

Configuring an Axis Camera

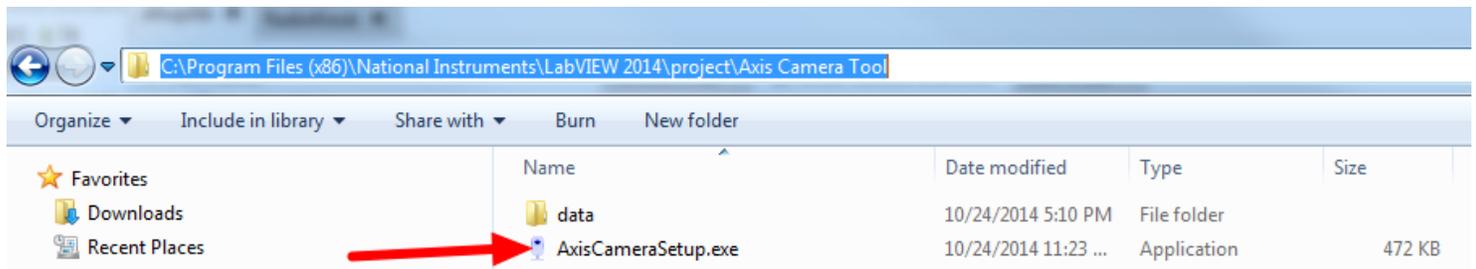
Configuring an Axis Camera

Three different Axis camera models are supported by the FRC software, the Axis 206, Axis M1011 and Axis M1013. This document provides instructions on how to configure one of these cameras for FRC use. To follow the instructions in this document, you must have installed the [NI 2015 FRC Update Suite](#) and [Configured your radio](#)

Connect the camera

Connect the Axis camera to the DAP-1522 radio using an Ethernet cable. Connect your computer to the radio using an ethernet cable or via a wireless connection.

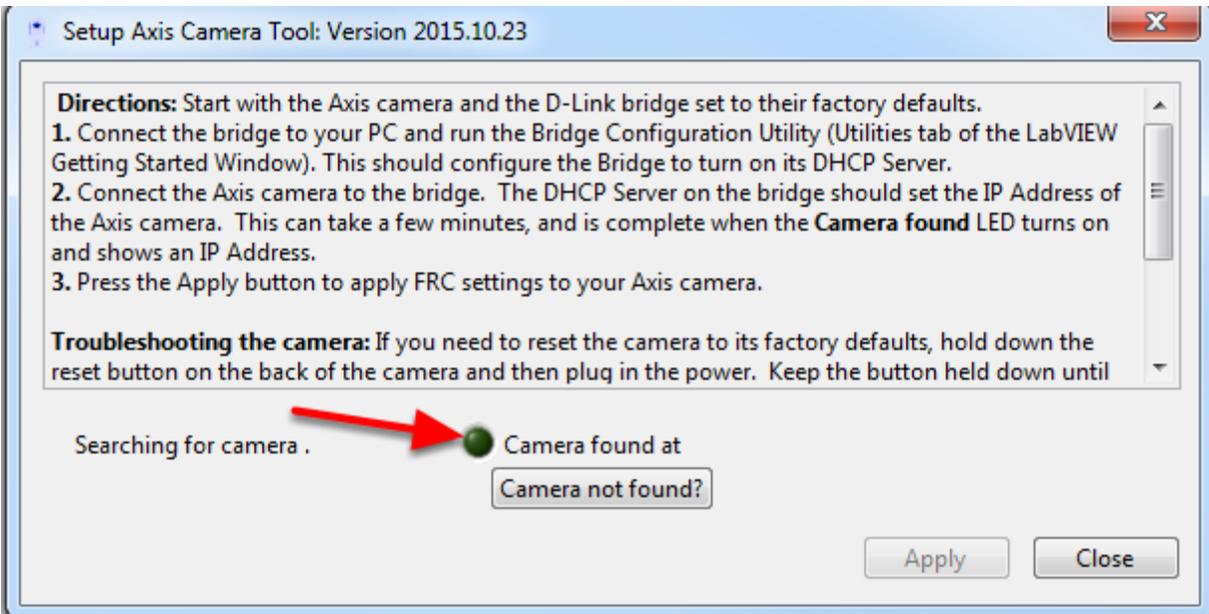
Axis Camera Setup Tool



Browse to `C:\Program Files (x86)\National Instruments\LabVIEW 2014\project\Axis Camera Tool` and double-click on `AxisCameraSetup.exe` to start the Axis Camera Setup Tool.

Configuring an Axis Camera

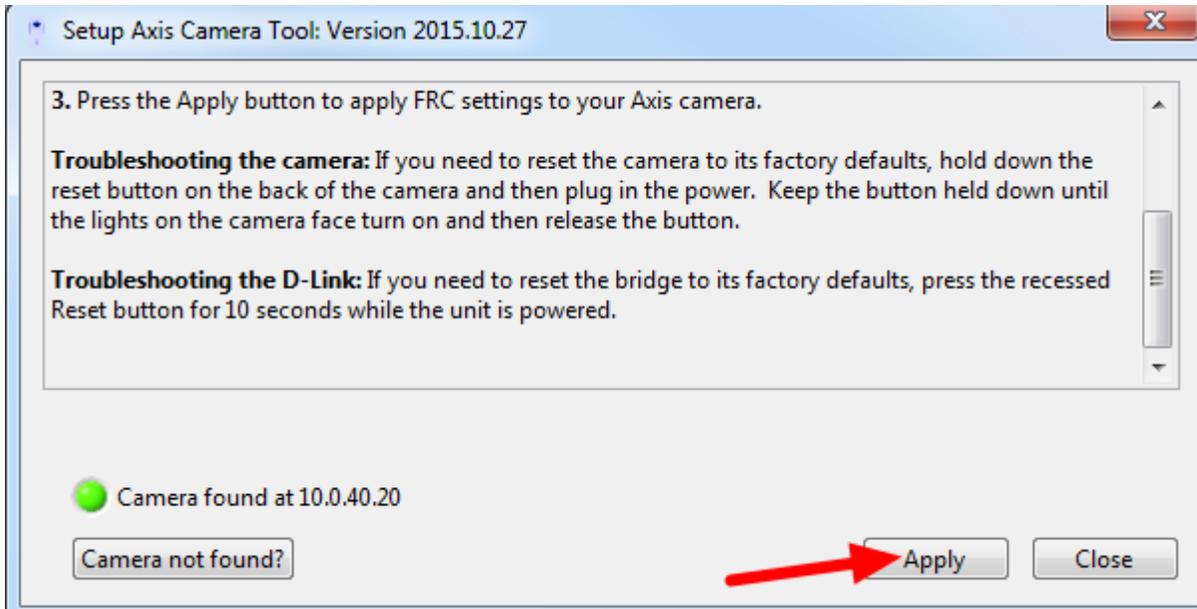
Tool Overview



The camera should be automatically detected and the green indicator light should be lit. If it is not, make sure the camera is powered on (the ring on the camera face should be green) and connected to your computer. If the indicator remains off follow the instructions in the tool textbox next to **Troubleshooting the camera** to reset the camera. You can also use the **Camera not found?** button to check the IP address of your computer, one of the addresses listed should be of the form 10.TE.AM.XX where TEAM is your 4 digit team number.

Configuring an Axis Camera

Setup the Camera



To configure the camera, press Apply. This will configure many of the necessary/recommended settings for using the camera for FRC. Currently the tool does not properly configure the DNS name of the camera in many cases.

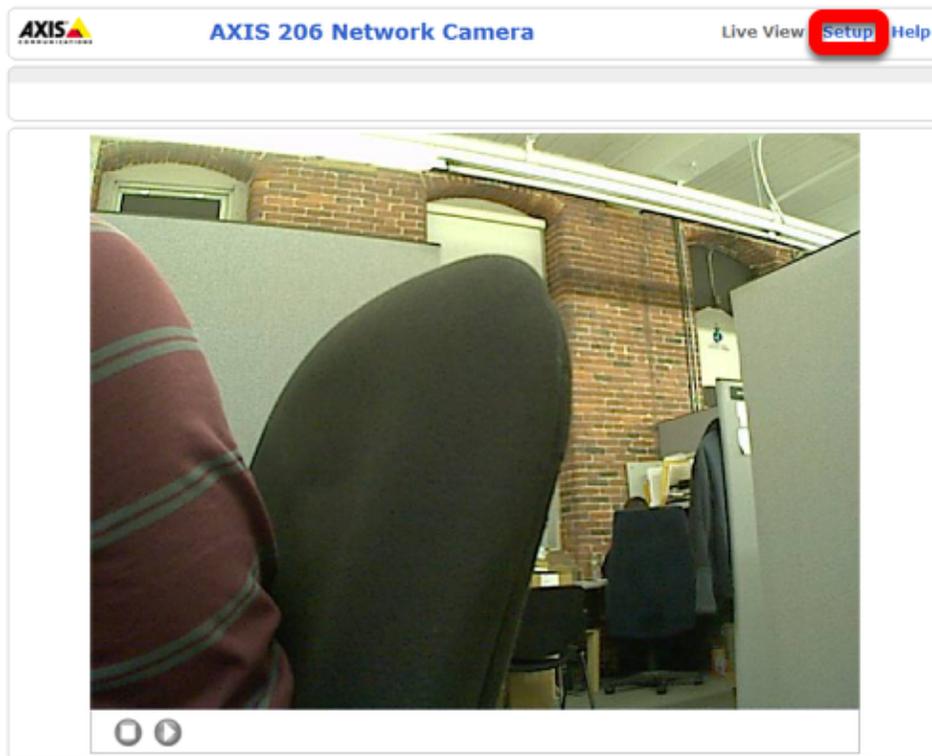
Camera Webpage



Configuring an Axis Camera

To set the network settings, open a web browser and enter the address shown next to **Camera found at** in the tool (in the example above this is 10.0.40.20) in the address bar and press enter. You should see a Configure Root Password page, set this password to whatever you would like, but **admin** is recommended.

Setup Page



Click **Setup** to go to the setup page.

Configuring an Axis Camera

Configure Basic Network Settings

The screenshot displays the configuration page for an Axis 206 Network Camera. The page title is "AXIS 206 Network Camera" with links for "Live View", "Setup", and "Help". The left sidebar contains a navigation menu with categories: Basic Configuration, Video & Image, Live View Config, System Options (Users, Date & Time, Network, TCP/IP, Basic, Advanced, QoS, SMTP (email), UPnP, Bonjour, LED settings, Maintenance, Support, Advanced), Language (with a US flag), and About. The "Basic" option under TCP/IP is highlighted with a circled "1". The main content area is titled "Basic TCP/IP Settings" and includes a help icon. It is divided into sections: "Network Settings" with a "View" button; "IP Address Configuration" with radio buttons for "Obtain IP address via DHCP" (selected, circled "2") and "Use the following IP address:"; and "Services" with a checked checkbox for "Enable ARP/Ping setting of IP Address" and "Options for notification of IP address change" and "AXIS Internet Dynamic DNS Service" (both with "Settings..." buttons). At the bottom are "Save" and "Reset" buttons, with "Save" circled "3". The IP address field is set to 192.168.0.90, the subnet mask to 255.255.255.0, and the default router to 192.168.0.1.

To configure the network settings of the camera, click the arrow to expand the **System Options** pane, then click the arrow to expand **Network**, then expand **TCP/IP** and select **Basic**. Set the camera to obtain an IP address via DHCP by selecting the bubble. Alternately, you may choose to set a static IP in the range 10.TE.AM.3 to 10.TE.AM.19. This is outside the range handed out by the DAP-1522 radio (home use) or FMS system (event use) so you will avoid any IP conflicts.

Click **Save**.

Configuring an Axis Camera

Configure Advanced Network Settings

The screenshot shows the configuration interface for an AXIS 206 Network Camera. The left sidebar contains a navigation menu with categories: Basic Configuration, Video & Image, Live View Config, System Options (Users, Date & Time, Network), TCP/IP (Basic, Advanced, QoS, SMTP (email), UPnP, Bonjour, LED settings, Maintenance), Support, Advanced, Language, and About. The 'Advanced' option under TCP/IP is circled in red. The main content area is titled 'Advanced TCP/IP Settings' and includes sections for DNS Configuration, NTP Configuration, Host Name Configuration, Link-Local Address, HTTP, NAT traversal (port mapping), FTP, and Network Traffic. The 'Host Name Configuration' section is circled in red, showing the radio button for 'Use the host name:' selected, with the text 'axis-camera' entered in the adjacent input field.

Next click **Advanced** under **TCP/IP**. Set the **Host Name Configuration** to "Use the host name:" and set the value to "axis-camera" as shown. If you plan to use multiple cameras on your robot, select a unique host name for each. You will need to modify the dashboard and/or robot code to work with the additional cameras and unique host names.

Click **Save**.

Configuring an Axis Camera

Manual Camera Configuration



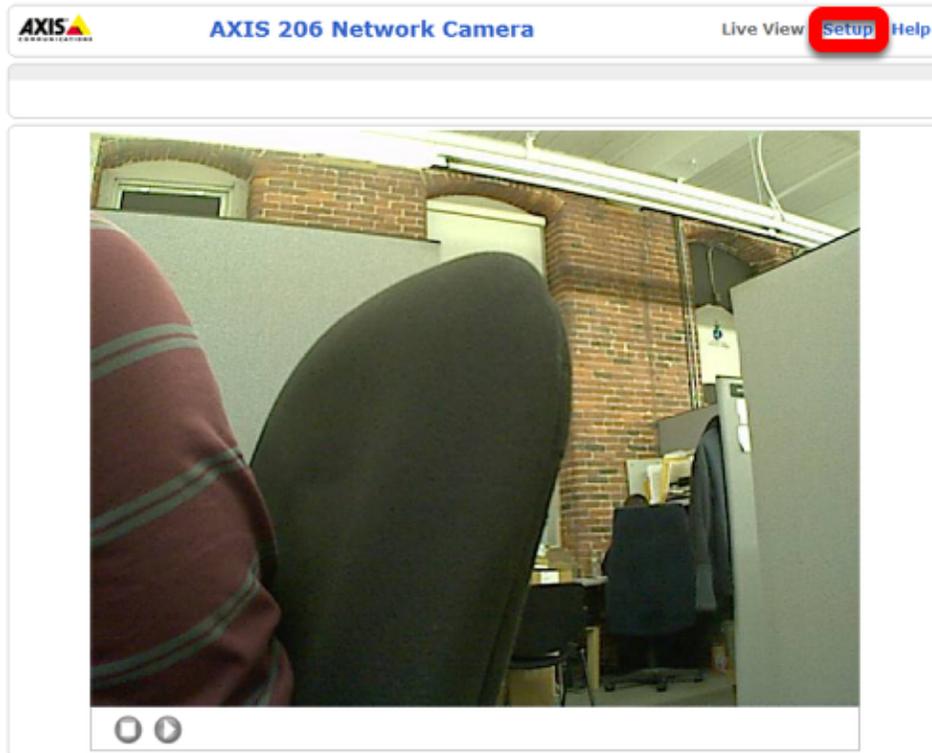
The screenshot shows a web browser window with the Axis Communications logo in the top left and a row of flags (USA, Korea, Japan, Italy, France, Spain, Germany, China) in the top right. The main heading is "Configure Root Password". Below this, there are three input fields: "User name:" with the value "root", "Password:" with an empty field, and "Confirm password:" with an empty field. An "OK" button is located to the right of the confirm password field. Below the input fields, there is a horizontal line and a paragraph of text: "The password for the pre-configured administrator root must be changed before the product can be used." Below that is another paragraph: "If the password for root is lost, the product must be reset to the factory default settings, by pressing the button located in the product's casing. Please see the user documentation for more information."

It is recommended to use the Setup Axis Camera Tool to configure the Axis Camera. If you need to configure the camera manually, connect the camera directly to the computer, configure your computer to have a static IP of 192.168.0.5, then open a web browser and enter 192.168.0.90 in the address bar and press enter. You should see a Configure Root Password page, set this password to whatever you would like, but **admin** is recommended.

If you do not see the camera webpage come up, you may need to reset the camera to factory defaults. To do this, remove power from the camera, hold the reset button while applying power to the camera and continue holding it until the lights on the camera face turn on, then release the reset button and wait for the lights to turn green. The camera is now reset to factory settings and should be accessible via the 192.168.0.5 address.

Configuring an Axis Camera

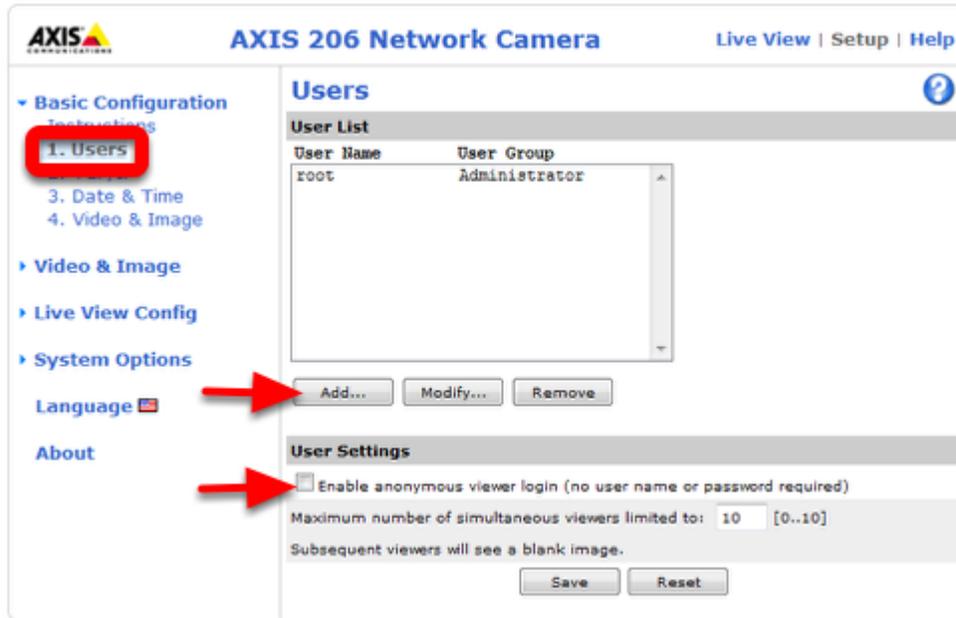
Setup Page



Click **Setup** to go to the setup page.

Configuring an Axis Camera

Configure Users



On the left side click Users to open the users page. Click Add then enter the Username FRC Password FRC and click the Administrator bubble, then click OK. If using the SmartDashboard, check the Enable anonymous viewer login box. Then click Save.

Configuring an Axis Camera

Configure Image Settings

The screenshot displays the configuration interface for an AXIS 206 Network Camera. The page title is "AXIS 206 Network Camera" with navigation links for "Live View", "Setup", and "Help". On the left, a sidebar menu includes "Basic Configuration", "Video & Image" (with sub-items "Video & Image" and "Advanced"), "Live View Config", "System Options", "Language", and "About". The main content area is titled "Image Settings" and contains the following sections:

- Image Appearance:** Resolution (320x240 pixels), Compression (30), Rotate image (0 degrees), Color level (50), Brightness (50), and Sharpness (0).
- Overlay Settings:** Checkboxes for "Include date" and "Include time", a text input for "Include text", and a dropdown for "Place text/date/time at top of image".
- Video Stream:** Radio buttons for "Unlimited" and "Limited to" (with a seconds input) under "Maximum video stream time"; and radio buttons for "Unlimited" and "Limited to" (with a fps input) under "Maximum frame rate".
- Test:** A "Test" button and a "Test settings before saving" checkbox.

At the bottom of the configuration area are "Save" and "Reset" buttons.

Click **Video & Image** on the left side to open the image settings page. Set the **Resolution** and **Compression** to the desired values (recommended 320x240, 30). To limit the framerate to under 30 FPS, select the **Limited to** bubble under **Maximum frame rate** and enter the desired rate in the box. Color, Brightness and Sharpness may also be set on this screen if desired. Click **Save** when finished.

Configuring an Axis Camera

Configure Basic Network Settings

AXIS 206 Network Camera Live View | Setup | Help

Basic TCP/IP Settings

Network Settings

View current network settings:

IP Address Configuration

Obtain IP address via DHCP

Use the following IP address:

IP address:

Subnet mask:

Default router:

Services

Enable ARP/Ping setting of IP Address

Options for notification of IP address change

AXIS Internet Dynamic DNS Service

To configure the network settings of the camera, click the arrow to expand the **System Options** pane, then click the arrow to expand **Network**, then expand **TCP/IP** and select **Basic**. Set the camera to obtain an IP address via DHCP by selecting the bubble. Alternately, you may choose to set a static IP in the range 10.TE.AM.3 to 10.TE.AM.19. This is outside the range handed out by the DAP-1522 radio (home use) or FMS system (event use) so you will avoid any IP conflicts.

Click **Save**.

Configuring an Axis Camera

Configure Advanced Network Settings

The screenshot shows the configuration interface for an AXIS 206 Network Camera. The page title is "AXIS 206 Network Camera" with links for "Live View", "Setup", and "Help". A left sidebar contains a navigation menu with categories like "Basic Configuration", "Video & Image", "Live View Config", "System Options", "Network", "TCP/IP", "Language", and "About". The "Network" section is expanded to show "TCP/IP" settings. The "Advanced TCP/IP Settings" section is active, containing several sub-sections: "DNS Configuration", "NTP Configuration", "Host Name Configuration", "Link-Local Address", "HTTP", "NAT traversal (port mapping)", "FTP", and "Network Traffic". In the "Host Name Configuration" section, the radio button for "Use the host name:" is selected and circled in red. The text input field next to it contains the value "axis-camera". Other options include "Obtain host name via DHCP", "Enable dynamic DNS updates", and "Register DNS name".

Next click **Advanced** under **TCP/IP**. Set the **Host Name Configuration** to "Use the host name:" and set the value to "axis-camera" as shown. If you plan to use multiple cameras on your robot, select a unique host name for each. You will need to modify the dashboard and/or robot code to work with the additional cameras and unique host names.

Click **Save**.