

# Network and Firewall Setup for Streambox Encoders and Decoders

Streambox Encoders and Servers will stream through a single UDP port using a two-way protocol. By default, that port is 1770 UDP , and the Decoder will listen and receive using the same UDP port 1770. *Data<sup>1</sup> must be allowed bi-directionally through any firewalls in the network path between Encoder and Decoder.*

[Software License Activation \(80/TCP, 85/TCP\)](#)

[Online Activation](#)

[Local/Offline Activation](#)

[Sending Live Streams Directly \(1770/UDP\)](#)

[Setting the IP address](#)

[Local Network Streaming](#)

[Direct Streaming over the Internet](#)

[Sending Live Streams via Streambox Cloud or StreamON Server \(1770-1780/UDP\)](#)

[Streambox Media Players and Streambox Node “Pull” Mode and Channels. \(1770/UDP, 80/TCP, and 443/TCP\)](#)

[“P2P” Point-to-Point Pull Mode from Encoder to Decoder \(443/TCP to 18.210.176.249 - broker.streambox.com\)](#)

[StreamON Server \(1770-1780/UDP, 443/TCP, 22/TCP\)](#)

[Sending to StreamON Server \(1770-1780/UDP and 443/TCP to StreamON Server\)](#)

[Receiving from StreamON Server \(1770-1780/UDP and 443/TCP to StreamON Server; 443/TCP to 18.210.176.249 - broker.streambox.com\)](#)

[Remote Configuration, Updates, and Support \(22/TCP, 80/TCP and 443/TCP to 184.106.189.99 and 184.106.155.61\)](#)

[Streambox Support](#)

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<sup>1</sup> The port can be changed to another UDP port with some settings in Encoders, Decoders/Media Players, and Servers.

## Software License Activation (80/TCP, 85/TCP)

Streambox Software Encoders, Decoders and Servers with paid licenses for encoding, decoding, or adding additional paid features, have two methods of activation: Online and Local (sometimes called Offline) Activation.

### Online Activation

Online Activation requires a connection to the server as.streambox.com (3.225.45.50) via TCP ports 80 and 85. This connection is only required at the time of activation, and so may be disabled at other times. However, many products now have a timed activation and require periodic renewal. Each renewal would require enabling these ports if they are otherwise disabled.

### Local/Offline Activation

Local/Offline Activation does not require network access but does require exchanging the Hardware ID (HWID) with Streambox Support via phone or email and receiving an activation code in return.

Hardware Encoders/Decoders with firmware from 2022 and prior only use offline activation. Those using Chroma.2023 Firmware and later can support online activation.

## Sending Live Streams Directly (1770/UDP)

Streambox Encoders and Decoders can send live streams over private or public IP networks. The Decoder's IP address is fed into the Encoder's settings so it knows where to send the stream; the Decoder's replies and acknowledgements are sent back to the Encoder (LDMP protocol). If one-way connection is required, UDP-only mode is supported with decreased functionality, such as no adaptive bitrate or dynamic packet loss recovery. FEC (error correction) is supported in UDP and LDMP network modes.

### Setting the IP address

Streambox hardware products ship with their network adapters in DHCP mode, which means they will request an address from any network they are connected to. Rackmount Streamboxes run either Windows or Linux (newer units run Linux) and the IP address can be set using the Linux interface console, the Front LCD Control Panel ("FCP"), or using the Web UI of the unit as accessed from another computer. It's often helpful to use the Front LCD panel, available on some hardware products, to determine the current IP to attempt web access.

This guide has been created for setting the IP address:

<https://docs.google.com/document/d/1vxtXhRA6HcPbWYmHJ2tRjv603dS51F6BBiZjkaQvd6Y/edit?usp=sharing>

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## Local Network Streaming

When streaming over a local network, we recommend that both Encoder and Decoder have static or DHCP reserved addresses. It's more critical that the Decoder have a fixed address, and of course both machines must either be in the same subnet, or be visible to the other unit's subnet.

## Direct Streaming over the Internet

When streaming over the public Internet, Encoders and Decoders are not required to have their own Public IP addresses. They should still have static internal IP addresses, however, and it will be necessary during the stream setup to know the external IP address of the Decoder's network.

A Firewall at any receiving location (Decoder/Server/Media Player) should be set with a port forward (a.k.a. port filter) so that all traffic received from the internet that's been sent to port 1770 UDP must be forwarded<sup>2</sup> to the private IP of the Decoder. This setting must allow both incoming and outgoing traffic.<sup>3</sup> Alternatively, Network Address Translation (NAT) may be used so that a Decoder may reliably be contacted through a public IP address.

**For example:** a Decoder has a static private IP address of 192.168.10.10. In the firewall settings, the user (or IT person) must set port-forwarding in the firewall so all UDP packets sent from Any address on the internet to Port 1770 on the firewall will be forwarded to 192.168.10.10 on port 1770.

In this example IT people can also restrict source addresses for security reasons. Source port number can be restricted if Encoder is not behind a firewall.

## Sending Live Streams via Streambox Cloud or StreamON Server (1770-1780/UDP)

Whether you're using Streambox Cloud, our online stream-management platform, or Streambox StreamON Server, you set the Server IP address as the Target Receiver (aka Target Decoder) in the Encoder's settings.

Both types of server require that the Encoder metadata is enabled and configured for use; particularly the Encoder DRM (a.k.a. Session DRM) code to match the Session pair.

If using the legacy mode for streaming the metadata should match the Group name of the user's cloud account. (Not the same as their username.)

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<sup>2</sup> Port Forwarding/Filtering is required *in addition to* allowing a Port through the firewall. The Firewall must not only allow the data through, but Port-Forwarding must tell the firewall where to send the data inside the private network.

<sup>3</sup> Streambox supports low-delay transport protocols; both "plain" UDP and two-way LDMP over UDP. When streaming in UDP mode, only one way traffic is sufficient, e.g. Encoder to Decoder, or Firewall to Decoder. When streaming in LDMP mode (Low-Delay Multi-Path), two-way traffic over the same UDP port is required.

Streambox Cloud IP names, IP addresses, and locations are listed below:

Server Name	IP Address	General Location
LiveUS.streambox.com	44.227.70.150	USA (Oregon)
LiveEU.streambox.com	63.32.64.156	Europe (Ireland)

Streambox Cloud is multi-tenant service; each Decoder setting for the Cloud can be configured for a specific “destination” port number, with default port UDP 1770 but valid ports range from 1770-1780. Streambox Cloud will use random source port number when routing stream to remote Decoder, so *the firewall rule should not restrict traffic based on source port number, but can restrict traffic based on destination port number and Source IP.*

### **Streambox Media Players and Streambox Node “Pull” Mode and Channels. (1770/UDP, 80/TCP, and 443/TCP)**

Streambox Media Players are often able to do without this firewall requirement when they are "pulling" a stream from a Streambox StreamON Server or the Streambox Cloud Service. They can request a stream from the server, and many basic and consumer ("stateful") firewalls will permit the stream to enter. Higher-security firewalls (including "stateless" firewalls) can still prevent this from working without some manual exceptions being programmed in.

When receiving a direct stream from any Streambox Encoder, the Firewall must be set as described above. In addition, any Streambox Receiver (Decoder/Media Player/Node ) should be allowed to access Streambox Cloud Server via HTTP or HTTPS protocol (TCP ports 80 and 443, respectively), to request Stream metadata when requesting a stream via web UI.

### **“P2P” Point-to-Point Pull Mode from Encoder to Decoder (443/TCP to 18.210.176.249 - broker.streambox.com)**

Instead of Direct streaming from Encoder to Decoder, where data is “pushed” from Encoder to the Decoder which acts as a passive listener as [described above](#), P2P mode is a special upgrade mode where the Encoder and Decoder communicate with a Streambox server, called Broker, to allow the Decoder to “pull” the stream from the Encoder. This makes it easy, in most cases, for Decoders to receive a direct stream without requiring a special firewall configuration at that end. It does require a special firewall configuration at the Encoder end, however.

A firewall at the Encoding location must be set with a port forward (a.k.a. port filter) so that all traffic received from the internet that’s been sent to port 1770 UDP must be forwarded to the private IP of the Encoder. This setting must allow both incoming and outgoing traffic. Alternatively, Network Address Translation (NAT) may

be used so that an Encoder may reliably be contacted through a public IP address.

## StreamON Server (1770-1780/UDP, 443/TCP, 22/TCP)

Streambox StreamON Server allows each Encoder to stream to one or more Decoders and Media Players using the Sessions feature. The server itself runs on AWS and the admin user will need SSH access (22/tcp), and any user will need HTTPS access (443/tcp). For handling streams, the server uses a range of UDP ports 1770-1780.

### [Sending to StreamON Server \(1770-1780/UDP and 443/TCP to StreamON Server\)](#)

Encoders streaming to StreamON Server need to stream directly to the Server's IP address or DNS name via a port in the range 1770-1780/udp. Additionally, Port Forwarding is required for the Encoder's network firewall for this UDP range.

### [Receiving from StreamON Server \(1770-1780/UDP and 443/TCP to StreamON Server; 443/TCP to 18.210.176.249 - broker.streambox.com\)](#)

Decoders and Media Players will need to reach both the StreamON Server itself as well as the Streambox Broker server which negotiates the connections between server and receiver.

## Remote Configuration, Updates, and Support (22/TCP, 80/TCP and 443/TCP to 184.106.189.99 and 184.106.155.61)

Streambox Hardware Encoders and Decoders will reach out, by default, to our home servers to permit a secure SSH connection to your Streambox, which allows password-protected remote control by the user, as well as remote access and updates by Streambox personnel. The connections go to our two Streambox Servers for this purpose, 184.106.189.99 and 184.106.155.61.

Once connected, you can access your unit by going to <http://avenir.streambox.com/remote> and enter the serial number (ALL CAPS for the letters), and entering your password if you've set one. Using the same connection, Streambox personnel can upload updates via SSH and make changes to assist you.

The default password is based on the serial number. The password is **supportXXXX** where **XXXX** is the last 4 digits, before the period, from the serial number. For example, a unit with serial E24130050.4K4 will have the following password: **support0050**

## Streambox Support

Please contact [support@streambox.com](mailto:support@streambox.com) if you have any questions.