

PBS Access Desktop 2018.2

Administrator's Guide



 Altair | PBS Works™

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Altair® PBS Works® v.2018.2

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Latest features available with PBS Access Desktop.

Central Server Repository

The Central Server Repository helps the administrators to manage the application definitions at a central server. The application definitions can be updated at the central server and it gets automatically updated to all the users. The central server is a PBS Access Web component.

Master File Analyzer

The Master File Analyzer identifies the list of include files from the input or master file that is required to submit a job. This feature must be enabled in the application definition to dynamically identify the include files.

Dynamic Application Definition

Dynamic applications are a special type of application that allows the job submission form to react to information entered by a user. The steps for submitting a job via a dynamic application are similar to those for submission of a static application.

Fire-and-Forget Concept

PBS Access Desktop provides the Fire-and-Forget approach while submitting a job, uploading a file, or downloading the result files.

For example, when you upload a huge input file for a job and if you log out from the network, the upload file process will stop and resume uploading the input file once the system is back to the network without any interruptions. Similarly, there will be no interruptions while downloading the job result files.

Register Multiple Server

PBS Access Desktop allows you to register multiple servers. Now, you can submit your job by selecting a solver or a profile from the application that is available in the different servers.

Command Line Submission

PBS Access Desktop provides command line interface to submit a job, manage the application, perform job operation, and manage the servers.

Job Submission Form Enhancement

Job Submission form provides an option to choose Required Fields or All Fields while submitting a job.

PBS Access Desktop Application Resize

Now you can resize the PBS Access Desktop application to better visibility and to reposition it on your screen.

Use PBS Access Desktop to submit jobs to a Workload Manager.

This chapter covers the following:

- [2.1 System Requirements](#) (p. 5)
- [2.2 Supported Product Configurations](#) (p. 6)
- [2.3 Deployment Options](#) (p. 7)
- [2.4 Prerequisites for Installing PBS Access Desktop](#) (p. 8)

Altair's new PBS Access Desktop provides a simple, powerful, and consistent interface for submitting and monitoring jobs on remote clusters, clouds, or other resources. Engineers and researchers can now focus on core activities and spend less time learning how to run applications or moving data around. The PBS Access remote visualization and collaboration capabilities bring access to an expensive, high-end 3D visualization datacenter hardware right to the user.

Features

- Novice to Expert: simple and powerful
- Same UX: desktop and web
- Secure: protected access to HPC resources
- End-to-end: submit, monitor progress, steer, fix, and rerun jobs
- Save time: Simplify job submission and management thanks to a powerful GUI with smart, simplified interfaces
- Be more productive: Spend more time focused on work and not IT tasks - for example, monitor jobs graphically without having to download huge job files
- Increase ROI: Consolidate access to applications and optimize license availability
- Reduce errors and improve consistency: Embed your company's best-practice "know how" directly into Application Definitions used for job submission

2.1 System Requirements

Supported platforms and hardware requirements for using PBS Access Desktop.

Supported Platforms

PBS Access Desktop is supported on the following Windows 64-bit platforms:

- Windows 7
- Windows 10

Hardware Requirements

PBS Access Desktop requires a minimum hardware configuration:

Table 1:

Hardware	Minimum Requirement	Recommended
CPU	2 CPU cores with a minimum speed of 2.5 GHz	4 CPU cores with a minimum speed of 2.5 GHz
Memory (Physical)	2 GB	8 GB
Disk Space	2 GB	4 GB

2.2 Supported Product Configurations

Supported product configurations for using PBS Access Desktop.

The currently supported PBS Access Desktop product configurations are:

Table 2:

PBS Access Desktop	PBS Professional
2018.2	<ul style="list-style-type: none">• 13.1.3• 14.2.4• 18.2.1

2.3 Deployment Options

There are three deployment options. Review the following sections to determine which deployment option best suits your site's needs:

To use PBS Access Desktop a supported version of PBS Professional must be running on your HPC cluster. Additionally, application definitions must be installed (the location where these application definitions are installed varies depending upon the deployment option chosen). Legacy application definitions can be used with PBS Access Desktop, however some specific changes are required. Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop and can be obtained through your normal Altair support channels. Before you can login and submit jobs, a cluster must be added to PBS Access Desktop through its user interface.

Deployment Option 1 - Install and Configure PBS Access Desktop on a Single Workstation

This deployment option is best suited for sites where only a single user will be using PBS Access Desktop. For this option, PBS Access Desktop is installed on the user's workstation, clusters are added via the user interface, and then application definitions are copied to a specific location on the workstation. This option requires some level of familiarity about PBS Professional and application definitions to add clusters and onboard application definitions.

Deployment Option 2 - Install and Configure PBS Access Desktop and Export the Configuration for a Multi-User Site

This deployment option is best suited for multi-user sites. This option requires a system administrator to install PBS Access Desktop, add clusters, and onboard application definitions (see Deployment Option 1). Then the installation configuration, including clusters and application definitions, is exported to a zip file. The zip file is then used to install PBS Access Desktop on all the other user's workstations eliminating the need to add clusters and application definitions at each workstation. An advantage of this option is that a non-administrative user can perform the install using the zip file without assistance. A disadvantage for this option is that whenever an application definition is changed, all workstations will need to be updated with the change.

Deployment Option 3 - Central Application Definition Server Deployment

This deployment option allows the application definitions to be stored and maintained in a central repository. This option requires that PBS Access Web be installed on a Linux machine (typically the PBS Professional Server). Application definitions are copied to a specific location on this machine which is considered the central repository. A multi-user deployment can then be performed with a slight change to the workflow - when clusters are added to PBS Access Desktop, the location of the central repository must be provided.

2.4 Prerequisites for Installing PBS Access Desktop

Prerequisites for installing PBS Access Desktop.

PBS Professional

Ensure that a supported version of PBS Professional is installed and running on your HPC cluster.

Application Definitions

Legacy application definitions can be used with PBS Access Desktop, however some specific changes are required. Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop and can be obtained through your normal Altair support channels. Refer to *Diving Into Application Definitions* for information about application definitions.

Central Repository of Application Definitions

If you are deploying PBS Access Desktop using a central repository of application definitions, then a supported version of PBS Access Web must be installed and running properly.

Previous Versions of PBS Access Desktop

Uninstall previous versions of PBS Access Desktop.

Install PBS Access Desktop based on your chosen deployment option.

This chapter covers the following:

- [3.1 Installing PBS Access Desktop for Deployment Option 1](#) (p. 10)
- [3.2 Installing PBS Access Desktop for Deployment Option 2](#) (p. 15)
- [3.3 Installing PBS Access Desktop for Deployment Option 3](#) (p. 21)

3.1 Installing PBS Access Desktop for Deployment Option 1

Install in a single user environment.

Install PBS Access Desktop on the user's workstation, add clusters, and then copy application definitions for each cluster. You can also create job profiles, a customized shortcut for submitting a job, for solvers that are used on a regular basis by your users.

3.1.1 Installing PBS Access Desktop

Install PBS Access Desktop on a workstation.


To ensure a successful installation, review the [System Requirements](#).

Installation of PBS Access Desktop is very simple and quick. A binary or executable needs to be downloaded or obtained using your usual Altair support channels. You will be asked to provide an installation directory and a license server to install the product.


1. Choose one of the following options:

- To install in GUI mode, right-click the installation executable and choose the **Run as administrator** option.
- To install from the command line in silent mode, open a command prompt as a Windows administrator and enter the command:

```
PBSAccessDesktop_<Version>_<Build ID>_<YYYYMMDD>_<Timestamp>.exe -i silent  
-DUSER_INSTALL_DIR="<INSTALL_PATH>"  
-DALTAIR_SPM_LICENSE_PATH=<PORT@HOSTNAME>
```

 **Note:** Where <INSTALL_PATH> is where the binaries will be installed (make sure that the installation directory is surrounded by double quotes) and <PORT@HOSTAME> is the license server in the format port@hostname.

2. Follow the installation instructions.

Once the installation is complete, a shortcut is created and appears on the desktop represented by the icon .

3.1.2 Registering a Cluster

Establish a connection to the HPC cluster by registering it so that you may begin submitting and monitoring jobs.

To register a cluster you will need to know the hostname of the machine where the PBS Server is installed and a valid set of credentials for that machine.

1. Double-click the PBS Access Desktop shortcut  on the Windows desktop. An Add Cluster dialog box is displayed.

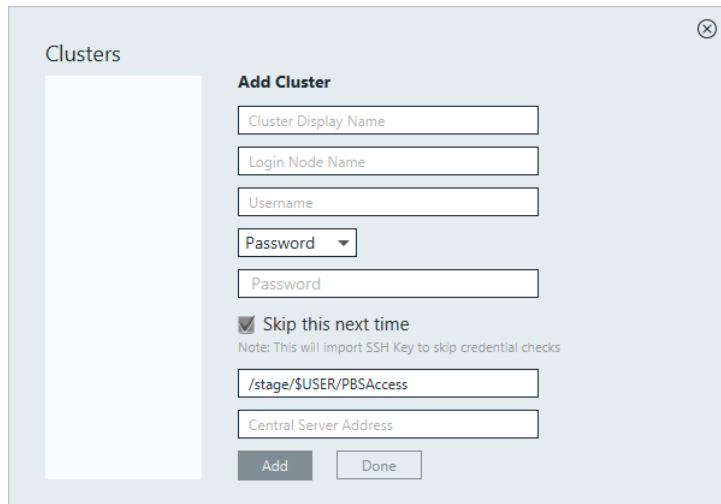



Figure 1: Add Cluster


2. For Cluster Display Name, enter a name for the cluster as it will be known within PBS Access Desktop.
3. For Login Node Name, enter the hostname of the machine where the PBS Server is installed.
4. For Username, enter your username.
5. Choose one of the following options:
 - Select Password from the drop down menu and enter your password.
 - Select SSH Key from the drop down menu and import the RSA private SSH key file.
6. Optional: If you have chosen to enter your password, you may enable **Skip this next time**, so that you do not have to enter your credentials again.

An SSH key is generated and stored allowing you to login to the cluster without having to enter your credentials.

7. Enter the location on the PBS Server where job files will be staged when a job is running.
8. Choose on of the following options:
 - If you have chosen to store your application definitions in a central repository rather than on your workstation, enter the URL for accessing the central repository in the format `https://<HOSTNAME>:4443` where <HOSTNAME> is the hostname of the machine where PBS Access Web is installed.

 **Note:** If the central repository is being hosted on the PBS Server, then the URL is automatically populated.

- If you have chosen to store your application definitions locally, then remove the URL.
9. Click **Add**.

 **Tip:** Repeat the previous steps add additional clusters.



10. Click **Done**.


3.1.3 Copying Application Definitions to a Local Repository

Copy any application definitions required for an HPC cluster to a local repository.

Specific changes must be made to legacy application definitions so that they will work with PBS Access Desktop. For more information see [Onboarding an Application Definition](#). Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop. These application definitions can be obtained through your normal Altair support channels.

1. Navigate to the following location on the workstation:`C:\Users\<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets`,
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster.
There should be a directory for each cluster that was added to PBS Access Desktop and the name of the directory should be the same as the Cluster Display Name that was entered when you added the cluster.
2. Navigate to `<CLUSTER_DISPLAY_NAME>\repository\applications`
where `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
3. Choose one of the following options:
 - Copy any legacy application definitions required for this HPC cluster to this location.
 - Copy any Altair default application definitions required for this HPC to this location.
4. Navigate to `C:\Users\<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets\<CLUSTER_DISPLAY_NAME>\repository`
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster and `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
5. Choose one of the following options:
 - Copy the legacy site configuration file `site-config.xml` to this location.
 - Copy the Altair default site configuration file `site-config.xml` to this location.
6. For each application in the site configuration file, update the value of the XML element `<Executable>` to the location of the application's executable.


```
<Application id="Abaqus">
  <ApplicationVersions>
    <ApplicationVersion>
      <Option>13.0</Option>
      <Executable>/opt/scripts/abaqus</Executable>
    </ApplicationVersion>
  </ApplicationVersions>
</Application>
```
7. Repeat steps 1 through 6 for all clusters that were added.
8. Open the Windows system tray.
9. Right-click the icon , and choose **Exit** from the menu.
10. Double-click the  shortcut that appears on the desktop.

 **Note:** The following steps are not required if you are logging in using an SSH key.

11. Login to a cluster by clicking its name from the cluster list located on the left of the Clusters dialog window.
12. Enter your login credentials and click **Login**.
13. Repeat steps 11 and 12 to login to additional clusters.
14. Click the X on the upper right-hand corner of the Clusters dialog window.
The application definitions associated with the cluster are now accessible to PBS Access Desktop.

3.1.4 Creating a Job Profile

Create a job profile, a customized shortcut for submitting a job.

Open the Windows system tray and double-click the PBS Access Desktop icon .

If you submit multiple jobs to the same application with the same arguments, it makes sense for you to create a job profile that has these arguments pre-populated for you - streamlining the process of job submission.

1. Click .
2. Select **Show Job Profiles**.

A list of solvers (Type = Application) and job profiles (Type = Profile) are displayed.

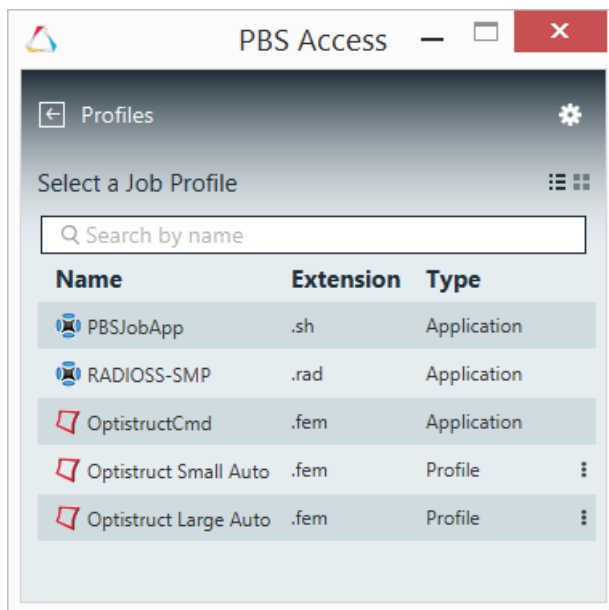


Figure 2: Profile List

3. Double-click a solver.
A job submission form is displayed containing the solver arguments.
4. Choose which cluster to add the job profile to by clicking the **Select server** menu and selecting a cluster.
5. Populate the solver arguments with values.

When you use a job profile to submit a job, solver arguments may be modified before the job is submitted. You can override any values that have been saved in the job profile or you can populate arguments that were not populated while creating the job profile.

6. Click **Save As Profile**.
7. Enter a name for the profile.
8. Click **OK**.

The job profile is saved and is displayed in the list.

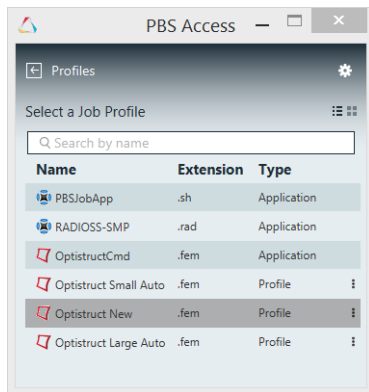


Figure 3: New Job Profile

3.2 Installing PBS Access Desktop for Deployment Option 2

Install in a multi-user environment.

This deployment option is best suited for sites where a small number of users will be using PBS Access Desktop. For this option, a single user deployment is done on a workstation. Using PBS Access Desktop, the installation configuration including clusters, application definitions and job profiles is exported to a zip file. The zip file is then used to install PBS Access Desktop on all the other user's workstations eliminating the need to add clusters and application definitions at each workstation. One disadvantage for this deployment option is that whenever an application definition is changed, all workstations will need to be updated with the change.

3.2.1 Installing PBS Access Desktop

Install PBS Access Desktop on a workstation.


To ensure a successful installation, review the [System Requirements](#).

Installation of PBS Access Desktop is very simple and quick. A binary or executable needs to be downloaded or obtained using your usual Altair support channels. You will be asked to provide an installation directory and a license server to install the product.


1. Choose one of the following options:

- To install in GUI mode, right-click the installation executable and choose the **Run as administrator** option.
- To install from the command line in silent mode, open a command prompt as a Windows administrator and enter the command:

```
PBSAccessDesktop_<Version>_<Build ID>_<YYYYMMDD>_<Timestamp>.exe -i silent  
-dUSER_INSTALL_DIR="<INSTALL_PATH>"  
-dALTAIR_SPM_LICENSE_PATH=<PORT@HOSTNAME>
```

 **Note:** Where <INSTALL_PATH> is where the binaries will be installed (make sure that the installation directory is surrounded by double quotes) and <PORT@HOSTNAME> is the license server in the format port@hostname.


2. Follow the installation instructions.

Once the installation is complete, a shortcut is created and appears on the desktop represented by the icon .

3.2.2 Registering a Cluster

Establish a connection to the HPC cluster by registering it so that you may begin submitting and monitoring jobs.

To register a cluster you will need to know the hostname of the machine where the PBS Server is installed and a valid set of credentials for that machine.

1. Double-click the PBS Access Desktop shortcut  on the Windows desktop. An Add Cluster dialog box is displayed.

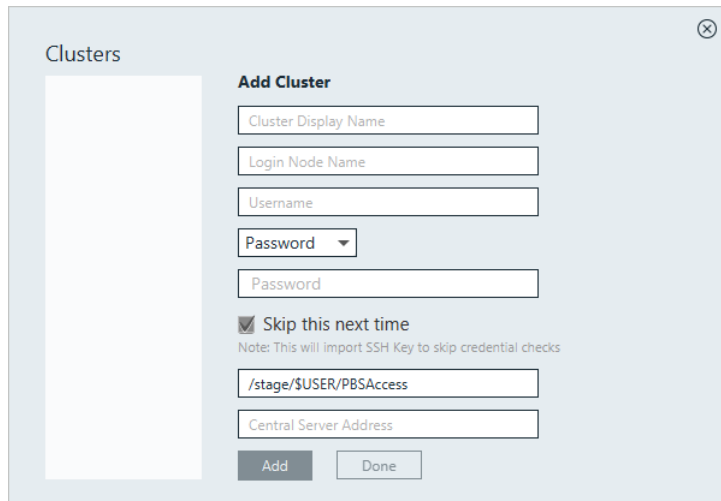



Figure 4: Add Cluster


2. For Cluster Display Name, enter a name for the cluster as it will be known within PBS Access Desktop.
3. For Login Node Name, enter the hostname of the machine where the PBS Server is installed.
4. For Username, enter your username.
5. Choose one of the following options:
 - Select Password from the drop down menu and enter your password.
 - Select SSH Key from the drop down menu and import the RSA private SSH key file.
6. Optional: If you have chosen to enter your password, you may enable **Skip this next time**, so that you do not have to enter your credentials again.

An SSH key is generated and stored allowing you to login to the cluster without having to enter your credentials.
7. Enter the location on the PBS Server where job files will be staged when a job is running.
8. Choose on of the following options:
 - If you have chosen to store your application definitions in a central repository rather than on your workstation, enter the URL for accessing the central repository in the format `https://<HOSTNAME>:4443` where <HOSTNAME> is the hostname of the machine where PBS Access Web is installed.

 **Note:** If the central repository is being hosted on the PBS Server, then the URL is automatically populated.

- If you have chosen to store your application definitions locally, then remove the URL.

9. Click **Add**.

 **Tip:** Repeat the previous steps add additional clusters.

10. Click **Done**.

3.2.3 Copying Application Definitions to a Local Repository



Copy any application definitions required for an HPC cluster to a local repository.


Specific changes must be made to legacy application definitions so that they will work with PBS Access Desktop. For more information see [Onboarding an Application Definition](#). Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop. These application definitions can be obtained through your normal Altair support channels.

1. Navigate to the following location on the workstation:`C:\Users\<<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets`.
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster.
There should be a directory for each cluster that was added to PBS Access Desktop and the name of the directory should be the same as the Cluster Display Name that was entered when you added the cluster.
2. Navigate to `<CLUSTER_DISPLAY_NAME>\repository\applications`
where `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
3. Choose one of the following options:
 - Copy any legacy application definitions required for this HPC cluster to this location.
 - Copy any Altair default application definitions required for this HPC to this location.
4. Navigate to `C:\Users\<<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets\<CLUSTER_DISPLAY_NAME>\repository`
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster and `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
5. Choose one of the following options:
 - Copy the legacy site configuration file `site-config.xml` to this location.
 - Copy the Altair default site configuration file `site-config.xml` to this location.
6. For each application in the site configuration file, update the value of the XML element `<Executable>` to the location of the application's executable.

```
<Application id="Abaqus">
```

```
<ApplicationVersions>
  <ApplicationVersion>
    <Option>13.0</Option>
    <Executable>/opt/scripts/abaqus</Executable>
  </ApplicationVersion>
</ApplicationVersions>
</Application>
```


7. Repeat steps 1 through 6 for all clusters that were added.
8. Open the Windows system tray.
9. Right-click the icon , and choose **Exit** from the menu.
10. Double-click the  shortcut that appears on the desktop.

 **Note:** The following steps are not required if you are logging in using an SSH key.

11. Login to a cluster by clicking its name from the cluster list located on the left of the Clusters dialog window.
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The application definitions associated with the cluster are now accessible to PBS Access Desktop.

3.2.4 Creating a Job Profile

Create a job profile, a customized shortcut for submitting a job.

Open the Windows system tray and double-click the PBS Access Desktop icon .

If you submit multiple jobs to the same application with the same arguments, it makes sense for you to create a job profile that has these arguments pre-populated for you - streamlining the process of job submission.

1. Click .
2. Select **Show Job Profiles**.

A list of solvers (Type = Application) and job profiles (Type = Profile) are displayed.

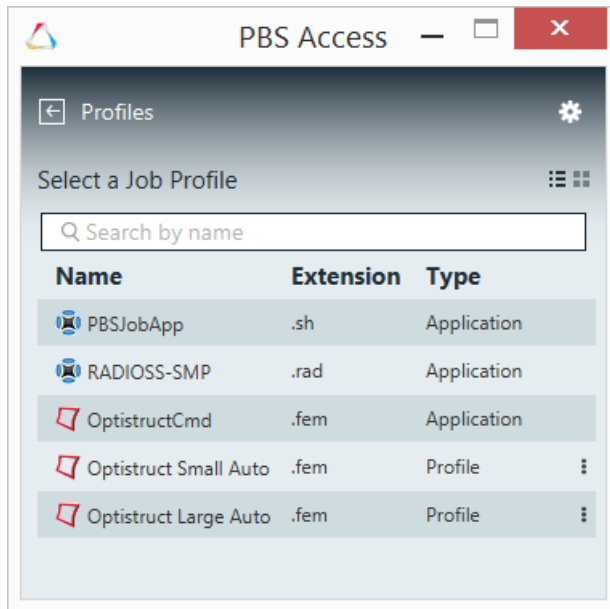


Figure 5: Profile List

3. Double-click a solver.

A job submission form is displayed containing the solver arguments.

4. Choose which cluster to add the job profile to by clicking the **Select server** menu and selecting a cluster.

5. Populate the solver arguments with values.

When you use a job profile to submit a job, solver arguments may be modified before the job is submitted. You can override any values that have been saved in the job profile or you can populate arguments that were not populated while creating the job profile.

6. Click **Save As Profile**.

7. Enter a name for the profile.

8. Click **OK**.

The job profile is saved and is displayed in the list.

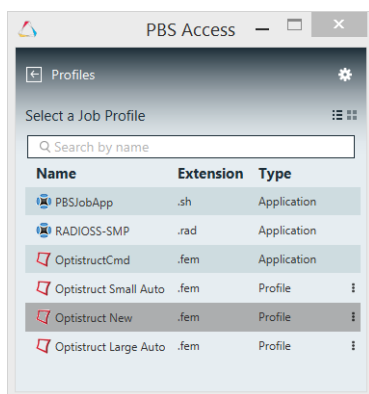




Figure 6: New Job Profile

3.2.5 Exporting the Installation Configuration

Export cluster, profile and application definition information to a zip file.

Create a zip file containing cluster, job profile and application definition information. The zip file can then be used to install PBS Access Desktop on other workstations eliminating the need to add clusters, job profiles and application definitions at each workstation.

1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Export Config** from the menu.
5. Select a folder where the exported configuration will be saved.

A zip file called `PBSAccessConfig.zip` is created in the selected folder.


3.2.6 Installing Using the Exported Configuration Zip File


Install PBS Access Desktop along with clusters, job profiles, and application definitions that were previously configured.

Using the zip file containing a previously configured PBS Access Desktop installation, install the product at all other workstations at your site. You will be asked to provide an installation directory and a license server to install the product.

1. Login to a workstation.
2. Copy the PBS Access Desktop installation executable to a directory on the workstation's hard drive.
3. Copy the `PBSAccessConfig.zip` file to the same directory as the installation executable.
4. Choose one of the following options:
 - To install in GUI mode, right-click the installation executable and choose the **Run as administrator** option.
 - To install from the command line in silent mode, open a command prompt as a Windows administrator and enter the command:

```
PBSAccessDesktop_<Version>_<Build ID>_<YYYYMMDD>_<Timestamp>.exe -i silent  
-dUSER_INSTALL_DIR="<INSTALL_PATH>"  
-dALTAIR_SPM_LICENSE_PATH=<PORT@HOSTNAME>
```

 **Note:** Where `<INSTALL_PATH>` is where the binaries will be installed (make sure that the installation directory is surrounded by double quotes) and `<PORT@HOSTAME>` is the license server in the format `port@hostname`.

5. Follow the installation instructions.
Once the installation is complete, a shortcut is created and appears on the desktop represented by the icon .

3.3 Installing PBS Access Desktop for Deployment Option 3

Install PBS Access Desktop so that it uses a central repository for storing the application definitions.


This deployment option allows the application definitions to be stored and maintained in a central repository. This deployment option requires that PBS Access Web be installed on a Linux machine. Application definitions are copied to a specific location on this machine which is considered the central repository. A multi-user deployment can then be performed with a slight change to the workflow. When clusters are added to PBS Access Desktop, the hostname of the machine hosting the central repository is provided.

3.3.1 Installing PBS Access Web

Install PBS Access Web on the machine that is going to host the central repository of application definitions.

PBS Access Web can be installed on the same machine as the PBS Server or on a separate machine.

1. Login to the machine where you want to install PBS Access Web and the application definitions (the central repository).
2. Install PBS Access Web using the instructions documented in section ??? in the *PBS Access Web Administrator's Guide*.

 **Note:** Ignore the prerequisite for having to install a supported version of PAS. You do not have to install it.

3. Configure the Service user using the instructions documented in section ??? in the *PBS Access Web Administrator's Guide*.
4. Configure the license server if it was not supplied during installation of PBS Access Web using the instructions documented in section in the *PBS Access Web Administrator's Guide*.

3.3.2 Installing PBS Access Desktop

Install PBS Access Desktop on a workstation.


To ensure a successful installation, review the [System Requirements](#).

Installation of PBS Access Desktop is very simple and quick. A binary or executable needs to be downloaded or obtained using your usual Altair support channels. You will be asked to provide an installation directory and a license server to install the product.


1. Choose one of the following options:
 - To install in GUI mode, right-click the installation executable and choose the **Run as administrator** option.

- To install from the command line in silent mode, open a command prompt as a Windows administrator and enter the command:

```
PBSAccessDesktop_<Version>_<Build ID>_<YYYYMMDD>_<Timestamp>.exe -i silent  
-dUSER_INSTALL_DIR="<INSTALL_PATH>"  
-dALTAIR_SPM_LICENSE_PATH=<PORT@HOSTNAME>
```

 **Note:** Where <INSTALL_PATH> is where the binaries will be installed (make sure that the installation directory is surrounded by double quotes) and <PORT@HOSTNAME> is the license server in the format port@hostname.

- Follow the installation instructions.

Once the installation is complete, a shortcut is created and appears on the desktop represented by the icon .

3.3.3 Configuring the Central Repository

Add application definitions to the central repository and configure PBS Access Web so that it will administer the central repository.

Specific changes must be made to legacy application definitions so that they will work with PBS Access Desktop. For more information see [Onboarding an Application Definition](#). Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop. These application definitions can be obtained through your normal Altair support channels.

- Stop PBS Access Web using the command:


```
/etc/init.d/pbsworks-pa stop
```

- Navigate to: `/var/spool/PBS_Access/2018.2/home/config/shared`.
- Make a backup of the `deployment.ini` file.
- Edit the file `deployment.ini`.
- Add `'option=("repository")'` to the value of `deploy_option`.

```
deploy_option=('option=("pa" "ams" "storage" "license" "preferences")'  
              'option=("executor")'  
              'option=("displaymanager")'  
              'option=("repository")'  
              #'option=("resultmanager")'  
              #'option=("resultservice")'  
              )
```

- Save the file.
 - Start PBS Access Web using the command:
- ```
/etc/init.d/pbsworks-pa start
```
- Navigate to `/var/spool/PBS_Access/2018.2/home/data/repository`.
  - Create a `targets` directory.
  - Navigate to the `targets` directory.
  - Create a directory in the `targets` directory that corresponds to an HPC cluster that will be added to PBS Access Desktop.

```
/var/spool/PBS_Access/2018.2/home/data/repository/targets/<PBS_SERVER_HOSTNAME>
```

 **Note:** where <PBS\_SERVER\_HOSTNAME> is the hostname of the machine hosting the PBS Server.

**12.** Navigate to the <PBS\_SERVER\_HOSTNAME> directory.

**13.** Create an applications directory in the <PBS\_SERVER\_HOSTNAME> directory.

/var/spool/PBS\_Access/2018.2/home/data/repository/targets/<PBS\_SERVER\_HOSTNAME>

**14.** Navigate to the applications directory.

**15.** Choose one of the following options:

- Copy any legacy application definitions required for this HPC cluster to this location.
- Copy any Altair default application definitions required for this HPC to this location.

**16.** Navigate to /var/spool/PBS\_Access/2018.2/home/data/repository/targets/<PBS\_SERVER\_HOSTNAME>.

**17.** Choose one of the following options:

- Copy the legacy site configuration file site-config.xml file to this location.
- Copy the Altair default site configuration file site-config.xml file to this location.

**18.** For each application in the site configuration file, update the value of the XML element <Executable> to the location of the application's executable.


```
<Application id="Abaqus">
 <ApplicationVersions>
 <ApplicationVersion>
 <Option>13.0</Option>
 <Executable>/opt/scripts/abaqus</Executable>
 </ApplicationVersion>
 </ApplicationVersions>
</Application>
```

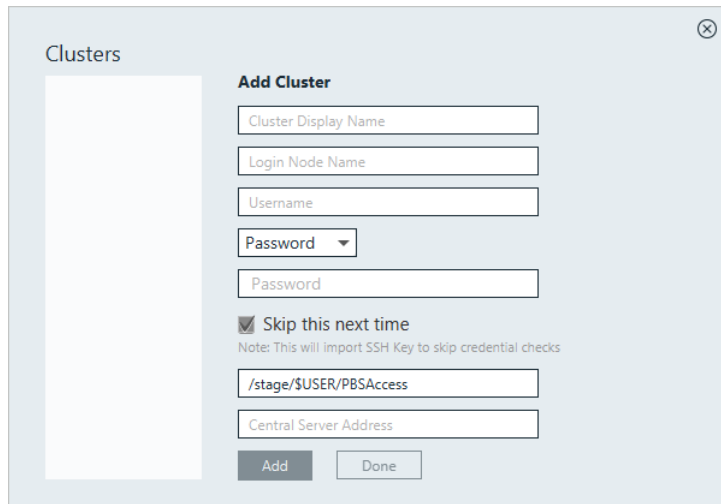
**19.** Repeat steps 8 through 17 for every cluster that was added to PBS Access Desktop.

### 3.3.4 Registering a Cluster

Establish a connection to the HPC cluster by registering it so that you may begin submitting and monitoring jobs.

To register a cluster you will need to know the hostname of the machine where the PBS Server is installed and a valid set of credentials for that machine.

- 1.** Double-click the PBS Access Desktop shortcut  on the Windows desktop. An Add Cluster dialog box is displayed.




**Figure 7:** Add Cluster


2. For Cluster Display Name, enter a name for the cluster as it will be known within PBS Access Desktop.
3. For Login Node Name, enter the hostname of the machine where the PBS Server is installed.
4. For Username, enter your username.
5. Choose one of the following options:
  - Select Password from the drop down menu and enter your password.
  - Select SSH Key from the drop down menu and import the RSA private SSH key file.
6. Optional: If you have chosen to enter your password, you may enable **Skip this next time**, so that you do not have to enter your credentials again.

An SSH key is generated and stored allowing you to login to the cluster without having to enter your credentials.

7. Enter the location on the PBS Server where job files will be staged when a job is running.
8. Choose on of the following options:
  - If you have chosen to store your application definitions in a central repository rather than on your workstation, enter the URL for accessing the central repository in the format `https://<HOSTNAME>:4443` where `<HOSTNAME>` is the hostname of the machine where PBS Access Web is installed.

 **Note:** If the central repository is being hosted on the PBS Server, then the URL is automatically populated.


- If you have chosen to store your application definitions locally, then remove the URL.
9. Click **Add**.

 **Tip:** Repeat the previous steps add additional clusters.

10. Click **Done**.

## 3.3.5 Creating a Job Profile

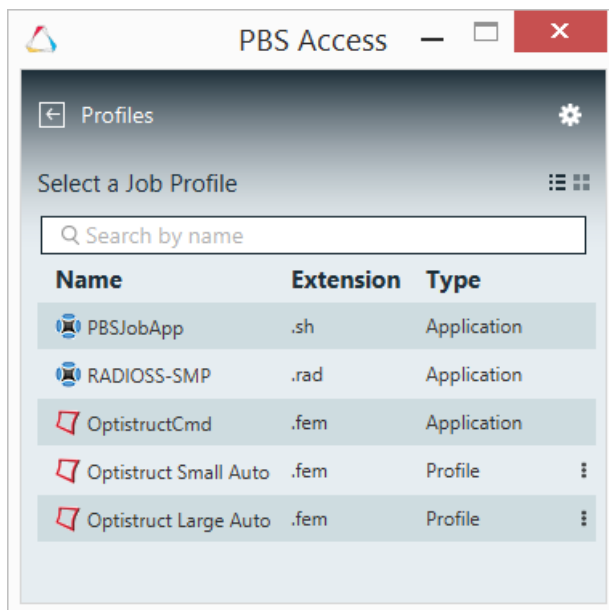
Create a job profile, a customized shortcut for submitting a job.

Open the Windows system tray and double-click the PBS Access Desktop icon .

If you submit multiple jobs to the same application with the same arguments, it makes sense for you to create a job profile that has these arguments pre-populated for you - streamlining the process of job submission.

1. Click .
2. Select **Show Job Profiles**.

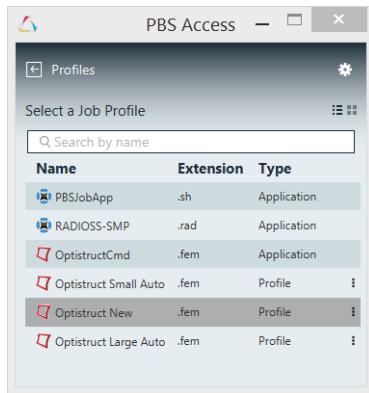
A list of solvers (Type = Application) and job profiles (Type = Profile) are displayed.



**Figure 8:** Profile List

3. Double-click a solver.  
A job submission form is displayed containing the solver arguments.
4. Choose which cluster to add the job profile to by clicking the **Select server** menu and selecting a cluster.
5. Populate the solver arguments with values.  
When you use a job profile to submit a job, solver arguments may be modified before the job is submitted. You can override any values that have been saved in the job profile or you can populate arguments that were not populated while creating the job profile.
6. Click **Save As Profile**.
7. Enter a name for the profile.
8. Click **OK**.

The job profile is saved and is displayed in the list.





**Figure 9:** New Job Profile

### 3.3.6 Exporting the Installation Configuration

Export cluster, profile and application definition information to a zip file.

Create a zip file containing cluster, job profile and application definition information. The zip file can then be used to install PBS Access Desktop on other workstations eliminating the need to add clusters, job profiles and application definitions at each workstation.

1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Export Config** from the menu.
5. Select a folder where the exported configuration will be saved.

A zip file called `PBSAccessConfig.zip` is created in the selected folder.

### 3.3.7 Installing Using the Exported Configuration Zip File


Install PBS Access Desktop along with clusters, job profiles, and application definitions that were previously configured.


Using the zip file containing a previously configured PBS Access Desktop installation, install the product at all other workstations at your site. You will be asked to provide an installation directory and a license server to install the product.

1. Login to a workstation.
2. Copy the PBS Access Desktop installation executable to a directory on the workstation's hard drive.
3. Copy the `PBSAccessConfig.zip` file to the same directory as the installation executable.
4. Choose one of the following options:
  - To install in GUI mode, right-click the installation executable and choose the **Run as administrator** option.

- To install from the command line in silent mode, open a command prompt as a Windows administrator and enter the command:

```
PBSAccessDesktop_<Version>_<Build ID>_<YYYYMMDD>_<Timestamp>.exe -i silent
-dUSER_INSTALL_DIR="<INSTALL_PATH>"
-dALTAIR_SPM_LICENSE_PATH=<PORT@HOSTNAME>
```

 **Note:** Where <INSTALL\_PATH> is where the binaries will be installed (make sure that the installation directory is surrounded by double quotes) and <PORT@HOSTNAME> is the license server in the format port@hostname.

5. Follow the installation instructions.  
Once the installation is complete, a shortcut is created and appears on the desktop represented by the icon .

# Onboarding an Application Definition

---

# 4

Update a solver's application definition so that it can be used by PBS Access Desktop.

This chapter covers the following:

- [4.1 Porting an Application Definition](#) (p. 29)
- [4.2 Linking a Solver to a File Extension](#) (p. 31)
- [4.3 Adding a Refresh Script for Determining Include Files](#) (p. 33)


Certain things must be added to a solver's application definition for PBS Access Desktop to work correctly.



## 4.1 Porting an Application Definition

Port an application definition from a legacy version of PBS Works so that it can be used by PBS Access Desktop.

Application definitions must have a PRIMARY\_FILE argument defined in the application definition input file that represents the primary input file for the solver. If a legacy application definition calls the primary input file something other than PRIMARY\_FILE, then a mapping file must be updated to port the application definition. Additionally, if the legacy application definition contains an application argument that represents the queue to which the job is submitted, the name of the application argument must be QUEUE. If it is not, the mapping file must be updated.

 **Note:** You can onboard an application definition at any time.

1. Navigate to `C:\Users\<<USERNAME>\PBS_Access\home\apps\PBSAccessDesktop\config.` where `<USERNAME>` is the Windows username.
2. Edit the file `applicationmapping.json`.
3. Add the following JSON between the bracket `[]`

```
{
 "serverName": "server-1", "version": "13.1", "applications":
 [
 {
 "applicationName": "RADIOSS-SMP",
 "primaryFile": "MASTER_FILE",
 "queue": "Queues"
 }
]
}
```

4. Change the value of `serverName` to the name of the server provided when adding the service cluster.

```
"serverName": "server-1",
```

5. Change the value of `version` to the legacy version of PBS Works that you are porting from.

```
"version": "13.1",
```

6. Change the value of `applicationName` to the name of the application that you want to port. Denoted by the XML element `<ApplicationName>` in the application definition. The XML looks like this:

```
<ApplicationName>Optistruct</ApplicationName>
```

The JSON should look like this:

```
"applicationName": "Optistruct"
```

7. Change the value of `primaryFile` to the name of the application argument that represents the application input file for the solver.

Denoted by the XML element `<Name>` in the application definition. The XML looks like this:

```
<ArgumentChoice>
 <ArgumentFileName>
 <Name>MASTER_FILE</Name>
 <Description>Select your Optistruct Master file.</Description>
 <DisplayName>Master File</DisplayName>
 <InputRequired>true</InputRequired>
 </ArgumentFileName>
</ArgumentChoice>
```

The JSON should look like this:

```
"primaryFile": "MASTER_FILE"
```

8. Change the value of queue to the name of the application argument that represents the queue to which the job is submitted.

Denoted by the XML element <Name> in the application definition. The XML looks like this:

```
<ArgumentChoice>
 <ArgumentStringEnumerated>
 <Name>BATCH_QUEUE</Name>
 <Description>Select the batch queue you would like to submit to.</Description>
 <DisplayName>Batch Queue</DisplayName>
 <InputRequired>false</InputRequired>
 <Option>workq</Option>
 <Option>testq</Option>
 <DefaultValue>workq</DefaultValue>
 </ArgumentStringEnumerated>
</ArgumentChoice>
```

The JSON should look like this:

```
"queue": "BATCH_QUEUE"
```

9. Add additional applications by repeating previous step 5-7 making sure that when you add the next application to the JSON mapping file you separate the applications using a comma.

```
"applications":
[
 {
 "applicationName": "PBSJobApp",
 "primaryFile": "JOB_SCRIPT"
 },
 {
 "applicationName": "Optistruct",
 "primaryFile": "MASTER"
 }
]
```

10. Save the file.
11. Copy your application definitions to the central repository or to your local repository.
12. Restart PBS Access Desktop.

## 4.2 Linking a Solver to a File Extension

Update a solver's application definition to link it to a specific file extension.

PBS Access Desktop links a job input file to a specific application or solver via the file's extension. For example, the solver Optistruct is a structural analysis solver and can process input files with a .fem extension. The association between the file extension and the solver is done through the application definition and must be set up so that PBS Access Desktop can determine which solvers are available for a file extension.

1. Edit the solver's application input file `app-inp-application.xml`.
2. Link the file extension to the solver by adding the following XML:

```
<ApplicationExtension>file_extension</ApplicationExtension>
```

The below example links a file with the extension of .fem to the Optistruct solver.

```
<ApplicationId>Optistruct</ApplicationId>
<ApplicationName>Optistruct</ApplicationName>
<ApplicationExtension>.fem</ApplicationExtension>
```

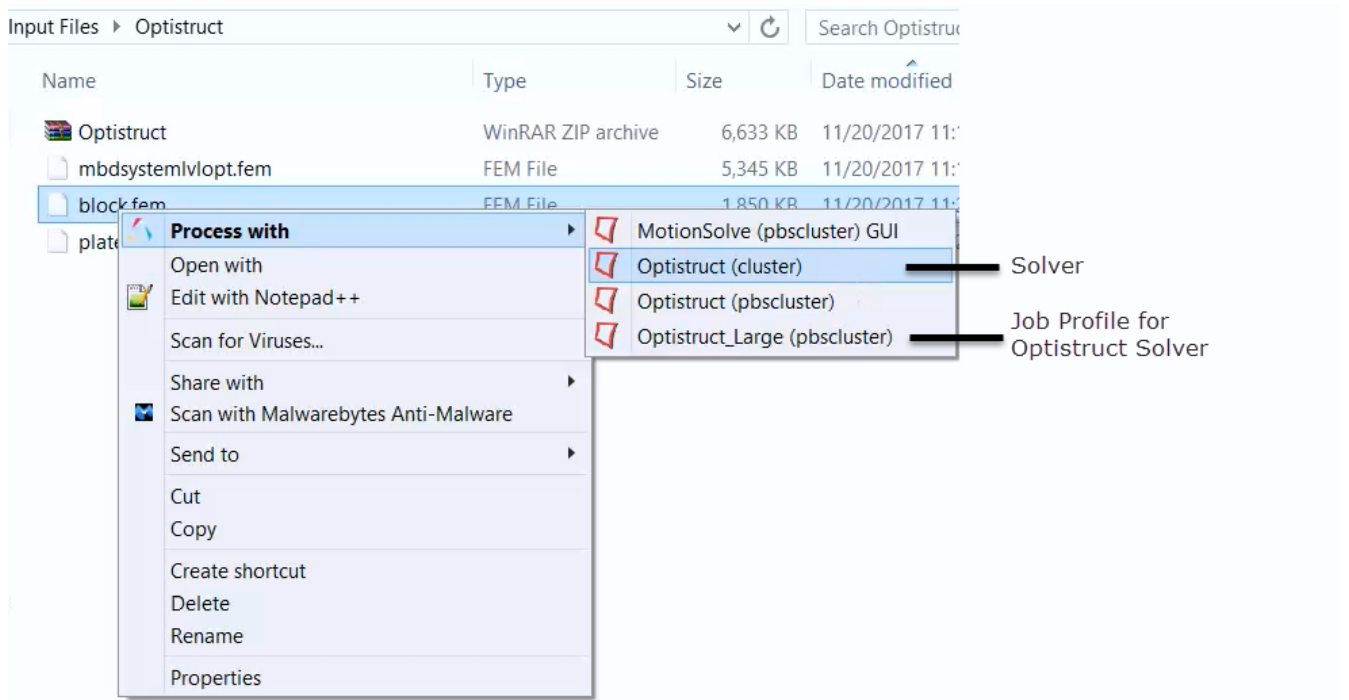
3. Save the application input file.
4. Update the site configuration file `site-config.xml` with the appropriate application information such as versions and policies:

```
<Applications>
 <Application id="Optistruct">
 <ApplicationVersions>
 <ApplicationVersion>
 <Option>11.0</Option>
 <Executable>/opt/hyperworks/11.0/altair/scripts/optistruct</Executable>
 </ApplicationVersion>

 <ApplicationVersion>
 <Option>12.0</Option>
 <Executable>/opt/hyperworks/12.0/altair/scripts/optistruct</Executable>
 </ApplicationVersion>
 </ApplicationVersions>
 </Application>
</Applications>
```

For more information about updating the site configuration file with application version and policies see *Diving Into Application Definitions*.

5. Restart PBS Access Desktop.
6. Right-click on a job input file that has the file extension that was just added to the application definition.
7. Verify that the correct solver and job profiles are being displayed in the context menu.



**Figure 10:** Verify Solvers and Job Profiles

## 4.3 Adding a Refresh Script for Determining Include Files

Add a refresh script to an application definition to automatically determine the include files based on the chosen master file.

An application definition refresh script refreshes the job submission form based on user input. You can add a refresh script to an application definition to automatically determine which files are the solver's include files based on the master file chosen by the user.

1. Create a refresh script `refresh.py` and add the code necessary to identify include files based on the master file.
2. Place the `refresh.py` script in the `submittime` directory of the application definition.
3. Edit the solver's application input file `app-inp-application.xml`.
4. Add the following XML to the Primary file argument: `<RefreshOnUpdate>true</RefreshOnUpdate>`

```
<ArgumentChoice>
 <ArgumentFileName>
 <Name>PRIMARY_FILE</Name>
 <Description>Select your Primary file.</Description>
 <DisplayName>Primary File</DisplayName>
 <InputRequired>true</InputRequired>
 <RefreshOnUpdate>true</RefreshOnUpdate>
 </ArgumentFileName>
</ArgumentChoice>
```

5. Add the following XML at the end of the application input file: `<RefreshScript>refresh.py</RefreshScript>`

```
<TemplateApplicationInput>
 <RefreshScript>refresh.py</RefreshScript>
</TemplateApplicationInput>
```

6. Save the application input file.
7. Restart PBS Access Desktop.
8. Verify that the include files are added when you drag and drop the master file as an input file.



Advanced configurations for PBS Access Desktop.

This chapter covers the following:

- [5.1 Configuring Remote Drive](#) (p. 35)
- [5.2 Switching from the Central Repository to a Local Repository](#) (p. 36)
- [5.3 Configuring the License Server](#) (p. 38)

## 5.1 Configuring Remote Drive

Configure the remote drive to access the cluster and the job files.

1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Configure Remote Drive**.
5. Enter the remote network drive name.

The remote network drive name is displayed in Windows Explorer.

## 5.2 Switching from the Central Repository to a Local Repository

Use local application definitions rather than those installed in the central repository.

### 5.2.1 Disabling the Central Repository

Configure PBS Access Desktop to discontinue using the central repository of application definitions.

Exit from PBS Access Desktop before making these changes.

1. Navigate to `C:\Users\<USERNAME>\PBS_Access\home\apps\PAS\config\pas\conf.`  
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster.
2. Edit `serverData.xml`.
3. Change the value of the XML `<property>` element having a `@key` equal to "useCentralRepo" to `false`.  

```
<property key="useCentralRepo">false</property>
```
4. Save the file.

### 5.2.2 Copying Application Definitions to a Local Repository



Copy any application definitions required for an HPC cluster to a local repository.


Specific changes must be made to legacy application definitions so that they will work with PBS Access Desktop. For more information see [Onboarding an Application Definition](#). Alternately, Altair provides a number of default application definitions that can be used with PBS Access Desktop. These application definitions can be obtained through your normal Altair support channels.

1. Navigate to the following location on the workstation: `C:\Users\<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets.`  
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster.  
There should be a directory for each cluster that was added to PBS Access Desktop and the name of the directory should be the same as the Cluster Display Name that was entered when you added the cluster.
2. Navigate to `<CLUSTER_DISPLAY_NAME>\repository\applications`  
where `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
3. Choose one of the following options:
  - Copy any legacy application definitions required for this HPC cluster to this location.
  - Copy any Altair default application definitions required for this HPC to this location.



4. Navigate to `C:\Users\<USERNAME>\PBS_Access\home\apps\PAS\data\pas\targets\<CLUSTER_DISPLAY_NAME>\repository`  
where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster and `<CLUSTER_DISPLAY_NAME>` is the name that was entered for the cluster when it was added to PBS Access Desktop.
5. Choose one of the following options:
  - Copy the legacy site configuration file `site-config.xml` to this location.
  - Copy the Altair default site configuration file `site-config.xml` to this location.
6. For each application in the site configuration file, update the value of the XML element `<Executable>` to the location of the application's executable.

```
<Application id="Abaqus">
 <ApplicationVersions>
 <ApplicationVersion>
 <Option>13.0</Option>
 <Executable>opt/scripts/abaqus</Executable>
 </ApplicationVersion>
 </ApplicationVersions>
</Application>
```
7. Repeat steps 1 through 6 for all clusters that were added.
8. Open the Windows system tray.
9. Right-click the icon , and choose **Exit** from the menu.
10. Double-click the  shortcut that appears on the desktop.


 **Note:** The following steps are not required if you are logging in using an SSH key.

11. Login to a cluster by clicking its name from the cluster list located on the left of the Clusters dialog window.
12. Enter your login credentials and click **Login**.
13. Repeat steps 11 and 12 to login to additional clusters.
14. Click the X on the upper right-hand corner of the Clusters dialog window.  
The application definitions associated with the cluster are now accessible to PBS Access Desktop.

## 5.3 Configuring the License Server

Configure the license servers post-installation.

During the installation PBS Access Desktop, you are prompted to provide a license server in the format `port@hostname`. If this information is not provided at this time, then the license server must be configured post-installation.



 **Note:** You must have administrative privileges to configure the PBS Access Desktop license server.

1. Navigate to `C:\Program Files\altair\PBS Access\2018.2\exec\config\`
2. Edit the file `PBSWorks-PAD.conf`.
3. Change the value of `LICENSE_SERVER_PATH` to the port and hostname of the license server in the format `port@hostname`.  


```
LICENSE_SERVER_PATH=6200@cntrlicsrv03
```
4. Restart PBS Access Desktop for these changes to take effect.

# Viewing Logs

Log files can be used for monitoring and troubleshooting the application.

1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Show Logs**.

The folder containing the log files is opened in Windows Explorer.

 **Note:** The default location of the log files is: `C:\Users\<USERNAME>\PBS_Access\home\logs` where `<USERNAME>` is the username of the user who logged into the workstation and added the cluster.

The log files in the folder are:

- catalina, host-manager, localhost, and manager - related to Tomcat
- adf - related to framework
- pas-server and desktop - related to server

# Uninstalling PBS Access Desktop

---

Uninstall old or unused versions of PBS Access Desktop.

Exit from PBS Access Desktop before you uninstall.

1. Navigate to C:\Program Files\altair\PBS Access\2018.2\\_PBS Access Desktop\_installation\  
Desktop\_installation\  
Desktop\_installation\
2. Right-click the *Change PBS Access Desktop Installation* executable and choose the **Run as administrator** option.
3. Follow the instructions for uninstalling.



Register an HPC cluster so that jobs can be submitted to that cluster and removed unwanted clusters.

This chapter covers the following:

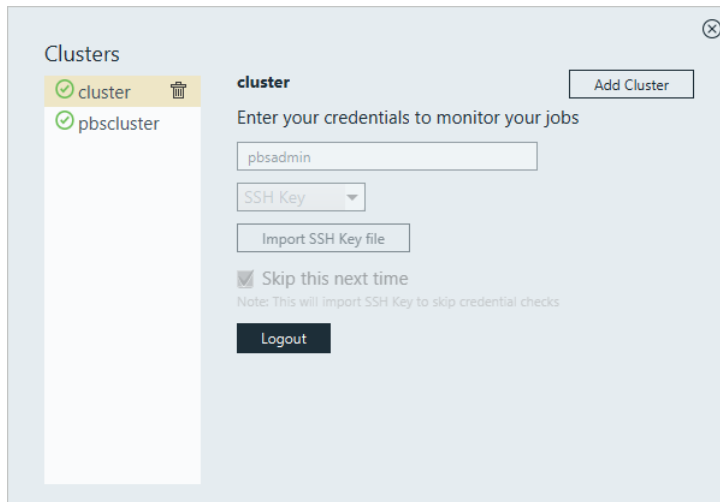
- [8.1 Adding a Cluster](#) (p. 42)
- [8.2 Deleting a Cluster](#) (p. 44)

## 8.1 Adding a Cluster

Add and establish a connection to the HPC cluster by registering it so that you may begin submitting and monitoring jobs.

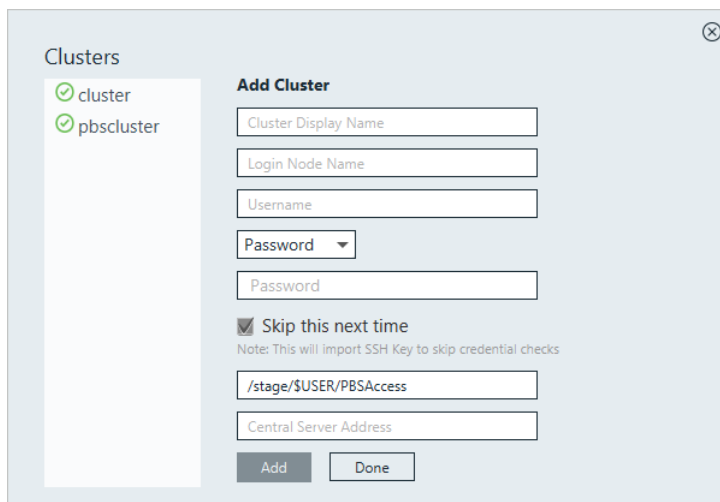
1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Clusters**.

A Clusters dialog box is displayed.



**Figure 11:** Clusters

5. Click **Add Cluster**.  
Add Cluster dialog box is displayed.



**Figure 12:** Add Cluster

6. For Cluster Display Name, enter a name for the cluster as it will be known within PBS Access Desktop.
7. For Login Node Name, enter the hostname of the machine where the PBS Server is installed.
8. For Username, enter your username.
9. Choose one of the following options:
  - Select Password from the drop down menu and enter your password.
  - Select SSH Key from the drop down menu and import the RSA private SSH key file.
10. Optional: If you have chosen to enter your password, you may enable **Skip this next time**, so that you do not have to enter your credentials again.

An SSH key is generated and stored allowing you to login to the cluster without having to enter your credentials.

11. Enter the location on the PBS Server where job files will be staged when a job is running.
12. Choose on of the following options:
  - If you have chosen to store your application definitions in a central repository rather than on your workstation, enter the URL for accessing the central repository in the format `https://<HOSTNAME>:4443` where <HOSTNAME> is the hostname of the machine where PBS Access Web is installed.



**Note:** If the central repository is being hosted on the PBS Server, then the URL is automatically populated.

- If you have chosen to store your application definitions locally, then remove the URL.

13. Click **Add**.





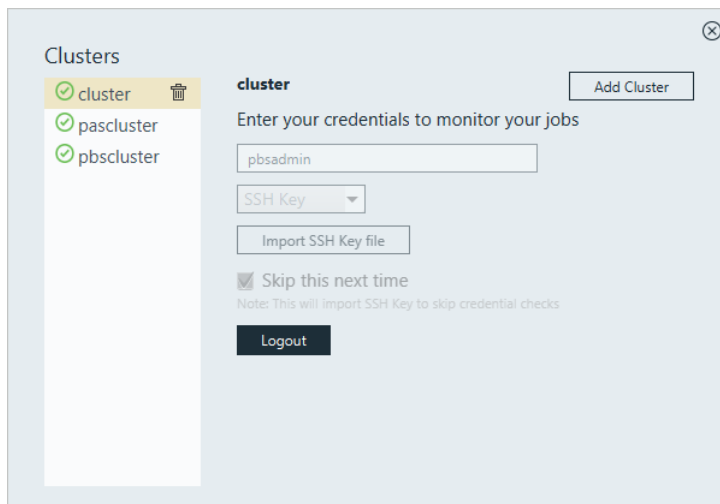
**Tip:** Repeat the previous steps to add additional clusters.

14. Click **Done**.

## 8.2 Deleting a Cluster

Remove a cluster when you no longer want to submit and manage jobs on that cluster.

1. Open the Windows system tray.
2. Double-click the PBS Access Desktop icon .
3. Click .
4. Select **Clusters** from the menu.  
A list of clusters that are registered and available is displayed.



**Figure 13:** Clusters

5. Find the cluster you want to remove and click  next to its name.



# Managing Application Definitions

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# 9

Application definitions are a predefined set of instructions to describe application parameters, store responses and prepare responses for job execution.

This chapter covers the following:

- [9.1 Components of Application Definitions](#) (p. 46)
- [9.2 Location of Application Definitions](#) (p. 47)
- [9.3 Adding a New Application](#) (p. 48)

The applications available in PBS Access Desktop are deployed as PAS application definitions.

More comprehensive information regarding application definitions is available in the *PAS Administrator's Guide* and the *Diving Into Application Definitions Guide*.

## 9.1 Components of Application Definitions

Main components of application definitions.

An interactive application definition consists of the following components:

- An **Application input file** (`app-inp-Optistruct.xml`). The valid arguments for the application is specified in this file.
- An **Application converter file** (`app-conv-Optistruct.xml`). The values received through the input file are converted and communicated to the PAS and PBS through this file. The Job submission environment is configured in this file.
- The **Site Configuration file** (`site-config.xml`). The information stored in this file can be referenced by any application definition. Applications, Application versions, Job projects and policies are some common settings that can be defined in the site configuration file.

## 9.2 Location of Application Definitions

Locate the application definition in central server and in your local system.

When PBS Access Desktop server starts up and if you have registered the central server, it scans the application definitions stored in a central repository and automatically gets listed in the PBS Access Desktop.

If the central repository is disabled, then the local list of application definition will be displayed in PBS Access Desktop.

 **Note:** Refer to [Disabling the Central Repository](#) and [Adding a New Application](#) for more information.

The location of application definition in central server:

```
/var/spool/PBS_Access/2018.2/home/data/repository/targets/<cluster name>/repository/
applications/
```

The location of application in the system:


```
C:\Users\<user name>\PBS_Access\home\apps\PAS\data\pas\targets\<cluster name>
\repository\applications\
```

## 9.3 Adding a New Application

Procedure of copying and modifying the default application definition which is available as part of the application installation.

Exit from the PBS Access Desktop before you add new application definition.

Verify the [location of application definition](#).

 **Note:** The default application definition directory that is available is *PBSJobApp*.

1. In the application definitions directory, copy the PBSJobApp application definition directory and rename it to the name of the application. For example, let's assume that we are adding Optistruct application definition.

2. Rename the Optistruct application definition files to the name of the new application.

app-conv-PBSJobApp.xml to app-conv-Optistruct.xml

app-inp-PBSJobApp.xml to app-inp-Optistruct.xml

3. Edit the app-inp-AppName file (e.g. app-inp-Optistruct.xml).

- a) Change the `<ApplicationId>PBSJobApp</ApplicationId>` entry to the application ID.

`<ApplicationId>Optistruct</ApplicationId>`

- b) Change the `<ApplicationName>PBSJobApp</ApplicationName>` entry to the application name.

`<ApplicationName>Optistruct</ApplicationName>`

- c) Change the `<ApplicationExtension>.sh</ApplicationExtension>` entry to the application extension.

`<ApplicationExtension>.fem</ApplicationExtension>`

- d) Locate the VERSION category. In the xpath1 value, update the `Application@id` to the AppName

```
<ArgumentChoice>
 <ArgumentStringEnumerated>
 <Name>VERSION</NAME>
 <Description> Version of the interactive application you
 selected to start </Description>
 <DisplayName>Version</DisplayName>
 <xi:include href="site-config.xml" pointer="xpath1
 (//Application[@id='Optistruct']/ApplicationVersions//Option)" />
 </ArgumentStringEnumerated>
</ArgumentChoice>
```

4. Edit the app-conv-AppName file (e.g. app-conv-Optistruct.xml).

- a) Change the `<ApplicationId>PBSJobApp</ApplicationId>` entry to the application ID.

`<ApplicationId>Optistruct</ApplicationId>`

- b) Change the `<ApplicationName>PBSJobApp</ApplicationName>` entry to the application name.

`<ApplicationName>Optistruct</ApplicationName>`

- c) Change the `<Software>PBSJobApp</Software>` entry to the application software.

`<Software>Optistruct</Software>`

5. Remove the time stamp file for the services to pick up the updated files.

6. In the `site-config.xml` file located in the application definitions directory, add an entry for the application in the `<Applications>` section.

```
<Application id="Optistruct">
 <ApplicationVersions>
 <ApplicationVersion>
 <Option>13.2</Option>
 <Executable>altair/Optistruct/13.2/altair/scripts/OV</Executable>
 </ApplicationVersion>
 </ApplicationVersions>
</Application>
```



**Note:** You can also define multiple executable versions for the application definition.

Example to define multiple executable versions of the application definition:

```
<Application id="Optistruct">
 <ApplicationVersions>
 <ApplicationVersion>
 <Option>13.1</Option>
 <Executable>altair/hw/13.1/altair/scripts/hv</Executable>
 </ApplicationVersion>
 <ApplicationVersion>
 <Option>13.2</Option>
 <Executable>altair/hw/13.2/altair/scripts/hv</Executable>
 </ApplicationVersion>
 </ApplicationVersions>
</Application>
```

7. Restart the PBS Access Desktop for these changes to take effect.  
The new application definition will be listed in PBS Access Desktop.