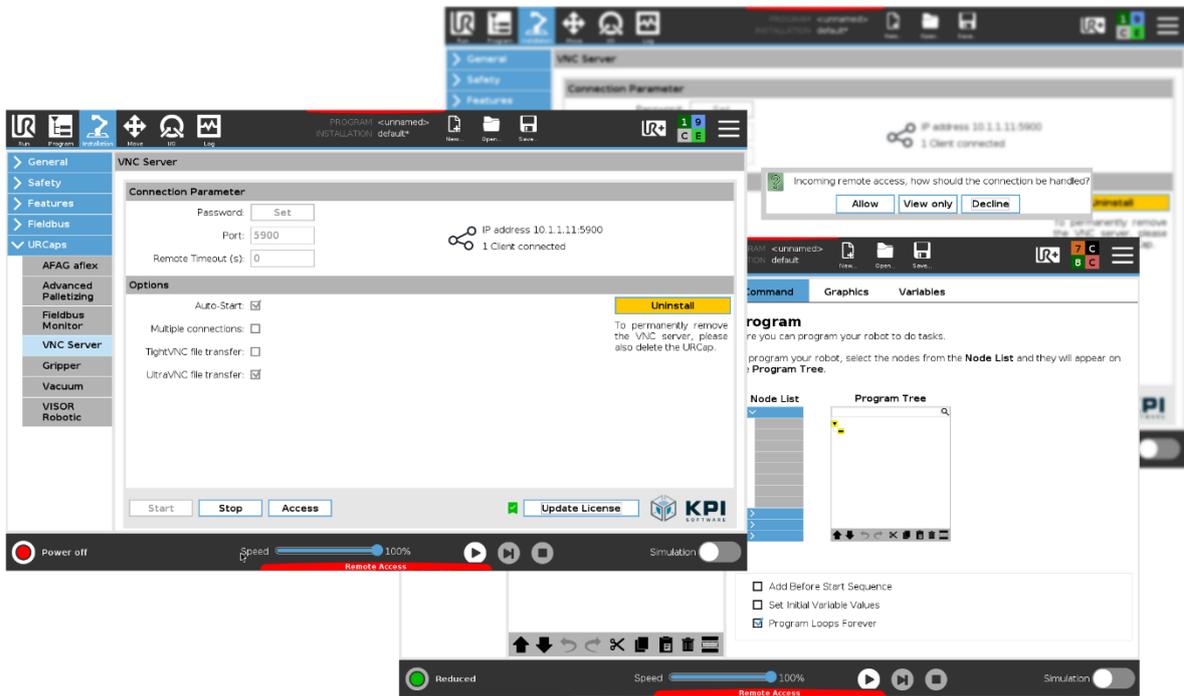


Reference Manual

URCap VNC Server – Version 1.0



KPI Software GmbH

Im Winkel 1

78588 Denkingen

Phone: +49 7424 7031610

E-Mail: info@kpi-software.de

Internet: www.kpi-software.de

Reference Manual

Version 1.0

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1 Introduction

The URCap VNC Server is a software extension for the UR robot (Universal Robots). It enables remote access to a UR robot within the same local network using the Virtual Network Computing Protocol for short VNC. By accessing the robot control panel, you can control the robot remotely, make program changes, provide diagnostics and assistance and exchange data.

1.1 About this document

The reference manual contains an overview of all functions of the URCap. It was created for robot programmers, software developers and maintenance technicians.

1.2 Requirements and supported versions

E-Series robots (UR3, UR5, UR10 or UR16) from PolyScope 5.6.

1.3 Update URCap

Attention: Robot programs that were created with a previous version may no longer be used. The robot programs and the robot installation may have to be recreated or adapted. To install the URCap version 1.0 on a system where an earlier version is already installed.

- Uninstall the previous version
- Check the PolyScope version, if necessary update to a newer version (version 5.6)
- To avoid configuration conflicts, create a new robot installation
- Install URCap

2 Installation

2.1 Installing the URcap

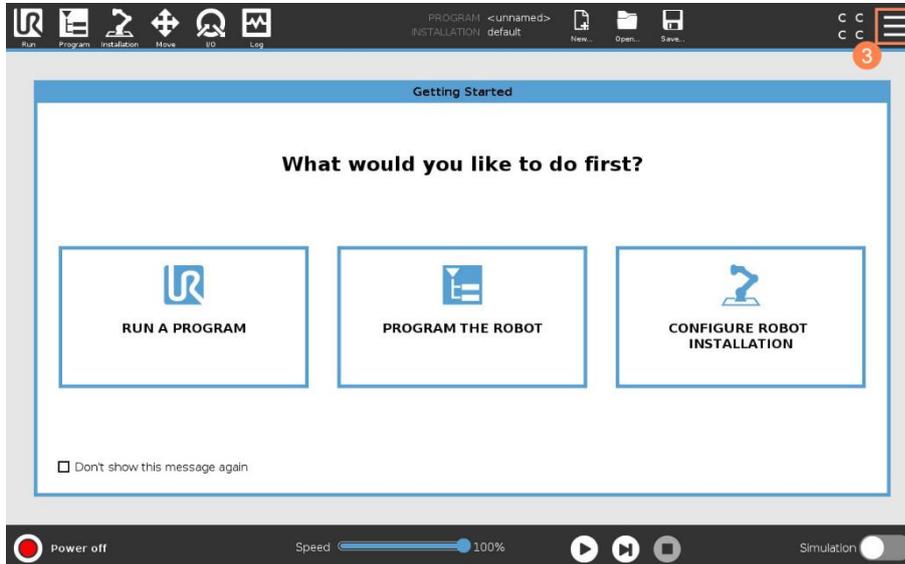


Figure 1: Home screen

1. Start the robot
2. Insert the USB stick with the URcap
3. Click the hamburger menu in the top right corner

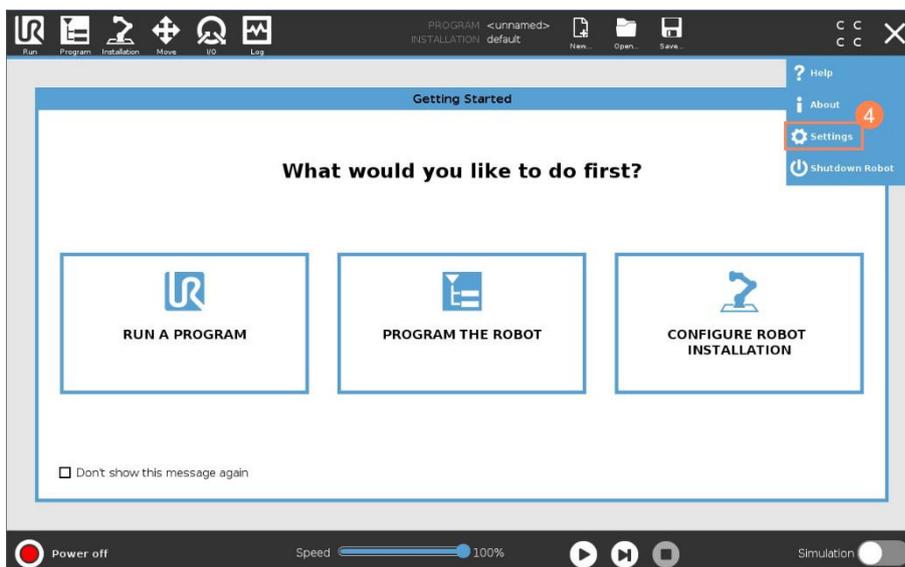


Figure 2: Select Settings

4. Click Settings

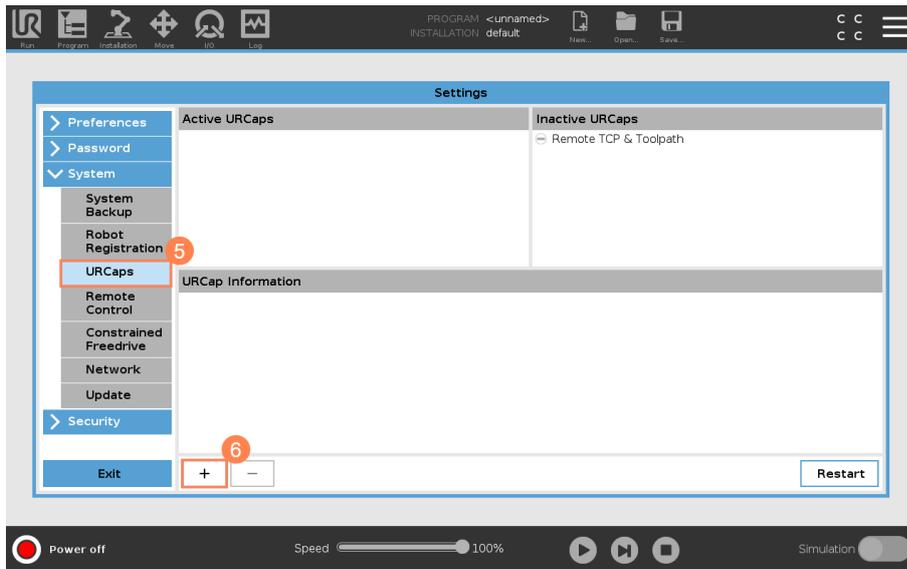


Figure 3: Add URCap

- 5. Click on URCaps
- 6. Click +

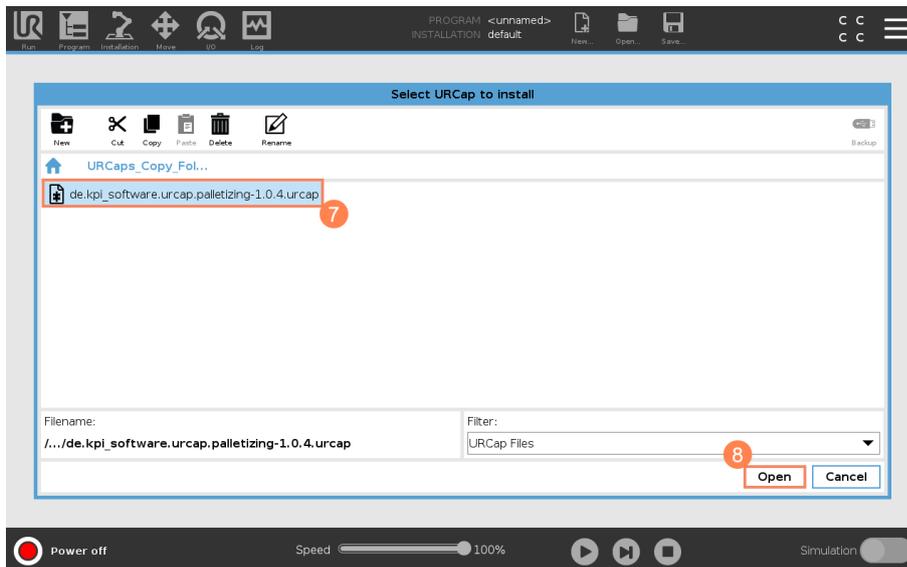


Figure 4: Select URCap on USB stick

- 7. Select the URCap on the USB stick
- 8. Click Open to install the URCap

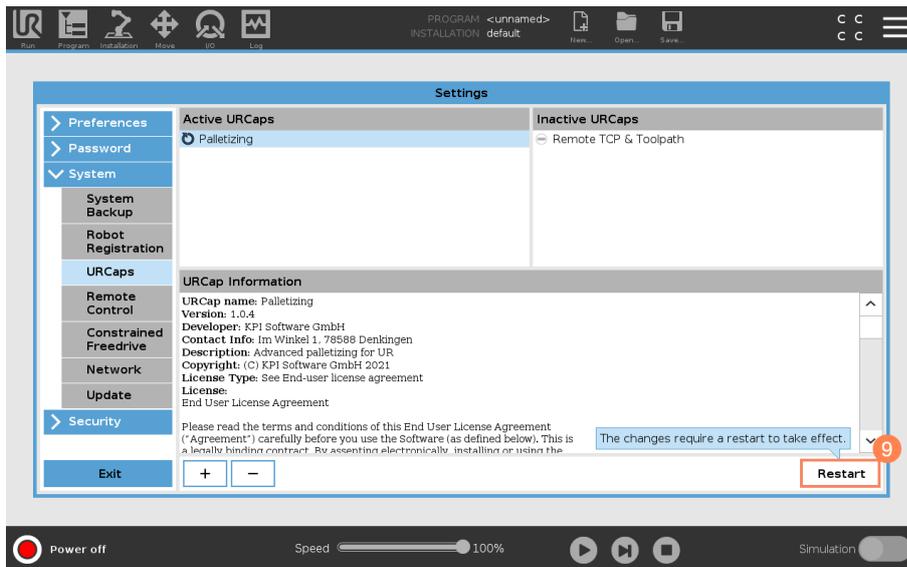


Figure 5: Restart the robot

9. Click Restart to restart the robot

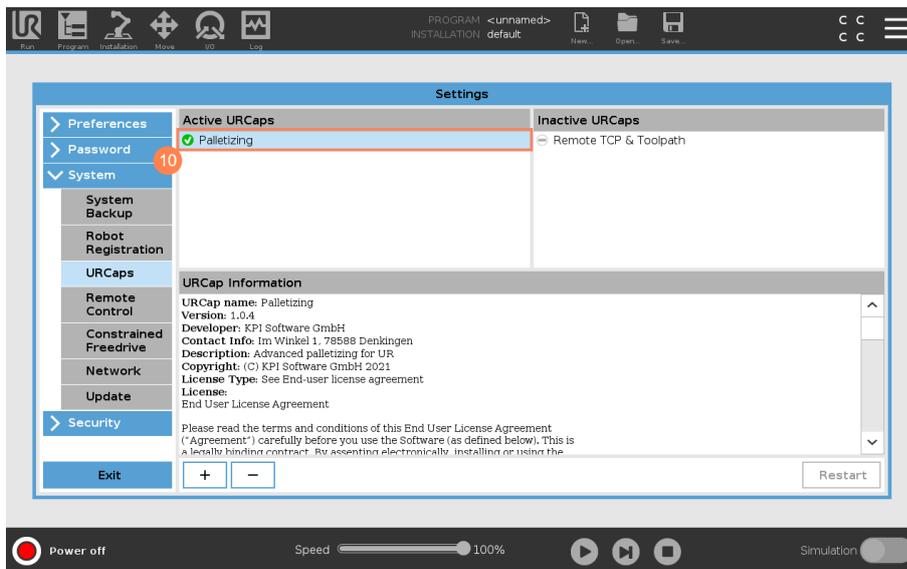


Figure 6: URCap is installed

10. A green tick will appear next to the URCap if it has been installed correctly

2.2 Uninstall the URCap

In order to completely remove the VNC server from the robot, the software packages must first be uninstalled in the installation tab before uninstalling the URCap.

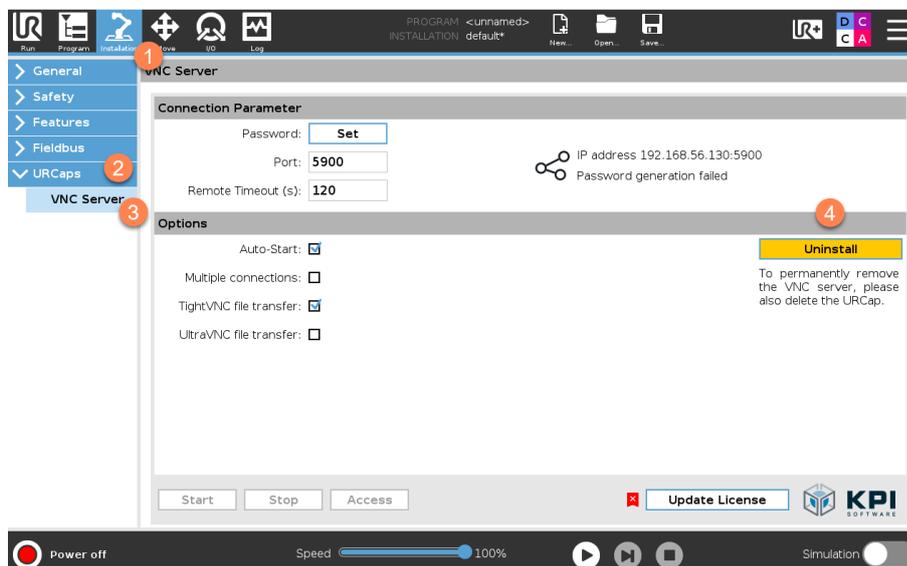


Figure 7: Uninstall software

1. Open the installation page under Installation
2. -> URCaps
3. -> VNC Server
4. Start the uninstallation using the uninstall button

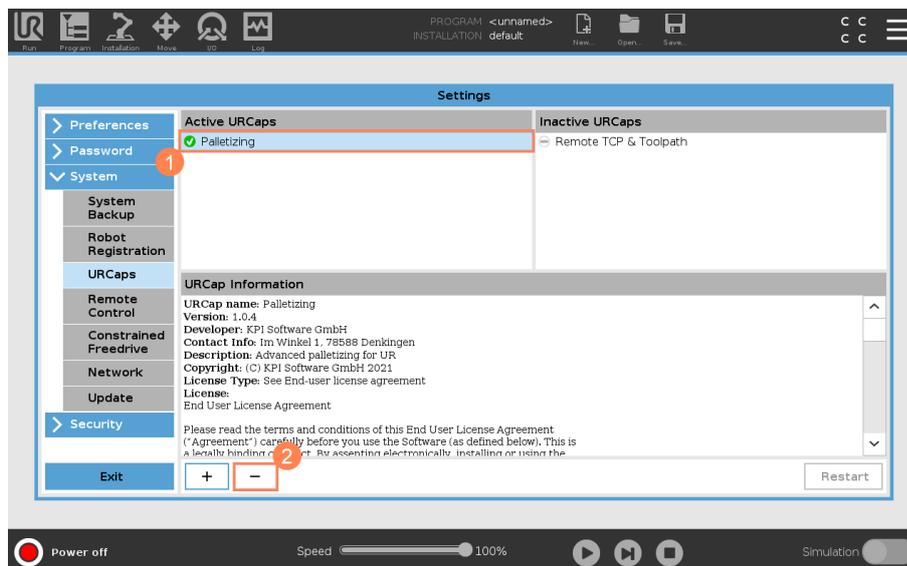


Figure 8: Select URCap

1. Select the URCap to be uninstalled
2. Click on -
3. Restart the robot

3 Installation Node

In the Installation Node you will find current status information about the status of the VNC connection. The VNC server can also be parameterized and controlled there.

3.1 Licensing

In order for VNC Server to be used, a valid license key must be entered in advance. This is generated by the manufacturer with the help of the generator string.

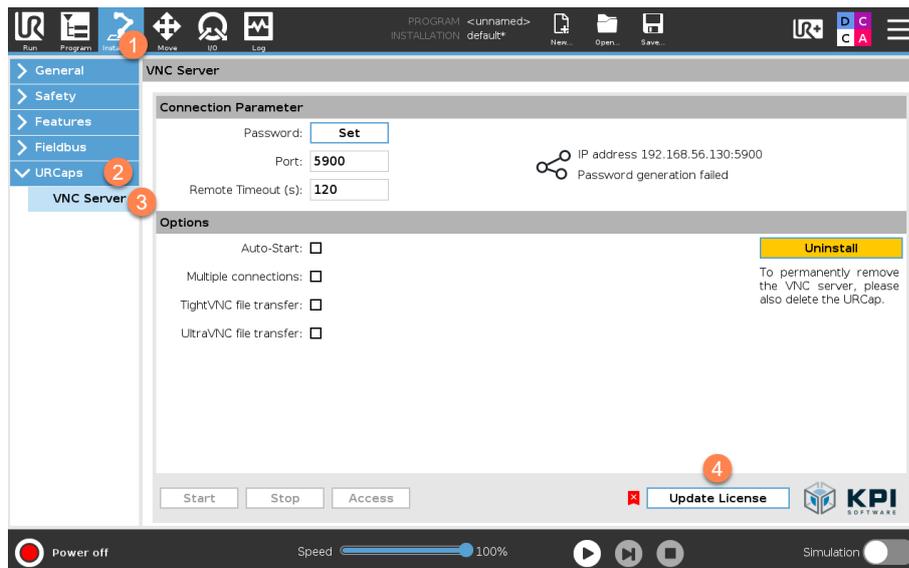


Figure 9: Installation Node

1. Open the installation page
2. Go to URCaps
3. Click on Advanced Palletizing
4. Click Update License



Figure 10: Generator-String

5. Make a note of the 8-digit generator string and send it together with your contact details to redemlicense@kpi-software.de



Figure 11: Enter license key

6. You will then receive your 8-digit license key, which must be entered instead of the generator string



Figure 12: Successful licensing

7. You can recognize successful activation by the green tick

3.2 Overview

The URCap is divided into 3 sections. The individual sections are explained in more detail below.

1. Connection parameters and status display of the current status of the VNC connection
2. Setting options that control the behavior of the VNC server
3. Action buttons to control the VNC server

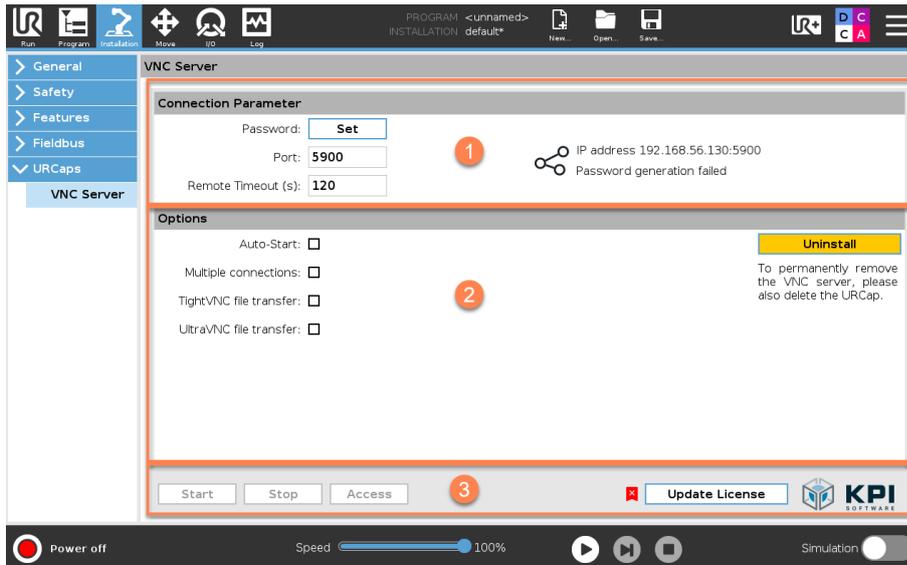


Figure 13: Overview

3.2.1 Connection parameters and status display



Figure 14: Connection parameters

1. Password: Assign connection password
 - Maximum of 8 characters
 - Standard password: kpvnc
2. Port: Use a custom port
 - Standard port VNC protocol: 5900
3. Remote timeout (s): Timeout for remote access control, after the set time has elapsed, the continuation of the connection must be confirmed again via the control dialog on the robot control unit
4. Status display of the VNC connection, visualizes the current IP address of the robot, the port used and the number of connected clients or the status of the VNC connection



Figure 15: Status display

1. Current IP address of the robot
2. Current port for the VNC connection (default: 5900)
3. Status message

Status message	Description
Waiting for connection	VNC server started, no client connected
{No.} Client{s} connected	Indicates that {No.} clients are currently connected
VNC server not started	VNC server is currently not started, no client connection possible, VNC server can be parameterized
Installation failed (software packages)	The software packages for the VNC server could not be copied
Installation failed	The VNC server could not be installed, check that no other VNC server is installed on your robot, re-install the URCap
Password generation failed	Password assignment failed, check that the password does not exceed 8 characters, repeat the process

VNC server has been un-installed	VNC server has been uninstalled to permanently remove the VNC server, please delete the URCap and restart the robot
Invalid license key	A license key has not yet been entered or the license key entered is invalid

3.2.2 Options



Figure 16: Options

1. Auto-start: the VNC server is started automatically after restarting the robot. Attention: only when using the default installation, because this is loaded when the robot is restarted
2. Multiple connections: with this setting it is possible that several clients can connect to the robot at the same time (only in View only mode)
3. TightVNC file transfer: when using the TightVNC client and the option activated, it is possible to exchange data with the robot
4. UltraVNC file transfer: when using the UltraVNC client and the option activated, it is possible to exchange data with the robot
5. Uninstall: If the VNC server is no longer required, the software packages can be uninstalled from the robot with this button

3.2.3 Action buttons

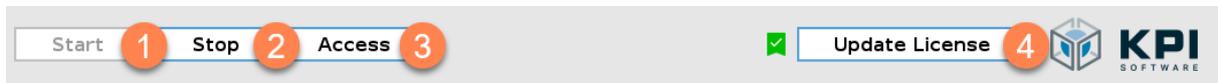


Figure 17: Action buttons

1. Start: Start the VNC server
2. Stop: Stop the VNC server (client connection is terminated)
3. Access: opens the control dialog of the current connection
4. Update license: Enter or update license key

3.3 Start the VNC server

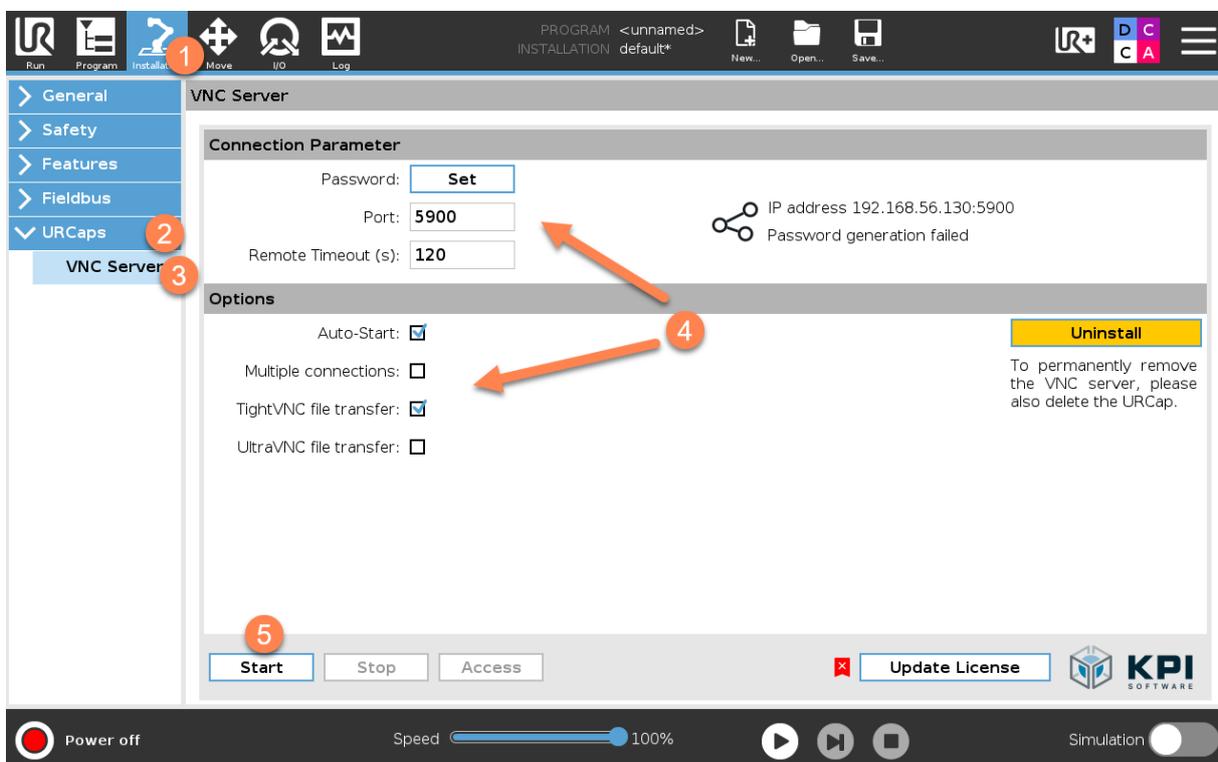


Figure 18: Start the VNC server

1. Open the installation page under Installation
2. -> URCaps
3. -> VNC Server
4. Check the connection and option parameters
5. Click the Start button

3.4 Stop the VNC server

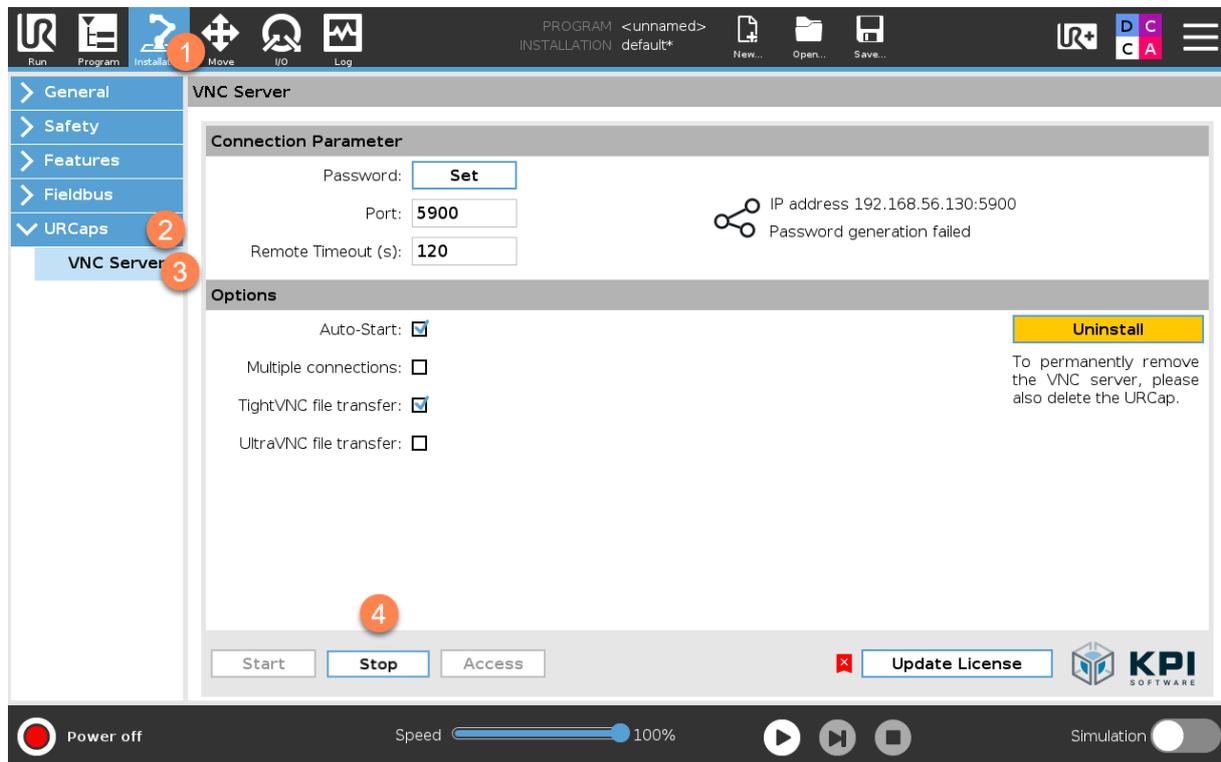


Figure 19: Stop the VNC server

1. Open the installation page under Installation
2. -> URCaps
3. -> VNC Server
Check the master control over the robot
4. Click the Stop button

4 Toolbar

In addition to the installation node, it is possible to operate the VNC server from anywhere using the UR toolbar. In addition to the status display, you will find the buttons here to start/stop the VNC server and to call up the control dialog.

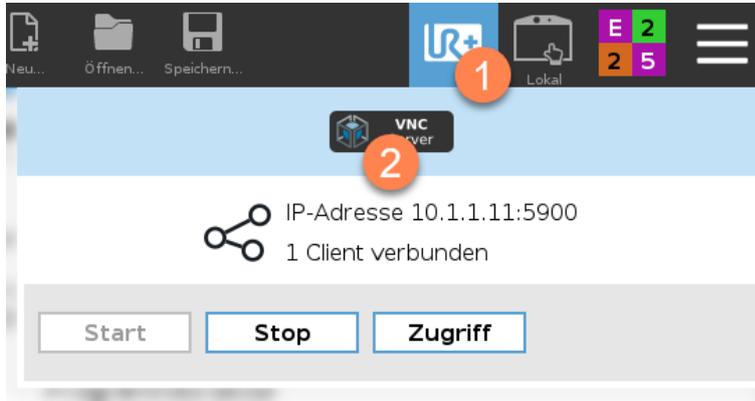


Figure 20: Toolbar

1. Open the UR toolbar
 2. Select VNC server entry
- The functionality of the action buttons and the status display can be found in the Installation Node chapter.

5 Safety

For safety reasons, the robot may only ever be controlled from one control point. Therefore, a control dialog opens as soon as the first client connects to the robot. The control dialog on the robot control unit must be used to decide which rights are to be granted remote access and who will have control sovereignty.

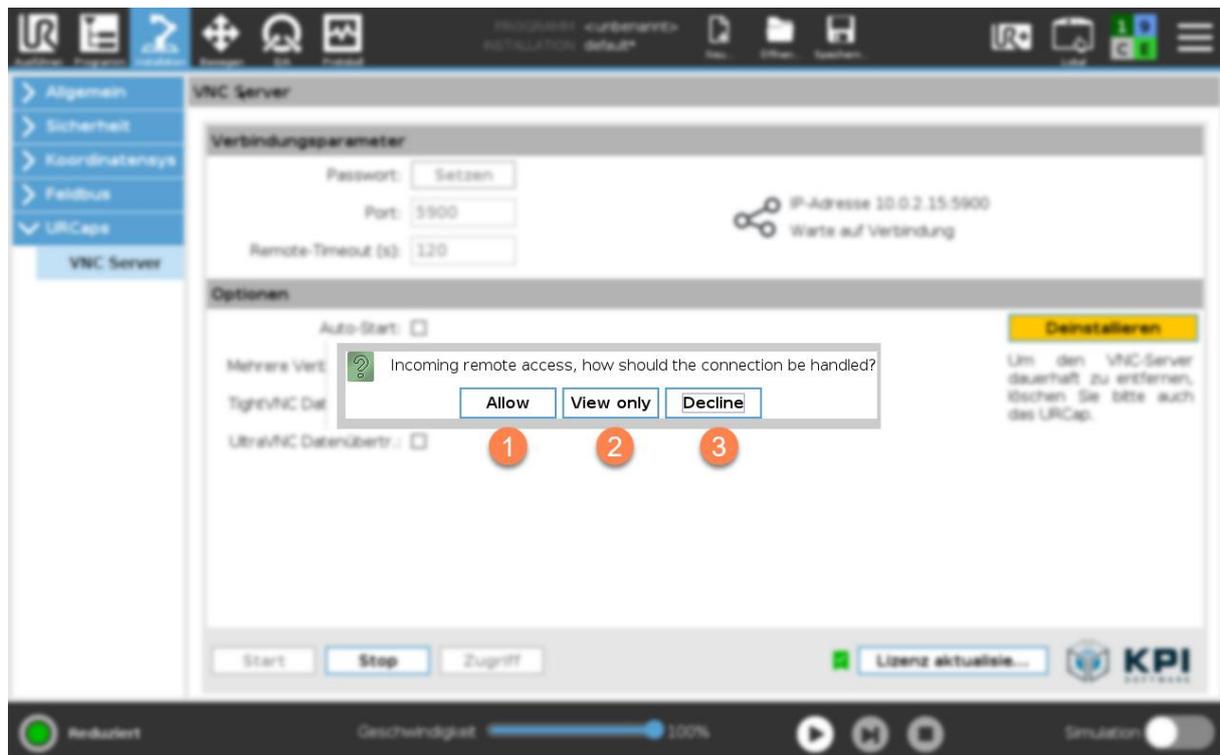


Figure 21: Safety dialogue

1. Allow: remote access receives control sovereignty, the touchscreen of the robot control unit is deactivated
2. View only: the remote access can only observe the robot control unit, not interact with the robot
3. Decline: remote access is not permitted, the VNC server is stopped

5.1 Remote access with control sovereignty

Permitted remote access with control sovereignty can be recognized by the red markings on the edge. The touchscreen of the robot control unit is only enabled again when the client disconnects, the set timeout has expired or the control dialog is called up.

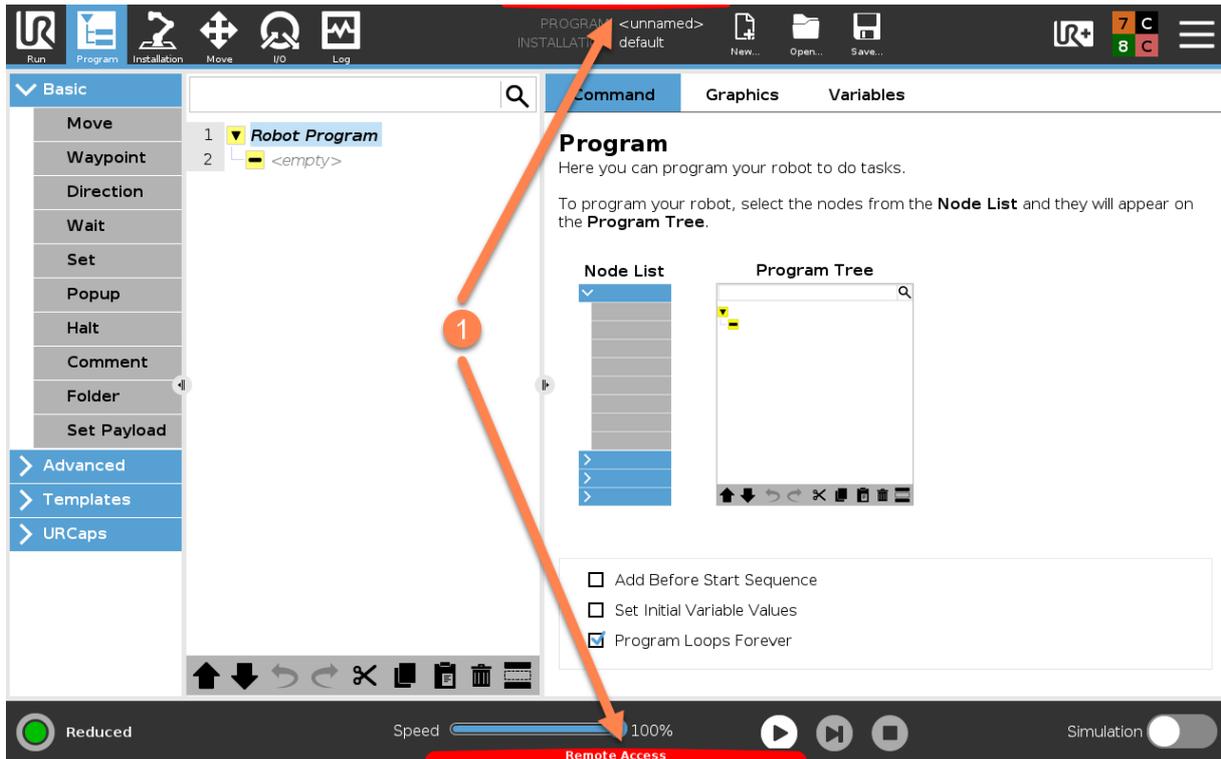


Figure 22: Remote access with control sovereignty

6 File transfer

The file transfer can be done either with the UltraVNC Viewer or the TightVNC Viewer (Version 1.3.10). You can activate the file transfer in the options.

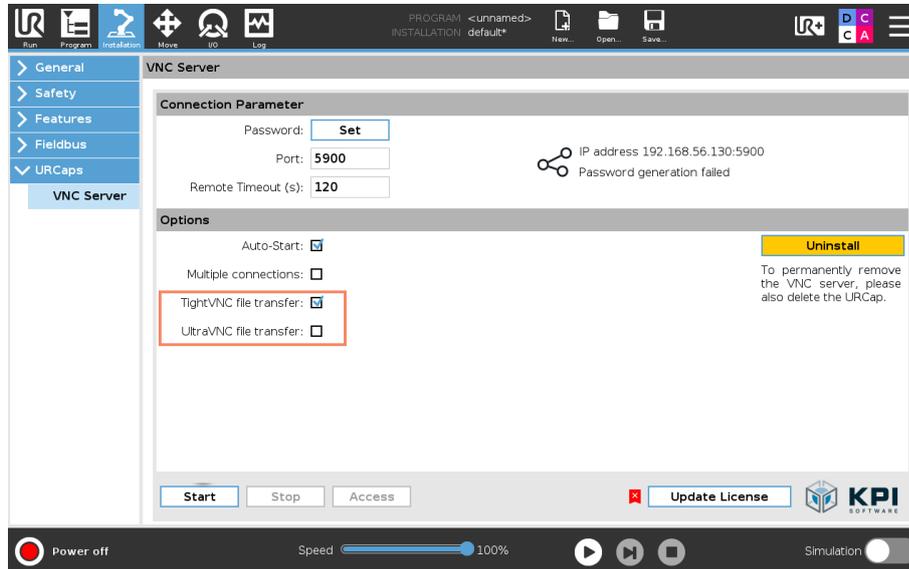


Figure 23: File transfer

6.1 UltraVNC Viewer

Note: The file transfer with the UltraVNC Viewer has been tested with the current versions 1.2.4 and 1.3.2 (<https://www.uvnc.com/downloads/ultravnc.html>).

Right-click in the top menu bar to open the context menu first. In this you then select File Transfer.

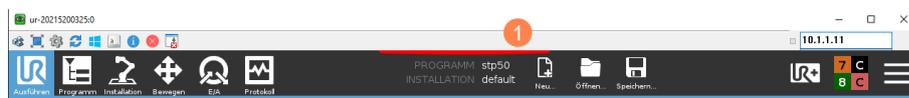


Figure 24: Open UltraVNC context menu

File transfer

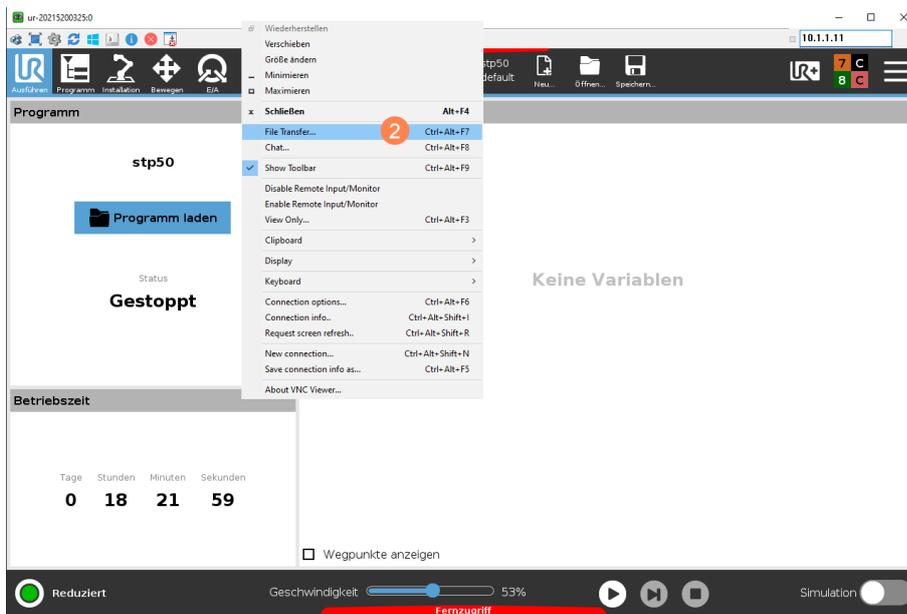


Figure 25: Open UltraVNC file transfer

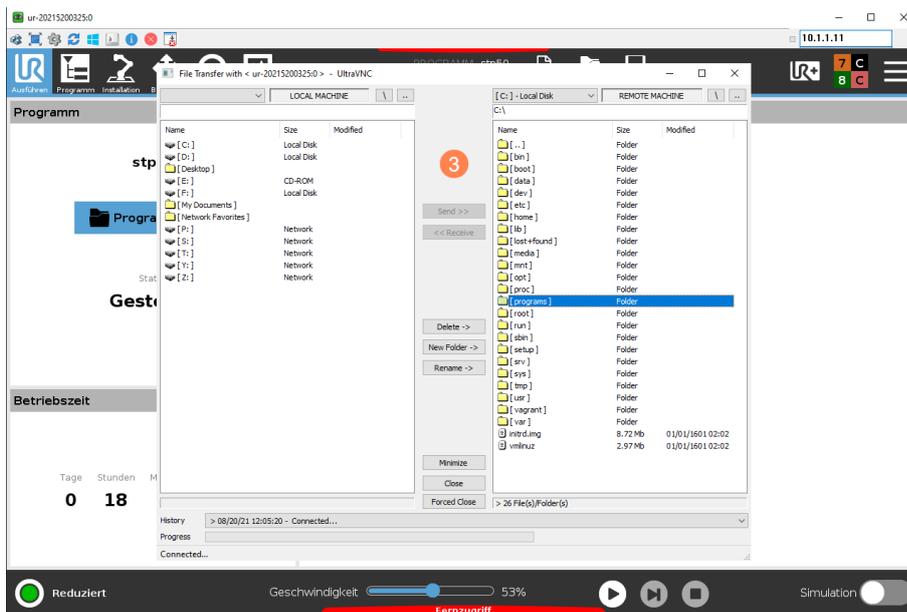


Figure 26: UltraVNC file transfer

6.2 TightVNC Viewer

Note: File transfer with the TightVNC Viewer only works with version 1.3.10 (<https://www.tight-vnc.com/download-old.php>).

Click the file icon to open the file transfer.

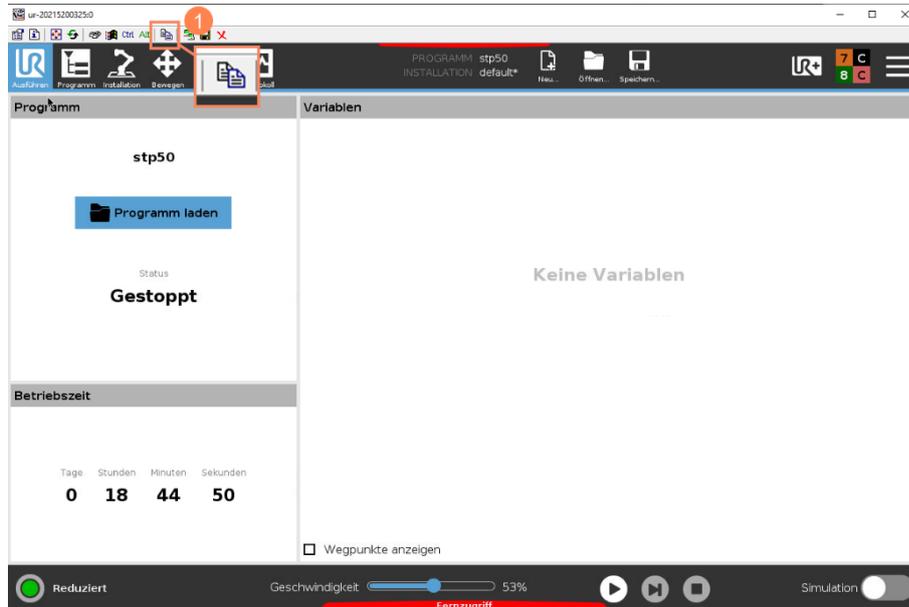


Figure 27: Open TightVNC file transfer

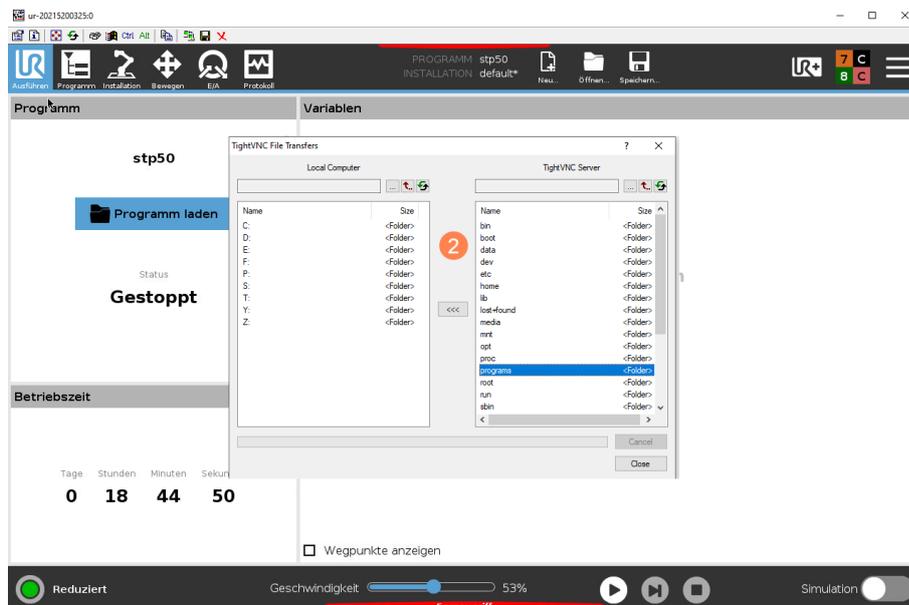


Figure 28: TightVNC file transfer

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