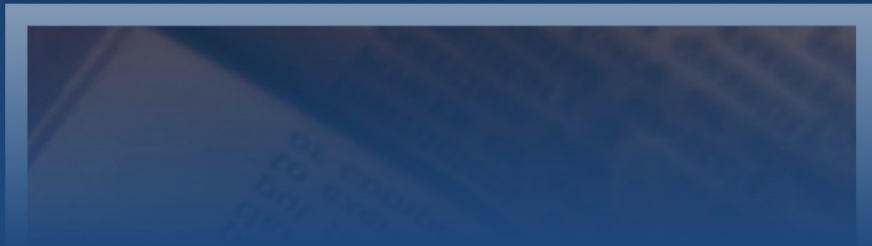




NETWORKTV

NetworkTV

User Guide



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Release 3.0



TABLE OF CONTENTS

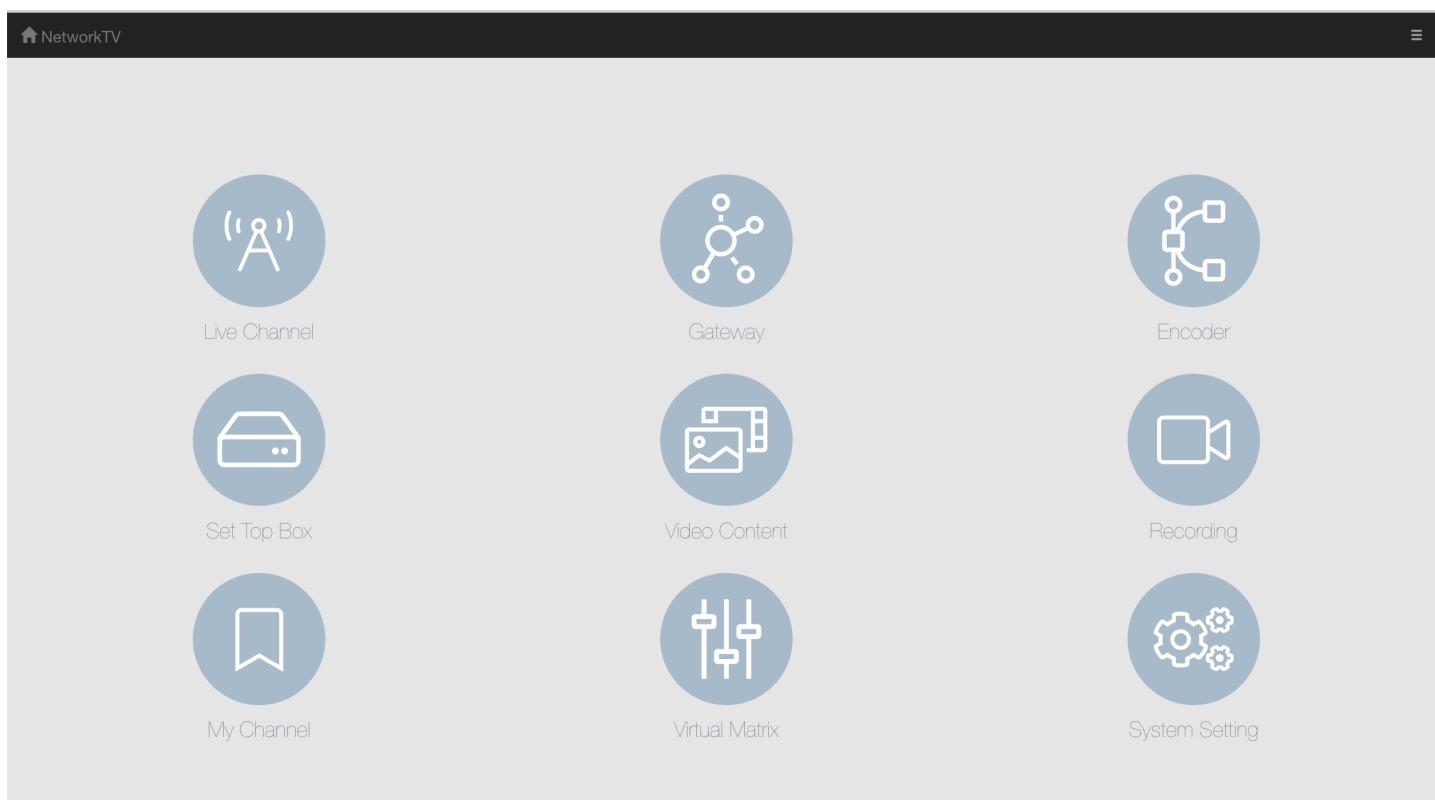
NetworkTV Introduction	3
NetworkTV Server Set Up	4
NetworkTV Browser & Manage Settings	5
System Setting	7
Server Addressing Setup	7
Managing Live Channels	8
Add New Live Channel	9
SAP Announcements	9
Managing NetworkTV Digital TV Gateways & Importing Channel Lists	10
Adding NetworkTV Gateway Appliances	10
Import TV Channels	10
NetworkTV Live Gateway & Live Pro Servers	11
Configuring NetworkTV Live TV Gateway	12
Set Up	12
System Settings	13
DVB-T Tuners	14
DVB-S Tuners	17
Managing Encoders	20
Manage My Channels (VoD & Playlists)	21
Managing Video Content in the NetworkTV Library (VoD)	22
Manage Video Content	22
Upload New Video	23
Managing Recordings	24
The Recorders	24
Setting Up a Recording	24
Managing Set Top Boxes	26
Manage Groups	27
Setting up & Configuring the NTV Set Top Box	28
Setting up & Configuring the Amino H140 Set Top Box	30
Playlists	33
Manage Virtual Matrix	34
Appendix A—Graceful Shutdown & Restart of NetworkTV System	35
Troubleshooting	36
Appendix B – Live Channel Types	37
Example Stream Addresses	37

NetworkTV Introduction

NetworkTV is an IPTV content management system that is structured as a client/server solution. The NetworkTV server application runs on a Linux Ubuntu operating system with an Apache Tomcat webserver and a MySQL database. Management of the system is via an HTML5 browser that provides the NetworkTV Management Portal (via username and password) that is responsible for controlling all of the different NetworkTV services across the IP attached devices in the system (e.g. tuners, encoders, set top boxes etc) as well as initiating recordings and uploading of content into the integrated library. PC Users also get access to the live channels and pre-recorded video content via an HTML5 browser. A separate interface has been created to deliver access to the live channels and library of content for the set top box and mobile devices.

NetworkTV Live systems provide similar Management and User interfaces to the full system, but with reduced functionality to take into account that only live channels are being managed and distributed.

This operational User Guide covers all of the key functionality for NetworkTV.





NetworkTV Server Set Up

The NetworkTV Management Server (NTVSERV) is based on an HP DL20 Server or Dell R240, with 16Gb RAM, 4Tb HDD, 1Gb Ethernet NIC (2 ports). It's running a Linux Ubuntu 18.04 Server Operating System, Tomcat webserver and a mySQL database.

The NetworkTV Management Server is a 1U short depth rack server so that it will fit neatly into an AV style rack and therefore suitable for most types of installations. However, the server will also install just as well in a full IT rack in a data comms room. The server dimensions are approximately: 1.7" (4.32cm) Height x 17.11" (43.46cm) Width x 15.07" (38.30cm) Length.

The server is configured with a single processor supporting the latest quad core Intel Xeon E3-1200 v3 processor. It has two PCIe 3.0 slots, DDR3 1600 MHz memory and 4 terabytes of internal storage, plus a state of the art HP iLO Management Engine or Dell OpenManage. The server can be expanded with additional RAM and hard disks we can custom build a different server configuration if required including providing full RAID compatibility as an option. Finally, we can also provide NetworkTV as an OVF file to be used in a virtual environment.

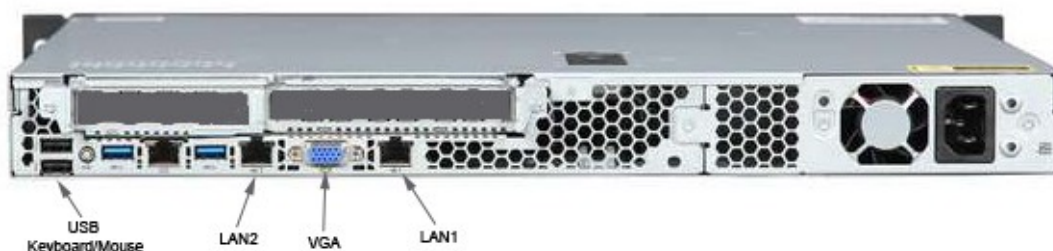
The NetworkTV Management Server will be delivered pre-configured and will include the NetworkTV Management Software which provides the capability to manage encoders, tuners, streams, recordings and set top boxes. It also includes video content management via the NetworkTV integrated library system which allows you to record or upload your content (about 900 hours at HD quality) so that users can choose what they watch and when.

Install the server into the rack (server rails are included) and connect an RJ45 network cable to the LAN1 port (see picture below). Then connect a USB keyboard and mouse to the USB ports and a display to the VGA port. Finally, connect the IEC power lead to the power socket and turn the system on.



Note: Please register your server with the manufacturer to ensure warranty is initiated.

The picture below shows the back of an HP DL20 short form factor server. NetworkTV Live systems provide similar Management and User interfaces to the full system, but with reduced functionality to take into account that only live channels are being managed and distributed.

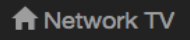


NetworkTV Browser & Manage Settings

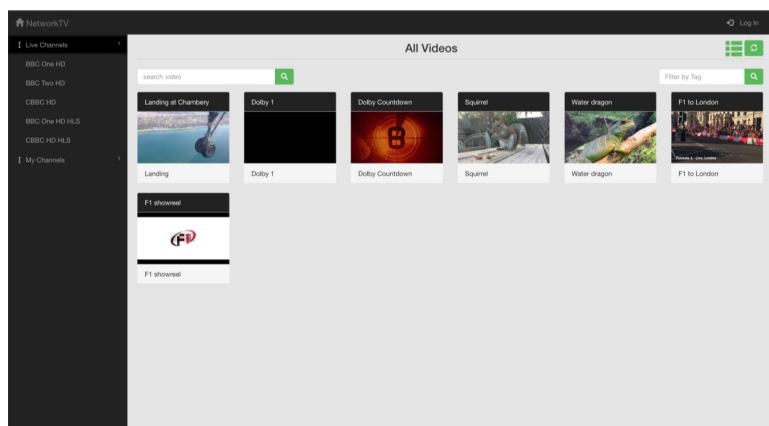
Access to NetworkTV is via an HTML5 browser. NetworkTV has been tested on the latest versions of Safari, Firefox, Chrome and Pale Moon. If the user wants to access NetworkTV multicast streams within a browser with the use of a VLC plugin, then currently there are only two options, Pale Moon and Firefox v52.9ESR (Extended Support Release).


You can also access the list of live channels or On-Demand content from the menu displayed via a Set Top Box (STB). However, administration of the NetworkTV system is only available from the browser and requires a Login and Password.

Browse to NetworkTV (<http://<<server IP address>>:8080/aurora/WebApp>) and you will be presented with the landing page shown on the right.


Clicking on the logo  at the top left of the page will bring you back to this Home page.

The channel list is on the left hand side and comprises **Live Channels** which are the live broadcast TV channels, encoded streams, Internet TV channels and other live sources such as IP cameras. Underneath the live channels is **My Channels** which are the on-demand channel categories that have been set up by the system administrator as well as the Playlist Channels. These folders hold your recordings and pre-recorded uploaded content and can be categorized in any way you want eg. by name, genre, department, date, course etc.

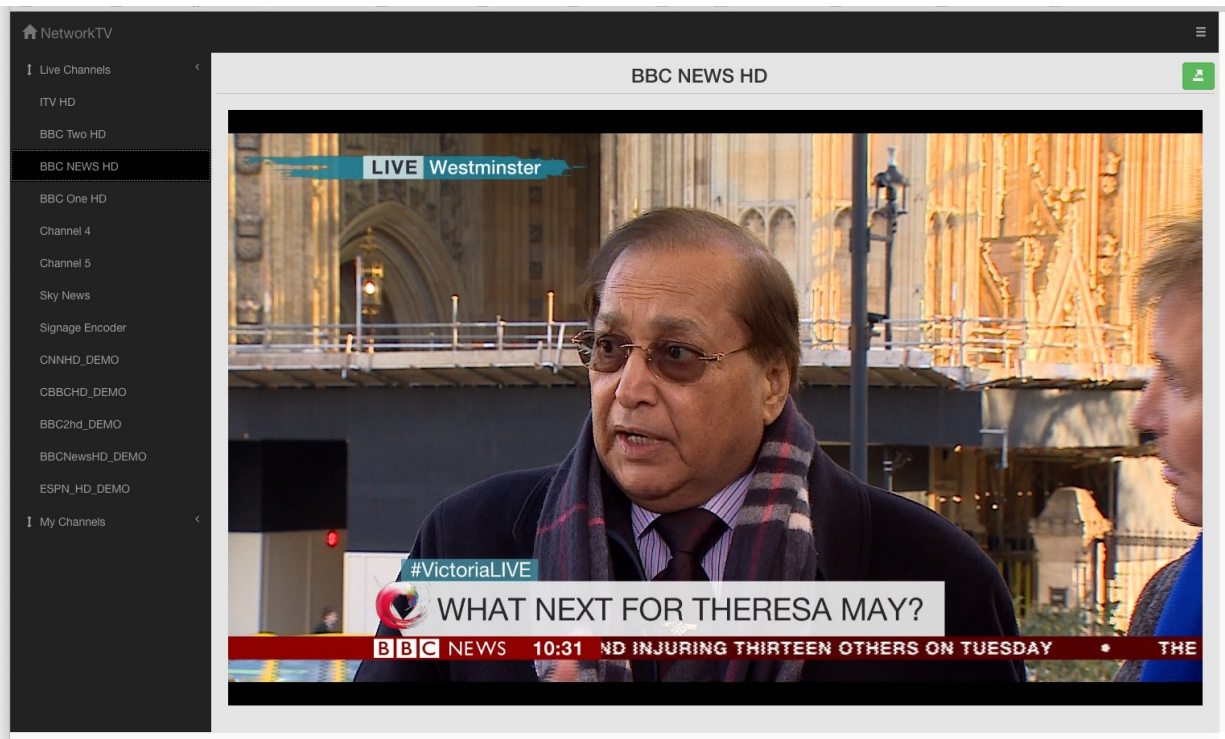


 To find the IP address of your NetworkTV server, connect a display and keyboard to the server and login with networktvserver and NetworkTVServer. At the command prompt enter ip a (or ifconfig) and you will see the network IP address.


 Clicking this icon changes the layout of the page.


 By clicking this button the content will refresh in the folder and any new content that has been recorded or uploaded will appear as long as they are not marked as private.

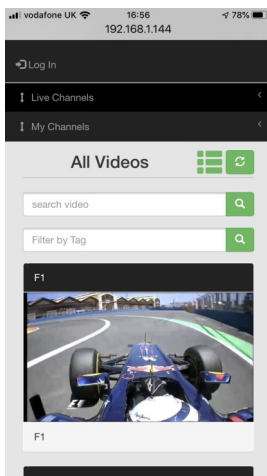
To play a **Live Channel**, click on it from the list on the left (see page 6 for a screenshot of a typical video playing).



Note: If you have only purchased a NetworkTV Live system, some Tabs and Buttons will be greyed-out and you will not be able to access the NetworkTV On-Demand, Library or Recording functionality.

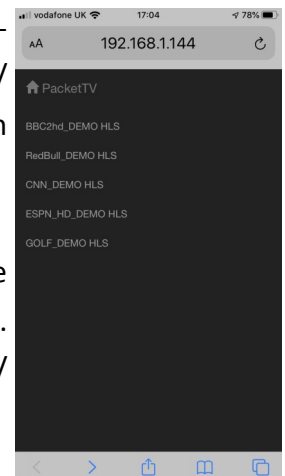
The Send to STB button  will be covered later in this Guide under the Manage STB section but it allows the user to push specific live channels or pre-recorded video content to individual, groups or all set top boxes.

If you hover over the video window while a video is playing, the Maximise button  appears on the bottom right of the player window. If you click this, the video will play fullscreen on the computer. Pressing the button again or alternatively the “esc” button on your keyboard will return to the browser player window.

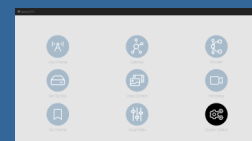


The NetworkTV system can also be accessed and controlled via mobile devices by browsing to the address of the server: (<http://<<server IP address>>:8080/aurora/WebApp>). See the graphic on the left.

However, there is also a user interface for mobile devices to just see the live HLS channels without access to the administration portal. This url is: <http://<<server IP address>>:8080/aurora/WebApp/mobile.html>. See the graphic on the right.




System Setting



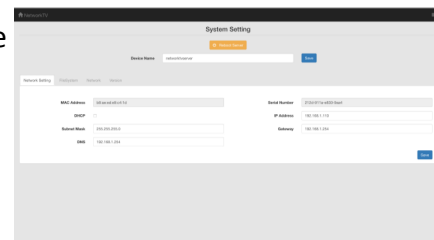
The Administrator Portal provides a range of system information including the capability to change the server IP address and the ability to reboot the server.

Server Addressing Setup

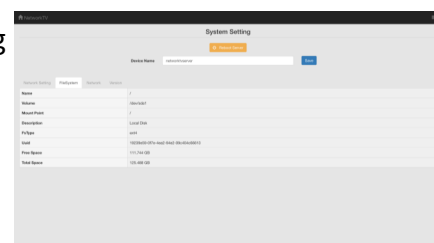
The NetworkTV management server will be delivered with a static IP address and you will probably want to change this to an IP address in your preferred subnet.

To access the management functions, select the management **Log In** button  which is situated at the top right of the page. You will be asked for your user name and password to allow you access to the system Administration functions. Login with your name and default password is: azureadmin. The admin portal will then display as per the screenshot.

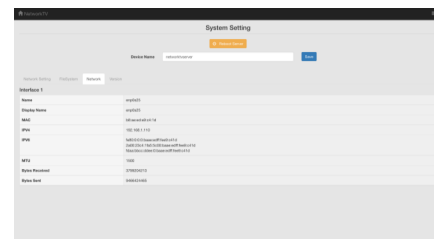
To change the server IP address, click on the **Settings** button and choose the **Network Setting** tab. Insert the new IP address and click **Save**.



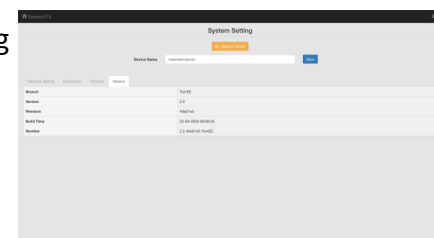
Click the **FileSystem** tab to see information about the disk system including the free space.



Click the **Network** tab to see information about network set up.




Click the **Version** tab to see the NetworkTV software information regarding your specific system.



The Manage Live Channels function allows Administrators to create or configure live channels. A Live channel can be a DVB or ATSC broadcast TV channel, an encoded feed, an IP camera or a third party stream. Click the **Live Channels** button and you will be displayed with the page below.

[illegible]

Delete Live Channel: Click the Trash Can to delete a channel from the list.


Name: This gives you the name of the live channel. It can be edited via the configure channel  button.

Type: Shows you where the channel is delivered from (ie Gateway is the NetworkTV DVB Gateway, UDP is network stream, Encoder is from a managed hardware encoder).

Stream URL: This shows the URL address of each stream.

Private: If the Private button is ticked then the channel will only be available to Administrators and not visible in the channel list for users.

Send to Set Top Box (STB):

To send a specific live channel from the list to a STB, click  and choose to send the channel to all STBs, a group or an individual STB. The Groups or individual STBs available will be shown in a list (see screenshot left). Tick the STB or Group you want the channel to be sent to and click Confirm. The chosen STB(s) will immediately start playing that live channel.

Send to STB

☐ Send to All STB ☐ Send to STB groups ☒ Send to selected STB

☒ Amino 1

☐ Room 101

☐ Marketing Department

Send to STB

☐ Send to All STB ☐ Send to STB groups ☒ Send to selected STB


☒ Amino 1

☐ Room 101

☐ Marketing Department

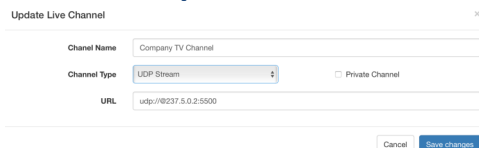
Live Channel Order: To move the position that the live channels will appear in the User Interface, use the **UP** and **Down** arrows to move channels up or down the list.

Create HLS: This allows any live H.264 stream to be repurposed into an HTTP Live Streaming (HLS) channel. Click the [Create HLS](#) button and you will be asked if you want a Native (current channel bit rate) or Transcode stream (set at 1Mbit). A new channel will be added to the bottom of the live channels list. HLS channels are unicast streams and can be viewed in PC browsers, mobile devices like iPhones, iPads, Android tablets and phones.

Configure Channel: You will also be able to configure the metadata detail of each video by selecting the **Configure Channel**  button. The **Update Live Channel** dialogue box will open.

Update Live Channel: To edit the name of the channel or the Channel Type or its URL (depending upon the type of live channel it is), enter the details.

When you have finished, click **Save Changes** to confirm.



Update Live Channel

Channel Name: Company TV Channel

Channel Type: UDP Stream ☐ Private Channel

URL: udp://@237.5.0.2:5500

Buttons: Cancel, Save changes

Adding New Live Channel

Add a New Live Channel




New Live Channel

Channel Name:

Channel Type: ☐ Private Channel


URL:

Buttons: Cancel, Save changes

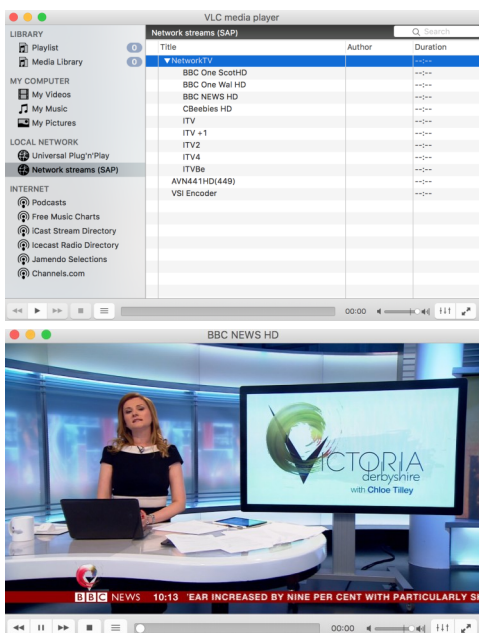
To add a new live channel, whether it's an encoder stream, IP camera feed or third party stream, then click the  button and the following window will open.

Insert a channel name, choose the type of channel from the dropdown (**Note: use UDP for most networked streams**) and enter the URL for its multicast, HTTP or RTSP address. Tick the Private Channel box if you want this channel to remain hidden from users. Click **Save Changes** when you have finished.

Note: Any of the live channels can be recorded.

 **Note:** See the **Manage Live Channels** screenshot on the previous page for examples of the different URL nomenclature (URL addresses) of multicast, HLS, HTTP and RTSP streams. See **Appendix B** for explanation and examples.

SAP Announcements



Session Announcement Protocol (SAP) is a protocol for broadcasting multicast session information. Each live TV channel that is output by the NetworkTV Live Gateway system produces these SAP announcements which identify the TV channel by name. Some encoders and IP devices also produce SAP announcements such as the VSI AVN encoder range.

This enables a user to open a media player such as VLC and see the channel line-up (playlist) of live multicast streams that are being broadcast by NetworkTV or other IP devices. The user can then choose a channel by double-clicking on it or clicking the play arrow icon and VLC will display the channel. Resize the window for your needs or play full screen. You can also choose to allow the VLC player to "float on top" which means you can keep the player window open and it will sit on top of whatever applications you are working on.

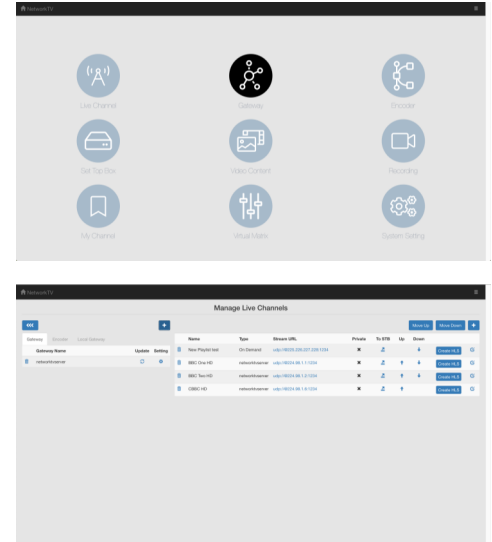


Managing NetworkTV Digital TV Gateways and Importing Channel Lists

Adding NetworkTV Gateway Appliances

Once you have scanned the tuners and created your channel lists on the NetworkTV Gateway Appliance(s), then it's an easy process to add and import the channels into the main NetworkTV system.



When the NetworkTV Gateway Appliance is integrated into the main NetworkTV Administration UI then you will be able to manage the imported channels from the Live Channels management interface. Click the Gateway icon on the Admin portal or access it from the **Manage Live Channels** page and follow the instructions below.





To add a Gateway Appliance:

New Digital TV Gateway

IP Address

1. Click **Gateway** from the Admin Portal or select **Manage Live Channels** then click the Gateway  button.
2. Click the Add new Gateway button  and the **New Digital TV Gateway** dialogue box (left) will open.
3. Enter the IP Address of the Gateway in the dialogue box and Click **Apply**.
4. The new Gateway will then appear in your Digital TV Gateways list. The TV channels that have been enabled in the Gateway tuners will automatically be published in the Live Channels list in the NetworkTV UI.

To Manage a Gateway & Import TV Channels:

1. Click the **Setting** button  of the Gateway you want to manage and this will launch the management page in a new browser window (refer to pages 12-19 for configuration instructions).
2. After you make changes on the Gateway go back to the main Network TV page (above) and click the Update from Gateway button  to import all channels selected in the Gateway UI.

NetworkTV Live Digital TV Gateway & Pro Servers

NetworkTV Live provides the equipment and software to manage live video streams. NetworkTV Live can manage various types of live streams including DVB-T2, DVB-S2, DVB-C, ATSC QAM, encoded and unmanaged multicasts.

There are two types of NetworkTV Live systems:

1. NetworkTV Live Digital TV Gateway Appliance is a 1U short depth rack unit so that it will fit neatly into an AV style rack and therefore suitable for most types of installations. However, the Gateway Appliance will also install just as well in a full IT rack in a data comms room.

The NetworkTV Live Digital TV Gateway Appliance will be delivered pre-configured as a package and will include the NetworkTV Management software which provides the capability to manage tuners, encoders, streams and set top boxes. The NetworkTV Live Gateway will be shipped with the appropriate tuner cards already installed.

The NetworkTV Live Starter Packages include options for different types of DVB, DTMB and ATSC tuners.

The NetworkTV Live Digital TV Gateway Appliance can be used as a standalone system to deliver just live channels or as a slave tuner chassis in a full NetworkTV Video Content Management System.

The NetworkTV Live Digital TV Gateway Appliance (NTVLGAPP) is a chassis holding up to four DVB/ATSC cards running a Linux Ubuntu Operating System and the NetworkTV Management Software. You can mix and match different types of NetworkTV tuners in the same chassis to access DVB-T/T2, DVB-S/S2, DVB-C, DTMB and ATSC transmissions as well as tuner cards with Common Interfaces for Conditional Access Modules to receive scrambled TV channels (see picture below).

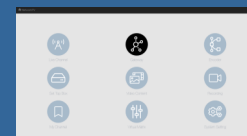
Simply plug in the power lead, the RF coax cables to the connectors, an RJ45 network fly lead to the LAN port and then turn the unit on.



2. NetworkTV Live Pro Server is a system employed to create a solution that can manage large numbers of various types of live streams and users. The NetworkTV Pro system can also be delivered as a virtual machine image. This system is also capable of being expanded to include a recorder, archiving and Video-on-Demand. It is an Intel NUC based server and is delivered as a pre-configured NetworkTV Live system. Connect an RJ45 cable and power and the server is ready to go.



Configuring NetworkTV Live Digital TV Gateways



NetworkTV Live Digital TV Gateway Appliance Set-up

The NetworkTV Live Digital Gateway Appliance can act as a standalone system or as an additional device to a NetworkTV Server. The NetworkTV server can either be a NetworkTV Live Server or a NetworkTV Content Management System Server.

The first step is to configure the NetworkTV Gateway Appliance and set up the channel lists from the tuners by following the instructions below. The second step is then to import the Appliance and the channels into the main NetworkTV Administration UI.

Managing NetworkTV Live Gateway Appliances

First add the NetworkTV Gateway as shown in the previous pages or browse to the IP address of the NetworkTV Gateway Appliance and login as administrator. You will be presented with a web page login screen.

Please sign in

Username or Email

Password

☐ Remember Me

Login

Login: admin

Password: gateway

Once you have logged in you will be presented with the DVB Gateway configuration screen — see below.

Network TV Gateway

Server Version: 2.3

System

Channel Order

- Card 1 - DVB-S
- Card 2 - DVB-S
- Card 3 - DVB-S
- Card 4 - DVB-S
- Card 5 - DVB-S
- Card 6 - DVB-S
- Card 7 - DVB-S
- Card 8 - DVB-S

System Settings

Reboot Gateway

Device Name: networktvserver Save

Licence Key: 8066-998C-84DA-6D58 Save

Network Configuration

MAC Address: 00:22:AB:80:84:12 Serial Number: 2e44-1aa2-a8bc-dc2a

DHCP: ☐ IP Address: 192.168.1.98

Subnet Mask: 255.255.255.0 Gateway: 192.168.1.254

DNS: 192.168.1.254

Save

System settings

Device Name This is the name that is used to identify the Gateway Appliance on the network. It is limited to 16 characters and must contain no spaces.

Network Configuration Use this section to configure the network settings of the Gateway Appliance. We recommend you always use a static IP address (ie no DHCP).

Settings

DHCP: Dynamic Host Configuration Protocol provides automatic network configuration on a network that has a DHCP server.

IP Address: If DHCP is not selected then enter the IP Address to use.

Subnet Mask: If DHCP is not selected then enter the Subnet Mask to use.

Gateway: If DHCP is not selected then enter the default Gateway to use.

If you need to perform a major update of the firmware of the Gateway, then the shouldn't need to to re-scan or configure the tuners again, the system will remember the existing frequencies and channels.

Reboot Gateway You need to reboot the Gateway if you have changed the Device Name or Network Configuration or have performed a Firmware Update.



DVB-T Tuners

DVB-T Tuners enable you to receive terrestrial digital TV broadcasts using a domestic TV aerial. DVB transmits a number of digital channels on a single frequency.

Each country has its own set of UHF frequencies it uses to transmit these multiple channels and within each country only a small range of available frequencies are used for each geographic region. To find your local region frequencies speak to your System Integrator or contact us at info@networktv.tv for more information.

The tuners that are installed in your NetworkTV Gateway Appliance are listed down the left hand side of the screen. Click on the tuner you want to scan then proceed to the instructions below.



Settings for scanning

See above for an example screenshot of the NetworkTV Live Gateway DVB-T Scanning page.

Frequency: Insert the frequency of the transponder you want to scan to for the particular multiplex you require. For example 498000KHZ.

Bandwidth: DVB-T in the UK is normally within the 8MHZ range so insert 8 here. For other regions check the local transport bandwidth.

Delivery Type: Choose DVB-T or DVB-T2 from the dropdown.

Start Scan: Clicking the **Start Scan** button initiates the tuner to start scanning the DVB-T frequencies for the one you require and is likely to take a minute or two depending upon how many local frequencies there are.

Scan Status: This displays the current scan status via the progress bar.

Signal: Indicates that the tuner is receiving a signal

Carrier: Indicates that the tuner is receiving a carrier wave

Sync: Indicates that the tuner is synchronized with the broadcast

Locked: Indicates that the tuner has locked onto the selected frequency

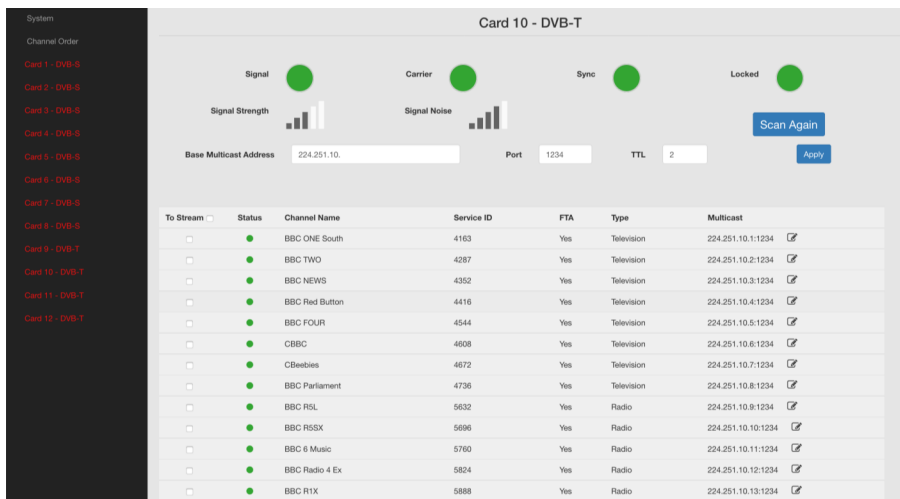
Signal Strength: Indicates amount of signal being received

Signal to Noise: Indicates the ratio of valid signal being received against interference (the higher the value the better)



Settings after scanning

After you have scanned a tuner the UI will change to reflect the ability to select the channels you want to transmit. See below for an example screenshot of the NetworkTV Live Gateway DVB-T tuner settings page.



To Stream	Status	Channel Name	Service ID	FTA	Type	Multicast
<input type="checkbox"/>	●	BBC ONE South	4163	Yes	Television	224.251.10.1:1234
<input type="checkbox"/>	●	BBC TWO	4287	Yes	Television	224.251.10.2:1234
<input type="checkbox"/>	●	BBC NEWS	4352	Yes	Television	224.251.10.3:1234
<input type="checkbox"/>	●	BBC Red Button	4416	Yes	Television	224.251.10.4:1234
<input type="checkbox"/>	●	BBC FOUR	4544	Yes	Television	224.251.10.5:1234
<input type="checkbox"/>	●	CBBC	4608	Yes	Television	224.251.10.6:1234
<input type="checkbox"/>	●	CBeebies	4672	Yes	Television	224.251.10.7:1234
<input type="checkbox"/>	●	BBC Parliament	4736	Yes	Television	224.251.10.8:1234
<input type="checkbox"/>	●	BBC RSL	5632	Yes	Radio	224.251.10.9:1234
<input type="checkbox"/>	●	BBC RSLX	5696	Yes	Radio	224.251.10.10:1234
<input type="checkbox"/>	●	BBC 6 Music	5760	Yes	Radio	224.251.10.11:1234
<input type="checkbox"/>	●	BBC Radio 4 Ex	5824	Yes	Radio	224.251.10.12:1234
<input type="checkbox"/>	●	BBC R1X	5888	Yes	Radio	224.251.10.13:1234

Base Multicast Address

The system automatically assigns a base multicast address and then provides each channel a multicast address sequentially. However, you can assign your own base multicast address or alternatively edit any channels multicast to one that you want to assign to that specific channel.

Enter the multicast address you want to have the channel to start from eg 237.0.0.0. Each channel will automatically have assigned to it the next sequential number.

Port

Enter the port number that you want to assign the channels to multicast on.

TTL

Enter the TTL (time to live) you require according to your IP setup.

Click **Apply** to save your settings. This will turn the indicators red until you have chosen which channels to stream and then they will display green again.

Important: To select channels on a different frequency you need to use a different tuner. If you are already broadcasting channels on one frequency and you then change frequency and select another set of channels, the first set will stop being broadcast.



Channel List

To Stream: Tick the box next to the channel(s) you want to stream.

Status: When the indicator is green then the channel is fully functioning when chosen to stream.

Channel Name: The transmitted channel name


Service ID: The service ID of the channel (every channel has a unique ID no.).

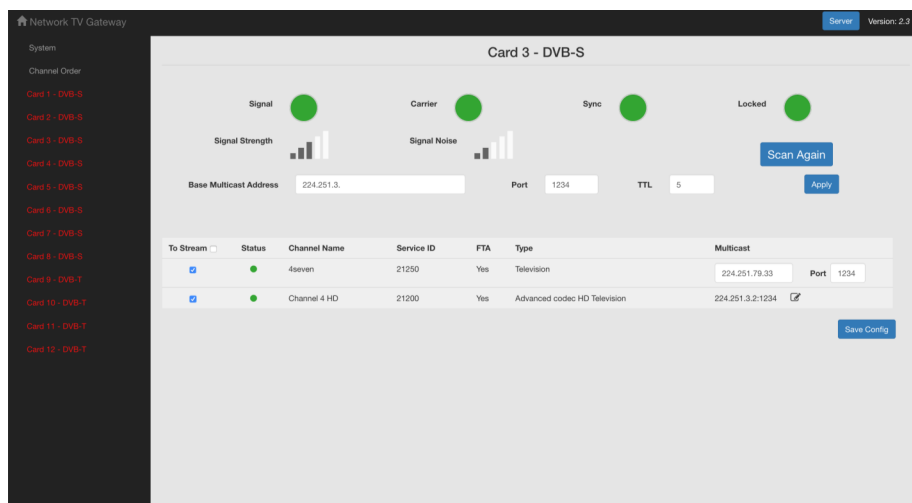


Note: Local/regional channel transmissions are likely to have a specific Service ID to distinguish them from other regions even though they are listed in the same frequency multiplex (eg BBC One London versus BBC One South).


FTA: It will indicate **Yes** if the channel is Free To Air (i.e. not encrypted)

Type: The type of channel (eg SD, HD or Radio format)

Multicast: The multicast address and port used to receive this channel on an IP Network. Use the edit button  to manually change the multicast address and port number for a specific channel.



The screenshot shows the 'Card 3 - DVB-S' configuration page in the Network TV Gateway. The left sidebar lists system components, and the main area displays signal metrics (Signal, Carrier, Sync, Locked) and a table of channels to stream. The table has columns for 'To Stream', 'Status', 'Channel Name', 'Service ID', 'FTA', 'Type', and 'Multicast'. Two channels are listed: '4seven' and 'Channel 4 HD'. The 'Channel 4 HD' row is selected, and its multicast address '224.251.3.2:1234' is highlighted. A 'Save Config' button is visible at the bottom right.

To Stream	Status	Channel Name	Service ID	FTA	Type	Multicast
<input checked="" type="checkbox"/>	●	4seven	21250	Yes	Television	224.251.79.33 Port 1234
<input checked="" type="checkbox"/>	●	Channel 4 HD	21200	Yes	Advanced codec HD Television	224.251.3.2:1234 



Note: Don't forget to select the channels you want to broadcast by clicking on them in the list and then click Save Config to apply the changes.

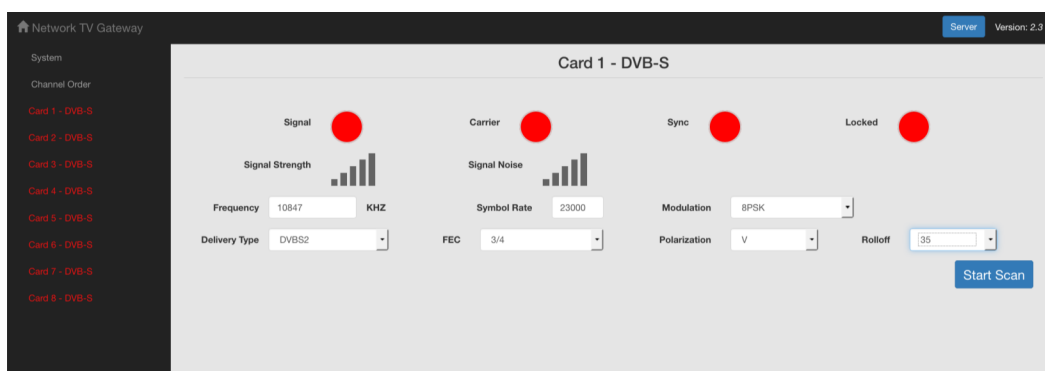
DVB-S Tuners

DVB-S Tuners enable you to receive digital TV broadcasts using a satellite dish. DVB transmits a number of digital channels on a single frequency.

To configure a DVB-S Tuner you need to know the settings for the transponder on the satellite you want to tune to. Point your browser at www.kingofsat.net or www.lyngsat.com to find the information you require.

The tuners that are installed in your NetworkTV Gateway Appliance are listed down the left hand side of the screen. Click on the tuner you want to scan then proceed to the instructions below.

Settings for scanning See below for an example screenshot of the NetworkTV Live Gateway DVB-S Settings page.



The screenshot shows the 'Card 1 - DVB-S' settings page. On the left is a sidebar with a menu: System, Channel Order, Card 1 - DVB-S (selected), Card 2 - DVB-S, Card 3 - DVB-S, Card 4 - DVB-S, Card 5 - DVB-S, Card 6 - DVB-S, Card 7 - DVB-S, and Card 8 - DVB-S. The main content area has a title 'Card 1 - DVB-S' and a 'Server Version: 2.3' label. It features four status indicators: Signal, Carrier, Sync, and Locked, each with a red circle. Below these are two bar charts: 'Signal Strength' and 'Signal Noise'. The configuration fields include: Frequency (10847 KHZ), Symbol Rate (22000), Modulation (QPSK), Delivery Type (DVBS2), FEC (3/4), Polarization (V), and Rolloff (35). A 'Start Scan' button is located at the bottom right.

Frequency to Scan: Enter the frequency of the transponder you want to tune to.

Symbol Rate: Enter the Symbol Rate that the transponder uses.

Modulation: Choose the Modulation that the transponder uses from the dropdown.

Delivery Type: Choose either DVBS or DVBS2.

FEC: Choose the Forward Error Correction type that the transponder uses from the dropdown.

Polarisation: Choose the Polarisation that the transponder uses from the dropdown (H, V, L, R).

Rolloff: Choose the Rolloff for DVB-S2 transponders from the dropdown. We advise that if it is not known then select 35.

Start Scan: Clicking the **Start Scan** button initiates the tuner to start scanning the DVB-S frequencies for the one you require and is likely to take a minute or two.

Abort Scan: Stops the scan and saves the channels found so far.

Scan Status: This displays the current scan status via the progress bar.



Signal: Indicates that the tuner is receiving a signal

Carrier: Indicates that the tuner is receiving a carrier wave

Sync: Indicates that the tuner is synchronized with the broadcast

Locked: Indicates that the tuner has locked onto the selected frequency

Signal Strength: Indicates amount of signal being received

Signal to Noise: Indicates the ratio of valid signal being received against interference (the higher the value the better)

Settings after scanning After you have scanned a tuner the UI will change to reflect the ability to select the channels you want to transmit. See below for an example screenshot of the NetworkTV Live Gateway DVB-S tuner settings page.

To Stream	Status	Channel Name	Service ID	FTA	Type	Multicast
<input type="checkbox"/>	<input type="radio"/>	BBC One HD	6961	No	Advanced codec HD Television	224.98.1.1:1234
<input type="checkbox"/>	<input type="radio"/>	BBC Two HD	6960	No	Advanced codec HD Television	224.98.1.2:1234
<input type="checkbox"/>	<input type="radio"/>	BBC One NI HD	6963	No	Advanced codec HD Television	224.98.1.3:1234
<input type="checkbox"/>	<input type="radio"/>	BBC Two HD	6940	No	Advanced codec HD Television	224.98.1.4:1234
<input type="checkbox"/>	<input type="radio"/>	BBC One HD	6941	No	Advanced codec HD Television	224.98.1.5:1234
<input type="checkbox"/>	<input type="radio"/>	CBBC HD	6972	No	Advanced codec HD Television	224.98.1.6:1234
<input type="checkbox"/>	<input type="radio"/>	CBBC HD	6952	No	Advanced codec HD Television	224.98.1.7:1234
<input type="checkbox"/>	<input type="radio"/>	6945	6945	No	Advanced codec HD Television	224.98.1.8:1234
<input type="checkbox"/>	<input type="radio"/>	BBC One NI HD	6943	No	Advanced codec HD Television	224.98.1.9:1234
<input type="checkbox"/>	<input type="radio"/>	BBC Two Wal HD	6912	No	Advanced codec HD Television	224.98.1.10:1234

Base Multicast Address

The system automatically assigns a base multicast address and then provides each channel a multicast address sequentially. However, you can assign your own base multicast address or alternatively edit any channel multicast to one that you want to assign to that specific channel.

Enter the multicast address you want to have the channels to start from eg 237.0.0.0. Each channel will automatically have assigned to it the next sequential number.

Port

Enter the port number that you want to assign the channels to multicast on.

TTL

Enter the TTL (time to live) you require according to your IP setup.

Click **Apply** to save your settings. This will turn the indicators red until you have chosen which channels to stream and then they will display green again.

Important: To select channels on a different frequency you need to use a different tuner. If you are already broadcasting channels on one frequency and you then change frequency and select another set of channels, the first set will stop being broadcast.





Channel List

To Stream: Tick the box next to the channel(s) you want to stream.

Status: When the indicator is green then the channel is fully functioning when chosen to stream.

Channel Name: The transmitted channel name


Service ID: The service ID of the channel (every channel has a unique ID no.).











Note: Local/regional channel transmissions are likely to have a specific Service ID to distinguish them from other regions even though they are listed in the same frequency multiplex (eg BBC One London versus BBC One South).

FTA: It will indicate **Yes** if the channel is Free To Air (i.e. not encrypted)

Type: The type of channel (eg SD, HD or Radio format)

Multicast: The multicast address and port used to receive this channel on an IP Network. Use the edit button  to manually change the multicast address and port number for a specific channel.



To Stream	Status	Channel Name	Service ID	FTA	Type	Multicast
<input checked="" type="checkbox"/>	●	BBC One HD	6961	Yes	Advanced codec HD Television	224.98.1.1 Port 1234
<input checked="" type="checkbox"/>	●	BBC Two HD	6960	Yes	Advanced codec HD Television	224.98.1.2:1234 
<input type="checkbox"/>	●	BBC One NI HD	6963	No	Advanced codec HD Television	224.98.1.3:1234 
<input type="checkbox"/>	●	BBC Two HD	6940	No	Advanced codec HD Television	224.98.1.4:1234 
<input type="checkbox"/>	●	BBC One HD	6941	No	Advanced codec HD Television	224.98.1.5:1234 
<input checked="" type="checkbox"/>	●	CBBC HD	6972	Yes	Advanced codec HD Television	224.98.1.6:1234 
<input type="checkbox"/>	●	CBBC HD	6952	No	Advanced codec HD Television	224.98.1.7:1234 
<input type="checkbox"/>	●	6945	6945	No	Advanced codec HD Television	224.98.1.8:1234 
<input type="checkbox"/>	●	BBC One NI HD	6943	No	Advanced codec HD Television	224.98.1.9:1234 
<input type="checkbox"/>	●	BBC Two Wai HD	6912	No	Advanced codec HD Television	224.98.1.10:1234 

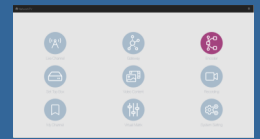


Note: Don't forget to select the channels you want to broadcast by clicking on them in the list and then click Save Config to apply the changes.





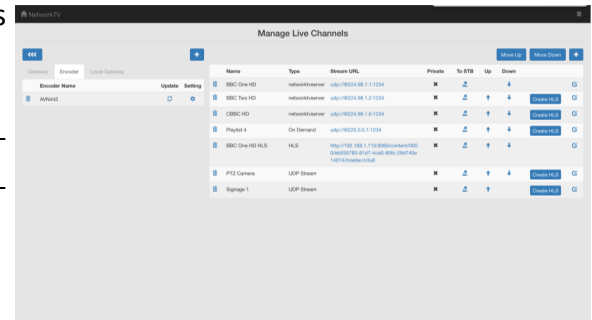
Managing Encoders



Adding Encoders

NetworkTV provides functionality to manage multiple encoders via the Administration Portal.

Click the **Encoder** icon and you will access the Encoder Management page. Add a new encoder or edit an existing encoder setting.

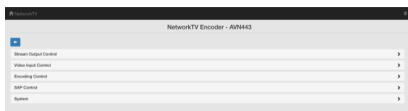


To add a new encoder:

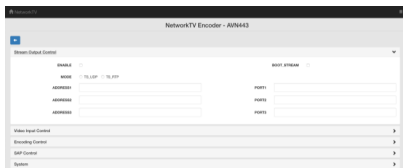
Click to add a new encoder and choose whether it will be an **AVN4XX** encoder or an **IP Stream** from a third party encoder.

Enter its **Name**, **Username**, **Password** and **IP address**.

Click **Add** to confirm.



Click to access the settings for that encoder. The settings here apply to the Visionary Solutions AVN range of encoders.



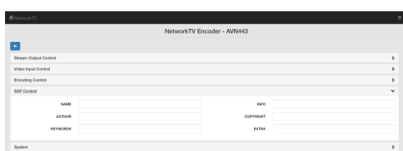
Click the **Stream Output Control** tab to enter the multicast and port settings and enable the stream to automatically start on boot up.



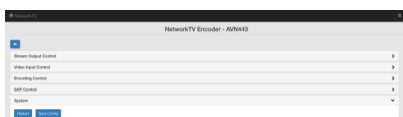
Click the **Video Input Control** and choose the input source and resolution. You can also get the encoder to scale the output.



The **Encoding Control** tab allows you to set the video and audio bit rate for the stream and choose whether the stream will be constant or variable from the dropdown. You also have an option on the GOP type from the dropdown.



The **SAP** (Session Announcement Protocol) Control tab allows you to set metadata for the video channels.

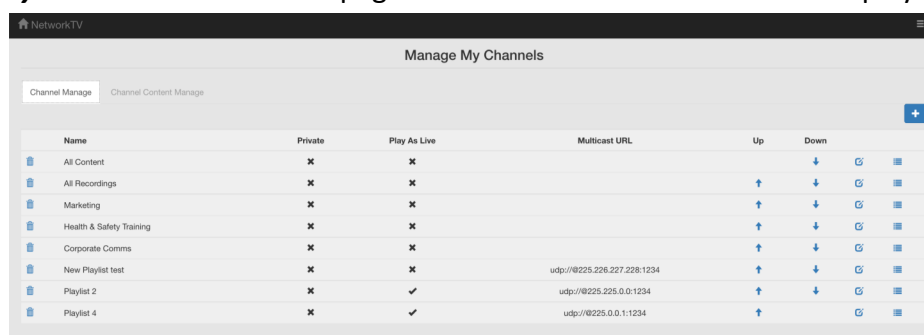


Save the configuration you have set or reboot the encoder in the the **System** tab.

Manage My Channels



My Channels (channel folders or content categories) are created and each category can hold an unlimited number of pre-recorded videos relevant to that category (dependent on hard disk storage capacity). These category channels within the NetworkTV Library are where you would normally organise and archive videos relevant to a department, course, genre, skill, date etc. Video's can be uploaded or recorded into a chosen **My Channels** category. Managing **My Channels** allows you to create, change, make private or delete category channels within the NetworkTV Library. You can have an unlimited number of **My Channels** in a NetworkTV Library. Click the **My Channels** icon and the page similar to the one below will be displayed.




Name	Private	Play As Live	Multicast URL	Up	Down	
All Content	✗	✗			↓	ⓘ
All Recordings	✗	✗		↑	↓	ⓘ
Marketing	✗	✗		↑	↓	ⓘ
Health & Safety Training	✗	✗		↑	↓	ⓘ
Corporate Comms	✗	✗		↑	↓	ⓘ
New Playlist test	✗	✗	udp://@225.226.227.228:1234	↑	↓	ⓘ
Playlist 2	✗	✓	udp://@225.225.0.0:1234	↑	↓	ⓘ
Playlist 4	✗	✓	udp://@225.0.0.1:1234	↑		ⓘ

Add New Channel

Add New Channel

Channel Name ☒ Private Channel

Click the  and the **Add new Channel** dialogue box will open. Enter a name for the new channel and whether it is **Private** or not, click **Save** to confirm the changes.

Private

Indicates if this channel is **Private** and therefore only visible to administrators. The content within it will be hidden from user channel lists. Access will be via the Admin UI only.

Play As Live

Play As Live allows you to create or change any of the folders into an in-house live multicast channel. This provides the capability to create **Playlists** of pre-recorded content as a channels that play out sequentially in a loop.


Multicast

This is the multicast address assigned to Play as Live/Playlist channels.

Channel Order

To move the position that the channel categories in **My Channels** appear in the User Interface, use the **UP** and **Down** arrows to move channels up or down the list.

Edit Channel Details

To edit the name of the channel and whether it is a Private Channel or not, click on the  button. When you have edited the Channel Name and whether it is **Private** or not, click **Save** to confirm the changes.

Manage Content

Click the  button to manage content for that channel.

Delete Channel

Click the Trash Can  to delete a channel from the list.



Managing Video Content in the NetworkTV Library



Manage Video Content

The **Video Content** icon provides access to the pre recorded content stored in the **My Channels** folders within the library. The channels are listed by category and each category can hold an unlimited number of pre-recorded videos relevant to that category. To manage this content, select the **Video Content** button.

To display all of the video content in the library select **All Channels** in the **Filter By Channels** dropdown box. If you only want to see the list of videos in a particular channel category, select that category in the **Filter By Channels** dropdown box.

Date Uploaded	Title	Caption	Duration	Private	Size	Download	More
2020-09-16 11:17:38	Landing at Chambéry	Landing	00:04:43		501.4 MB		
2020-09-16 12:10:03	Delay 1	Delay 1	00:01:03		38.2 MB		
2020-09-16 12:10:43	Delay Countdown	Delay Countdown	00:00:20		13.1 MB		
2020-09-16 12:11:13	Square	Square	00:00:08		20.0 MB		
2020-09-16 12:11:45	Water dragon	Water dragon	00:00:20		1.9 MB		
2020-09-16 12:23:31	F1 in London	F1 in London	00:00:27		20.2 MB		
2020-09-16 15:11:32	F1 showered	F1 showered	00:02:08		33.3 MB		
2020-09-30 18:41:05	Recording 1	HD Camera	00:00:12	<input checked="" type="checkbox"/>	4.5 MB		

Delete Video

Click the Trash Can to delete a video from the library.

Metadata

The page shows when the video was uploaded (or recorded), it's duration and size. It also gives the title and caption.

To STB

To make a specific video play out on a single, group or all set top boxes, click the button and the **Send to STB** dialogue box will open. Choose the option you require and then click **Confirm** to send it.

Download

Click the button to download a specific video. Depending on the browser you are using, the video will either start playing or be placed into your Downloads Folder. To save it to a different location, right-click and save as.

Edit Video Properties

If you need to update, change or add any metadata to a video, click on the **Edit Video Properties** button . The following window will open.

Private

Tick this box to make the content restricted to access by only the Administrator.

Edit Video Properties

Metadata Channels

Title: Landing at Chambéry

Caption: Plane Clip


Description: Clip of plane landing at Chambéry airport

☒ Private

type to add tags


Cancel Save

Click on the **Metadata** tab to enter or edit the text for the video: **Title**, **Caption** and **Description**.

Then click on the **Type to add Tags** box if you want to add tag types to the video. Users will be able to search for videos using the tags associated with a video. You can add multiple Tags. You can also add new tags to the list by entering the tag type and clicking the add  button.


Click on the **Channels** tab and tick the category folder or folders you want the video to appear in on the **My Channels** list. Each piece of content can be assigned to multiple folders.



Edit Video Properties




Metadata Channels

- ☒ All Content
- ☐ All Recordings
- ☐ Marketing
- ☐ Health & Safety Training
- ☐ Corporate Comms
- ☒ New Playlist test
- ☐ Playlist 2
- ☒ Playlist 4


type to add tags 


Cancel Save

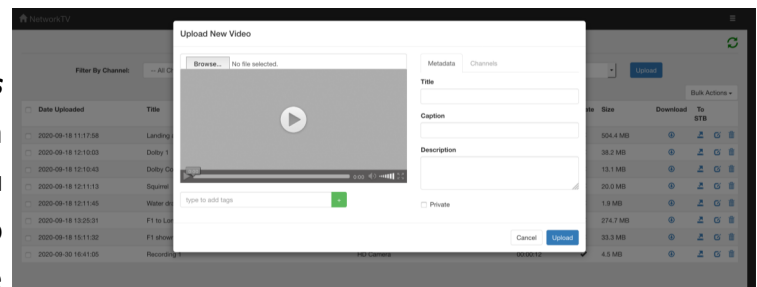
Click  when you are finished editing.

Upload New Video

Upload Click the  button to upload a video. The **Upload New Video** box will open. NetworkTV is able to handle a variety of video formats including .ts, .mp4, .mov, .avi, .wmv.

Click **Browse** to find your required video file (note: Explorer will open on a Windows PC and Finder will open on a Mac). Browse to the video you want to upload and click Open or Choose. You can also play the video if you want to make sure it's the correct one.

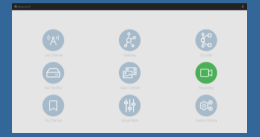
Follow the instructions in the **Edit Video Properties** section on the previous page to add any metadata to the **Metadata** and **Channels** tabs. Once you have made the changes click  and the video will start uploading to the NetworkTV library. The green progress bar will indicate that it is being uploaded.



By clicking  will refresh the content in that list if videos have been added or deleted.

The Bulk Actions button enables the Administrator to choose multiple pieces of content and delete or make them public or private rather than having to do this to each individual item. Use the tick boxes on the left of the page to choose individual or all items .

Managing Recordings




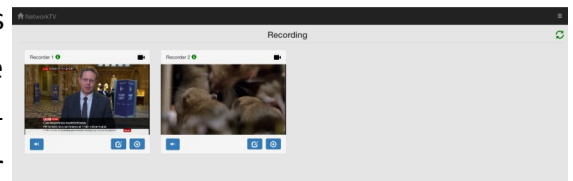
NetworkTV provides two recorders as standard in each of the NetworkTV Video Content Management Starter Packages, but additional recorders can be added upon request. The Recorders will record any of the live stream formats handled by NetworkTV including MPEG2 TS, MPEG4 H.264, HLS, HTTP and RTSP formats.

The recording function allows for a maximum 4 hours recording time for one individual recording. Depending upon the bitrate, the size of a 4 hour recording file could be very large. The amount of storage required will be determined by how long the video's are and the bit rate at which they were encoded. The matrix table below provides some guidance on the amount of storage space required for video's of a specific length at a range of bit rates.

Video Bit Rate (megabits per second)	MBytes Storage per Minutes		
	1Min	10 Min	60 Min
0.5Mbps	3.8MB	38MB	228MB
1Mbps	7.5Mb	75Mb	450MB
2Mbps	15MB	150MB	900MB
4Mbps	30MB	300MB	1800MB
6Mbps	45MB	450MB	2700MB
10Mbps	75MB	750MB	4500MB

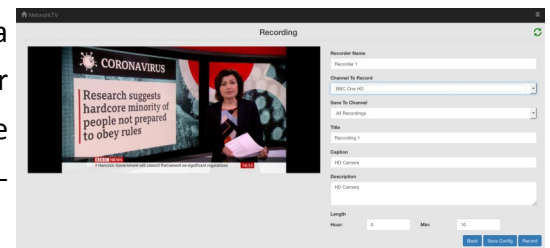
The Recorders

To access the recording function, select the **Recording** icon. This will open the Recording page as seen here giving you access to the **Recorders**. The Recorders can record the same or different channels simultaneously. To set up a recording, choose which Recorder you want to use and click the edit  button.



Setting up a Recording

By editing the configuration of a recorder, it will store the metadata you enter for that recording. From here you can start the Recorder or you can save the configuration so that the same channel will be recorded each time. This may be useful if you have a room or channel that you regularly record.



Recorder Name: Enter the name for the Recorder. This will be displayed above the Recorder pane in the Recordings Page.

Channel to Record: Click on the dropdown to choose the live channel that you want to record.


Save to Channel: Click on the dropdown to choose the folder area of **My Channels** of the content library that you want your recording to be recorded into.


Title: Enter a title for the Video. This could be the channel name or a time or date.

Caption: Enter a caption which will act as a short description.


Description: Enter a full description.


Length: Set a time in hours and minutes for a set recording length.

Save Config and Exit: Click the  for the Recorder to remember this setting for future recordings. You can then Start the recording from here or the Recording page.




Record: Click the  button to begin recording. The page will then revert back to the Recording page. The recording will show a red button if that Recorder is currently recording.


Stop Recording: To Stop a recording, just click the green button. Once the recording has been stopped the video is automatically published to the category you chose and available to be watched On Demand by users.



 **Note:** All of the metadata is editable after you have stopped the recording via the **Edit Video Properties** function in the **Manage Content administration** page.


When a Recorder has been configured and you have entered the metadata, if you click the  button on the Recorder pane, you will see the information for that channel as seen on the screenshot on the right.


The Recorder pane also shows the status of a stream with the colour of the camera icon in the top right of the pane:

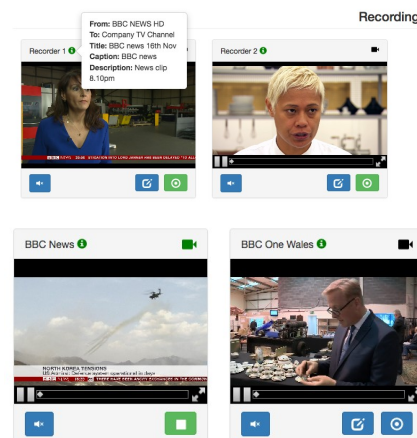
-  The black icon means no live feed available
-  The amber icon means requesting stream
-  The green icon indicates that the stream is good and being recorded.

If the stream is good the camera icon will turn green after about 10 seconds, alternatively you can refresh the Recorders to make sure the stream is being received. If a red camera icon appears  then the recording has failed to start, so check connections and restart the recording.

Start Recording: You can start a recording directly from the Recorder by pressing the  button. It will then turn green  as you can see in the **BBC News Recorder 1** in the screenshot above. Click it again to stop the recording.

Audio: The audio for each recorder is turned off by default but you can click the speaker button  to hear the audio from that live stream. Click it again to turn it off.

 **Note:** The metadata you enter for a recording will be displayed in the user interfaces (PC & STB) and can help as another resource alongside Filters and Tags when users search for specific videos in the NetworkTV library archive.





Managing Set Top Boxes



NetworkTV currently offers support for either our own STB or the Amino H140 set top box (STB) as decoder devices that accept the incoming IP video streams and outputs them via HDMI onto large format displays. Control of each STB can be with a handheld remote control, via the NetworkTV Administration Portal or using a third party control system.

The **Manage Set Top Boxes** function provides the capability to manage all of the set top boxes that are installed as part of a NetworkTV system.

Manage Set Top Boxes

To manage the STB's, select the **Set Top Box** button and the **Manage Set Top Boxes** page will open (see below).

Name	IP Address	Group	Status	Reboot	Up	Down
PackeTV STB	192.168.1.240	Default Group	Idle			
Reception	192.168.1.243	Default Group	Chambery			
Admin	192.168.1.244	Default Group	Landing at Chambery			
Marketing	192.168.1.90	Default Group	CBBC HD			

When a STB has been configured (see Page 28), NetworkTV will automatically find it on the IP network and by clicking the Refresh button at the top right of the page those correctly configured STBs will be displayed in the list. However, you can also add STBs manually by clicking on the button. The page also shows the STB IP address, the Group it's a member of and its **Status** (what channel or content it's currently playing).

Delete Selected STB

To delete a STB, click on the button.

Reboot STB

If a STB requires a reboot then click on the STB that you want to reboot and then click on the **Reboot STB** button.

Configure STB

To change the name of an existing STB or change its IP address, click on the **Configure STB** button, click **Save Changes** to confirm.

Reboot All STBs








From time to time — maybe after a power loss or a firmware update — all of the set top boxes may need to be rebooted. The feature allows all of them to be rebooted rather than having to visit each one individually to reboot/power cycle them.

Manage Groups

NetworkTV provides the capability to create Groups of set top boxes. This may be relevant if you want to create Departmental groups so that you can send specific video's only to those displays in that Department.

Click the [Manage Groups](#) button and the **Manage Set Top Box Groups** page opens:

Manage Set Top Box Groups

Name	Multicast Address	
Default	255.10.10.10	
 Public Displays	241.0.0.1	
 1st Floor	241.0.0.2	
 2nd Floor	241.0.0.3	

Group Name

Address

Add


Add new Group

Enter a name for the Group you want to create and then give that Group a unique IP multicast address. The IP multicast address is required because STBs assigned to a specific Set Top Box Group listen for commands sent on the multicast address assigned to that group. Click **Add** to confirm.



Note: Multicast addresses will most likely be allocated by your IT Department.

Edit Selected Group

To rename an existing Group or change its IP multicast address, click on the Group in the **Groups** list and click the edit button . Edit the **Group Name** or change its IP multicast address. Click **Add** to confirm.

Delete Selected Group

If you want to delete one of the existing groups, click on the  button.




Setting up & Configuring the NetworkTV Set Top Box

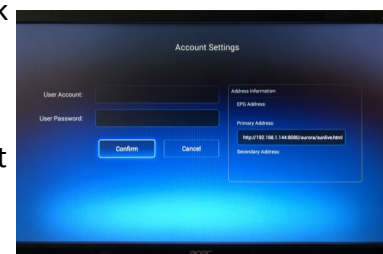
The set-top boxes access your NetworkTV system and display available live channels and content on a connected video source such as a large format display. The set-top boxes will be primarily used to play H.264, MP4 and MPEG .ts content but are also able to play other various format content including 4K. They support viewing live video as well as on-demand (and support Stop, Play, Pause, Fast Forward and Rewind features in VoD).





Before you can use your set top box to view video, you must configure it to access your NetworkTV system. Although you can use the RCU to set up the STB, you may find it easier to connect a USB keyboard and mouse (optional items) to access the configuration pages for the unit.

Connecting the set-top box for live streams only:


1. Use an HDMI cable to connect the HDMI port on the set-top box to an HDMI port on your video display. HDMI also transmits an audio signal in addition to video (there is also an AV audio out mini jack).
2. Connect an RJ-45 LAN cable to the LAN port on the rear of the unit. The other end of the cable connects to your LAN.
3. Connect the power supply to the power connector on the rear of the unit and press the on button
4. Press the 'hamburger' button  on the RCU to access the Management Settings menu. Use the arrow keys on the RCU to move around the menus.
5. Set STB to be DHCP or Static IP in the **Network Settings** menu.
6. Set the screen resolution in the **Resolution** menu.
7. **Display Adaptation** allows you to stretch or reduce the image if necessary.
8. Click the **More** menu for access to the **Account Settings** configuration.
 - Scroll down to **Advanced Settings** and enter. The login is **3008** then click **Confirm**.
 - Enter **Account Settings**.
 - In the **Primary Address** enter your NetworkTV Server url which will point the STB at your server:
<http://<<NTV Server ip address>>:8080/aurora/sunlive.html>
 - Click **Confirm**.
 - Escape out or use Back key on the RCU.
 - Reboot the STB.
 - Use **I** on the RCU to get the channel line up on screen.
 - Select the channel by scrolling down and clicking **OK** on the RCU.

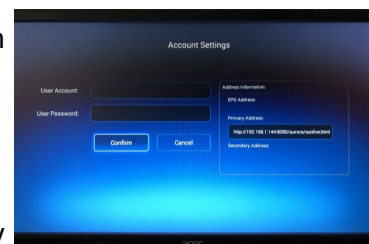


 You are able to bring up on the display an onscreen keyboard by pressing the **OK** button when you are in a text box. The Back button  hides the onscreen keyboard.


Setting up & Configuring the NetworkTV Set Top Box

Connecting the set-top box for live streams & VoD content:

1. Connect the power supply to the power connector on the rear of the unit.
2. Use an HDMI cable to connect the HDMI port on the set-top box to an HDMI port on your video source. HDMI also transmits an audio signal in addition to video.
3. Connect an RJ-45 LAN cable to the LAN port on the rear of the unit. The other end of the cable connects to your LAN.
4. Press the 'hamburger' button  on the RCU to access the Management Pages screen. Use the arrow keys on the RCU to move around the menus.
5. Set STB to be DHCP or Static IP in the network settings menu.
6. Set the screen resolution in the Resolution menu.
7. Display Adaptation allows you to stretch or reduce the image if necessary.
8. Enter the More menu for access to the Account Settings configuration.
 - Scroll down to **Advanced Settings** and enter. The login is **3008** then click **Confirm**.
 - Enter **Account Settings**.
 - In the **Primary Address** enter the url:
 <<NTV Server ip address>>:8080/aurora/sunhome
 - Click **Confirm**.
 - Escape out or use Back key on RCU.
 - Reboot the STB.
 - Use I on the RCU to get the channel line up on screen or EPG to return to the home page.
 - Select the channel by scrolling down and clicking OK on the RCU.



HELP: You are able to bring up on the display an onscreen keyboard by pressing the **OK** button when you are in a text box.

The **Back** button  hides the onscreen keyboard. You may find it easier to connect a USB keyboard to the STB to make the changes.



Setting up & Configuring the Amino Set Top Box


The set-top boxes access your NetworkTV system and display available live channels and content on a connected video source such as a large format display. The set-top boxes are used only for H.264 and MPEG .TS content. They support viewing live video as well as on-demand (but support only Stop, Play, Pause, Fast Forward and Rewind features in VoD).



Before you can use your set top box to view video, you must configure it to access your NetworkTV system. You can use the Amino Configuration Keyboard (optional item) included with your set-top box to access the configuration pages for the unit. The keyboard is wireless and communicates with the set top box via IR signal. Position the keyboard within a short range (1-3 ft or 0.3-1m) of the front of the set-top box before getting started (alternatively you can use a USB keyboard).

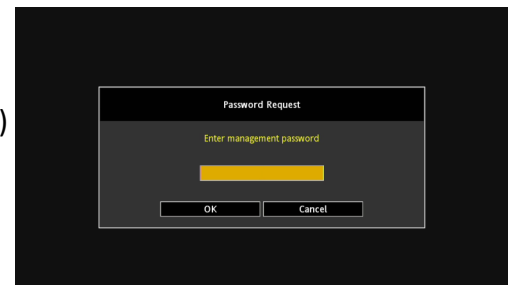
Connecting the set-top box for live streams only:

1. Connect the power supply to the power connector on the rear of the unit.
2. Choose one of the following methods to connect the set top box to your audio and video sources:
 - Use an HDMI cable to connect the HDMI port on the set-top box to an HDMI port on your video source. HDMI also transmits an audio signal in addition to video.
 - Use a breakout cable to connect the AUDIO VISUAL port on the set top box to your audio and video sources. In place of connecting the breakout cable to your audio source, you can connect an optical audio cable from the SPDIF port on the set-top box to your audio source.
3. Connect an RJ-45 LAN cable to the LAN port on the rear of the unit. The other end of the cable connects to your LAN.
4. Make sure the keyboard is within range of the front of the set-top box, and press Alt-M to access the Enter Management Pages screen. If the keyboard and STB have connected you will see a red LED flash on the STB.

 **Note:** Sometimes the keyboard doesn't connect. If this happens try replacing the batteries or toggle the frequency switch inside the battery compartment of the keyboard. Revert to using a USB keyboard if this doesn't solve the problem but note you will need to reboot the Amino with the keyboard connected so it recognizes the connection.

Logging In:

5. In the Password field, enter the password (the default is **leaves**) and press Enter. The STB Management screen appears.
6. Use the arrow keys on the keyboard to access the Browser Setup option, and press Enter.



Setting Browser Path & Display Mode:

7. To set the Amino so it only has access to live channels then use the following url:

<http://<<server IP address:port number>>/aurora/aminolive.html>

To set the Amino so it only has access to live and VoD channels then use the following url:

<http://<<server IP address:port number>>/aurora/stbhome>

8. Use the arrow keys to access the Password field, and enter the password in the space provided (the default is **snake**).

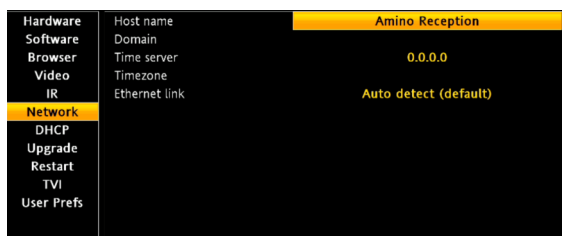
9. Use the arrow keys to highlight Back to Main Menu, and press Enter to return to the STB Management screen.

10. Use the arrow keys to highlight Restart, and press Enter to reboot the set-top box.



Setting Hostname:

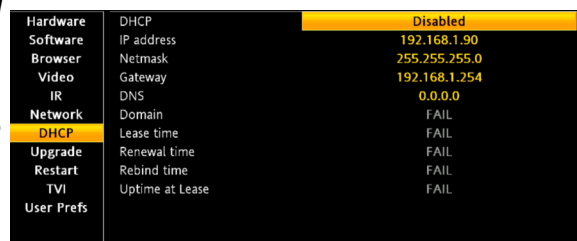
When configuring an Amino, make sure to set the hostname in the Network tab. When you set a name (such as Room1/Reception etc) it will be imported into the NetworkTV system. When you join the amino to the NetworkTV server, it will grab the hostname of the box, and use that as the name in the UI list.



Setting a static IP Address:

Note: Make sure you press return after you have changed any of the information in the fields to confirm the changes.

- Use the arrow keys on the keyboard to access the DHCP setup option and press Enter.
- Click on **DHCP** and choose **Disabled**.
- Use the arrow keys to enter the IP address, Netmask, Gateway (and DNS if relevant) - you will be asked to enter the confirm password (default is **snake**).
- Use the arrow keys to highlight Back to Main Menu, and press Enter to return to the STB Management screen.
- Use the arrow keys to highlight Reboot, and press Enter to reboot the set-top box.





To configure the video settings:

1. Use the arrow keys on the keyboard to access the Video setup option and press Enter. The settings for Europe are listed below but if you are in a different region, click on the TV System and choose your area from the dropdown list and hit enter when you have chosen —you will be asked to enter the confirm password (default is **snake**).
2. There are more video, audio and subtitle settings on the **User Prefs** pages.
3. Once you have made your changes, use the arrow keys to highlight **Sys Prefs** and press Enter then Yes and Confirm.
4. Navigate with the arrow keys to return to the Main Menu, and press Enter to return to the STB Management Screen.
3. Use the arrow keys to highlight **Restart** and press Enter to reboot the set-top box.

Hardware	TV system (Restart)	PAL-1 (United Kingdom)
Software	Default video server	nCube
Browser	Trick play	6
Video	No RTSP event timeout	4
IR	RTSP end timeout	6
Network	No IGMP event timeout	30
DHCP	IGMP end timeout	30
Upgrade	No UDP event timeout	8
Restart	UDP end timeout	8
TVI		
User Prefs		

Hardware	Enter preferences page?	Yes
Software		
Browser		
Video		
IR		
Network		
DHCP		
Upgrade		
Restart		
TVI		
User Prefs		

Video	TV type	16:9
Audio	Picture format	Auto
Subtitles	Output resolution	1080p50
Info	Outputs	HDMI+RGB+Composite
Restart	HDMI format (Restart)	RGB
Sys Prefs	HDMI fallback mode	HDMI
	Native passthrough	None

Video	Subtitles	Enabled
Audio	Primary language	No Preference
Subtitles	Secondary language	No Preference
Info		
Restart		
Sys Prefs		

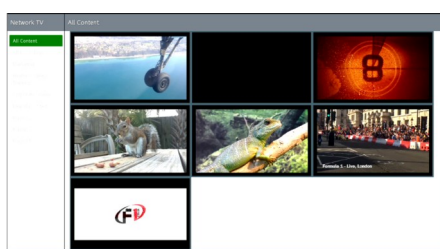
Video	Primary language	No Preference
Audio	Secondary language	No Preference
Subtitles	Assistive audio	None
Info	HDMI capabilities	2 channel PCM
Restart	AC3 speech level boost	Disabled
Sys Prefs		

Handheld Remote Control Functions:

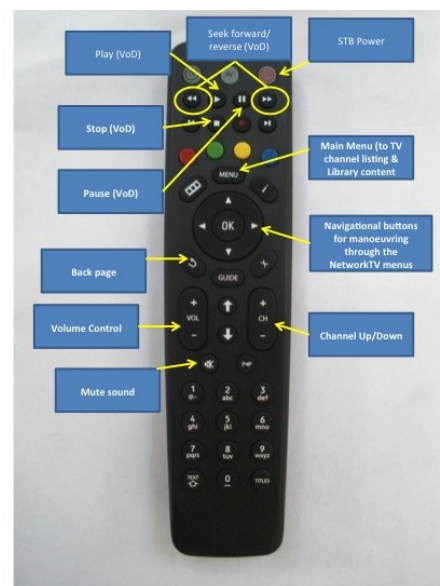


To access the on-screen NetworkTV channel menu, you can use the handheld remote control. See the picture for the controls. Press **Menu** to load the NetworkTV home menu then choose between Live and On-Demand channels by using the navigational arrow keys and press **OK** to select.

If you are watching a live channel but want to change to a different channel, press **Guide** and the current available channels will display in the top

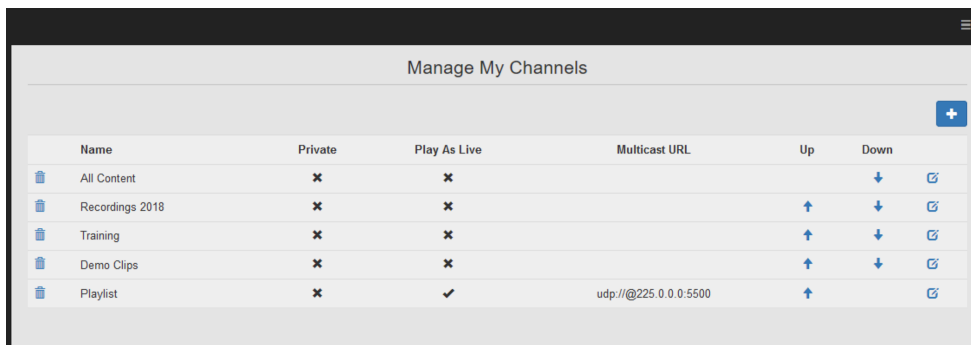


left hand side of the display. Use the up and down arrows to navigate to the channel you want and press **OK**. Then press **Guide** again to turn the menu off. Alternatively select Video-on-Demand to access your video library and choose to a video to watch.




Playlists

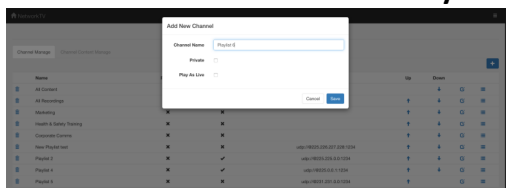
NetworkTV provides the functionality to create Playlists. A Playlist is a list of video or audio files that can be played back sequentially in a loop. Multiple Playlists can be created to run simultaneously so that users can select the Playlist Channel they want to display.



Name	Private	Play As Live	Multicast URL	Up	Down	
All Content	✗	✗			↓	✎
Recordings 2018	✗	✗		↑	↓	✎
Training	✗	✗		↑	↓	✎
Demo Clips	✗	✗		↑	↓	✎
Playlist	✗	✓	udp://@225.0.0.0:5500	↑		✎

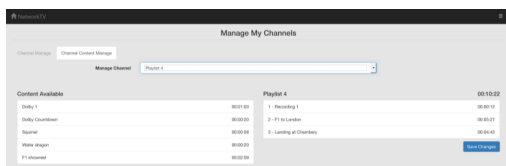
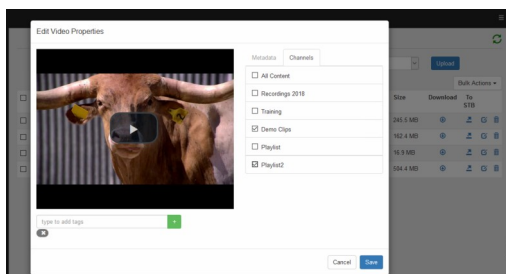
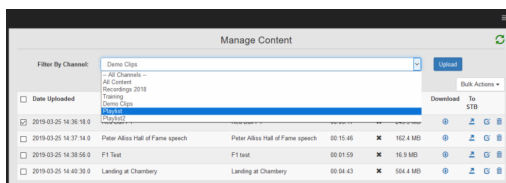
Setting up a Playlist


Create Playlist: In My Channels, click on the  button to create a new Playlist.



1. Name the Playlist.
2. Indicate if it will be a Private Channel (not published to Users).
3. Choose **Play it Live** if you want it to play in a loop as a live channel
4. Enter a unique multicast address and provide a port number (the example here shows the full url and port 5500).
5. Click **Save**.

Adding Pre Recorded Clips: 1. Click **Manage Content** and choose the content you want to add (filter the content in the library if you need to—see screenshot on left).



2. When you have selected the video, choose the edit button. 
3. Tick the Channel box that you want the video to play in.
4. Click **Save**.
5. Repeat steps 1-4 above to create the list of video's that you want to run in the Playlist loop.
6. Return to **My Channels** and click **Channel Content Manage** tab.
7. Choose the **Playlist** from the **Manage Channel** dropdown. You will see the content available to be used in the Playlist. Hover over any of the listed content on the left and drag it over it to the Playlist on the right. Reorder the content by dragging the chosen content up or down the list.
8. Click **Save** and the Playlist will start automatically and will be available in the Live Channel List so that it can be chosen by users to play.



Manage Virtual Matrix



The NetworkTV Virtual Matrix will allow you to set up a matrix of routes that take the input from IP encoders or live TV streams to destination endpoint decoders. So the matrix can route one live stream to a specific decoder (eg encoder in room 1 to show on the display in room 2. Or maybe the encoder in room 1 to show it on the displays in rooms 2, 3, 4, 5 or all the displays).

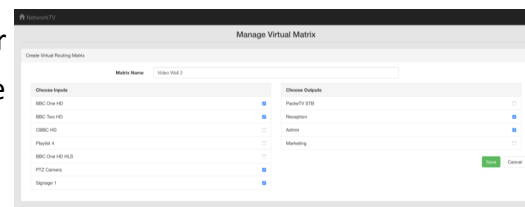
Once you have created your list of routes, this can be saved as a unique matrix which can be recalled and run at any time. Meaning you don't have to waste time recreating matrix routes and therefore different matrices can be created for different uses and scheduled to run at different times. Because the way NetworkTV Virtual Matrix has been designed and the technology it uses, more than one administrator can use the system at a time which means that several people can be setting up and managing their own version of the Virtual Matrix simultaneously.

Control From Anywhere

NetworkTV Virtual Matrix runs in a browser and can therefore be managed and controlled via a PC, tablet or mobile device and means that with the correct authentication an administrator anywhere in the world can set up and manage their own virtual matrices.

Setting up a Matrix

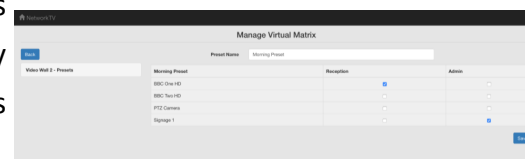
First, create your matrix by giving it a unique name then choose your inputs by ticking the boxes. Then tick the outputs that you want the streams to play on and then save the matrix.



Then all you have to do is select the matrix you want by selecting from the list on the left.



You can also set up Presets within each Virtual Matrix. This allows you to select a specific input to be played on a specific output just by clicking the Manage Preset button so that you can schedule channels to play on a specific output.



Initiate a Preset sequence by clicking the **Preset Play** button.



Appendix A — Graceful Shutdown & Restart of NetworkTV System

Overview

In the event of a planned or unplanned network or electrical outage, the following steps should be taken to ensure a controlled shutdown and restart of the NetworkTV system.

The order of restart is fairly important to provide data to the control components in the correct manner. If the system is brought back into service randomly or in improper order, you may see some random error messages appearing in the user interfaces.

Shutdown

The order of shutdown is not as critical as the restarting, but the recommended order of tasks are:

- | | |
|-------------------------------|--|
| NetworkTV HD Encoder | Powering off the encoder by unplugging its power cable is normally sufficient. |
| NTV Set Top Box | <p>Power off unit by pushing the power button located on the rear of the unit (see Page 28).</p> <p><i>Note: It may not be necessary to power down every NTV STB throughout the facility in the event of a planned network or power outage, but it is a recommended practice. When network and power are restored, it may be necessary to use the Reboot All STBs from the Manage STB Administration page (see Page 26). The NetworkTV System will then poll the STBs on the IP LAN and populate the STB list automatically in the NetworkTV management interface.</i></p> |
| Amino Set Top Box | <p>Power off unit by disconnecting the power cable from rear of unit (see Page 30).</p> <p><i>Note: It may not be necessary to power down every Amino throughout the facility in the event of a planned network or power outage, but it is a recommended practice. When network and power are restored, it may be necessary to use the Reboot All STBs from the Manage STB Administration page (see Page 26). The NetworkTV System will then poll the STBs on the IP LAN and populate the STB list automatically in the NetworkTV management interface.</i></p> |
| NetworkTV Live Servers | Power off unit by disconnecting the power cable from rear of unit (see Page 11). |
| NetworkTV Server | <p>Access the Settings button from the Admin Portal and choose reboot and pull the power cord. Or attach a keyboard, mouse and screen to the NetworkTV Server and login with your username and password. (the default is: u: admin/p: auro-raadmin). Type Q and the system will close down. Remove the power cable from the rear of the server (see page 4).</p> |



Startup/Restart

The order of startup is important to the proper operation of the system following a network or power outage. Several of the system components provide configuration or status details to each other, and the absence of that information can cause components to malfunction. It's important that the networking infrastructure (switches, hubs, routers etc.) are powered-on first followed by the NetworkTV Server.

A short wait period between powering up each device is recommended to ensure that each has a chance to initialize before the next, to provide any needed configuration or status data in the proper sequence.

If the servers, Gateway appliances, encoders or STBs come online without network present, they may default to local loop-back addressing if they don't have static IP addresses, which would impair or stop necessary services within those devices.

Troubleshooting

In the case that this procedure is followed, but does not return the system to functionality, there are several steps which may be performed to verify which portion(s) of the system is not operating properly. For purposes of this document, these steps are bulleted, with more detailed information referenced.

No TV signal on screen from STB

- Verify that the display is connected to power and to the STB.
- Verify that the display is powered on and set to the correct source.
- Verify that the STB is connected to power, network, and to the video display.
- Verify that the STB is powered on, and has network connectivity by checking the red LED on the front of the STB, and the network connectivity and activity lights on the rear of the unit.
- Verify that the correct video display input is selected (check video connection from STB).
- Verify that the STB has a proper IP address and default browser page configured (refer to the Configuring the Set Top Box section on page 26 for more information.)

No TV signal from Transmitter

- Verify that network switch is operational, and that connectivity/activity lights are illuminated and flashing.
- Verify that CATV/Satellite/Cable connection/service is functioning, and that transmitters have power, coaxial (RF), and network connections.
- Verify that NetworkTV Live Gateway is powered on, or that power source (strip/UPS, etc) is working.
- Verify that NetworkTV Live Gateway has active network connections with network activity lights on the NIC illuminated and flashing.
- Verify that the NetworkTV Live Gateway is configured and has a saved channel list (see Page 12 and 19 for the tuner set up instructions).



Appendix B — Live Channel Types

Overview

There are three main ways to stream media over a network: Unicast, Multicast, and Broadcast. Unicast creates a one-to-one connection between an individual user and a server. Each additional connection between a user and the server is a separate unicast connection, and takes up its own amount of bandwidth. In a unicast system, the demand on the server increases as the number of users increases. However, each unicast stream is independent allowing each user to independently control their content.

Broadcast creates a one-to-all connection between all users and a server. Because it transmits data to all the workstations on a network, broadcast is bandwidth-intensive.

Multicast creates a one-to-many connection between several users and a server. Only the users wanting to receive the signal will receive it. Multicast is generally preferred to broadcast on a corporate LAN, because it only transmits data to users that are actually accessing the information at a given time.

NetworkTV is capable of handling most of the main live streaming format types such as multicast, HTTP, RTSP, HLS, RTMP and RTP. The URL nomenclature (or address) for each type of channel differs for each of the above types and when creating new live channels you will need to know what type of stream it is and decide how you want to distribute it.

Example Stream Addresses

The example URL's below give you an example of the format of the address to be used for each video stream type. When creating a live channel be aware to avoid conflicts with ports being used for other purposes.

Multicast

udp://@238.0.0.1:1234—The multicast IP address selection range is between 224.0.1.0 and 238.255.255.255.

HTTP

http://192.168.1.168:80/hdmi_ext (identifier “hdmi” can be changed here).
HTTP Port: Set the port to be used for http streaming (usually port 80).

RTSP

rtsp://192.168.1.168:554/hdmiStream (identifier “hdmi” can be changed here).
RTSP Port: usually 554 but any port from 1-65535 can be chosen.

HLS

http://192.168.1.166:8080/aurora/content/0000/010033ed-fd25-42e8-965a-a6e10095b244/live.m3u8. The HLS stream will be created automatically from the Manage Live Channels Page.

