



AvediaStream[®] g4400 Series TVgateway v1.2

Administrator's Guide

Leading IPTV Delivery

Notices

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Document Reference

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Products Described by This Guide

AvediaStream g4410 - avstr-g4410 AvediaStream g4412 - avstr-g4412 AvediaStream g4415-sm - avstr-g4415-sm AvediaStream g4418 - avstr-g4418 AvediaStream g4442 - avstr-g4442 AvediaStream g4448 - avstr-g4448

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support@exterity.com

Safety Notices

Before installing and operating these products, please read the safety information contained in this guide.

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Safety Notices

Before installing and operating these products, please read the safety information in this manual.

Important Safety Instructions

There are no instructions specifically for service personnel in this document. There are no user serviceable parts inside any Exterity product. To prevent electric shock or fire hazard, do not remove cover. Refer service to qualified service personnel.

This chapter contains important safety information. If you are unsure about any of the information in the section, please contact Exterity.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

USA and Canada

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the instructions contained in this manual.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer.
- 12 Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 15 Do not expose this apparatus to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the apparatus.
- 16 To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.
- 17 The mains plug of the power supply cord shall remain readily operable.



To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

EU and Others

Do not proceed beyond a **Warning** notice until you have understood the hazardous conditions and have taken appropriate steps.

Safety Information

Warning: There are no user serviceable parts inside any Exterity product. To prevent electric shock or fire hazard, do not remove cover. Refer service to qualified service personnel.

For 230/240 volt operation, be sure to use a harmonized grounded 3 conductor cord, rated 6 Amp minimum. Use a suitable cord for connection to the equipment and terminating in an IEC.

This equipment relies upon a safety earth for operation, ensure that you always use a power cord with appropriate earth and that the inlet to which is inserted also has the appropriate earth. If in any doubt about the earth provision in your building consult a qualified electrician.

Use only the dedicated power supply or cord supplied for your device.

Exterity products use ventilation holes for cooling. None of the ventilation holes should be blocked. Keep all materials at least 5cm away from all the ventilation holes.

Do not expose the product to any rain or moisture.

Do not use the product near a naked flame e.g. a candle.

The operating conditions of the product should be $0^{\circ}C - 40^{\circ}C$ with a Relative Humidity of 5 – 95%. The product should not be operated outside of these conditions.

There are no user-serviceable parts inside these products. Any servicing, adjustment, maintenance, or repair must only be performed by service-trained personnel.

About this Guide

This manual explains how to set up, use and manage AvediaStream g44xx TVgateways. These TVgateways are network devices that receive digital terrestrial, satellite, and cable TV channels and make them available as MPEG transport streams over an IP network. Channels are automatically announced on the network using the information contained in the digital broadcast for easy viewing on Exterity Receivers and Artio Desktop clients.

Audience

This manual is intended for use by systems integrators or systems administrators who are installing and setting up Exterity products. It assumes that readers are familiar with installing and configuring network-based products.

Scope

This edition of the manual refers to version 1.2 of the g44xx TVgateway firmware. All Exterity AvediaStream g44xx TVgateway products are covered.

Glossary

AV	Audio/Video
Data channels	Data channels do not carry normal audio-video streams but are typically used as control channels under the DSM-CC protocol (part 6 of the MPEG-2 standard).
DVB	Digital Video Broadcasting, a suite of internationally accepted open standards for digital television transmission over terrestrial, cable, and satellite networks.
DVB-C/C2	Digital Video Broadcasting standard for Cable delivery.
DVB-T/T2	Digital Video Broadcasting standards for Terrestrial delivery.
EIT	Found in a Transport Stream, the Event Information Table provides information to enable construction of Program Guides.
EPG	Electronic Program Guide
FEC	Forward Error Correction
FTA	Free to Air
FTP	File Transfer Protocol
IP	Internet Protocol, a protocol used for communicating data across a network using the Internet Protocol Suite, also referred to as TC/I.
IP TOS	The Type of Service (TOS) field is a six-bit Differentiated Services Code Point (DSC) field and a two-bit Explicit Congestion Notification field.
MEG	A family of compression methodologies for audio and video.
MEG Transport Stream	A communications protocol enabling multiplexing of digital audio, video and data which is specified in MEG-2 art 1, Systems (ISO/IEC standard 13818-1).
NTP	Network Time Protocol, used for synchronizing the clocks of computer systems.
PAT	Found in a Transport Stream, the Program Association Table lists all the services found in a transport stream. The PAT is always on PID 0.
PID	Found in a Transport Stream, the Packet ID identifies a particular stream of data (e.g. video, audio, etc) within an MPEG Transport Stream
PMT	Found in a Transport Stream, the Program Map Table identifies all the Elementary Streams within a service.
SAP	Session Announcement Protocol, a protocol used to advertise the presence of multicast sessions on an IP network.
Transmitter file	A transmitter file typically lists all the frequencies available for transmission in a particular country or geographic region.

The following terms and definitions are used in this document:



Section 1 - Getting Started

This section contains information on the following:

- An introduction to the AvediaStream TVgateways.
- A configuration overview.
- The different methods you can use to manage the TVgateway.
- Managing attributes of the TV gateway not associated with IPTV streaming.
- The connections required to connect the TVgateway to a terrestrial or satellite source.

Getting Started

Product Overview

TVgateways are network devices that receive digital TV channels and make them available as MPEG transport streams over an IP network. Each channel is automatically announced on the network using the information contained in the digital broadcast for easy viewing on Exterity Receivers and desktop clients.

For the purposes of this manual, "TVgateway" refers to a single TVgateway blade in an AvediaStream chassis. Each blade is a separate entity and is configured and managed independently from any other blades in the chassis.

The following TVgateways are currently available and supported by this firmware version:

- AvediaStream g4410 (Dual DVB-S/S2)
- AvediaStream g4412 (Dual DVB-S/S2 + Dual CAM)
- AvediaStream g4415-sm (Dual DVB-S/S2 + Dual CAM)
- AvediaStream g4418 (Octal DVB-S/S2)
- AvediaStream g4442 (Dual DVB-T/T2/DVB-C/C2 + Dual CAM)
- AvediaStream g4448 (Octal DVB-T/T2/DVB-C/C2)

These devices are operated and managed largely in the same way. Each blade has its own unique features and management requirements which are identified and highlighted in the document.

TVgateways with CAM slots have the ability to descramble channels; to do this, a CAM and subscription card from the package provider are required. If you are descrambling content using a TVgateway with CAM, ensure that you have the appropriate authority/rights to distribute the descrambled content on the network.

Network Considerations

The TVgateway transmits audio/video using IP multicast. In order for this to work satisfactorily, it is vital that the network switches are multicast-enabled in order to prevent unwanted flooding of traffic on the network.

For these purposes, "Multicast-enabled" is understood to mean that all network switches carry out IGMP snooping, and one switch must function as the IGMP querier.

Exterity TVgateways support V2 and V3 of IGMP.

Channel Announcements

The TVgateway announces the list of channels it is streaming using the Session Announcement Protocol (SAP). This enables Exterity Receivers/desktop clients and third-party equipment to automatically discover and connect to the available channels on the network.

SecureMedia® Technology

The Exterity content protection solution is designed to meet the Digital Rights Management (DRM) requirements of content owners and broadcasters.

SecureMedia technology forms part of this solution, and is integrated into the AvediaStream g4415-sm TVgateway. The g4415-sm first decrypts the selected channels using a CAM, then uses SecureMedia to re-encrypt the content prior to streaming onto the LAN. Using this TVgateway in

conjunction with an Exterity SecureMedia Server and correctly licensed viewing clients ensures that video content is always delivered securely throughout the IPTV system. This is illustrated in Figure 1.



Figure 1 Using the g4415-sm TV gateway with SecureMedia to protect video content

Please note the following:

- If a CAM on an AvediaStream g4415-sm has been used to decrypt content, it **never** streams that content in the clear. However, it can stream FTA channels which have never been encrypted.
- All other AvediaStream g44xx TVgateways with CAM slots can stream de-scrambled content in the clear. For example, the g4412 can decrypt content using a CAM and then stream it on the LAN in an unencrypted format.

For more information about SecureMedia licenses, please see Appendix A, "Using the Product Feature Manager Application".

For more information on how to set up and use SecureMedia encryption technology, please see the Exterity website.

Configuration Overview

This section contains a brief overview of the steps required to install and configure the TVgateway.

1 Installing the TVgateway

Before using the TVgateway, it must be powered on and connected to the network and satellite source. This process is described in the installation guide for the chassis and also in Chapter 4, "Physical Interfaces".

2 Configuring the IP address of the TVgateway

By default, the TVgateway requires a DHCP server to be available on the network to assign it an IP address.

There are two methods of assigning a static IP address to the TVgateway, if required:

- a. Temporarily set up a DHCP server on an isolated network. Once an IP address has been assigned to the TVgateway, you can configure a static IP address using the Web Management Interface. For more information, see "IP Address Configuration" on page 19.
- b. Use the Admin Interface to configure the IP address. For more information, see "Admin Interface" on page 16.

3 Naming the TVgateway

Provide a name (and location) for the device so you can easily identify it in the future. You can do this using the Web Management Interface (see page 14) or the AvediaServer Director Application.

4 Scanning for Channels

Scan the source to discover details of the available channels. This is done on a per-tuner basis and is described in Chapter 6, "Scanning DVB-T/T2 & DVB-C/C2 Channels" and Chapter 7, "Scanning DVB-S/S2 Satellite Channels".

5 Selecting the Multiplex

Once you have successfully scanned for channels, select the multiplex containing the channels you want to stream. This is also carried out on a per-tuner basis. This is described in Chapter 9, "Channel Configuration".

6 Configuring the Channels

Once you have successfully scanned for channels and selected a suitable multiplex, select the channels you want to stream, again on a per-tuner basis. This is described in Chapter 9, "Channel Configuration".

7 Streaming the Channels

You are now ready to stream channels onto the network. See Chapter 10, "Streaming" for details of this final step.

2 Management Interfaces

The TVgateway can be managed in the following ways:

- Web Management Interface
- Admin Interface
- AvediaServer Director

It can also be managed by third party applications using SNMP or using Exterity's propriety Terminal Control Interface (TCI).

Note: Each TVgateway blade in a chassis must be configured independently.

Web Management Interface

You can manage all major aspects of the TVgateway's functionality using the Web Management Interface, which is supported by Microsoft Internet Explorer, Mozilla Firefox and Google Chrome. Open the Web Management Interface as follows:

- 1 Enter the IP address of the TVgateway directly into your browser, or click the TVgateway's name in the AvediaServer Director application as shown on page 17.
- 2 When prompted, enter the username and password. The default login details are:

Username: admin

Password: labrador

Authentication	Required	_ XX _)
The server http:// username and pa Server Authentica	(10.8.100.248:80 requires a assword. The server says: We ation.	eb
User Name:	admin	
Password:	******	
	Log In Cance	

Figure 2 Login window

Note: You can also change the admin password using the Admin Interface. Please refer to "Admin Interface" on page 16.

AvediaS	tream TVgat	eway							exterity
Main Menu	Status								
General Status	Check tuner status an	nd view temper	rature and ch	annel streaming info	ormation				
Network Authentication Resources Services Maintenance Looning		Tuner St	atus Streaming	Multiplex 44 522 MHz	Lock	Signal Strength	Signal Quality	Cont Errs U	JCB Errs
Tuner A		Tuner A	•	#1 Central Scotland	•	60.50ВµV	136.0dB	0	0
Tuner B		Tuner E	в 🔹	#2 498 MHz Central Scotland	•	55.6dBµV	36 0dB	0	0
Tuner C		Tuner C	•	#3 474.2 MHz Central Scotland	•)58.5dBµV	35.6dB	0	0
Tuner D		Tuner E	•	#4 642 MHz Central Scotland	•	61.1dBµV	[36.0dB	90	0
Tuner F		Tuner E	•	#5 666 MHz Central Scotland	•	60.5dBµV	136.0dB	0	0
Tuner G		Tuner F	•	#6 618 MHz Central Scotland	• •	59.3dBµV	136.0dB	0	0
		Tuner G	•	#7 546 MHz Central Scotland	•	51.1dBµV	32.7dB	0	0
		Tuner H	•	#8 570 MHz Central Scotland	•)54.5dBµV	32.0dB	0	0
	Reset Error Counts								
	Cha	nnels Tuner 🔺	Num	Name		Address	Type	SAP	Groups
		A	1 8	BC One Scot		udp://239.192.0.118:5000	TV	1	DMTest
		A	70 (BBC Channel		udp://239.192.6.118:5000	TV	1	DMTest
		в	3 5	TV		udp://239.192.64.118:5000	TV	1	DMTest
		с	101 E	BBC 1 Scot HD		udp://239.192.129.118.5000	HD TV	1	DMTest
		D	30 5	7		udp://239.192.192.118.5000	TV	1	DMTest
		E	82 5	Sky News		udp://239.193.0.118:5000	TV	1	DMTest
		F	18 4	Music		udn //239 193 64 118 5000	TV	1	DMTest

3 The Web Management Interface opens in your browser, as shown below.

Figure 3 Web management interface (AvediaStream g4448)

- 4 Use this menu to navigate through the pages, changing settings as required. Click Apply on each page to save your changes.
 - **Note:** For security reasons, we recommend that you change the administrator password as soon as possible. Please see "Authentication" on page 23 for details of how to do this.

Admin Interface

In certain circumstances it may not be possible to manage the TVgateway via the Web Management Interface. For these situations, a text-based Admin Interface is provided, which is available via the serial interface (marked 'ADM' on the chassis front panel) or via SSH.

See Appendix B, "Serial Interface Connection" for details of how to connect to the serial admin port.

Once connected, log in using username admin and password as for the Web Interface (default labrador).

The options are as follows:

1	Show Diagnostics	Displays the device log file.
2	Show Bootloader params	Displays the internal configuration used by the bootloader.
3	Show Network Config	Displays the IP addressing information of the device.
4	Set Network Config	Allows the administrator to set the IP address of the device.
5	Set Admin Password	Allows the administrator to change the admin password for the Admin and Web Interfaces.
6	Run a shell	Allows the administrator to run a shell as admin.
7	Return to factory defaults	Allows the administrator to set all configuration to factory defaults.
8	Upgrade	Allows the administrator to specify a TFTP server and initiate a firmware upgrade.
9	Reboot	Restarts the device.
10	Exit	Exits the application.

AvediaServer Director

The AvediaServer Director is used for device discovery and management and is an integral part of the AvediaServer platform. The Director uses SNMP to manage a subset of device functionality and can also be used to open the Web Management Interface of the TVgateway.

••		e	Director			$\overline{\mathbb{V}}$	5	adm Server time: 14:22:08 11st	in (logout) Mar 2014
	All Devices		New Devices	AvediaStream	Receivers	Sche	duled Tasks	Configuration	
ich have	been found au	tomatical	ly.						
Action Se	et Name	• Ap	oply Online 🗹 Unavai	ilable 🗹 Offline 🗆 🛛 Add De	vice				
Action Se	et Name Device	• Ap	oply Online Vunavai	lable ² Offline □ Add De	vice	Address	TFTPServer	Syslog Server	
ction Se	Device	• Ap	Name	lable ♥ Offline	MAC <search></search>	Address <search></search>	TFTPServer <search></search>	Syslog Server <search></search>	
Select: •	Device TVgatewa •	 Approximation Version 1.1.0 1.1.0 	Name Search> Igor - DM	lable ✓ Offline □ Add De Location <search></search>	MAC <pre></pre>	Address <search> 10.8.100.92</search>	TFTPServer <search> 10.8.64.32</search>	Syslog Server <search> 255.255.255.255</search>	(disabled)
Select: •	Device TVgatewa • TVgateway TVgateway	 Ap Version 1.1.0 1.1.0 1.1.0 	oply Online	lable ♥ Offline □ Add De Location <pre></pre>	vice MAC ≤search> 00:18:1C:00:00:CE 00:18:1C:00:00:D6	Address <search> 10.8.100.92 10.8.100.141</search>	TFTPServer <search> 10.8.64.32 10.8.64.32</search>	Syslog Server <search> 255.255.255.255 0.0.0.0(disabled)</search>	(disabled)
Action Se Select: •	Device TVgatewa • TVgateway TVgateway TVgateway	 Appendix Appendix Appendix	Name ≤search> Igor - DM Baron Greenback 0000CA	lable ♥ Offine □ Add De Location <search> Ø C1210 - slot 10 Ø DMs desk Ø Default</search>	vice MAC ≤search> 00:18:1C:00:00:CE 00:18:1C:00:00:CA	Address <search> 10.8.100.92 10.8.100.141 10.8.100.107</search>	TFTPServer ≤search> 10.8.64.32 10.8.64.32 10.8.64.32	Syslog Server <search> 255.255.255.255 0.0.0.0(disabled) 0.0.0.0(disabled)</search>	(disabled)
Action Se Select: •	Device TVgatewa • TVgateway TVgateway TVgateway TVgateway TVgateway	 Appendix Appendix Appendix	ppy Online ♥ Unavai Name <search> Igor - DM Baron Greenback 0000CA 0000CC</search>	Location <search> C1210 - slot 10 DMs desk Default Default</search>	Vice MAC ≪search> 00.18:1C:00:00:CE 00:18:1C:00:00:CA 00:18:1C:00:00:CA	Address <search> 10.8.100.92 10.8.100.141 10.8.100.107 10.8.250.97</search>	TFTPServer ≤search> 10.8.64.32 10.8.64.32 10.8.64.32 10.8.64.32	Syslog Server <search> 255.255.255.255 0.0.0.0(disabled) 0.0.0.0(disabled) 0.0.0.0(disabled)</search>	(disabled)

Figure 4 AvediaServer Director

You can carry out the following actions on the TVgateway using the Director:

- Set Name Specify the TVgateway name.
- Set Location Specify the TV gateway location.
- **Reboot** Re-start the TVgateway.
- **Ping** Ping the TVgateway.
- Upgrade Firmware Upload new device firmware.
- Factory Reset Set the TVgateway back to factory default configuration.
- **Export Config** Export the current configuration for archiving or applying to another device.
- Import Config Restore the TVgateway to a previously saved configuration.
- Set TFTP Server Specify the IP address of the TFTP server to be used.
- Set Syslog Server Specify the IP address of the Syslog server to be used.

To start the TVgateway Web Interface with AvediaServer Director:

- 1 Open the AvediaServer Web Interface and start the AvediaServer Director application.
- 2 Select TVgateway from the Device drop-down list to display only TVgateways, and use the column sort functions to help locate the TVgateway you want to configure.
- 3 Click the required TVgateway Name hyperlink to launch the Web Interface login window.
- 4 Enter the admin login credentials to display the Web Interface.

To open the Admin Interface via telnet with AvediaServer Director:

- 1 Open the AvediaServer Web Interface and start the Director application.
- 2 Select TVgateway from the Device drop-down list to display only TVgateways, and use the column sort functions to help locate the TVgateway you want to configure.
- 3 Click the required TVgateway icon hyperlink (*(*) in the Name column to launch the Admin Interface window.

General Device Management

This chapter describes how to manage attributes of the TVgateway not associated with IPTV streaming. All procedures described in this section assume that you are running the Web Management Interface as described in Chapter 2, "Management Interfaces".

About the TVgateway

The General page in the web interface displays specific information about the TVgateway. Much of this information is useful for identifying the software and hardware revisions in use on this blade. If contacting technical support regarding a problem with the device, it can be useful to provide all this information.

- **Product Type**: The AvediaStream TVgateway model number.
- Software Version: The version of software (often known as firmware) running on this device.
- Description: A detailed version description identifying when the software was built.
- Serial number: The MAC address of the unit.
- IP Address: The IP address being used by the unit.
- Hardware Type: This identifies the exact type of hardware in the device.
- **Date**: The configured NTP server is used to generate the displayed date and time. (If no NTP server is present, the TVgateway's internal clock is used, starting on Jan 1 1970 (Linux Epoch).)
- Secure Hardware: Shows hardware has security and tamper proofing features required for video content protection.
- License: A comma-separated list of feature licenses that have been deployed on this device.

AvediaSt	tream TVgate	eway
Main Menu	General	
 > General > Status > Network 	This page details inform can also specify a name	mation such as product type, serial number, software version, and IP address. You e and location to help identify the device.
 Authentication Securemedia 	Product Type:	AvediaStream g4415
► Resources	Software Version:	1.2.0
 Services 	Description:	Gateway_4G [1.2.0] 17531 rel #2 SMP Fri Feb 27 17:51:25 GMT 2015
 Maintenance Logging 	Serial Number:	00:18:1C:02:D5:E2
Tuner A e	IP Address:	10.8.101.63
🕨 Tuner B 🛛 🧧	Hardware Type:	LZ-B-4-ALL-A-2-CAD-B-1
	Date:	Sat Feb 28 15:33 UTC 2015
	Secure Hardware:	Yes
	License:	securemedia
	Name:	g4415
	Location:	QA Test
	Apply	

Figure 5 Example of TV gateway General Page (AvediaStream g4415-sm)

Device Naming

You can assign a name and location to the TVgateway which can help identify it in a management application, such as AvediaServer Director.

To specify the name and location:

- 1 Click General.
- 2 Enter a name and location as required in the Name and Location fields, then click Apply.
- **Note:** You can also configure the name and location using the Name and Location actions in the AvediaServer Director application.

Network Configuration

This section describes TVgateway options relating to network connections. These options are all available from the Network page.

AvediaSt	ream TVgateway	
Main Menu	Network	
 General Status 	Configure network settings and view data transfer information. The default configuration is DHCP-enabled.	
Network Authentication Resources CAM Menu Services Maintenance Logging Tuner A Tuner B	IP Address Configuration IP Address Settings: DHCP (Automatic) • IP Address: 10.8.101.128 Subnet: 255.255.0.0 Default Gateway: 10.8.64.1 DNS Server: 127.0.0.1 Primary Interface: Ethermet B •	
	Network Port Configuration Link Speed Duplex Ethernet A Auto-negotiate 1000 Mb/s Full Ethernet B Auto-negotiate 10 Mb/s Half	
	Statistics Total Bytes Total Packets Errors Dropped Collisions Transmit Ethernet A 0% 3481413769 59794610 0 0 0 Receive Ethernet A 0% 264192787 2591900 0 N/A N/A Transmit Ethernet B 0% 0 0 0 0 Receive Ethernet B 0% 0 0 N/A N/A	

Figure 6 Network Page (AvediaStream g4442)

IP Address Configuration

You can configure the TVgateway to obtain an IP address automatically using DHCP, or you can specify static addressing information, i.e. IP address, subnet mask, default gateway and DNS server.

Note: An IP addressing change may take a short time to come into effect. The device starts using the new IP address automatically - no reboot is necessary.

To configure automatic IP address allocation:

- 1 Click Network.
- 2 In the IP Address Configuration section, select DHCP (Automatic) from the IP Address Settings drop-down list and click Apply.

To configure a static IP address:

- 1 Click Network.
- 2 In the IP Address Configuration section, select Static (use below) from the IP Address Settings drop-down list.
- 3 Specify values for IP Address, Subnet Mask, Default Gateway and DNS Server, then click Apply.

Network Port Configuration

The TVgateway can automatically negotiate any combination of 10/100/1000 Mbps and half/full duplex with an Ethernet switch. It is also possible to disable auto-negotiation. The two LEDs on the front of the AvediaStream chassis indicate the type and status of the link. See "Network Port Status" on page 65 for more information.

Caution: It is important to ensure that the TVgateway settings match the settings on the switch port to which the TVgateway is connected. If this is not the case, it can result in dropped packets causing breakup of audio/video.

In practice this means the TV gateway and the connected network switch should be configured for operation as follows:

Auto-negotiation enabled on *both* the TVgateway and the connected network switch. or

Auto-negotiation disabled on *both* the TVgateway and the connected network switch, and a fixed setting of 100FD (Full Duplex) configured on the switch.

We do not recommend connecting the TVgateway to a half duplex Ethernet port.

To enable/disable Ethernet auto-negotiation:

- 1 Click Network.
- 2 In the Network Port Configuration section, choose On or Off as appropriate from the Auto-negotiation drop-down list and click Apply.

Note: If you turn off Auto-negotiation, the TVgateway uses 100 Mb/s, Full Duplex.

Ethernet Redundancy (c1210 only)

When inserted into an AvediaStream c1210 chassis, all AvediaStream g44xx TVgateways have automatic Ethernet backup, provided that both Ethernet ports for that blade slot on the chassis are connected. If the primary interface becomes unavailable, all data is automatically transferred to the secondary interface. Once the primary interface becomes available again, data is automatically transferred back to it.

No user configuration is required to enable switching between Ethernet interfaces.

The statistics at the bottom of the Network page indicate which Ethernet interface is active. In Figure 7, the higher transmit stats for Ethernet A indicate that it is currently in use:

AvediaS	tream TVgateway
Main Menu	Network
General Status	Configure network settings and view data transfer information. The default configuration is DHCP-enabled.
Network Authentication Resources CAM Menu Services Maintenance Logging Tuner A	IP Address Configuration IP Address Settings: DHCP (Automatic) ▼ IP Address: 10.8.100.77 Subnet: 255.255.0.0 Default Gateway: 10.8.64.1 DNS Server: 127.0.0.1 Primary Interface: Ethermet A ▼ Network Port Configuration Link Link Speed Duplex Ethermet A Auto-negotiate ▼ 100 Mb/s Full Ethermet B Auto-negotiate ▼ 100 Mb/s Full
	Apply Statistics
	% Utilisation Total Bytes Total Packets Errors Dropped Collisions
	Transmit Ethernet A 24% 1938785878 14090475 0 0 0 Receive Ethernet A 0% 1478286043 4141272 0 N/A N/A Transmit Ethernet B 0% 0 0 0 0 0
	Receive Ethernet B 0% 1475051196 4124742 0 N/A N/A

Figure 7 Network page with Ethernet redundancy

The Primary Interface defines which Ethernet interface is used for transmitting data if both interfaces are available. By default, Ethernet A is the primary interface. To change this, select Ethernet B in the drop-down list and click Apply.

Information on Ethernet port usage and switching is also recorded in the log file. Please see "Logging" on page 69.

Authentication

Admin Password

You can control access to the web management interface and admin interface by changing the password. This option is available from the Authentication page in the Web Interface.

AvediaS	tream TVgatev	vay	exterity
Main Menu	Authentication		
▶ General ▶ Status	Change the administrator	password and specify the SNMP Agent set	tting.
 Network Authentication Securemedia Resources CAM Menu Services Maintenance Logging 	User Name: Current Password: New Password: New Password (repeat):	admin 	
🕨 Tuner A 💦 🚺	Enable SNMP Agent:		
• Tuner B	read/write community: read only community: Apply	public public	

Figure 8 Authentication Page (AvediaStream g4415-sm)

To change the admin password:

- 1 Click Authentication.
- 2 Enter the required passwords and click Apply.

Password Requirements

Administrator passwords:

- should contain at least six characters;
- should contain a mix of four different types of characters:
 - upper case letters,
 - lower case letters,
 - numbers,
 - special characters such as !@#\$%^&*;;".

SNMP

SNMP is used by management applications such as the AvediaServer Director application to manage a subset of the TVgateway functions and configuration. It is possible to completely disable the use of SNMP; however, if you disable SNMP on the TVgateway, management applications such as the AvediaServer Director will not be able to communicate with it.

Note: Device discovery and configuration change traps are still sent even when SNMP control is disabled.

To configure SNMP community strings:

- 1 Click Authentication.
- 2 Enter the required read/write and read-only community strings in the appropriate boxes.
- 3 Click Apply.

To enable/disable SNMP control:

- 1 Click Authentication.
- 2 Check or uncheck the Enable SNMP Agent box as required (default: checked enabled).
- 3 Click Apply.



AvediaStream TVgateways can operate in any of the following chassis:

- AvediaStream c1101
- AvediaStream c1103
- AvediaStream c1210 (required for Ethernet redundancy)
- AvediaStream c1110 (no longer available)

The blade input signal interfaces are on the rear panel, while the edge connector enables access to the network and admin ports via the chassis front panel connections.

The installation guide for each chassis describes the connection of the blades to the power supply, the network and to a PC via serial connection.

Overview

This section describes the connections required to connect the following TVgateways to the terrestrial/satellite source:

- AvediaStream g4410 (Dual DVB-S/S2)
- AvediaStream g4412 (Dual DVB-S/S2 + Dual CAM)
- AvediaStream g4415-sm (Dual DVB-S/S2 + Dual CAM)
- AvediaStream g4418 (Octal DVB-S/S2)
- AvediaStream g4442 (Dual DVB-T/T2/DVB-C/C2 + Dual CAM)
- AvediaStream g4448 (Octal DVB-T/T2/DVB-C/C2)

AvediaStream g4410 (Dual DVB-S/S2)

The AvediaStream g4410 satellite (DVB-S/S2) TVgateway receives unencrypted live TV and radio from satellite RF sources and streams them across an IP network. Encrypted channels are streamed onto the network with the original CA encryption still in place.

The g4410 is shown in Figure 9. It has two tuners, connected to the antennae by two female F-type connector inputs.

Caution: Please disconnect all RF cables from the blade before inserting or removing from a chassis.



Figure 9 AvediaStream g4410 TVgateway

AvediaStream g4412 (Dual DVB-S/S2 + Dual CAM)

The AvediaStream g4412 satellite (DVB-S/S2) with Dual CAM TVgateway receives content-protected live TV and radio from satellite RF sources. The CAM is used to decrypt the content, which is then streamed across an IP network.

The g4412 is shown in Figure 10. It has two tuners, connected to the antennae by two female F-type connector inputs. Descrambling capability is enabled using an appropriate CAM and subscription card.

Caution: Please disconnect all RF cables from the blade before inserting or removing from a chassis.

To insert a CAM, first insert the smart card into the CAM. Then insert the CAM into the CAM slot for the associated tuner, A or B. You can insert/remove the CAM while the TVgateway is powered on.

Connect the satellite dish LNB or multiswitch to the selected TVgateway tuner input using the F-type connector. The satellite dish should be installed by a professional installer, ensuring that the signal levels conform to the requirements listed in Appendix C, "Recommended Signal Levels".



Figure 10 AvediaStream g4412 TVgateway

AvediaStream g4415-sm (Dual DVB-S/S2 + Dual CAM)

The AvediaStream g4415-sm satellite (DVB-S/S2) with Dual CAM TVgateway captures content-protected live TV and radio from satellite sources and streams it securely across an IP network using SecureMedia. It never streams content in the clear.

The g4415-sm is shown in Figure 11. It has two tuners, connected to the antennae by two female F-type connector inputs. Descrambling capability is enabled using an appropriate CAM and subscription card.

Caution: Please disconnect all RF cables from the blade before inserting or removing from a chassis.

To insert a CAM, first insert the smart card into the CAM. Then insert the CAM into the CAM slot for the associated tuner, A or B. You can insert/remove the CAM while the TVgateway is powered on.

Connect the satellite dish LNB or multiswitch to the selected TVgateway tuner input using the F-type connector. The satellite dish should be installed by a professional installer, ensuring that the signal levels conform to the requirements listed in Appendix C, "Recommended Signal Levels".



Figure 11 AvediaStream g4415-sm TVgateway

AvediaStream g4418 (Octal DVB-S/S2)

The AvediaStream g4418 satellite (DVB-S/S2) TVgateway receives unencrypted live TV and radio from terrestrial RF sources and streams them across an IP network. Encrypted channels are streamed onto the network with the original CA encryption still in place.

The g4418 is shown in Figure 12, and has eight tuners, Tuner A to H, connected to the antennae by eight female F-type connector inputs.

Caution: Please disconnect all RF cables from the blade before inserting or removing from a chassis.

Connect the satellite dish LNB or multiswitch to the selected TVgateway tuner input using the F-type connector. The satellite dish should be installed by a professional installer, ensuring that the signal levels conform to the requirements listed in Appendix C, "Recommended Signal Levels".

Caution: Connect the AvediaStream g4418 to a multiswitch rather than directly to an LNB if the LNB draws more than 100 mA from the TVgateway. Failure to do this may result in power to the LNB being switched off.



Figure 12 AvediaStream g4418 TVgateway

AvediaStream g4442 (Dual DVB-T/T2/DVB-C/C2 + Dual CAM)

The AvediaStream g4442 dual terrestrial TVgateway receives content-protected live TV and radio from terrestrial RF sources and streams them across an IP network. With dual conditional access slots, it descrambles and distributes encrypted and free to air channels across your IP network.

The g4442, shown in Figure 13 has two tuners, connected to the antennae by one female F-type connector input.

Connect the antenna feed to the TVgateway tuner input using the F-type connector. The antenna should be installed by a professional installer, ensuring that the signal levels conform to the requirements listed in Appendix C, "Recommended Signal Levels".



Figure 13 AvediaStream g4442 TVgateway

AvediaStream g4448 (Octal DVB-T/T2/DVB-C/C2)

The AvediaStream g4448 octal terrestrial TVgateway captures live TV and radio from terrestrial sources and streams them across an IP network. Encrypted channels are streamed onto the network with the original CA encryption still in place.

The g4448, shown in Figure 14 has eight tuners, Tuner A to H, connected to the antennae by two female F-type connector inputs. Input 1 feeds tuners A-D, and input 2 feeds tuners E-H.

Caution: Please disconnect all RF cables from the blade before inserting or removing from a chassis.



Figure 14 AvediaStream g4448 TVgateway



Section 2 - Channel Selection, Configuration and Streaming

This section contains the following:

- An introduction to the process of scanning for channels.
- Specific process details for selecting the RF signal source, tuning the TVgateway tuner to specified frequencies and reviewing the channel contents of a multiplex:
 - Chapter 6, "Scanning DVB-T/T2 & DVB-C/C2 Channels".
 - Chapter 7, "Scanning DVB-S/S2 Satellite Channels"
- Understanding the results of a scan and managing the TVgateway transmitter files.
- Enabling specific channels from the selected multiplex and configuring or changing channel parameter details.
- Setting up parameters to announce and stream the selected channels onto the IP network.

Scanning Overview

Overview

DVB-S/S2, DVB-T/T2 and DVB-C/C2 signals consist of television and radio channels collected into bundles called multiplexes. Each multiplex is transmitted on a separate frequency, or for satellite (DVB-S/S2) a combination of frequency and signal polarization.

A TVgateway, in common with all RF receivers, must tune to the transmission frequency to access the channels in a multiplex. Each tuner in a TVgateway can tune to one frequency and therefore stream all the channels transmitted on that particular frequency.

TVgateways are supplied with transmitter files for many commonly used satellite transponders, terrestrial transmitters and cable sources. These files contain the required tuning parameters such as frequency, polarization, modulation schemes, symbol rate, and error correction information. Tune the TVgateway by selecting the source for the relevant multiplex and initiating a scan. When tuned, the required channels can be selected and subsequently streamed to the IP network.

Appendix D, "Scan Resources" contains some useful tips on how to find information which will help you decide what to scan. To use the advanced scanning procedure you must know the frequencies, polarization, symbol rate and delivery system information for the satellite you intend to use. The process of tuning the TVgateway to the required transmitter source, selecting channels, and streaming them onto the IP network follows the logical process shown in Figure 15.



Figure 15 Configuring the TVgateway

This section contains the following information:

- The process of selecting the RF signal source, tuning the TVgateway tuner to specified frequencies and reviewing the channel contents of a multiplex. Refer to the following chapters for the relevant signal source:
 - Chapter 6, "Scanning DVB-T/T2 & DVB-C/C2 Channels"
 - Chapter 7, "Scanning DVB-S/S2 Satellite Channels"
- To understand the results of a scan and manage the TVgateway transmitter files, refer to Chapter 8, "Interpreting Scan Results".
- To enable specific channels from the selected multiplex, configure or change channel parameter details, refer to Chapter 9, "Channel Configuration".
- To set up the parameters to announce and stream the selected channels onto the IP network, refer to Chapter 10, "Streaming".

6 Scanning DVB-T/T2 & DVB-C/C2 Channels

This section explains how to scan Terrestrial (DVB-T/T2) and Cable (DVB-C/C2) broadcast sources for available channels.

Scanning Terrestrial and Cable Channels

In order to successfully receive and stream channels, the input signal level and quality must meet the requirements specified in Appendix C, "Recommended Signal Levels". There are three types of scan:

- **Frequency Range Scans** enable you to scan the complete list of frequencies listed in a transmitter file.
- **Basic Scans** provide the ability to individually scan any frequency listed in a transmitter file for a specific transmitter.
- Advanced Scans provide the ability to tune to a multiplex not listed in the transmitter files.

Note: This version of firmware does not have transmitter files for DVB-C/C2 built in.

Frequency Range Scan

A Frequency Range Scan scans the complete list of frequencies listed in a transmitter file. Transmitter files typically list all the frequencies available for transmission in a particular country or geographic region. Exterity terrestrial TVgateways are supplied with the following transmitter files, listed on the Resources page:

n Menu	Resources		- V2-22-1			
eneral	Upload extra resour	ces fro	m a TFTP server	. Change the TFTP server address on	the Maintenance pag	e, if required.
letwork	Transmitter Files					
Resources	tftp://10.8.64.32/			Import		
aintenance				Transmitter File		Last Update
Logging			Australia DVE	3-T	16/0	1/2014
ican		0	Continental E	urope DVB-T	16/0	1/2014
Multiplexes Channels Stream			France DVB-	т	16/0	1/2014
uner B 🛛 🧃			New Zealand	DVB-T	16/0	1/2014
uner C 🗧			UK DVB-T		16/0	1/2014
uner D 🧯		0	Delete Resto	ore Defaults		
uner E 🛛 🤞	Total Canacity Lload	1		28/ (4140kB of 20769kB)		
uner F 🤞	Total Capacity Used			370 (1140KB 01 32768KB)		
uner G						

Figure 16 Resources page (AvediaStream g4448)

If you cannot find a suitable configuration file, you can add additional files using the Transmitter Files import function on the Resources page as shown in Figure 16. See Appendix F, "Transmitter File Format" for file format information, and "Managing Transmitter Files" on page 42. To perform a Frequency Range Scan:

1 Click Scan in the required Tuner menu to display the relevant Scan page.

vediaS	tream TV	gatew	ay									exte
lenu	Tuner A Scan											
ral	Use this page t	o scan for ne	ew multip	lexes.								
rk ntication emedia irces es	Scan Parame Scan Mode: Transmitter	rters file:	Freq UK D	uency range • DVB-T		•						
ng A (Scan idle:		Start so	an								
eves	Scan Status:		Range s	can complete								
els 1		New Mult	tiplexes TS ID	Par	ameter		Transmitter	Scan St	rength So	can Qua	lity	Quality
ekes n B		New Mult Mux 32	tiplexes TS ID 16572	Par 474 MHz D	ameter IVB-T2 21)	s (Channel	Transmitter Central Scotland	Scan Str	rength So 57.3	can Qua dB	lity 36.0	Quality
exes n 3 C		New Mult Mux 32 New Cha	tiplexes TS ID 16572 nnels	Par 474 MHz [ameter VB-T2 21)	s (Channel	Transmitter Central Scotland	Scan Str dBj	rength So 57.3 μV	can Qua dB	lity	Quality
exes n B C D		New Mult Mux 32 New Cha Mux	tiplexes TS ID 16572 nnels	Par 474 MHz [Service ID	ameter VB-T2 21)	s (Channel Num	Transmitter Central Scotland Name	Scan Str dBj	rength Sα 57.3 μV Provider	can Qua dB	lity 36.0 Type	Quality
exes els n 2 2 2 2 2 2 2 2 2 2 2 2 3 2 3 3 3 3 3		New Mult Mux 32 New Cha Mux 32	tiplexes TS ID 16572 nnels	Par 474 MHz [Service ID 17472	ametern IVB-T2 21)	s (Channel Num 102	Transmitter Central Scotland Name BBC TWO HD	Scan Sti	rength S4	dB	lity 1 (36.0 Type HD TV	Quality CA FTA
exes els n 3 2 2 2 2 2 2 2 2 2 3 3		New Mult Mux 32 New Cha Mux 32 32	tiplexes TS ID 16572 nnets	Par 474 MHz D Service ID 17472 17596	ameter IVB-T2 21)	s (Channel (Channel Num 1 102 101	Transmitter Central Scotland Name BBC TWO HD BBC 1 Scot HD	Scan Str	rength So 57.3 V Provider fp bbc co.uk fp bbc co.uk	dB	Type HD TV HD TV	Quality CA FTA FTA
e Ace a e e ls 1 3 2 5 6 4		New Mult Mux 32 New Cha Mux 32 32 32 32	tiplexes TS ID 16572 nnels	Par 474 MHz C Service ID 17472 17596 17664	ametern VVB-T2 21)	s (Channel (Channel 102 101 104	Transmitter Central Scotland Name BBC TWO HD BBC 1 Scot HD Channel 4 HD	Scan Str	rength Se 57.3 μV Provider fp.bbc.co.uk fp.bbc.co.uk www.channel4.com	dB	lity 36.0 Туре НD TV HD TV HD TV HD TV	Quality CA FTA FTA FTA
exes n 3 2 2 5 6 4		New Mult Mux 32 New Cha Mux 32 32 32 32 32	tiplexes TS ID 16572 nnels	Par 474 MHz C Service ID 17472 17596 17664 17856	ameter VVB-T2 21)	s (Channel (Channel 102 101 104 103	Transmitter Central Scotland BBC TWO HD BBC 1 Scot HD Channel 4 HD STV HD	Scan Str	Provider provider fp.bbc.co.uk fp.bbc.co.uk www.channel4.com www.st.ht	dB	ііty 36.0 Туре НD TV HD TV HD TV HD TV HD TV	CA FTA FTA FTA FTA FTA
enes n 3 2 2 5 6 6 6 6		New Mult Mux 32 New Cha 32 32 32 32 32 32 32	tiplexes TS ID 16572 nnels	Par 474 MHz D Service ID 17472 17596 17664 17858 17920	ameter VVB-T2 21)	s 0 (Channel 102 101 104 103 105	Central Scotland BBC TWO HD BBC 1 Scot HD Channel 4 HD STV HD BBC THREE HD	Scan Sti	rength Sr 57.3 V Provider fp bbc.co.uk fp.bbc.co.uk www.channel4.com www.stv.tv fp.bbc.co.uk	dB	Iity 36.0 Туре НD TV HD TV HD TV HD TV HD TV HD TV HD TV	Quality CA FTA FTA FTA FTA FTA
exxes n 3 2 5 5 6 6 6 6 7		New Mult Mux 32 New Cha 32 32 32 32 32 32 32 32	tiplexes TS ID 16572 nnels	Par 474 MHz D 5ervice ID 17472 17596 17664 17858 17920 18112	ametern IVB-T2 21)	s (Channel Num 102 101 104 103 105 123	Transmitter Central Scotland BBC TWO HD BBC 1 Scot HD Channel 4 HD STV HD BBC THREE HD CBBC HREE HD	Scan Str	rength S4	dB	ity (36.0 НD TV HD TV HD TV HD TV HD TV HD TV HD TV HD TV	Quality CA FTA FTA FTA FTA FTA FTA

Figure 17 TVgateway DVB-T terrestrial frequency range scan (AvediaStream g4448)

- 2 From the Scan Mode drop-down list, select Frequency range.
- 3 From the Transmitter file drop-down list, select the file you want to use.
- 4 Click Start Scan.

The scan starts and a progress bar is shown before results are displayed on the screen. For more information, refer to "Interpreting Scan Results" on page 40.

Note: The time required to scan all the frequencies listed in a complete transmitter file depends upon two factors: the number of entries, and the number of active frequencies discovered. The TVgateway requires approximately 5 seconds to tune to each frequency, and when a frequency is active, approximately 20 seconds to determine and store the details of the multiplex.

Basic Scan

A Basic scan provides the ability to individually scan individual frequencies listed in a transmitter file.

To scan a specific frequency:

1 Click Scan in the required Tuner menu to display the relevant Scan page.

AvediaS	tream T\	/gate	way					e	xterity
Main Menu	Tuner A Sca	n							
General Status	Use this pag	e to scan fo	or new multiplexes						
 Network Authentication Resources Services Maintenance Logging 	Scan Paran Scan Mod Transmitte	meters le: er file:	Basic UK DVB-	T (Channel 39)	•				
Tuner A	Frequency	γ.	010 MHz	(Channel 39					
 ▶ Scan ▶ Multiplexes 	Scan idle:		Start scan						
 Channels Stream 	Scan Status:								
Tuner B		New Mult	iplexes						
			TS		2 32	21 23 33 5	20 02 00 00	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	
Tuner C		Mux	ID Parar	neters	Transmitter	Scan Strength	Scan Quality	Quality	
Tuner D 🕴		4	24640 618 MH	Hz DVB-T	Central			-	
Tuner E			(Char	nnel 39)	Scotland	82.9dBµV	36.0dB		
Tuner F		New Char	nnels Consise ID	Num		Provides		~	
Tuner G		Mux	Service ID	Num	Name	Provider	Type	CA	
Tuner H		4	20004	18	4MUSIC	DOS.tV	TV	FIA	
			25720	21	Ideal World	bda.tv	TV	ETA	
			23920	22 50	RT Sport 1	DUS.IV	TV	FIA	
		4	27360	50	BT Sport 2	www.bt.com	TV	Scrambled	
		4	27520	172	ADULT sport 2	www.bt.com	TV	ETA	
		4	27840	40	Rocke & Co. 1		TV	FTA	
		7	27040	174	ADULT Raborto		TV	ETA	
		-	21904	174	ADULT Dabestr		IV.	FIA	
		4	28032	24	ITV/A	waan it com	TV	FTA	

Figure 18 TVgateway DVB-T terrestrial basic scan (AvediaStream g4448)

- 2 From the Scan Mode drop-down list, select Basic.
- 3 From the Transmitter file drop-down list, select the file you want to use.
- 4 From the Frequency drop-down list, select the frequency/UHF channel number you want to scan.
- 5 Click Start Scan.

The scan starts and a progress bar is shown before results are displayed on the screen. For more information, refer to "Interpreting Scan Results" on page 40.

Advanced Scan

An advanced scan provides the ability to tune to a multiplex not listed in the transmitter files. If required you can configure specific values for each parameter, or leave at the default.

Note: You must use the advanced scan method for DVB-C/C2 signals.

To carry out an advanced scan:

- 1 Click Scan on the required tuner menu.
- 2 From the Scan Mode drop-down list, select Advanced.

AvediaS	tream T	Vgat	teway							e)	cterit
n Menu	Tuner A S	can									
General Status	Use this pa	age to sca	in for new mu	ltiplexes.							
letwork authentication kesources Services Jaintenance logging Inter A	Scan Pau Scan M Frequer Bandwi Delivery	rameters lode: ncy: dth: / System:	4 5 8 2	Advanced 522 3 MHz • DVB-T/T2 •	• MHz •						
Channels	Scan idle:		Sta	rt scan							
iner B 😽	Scan Statu	IS:									
ıner B	Scan Statu	is: plexes									
iner B iner C iner D	Scan Statu New Multij Mux	s: plexes TS ID	Parame	ters 0	Transmitter	Scan Streng	th	Scar	n Quality		Quality
ner B ner C ner D ner E	Scan Statu New Multip Mux	is: plexes TS ID 4220	Parame 522 MHz	ters DVB-T	Transmitter Central Scotland	Scan Streng	th	Scar	n Quality	0 50.0dB	Quality
iner B ner C ner D ner E	Scan Statu New Multi Mux 1 New Chan	nels	Parame 522 MHz	ters DVB-T	Transmitter Central Scotland	Scan Streng	th 63%	Scar	n Quality	50.0dB	Quality
ner B ner C ner D ner E ner F	Scan Statu New Multin 1 New Chan Mux	ns: plexes TS ID 4220 nels	Parame 522 MHz Service ID	ters OVB-T	Transmitter Central Scotland Num	Scan Streng	th 63%	Scar	n Quality	50.0dB	Quality • CA
ner B ner C ner D ner E ner F ner G	Scan Statu New Multi, 1 New Chan Mux 1	rs: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220	ters O DVB-T	Transmitter Central Scotland Num 1	Scan Streng Name BBC ONE Scot	th 63%	Scar Provider fp.bbc.co.uk	n Quality	50.0dB Type TV	Quality • CA FTA
ner B ner C ner D ner E ner F ner G ner H	Scan Statu New Multi 1 New Chan Mux 1 1	is: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284	ters DVB-T	Transmitter Central Scotland Num 1 2	Scan Streng Name BBC ONE Scot BBC TWO Scot	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk	n Quality	50.0dB Type TV TV	Quality CA FTA FTA
ner B en er C en er D en er E en er F en er F en er F en er H	Scan Statu New Multi 1 New Chan Mux 1 1 1	s: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288	ters 0 DVB-T	Transmitter Central Scotland Num 1 2 7	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	50.0dB Type TV TV TV TV	Quality CA FTA FTA FTA
ner B anner C anner C anner C anner C anner F anner F anner G anner H	Scan Statu New Multi Mux 1 New Chan Mux 1 1 1 1	s: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352	ters o DVB-T	Transmitter Central Scotland Num 1 2 7 80	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	Type TV TV TV TV TV TV	Quality CA FTA FTA FTA FTA
ner B	Scan Statu New Multij Mux 1 New Chan Mux 1 1 1 1 1	is: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352 4418	ters	Transmitter Central Scotland Num 1 2 7 80 200	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	50.0dB Type TV TV TV TV TV TV TV	Quality CA FTA FTA FTA FTA FTA
ner B	Scan Statu New Multi 1 New Chan 1 1 New Chan 1 1 1 1 1 1	s: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352 4418 4544	ters DVB-T	Transmitter Central Scotland Num 1 2 7 80 200 9	Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	50.0dB Type TV	Quality CA FTA FTA FTA FTA FTA
ner B	Scan Statu New Multi 1 New Chan Mux 1 1 1 1 1 1 1 1 1	s: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352 4416 4544 4608	ters DVB-T	Transmitter Central Scotland Num 1 2 7 80 200 9 70	Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	Type TV	Quality CA FTA FTA FTA FTA FTA FTA
ner B	Scan Statu New Multi Mux 1 New Chan Mux 1 1 1 1 1 1 1 1 1 1 1	is: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352 4416 4544 4608 4672	ters	Transmitter Central Scotland Num 1 2 7 80 200 9 9 70 70 71	Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel CBBC Channel CBBC Schannel	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	Type TV	Quality CA FTA FTA FTA FTA FTA FTA FTA FTA
iner B	Scan Statu New Multi Mux 1 New Chan Mux 1 1 1 1 1 1 1 1 1 1 1 1 1 1	s: plexes TS ID 4220 nels	Parame 522 MHz Service ID 4220 4284 4288 4352 4416 4544 4608 4672 4736	ters	Transmitter Central Scotland Num 1 2 7 80 200 9 70 71 81	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel CBBCbies BBC Parliament	th 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	n Quality	Type TV TV	Quality CA FTA FTA FTA FTA FTA FTA FTA FTA

Figure 19 TVgateway DVB-T terrestrial advanced scan (AvediaStream g4448)

- 3 Enter the frequency, making sure to select the correct frequency units from the drop-down list.
- 4 Select a value from the Bandwidth drop-down list. The default is 8 MHz.
- 5 Select the delivery system: DVB-T, DVB-T2, DVB-T/T2, DVB-C or DVB-C2.

Note: The DVB-T/T2 option scans for both DVB-T and DVB-T2 multiplexes.

6 Click Start Scan.

The scan starts and a progress bar is shown before results are displayed on the screen. For more information, refer to "Interpreting Scan Results" on page 40.

7 Scanning DVB-S/S2 Satellite Channels

This chapter shows how to scan satellite sources for available channels.

Scanning Satellite Channels (DVB-S/S2)

In order to successfully receive and stream channels, the input signal level and quality must meet the requirements specified in Appendix C, "Recommended Signal Levels". There are two types of DVB-S/DVB-S2 scan:

- Basic Scan
- Advanced Scan

Basic Scan

The basic scan provides the ability to individually scan any frequency listed in a transmitter file for a specific satellite. The DVB-S/S2 TVgateways in their factory default condition are supplied with the following transmitter files, listed on the Resources page:

in Menu	Resources				
eneral tatus	Upload extra resource	es from a	TFTP server. Change the TFTP server address on the Maintenance page, it	f required.	
letwork uthentication ecuremedia tesources	Transmitter Files tftp://10.8.64.32/		Import		
CAM Menu Services	-		Transmitter File 30'W Hispasat 1D/1E	02	Last Update
Logging			7"W Eutelsat 7 West A/8 West C, Nilesat 102/201	02	/09/2014
uner A			5"W Eutelsat 5 West A	02	/09/2014
	- III III		4"W Amos 2/3	02	/09/2014
			0.8"W Intelsat 10-02, Thor 5/6	02	/09/2014
			4.8°E Astra 4A, SES 5	02	/09/2014
			7°E Eutelsat 7A/7B	02	/09/2014
			31.5"E Astra 1G/5B	02	/09/2014
			36°E Eutelsat 36A/36B	02	/09/2014
			39°E Hellas Sat 2	02	/09/2014
			42°E Turksat 2A/3A, Türksat 4A	02	/09/2014
			45°E Intelsat 12	02	/09/2014
			68.5°E Intelsat 20	02	/09/2014

Figure 20 Resources page (AvediaStream g4415-sm)

If you cannot find a suitable configuration you can add additional transmitter files using the Transmitter Files import function on the Resources page (see "Managing Transmitter Files" on page 42). See Appendix F, "Transmitter File Format" for file format information.

To scan a frequency on a particular satellite:

1 Click Scan in the required Tuner menu to display the Tuner Scan page.

AvediaS	tream TVgate	way					exterity
Main Menu	Tuner A Scan						
 General 	Use this page to scan fo	r new multiplexes.					
 Network Authentication Resources CAM Menu Services Maintenance 	DiSEqC DiSEqC: Committed Switch:	DiSEqC 1.0 B	T				
▶ Logging	Scan Parameters						
luner A	Scan Mode:	Basic	•				
 Scan Multiplexes Channels Stream 	Transmitter file: Frequency:	19.2°E Astra 12.207 GHz	a 1H/1KR/1L/ V 💌	1M/2B/2C			
Tuner B	LNB Type:	Universal 💌]				
 Scan Multiplexes Channels 	Scan idle:	Start scan					
h Changes							
* Stream	Scan Status: New Mult Mux 🌢	0 iplexes TS Parameter	rs Tra	ansmitter 🝵 Scan St	renath 💧	Scan Quality	Quality
 Sueam 	Scan Status: New Mul Mux () 12	0 tiplexes TS Parameter 1090 12.207 GH V 29.7 Msym/s DVB-S2	rs Tra Iz 1H/1KF	ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 94	rength 8%	Scan Quality	Quality
 Sueam 	Scan Status: New Mul Mux 0 12 New Cha	0 tiplexes TS Parameter 1090 12.207 GH V 29.7 Msym/s DVB-S2 nnels	rs ∳ Tra Iz 19 1H/1KF	ansmitter Scan St 2°E Astra R/1L/1M/2B/2C 94	rength 0	Scan Quality	Quality 🔶
* Sueam	Scan Status: New Mul Mux 0 12 New Cha Mux	0 tiplexes TS D 1090 1090 VV-S2 nnels Service ID	rs Tra iz 19 1H/1KF Num \$	ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 94 Name	rength 8% Provider 🐳	Scan Quality 74% Type	Quality Quality
➤ Suream	Scan Status: New Mul 12 New Cha Mux 12	0 tiplexes TS D 1090 V29.7 Msym/s DVB-s2 nnels Service ID 9003	rs Tra Iz 19 1H/1KF Num 0	Ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 94 Name NATIONAL GEO HD	Provider CSAT	Scan Quality 74% Type HD TV	CA Scrambled
▶ Sueam	Scan Status: New Mul 12 New Cha 12 12 12	0 tiplexes TS 10 1090 12.207 GH V 29.7 Msym/s DVB-S2 nnels Service ID 9003 9041	rs Tra Iz 19 1H/1KF Num 0 0	Ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 98 Name NATIONAL GEO HD TF1 HD	Provider CSAT CSAT	Scan Quality 74% Type HD TV HD TV	CA Scrambled
r Sueam	Scan Status: New Mul 12 New Cha 12 12 12 12	0 tiplexes TS 10 1090 12.207 GH V 29.7 Msym/s DVB-S2 nnels Service ID 9003 9041 9027	rs Tra Iz 19 1H/1KF Num 0 0 0 0 0	Ansmitter Scan St 2°E Astra R/1L/1M/2B/2C 98 Name NATIONAL GEO HD TF1 HD DJAZZ.TV HD	Provider CSAT CSAT CSAT	Scan Quality 74% Type HD TV HD TV HD TV	CA Scrambled Scrambled
▶ Sueam	Scan Status: New Mul 12 New Cha 12 12 12 12 12	0 tiplexes TS 1090 12.207 GH V 29.7 Msym/s DVB-S2 nnels Service ID 9003 9041 9027 9007	rs Tra tz 19 1H/1KF Num 0 0 0 0 0	Ansmitter Scan St 2°E Astra X1L/1M/2B/2C 94 Name 9 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ.TV HD	Provider CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV HD TV HD TV HD TV	CA Scrambled Scrambled Scrambled
▶ Sueam	Scan Status: New Mul 12 New Cha 12 12 12 12 12 12 12 12	0 tiplexes TS D 1090 12.207 GH V 29.7 Maym's DVB-S2 nnels Service ID 9003 9041 9027 9007 9007	rs Trr tz 19 1H/1KF 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 2°L /1L/1M/2B/2C 98 Name NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT	74% Type HD TV HD TV HD TV HD TV HD TV HD TV	CA CA Scrambled Scrambled Scrambled Scrambled Scrambled
> Sueam	Scan Status: New Mul 12 New Cha 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS D 1090 22.07 GH V 29.7 Msym/s DVB-S2 mels Service ID 9003 9041 9007 9005 9015	rs Tra iz 19 1H/1KF 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 8/1L/1M/2B/2C 94 Name NATIONAL GEO HD TF1 HD DJAZZ.TV HD DJAZZ.TV HD DJAZZ.TV HD PLANETE+ HD PLANETE+ HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT	Type A HD TV HD TV HD TV HD TV HD TV HD TV HD TV HD TV HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
Vueam	Scan Status: New Mul 12 New Cha 12 12 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 22.207 GF V 29.7 Msym/s pVD-52 nnels Service ID 9003 9041 9027 9003 9041 9027 9035 9015 9015	rs Tra Iz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 94 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD DISNEY HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
▶ Sueam	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 22.207 GF V 29.7 Msym/s DVB-S2 nnels Service ID 9003 9041 9027 9007 9005 9015 9036 9016	rs Tra Iz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 98 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD DISNEY HD DISNEY HD	Provider S% Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
▶ Suream	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 22.207 GF V 29.7 Msym/s DVB25 0003 9003 9004 9007 9007 9007 9007 9007 9005 9016 9016 9011	rs Tra iz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra X/1L/1M/2B/2C 98 Name 9 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD DISNEY HD DISNEY HD DISNEY HD DISNEY HD	Provider B% Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
> Sueam	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 10 10207 GH V 29,7 Msym/s DVB-S2 nnels Service ID 9003 9041 9027 9007 9005 9015 9036 9015 9036 9031 9011	rs Tra tz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 2°E Astra 2°LU/IM/2B/2C 98 Name NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD DISNEY HD DISNEY HD DISNEY HD PARIS PREMIERE HD PARIS PREMIERE HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
* Suream	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 1090 12.207 GF V 29,7 Msym/s DVB-S2 nnels Service ID 9003 9041 9007 9003 9041 9007 9035 9015 9036 9015 9036 9016 9031 9011 9011	rs Tra tz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 8/1L/1M/2B/2C 98 Name 98 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD DISNEY HD DISNEY HD DISNEY HD PARIS PREMIERE HD PARIS PREMIERE HD PARIS PREMIERE HD TF1 HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
* Suream	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS D 1090 22.207 GF V 29.7 Msyms DVB-S2 mels 9003 9003 9041 9007 9035 9015 9036 9015 9036 9016 9031 9021 9021 9023	rs Tra iz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 8/1L/1M/2B/2C 9/1 Name NATIONAL GEO HD TF1 HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD PARIS PREMIERE HD PARIS PREMIERE HD PARIS PREMIERE HD PARIS PREMIERE HD PARIS PREMIERE HD TF1 HD EUROSPORT HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
* Suream	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 22.207 GF V 29.7 Msyms DVB-52 mels Service ID 9003 9041 9027 9035 9015 9035 9015 9036 9016 9031 9011 9021 9033 9023	rs Tra iz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 3/1L/1M/2B/2C 94 NATIONAL GEO HD TF1 HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD DJAZZ TV HD PLANETE+ HD PLANETE+ HD DISNEY HD DISNEY HD PARIS PREMIERE HD	Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled
✓ Suterni	Scan Status: New Mul 12 New Cha Mux 12 12 12 12 12 12 12 12 12 12	0 tiplexes TS 1090 22.207 GF V 29.7 Msym/s DVB-S2 nnels Service ID 9003 9041 9027 9007 9005 9015 9036 9015 9036 9016 9031 9011 9021 9023 9023 9013	rs Tra tz 19 1H/1KF 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Ansmitter Scan St 2°E Astra 2°E	Provider 8% Provider CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT CSAT	Scan Quality 74% Type HD TV	CA Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled Scrambled

Figure 21 TV gateway satellite scan

- 2 Select the required version from the DiSEqC drop-down list. If None is selected, no further DiSEqC configuration is required.
- 3 Select the required DiSEqC switch position from the Committed Switch drop-down list.

For detailed configuration of the DiSEqC settings refer to "Configuring the DiSEqC Switch Position" on page 38.

- 4 From the Scan Mode drop-down list, select Basic.
- 5 From the Transmitter file drop-down list, select a satellite.
- 6 Select the required RF frequency and polarization from the Scan Frequency drop-down list.
- 7 Select the installed LNB type from the LNB Type drop-down list. (The default is Universal, the most commonly used.)
- **Note:** Tool-tips show the Local Oscillator (LO) frequency used for each LNB type when you place your cursor over each LNB Type in the drop-down list (as shown in Figure 22).
| Scan Parameters | |
|-------------------|--|
| Scan Mode: | Basic v |
| Transmitter file: | 19.2°E Astra 1H/1KR/1L/1M/2C ~ |
| Scan Frequency: | 12.207 MHz V ~ |
| LNB Type: | Universal Viniversal |
| Scan idle: | Standar(low band:
DBS L0: 9.75 GHz
C. Rand high band: |
| Scan Status: | No Manual LO: 10.6 GHz |

Figure 22 Local oscillator frequency

8 Click Start Scan.

The scan starts and a progress bar is shown before results are displayed on the screen. For more information, refer to Chapter 8, "Interpreting Scan Results" on page 35.

Advanced Scan

The advanced scan provides the ability to scan a multiplex not listed in the transmitter files. In order to carry out such a scan, the following information is required: frequency, polarization, symbol rate, delivery system and LNB type.

To carry out an advanced scan:

- 1 Click Scan on the required tuner menu.
- 2 Select the DiSEqC switch position from the DiSEqC drop-down menu. (For more information, refer to "Configuring the DiSEqC Switch Position" on page 38.
- 3 From the Scan Mode drop-down list, select Advanced.

AvediaS	tream TVgate	way					exterity
Main Menu	Tuner A Scan						
General Status	Use this page to scan fe	or new multiplexes.					
Network Authentication Resources Services Maintenance Logging	DiSEqC DiSEqC: Committed Switch:	DISEqC 1 0 B •	•				
- Tuner A	Scan Parameters						
Scan	Scan Mode:	Advanced •					
 Multiplexes Channels 	Frequency.	11255	MHz •				
 Stream 	Polarization	Horizontal					
Tuner B	Symbol Rate:	30	Msym/s •				
Tuner C	Delivery Surtem	DAR S2 +	Thispits				
Tuper D	Derivery System.	UVD-32 ·					
	LINB Type:	Universal •					
Tuner E	Scan idle.	Start scan					
Tuner G	Scan Status:	Scan Timeout					
Tuper H	New Multipleyes						
	Mux TS ID	Paramet	are i	Transmitter	Scan Strength	Scan Quality	Quality
	33 1024	11.567 GHz V 22 M	visym/s DVB-S	19.2°E Astra 1KR/1L/1M/1N	065.1dBµV		13.4dB
	New Channels						
	Mux	Service ID	Num	Name	Provider	Type	CA
	33	8501	0	TELE MELODY	CSAT	TV	Scrambled
	33	8502	0	NUMERO 23	CSAT	TV	Scrambled
	33	8504	0	PLANETE+ THALASSA	CSAT	TV	Scrambled
	33	8505	0	[2139]		TV	Scrambled
	33	8506	0	[213a]		unknown	Scrambled
	33	8507	0	CANALSAT RADIOS	CSAT	Radio	FTA
	33	8508	0	MCS BIEN ETRE		TV	Scrambled
	33	8509	0	[213d]		Radio	FTA
	33	8510	0	RADIOS 2	CSAT	198	FTA
	22	9511	0	PADIOS 3	CSAT	109	FTA

Figure 23 Advanced satellite scan (AvediaStream g4418)

- 4 Enter the frequency in the Frequency field, making sure to select the correct units from the drop-down list.
- 5 Select an option from the Polarization drop-down list.
- 6 Enter the symbol rate in the Symbol Rate field, making sure to select the correct units from the drop-down list.
- 7 Select DVB-S or DVB-S2 from the Delivery System drop-down list.
- 8 Select the LNB type. If required select Manual and configure as described in "Specifying LNB Parameters" on page 39.
- 9 Click Start Scan.

The scan starts and a progress bar is shown before results are displayed on the screen. For more information, refer to "Interpreting Scan Results" on page 40.

Configuring the DiSEqC Switch Position

DiSEqC (Digital Satellite Equipment Control) is a communication protocol used by satellite reception devices. It enables the reception device to select specific signal paths from multiple LNBs and provides position control of steerable dishes.

If the satellite equipment is connected to the TVgateway through a DiSEqC switch, it is necessary to configure the required input prior to starting a scan. To do this use the DiSEqC settings on the Scan page.

Configuration of the DiSEqC settings is common to all types of satellite scan described above.

Note: If the satellite equipment is not connected through a DiSEqC switch, the DiSEqC version described in the following procedure should be left at the default value of 'None'.

All Exterity TVgateways support the versions of DiSEqC listed in Table 1.

DiSEqC version	Description
1.0	Enables switching between up to four satellite sources on a committed switch.
1.1	Adds to 1.0 the ability to switch between up to 16 satellite sources on an uncommitted switch. Uncommitted switches can also be daisy-chained from committed switches.
1.2	Adds to 1.1 the ability to steer a motorized dish to a stored position number.
1.1 + Goto X	Adds to 1.1 the ability to steer a motorized dish to a satellite at a particular longitude.

Table 1 DiSEqC version details

Note: DiSEqC 2.x switches are backwards-compatible with DiSEqC 1.x satellite receivers. The TVgateway can therefore operate with DiSEqC 2.x switches.

Note: Motorized dishes require some time to move to a new position therefore more than 30 seconds may elapse before a scan starts if one of the motorized position options is selected.

To configure the DiSEqC settings before starting a scan, follow the instructions below.

To select the required satellite input using DiSEqC 1.0:

- 1 Select DiSEqC 1.0 from the DiSEqC drop-down menu.
- 2 Select a switch (A, B, C, D or None) from the DiSEqC committed switch drop-down menu.

Note: The DiSEqC switch inputs may be numbered rather than lettered. In this case, position A would correspond to the lowest numbered position. For example, if the switch is labeled with positions 0 – 3, position A corresponds to position 0, position B to position 1, and so on.

To select the required satellite input using DiSEqC 1.1:

- 1 Select DiSEqC 1.1 from the DiSEqC drop-down menu.
- 2 Select a committed switch position as for DiSEqC 1.0 if required.
- 3 Select a switch (1 to 16 or None) from the DiSEqC uncommitted switch drop-down menu.

To steer a motorized dish to a particular longitude using DiSEqC 1.1 + Goto X:

- 1 Select DiSEqC 1.1 + Goto X from the DiSEqC drop-down menu.
- 2 Select committed and non-committed switch positions as for DiSEqC 1.0 and 1.1, if required.
- 3 Enter the geographic coordinates of the satellite dish location in the Ground Station fields.
- 4 Enter the satellite longitude position in the Satellite Longitude field.
- **Note:** The geographic coordinates are required in order for the TVgateway to calculate the correct angle offsets for the dish. It is up to the administrator to make sure that it is possible to receive the signal from the required satellite from this location and using this dish.

To steer a motorized dish to a stored position using DiSEqC 1.2:

- 1 Select DiSEqC 1.2 from the DiSEqC drop-down menu.
- 2 Select committed and non-committed switch positions as for DiSEqC 1.0 and 1.1, if required.
- 3 Enter the required position number as specified by the satellite installer in the Stored Position # field.

Specifying LNB Parameters

The TV gateway assumes the LNB Local Oscillator frequency as shown in the table below for the type of LNB specified:

LNB Type	LO Frequency (GHz)	Transmission Frequency (GHz)
Universal	9.75	<11.7
	10.6	>11.7
Standard	10.75	_
DBS	11.25	_
C-Band	5.15	_

If a different type of LNB is used, you can manually configure the Local Oscillator frequency.

For a Universal LNB, the TVgateway selects the LO frequency by disabling/enabling a 22kHz tone to the LNB for transmission frequencies below/above 11.7GHz respectively. Again, this can be manually configured.

To specify the LNB LO frequency:

- 1 Select the LNB in use from the LNB Type drop-down list. To specify the LNB local oscillator frequency:
 - a. Choose Manual from the LNB Type drop-down list.
 - b. Enter the frequency in kHz in the LNB Osc Freq field.
 - c. Specify Off (low band) or On (high band) to specify the use of the 22kHz tone from the 22kHz tone drop-down list.
- 2 If the configuration is complete, click Start Scan.

Refer to Chapter 8, "Interpreting Scan Results" to review the Multiplex and Channels Lists.

Interpreting Scan Results

The scan process produces the details of the discovered multiplex(es), including the frequency and other details used in scanning. If the scan of a frequency was successful, the mux and channel information is listed. If unsuccessful, a Scan Status of "No Lock" is displayed.

The Scan Status displays the following states:

- **Tuning** The TVgateway tuner is tuning to the specified scan frequency.
- **Tuner Locked** The TVgateway tuner has found and is locked to the specified scan frequency.
- Scan Complete The TVgateway has completed the scan of the specified frequency and the multiplex and channel details are listed.
- No Lock The TV gateway tuner has been unable to locate a signal at the specified frequency.
- Scan timed out No data has been received from the tuner.

Examples of successful satellite frequency/polarization and terrestrial scans are shown below:

AvediaSt	ream TV <u>c</u>	jatew	/ay						ex	terity
Main Menu	Tuner B Scan									
For the second seco	Use this page to	scan for ne	ew multiplexes.							
▶ Network	DiSEqC									
 Resources 	DiSEqC:		DiSEqC 1.0	Y						
 ▶ Services ▶ Maintenance ▶ Logging 	Committed St	witch:	None 🔻							
🕨 Tuner A 🛛 🔵	Scan Parame	ters								
- Tuner B 😑	Scan Mode:		Basic 🔹							
In Scan	Transmitter fil	e:	13°E Hot Bird 13B/1	3C/13D	•					
 Multiplexes Channels 	Frequency:		12.225 GHz V 🔻							
▶ Stream	LNB Type:		Universal 🔻							
Tuner C										
🕨 Tuner D 😐	Scan idle:		Start scan							
🕨 Tuner E 🛛 😑	Scon Status:									
🕨 Tuner F 💦 😁	ocan otatus.	Now Mult	inloves							
🕨 Tuner G 🛛 😁		New Mult	тс							
🕨 Tuner H 🔗		Mux ≬	ID Parame	ters 🕴	Transmitter Sca	n Strength	Scan Qu	ality 🔶 🤇	Quality 🔅	
		2	101 12.225 GHz V 2 DVB	27.5 Msym/s -S	13°E Hot Bird	53.9dBµV	8.70	:B	•	
		New Char	nnels							
		Mux	Service ID	Num 🔶	Name	-	Provider 🔶	Туре 🍦	CA 🔶	
		2	1	0	RFE/RL TV 1 (HB1-8)			TV	FTA	
		2	240	0	VOA TV 240 (HB49-56))		TV	FTA	
		2	270	0	VOA Radio 270 (HB65-6)	8)		Radio	FIA	
		2	271	0	VOA Radio 271 (HB09-7.	2) 2)		Radio	ETA	
		2	212	0	VOA Radio 272 (HD7144	2)		TV	ETA .	
		-	241		VUA IV 241				FIA	
		2	242	0	VOA TV 241 VOA TV 242			TV	FTA	
		2	242 251	0	VOA TV 241 VOA TV 242 VOA TV 251			TV TV	FTA FTA	
		2 2 2	242 251 281	0 0 0 0	VOA TV 241 VOA TV 242 VOA TV 251 VOA Radio 281 (HB75-71	8)		TV TV Radio	FTA FTA FTA FTA	
		2 2 2 2	242 251 281 252	0 0 0 0	VOA TV 241 VOA TV 242 VOA TV 251 VOA Radio 281 (HB75-71 VOA TV 252	8)		TV TV Radio TV	FTA FTA FTA FTA	
		2 2 2 2 2 2	242 251 281 252 253	0 0 0 0 0	VOA TV 241 VOA TV 242 VOA TV 251 VOA Radio 281 (HB75-71 VOA TV 252 VOA Radio 253 (HB53-51	8) 6)		TV TV Radio TV Radio	FTA FTA FTA FTA FTA FTA	

Figure 24 Successful satellite scan results (AvediaStream g4418)

AvediaS	stream T\	/gate	eway					ex	terity
lain Menu	Tuner A Sca	n							
General Status	Use this page	e to scan	for new multiplexes.						
Network Authentication Resources Scan Mode:		meters le:	Advanced						
Services Maintenance Logging	Frequency	y:	522	MHz *					
uner A	Bandwidth	1:	8 MHz						
Scan	Delivery S	system:	DVB-T/T2 •						
Multiplexes Channels Stream	Scan idle:		Start scan						
	and the second second								
Tuner B 🛛 🕴	Scan Status:								
Tuner B	Scan Status: New Multiple	exes	Parametere	Transmitter	Scan Strang	rth	Scop Of	uality A	Quality
'uner B 'uner C 'uner D	Scan Status: New Multiple Mux 1	exes TS ID 4220	Parameters	Transmitter Central Scotland	Scan Streng	gth	Scan Qu	uality	Quality
Funer B Funer C Funer D	Scan Status: New Multiple Mux 1 1	exes TS ID 4220	Parameters 522 MHz DVB-T	Transmitter Central Scotland	Scan Streng	gth 63%	Scan Qu	uality	Quality
uner B uner C uner D uner E uner F	Scan Status: New Multiple Mux 1 1 New Channe Mux	exes TS ID 4220 els	Parameters 522 MHz DVB-T Service ID	Transmitter Central Scotland	Scan Streng	gth	Scan Qu	uality 50.0dB Type	Quality • CA
uner B uner C uner D uner E uner F uner G	Scan Status: New Multiple Mux 1 1 New Channe Mux 1	exes TS ID 4220 els	Parameters 522 MHz DVB-T Service ID 4220	Transmitter Central Scotland Num	Scan Streng Name BBC ONE Scot	gth 63%	Scan Qu Provider	Use Solution Statements So	Quality • CA FTA
uner B uner C uner D uner E uner F uner G uner H	Scan Status: New Multiple Mux 1 1 New Channe Mux 1 1	exes TS ID 4220 els	Parameters 522 MHz DVB-T Service ID 4220 4284	Transmitter Central Scotland Num 1 2	Scan Streng Name BBC ONE Scot BBC TWO Scot	gth 63%	Scan Qu Provider fp.bbc.co.uk fp.bbc.co.uk	Type TV	Quality CA FTA FTA
uner B uner C uner D uner E uner F uner G uner H	Scan Status: New Multiple Mux 1 1 New Channe Mux 1 1 1	exes TS ID 4220 els	Parameters 522 MHz DVB-T Service ID 4220 4284 4288	Transmitter Central Scotland Num 1 2 7	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE	gth	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	Type TV TV TV TV	Quality CA FTA FTA FTA
uner B uner C uner D uner E uner F uner G uner H	Scan Status: New Multiple Mux 1 New Channe Mux 1 1 1 1	exes TS ID 4220 sis	Parameters 522 MHz DVB-T Service ID 4220 4284 4288 4352	Transmitter Central Scotland	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	Type TV TV TV TV TV	Quality CA FTA FTA FTA FTA
iner B iner C iner E iner F iner G iner H	Scan Status: New Multiple Mux 1 New Channe Mux 1 1 1 1 1	exes TS ID 4220 Hs	Parameters 522 MHz DVB-T Service ID 4220 4284 4284 4285 4352 4416	Transmitter Central Scotland Num 1 2 7 7 80 200	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	Type TV TV TV TV TV TV TV	Quality CA FTA FTA FTA FTA FTA
iner B iner C iner E iner F iner G iner H	Scan Status: New Multiple Mux 1 1 New Channe 1 1 1 1 1 1 1	exes TS ID 4220 Hs	Parameters 522 MHz DVB-T Service ID 4220 4284 4288 4352 4416 4544	Transmitter Central Scotland Num 1 2 7 80 200 9	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	Julity Image: Colored system Type Image: Colored system TV TV TV TV TV TV TV TV TV TV	Quality CA FTA FTA FTA FTA FTA FTA
iner B	Scan Status: New Multiple Mux 1 1 New Channe 1 1 1 1 1 1 1 1	exes TS ID 4220 Hs	Parameters 522 MHz DVB-T Service ID 4220 4288 4352 4416 4544 4608	Transmitter Central Scotland Num 1 2 7 7 80 200 9 70	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	Type 0 TV TV TV TV TV TV TV TV TV	Quality CA FTA FTA FTA FTA FTA FTA
iner B	Scan Status: New Multiple Mux 1 New Channe Mux 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	exes TS ID 4220 Hs	Parameters 522 MHz DVB-T Service ID 4220 4284 4288 4352 4416 4544 4608 4672	Transmitter Central Scotland Num 1 2 7 80 200 9 9 70 70 71	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel CBBC Channel CBBC Channel	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	tality 0 50.0dB 0 TV 0	Quality CA FTA FTA FTA FTA FTA FTA FTA
uner B uner C uner D uner F uner G uner H	Scan Status: New Multiple Mux 1 1 New Channe Mux 1 1 1 1 1 1 1 1 1 1 1 1 1	exes TS ID 4220 Is	Parameters 522 MHz DVB-T Service ID 4220 4284 4284 4352 4416 4544 4608 4672 4736	Transmitter Central Scotland Num 1 2 7 80 200 9 9 70 71 81	Scan Streng Name BBC ONE Scot BBC TWO Scot BBC THREE BBC NEWS BBC Red Button BBC FOUR CBBC Channel CBBC Charliament	gth 63%	Provider fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk fp.bbc.co.uk	topological topological TV TV	Quality CA FTA FTA FTA FTA FTA FTA FTA FT

Figure 25 Successful terrestrial scan results (AvediaStream g4448)

Summary information about the scanned multiplex and its channel content is displayed as shown in Figure 24.

New Multiplexes

The New Multiplexes section displays the following information:

Mux Number	On completion of a successful scan the detected multiplex is assigned a value by the TVgateway (in sequence) and added to the list on the Multiplexes page.
TS ID	Displays the identification of the multiplex as assigned by the broadcaster.
Parameters	Displays the multiplex frequency and delivery system polarization (if applicable), and symbol rate.
Transmitter	Displays the transmitter/transmitter family name, if available.
Scan Strength	Signal strength at the time of the scan.
Scan Quality	Signal quality at the time of the scan.
Quality	Green or orange indicate that the signal is good enough to stream; red indicates that the signal is not strong enough.

New Channels

The channel content for the New Multiplex is listed and the following information is displayed:

Mux Number	On completion of a successful scan, the detected multiplex is assigned a value by the TVgateway (in sequence) and added to the list on the Multiplexes page.
Service ID	The identification of the channel as assigned by the broadcaster.
Num –	The channel number assigned by the broadcaster. If none is available, 0 is displayed.
Name	The channel name assigned by the broadcaster.
Provider	The service provider name.
Туре	The type of channel content detected, for example: TV/Radio/HD TV/Data

The Conditional Access status of the channel:

FTA, indicating Free to Air:

Scrambled:

g4410/g4418/g4448 - indicates that the channel is encrypted (and cannot be decrypted by the TVgateway).

g4415-sm - indicates that a CAM Module, access card and SecureMedia server are required.

g4412/g4442 - indicates that a CAM Module and access card are required.

Managing Transmitter Files

CA

The TVgateway is supplied with transmitter information files for commonly used terrestrial and satellite sources. These files list the frequencies in use on the particular transmitter and allow for straightforward scanning of the available channels.

You can upload additional configuration files for additional satellites to the TVgateway. These files may be supplied to you by your Exterity reseller. The format of these files is shown in Appendix F, "Transmitter File Format".

The TVgateway uses TFTP to acquire transmitter files, so the new transmitter file must be hosted on a TFTP server for the TVgateway to be able to download it. For more information, refer to "Specifying the TFTP Server's Address" on page 67.

The transmitter files are managed from the Resources page on the Web Management Interface (see Figure 28).

Viewing the Contents of a Transmitter File

You can view the details of each installed transmitter file on the Web Interface. To view transmitter file details:

1	Click Resources to	display the	list of installed	transmitter files:
---	---------------------------	-------------	-------------------	--------------------

AvediaS	ream TVgateway					
Main Menu	Resources					
 General Status 	Upload extra resource	ces fr	om a TFTP server. Change	the TFTP server address on	the Maintenance page	e, if required.
Network Authentication	Transmitter Files					
Resources tftp://10.8.64.32/ Services Maintenance Longing	tftp://10.8.64.32/		Import			
			Transmitter File	*	Last Update	
Tuner A			Australia DVB-T		16/0	1/2014
Scan			Continental Europe DVE	3-T	16/0	1/2014
 Multiplexes Channels Stream 			France DVB-T		16/0	1/2014
Tuner B 🗧			New Zealand DVB-T		16/0	1/2014
Tuner C 🗧			UK DVB-T		16/0	1/2014
Tuner D		0	Delete Restore Default	S		
Tuner E		and and a				
Tuner F	Total Capacity Used:		•	3% (1140kB of 32768kB)		
Tuner G						
Tuner H						

Figure 26 Resources page (AvediaStream g4448)

2 Click the name of the transmitter file you want to examine.

i Menu Rei	ransmitter F	ile Details		
tus Up	Transmitter:	A	istralia DVB-T	
hentication	Filename:	31	I-All	
curemedia t	including.	Num	Parameters	6
vices		0	177.5 MHz 7 MHz Bandwidth (Channel 6)	
intenance		1	184.5 MHz 7 MHz Bandwidth (Channel 7)	
r A		2	191.5 MHz 7 MHz Bandwidth (Channel 8)	
		3	198.5 MHz 7 MHz Bandwidth (Channel 9)	
er B 😈		4	205.5 MHz 7 MHz Bandwidth (Channel 1009)	
er C 😐		5	212.5 MHz 7 MHz Bandwidth (Channel 10)	
er D		6	219.5 MHz 7 MHz Bandwidth (Channel 11)	
		7	226.5 MHz 7 MHz Bandwidth (Channel 12)	
er E 👳		8	527.25 MHz 7 MHz Bandwidth (Channel 28)	
er F 😑		9	534.25 MHz 7 MHz Bandwidth (Channel 29)	
er G 😑		10	541.25 MHz 7 MHz Bandwidth (Channel 30)	
		11	548.25 MHz 7 MHz Bandwidth (Channel 31)	
Tot		12	555.25 MHz 7 MHz Bandwidth (Channel 32)	
		13	562.25 MHz 7 MHz Bandwidth (Channel 33)	
		14	569.25 MHz 7 MHz Bandwidth (Channel 34)	
		15	576 25 MHz 7 MHz Bandwidth (Channel 35)	

Figure 27 Transmitter file details (AvediaStream g4448)

3 Click OK to close the window.

Adding/Deleting Transmitter Files

To add a new transmitter file to the TVgateway:

- 1 Ensure that the TFTP server is running.
- 2 Ensure that the transmitter file is hosted correctly in the root directory of the TFTP server.
- 3 Click Resources.

lain Menu	Resources					
General	Upload extra resour	ces from a	a TFTP server. Chang	e the TFTP server address on	he Maintenance page	e, if required.
Network	Transmitter Files					
Resources Services Maintenance	tftp://10.8.64.32/		Import			
	_			Transmitter File	*	Last Update
Tuper A			Australia DVB-T		16/0	1/2014
Scan			Continental Europe DV	'B-T	16/0	1/2014
Multiplexes Channels Stream			France DVB-T		16/0	1/2014
Tuner B 🧧		D	New Zealand DVB-T		16/0	1/2014
Tuner C 🗧			UK DVB-T		16/0	1/2014
Tuner D 🧧		De	lete Restore Defau	Its		
Tuner E 🛛 🧧	Total Canacity Lised			3% (1140kB of 32768kB)		
the second s	i otal Capacity Used.			5 10 (1 140KB 01 52/00KB)		

Figure 28 Resources Page (AvediaStream g4448)

- 4 Ensure that the correct TFTP Server address is shown. This is configured on the Maintenance page (see "Specifying the TFTP Server's Address" on page 67 for more details).
- 5 Enter the name of the file in the Transmitter Files field.
- 6 Click Import.

The file is retrieved from the TFTP server and is available for use on the Scan page on completion of the upload.

To delete a transmitter file from the TVgateway:

- 1 Click Resources.
- 2 Click the box for each file you want to delete.
- 3 Click Delete.

To restore the factory default transmitter files:

- 1 Click Resources.
- 2 Click Restore Defaults.

Channel Configuration

This chapter contains the following sections:

- Selecting a Multiplex
- Checking the Channel List
- Selecting Channels for Streaming
- Advanced Channel Configuration

Overview

A successful scan results in a list of one or more multiplexes, and lists of channels for each scanned multiplex. From these lists you can select the channels to be streamed onto the network.

Use the Channels page to view all the channels. By default, channels are ordered by multiplex. To re-order the table, click any of the column headings. Any multiplex may contain a mix of TV, radio, and data channels. (Data channels do not carry normal audio-video streams but are typically used as control channels.) A tuner tunes to a specified frequency and can therefore stream all the channels in the multiplex at that frequency.

You can change the announced Channel Names and Numbers. More advanced channel editing allows you to enable/disable discrete elements. For example you can choose to enable or disable subtitles if they are a discrete part of the channel stream. Refer to "Advanced Channel Configuration" on page 48 for more information.

Selecting a Multiplex

Once you have identified the multiplex containing the channels you want to stream, you must select it as the active multiplex so that the TVgateway tunes to the correct frequency.

To select a multiplex:

- 1 Click Multiplexes on the required tuner.
- 2 Click the Active button for the required multiplex.
- 3 Click Set Active Multiplex.

Main Menu	Tuner A Mul	tiplexes												
General Status	Select the ar	Select the active multiplex for this tuner and delete unused multiplexes.												
Network	Active Multip	lex:												
Securemedia	Active	Mux	TS ID	Parameters	Transmitter	Scan St	rength	Scan Quality	Quality	Delet				
Services	۲	1	16572	474 MHz DVB-T2 (Channel 21)	Central Scotland	and the second	51.4dBµV	34.3dB	•					
Maintenance Logging		2	8209	498 MHz DVB-T (Channel 24)	Central Scotland	-	351.7dBµV	36.0dB	•					
uner A	0	3	4220	522 MHz DVB-T (Channel 27)	Central Scotland		55.0dBµV	136.0dB	•					
Scan	Q	4	32785	546 MHz DVB-T (Channel 30)	Central Scotland	-	47.6dBµV	28.2d8	•					
Multiplexes Channels		5	40960	570 MHz DVB-T2 (Channel 33)	Central Scotland	Contract of	50.6dBµV	30.2dB	•					
Stream	0 Q	6	24640	618 MHz DVB-T (Channel 39)	Central Scotland	-	51.6dBµV	33.2d8	•					
uner B 🧧	0	7	12293	642 MHz DVB-T (Channel 42)	Central Scotland	-	51.6dBµV	C35.0dB	•					
uner C 🗧	0	8	20544	666 MHz DVB-T (Channel 45)	Central Scotland	and the second second	52.0dBµV	C35.3dB	•					
iner D										D				
uner E 🛛 🗧	Set Active M	ultiplex								10				
	Contra in	anapien												

Figure 29 Setting an active multiplex (AvediaStream g4448)

To remove unwanted multiplexes from the table:

- 1 Select the respective Delete check box(es).
- 2 Click Delete.

Note: If you delete a multiplex, all associated channels are also deleted.

Checking the Channel List

This section describes the information displayed in the multiplex and channel lists, and explains how to select and configure the channels you want to stream. The channels discovered by the scan process are listed on a per-tuner basis. The View check boxes allow you to display only the types of channels required.

To see the channel list for a tuner:

1 In the required tuner menu, click Channels.

AvediaSt	tream T\	/gate	eway						e	xterity	i
Main Menu	Tuner A Cha	nnels									
General Status	Select which	channels	to stream an	d edit the name and ch	annel numb	er used in SAP annou	ncements	h.			
 Network Authentication Securemedia 	Channels View: Activ	e Mux onl	y 🔍 Enable	ed only 🔍 FTA only 🗐	TV⊠R	adio 🗹 🛛 Data 🗐		Search:			
 Services Maintenance 	Enable	Mux 🔺	Service _ ID	Provider	Num	Name	Type	Groups	CA	SM Band	
Logging Tuner A	2	1	17472	fp.bbc.co.uk	902	QA BBC TWO HD	HD TV	QA_TEST	FTA	None •	X
In Scan In Multiplexes	æ	1	17596	fp.bbc.co.uk	901	QA BBC 1 Scot HE	HD TV	QA_TEST	FTA	None •	X
 Channels Stream 		1	17664	www.channel4.com	904	QA Channel 4 HD	HD TV	QA_TEST	FTA	None +	X
Tuner B		1	17856	www.stv.tv	903	QA STV HD	HD TV	QA_TEST	FTA	None •	X
Tuner D 🗧	U.	1	17920	fp.bbc.co.uk	105	BBC THREE HD	HD TV	all	FTA	None •	X
🛛 Tuner E 🛛 🍯	0	1	18112	fp.bbc.co.uk	123	CBBC HD	HD	all	FTA	None •	X
FTuner F	0	1	20352	www.channel4.com	45	Film4+1	TV	all	FTA	None •	2
Tuner G	0	2	8273	www.stv.tv	3	STV	TV	all	FTA	None •	2
🔋 Tuner H 🛛 🕚		2	8325	www.itv.com	6	ITV2	TV	all	FTA	None •	X

Figure 30 Channels page (AvediaStream g4448)

- 2 Select the View check boxes for the types of channels required. For example, click TV and Radio to list only TV and radio channels. Click the Active Mux only check box to list only the channels on the selected multiplex.
- **Note:** The View check box selection is applied and saved in your browser; no configuration changes are applied to the TVgateway.
- 3 Click the headings to sort the list and help you to find the specific channels you want to stream. For example, click Name to sort the channels in alphabetical order. The information displayed is described in Table 2.

Table 2 Channel	s page details
-----------------	----------------

Column	Description and Function
Enable	Click the check box to enable streaming of the selected channel. Note : To stream the specified channel you must set the respective multiplex as the active mux.
Mux	The reference number of the multiplex containing this channel. Click Mux to order the channels by multiplex number.
Service ID	The Service ID of the channel.
Provider	The service provider for the multiplex/channel.

Column	Description and Function
Num	The channel number is displayed in the channel list on the Status page. This is the number displayed by AvediaPlayer Receivers, AvediaPlayer/Artio desktop clients, and the AvediaServer Channel Monitor application, and can be configured as required. The Channel number field may be pre-populated by the scan.
Name	The channel name. This is the name displayed by AvediaPlayer Receivers, AvediaPlayer/Artio desktop clients and the AvediaServer Channel Monitor application. The default name is that applied by the broadcaster. To change this name, click the name and edit the text field.
Туре	The type of channel: TV, HD TV, Radio or Data.
Groups	Within the Exterity IPTV system a simple but powerful mechanism called <i>groups</i> is used to filter access to content available to receivers or computer based clients on the network. For example, you can configure a group of sports channels and a group of children's channels. Channels are assigned to group(s) by Exterity Encoders and TVgateways. The name is included as part of the SAP announcements and the groups mechanism allows Exterity Receivers and AvediaServer/Artio desktop clients to list only channels in a particular group or groups. The default value is "all", meaning that the channel is a member of all groups.
	To change the group membership for a channel, click the group name and edit the text field. Where required, enter more than one group name(s) in a comma-separated list.
	Note: Valid characters are: A-Z (upper case alphabet), a-z (lower case alphabet), 0-9, and _ (underscore)
CA	Indicates whether or not the channel is scrambled (encrypted). FTA indicates Free To Air with no restriction on streaming. When Scrambled is indicated, a SecureMedia server, CAM and access card are required to stream the channel (g4415-sm only).
	Note: Some broadcast multiplexes do not use the Conditional Access (CA) bit as expected, so this information is displayed as a hint only.
SM Band	(g4415-sm only) In order to stream a channel which is scrambled, select the required band from the drop-down list for the channels you want to encrypt and stream. These bands match those set up on the SecureMedia Broadcast Director, and are available only if the TVgateway has been registered with the Broadcast Director.
Decrypt	(g4412 and g4442 only) Select Decrypt to decrypt the encrypted channel using the CAM and stream it in the clear.
(Edit Channel)	The Edit Channel window allows you to configure advanced channel configuration settings such as more than one destination address and PID filtering. Refer to "Advanced Channel Configuration" on page 48 for more information.

Table 2 Channels page details

Selecting Channels for Streaming

After filtering the list of channels to list only those you want to stream, check the Mux column on the Channels page. Identify the channels you want to stream from each tuner.

Selecting Channels

To select channels:

- 1 Click Channels on the required tuner.
- 2 Click the View: Active Mux only check box to list only the channels on the selected multiplex:

AvediaS	tream T\	/gate	way						e	kterity	i
Main Menu	Tuner A Cha	nnels									
General Status Network Authentication Resources CAM Menu Services	Select which Channels View: Acti	channels t	o stream and	edit the name and channel number	used in SAP announ idio 🖗 Data 🗆	cements.	207		Search:		
Maintenance	Enable	Mux *	ID	Provider	Num :	Name	Туре	Groups	CA	Decrypt	1
Tuner A		1	17472	fp.bbc.co.uk	102	BBC TWO HDdjd	HD TV	all	FTA		X
Scan		1	17596	fp.bbc.co.uk	101	BBC 1 Scot HDdjd	HD TV	all	FTA		2
Multiplexes Channels		1	17664	www.channel4.com	104	Channel 4 HD	HD TV	all	FTA		2
Stream		1	17856	www.stv.tv	103	STV HD	HD TV	all	FTA		2
uner B 🗧		1	17920	fp.bbc.co.uk	105	BBC THREE HD	HD TV	all	FTA		N
		1	18112	fp.bbc.co.uk	73	CBBC HD	HD TV	all	FTA		1
		3	40001		0	[9c41]	TV	all	FTA		2
		4	8202	Globecast	0	ARM_1	TV	all	FTA		2
		4	8203	Globecast	0	BET	TV	all	FTA		1
		4	8204	Globecast UK	0	BBC World News	TV	all	FTA		X

Figure 31 Selecting channels (AvediaStream g4412)

Main Menu	Tuner A Cha	nnels									
General Status	Select which	channels to	stream and ed	it the name and channel	number used	in SAP announcements.					
Network Authentication Securemedia Resources	Channels View: Activ	ve Mux only (Enabled on	ily 🗐 FTA only 🗐 TV	Radio R	Data			Search:		
 Services Maintenance 	Enable	Mux *	Service ID *	Provider	Num	Name	Туре	Groups	CA	SM Band	
+ Logging		1	17472	fp.bbc.co.uk	902	QA BBC TWO HD	HD TV	QA_TEST	FTA	None *	1
Tuner A 😐		1	17596	fp.bbc.co.uk	901	QA BBC 1 Scot HD	HD TV	QA_TEST	FTA	None +	×
 Scan Multiplexes 		1	17664	www.channel4.com	904	QA Channel 4 HD	HD TV	QA_TEST	FTA	None •	X
Channels Stream		1	17856	www.stv.tv	903	QA STV HD	HD TV	QA_TEST	FTA	None •	X
Tuner B	0	1	17920	fp.bbc.co.uk	105	BBC THREE HD	HD TV	all	FTA	None •	đ
Tuner C 🛛 🗧	G	1	18112	fp.bbc.co.uk	123	CBBC HD	HD TV	all	FTA	None •	X
Tuner D 🛛	Ū.	1	20352	www.channel4.com	45	Film4+1	TV	all	FTA	None •	X
Tuner E 🛛 📵	0	2	8273	www.stv.tv	3	STV	TV	all	FTA	None +	X
Tuner F	0	2	8325	www.itv.com	6	ITV2	TV	all	FTA	None +	×
Tuner G 🛛 🗧	0	2	8373	www.stv.tv	33	STV+1	TV	all	FTA	None •	X
Tuner H @	0	2	8384	www.channel4.com	4	Channel 4	TV	all	FTA	None •	X
the state of the s	0	2	8385	www.channel4.com	904	QA Film4	TV	QA_TEST	FTA	None +	X
		2	8442	www.channel4.com	906	OA More 4	TV	QA TEST	FTA	None •	1

Figure 32 Selecting channels (AvediaStream g4448)

- 3 Click the Enabled only check box to display only the channels you have selected for streaming.
- 4 If required, change the Name and Number of any channel using the Name and Num fields.
- 5 If required, enter the group membership name(s) in the Groups field. Refer to Table 2 on page 46 for more information about Exterity groups.

To stream the selected channels onto the IPTV network refer to Chapter 10, "Streaming". Refer to "Advanced Channel Configuration" below for more information about advanced channel configuration such as PID filtering.

Advanced Channel Configuration

In most circumstances, the default streaming settings are suitable. However, if required, you can use the advanced channel configuration to:

- Manually configure parameters such as the multicast address. Each channel selected for streaming can be individually configured.
- Create and configure duplicate channels, allowing you to stream a multi-language channel as discrete single language channels, for example.

Specifying the channel content and meta data makes use of the Service Information (SI) and Program Specific Information (PSI) tables.

Note: When making changes in the Edit Channel window, click OK to close the window, then click Apply on the Channel page to save your settings.

This section contains the following information:

- Configuring the Stream Destination
- Using PID Filtering to Specify Channel Content
- Including More Service Information in the Stream

Configuring the Stream Destination

The TVgateway is configured to automatically assign a multicast address to each channel on a per tuner basis. (Details of this can be found in Appendix E, "Assigning Multicast Addresses".)

Alternatively, you can manually set a multicast address for each channel, which overrides the automatic setting. If you do this, ensure the address you specify for each channel is unique for the network.

Note: If you manually specify a multicast address, you must also specify the port number. If you do not do this, the entered multicast address is ignored and the default address used instead.

You can enter multiple addresses separated by commas, as shown in Figure 34.

You can manually configure a different multicast address, or one or more unicast addresses. When streaming to unicast addresses, you may also want to disable SAP announcement of the channel.

Note: To globally disable SAP announcements, deselect the SAP Service check box on the Services page.

To configure the channel address:

- 1 Configure each channel required for streaming as described in "Selecting Channels for Streaming" on page 47.
- 2 Click 📝 for the channel you want to configure to open the Edit Channel window.

Edit Channel										×
Select which stream	ns to in	clude i	in a chan	nel. You can	also copy	and delete strea	ms.			
Name:	E	UROSP	ORT CZ							
Service ID:	2	026								
CA Systems:	Ir	detoC	ryptowork	s						
SAP Announce:	2	1								
Destination Address	es:									
SI Table Types:						BAT others				
		- 10				DATE Others				
	Enable	ed 🔅	PID ^	Mapped PI	D 0	Туре	Language	• CA •		
			101			H.264 Video		FTA		
			102			AAC Audio	Hungarian	FTA		
	₹		105			Subtitles		FTA		
	1		106			AAC Audio	English	FTA		
			110		I	SO 13818-6 type B	Czech	FTA		
								OK Creat	te Copy Delete	Cancel

Figure 33 Edit Channel Window

- 3 To disable SAP announcement of the channel, deselect the SAP Announce check box.
- 4 Specify the Destination Addresses. If left blank, the default multicast address and port are used.

Caution: Please be aware that entering multiple addresses creates multiple streams which increases bandwidth usage.

Select which streams to include in a channel. You can also copy and delete streams.						
Name:	TF1 HD					
Service ID:	9001					
CA Systems:	SECA Mediaguard, Viaccess, Nagravision					
SAP Announce:						
Destination Addresses:	250.0.3.4:5000,250.0.3.5:5000,250.0.3.6:5000					

Figure 34 Multiple stream destinations

Using PID Filtering to Specify Channel Content

You can enable/disable specific elements of the transport stream if required. For example, a channel may contain multiple audio language and codec elements which are not required. Figure 33 on page 49 shows a channel with two audio elements, each for a different language.

To specify channel elements:

- 1 Configure each channel required for streaming as described in "Selecting Channels for Streaming" on page 47.
- 2 Click 📝 for the channel you want to configure to open the Edit Channel window.

Note: The TVgateway automatically enables all video, audio, subtitle/closed caption and Teletext elements.

Enabled 🕴	PID 🔺	Mapped PID	Туре	\$ Language	CA 🕴
	101		H.264 Video		FTA
	102		AAC Audio	Hungarian	FTA
Ø	105		Subtitles		FTA
	106		AAC Audio	English	FTA

Figure 35 Automatically enabled channel elements

- 3 Click the Enabled check boxes to enable each channel element you want to include in the stream.
- 4 If you require a particular number for the PID, enter this in the Mapped PID box. This is then used instead of the default PID for that element.
- 5 Click OK to close the window.
- 6 Click Apply to save your changes.

Including More Service Information in the Stream

You can allow additional service information to be included in a channel output stream. The Edit Channel window allows you to include commonly used information tables in the channel stream, such as the Conditional Access Table (CAT) and the Network Information Table (NIT). You can specify additional tables by entering their decimal value in the entry field (0-255). Note that the Program Association Table (PAT) and Program Map Table (PMT) are always enabled.

Including additional service information may be useful for processes subsequently applied to the channel after it is streamed. For example, if the channel is to be decrypted by an IPTV set-top box or player client, the CAT is most likely required.

To specify additional service information:

- 1 Configure each channel required for streaming as described in "Selecting Channels for Streaming" on page 47.
- 2 Click 📝 for the channel you want to configure to open the Edit Channel window.

3 Click the check box for the additional SI table(s) you want to include in the stream. (For example, CAT and NIT.)

Name:	BBC TWO HD
Service ID:	17472
CA Systems:	None
SAP Announce:	
Destination Addresses:	
SI Table Types:	PAT @ PMT @ CAT @ NIT @ SDT . EIT . BAT . others

Figure 36 Including additional SI elements

- 4 Click OK to apply your changes.
- **Tip:** To specify additional tables not available from the check boxes, you can enter the decimal value of the required table(s). Enter the table number and/or ranges separated by commas. For example 4,7,100-104:

Name:	BBC TWO HD
Service ID:	17472
CA Systems:	None
SAP Announce:	•
Destination Addresses:	
SI Table Types:	PAT PMT CAT NIT SDT EIT BAT other 4,7,100-104

Figure 37 Entering additional table numbers

5 Click OK to close the window, then click Apply to save your changes.

Creating a Duplicate Channel

Creating duplicate channels enables you to stream more than one version of a channel, each containing different elements of the original stream. In the following example, a multi-language channel is copied and by individually enabling/disabling the audio PIDs, single language versions of the channel are created.

To create and configure duplicate channels:

- 1 Configure each channel required for streaming as described in "Selecting Channels for Streaming" on page 47.
- 2 Click 📝 for the channel you want to configure to open the Edit Channel window.

Edit Channe	el						×
Select whic	h streams t	o include in a cł	nannel. You ca	n also copy and delete streams			
Name:		BBC TWO HD					
Service ID:		17472					
CA Systems	5:	None					
SAP Annour	nce:						
Destination	Addresses:						
SI Table Tyr	pes:	PAT PMT	CAT 🖉 NIT 🖗	SDT FIT BAT others			
	Enabled	🕴 PID 🔺	Mapped PIC) 🕴 Type	Language	¢ CA ♦	
	Enabled <pre> </pre>	PID 101	Mapped PIC	H.264 Video	Language	CA FTA	
	Enabled	PID ^ 101 102	Mapped PIC	Type H.264 Video AAC Audio	Language English	CA FTA	
	Enabled	PID 101 102 105	Mapped PIC	H.264 Video AAC Audio Subtitles	Language English	 CA FTA FTA FTA 	
	Enabled	 PID 101 102 105 106 	Mapped PID	H.264 Video AAC Audio Subtitles AAC Audio	Language English English	CA FTA FTA FTA FTA FTA	
	Enabled Constraints Constrain	 PID * 101 102 105 106 110 	Mapped PID	H.264 Video H.264 Video AAC Audio Subtitles AAC Audio ISO 13818-6 type B	Language English English	 CA FTA FTA FTA FTA FTA FTA FTA 	

Figure 38 Copying a channel

3 Click Create Copy. The duplicate channel is added to the channel list.

4 Re-name the duplicate channel by clicking in the name field and editing the name, for example Euronews. Click Apply to save the new name.



Figure 39 Renaming a channel

- 5 Click 📝 for the new channel.
- 6 Deselect the Audio PIDs you do not want to include in this channel.
- 7 Click OK to save the changes.
- 8 Continue the process of copying the channel, re-naming and enabling the required content until you have configured all the required channels.
- 9 Stream the required channels by clicking the Enabled check boxes.

Duplicate channels can be deleted when required. You cannot delete the source channel listing.

To delete duplicate channels:

- 1 Click 🦯 for the duplicate channel you want to remove.
- 2 Click Delete.

Edit Channel							×
Select which s	streams to In	clude in a cl	annel. You ca	n also copy and delete stream	ns.		
Name:	TF	1 HD					
Service ID:	90	01					
CA Systems:	No	ne					
SAP Announce	:						
Destination Ad	idresses:						
SI Table Types	s: P	AT 🛛 PMT 🗹		SDT EIT BAT others			
	Enabled	PID *	Mapped PID	0 Туре 0	Language	CA	
		101		H.264 Video		FTA	
	۲	102		AAC Audio	English	FTA	
	2	105		Subtitles		FTA	
		106		AAC Audio	English	FTA	
	0	110		ISO 13818-6 type B	Czech	FTA	
					OK	Create Co	by Delete Cancel

Figure 40 Deleting duplicate channels

10 Streaming

This chapter contains the following sections:

- Configuring Stream Settings
- Viewing Streaming Status
- Stream Configuration

Once you have scanned for channels and selected those required, you can stream the channels onto the IP network. Streaming is configured for each individual tuner. In most circumstances the default settings are suitable, but you can manually configure parameters such as the base IP address used for the multicast address assignment.

Caution: The g4418 and g4448 TVgateways can be configured to concurrently access multiple high bit rate channels, and are capable of streaming up to 500Mbps onto the network. Ensure your network architecture and devices are capable of handling these high data rates. Refer to the Transmit% Utilisation on the Network page to determine how much of the capacity of the Ethernet interface is being used for streaming TV channels.

You should also take the number of channels into account and ensure that you do not exceed the number of multicast groups the network can handle. For example, lower end switches and routers may only support 255 different multicast groups.

Configuring Stream Settings

This section shows you how to specify the basic streaming settings. It contains the following:

- Specifying the Startup Mode
- Starting/Stopping Streaming

Specifying the Startup Mode

By default the TVgateway streams on boot (startup). This enables a previously configured TVgateway to restart the channel streams after a power outage; however, you can disable this on a per-tuner basis. To configure startup mode for a tuner:

1 Click Stream in the required tuner menu.

AvediaS	AvediaStream TVgateway					
Main Menu	Tuner A Stream					
 General Status 	Start/stop the output strea	am and specify its network parameters.				
 Network Authentication 	Transport Protocol:	UDP ·				
 Resources 	Base Address:	239.192.0.0				
Maintenance	Default Port:	5000				
► Logging	IP TTL:	7				
► Scan	IP TOS/Diffserv:	0				
Multiplexes Channels	Stream On Boot:					
 Stream 	Send IGMP Join Group:					
Tuner B	EPG Server:	IP Address				
Tuner C	Apply					
Tuner D						
🕨 Tuner E 🛛	Stream Started:	Stop				
🕨 Tuner F 🛛 🧉	5.					
🕨 Tuner G 🛛 🤞	5					
🕨 Tuner H 🛛						

Figure 41 Stream page (AvediaStream g4448)

- 2 Click the Stream on Boot check box to disable or enable the stream on boot function.
- 3 Click Apply.

Starting/Stopping Streaming

Start/stop control of streaming is applied on a per-tuner basis. When the TVgateway has started streaming, the complete list of channels streaming is shown on the Status page.

To control streaming on a tuner:

- 1 Click Stream for the required tuner.
- 2 Click Start or Stop to start or stop all channels streamed from the tuner.
- 3 Repeat as required for each tuner.
- **Note:** If a tuner is already streaming when you apply changes to the list of channels, you do not need to manually stop and restart channel streaming as the changes are made dynamically. However, if the tuner is not streaming, you must manually restart streaming after making changes.

Viewing Streaming Status

You can display the list of all channels streaming from the TVgateway on the Status page, as shown in Figure 42.

AvediaS	Stream TVg	ateway						ext	erity
Main Menu	Status								
General Status Network Authentication Resources Services	Check tuner stat Tuner Status Stream	tus and view tem ning Multipl #1 522 M	perature and cha ex Lock Hz	signal Strength	ation. Signal Qu	ality (Cont Errs UC	B Errs	
 Maintenance Logging 	Tuner B	#1 Central #2 498 M	Scotland	3	7%	33.40B	0	0	
Tuner A Scan Multiplexes Channels	Tuner C	#8 474 M Central	Scotland	2	9%	34.1dB	0	0	
Stream Tuner B	Tuner D 🔹	#3 642 M Central	Hz Scotland	4	4%	45.0dB	235	0	
• Tuner C	🗧 Tuner E 🛛 🔵	#4 666 M Central	Hz Scotland	4	5%	35.4dB	0	0	
Tuner D Tuner E	Tuner F 🛛 🌒	#5 618 M Central	Hz Scotland	4	2%	38.8dB	0	0	
• Tuner F	Tuner G	#6 546 M Central	Hz Scotland	2	6%	30.3dB	0	0	
Tuner G	🗧 Tuner H 🛛 🔵	#9 570 M Central	Hz Scotland	3	1%	34.3dB	0	0	
Tuller H	Channels Tuner	Num 🔺	Name		Address		Туре	SAP	Groups
	A	821 QA	BBC TWO HD	udp://23	9.192.0.35:5000		HD TV	1	all
	А	822 QA	BBC 1 Scot HD	udp://23	9.192.1.35:5000		HD TV	1	all
	A	823 QA	Channel 4 HD	udp://23	9.192.2.35:5000		HD TV	1	all
	A	824 QA	STV HD	udp://23	9.192.3.35:5000		HD TV	1	all
	А	825 QA	BBC THREE HD) udp://23	9.192.4.35:5000		HD TV	1	all
	A	826 QA	CBBC HD	udp://23	9.192.5.35:5000		HD TV	1	all
	В	802 QA	BBC TWO HD	udp://23	9.192.64.35:5000		HD TV	1	all
	С	803 QA	Channel 4 HD	udp://23	9.192.130.35:5000		HD TV	1	all
	D	804 QA	STV HD	udp://23	9.192.195.35:5000		HD TV	1	all
	E	707 QA	BBC 6 Music	udp://23	9.193.12.35:5000		Radio	1	all
	-	005 04			0 400 0 05.5000		71/	1	-

Figure 42 Status Page (AvediaStream g4448)

 Table 3
 Streaming channels information

Parameter	Description
Tuner	The tuner this channel is streaming from.
Num	The channel number as advertised in SAP announcements and displayed in the channel list on Exterity Receivers and clients.
Name	The channel name as advertised in SAP announcements and displayed in the channel list on Exterity Receivers and clients.
Address	The stream destination as a URI, in the format <protocol>://<destination address>:<port>. The protocol is udp or rtp. The destination address is the multicast or unicast destination IP address of the stream. The port is the destination UDP port number of the stream. If multiple destinations are configured for a channel, each is represented by an individual URI.</port></destination </protocol>
Туре	Indicates the type of content (TV, HD TV Radio, Data).
SAP	Indicates the SAP announcement state of the channel. Note that the SAP setting on the Services page can globally enable/disable SAP announcements. If SAP is disabled, the SAP column is empty.
Groups	Lists the groups to which this channel belongs.
SM Band	(g4415-sm only) Indicates which SecureMedia band has been selected on the Channels page. These bands match those set up on the SecureMedia Broadcast Director, and are available only if the TVgateway has been registered with the Broadcast Director.

Note: Please see "Selecting Channels" on page 47 for information on how to change the channel name and number and to configure group membership.

Stream Configuration

This section explains how to apply stream settings. These mainly relate to the way the stream is transmitted on the network, such as the Transport Protocol. It contains the following:

- Selecting the Stream Protocol
- Specifying the Stream Base Address
- Specifying IP TTL (Time to Live)
- Specifying IP TOS/Diffserv
- IGMP Join Group
- Configuring the EPG Server Address

Selecting the Stream Protocol

Streams from the TVgateway are transmitted as MPEG transport streams using UDP or RTP protocols. UDP is the default. The RTP option is provided mainly as a network debugging tool, as the sequence number in the RTP header can help identify packet loss. RTP may also be required to enable interoperability with some third party products. To configure the stream type for a tuner:

- 1 Click Stream in the required tuner menu.
- 2 Choose UDP or RTP from the Transport Protocol drop-down list.
- 3 Click Apply.
- 4 Repeat as required for each tuner.

Specifying the Stream Base Address

The TVgateway automatically assigns unique multicast addresses for each channel, based on the configured base address. Details of the algorithm used can be found in Appendix E, "Assigning Multicast Addresses".

Note: Automatically assigned multicast addresses can be manually overridden on the Channels page.

Using the default base address 239.192.0.0 as an example, these automatic addresses will occupy the following address ranges (where 'y' represents the last octet of the TVgateway's IP address):

Tuner	From	То
А	239.192.0.y	239.192.63.y
В	239.192.64.y	239.192.127.y
С	239.192.128.y	239.192.191.y
D	239.192.192.y	239.192.255.y
E	239.193.0.y	239.193.63.y
F	239.193.64.y	239.193.127.y
G	239.193.128.y	239.193.191.y
н	239.193.192.y	239.193.255.y

Note: If a multiplex carries more than 64 channels the additional channels will require manual configuration.

To configure the base address:

- 1 Click Stream in the required tuner menu.
- 2 Enter the required base address, remembering that only the first 15 bits are relevant (refer to Appendix E, "Assigning Multicast Addresses").
- 3 Click Apply.

Specifying the Stream Destination Port Number

Streams transmitted by the TVgateway automatically use the destination UDP port number specified on the Stream page. The default value is 5000.

Note: The port number for each channel can be manually overridden on the Channels page.

To configure the stream destination port number:

- 1 Click Stream in the required tuner menu.
- 2 Enter the new value in the Default Port field and click Apply.
- 3 Repeat as required for each tuner.
- **Note:** These settings are ignored if you have specified destinations in the Channels page. Refer to "Advanced Channel Configuration" on page 48 for more information.

Specifying IP TTL (Time to Live)

By default, all streams are transmitted with an IP TTL of 7. The TTL can be set to any value between 0 and 255 to allow operation across different network topologies.

Note: This TTL value applies only to channel streams. The TTL for SAP announcements can also be configured using a hidden configuration option. Details are available on request.

To specify the IP TTL:

- 1 Click Stream.
- 2 Enter a value between 0 and 255 in the IP TTL field.
- 3 Click Apply.

Specifying IP TOS/Diffserv

You can set the value of the TOS byte in the IP header. By default, the stream is sent with an IP TOS value of 0. Note that the value can be set between 0 and 255. To configure only a Differentiated Services Code Point (DSCP), only the upper six bits are required, with the two lower Explicit Congestion Notification bits (ECN) set to zero.

0	1	2	3	4	5	6	7	Decimal Value
DCSP Value						ECN		
0	0	0	0	0	1	0	0	4

For example, as shown here, to specify a DCSP (decimal) value of 1 you must left shift the binary value by 2 bits and enter a value of 4 in the IP TOS/Diffserv entry field. Refer to RFC 2474 for more detailed information. To specify the IP TOS/Diffserv:

- 1 Click Stream.
- 2 Enter a value between 0 and 255 in the IP TOS box.
- 3 Click Apply.

Stream on Boot

When this option is selected, the TVgateway automatically starts to stream on startup (assuming it has been previously configured to do so, and the RF feed is connected) and restarts the channel streams after an event such as a power outage. Deselect this if you do not want the streams to start immediately on boot. Stream on boot is enabled by default.

To specify the stream on boot setting:

- 1 Click Stream.
- 2 Select or deselect the Stream On Boot box as required.
- 3 Click Apply.

IGMP Join Group

By default, the TVgateway uses IGMP to join the multicast groups for its own streams. This can be essential to prevent flooding on some network switches.

If required, deselect the check box to disable this function.

To specify the IGMP Join Group setting:

- 1 Click Stream.
- 2 Select or deselect the Send IGMP Join Group box as required.
- 3 Click Apply.

Configuring the EPG Server Address

If you have an AvediaServer EPG Server application running on the IPTV network, specify its IP address here. The TVgateway sends EPG information for all streaming channels to this EPG server. The function is disabled when no address is entered. This can be configured on a per-tuner basis.

To configure the EPG server address:

- 1 Click Stream in the required tuner menu.
- 2 Enter the AvediaServer's IP address in the EPG Server field.
- 3 Click Apply.
- 4 Repeat as required for each tuner.

AvediaSt	ream TVgatev	exterity	
Main Menu	Tuner A Stream		
 General Status 	Start/stop the output strea	am and specify its network parameters.	
 Network Authentication Securemedia Resources CAM Menu Services Maintenance Logging Tuner A Scan Multiplexes Channels Stream Tuner B 	Transport Protocol: Base Address: Default Port: IP TTL: IP TOS/Diffserv: Stream On Boot: Send IGMP Join Group: EPG Server: Apply Stream Started:	UDP • 239.192.0.0 5000 7 0 2 14.8.100.156 Stop	

Figure 43 Configuring Base and EPG Server addresses (AvediaStream g4415-sm)



Section 3 - Maintenance

This section contains information on how to:

- Check the operating status of the TVgateway
- Carry out various maintenance tasks, such as importing/exporting configuration and restarting the device
- Upload extra resources from a TFTP server
- Create log files of device activity

Status Monitoring

This section explains how to check the operating status of the TVgateway. It contains the following sections:

- Viewing TVgateway Details
- Viewing Operating Status
- Warning Messages
- Viewing Network Statistics
- Viewing CAM Status

Viewing TVgateway Details

Click General to display the TVgateway General page, as shown in Figure 44.

AvediaSti	ream TVgate	eway					
Main Menu	General						
 General Status Network 	This page details inform can also specify a name	nation such as product type, serial number, software version, and IP address. You e and location to help identify the device.					
 Authentication Securemedia Resources CAM Menu Services Maintenance 	Product Type:	AvediaStream g4415					
	Software Version:	1.2.0					
	Description:	Gateway_4G [1.2.0] 17531 rel #2 SMP Fri Feb 27 17:51:25 GMT 2015					
 Maintenance Logging 	Serial Number: 00:18:1C:02:D5:E2						
Tuner A e	IP Address: 10.8.101.63						
Tuner B	Hardware Type:	LZ-B-4-ALL-A-2-CAD-B-1					
	Date:	Sat Feb 28 15:33 UTC 2015					
	Secure Hardware:	Yes					
	License:	securemedia					
	Name:	g4415					
	Location:	QA Test					
	Apply						

Figure 44 TV gateway General Page (AvediaStream g4415-sm)

For details of each item, please see "About the TVgateway" on page 18. This information is useful for identifying the software and hardware revisions in use on this device. If contacting technical support regarding a problem with the device, it can be useful to provide all this information.

Viewing Operating Status

The TV gateway reports on the status of the tuners on a per-tuner basis. The streaming status of the tuner is reported, as well as a number of statistics that represent the quality of the input RF signal.

Note: Status information is refreshed automatically.

To view details of the operating status of the TVgateway, click Status to display the page as shown in Figure 45.

AvediaS	Stream TVgatev	way							exterity
Main Menu	Status								
General Status Network	Check tuner status and v	iew temp	erature and	channel streaming info	rmatic	n.			
Authentication Resources Services Maintenance		Tuner	Status Streamin	g Multiplex	Lock	Signal Strength	Signal Quality	Cont Errs	UCB Errs
Logging		Tuner	· A 🔹	#1 522 MHz Central Scotland	•	060.5dBpV	136.0dB	0	0
Tuner B		Tuner	в	#2 498 MHz Central Scotland	•	55.6dBµV	136.0dB	0	0
Tuner C		Tuner	c 🌒	#3 474.2 MHz Central Scotland	•	58.5dBµV	035.6dB	0	0
Tuner D Tuner E		Tuner	D .	#4 642 MHz Central Scotland	•	61.1dBµV	l36.0dB	90	0
Tuner F		Tuner	е .	#5 666 MHz Central Scotland	•	60.5dBµV	136.0dB	0	0
funer G		Tuner	F .	#6 618 MHz Central Scotland	•	59.3dBµV	136.0dB	0	0
iner H 😐		Tuner	G 😐	#7 546 MHz Central Scotland	•	51.1dBµV	32.7dB	0	0
		Tune	н •	#8 570 MHz Central Scotland	٠	54.5dBµV	32.0dB	0	0
	Reset Error Counts								
	Channe Tun	er 🔺	Num 🔺	Name		Address	Туре	SAP	Groups
	1	1	1	BBC One Scot		udp://239.192.0.118.5000	TV	5	DMTest
	1	1	70	CBBC Channel		udp.//239.192.6.118.5000	TV	1	DMTest
	E	3	3	STV		udp://239.192.64.118.5000	TV	1	DMTest
	(;	101	BBC 1 Scot HD		udp://239.192.129.118.5000	HD TV	1	DMTest
	()	30	5*		udp://239.192.192.118:5000	TV	1	DMTest
	E		82	Sky News		udp://239.193.0.118:5000	TV	1	DMTest
	1		18	4Music		udp://239.193.64.118.5000	TV	1	DMTest
	(3	64.03	BONANZABONANZA		udp://239.193.129.118.5000	TV	1	DMTest
	1	1	107	BBC NEWS HD		udp://239.193.192.118:5000	HD TV	1	DMTest
	Uptime:	2	6 days, 19	:39					
	Board Temperature:	4	2°C						
	CBU Tomporation		0.0						
	CPO remperature:	e	a C						

Figure 45 TV gateway Status Page (AvediaStream g4448)

The operating status information can be found in three locations:

• Main Menu

On the left side of the Status page operational status is summarized for each tuner using simple traffic light indicators in the tuner name label. The indicators are visible at all times. Refer to Table 4 on page 64 for more information.

Tuner Status

The Tuner Status section of the page displays more details about each tuner, including indicators for streaming status and signal, signal strength and quality information, and summary information about the selected multiplex and each channel currently streaming. Refer to Table 4 on page 64 for more information about the traffic light indicators.

Rear Panel

Each tuner has its own LED on the rear panel, which provides information about the TVgateway's operational status. Refer to Table 4 on page 64 for more information.

Warning Messages

CPU and Temperature Status

These details are found on the Status page. The TVgateway alerts you if there are changes in CPU fan activity, for example, if the fan speed drops, or if the temperature starts to rise. The uptime is also indicated. This is the length of time since the device was restarted.

AvediaSt	tream TVgat	eway	,					exterity
Main Menu	Status							
General Status	Check tuner status a	and view ter	nperature and	channel streaming informa	ation.			
Network Authentication Resources Services Maintenance		Tune	r Status Streamin	Fan Speed	Warning: Low fan speed. sk Signal Strength	Signal Quality	Cont Errs	UCB Errs
Logging Tuper A		Tun	er A 🛛 💿	#1 Central Scotland	60.5dBµV	[36.0dB	0	0
Tuner B		Tun	er B 😐	#2 498 MHz Central Scotland	55.6dBµV	136.0dB	0	0
Tuner C e		Tun	er C 🛛 🔵	#3 474.2 MHz Central Scotland	58.5dBµV	D35.6dB	0	0
Tuner D Tuner E		Tun	er D 😐	#4 642 MHz Central Scotland	61.1dBµV	136.0dB	90	0
Tuner F e		Tun	er E 🛛 🔵	#5 666 MHz Central Scotland	60.5dBµV	136.0dB	0	0
Tuner G		Tun	er F 😐	#6 618 MHz.	59.3dBµV	l36.0dB	0	0
		Tun	er G 🔹	#7 546 MHz Central Scotland	51.1dBµV	32.7dB	0	0
	Reset Error Counts	Tun	er H 🛛	#8 570 MHz Central Scotland	54.5dBµV	32.0dB	0	0
	Ch	annels Tuner 🔺	Num *	Name	Address	Туре	SAP	Groups
		Α	1	BBC One Scot	udp://239.192.0.118:5000	TV	1	DMTest
		A	70	CBBC Channel	udp://239.192.6.118;5000	TV	1	DMTest
		В	3	STV	udp://239.192.64.118:5000	TV	1	DMTest
		С	101	BBC 1 Scot HD	udp://239.192.129.118:5000	HD TV	~	DMTest
		D	30	5*	udp://239.192.192.118:5000	TV	1	DMTest
		E	82	Sky News	udp://239.193.0.118.5000	TV	1	DMTest
		F	18	4Music	udp://239.193.64.118.5000	TV	1	DMTest
		G	64.03	BONANZABONANZA	udp://239.193.129.118.5000	TV	1	DMTest
	_	Н	107	BBC NEWS HD	udp://239.193.192.118:5000	HD TV	1	DMTest
	Uptime: Board Temperature	e:	26 days, 19 42°C	:39				

Figure 46 TV gateway Status Page with fan speed warning (AvediaStream g4448)

Caution: If a low fan speed warning is displayed, please contact Exterity support as the CPU could start to overheat if the fan stops spinning. If the CPU's core temperature gets too hot the unit automatically stops streaming and waits for user intervention.

If the Board Temperature exceeds 60°C, you should stop using the unit immediately.

LNB Over Current Warning

Please refer to Appendix C, "Recommended Signal Levels" for details of the maximum LNB supply per tuner on each TVgateway.

Caution: Connect the AvediaStream g4418 to a multiswitch rather than directly to an LNB if the LNB draws more than 100 mA from the TVgateway. Failure to do this may result in an Over Current warning (Figure 47), and power to the LNB being switched off.

The AvediaStream g4410, g4412 or g4415-sm can be connected to either a multiswitch or LNB.

AvediaSt	tream TVga	teway								exterit
Main Menu	Status				-					
General	Check tuner status	and view terr	perature and	d channel streaming informat	ion.					
Network Authentication Resources		Tuner Sta	itus		1	Warning: LNB Overcurrent.				
 Services Maintenance 			Streaming	Multiplex 10.847 GHz V	Lock	Signal Strength		Signal Quality	Cont Errs	UCB Errs
 Logging 		Tuner A	•	#1 DISEQC: A	•	62.4dBµV	-	15.6dB	474	1811
Tuner B @		Tuner B		#8 11.137 GHz H 13"E Hot Bird 138/13C/13D	•	0.0		0.0	85	0
Tuner C 😑		Tuner C		#2 10.847 GHz V DISEqC: A	•	0.0		0.0	10440	18456
Tuner D @		Tuner D		#9 11.137 GHz H 13"E Hot Bird 138/13C/13D	•	0.0		0.0	80	0
Tuner F 🛛 🥥		Tuner E		#7 10.719 GHz V DISEgC: A		0.0	_	0.0	44	0
Tuner G 🛛 🗧		Tuner F		#3 10.847 GHz V DISEgC: A	•	0.0	—	0.0	9933	17588
		Tuner G		#6 11.137 GHz H DISEqC: C	•	0.0	c	0.0	1176	0
		Tuner H		#4 10.847 GHz V DISEqC: A	•	0.0		0.0	0	0
	Reset Error Counts									
	ci	hannels								
		Tuner	Num	Name	×	Address	1	Type S/	AP	Groups
		A	0	BBC Two HD	u	idp://239.192.0.100:5000		HD TV	1	all
		4	0	BBC One NI HD		do-1/230 102 2 100-5000		HD TV	1	all

Figure 47 TV gateway Status Page with over current warning (AvediaStream g4418)

If a scan is attempted but fails because of over-current, a warning is also provided on the Scan page:

AvediaSt	tream TVgatev	vay			ex	terity
Main Menu	Tuner C Scan					
F General Status	Use this page to scan for i	new multiplexes.				
 Network Authentication Resources Services Maintenance Logoing 	DiSEqC DiSEqC: Committed Switch:	DiSEqC 1.0	•			
Tuner A	Scan Parameters					
🕴 Tuner B 🛛 📵	Scan Mode:	Advanced •				
- Tuner C 🛛 🗧	Frequency:	10847	MHz •			
▶ Scan	Polarization:	Vertical	•			
 Multiplexes Channels 	Symbol Rate:	23	Msym/s •			
▶ Stream	Delivery System:	DVB-S2 ·				
> Tuner D 🧧	LNB Type:	Universal •				
Tuner E	Scan idle:	Start scan				
⊤Tuner G ©	Scan Status: New Multiplexes Mux I TS ID II	No Lock (Overcu Parameters	rrent occurred)	Scan Strength	Scan Quality	Quality
						0
	New Channels Mux	Service ID	0 Num 0	Name Provi	der Type	CA

Figure 48 TV gateway Scan Page with over current warning (AvediaStream g4418)

Understanding the Traffic Light Indicators

The traffic light indicators provide status information at a glance. Table 4 provides more information.

Table 4 Operational status

Rear Panel LEDs	Main Menu Tuner Indicator	Status Page Streaming Indicator	Status Page Lock Indicator	Status
•	•	•	•	Tuner is not tuned and not locked, no channels have been selected for streaming, and the TVgateway is not streaming.
•	•	•	•	Tuner is tuned and locked, channels have been selected and are being streamed.
•	٠	٠	•	Streaming has been stopped (Tuner Stream page). When streaming is stopped, the associated tuner is also turned off, so the Lock indicator and Rear Panel LED are also red.
•	•	•	•	Tuner is tuned and locked, and the TVgateway is streaming, but no channels have been enabled for streaming (Channels Page).

Multiplex Information

The Multiplex section shows the following details about the multiplex you have selected to be active on the Tuner Multiplex pages:

- Displays the number (internal ID) of the multiplex. For example, in Figure 45 Multiplex 1 (#1) has been selected for Tuner A.
- Displays the RF input signal frequency (and polarization for satellite inputs). For example, in Figure 45 Tuner A is tuned to a signal at 522 MHz with horizontal polarization.
- Displays details taken from the selected transmitter file. For example, in Figure 45 Tuner A is using the transmitter file for Central Scotland.

Signal Strength and Quality Information

These parameters provide an approximate guide to the strength and quality of the input signal.

- Signal Strength Indicates the power level of the RF input signal. Generally, the stronger the signal, the better.
- Signal Quality The average number of received bit errors that have been successfully corrected. This number will vary slightly over time. Note that the signal quality is an instantaneous measurement and may fluctuate.

Error Statistics

Uncorrectable Blocks

Most RF signals contain errors. The tuners frequently correct these errors automatically. Some of these errors are not correctable and are reported as uncorrectable blocks under the heading UCB Errs.

This is the most important metric for determining the quality of RF signal to the TVgateway. If this value is steadily increasing, the signal is almost certainly not of good enough quality and results in a poor TV picture.

Continuity Errors

DVB programs are transmitted as MPEG Transport Streams. Transport Stream packets contain a continuity counter which allows stream integrity to be checked. Any missing packet is reported as a continuity error under the heading Cont Err.

If the continuity error count is steadily increasing it will probably result in a poor TV picture and usually indicates that the signal is not of good enough quality.

If the continuity error count is increasing while the UCB error count remains static, this may indicate that the TVgateway is close to its performance limit.

The Error Counter Reset button allows you to reset the error counts to 0. This can be useful to see if a change you have made to rectify a problem (such as a signal quality issue) has been successful.

Viewing Network Statistics

The network statistics reported for the TVgateway give an indication of network interface utilization as well as reporting any errors.

To view details of network port utilization, click Network.

The Ethernet interface statistics are shown along the bottom of the page.

- **Note:** If the TVgateway has been inserted into a c1210 chassis, and both Ethernet interfaces have been connected, Ethernet statistics are shown for both interfaces.
- **Transmit % Utilization** Indicates how much of the capacity of the Ethernet interface is being used for streaming TV channels. Best practice suggests that you do not exceed 80% capacity in normal usage, and you may have to adjust the number of channels being streamed to maintain this.
- **Transmit Errors** (Errors, Dropped, Collisions, Discarded) If being recorded in any volume, these may indicate that the interface capacity has been reached, or may indicate a mismatch in Ethernet settings between the TVgateway and the network switch (e.g. auto-negotiation settings mismatch). Any transmit errors may adversely affect the quality of TV picture at the endpoints.
- **Receive % Utilization** Indicates how much traffic the TVgateway is receiving from the network. Under normal circumstances this should be 0%. If this is non-zero, this may indicate that the network is not correctly multicast enabled, resulting in the TVgateway receiving multicast traffic from other streaming devices.
- **Note:** Even if the Receive Utilization% displays 0%, some non-streaming traffic is being constantly received. This may be traffic:
 - from the web interface
 - added by standard network protocols such as DNS, DHCP and NTP

Network Port Status

The two LEDs on the AvediaStream Chassis denote the status of the link, as follows:

there is no data
data is being transmitted

LED	Connection type (Mbps)
Green and orange	10
Green only	100
Orange only	1000

Viewing CAM Status

On a TVgateway with CAM slots you can view information about the installed CAM and associated subscription card. The displayed details are specific to the type of CAM and subscription card. An example with an Viaccess CAM is shown in Figure 49.

AvediaSt	ream TVgateway
Main Menu	CAM Menu
General Status Network Authentication Securemedia Resources CAM Menu Services Maintenance Logging Tuner A Tuner B	Access the CAM Menu and view informational messages from attached Conditional Access Modules. CAM Slot A CAM: Viaccess Access CA Systems: Viaccess Viaccess Conditional Access Main Menu Consultation Settings Upgrade Press 'OK' to confirm, 'EXIT' to quit

Figure 49 CAM Menu

Navigate the CAM menu system and view the details available by clicking the information labels (such as Consultation) and Back. To use the admin interface:

- 1 Log in to the Admin Interface, as described in "Admin Interface" on page 16.
- 2 Select option 1>Show Diagnostics (enter '1') to display the diagnostics list as shown in Figure 50:



Figure 50 Admin Interface show diagnostics

3 Select option 3> Enter CAM menu (enter '3').

Note: The CAM menu is type specific. No other details are included here.

12 Maintenance

This chapter describes various maintenance tasks. It covers:

- Specifying the TFTP Server's Address
- Specifying the SNMP Trap Manager IP Address
- Specifying the Time Server Address
- Restarting the TVgateway
- Upgrading Firmware
- Restoring Factory Defaults
- Exporting/Importing Configuration Settings
- Logging

These tasks are managed from the Maintenance page.

AvediaStr	eam TVgateway	exterity	
Main Menu	Maintenance		
 General Status Network Authoritication 	Perform maintenance functions device to factory default setting	s such as importing and expor gs	orting system settings, updating firmware, restarting, or returning the
 Resources Services Maintenance Logging 	TFTP Server: 10 Time Server: Us	0.8.64.32 sing 10.8.64.15 from DHCP	
> Tuner A 🛛 🔶 > Tuner B 🔗	SNMP Trap Manager: 23	39.255.255.255	
 Tuner C Tuner D 	Firmware filename:	ateway_4g.bin	Upgrade firmware
 Tuner E Tuner F 	Export filename:	.tar.gz	z Export configuration
 Tuner G Tuner H 	Import filename:	.tar.gz	z Import configuration
	Reboot Gateway Return to factory defaults		

Figure 51 Maintenance Page (AvediaStream g4448)

Specifying the TFTP Server's Address

The TV gateway uses TFTP to download new firmware releases and transmitter files. For this to operate correctly, it must be configured to communicate with the TFTP server.

To specify the TFTP server's IP address:

- 1 Click Maintenance.
- 2 Enter the IP address of the TFTP server in the TFTP Server field.
- 3 Click Apply.

Specifying the SNMP Trap Manager IP Address

SNMP traps are mainly used as device discovery messages; they enable Exterity's management applications to discover devices on the network. These traps are always broadcast on the local subnet. They are also transmitted to an additional configurable destination. By default, this is the multicast address 239.255.255.255, but this can be reconfigured to any broadcast, multicast or unicast destination as required. To set the SNMP trap manager address:

- 1 Click Maintenance.
- 2 Enter the required IP address in the SNMP Trap Manager field.
- 3 Click Apply.

Specifying the Time Server Address

Using a time server ensures this device has the correct time. The TVgateway uses NTP (Network Time Protocol) to maintain accurate time on the device, using the time server specified. This is useful when examining the device log file as each log message has an accurate universal time code (UTC) timestamp.

Note: If no time server is present, the TVgateway's internal clock is used, which starts at Jan 1 1970 (Linux Epoch).

The TVgateway can be configured with a Time Server IP address in one of two ways:

- Automatically using DHCP
- Manual configuration

Tip: A manually configured time server overrides a time server provided by the DHCP Server.

To specify a time server manually:

- 1 Click Maintenance.
- 2 Enter the IP address or the host name of the time server in the Time Server field, and click Apply. If already configured, the IP address is displayed.

Restarting the TVgateway

You can restart the TVgateway to return it to a known state. All current settings are maintained during a reboot. To restart the TVgateway at any time, click Maintenance and click Reboot TVgateway.

Upgrading Firmware

By upgrading firmware regularly, you can ensure that you are always using the most recent version. As the new firmware is uploaded using TFTP, you must first ensure that the TVgateway is using the correct TFTP server address (see "Specifying the TFTP Server's Address" on page 67).

To upgrade the TVgateway to a new version of firmware:

- 1 Click Maintenance.
- 2 Ensure that you have specified the IP address of your TFTP server and that it is running and configured correctly.
- 3 Ensure that the following firmware file is hosted in the root directory of the TFTP server:

gateway_4g.bin

- 4 Ensure that the Firmware filename field shows the file indicated above (or matches the name of the firmware file if this is different).
- 5 Click Upgrade firmware.
- 6 The firmware is downloaded from the TFTP server. This process will take several minutes.

Restoring Factory Defaults

You can return the TVgateway to its factory default configuration.

Note: When resetting to factory default settings, all previously saved settings are lost. IP addressing is returned to DHCP.

To restore the factory default settings:

- 1 Click Maintenance.
- 2 Click Return to factory defaults.
- 3 Click Return to factory defaults again to confirm. The device reboots.

Exporting/Importing Configuration Settings

Once you have set up the TVgateway, you can save (export) its configuration settings. You can then import the saved configuration file to restore the settings if required, or to copy the settings to additional devices. Use TFTP to export and import configuration files.

All configuration settings, including device-specific settings (IP address, name and location) are saved when exported.

When a saved configuration file is imported, all settings *except* the IP address, name and location are imported.

To export configuration settings:

- 1 Ensure that the TFTP server is running and is correctly configured (see "Specifying the TFTP Server's Address" on page 67).
- 2 Click Maintenance.
- 3 Enter a name for your configuration archive in the Export filename field.
- 4 Click Export configuration.

To import configuration settings:

- 1 Ensure that the TFTP server is running and that the configuration file is hosted in the root directory of the TFTP server.
- 2 Click Maintenance.
- 3 Enter the name of the configuration file in the Import Filename field.

The configuration file is downloaded from the TFTP server and the TVgateway reboots.

Logging

The TVgateway saves historical information about internal events within the device to its log file. This can be useful when troubleshooting problems with the device. All log information up to the selected level (see Table 5) is automatically saved locally and can be viewed in the Web Interface.

Use of a time server ensures all devices in your IPTV system are synchronized. The TVgateway uses NTP to maintain an accurate time on the device, useful when examining log files as each log message has an accurate timestamp (UTC time zone). Logging is configured in the Web Interface Logging page as shown below.

AvediaSt	ream TVgate	eway	exterity
Main Menu	Logging		
 General Status Network 	Specify the level of det Syslog server.	ail required for the device's event log. You can save the	log locally, or specify a remote
 Authentication Resources 	Logging:	Local and Remote •	
 Services Maintenance 	Syslog Server:		
▶ Logging	Syslog Port:		
Tuner A e	Local logging level:	4-Warning	
Tuner B	Apply		
Tuner C			
Tuner D	Download Log		
🕨 Tuner E 🛛 🍵	Show Log		
> Tuner F 🛛 🔵			
🕨 Tuner G			
Tuner H			

Figure 52 Logging page (AvediaStream g4448)

Table 5 Logging levels

Level	Suggested usage
Emergency (level 0)	The highest priority, usually reserved for catastrophic failures and reboot notices.
Alert (level 1)	A serious failure in a key system.
Critical (level 2)	A failure in a key system.
Error (level 3)	Something has failed.
Warning (level 4)	Something is amiss and might fail if not corrected.
Notice (level 5)	Things of moderate interest to the user or administrator.
Info (level 6)	The lowest priority that you would normally log, and purely informational in nature.
Debug (level 7)	The lowest priority, and normally not logged except for messages from the kernel.

Under normal circumstances, the log level should be set to 6. Level 7 should ideally only be used for diagnostics, as it logs all device activity. The default logging level is 4.

Local Logging

You can view the log file in the Web Interface or download it to your computer. All log information up to the selected level is automatically saved locally. The log is stored in memory and is lost if the TVgateway is rebooted or powered down. As TVgateway memory capacity is limited, older log information is overwritten. To configure local logging:

- 1 Click Logging.
- 2 Select Local from the Logging drop-down list.
- 3 Select a logging level from the Local logging level drop-down list and click Apply.

To view the log file:

1 Click Logging, and click Show Log to display the log in a browser window.

AvediaSt	ream TVgateway
Main Menu	Logging
 ▶ General ▶ Status ▶ Network 	Specify the level of detail required for the device's event log. You can save the log locally, or specify a remote Syslog server.
 Authentication Resources 	Logging: Local and Remote 🔹
 Services Maintenance 	Syslog Server:
 Logging 	Syslog Port:
Tuner A	Local logging level: 4-Warning
Tuner B	Apply
Tuner C	
→ Tuner D 🛛 🖨	Download Log
Tuner E	Hide Log
Tunor E	
	May 28 11:35:00 p10221z user.warn kernel: /soc@ffe00000/usb@22000: Invalid 'dr mode' property, fallback to bost mode
Tuner G	May 28 11:35:00 p10221z user.err kernel: i2c i2c-0: of_i2c: modalias failure on
Tuner H	/soc@ffe00000/i2c@3000/idt6v49205b@69 May 28 11:35:00 p10221z user.warn kernel: iffs2: Empty flash at 0x01dea9f0 ends
	at 0x01deb000
	May 28 11:35:00 p10221z user.err kernel: 0>udevd[1349]: starting version 182
	May 28 11:35:00 pl022lz user.warn kernel: tabasco_init_module
	May 28 11:35:00 pi02212 user.err kernel: of_get_gpio(Settifist, 0)=181
	May 28 11:35:00 p10221z user.warn kernel: fpga id=4000
	May 28 11:35:00 p10221z user.warn kernel: fpga ver=5000
	May 28 11:35:00 p10221z user.warn kernel: fpga_ctrl=6000
	May 28 11:35:00 p1022lz user.warn kernel: tsin_fifos[0].ctrl=7000
	May 28 11:35:00 p10221z user.warn kernel: tsin_fifos[1].ctrl=7100

Figure 53 Log displayed (AvediaStream g4448)

2 Click Hide Log to close the log display.

To download the log file:

- 1 Click Logging.
- 2 Click Download log to download the log file to the configured download folder on your local computer.
- **Note:** The downloaded log file can be more easily viewed with an application which understands Unix line endings. For example, on Windows[®], Wordpad is preferable to Notepad.

Remote Logging

To send device log information to a remote server, you need to install a syslog server application on the remote server. Then set up the remote logging function on the TVgateway as described below.

To configure remote logging:

- 1 Click Logging, then select Local and Remote from the Logging drop-down list.
- 2 In the Syslog server field, enter the IP address or host name of the syslog server where the log files are to be sent.
- 3 In the Syslog port field, enter the port number on the syslog server. The default value is 514.
- 4 Click Apply.



Section 4 - Appendices

This section contains information on the following:

- Licensing the TVgateway for SecureMedia using the Product Feature Manager
- Connecting to the serial interface
- Recommended signal levels
- Useful scanning resources
- Assigning multicast addresses
- Transmitter file format
- Support information
A Using the Product Feature Manager Application

The Product Feature Manager application allows you to manage the licensed features for the Exterity products on the IPTV network. This provides a mechanism to centrally manage licenses for product features such as advanced codecs and content protection protocols.

Licensing of these advanced features can be applied during manufacture or at a later date using additional purchased licenses and the AvediaServer Product Feature Manager application.

The Product Feature Manager allows you to:

- Distribute the licenses to devices.
- Report licensing status of devices.
- Show licensing discrepancies (difference between the license held by the AvediaServer and the licensed capabilities of the device).

Deleting a license only removes it from the Product Feature Manager listing. The feature, if deployed, remains on the device.

This chapter contains the following information:

- Reviewing the License Status of the IPTV Network Devices
- Importing Licenses to the Product Feature Manager
- Deploying Features to Specific Devices

•	Sector Product Feature Manager	Server time: 08.24.56 14th May 20		
	Licences	Devices		
inage the feature lic	ences for your Exterity products. This interface allows the import of a file con	aining the licences for your Exterity products.		
ences:		Search:		
mport	MAC Address	Features		
Delete	00:18:1c:01:3e:38	securemedia		
	00:18:1c:01:4e:48	hdcpv2		
ble control:	00:18:1c:02:8b:91	hdcpv2,securemedia		
elect all	00:18:1c:02:8b:97	hdcpv2,securemedia		
elect none	00:18:1c:02:8b:b1	hdcpv2,securemedia		
	00:18:1c:02:8b:b6	hdcpv2,securemedia		
	00:18:1c:02:8b:b7	hdcpv2		
	00:18:1c:02:93:64	hdcpv2,securemedia		
	00:18:1c:02:9c:03	hdcpv2		
	00-19-1-02-04-3-	hdcnv2 eacuremedia		

Figure 54 Product Feature Manager - Licenses Page

Reviewing the License Status of the IPTV Network Devices

The Product Feature Manager allows you to review the status of installed and/or available feature licenses for each device in the IPTV network. Devices are listed on the Devices page only when:

- The device has a feature license.
- A feature license is available for the device in the Product Feature Manager.

To review license status:

- 1 Start the Product Feature Manager to display the Licenses page.
- 2 Click Devices to view the table of devices and license status.

exterity	Product Fea	iture Ma	inager		-		admin (logout)
<u> </u>	- Troducti cu	iture ma	linger		· · ·	Server time	1: 08:31:17 14th May 2014
	Licence	5			Devices		
This interface allows you to licence from a device or ren	review and manage devi nove the licence from the	ce feature l e server.	icences. You can dep	oloy the licences to the devic	es, check the licensi	ing status of each de	avice, remove the
Devices:						Search:	
Deploy	MAC Address 🖕	Device	Name	Location	Status	Features Licensed	Features Available
	00:18:1c:02:a4:3c				No device found		hdcpv2,securemedia
Table control:	00:18:1c:02:9f:10	Receiver	mike_9200_revf	mikes_office	Licensed	hdcpv2	
Select all	00:18:1c:02:9c:05	Receiver	029C05	Default	Licensed	hdcpv2	
Select none	00:18:1c:02:9c:03				No device found		hdcpv2
Reload	00:18:1c:02:96:07	Receiver	DA r9210 Signage	DA Desk	Licensed	hdcpv2	
	00:18:1c:02:95:e6	Receiver	LG monitor	Engineering System Test	Licensed	hdcpv2	
	00:18:1c:02:93:64	Encoder	qa e3635	QA C12	Licence mismatch	hdcpv2	hdcpv2,securemedia
	00:18:1c:02:8b:ea	Receiver	Row2Column4	The Wall	Licensed	hdcpv2	
	00:18:1c:02:8b:e7	Receiver	r9200-rev-f	qa lab	Licensed	hdcpv2	
	was a server of a server as server	Bernhard	2018	1000	Licensed	hdony2	

Figure 55 Product Features Manager - Devices Page

The Devices page displays the following information:

- Device MAC Address MAC address of each listed device.
- Device Type, Name, and Location Type, Name, and Location of each listed device.
- Status Shows the results of the license/device features check:
 - Licensed Indicates a license is held on the AvediaServer and its feature(s) are deployed on the device. The device may also list additional features not specified in the license.
 - License mismatch Indicates a that feature(s) specified in the AvediaServer held license are not deployed on the device.
 - No device found Indicates the device associated with the AvediaServer held license is not visible to the AvediaServer.

In summary, when licensed features have been deployed on the respective device, the status is "licensed." When the licensed features have not been deployed on the respective device, the status is "License mismatch"

- Features Licensed Features enabled on each listed device.
- Features Available Features specified in the license for each listed device held in the Product Feature Manager.

	MAC Address 🖕	Device	♦ Name	$\stackrel{\wedge}{\lor}$	Location	Å V	Status	$\stackrel{\wedge}{\lor}$	Features Licensed 🗘	Features Available 🔆
1→	11:22:33:44:55:66					No	device found	ł		securemedia
2→	00:18:1c:02:9c:05	Receiver	029C05	Defa	ault	Lic	ensed		hdcpv2	hdcpv2
3→	00:18:1c:02:96:07	Receiver	r9200	DA I	Desk	Lic	ence misma	tch	hdcpv2	hdcpv2,securemedia
ă →	00:18:1c:02:95:e6	Receiver	QA_WALL10	QA_	TV	Lic	ensed		hdcpv2	
-	00:18:1c:02:93:64	Encoder	QA e3635	QA_	test	Lic	ensed		hdcpv2	
	00:18:1c:02:8b:ea	Receiver	028B9A	Syst	em Test	Lic	ensed		hdcpv2	
5	00:18:1c:02:8b:e0	Receiver	028BE01	QA	_test	Lic	ence misma	tch	hdcpv2	securemedia
	00:18:1c:02:8b:b7	Receiver	QA_WALL12	QA_	TV	Lic	ensed		hdcpv2,securemedia	hdcpv2
	00:18:1c:02:8b:b4	Receiver	QA_WALL11	QA_	TV	Lic	ensed		hdcpv2	
	Device Information							ense and the mation		

Figure 56 Status details

Figure 56 shows examples of the three license Status column values and red/green indicator:

- 1 The device associated with this license cannot be found on the network.
- 2 This receiver indicates "Licensed" in the Status column. This shows the features enabled by the licenses held on the AvediaServer have been deployed on the device; in this case HDCPv2.
- 3 This receiver indicates a "Licence mismatch". Whilst the HDCPv2 feature in the license has been deployed on the device, the SecureMedia feature has not.
- 4 These three devices indicate "Licensed". Although there is no AvediaServer held license for their HDCPv2 feature, it has been deployed on the devices.
- 5 This receiver indicates a "Licence mismatch". The device lists an existing HDCPv2 license, but the SecureMedia feature license has not been deployed.
- 6 This receiver indicates "Licensed". In this case the HDCPv2 license has been deployed on the device. The device also lists the SecureMedia feature.

Importing Licenses to the Product Feature Manager

Device licenses are managed by the Product Feature Manager and must be uploaded to the AvediaServer prior to deployment on the required devices. The format of the license is a tar.gz file and named in the following format: <FeatureLicense_SALESORDERNUMBER.tar.gz>.

To import a feature license:

1 Start the Product Feature Manager to display the Licences page:

• exteritv					
•	🖕 Product Feature Manager			Server time:	admin (logout) 15:51:32 3rd Oct 2013
	Licences		Devices		
Manage the feature licence	s for your Exterity products. This interface allows the im	port of a file containing the licen	ces for your Exterity	products.	
Licences:				Search:	
Import	MAC Address	٥		Features	Ŷ
Delete		No licences found			
Table control:	Showing 0 to 0 of 0 entries - 10 - per page				<< < > >>
Select all					
Select none					
	© Exterity LTD 2009-	2013 System summary			

Figure 57 Product Feature Manager - Licences Page

2 Click Import.

Import licences to the server. If t	the file contains a licence fo	or a device that already exists on the server it will be replaced.	
Lineare File	Choose File	No file chosen	
Licence File.			

Figure 58 Importing a license file

- 3 Click Choose File, navigate to and select the required file.
- 4 Confirm the license table is updated with a listing for the associated MAC address and licensable features.
- **Note:** Licenses are cumulative. For example if you are adding Feature B to a previously licensed Feature A on a specific device, the Feature B license is uploaded to the Product Feature Manager and both licenses are retained in a single license file.

Deploying Features to Specific Devices

Once you have imported license file(s) to the AvediaServer you can deploy them on the specified devices to enable the required feature(s).

To deploy the license:

1 Start the Product Feature Manager to display the licenses page.

Click the Devices tab to view the table of devices and license status. In Figure 59, a license has been uploaded to the Product Feature Manager for device 00:18:1c:02:93:64 (Encoder, qa 3635), but has not yet been deployed onto the device (Features Available). This results in a status of Licence mismatch, and has been highlighted in red.

2 Select the device(s) for license deployment:

•	Second Product Fea	ture Ma	inager			Server time	e: 09:32:08 14th May 201
	Licence	5			Devices		
This interface allows yo licence from a device of	ou to review and manage devi or remove the licence from the	ice feature l e server.	licences. You can dep	ploy the licences to the devic	es, check the licensi	ng status of each de	evice, remove the
Devices:						Search:	
Deploy	MAC Address 🖕	Device	Name	Location	Status	Features Licensed	Features Available
_	00:18:1c:02:a4:3c				No device found		hdcpv2,securemedia
Table control:	00:18:1c:02:9f:10	Receiver	mike_9200_revf	mikes_office	Licensed	hdcpv2	
Select all	00:18:1c:02:9c:05	Receiver	029C05	Default	Licensed	hdcpv2	
Select none	00:18:1c:02:9c:03				No device found		hdcpv2
Reload	00:18:1c:02:96:07	Receiver	DA r9210 Signage	DA Desk	Licensed	hdcpv2	
	00:18:1c:02:95:e6	Receiver	LG monitor	Engineering System Test	Licensed	hdcpv2	
	00:18:1c:02:93:64	Encoder	qa e3635	QA C12	Licence mismatch	hdcpv2	hdcpv2,securemedia
	00:18:1c:02:8b:ea	Receiver	Row2Column4	The Wall	Licensed	hdcpv2	
	00:18:1c:02:8b:e7	Receiver	r9200-rev-f	qa lab	Licensed	hdcpv2	
				22222	Licensed	helen: 2	

Figure 59 Product Feature Manager - device selected

The Status column contains information about the status of the license on the server and the device itself.

3 Click Deploy:

leploying a licence to a devi	e will change the TFTP setting to this server's IP address and reboot the device	1.
leploy licences to all devices	or selected devices?	
	Selected All	

Figure 60 Deploying the selected licenses

- 4 Choose Selected to deploy the licenses on the devices selected in step 3, or choose All to apply the license to all listed devices.
- 5 Click OK to deploy the licenses to the devices. The devices reboot, and their TFTP server address is set to the AvediaServer address.

When the newly licensed devices are viewed on the Feature Manager devices page, the devices appear with a green highlight, and "Licensed" is displayed in the status column.

Note: Deployed license(s) do not persist when a device is returned to its factory default settings. If reset to factory default, you must re-deploy any required feature licenses.



Serial Interface Connection

The serial port provides access to a small subset of device functionality. For example, you can configure an IP address using a terminal program session, such as PuTTY or HyperTerminal. See Chapter 2, "Management Interfaces" for more information.

Cabling

To connect to the serial interface use the female DB-9 to RJ45 adaptor shown in Figure 61 (Exterity part number access-srl), or the USB – RJ45 serial cable shown in Figure 62 (Exterity part number access-usb).



Figure 61 DB-9 – RJ45 serial adaptor

The female DB-9 connector should be plugged into the serial port on a PC. A straight-through network cable should be used between the RJ45 socket on the adaptor and the admin port on the Exterity device.



Figure 62 USB – RJ45 serial cable

Note: Although the cable fits, the admin port should not be connected to the Ethernet port on a PC.

Adaptor Wiring

If you do not have an adaptor you can make one using the details shown in Figure 63.





Figure 63 DB-9 to RJ45 connector

Table 6 Serial Pin Out

DB9 Connector Pin No	Description	RJ45 Pin No
2	TxD	8
3	RxD	2
5	GND	4

Opening a Session

- 1 Open a terminal program such as PuTTY or HyperTerminal.
- 2 Set up the serial port with the following settings:
 - Baud rate: 115200
 - Data bits: 8
 - Parity: none
 - Stop bits: 1
 - Flow control: none

The program should now connect and present a login prompt when you press the Return key.

OM3 Properties		2
Port Settings		
Bits per second:	115200	~
<u>D</u> ata bits:	8	~
Parity:	None	~
<u>S</u> top bits:	1	~
Elow control:	None	~
	Bestore	e Defaults
0	K Cancel	Apply

Figure 64 Serial port settings

Recommended Signal Levels

The digital satellite, terrestrial and cable AvediaStream TVgateways require good quality signals at their inputs. The recommended signal levels are specified below.

AvediaStream g4410, g4412, g4415-sm & g4418 — DVB-S/S2

The recommended satellite input signal is as follows:

• -25 dBm to -65 dBm

Satellite Input Signal

- Input connector: two/eight 75 ohm F-type
- Tuning range: 950 to 2150 MHz
- Input level: -25 dBm to -65 dBm
- Symbol rate range: 1 to 45 MSymbols/s

DVB-S (ETSI EN 300 421 Broadcast services)

- Decoding: Viterbi/Reed-Solomon
- Code Rate: QPSK: 1/2, 2/3, 3/4, 5/6, 7/8
- Roll off: 0.35

DVB-S2 (ETSI EN 302 307 Broadcast services)

- Decoding: LDPC/BCH
- Code Rate:
 - QPSK: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
 - 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
 - Roll off: 0.2, 0.25, 0.35
- Diseqc: 1.0, 1.1, 1.2
- LNB supply (g4410/g4412/g4415-sm): 350mA with Short circuit protection
- LNB supply (g4418): 100mA with Short circuit protection
- LNB Voltage: 13 or 18v

AvediaStream g4442, g4448— DVB-T/T2, DVB-C/C2

The recommended terrestrial input signal is as follows:

1 Minimum Signal Levels:

DVB-T 8K, 64 QAM, Code Rate 2/3	79.6dBm
DVB-T2 8K, 64 QAM, Code Rate 2/3 (DTG 104)	78.1dBm
DVB-T2 32K, 256 QAM, Code Rate 3/5 (DTG 106)	78.2dBm
DVB-T2 32K, 256 QAM, Code Rate 2/3 (DTG 109)	76.3dBm
DVB-C, 64 QAM, Code Rate 2/3	79.6dBm
DVB-C2, 1024 QAM, Code Rate 3/4	76.3dBm

2 Bit Error Rate (BER): < 2E-04

Scan Resources

This page lists useful sources of information which may help you scan for the required channels.

Satellite

The websites listed below contain details of major satellites broadcasting DVB-S/S2 signals. Channels are listed on a per-frequency basis, and maps are available detailing satellite coverage.

- http://www.lyngsat.com
- http://www.kingofsat.net

Terrestrial

DVB-T broadcasts are country-specific, and within a country there will be multiple transmitters, each broadcasting on a different set of frequencies. To find out the transmission frequencies for your location you may need to get this information from the relevant national broadcasting authority.

For example, in the UK this information is available at the site below:

• http://www.digitaluk.co.uk



Assigning Multicast Addresses

The TVgateway is configured to automatically assign a multicast address to each channel on a per tuner basis. The following algorithm is used:

Parameter	Meaning
ip_address	The TVgateway's IP address
base_addr	The base {multi,uni}cast address to use (typically 239.192.0.0)
tuner	The number of the tuner supplying the channel
program_idx	The index of the program on the current multiplex
auto_dst_ip	The generated destination address

Example

Multicast addresses are generated using the values below: BBBBBBBBBBBBBBT.TTNNNNNN.IIIIIII

where:

- B = Base address. In this example, this starts at 239.192.
- T = 3 bits required to specify any of the 8 tuners in the gateway.
- N = 6 bits used from the program index.
- I = 8 bits used to specify the last octet of the TVgateway's IP address.

BBBBBBBB	bbbbbbbt	TTNNNNNN	ııııııı
239	192 + 0/1	X	y (0-255)
The first octet of the base address, fixed at 239	The second octet of the base address, fixed at 192 PLUS the most significant binary bit of the 3 bits required to specify the source tuner A to H.	The second and third bits of the tuner ID, PLUS the the index of the program on the current multiplex	The final octet of the TVgateway's own IP address.

Octets

- Octet 1 is the first octet of the base address fixed at 239 (decimal).
- Octet 2 is the sum of the second octet of the base address 192 (decimal) (B)+ the first bit of the three bits required to specify the source tuner (T) in binary:
 - Tuner A = 000
 - Tuner B = 001
 - Tuner C = 010
 - Tuner D = **0**11
 - Tuner E = **1**00
 - Tuner F = **1**01
 - Tuner G = **1**10
 - Tuner H = **1**11

For example:

For a stream from tuners A to D, the second octet is 192 (192 + 0)

For a stream from tuners E to H, the second octet is 193 (192 + 1)

• Octet 3 is determined by the TVgateway – it combines the two remaining bits of the source tuner (T) with 6 bits used to define the program index to get the 8 bits.

Note: If a multiplex has more than 63 channels, you should manually assign multicast addresses to these channels to avoid conflicts.

Tuner	Program Index
А	0 - 63
В	64-127
С	128 - 191
D	192 - 255
E	0 - 63
F	64-127
G	128 - 191
Н	192 - 255

• Octet 4 is the final octet of the TVgateway's own IP address, 0 to 255.

Transmitter File Format

The transmitter files supplied with the TVgateway contain all required parameters to enable the TVgateway to tune to a particular transponder/multiplex.

Transmitter files are supplied as text files, with the first two lines being description and date parameters; see the example below.

Table 7 details all parameters used in transmitter files and their meanings, and the "Examples" section below provides examples of these for satellite, terrestrial, and cable transmitter types.

Table 7

ID	Parameter	Units/Parameter Value
3	Frequency	Hz
4	Modulation type	0 = QPSK
		1 = QAM 16
		2 = QAM 32
		3 = QAM 64
		4 = QAM 128
		5 = QAM 256
		6 = Auto
		7 = 8 VSB
		8 = 16 VSB
		9 = 8PSK
5	Bandwidth	Hz
8	Symbol Rate	Hz
9	FEC	1 - 1/2
		2 - 2/3
		3 - 3/4
		4 - 4/5
		5 - 5/6
		7 - 7/8
		8 - 8/9
		9 - Auto
		10 - 3/5
		11 - 9/10
		12 - 2/5
		13 - 1/4
		14 - 1/3

(continued)

ID	Parameter	Units/Parameter Value
17	Delivery System	1 - DVB-C
		2 - J.83/B
		3 - DVB-T
		5 - DVB-S
		6 - DVB-S2
		11 - ATSC
		16 - DVB-T2
		19 - DVB-C2
		240 - DVB-T/T2
516	Polarization	104 - Horizontal
		108 - Left Hand Circular
		114 - Right Hand Circular
		118 - Vertical
550	VHF/UHF Channel Number	Channel number

Table 7

Examples

The following examples are described in Table 8 below:

desc: Various examples of transmitter file entries

date: 1404294928

0:{3: 10714000000, 516:104, 8:22000000, 9:5, 17:5, 4:0}

```
1:{3: 498000000, 5:8000000, 17:240, 550:24}
```

 $4: \{3: 114000000, 4:5, 8:6900000, 17:1\}$

Table 8

Transponder Number	Туре	Parameters
0	Satellite	Frequency: 10.714GHz
		Polarization: Horizontal
		Symbol rate: 22M sym/s
		• FEC: 5/6
		Delivery system: DVB-S
		Modulation: QPSK
1	Terrestrial	Frequency: 498MHz
		Bandwidth: 8Mhz
		Delivery system: DVB/DVB-T2
		UHF channel number: 24
4	Cable	Frequency: 114MHz
		Modulation type: QAM 128
		Symbol rate: 6.9 Msyms/s
		Delivery system: DVB-C

G Support and Contact Information

Technical Support for Exterity products is provided by authorized Systems Integrators and Resellers. Please contact your Systems Integrator or Reseller with any support issues.