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[1], and the Decoder will listen and receive using the same UDP port 1770. *Data must be allowed bi-directionally through any firewalls in the network path between Encoder and Decoder.*

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Summary of Network Ports used by Streambox

Sending Live Streams (Point-to-Point) (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 adaptive bitrate or dynamic packet loss recovery. FEC 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 to determine the current IP to attempt web access.

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

This guide has been created for setting the IP address:
https://docs.google.com/document/d/1vxtXhRA6HcPbWYmHJ2tRJv603dS51F6BBiZjkaQvd6Y/edit?usp=sharing

Local Network Streaming

When streaming over 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.

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/Enterprise Server/Media Player) should be set with a port forward[2] (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 Decoder. This setting must allow both incoming and outgoing traffic.[3] 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 person can also restrict source address for security reasons. Source port number can be restricted if Encoder is not behind firewall.

Sending Live Streams via Streambox Cloud or Enterprise Server (1770/UDP and others)

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

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[2] 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.

[3] Streambox supports to low delays protocols "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 Multipath), two-way traffic over the same UDP port is required.

Both types of server requires that the Encoder metadata is enabled and configured for use; particularly the “Group” (also called “DRM”) code must match the Group of whichever users are accessing the server.

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

Server Name	IP Address	Location
LiveUS.streambox.com	52.25.129.48	USA (Oregon)
LiveUSEast.streambox.com	54.83.19.155	USA (Northern Virginia)
LiveAU.streambox.com	52.62.2.246	Asia Pacific (Sydney)
LiveDE.streambox.com	54.93.179.19	Europe (Frankfurt)
LiveEU.streambox.com	54.247.100.52	Europe (Ireland)
LiveJP.streambox.com	52.69.71.156	Asia Pacific (Tokyo)
LiveSA.streambox.com	54.233.86.10	South America (Sao Paulo)
LiveSG.streambox.com	52.76.243.157	Asia Pacific (Singapore)
LiveIN.streambox.com	52.66.83.26	Central Asia (India)

Streambox Cloud is multi-tenant service; each Decoder setting for the Cloud can be configured for specific “destination” port number, with default port UDP 1770 . 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 Enterprise 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 request stream via web UI.

File Playout from Enterprise or Cloud Server (including Time-Shifted Streams) (80/TCP and 443/TCP)

When performing a playout of a recorded file to Decoder, Media Player, or Streambox Node, the file transfer from Server to receiver is via HTTP (80/TCP) instead of the usual UDP port. It's an HTTP file transfer that is paced to match the bitrate of the video recording itself.

In this workflow, the Decoder/Node/Media Player must have HTTP or HTTPS access to the Server (Cloud or Enterprise)

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

Streambox Linux 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.

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.

Summary of Network Ports used by Streambox

Video streams -- from Encoder, and to Decoder/Media Player:
Port: UDP 1770
Direction: Inbound and outbound for LDMP, inbound for UDP only
Required for live streams

HTTP -- For the server web interface.
Files played/streams to Decoders/Media Players are also transferred through this port.
Port: TCP 80
Direction: Inbound and outbound
Required for file playout from server to Decoder/MP; Required for local web control of rackmounts

Authentication -- Web user authentication.
Port: TCP 80 and 443
Direction: inbound
TCP 443 is required for HTTPS authentication

Remote Connections - Used for remote updates and remote configuration via SSH (Avenir Encoders; Chroma Rackmounts)
Port: TCP 22, 80, 443 (and 3389 Remote Desktop Protocol for Windows)
Direction: Inbound and outbound
Connections go exclusively to two IP addresses:
Optional but strongly recommended

Please contact support@streambox.com if you have any questions.