

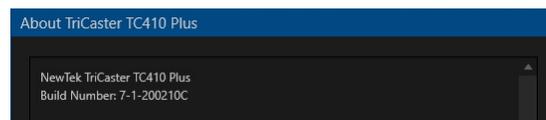
Operating a TriCaster system remotely

This document will explain the methods to configure and operate a NewTek TriCaster system from a remote location.

First, you need to verify that your system is capable of using one of these methods. Supported TriCaster models are.

- TriCaster TC1
- TriCaster 410 Plus
- TriCaster Mini 4K
- TriCaster XD system with Advanced Edition 3 (Mini HDMI, Mini SDI, 410, 460, 860, 8000)
- NewTek VMC

For any of the above systems, you need to be running Rev 7-0 software or higher. You can check the software version of the system by going to the 'Help' button on the home screen, then clicking on 'About TriCaster' found on the right side. At the top of the window it will list your model TriCaster and software build number. If the build starts with '7-0' or '7-1', then you are on the correct software version.



The methods of remote control are NDI-KVM and LivePanel. They can be used separately or together.

Caveats

Why not install a remote desktop client on the TriCaster system operate in that manner? TriCaster doesn't stop you from installing 3rd party software, but it isn't a recommended solution.

The first reason is that the TriCaster is a heavily GPU dependent application. It is built this way to perform the real-time processing required for working with video signals. Remote desktop software 'wedges' itself into the system to get access to the computer desktop. This process adds additional processing and latency onto the GPU and CPU. Depending on the workflow, it is possible that it can cause issues. NewTek has not tested any of the 3rd party solutions in this manner; it is unknown how it can affect the system. Remote desktop software is often updated; a tested version today might cause issues in the future.

The second reason is the performance of the remote desktop connection. Most remote desktop software is looking for every on-screen update, capturing that information and then sending it to the remote client. The TriCaster user interface has a substantial amount of on-screen video. Each video window in the main Multiviewer, not to mention if you have additional Multiviewer displays connected, can cause remote desktop software to become very slow as it tries to process the enormous amount of

video updates that are appearing the screen. Using the tools below will allow you to offload this work to another computer. In the case of NDI KVM, while the screen updates are still significant, from the remote desktop client it is viewed as one update for the entire user interface versus each individual Multiviewer video window as seen on the local TriCaster system. Using the workflows designed below will offer the highest remote performance with the lowest resource impact on the TriCaster system.

Some remote desktop solutions like RDP cannot be used with TriCaster. RDP has a significant impact on how a host application can access the GPU; because of this, it is incompatible with the TriCaster.

All of the methods of remote control need to be tested thoroughly before a production. Upstream and downstream bandwidth along with overall latency of the connection will determine how well it operates. The level of remote operation is difficult to determine in advance; often the best solution is to test the actual setup and then see what adjustments can be performed.

A last aspect to think about is the worst-case scenario. What happens if a device were to freeze or be turned off and you have no one close by to restart or power it on? There are companies that make remote control power strips. This allows for the ability to power on or perform a power cycle of a system from a web interface. Make sure the connected devices have the BIOS set to boot up on restored power. Here are some companies that make these products, typically called a 'Switched PDU' device.

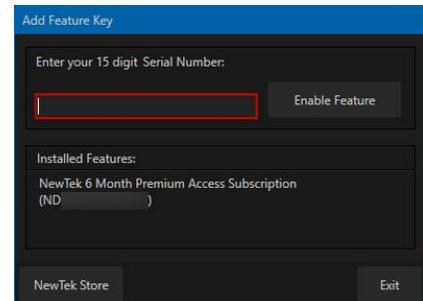
- [Tripp-Lite](#)
- [CyberPower](#)
- [Digital Loggers](#)

Control surfaces are not designed to work over remote connections. These solutions are designed for operation using a keyboard, mouse and web browser.

NDI-KVM

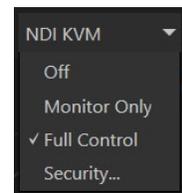
This method gives you access to the entire TriCaster user interface, you will be able to operate the system via keyboard and mouse as if you were sitting in front of the system.

NDI-KVM is included with Premium Access; this feature must be active for NDI-KVM to be available. You can check if this license is active by going to the 'Shutdown' button, then 'Administrator Mode' on the TriCaster. Click on the button called 'Enter Feature Key'. If Premium Access is enabled, you will see it listed in the window.



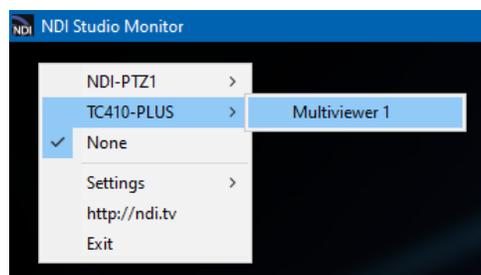
NDI-KVM does require that the TriCaster system be running Windows 10. TriCaster systems on a Windows 7 OS will not be able to use this feature. This restriction is just on the TriCaster side; a Windows 7 system can control a TriCaster via NDI-KVM. If your TriCaster system is running on Windows 7 and you need the NDI-KVM feature, please contact your NewTek Dealer or representative about upgrade options to systems with Windows 10 OS.

To turn on NDI-KVM, look in the upper right corner of the home screen. An 'NDI KVM' dropdown is available. Click on this and choose 'Full Control' to allow clients to both screen and control the system.



Once this option is set, it will be remembered on a reboot of the system.

To connect to NDI-KVM from another Windows computer on the network, install the free [NDI Tools](#) software. Included with NDI Tools is an application called 'NDI Studio Monitor'. From the list of NDI sources in NDI Studio Monitor, find your TriCaster system and choose the NDI source called 'User Interface' or 'Multiviewer 1'.



Once selected, the interface of the TriCaster will appear. The NDI Studio Monitor will also show a KVM control widget on the screen. You can use the 'arrow' icons on the left side of the widget to move it around on the screen. Click on the 'KVM' button on the widget to activate remote control. Once this is active, all mouse and keyboard functions will be sent to the TriCaster thru the NDI Studio Monitor interface. Beyond the user interface you can also hear the audio of the Master audio output of the TriCaster.



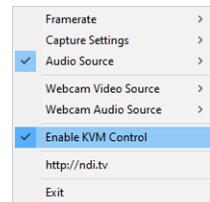
NDI-KVM will allow for access of the TriCaster from the local computer network. If you need to access NDI-KVM outside the network, you can use tool like Teradici, TGX, TeamViewer or other Internet remote

desktop software for control. This will allow anyone that can remote into the system running NDI-KVM to then have full control over the TriCaster system.

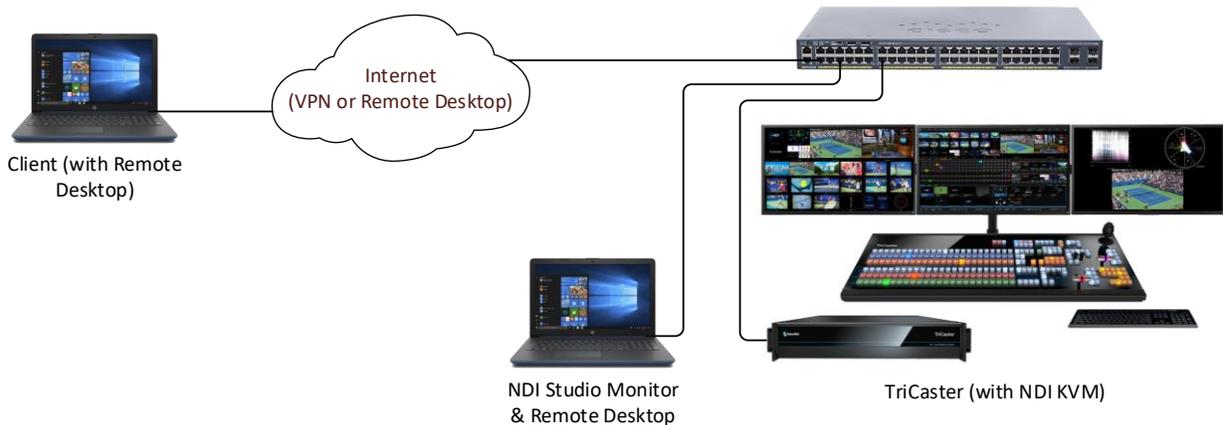
It is also possible that a VPN solution can be used as well; however, this will require a solution that can handle high bandwidths (up to 150Mbit/s). This would allow you to run NDI Studio Monitor on the remote client and connect to the system thru the VPN. Setting 'Prefer UDP' as the receive type inside NDI Access Manager will help with this kind of connection. Work with your IT department to determine if an Internet based remote desktop solution or VPN solution might work best.

Other NewTek products also have NDI KVM support like 3PLAY 3P1 and Connect NC1 IO. For these products you can turn on NDI KVM as shown on the TriCaster above. This will allow you to easily switch between these products from the same NDI Studio Monitor interface or run multiple copies of NDI Studio Monitor.

If you have non NewTek products that would be useful to access via NDI KVM, that is possible as well. Install NDI Tools on the target system. NDI Scan Converter has an 'Enable KVM Control' option that will allow it to be accessed in the same manner.

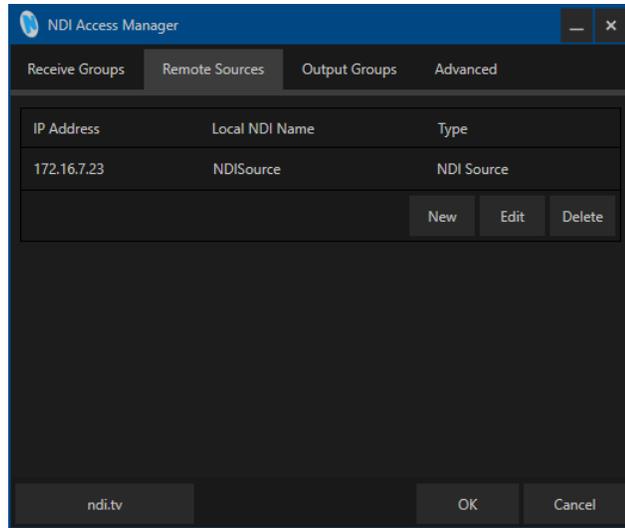
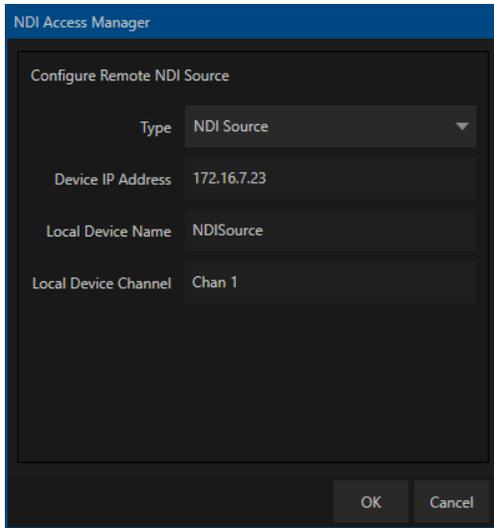


This option is remembered in NDI Scan Converter when the application is closed. When it is run again, the option will be active. This allows you to have NDI Scan Converter run on system start, making the device available even on a reboot. Note that only the Windows 8 and 10 versions of NDI Scan Converter support NDI KVM. NDI Studio Monitor supports NDI KVM on any supported Windows version.



If you cannot get NDI KVM to find sources thru a VPN, mDNS traffic is probably being blocked. In this case Remote Sources can help.

To setup Remote Source, the client system as shown in the diagram above. Open NDI Access Manager. In the Window, go to the 'Remote Sources' tab. Click on 'New'. In the window that opens, enter the IP address of the target system. This is the system that has NDI KVM running on it that you want to access.



Once entered, press OK. A new entry will appear in the list of Remote Sources. If NDI Studio Monitor is currently running, close all running instances, then run it again. In the NDI sources list you should find the new entry for the remote system. If it isn't appearing, then verify the IP is correct or that there isn't any blocking of traffic thru the VPN connection.

NDI 4 Network Ports

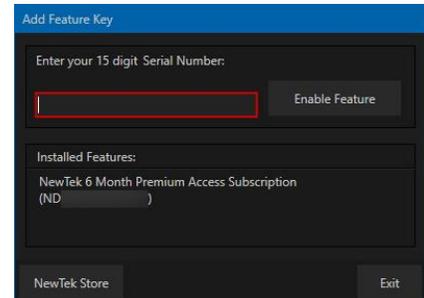
| Port | Protocol | Name | Application |
|--------|----------|------|--|
| 5353 | UDP | mDNS | NDI Auto Discovery |
| 5959 | TCP | NDI | NDI Discovery Service |
| 5960 | TCP | NDI | NDI Messaging Server |
| 5961+ | TCP | NDI | NDI Connections, add one port for each additional connection |
| 6960 | TCP/UDP | NDI | NDI Messaging Server |
| 6961+ | TCP/UDP | NDI | NDI Connections, add one port for each additional connection |
| 49152+ | TCP | NDI | NDI Connections/Ephemeral |

LivePanel

LivePanel allows you to use a web browser to control functions on the TriCaster. LivePanel will typically require some pre-production setup; make sure you give yourself the time needed to build and test your workflows with this method.

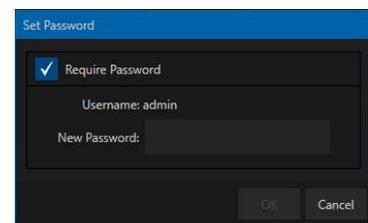
The web browser can run on any computer operating system (Windows, OSX, Linux, iOS, Android). Recommend web browsers to use with LivePanel are:

- Google Chrome
- Microsoft Edge
- Mozilla Firefox
- Apple Safari



LivePanel requires either a Premium Access license or LivePanel license on the system. You can check if this license is active by going to the 'Shutdown' button, then 'Administrator Mode' on the TriCaster. Click on the button called 'Enter Feature Key'. If Premium Access or LivePanel are licensed, you will see it in the window.

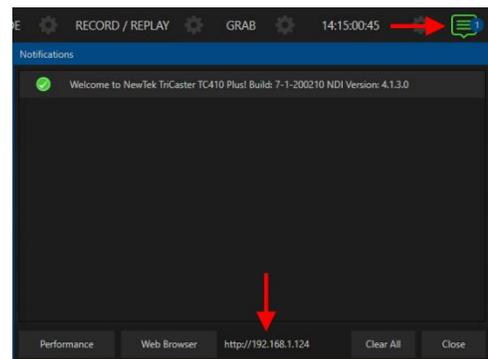
LivePanel also supports a password. On the same Administration page, you can click on the 'Set LivePanel Password' button to modify this. The default username and password are 'admin'. The password can be changed or disabled.

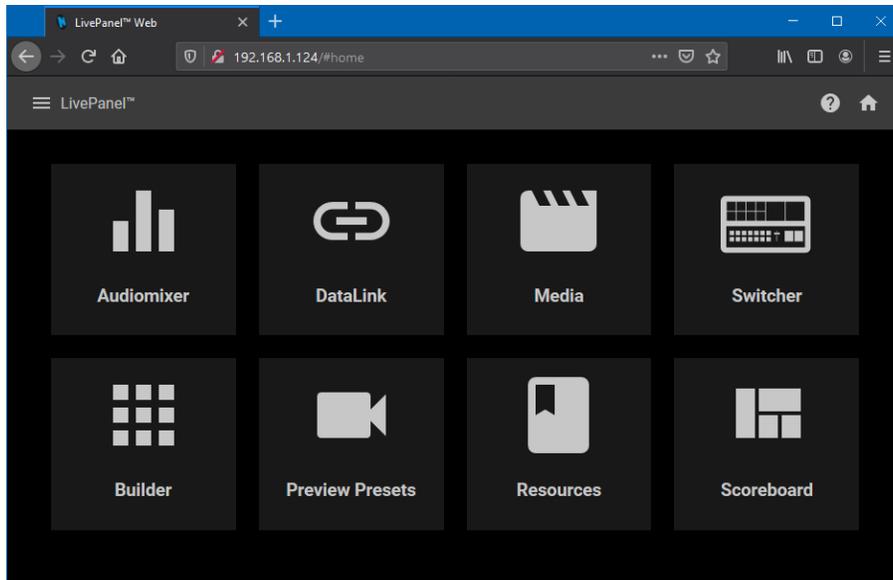


It is recommend that you have a LivePanel password set to prevent unauthorized access to the system.

To access LivePanel you need to type in the IP address of the system. You can determine the primary IP of the TriCaster system by clicking on the Notification Center icon found in the upper right corner of the system.

In the window that appears, the URL to access LivePanel will be listed at the bottom of the screen. Type this URL into any supported web browser to access it. A window will open asking for the username and password. Once that is accepted, the LivePanel interface will appear.





LivePanel contains the following interfaces: AudioMixer, DataLink, Media controller (DDR/GFX), Switcher panel, Preview Presets (PTZ Control) and Builder. You can access any interface by clicking on the button. Instructions are included by clicking the '?' found on each panel.

The Builder panel is very useful, letting you create an interface with labeled buttons and live video windows. The button can trigger macros of any functions you create in the TriCaster. Using this interface, it is possible to build macros to control a high amount of TriCaster functionally.

To access LivePanel from a remote location, you need to be able to access port 80 (or 5952) from that location. This could be accomplished using a VPN or via a port forward thru a router. Work with your IT department to determine which method can work for your location.



The LivePanel interface allows for video; you will not hear audio thru it. Some methods that can be used to hear audio are the following.

- If your TriCaster system supports Skype TX, you could call a Skype client on your end to get a return feed of video and audio from the production.
- A VPN that has enough performance can allow for NDI Studio Monitor to view the output of the TriCaster. Using NDI Access Manager and setting up a Remote Source may be required for this to work. NDI Studio Monitor does support a 'low bandwidth' mode that can also help with limited bandwidth.
- NDI Gateway products which could be used (BirdDog Cloud, Sienna Cloud, Medialooks). These solutions require an external system to run the NDI Gateway product, but allow for more sharing of video between locations using the same amount of bandwidth.

If additional assistance or help with upgrades are needed for these workflows, contact your [NewTek Reseller](#). [NewTek Professional Services](#) is also a resource that is available for building these workflows.