

Phoenix[®] Job Management System[™] Guide

Applies to:

Phoenix WinNonlin[®] 8.4

Phoenix NLME[™] 8.4

IVIVC Toolkit[™] 8.4 for Phoenix

AutoPilot Toolkit[™] 8.4 for Phoenix

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Job Management System

The JMS (Phoenix Job Management System) provides features to facilitate remote execution of workflows. These features allow you to: submit long running processes without tying up your desktop, shut down your desktop or Phoenix while the processes are running remotely, and reclaim the results at a future time.

The following topics are discussed in this section:

- Installing JMS

- Configuring JMS

- Configure the JPS to use the RPS

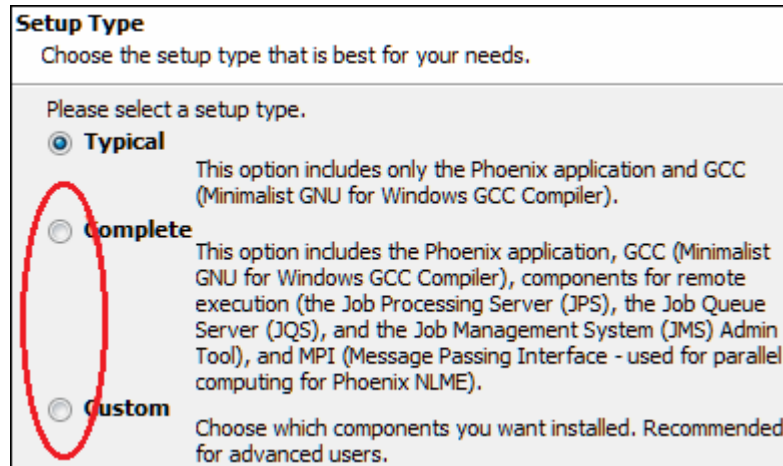
- Troubleshooting

- JMS Admin Tool

- Using JMS from within Phoenix

Installing JMS

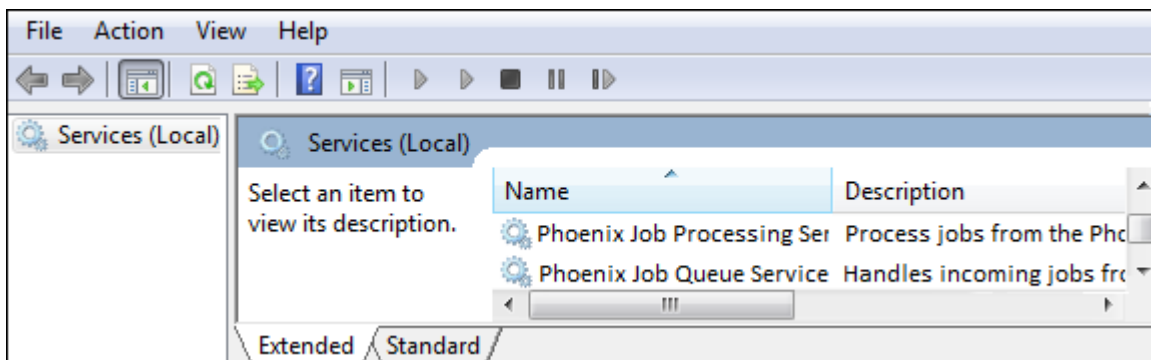
During the installation of Phoenix, options to install the JMS components are available via selection of either **Complete** or **Custom** installation type.



To perform a Complete installation

1. Select the **Complete** option to install all components (MPI and JMS servers: Job Queue Server and Job Processing Server).
2. Click **Next >** and, if desired, change the installation directory.
No further selections are needed to setup JMS in the remainder of the installation.
3. Click **Next >** to review the installation settings.
4. Click **Next >** to install the components.
5. The system on which the JMS component(s) are installed must be rebooted. Once the Phoenix installation is complete, use the **Restart now** checkbox to indicate whether to reboot the computer at this time or not and click **Finish**.

After rebooting, the installed Server parts will start as a Windows Service. Below is a representation of both JMS Servers installed on a single PC.



Note: For third-party applications compatible with Phoenix to be utilized for Remote Execution, the Job Processing Service must be run as an existing user on the JPS system, and not just the default Local System account. The supported third-party applications are R, SAS, and NONMEM, which must be installed and have working folders on the JPS and configured via the Phoenix Preferences on this system. The deployed Phoenix installation on the JPS

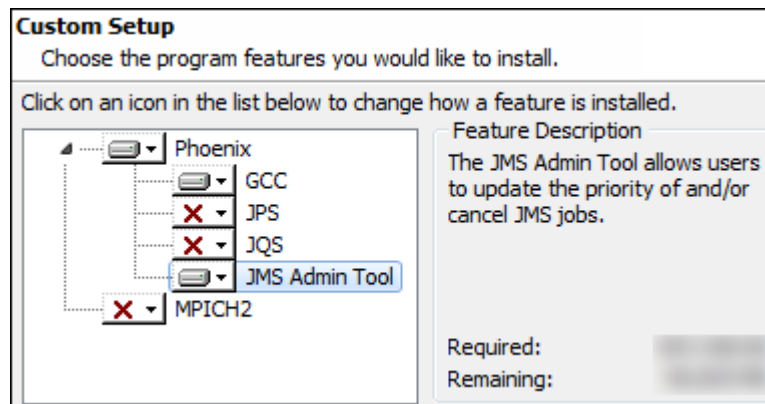
has no need to be licensed as its sole purpose is to configure the third-party applications for use by the JPS.

To perform a Custom installation

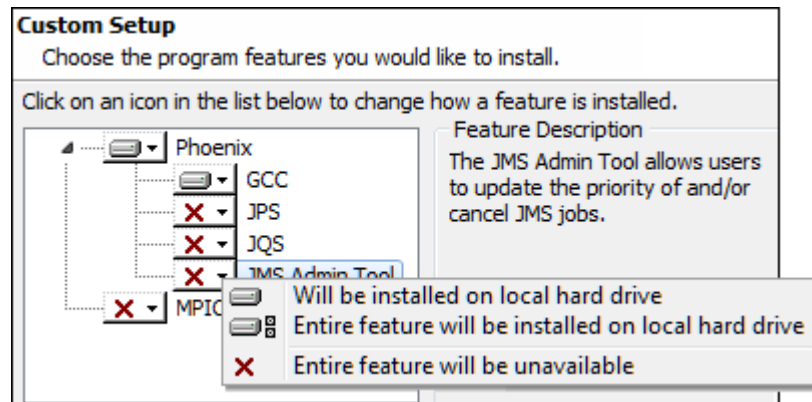
1. Select the **Custom** installation type to choose individual components for installation.

This is useful in an environment where components will reside on multiple computers, for example Job Queue Server on one computer and the Job Processing Server on another. This configuration will facilitate distributing the load of processing for the Queue and the Engine(s).

2. Click **Next >** to display the Select Features page listing the optional components available for installation.



3. Select a component using its drop-down menu and choose from the available options.



It is preferred to select the option **Entire feature will be installed on local hard drive**.

4. Click **Next >** and, if desired, change the installation directory.
5. Click **Next >** to review the installation settings.
6. Click **Next >** to install the components.
7. The system on which the JMS component(s) are installed must be rebooted. Once the Phoenix installation is complete, use the **Restart now** checkbox to indicate whether to reboot the computer at this time or not and click **Finish**.

Configuring JMS

Instructions are presented in this section to configure the following.

[Set job queue options](#)

[Point to the correct JQS](#)

[Set job processing options](#)

For more information on the configuration files mentioned, see [“Phoenix configuration files”](#).

Set job queue options

1. Open `<Phoenix_install_dir>\application\jqs.exe.config`.
2. Go to the `jobqueue` and configure the following options.

`isLocalJobQueue`: Leave as `false`.

`maxHistory`: Set the maximum number of finished/canceled jobs to keep on the queue. When this number is exceeded the oldest jobs will be removed from the queue.

`jobTimeoutInSeconds`: Set the amount of time in seconds that the queue waits to determine if a JPS machine has gone down while processing a job. If the queue does not get a heartbeat back from the processing machine continuously within this time frame, the job will be put back on the queue. Any results from the machine that timed out will not be accepted.

See [“JPS and JQS configuration files”](#) for more file information.

Point to the correct JQS

1. Stop JPS.
2. Using a text editor, open `<Phoenix_install_dir>\application\jobManagement.xml`.
3. Modify the `machineName` attribute to point to the JQS machine. This value can be an IP address or a resolvable hostname.
4. In the `channels` section, modify the `port` attribute for HTTP and/or TCP.
5. In the `server` section, set `default=true` for the channel you wish to use (HTTP or TCP).
6. Restart the server.

Console mode can be used to verify that the service is setup properly and processing jobs.

See [“Job management configuration file”](#) for more file information.

Set job processing options

1. Open `<Phoenix_install_dir>\application\jps.exe.config`.
2. Go to the `jobProcessing` section and configure the following options:

`maxProcessingThreads`: Set to the maximum number of concurrent JPS jobs to process on the machine. Factors to consider when setting the value include the number of available cores and whether MPI is also being used.

`useLocalConfigurationFile`: Leave as `true`.

`configurationFilePath`: Leave as empty.

`threadPollInterval`: Set how often in seconds the JPS will ask the queue for a job if it is not already processing one.

`gridAvailable`: Leave as false.

`heartbeatTimeInSeconds`: Set how often in seconds JPS will talk back to the queue to report that it is still processing a job. This is used in conjunction with the time out option in the queue to determine if a processing machine has gone down and the job should be returned to the queue for processing.

3. Configure the HTTP/TCP channels to pick the port that will be used to communicate with Phoenix clients and JPS nodes.
4. To have JPS use a named user license server, remove the comment “<!--” before and after the `<appSettings>` section. Change the default IP address to the named user license server’s IP address.

```
<add key="floatLicenseServer" value="127.0.0.1"/>
```

The Job Processing Server Sandbox directory is defined by *jps.exe.config*. The default location is *C:\Phoenix.JPS*, but may need to be set to another location if the default location is not acceptable. The directory name must be *\Phoenix.JPS* for the system to correctly function.

5. The sandbox directory drive letter can be changed to the letter of any local drive. The sandbox cannot be located on a networked hard drive.

The sandbox location is defined in the following two areas in *jps.exe.config*:

```
jobSandboxDirectory="C:\Phoenix.JPS"
repositoryType="Certara.Phoenix.Services.\
  ObjectBrowser.FlatRepository.FlatRepository,\
  Services.ObjectBrowser"
repositoryDirectory="c:\Phoenix.JPS"
repositoryFormatType="Binary"
```

See “JPS and JQS configuration files” for more file information.

Phoenix configuration files

Phoenix has various configuration files that are used to configure the Job Management System and set default configurations for the Phoenix desktop application. The configuration files are for the servers that process jobs submitted for remote execution. The content of these files are described in the following sections.

Phoenix configuration file

JPS and JQS configuration files

Job management configuration file

Plug-in configuration files

PhoenixRemoteSettings.xml file

Phoenix configuration file

Name:

Phoenix.exe.config

Format:

XML

Configurable Sections:

Application Settings and Logging (uses NLog: see <http://nlog-project.org> for more information).

```
<appSettings>
  <add key="KEY" value="VALUE"/>
</appSettings>
```

Keys and Values:

hideCommute=true/false: Toggles the ability to check out commuter licenses.

useDebugDirectory: Location for NLME Debug files.

```
<nlog>
  <...>
<\nlog>
```

Configurations:

<nlog globalThreshold="Trace">: Defines the logging level, default is Trace.
Valid values include: Trace, Debug, Info, Warn, Error, Fatal

JPS and JQS configuration files

Names:

jps.exe.config and *jqs.exe.config*

Summary:

jps.exe.config is the Job Server configuration file used to define the connection between the Job Server and the Job Queue. It has other settings that typically do not need modi-

fication. *jqs.exe.config* is the Job Queue configuration file used to set the ports to listen to and except for the license location is generally not modified.

Location:

Application root directory. For example, %INSTALL_FOLDER%\Phoenix\application.

Format:

XML

Configurable Sections:

Application Settings and Logging (uses NLog: see <http://nlog-project.org> more information).

```
<appSettings>
  <add key="KEY" value="VALUE"/>
</appSettings>
```

Keys and Values:

floatLicenseServer: States where the JPS named user license server is via IP Address.

serviceLicense: JPS/JQS license

useDebugDirectory: Location for NLME Debug files.

```
<nlog>
  <...>
<\nlog>
```

Configurations:

<nlog globalThreshold="Trace">: Defines the logging level, default is Trace.

Valid values include: Trace, Debug, Info, Warn, Error, Fatal

jobqueue isLocalJobQueue: Leave as false.

maxHistory: Sets the maximum number of finished/canceled jobs to keep on the queue. When this number is exceeded the oldest jobs will be removed from the queue.

jobTimeoutInSeconds: Sets the amount of time in seconds that the queue waits to determine if a JPS machine has gone down while processing a job. If the queue does not get a heartbeat back from the processing machine continuously within this time frame, the job will be put back on the queue. Any results from the machine that timed out will not be accepted.

jqs.exe.config only:

```
<jobqueue isLocalJobQueue="false" maxHistory="25"
  jobTimeoutInSeconds="300">
  <channels>
    <channel type="tcp" port="4000" />
    <channel type="http" port="8000" />
  </channels>
</jobqueue>
```

`threadPollInterval`: Sets how often in seconds the JPS will ask the queue for a job if it is not already processing one.

`heartbeatTimeInSeconds`: Sets how often in seconds JPS will talk back to the queue to report that it is still processing a job. This is used in conjunction with the `timeout` option in the queue to determine if a processing machine has gone down and the job should be returned to the queue for processing.

`maxProcessingThreads`: Ignore/Do Not Modify. Sets the maximum number of concurrent JPS jobs to process on the machine. Factors to consider when setting the value include the number of available cores and whether MPI is also being used.

`gridAvailable`: Ignore/Do Not Modify.

`maxProcessingThreads`: Ignore/Do Not Modify.

`useLocalConfigurationFile`: Ignore/Do Not Modify.

`configurationFilePath`: Ignore/Do Not Modify.

jps.exe.config only:

```
<jobProcessing maxProcessingThreads="1"
  useLocalConfigurationFile="true"
  configurationFilePath="" threadPollInterval="60"
  gridAvailable="false" heartbeatTimeInSeconds="60" />
```

See also [“Set job queue options”](#) and [“Set job processing options”](#).

Job management configuration file

Name:

jobManagement.xml

Summary:

The client configuration file used to point the client to the Job Queue. This file allows configuring of the Job Queue location and the port number to use. This file is located in the same directory as the application data configuration files mentioned earlier.

Location:

Application root directory. For example, `%INSTALL_FOLDER%\Phoenix\application`.

Format: XML

Configurable Sections:

`machineName`: The JQS machine. This value can be an IP address or a resolvable host-name.

`port`: Attribute in `channels` section for HTTP and/or TCP.

`default=true`: In the `server` section, set for the channel you wish to use (HTTP or TCP).

Example:

```

<jobManagement defaultPollInterval="60"
  usePolling="true">
  <channels>
    <channel name="tcp4000" type="tcp" port="4000"
      direction="out" />
    <channel name="http8000" type="http" port="8000"
      direction="out" />
  </channels>
  <servers localJobQueueChannelName="tcp4000">
    <server machineName="localhost" primary="true">
      <serverChannel channelName="tcp4000"
        default="true" />
      <serverChannel channelName="http8000" />
    </server>
  </servers>
</jobManagement>

```

See also ["Point to the correct JQS"](#).

Plug-in configuration files**Location:**

%APPDATA%\Certara\Phoenix

Summary:

Binary files that contain the settings found in the *Preferences* dialog (**Edit > Preferences**). They cannot be modified manually. They can only be modified by running an instance of Phoenix on the computer. After they are set by Phoenix, they can be distributed to other computers that have Phoenix installed. The files are only computer-specific in the areas of configuration files related to mapped drives. The items that can be configured are Autosave, SAS, NONMEM, R, Certara Integral, and Licensing.

Plug-In files:

NONMEM.binconfig: NONMEM configuration information.

SAS.binconfig: SAS configuration information.

pks_config.binconfig: Certara Integral instance information.

pks_saveoptions.binconfig: Certara Integral default save options.

ObjectBrowser.binconfig: General project settings and the default save options.

If licensing configuration files are moved to another computer, the following three files must be moved together:

licensing.licenses.configuration.binconfig

licensing.server.configuration.binconfig

licensing.service.configuration.binconfig

PhoenixRemoteSettings.xml file

Location:

`%APPDATA%\Certara\Phoenix` (if file been updated using **Edit > Preferences > Remote Settings**, otherwise, the copy located in `%INSTALL_FOLDER%\Phoenix\application` will be used)

Summary:

Configurable settings for remote execution.

Configurations:

`logLevel`: Set the amount of information to store in the log file. Levels include:

- `prod`: Production is the default level and the least verbose.
- `test`: Testing reports slightly more detail than `prod`.
- `debug`: Essentially a dump of information.

`logPath`: Sets the location in which to store the log files generated by the Remote Phoenix Server. If `logPath` is not specified, log files are written to `\<user_data\Application Data\Certara\Phoenix\Logs`.

`server name`: Server name.

`root`: Context root.

`port`: Server port.

`use SSL`: `true/false` whether to use the secure socket layer.

`timeout`: Server timeout value.

`executeRemotely`: Set to `true` for all process types you wish to be executed by the RPS. All other process types should be set to `false`.

See also [“Configure the JPS to use the RPS”](#).

Configure the JPS to use the RPS

In addition to being able to execute Phoenix objects, the JPS can be configured to send certain pieces of work to a remote server for execution. For instance, assume that NONMEM is already installed on a server somewhere in the organization. The JPS can be configured so that all NONMEM jobs are executed on the server where NONMEM and the Phoenix Remote Server are already installed. Phoenix objects that can be setup for remote execution include Phoenix Model, NONMEM Shell, R Shell, SAS Shell, and PsN Shell.

When JPS sends part of a job for remote execution, JPS will wait for the execution results to return before continuing with the rest of the job.

1. Stop the JPS.
2. Using a text editor, open *PhoenixRemoteSettings.xml* which is located in the Phoenix application folder on the JPS machine.
3. Modify the server element so that it references the RPS Queue Server.
4. Set `executeRemotely` to `true` for all process types you wish to be executed by the RPS. All other process types would be `false`.
5. After saving your changes to *PhoenixRemoteSettings.xml*, restart JPS.

See “[PhoenixRemoteSettings.xml file](#)” for more file information.

Deploy the RPS Queue and Processor

The Remote Phoenix Server Queue (RPS Queue) is a Java servlet that runs in a Java servlet container. Tomcat must be installed on a computer that the JPS machine can ping. (Refer to the “[Remote Processing Server](#)” for more information.) The following instructions assume that Tomcat is being used.

[Deploy the RPS Queue](#)

[Deploy the RPS Processor in Console mode](#)

[Deploy the RPS Processor as an Automatic Windows Service](#)

Deploy the RPS Queue

1. Install Apache Tomcat after the latest JDK is installed.
2. Shutdown Tomcat.
3. Copy *PhoenixServer.war* to `%TOMCAT_HOME%\webapps`.
4. Restart Tomcat.

The RPS Processor is installed on the same machine as the third-party software (for NLME execution, no additional software is required). Currently, there are remote processors for NLME, NONMEM, PsN, R, and SAS. The RPS uses a plug-in architecture and it is possible to add processors not shipped with Phoenix.

Any number of RPS Processors can be configured and each one can be limited to processing specific job types.

Deploy the RPS Processor in Console mode

1. Copy *PhoenixJobProcessor.zip* to the machine that will perform the execution.

The executing machine must be able to ping the RPS Queue machine.

2. Create a new folder where RPS Queue will be installed.
3. Unzip *PhoenixJobProcessor.zip* into the new installation folder.
4. Modify the *serverConfig.xml* file according to your needs.

It must reference the RPS Queue Server and have the correct executable path value specified. For example, *C:\Program Files\R\R-3.6.0\bin\R.exe* for R version 3.6.0. If the executing machine has multiple processors, the `maxProcesses` attribute can be increased to an appropriate number, and the RPS will process up to that many jobs simultaneously.

Valid values must be present in the *serverConfig.xml* for communicating with the Web server (DNS name or IP address), root (default is PhoenixServer), Web server port, SSL configuration, timeout, and pollinterval.

5. After saving changes to *serverConfig.xml* start the RPS Processor by opening a command window, navigating to the installation folder, and typing:

```
java -jar PhoenixJobProcessor.jar
```

Deploy the RPS Processor as an Automatic Windows Service

1. Copy *PhoenixJobProcessor.zip* to the machine that will perform the execution.

The executing machine must be able to ping the RPS Queue machine.

2. Create a new folder where RPS Queue will be installed.
3. Unzip *PhoenixJobProcessor.zip* into the new installation folder at the root of this folder.
4. Modify the *serverConfig.xml* file according to your needs.

It must reference the RPS Queue Server and have the correct executable path value specified. For example, *C:\Program Files\R\R-3.6.0\bin\R.exe* for R version 3.6.0. If the executing machine has multiple processors, the `maxProcesses` attribute can be increased to an appropriate number, and the RPS will process up to that many jobs simultaneously.

Valid values must be present in the *serverConfig.xml* for communicating with the Web server (DNS name or IP address), root (default is PhoenixServer), Web server port, SSL configuration, timeout and pollinterval.

5. Edit the file *install_service.bat* to reflect the location of the folder created in Step 2 for the following entries, editing only the path statement after each of these parameters.

```
{setjob_processor_home=}
{job_processor.exe //IS//PhoenixJobProcessor --Install=}
```

6. Save and close the batch file.
7. Execute the batch file as an administrative user on the target Windows system.

Optionally, the Windows Service can be set to start automatically. Doing this prevents the need to restart this service after each reboot in order to enable the processing of jobs sent to the RPS Queue.

8. To edit the Windows Service startup option:
 - a. Click **Start** or **Start Orb** and select the **Run** option.
 - b. Type *Services.msc* and press **Enter**. This opens the Services Console Window.
 - c. Find and double-click the Service named **Phoenix Job Processor**, unless you edited the installation batch file to change this name.
 - d. Change the **Startup** type for this service to **Automatic** and click **Start**.

Troubleshooting

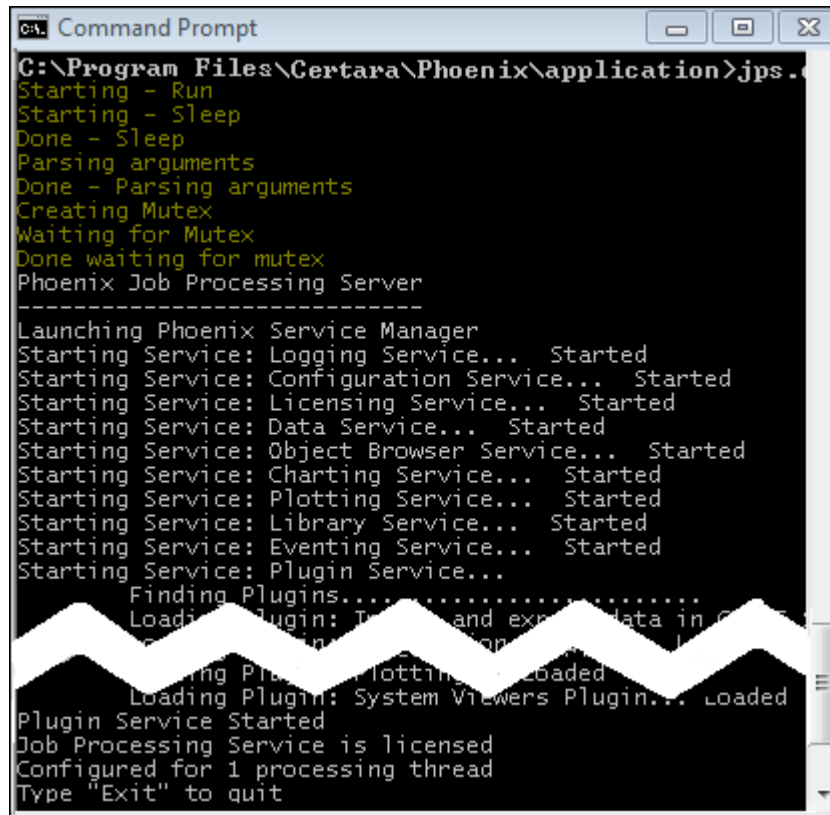
The Services can be invoked, if necessary, in **Console** mode via the following procedure. It is only necessary to invoke the Services in Console mode for troubleshooting.

Start Job Processing Server in Console mode

1. Stop the service you want to run via command line in the Services console.
2. Open a command prompt window and navigate to the location of the Phoenix installation (e.g., for 64-bit machines: *C:\Program Files (x86)\Certara\Phoenix\application*).
3. Type the following text to start the Phoenix Job Processing Server:

```
jps.exe /console
```

After pressing the **Enter** key, the Server will load and verify that it has access to a license to operate. If no named user license server is defined in the *jps.exe.config* file, it will not complete startup. The screen capture below illustrates a successful loading of the Job Processing Server.



```
C:\Program Files\Certara\Phoenix\application>jps.exe
Starting - Run
Starting - Sleep
Done - Sleep
Parsing arguments
Done - Parsing arguments
Creating Mutex
Waiting for Mutex
Done waiting for mutex
Phoenix Job Processing Server
-----
Launching Phoenix Service Manager
Starting Service: Logging Service... Started
Starting Service: Configuration Service... Started
Starting Service: Licensing Service... Started
Starting Service: Data Service... Started
Starting Service: Object Browser Service... Started
Starting Service: Charting Service... Started
Starting Service: Plotting Service... Started
Starting Service: Library Service... Started
Starting Service: Eventing Service... Started
Starting Service: Plugin Service...
Finding Plugins...
Loading Plugin: T... and exp... data in C...
Loading Plugin: Plotting... Loaded
Loading Plugin: System Viewers Plugin... Loaded
Plugin Service Started
Job Processing Service is licensed
Configured for 1 processing thread
Type "Exit" to quit
```

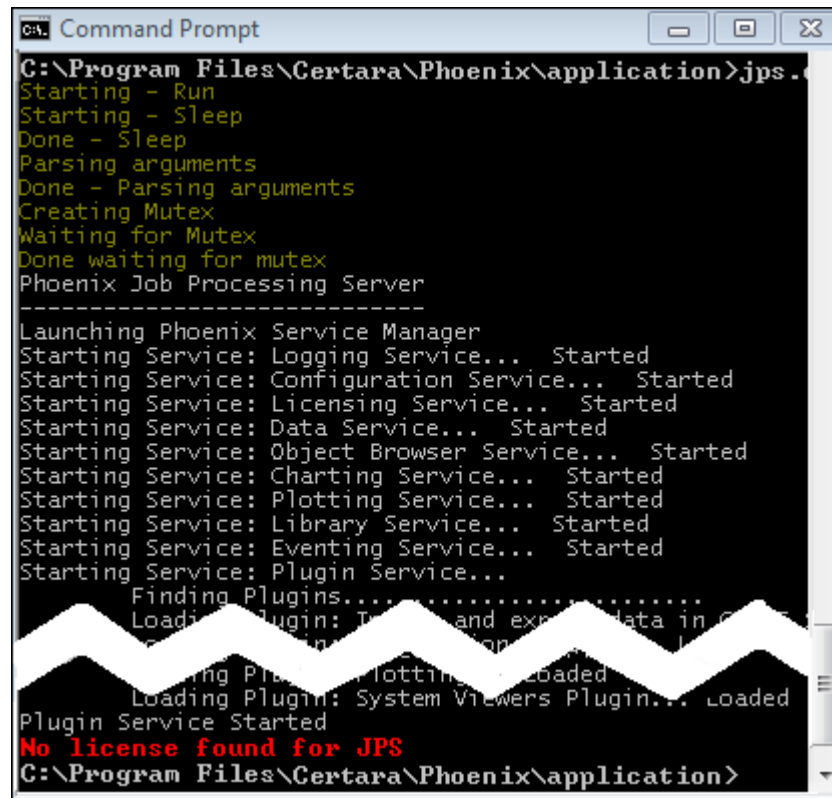
Start Job Queue Server in Console mode

1. Open a command prompt window and navigate to the location of the Phoenix installation (e.g., for 64-bit machines: *C:\Program Files (x86)\Certara\Phoenix\application*).
2. Type the following text to start the Phoenix Job Queue Server:

```
jqs.exe /console
```

The end result is that you have two command prompt windows open that can be minimized but not closed.

If a JMS component cannot pass licensing, it will not run as a Service. When run in Console mode, an entry in the command line interface will clearly show that a license could not be acquired.



```
C:\Program Files\Certara\Phoenix\application>jps.  
Starting - Run  
Starting - Sleep  
Done - Sleep  
Parsing arguments  
Done - Parsing arguments  
Creating Mutex  
Waiting for Mutex  
Done waiting for mutex  
Phoenix Job Processing Server  
-----  
Launching Phoenix Service Manager  
Starting Service: Logging Service... Started  
Starting Service: Configuration Service... Started  
Starting Service: Licensing Service... Started  
Starting Service: Data Service... Started  
Starting Service: Object Browser Service... Started  
Starting Service: Charting Service... Started  
Starting Service: Plotting Service... Started  
Starting Service: Library Service... Started  
Starting Service: Eventing Service... Started  
Starting Service: Plugin Service...  
Finding Plugins...  
Loading Plugin: T... and exp... data in C...  
Loading Plugin: T...  
Loading Plugin: Plotting... Loaded  
Loading Plugin: System Viewers Plugin... Loaded  
Plugin Service Started  
No license found for JPS  
C:\Program Files\Certara\Phoenix\application>
```

JMS Admin Tool

Note: The JMS Admin Tool should only be installed on the machines of JMS administrators. It is not included in a typical Phoenix installation.

Install the JMS Admin Tool

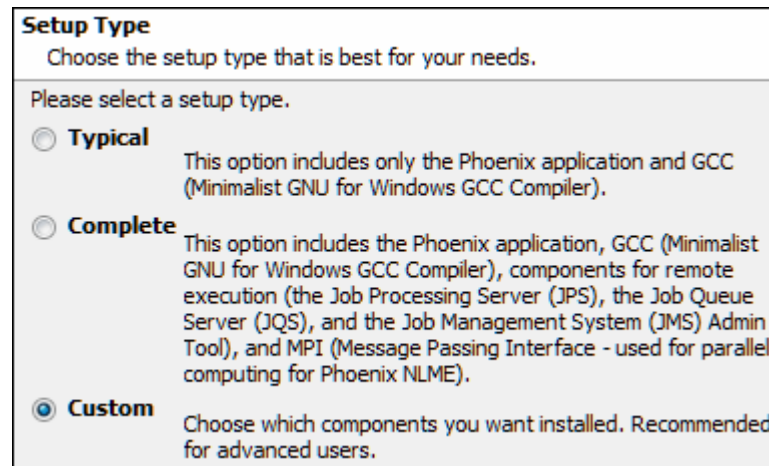
Start the Admin Tool

Change job priority

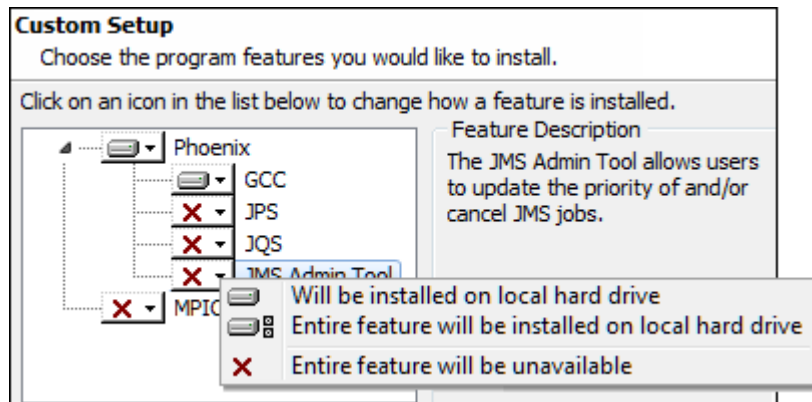
Cancel a job

Install the JMS Admin Tool

1. Select the **Custom** option during Phoenix installation.



2. Expand the **Phoenix Application** node.
3. Select **Will be installed on local hard drive** for the **JMS Admin Tool** feature.



4. Continue with Phoenix installation.

Start the Admin Tool

1. Open Windows Explorer.
2. Navigate to the Phoenix installation directory (e.g., for 64-bit machines: `C:\Program Files (x86)\Certara\Phoenix\application`).
3. Double-click **JobManagementAdmin.exe**.

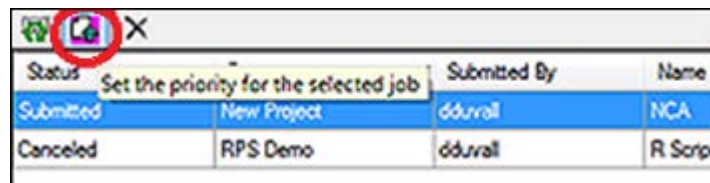
Once the application is started it will display a list of jobs currently in the JMS queue.

Status	Project	Submitted By	Name	Source Project	Submit Time	Processing Time	Priority
Submitted	New Project	dduvall	NCA	C:\Users\dduvall\Doc...	Tuesday, December...	00:00:00	Normal
Canceled	RPS Demo	dduvall	R Script	C:\Users\dduvall\Doc...	Thursday, February...	734534 days,16:...	Normal

Jobs are displayed in the order that they will be executed with the job that will be executed first at the top of the list.

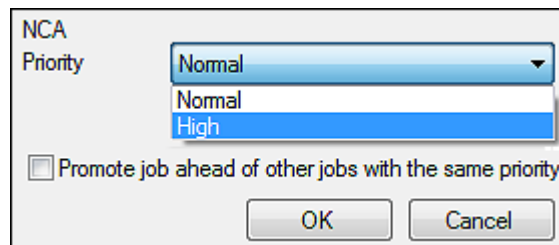
Change job priority

1. Click the **Set the priority for the selected job** icon in the toolbar.



Status	Project	Submitted By	Name
Submitted	New Project	dduvall	NCA
Canceled	RPS Demo	dduvall	R Script

2. Use the *Priority* dialog to change the priority or promote the job within its priority.



NCA
Priority

Normal

Normal

High

☐ Promote job ahead of other jobs with the same priority

OK Cancel

3. Click the **Promote job...** checkbox to execute the job before other jobs with the same priority, even if they were submitted prior to the job. If more than one job within a priority have been promoted, then submission time will determine which will be processed first.

Cancel a job

1. Select the job to be canceled.
2. Click **Cancel Job** icon in the toolbar.



Status	Project	Submitted By	Name
Submitted	New Project	dduvall	NCA
Canceled	RPS Demo	dduvall	R Script

Using JMS from within Phoenix

The following topics describe how to use JMS within a Phoenix session:

- JMS preferences

- Submit a job

- Jobs Viewer

- Merging results

- Manage jobs within a project

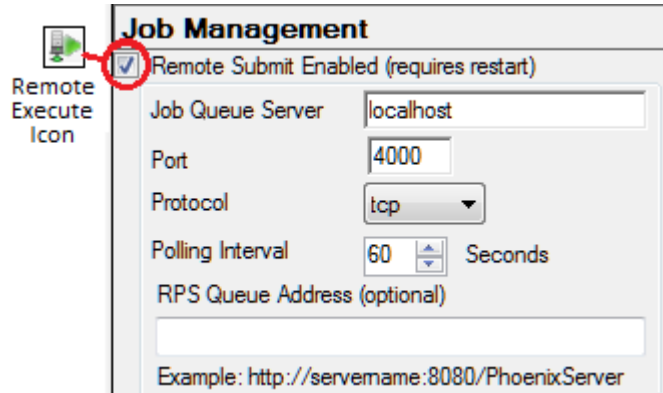
JMS preferences

Access Job Management configuration within Phoenix via the *Preferences* dialog (**Edit > Preferences**).

Set JMS preferences

1. In the *Preferences* dialog, expand **Remote Execution** and select **JMS**.
2. Check the **Remote Submit Enabled** box.

If the checkbox is not checked, the **Remote Execute** icon in the Phoenix toolbar is present but disabled. When checked, the icon is enabled, allowing jobs to be sent to the JQS.

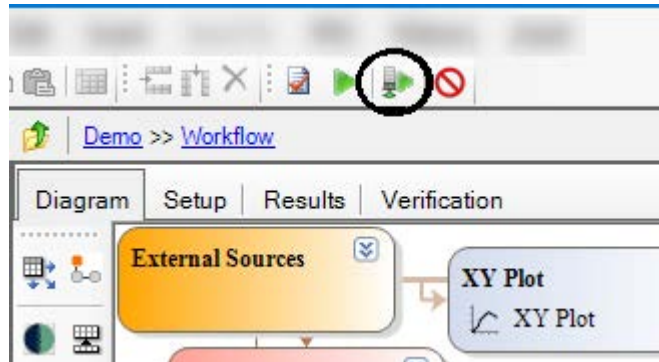


3. The **Job Queue Server** name (DNS Name or IP address), **Port**, and **Protocol** should be provided to you by you administrator.
4. In the **Polling Interval** field, enter how often you want your local client to sync up with the JQS.
5. In the **RPS Queue Address** field, optionally enter the fully qualified address of the RPS queue (e.g., `http://myserver:8080/PhoenixServer`).

Submit a job

JMS is intended to facilitate the off-loading of Phoenix processing to a remote source allowing work to continue while large and time consuming workflows are processed. These workflows and executable objects are later merged in to the originating Phoenix project.

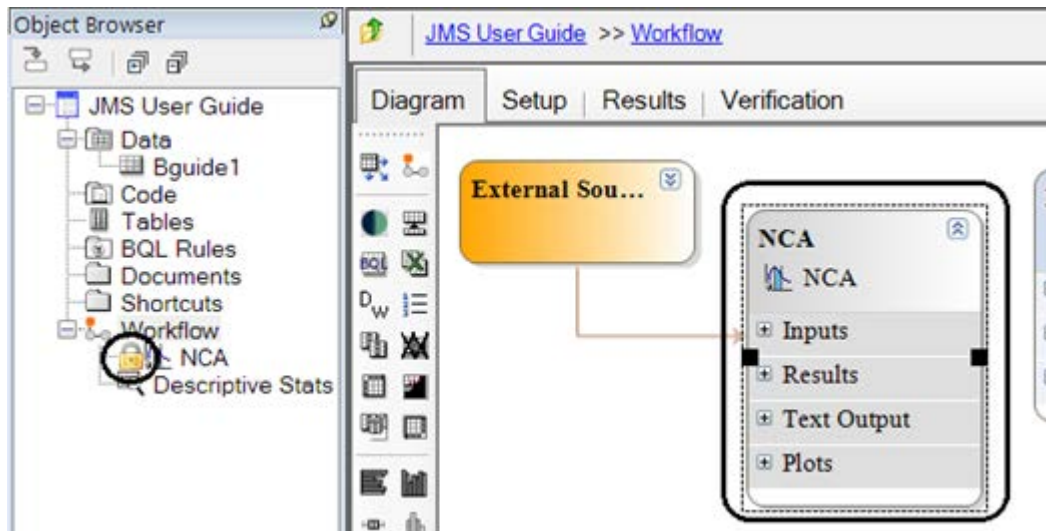
To perform a remote execution of an object, click the **Remote Execute** icon in the Phoenix toolbar and select **Yes** in the *Remote Execution Confirmation* dialog.



The next dialog confirms successful submission to the remote Job Queue (JQS) of the job. Any executable that is not out-of-date or otherwise requiring executing cannot be submitted as a job.

If the remote machine cannot be reached, a dialog will display an error message and the locked objects will become unlocked.

Once the job is submitted, changes to any of the sources or dependents of the object(s) being executed are not permitted. They are in read-only state so that changes that happen to the objects on the server can be merged into the project. However, new objects can be added and multi-tasking can occur within the project while the job is executing. The exception is if the root workflow of the project is submitted. Locked workflows do not allow insertion or deletion of executables.



In the previous image, NCA has been submitted as a job, note the color in the diagram and the lock icon in the Object Browser

Viewing the history for any of the objects will reveal an entry showing that the object was executed remotely.




	Timestamp	User	Object Name	Event	Description
▶	2015.03.03 1:10:00 UTC	Authorized User	Descriptive Stats	Object Created	Object Created
	2015.03.03 1:10:00 UTC	Authorized User	Descriptive Stats	Executed	Include Percentiles = False Executed Remotely Submitted by User Authorized User from WXPSP202K3 Processed on WXPSP202K3
Properties Information History					

Note: Projects executed on the Job Management Service will report local times in the History for that object. If the Server and Workstation times are not in sync, this could lead to events appearing to have occurred out of order. The system administrator should always attempt to keep all network participants time in sync.

A message in the Status Bar indicates when the remote execution completes. (Information also appears in the Status Bar when there is communication from the client to the JQS (e.g., sending job, receiving job results)).

Jobs Viewer

The *Jobs Viewer* is used to monitor jobs as they are being processed, and to merge results back into projects. Other work can continue and the Jobs Viewer checked at a later time via the **Window > View Jobs** menu option (CTL+J).

File Action Help						
						
Status	Project	Submitted By	Name	Source Project	Submit Time	Processing Time
Finished	Workflow	Authorized User	Workflow	C:\Documents...	Friday,	00:00:38
Finished	NONMEM_LocalR...	Authorized User	NONMEM	C:\Documents...	Thursday,	00:00:22
Finished	RScript	Authorized User	R Script	C:\Documents...	Thursday,	00:00:10
Finished	SAS_Example1	Authorized User	SAS	C:\Documents...	Thursday,	00:00:16
Finished	JMS_Baseline	Authorized User	JMS	C:\Documents...	Thursday,	00:01:51
Finished	PK1_PD101_cmd	Authorized User	Workflow	C:\Documents...	Thursday,	00:00:17
Finished	SigmaPlot_Base	tmuntz	SigmaPlot	C:\Documents...	Thursday,	00:00:17
Canceled	NONMEM_LocalR...	tmuntz	NONMEM	C:\Documents...	Wednesday,	20:15:42
Finished	NONMEM_LocalR...	tmuntz	NONMEM	C:\Documents...	Wednesday,	00:00:13
Last Updated: <input type="checkbox"/> Filter out Finished/Canceled jobs <input type="checkbox"/> Filter out jobs from other users						

The *Jobs Viewer* displays several properties of the jobs including:

Status: Displays where the job is in the processing flow. The typical ordering of the states is.

Submitted: Job is on the queue waiting to be processed.

Processing: Job is being processed by a Job Processing (JPS) node. In this state, there will be additional information letting you know what machine it is being processed on and how long it has been running.

Results in Queue: Job has finished processing and the results can be merged back into the original project.

Finished: Job was completed and results merged back into the project.

Canceled: Job was canceled by the user.

Project: The name of the project from which the job was submitted.

Submitted By: The username of the person who submitted the job.

Name: The name of the object submitted.

Source Project: The full path to the project from which the job was submitted.

Submit Time: The day, month, year, and time the job was submitted.

Processing Time: The length of computational time it took to complete the job.

The checkboxes at the bottom of the viewer enable quick filtering of the listed jobs (**Filter out Finished/Canceled jobs** or **Filter out jobs from other users**). By default, only jobs submitted by the current user that are actively executing are listed.

Job Viewer toolbar icons include:



Cancel the execution. (A confirmation dialog will display.)



Refresh of the viewer list.



Merge a selected job.

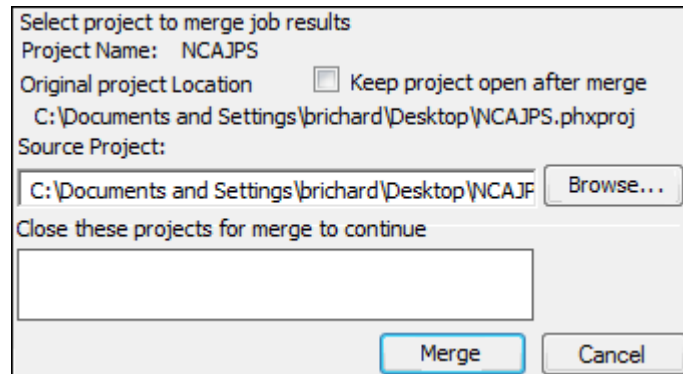
The RPS queue can also be accessed via the *Jobs Viewer* through the **Action > View RPS Queue** menu item.

Merging results

Merging results requires the original project file, that the project (or a copy of the project) is not currently opened in Phoenix, and nothing is currently executing.

Merge results

1. When the submitted Workflow is at a Status of **Results in Queue**, click **Merge** (or select the **Action > Merge** menu item.)
2. In the *Job Results Merge* dialog, use the **Keep project open after merge** checkbox to indicate if the project remain open or be closed after merging. (The default is to keep it open).



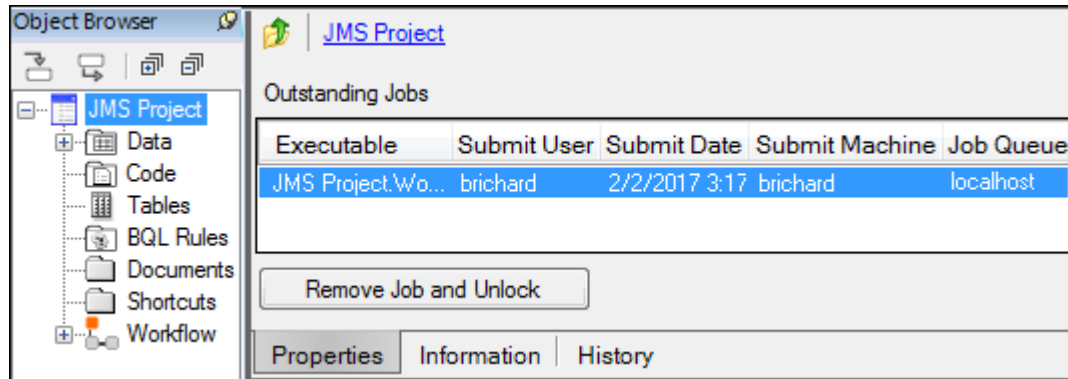
3. Click **Browse** to select an alternate source project with which to reconcile the results.
If the source project, a project with the same name, or a project that has ID conflicts is already open in Phoenix, it is listed in the **Close these projects for merge to continue** area.
4. Click **Merge** to merge the results.

When the data merge is complete, the *Job Results Merge* dialog will close and the status of the merged entry will change to **Finished**.

Note: *The results of a job can only be merged once.*

Manage jobs within a project

In the event of canceling a job, the project the job was sent from remains locked. In this scenario, you will need to remove the job from the project to unlock the locked objects. This is done from the project root's property panel by selecting the job to remove and clicking **Remove Job and Unlock**.



This permanently removes the job information from the project and unlocks the objects. Only do this if you no longer wish to merge the jobs results back into the project. Once the project is saved this cannot be undone the deleted job will no longer merge into the project.

Note: A user can only delete jobs that they have submitted from the JMS queue. Only the Admin has the ability to delete any job from the queue.

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