may need to be installed. See the Known Issues section below for details.

- **HTTP connectivity:**

The Sentences client applets do not run on IBM iSeries. Instead they are loaded from the iSeries server and connect back to it from the client machine using HTTP. This requires that the iSeries server can be reached from the client using either a hostname lookup or IP address and HTTP.

- **Login:**

To install Sentences you should be logged into the iSeries as user QSECOFR.

- **Port usage:**

The Tomcat instance installed for Sentences requires exclusive use, when running, of at least two ports on the server system. One is for HTTP access the other for shutdown messages.

The default ports for Tomcat 4 installed by Sentences 3.5 are 8090 for HTTP and 8095 for shutdown.

The ports to use can be selected as part of the **Custom** install process. You should ensure that the ports you wish to use are not in use by other software on the server before assigning them.

- **Installation locations:**

The locations chosen for use by the Sentences installer must all be on the iSeries Integrated File System (IFS). The default locations for Sentences files on the iSeries include the major and minor Sentences version numbers.

For an overview of the iSeries IFS see, for example:

<http://publib.boulder.ibm.com/pubs/html/as400/v4r4/ic2924/info/db2/rzaaxmst02.htm#ToC>.

- **Known Issues:**

Please review the Installation sub-section of the Known Issues section on page 22 before continuing to the installation.

Upgrading from earlier versions

Due to changes to the internal format of chapter files and to the rearrangement of the Sentences installation directories, you must install Sentences Version 3.5 and its related directories in different locations from those used by any earlier version of Sentences.

You must export your existing Sentences applications and then import them into Sentences Version 3.5 before running them. For this reason you must not uninstall

any earlier version of Sentences before you have completed all the tasks required for upgrading to Sentences Version 3.5.

The following procedures apply to Sentences Versions 2.2, 3.0 and 3.1. To upgrade from any earlier version of Sentences, please contact Lazy Software Technical Support (<mailto:support@lazysoft.com>).

Important steps before upgrading

Before you upgrade to Sentences Version 3.5 make sure you are using a current version of Sentences Version 3.0 (build 3.0.43 or later) or of Sentences Version 2.2 (build 2.2.32 or later).

In Sentences Version 3.5, instances with datatype **<None>** of entity types with datatype **Text** will not be visible. The export command included in the current builds of Sentences Version 3.0 and Sentences Version 2.2 converts instances with the **<None>** datatype of entity types with the **Text** datatype to the **Text** datatype, so that the instances are preserved when the database is exported, and are therefore visible in Sentences Version 3.5.

For assistance in obtaining a current build of Sentences Version 3.0 (build 3.0.43 or later) or of Sentences Version 2.2 (build 2.2.32 or later), and for advice on upgrading to a current build before upgrading to Sentences Version 3.5, please contact Lazy Software Technical Support (<mailto:support@lazysoft.com>).

Before you upgrade to Sentences 3.5 we strongly recommend that you perform a backup of your Sentences installation, including all your profiles and chapters. For more information on performing a backup please see the *Sentences User's Guide*.

Existing Sentences applications

Sentences chapter files from earlier versions cannot be used with Sentences Version 3.5. This means that you must export your Sentences applications from any earlier version and import them into Version 3.5 using the `Export` and `Import` commands.

The `Export` command creates an export file which is an external representation of a profile including of all the chapters within that profile. The `Import` command reads the export file and creates new chapter files for each chapter which it defines.

Independent profiles

Chapters may be used in one or many profiles. Data or schema dependencies can be created between any pair of chapters in the same profile. To maintain these

dependencies all chapters that are linked must be exported together. Each profile you export must be *independent*, that is it must contain a set of chapters which has no dependencies outside of the set.

If your existing profiles are independent then you can follow the procedure given below to upgrade them to Version 3.5. If your existing profiles are not independent you must create new profiles, for the purpose of upgrading, that do contain a set of chapters with no dependencies outside of the set. This may require you to set up a single profile containing all of your existing chapters. You must not include the system chapter `Profiles.chap` in any of the profiles you wish to upgrade.

Do not use the `-force` option with the `Export` command for this upgrade. If it is used some dependencies or links between chapters will be lost. If a profile appears to need the `-force` option, this indicates that the profile does include chapters with external dependencies and therefore is not an independent profile.

For more details of the `Export` procedure see the section “To export a database” in the *Sentences User’s Guide*. For more details of the `Import` procedure see the section “To import a set of chapters” in the *Sentences User’s Guide*.

Customised versions of example applications

When you import your own customised versions of any of the example applications supplied with Sentences, such as the Human Resources example or any of the examples from the Application Suite, you should use both the `-overwrite` and the `-renumber` switches. When you use the `-renumber` switch Sentences imports your chapters and creates your profiles at the same time so you do not need to create them after the import.

For more details of the `Import` procedure see the section “To import a set of chapters” in the *Sentences User’s Guide*.

Upgrade steps

The following procedure lists the steps required to upgrade your existing Sentences applications to Sentences Version 3.5. You should complete this procedure separately for each independent profile you wish to upgrade.

1. Start your existing version of Sentences and identify or create the required independent profile or profiles as defined above. You must not include the system chapter `Profiles.chap` in any of these profiles.
2. Shut down your existing version of Sentences and use the `Export` command from that version of Sentences to export each independent profile to a new export

file. You should not use the `-force` option with the `Export` command for this upgrade.

3. Use the `Import` command in your Sentences Version 3.5 installation to import the export files you created in the previous step. In Sentences Version 3.5 the `Import` command does not create profiles but only imports sets of related chapters, and in doing so maintains the validity of references between chapter files. For more details of the import procedure see the section “To import a set of chapters” in the *Sentences User’s Guide*.
4. Run Sentences Version 3.5 and use the **New Profile** command to create the profiles you need using the imported chapters. See the section “Creating a new profile” in the *Sentences User’s Guide* for more details.

Make sure that you define a **Query changes** chapter wherever required in the profiles you create. You may use the same chapter as one defined for **Schema changes** or **Data changes**. If a **Query changes** chapter is not defined users are unable to save any updates to queries.

The *Sentences User’s Guide* gives details of an optional procedure for transferring the profiles database between systems which uses XML Export and XML Import. This procedure may be used when upgrading from Version 2.2 to Version 3.5. For full instructions see the section “Transferring the profiles database” in the *User’s Guide*. If you wish to use this procedure when upgrading from a version of Sentences earlier than Version 2.2, you must amend the Export profiles query in the Profiles database. This is because Sentences Version 2.2 introduced the **Query changes** chapter as part of the profile definition.

5. If you have an application that uses a custom API program you must recompile your program code, using the same Java version that you are using for Sentences Version 3.5, before running it with Sentences Version 3.5. You must restart the Sentences server after making changes to your program code.
6. If you have an application that uses a trigger you must recompile your code, using the same Java version that you are using for Sentences Version 3.5, and save it to a Java archive (JAR) file. You must place the JAR file in a directory you specify in the `TriggerPath` parameter of the `Server.properties` file so that Sentences can recognise the trigger automatically. The default setting for the `TriggerPath` parameter is `<Sentences_home>\Triggers`. You must restart the Sentences server after adding or removing trigger JAR files or making changes to the `Server.properties` file.

7. If you have an application that uses a custom datatype you must recompile your code, using the same Java version that you are using for Sentences Version 3.5, and save it to a Java archive (JAR) file. You must place the JAR file in a directory you specify in the `DatatypePath` parameter of the `Server.properties` file so that Sentences can recognise the custom datatype automatically. The default setting for the `DatatypePath` parameter is `<Sentences_home>\Datatypes`. You must restart the Sentences server after adding or removing custom datatype JAR files or making changes to the `Server.properties` file.

In Sentences Version 3.5 it is no longer necessary for custom datatypes to be directly accessible by HTTP from the client.

Loading the installation file

The Sentences installation file must first be copied to the iSeries IFS.

1. The Sentences iSeries installation file is a Java archive (JAR) file and can be found on the Sentences installation CD under: `\Installers\iSeries`. The file name includes the Sentences version number. For Sentences 3.5 the file is named: `sentences-ee-3.5.jar`.
2. The installation JAR file needs to be copied to the iSeries IFS. This can be achieved by various means depending on the configuration and available services on the iSeries server. For example, the file may be copied from CD-ROM directly on the iSeries or a directory within the IFS may be mapped as a network drive to a Windows machine with a CD drive.
3. Copying the installer from CD may make use of the iSeries Q-shell environment. An example procedure for this is as follows:

- i At an iSeries command line, enter the command `qsh`. A command line prompt is displayed.
- ii Create a target directory, for example:

```
mkdir /QIBM/Sentences
```
- iii Assuming the iSeries CD drive is mapped as `/QOPT`, find the Sentences installer by changing directory onto the CD file system. The directory names may be limited to DOS 8.3 format and will vary between builds of Sentences. For example:

```
cd /QOPT
cd 3.5*
cd INSTAL?1
cd iSeries
```

- iv Copy the installer from this location to the target directory, for example:
`cp sentences-ee-3.5.jar /QIBM/Sentences`

Java Program generation from the installation file

Before running the Sentences installer an iSeries Java program should be created by transforming the installer JAR file. This uses the `CRTJVAPGM` command (*create Java program*). This significantly speeds up execution of Java programs on the iSeries. However the command itself can take a significant period to run. There is a trade-off between `CRTJVAPGM` execution time, optimization level and Java program execution time. There may also be some benefit for debugging in lower optimization levels.

1. The `CRTJVAPGM` command takes as its arguments the JAR file to be processed, an optimization parameter and a replace parameter. We recommend use of the optimization value `*INTERPRET` for the Sentences installer. We also recommend that the replace parameter is always set to `*YES`.
2. `CRTJVAPGM` is used at the OS/400 command line, not via the `Qshell`. For a JAR file named `<filename.jar>` and located at `<location>` the command to use (all on one line) is:

```
crtjvapgml clsf('<location>/<filename.jar>')
optimize(*INTERPRET) replace(*YES)
```

for example:

```
crtjvapgml clsf('/QIBM/Sentences/sentences-ee-3.5.jar')
optimize(*INTERPRET) replace(*YES)
```

3. With optimization level `*INTERPRET` this command should complete within some minutes. On successful completion the command reports:
`Java program created for "<...ee-3.5.jar"`.
4. Note also that `CRTJVAPGM` leaves the JAR file unchanged even though the program to execute is then referenced via that JAR. The transformed executable is not visible via the IFS but execution of classes from within the JAR will use the transformed and optimized code.
5. For reference information on the `CRTJVAPGM` command see, for example:
<http://www-919.ibm.com/developer/java/presentations/manjava/managejava5.htm>

Running the installer

After you have transformed the installation JAR file the Sentences installer can be run. During the installation procedure you need to specify locations for Sentences files, as detailed in the following section.

Choosing installation locations

When you install Sentences you need to specify locations for Sentences files, as follows:

- the Sentences installation location (referred to as <Sentences_home>)
- a location for Sentences Data

The Sentences Data location has subdirectories that are used for Sentences chapters, images, and OLAP cubes used with Lazy Analytics.

Default locations are offered. All the locations used must be on the iSeries IFS. If the installer finds that any of the locations you have chosen is unsuitable, it will display a warning message, and allow you to select an alternative.

Installing Sentences

The IBM Java Development Kit (JDK) Version 1.3 must be installed on your computer before you install Sentences.

The Sentences Enterprise Edition installer is a Java program. This can be run either from the OS/400 command line or via the Qshell. Invocation via the Qshell is simpler but access to diagnostics, in the event of problems, is improved by invocation from the OS/400 command line.

1. Invoke the Sentences installer using one or the other of the following procedures, either using *Invocation from the Qshell* or *Invocation from the OS/400 command line*:

Invocation from the Qshell:

- i At an iSeries command line, enter the command `qsh`. A command line prompt is displayed.
- ii Navigate to the location of the Sentences installation JAR file, for example:
`cd /QIBM/Sentences`

- iii Check the java command execution and version at this command line using:
`java -version`
A string such as 1.3.1 should be returned.
- iv Use the following command to start the Sentences installer:
`java -cp ./<filename.jar> install -i console`
In this command, <filename.jar> is the name of the optimized Sentences installation JAR file, for example:
`java -cp ./sentences-ee-3.5.jar install -i console`
- v The installer should now start in the QSH Command Entry window. Continue from step 2.

Invocation from the OS/400 command line:

- i Identify the full path to the installer jar file on the IFS, as used for the `crtjvapg` command.
 - ii Run the Java command to execute the installer from the OS/400 command line by entering, for example (all on one line):
`JAVA CLASS(install) PARM('-i' console) CLASSPATH('/qibm/sentences/sentences-ee-3.5.jar')`
 - iii The installer should now start in a Java command window. Continue from step 2.
2. The installer displays the License Agreement for Sentences. Press **Enter** to view the successive pages of the Agreement, and when prompted with the question: Do you accept the terms of the License Agreement? (Yes/No) type Yes and press **Enter** to accept the Agreement and proceed with the installation.
 3. You may choose either the **Typical** or the **Custom** installation. Selecting the **Custom** installation option allows you to select additional components for installation, set the port numbers to be used by Tomcat and set additional parameters for the Java Virtual Machine.

Type in 1 for **Typical** installation or 2 for **Custom** installation, and press **Enter** to continue the installation.
 4. The installer displays the location of the installed Java 1.3 Virtual Machine for use with Sentences. The Java Virtual Machine you select here is used by the Tomcat Web server and by Sentences' command line tools. Press **Enter** to accept the Java Virtual Machine details as displayed or type in the location of a suitable

alternative Java Virtual Machine and press **Enter**. For more information see the Known Issues section on page 21.

5. The installer displays the default location for the Sentences installation directory. Press **Enter** to accept the Sentences installation directory details as displayed or type in the location of a suitable alternative Sentences installation directory and press **Enter**. This location is referred to below as `<sentences_home>` and you should make a note of its value to be used later in this procedure and when starting Tomcat for Sentences.
6. The installer displays the default location for the Sentences Data directory. Press **Enter** to accept the Sentences Data directory details as displayed or type in the location of a suitable alternative Sentences Data directory and press **Enter**.
7. If you selected **Custom** installation, Sentences allows you to select optional components for your installation. These are Application Suite examples and Lazy Analytics. Select the optional components required and click **Next**.
8. If you have selected the **Custom** installation, the installer displays the default port numbers for the Tomcat Web server.

By default the Tomcat installation created for Sentences 3.5 listens for HTTP requests on port 8090 and for stop commands on port 8095. If these port numbers are not suitable for this installation you may change them here. Note that these default ports are different from those used before version 3.0.

Press **Enter** to accept the Tomcat port number details as displayed or type in suitable alternative port numbers and press **Enter**. You should make a note of the **HTTP port** in particular for use when accessing Tomcat and Sentences.

9. If you have selected the **Custom** installation, the installer displays the default values for the Java Virtual Machine memory parameters.

The Java Virtual Machine memory parameters that can be used are in the format:
`-Xmx128m -Xms64m`

where `-Xmx` specifies the maximum system memory that can eventually be used, (shown here with the example value `128m` meaning 128MB), and `-Xms` specifies the initial amount of memory to be allocated (shown here with the example value `64m` meaning 64MB).

Press **Enter** to accept the Java Virtual Machine memory parameters as displayed

or type suitable alternative Java Virtual Machine memory parameters and press **Enter**.

10. If your Sentences License file is already available on your system you may specify its location on the **Copy Existing Sentences License File** window. Sentences copies the file to your installation directory. If you do not specify the file location at this stage, you may still complete the installation. You must copy the License file to your Sentences installation directory before you can run Sentences. This window is not displayed if a Sentences License file is already present in the directory location in which you are installing Sentences. Click **Next** to continue.
11. Review the summary of installation choices you have made and if they are correct press **Enter** to complete the installation. If you want to change any of your choices, type in `back` and press **Enter**. If you have not already done so, you should make a note of the location to be used for Sentences installation, `<Sentences_home>`.
12. The installation and configuration of Sentences server components should take approximately 15 minutes.

If you have selected any optional components the example profiles for these components need to be imported. Unlike the Sentences installers for other platforms, the installer for IBM iSeries does not attempt to import these profiles automatically. This is because the installed server JAR files must be optimized before attempting to run Sentences.

When the installation is complete Sentences displays an informational message.
13. At this stage you must generate Java programs for all the installed server JAR files, and then execute a script file for each optional component that needs to have a profile created for it (see [“Importing profiles for optional components” on page 19](#)).

Java Program generation for other JAR files

The JAR files used by the Sentences server must be optimized, using the same `CRTJVAPGM` command that was applied to the installer JAR file, before you start running Sentences. If you do not optimize the server JAR files before starting the Sentences server, your iSeries computer interprets each file automatically each time the server is started. This will cause significant delay in Sentences availability, and a reduction in performance.

This process uses the `CRTJVAPGM` command, as was applied to the installer JAR previously. For the server JAR files we recommend level 30 for the `optimize` parameter. Again the parameter `replace` should be set to `*YES` to ensure that new Java programs are created.

`CRTJVAPGM` is used at the OS/400 command line, not via the Qshell. For a JAR file named `<filename.jar>` and located at `<location>` the command to use (all on one line) is:

```
crtjvapgml clsf('<location>/<filename.jar>') optimize(30)
replace(*YES)
```

There are a large number of JAR files which require processing. To process a set of JAR files with a single `crtjvapgml` command the `*` metacharacter should be used, for example as follows:

```
crtjvapgml clsf('<location>/*.jar') optimize(30) replace(*YES)
```

There is a significant trade-off between the `crtjvapgml` execution time and the `optimize` level selected. The lowest level is `*INTERPRET`. The highest level supported by Lazy software is 30. Note that with optimization levels higher than `*INTERPRET` the `crtjvapgml` command can take several hours to complete. The execution time can also be significantly impacted by system main memory. For machines with 250MB of main memory or less, execution times of several hours have been reported.

The locations of server-side JAR files for Sentences Version 3.5 are different from those used by Sentences Version 2.2. Sentences Version 3.5 is delivered as a set of J2EE compliant web application archive (WAR) files. These files are also installed already expanded under the Tomcat installation directory so that they can be configured as part of the installation process.

All locations are defined relative to either the Sentences installation directory, `<Sentences_home>`, as defined within the installation procedure above, or the Tomcat installation directory, `<tomcat_home>`, which, relative to `<Sentences_home>`, is currently:

```
<Sentences_home>/tomcat4
```

The default value for `<Sentences_home>` on iSeries at Sentences 3.5 is:
`/QIBM/ProdData/SentencesV3.5`

All the JAR files in all of the following locations should be processed:

- <tomcat_home>/webapps/Sentences/Web-inf/lib
- <tomcat_home>/bin/
- <tomcat_home>/server/lib
- <tomcat_home>/common/lib
- <tomcat_home>/common/endorsed
- <tomcat_home>/shared/lib
- <sentences_home>/datatypes
- <sentences_home>/triggers

By substituting the complete path to the location each of these locations should be processed using a single invocation of the `crtjvapg`, such as:

```
crtjvapg clsf('/qibm/proddata/sentencesv3.5/tomcat4/bin/  
*.jar') optimize(30) replace(*YES)
```

Note *This and similar invocations of `crtjvapg` may take several hours to complete at the recommend level of `optimize`. For test installation these commands may be run with `optimize(*INTERPRET)`. This processing should then complete in a few minutes.*

Any JAR files which may be used at the server can beneficially be processed, as above. You do not need to optimize JAR files which are only downloaded for use at the client. However, as a result of how the “Java programs” are stored, this cannot do any harm. JAR files will be processed on demand if not already available as “Java programs” but the level of optimization applied will not be apparent and the processing may be repeated each time Tomcat is run. Messages indicating such processing are generated on the server, for example to the Qshell window where Tomcat is started.

Note *Whenever new or additional JAR files are introduced for use with Sentences on the iSeries, server optimized Java programs for them should be generated or regenerated before they are used.*

Importing profiles for optional components

If you select any optional components to be installed, the Sentences installer for IBM iSeries installs the physical files but does not create the example profiles needed to use these components. Follow the steps below to run scripts to create the profiles.

Application Suite

To create the example profiles for the Sentences Application Suite, follow these steps:

1. Make sure that the Sentences server is not running.
2. At an iSeries command line enter the command `qsh`. A command line prompt is displayed.
3. Navigate to the Resources directory (a sub-directory of `<Sentences_home>`) and run the `createAppSuite.sh` script. For example

```
cd/QIBM/ProdData/Sentences35/resources  
sh ./createAppSuite.sh
```
4. After completing this processing Tomcat and Sentences can be started.

Lazy Analytics

To create the example profiles for Lazy Analytics, follow these steps:

1. Make sure that the Sentences server is not running.
2. At an iSeries command line enter the command `qsh`. A command line prompt is displayed.
3. Navigate to the Resources directory (a sub-directory of `<Sentences_home>`) and run the `createLazyAnalytics.sh` script. For example

```
cd/QIBM/ProdData/Sentences35/resources  
sh ./createLazyAnalytics.sh
```
4. After completing this processing Tomcat and Sentences can be started.

Starting Tomcat and Sentences

The Tomcat installation that has now been created has been configured by the Sentences installer to host Sentences. The significant information from the installation which is required to use Sentences is as follows:

- The location to which Sentences was installed (`<Sentences_home>`).
- The HTTP port which was selected.

Tomcat for Sentences on the iSeries is stopped and started via the Qshell prompt.

To start Tomcat:

1. Login as QSECOFR.
2. At an iSeries command line, enter the command `qsh`. A command line prompt is displayed.
3. At the Qshell prompt:

- i Change directory to <Sentences_home>, for example:
`cd /QIBM/ProdData/SentencesV3.5`
- ii Type:
`sh ./starttom &`
and press **Enter**. Including the trailing '&' starts the job in background mode and allows Tomcat to keep running after the user logs out.

To stop Tomcat:

1. Login as QSECOFR.
2. At an iSeries command line, enter the command `qsh`. A command line prompt is displayed.
3. At the Qshell prompt:
 - i Change directory to <Sentences_home>, for example:
`cd /QIBM/ProdData/SentencesV3.5`
 - ii Type:
`sh ./stoptom`
and press **Enter**. The Java process running Tomcat should exit within approximately 1 minute.

Testing Sentences

A completed and started Sentences server installation can be tested from any connected client (see “Requirements” on page 7), with an appropriate Web browser and Java Plug-in installed. The tests of Sentences on the iSeries are then the same as those for any other platform. The initial tests are:

1. For server `myserver.com` and HTTP port 1234, the test page for Tomcat should be displayed in response to:
`http://myserver.com:1234/testtom.html`
2. The Sentences Explorer applet can be started using:
`http://myserver.com:1234/Sentences/Sentences.html`

Known Issues and Problem resolution on iSeries

The following actions may help in the diagnosis and resolution of problems with the Sentences installer and with Sentences execution on iSeries.

Installation problems

The following problems with installing Sentences specific to the iSeries have been identified to date:

- The installer hangs after selecting the Java Virtual Machine to run on:
This problem may be resolved by installing up-to-date IBM PTFs for Java 1.3, in particular group PTF# SF99069-06 V5R1M0 December 6, 2001, or later.
- The installer hangs at the end of the installation process progress bar just before completion:
This problem may result from the installer running in a non-1.3 Java environment or in an incomplete Java 1.3 environment. The Java version to run on can be set using the `PROP` parameter when running from the OS/400 command line. See below.
- Execution times for the `crtjvapg` commands vary greatly with JAR size, optimize level and machine main memory. To process all JAR files in a much shorter period `optimize(*INTERPRET)` may be used initially. All such JAR files should be re-generated using `optimize(30)` and `replace(*YES)` to achieve maximum performance. Lazy Software does not support use of `optimize(40)`.

When other errors occur executing the Sentences installer the following steps should be reviewed and applied.

- Enable installer debug output. To generate the debug output from the iSeries installer, place an empty file, of any type, called `IA_DEBUG` in the same directory as the installer and run the installer as normal. The presence of this file should cause the generation of Sentences debug output in the window where the installer is started.
- Execute the installer from the OS/400 command line, not from the Qshell. This may improve access to diagnostics and give greater control of the installer's environment. See the following example, or that given above.
- Assert the Java version for installer execution. From the OS/400 command line the Java version on which classes execute can be controlled using the `PROP` argument, as per the following example:

```
JAVA CLASS(install) PARM('-DLAX_DEBUG=true' '-i' console)
CLASSPATH('/qibm/installers/see2_2.jar') PROP((java.version
1.3))
```

- When re-running the CRTJVAPGM command it is important to replace any already created program for the JAR file. This can be achieved via start-up of CRTJVAPGM using F4, or with a command line such as:

```
crtjvapgml clsf('<location>/<filename.jar>') optimize(30)  
replace(*YES)
```

- Alternatively explicit deletion of any existing Java program corresponding to a JAR file can be achieved using DLTJVAPGM, for example:

```
dltjvapgml clsf('<location>/<filename.jar>')
```

- The optimization levels available with CRTJVAPGM are *INTERPRET, 10, 20, 30, 40. Higher optimization will reduce the availability of diagnostics. To reduce CRTJVAPGM runtime and potentially improve debugging information recreate the Java program with a lower optimization level.

Execution problems

The following limitations of using Sentences specific to the iSeries have been identified to date:

- Running script files, including starting and stopping Tomcat:
Script files may not be recognised by the Qshell as available commands. In this case the Qshell will return, for example:
qsh: 001-0019 Error found searching for command <filename>.
No such path or directory.
Running the script preceded by sh (for shell) should work around this problem, for example:
sh ./starttom
On subsequent invocations the script may then be recognised as a command without use of sh.
- Server side commands cannot process arguments including spaces:
Sentences includes a number of server side commands, for example Export and Import database, CSV Import and others. On the iSeries these commands cannot take arguments which include spaces. The most common example is in profile names, such as the example profile Human resources. The solution is to rename or create a copy of the named item using a name which does not include a space.

Technical Support

Please report any problems or difficulties which are not addressed within this document to Lazy Software Technical Support:

<mailto:support@lazysoft.com>.