



# CINEMA 4D

## Release 15

## TEAM RENDER FAQs

With the introduction of CINEMA 4D R15, NET Render will be replaced by the new Team Render. Team Render is based on a completely new network render technology and offer a much simpler workflow that clearly sets it apart from its predecessor.

### What advantages does Team Render offer compared to NET Render?

The primary advantages at a glance:

- Distributed rendering of still images across multiple computers within the network (Distributed Single Frame Rendering).
- Render across the network with a single click of the mouse - including all assets.
- Faster data transfer between render clients.
- Team Render makes it possible to use all available computers within the network on which a CINEMA 4D license or render client is installed - regardless of whether it's a powerful workstation or a simple office computer with available capacity.
- Simple and mostly automated configuration. Team Render automatically recognizes computers that can be used for rendering via the Bonjour protocol.
- Render results are displayed right away in the Picture Viewer.
- Simple prioritization of render jobs in the Render Queue via drag & drop.
- No administrator or dedicated server necessary.
- Any CINEMA 4D installation can serve as a render server with a single click of the mouse and can simultaneously be used as a render client.
- Team Render distributes Global Illumination (GI), Ambient Occlusion (AO) or subsurface cache renderings to all computers activated for Team Render.

### Which jobs are solved differently by Team Render compared to NET Render?

- Team Render is a peer-to-peer solution similar to the BitTorrent system. All parameters are adjusted in the Team Render Manager in CINEMA 4D - whereas NET Render required a separately installed client-server solution with a web interface for job management.
- Team Render offers a straightforward integration of computers within a local network. NET Render made it possible to also include computers outside of the local network in the render process. However, the scenes had to be uploaded individually, which was often quite laborious.

### Can I use multiple computers to render a still image faster?

Yes. Team Render makes it possible to render still images across multiple computers, which was previously not possible.

## Which application do I need to render across a network?

Each available CINEMA 4D license within the network can be used to render - hence the name Team Render. Even computers that do not have a full CINEMA 4D license installed on them can be used for rendering by simply installing the Team Render Client. The number of available clients is defined by the CINEMA 4D version that initiates Team Render. This computer can also take part in rendering.

CINEMA 4D Version	Maximum number of Render Clients
CINEMA 4D Prime	None
CINEMA 4D Broadcast	3
CINEMA 4D Visualize	3
CINEMA 4D Studio	Unlimited*

\* When a very large number of clients are used, process-related physical limitations may occur, depending on the network technology used and the resulting traffic.

## Can I use Team Render in a mixed network?

Yes. It must however be noted that differences in the calculation of effects may occur if different types of computers are used (in particular different CPUs).

When rendering animations, individual frame packets are distributed to different computers and subsequently brought together on a primary computer to create the complete sequence. If participating computers have different processors, deviations may occur, in particular with particle streams, cloth, Hair, Dynamics and Global Illumination. This is most noticeable with incorrectly positioned particles or flickering when the animation is played. Such effects should always be baked for projects that use sequential calculation or effects. These deviations are caused by the differing precision of the float comma units among CPUs. Some take effect earlier than others. This problem can be avoided completely by using computers whose hardware is identical. This will ensure that the mathematical calculations performed by all participating computers are the same when rendering the scene.

## Do I need a dedicated server machine to render across a network?

No. The Team Render workflow makes it possible for any user to directly control all available CINEMA 4D / Team Render Clients installations within the network. Each CINEMA 4D license will act as its own server for the render process it initiates.

## How difficult is it to configure network rendering?

If Bonjour is installed on the computer, a manual configuration will not be required. If Bonjour is not installed, additional computers can be accessed using their IP addresses. The configuration will then be restricted to the IP addresses entered.

## What is Bonjour?

Bonjour is an automatic configuration service that automatically recognizes computers, printers and other devices on a network.

### **Is Bonjour part of the CINEMA 4D installation?**

No. Bonjour is installed on Mac OS systems by default. Computers that use Microsoft Windows operating systems, Bonjour is already installed in conjunction with printer drivers or Apple iTunes. If Bonjour is not installed on your computer, it can be downloaded free from Apple's website as part of the Apple Print Services here: <http://www.apple.com/support/downloads/bonjourforwindows.html>, or via iTunes: <http://www.apple.com/de/itunes/download/>

### **How do I start a render job?**

First, computers must be selected from the Team Render Client list and their individually definable passwords (Security Token) must be entered. Render jobs can then be started directly from CINEMA 4D with a single click of the mouse, or they can be placed into the Render Queue so they can be rendered consecutively.

### **Do I need specific hardware for network rendering?**

Basically any computer can be used that meet CINEMA 4D R15's minimum system requirements. Team Render can be used on high-end computers that are specially configured for rendering or on normal office workstations within the network, whose computing capacity is often not fully invoked.

### **How can I restrict a computer's use by Team Render jobs?**

Team Render can be deactivated completely in the CINEMA 4D preferences menu. Additionally, a specific computer can be temporarily removed from the active group using the Share Machine over Network command.

### **Can my computer's capacity be made available to others without slowing my own computer down?**

The number of processor cores made available to Team Render can be defined freely in the preferences menu. For example, only half of a computer's available processor cores can be made available to Team Render, which leaves the remaining cores available for your own work. However, you should make sure that the computer has enough CPU power and enough RAM so the hard drive's capacity does not have to be used.

### **How is the Team Render Client installed?**

The Team Render Client is part of the CINEMA 4D installer. The Team Render Client can be selected from the installation options when the setup is started. If a Team Render instance is already installed on a given computer, the complete Team Render directory can be copied onto an external medium and transferred to other computers.

**Tip:** If the Team Render Client is set up as an auto-start program it will be made available as soon as the operating system is up and running.

### **Can I include additional computers via the internet?**

No. Team Render is designed for rendering across a local network. The peer-to-peer architecture provides the greatest possible speed for asset transfers and rendered frames.

### **Can I start multiple render jobs?**

Yes. Team Render works in the Picture Viewer and in the Render Queue, which can be used to render several jobs consecutively.

### **Can I change the order of the render jobs?**

Yes. Render jobs can be dragged to a different position in the CINEMA 4D Render Queue list.

### **How are multiple render jobs completed if the same render clients are used?**

The job that is started first will also be rendered first. All other jobs will be rendered in the order in which they appear in the list.

### **Can I halt render jobs and re-start them later?**

Yes. Animation render jobs can be halted in the Render Queue. When the rendering is re-started, only the remaining frames will be rendered. This can be helpful if other render jobs have to be given priority or to let other users render their scenes in-between.

### **Can I work off render jobs without using a dedicated server and control this - even remotely - using an administrator?**

Instead of using a dedicated server you can use any computer on which a CINEMA 4D license is installed to define the start of render jobs via the Render Queue. A password will be assigned to the corresponding clients that is only known to your computer. The data transfer to this "server" will, for example, be achieved by permission from the hard drive. The transferred data will then be added manually to the "server's" Render Queue. Access to the "server" computer can be restricted by the operating system's security settings.

Remote access can be set up using applications such as Team Viewer or Remote Desktop.

### **Can render clients be reserved for important jobs?**

Each render client can be assigned an individual password. This makes it possible, for example, to reserve a specific render farm for a prioritized group, while all other users are given access to other computers (e.g., normal office computers). However, the greatest degree of flexibility when using Team Render can be achieved when all teams communicate their individual needs.

### **Can I only use specific render clients?**

Specific render clients can be selected as long as their passwords are correct. The maximum number of clients that can be used is defined by the CINEMA 4D version used to initiate the rendering.

### **Can I add render clients once rendering has begun?**

No additional render clients can be added once the render job has been started. However, a render job can be halted at any time and re-started with additional render clients.

### **What happens if a render client is halted even though the render job has not yet been completed?**

The image or image region assigned to that computer will be taken over by another render client and completed.

### **What happens if CINEMA 4D is quit while the render clients are still working on render jobs that were initiated by this CINEMA 4D installation?**

For still images, the partially rendered results will be lost. The rendering of an animation can be re-started. Already rendered and transferred images will remain intact.

## How are the results of a render job delivered?

The results are automatically saved to a previously defined location or transferred to the Picture Viewer (Bild Manager) of the computer on which the rendering was initiated.

## Is Team Render controlled via a web interface?

No. Team Render is controlled entirely via the CINEMA 4D user interface.

## Which requirements must be met by my network infrastructure for Team Render?

The computer from which a render job is initiated must be able to communicate with all client computers, exactly like the render clients do amongst themselves. Note that no firewall or router settings should block the communication. Team Render requires Bonjour for automatic recognition of render clients as well as a freely definable communication port. Data will be distributed very effectively between render clients using a BitTorrent (can be disabled).

Not only scene data and final images will be transferred. Numerous other intermediate data such as Global Illumination, Ambient Occlusion and subsurface caches will also be transferred between render clients.

An increase in the number of render clients used will increase the amount of network traffic accordingly. Depending on the quality of the router and the network landscape, the time needed to transfer data can increase and the network will be slowed or the number of connections limited accordingly. This is particularly true for WiFi connections.

## Can I also render using WiFi?

Yes. But the connection speed is not comparable with that of an Ethernet connection. Nevertheless, this is a practical solution for laptop users who want to render on desktop computers within the network.

## Does Team Render support CINEMA 4D's complete render functionality?

The following functions are not currently supported by Team Render: Stereoscopic rendering, sound rendering and Sub-Frame Motion Blur (previously Scene Motion Blur) for still image rendering. Also, QuickTime VR object, PyroCluster and the Vector Motion Blur post effect are not compatible with still image rendering. The Multi-Pass motion vector is compatible.

## Where can I see the status of computers in Team Render?

When Team Render is enabled, a dot will appear in the CINEMA 4D status bar. If the computer is currently not rendering, this dot will be green. A yellow dot means that the computer is currently rendering a render job. If the cursor is held above the dot, the name of the computer that initiated the render job will be displayed. The Team Render Manager displays all computers visible in the network. A green dot next to the computer's name means that the computer is currently available and a yellow dot means that a computer is currently rendering a render job.

## How can I indicate which image was rendered by which computer?

The easiest way to do this is using the Watermark post effect with the text variable „\$comname“, which will be placed at the edge of the image. The watermark will show which computer was used to render this frame. Final images used in production can be rendered slightly larger so the watermark can be cropped out. Alternatively, the watermark can be output in a Multi-Pass layer.