



OFFLOAD CALCULATION SERVER (SUPERBOX) INSTALLATION GUIDE

Release Note

3DXpert 15

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Introduction

The **Offload Calculation Server** (also known as **SuperBox**) enables the automatic offloading of toolpath, scan path or build simulation calculation tasks from all 3DXpert seats in a network, thereby freeing up resources of individual work stations. The calculations may also be accelerated, depending on the hardware of the individual work stations.

The typical types of calculations that are offloaded, are as follows:

- **NC Toolpath Calculations:** A toolpath is a sequence of one or more machining procedures, performed in a given set of milling axes. A toolpath may consist of 2, 2.5, 3, 4 or 5 axis procedures.
- **Slicing Calculations:** When an object is ready for 3D printing, software called a "slicer" converts the object into a series of thin horizontal layers and produces a scanpath containing printing instructions tailored to the specific pre-defined type of 3D printer.
- **Build Simulation:** Build Simulation enables the accurate verification and optimization of parts for additive manufacturing. In 3DXpert, the Offload Calculation Server is an essential prerequisite for performing Build Simulations, as all simulations are automatically offloaded.

Calculation tasks are offloaded to the computer where the Offload Calculation Server is installed, allowing programmers to perform other tasks on their individual computers without any delays.

The Offload Calculation Server cannot be installed on a computer where 3DXpert is installed, and vice versa.

The SuperBox Manager is an interface to connect your computer to one or more Offload Calculation Servers. You may use the SuperBox Manager either as a User or as an Administrator, depending on your permissions.

An example **SuperBox Manager** dialog is displayed below showing the Offload Calculation Server in operation. In this example, NB-VIB-W7 is the local PC where 3DXpert is installed and SB-AF31 is the name of the Offload Calculation Server.

The screenshot shows the SuperBox Manager 15.00 application window. The interface includes a menu bar with 'User' and 'Administrator' options, and a toolbar with 'Refresh', 'Reports', 'Exit', and 'Help' buttons. The main area is divided into several sections:

- Left Panel:** A list of servers with 'SB-AF31' and 'NB-VIB-W7' selected, each with a green status indicator.
- Computer Data:**
 - Computer Name: SB-AF31
 - Processor: Intel(R) Xeon(R) CPU E5-2667 v4 @ 3.20GHz
 - Total RAM: 130987 MB
 - Free Disk Space: 223.8 GB
 - Graphics Card: NVIDIA Quadro P6000
 - Graphics Card Memory: 4095 MB
 - Windows Edition: Microsoft Windows 10 Pro
 - SuperBox latest version: 14.0200.1599.1059
 - License Expiration Date: 20-Nov-19 00:00:00 (E14)
- Computer Usage Data:**
 - CPU Usage: 12%
 - Used: 4603MB, Free: 126384MB, Total: 130987MB
 - Ram: 3%
 - Core Usage: Core1 (21%), Core2 (5%), Core3 (11%), Core4 (12%), Core5 (8%), Core6 (17%), Core7 (12%), Core8 (11%), Core9 (24%), Core10 (5%), Core11 (32%), Core12 (2%), Core13 (30%), Core14 (4%), Core15 (14%), Core16 (8%)
- Task List Table:**

Owner	File Name	Proc. Name	Progress
NB-VIB-W7	Indicate_holder_prev	Surface Milling-Finish	32%
NB-VIB-W7	Indicate_holder_prev	Volume Milling-Rough	37%
- Control Panel:** 'Terminate', 'Pause', and 'Resume' buttons.
- Transfer Rate:** A 'Test' button showing a rate of 3.8254 and a timestamp of 5/11/2019 9:16 AM.

Installation of Offload Calculation Server

The hardware / software requirements for the Offload Calculation Server are detailed below:

Hardware Requirements

Memory (RAM) / Processor & Graphics Card

	Memory (RAM) / Processor *	Graphics Card **
Client PC:		
Minimum:	64 GB RAM, 6 cores i9 CPU	4 GB
Recommended:	128 GB RAM, 10 cores i9 CPU	8 GB
OffLoad Calc. Seat:		
Recommended:	256 GB RAM, 2 x 8 cores i9 CPU	Built-in GPU ***
Best:	512 GB RAM, 2 x 12 cores i9 CPU	Built-in GPU ***
OffLoad Calc. Seat for Simulation:		
Recommended:	256 GB RAM, 2 x 8 cores i9 CPU	24 GB
Best:	512 GB RAM, 2 x 12 cores i9 CPU	24 GB

* To gain better I/O performance, it is recommended using a solid state hard Drive (SSD). Windows and 3DXpert should be installed on the SSD. The file management should be configured on a different hard drive, local or network based.

** Quadro cards from Nvidia and FirePro/Radeon Pro cards from AMD are the most recommended cards for CAD/CAM software.
The performance of graphics cards is tightly related to driver version and memory size. The newer the driver and the greater the memory, the better the graphics card performance.
The graphics card must support OpenGL 3.3.
For recommended graphics cards see the following website:
<https://cimgraphics.3dsystems.com/>

*** The Offload Calculation Seat is only used for CPU based calculations, so the GPU is not relevant.

Additional

- Free Hard disk space: 20 GB; important for the machine swap file.
- Internet connection and no blocking firewall.

Software Requirements

The software requirements for this product are detailed below.

Recommended:

- Windows Server 2008, 2012, 2016 or 2019.
- Windows 10, Professional/Ultimate Edition.

Not Supported:

- Windows 7, 8 and 8.1 are no longer supported, however, the system will still run on them.
- Windows versions older than Windows 7 are not supported.
- **.NET Framework 4.6.2** is an installation prerequisite. If this is not installed, you are prompted to download it from the internet. If you have no internet connection, install the .NET Framework 4.6.2 from the 3DXpert DVD under the appropriate folder:
3DXpert: ...\\DVD2\\3DXpert\\Disk1\\ISSetupPrerequisites\\
If the Offload Calculation Server is installed on Windows 8, a message is displayed enabling you to activate the .NET Framework 4.6.2 component.

Power Options

As the Offload Calculation Server has to be continually powered up and running (cannot timeout and go to sleep), the **Power Options** are set during the installation to: **Power Plan = High Performance** and all timeout settings for the **Display** and **Sleep = Never**. The Power Options (under the system Control Panel) are a collection of hardware and system settings that manage how the computer uses power.

Installation

Install the Offload Calculation Server from the 3DXpert release DVD.

Installation Procedure

When installing the software product, prepare the computer for installation as follows:

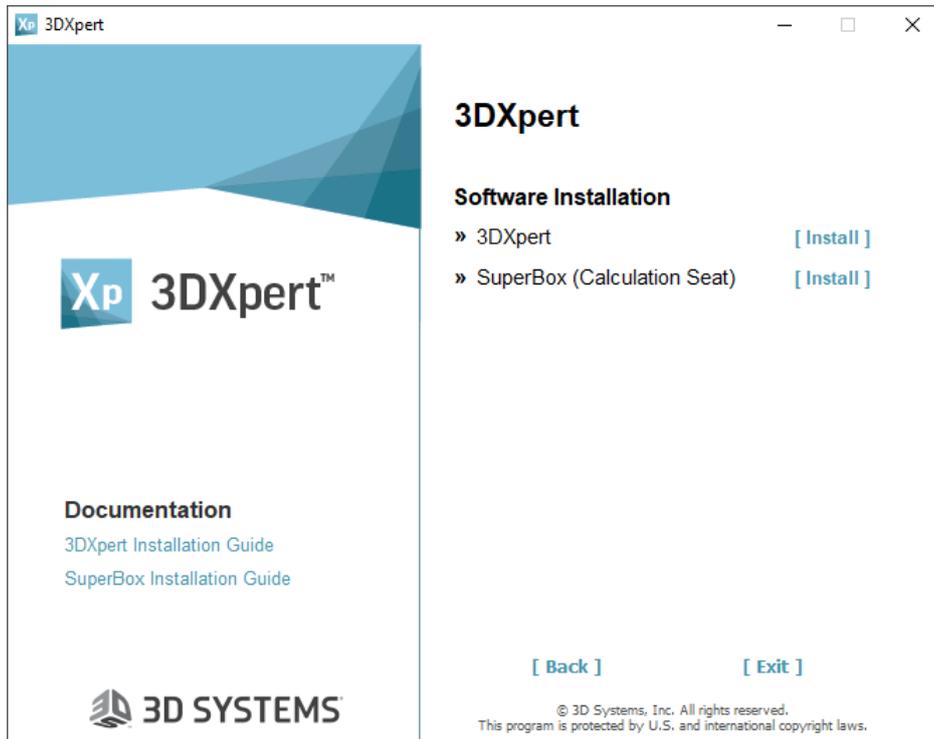
1. Ensure that 3DXpert is *NOT* installed on the computer.

The Offload Calculation Server cannot be installed on a computer where 3DXpert is installed, and vice versa.

2. Insert the 3DXpert installation DVD into the drive.
3. The installation menu (Autorun) is displayed. Click the 3DXpert item.



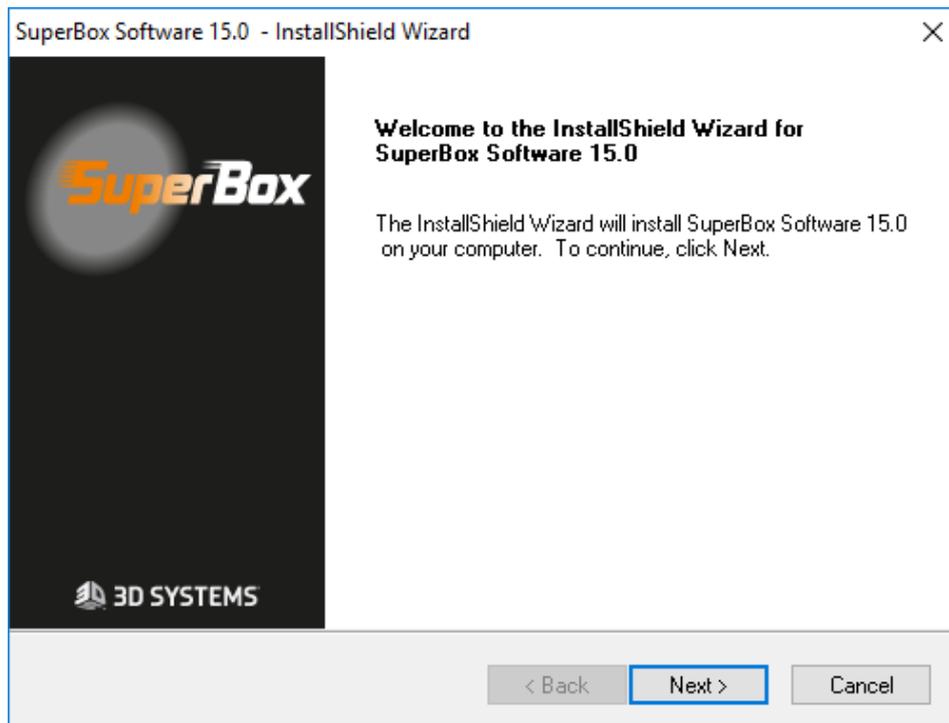
4. The next installation dialog is displayed. Click the **SuperBox (Calculation Seat)** installation.



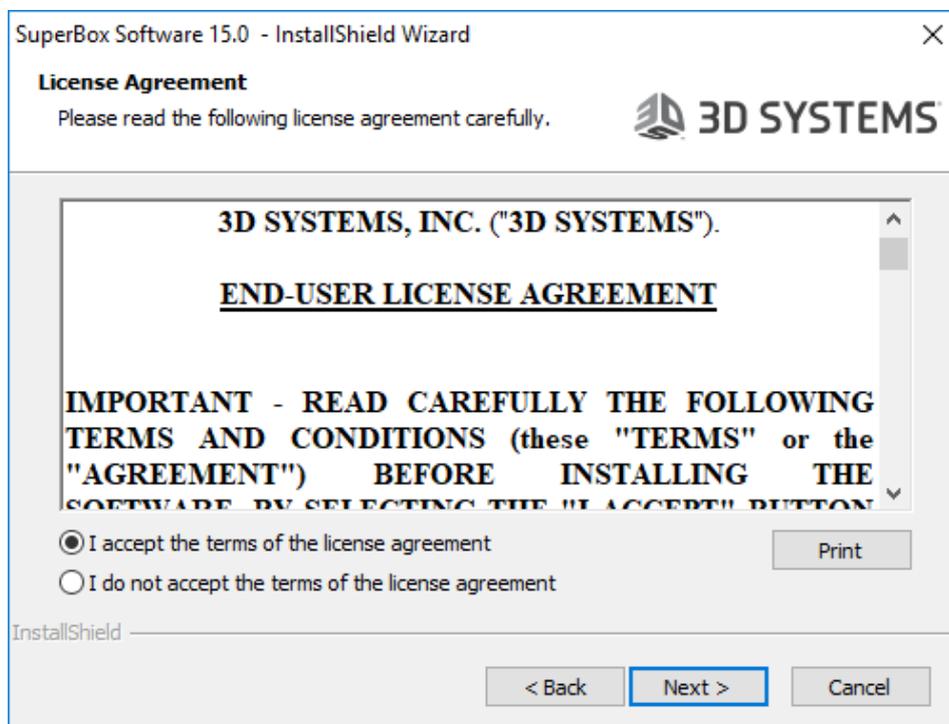
If 3DXpert is installed on the computer, a warning message is displayed, and, on pressing **OK**, the installation terminates.

The Offload Calculation Server cannot be installed on a computer where 3DXpert is installed, and vice versa.

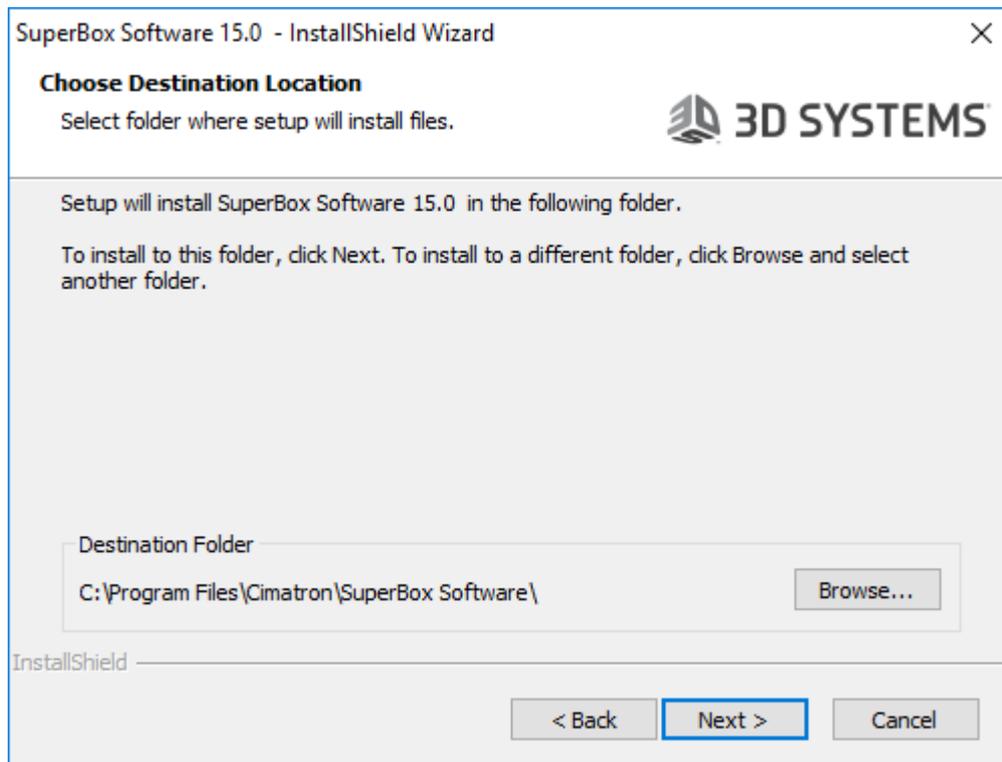
If 3DXpert is NOT installed on the computer, the installation continues. The **Offload Calculation Server Software Welcome** dialog is displayed. Click **Next**.



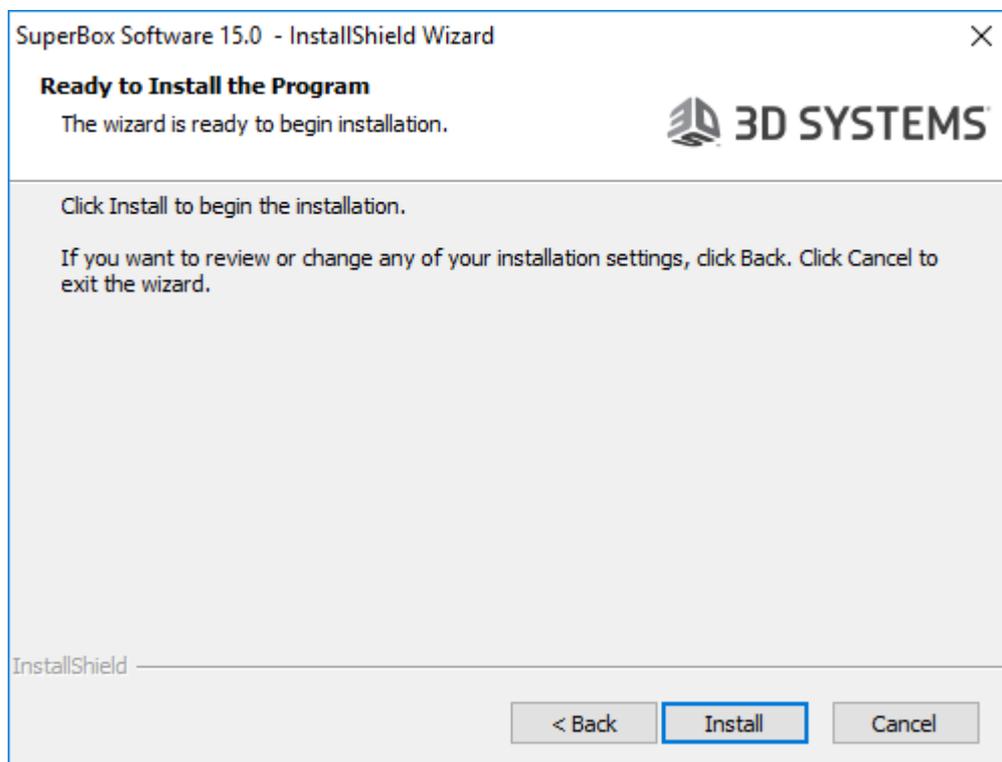
5. The **License Agreement** dialog is displayed. Read it carefully. To accept the terms of the license agreement, click the **I accept...** radio button. Click **Next**.



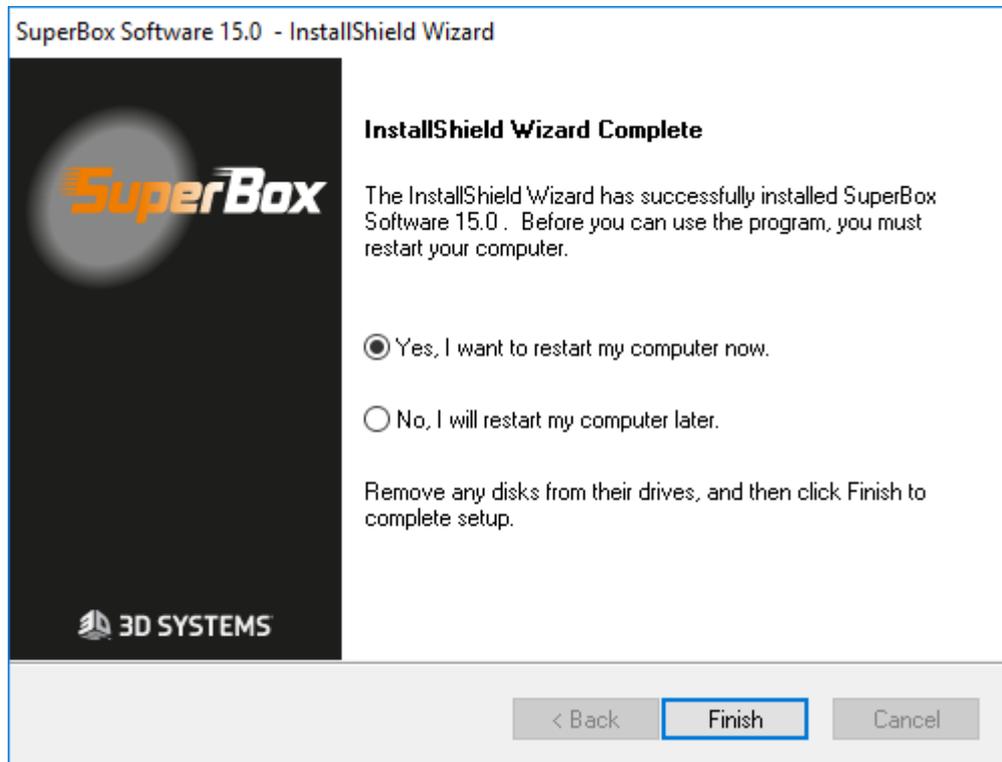
- The **Destination Folder** dialog is displayed. Either accept the default location or browse to select another location. Click **Next**.



- The **Ready to Install Program** dialog is displayed. Click **Install**.



8. The Offload Calculation Server installation commences.
9. When the installation is complete, click **Finish** to exit the installation procedure.



Connectivity Troubleshooting

This is relevant when the Off Load Calculation Server works as a Build Simulation Server. If on the 3DXpert Client side, the Build Simulation application stops with the message: “Your graphics card is not supported”, reinstall or upgrade the graphics card driver on the server PC.

There may two main reasons for connectivity issues.

On-Site Networks – see page 10.

On-Site Network setting troubleshooting, for example some sites block internet access of client PCs or have different subnets, etc.

Installation and Setup – see page 14.

Software-related troubleshooting, for example the installation, setup, update status, versions, etc.

Before starting to troubleshoot reasons for Offload Calculation Server connectivity issues, verify the following:

- The PC where the Offload Calculation Server is installed is powered on (connected to a power supply with the power button on).
- The PC is connected to the LAN (Local Area Network) or to a local Router (not hub).

On-Site Networks

If Offload Calculation Servers are not available due to on-site networks settings, for example some sites block internet access of client PCs or have different subnets, etc., try checking the following:

Client or Offload Calculation Server has a Non-Microsoft Windows Firewall

Disable the client's personal firewall (the Microsoft Windows firewall and the network firewalls are handled automatically).

If Offload Calculation Servers are available, you need to allow access on the personal firewall by adding the following port numbers to the firewall “Exception” list:

- HTTP-In 36127 (System)
- UDP-In 36128 (CimRemoteRedConsolHost.exe)
- UDP-In 36129 (CimRemoteWorker.exe)

Client or Offload Calculation Seat has Blocked Internet Communications

1. General requirements:
 - a. The Offload Calculation Seat should be in the Domain.
 - b. It is important to have enough disk space on the Offload Calculation Seat disk. See the Hardware Requirements on page 3.
2. On the client computer, create the file **SuperBoxList.dat** in the data directory listing the IPs of the Offload Calculation Seats.

Connection through Wireless

The Offload Calculation Server must be connected directly to the router. It has no wireless connectivity.

A client may connect wireless to the network.

For performance reasons, it is strongly advised that the Offload Calculation Server is connected with the fastest connection method.

When using a wireless network with slow connectivity (below 10 Mbit), operations may end unsuccessfully, due to interruptions in data transfer.

ESET NOD32 Antivirus

Some users have reported issues using the Offload Calculation Server if they are using the ESET NOD32 Antivirus software.

The ESET NOD32 Antivirus program has a problem handling basic HTTP data that is moved across the network between a client and an Offload Calculation Server, since the antivirus program continuously scans the traffic. For more information, see the following reference: http://kb.eset.com/esetkb/index?page=content&id=SOLN2654&actp=search&viewlocale=en_US&searchid=1295772115119

This problem results in a very slow connection, up to the point where calculations abort after one minute.

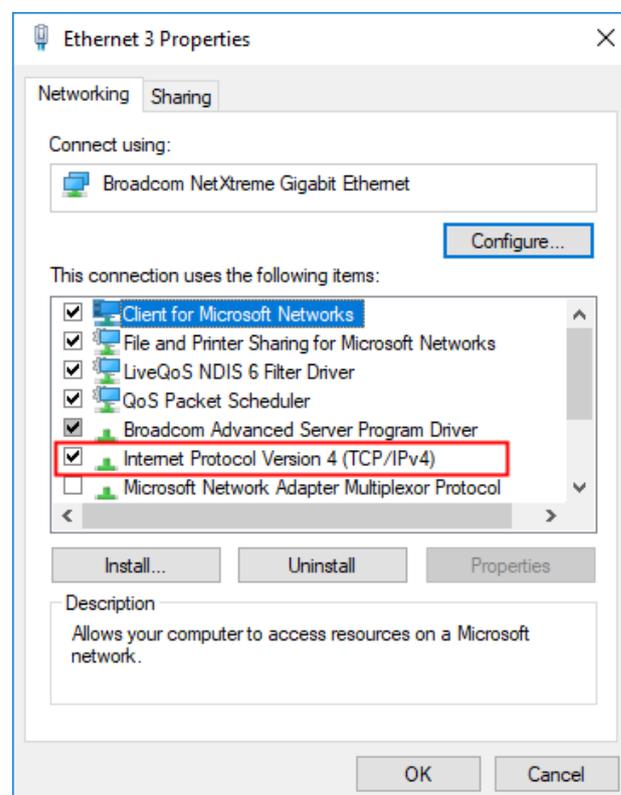
To solve this issue, you must uncheck the **HTTP Scan** option, and restart all 3DXpert processes.

Client or Offload Calculation Server Connection Does Not Support TCP/IPv4

Verify that the TCP/IPv4 option is set.

From the Windows Control Panel, select **Network and Internet > Network and Sharing Center**. Click the **Property** button for the connection you are working with.

Verify that this option is checked for the used connection.



Client and Offload Calculation Server are Connected on Different Subnets

The client and Offload Calculation Server must be connected to the same subnet.

If the client has more than one network connection (for example, LAN, Wi-Fi, LAN2), verify that the client has an **active** connection on the same subnet as the Offload Calculation Server. Usually different connections are connected to different subnets.

If Offload Calculation Servers are not available, they may be connected outside of the network firewall (or on a different VLAN).

Network does not support Dynamic IP

If the network does not support dynamic IP or if the router cannot be configured to allow the Offload Calculation Server to get a fixed IP, you need to set the Offload Calculation Server with a static IP.

If the Offload Calculation Server is a 3DXpert device, follow the next steps to configure the Offload Calculation Server with a static IP:

1. Prepare a file by the name StaticIP.dat.
2. The file should include the following data in the exact format:
IP = 10.1.1.1
Subnet = 255.255.255.0
Gateway = 196.10.100.1
3. Put the file on the root folder of a USB memory stick and connect it to the Offload Calculation Server.
4. Restart the Offload Calculation Server.

To reset the Offload Calculation Server back to be DHCP enabled, place the string DHCP in the StaticIP.dat file, and restart the Offload Calculation Server.

The 3DXpert SBaS can be configured manually to a static IP.

Note: For the 3DXpert device, the USB should be a 'simple' 2.0 USB that does not require special driver installation.

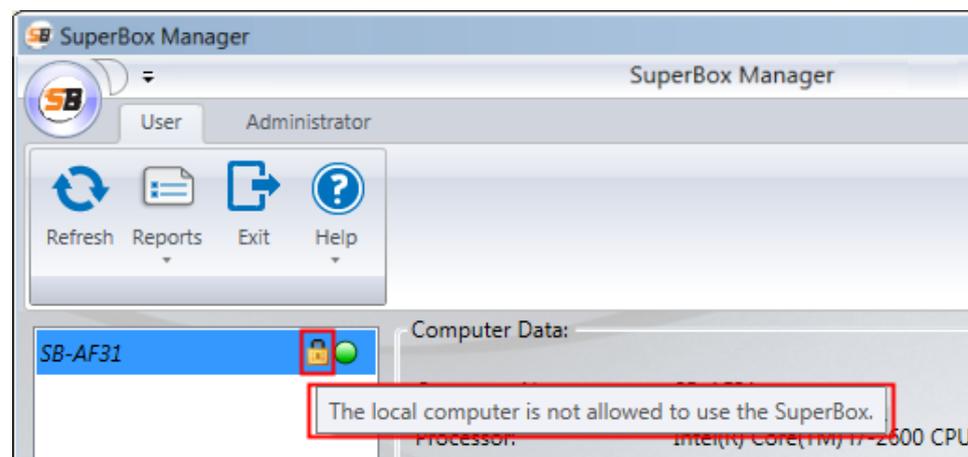
Installation and Setup

If Offload Calculation Servers are not available for a specific client, try checking the following:

Offload Calculation Server Authorization was Set On

Load the SuperBox Manager application from the 3DXpert Control Panel, and check which Offload Calculation Servers are available.

If an Offload Calculation Server is shown on the list, but not available for the Client (3DXpert session), check the Offload Calculation Server authorization configuration. An example of this situation is shown below, where an Offload Calculation Server is shown on the list with a lock status, meaning that it is blocked for this user:

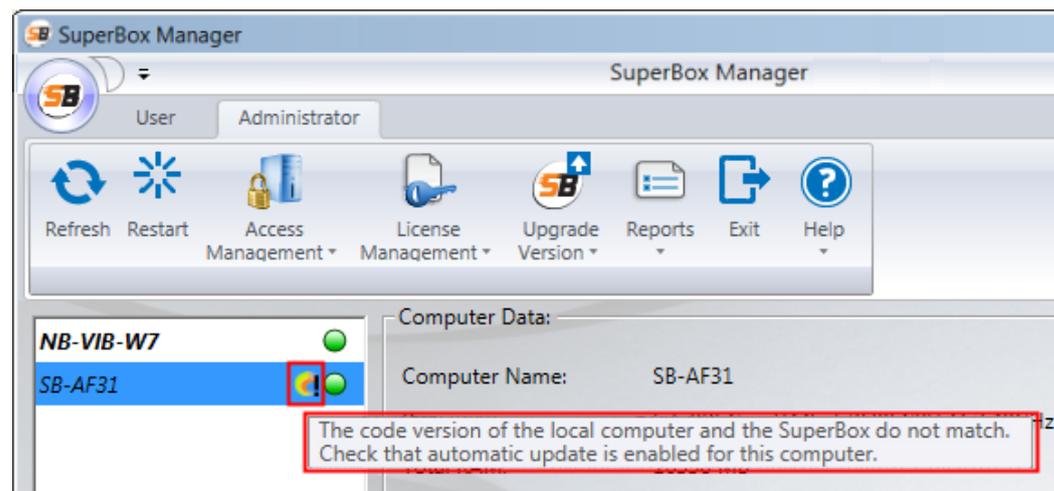


The SuperBox Manager Administrator can view and edit authorization for users using the **Offload Calculation Server Access Permissions** tool.

3DXpert and the Offload Calculation Server have Different Versions

On a PC where 3DXpert is installed, load the SuperBox Manager application from the 3DXpert Control Panel, and check which Offload Calculation Servers are available.

If an Offload Calculation Server is shown on the list, but not available for the Client (3DXpert session), check that the version number of the Offload Calculation Server matches the 3DXpert version number that is currently installed on your client. If the versions are different, you may need to upgrade your Offload Calculation Server to a newer version. An example of this situation is shown below (in the **Status**) where an Offload Calculation Server is shown on the list, but is not available for the client (3DXpert session):



The SuperBox Manager Administrator is prompted to upgrade the Offload Calculation Server version to the 3DXpert version from the same client that has the new version. Check the **Enable SB Updates** tool (under the **Administrator > Upgrade Version** menu), to verify that automatic updates are enabled by default.

Offload Calculation Server is not updated with client version automatically

The Offload Calculation Server can serve different clients with different 3DXpert versions (e.g.: version 15P3, version 15SP1, etc).

The Offload Calculation Server will update its own version when a client with a new version is loaded.

If this does not happen, check the **Enable SB Updates** tool (under the **Administrator > Upgrade Version** menu), to verify that automatic updates are enabled by default.

If you have a valid (not an evaluation) license, and there is no automatic update, please contact your local 3DXpert Reseller.

Offload Calculation Server Licensing is Out of Date or has the Wrong Version

Load the SuperBox Manager application from the 3DXpert Control Panel, and check which Offload Calculation Servers are available.

Verify that the Offload Calculation Server licensing is valid and in effect. The SuperBox Manager Administrator can upgrade the Offload Calculation Server license file, if required, using the **Upgrade License** tool.

Make sure you have the correct major version license to run the client version. For example, a 3DXpert 15 license can serve both 3DXpert 14 and 3DXpert 15, but a 3DXpert 14 license will not serve 3DXpert 15 clients.

Client or Offload Calculation Server Security Setup Failed

If the security setup failed during the installation of 3DXpert, run the **HttpReg.exe** executable file (from the relevant Program folder) in a command console (CMD). The **HttpReg.exe** file is available in the Program folder:

3DXpert: ...\\Program Files\\3D Systems\\3DXpert\\15\\Program \\HttpReg.exe

If you get an error, contact your local reseller with this error.

Copy the Offload Calculation Server Log

If there is a need to copy the Offload Calculation Server log file, follow the procedure below:

1. Create a folder by the name RedLog on the root folder of a USB memory stick.
2. Connect the stick into the Offload Calculation Server.
3. Restart the Offload Calculation Server.

The file can be copied manually for the 3DXpert SBaS from the folder:

...\\ProgramData\\3D Systems\\3DXpert\\15\\Data\\Log\\

Note: For the 3DXpert device, the USB should be a 'simple' 2.0 USB that does not require special driver installation.

General Offload Calculation Server Failure Problem

Try rebooting the PC where the Offload Calculation Server is installed.

You should be able to connect a few seconds after the startup is completed.