

PBS Professional® 12.0

# Quick Start Guide



**PBS Works™**

PBS Works is a division of  Altair

# PBS Professional Quick Start Guide

**Altair® PBS Professional 12, updated 25 January 2013**

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For documentation and the PBS Works forums, go to:

Web: [www.pbsworks.com](http://www.pbsworks.com)

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# PBS Professional® Quick Install for UNIX and Linux

This section describes how to install socket licenses and PBS Professional on UNIX and Linux.

This process covers installation on both stand-alone machines and complexes. For more information on software and license installation and pre-installation planning, consult the **PBS Professional Installation & Upgrade Guide**.

## General Information

If you will use floating licenses for any of your hosts, PBS requires an LM-X Altair floating license server. You **cannot** use the old Flex license server. If you will use the floating license server and you are upgrading from pre-11.0 PBS, you must download, install and configure the LM-X Altair license server **before** installing PBS Professional.

### Types of Installation

- For **standalone** machines, perform a full installation of PBS Professional. Further configuration is optional.
- For **cluster systems**, first install on the PBS server host, then install on each execution host.
- For **client machines** (those from which jobs will be submitted, but which will not execute jobs) you can install PBS any time *after* the other PBS installations have been completed.

### Step 1: Choose Licensing

You can license PBS jobs in the following ways: you can license all hosts via socket licenses, you can license all hosts using floating licenses, or you can license some hosts with sockets and some with floating licenses.

#### Using Socket Licenses For All Hosts

If you will use socket licenses for all hosts, you can create the accounts required by PBS, download and install PBS, then obtain your socket license file and install it where the PBS server can find it. You do not need the Altair License Server. To download socket licenses, see section , Downloading Socket Licenses , on page 14. For licensing details, see the PBS Professional Installation and Upgrade Guide.

tion , Downloading Socket Licenses , on page 14. For licensing details, see the PBS Professional Installation and Upgrade Guide.

#### Using Floating Licenses for All Hosts

If you will use floating licenses for all hosts, you must first download and install the Altair license server. Then you can create the accounts required by PBS, then download and install PBS. To download floating licenses, see section , Downloading Floating Licenses , on page 13. For licensing details, see the PBS Professional Installation and Upgrade Guide.

#### Using a Mix of Socket and Floating Licenses

If you will use both socket and floating licenses, you must first download and install the Altair license server. Then you can create the accounts required by PBS, download and install PBS, then obtain your socket license file and install it where the PBS server can find it. To download socket and floating licenses, see section , Downloading Socket Licenses , on page 14 and section , Downloading Floating Licenses , on page 13. For licensing details, see the PBS Professional Installation and Upgrade Guide.

### Step 2: Download, Install and Start the Altair License Server

For instructions on downloading and installing the Altair license server, see the instructions on page 10 and the Altair License Management System Installation and Operations Guide, available at the Altair website, [www.altair.com](http://www.altair.com).

### Step 3: Prepare to Install PBS Professional

(See also *Installation & Upgrade Guide*.)

- Log in as Administrator (root). You must have administrator privileges to install PBS Professional.
- Create the data service account. See the PBS Professional Installation & Upgrade Guide for requirements.
- Download the appropriate package from the PBS Professional website. See Downloading Software on page 10. Extract the file to a directory of your choice.

### Step 4: Start the Installation Program

(See also *Installation & Upgrade Guide*.)

- Change to the PBSPro\_<version> subdirectory where you extracted the PBS file.
- To start the installation process, enter this command at the UNIX prompt:

```
./INSTALL
```

### Step 5: Follow the Installation Program

(See also *Installation & Upgrade Guide*.)

- **Execution directory (PBS\_EXEC)**  
This step identifies the directory into which the executable programs and libraries will be installed. To change the default destination, enter a new pathname.
- **Home directory (PBS\_HOME)**  
This step identifies the directory into which the PBS Professional daemon configuration files and logfiles will be installed. To change the default destination, enter a new pathname.

- **PBS installation type**

Select the desired type of installation (see below):

- If this is a **stand-alone** system, select option 1.
- If this is a cluster **server host** (front-end), select option 1.
- If this is a cluster **execution host**, select option 2.
- If this is a **client machine**, select option 3.

### Installation Begins

Approximate load time varies by the option selected and whether the installation is being done across the network.

### Step 6: Enter the License File Location

(See also the the *Installation & Upgrade Guide*.)

If this is a **stand-alone** or **front-end machine**, you will be prompted to enter the location of the license server or license file. Type the location(s) at the prompt when requested.

### Step 7: Finish Installation

If this is a cluster **front-end machine**, enter *n* (for “no”) when the installation program offers to start PBS. Then proceed directly to the next step for further configuration.

However, if this is a **client machine**, then the installation is complete.

If this is a **stand-alone** or an **execution machine**, the installation program will offer to start PBS. Enter *n* (for “no”).

At this time, you may repeat the install process for other **execution** or **client machines**.

## Step 8: Perform Front-end Configuration

(See also *Installation & Upgrade Guide*.)

After the **front-end machine** has been installed, further configuration is required.

- If you do *not* intend to execute jobs on this **front-end machine**, then edit its global configuration file `/etc/pbs.conf`, setting the entry for `PBS_START_MOM=0`. This will tell PBS not to start the MoM daemon on this machine.

## Step 9: Start PBS Professional

Run the PBS start script:

```
<path to script>/pbs start
```

This is often in `/etc/init.d`.

## Step 10: Configure for Socket Licenses

- If you will use socket licenses, get a socket license file from Altair, and install it where the server can reach it. Then configure the server's `pbs_license_info` attribute to use it. For information on getting the socket license file, see the instructions on page 14 and the Altair License Management System Installation and Operations Guide.

## Step 11: Perform Cluster Configuration

- Create the list of machines PBS will manage. Use `qmgr` to add one host name for each **execution host** in your cluster. (See also *Installation & Upgrade Guide*.)

## Step 12: Test PBS Professional

The following commands are useful in testing that PBS Professional is up and running:

Command	Purpose
<code>pbsnodes -a</code>	Show status of nodes in cluster
<code>qsub</code>	Command to submit a job
<code>qdel</code>	Command to delete a job
<code>qstat</code>	Show job, queue, & Server status
<code>qstat -B</code>	Briefly show PBS Server status
<code>qstat -Bf</code>	Show detailed PBS Server status
<code>qstat -Q</code>	Briefly list all queues
<code>qstat -Qf</code>	Show detailed queue information
<code>tracejob</code>	Extracts job info from log files
<code>xpbs</code>	PBS graphical user interface
<code>xpbsmon</code>	PBS graphical monitoring tool

The above commands are discussed in the **PBS Professional Reference Guide**. You can find detailed information on managing PBS Professional in the **PBS Professional Administrator's Guide**.

## Other Considerations

The following situations are *not* covered by this **PBS Professional Quick Start Guide**. We recommend you review the **PBS Professional Administrator's Guide** for details regarding the following:

- Performing an upgrade rather than a new install
- Installing MoM with SGI<sup>®</sup> cpuset support
- Installing on a Cray
- Installing on Solaris



# PBS Professional® Quick Install for Windows

This section describes how to install PBS Professional on Windows.

This process covers installation on both stand-alone machines and complexes. For more information on software and license installation and pre-installation planning, consult the **PBS Professional Installation & Upgrade Guide**.

## General Information

(See also *Installation & Upgrade Guide*.) PBS requires an LM-X Altair license server. You **can-not** use PBS with the previous FLEX license server. If you are upgrading from pre-11.0 PBS, you must download, install and configure the LM-X Altair license server **before** installing PBS Professional.

Socket licenses are not available for Windows.

- For **standalone** machines, perform a full install of PBS Professional. Further configuration is optional.
- For **cluster** systems, first install on the front-end machine (server host), then install on each execution host.
- For **client machines** (those from which jobs will be submitted, but which will not execute jobs), you can install PBS at any time *after* the other PBS installations have been completed.

## Step 1: Download, Install and Start the Altair License Server

For instructions on downloading and installing the Altair license server, see the instructions on page 10 and the Altair License Management System Installation and Operations Guide, available at the Altair website, [www.altair.com](http://www.altair.com).

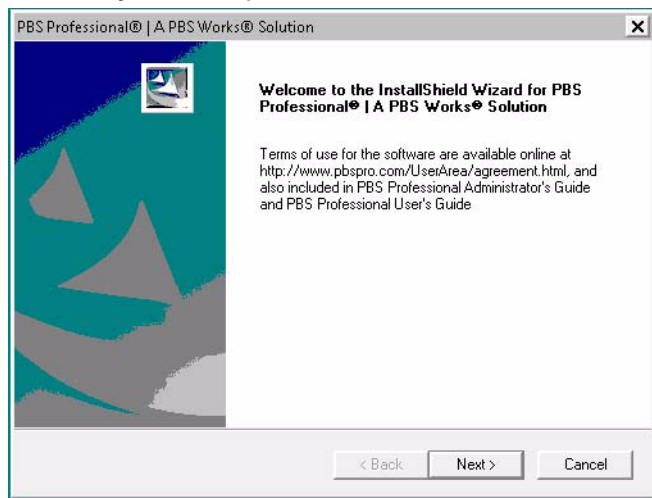
## Step 2: Prepare to Install PBS Professional

(See also *Installation & Upgrade Guide*.)

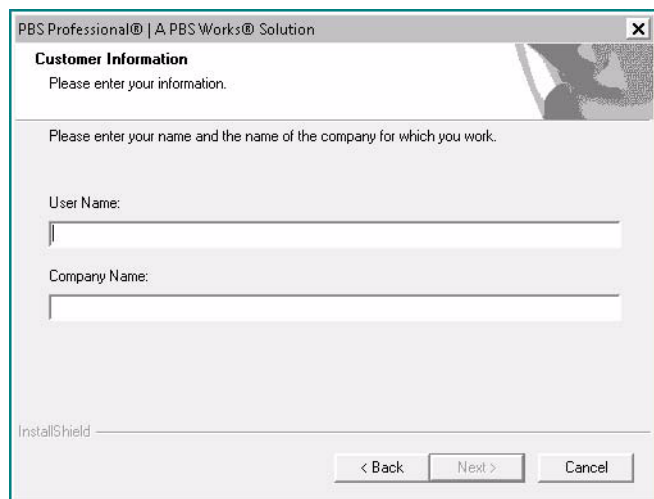
- Log in under an account that is a member of the local Administrators group on the local computer.
- Create the service account.  
For domained environments, the service account must:
  - Be a domain account
  - Be a member of the *Domain Users* group
  - Have *domain read* privilege to all users and groups
- You must delegate *read access to all users and groups information* to the service account.
- For standalone environments, the service account must be a local account that is a member of the local Administrators group on the local computer.
- Download the PBS Professional package. Follow the instructions on page 10.
- Uncompress the PBS package you downloaded.
- Browse to the package (.exe file) and double-click on the **PBSPro\_<version>**. This will launch the InstallShield Wizard.

### Step 3: Follow the InstallShield Wizard

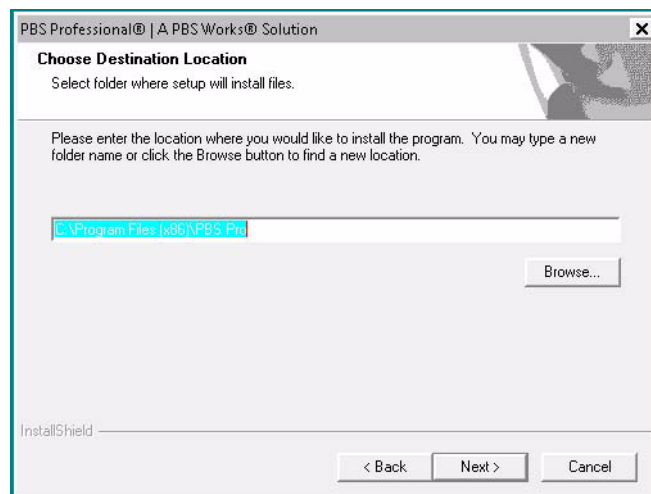
- On the **Welcome** screen, read **Terms of Use**, and if you accept, click **Next**:



- In the **Customer Information** screen, enter the **User Name** and **Company Name**. Click **Next**:

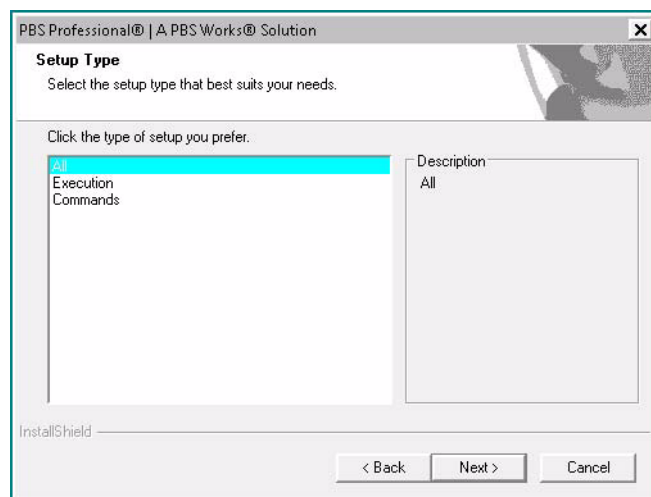


- In the **Choose Destination Location** screen, choose the folder where you want PBS Professional installed. Then click **Next**:



- In the **Setup Type** screen, select the type of installation you wish to perform.
  - If this is a **standalone** system, select **All**.
  - If this is a cluster **front-end machine** (Server host), select **All**.
  - If this is a cluster **execution machine** (Compute host), select **Execution**.
  - If this is a **client machine**, select **Commands**.

Then click **Next**:



- In the **User Account Information** screen, enter the administrator account name and password. Then click **Next**:

- You will see an **Information** screen listing privileges required for the administrator account. Click **Next**.
- You will see an **Information** screen showing that the administrator account has been validated and listing the privileges set for the administrator account. Click **Next**.
- In the **Editing HOSTS.EQUIV File** screen, specify any host(s) or user(s) who will need local filesystem access, then click **Next**:

## Step 4: Perform Server-Specific Configuration

(See also the *Administrator's Guide*.)

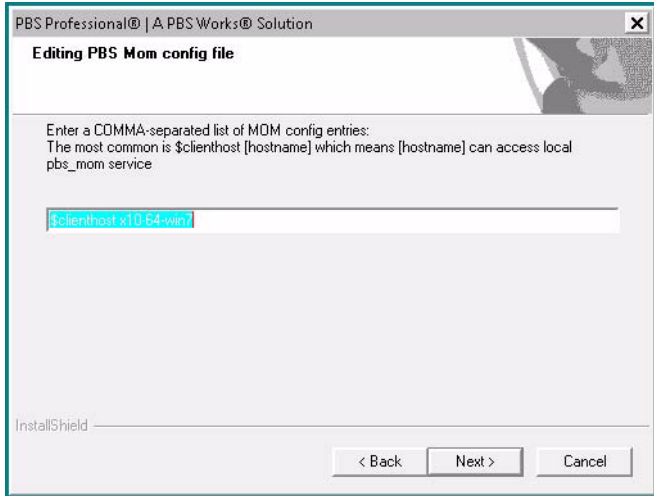
- In the **Enter License File Location** screen, type your license file or server location, and click **Next**:

- In the **Editing PBS Server Nodes** file screen, enter the names of the nodes in your cluster, separated by commas, then click **Next**:

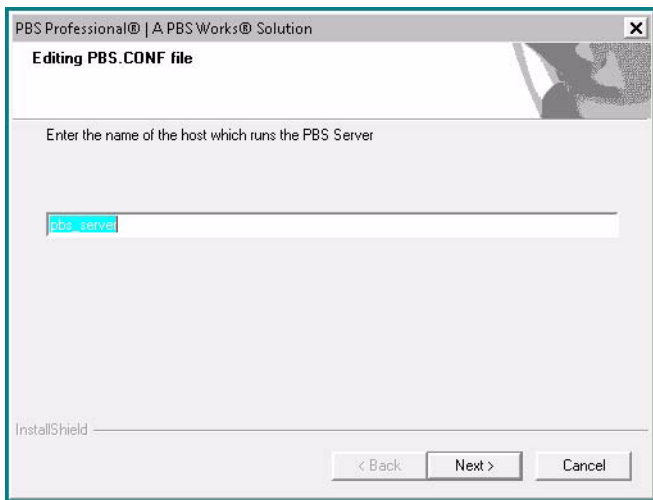


## Step 5: Perform Host-specific Configuration

If this is an execution machine, you will see the following **Editing PBS MOM config file** screen. Enter any MoM configuration parameters you wish to set for this computer, then click **Next**:



- The **Editing PBS.CONF File** screen will appear for an execution-only install. Enter the name of the host that will be running the PBS server, then click **Next**:

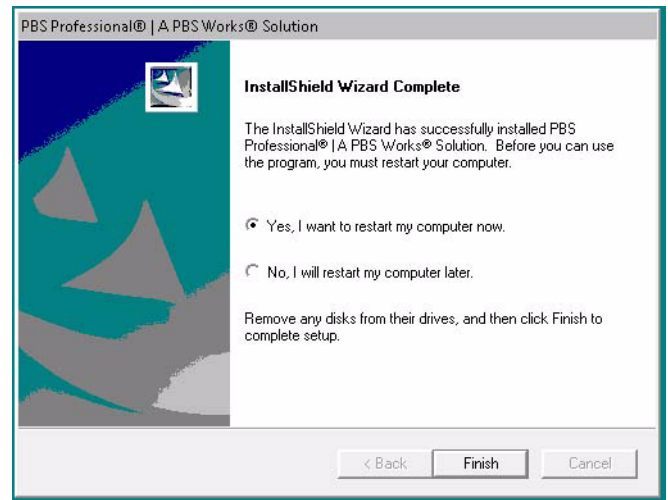


## Installation Begins

Approximate load time varies by the option selected and whether the installation is being performed across the network.

## Step 6: Finish Installation

Select **Yes** to reboot this computer, then click **Finish**:



At this time, you may repeat the install process for other **execution** or **client machines**. If this system is part of a cluster, further configuration may be required.

## Step 7: Verify List of Hosts

(See also *Installation & Upgrade Guide*.)

After you install PBS on the **front-end machine**, you must perform further configuration of that machine.

- Use the `pbsnodes` command to verify the list of machines PBS will manage. Use `qmgr` to add any missing **execution hosts** in your cluster.
- If you do *not* intend to execute jobs on this **front-end machine**, then use `qmgr` to delete the front-end machine's name from the list of nodes, and run the following command to prevent MoM from running on this node:

```
pbs-config-add PBS_START_MOM=0
```

This will set the parameter that tells PBS *not* to start the MoM service on this machine. (See also *Installation & Upgrade Guide*.)

- Now start the PBS software by running the following commands as Administrator (Windows 2000) or as a user with Administrator privilege (Windows XP). (See also *Installation & Upgrade Guide*.)

```
net start pbs_server
```

```
net start pbs_mom (execution nodes only)
```

```
net start pbs_sched
```

```
net start pbs_rshd
```

## Step 8: Test PBS Professional

The following commands are useful in testing that PBS Professional is up and running:

Command	Purpose
<code>pbsnodes -a</code>	Show status of nodes in cluster
<code>qsub</code>	Command to submit a job
<code>qdel</code>	Command to delete a job
<code>qstat</code>	Show job, queue, & Server status
<code>qstat -B</code>	Briefly show PBS Server status
<code>qstat -Bf</code>	Show detailed PBS Server status
<code>qstat -Q</code>	Briefly list all queues
<code>qstat -Qf</code>	Show detailed queue information
<code>tracejob</code>	Extracts job info from log files
<code>xpbs</code>	PBS graphical user interface
<code>xpbsmon</code>	PBS graphical monitoring tool

The above commands are discussed in the **PBS Professional Reference Guide**. You can find detailed information on managing PBS Professional in the **PBS Professional Administrator's Guide**.

# PBS Professional® Software Download from Website

This section describes how to download packages for the Altair license server and PBS Professional.

## General Information

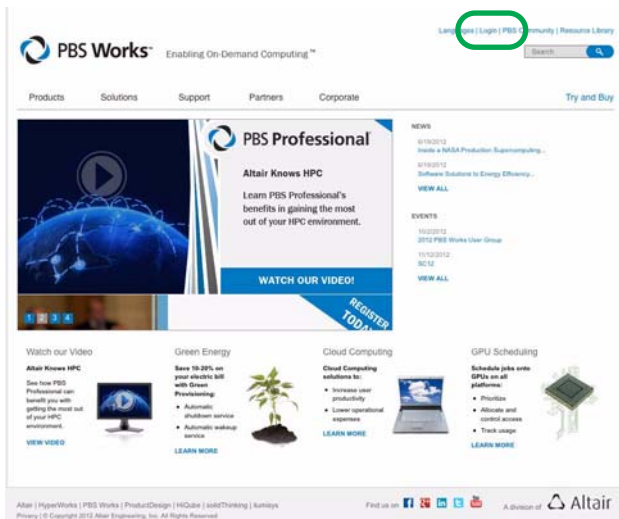
You can use any web browser to access the PBS Professional website. Both the PBS software and the license server are available here.

### Step 1: Go To PBS Professional Website

Go to the PBS Professional website at [www.pbsworks.com](http://www.pbsworks.com).

### Step 2: Log in to the Customer Area

- Click on **Login** in the upper right corner of the website window. A window will pop up.
- Choose **Client Login/User Area**. Ignore the text entry slot.



- When prompted, enter your Site ID and password. This information is provided by your Altair PBS Professional sales representative.

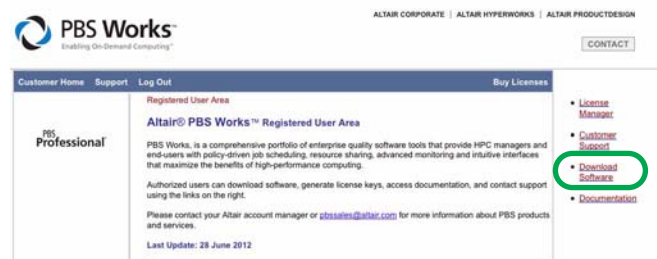


### Step 3: Accept Terms

- You must accept the terms the first time you go to the site. Enter the required information.

### Step 4: Go to Software Download Page

- Click on **Download Software**:



### Step 5: Select Package to Download

- Click on **PBS Professional** to expand the folder.
- Choose the manufacturer to expand to a list of packages.
- Click on the package you wish to download. You can download a package for all PBS components or for the execution host(s) only.



# PBS Professional® Documentation Download from Website

This section describes how to download the documentation for the Altair license server and PBS Professional.

## General Information

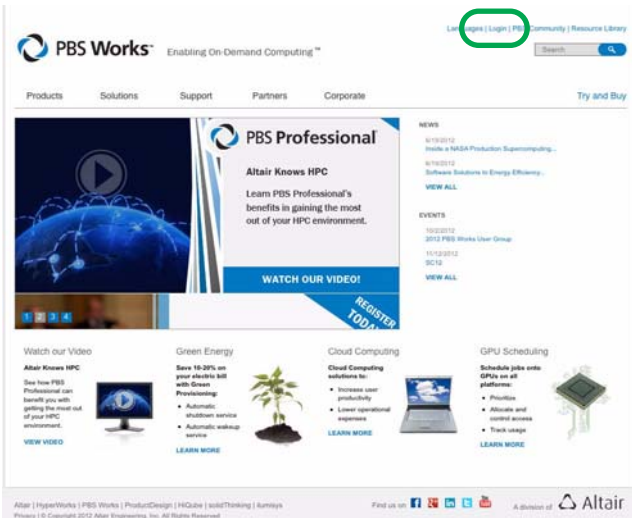
You can use any web browser to access the PBS Professional website.

### Step 1: Go To PBS Professional Website

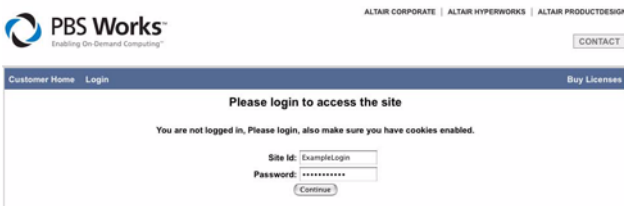
Go to the PBS Professional website at [www.pbsworks.com](http://www.pbsworks.com)

### Step 2: Log in to the Customer Area

- Click on **Login** in the upper right corner of the website window. A window will pop up.
- Choose **Client Login/User Area**. Ignore the text entry slot.

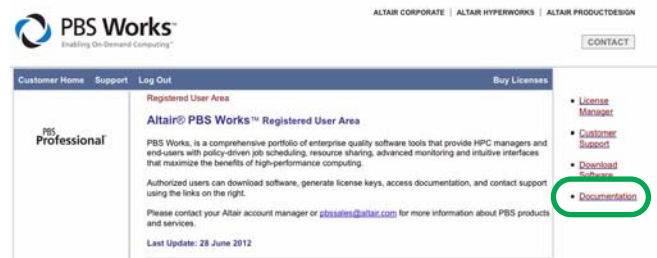


- When prompted, enter your Site ID and Password. This information is provided by your Altair PBS Professional sales representative.



### Step 3: Select Documentation

- Click on **Documentation**:



### Step 4: Select Documents to Download

- Click on the document you wish to download:

PBS Professional	Formats
PBS Professional 11.3 Installation and Upgrade Guide	<a href="#">PDF</a>
PBS Professional 11.3 Administrator's Guide	<a href="#">PDF</a>
PBS Professional 11.3 User's Guide	<a href="#">PDF</a>
PBS Professional 11.3 Reference Guide	<a href="#">PDF</a>
PBS Professional 11.3 Programmer's Guide	<a href="#">PDF</a>
PBS Professional Common Criteria Administration and Usage Guide (References PBS Professional 10.1 Release)	<a href="#">PDF</a>
PBS Professional 11.3 Release Notes (Update: 26 June 2012)	<a href="#">TEXT</a>
PBS Application Services	Formats
PBS Application Services 11.0.1 Administrator's Guide	<a href="#">PDF</a>
PBS Application Services 11.0.1 Diving Into Application Definitions	<a href="#">PDF</a>
PBS Application Services 11.0.1 Release Notes (Update: 22 December 2011)	<a href="#">PDF</a>
Altair License Manager	Formats
Altair License Manager 11.0.2 Installation and Operations Guide	<a href="#">PDF</a>
Altair License Manager 11.0.2 Release Notes (Update: 12 November 2011)	<a href="#">PDF</a>
Altair License Manager 11.0.1 Release Notes (Update: 02 June 2011)	<a href="#">PDF</a>
HWE Compute Manager	Formats
HWE Compute Manager 11.0.0 Installation and Configuration Guide	<a href="#">ZIP</a>
HWE Compute Manager 11.0.0 Documentation	<a href="#">ZIP</a>

# PBS Professional® License Download from Website

This section describes how to download socket and/or floating licenses from the Altair website.

## General Information

You can use any web browser to access the PBS Professional website.

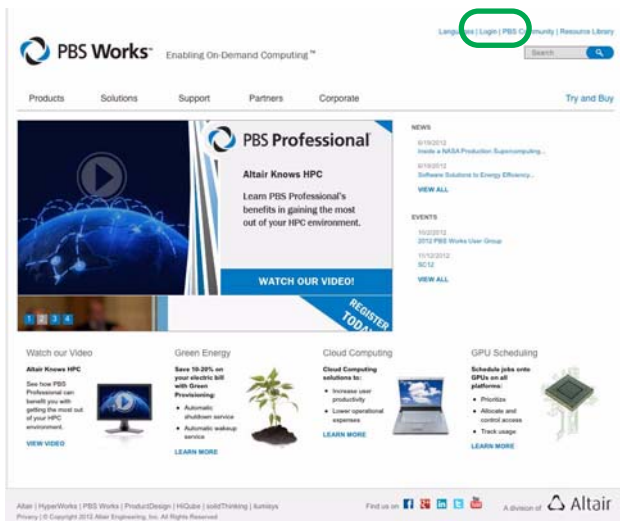
To purchase licenses, contact your PBS sales representative. After you have purchased the licenses, they are available for download on the PBS website.

### Step 1: Go to PBS Professional Website

Go to the PBS Professional website at [www.pbsworks.com](http://www.pbsworks.com).

### Step 2: Log in to the Customer Area

- Click on **Login** in the upper right corner of the website window. A window will pop up.
- Choose **Client Login/User Area**. Ignore the text entry slot.



- When prompted, enter your Site ID and password. This information is provided by your Altair PBS Professional sales representative.



### Step 3: Accept Terms

- You must accept the terms the first time you go to the site. Enter the required information.

### Step 4: View Unused Licenses

- Click on **License Manager**:



- You will see a page showing the socket and floating licenses you have purchased. The **Scope** field in the **Unused Licenses** table shows the type of license: socket licenses show “socket”, and floating licenses show “HWU”.



# Downloading Floating Licenses

## Step 1: Begin License Download Process

- The following figure shows unused floating licenses. Click on **Create New License**:

Site id: ExampleLogin

Unused Licenses

Line	Class	Platform	Scope	Expiration	Available Quantity	Create New License
1	Commercial	All	HWU	2012-10-08	30.72	Create New License

## Step 2: Generate Host ID and Choose License Manager

- Download and uncompress the **almutils** package.
- Run the appropriate **almutil** command to generate your host ID:

**almutil -hostid**

- You must select the LM-X license manager.

### Please enter your license data below

The license you are about to create is a **Commercial, HWU** license for systems running **All**. If this is not correct, please return to the [previous page](#) and select a different license pool from which to create your new license.

1. Enter the **host id type**, **host id**, and **host name** of the machine where your PBS server will run.

For **v11.x** license and later use **LM-X**. Host ID Type and Host ID are determined by using the [almutils \(MD5\)](#) (note this is not the same as the FLEXlm Host ID).

All **v9.x** and **v10.x** license are **FLEXlm** based. Host ID Type and Host ID are determined by running the **lmhostid** or "lmutil lmhostid" command on the license server machine. There are several possible formats for the commands output. If the output contains the string **ID\_STRING=** or something similar, please choose the appropriate type of **HOST ID** and do not include that portion of the output in the **HOST ID** field below. (Example output of **lmhostid**: **ID\_STRING=9c766319-ade35464-asdf3444-0063afef999** then choose **IDString** as Host ID Type, and put **9c766319-ade35464-asdf3444-0063afef999** in the Host ID field)

License Type: FLEXlm ☐ **LM-X** ☒

## Step 3: Enter Host Information

- Enter the required information.
- Enter host ID type, host ID and host name.
- If this is a three-server license, enter the information for all three servers.

☒ 1 Server ☐ 3 Servers

Host ID Type	Host ID	Host Name
Ethernet	0123456789	ExampleHost
Choose One		
Choose One		

## Step 4: Assign Licenses to PBS

- Assign the licenses to PBS:

2. How many **HyperWorks Units**. (from 0.01 to 30.72) will this PBS installation need? You can input CPU Cores and PBS Catalyst users and PBS Analytics users that you are trying to run **concurrently** in the HWU Calculator below to generate the license for "Total HyperWorks Units".

HWU Calculator		
Product	Quantity	Total HWUs
PBS Professional:	1024 CPU Cores X 0.03 HWUs	30.72
PBS Catalyst:	Users X 1 HWUs	0
PBS Analytics Modeler:	Users X 6.5 HWUs	0
PBS Analytics		

## Step 5: Generate Licenses

- Click on **Generate License**:

Please double check the information above. If you create a license using incorrect data it will be unusable and a support analyst will need to assist you in correcting the situation.

Generate License

## Step 6: Download Floating Licenses

You will see a page showing the created licenses. You can download your licenses from this page:

### License Successfully Created

Hostname	HostID	HWUs
ExampleHost	012345678901	30.72
License Key		
<a href="#">License File</a>		

Please select a menu entry in the column to the right or [click here](#) to continue.

# Downloading Socket Licenses

## Step 1: Begin License Download Process

- The following figure shows unused socket licenses. It also shows any active socket licenses. In this example, there are no active socket licenses. Click on **Create New License**:

Site id: ExampleLogin

### Unused Licenses

Line	Class	Platform	Scope	Expiration	Available Quantity	Create New License
1	Commercial	All	Socket	perpetual	512 Sockets	Create New License

### Active Licenses

Line	Hostname (Hostid)						
	License Key						
	Class	Platform	Scope	License Type	Created	Expiration	HWUs
There are no licenses of this type.							

## Step 2: Generate Host ID

- Download and uncompress the **almutils** package.
- Run the appropriate `almutil` command to generate your host ID:

**almutil -hostid**

### Please enter your license data below

The license you are about to create is a **Commercial, Socket** license for systems running **All**. If this is not correct, please return to the [previous page](#) and select a different license pool from which to create your new license.

1. Enter the **host id type**, **host id**, and **host name** of the machine where your PBS server will run.

**LM-X**. Host ID Type and Host ID are determined by using the [almutils \(MD5\)](#). (Note this is not the same as the FLEXlm Host ID).

**License Type:** LM-X

## Step 3: Enter License Data

- Enter the license data requested:

### 1. Primary Server

Host ID Type	Host ID	Host Name
<input type="text" value="-- Choose One --"/>	<input type="text"/>	<input type="text"/>

2. Please check this box to enter a secondary server if you have a failover server

☐ Have a failover server

3. What is the total number of physical Sockets for the whole PBS Professional complex (from 1 to 512)?

Socket(s)

4. What is the total number of CPU cores for the whole PBS Professional complex?

Core(s)

## Step 4: Generate License

- Click on **Generate License**:

Please double check the information above. If you create a license using incorrect data it will be unusable and a support analyst will need to assist you in correcting the situation.

## Step 5: Download Socket Licenses

You will see a page showing the created licenses. You can download your licenses from this page:

### License Successfully Created

Hostname	HostID	Sockets
ExampleHost	012345678901	512
License Key		
<a href="#">License File</a>		

Please select a menu entry in the column to the right or [click here](#) to continue.