



Opsware™ Process Automation System

*Version 2.2, Installing Opsware Process Automation
System*

For Process Automation System Administrators

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Overview

Opsware Process Automation System (PAS) is a system for creating automated procedures (called *Ops flows*) and making them available to IT personnel. Ops flows are made up of operations that each perform a specific action to maintain, diagnose, and/or repair a system.

Process Automation System (PAS) is made up of the PAS Central Web application, the Central Web client, and PAS Studio:

- The PAS Central Web application provides the business-logic tier between the PAS Repository database and both the PAS Central Web client and PAS Studio.
- The PAS Central Web client is the browser-based tool that IT personnel use to execute Ops flows.

- PAS Studio is a standalone application in which you create new Ops flows.

Roadmap to this guide

Installing PAS for importing, creating, and running basic Ops flows involves installing the Central Web application and Studio. The following sections of this installation guide describe these tasks in detail and provide background information:

- [Planning the installation](#)

This section discusses considerations regarding server distribution and PAS extensibility.

Important: To run the Windows Accelerator Pack Ops flows against a remote machine, you must install Java Remote Action Service (JRAS) and .NET Remote Action Service (NRAS) on the remote machine.

- [Basic PAS installation](#)

Basic installation includes the Central Web application and Studio.

- [Making PAS available to users](#)

This section talks about what you need to provide to Central users and Studio authors for them to get started.

For information on ongoing administrative tasks and on configuring PAS for extended functionality, see the *PAS Administration Guide*.

Planning the installation

Planning issues include the following:

- Server and Studio distribution
- Ports for crossing firewalls
- Extensibility
- Scheduling automatic runs of flows

Server and Studio distribution

Factors that can influence your server distribution include whether you want to:

- Enable Ops flow authors to edit an Ops flow while users are running the previous version of the Ops flow. This requires installing Central on a staging server as well as on a production server.
- Install NRAS and/or JRAS on a standalone server. On each remote computer where you need standalone installations of NRAS or JRAS, you can install one of each. You cannot install a standalone NRAS or JRAS on the Central Web server; the Central installation program includes installation of NRAS and JRAS.

With repository publishing and updating, it is possible to have multiple authors working on Ops flows. It is recommended that in a multi-authoring installation, you install Central on a staging server for final-testing purposes as well as on the production server.

Following are some scenarios and the server and client distribution that would support them:

One staging Central server, one production Central server

This scenario is the minimum recommended best practice. Even if the Ops flows author and the Central user are a single person, there should be a staging server for testing and a production server that the repository is published to after testing on the staging server. Studio can be installed either on a third computer, on the staging server, or on the production server.

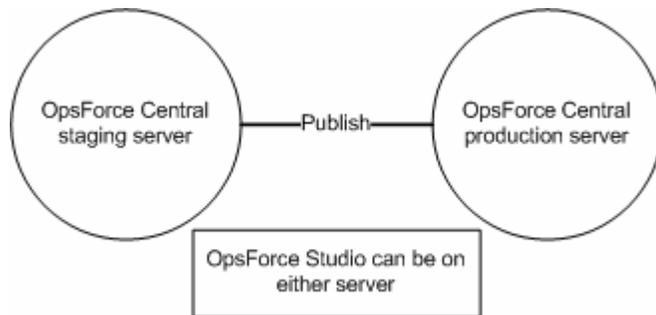


Figure 1 - Minimum recommended configuration

The Central staging server and the Central production server each have Central installed. Studio can be installed on either server. Whether Studio is installed on the Central production or staging server, the author publishes to the repository that the staging server's installation of Central uses.

Multiple authors

Multiple authors can exchange work by publishing and updating from the Central staging server. When either author publishes to the staging server, his or her work is copied there. When either author updates from the staging server, his or her local repository is updated with any work that the other author has published to the staging server.

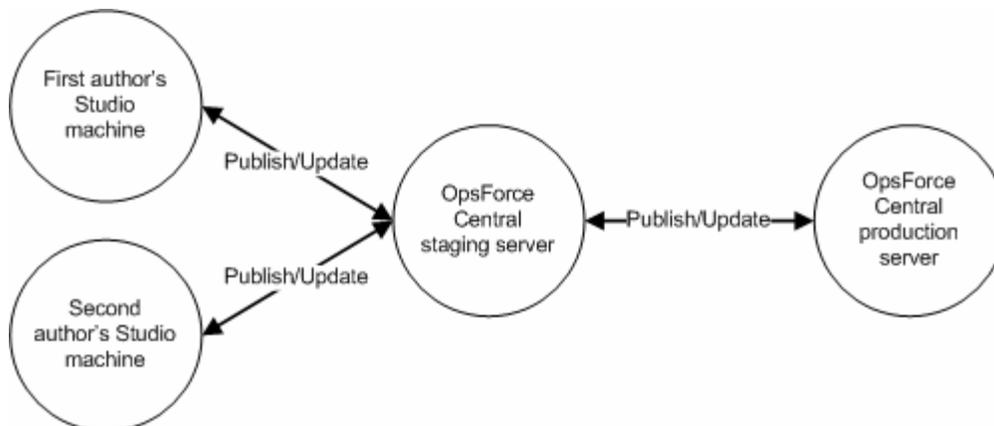


Figure 2 - Server distribution for multiple authors

Multiple authors, multiple Central production servers

If you cluster two or more Central production servers, your server distribution would look like the following, if you had two authors. The authors publish to and update from the staging server as described in the preceding scenario. The difference here is that the staging server's Central repository is published to either or both of the clustered Central production servers. The relationship between the clustered production servers depends on the clustering software that is used.

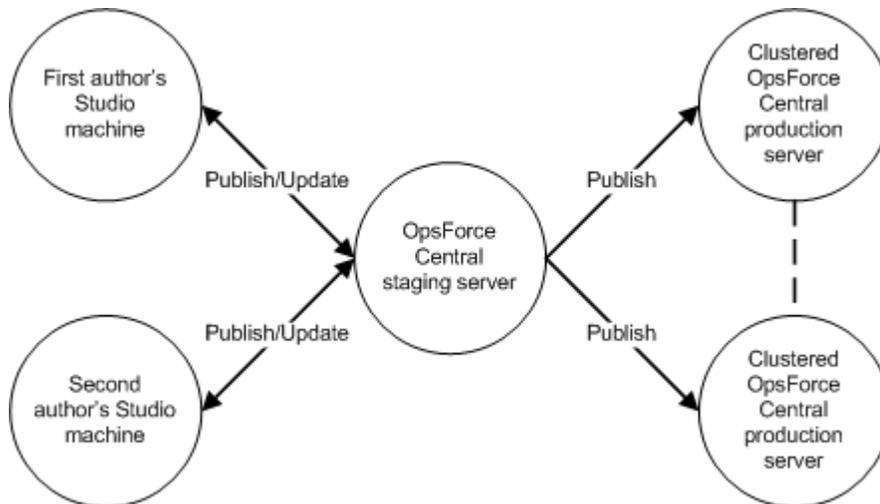


Figure 3 - Server distribution for multiple authors and multiple production servers

Ports for crossing firewalls

When you install NRAS or JRAS on the other side of a firewall from Central, you must specify a port in the firewall through which Central can communicate with the remote NRAS or JRAS. By default, the port used for communication by a standalone installation of JRAS is 9004. A standalone installation of NRAS uses 9005.

Also, in order to use operations that send email, your firewall must allow outbound communication over the default port used by your email server. For an SMTP server, this is port 25.

Extensibility

Using basic PAS operations, you can carry out Ops flows that are enabled through the Web service on which runs. Using JRAS or NRAS, you can extend the ability of PAS to operate in additional contexts:

- On machines that are remote from the Central Web server. Such machines can be on the other side of a firewall from the Central Web server or anywhere on an intranet or the Internet.
- Using Web services other than that on which the Central Web server was installed.
- Integrated with actions carried out on other applications, programmed using the target application's API.

Scheduling automatic runs of flows

Doing so requires installing the PAS Scheduler.

Creating a security certificate

For installations of Central that communicate using the HTTPS protocol, Web browsers will show security violation errors or messages unless you create a valid security certificate for delivering the Central Web pages. If you see such a browser warning, it is because PAS includes, by default, an unsigned certificate that serves as a placeholder for a valid customer-obtained certificate. If you choose not to create a security certificate, you can safely ignore the warning.

Basic PAS installation

Installing Central and Studio provides everything you need to create and run Ops flows. The Central installation includes automatic installation of Java Remote Action Service (JRAS) and .NET Remote Action Service (NRAS), which enable you to run Ops flows that operate remotely from PAS or interact with other programs.

Installing PAS Central

In the following procedures, you do the following:

1. Create the database that will be the Ops flow repository, and database user for the database.

Warning: The schema and user must always be dedicated to PAS. Do not adapt the schema to support any other applications. If you do, you can lose data in the other applications when you install PAS.

2. Install the PAS Central Web application.
3. Install Studio.

Before you begin, make sure that the server meets hardware and software requirements, as described in:

- PAS_SystemReqs.pdf.
- Requirements for all the required software programs.

Note: If you install remote action services, do not install the Web server in a subdirectory of the directory that will be the PAS home directory.

Configuring the database and database user

Currently, PAS requires use of the SQL Server database management system. The database size and collation depend on your business needs.

If another person installs PAS Central, you must provide him or her with the following information about the database and the database server:

- Database name
- Server location and name or IP address
- Port number
- Database user name and password

As you install or configure SQL Server and create a database and database login and user, make sure that among your tasks you complete one of the following lists, depending on whether your version of Microsoft SQL Server is SQL Server 2000 (SP 3a or later) or SQL Server 2005.

Database and database user configuration tasks when running SQL Server 2000, SP 3a or later

- When you create the login for the new database user, among the new login's properties:
 - Specify either kind of authentication.
 - Select the database that you have created as the default database for this login.
Note: If this is not acceptable for your organization, the database administrator can modify the .ddl file appropriately. The .ddl file is located in the PAS home directory, in the \Central\db subdirectory.
- When creating the database user:
 - For the default schema, specify "dbo".
 - For role membership, select the db_owner database role.

Database and database user configuration tasks when running SQL Server 2005

1. When configuring SQL Server configuration, enable TCP/IP as a network protocol.
2. Enable TCP/IP as a network protocol for SQL Server.
 - a. Within the SQL Server Configuration Manager program, expand **SQL Server 2005 Network Configuration**.
 - b. Select **Protocols for MSSQLSERVER**, right-click **TCP/IP**, and in the context menu that appears, click **Enable**.
3. When creating the database login:
 - Specify either kind of authentication.
 - Select the database that you have created as the default database for this login.
Note: If this is not acceptable for your organization, the database administrator can modify the .ddl file appropriately. The .ddl file is located in the PAS home directory, in the \Central\db subdirectory.
 - In **Server Roles**, select all the roles.
4. When creating the database user:
 - For the default schema, specify "dbo".
 - For role membership, select the db_owner database role.

Next, you install the Central Web application (and, if you wish, the Scheduler) and Studio.

Installing the Central Web application

The PAS Central installation checks connectivity with and configures the database that you created and installs the Central server files.

Note: By default, Central is configured to communicate with remote installations of JRAS and NRAS over ports 9004 and 9005, respectively (which the JRAS and NRAS installations configure on the remote machines for communication with Central).

At any point in the following procedure, you can stop the installation by clicking **Quit**. The installation stops gracefully.

To install PAS Central

1. Before starting the installation, make sure that the SQL Server is connected to the database that you're using for .
2. Navigate to and double-click PASCentralInstaller-sqlserver.exe.
3. On the welcome page of the PAS Central Setup Wizard, click **Next**.
4. On the **License Agreement** page, read the agreement, select **I accept the agreement**, and then click **Next**.
5. On the **Select Destination Location** page, click **Next** to accept the default installation path.

OR

Click **Browse**, specify a different location where you want the Web application installed, and then click **Next**.

If you are reinstalling the Web application or have already installed Studio to the same directory, a message warns you that the directory already exists and prompts you to confirm that you want to overwrite files in the directory.

6. In the message, click **Yes**.

The **Network Settings** page appears, on which you configure the ports and IP address that Central uses.

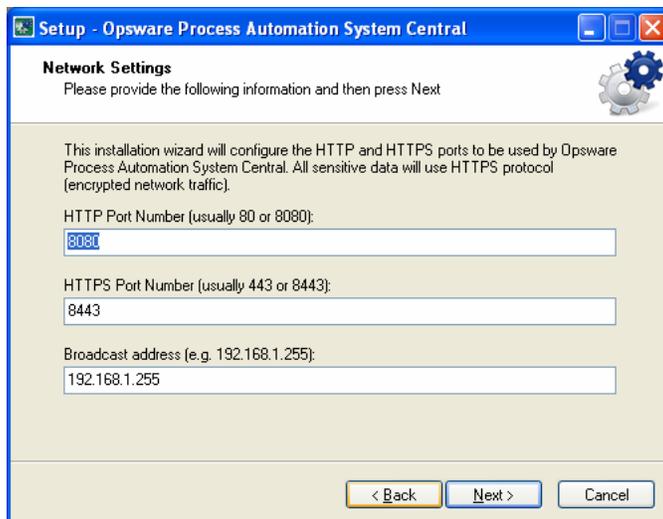


Figure 4 – Network Settings page

Communications between the Central Web application, Studio, and the Central Web client are over secure connections, using the HTTPS protocol. The HTTP port

makes it possible for client users to type their customary HTTP protocol in their browser address box and be redirected to the secure connection.

7. Either accept the default port numbers or type different port numbers in the text boxes
8. Record the HTTPS port number in a separate document.
Note: The installation program for Studio requires the HTTPS port number, so make sure it is available for installations of Studio.
9. Either accept the default broadcast IP address or type a different one, and then click **Next**.

The **Database Information** page appears.

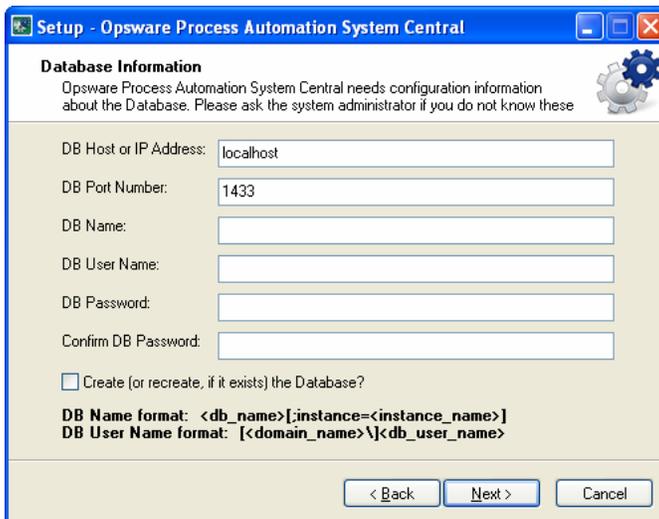


Figure 5 - Database Information page

Warnings – In the following step:

- If you are upgrading from an earlier version, do not recreate the database. If you do, you lose historical data.
 - If you choose to create a new database with the name of an existing database, all the data in the previously installed database is overwritten.
10. Fill in the information as your configuration dictates.

Use the following formats. In these formats, angle brackets (<>) contain strings that you replace with your particulars; square brackets ([]) indicate optional material; and the pipe character (|) separates two alternatives.

- DB Host or IP Address
`<host|ip_address>`
- DB Port Number
`<port>`
- DB Name
`<db_name>[;instance=<instance_name>]`
The instance name is necessary only if the database is an instance.
- DB User Name
`[<domain_name>\\]<db_user_name>`

The domain name is necessary only if the database authentication is Windows, using a domain account.

You can get this information from your database administrator.

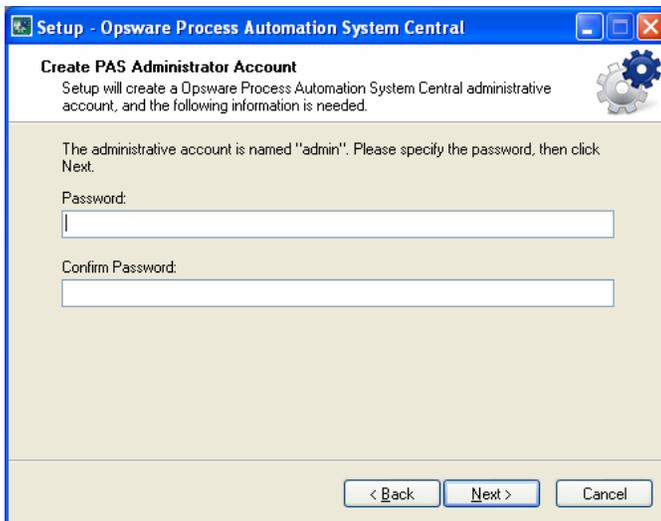
- Password and Confirm Password

The database name (**DB Name**) and password are the name and password that the Central Web application uses to access the database.

Be sure to record the port number that your database instance uses; it will be needed for installing Studio and Scheduler.

11. To create a new database, select the **Create (or recreate, if it exists) database** checkbox, and then click **Next**.

The **Create PAS Administrator Account** page appears. The administrator account, which you will use to log in to Central, is always named "admin." In this dialog box, you create a password for the admin account.



The screenshot shows a Windows-style dialog box titled "Setup - Opsware Process Automation System Central". The main heading is "Create PAS Administrator Account". Below the heading, it says "Setup will create a Opsware Process Automation System Central administrative account, and the following information is needed." There is a gear icon in the top right corner. The text reads: "The administrative account is named 'admin'. Please specify the password, then click Next." Below this, there are two text input fields: "Password:" and "Confirm Password:". At the bottom of the dialog box, there are three buttons: "< Back", "Next >", and "Cancel".

Figure 6 - Create PAS Administrator Account page

12. In the **Password** and **Confirm Password** boxes, type a password.

The **Ready to Install** page appears, displaying the information that you specified in the rest of the setup.

13. To proceed, click **Install**.

The installation program tracks progress on the **Installing** page.

14. When the installation completes, click **Finish**.

The remaining programs to install are Studio and Scheduler. Installing Scheduler installs a **Schedule** tab in Central. The installation procedure for Scheduler follows the section on installing Studio.

Installing Studio

To install Studio, you must be logged in with an account that is either a Power User or a local Administrator.

Important: The installation requires a port number for communications using the HTTPS protocol. This port number was specified during installation of the Central

Web application. Before starting installation of Studio, obtain this port number from the person who installed Central.

To install Studio

15. To start the PAS Studio Setup Wizard, navigate to and double-click PASStudioInstaller.exe.
16. On the **Welcome** page, click **Next**.
17. On the **License Agreement** page, accept the terms of the license agreement, and then click **Next**.
18. On the **Select Destination Location** page, type the location where you want the Studio files installed.

OR

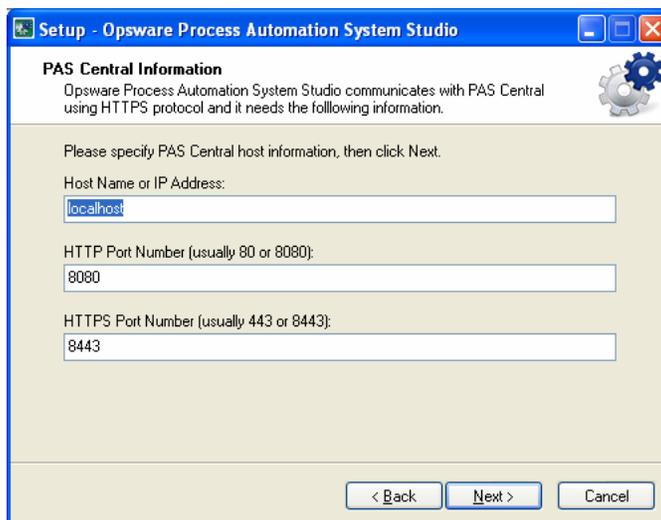
Click **Browse**, specify a different location where you want the Web application installed, and then click **Next**.

If you install the Studio on the same machine as the Central Web application, make sure that the location that you specify is the same location in which the Web application is installed.

If you have already installed Studio or the Central Web application, a message appears, warning you that the directory already exists and prompts you to confirm that it is acceptable to overwrite files in the directory.

19. In the message, click **Yes**.

The **PAS Central Information** page appears.



The screenshot shows a Windows dialog box titled "Setup - Opware Process Automation System Studio". The dialog has a blue header bar with standard window controls. The main content area has a light beige background and contains the following text and fields:

- PAS Central Information** (Section Header)
- Opware Process Automation System Studio communicates with PAS Central using HTTPS protocol and it needs the following information.
- A gear icon in the top right corner.
- Text: "Please specify PAS Central host information, then click Next."
- Text: "Host Name or IP Address:" followed by a text input field containing "localhost".
- Text: "HTTP Port Number (usually 80 or 8080):" followed by a text input field containing "8080".
- Text: "HTTPS Port Number (usually 443 or 8443):" followed by a text input field containing "8443".
- At the bottom, there are three buttons: "< Back", "Next >", and "Cancel".

Figure 7 - PAS Central Information page

20. To specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the Web application is installed, leave **localhost** in the text box.

21. Make sure the HTTPS port number matches the HTTPS port number that the administrator specified when installing Central, and then click **Next**.

The **Select Additional Tasks** page appears.

22. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.

The **Ready to Install** page appears, displaying the location where Central will be installed and other information on the choices you have made.

23. To proceed, click **Install**.

The Setup Wizard tracks progress on the **Installing** page.

24. When the installation completes, make sure that the **Launch PAS Studio** box is selected, and then click **Finish**.

Starting Studio is part of testing the success of the installation.

25. Switch to Studio and log in with the username and password that were created in the Central installation.

If you did not install Central, get the username and password from the person who did.

Installing Scheduler

1. Navigate to and double-click PASSchedulerInstaller-sqlserver.exe.
2. On the **Welcome** page, click **Next**.
3. On the **License Agreement** page, accept the terms of the license agreement, and then click **Next**.
4. On the **Select Destination Location** page, type the location where you want the Studio files installed.

OR

Click **Browse**, specify a different location where you want the Web application installed, and then click **Next**.

If you have already installed Studio or the Central Web application, a message appears, warning you that the directory already exists and prompts you to confirm that it is acceptable to overwrite files in the directory.

The **PAS Central Network Ports** page appears.

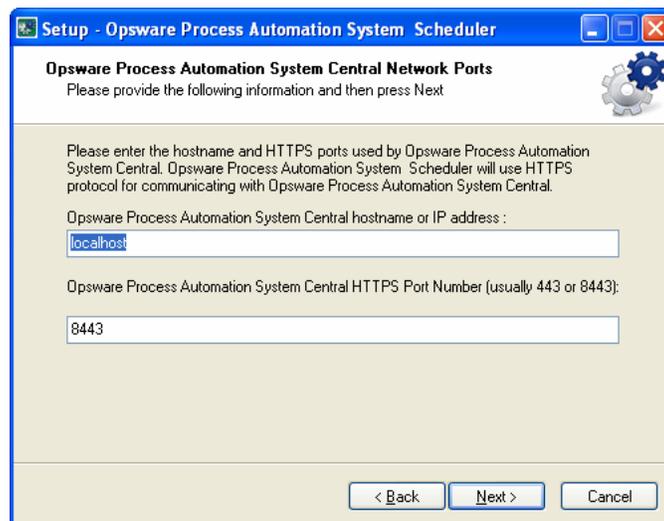


Figure 8 - PAS Central Network Ports dialog box

5. Specify the following, and then click **Next**:

- The host server on which the Central Web application is installed
 - The HTTPS port number specified when you installed Central
6. In the **Enter PAS Scheduling Account** dialog, type the name of a valid PAS account that has sufficient capabilities and access rights to schedule and start flows automatically.

It is simplest to specify the admin account here. The admin account possesses every capability and all access rights to all flows. (Capabilities are the objects that allow a group to perform specific functions; authors assign groups access rights to specific flows. For more on Capabilities and access rights, see the Help systems for Central and for Studio.)

If you choose to specify another account, keep in mind that if the account is not a valid PAS account (either a valid AD account or an PAS file-based account), an “HTTP 401 Unauthorized” error will occur when the scheduler tries to run a scheduled flow.

The **Database Information** dialog box appears.

Figure 9 - Scheduler Database Information dialog box

7. Fill in the information as your configuration dictates, specifying the same database and database user credentials that you did when installing Central. Use the following formats. In these formats, angle brackets (<>) contain strings that you replace with your particulars; square brackets ([]) indicate optional material; and the pipe character (|) separates two alternatives.
- DB Host or IP Address
`<host|ip_address>`
 - DB Port Number
`<port>`
 - DB Name
`<db_name>[:instance=<instance_name>]`
 The instance name is necessary only if the database is an instance.
 - DB User Name
`[<domain_name>\]<db_user_name>`

The domain name is necessary only if the database authentication is Windows, using a domain account.

You can get this information from your database administrator.

- Password and Confirm Password
8. To create a new database, select the **Create (or recreate, if it exists) database** checkbox, and then click **Next**.
The **Ready to Install** page appears, displaying the location where Central will be installed and other information on the choices you have made.
 9. To proceed, click **Install**.
The Setup Wizard tracks progress on the **Installing** page.
 10. When the installation completes, click **Finish**.

Upgrading PAS from version 2.1 to 2.2

Note: The following procedure for upgrading Central assumes that your Central server runs a Windows operating system and the Microsoft SQL Server database management system. If your Central server is running Linux and Oracle, use the upgrade procedures described in the Linux-platform PAS installation documents.

To upgrade Central and Scheduler from PAS 2.1 to 2.2

1. Make sure that your system meets the requirements as described in the 2.2 version of *System Requirements for Opware™ Process Automation System* (PAS_SystemReqs.pdf).
2. From the public repository, export flows and operations to a new repository.
You will import this repository later.
3. If Studio is installed on the same machine as Central, back up and have your users back up all affected local repositories, and store each backup in a safe place.
4. On each of the staging and production Central servers, back up the Central database and store the backup in a secure location.
Dashboard charts are stored in the Central database, so the database backup includes Dashboard charts.
Note: If the production Central server is clustered, back up the database in accordance with best practices for your clustering solution.
5. Close all windows to the iconclude home directory and any of its subdirectories.
The upgrade application cannot write into these directories if they are open.
6. On the Central server, close Central and stop the RSCentral, RSJRAS, and RSNRAS services.
7. Double-click PASCentralInstaller-sqlserver.exe.
Be sure to upgrade Central before upgrading Scheduler, because the Scheduler upgrade queries a database table that Central creates and owns.
8. In the message that appears, prompting you to confirm that you want to upgrade your existing installation of PAS Central, click **Yes**.
9. If you have AD or Kerberos authentication enabled, restart the server for the authentication to take effect, though your old AD or Kerberos settings from 2.1 should have migrated into 2.2.

10. If you made any changes in the Central.properties file in your 2.1 installation other than those dealing with AD or Kerberos, manually make those changes again in 2.2.
11. To run the Scheduler installer, in the Scheduler folder, double-click PASSchedulerInstaller-sqlserver.exe.
The Scheduler installer detects the previous version
12. In the message that appears, prompting you to confirm that you want to upgrade your existing installation of Scheduler, click **Yes**.
13. To upgrade Studio, see the following section.

Upgrading Studio from PAS 2.1 to 2.2

Notes:

- If Studio must be on the same machine as Central, upgrade 2.2 Studio in the same directory in which you installed Central. By default, the Studio installation program tries to install in C:\Program Files\Opware\PAS.
- To install Studio, you must be logged in with an account that is either a Power User or a local Administrator.
- **Important:** The installation requires a port number for communications using the HTTPS protocol. This port number was specified during installation of the Central Web application. Before starting installation of Studio, obtain this port number from the person who installed Central.

To upgrade Studio from PAS 2.1 to 2.2

1. To start the PAS Studio Setup Wizard, navigate to and double-click PASStudioInstaller.exe.
2. In the message that prompts you to confirm that you want to upgrade your existing installation of PAS Studio, click **Yes**.
3. In the message that prompts you to confirm that you want to completely remove PAS Studio, click **Yes**.
4. In the message that tells you that Studio was successfully removed, click **OK**.
5. On the **Welcome** page of the Opware Process Automation System Studio Setup Wizard, click **Next**.
6. On the **License Agreement** page, accept the terms of the license agreement, and then click **Next**.
7. On the **Select Destination Location** page, type the location where you want the Studio files installed.

OR

Click **Browse**, specify a different location where you want the Web application installed, and then click **Next**.

8. In the message that prompts you to confirm that it is acceptable to overwrite files in the directory, click **Yes**.
9. To specify the server on which the Web application is installed, type the server name in the text box beside **Host Name or IP Address**.

OR

If you are installing the Studio on the same machine on which the Web application is installed, leave **localhost** in the text box.

10. Make sure the HTTPS port number matches the HTTPS port number that the administrator specified when installing Central, and then click **Next**.
The **Select Additional Tasks** page appears.
11. To create a desktop icon for Studio, select the **Create a desktop icon** checkbox, and then click **Next**.
The **Ready to Install** page appears, displaying the location where Central will be installed and other information on the choices you have made.
12. To proceed, click **Install**.
The Setup Wizard tracks progress on the **Installing** page.
13. To restore repositories, open Studio and import the repositories from the locations where you stored them.
14. If you exported a local repository before upgrading, then in Studio, import the export into the current local repository.
15. Import all the flows into your new public repository, that were exported from the public repository.

Testing the installation

Testing the installation involves the following high-level steps. For information on performing the necessary tasks in Studio and Central, see Help for Studio and Help for Central.

1. After logging in to Studio, in the Library pane, open the **Library** folder.
2. In your Web browser, access and log in to Central.
3. Click the **Ops Flows** tab, and open some Ops flows in the Library.

Making PAS available to users

For PAS users to log in to Central or start Studio on their desktop:

- The Central Web server must be started.
- Central users need the URL and login information for the Central Web site.
- Studio users (authors) need the login information and, if Studio is not already installed on their machine, the installation files.

Before you provide them with the information and files, PAS, make sure that client machines meet hardware and software requirements for Central or Studio, as described in PAS_SystemReqs.pdf), and requirements for any required software.

To deploy Central and Studio to users

1. To start the Web server that contains the Central Web application, make sure that the RSCentral Windows service is started.
2. Send each Central user the following:
 - The URL for the Central Web site.
This URL has the format:

<http://<servername>:<portnumber>/PAS/static/Login.htm>

where <servername> is the name of the server on which the application is configured and <portnumber> is the port number that you specified when creating the application. By default, this port number is 8080 for HTTP or 8443 for HTTPS.

- The administrator login credentials (user name and password) that you created when installing the Central Web application.

Each user must log in with these credentials until you map his or her user account to the PAS ADMINISTRATOR role.

3. Send each Studio user (Ops flow author) the following:

- If you have not installed the author's copy of Studio, PASStudioInstaller.exe
- The administrator login credentials (user name and password) that you created when installing the Central Web application

Each user must log in with these credentials until you map his or her user account to the PAS ADMINISTRATOR role.

Installing JRAS and/or NRAS on standalone servers

You can install one installation each of .NET remote action service (NRAS) and Java remote action service (JRAS) on a computer that is remote from the Central server. You cannot install a standalone NRAS or JRAS on the Central Web server, because the Central installation program includes installation of NRAS and JRAS.

Note: By default, the standalone JRAS installation configures it to communicate over port 9004, which is also configured on the Central server for communicating with JRAS. In the same way, the standalone NRAS installation configures it to communicate over port 9005, which is also opened on the Central server.

To install JRAS or NRAS on a different machine from the Central server

1. Make sure that the server on which you install JRAS or NRAS meets the software requirements for PAS remote action services.

For the JRAS and NRAS software requirements, see *System Requirements for Opware™ Process Automation System* (PAS_SystemReqs.pdf).

2. To install JRAS or NRAS, double-click JRASSetup.exe or NRASSetup.exe.

Warning: If JRAS is already installed on the machine, you are prompted to allow the program to uninstall the existing JRAS installation before proceeding. If you run JRASSetup.exe on a computer on which Central is already installed, you are prompted to allow the program to uninstall Central and all of its components before installing JRAS. If you click Yes, JRASSetup.exe will uninstall Central and any RAS installations, and then install only JRAS. The same is true of NRASSetup.exe.

3. On the respective succeeding pages of the RAS Setup Wizard, do the following and then click **Next**.

4. Accept the license agreement.

- a. Specify a location for Java.exe.
- b. Specify the IP address that the RAS will use to communicate with Central.
- c. If you are installing JRAS, select the packages that you would like to install with the RAS.

If you are replacing a previous installation of the RAS, the next page of the wizard advises you that the RAS will be installed in the directory that was used for the previous installation of the RAS.

d. Select a Start menu folder, and then click **Next**.

5. On the **Ready to Install** page, either click **Next** or click **Back** and change your specifications before clicking **Install**.

When the wizard has installed the RAS, it tries to start it. If it fails, a message tells you how to view details.

Post-installation tasks

Enabling Central to be switched between the public and a private repository

Each author can create and connect his or her installation of Studio to a private repository on the Central server for authoring flows. If Central is configured so that an author can log in to Central as a user, then switch Central from the public repository to his or her private repository and test the private repository's flows in the Central environment before publishing them.

Warning: Flows run in Central from a private repository have actual effects on any target machines, so only installations of Central on staging servers should have this feature enabled.

For information on enabling Central to be switched between the public repository and an author's private repository, see the *PAS Administrator's Guide* (PAS_AdminGuide.pdf).

Uninstalling PAS programs

You uninstall Central, Studio, and JRAS and NRAS by running uninstall programs.

Note: It is recommended that, before uninstalling Central and associated programs, you manually stop the PAS Windows services (RSCentral, RSJRAS, RSNRAS, and RSScheduler). The uninstall programs try to shut down the PAS Windows services, but if the system is in heavy use when you uninstall, they may not be able to shut the services down and so may leave files and directories remaining after uninstallation has finished. If this happens, you can manually delete the files. However, you can also facilitate a clean uninstallation by manually stopping the PAS services before uninstalling.

To uninstall JRAS

1. From the **Start** menu, point to **All Programs, Opware, and PAS**, and then click **Uninstall Opware JRAS**.
2. When you are prompted to confirm that you want to remove JRAS and its components, click **Yes**.

The **Uninstall Status** box appears, in which progress of the removal is tracked on a progress bar.

When JRAS is completely removed, a message box appears, telling you so.

If you have relevant directories open, the message box might tell you that some components could not be removed. This is not significant.

3. Click **OK**.

To uninstall NRAS

1. From the **Start** menu, point to **All Programs, Opsware, and PAS**, and then click **Uninstall Opsware NRAS**.

2. When you are prompted to confirm that you want to remove NRAS and its components, click **Yes**.

The **Uninstall Status** box appears, in which progress of the removal is tracked on a progress bar.

When NRAS is completely removed, a message box appears, telling you so.

If you have relevant directories open, the message box might tell you that some components could not be removed. This is not significant.

3. Click **OK**.

To uninstall PAS Studio

1. From the **Start** menu, point to **All Programs, Opsware, and PAS**, and then click **Uninstall PAS Studio**.

2. When you are prompted to confirm whether you want to remove Studio and its components, click **Yes**.

The **Uninstall Status** box appears, in which progress of the removal is tracked on a progress bar.

When Studio is completely removed, a message box appears, telling you so.

If you have relevant directories open, the message box might tell you that some components could not be removed. This is not significant.

3. Click **OK**.

To uninstall PAS Scheduler

- Using **Add/Remove Programs** in the Windows Control Panel, remove **Opsware Process Automation System Scheduler**.

To uninstall PAS Central

- Using **Add/Remove Programs** in the Windows Control Panel, remove **Opsware Process Automation System Central**.