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User Guide for Camera server tool of JENOPTIK GRYPHAX® software

General description:

The "Camera server tool" of JENOPTIK GRYPHAX® software enables user to share physically local connected JENOPTIK GRYPHAX cameras via network connection on client PC using JENOPTIK GRYPHAX software at same network environment.

Users become the ability to watch live stream and remote control from exteriorly "network cameras" which are shared. All local software tools and options are available for network cameras. The software stores all media files directly on client PC.

Overview:

Camera server tool running on host PC | remote control at client PC:

Local PC e.g. Laboratory

Remote access via Network
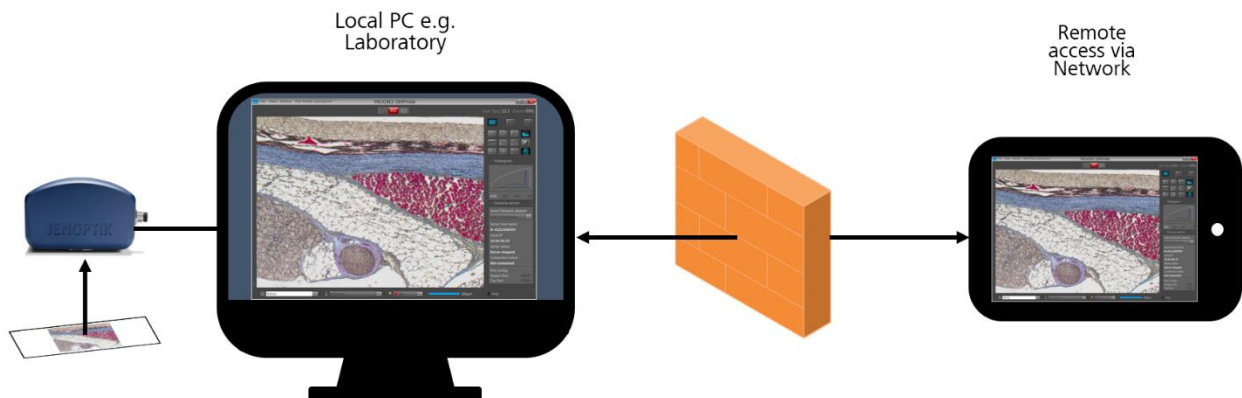
Preparations general:

To use the Camera Server tool user have to **allow network access** for JENOPTIK GRYPHAX application to communicate over network without blocking by firewall protection of operation system.

As default the first network adapter from list will be pre-selected by software! The pre-selected or user selected network adapter will be saved into the software preferences as well as used user profiles.

The default communication port values for "Streaming" port and "Tcp" port are pre-defined and can be changed by user to individual port values according local network environment.

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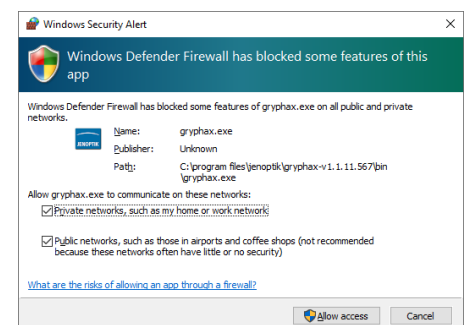
Location:

The *Camera server* tool is located at the *Toolbar.* Open the toolbar by pressing the arrow ◄ on right-hand software site or use keyboard short cut (**ctrl / cmd + T**)

Click on the *Camera server* icon [📷] from toolbar, the *Camera server widget* will be displayed and contains the connection settings and status information.

The widget is separated into three different sections by horizontal dividing line.

- **Top section** to select the active network adapter from drop down box. By press of arrow [^] all available network adapter will be visible on drop down list - as default the first network adapter from list will be pre-selected by software! Select individual network adapter from list to broadcast a camera server connection.

   The preselected or user selected network adapter will be saved into the software preferences as well as user profiles!

- **Middle section** is an information section only - it displays the following information:
  - Server host name of PC
  - Local IP address
  - Connection status: "Connected" or "Not connected" to client PC

- **Bottom section** to define port configuration - by edit box. Following port selection are available:
  - Stream port
  - Tcp port
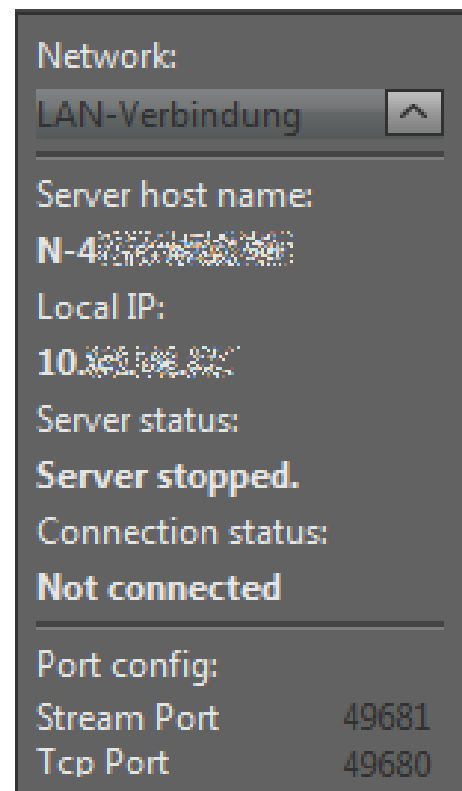
Detailed explanation for port configuration:

Stream port - this is the TCP port used by the server PC to stream live video data to the connected client. No need to set it for the client PC!
Clients in a network are informed about the port and address to connect by an UDP message broadcast by the server every 5s.

TCP port - it is another TCP port used by the server PC to communicate with a connected client PC (camera and accessories control). As above, there is no need to set it on the client side!

<u>Note:</u> Default port values are pre-selected by software. User can define user specific port values.

Reset Camera server settings:

To change back to software default network and port values, press: "Reset" [↰] button.
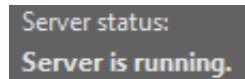
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Start Camera server:

To start the *Camera server* tool by pressing the "START"-Button , which instantly changes to "STOP" to signal the user, that the Camera server mode is active!
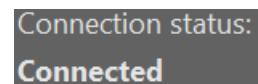
When the server mode is started, live video resolution changes to the predefined mode (usually the same one used during video recording) regardless of the mode selected before the server tool was activated. If the current video framerate is higher than 10 fps, it will be reduced to about 10 fps. Otherwise it will remain unchanged. The predefined live resolution mode and reduced framerate ensures low latency video streaming between the camera server and connected camera client!

Only one client can be connected to the running server at the same time. When a client is connected, the camera server is not visible to other computers.

Additionally the Camera server status at widget will change to: "**Server is running**".

After successful Camera server connection by client computer from network, the connection status at widget will be change to "**Connected**" to avoid unintentionally disconnection!
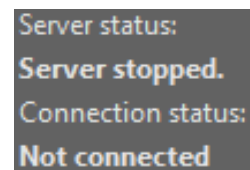

Note: After Camera server start the network adapter and port configuration can't be changed. Important, only one connection between client PC and host PC can be established.

Stop Camera server:

To deactivate the *Camera server* tool press "STOP" button.
All connections will be stopped. The camera will be no more available for another user.

The *Camera server* status at widget will change to "**Server stopped**" and the Connection status change to "**Not connected**".


Note: Deactivate of *Camera server* tool by press: "Camera server icon" will stop connection as well!

Connect to server camera:

To connect to a server camera from a host computer, open the software *Preferences* of client PC. The user can select and connect to the remote cameras the same way as with the local cameras.

Navigate to the section: "Device configuration" and select the server camera from camera drop down list.
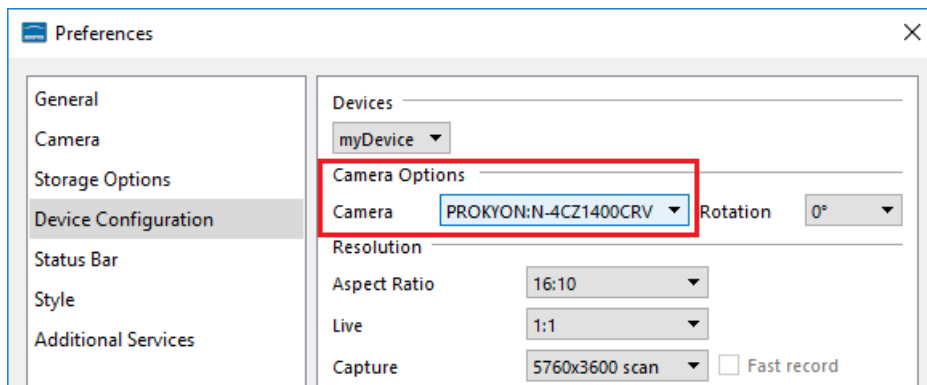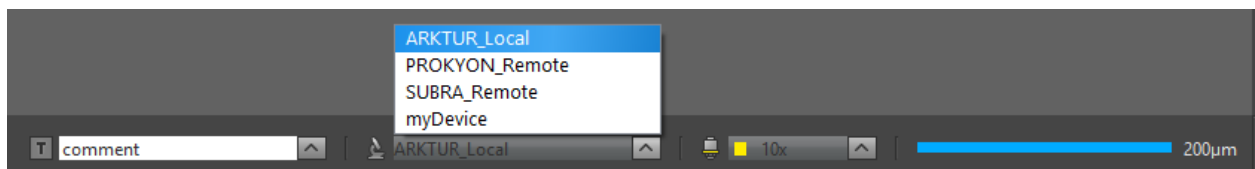

Multiple cameras from different host will be listed on drop down menu. The camera name of server cameras are **extended** by "server host name" of host PC!
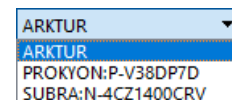
Fast camera switching for optimize workflows:

Create separate Devices for remote cameras to change quickly between local physically connected cameras and network "remote" cameras at status bar.

### Operation with server camera on client PC:

After establish of server camera connection, most camera settings and enhancements are remote controlled by client PC. User can utilize most functions and tools of local JENOPTIK GRYPHAX software.

The recorded media files (images, videos, etc.) will be always saved on client PC and are displayed on client Gallery as well.

Important Note: To operate with *Camera server* tool both computer has to be at the same network environment, otherwise no camera connection would be established!

Example for multi-remote-camera use:

Different laboratory can enable camera sever tool on their computer to share the locally connected cameras via network environment. Office workstations are able to remote control the camera and observe the experiments.
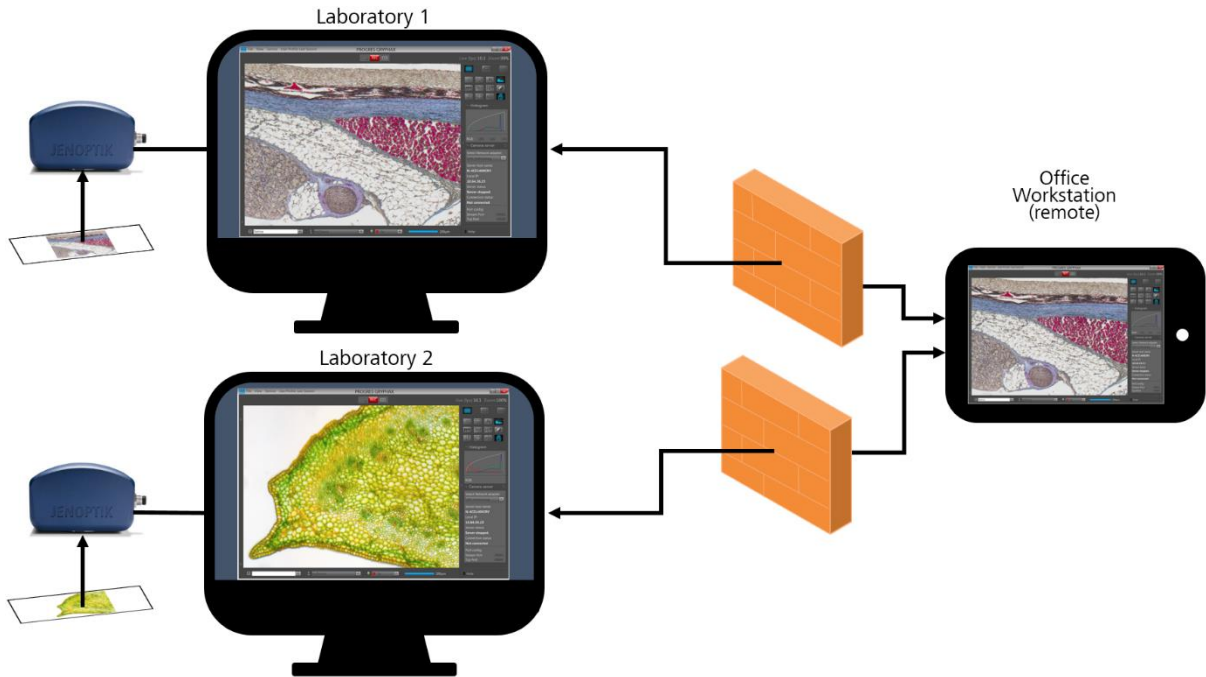
Reduce live image resolution:

The image size for live preview of server cameras can be reduced at client PC by option: "1:2" or "1:4" of original live resolution, depending on image size, to enhance the live image transfer rate and latency.

To change image size for live and capture, navigate to software Preferences under section Device configuration / Resolution.
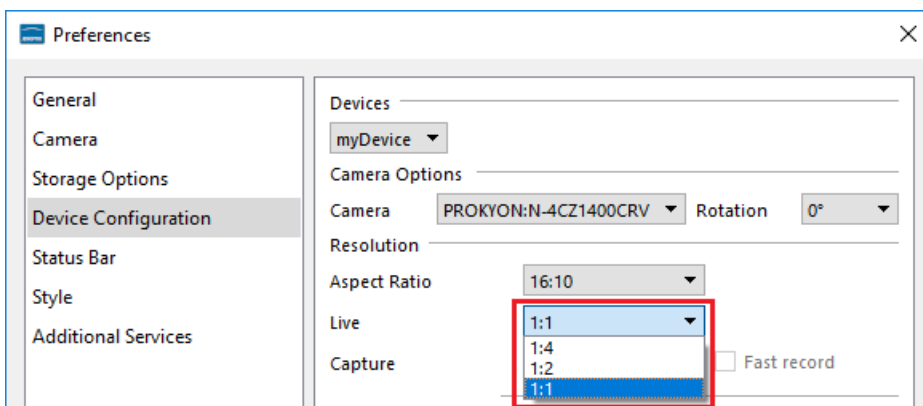
Note: The live image stream is transferred by compression depending on network speed.

Limitations:

a) The Camera server tool will be inactive during active record modes below:

- Time-Lapse record is running
- Video record is running
- Z-Stack record is running
- Panorama record is running
- Single image record (especially REC with long time exposure)
- Active Fluorescence tool

b) During active *Camera server* tool, the software *Preferences* and the *Gallery* are not reachable on host PC!

c) Camera server tool is inactive at client PC in case of already established server camera from other PC.

d) Only one client PC can connect to the server camera of host PC!

Remote cameras have some limitations in control compared to local physical connected cameras:

- The live resolution cannot be changed.
- The maximum live framerate is limited to 10 fps, regardless of the exposure time.
- Some control actions are not available e.g. White/ black/ auto calibration or black level.
- Live video recording is not possible.
- Recorded images are 8 bit only.

Learn more about JENOPTIK GRYPHAX® software and the easy workflows and tools.

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We looking forward to hearing from you and remain sincerely,

Your JENOPTIK GRYPHAX® Team

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