HP SmartStream 3D Command Center

User Guide

© Copyright 2018 HP Development Company, L.P.

Edition 1

Legal notices

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statement accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Trademarks

Intel® and Intel Core™ are trademarks of Intel Corporation in the U.S. and other countries.

Microsoft® and Windows® are U.S. registered trademarks of Microsoft Corporation.

Table of contents

1 About Command Center 1

2 Quick start 2

Download the application 2

Connect to a server 3

Add your first HP 3D printer 3

Start monitoring your printer 4

3 Set up preferences 5

General preferences 5

Network connectivity 5

Manage servers 5

Connect to proxy server 6

Run network diagnostics 6

Device management 7

Add a device 7

Manage the list of devices 7

Help and About 7

4 Access and security 8

Network connection security 8

Network and computer requirements 9

Network requirements 9

Computer requirements 9

Connectivity troubleshooting 10

Cannot connect to proxy server 10

Cannot add a device 10

Cannot connect to a server 12

Run network diagnostics 13

5 Monitoring basics 15

Types of devices 17

3D printers 17

Processing stations 18

Device alerts 19

6 Notification center 20

Types of notifications 20

New versions available 20

Connectivity issues 20

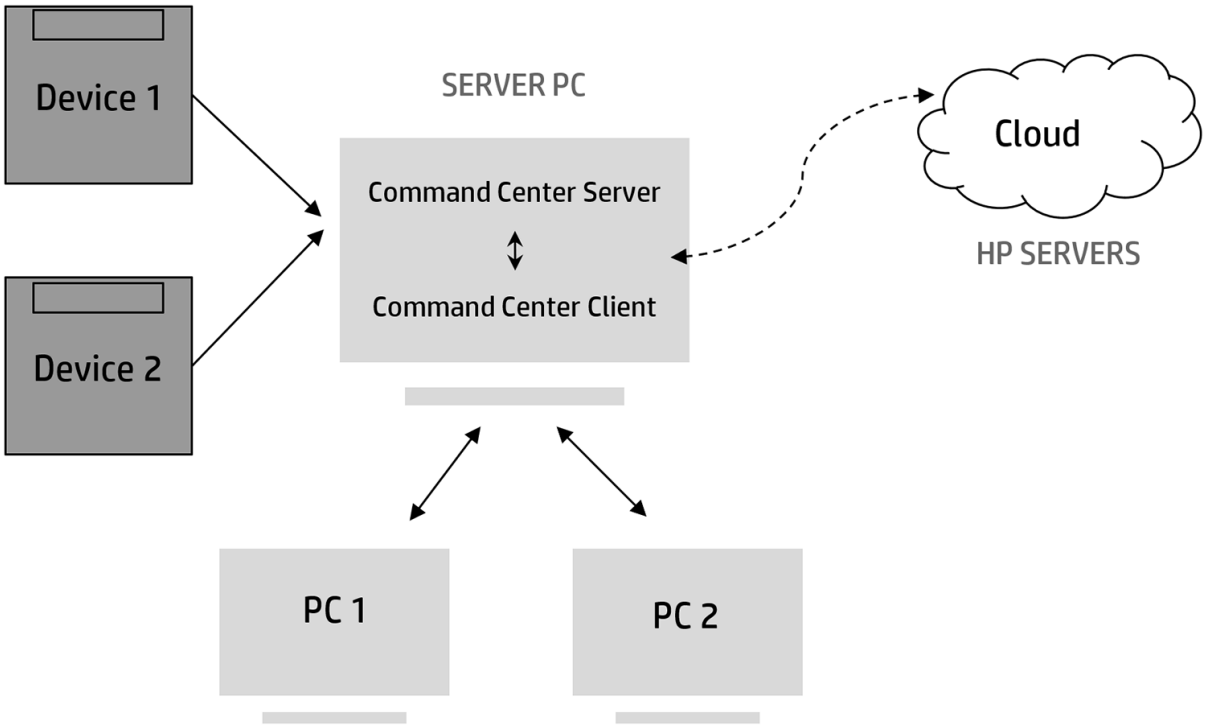
Device alerts 20

1 About Command Center

HP Smartstream 3D Command Center is a client application that fully monitors your HP 3D printers, and all other complementary devices such as processing stations, build units, and other 3D accessories, to fully utilize the power of the HP 3D ecosystem. Command Center must be installed with your 3D devices. It helps you to make all of your 3D printing builds successful: review print jobs and be ahead of the printer's needs by remotely viewing firmware updates, warnings, and errors.

HP Smartstream 3D Command Center consists of two different pieces of software: Server and Client.

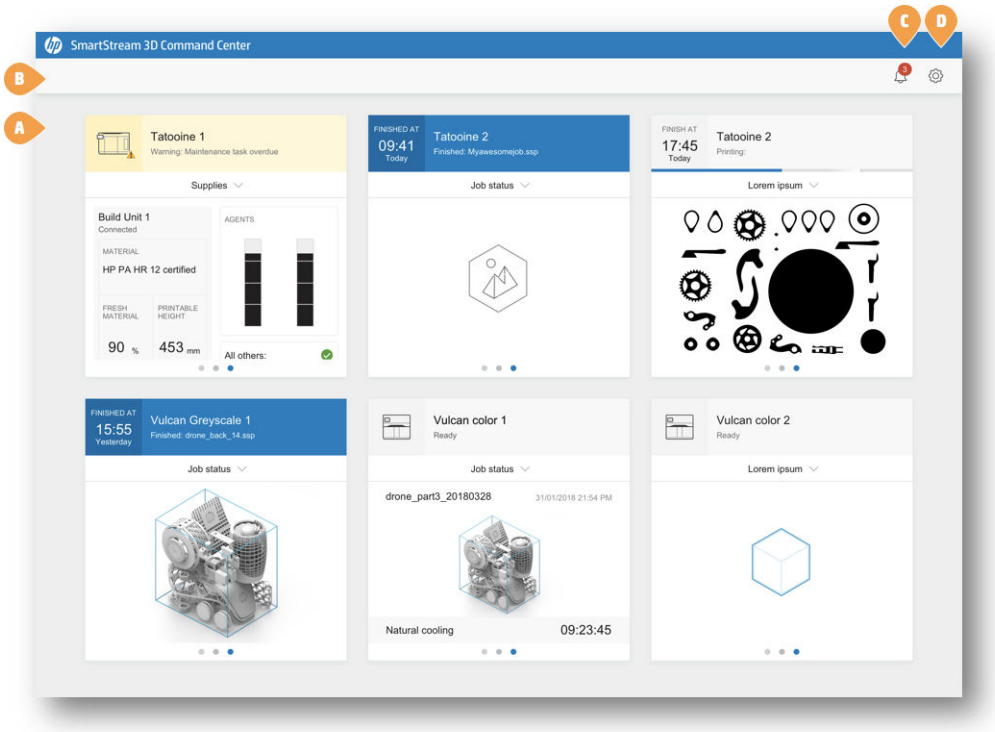
- Command Center Server needs to be installed in only one computer that is permanently running and connected to the cloud, while there can be as many instances of Command Center Client in different computers as needed.
- Command Center Server is the central connection point between all the HP 3D devices and the HP Cloud. The different instances of HP SmartStream 3D Command Center Client access the Server to get information about the devices; they do not connect directly to them.



For more information on how the HP Cloud works, and what information is sent and how, please read the document *HP Jet Fusion 3D Cloud Connection Security*, which you can download from http://www.hp.com/go/jetfusion580color/software/.

2 Quick start

After installing, connecting, and setting up the application, you will see the following window, showing information about the various devices that you have added to it.



a. Monitoring overview area

b. Main bar

c. Notification icon

d. Preferences icon

Before using the application for the first time, please read the documentation to get a basic understanding of the application and its uses. To open the user guide, press F1.

Download the application

You can download HP SmartStream 3D Command Center (Client and Server) from http://www.hp.com/go/SmartStream3DCommandCenter/manual.

Operating systems

- Microsoft Windows 10 (64-bit)
- Microsoft Windows 8.1 (64-bit)

- Microsoft Windows 8 (64-bit)
- Microsoft Windows 7 (64-bit)

Software updates are notified through Notification Center, and you can automatically install new versions.

Connect to a server

Once the printer and the assigned computer are connected to your local network and to the HP Cloud, open the HP SmartStream 3D Command Center Client that you have just installed, and go to **Network connectivity** > **Server**.

By default, all available servers on your network are displayed. Your computer is connected automatically to the auto-detected server if there is a single server. If multiple servers are available, select which server you want to use. Select a server and click 🔗. Once you are successfully connected, the ✓ icon indicates that the server is connected.

To save an auto-discovered server into the server list, click ☆.

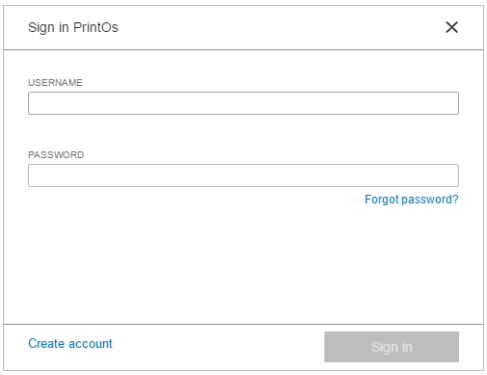
If the server does not appear automatically, you can add it manually by clicking **Add server**. A new row appears in the server list. Enter the server computer's hostname or IP address, and the corresponding port.

IMPORTANT: HP strongly recommends configuring a hostname or static IP address rather than a DHCP address for the server computer, to allow Command Center Clients to find the Command Center Server reliably. IP addresses can change in DHCP environments.

NOTE: The hostname/IP address and the port number are also displayed in the notification area icon.

Add your first HP 3D printer

Complete the printer configuration in **Device management** > **Add device**. To add a new device, you need to connect to PrintOS. If you already have an account, enter your username and password.

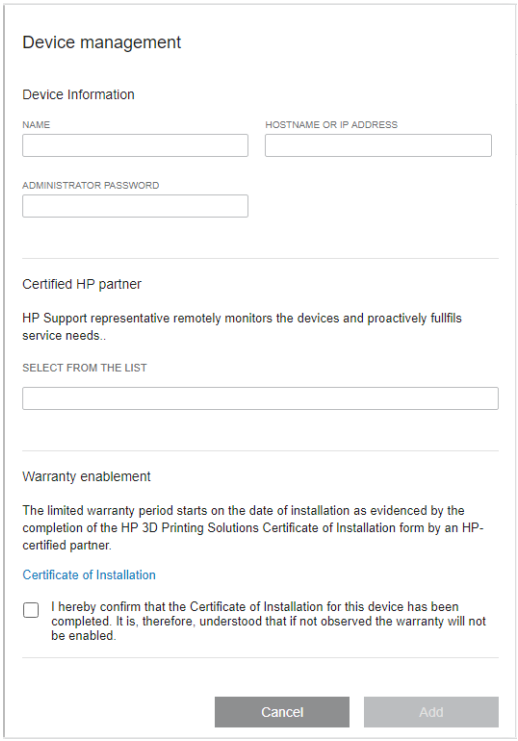


If you have no account, click **Create account**. A new window opens in which you can create an account. Once it is created, return to Command Center and introduce your new credentials.

NOTE: If there is an error in the login to PrintOS, check that the connectivity icon has no warnings (such as **Not connected to Command Center Server**) and that you are using a Customer/PSP account (not a Reseller account) to access PrintOS. If you have both accounts associated with the same email address, the last sign-in and sign-out should be done with the Customer account.

If you need to create a Customer/PSP PrintOS account, you must register with your information. You will receive an email invitation to log in to your new account, and then you will need to accept the terms and conditions to enable your account.

After signing in to PrintOS, enter the device information.



- **NAME**: Enter any name you choose to identify your printer.
- **HOSTNAME OR IP ADDRESS**: HP recommends using the hostname, or alternatively a static IP address, to avoid future connectivity problems.
- **ADMINISTRATOR PASSWORD**: This password is set in your printer.
- **SELECT FROM THE LIST**: You can either select from the list or enter the name of your HP partner or reseller.,
- **Certificate of Installation**: When you click this, a new window opens. You must fill in the form to activate your warranty.

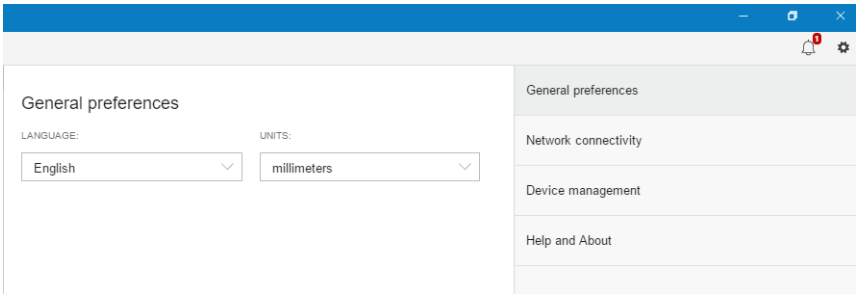
Start monitoring your printer

If you completed the above steps successfully, your first device is added to the monitoring area. For more information, see Monitoring basics on page 15.

3 Set up preferences

General preferences

Select your preferred language and units from the drop-down menus.



Network connectivity

In the **Network connectivity** tab, you can manage servers, connect to a proxy server, or run network diagnostics.

Manage servers

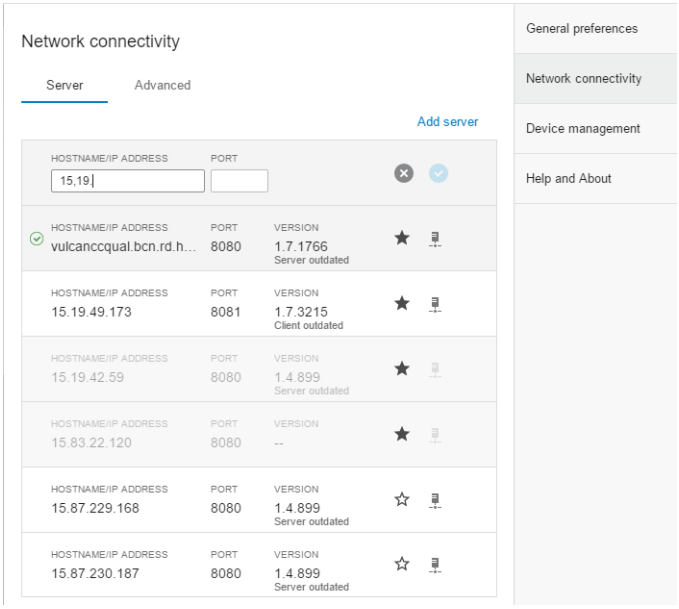
On the **Server** tab you can see a list of all available servers in your network. Select a server and click . Once you are successfully connected, indicates the server that is connected.

If the server you are looking for is not in the list, click **Add server** to add it manually. A new row appears in the list. Enter the hostname or IP address, and the corresponding port.

To save an auto-discovered server in the server list, click ☆.

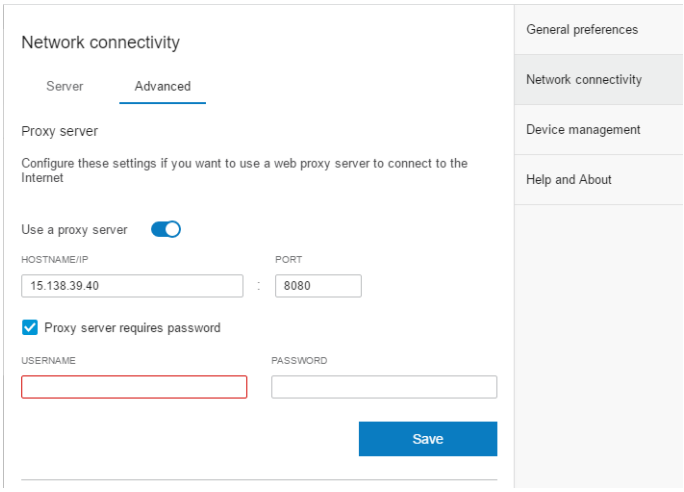
Server list order

1. The server to which Command Center is connected appears first on the list.
2. Then the other servers that you have saved as favorites.
3. Then any other servers automatically discovered on your network.



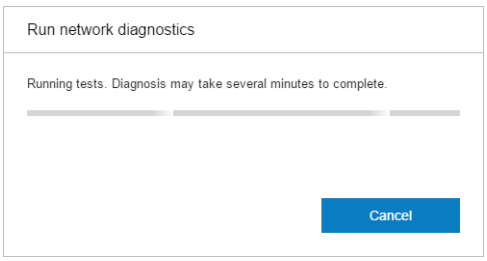
Connect to proxy server

Under **Advanced** you can connect to a private proxy server, which can be password-protected. Enter the proxy-server settings if you want to use a proxy server to connect to the Internet.



Run network diagnostics

You can also run network diagnostics to troubleshoot connectivity problems.



Device management

Add a device

To add a printer or processing station, see Add your first HP 3D printer on page 3.

To add a build unit, you need to fill in only two fields:

- **Device name**: Whatever name you choose to identify your build unit.
- **Serial number**: The serial number of the build unit.

Manage the list of devices

In the **Device management** tab, you have a list of all the 3D devices that have been registered in Command Center as your 3D fleet. They are ordered by date of installation, from the oldest to the newest. You can edit or delete them at any time, and update the device firmware when a new version is available.

- **Edit** : You can change the name of the device at any time. Once it is changed, save the new name by clicking **OK**.

  The other device information is not editable. If the hostname is changed, you must add delete the device and add it again as a new device.

- **Delete** : You can delete any device at any time, but you must enter the administrator password for that specific device to confirm the deletion.

- **Firmware** : Click the Firmware button to download the latest version of the firmware for that 3D device. Then go to the 3D device with a USB flash drive, and install the firmware.

Help and About

In this tab, you can find links to user guides, and information about the installed version of Command Center.

4 Access and security

Network connection security

- Device data are accessed through HTTPS from HP SmartStream 3D Command Center Servers using the Web Services from the devices.
- Data connections to the cloud are always initiated by HP SmartStream 3D Command Center Server. No incoming network ports need to be opened.
- Neither the HP SmartStream 3D Command Center, nor any devices connected to it, are accessed from the general Internet.
- HP 3D Printing Solution status and health monitoring require frequent uploads of small data payloads (every 5 minutes). Outgoing connections are opened and immediately closed for each payload, reducing any potential security risks.
- The HP SmartStream 3D Command Center Server uses HTTPS Web protocol but it is not a Web browser: It cannot be used to access anything other than the HP Cloud and it is not affected by Web browser vulnerabilities.
- The HP SmartStream 3D Command Center software transmits device data to HP Cloud servers using HTTPS. The identity of the servers is verified, and the communication between the HP SmartStream 3D Command Center software and the HP Cloud servers is encrypted using the Advanced Encryption Standard (AES) algorithm in Cipher Block Chaining (CBC) mode. This ensures that the device data cannot be viewed or modified by any third party.
- Full security audits and vulnerability scans are performed on the HP SmartStream 3D Command Center software before release.
- Printers and supporting devices run on dedicated hardware and firmware that are not affected by typical personal computer vulnerabilities.
- Full security audits and vulnerability scans are performed on all HP device firmware before release, and firmware update files are digitally signed by HP and verified by the HP device before installation.
- Device non-anonymous data is never shared with unauthorized third parties without the customer's consent. The HP Cloud stores the device data in HP authorized data centers which meet strict HP security standards, and the system is periodically audited to help ensure the highest level of data security.
- The HP SmartStream 3D Command Center software transmits device data to HP Cloud servers using HTTPS. The identity of the servers is verified, and communication between the HP SmartStream 3D Command Center software and the HP Cloud servers is encrypted using the Advanced Encryption Standard (AES) algorithm in Cipher Block Chaining (CBC) mode, to ensure that the device data cannot be viewed or modified by any third party.

Network and computer requirements

Network requirements

- Use hostnames or static IP addresses in devices and in the Command Center Server computer, which will prevent disconnections due to changes of IP address.
- The Command Center Server computer needs to open port 8080-8090 to allow Clients to connect to it.
- To allow the Command Center Server access to the cloud, you need to check that the firewall is not blocking the following endpoints:
  - http://www.printos.com, port 443 (or https://www.printos.com)
  - http://3dpconfig.heleni.me, port 443 (or https://3dpconfig.heleni.me)
  - http://*.amazonaws.com, port 443 (or https://*.amazonaws.com)
- Proxy details are taken from the system configuration.
- Proxy authentication is supported with an additional tool.
- Between client and server, HTTP is used; ensure that it is enabled in the firewall rules.

Computer requirements

Command Center Server computer

- 24/7 uptime (it never switches off or goes to sleep)
- Local network access to all HP 3D devices
- 24/7 access to HP Cloud
- Intel Core i3 2.4 GHz with four virtual cores/threads
- Computer running Windows 7, 8, 10 (64-bit), or Windows Server 2008 R2
- 4 GB RAM
- 5 GB available hard disk space
- Ethernet (IPv4) connection, at least 100 MB/s
- Shielded CAT-6 LAN cables to connect the printer to your LAN

Command Center Client computers

- Local network access to the computer running SmartStream 3D Command Center Server

NOTE: Connection to printers is not required.

- Intel Core i3 2.4 GHz with four virtual cores/threads
- Computer running Windows 7, 8, 10 (64-bit), or Windows Server 2008 R2
- 4 GB RAM
- 5 GB available hard disk space
- Ethernet (IPv4) connection, at least 100 MB/s
- Shielded CAT-6 LAN cables to connect the printer to your LAN

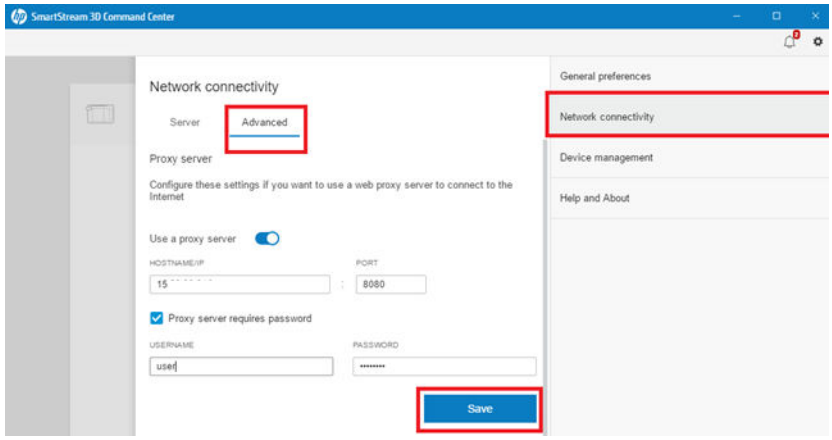
NOTE: Your local network configuration may require that a member of your IT department performs all the procedures described in this chapter, before and during the installation. This is to ensure that all the instances of the software are up and running and properly connected to the HP Cloud and to the printer. Make sure they are available on the agreed date of printer installation. If you require further help, contact your HP service representative, who can connect you to a HP network specialist.

Connectivity troubleshooting

Cannot connect to proxy server

If your network uses a corporate proxy server, you may see an error alert when you first install Command Center, showing that you cannot connect to the HP Cloud, because outgoing connections are blocked.

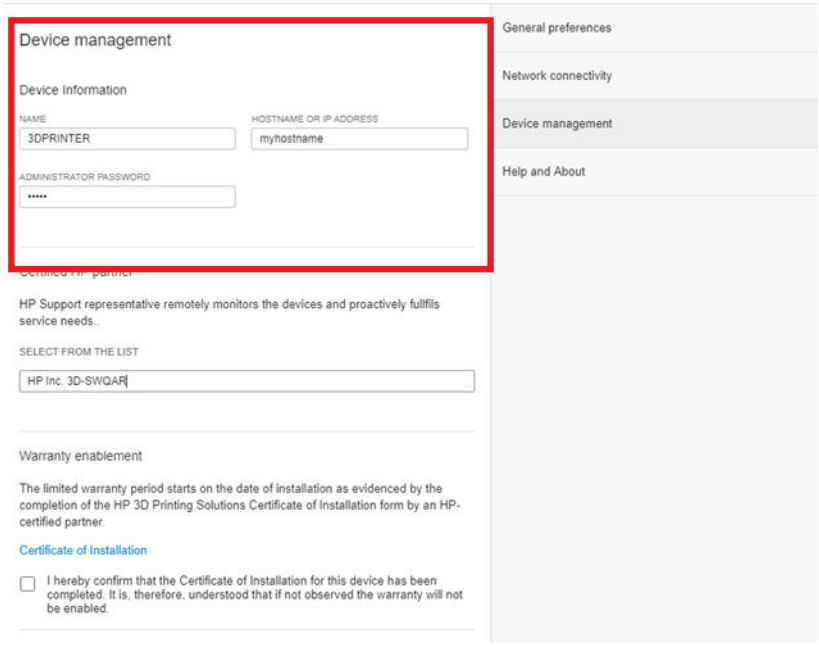
In this case, you must enter the credentials and URL of the proxy server into the advanced section of the network connectivity settings.



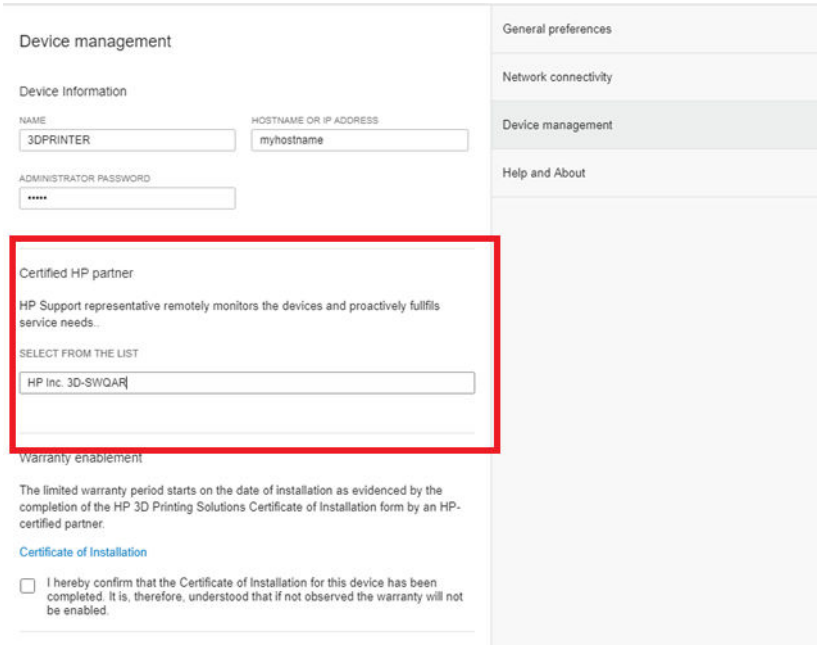
Once you have done this, a connection should be established within a few minutes, and the error alert will disappear.

Cannot add a device

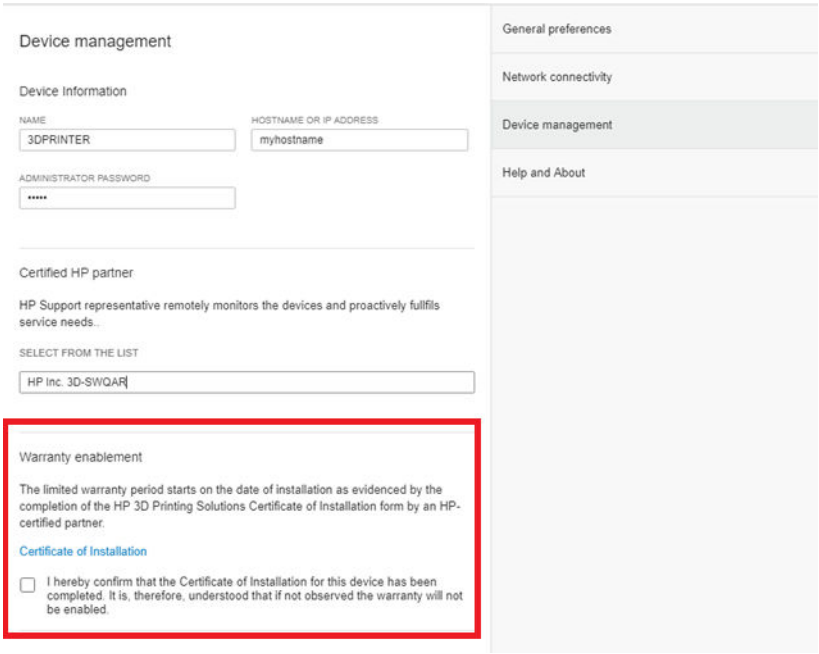
After signing in to PrintOS, you must enter a name for the device, the hostname (limited to 32 characters), and finally the administrator password already configured in the front panel of the device. If the hostname fails to work, you can use a static IP address. HP does not recommend dynamic IP addresses (provided by a DHCP server), because the connection to Command Center will be lost when the address changes, and you will need to delete the device and add it again every time.



The next step is to select from the list the certified HP partner who installed your device.



The last step is the Certificate of Installation.



Possible error messages

- **Invalid device name**

  The name of the device is not acceptable: some characters are not supported.

- **Invalid device credentials**

  The administrator password that you have given for the device is incorrect.

- **Device not supported**

  The PrintOS account is not associated with a 3D printing device, or the device serial number is incorrect.

- **Device already associated with another PrintOS account**

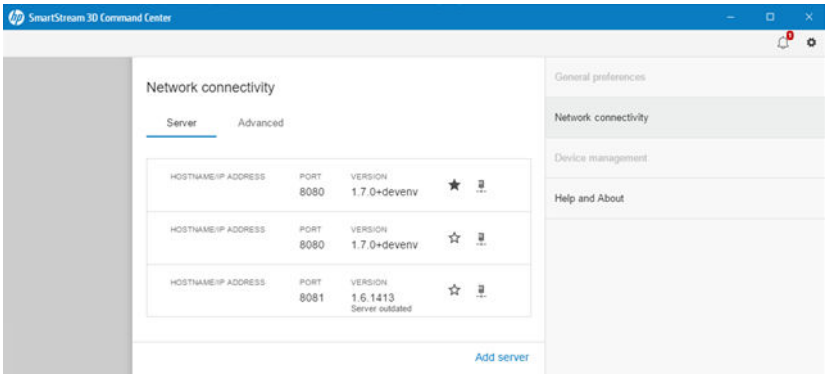
  The device is registered with a different PrintOS account (perhaps belonging to another customer).

- **Admin credentials not configured**

  The device has no administrator password.

Cannot connect to a server

Each Command Center Client needs to connect to a Command Center Server. The available servers in your network are displayed in the network connectivity settings.

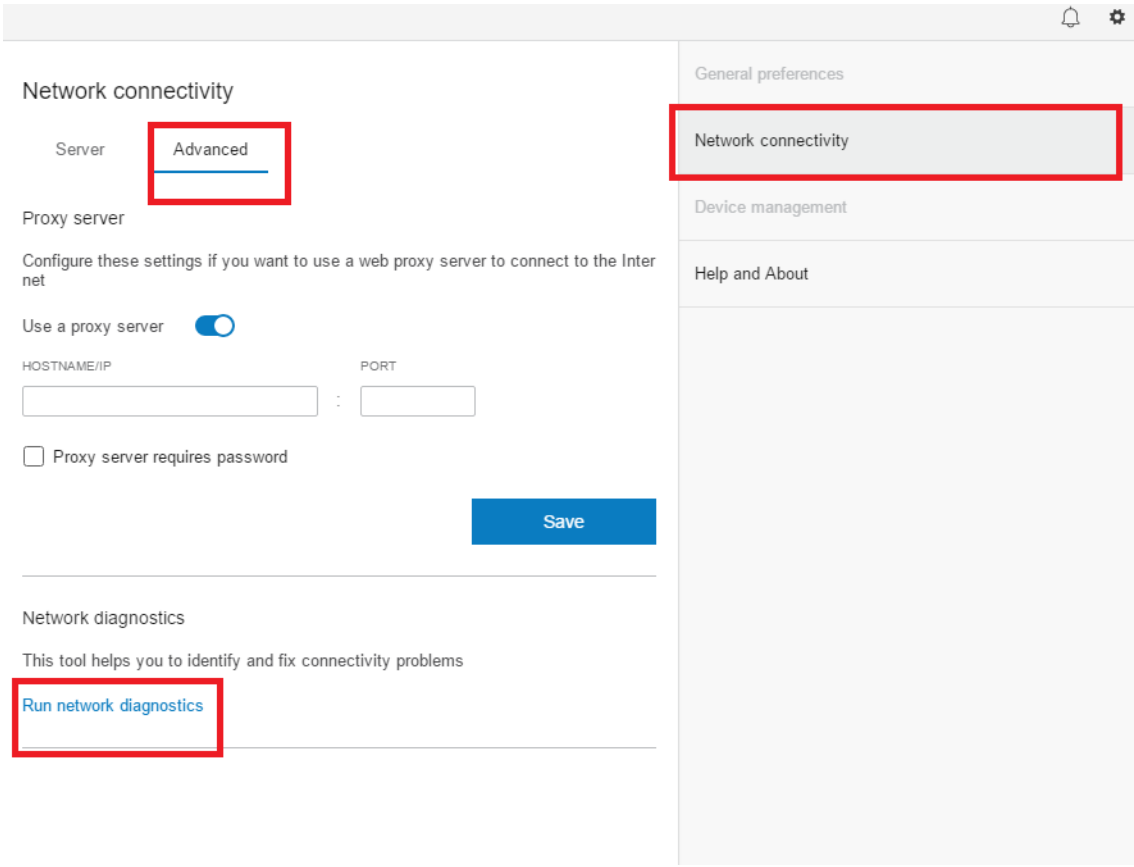


- The list shows servers that have been detected automatically, with their IP addresses. If only one server is detected, the client is automatically connected to it. If more than one are detected, you should select one of them.
- If no servers appear, you can click **Add server** to add a server manually. Enter the IP address and 8080 port of the server computer. The IP address and port are displayed in the notification area. You can save manually added servers by clicking the star.

If you have connected to a server that then ceases to be available, the message **Check your server connection** is displayed. You may need to restart the Command Center Server software on the server computer.

Run network diagnostics

You can run network diagnostics to identify and correct connectivity problems.

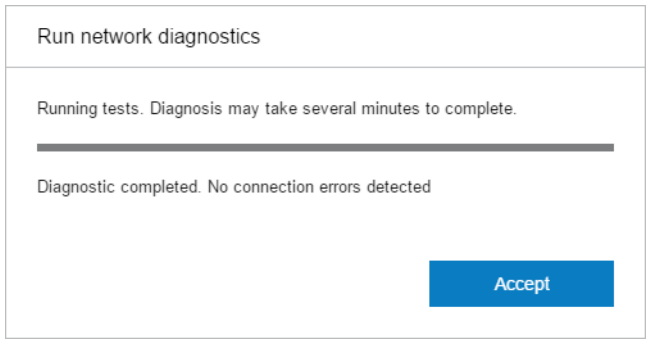


The diagnostics include tests of the basic network components, and tests of the connections to external resources that the Command Center needs.

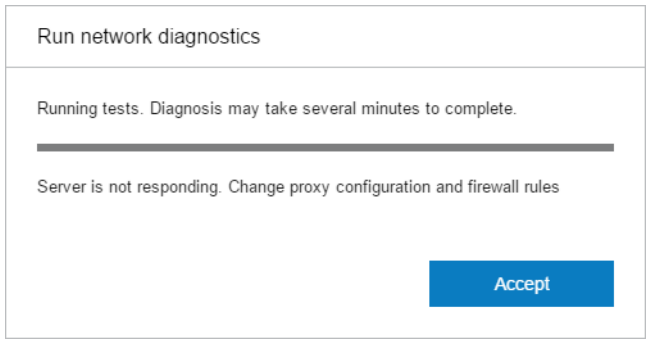
Principal services

- http://www.printos.com, port 443 (or https://www.printos.com)
- http://3dpconfig.heleni.me, port 443 (or https://3dpconfig.heleni.me)
- http://*.amazonaws.com, port 443 (or https://*.amazonaws.com)

If the diagnostics find no error, you will see the following window.

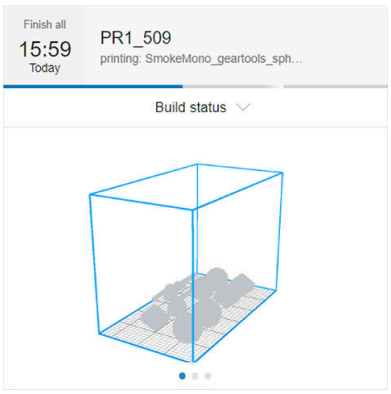


If an error is found, you will see an error message that varies according to the cause of the problem. The following window is an example.



5 Monitoring basics

Each device is represented by a card that summarizes the most important information about the device. By default, the build status information is shown.

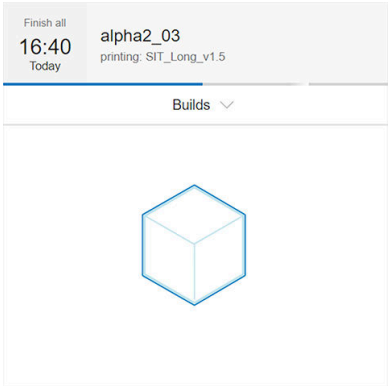


The upper part of the card shows the following information:

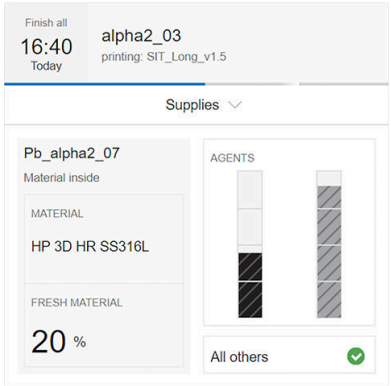
- Icon that helps to identify the type of device.
- Shows the expected finish time, if a part is being built.
- Name of the device chosen by the user who registered it in Command Center.
- Current status of the device.

You can use the drop-down menu to view information on builds and supplies.

Builds

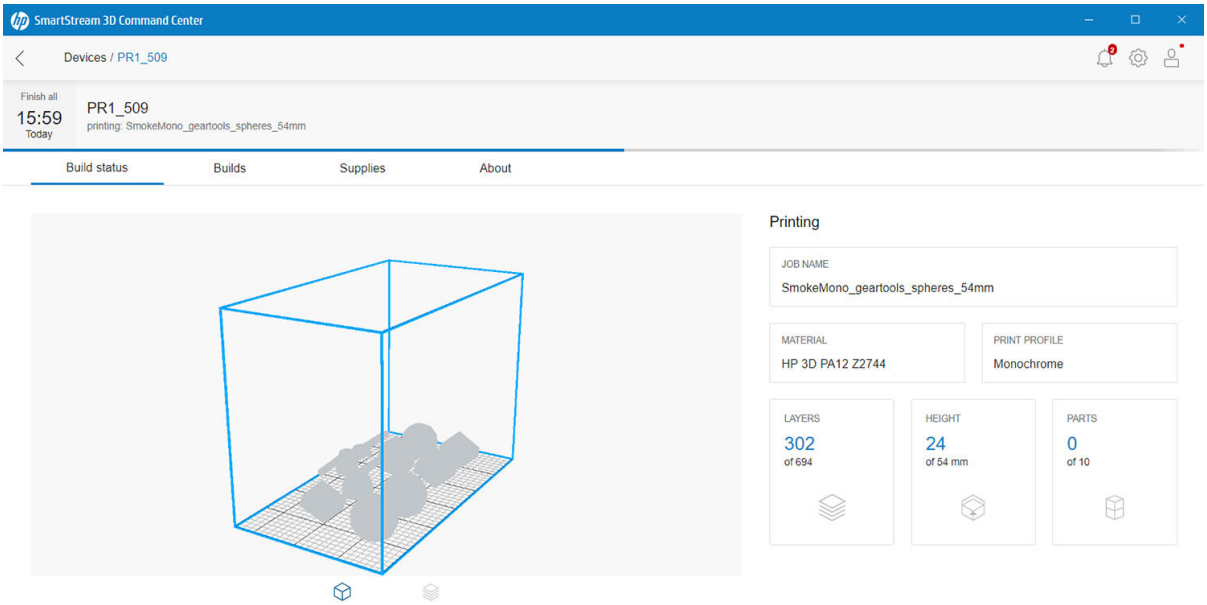


Supplies

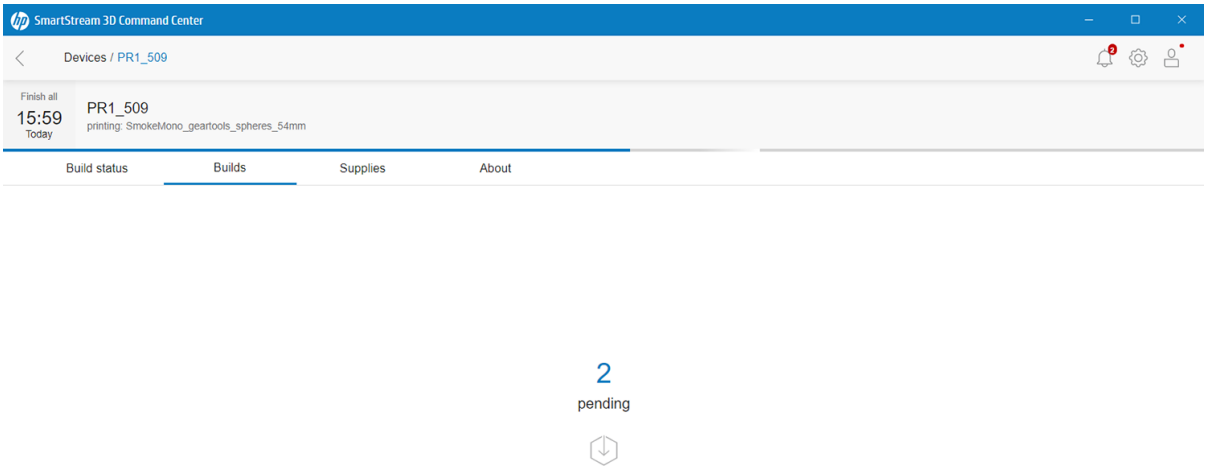


Click the card for more detailed information about the device.

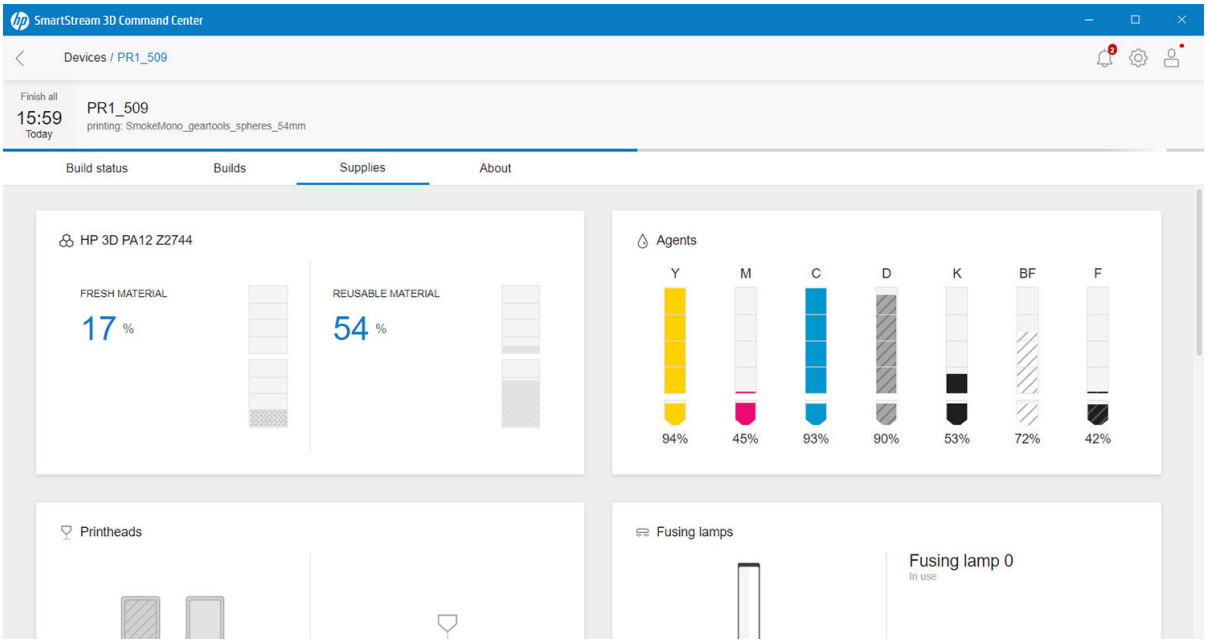
The **Build status** tab



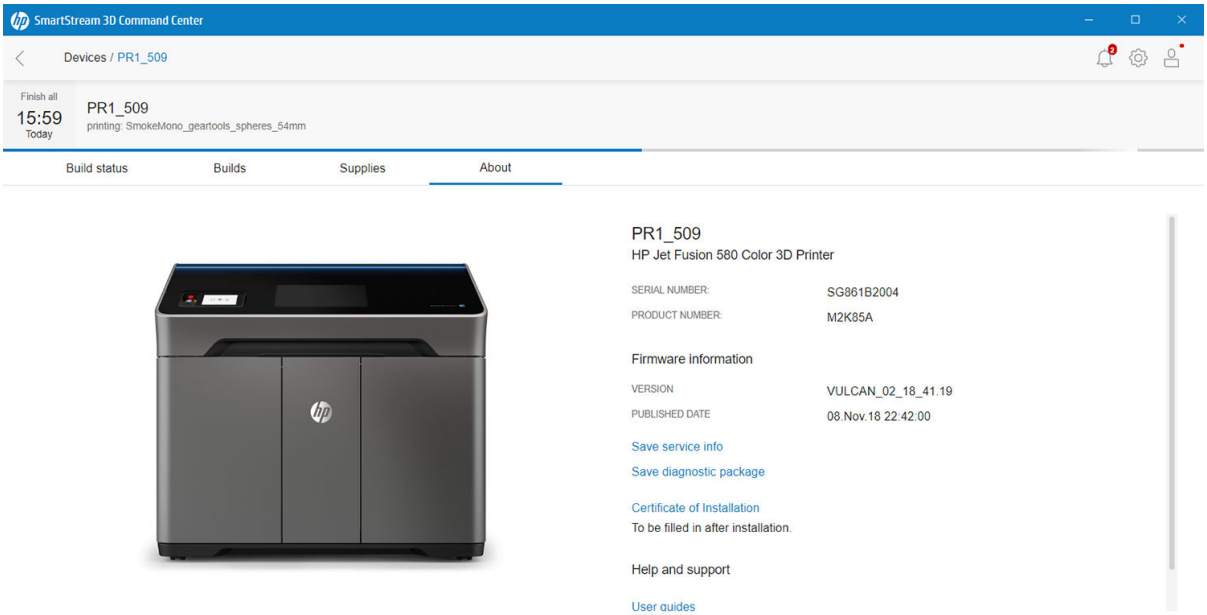
The **Builds** tab



The **Supplies** tab



The **About** tab



Click **Back** or the breadcrumb to go back to the monitoring overview area (see Quick start on page 2).

Types of devices

Command Center can monitor all models of 3D printers, processing stations, build units, and cooling frames.

3D printers

3D printers have the following sections:

- **Build status**: Information about the ongoing activity of the printer.

While a job is being printed, you can see the following information:

  - JOB NAME
  - MATERIAL
  - PRINT PROFILE
  - LAYERS: The number of layers printed, and the total number of layers to print
  - HEIGHT: The height printed, and the total height to print
  - PARTS: The number of parts printed, and the total number of parts to print

- **Builds**: Information about the current job file that is being printed, the upcoming jobs, and the pending jobs to be printed.
  - UPCOMING JOB: This appears only when a new job has been submitted while the current job is printing, to be printed in the same build chamber
  - PENDING JOBS: Jobs that are already stored in the printer, waiting to be printed when selected
- **Supplies**: Information about the health of all your supplies, with further information in case of any warning or error.

NOTE: Different printer models may have different types of supplies.

  - BUILD UNIT: Shows the status of the build unit and type of material in the build chamber, if the printer supports build units.
  - FRESH MATERIAL: The percentage of material that is fresh (from a material cartridge); the rest of the material is from the storage tank.
  - AGENTS: A real-time display of the level of the agents.
  - PRINTHEADS: Displays alerts or errors if any.
  - OTHER SUPPLIES: Displays alerts or errors if any.
  - FUSING LAMPS: Displays alerts or errors if any.
  - HEATING LAMPS: Displays alerts or errors if any.
- **About**: Information about the printer, such as model and product number, as well as a link to activate the warranty, and a link to the printer's user guide.

Processing stations

- **Printed builds**: Shows the job files that have been printed inside the inserted build unit.
- **Supplies**: Information about the health of all your supplies, with further information in case of any warning or error.

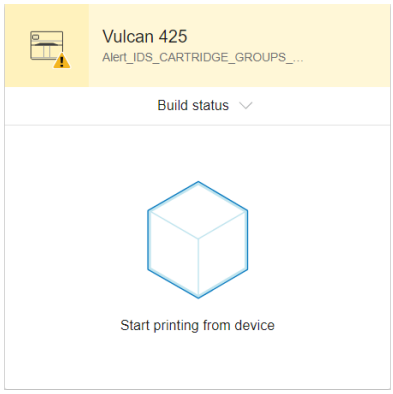
NOTE: Different printer models may have different types of supplies.

- **About**: Information about the processing station, such as model and product number, as well as a link to activate the warranty, and a link to the processing station's user guide.

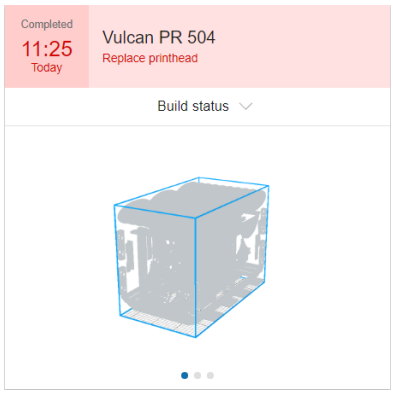
Device alerts

Cards may display warnings or errors, which may override the printer status, depending on their importance, which is determined by the printer.

- **Warnings** are about non-urgent issues, such as a maintenance routine. A warning about a particular component is displayed on the icon representing that component.



- **Errors** are about urgent issues that could stop the printer from starting a job, such as a broken lamp. An error about a particular component is displayed on the icon representing that component.



6 Notification center

Click to open the panel. The number of unread messages is displayed beside the icon. To close the panel, click again, or click anywhere else outside the notification drawer.

Types of notifications

New versions available

- Software updates are notified through the notification center; you can install new versions automatically.
- If there is a firmware update available, the Command Center displays a new message in the notification center. Go to the front panel of the printer and/or processing station to proceed. Click the message, download the new firmware, copy it to a USB flash drive, and insert it into the USB port in the printer or processing station.

Connectivity issues

- Not connected to PrintOS
- Not connected to Command Center Server

If the problem persists, see Connectivity troubleshooting on page 10.

These issues can arise when a specific device is no longer connected because of a reorganization.

Device alerts

Device alerts may consist of warnings, errors, a build that has been completed, a canceled job, device connectivity issue, and so on, related to a specific device.