1 Table of Contents

2 Introduction

JAMS Components

JAMS consists of the following individually installable components:

JAMS Client

The JAMS Client includes a Windows-based GUI, PowerShell Cmdlets, a PowerShell provider, a separately configurable Web Browser Interface, and a .NET-based Class Library.

JAMS Scheduler for Windows

The JAMS Scheduler includes background services that maintain and execute JAMS Jobs.

JAMS Agent for Windows

The JAMS Agent for Windows includes background services that execute JAMS Jobs under the direction of a JAMS Scheduler on a different machine.

JAMS Scheduler for OpenVMS

The JAMS Scheduler for OpenVMS includes background processes that maintain and execute JAMS Jobs. It also includes OpenVMS-specific command-line and character-cell Clients and an OpenVMS-specific sharable image.

JAMS Agent for OpenVMS

The JAMS Agent for OpenVMS includes background processes that execute JAMS Jobs under the direction of a JAMS Scheduler on a different machine.

JAMS OpenVMS Connection Server

The JAMS OpenVMS Connection Server includes a Windows-based background service that acts as a middle tier between the JAMS Client components on Windows and the JAMS Scheduler on OpenVMS.

Visit the JAMS Support site for Release Notes that will keep you up to date on changes and upgrades. You will also find articles on various JAMS components.

3 Using Windows as Your Scheduler

JAMS for Windows is delivered in two basic packages: the Developer's Edition and Full Edition.

JAMS Developer's Edition

The JAMS Developer's Edition is a free limited version that's great for learning, developing, testing, or simply to automate your workstation. The Developer's Edition can only be installed on workstation versions of Windows (Windows XP, Windows Vista, or Windows 7).

The Developer's Edition is packaged as SetupJAMSDE.exe for 32-bit versions of Windows and SetupJAMSDEx64.exe for 64-bit versions of Windows.

These setups contain the JAMS Client component and the JAMS Scheduler Developer's Edition component. The JAMS Client component is *exactly* the same as the JAMS Client component in every other edition of JAMS. The JAMS Scheduler component is basically the same as the standard JAMS Scheduler with some limitations.

JAMS Full Edition

The JAMS Full Edition can be installed on any supported version of Windows. It must also have a license installed before the JAMS Scheduler will function. Different versions of Windows (Standard, Enterprise, Datacenter, etc.) require the corresponding JAMS license.

The Full Edition is packaged as SetupJAMS.exe for 32-bit versions of Windows, and SetupJAMSx64.exe for 64-bit versions of Windows.

These setups contain the JAMS Client component, the JAMS Scheduler component, and the JAMS Agent component.

JAMS Demo Edition

The JAMS Demo Edition is the same as the JAMS Full Edition, but it includes a time-limited demonstration license. If you install the Demo Edition and decide to purchase a license, there is *no* need to reinstall or upgrade from the Demo Edition to the Full Edition; you only need to install a non-demonstration license.

The Demo Edition is packaged as SetupJAMSDemo.exe for 32-bit versions of Windows and SetupJAMSDemox64.exe for 64-bit versions of Windows.

Next Steps

Prerequisites (Section 3.1.1)

Starting the JAMS Setup (Section 3.1.2)

3.1 Installing JAMS

These topics describe installing JAMS in a Microsoft Windows environment.

3.1.1 Prerequisites

The JAMS self-extracting setups will check for and install all prerequisites. If you extract the Windows Installer MSIs (see **Alternate Installation Options (Section 3.1.7)**), then you must install the prerequisites before installing the MSI.

.NET Framework V4.0

The JAMS Client and Scheduler require V4.0 of the .NET Framework. When you start a JAMS setup, the first thing it

checks for is V4.0 of the .NET Framework. It it's not installed, the setup will ask you to accept Microsoft's license agreement and then it will download and install the Framework.

Installing V4.0 of the .NET Framework will require a reboot.

.NET Framework V2.0

The JAMS Agent, WebServices and WebControls require V2.0 (or higher) of the .NET Framework.

Microsoft Message Queue

The JAMS Scheduler requires Microsoft Message Queue (MSMQ). If you choose to install the JAMS Scheduler component, the setup will check for MSMQ and, if it's not installed, the setup will ask you to confirm that you want to install it.

MSMQ is included with Microsoft Windows, but it is optional and is not installed by default.

Microsoft SQL Server

The JAMS Scheduler requires Microsoft SQL Server 2005, 2008 or 2012. JAMS does not support SQL 2000. SQL Server does *not* need to be installed on the same machine that the JAMS Scheduler is installed on. If you choose to install the JAMS Scheduler component, the setup will check for an SQL Server; if it's not installed, the setup will ask if you would like to install SQL Server 2012 Express Edition. You also have the option of using SQL Server on a different machine. Note that when the installer checks for SQL Server, it only looks for the default instance names of MSSQLSERVER and SQLEXPRESS. If you have a difference instance that you would like to use, just decline to install SQL Express and specify you instance when the JAMS installer asks for the name and instance of your SQL Server.

PowerShell

The JAMS Client component includes a PowerShell Snap-In that contains a number of JAMS cmdlets and a JAMS Provider. PowerShell is *not* required; if you want to use these, you must install PowerShell *before* you install JAMS. If you install PowerShell after you install the JAMS Client, you can reinstall the JAMS Client to pick up the JAMS Snap-In.

JAMS supports both V1.0 and V2.0 of PowerShell.

Read the following article on the JAMS Support site for more information:

Recommended Server Specifications

Next Step

Starting the JAMS Setup (Section 3.1.2)

3.1.2 Starting the JAMS Setup

To Install JAMS

1. Log on to Windows using an account with administrator privileges.
2. Run the SetupJAMS executable and the JAMS setup wizard starts.
3. On the **Welcome** page, verify that this is the proper edition and version and click **Next**.
4. On the **License Terms** page, review the terms. If you accept the terms and conditions, select **I accept the terms of the License Agreement**, and then click **Next**.
5. On the **Feature Selection** page, select the features that you want to install or upgrade, and then click **Next**.

6. On the **Select Target Directory** page, select a target directory or accept the default, and then click **Next**. If this is an upgrade, the target directory cannot be modified.
7. You may be presented with a page that asks you to confirm that you want to install MSMQ.
8. You may be presented with a page that asks if you want to download and install SQL Server Express Edition.
9. You are presented with a **Finish** page. Click **Finish,** and the installation will begin.
10. If you elected to install the JAMS Scheduler and this is the first time that it has been installed, you will be asked additional questions about creating the initial JAMS database. For details, see **Installing the JAMS Scheduler (Section 3.1.4)**.

Read the following articles on the JAMS Support site for more information:

JAMS Services fail to start

SQL Server Express install fails

3.1.3 Installing the JAMS Client

Installing the JAMS Client will install:

- The JAMSWin.exe GUI client
- A Start Menu shortcut to JAMSWin.exe
- The JAMSShr.dll Class Library
- The JAMS PowerShell Snap-In (only if PowerShell is installed at the time of the JAMS Client installation)
- The JAMS.exe command line tool
- Help files

Read the following article on the JAMS Support site for more information:

JAMS Command Line Environment

3.1.4 Installing the JAMS Scheduler

Installing the JAMS Scheduler will install the JAMS Scheduler, JAMS Server, and JAMS Executor services. If this is the initial installation of the JAMS Scheduler, you will be prompted for additional configuration information when the installer needs to configure the JAMS database.

Creating the JAMS Database

After a successful install, a database creation wizard starts, which takes you through the steps for creating your JAMS database.

If you cancel the JAMS database creation wizard, JAMS is still installed, but it can't function without a database. You do *not* need to reinstall JAMS; you can restart the database creation wizard by following the instructions at the bottom of this page.

The database creation wizard will walk you through the following steps:

Support Contact Information

The Support Contact Information page asks for information that will be sent to JAMS technical support in the event of a failure. This information includes:

- Company Name
- Contact Name
- Phone Number

- E-Mail Address
- SMTP Server

All of these fields are self-explanatory and optional, but providing accurate information can help us provide better support. All of this information is easily changed at a later time, so if you're unsure you can leave any field blank and supply it later.

SQL Server

3.1.4.1 Select the SQL Server

This is where you specify the name of the SQL Server machine and the SQL Instance. If SQL Server is installed on the local machine, the default will be (local). If the server you want isn't listed in the pulldown control, you can enter the name and instance.

3.1.4.2 Database Name

This is the name of the database that will be created. The default is JAMS, which will usually work. You need to change this to a unique name if, for example, you are running the JAMS Scheduler on two different machines but they are both sharing the same SQL Server machine.

3.1.4.3 Authentication

Select the type of authentication to use when creating the JAMS database. If you select SQL Server Authentication, you must also supply a database user name and password.

Location of JAMS Database Files

Production JAMS installers allow you to specify the location of JAMS database files. Demo and Developer Editions always use default locations.

The JAMS database is divided into three data files and a log file. The default location for these files is all on one disk, which may not be appropriate for all sites.

These paths are on the database server machine, which may not be the same as the machine where you are installing JAMS.

3.1.4.4 Primary File

The Primary data file contains most of the database tables. These tables store the definitions of JAMS objects. Data is inserted and deleted only when JAMS objects are created or deleted.

3.1.4.5 Volatile File

The Volatile data file contains database tables that have records inserted and deleted whenever a task executes. This could equate to hundreds or thousands of inserts/deletes per day.

3.1.4.6 History File

The History data file contains historical database tables. A record is inserted every time a task is executed. Depending upon how much history you choose to keep, this data file could grow very large.

3.1.4.7 Database Logs

The database log file holds transaction information that is used to recover the database in case of a failure. If possible, you should place the database log file on a different disk than the other database files.

Default Directories

Production JAMS installers allow you to specify the default location of JAMS temporary files and log files. Demo and Developer Editions always use default locations.

These paths must be on the local machine.

3.1.4.8 Temporary Files

In many cases, JAMS needs to create a temporary script file when a Job is executed. These temporary script files will be created in the directory specified here. You can change this directory using the **Configuration** menu option in the JAMS GUI Client.

3.1.4.9 Job Log files

When a Job is executed, JAMS keeps a log of the run. You can specify the location of the log in the Job Definition or in the Job's System Definition. If the location isn't specified in one of those two places, it defaults to the value specified here. You can change this directory using the **Configuration** shortcut menu option in the JAMS GUI Client.

Account Information

When the JAMS database is initially loaded, a System named JAMS is created along with a number of Jobs. There are also a number of Sample Jobs installed. These Jobs cannot run unless they have a user account to run under. You are presented with a dialog asking you for user name and password that should be used for these Jobs.

If you don't enter a user name and password, it can easily be added at a later time.

Recovering from Problems

To restart the JAMS database creation wizard:

1. Open a command window (PowerShell or CMD.EXE).
2. Set your default directory to the JAMS Scheduler directory (C:\Program Files\MVPSI\JAMS\Scheduler is the default).
3. If the file Common.config exists, delete it.
4. Enter the command: JAMSDBA INSTALL

Read the following articles on the JAMS Support site for more information:

JAMSDBA Utility

Moving the JAMS SQL Database

Permissions to Convert SQL Agent Jobs

Using the SQL Server Agent Job Monitor

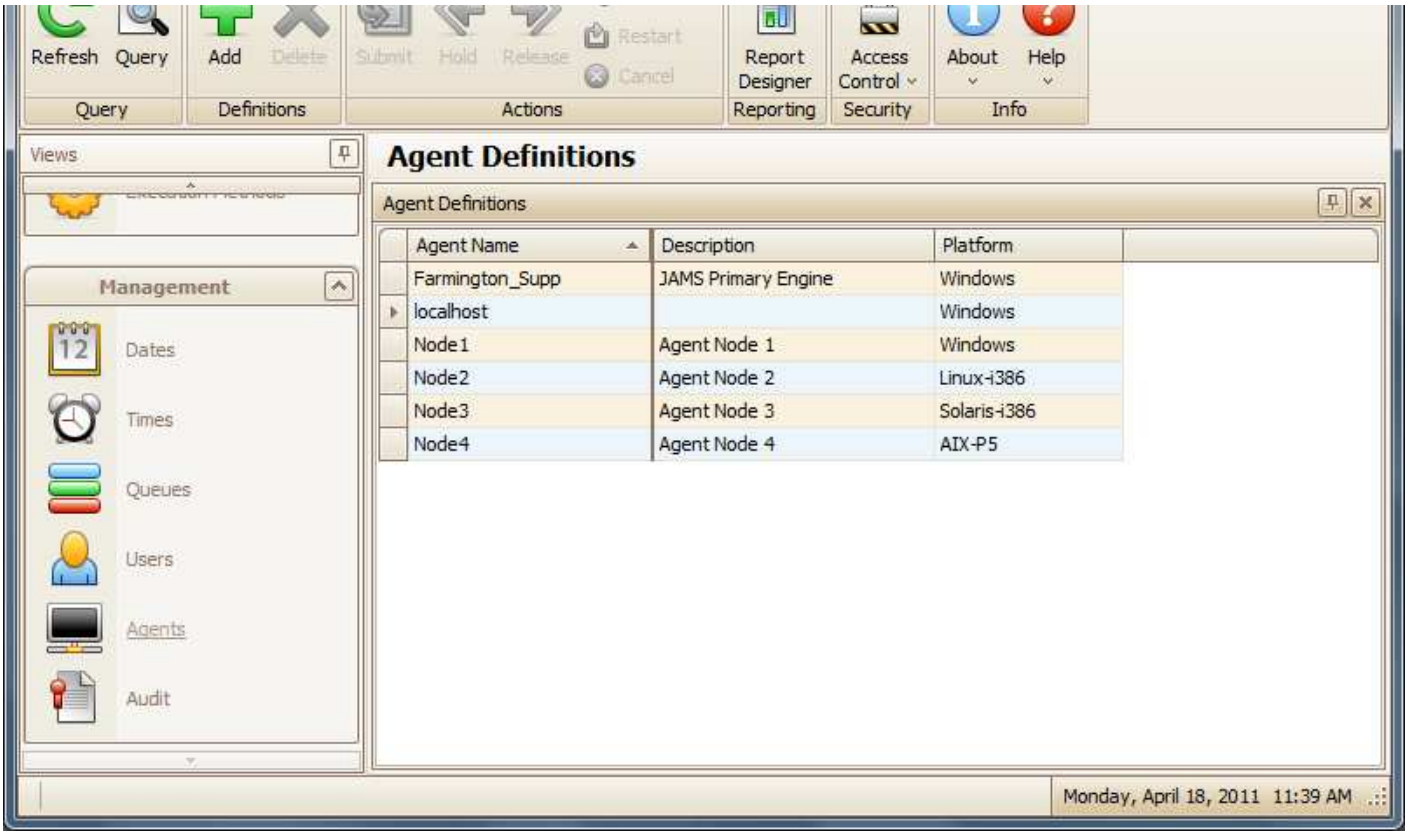
SQL Server Express install fails

3.1.5 Installing the JAMS Agent

There are many different Agents available for JAMS. Each Agent is designed and built for a specific platform and enables the JAMS Scheduler to execute Jobs on that platform.

Most of the JAMS Agents are installed along with the JAMS Scheduler. You can then use the JAMS Client to deploy the Agent to the servers where it is needed. This is the easiest way to install the JAMS Agent.

To deploy the JAMS Agent from the JAMS Client, click on the **Agents** shortcut to display the list of Servers known to JAMS.



Click the **Add** button to add a new server, and a wizard will walk you through adding an Agent machine definition. The wizard will ask if you want to deploy the JAMS Agent. If you do deploy, JAMS will submit a Batch Job that will deploy the correct Agent to the machine.

To update or reinstall the Agent on an existing Agent Server, right-click on the Server and pick **Deploy** from the pop-up menu.

Read the following article on the JAMS Support site for more information:

Deploying JAMS Agents

3.1.6 Installing the JAMS Web Services

The JAMS Web Services expose a subset of the JAMS .NET Class Library as web services. You can develop applications that call these web services. These web services are used by our JAMSWebClient command line tool.

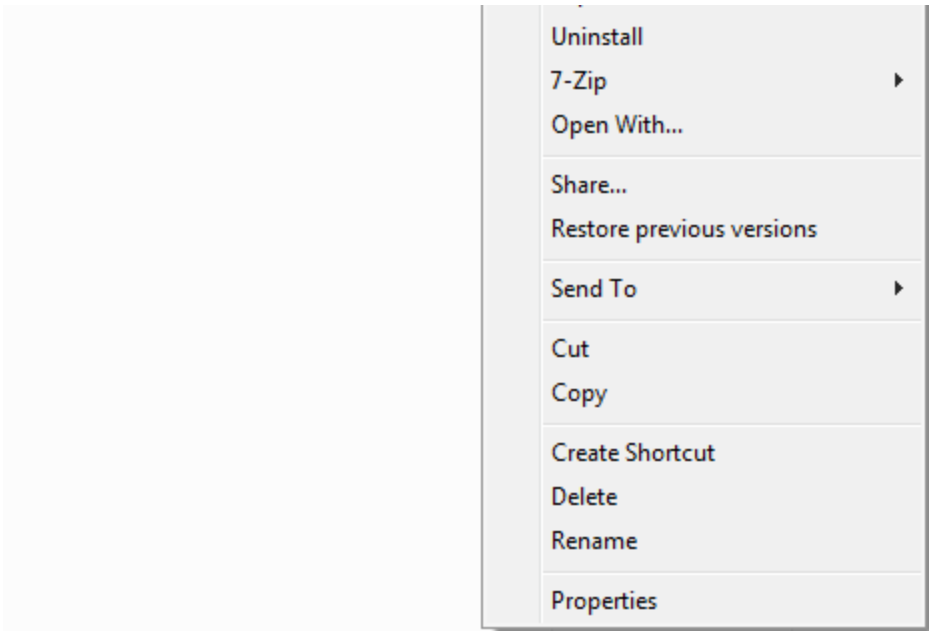
Installing the JAMS Web Services is a two-step process:

1. Run the SetupWebServices MSI
2. Configure IIS

Installing JAMS WebServices

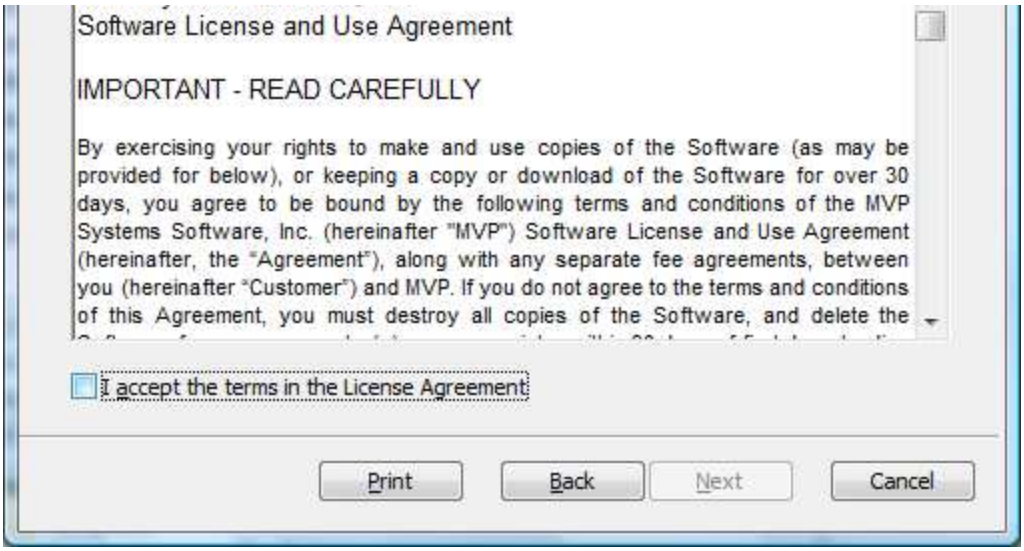
Start the SetupWebServices MSI that is appropriate for your system (SetupWebServices.msi for 32-bit Windows or SetupWebServicesx64.msi for 64-bit Windows).

1. Right-click on **SetupWebServices.msi** and choose **Install.**

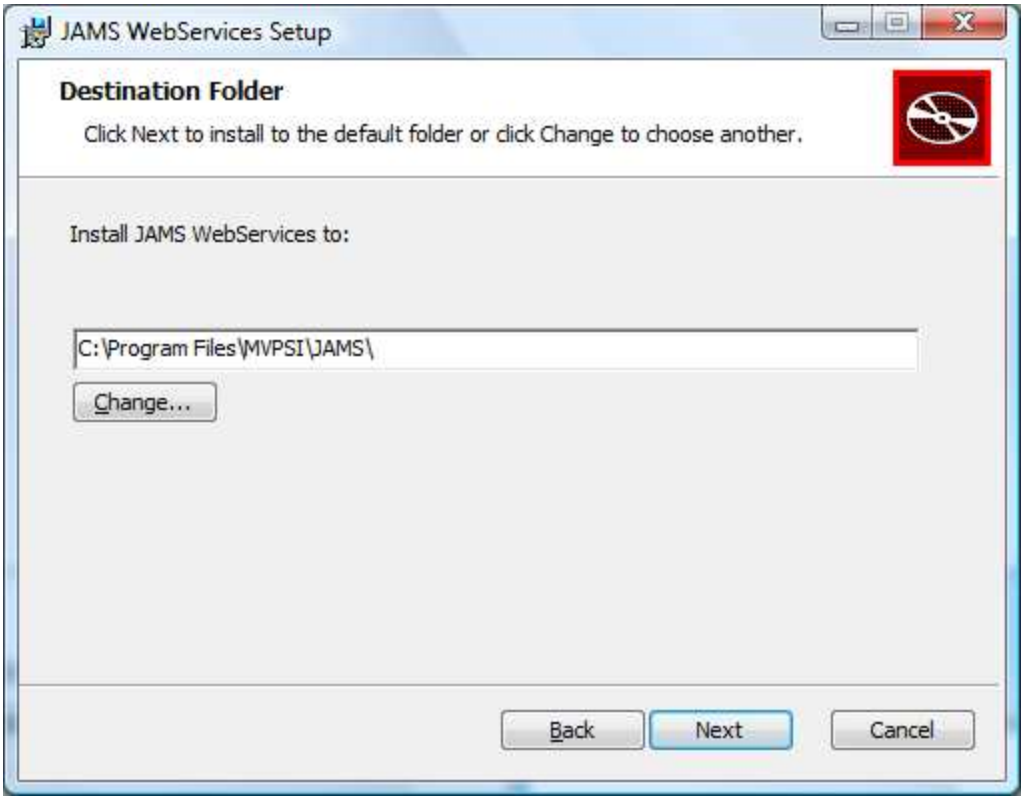


2. Click **Next**.

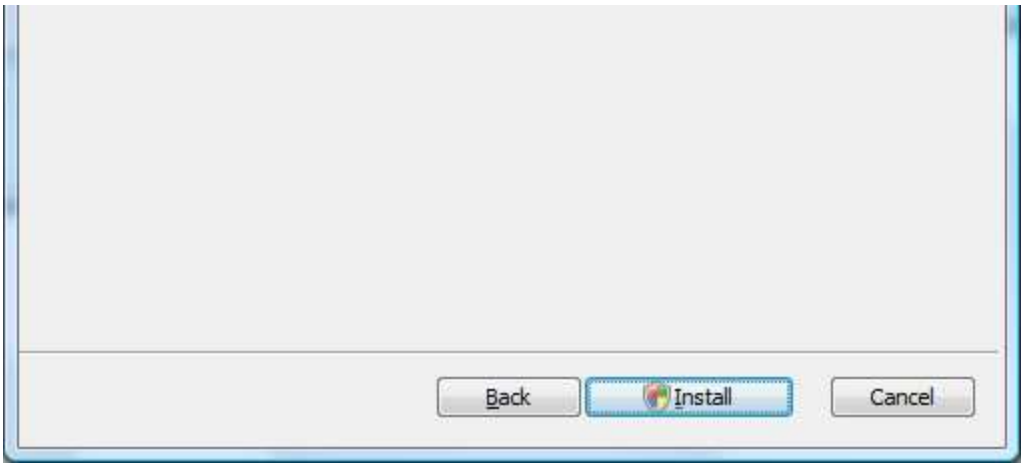
3. Accept the License Agreement and click **Next.**



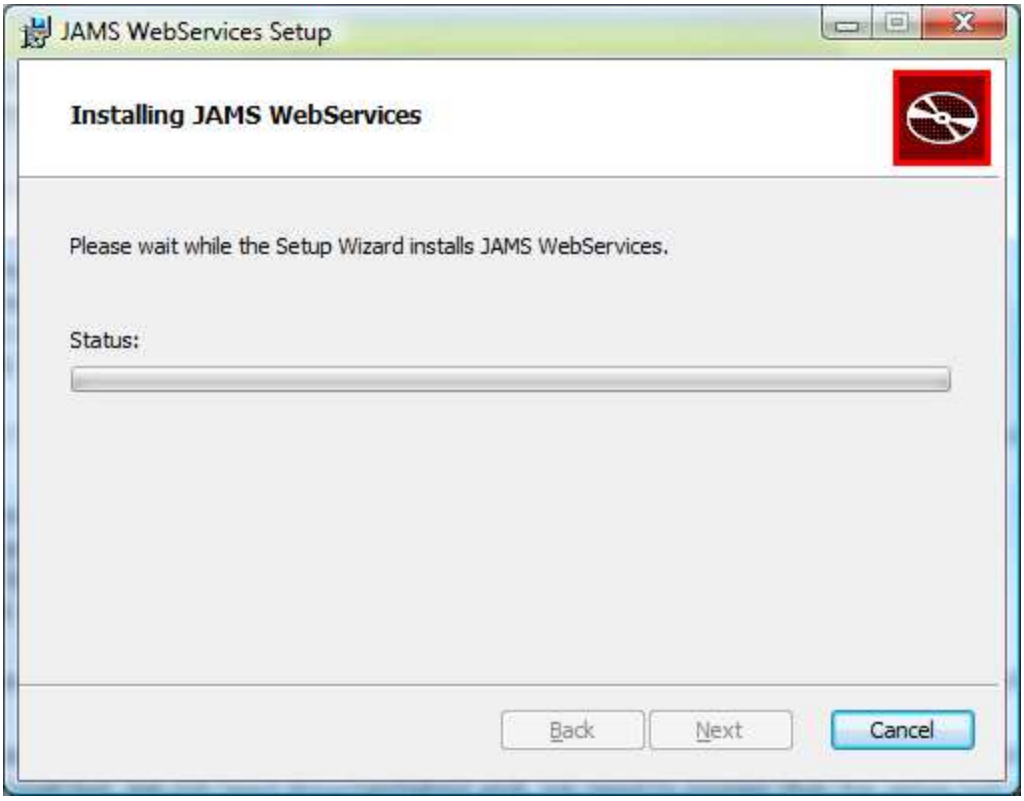
4. Choose installation directory.



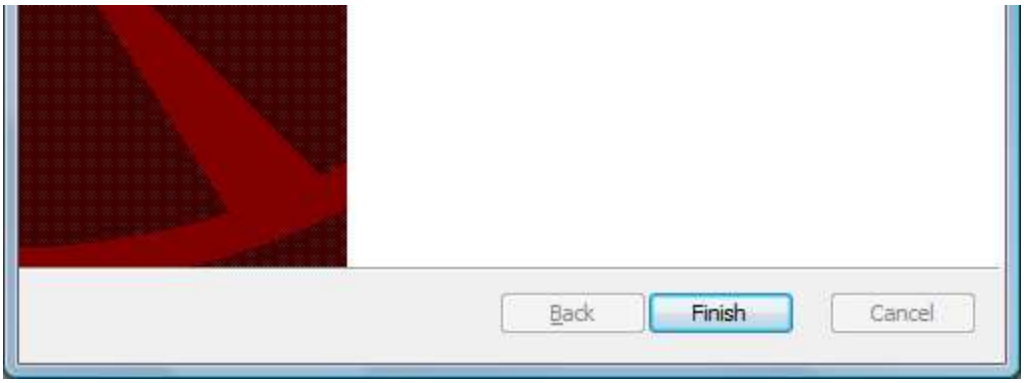
5. Click **Install.**



6. Wait for the installation to complete.



7. Click **Finish.**

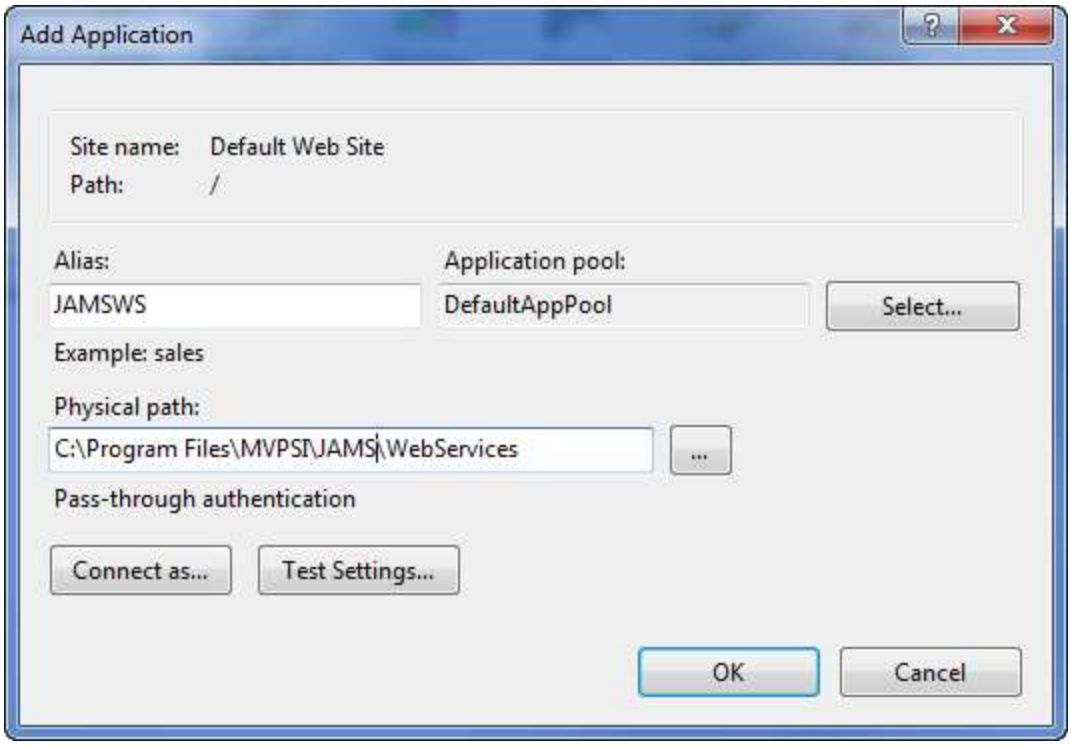


Configuring IIS

The procedure for configuring IIS 7 is slightly different than for previous versions. IIS 7 ships with Windows Server 2008, Vista, and Windows 7.

Configuring IIS 7

1. Start Internet Information Services (IIS) Manager.
2. Right-click on the web site that will host the JAMS Web Services and pick **Add Application....**
3. Enter a value for the **Alias** and set the **Physical path** to point to the location where you just installed the JAMS Web Services.
4. Click **OK.**



Configuring IIS 6

1. Start Internet Information Services (IIS) Manager.
2. Right-click on the web site that will host the JAMS Web Services and pick **New->Virtual Directory....**
3. A wizard will start and ask you for the **Alias.** Enter an alias for these web services; for example, JAMSWS.
4. Click **Next,** and the wizard will ask for the **Path.** Enter the location where you just installed the JAMS Web

Services.

5. Click **Next,** and the wizard will ask for the **Virtual Directory Access Permissions.** Check **Read** and **Execute.**
6. Click **Next,** then **Finish** to complete the wizard.

Setting the JAMS Server

The default JAMS Web Services installation will connect to a JAMS Server on the same machine. To change this, edit the Web.Config file in the WebServices directory. Search for a line like:

```
<add key="JAMSServer" value="localhost" />
```

Change "localhost" to be the JAMS Server you want to use.

Read the following articles on the JAMS Support site for more information:

JAMS Command Line Environment

Accessing JAMS from the Web

How to Integrate JAMS with a .NET Application

3.1.7 Alternate Installation Options

Extracting MSIs

JAMS is distributed as self-extracting executable images. These images contain setup bootstrappers and standard Microsoft Software Installation (MSI) kits. You can extract these kits by executing the SetupJAMS.exe from a command line and adding the **/C** and **/T:<location>** command arguments.

You can then install the extracted MSIs with any software distribution tool that supports MSIs.

> Since the bootstrapper installs the prerequisites, if you extract the MSI files, you must install the prerequisites before starting the MSI installs. See **Prerequisites (Section 3.1.1)** for more information.

Silent Installs

After extracting the MSIs, you can perform silent installs by adding the **/qn** command line parameter to the msiexec command. For example:

```
C:> msiexec /i SetupClient.msi /qn
```

3.1.8 After Installing

There are a couple of details you may need to know in order to continue using or evaluating JAMS.

Server Definition

If you're running the JAMS Client on the same machine as the Scheduler, the Client will be able to find the Scheduler. If the Scheduler is running on a different machine, you need to add a Server definition to tell the client where to find the Scheduler. Note that you can have many servers defined in the Client. In order to add a Server definition, click on the JAMS logo in the upper left corner of the JAMS Client and select Servers.

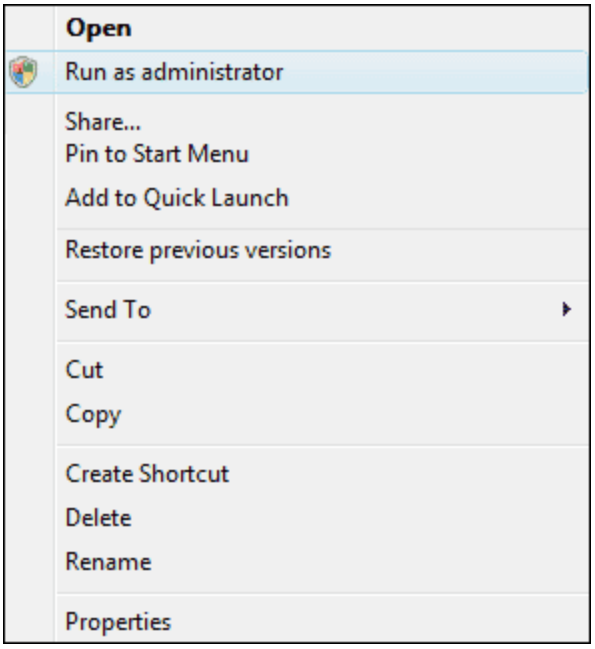
Access Control

When you install the JAMS Scheduler, it is secure by default—you must be in the Administrators group to do anything. This restriction is defined by the Server ACL, which defines who may connect to a specific JAMS Server.

There are many ACLs below the Server ACL that control access to specific areas in JAMS. For most of these lower ACLs, the Administrators group is granted full access and Authenticated users are granted limited access.

As an Administrator, start the JAMS Client and select the **Access Control** button in the Ribbon Bar and then the **Server** selection. The ACL can then be adjusted to define who should be able to access JAMS. You may also want to review the rest of the ACLs in the Security Menu.

On Windows 7, Windows Vista, and Windows Server 2008, when you start the JAMS Client you will *not* be a member of the Administrators group, so you will not be able to connect to the JAMS Server. You need to right-click on the JAMS Client start menu entry and pick **Run as administrator** to start the JAMS Client with Administrator rights. You can then adjust ACLs as required.



3.2 Installing JAMS Plugins

3.2.1 Installing Symitar

Check the Symitar option when installing JAMS. The Symitar add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on

that you want to add. There is no need to reinstall the other JAMS components.

3.2.2 Oracle E-Business Suite

Check the Oracle E-Business Suite option when installing JAMS. The Oracle E-Business add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

3.2.3 Netezza

Check the Netezza option when installing JAMS. The Netezza add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

3.2.4 Installing MS Dynamics

Check the Microsoft Dynamics option when installing JAMS. The Microsft Dynamics add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

3.2.5 Installing J.D. Edwards

Check the J.D. Edwards option when installing JAMS. The J.D. Edward add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

3.2.6 Configuring JAMS on a target SAP ECC system

Check the SAP option when installing JAMS. The SAP add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

Configuration documentation for JAMS Job Scheduling Activites

Document description: This documentation provides information to configure and execute the JAMS Job scheduling services on a target SAP ECC system.

Table of Contents

1. Prerequisites

The following prerequisites are required to proceed with the configuration.

- Transport Request Number: **NSPK900025**
- Files required for import: **K900025.NSP (on-line documentation)**, **R900025.NSP (on-line documentation)**

2. Preparation for transport import

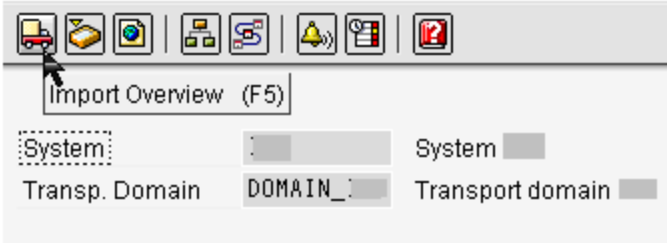
Place the following transport files in the corresponding directories of the target ECC system.

- File Name: K900025.NSP
- To: \sapmnt\trans\cofiles\

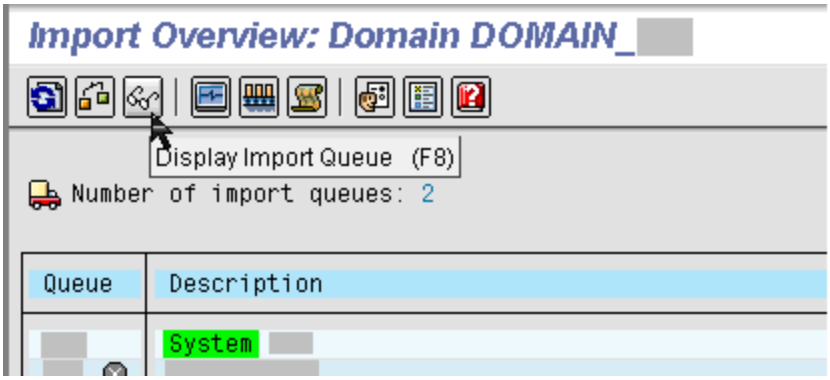
- File Name: R900025.NSP
- To: \sapmnt\trans\data\

3. Importing transport request(s) to target SAP ECC system.

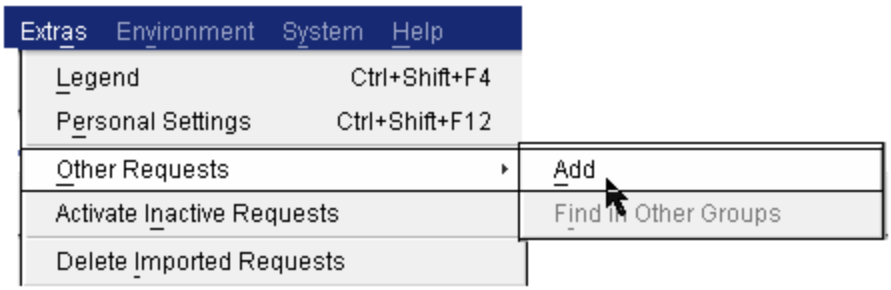
- T Code: STMS
- Choose Import Overview



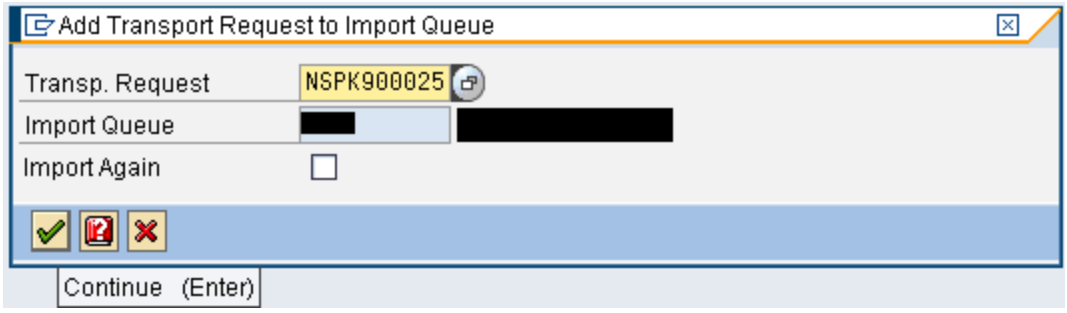
- Select System <SID> and hit Import Queue

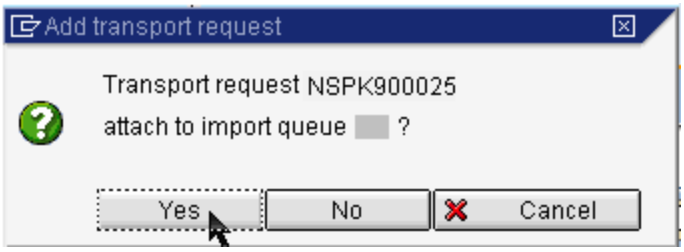


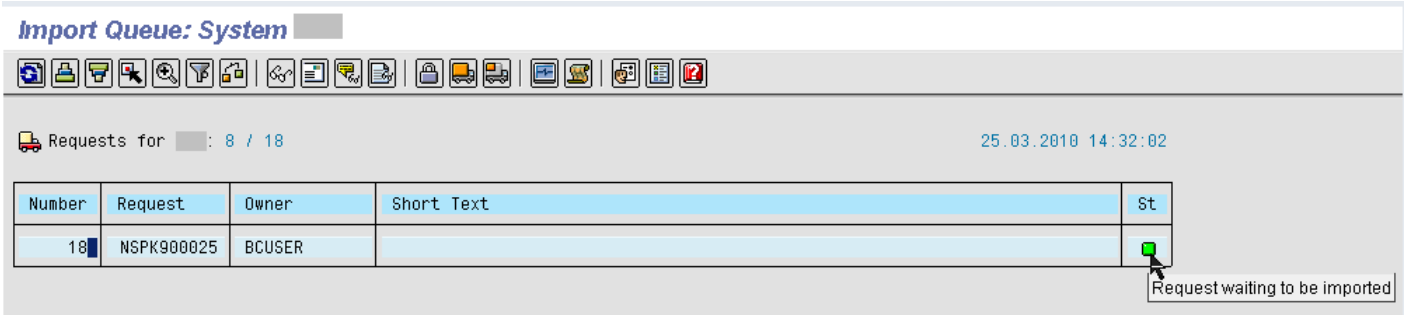
- Go to the ‘Extra’ menu item and follow along as shown below.



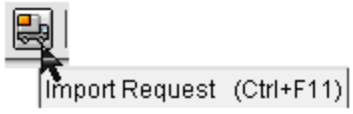
- Select transport to be imported: **NSPK900025**



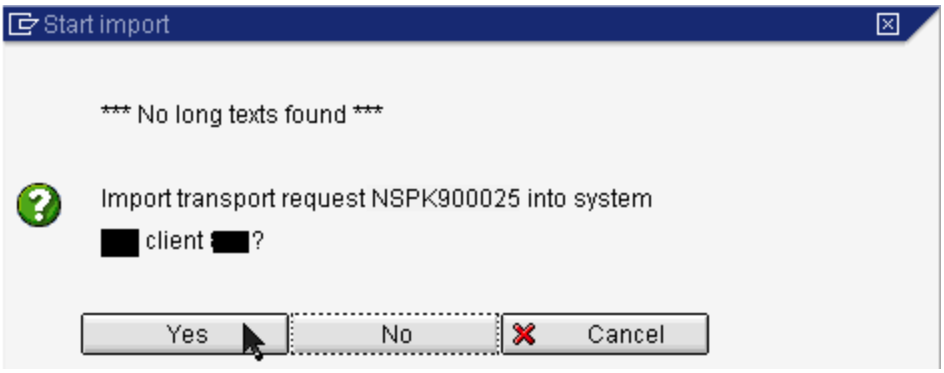




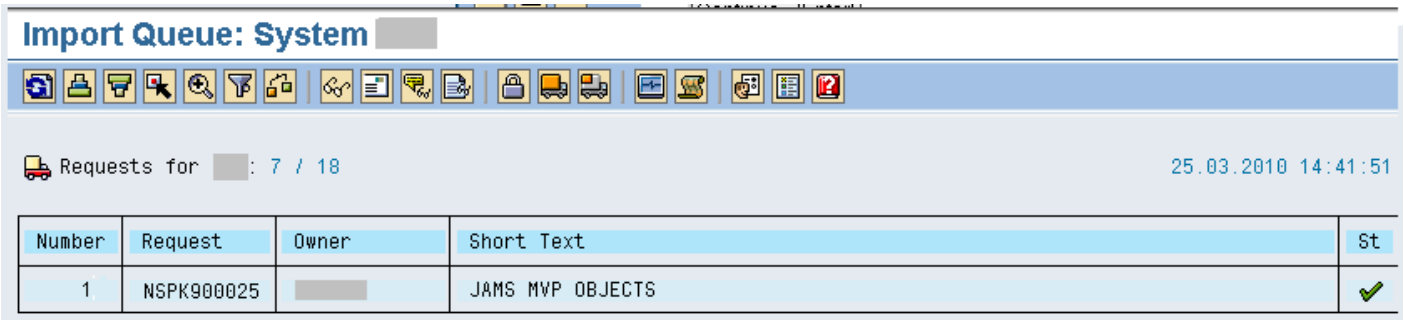
- Select the request and click on Import Request.



- Enter Client Number

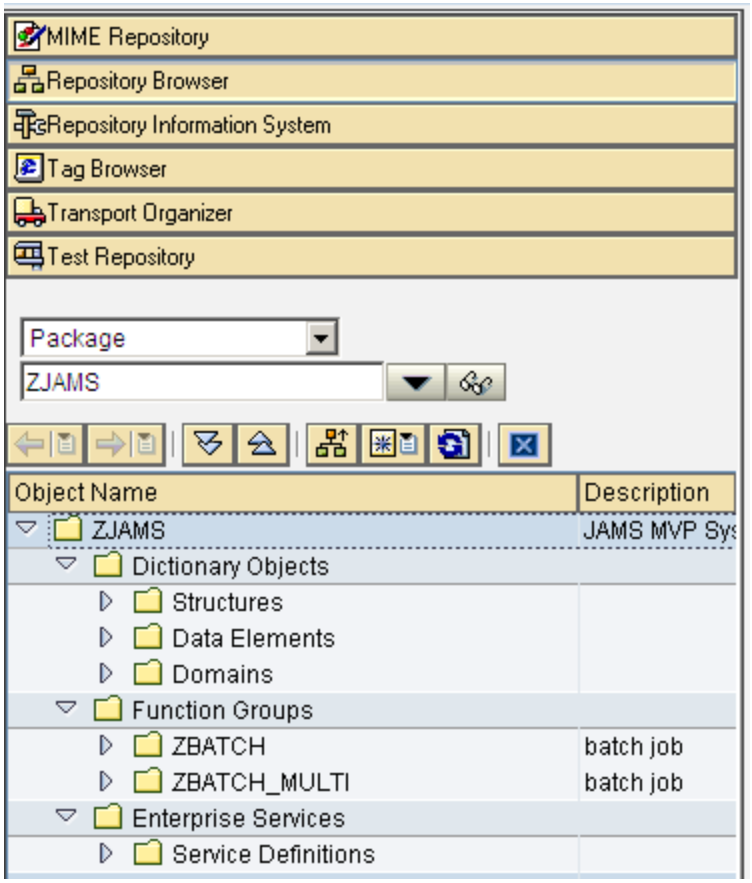


- Upon successful import you will get a confirmation as follows.



4. Verification of objects

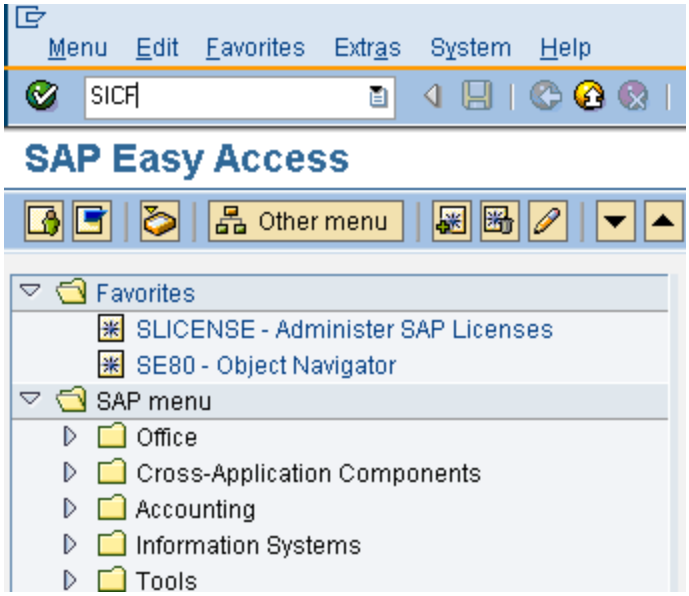
- TCode: SE80
- In the object Navigator, under repository browser, select package Name as ‘ZJAMS’. It will enlist objects that are part of this package as shown below.

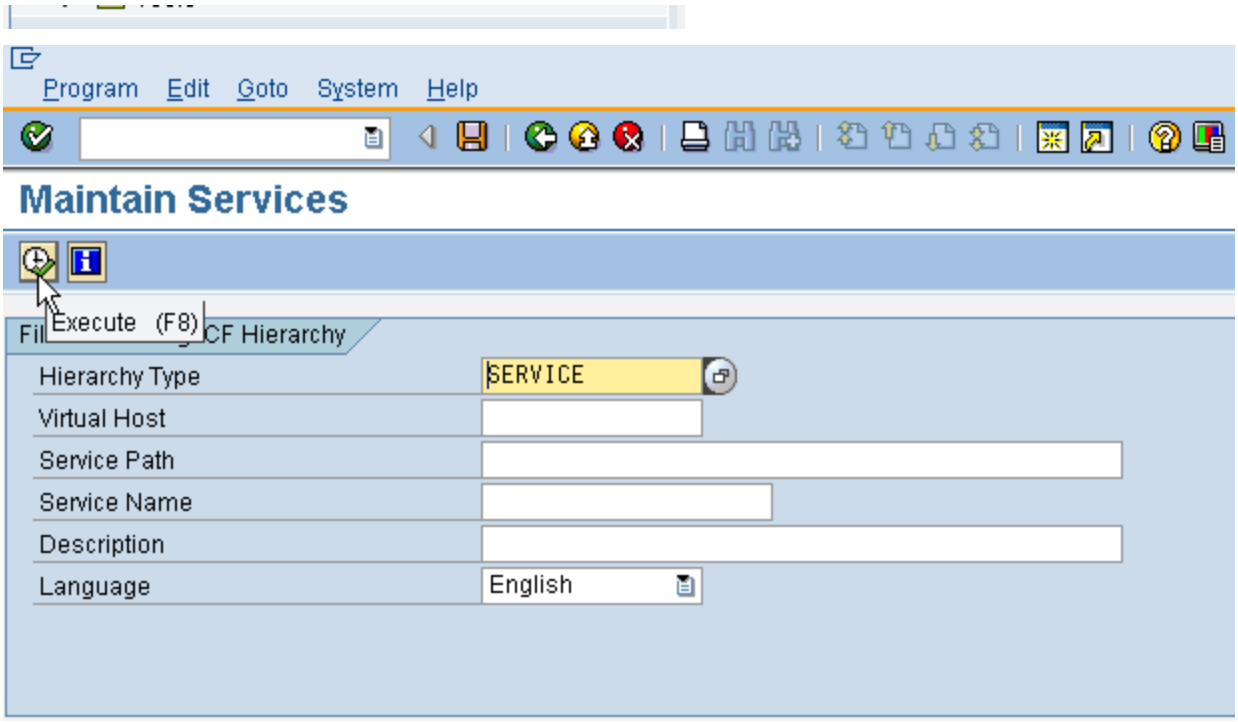


5. Configuration Steps

Once all imported ABAP objects are available in the target system we may need to activate Web Services before using them. The following procedure will walk you through the configuration.

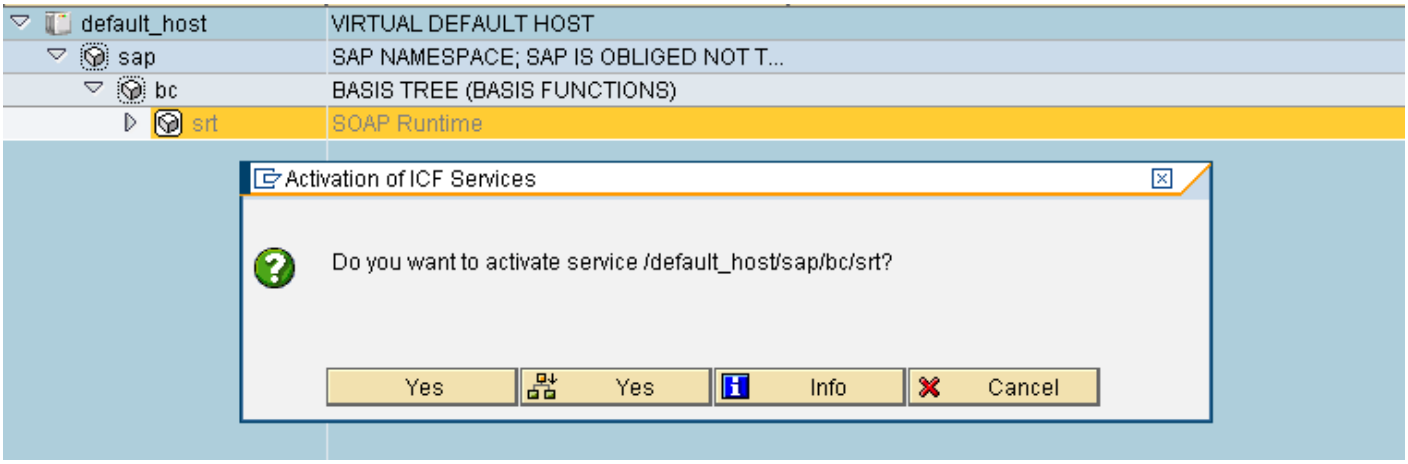
- TCode: SICF



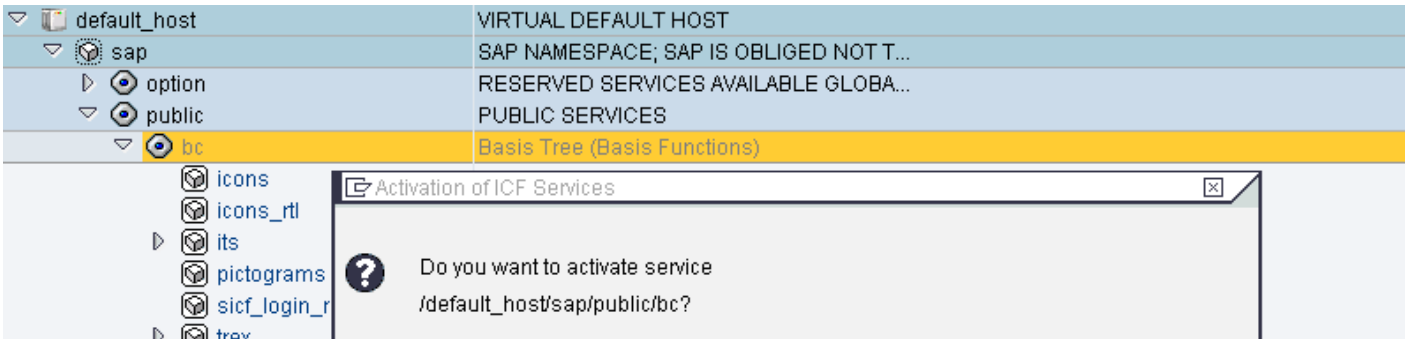


- Activate the following services in SICF:

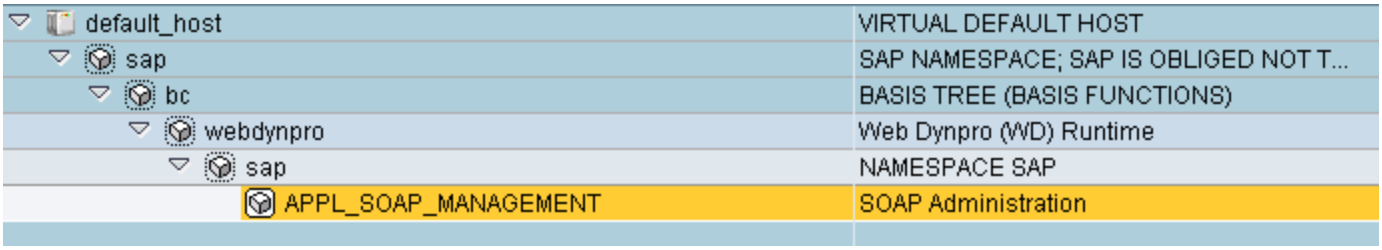
- default_host: SAP>BC>SRT right click on SRT node and click Activate, select Yes with Child Node



- default_host: SAP>Public>BC right click on BC node and click Activate, select Yes with Child Node

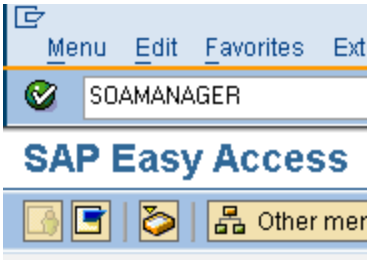


-default_host: SAP>BC>WEBDYNPRO>SAP>APPL_SOAP_MANAGEMENT right click on APPL_SOAP_MANAGEMENT node and click Activate, select Yes with Child Node

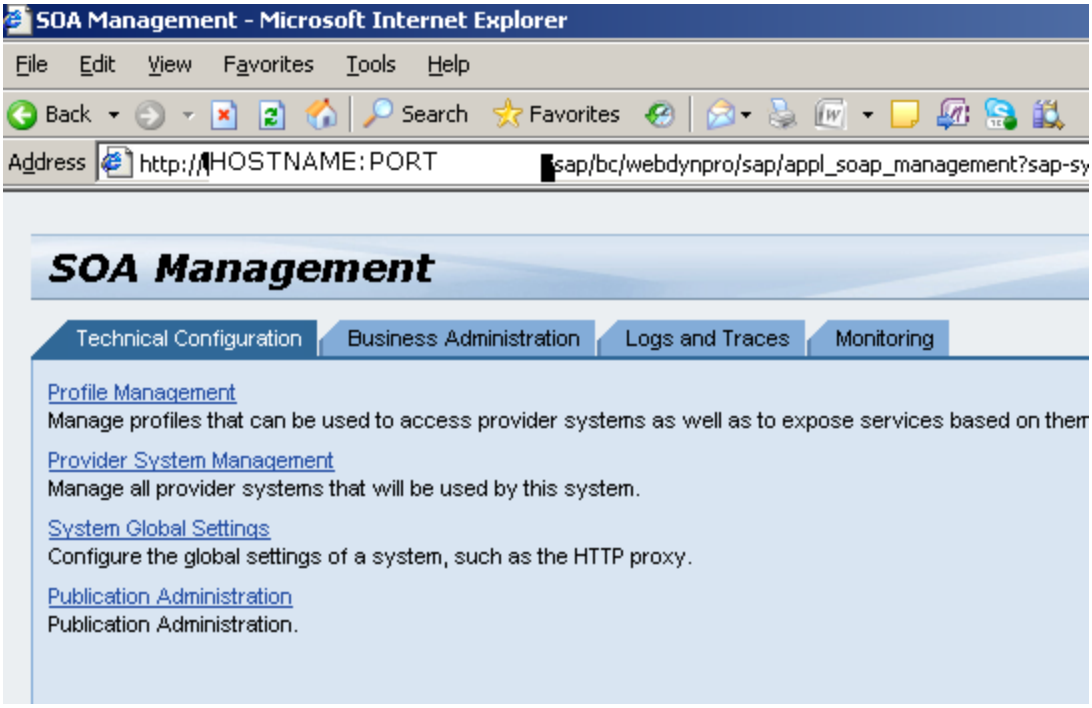


6. End Point Creation Steps

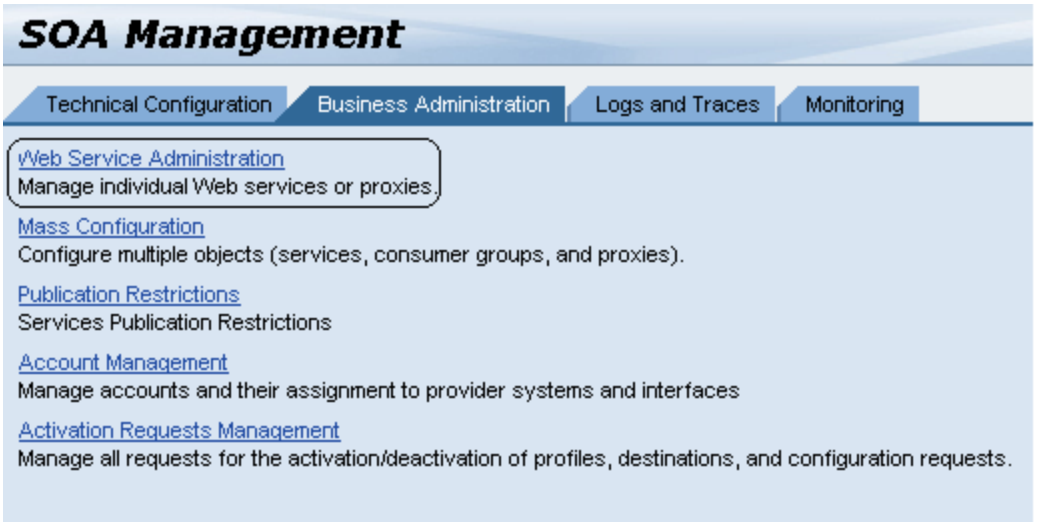
- Once all above mentioned Nodes are activated from SICF, run the t-code SOAMANAGER

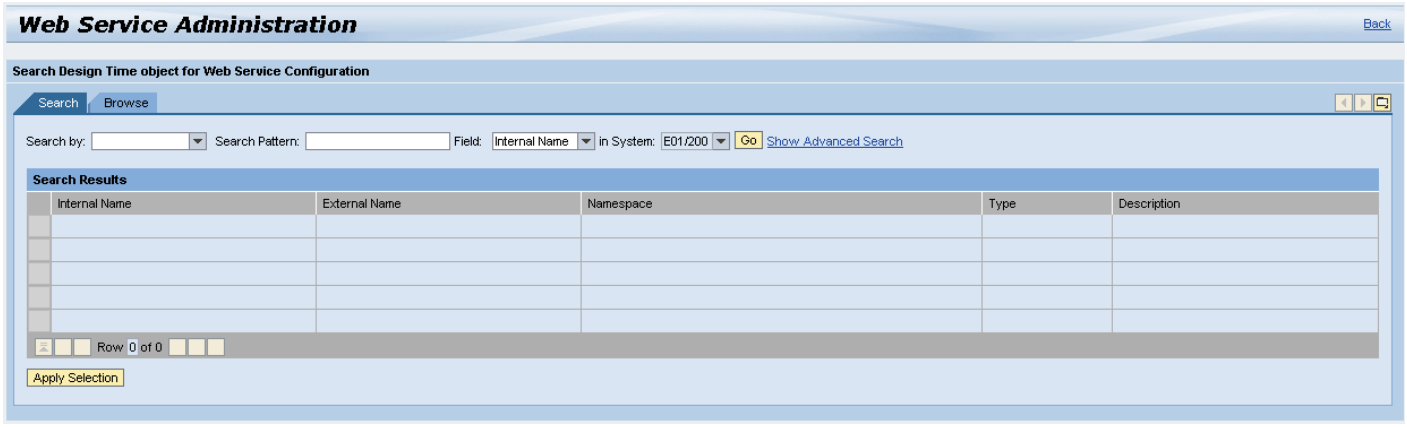


- SOAMANAGER will start application in a new browser

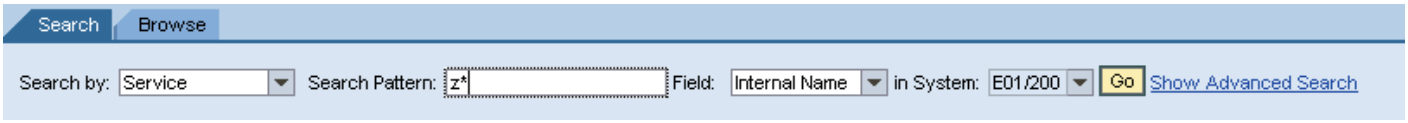


- Navigate to the "Business Administrative" tab and select "Web Service Administration"



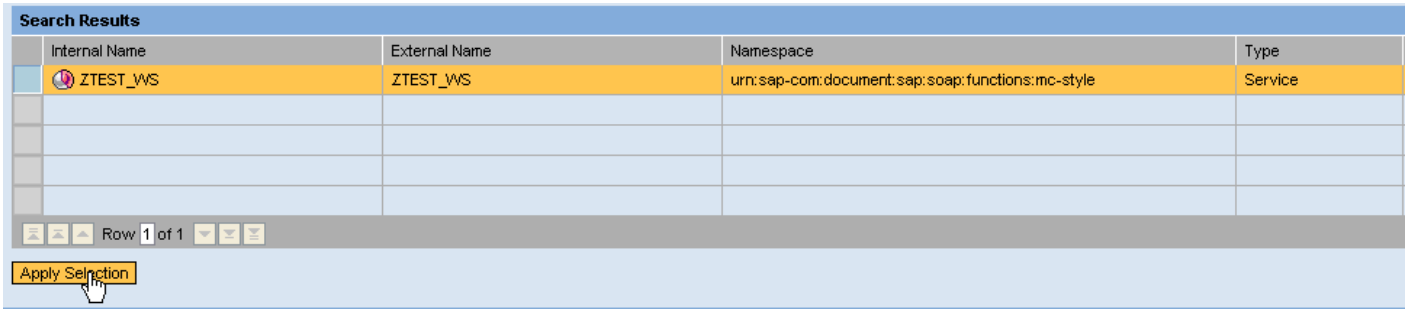


- Here in the Search Tab - Select "Service" in search by inputting, Z* in Search Pattern, "Internal Name" in Field and click the Go button

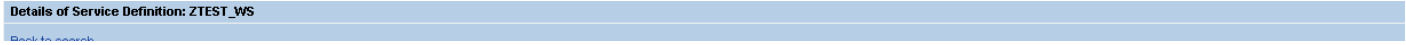


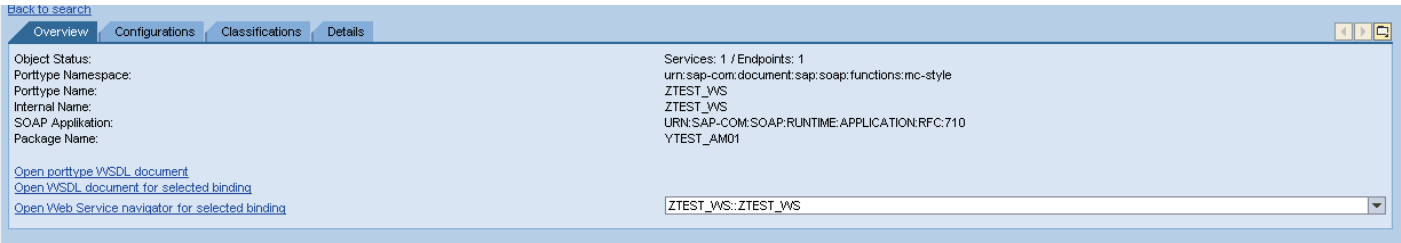
This will list all available services starting with "Z"

- Select the service for which you want to create End Point and hit "Apply Selection"

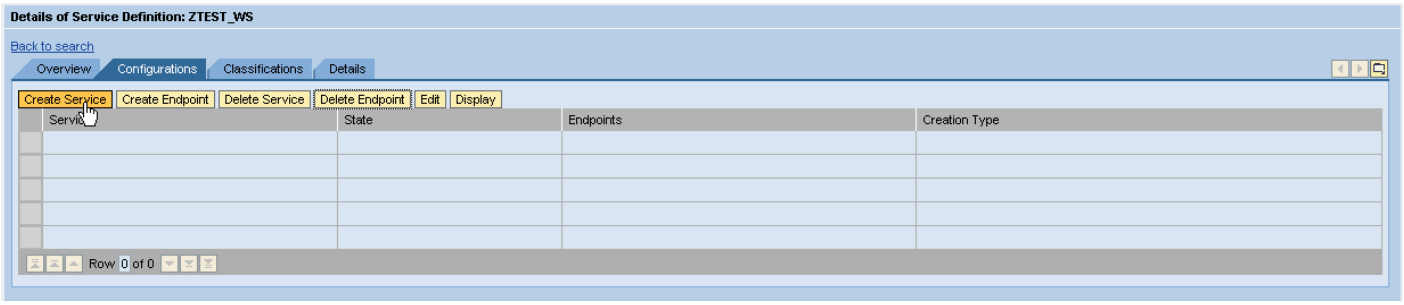


It will show details of Web Service

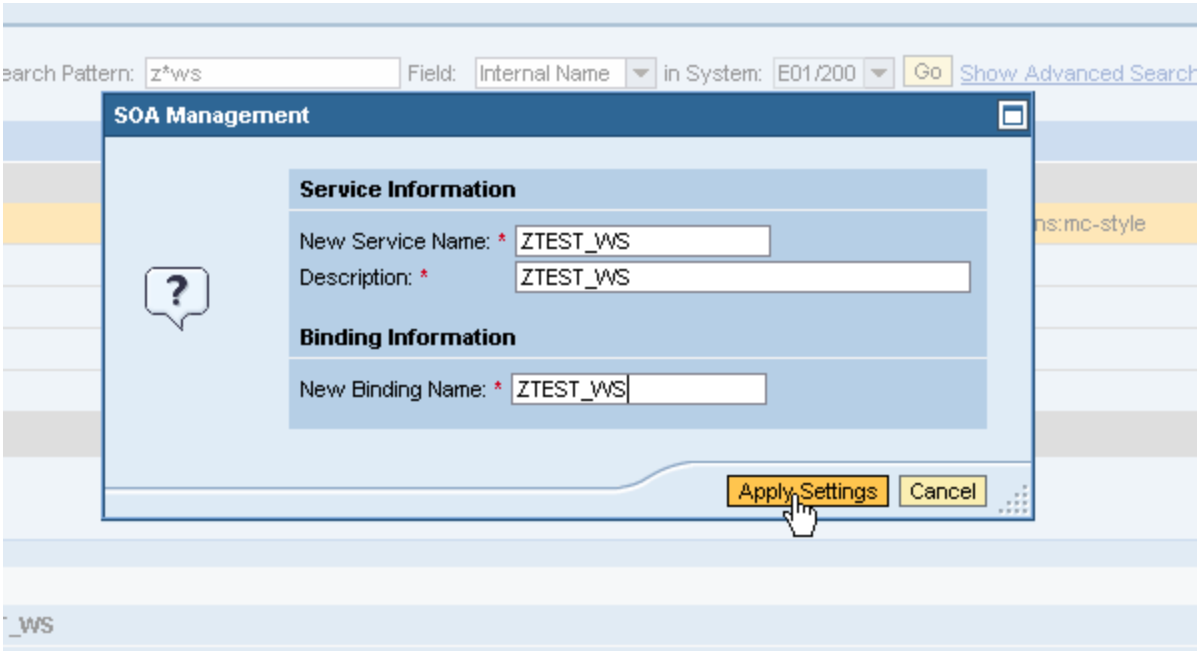




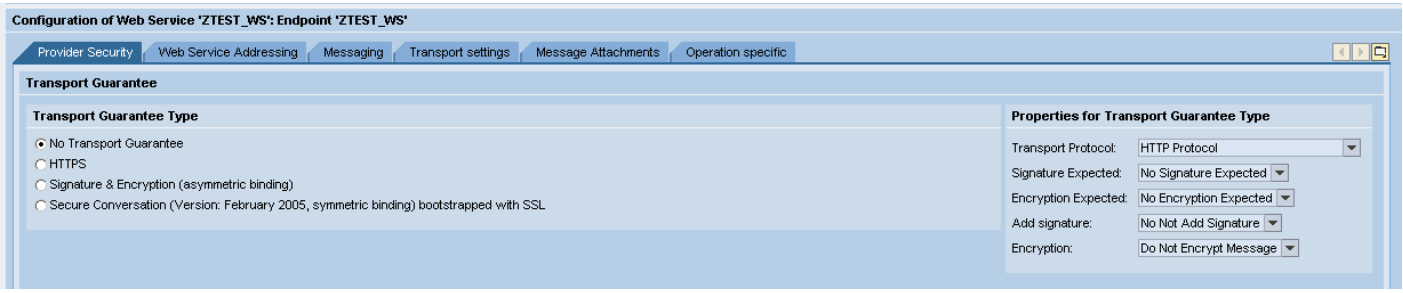
- Click on the "Configurations" tab. If no End Point exists, click on "Create Service"



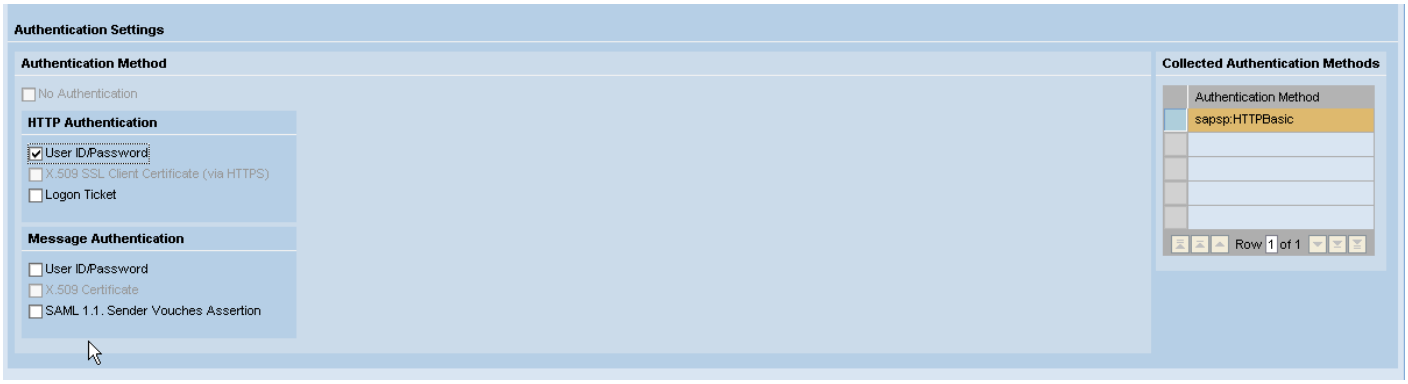
- Fill in the details in the pop-up menu and click "Apply Settings"



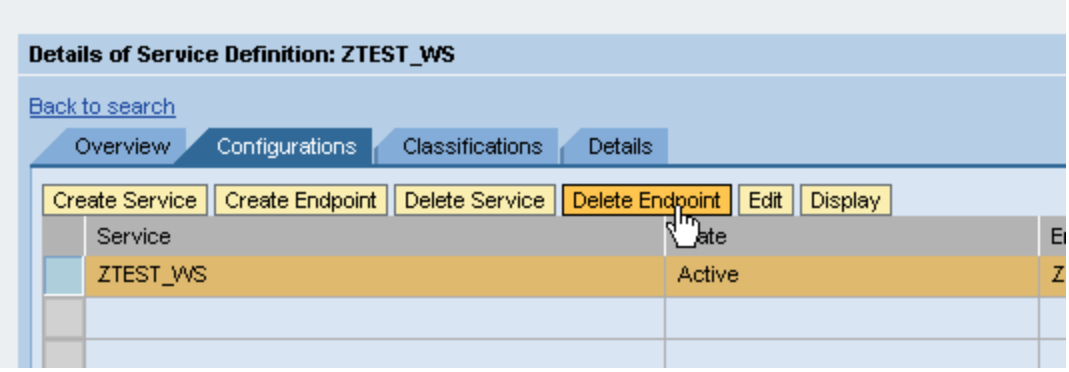
- Scroll down to "Web Service Configuration of Service Definition" section.
- In the Transport Guarantee section - select "No Transport Guarantee" radio button



- In Authentication Settings - under HTTP Authentication check "User ID/ Password" checkbox and save the settings.



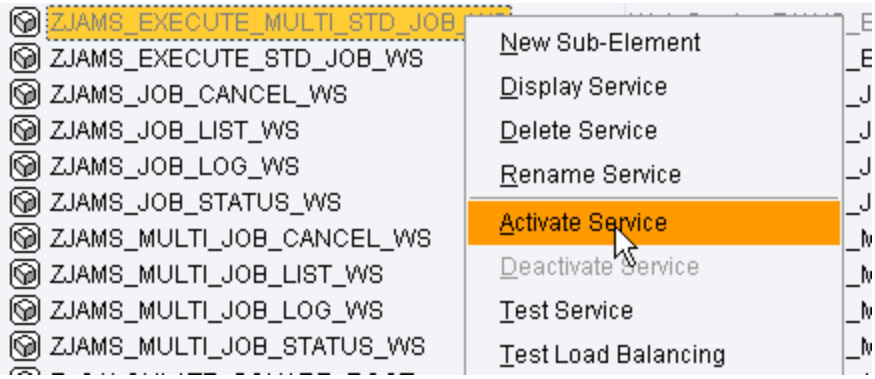
- To Delete End Point, Search Service, Select the service and click on "Apply Selection", navigate to Configuration Tab, select End Point and click on "Delete Endpoint" on popup confirm your deletion.



- Exectute the transaction SICF and navigate through the following path: default_host>SAP>BC>SRT>RFC>SAP

Here you will find the following service name.

- If services are inactive (grayed out) then right click on a particular service and activate it. Repeat same procedure for other services too.

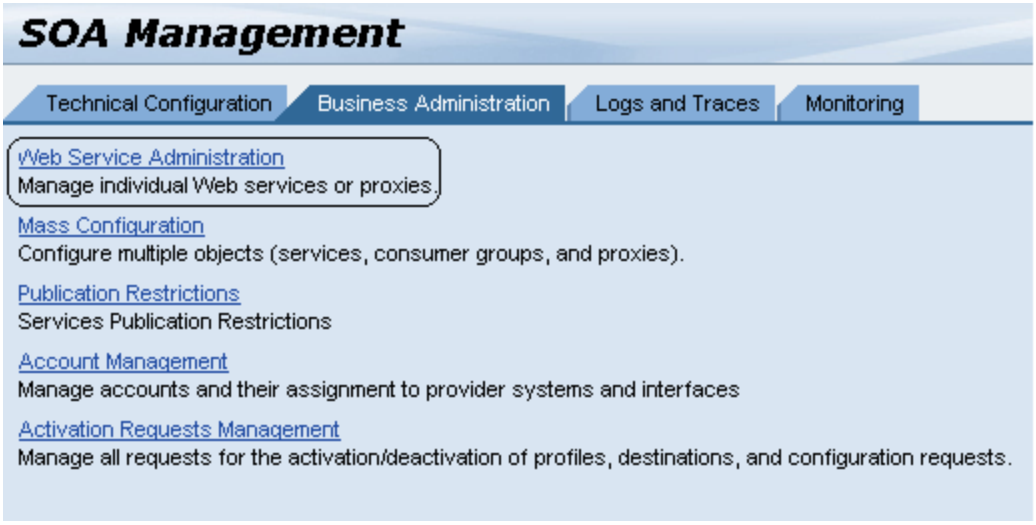


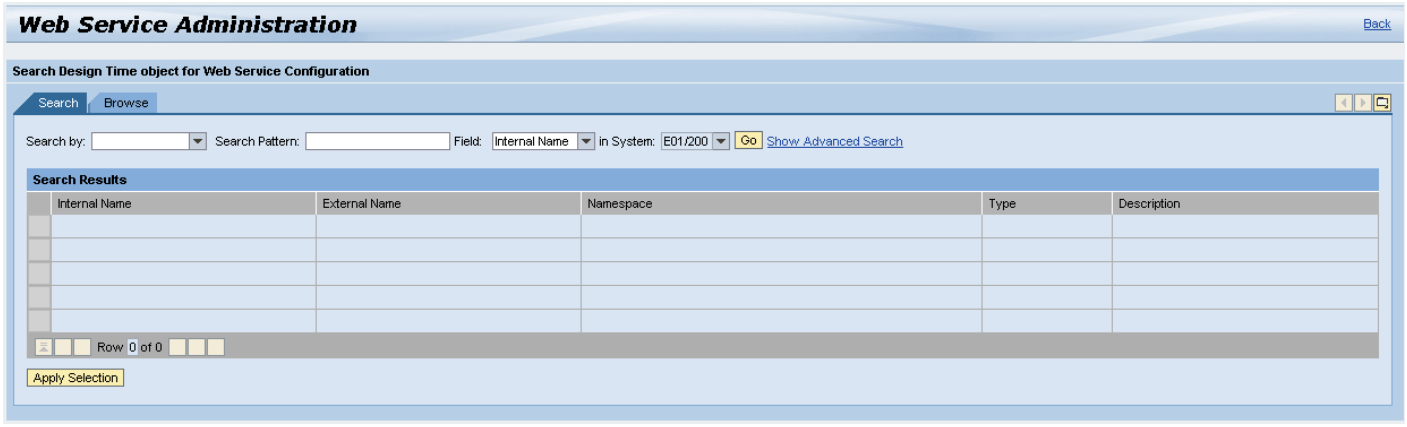
Upon activation services are ready for use.

7. Generating WSDL (Optional)

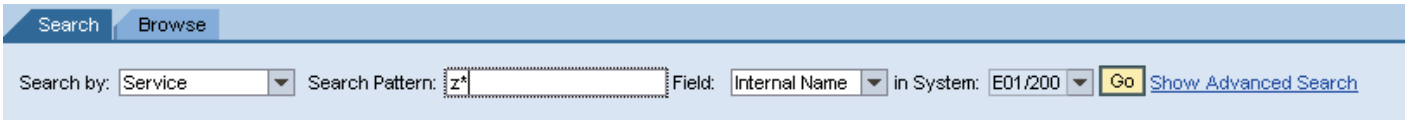
If you need to generate WSDL files again then proceed with the following procedure:

- Go to Transaction SOAMANAGER
- Select Business Administration tab and the "Web Service Administration" link.



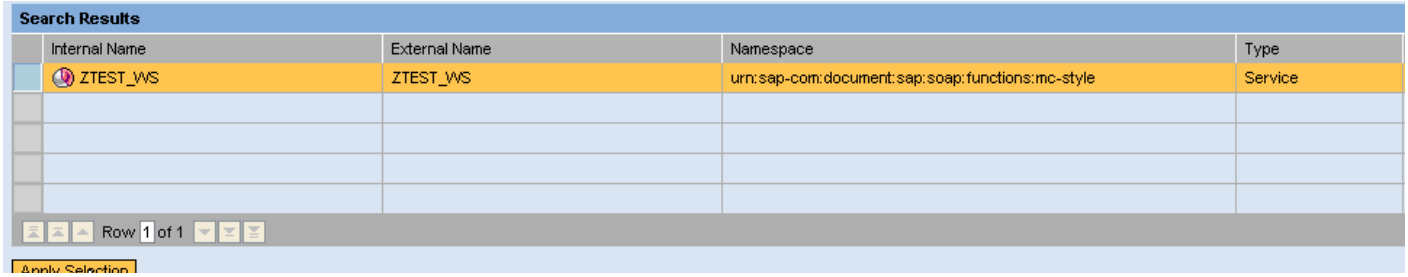


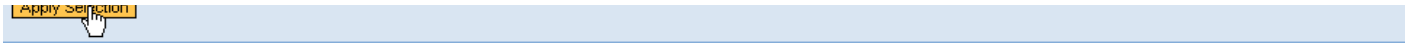
- Here in the Search tab - select "Service" in search, input Z* in Search Pattern, "Internal Name" in Field and click Go



This will list all available services starting with "Z"

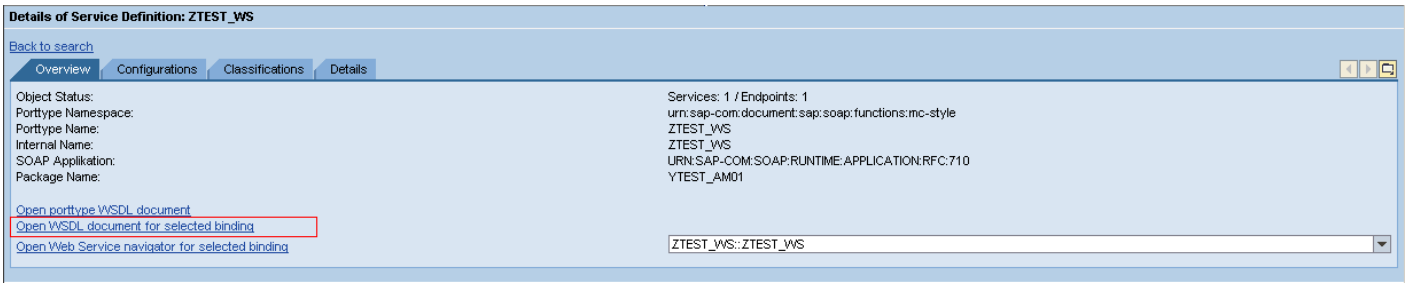
- Select the service for which you want to create an End Point and hit "Apply Selection"





It will show the details of Web Service in the "Overview" tab.

- Select "Open WSDL document for selected binding" to open WSDL in a new browser.



The following could be the expected URL for this particular service:

http:// <serverName or IP>:<portNo>/sap/bc/srt/rfc/sap/ZTEST_WS/<client No.>/ ZTEST_WS / ZTEST_WS

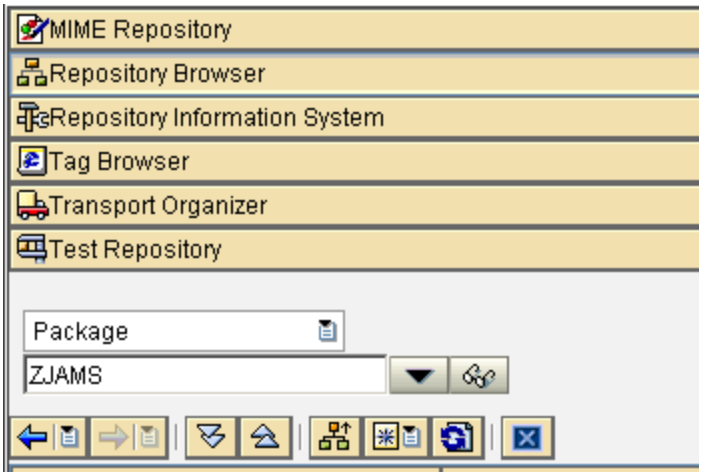
NOTE: SAP application system's "Host Name", "Port Number" and "Client Number" shown in above example could vary depending upon the technical details of target system. So URL in WSDL file will change accordingly.

These changes can be done manually (in WSDL file) or can be regenerated as explained above.

8. Creating New Transport Request for ZJAMS Package and related Objects

The steps below will explain how to create new transport request of package ZJAMS for Quality and Production environment.

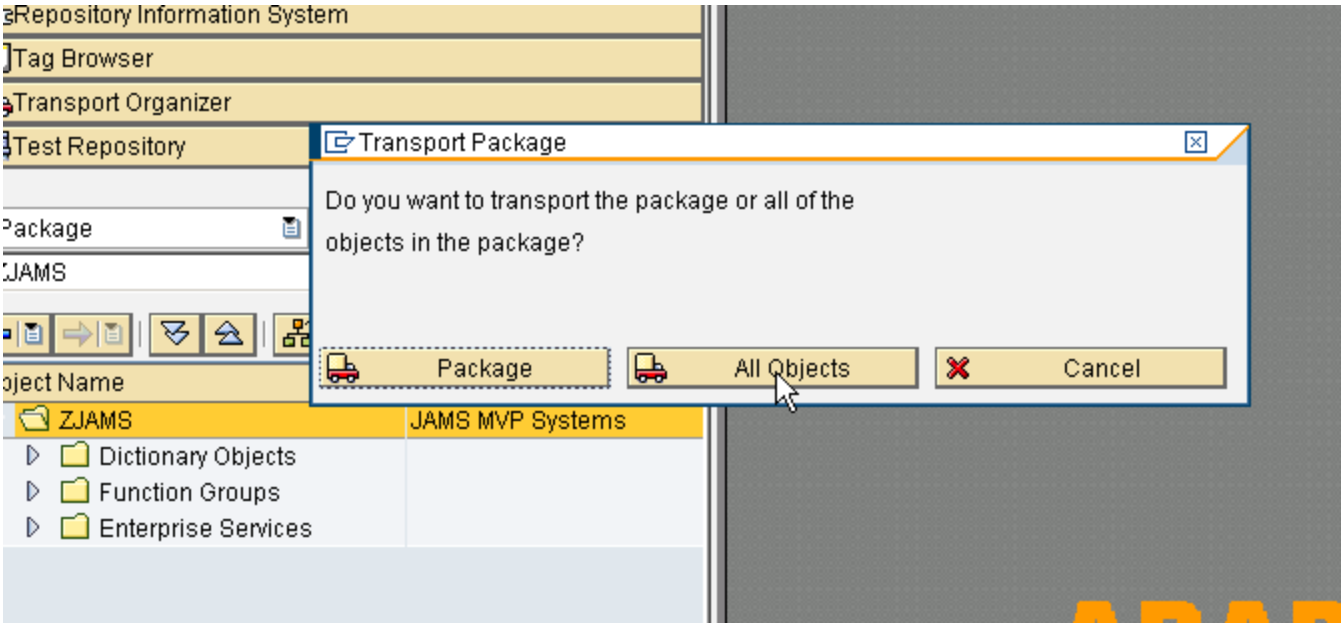
- Go to Transaction SE80
- Select Package: ZJAMS



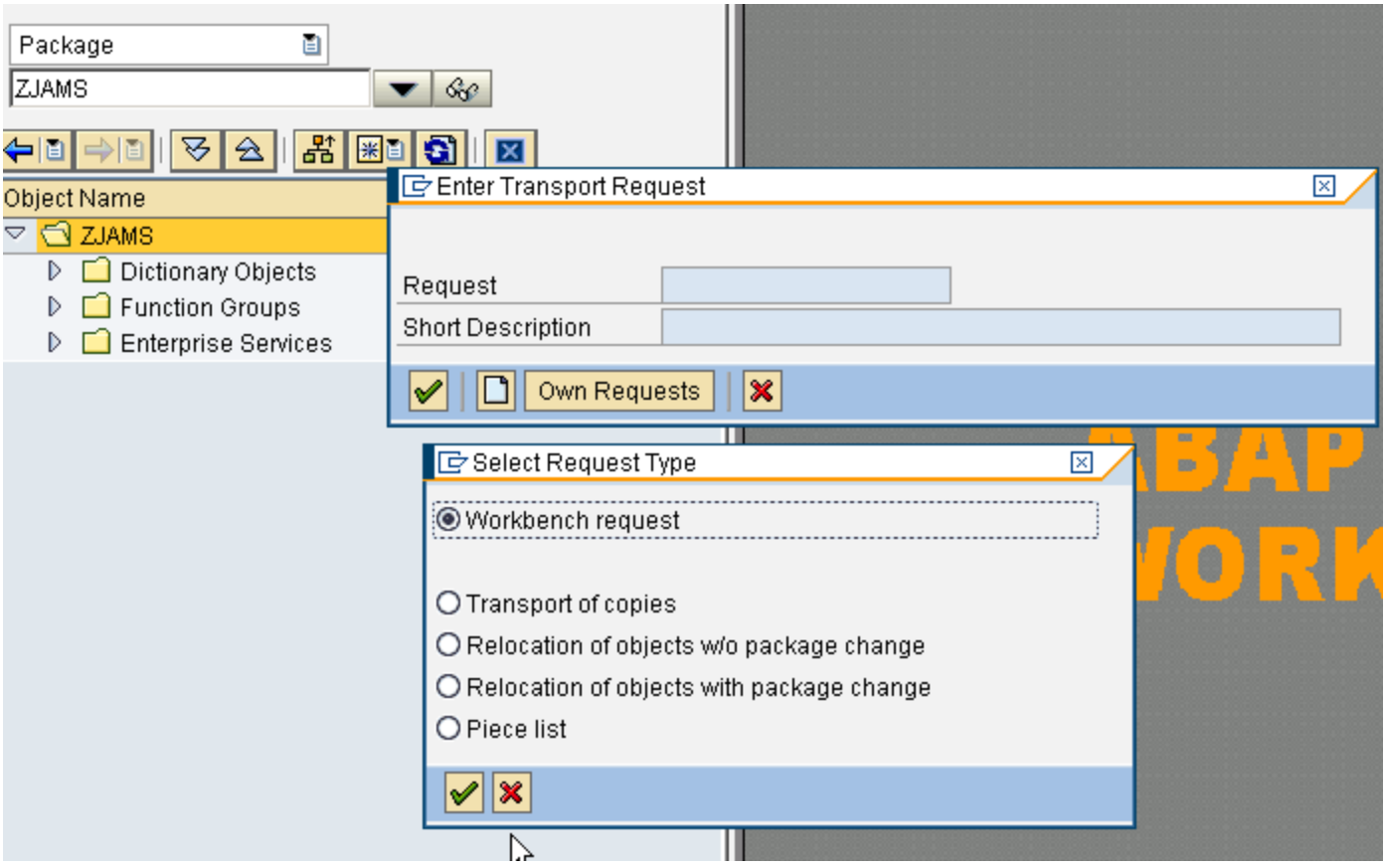
- Rebuild Object List - right click on package ZJAMS>Other Function>Rebuild Object List

Create New Transport Request:

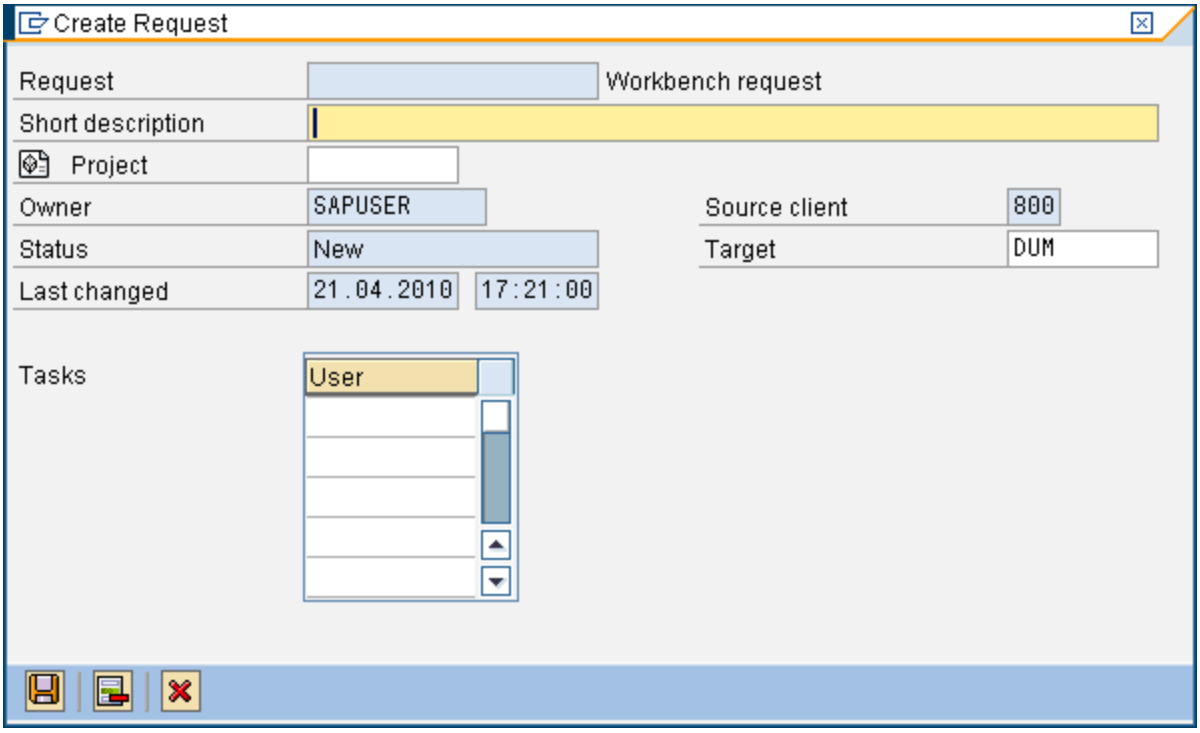
- Right click on package ZJAMS>Write Transport Entry
- On Pop-up select "All Objects"



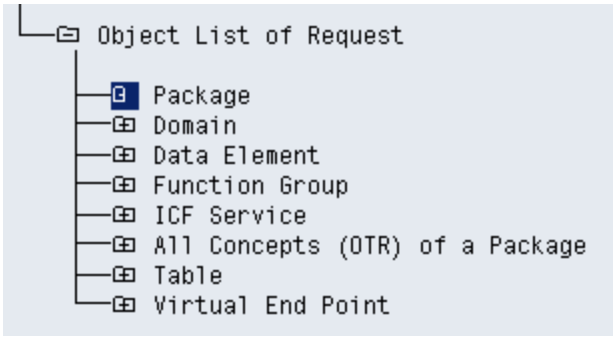
- Create New Workbench Transport Request



- Specify Description and Save and Continue



Request will contain the below objects



- Before release check request consistency, Inactive Objects
- During Request consistency if you get an error like xxxx is locked in request/task YY1kxxxxxx release the request YY1kxxxxxx first and then try to recheck Request consistency.

Now your transport is released and ready to move to Quality and Production Environment. Once it is moved, please follow steps #5 and 6.

9. Web Services

❖ **Single Jobs**

- JAMS_EXECUTE_STD_JOB_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_EXECUTE_STD_JOB_WS/<ClientNumber>/ZJAMS_E

XECUTE_STD_JOB_WS/ZJAMS_EXECUTE_STD_JOB_WS

- JAMS_JOB_CANCEL_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_JOB_CANCEL_WS/<ClientNumber>/ZJAMS_JOB_CANCEL_WS/ZJAMS_JOB_CANCEL_WS
- JAMS_JOB_LIST_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_JOB_LIST_WS/<ClientNumber>/ZJAMS_JOB_LIST_WS/ZJAMS_JOB_LIST_WS
- JAMS_JOB_LOG_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_JOB_LOG_WS/<ClientNumber>/ZJAMS_JOB_LOG_WS/ZJAMS_JOB_LOG_WS
- JAMS_JOB_STATUS_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_JOB_STATUS_WS/<ClientNumber>/ZJAMS_JOB_STATUS_WS/ZJAMS_JOB_STATUS_WS

❖ **Multiple Jobs**

- JAMS_EXECUTE_MULTI_STD_JOB_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_EXECUTE_MULTI_STD_JOB_WS/<ClientNumber>/ZJAMS_EXECUTE_MULTI_STD_JOB_WS/ZJAMS_EXECUTE_MULTI_STD_JOB_WS
- JAMS_MULTI_JOB_CANCEL_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_MULTI_JOB_CANCEL_WS/<ClientNumber>/ZJAMS_MULTI_JOB_CANCEL_WS/ZJAMS_MULTI_JOB_CANCEL_WS
- JAMS_MULTI_JOB_LIST_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_MULTI_JOB_LIST_WS/<ClientNumber>/ZJAMS_MULTI_JOB_LIST_WS/ZJAMS_MULTI_JOB_LIST_WS
- JAMS_MULTI_JOB_LOG_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_MULTI_JOB_LOG_WS/<ClientNumber>/ZJAMS_MULTI_JOB_LOG_WS/ZJAMS_MULTI_JOB_LOG_WS
- JAMS_MULTI_JOB_STATUS_WS
  - http://<HostName>:<PortNumber>/sap/bc/srt/rfc/sap/ZJAMS_MULTI_JOB_STATUS_WS/<ClientNumber>/ZJAMS_MULTI_JOB_STATUS_WS/ZJAMS_MULTI_JOB_STATUS_WS

10. WSDL Files

- ZIP file contains actual WSDL (from Test Server)

JAMS wsdl.zip (on-line documentation)

3.2.7 Installing PeopleSoft Add-On for JAMS

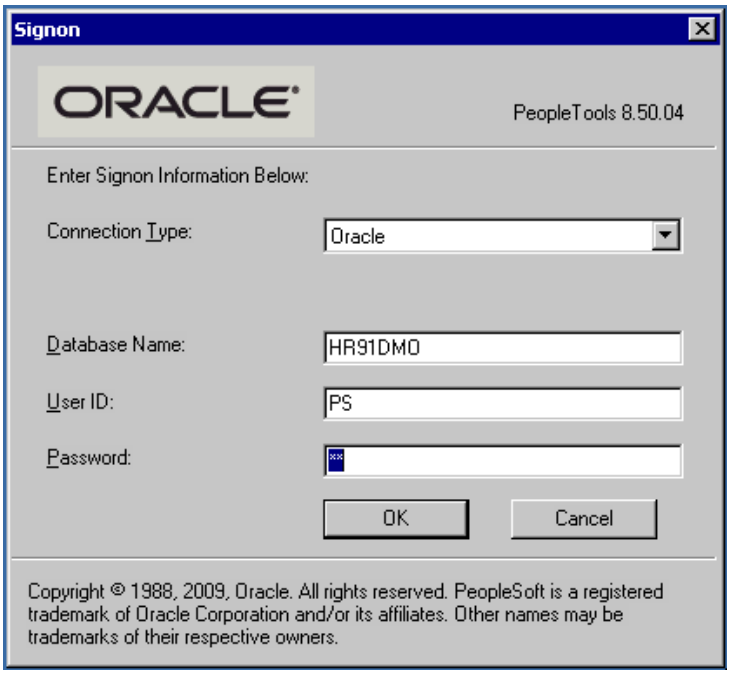
Check the Peoplesoft option when installing JAMS. The Peoplesoft add-on needs to be installed on the JAMS Client, Scheduler and Agent. If you have already installed JAMS, you can re-run the installer and check only the add-on that you want to add. There is no need to reinstall the other JAMS components.

Installing the JAMS Add-on for PeopleSoft

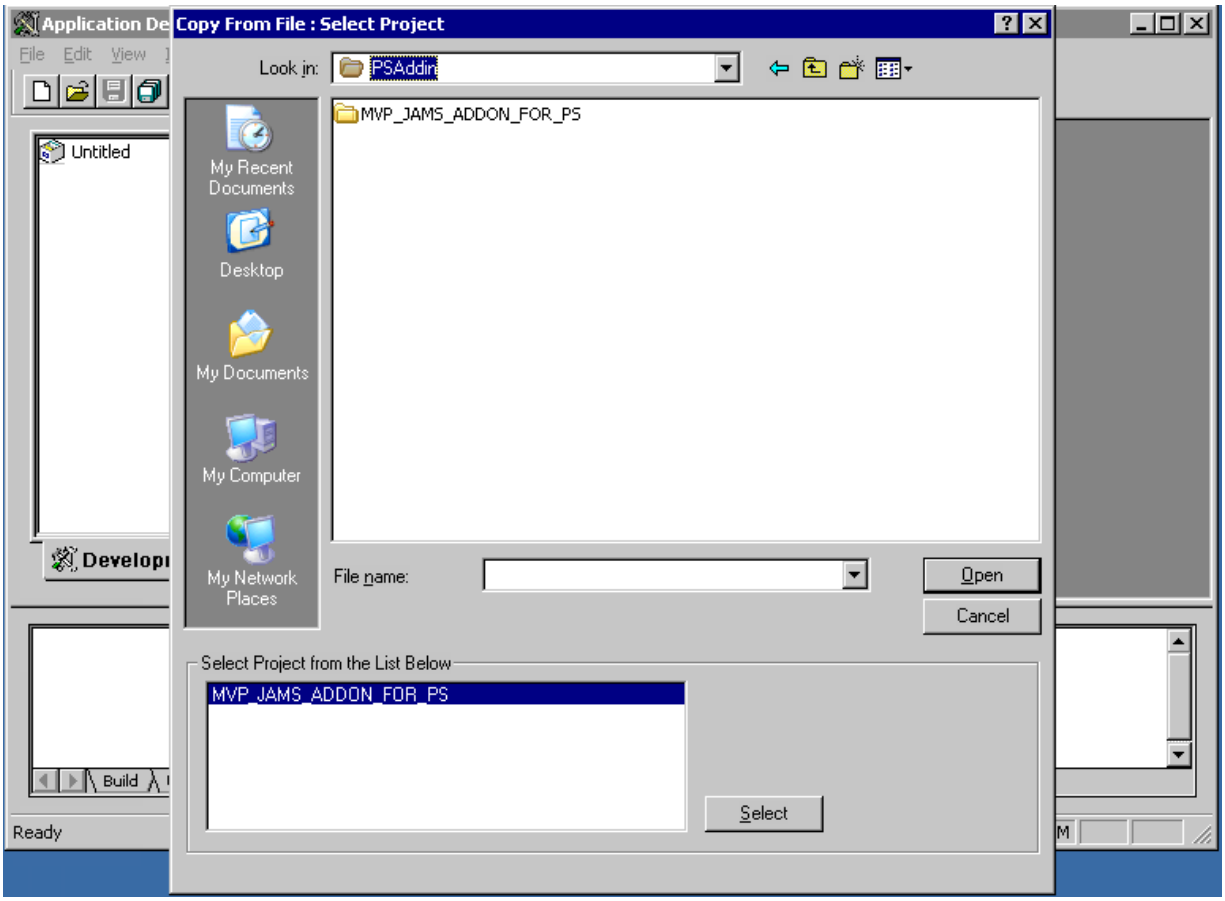
The JAMS Add-On for PeopleSoft contains an Application Engine program and supporting app designer objects to schedule the jobs. These objects are included in a project that must be installed and built in your PeopleSoft environment.

Import the JAMS Add-On for PeopleSoft Project

1. Launch Application Designer and connect to your PeopleSoft instance in 2-tier Mode



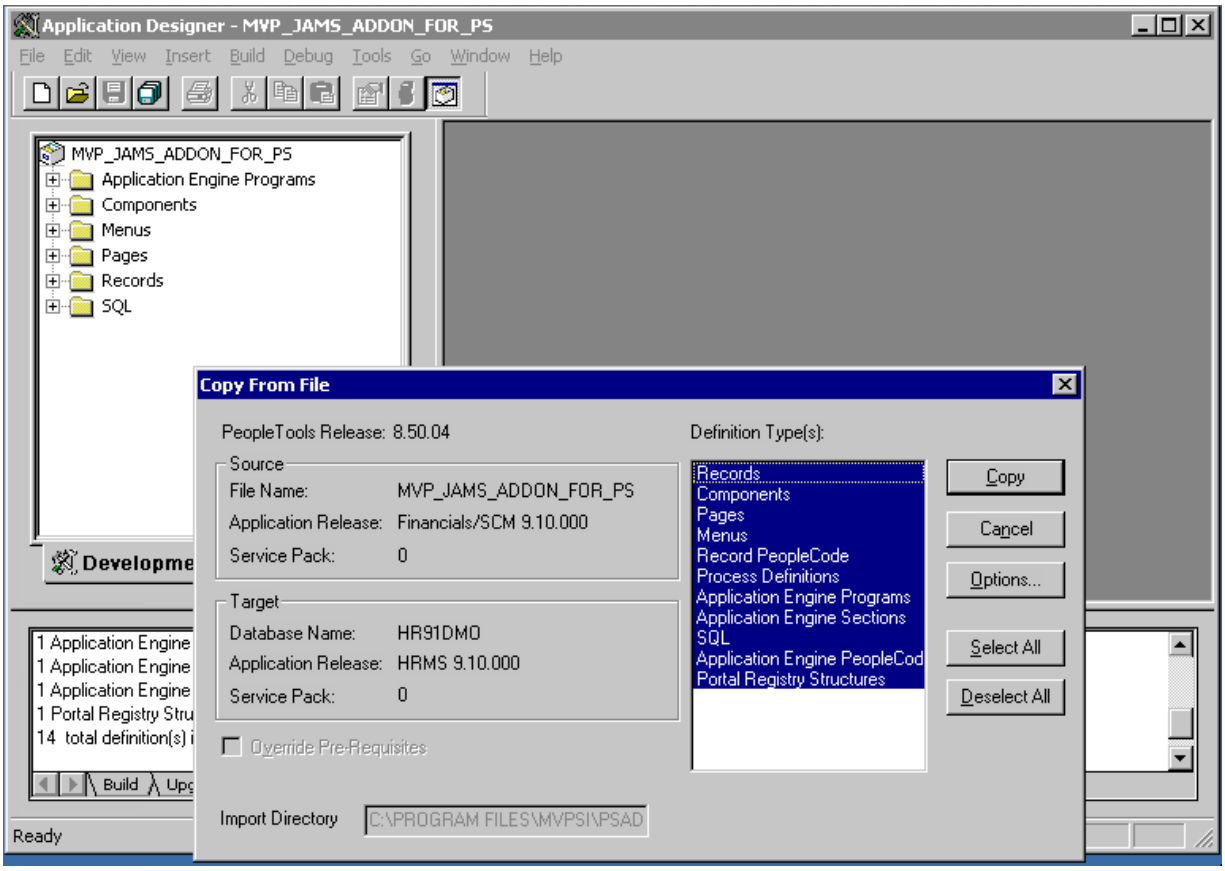
2. Navigate to Tools > Copy Project > From File



3. From your JAMS Scheduler machine, copy the MVP_JAMS_ADDON_FOR_PS.ini and MVP_JAMS_ADDON_FOR_PS.xml files from the Program Files\MVPSI\JAMS\Scheduler directory. Paste them into a folder name MVP_JAMS_ADDON_FOR_PS that you create on the PeopleSoft server.

Browse to the location of that newly created folder. The Project name "MVP_JAMS_ADDON_FOR_PS" will appear in the lower box. Click the "Select" button.

4. The "Copy from File" dialog box appears. Click "Copy".



5. Set the default tablespace

The JAMS Add-On for PeopleSoft requires four tables to maintain its scheduling process. Your DBA will likely want to specify which tablespace these belong in depending on your database platform.

a. Expand the "Records" node in the project tree.

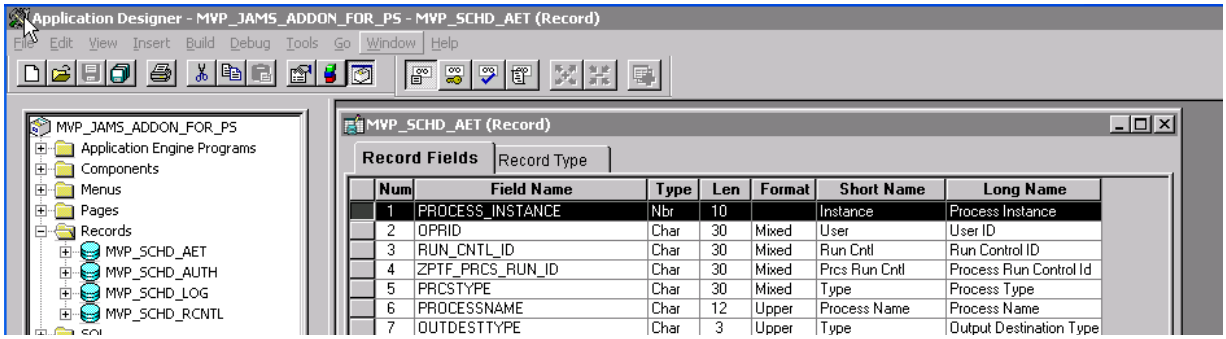
b. Double-click MVP_SCHD_AET to open the record definition.

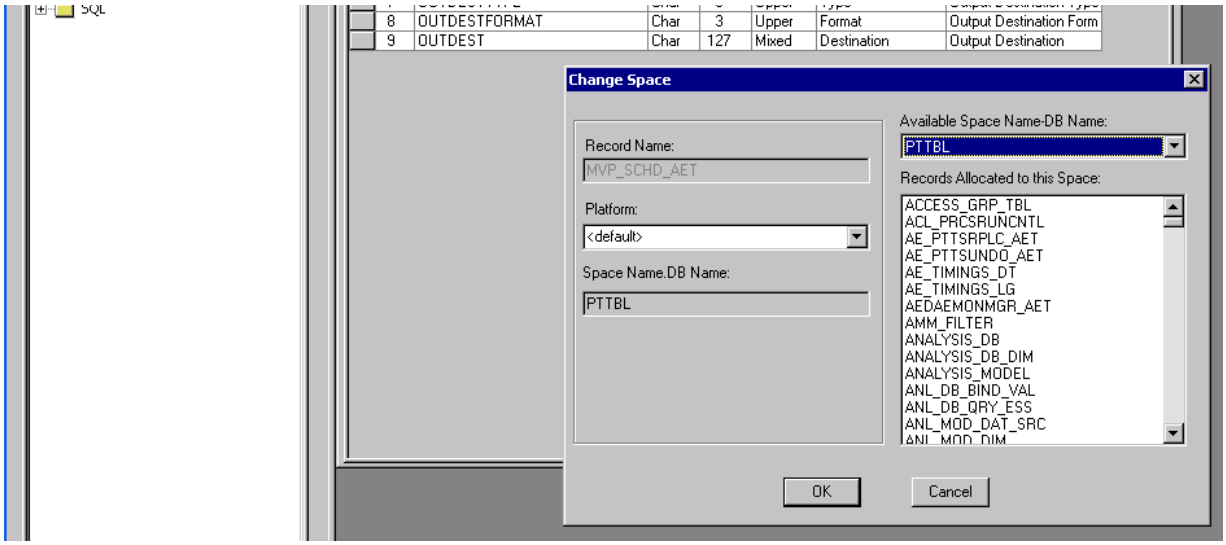
c. Navigate to Tools > Data Administration > Set Tablespace. The Change Space window appears.

d. Select the appropriate Platform and Tablespace Name depending on your database platform and click OK.

e. Save the record.

f. Repeat this process for the records MVP_SCHD_AUTH, MVP_SCHD_RCNTL, and MVP_SCHD_LOG.





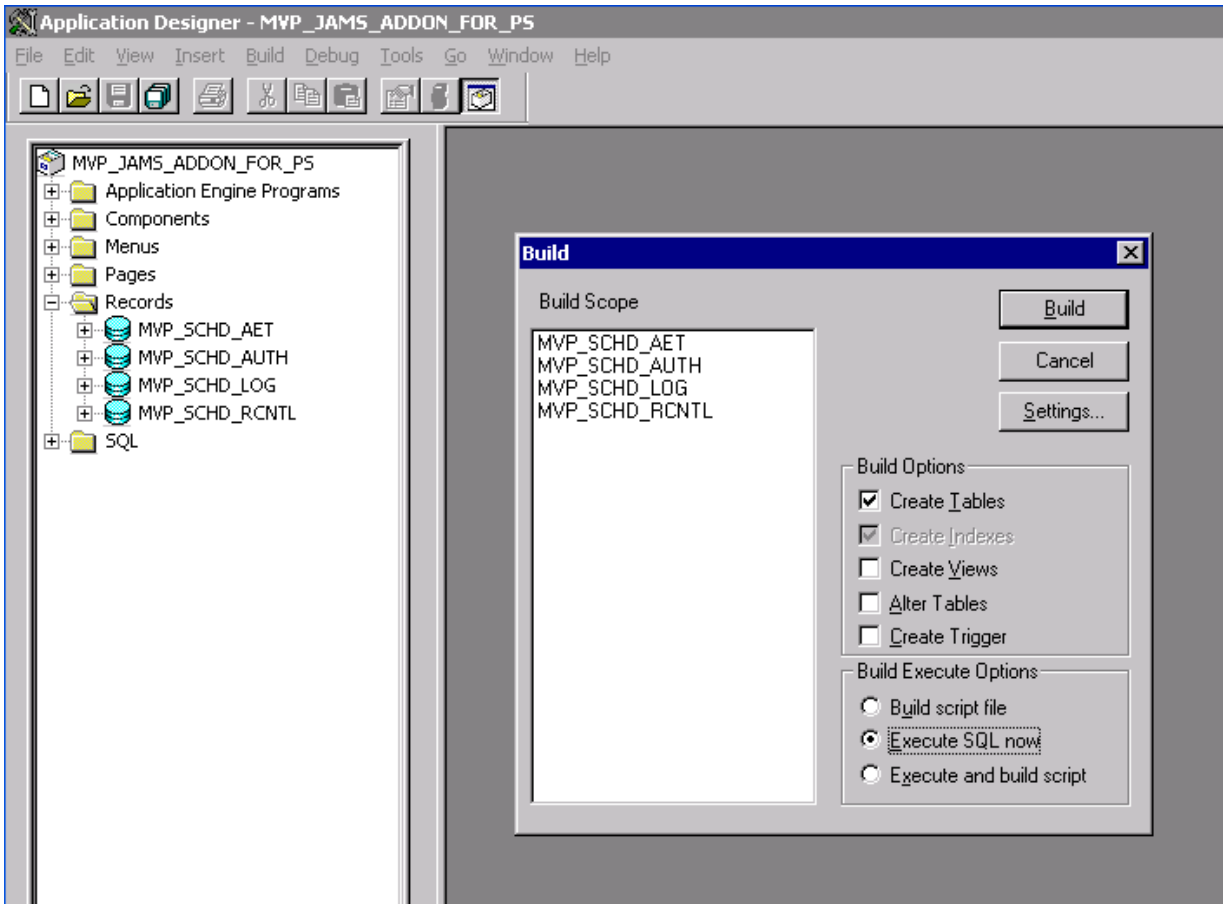
6. Build the Project to create the PS_MVP_SCHD_RCNTL table:

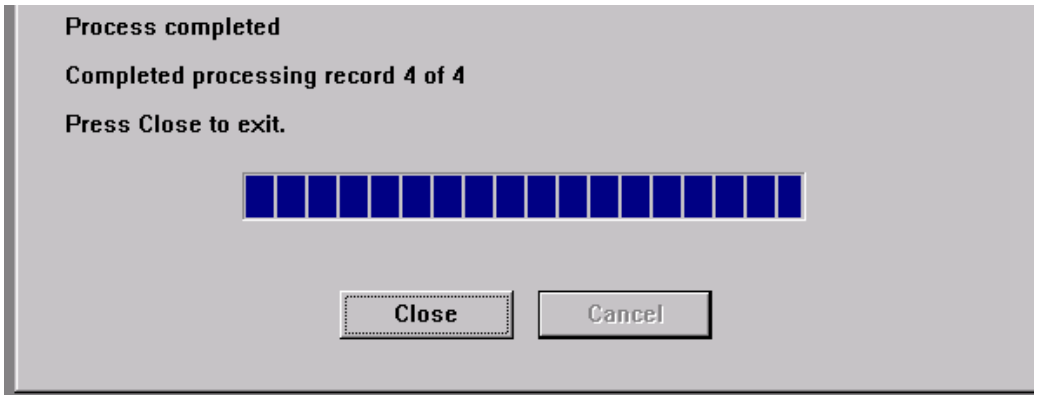
   a. Navigate to Build > Project

   b. Select the Create Tables and Create Indexes checkboxes.

   c. Select the Execute SQL Now button

   d. Click "Build".





e. Review the log files to verify there were no errors.

7. Congratulations! The JAMS Add On for PeopleSoft has been installed in your system.

3.3 The JAMSDBA Utility

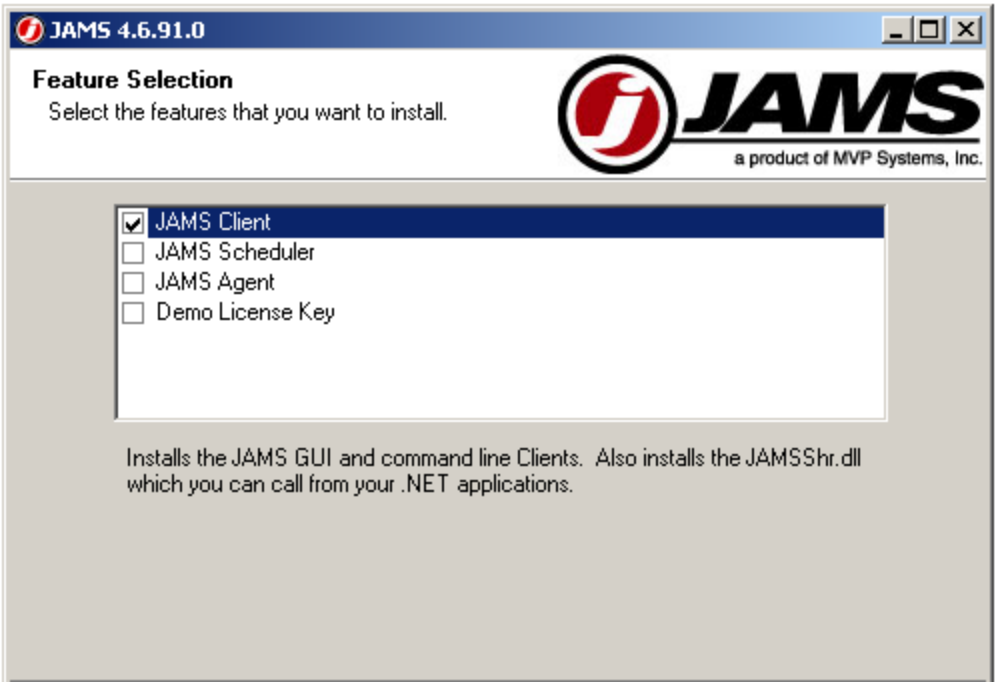
The JAMSDBA.exe utility is used to manage the JAMS Database and to perform other installation and management tasks. JAMSDBA is a command line utility and is located in the Scheduler installation directory (C:\Program Files\MVPSI\JAMS\Scheduler by default). When you start JAMSDBA, you are presented with a **JAMSDBA>** prompt. You can enter the command you want to execute or enter **"HELP"** to get online help.

You can also start JAMSDBA with a command appending the command you want to execute to the command to start JAMSDBA; for example:

```
JAMSDBA UPDATE/LOG
```

3.4 JAMS Clients

The JAMS Clients can be installed with any of the standard JAMS setup executables by selecting the JAMS Client option during installation. You can also extract the SetupClient.msi from the installation executable so that you can push the Client install out from a central location. The SetupClient.msi file installs the JAMS GUI, PowerShell, Command line, and .NET Class Library Clients.



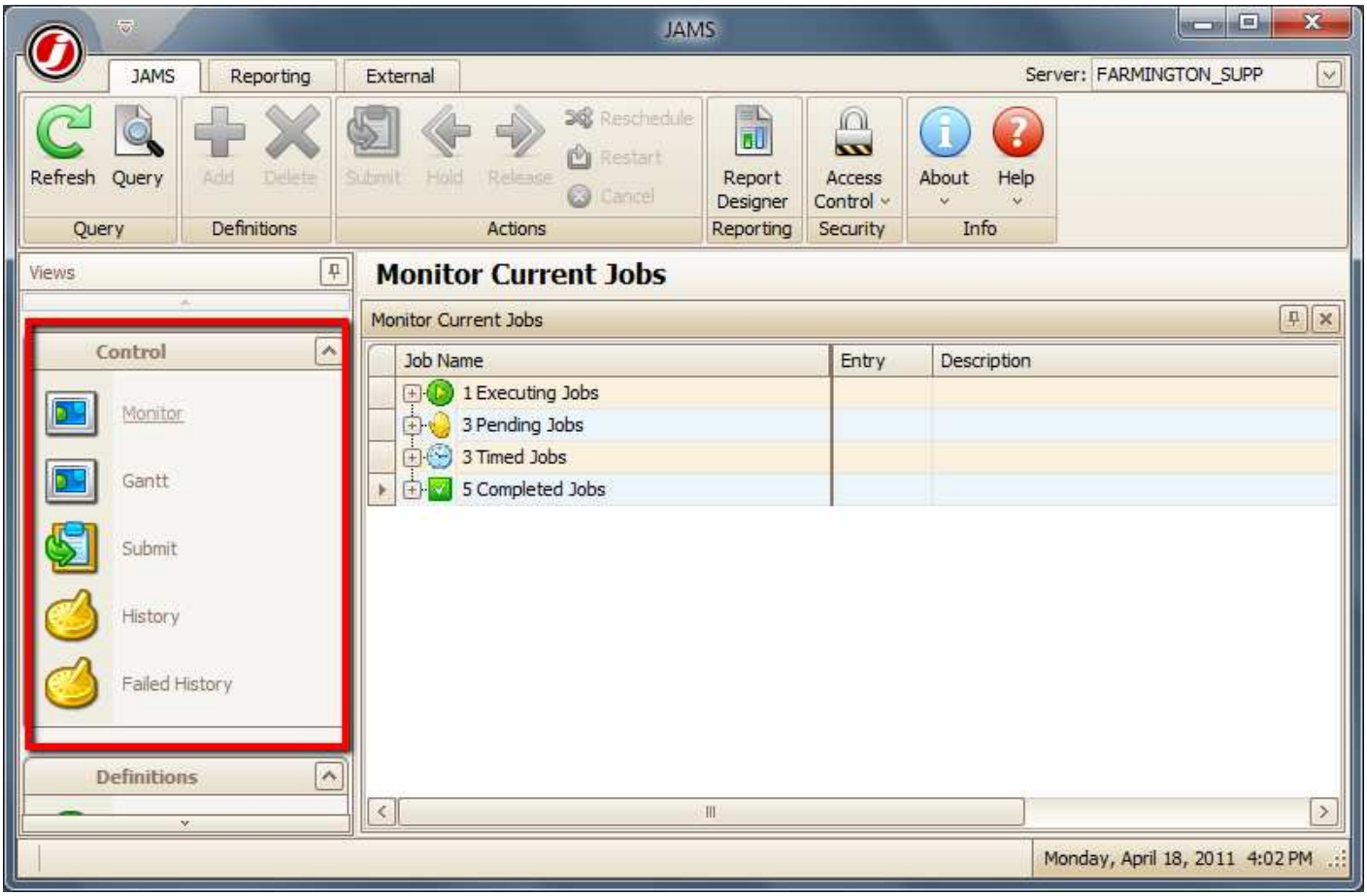
With the exception of the PowerShell Client, the JAMS Clients can also be deployed with an XCOPY installation. Simply copy the contents of the Client directory to the Client machine.

Please note that the PowerShell Snap-In is installed only if PowerShell is already installed. If you install PowerShell after installing JAMS, you have to reinstall the JAMS Client to pick up the PowerShell Snap-In.

There is no configuration required for the Client, but you can modify the default settings by editing the JAMSWin.exe.config, JAMS.exe.config or User.config files.

The .config files are XML text files you can edit with any text editor. The JAMSWin.exe.config file contains the default layout for the shortcuts contained in the JAMSWin GUI. You can customize these defaults to your environment.

This example illustrates the shortcuts defined in the JAMSWin.exe.config file:

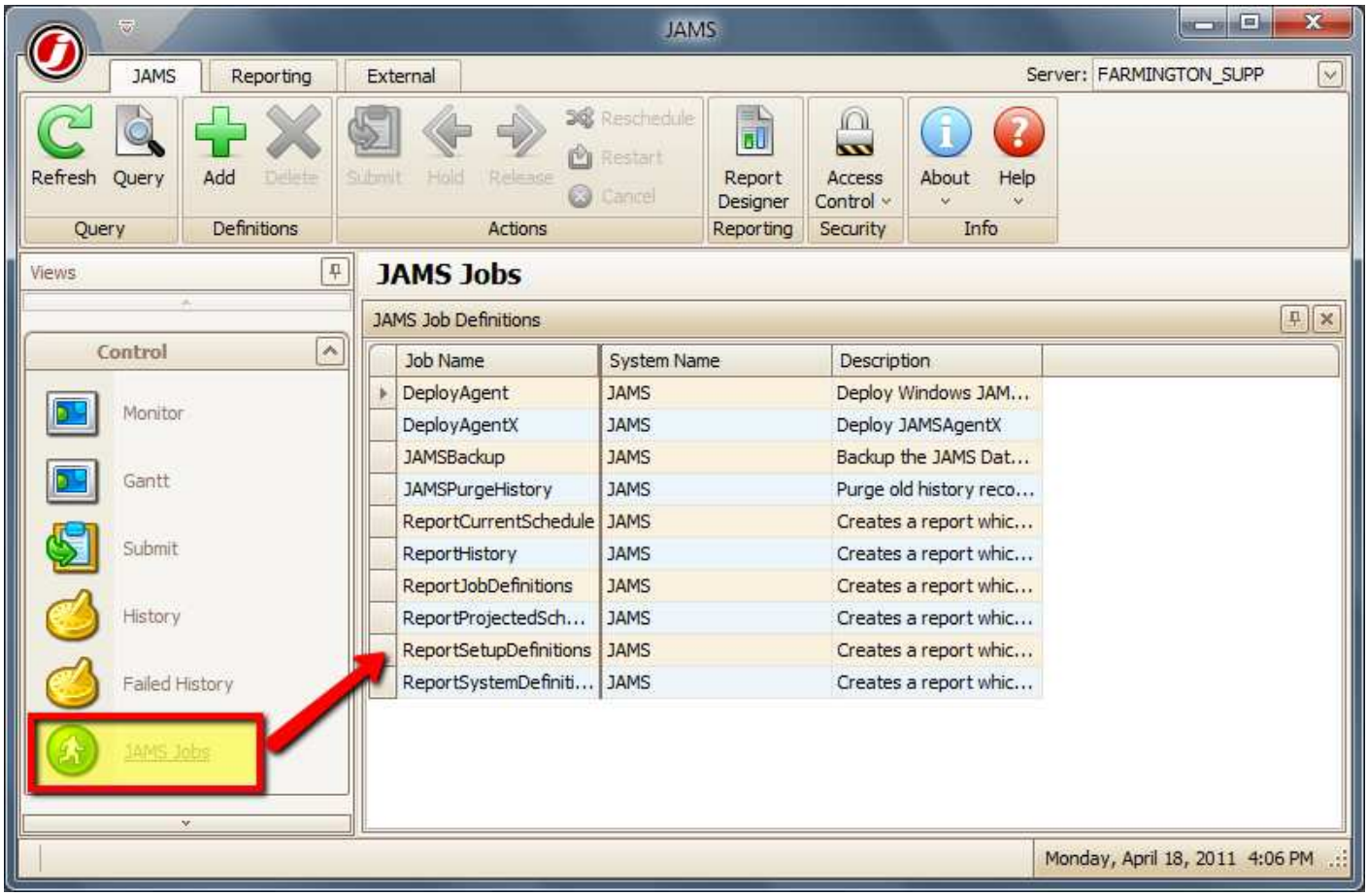


Users can easily customize these shortcuts, but you may want to create some standard shortcuts for your Users. For example, if you edit the JAMSWin.exe.config file and add this text:

```
<subkey name="Shortcut006">
<property name="Type">4</property>
<property name="Name">JAMS Jobs</property>
<property name="Title">JAMS Job Definitions</property>
<property name="Description" />
<property name="PromptForKeys">false</property>
<property name="QueryJobName">*</property>
<property name="QuerySystemName">JAMS</property>
```

```
</subkey>
```

to the end of the <Definitions> section, the result will look like this:



In addition, you can add default JAMS Server definitions to the JAMSWin.exe.config file so your Users don't have to worry about JAMS Server Definitions. To add default Servers, edit the JAMSWin.exe.config and populate the <JAMSServer> section. Here is an example that defines two JAMS Servers, Jimmy and Joe:

```
<JAMSServers>
<subkey name="Server000">
<property name="Name">Jimmy</property>
<property name="Node">jimmy.yourco.com</property>
<property name="Port">773</property>
<property name="Prompt">False</property>
</subkey>
<subkey name="Server001">
<property name="Name">Joe</property>
<property name="Node">joe.yourco.com</property>
<property name="Port">773</property>
<property name="Prompt">False</property>
</subkey>
</JAMSServers>
```

3.5 Microsoft Message Queueing

JAMS uses Microsoft Message Queue to reliably pass messages between the JAMS Services. It does this by creating a private queue named JAMSRequests.

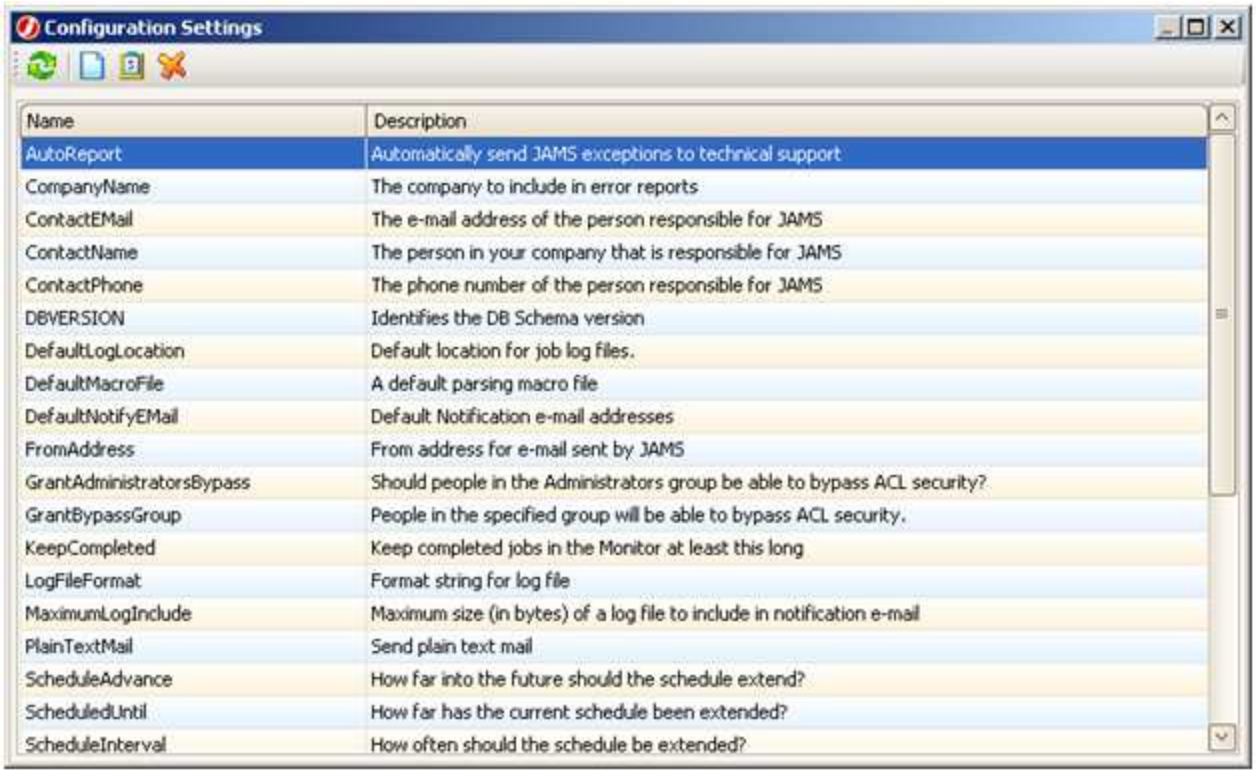
Installation

MSMQ is included with Windows, but it is not installed by default. If MSMQ is not installed when you install JAMS, the JAMS installer will install MSMQ with default, minimum settings. If you want to control how MSMQ is installed, you can install MSMQ before you start the JAMS installation.

If you want to change the way that MSMQ is installed after installing JAMS, stop the JAMS Services, reinstall MSMQ, and then restart the JAMS Services.

3.6 Configuration Settings

JAMS has a number of Configuration Settings. Reasonable defaults are supplied for all of the Settings. You can change these Settings from the JAMS GUI using the **Configuration** shortcut on the **JAMS** tab of the Ribbon Bar.



The configuration settings are:

Setting	Description
AutoReport	When set to true, failures of the JAMSServices will be automatically sent to JAMS technical support.
CompanyName	The company name to include in error reports.
ContactName	The person in your company that is responsible for JAMS.
ContactEmail	The email address of the person responsible for JAMS.
ContactPhone	The phone number of the person responsible for JAMS.
DBVERSION	Identifies the DB Schema version.
DefaultLogFormat	Format for creating log file specifications.

Setting	Description
	The default value is: “{0}\\{1}_{5:X8}{2}”
DefaultInputEncoding	The default input encoding for Routine Jobs
DefaultLogLocation	Default location for Job log files.
DefaultMacroFile	A default parsing macro file.
DefaultNotifyEMail	Default Notification e-mail addresses
DefaultOutputEncoding	The default output encoding for Routine Jobs
FromAddress	From address for e-mail sent by JAMS
GrantAdministratorsBypass	Should people in the Administrators group be able to bypass ACL security?
GrantBypassGroup	People in the specified group will be able to bypass ACL security.
HostKeyChecking	Defines what JAMS should do if the SSH fingerprint doesn't match when connecting. The options are: **AcceptHostKey**—Accepts the host key and adds the fingerprint to the cache of acceptable fingerprints. **CheckParameter**—Checks for a boolean parameter named AcceptHostKey and accepts the key if the parameter value is true. **FailFirstJob**—Fails the first job but adds the fingerprint to the cache of acceptable fingerprints.
KeepCompleted	Keep completed Jobs in the Monitor at least this long.
MaximumLogInclude	Maximum size (in bytes) of a log file to include in notification e-mails.
PlainTextMail	Send plain-text mail.
ScheduleAdvance	How far into the future should the Schedule extend? This is entered as a standard Windows time span, d.hh.mm (days.hours:minutes). For example, 0.08:00 is eight hours.
ScheduledUntil	How far into the future is the Schedule now? If you want to change this, you should stop the JAMS Scheduler service, change this setting, and then start the JAMS Scheduler service.
ScheduleInterval	How often should the Schedule be extended?
ScheduleMaxDownAction	Action to take if downtime exceeds the maximum (reset, fail, or continue).
ScheduleMaxDowntime	Maximum Scheduler downtime (in hours).
SMTPServer	SMTP Server Name.
TempLocation	Location for temporary files.
TimestampLogFormat	Format for creating time-stamped log file specifications. The default value is: “{0}\\{1}_{8:d4}{9:d2}{10:d2}_{11:d2}{12:d2}{13:d2}{14:d3}{2}”
WORK_FRI	Is Friday usually a workday?
WORK_MON	Is Monday usually a workday?
WORK_SAT	Is Saturday usually a workday?
WORK_SUN	Is Sunday usually a workday?
WORK_THU	Is Thursday usually a workday?
WORK_TUE	Is Tuesday usually a workday?
WORK_WED	Is Wednesday usually a workday?

The DefaultLogFormat and TimestampLogFormat settings are .NET format strings used to construct the full file specification for a Job's log file. The data values passed in the formatting operation are:

{0} – Directory specification
{1} - Filename
{2} – File Extension
{3} – System Name
{4} – Job or Setup Name
{5} – Run occurrence number
{6} – JAMS Entry number
{7} – Timestamp date & time
{8} – Timestamp year
{9} – Timestamp month
{10} – Timestamp day
{11} – Timestamp hour
{12} – Timestamp minute
{13} – Timestamp second
{14} – Timestamp millisecond

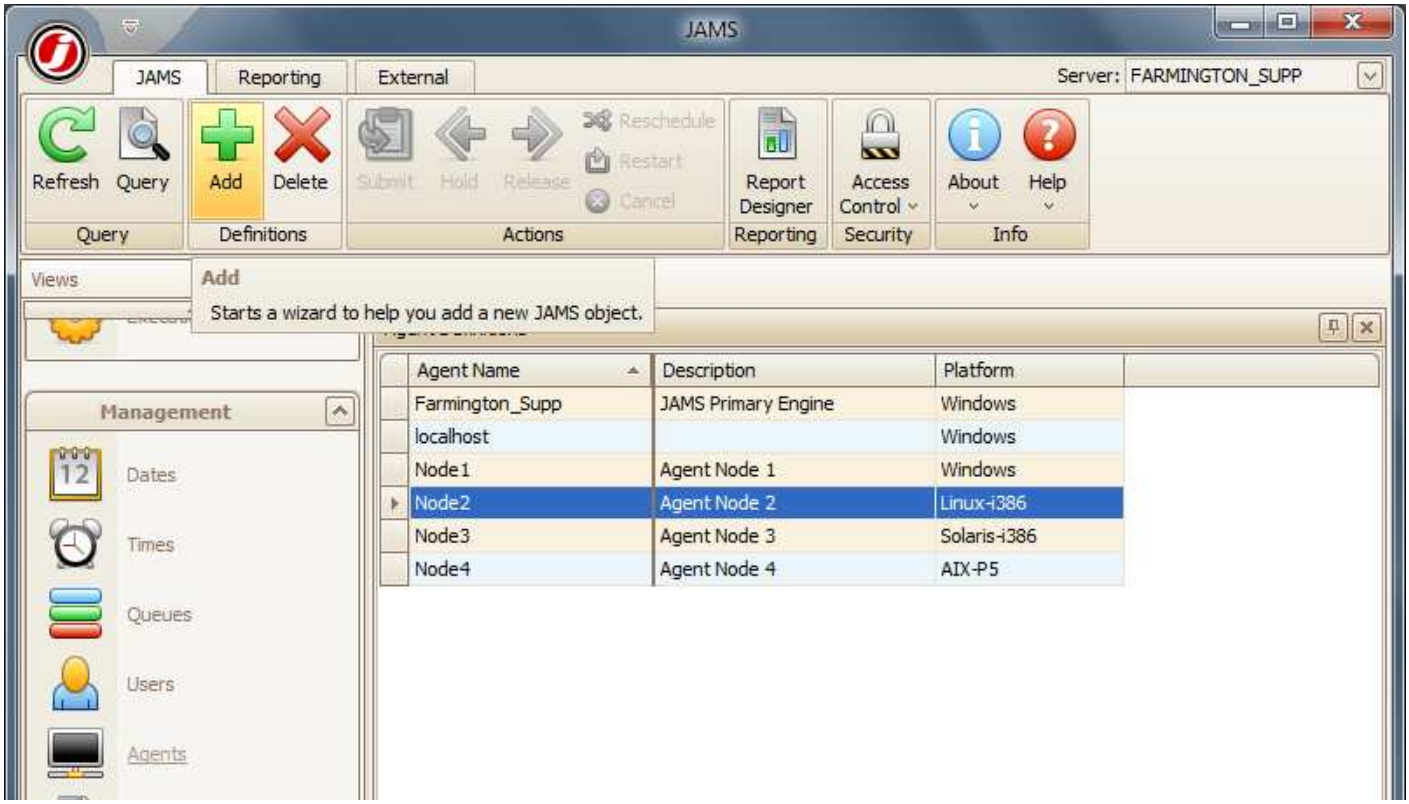
3.7 JAMS Agent X

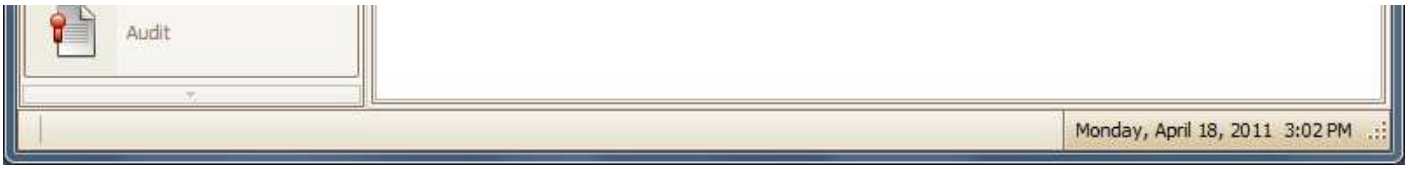
JAMSAgentX is a JAMS Agent designed to support non-Windows operating systems. JAMS uses SSH to connect to a machine and then starts JAMSAgentX to handle executing a Job or watching for a file.

Deploying

JAMSAgentX is installed along with the JAMS Scheduler, but you have to push it out to the Agent machines. You deploy from the **Agents** view of the **Management** tab in the JAMS GUI Client.

Begin by selecting the **Add** button on the **Agent** view.





Upgrading

If you install an updated version of JAMS, it may include an updated version of JAMSAgentX. To deploy the update, select one or more Agents in the Agent view, right-click, and pick **Deploy.**

JAMSAgentX Data

JAMSAgentX needs to keep track of the Jobs that are executing; it uses a simple database to do this. It also needs to keep the executing Job's scripts and log files while the Job is executing. All of this data is kept in a directory identified by the JAMS_HOME environment variable. If JAMS_HOME is undefined, the default is a directory named .jams in the User's home directory.

One way to change the value of JAMS_HOME is by changing the **Command** in the **Execution Method.** By default, the command is JAMSAgentX. You could change that to "env 'JAMS_HOME=/usr/data/jams' JAMSAgentX" to define JAMS_HOME before starting JAMSAgentX.

Troubleshooting

Examine the Job Log of the DeployAgentX job from Job History. The most common issues with deployment are:

- The User selected for the deployment job does not have sufficient privileges on the target machine.
- There are Jobs executing with the current version of JAMSAgentX.

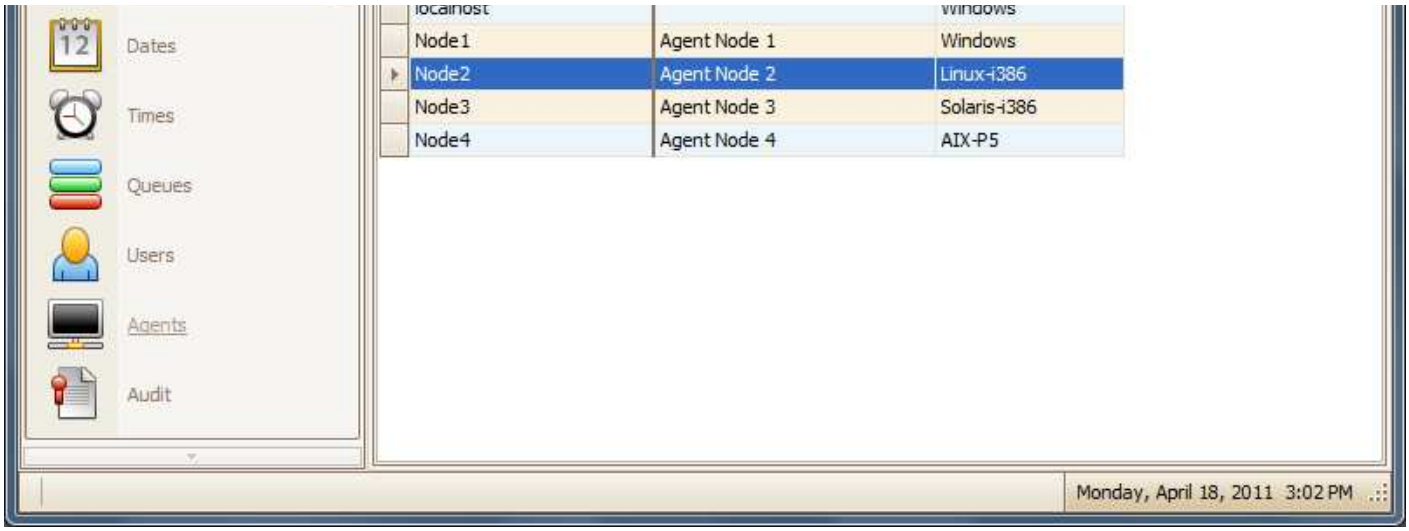
3.8 JAMS Agent for OS/400

The JAMS Agent for IBM OS/400 is a JAMS Agent designed to support the IBM OS/400 operating system (aka i5/OS). JAMS uses TCP/IP to connect to the IBM System i server.

Deploying

The JAMS Agent for IBM OS/400 is installed along with the JAMS Scheduler, but you have to push it out to the Agent machines. You deploy from the **Agents** view of the **Management** tab in the JAMS GUI Client. Before you try to deploy, make sure that you have created a JAMS User that contains the access information for a OS/400 user with the privileges required to deploy.

Begin by selecting the **Add** button on the **Agent** view.



Upgrading

If you install an updated version of JAMS, it may include an updated version of the JAMS Agent. To deploy the update, select one or more Agents in the Agent view, right-click, and pick **Deploy.**

Troubleshooting

Examine the Job Log of the DeploySystemi job from Job History. The most common issues with deployment are:

- The User selected for the deployment job does not have sufficient privileges on the target machine.
- FTP is disabled or blocked.

If the JAMS DeploySeriesi job will not work because of access restrictions (i.e. FTP is blocked), you can manually deploy the agent by following these steps:

- Create a JAMS user profile: **CRTUSRPRF USRPRF(JAMS) PASSWORD(*NONE) SPCAUT(*JOBCTL)**
- Create a library: **CRTLIB LIB(JAMSLIB)**
- Create a save file: **CRTSAVF FILE(JAMSLIB/JAMSSAVF)**
- Copy the JAMSSAVF.SAVF from the JAMS Scheduler to the OS/400 server
- Restore the objects: **RSTOBJ OBJ(*ALL) SAVLIB(JAMSLIB) DEV(*SAVF) SAVF(JAMSLIB/JAMSSAVF) MBROPT(*ALL) RSTLIB(JAMSLIB)**
- Start the JAMS subsystem: **STRSBS SBSD(JAMSLIB/JAMS)**

3.9 Administration

3.9.1 The JAMS Services

Installing the JAMS Scheduler installs three Windows Services: the JAMS Scheduler, JAMS Server, and JAMSExecutor. In addition, installing the JAMS Agent on Windows will install the JAMS Agent Windows Service.

JAMS Scheduler

The JAMS Scheduler service is the heart and soul of JAMS. It is responsible for automatically scheduling jobs, firing triggers, checking dependencies, etc. The JAMS Scheduler requires access to the JAMS Database. If the database is unavailable, the JAMS Scheduler service will fail. However, JAMS is designed to be resilient. Job execution is handled by the JAMS Executor service, so if the JAMS Scheduler service fails, you do not lose any job execution information.

JAMS Server

The JAMSServer service provides middle-tier services to JAMS Clients. This includes all forms of the JAMS Client: GUI, Powershell, .NET Class Library, and web services. This service is not involved in the execution of Jobs (although, many jobs may use the JAMS Powershell client, which does need this service).

JAMS Executor

The JAMS Executor is responsible for executing and monitoring Jobs. It does not access the JAMS Database.

JAMS Agent

The JAMS Agent service is an extension of the JAMS Executor service. When the JAMS Executor needs to execute a Job on a different machine, it does so via the JAMS Agent running on the remote machine.

Troubleshooting

Each of the JAMS Services creates a log file in the installation directory. The log file is named ServiceName.log (i.e. JAMSScheduler.log). Every Sunday these logs are automatically reset. The previous week's log file is renamed to ServiceNameArchive.log (i.e. JAMSSchedulerArchive.log).

The JAMS services will also write serious errors to the Windows Event log. When troubleshooting JAMS, you should check the event log and the .log files.

If you suspect there is a problem with JAMS and you want to restart the JAMS services, you should start by restarting the JAMS Scheduler service, because this services does the most work and restarting it is the least disruptive. Restarting the JAMS Scheduler service will not cause any Jobs to fail and you won't lose any job completion information. While the JAMS Scheduler service is stopped, new Jobs will not start.

You can also stop the JAMS Server service without losing any job execution information. However, JAMS Clients will not work while the JAMS Server service is down.

Stopping the JAMS Executor service is a last resort, and usually won't help resolve a problem. The JAMS Executor executes and monitors Jobs. If you stop the service, we will lose the completion information of any executing Jobs. In addition, some of the Jobs may fail. The JAMS Executor service does not access the JAMS database, so you don't have to stop this service when you are doing SQL Service maintenance.

Service Accounts

The JAMS services are set to run under the LocalSystem account. You may want (or need) to change this to a Windows Domain based account. In general, we recommend leaving the JAMS Executor and JAMS Agent services running under LocalSystem. These services do not need access to the database or network and they do need the privileges associated with the LocalSystem account.

You can use the Service Control application to change the account that the JAMS Scheduler and JAMS Server services run under. You may want to do this if you want to control network and database access.

If you do change the account you may also have to adjust the security settings on:

- C:\Program Files\MVPSI\JAMS\Scheduler folder
- C:\Program Files\MVPSI\JAMS\Scheduler\JAMSScheduler.log
- MSMQ JAMSRequests Private queue
- SQL Server
- JAMS Database

For the MSMQ JAMSRequests private queue, you need to modify the security on the queue to grant the domain account full access to the queue. In order to do that, you may have to "Take Ownership" of the MSMQ queue.

The follow Local Security Policies should also be granted for the domain based account:

- Log on as a Batch job
- Log on as a Service
- Adjust memory quotas for a process
- Bypass traverse checking
- Replace a process level token

If the domain based user account is not in the administrators group then you will have to create an Active Directory Group, add the user to the group, and then put:

<add key="AuthorizedGroup" value="Domain\YourGroup" />

in the Common.config file located in the Program Files\MVPSI\JAMS\Scheduler directory.

3.9.2 The JAMS Database

The following articles contain information on management of the JAMS SQL database backend:

- **Creation (Section 3.9.2.1)**
- **Backup (Section 3.9.2.2)**
- **Restoring (Section 3.9.2.3)**
- **Moving (Section 3.9.2.4)**

The following link provides a description of the SQL database tables used by JAMS:

- JAMS SQL Database Tables

3.9.2.1 Creation

In most instances, the JAMS Database will be created during the installation of the JAMS Scheduler. In some cases, the person installing the JAMS Scheduler may choose not to create the JAMS Database. Possibly because they are not permitted to create databases or simply because they prefer to let the DBA handle that task.
JAMS looks for the SQL Server connection string in the Common.config file. This file is created during the database creation process, so if the file is absent it indicates the JAMS Database has not been created. Likewise, if you want to redo the database creation, simply delete or rename that file.
To create a JAMS database after the JAMS Scheduler has been installed, open a command window and execute these commands:

```
CD "C:\Program Files\MVPSI\JAMS\Scheduler" JAMSDBA INSTALL
```

During the installation you are asked for SQL authentication information. You must use an account that has the ability to modify the master Database and create a new Database. The JAMS installation modifies the master Database by adding SQL messages. If you would like to review these changes, you can look at the C:\ProgramFiles\MVSPI\JAMS\Scheduler\JAMS_DB_ERRORS.sql file

Security

JAMS supports either Windows Integrated authentication or SQL Server authentication. You can change this after installation by changing the connection string found in the Common.config file.
The default installation expects the JAMS Services to be running under the LocalSystem account. To facilitate this, the installation executes these SQL commands:

```
exec sp_grantlogin @loginame='BUILTIN\Administrators' exec sp_grantdbaccess @loginame='BUILTIN\Administrators', @name_in_db='JAMSService' exec sp_addrolemember @rolename='JAMSApp', @membername='JAMSService'
```

The net effect is that using Windows Integrated authentication, anyone in the Administrators group maps the JAMSService Database user, and that user is in the JAMSApp Database role. You can adjust that security to meet your standards, but the bottom line is that the JAMS Services must be in the JAMSApp Database role.

3.9.2.2 Backup

It is very important for you to backup your JAMS Database. Since the JAMS Database is a standard SQL Server database, you can add it to your existing SQL Server database backup procedures.

Choosing the Recovery Model

Before you can implement a backup plan, you have to decide which recovery model you want to use with the JAMS database. The default installation uses the Simple recovery model. The other option is the Full recovery model. The difference between the two is in the amount of journaling performed by the database.

Simple Recovery Model

As its name implies, the Simple recovery model is the easiest to use. You periodically backup your JAMS database, but you do not need to backup the journal file over growth worries. The downside to the simple model is a lack of recovery options. If you lose or corrupt your JAMS database, you can recovery from backup but, you lose all database changes since the backup was performed. This includes Job Execution History, so Job Dependencies may not work as expected.

Full Recovery Model

The Full recovery model has much more robust recovery features. The downside is that you need to manage the journal file for the JAMS Database. Each time a change is made to the JAMS Database, it is also written to the journal file.

If you have a hardware failure or otherwise corrupt your JAMS Database, you can restore a backup and then recover from the journal files up to a specific point in time.

3.9.2.3 Restoring

There are many reasons for restoring a JAMS Database from backup. In general, it is a standard SQL Server restore operation. However, there are some things to consider before you restore a JAMS Database.

The JAMS Database includes the current Schedule. In many cases, you don't want the current Schedule restored. If the Database was backed up on Monday and you restore it on Friday, you probably don't want to start running Monday's Jobs and then continue with the rest of the week's processing.

When the JAMS Scheduler starts, it looks at the Database to see how up to date the Schedule is. It looks at the current Schedule point of the Database and checks that against the ScheduleMaxDowntime configuration setting. If the Database is older than that setting allows, the Scheduler will take the action specified in the ScheduleMaxDownAction configuration setting. The default settings are 48 hours and reset, which means that if the Database is more than 48 hours old, reset the schedule.

Depending on your settings for the ScheduleMax... configuration settings, you may want to manually clear the Schedule.

To clear the Schedule, open a command window and execute these commands:

```
CD "C:\Program Files\MVPSI\JAMS\Scheduler"
JAMSDBA RESET SCHEDULE
```

If the backup was performed on a different version of JAMS, you must use the JAMSDBA utility to update the Database schema to match the installed version of JAMS.

To update the database Schedule, open a command window and execute these commands:

```
CD "C:\Program Files\MVPSI\JAMS\Scheduler" JAMSDBA UPDATE/LOG
```

3.9.2.4 Moving

The process for moving the SQL database used by JAMS does not require reinstalling JAMS.

To relocate the SQL database used by JAMS:
1. Perform a normal SQL database backup and restore to target SQL server.
2. Edit the connection string property of the Common.config file found in C:\Program Files\MVPSI\JAMS\Scheduler.
3. Restart the JAMS Scheduler service from the Windows control panel services applet.
4. Run "JAMS_DB_ERRORS.sql" on the new server. This script is found in the JAMS Scheduler directory.

The Common.config file contains the connection string used by JAMS services to connect to the SQL database. Below are two examples of connection string information, one for Windows Authentication models, one for SQL Authentication models.

For Windows Authentication:

```
<?xml version="1.0" encoding="utf-8" ?>
<appSettings>
   <add key="ConnectionString" value="Server=SQLA\INST1; Failover Partner=SQLB\INST1; Database=JAMS; Application Name=JAMS; Connect Timeout=600; Integrated Security=SSPI"/>
</appSettings>
```

For SQL Account Authentication:

```
<?xml version="1.0" encoding="utf-8" ?>
<appSettings>
<add key="ConnectionString" value="Server=SQLA\INST1; Failover Partner=SQLB\INST1; Database=JAMS; Application Name=JAMS; Connect Timeout=600;Trusted_Connection=False;uid=YOURSQLACCOUNT;pwd=YOURPASSWORD" />
</appSettings>
```

3.9.3 Common User Settings

JAMS V6 - SettingsPath

JAMS includes support for overriding the location that Client settings are saved. This is useful when you want multiple JAMS Clients to default to the same set of shortcuts and theme. It also simplifies pushing out a new set of shortcuts or layout changes since only one location needs to be updated.

The “SettingsPath” is configured for each JAMS Client by modifying the User.config file as described below:

1.) Open the configurationfile which by default is found here: C:\Program Files\MVPSI\JAMS\Client\User.config

2.) Add a new entry within the “appSettings” tags called “CommonSettingsPath” with a value of the location where you want to save the Client settings:

For example:

<appSettings file="User.config">

<add key="ClientSettingsProvider.ServiceUri" value="" />

<add key=”CommonSettingsPath" value="\\AppServer\ClientSettings\" />

</appSettings>

3.) Optionally, if you want the Client to save changes back to this common location you will need to add an entry for “WriteToCommonSettings” with a value of true. By default any new changes will be saved to the user-specific location which is where JAMS always checks first.

<add key="WriteToCommonSettings" value="true" />

4.) The next step is to copy the desired Client settings into the new common location. By default, JAMS stores the Client settings by version number for each user as described in the following Knowledge Base Article:

http://jams.freshdesk.com/solution/articles/139055-client-gui-settings

a.) Two key files are Servers.xml and JAMSPage.xml. These define the JAMS Server definitions and the shortcuts on the JAMS Page. In many cases, these are the only files that you want in the common area. The other files save things that are more user specific such as columns and column widths.

b.) You can copy the entire folder which should be name of the version of JAMS such as “6.0.510.0”. This Folder will contain all the current Client settings and should be placed in the new location.

5.) JAMS will now try to load files from the Common area that it does not find in the user-specific location. In order to force an existing JAMS client to load from the Common area you will need to delete the user-specific settings.

Notes:

This setting is also useful if you want to have varying Client layouts for different user groups such as Admins, Developers, and Users. You could set up three directories which contain the appropriate settings for each group. After configuring the Client config file for the members of these groups you could then manage the settings independently.

a.) If the “WriteToCommonSettings” option is true for multiple JAMS Clients any one of them can overwrite the common settings.

b.) JAMS will only load from the common location if it doesn’t find the file in the user-specific location.

c.) You can prevent users from macking changes to server definitions by adding:

<add Key=”LockServer” value=”true” />

d.) You can prevent users from changing shortcuts by adding:

<add Key=”LockShortcutbar” value=”true” />

3.10 Managing Encryption Keys

JAMS encrypts password and private key information when it is stored in the database. The standard JAMS installation uses a predefined encryption key which is adequate for many sites. For additional protection, you can generate a unique encryption key but, if you do, you must ensure that you properly backup and secure the encryption key.

When you generate a unique encryption key, JAMS uses the Rinjndael encryption algorthm to reencrypt all of the password and private key information in the database. The generated key is then encrypted and stored using the Windows Data Protection API (DPAPI). The protected key is associated with the user account that the JAMS Server and Scheduler services run under.

You use the following commands available in the JAMSDBA utility to manage encryption keys:

GENERATE KEY - Generates a new 256 bit encryption key, decrypts passwords with the old key then encrypts with the new key. The new encryption key is then stored using DPAPI.

EXPORT KEY - Pulls the encryption key from DPAPI and writes it to a text file. You must protect this file because the key is *not* encrypted.

IMPORT KEY - Similar to GENERATE KEY but, the new key is pulled from a text file instead of being generated. If you are recoverying from backup or configuring the secondary server in a failover configuration, you should use the /NOENCRYPT qualifier to skup the decryption and reencryption of the current data.

Protecting a Standalone JAMS Server

To protect a standalone JAMS server, perform the following steps:

1. Log on to the server as a user that has "Execute" access to JAMS Configuration settings.
2. Set your default directory to the JAMS Scheduler installation directory (default is C:\Program Files\MVPSI\JAMS\Scheduler)
3. Execute JAMSDBA.EXE which will give you a JAMSDBA> prompt.
4. Enter GENERATE KEY and press Return.
5. Enter EXPORT KEY YourFileName.txt and press Return.
6. Enter EXIT and press Return.
7. Move the exported text file to a safe location.

Restoring a Standalone JAMS Server

If you restore a backup of the JAMS database on different server, the encrypted passwords cannot be decrypted

because the encryption key was protected by the DPAPI for the original machine and user. To restore the encryption key from backup, follow these steps:

1. Log on to the server as a user that has "Execute" access to JAMS Configuration settings.
2. Set your default directory to the JAMS Scheduler installation directory (default is C:\Program Files\MVPSI\JAMS\Scheduler)
3. Copy the exported text file (YourFileName.txt) from your safe location to the current directory.
4. Execute JAMSDBA.EXE which will give you a JAMSDBA> prompt.
5. Enter IMPORT KEY/NOENCRYPT and press Return.
6. Enter EXIT and press Return.

Failover Environments

To protect the servers in a failover environment, you should follow these steps:

1. Make sure that your Primary JAMS server is in the Running state.
2. Log on to the primary server as a user that has "Execute" access to JAMS Configuration settings.
3. Execute JAMSDBA.EXE which will give you a JAMSDBA> prompt.
4. Enter GENERATE KEY and press Return.
5. Enter EXPORT KEY YourFileName.txt and press Return.
6. Enter EXIT and press Return.
7. Move the exported text file to a safe location.
8. Log on to the secondary server as a user that has "Execute" access to JAMS Configuration settings.
9. Set your default directory to the JAMS Scheduler installation directory (default is C:\Program Files\MVPSI\JAMS\Scheduler)
10. Copy the exported text file (YourFileName.txt) from your safe location to the current directory.
11. Execute JAMSDBA.EXE which will give you a JAMSDBA> prompt.
12. Enter IMPORT KEY/NOENCRYPT and press Return.
13. Enter EXIT and press Return.

3.11 High Availability

JAMS supports a number of options for providing high availability, including:

- **JAMS Fail Over Schedule (Section 3.11.1)**
- **Windows Clusters (Section 3.11.2)**
- **SQL Server Mirroring (Section 3.11.3)**
- **SQL Server Log Shipping (Section 3.11.4)**

3.11.1 JAMS Fail Over Scheduler

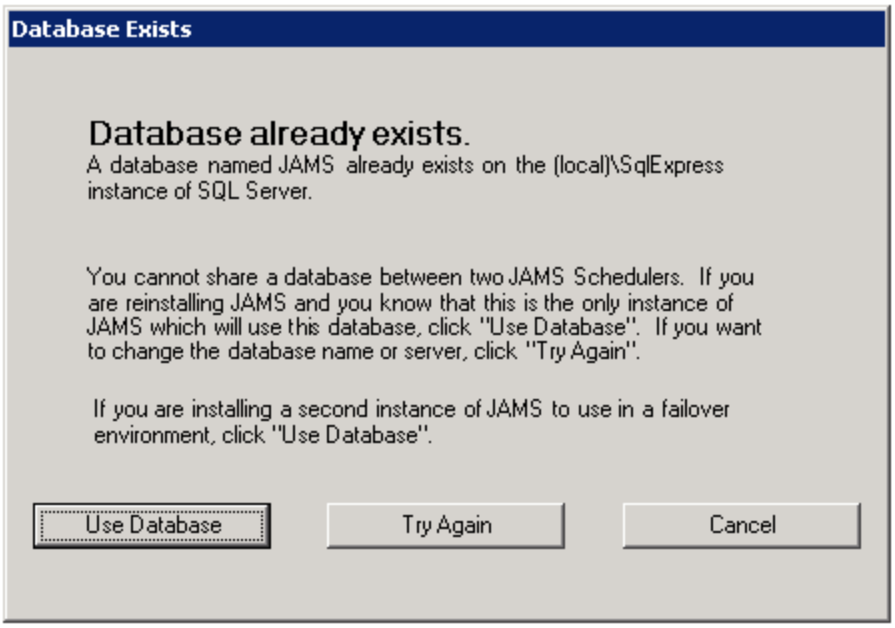
The JAMS Failover Engine provides automatic failover of the JAMS Scheduler without requiring a Microsoft Cluster.

Installation

Here are the instructions for installing a JAMS Failover Server:

1. Install the first Primary JAMS Scheduler.
2. If you want redundant databases, configure a SQL Server mirror of the JAMS Database.
3. Stop the JAMS Scheduler service on the Primary Engine.
4. Install the JAMS Scheduler on the second node; when prompted for the database server, specify the same SQL Server, Instance, and Database name as the first Server. You will receive a dialog that says “Database already exists.” Click **Use Database**.

5. Stop the JAMS Scheduler service on the second machine.
6. Create\Edit the Failover.config file.
7. Copy the Failover.config to both machines. Failover.config should be identical on both machines.
8. Start the JAMS Scheduler service on both machines.



Here is a sample Failover.config:

```
<FailoverConfig>
<Primary>Server1</Primary>
<Secondary>Server2</Secondary>
<Port>4773</Port>
</FailoverConfig>
```

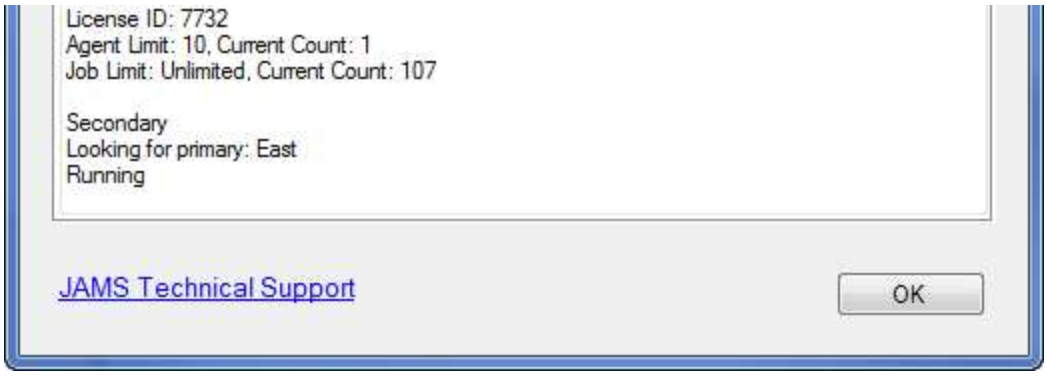
Monitoring

Under normal conditions, the JAMS Scheduler, Server, and Executor services are started on both Servers. The Server and Executor services run as they normally do. The Scheduler service is the key; one will be in Primary mode and the other will be in Secondary mode. The Primary Scheduler is actively working; the Secondary is just processing "keep alive" messages to and from the Primary.

If the Primary Scheduler should fail for any reason, the Secondary will detect the failure and take over the Scheduling responsibilities.

You can check the current status of a Scheduler from the JAMS GUI by selecting **About->JAMS Server.**

This example shows a Secondary JAMS Scheduler that is looking for the Primary and is currently running (because the Primary is down).



3.11.2 Clustering

JAMS Supports Windows Clustering. There are many ways to configure a Windows Cluster, and your options will vary depending on whether you're configuring the JAMS Scheduler or the JAMS Agent.

JAMS Scheduler

The JAMS Scheduler can be configured in an active/passive mode. The JAMS Services should be included in the same cluster resource group so they fail over as a unit.

JAMS Agent

The JAMS Agent can be configured in an active/active or active/passive mode. The key is the IP address cluster resource. When directing Jobs or Queues to a clustered agent, you can specify a DNS name that resolves to an IP address that fails over in a cluster to execute a Job on whichever node in the cluster is currently serving that IP address. This would be considered an active/passive configuration.

You could also specify a DNS name that resolves to an IP address that does not fail over. In this way, you are directing the Job to a specific machine in the cluster. This could be considered an active/active configuration.

In addition, you can create multiple IP address resources that normally run on different nodes in the cluster, but will fail over if a machine fails. This would be an active/active configuration.

3.11.3 SQL Server Mirroring

JAMS supports using a Mirrored Database. Please consult the SQL Server documentation for information on configuring and creating a Mirrored Database.

Once the JAMS Database has been successfully created, you should edit the connection string that is located in the Common.config file to add the "Failover Partner=OtherServer." This isn't strictly required, but if JAMS starts and the Primary Database server isn't available, JAMS won't know who the Secondary Server is.

3.11.4 SQL Server Log Shipping

JAMS supports SQL Server log shipping for disaster-recovery sites. In this scenario, you generally have JAMS installed at the DR site, but the services are all stopped. You configure the SQL Server to ship transaction logs to the DR site so the JAMS Database at the DR site is very close to current.

If a disaster occurs, you simply start the JAMS Services at the DR site.

Please consult the SQL Server documentation for information on configuring and managing log shipping.

4 Using OpenVMS as Your Scheduler

JAMS for OpenVMS is delivered in three basic packages.

JAMS Scheduler for OpenVMS

The JAMS Scheduler for OpenVMS is the only required component to run JAMS on OpenVMS. This installation kit includes the JAMS Scheduler, a command-line interface, and a character-cell interface.

JAMS Agent for OpenVMS

The JAMS Agent for OpenVMS is an optional component that allows JAMS Schedulers running on other machines (Windows or OpenVMS) to execute Jobs on an OpenVMS system.

JAMS Windows Components for OpenVMS

The JAMS Windows components for OpenVMS package contains Windows-based components you might want to use when you run the JAMS Scheduler on OpenVMS. These components are the JAMS Client, JAMS Agent, and the OpenVMS Connection Server.

The OpenVMS Connection Server is a Windows service that acts as a middle tier between an OpenVMS Scheduler and Windows Clients. This is an optional component and is required only if you want to use the JAMS Windows-based Clients to access an OpenVMS-based JAMS Scheduler.

The JAMS Client and Agent in this kit are exactly the same as the Client and Agent in the Windows kits.

Next Steps

Installing the JAMS Scheduler on OpenVMS (Section 4.1)

Installing the OpenVMS Connection Server (Section 4.2)

Installing the JAMS Agent on OpenVMS (Section 4.3)

Read the following articles on the JAMS Support site for more information:

Using Multiple Temp Directories with OpenVMS

JAMS for OpenVMS V4.2M

Are there any issues with OpenVMS V8.3?

4.1 Installing the JAMS Scheduler on OpenVMS

Prerequisite Software

This version of JAMS requires OpenVMS/AXP V6.2 or higher, OpenVMS/I64 V8.2 or higher, or OpenVMS/VAX version 6.2 or higher.

Decompressing ZIP Files

When you downloaded JAMS, you downloaded a self-extracting zip archive. The file will be named JAMSAXP042x.EXE, JAMSIA042x.EXE, or JAMSVAX042x.EXE, where "x" is replaced by the patch level of the kit.

These self-extracting zip archives are OpenVMS executable images. You unpack them by simply running them. The archives contain the following files:

- JAMS_DEMO_LICENSE.COM

- JAMSAXP042.A (or JAMSIA042.A or JAMSVAX042.A)
- JAMSAXP042.B (or JAMSIA042.B or JAMSVAX042.B)
- JAMSAXP042.C (or JAMSIA042.C or JAMSVAX042.C)

The JAMS_DEMO_LICENSE.COM is a command procedure used to register a demo license. If you have a permanent license PAK, you do not need to use this procedure.

Accessing the Online Release Notes

JAMS provides online release notes. If you use OPTIONS N on the VMSINSTAL command line, the installation procedure will ask if you want to display or print these release notes. To obtain the release notes after installation, type or print the file SYS$HELP:JAMS042.RELEASE_NOTES.

License Registration

Before you can install JAMS on a newly licensed node or cluster, you must first register and load a License Product Authorization Key (License PAK). The JAMS License PAK is registered and loaded using the standard VMS License Management Facility (LMF).

If you have a demonstration license PAK, you can register it with the JAMS_DEMO_LICENSE.COM command procedure. This command procedure is located on the CD-ROM in the [JAMS040] directory. Note that demonstration licenses have a product name of JAMS-DEMO and real licenses have a product name of JAMS. Example license management command shows a product name of JAMS, which you must change to JAMS-DEMO if you are working with a demonstration license.

To register a license under VMS, first log into the system manager's account, SYSTEM. You then have a choice of two methods to register and load your License PAK:

- Invoke the SYS$UPDATE:VMSLICENSE.COM command procedure and respond to the prompts with data from the JAMS PAK.
- At the DCL prompt, enter the LICENSE REGISTER command with the qualifiers that correspond to the information on the JAMS PAK. Then issue the command:

```
$ LICENSE LOAD JAMS/PRODUCER=MVP
```

Installation Procedure Requirements

The installation takes 10–20 minutes. Before installing JAMS, you must have the following privileges and resources:

- SETPRV privileges, or CMKRNL, WORLD, and SYSPRV privileges
- At least 13,000 (17,000 for Alpha) free blocks of disk space on the device that will hold the JAMS executable files
- At least 7,000 free blocks of disk space on the device that will hold the JAMS data files
- A minimum of 2,200 (3,100 for Alpha) free global pages
- A minimum of 15 free global sections

The installation procedure will check for the required resources before it begins the installations. If you do not have enough of a given resource, the installation procedure will issue error messages that identify the resource you are short on, and the installation will terminate.

To determine the number of free global pages on your system, type the following DCL command:

```
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLPAGES")
```

The number displayed is the total number of free global pages. If this number is less than 1,800 (3,600 for Alpha), you can increase the GBLPAGES system parameter by editing the file SYS$SYSTEM:MODPARAMS.DAT and invoking the SYS$UPDATE:AUTOGEN.COM command procedure. For more information on adjusting SYSGEN parameters and using AUTOGEN, please refer to the appropriate VMS documentation.

To determine the number of free global sections on your system, type the following DCL command:

```
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLSECTS")
```

The number displayed is the total number of free global sections. If this number is less than 15, you can increase the GBLSECTIONS system parameter by editing the file SYS$SYSTEM:MODPARAMS.DAT and invoking the SYS$UPDATE:AUTOGEN.COM command procedure. For more information on adjusting SYSGEN parameters and using AUTOGEN, please refer to the appropriate VMS documentation.

Installing JAMS

This section contains excerpts from the installation procedure and provides explanatory text. Default answers appear in brackets throughout the installation procedure.

To abort the installation procedure at any time, press **CTRL/Y.** The installation procedure cleans up any files it has created and returns you to the DCL prompt.

4.1.1 Step 1: Log in to a privileged account and set your default device and directory to SYS$UPDATE.

4.1.2 Step 2: Invoke VMSINSTAL

```
$ @VMSINSTAL JAMSAXP040 DKA400:[JAMS040.KIT]
```

4.1.3 Step 3: Answer standard VMSINSTAL questions.

VMSINSTAL will ask if you are satisfied with the backup of your system disk. If may also ask additional questions if you are not logged on as SYSTEM or it detects other unusual circumstances.

4.1.4 Step 4: Provide device name for JAMS executables.

You will be asked which disk device should be used for the JAMS executables. You can install both VAX and AXP executables on the same device. JAMS will create different directories for them.

4.1.5 Step 5: Provide device name for JAMS data.

You will be asked which disk device should be used for the JAMS data files. You can store the data files on the same disk as the executables.

The JAMS data disk *must* be the same on all nodes in a VMScluster.

4.1.6 Step 6: Start JAMS when the installation is complete?

If you want to execute the JAMS startup procedure when the installation is complete, press **Return**; otherwise, enter **NO** and press **Return.**

4.1.7 Step 7: Purge Files?

You will be asked if you want to purge files replaced by this installation. If you want to purge replaced files, press **Return**; otherwise, enter **NO** and press **Return.**

4.1.8 Step 8: Run the IVP?

You are asked if you want to run the installation verification procedure (IVP). If you want to run the JAMS IVP after the installation is complete, press **Return**; otherwise, enter **NO** and press **Return.**

4.1.9 Step 9: Read informational messages.

As the installation proceeds, you should read the informational messages and watch for problems.

JAMS puts all files in its own directory tree, with the exception of the following files:

SYS$STARTUP:JAMS_STARTUP.COM
VUE$LIBRARY:JAMS_PROFILE.VUE$DAT
VUE$LIBRARY:JAMS_VUE_STARTUP.COM

After the Installation

After successfully installing JAMS, you must perform the following tasks.

Insert JAMS_STARTUP.COM into System Start-Up

You must execute the JAMS startup procedure on every node that will be using JAMS. The JAMS startup procedure should be executed *before* you start any batch queues.

To ensure that the JAMS startup procedure is executed every time the system reboots, insert the following line into the system startup procedure (SYS$MANAGER:SYSTARTUP_V5.COM):

```
$ @SYS$STARTUP:JAMS_STARTUP.COM
```

Make sure you insert this line after the disk that contains the JAMS data files has been mounted and before you start any batch queues.

The JAMS startup procedure could also be defined as a startup file using the VMS SYSMAN utility.

Update the System-Wide LOGIN Command File

Batch Jobs must register with the JAMS Monitor when they start execution. This is done by running JAMS_REGISTRAR.EXE. The JAMS Registrar will register batch jobs with the JAMS monitor. It does not do anything if the process that runs it is not a batch job.

The easiest way to make sure that all batch jobs are registered is to put the following line into your system-wide login command procedure.

```
$ 'f$trnlnm("JAMS_LOGIN")'
```

Update the System Shutdown Procedure

You should insert a line in your system shutdown procedure (SYSHUTDWN.COM) to stop the JAMS Monitor process. The line to be inserted is:

```
$ MCR JAMS_EXE:JAMS_MASTER.EXE STOP MONITOR
```

This command will stop the JAMS Monitor process; if the Schedule process is also running on this node, it will also be stopped.

Initialize JAMS on all Nodes

JAMS is fully initialized on the node where the installation is performed. In order to initialize JAMS on other nodes in a VAXcluster, issue the following commands on every node on which JAMS is to execute:

```
$ LICENSE LOAD JAMS/PRODUCER=MVP
$ @SYS$STARTUP:JAMS_STARTUP.COM
```

Submit JAMS_AUTOSUBMIT

JAMS has a Batch Job that is used to submit recurring Jobs. The first time you install JAMS, you must manually submit this Job. To submit the JAMS_AUTOSUBMIT Job, enter the following command:

```
$ MCR JAMS_EXE:JAMS_MASTER SUBMIT/NOPROMPT JAMS_AUTOSUBMIT
```

If this is a reinstallation of JAMS, the JAMS_AUTOSUBMIT Job should already be pending in a batch queue.

Define JAMS Network Objects

If you plan to access JAMS on this node from a remote node, you must define the DECnet objects for the JAMS Server. Do this by executing the command procedure JAMS_COM:JAMS_DEFINE_DECNET_OBJECTS.COM.

Installing JAMS on a VMScluster

If you installed JAMS on a VAXcluster, there may have been other nodes in the cluster that were running during the installation. If you do not want to reboot these nodes after the installation, you should execute the JAMS startup procedure on each node that will be using JAMS.

Customize Your JAMS Environment

JAMS has a number of options that need to be customized for your site's environment. Take a few minutes to review these areas to be sure they meet your requirements.

Review JAMS Access Control

When you initially install JAMS, you need to be a member of the System UIC Group to have the OpenVMS BYPASS privilege to select any of the Maintenance menu options. This security is too restrictive for most sites. You should use the Access Control menu option to relax these security checks by specifying UIC and/or Rights Identifiers that should be allowed to execute the various menu options.

Error Conditions

If the installation procedure fails for any reason, a message is displayed and the installation is not performed.

Try to determine what caused the installation to fail. If you can correct the problem, do so and then restart the installation.

If you cannot determine the cause of the problem, please contact technical support.

If you have questions about JAMS, please feel free to call JAMS technical support at:

- Phone: (866) 259-5267
- Phone: (614) 238-0313
- E-Mail: Support@JAMSSupport.com

Technical support is available around the clock, 24 hours a day, 7 days a week.

Read the following articles on the JAMS Support site for more information:

JAMS Agent Cluster Installation

Updating Your JAMS License Key

4.2 Installing the OpenVMS Connection Server

The JAMS OpenVMS Connection Server is packaged in the SetupJAMSOpenVMS... package.

This package includes the JAMS Client, JAMS Agent, and JAMS OpenVMS Connection Server. Note that the Client and Agent are exactly the same as the Client and Agent included in the Windows Setup kits.

Where to Install

The JAMS OpenVMS Connection Server is a Windows service that can handle many JAMS Clients simultaneously. You can install it on a server to be shared by many clients. In that case, you could have dozens (maybe hundreds) of JAMS Clients connecting to the service that pools just a few connections to the OpenVMS Server.

You can also choose to install the JAMS OpenVMS Connection Server on individual workstations for use only by JAMS Clients on the local workstation. This is perhaps more flexible, but can require more resources on the OpenVMS server.

You can, of course, use a mixture of these two approaches as well.

To Install the JAMS OpenVMS Connection Server:

1. Log on to Windows using an account with administrator privileges.
2. Run the SetupJAMSOpenVMS executable and the JAMS setup wizard starts.
3. On the Welcome page, verify that this is the proper edition and version and click **Next**.
4. On the License Terms page, review the terms. If you accept the terms and conditions, select **I accept the terms of the License Agreement**, and then click **Next.**
5. On the Feature Selection page, select the features that you want to install or upgrade, and then click **Next.**
6. On the Select Target Directory page, select a target directory or accept the default, and then click **Next.** If this is an upgrade, the target directory cannot be modified.

Configuring the JAMS OpenVMS Connection Server

The first time you install the JAMS OpenVMS Connection Server, you *must* edit the User.config file. At a minimum, you have to specify the name of your OpenVMS server. The configuration settings are:

ServerName	You must enter the name or IP address of your OpenVMS server here.
ServerPort	This is the TCP/IP port that your OpenVMS server is listening on. The default is 773.
SMTPServer	This is the name of your SMTP Server. This is only used if the service fails and needs to notify you of the failure via e-mail. The best way to configure your SMTP Server is in your Machine.config file so that the settings apply to all applications on the machine.
ErrorEMail	This is the e-mail address to send error reports to. This is used only if the service itself fails.
MinimumConnections	This is the minimum number of connections to the OpenVMS server. The default is 1.
MaximumConnections	This is the maximum number of connections to the OpenVMS server. The default is 4. If a client has to wait too long for an OpenVMS connection, a new connection will be created until this maximum is reached.

The JAMS Server that JAMS Clients connect to is the machine that's running the OpenVMS Connection server. Clients never connect directly to the OpenVMS machine.

Read the following article on the JAMS Support site for more information:

JAMS TCI/IP Ports

4.3 Installing the JAMS Agent on OpenVMS

Prerequisite Software

This version of the JAMS Agent requires OpenVMS/VAX version 6.2 or higher, OpenVMS/AXP V6.2 or higher, or OpenVMS/Itanium V8.2 or higher.

Decompressing ZIP Files

If you downloaded the JAMS Agent over the Internet, you downloaded a self-extracting zip archive. The file will be named JAMSAGENT???042x.EXE where "???" is "AXP," "IA," or "VAX" and "x" is replaced by the patch level of the kit.

These self-extracting zip archives are OpenVMS executable images. You unpack them by simply running them. The archives contain the following files:

- JAMSAGENT???042.A
- JAMSAGENT???042.B

License Registration

The JAMS Agent does *not* need to have an LMF License PAK. The JAMS Agent can be installed and started on any machine. All license restrictions occur on the machine that is running the JAMS Scheduler.

Installation Procedure Requirements

The installation takes 5–10 minutes, depending on the type of media and your system configuration. Before installing JAMS, you must have the following privileges and resources:

- SETPRV privileges or CMKRNL, WORLD, and SYSPRV privileges
- At least TBD free blocks of disk space on the device that will hold the JAMS executable files
- A minimum of TBD free global pages
- A minimum of TBD free global sections

The installation procedure will check for the required resources before it begins the installations. If you do not have enough of a given resource, the installation procedure will issue error messages that identify which resource you are short on and the installation will terminate.

To determine the number of free global pages on your system, type the following DCL command:

```
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLPAGES")[Return]
```

The number displayed is the total number of free global pages. If this number is too small, you can increase the GBLPAGES system parameter by editing the file SYS$SYSTEM:MODPARAMS.DAT and invoking the SYS$UPDATE:AUTOGEN.COM command procedure. For more information on adjusting SYSGEN parameters and using AUTOGEN, please refer to the appropriate VMS documentation.

To determine the number of free global sections on your system, type the following DCL command:

```
$ WRITE SYS$OUTPUT F$GETSYI("FREE_GBLSECTS")[Return]
```

The number displayed is the total number of free global sections. If this number is too small, you can increase the GBLSECTIONS system parameter by editing the file SYS$SYSTEM:MODPARAMS.DAT and invoking the SYS$UPDATE:AUTOGEN.COM command procedure. For more information on adjusting SYSGEN parameters and using AUTOGEN, please refer to the appropriate VMS documentation.

Using VMSINSTAL

VMSINSTAL is a command procedure that is used to install software products onto the OpenVMS operating system. In Step 2 of the installation procedure, described in the next section, you must invoke VMSINSTAL.

The format of the VMSINSTAL command is as follows:

```
$ @SYS$UPDATE:VMSINSTAL upivvv ddnn:[dir] [OPTIONS N][Return]
```

upi

Represents the unique product identifier; in this case, JAMSAGENTAXP, JAMSAGENTIA, or JAMSAGENTVAX.

vvv

Represents the version number of the product. Refer to the label on the JAMS distribution media to determine the version you will be installing. The complete product name for Alpha JAMS Agent Version 4.2 would be JAMSAGENTAXP042.

ddnn:[dir]

Represents the device and directory where the distribution kits are located. If you are installing from CD-ROM, the distribution kits are located in the [JAMS042.KIT] directory. If you downloaded JAMS over the Internet, you should supply the device and directory where you unpacked the zip archives. DKA400:[JAMSAGENT042.KIT] is the device and directory used in the examples.

OPTIONS N

If this optional parameter is supplied, the installation procedure will ask if you want to display or print the release notes before performing the actual installation.

When you invoke VMSINSTAL, it checks the following:

- Whether you are logged into the system manager's account. You should install layered software from the system manager's account with your default device and directory set to SYS$UPDATE.
- Whether you have adequate quotas for installing layered products.
- Whether there are any user processes running on the system.

If VMSINSTAL detects any user processes running on the system, you are asked whether you want to continue the installation. If you want to continue, type **YES** and press **RETURN.** If you want to stop the installation, press **RETURN.**

Installing JAMS

This section contains excerpts from the installation procedure and provides explanatory text. Default answers appear in brackets throughout the installation procedure.

To abort the installation procedure at any time, press **CTRL/Y.** The installation procedure cleans up any files it has created and returns you to the DCL prompt.

Step 1: Log in to a privileged account and set your default device and directory to SYS$UPDATE.

Step 2: Invoke VMSINSTAL:

```
$ @VMSINSTAL JAMSAGENTAXP042 DKA400:[JAMS040.KIT] [Return]
```

Step 3: Answer standard VMSINSTAL questions.

VMSINSTAL will ask if you are satisfied with the backup of your system disk. It may also ask additional questions if you are not logged on as SYSTEM or it detects other unusual circumstances.

Step 4: Provide device name for JAMS executables.

You will be asked which disk device should be used for the JAMS executables. You can install Alpha, Itanium, and VAX executables on the same device. JAMS will create different directories for them.

Step 5: Provide device name for JAMS data.

You will be asked which disk device should be used for the JAMS data files. You can store the data files on the same disk as the executables.

The JAMS data disk *must* be the same on all nodes in a VMScluster.

Step 6: Start JAMS when the installation is complete?

If you want to execute the JAMS startup procedure when the installation is complete, press **Return**; otherwise, enter **NO** and press **Return.**

Step 7: Purge Files?

You will be asked if you want to purge files replaced by this installation. If you want to purge replaced files, press **Return**; otherwise, enter **NO** and press **Return.**

Step 8: Read informational messages.

As the installation proceeds, you should read the informational messages and watch for problems.

JAMS puts all files in its own directory tree, with the exception of the following files:

SYS$STARTUP:JAMS_AGENT_STARTUP.COM
SYS$STARTUP:JAMS_SITE_STARTUP.COM

After the Installation

After successfully installing JAMS, you must perform the following tasks.

Insert JAMS_AGENT_STARTUP.COM into System Start-Up

You must execute the JAMS Agent startup procedure on every node that will be using the JAMS Agent. If you install the JAMS Agent on a node that also has the JAMS Agent installed, you should execute the JAMS_AGENT_STARTUP.COM procedure *before* you start any batch queues.

To ensure that the JAMS Agent startup procedure is executed every time the system reboots, insert the following line into the system startup procedure (SYS$MANAGER:SYSTARTUP_VMS.COM):

```
$ @SYS$STARTUP:JAMS_AGENT_STARTUP.COM
```

Make sure you insert this line after the disk that contains the JAMS data files has been mounted and before you start any batch queues.

The JAMS startup procedure could also be defined as a startup file using the VMS SYSMAN utility.

Initialize the JAMS Agent on all Nodes

The JAMS Agent is fully initialized on the node where the installation is performed. In order to initialize the JAMS Agent on other nodes in a VMScluster, issue the following commands on every node on which the JAMS Agent is to execute:

```
$ @SYS$STARTUP:JAMS_AGENT_STARTUP.COM
```

Check TCP/IP port 77

The JAMS Agent listens on TCP/IP port 77. Make sure that this port isn't blocked by a firewall.

You can change the port that is used by defining a logical name, for example:

```
   $ DEFINE/SYSTEM/EXECUTIVE JAMS_AGENT_PORT 7777
```

This would tell the JAMS Agent to listen on port 7777. You must restart the JAMS Agent after defining this logical name.

Managing the JAMS Agent

You can run JAMS_EXE:JAMS_AGENT_MANAGER.EXE to manage the JAMS Agent. The utility has commands for starting, stopping, and displaying the status of the JAMS Agent. You can get more information by running the utility and using the **HELP** command at the **JAMS_AGENT>** prompt.

Error Conditions

If the installation procedure fails for any reason, a message is displayed and the installation is not performed.

Try to determine what caused the installation to fail. If you can correct the problem, do so and then restart the installation.

If you cannot determine the cause of the problem, please contact technical support.

If you have questions about JAMS, please feel free to call JAMS technical support at:

- Phone: (866) 259-5267
- Phone: (614) 238-0313
- E-Mail: Support@JAMSSupport.com

Technical support is available around the clock, 24 hours a day, 7 days a week.

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