# Network Control for Chronos Cameras

A Chronos Camera can easily be controlled over the internet or a local network via the Ethernet port. Each camera provides both an intuitive web-based control interface, as well as an Application Programming Interface (API) for controlling and automating camera actions based on site requirements.

1. Camera   2. Router   3. Computer
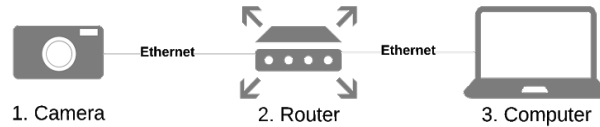
#	Item	Software Requirements
1	Chronos 1.4, or 2.1	Version 0.4.0~beta38 or greater
2	Network Switch or Router	HTTP Port 80 is open
3	Laptop or Desktop Computer	Chrome or Firefox browsers recommended
4	Tablet or Smartphone	Android or iOS

Notes:

- To connect to the camera outside of a local area network, consult your organization's network administrator
- Ethernet-to Fiber media extenders can be used for distances greater than 100 meters

1. Setting up a Camera connected via Ethernet or USB

1.1. Connecting via Ethernet

Network information can be found on the camera's touchscreen, in the Util menu, under the Network tab.

The IP address is listed in the Network Status box at the bottom of the screen, on the 2nd line, just after "inet addr:"

```
Network Status
eth0        Link encap:Ethernet  HWaddr 20:c3:8f:3b:55:9e
            inet addr:192.168.1.76  Bcast:192.168.1.255  Mask:255.255.255.0
            inet6 addr: 2001:569:73ff:0:22c3:8fff:fe3b:559e/128 Scope:Global
            inet6 addr: fe80::22c3:8fff:fe3b:559e/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:6979 errors:0 dropped:0 overruns:0 frame:0
            TX packets:40 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:1633885 (1.5 MiB)  TX bytes:4026 (3.9 KiB)
```

If the IP address is not listed, the camera is not connected to the network. Double check that the camera is connected via ethernet, and the green activity light on the camera's port is flashing.

1.2. Connecting via Mini-USB or Micro-USB

The camera can be accessed at the IP address 192.168.12.1 when using the mini-USB or micro-USB connection.

Windows operating systems require a RNDIS driver to connect via USB. Windows 10 should find and download it automatically if an internet connection is available. Older versions may require manual installation in this fashion: https://developer.toradex.com/knowledge-base/how-to-install-microsoft-rndis-driver-for-windows-7

2. Connecting to and controlling the Camera

2.1. Remote Camera Control via Web UI

To control and monitor the camera from a web page, open a web browser and go to the address http://<Camera's IP Address>, where <Camera's IP Address> is the camera's IP address from Step 1. For example, using the IP address from step 1, the address would be http://192.168.1.76
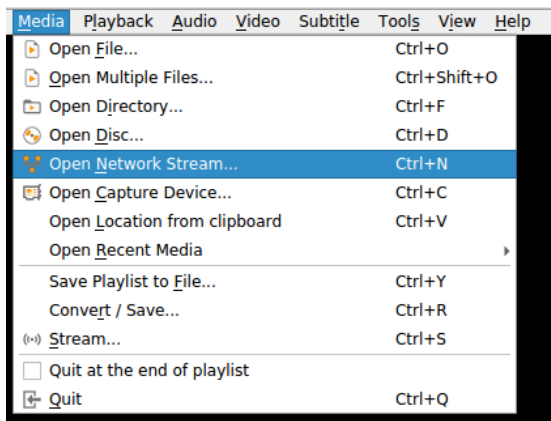
The web page will be displayed similar to the image below:
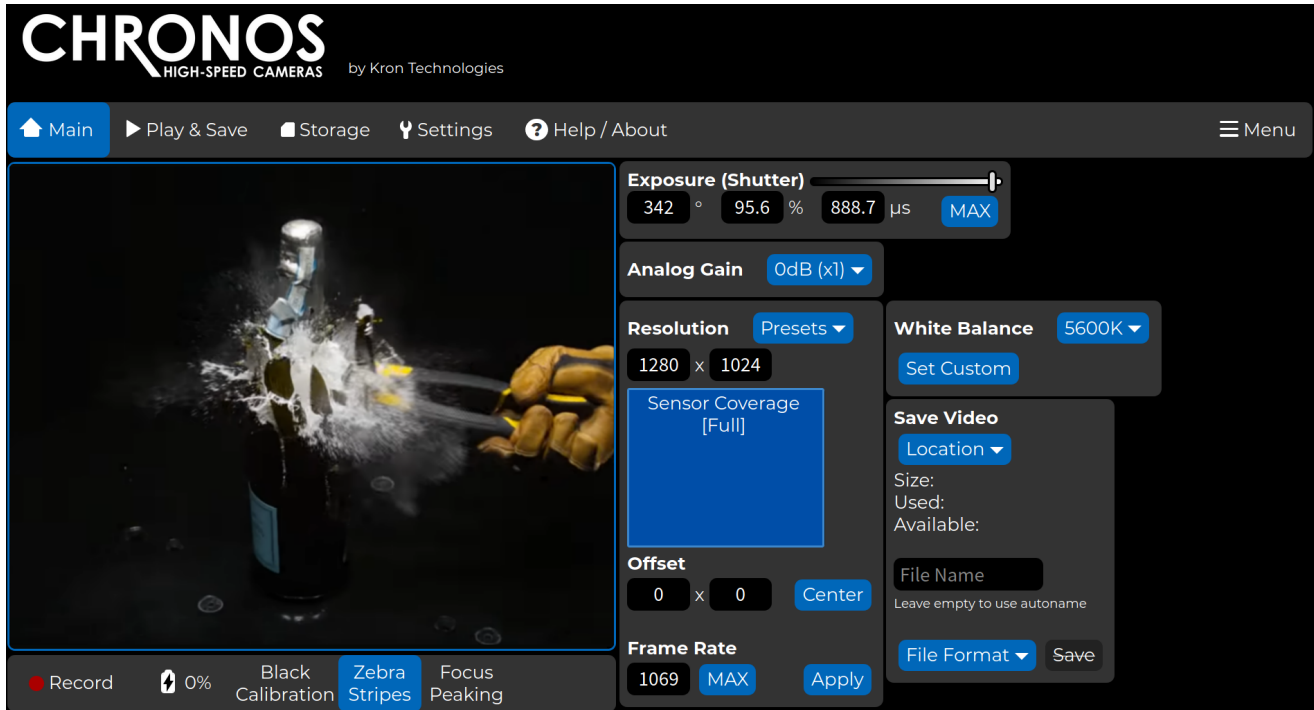
## 2.2 .   Remote Monitoring via Live Stream

VLC Media Player can be used to view a 60 FPS stream from the camera.

Select **Media->Open Network Stream**:

On the Open Media window, for the network URL at the location shown in the red box below, enter "rtsp://" followed by the camera's IP address.

It is recommended to reduce the Caching setting to reduce the latency between the camera and the connected computer. It is shown below at the location in the blue box, after checking **Show More Options** near the bottom of the window. 500 ms is suitable for a resolution of 1920x1080.
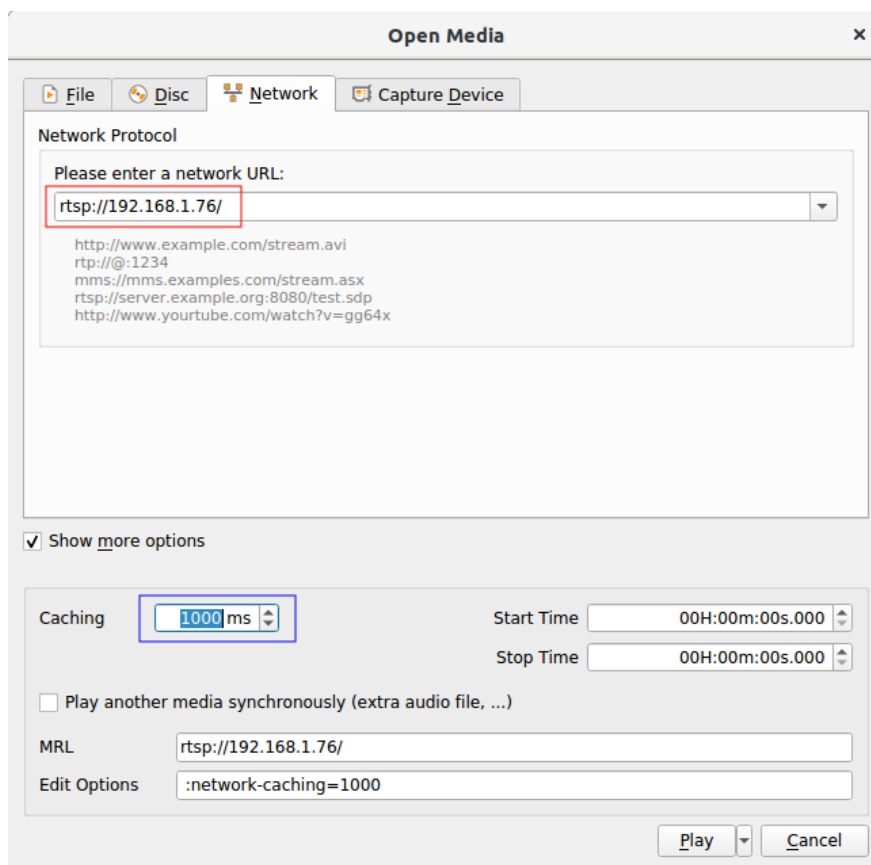
2.3 .   Remote Camera Control via API

To control the camera via a custom script or program, use the HTTP API. The documentation for the HTTP API is hosted on the camera itself. It can be accessed on a web browser at the address http://IP/apidoc/, where IP is the IP address of the camera.

Control of the Chronos camera is provided as a REST API, which is a common way to communicate with web services.
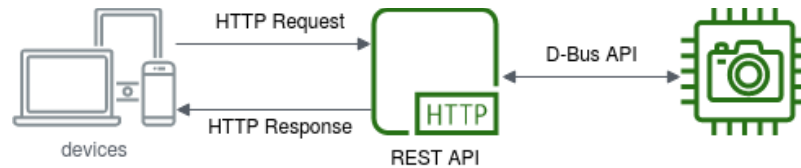
The Chronos API provides access to the camera configuration, settings and related data describing the camera's hardware and available features.

For examples on API usage with various programming languages, please visit https://github.com/krontech/chronos-examples.

Written by: <Simon Kronstein, simon@krontech.ca>
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