

May 2024

Developer Information



Blackmagic Web Presenter Ethernet Protocol



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v1.2

Protocol Details

Overview

The Blackmagic Web Presenter Ethernet Protocol is a line-oriented, text-based protocol to control a Web Presenter.

Lines from the Web Presenter server will be separated by an ASCII LF sequence.

Messages from the user may be separated by LF or CR LF.

Connection

The Web Presenter server is accessed by connecting to TCP port 9977 on a Web Presenter.

Connection Response

Upon connection, the Web Presenter server sends a dump of the device's state.

The Web Presenter server sends information in blocks, with each having an identifying header followed by a colon. A block spans multiple lines and is terminated by a blank line. Each line in the protocol is terminated by a newline character.

Following the header, a block contains either a single multi-line string or a sequence of key/value pairs arranged one per line. The first full-colon on a line is used to delimit the key and the value. A value may be a comma separated list. In this case, values in the list must have the “,” and “\” characters escaped with a “\” character.

To be resilient to future protocol changes, clients should ignore blocks they do not recognize, up to the trailing blank line. Within recognized blocks, clients should ignore keys they do not recognize.

Legend	
↵	End of line
...	and so on
Orange Text	Client Generated
Grey Text	Server Generated

The protocol preamble block is always the first block sent by the Web Presenter server:

```
PROTOCOL PREAMBLE:↵
Version: 1.2↵
↵
```

The version field indicates the protocol version. When the protocol is changed in a compatible way, the minor version number will be updated. If incompatible changes are made, the major version number will be updated.

The initial status dump is concluded by the end prelude block:

```
END PRELUDE:↵
↵
```

Status Updates

When any device parameter is changed on the Web Presenter server by any client, such as the Blackmagic Web Presenter Setup utility, the Web Presenter server resends the applicable status block, containing only the items that have changed. Status updates can also occur due to external changes such as tethering to a smartphone or when a streaming service is disconnected.

For example, if the input video mode is set to Auto, the following block will be sent:

```
STREAM SETTINGS:↵  
Video Mode: Auto↵  
↵
```

Requesting Changes

To change one or more parameters in a block, the client should send the appropriate block header in the same form the Web Presenter server sends, followed by the key/value pairs to be changed. For example, to change the input video format to 1080p59.94, the user should send the following block:

```
STREAM SETTINGS:↵  
Video Mode: 1080p59.94↵  
↵
```

The block must be terminated by a blank line. On receipt of a blank line, the Web Presenter server will either acknowledge the request by responding:

```
ACK↵  
↵
```

or if unable to parse the block responding with:

```
NACK↵  
↵
```

After a positive response, the client should expect to see a status update from the Web Presenter server showing the status change. This is likely to be the same as the command that was sent, sometimes followed by other blocks providing data specific to the change.

```
STREAM SETTINGS:↵  
Video Mode: 1080p59.94↵  
↵
```

If the Web Presenter server does not understand a key in the requested block, the key will be ignored. If an invalid value is provided for a known key, then the request is ignored and the Web Presenter will respond with the existing value for the key. In both cases the Web Presenter server will still respond with an ACK.

```
STREAM SETTINGS:↵  
Video Mode: UnsupportedMode↵  
↵  
ACK↵  
↵  
STREAM SETTINGS:↵  
Video Mode: 1080p59.94↵  
↵
```

Requesting a Status Dump

The user may request that the Web Presenter server resend the complete state of any status block by sending the block header, followed by a blank line. In the following example, the user requests the Web Presenter server resend the stream settings:

```
STREAM SETTINGS:↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
...
↵
```

Protocol Blocks

Identity Block

The identity block contains information to identify the connected Web Presenter.

Block Syntax

The following example shows the Identity Block for a Blackmagic Web Presenter HD.

```
IDENTITY:↵
Model: Blackmagic Web Presenter HD↵
Label: Blackmagic Web Presenter HD↵
Unique ID: 00112233445566778899AABBCCDDEEFF↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Model	Read only	The Web Presenter model name	String
Label	Read/Write	A display name for the Web Presenter	String
Unique ID	Read only	A device specific unique identifier	Hexadecimal ID

Changing Device Label

A device label to identify the Web Presenter can be changed by sending an identity block with label key.

```
IDENTITY:↵
Label: My Web Presenter↵
↵
ACK↵
↵
IDENTITY:↵
Label: My Web Presenter↵
↵
```

Version Block

The version block contains hardware and software version information for the connected Web Presenter.

Block Syntax

```
VERSION:↵  
Product ID: BE73↵  
Hardware Version: 0100↵  
Software Version: 0123ABCD↵  
Software Release: 3.5↵  
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Product ID	Read only	The Web Presenter product ID	Hexadecimal ID
Hardware Version	Read only	The Web Presenter hardware version	Hexadecimal version
Software Version	Read only	The Web Presenter software version	Hexadecimal version
Software Release	Read only	The Web Presenter software release version	Version Number

Network Blocks

The network block contains the TCP/IP networking configuration for the connected Web Presenter.

Block Syntax

This example shows the output for a connected Web Presenter. It displays 2 networking interfaces - the Gigabit Ethernet interface and option for a tethered smartphone.

The network settings prefixed with Current show the active TCP/IP settings, and are read-only. The Current settings reflect either the DHCP or Static configuration, depending on the Dynamic IP flag.

```
NETWORK:↵  
Interface Count: 2↵  
Default Interface: 0↵  
↵  
NETWORK INTERFACE 0:↵  
Name: Ethernet↵  
Priority: 1↵  
MAC Address: 00:11:22:33:44:55↵  
Dynamic IP: true↵  
Current Addresses: 192.168.1.10/255.255.255.0↵  
Current Gateway: 192.168.1.1↵  
Current DNS Servers: 192.168.1.1, 8.8.8.8, 8.8.4.4↵  
Static Addresses: 10.0.0.2/255.255.255.0↵  
Static Gateway: 10.0.0.1↵  
Static DNS Servers: 8.8.8.8, 8.8.4.4↵  
↵
```

```

NETWORK INTERFACE 1:↵
Name: USBEthernet↵
Priority: 0↵
MAC Address: 00:00:00:00:00:00↵
Dynamic IP: true↵
Current Addresses: 0.0.0.0/255.255.0.0↵
Current Gateway: 0.0.0.0↵
Current DNS Servers: ↵
Static Addresses: 10.0.0.2/255.255.255.0↵
Static Gateway: 10.0.0.1↵
Static DNS Servers: 8.8.8.8, 8.8.4.4↵
↵

```

Parameters

Network Block

Key	Read/Write	Description	Valid Values
Interface Count	Read only	The number of networking interfaces supported by the Web Presenter	Integer
Default Interface	Read only	The default networking interface	Integer

Network Interface Block

Key	Read/Write	Description	Valid Values
Name	Read only	The name of the networking interface	String
Priority	Read/Write	The priority of the network interface. When multiple network interfaces are available, the high priority interface will become the default	Unsigned integer. The higher number is the higher priority
MAC Address	Read Only	MAC address of the networking interface	IEEE 802 MAC address
Dynamic IP	Read/Write	Selects DHCP or Static IP configuration	true - DHCP enabled false - Static IP
Current Addresses	Read Only	The current IP address and Subnet mask	{IPv4 address}/{Subnet Mask}
Current Gateway	Read Only	The current IP gateway address	IPv4 address
Current DNS Servers	Read only	The IP addresses of the current DNS servers	Comma separated list of IPv4 addresses
Static Addresses	Read/Write	Status IP address and subnet mask when DHCP disabled	{IPv4 address}/{Subnet Mask}
Static Gateway	Read/Write	Static gateway address when DHCP disabled	IPv4 address
Static DNS Servers	Read/Write	The IP addresses of the static DNS servers	Comma separated list of IPv4 addresses

Changing Networking Settings

The network can be configured to use either DHCP or a static configuration. To enable DHCP on Network Interface 0:

```
NETWORK INTERFACE 0:↵  
Dynamic IP: true↵  
↵  
ACK↵  
↵  
NETWORK INTERFACE 0:↵  
Dynamic IP: true↵  
↵
```

To set a fixed IP address, supply all static parameters:

```
NETWORK INTERFACE 0:↵  
Dynamic IP: false↵  
Static Addresses: 192.168.1.2/255.255.255.0↵  
Static Gateway: 192.168.1.1↵  
Static DNS Servers: 8.8.8.8, 8.8.4.4↵  
↵  
ACK↵  
↵  
NETWORK INTERFACE 0:↵  
Dynamic IP: false↵  
Static Addresses: 192.168.1.2/255.255.255.0↵  
Static Gateway: 192.168.1.1↵  
Static DNS Servers: 8.8.8.8, 8.8.4.4↵  
↵
```

Changing network settings may cause the IP connection to be dropped.

UI Settings Block

The UI settings block contains the front panel LCD and monitor output settings for the connected Web Presenter.

Block Syntax

```
UI SETTINGS:↵  
Available Locales: en_US.UTF-8, zh_CN.UTF-8, ja_JP.UTF-8, ko_KR.UTF-8, es_↵  
ES.UTF-8, de_DE.UTF-8, fr_FR.UTF-8, ru_RU.UTF-8, it_IT.UTF-8, pt_BR.UTF-8,↵  
tr_TR.UTF-8, pl_PL.UTF-8, uk_UA.UTF-8↵  
Current Locale: en_US.UTF-8↵  
Available Audio Meters: PPM -18dB, PPM -20dB, VU -18dB, VU -20dB↵  
Current Audio Meter: PPM -20dB↵  
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Available Locales	Read only	The locales available in the Web Presenter	Comma separated list of locales
Current Locale	Read/Write	The current locale for Web Presenter	Refer to the locales from the Available Locales field
Available Audio Meters	Read only	The available audio meters supported by the Web Presenter	Comma separated list of audio meter types
Current Audio Meter	Read/Write	The current audio meter	Refer to the audio meters from the Available Audio Meters field

Stream Settings Block

The stream settings block contains the stream configuration for the connected Web Presenter.

Block syntax

This example shows the output for a connected Web Presenter. The stream settings prefixed with Current show the active stream settings and are writable. The stream settings prefixed by Available show the available stream settings for the device or platform and are read-only. To view the available servers or quality levels for a stream service, the Current Platform stream setting should be set first.

```
STREAM SETTINGS:↵
Available Video Modes: Auto, 1080p23.98, 1080p24, 1080p25, 1080p29.97,
1080p30, 1080p50, 1080p59.94, 1080p60, 720p25, 720p30, 720p50, 720p60↵
Video Mode: 1080p59.94↵
Current Platform: YouTube↵
Current Server: Primary↵
Current Quality Level: Streaming Medium↵
Stream Key: abc1-def2-ghi3-jkl4-mno5↵
Password: ↵
Current URL: srt://192.168.8.51
Customizable URL: true
Available Default Platforms: YouTube RTMP, YouTube SRT (Beta), Facebook,
Microsoft Teams, Instagram, Twitch, X (Twitter), Restream.IO, Vimeo,
BoxCast, Castr, AfreecaTV, Bilibili, DouYu, Weibo↵
Available Custom Platforms: My Platform↵
Available Servers: Primary, Secondary↵
Available Quality Levels: HyperDeck High, HyperDeck Medium, HyperDeck Low,
Streaming High, Streaming Medium, Streaming Low↵
↵
```


Parameters

Key	Read/Write	Description	Valid Values
Available Video Modes	Read only	The video modes available in the Web Presenter	Comma separated list of video modes
Video Mode	Read/Write	The current video mode	Refer to the video modes from the <i>Available Video Modes</i> field
Current Platform	Read/Write	The selected streaming platform	Refer to the platforms from the <i>Available Default Platforms</i> and <i>Available Custom Platforms</i> fields
Current Server	Read/Write	The current server for the streaming platform	Server is dependent on selected Current Platform
Current Quality Level	Read/Write	The current streaming quality level	Quality level is dependent on selected Current Platform
Stream Key	Read/Write	The stream key for the streaming platform	String
Password	Read/Write	The passphrase for an encrypted SRT stream	String
Current URL	Read/Write	The current URL for the streaming platform. This field is writable if <i>Customizable URL</i> field is true.	String
Customizable URL	Read only	A boolean specifying whether custom URLs are supported by the streaming platform	true - Custom URLs are supported false - Custom URLs are not supported
Available Default Platforms	Read only	The available default streaming platforms	Comma separated list of default platforms
Available Custom Platforms	Read only	The custom streaming platforms loaded in the Web Presenter	Comma separated list of custom platforms
Available Servers	Read only	The available servers for the selected streaming platform	Comma separated list of servers
Available Quality Levels	Read only	The available quality levels for the selected streaming platform	Comma separated list of quality levels

Changing Stream Settings

The stream settings can be changed by providing a stream settings block. The following is an example of streaming a 1080p59.94 input on Twitch with a medium stream quality.

```

STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵
ACK↵
↵
STREAM SETTINGS:↵
Video Mode: 1080p59.94↵
Current Platform: Twitch↵
Current Server: US West: Los Angeles, CA↵
Current Quality Level: Streaming Medium↵
Stream Key: live_123456789_1aB2cD3eF4gH5iJ6kL7mN8oP9qR0sT↵
↵

```

Stream XML Block

The stream XML block allows users to configure the Web Presenter with a custom configuration file in XML format.

Block syntax

The following example shows an XML file - Custom.xml has been loaded to configure the stream settings in the Web Presenter.

```
STREAM XML:↵  
Files: Custom.xml↵  
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Files	Read/Write	The XML files loaded in Web Presenter	Comma separated list of filenames
Action	Write only	The stream XML action	Remove Remove All"

Adding a Stream XML file

An XML file can be loaded onto a Web Presenter by sending the stream xml command with a filename, then provide the contents of the XML file. After adding the XML file, the Available Custom Platforms field in the STREAM SETTINGS block will be updated with the new platforms, however the Current items will remain unchanged.

For the Stream XML block to be parsed correctly, any blank lines should be removed from the XML files.

Refer to the `Blackmagic Streaming XML Format` section in this manual for description of the Stream XML file format.

```
STREAM XML Custom.xml:↵  
<?xml version="1.0" encoding="UTF-8"?>↵  
<streaming>↵  
    <service>↵  
        <name>My Custom Platform</name>↵  
        ...  
    </service>↵  
</streaming>↵  
↵  
ACK↵  
↵  
STREAM XML Custom.xml:↵  
<?xml version="1.0" encoding="UTF-8"?>↵  
<streaming>↵  
    <service>↵  
        <name>My Custom Platform</name>↵  
        ...  
    </service>↵  
</streaming>↵  
↵
```

```
STREAM XML:↵
Files: Custom.xml↵
↵
STREAM SETTINGS:↵
Available Custom Platforms: My Custom Platform↵
↵
```

Removing a Stream XML file

An XML file can be removed from the Web Presenter by sending the stream xml command with the remove action.

```
STREAM XML:↵
Action: Remove↵
Files: Custom.xml↵
↵
ACK↵
↵
STREAM XML:↵
Files:↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Removing all Stream XML files

All XML files can be removed from the Web Presenter by sending the stream xml command with the remove all action. In the example, following the remove all action, the loaded stream XML files and available custom platforms are both displayed as empty.

```
STREAM XML:↵
Action: Remove All↵
↵
ACK↵
↵
STREAM XML:↵
Files: ↵
↵
STREAM SETTINGS:↵
Available Custom Platforms:↵
↵
```

Stream State Block

The stream state block provides the streaming status of the Web Presenter.

The Web Presenter server will send a stream state block update whenever there is a change to the Status field. Due to frequency of changes to Duration, Bitrate and Cache Used fields, these fields need to be polled by the client by requesting a Stream State block.

Block syntax

```
STREAM STATE:↵↵
Status: Idle↵↵
Bitrate: 161672↵↵
Duration: 00:00:00:00↵↵
Cache Used: 0↵↵
↵↵
```

Parameters

Key	Read/Write	Description	Valid Values
Status	Read only	The stream state of the Web Presenter, updated when the stream status changes	Idle Connecting Streaming Interrupted
Action	Write only	The Web Presenter stream state action.	Start Stop
Duration	Read only	The duration of the active stream	String in format of DD:HH:MM:SS
Bitrate	Read only	The bitrate of the active stream	Integer bits per second
Cache Used	Read only	The current usage of the streaming cache	Integer as a percentage

Starting Stream

The stream is started by providing a stream state block with start action.

```
STREAM STATE:↵↵
Action: Start↵↵
↵↵
ACK↵↵
↵↵
STREAM STATE:↵↵
Status: Connecting↵↵
↵↵
STREAM STATE:↵↵
Status: Streaming↵↵
↵↵
```

Stopping stream

The stream is stopped by providing a Stream State block with stop action.

```
STREAM STATE:↵↵
Action: Stop↵
↵
ACK↵
↵
STREAM STATE:↵↵
Status: Idle↵
↵
```

Audio Settings Block

The Audio Settings block contains the audio configuration for the connected Web Presenter.

Block syntax

This example shows the output for a connected Web Presenter. The stream settings prefixed with Current show the active audio settings and are writable. The stream settings prefixed by Available show the available audio settings for the device or platform and are read-only.

```
AUDIO SETTINGS:↵↵
Current Monitor Out Audio Source: Auto↵
Available Monitor Out Audio Sources: Auto, SDI In, Remote Source↵
↵
```

Parameters

Key	Read/Write	Description	Valid Values
Current Monitor Out Audio Source	Read/Write	The current audio source on the monitor output	Refer to the audio sources from the <i>Available Monitor Out Audio Sources</i> field
Available Monitor Out Audio Sources	Read only	The available audio sources that can be routed to the monitor output	Comma separated list of audio sources

Changing Audio Settings

The audio settings can be changed by providing an audio settings block. The following is an example of setting the monitor output audio source to remote.

```
AUDIO SETTINGS:↵↵
Current Monitor Out Audio Source: Remote Source↵
↵
ACK↵
↵
AUDIO SETTINGS:↵↵
Current Monitor Out Audio Source: Remote Source↵
↵
```

Shutdown Block

The Shutdown block provides power control of the Web Presenter. The Shutdown block is write-only and not presented in the preamble.

Parameters

Key	Read/Write	Description	Valid Values
Action	Write only	The Web Presenter shutdown action.	Reboot Factory Reset

Reboot

The Web Presenter can be rebooted by providing a Shutdown block with reboot action.

```
SHUTDOWN:↵
```

```
Action: Reboot↵
```

```
↵
```

```
ACK↵
```

```
↵
```

On reboot action, the Web Presenter server will be stopped and clients will be disconnected.

Factory Reset

The Web Presenter can be factory reset by providing a Shutdown block with factory reset action. On factory reset action, all settings are set to factory defaults.

```
SHUTDOWN:↵
```

```
Action: Factory Reset↵
```

```
↵
```

```
ACK↵
```

```
↵
```