



Media Intelligence Service

Admin Guide – Ver 9.1

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1 INTRODUCTION

Welcome to the Volicon Media Intelligence Service (MIS) version 8.1 Admin Guide.

1.1 Purpose and scope

This document will provide the details and instructions necessary to guide you through MIS configuration and operation, addressing specific system and network administrator functions, including:

- Connecting video sources
- Encoders used to ingest various video sources
- IP network configuration
- Alerting thresholds
- User accounts
- Other system related parameters in the MIS

This document is also useful for advanced users to gain further understanding of system operations.

1.2 About the Volicon Media Intelligence Service™

The Volicon Media Intelligence Service suite of applications transforms content creation, sharing, and monitoring of broadcast products. It allows you to create and distribute high-quality content faster while immediately enabling response to the competition, advertisers and regulatory entities. Most importantly, the Volicon Media Intelligence Service enables you to provide an improved product that will increase approval from all audiences.

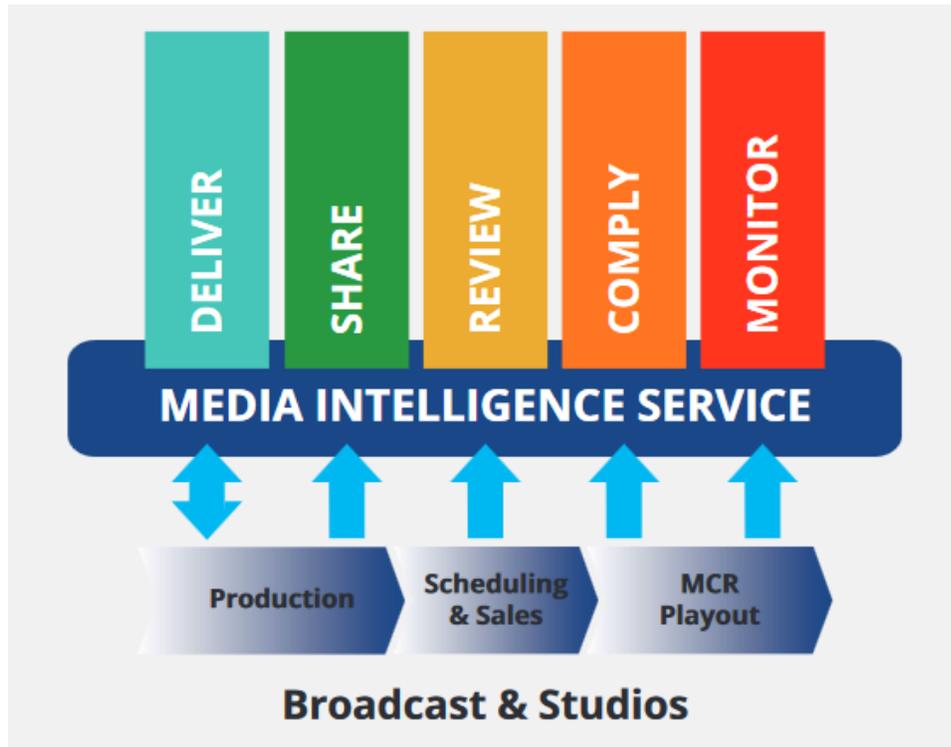


Figure: MIS functional diagram

The MIS continuously ingests the video and audio from multiple sources. MIS works with networks of all sizes. The system is preconfigured with default settings so that small installations can work right out of the box. For larger installations, you can define as many Probe servers and their streams in the Central Server as you need to completely monitor your network.

1.3 Conventions used in this manual

| Type | Classification |
|-----------------------|--|
| Boldface | Denotes names and labels in the Graphical User Interface (GUI) |
| Capitalization | Denotes key-words, module names, components and signal labels |
| < Boldface > | Denotes push buttons and other similar user input devices |
| @ Hyperlink | Automatic links to other sections in the document denoted by boldface and the “@” prefix |

1.4 Definitions and acronyms

| | |
|------------------------|--|
| 8VSB | 8-level vestigial sideband modulation: used for ATSC over the air broadcast |
| ABR | Adaptive bitrate video coding |
| AC-3 | Dolby Digital Audio Codec 3: compression used by ATSC |
| ACE | Automated Content Export |
| AFD | Active Format Description: metadata describing format i.e. 4:3 or 16:9 |
| ARL | As run logs: used to extract program schedule |
| ASI | Asynchronous Serial Interface: used to carry MPEG-TS |
| ATSC | Advanced Television System Committee: a set of standards for US digital television |
| Bookmark | Short program segments marked on the MIS server to facilitate auditing and sharing |
| Bouquet | A logical grouping of channels |
| CALM Act | Commercial Advertisement Loudness Mitigation: FCC requirement for audio loudness |
| CC/TT | Closed captioning/ SMPTE timed text: protocols used to add text description of the audio |
| CDN | Content Deliver Network: distributed network of servers to host content as geographically near to the user as possible |
| CEM | Content Export Module: optional software package to export program clips to social media sites |
| Clear QAM | Clear Quadrature Amplitude Modulation: non-encrypted cable TV video distribution |
| Component video | Analog video with separate red, green, blue channels using three RCA connections |
| Composite video | Analog video over a single RCA connection |
| Dialnorm | AC-3 metadata used to control playback gain |
| DPI | Digital Program Insertion: metadata that allows downstream insertion of commercial or short programs |
| DPI – in point | Entry point to switch to a different stream |
| DPI – out point | Return to normal stream |
| DvB | Digital video Broadcasting: international suite of digital television standards |
| ETSI | European Telecommunications Standards Institute |

| | |
|--------------------|--|
| Encoder | MIS function that receives and processes media signals |
| Fault clips | Portions of audio or video stream that fails to meet MIS quality thresholds |
| GPI | General Purpose Interface: metadata used for broadcast automation |
| HDMI | High Definition Multimedia Interface: a digital interface used to transport audio and video short distances |
| IP | Internet Protocol: used to send digital data from one computer to another |
| IPMI | Intelligent platform management interface: interface specification to provide low level management functions outside the O/S |
| Metadata | Data-about-the-data: additional information carried by the program used to describe program details |
| MH | Media Hub: an internal MIS component |
| MPEG | Motion Picture Expert Group: an international organization that sets audio and video compression and transmission standards |
| MPEG-TS | MPEG Transport Stream: a standard container for audio, video, Program and System Information Protocol (PSIP) |
| Multiview | MIS feature that allows you to configure multiple channels and monitoring widgets into a single display screen |
| NAVE | Nielsen audio video encoder: psychoacoustic symbols inserted in programs to facilitate automatic viewer tracking |
| NTP | Network Time Protocol: an internet standard used to synchronize computer real time clocks |
| NTSC | National Television System Committee: developed analog US television standard |
| OTT | Over the top program delivery using internet protocols |
| PID | Packet identifier: a unique 13-bit value used to identify elementary streams of a program in a single or multi-program Transport Stream |
| Probe | MIS ingest server housing one or more encoders |
| PSIP | Program and System Information Protocol: a method used to transport program metadata (e.g. sub channels, program guide, and content ratings) |
| RPM | Remote program monitor – Volicon multisite video analysis and monitoring suite |
| S-video | Separate video: a variation of composite video that separates luminance (black and white) from chrominance (color) to enhance video quality |

| | |
|-------------------|---|
| SD/HD-SDI | Uncompressed standard or high definition video serial data interface |
| Services | A/V program content with the associated metadata |
| SMLP | Short main long proxy |
| SMPTE | Society of Motion Picture and Television Engineers: a standards group that creates numerous technical standards |
| STB | Set top box: a device used to make programming available to customers |
| Storyboard | Sequence of video frames to assist visualization |
| TS | Transport stream |
| TSA | Transport stream analysis |
| VANC | Vertical Ancillary data space in digital streams |
| W3C | World Wide Web Consortium: sets standards to advance use of the World Wide Web |
| XDS | Extended Data Services: analog NTSC metadata |

2 MIS PLATFORMS

Volicon Media Intelligence Service has numerous platforms optimized to meet the needs of a wide variety of customers. Systems are customized per customer requirements. Below is an overview of the different system classes.

Enterprise

The Enterprise platform offers the highest degree of scalability with enterprise reliability, and the maximum amount of storage. Enterprise systems use RAID 6 for increased reliability.

Professional

The Professional platform provides a cost-effective system for content monitoring, logging and compliance workflows. It serves as a cross-browser and cross-platform solution that offers greater portability, scalability, and redundancy, with ease of use and extensibility. A Professional class system is equipped with RAID 5 and typically a 2U chassis form factor.

Scout

Scout is a cost-effective, yet powerful video network monitoring device. It enables broadcasters, networks, as well as cable and IPTV operators, to proactively perform quality checks at audio/video service handoffs to ensure the highest quality experience for their customers. Scout is the smallest server, using a 1U chassis that supports a single capture card.

3 SERVERS

Volicon Media Intelligence Service offers a number of different rack mounted servers to meet customer requirements.



Figure: Typical MIS server

3.1 Server dimensions and power requirements

| Server | Hard drive storage capacity | Power requirements all supplies 50/60Hz | Height multiple 1U (1.74 inch, 44.45 mm) | Weight |
|------------------|-------------------------------------|---|--|---------------------|
| Scout | 1 bay | Single 200W 100-240V 2.1-1.3A | 1U x 14.0" (346mm) deep | 12.8lbs (6.8kg) |
| Enterprise TS | 4 RAID5 hot swap 1 O/S bay | Redundant supplies 700W @100-140V 8.5-6.0A per supply 750W @180-240V 5.0-3.8A per supply | 1U x 25.6" (650mm) deep | 36 lbs. (16.3kg) |
| Enterprise TS | 8 RAID5/6 2 O/S bays hot swap | Redundant 740W supplies 100-240V 7.8A-3.2 per supply | 2U x 25.5" (648mm) | 52lbs (26.6kg) |
| Enterprise | 16 RAID6 2 O/S bays hot swap | Redundant supplies 800W @ 100-127V 8.4-6.7A per supply 1000W @ 200-240V 5.3-4.4A per supply | 3U x 25.5" (648mm) deep | 72 lbs. (32.7kg) |
| Enterprise TS | 24 RAID6 2 O/S bays hot swap | Redundant 1280W supplies 100-240V 13.5-5.6A per supply | 4U x 26.0" (660mm) deep | 75lbs (34.0kg) |

Table: Server space and power requirements

3.2 Mounting, power, basic connections

Servers mount in standard 19-inch racks. Follow your rack manufacturer's mounting instructions for safe and stable mounting. If the server power supply has a 110/240 switch, make sure to set it to the proper voltage (120/240VAC, 50/60 Hz).

Plan for your rack space and cooling requirements by creating a table similar to the one shown above. List your servers, set top boxes, and related equipment. If possible, include a PC or laptop dedicated for use with the MIS servers.

Access and peripherals

- It is recommended to attach a dedicated display, keyboard and mouse so that there is no delay in logging into the server during urgent service.
- Attach LAN and video cables as needed per application.

3.2.1 Power distribution

Servers should preferably be on dedicated circuits so that if one trips, it will not affect more than one power supply module per server.

MIS systems should be connected to a UPS or a similar high availability power supply. Momentary power loss may result in file corruption.

3.2.2 Total power

Add the power requirements of all other onsite equipment to obtain total system power consumption.

3.2.3 HVAC

Ensure your HVAC has sufficient cooling capacity to handle the total power (watts) of heat dissipated by the servers and your other onsite equipment.

3.2.4 STB shelves

If you use set-top boxes (STBs), Volicon recommends mounting these in 19-inch racks (482.6 mm) for solid installation. Locate the shelves close to the respective probe server to reduce cable lengths. As an example, see the STB shelf shown below. It fits in a 19-inch 2U high rack.

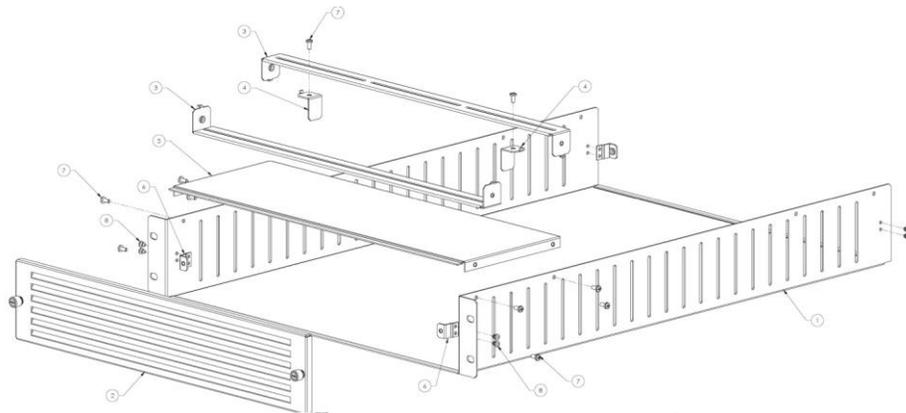


Figure: Set-top box mounting shelf

3.2.5 Typical rack layout with set-top boxes

This section describes rack layout and interconnections scenarios. Typical deployment will have a central server; one or more probe servers with capture cards, and optionally set-top boxes. A small installation may be able to combine the central server and probe functionality in a single physical server.

For troubleshooting and maintenance include: local keyboard, mouse and monitor. If the installation utilizes multiple servers utilize KVM to share peripherals between servers.

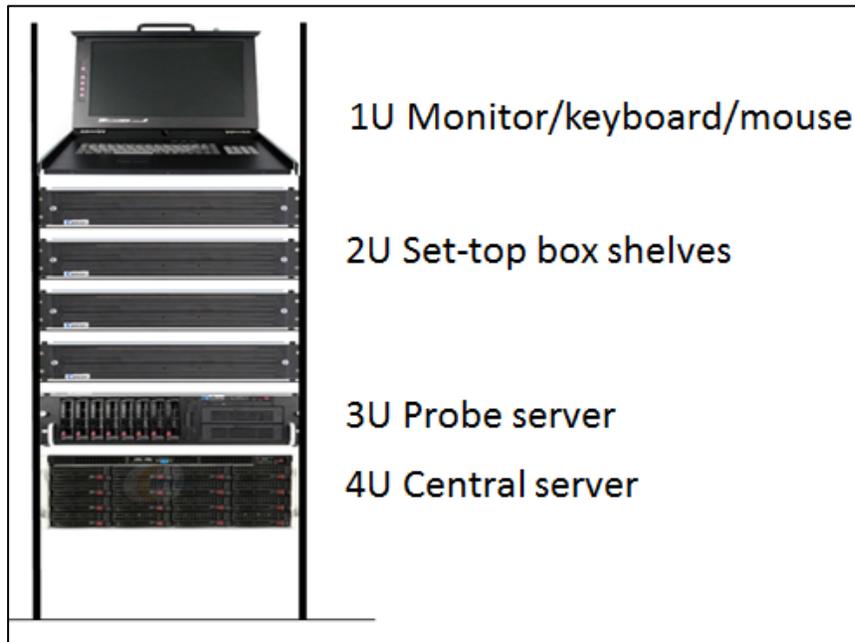


Figure: Typical MIS and STB equipment rack

3.3 Server front panel indicators and controls

For security purposes, a locking front cover prevents access to drive bays, auxiliary drives and the power and reset buttons. With the security panel installed, only the system level status LEDs are visible.

Note: There are minor differences in Panel Indicators depending on the specific server and configuration.

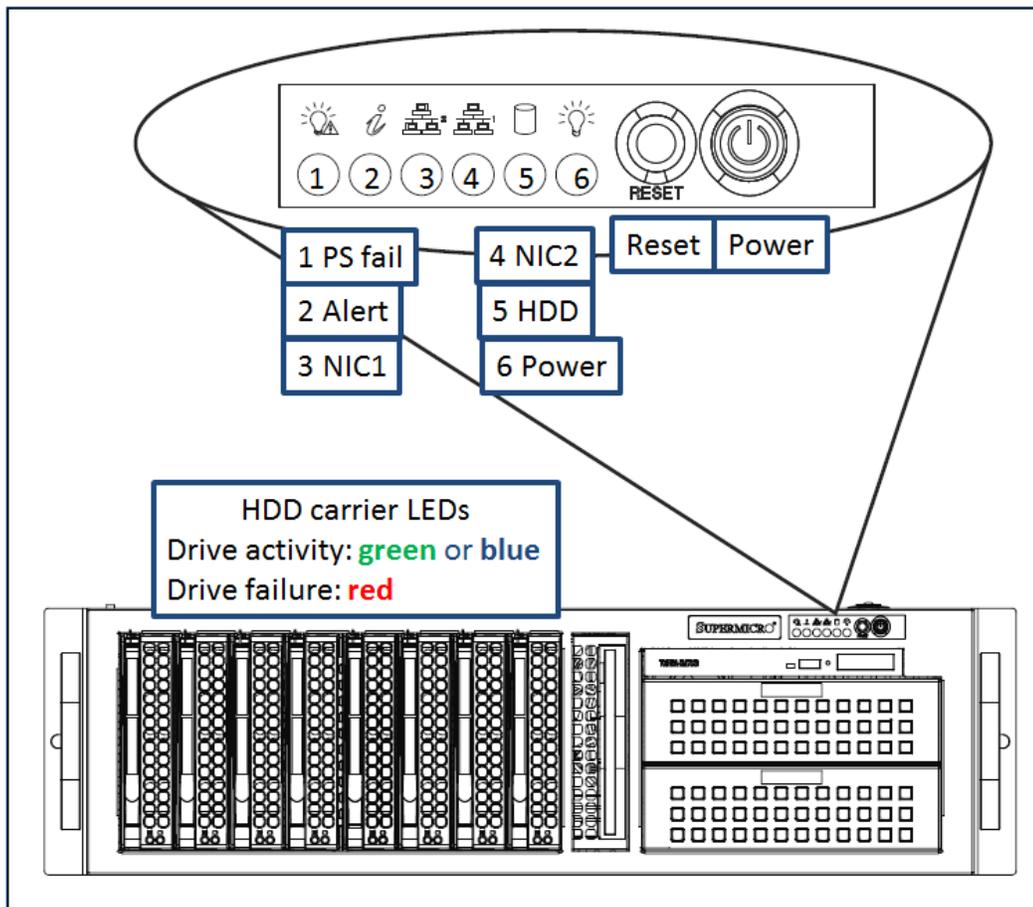


Figure: Typical server indicators and controls (security panel removed)

3.3.1 Power on and shutdown

To power up the server remove the locking front panel security cover and press the **power** switch.

After powering up the MIS server, wait for the login screen to appear. If you are logging into the system for the first time, consult the “Read me first” guide or contact the Volicon MIS support team.

Note: MIS runs as a service (configured by default) and *does not* require a user/admin log in to operate.

To shut down MIS, from the console use the MS Windows **<Start>→<Shutdown>** sequence. To restart the server, use the **<Start>→<Restart>** menu.

CAUTION

DO NOT remove power or press the **<Reset>** button to reboot the server. This uncontrolled shutdown can corrupt the application database, and require re-indexing by a MIS support engineer.

If the Windows UI is not accessible, use the front panel **<Power>** button to perform an orderly server shutdown.

3.3.2 Server front panel indicators

There are several LED indicators on the control panel and others on the drive carriers, to keep you informed of the overall system status and the activity and health of specific components.

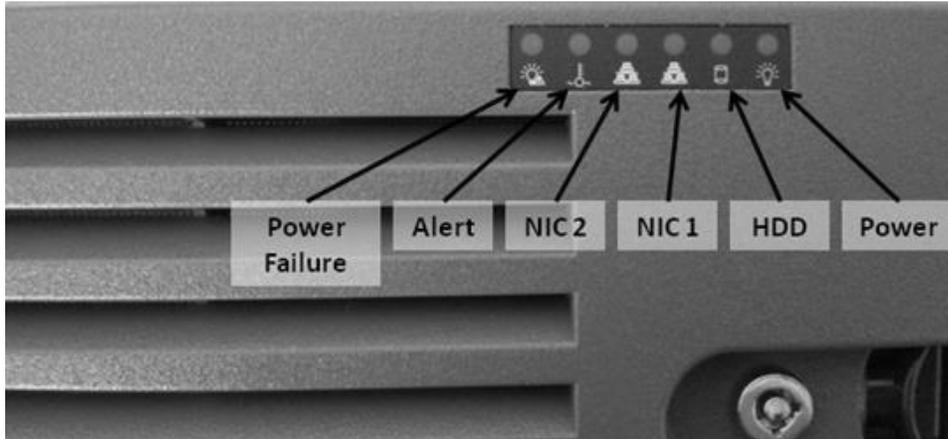


Figure: MIS front panel indicators (security panel in place)

3.3.2.1 Indicators



- **Power failure:** When flashing indicates one of the power supplies has failed.
- **Alert**



| | |
|------------------------------|--|
| Constant red | An overheat condition has occurred |
| Blinking red (1Hz) | This indicates a fan failure check for an inoperative fan |
| Blinking red (0.25Hz) | This indicates a power failure, check for a non-operational power supply |
| Constant blue | Local UID has been activated; use this function to locate the server in a rack mount environment |
| Blinking blue | The remote UID is on; use this function to identify the server from a remote location |

Table: Chassis indicators



- **NIC2** - indicates network activity on LAN2 when flashing.
- **NIC1** - indicates network activity on LAN1 when flashing.



- **HDD** - indicates IDE channel activity. SAS/SATA drive and/or DVD-ROM drive activity when flashing.



- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3.3.3 Drive carrier indicators

Each drive carrier has two status LEDs. They are normally hidden behind the security panel. Remove the panel to access the drive bays.

- **Activity LED** - green or blue indicates drive activity and flashes when the drive is accessed.
- **Status LED** - red: drive failure, flashing during drive rebuild.

3.3.4 Power supply indicator

Some power supplies have a status LED located on the power supply, visible from the rear of the chassis.

- Solid green indicates the supply is on and operating normally
- Solid amber indicates the supply is plugged in and turned off or in an abnormal state
- Blinking amber indicates over temperature, the supply has reached 63C. The system will automatically power down if the supply reaches 70C, and restart when the supply cools down to 60C.

3.4 Server rear panel connections

Power and I/O are located on the back panel.

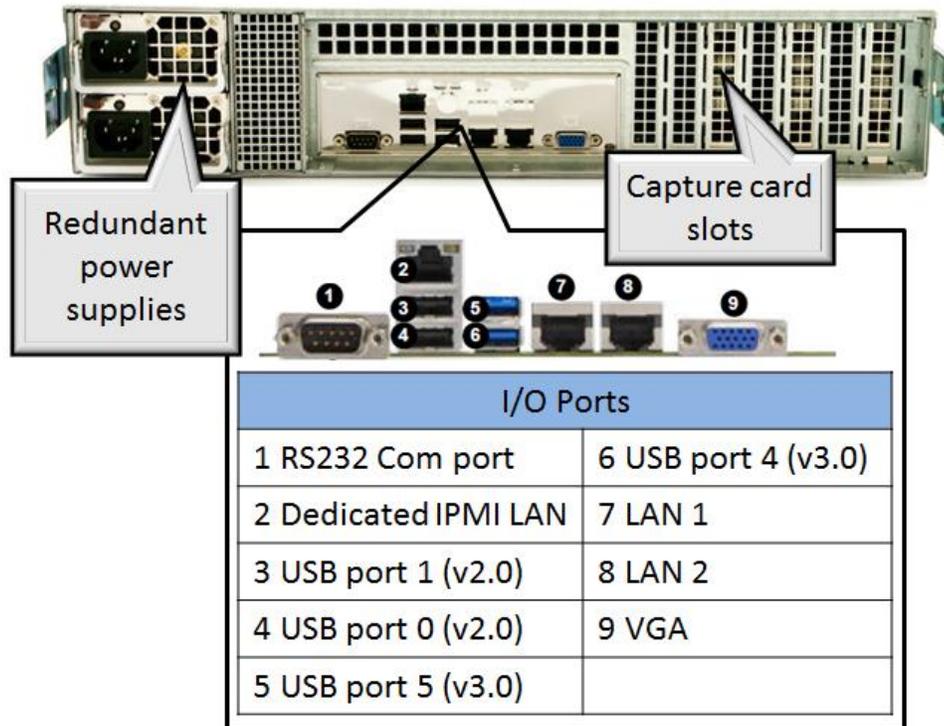


Figure: Typical server rear panel

3.5 Capture cards

MIS supports a wide range of RF, analog and digital radio and TV capture cards to meet customer requirements. Capture cards are described in detail in [Section 8](#).

- Blackmagic: analog, HDMI, and SDI
- DekTec: DVB, SDI
- Hauppauge: 8VSB, QAM
- Magewel: HDMI
- Osprey: analog
- Sonifex: AM, FM, DAB radio

4 SOFTWARE INSTALLATION

MIS central server and probe server software are preinstalled and configured by Volicon Media Intelligence Service.

4.1 Central and probe server operating systems

The MIS central server and probe server can be installed on 64-bit computers running any of the following Microsoft operating systems:

- Windows 2012 R2
- Windows 10
- AWS Win 2012 R2
- Windows 2016
- AWS virtual server

4.1.1 Additional Microsoft software

The central server utilizes the following additional MS software packages:

- Microsoft .NET Framework 3.5 SP1
- Microsoft Message Queuing (MSMQ)
- Windows Installer 4.5 Redistributable
- Microsoft Visual C++ 2005 SP1 Redistributable
- Microsoft Updates – turned off during normal MIS operation

4.1.2 Third-party software

MIS makes use of several third-party software packages. The following software packages are preinstalled when the system is ordered:

- [Apache](#): web server V2.4.23
- [Hmailserver](#): outgoing mail server
- [Redis](#): object cache V3.2.100
- [MariaDB](#): database V10.2
- [PHP](#): scripting V2.4.23

4.2 Client workstation

PC clients require the following 64-bit operating systems:

- Microsoft Windows 10
- Apple Mac

4.2.1 Client-side browsers

MIS supports the following 64-bit browsers:

- Chrome: uses [HTML5](#) (Mac and Windows)
- Edge: uses [HTML5](#)
- Firefox: uses [HTML5](#)
- Internet Explorer 11: uses [ActiveX](#)
- Safari: uses [HTML5](#) (Mac O/S only)

4.3 Initial MIS deployment

Volicon digital media services installs and tests each customer configuration prior to shipping. Onsite installation consists of integrating the servers into your corporate IPv4 network, and connecting encoders to ingest the appropriate channels. Once the system is up and running need to configure social media publishing profiles and create user accounts.

Due to the complexity of MIS setup, most servers are not shipped in a “plug and play” ready state. Contact Volicon support for assistance with your initial MIS server configuration.

4.4 Optional MIS modules

MIS is highly configurable to meet customer needs. Below is a partial list of optional modules.

- **Loudness monitoring:** compliance verification
- **Content matching:** identifies when specific content is aired
- **Advanced Content Export (ACE):** automatically creates assets and uploads them to predefined locations
- **Trigger clipping:** integrates MIS to third-party monitoring systems
- **NAVE decoding, logging and alerting:** insures proper transmission and delivery of NAVE codes to Nielsen monitoring equipment

- **Scheduled recording:** automatically controls the set-top box to monitor relevant media sources
- **Ratings import:** Imports viewer ratings
- **Quality of Experience (QoE or QoX):** monitors logged content for a variety of signal faults
- **As run log (ARL) integration:** Integrates MIS with existing automation systems
- **Active directory (AD) Integration:** Integrates MIS into the AD domain to allow single log-in
- **Embedded AC-3 capture:** natively processes AC-3 audio eliminating need for an external AC-3 decoder
- **DvB subtitles capture:** monitors and alerts on missing DVB subtitles
- **Multiviewer:** watches multiple programs on network wall
- **Multicast:** live streams either high-quality original programs or low resolution proxy across the enterprise
- **DPI monitoring:** frames accurate monitoring to insure DPI messages were conveyed properly
- **Digital audio S/PDIF Interface:** an ingest of digital audio streams
- **Over-the-top (OTT) monitoring:** multiplatform streaming media logging and monitoring
- **Archiver:** manages storage and retrieval of content
- **Closed caption (CC) monitoring:** monitors and alerts closed captioning service

4.5 Managing MIS software updates

Volicon support is responsible for installing central server (CS) and probe server software updates as well as adding encoder hardware.

Updates to the Internet Explorer Active-X viewer, a component of the CS, are automatically pushed to the client when the user logs in. Installing the ActiveX viewer requires admin privileges.

4.6 Upgrading from previous software versions

There are significant differences between previous versions and MIS. Please contact Volicon support for information about upgrading.

If the site is upgrade with a new version of MIS be sure to clear the browser cache on all client workstations.

5 ADDING MIS SERVERS TO YOUR NETWORK

Assign each server a static IPv4 address. If you are using the internet for MIS access, place firewalls between your MIS probe servers and their internet connection, and between the central server and its internet connection. As a minimum, assign a DNS entry to the central server to facilitate client access.

5.1 IP port utilization

Numerous TCP/UDP ports are used for intra application communication and to provide MIS client access.

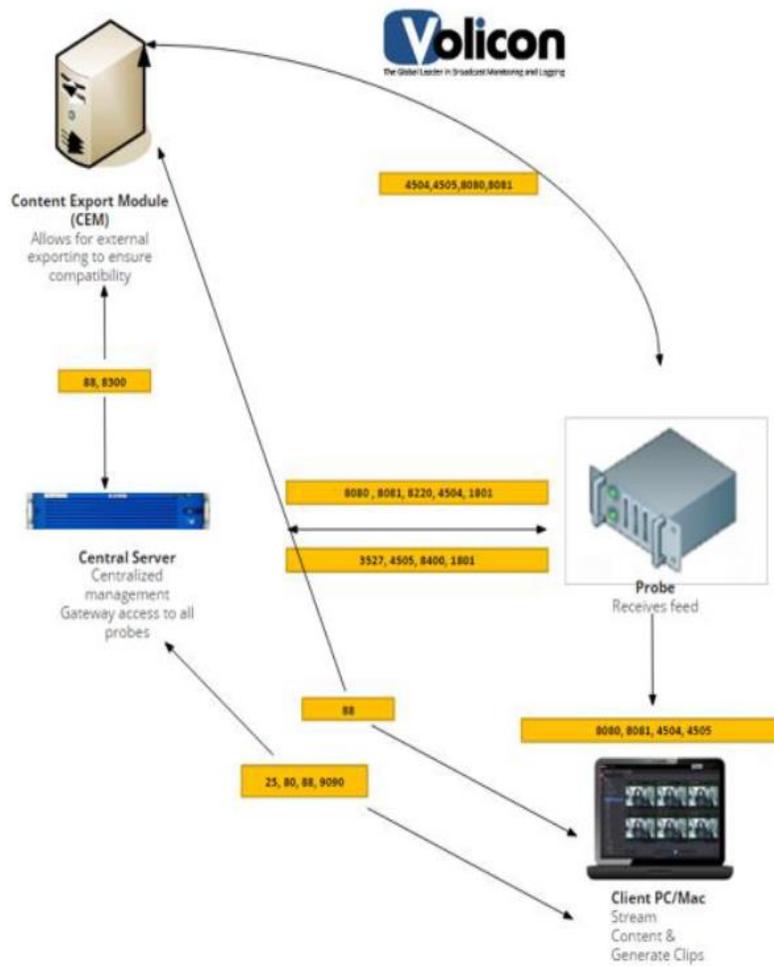


Figure: System Intercommunication

| Central server | | |
|------------------------|------------|------------|
| Service | Incoming | Outgoing |
| HTTP | 80 | |
| HTTPS | 443 | |
| SMTP | | 25 |
| Probe listener service | | 8220 |
| Volicon liver streamer | | 4505 |
| Volicon streamer | | 4504 |
| CEM | 88/8300 | 88/8300 |
| MediaHub | 8080/8081 | 8080/8081 |
| MSMQ | 1801. 3527 | |
| SNMP | 161/162 | 161/162 |
| WebSocket | 9090 | 9090 |
| Thumbnails | 8500 | 8500 |
| Sphinx | 9312 | 9312 |
| DPI indexing | 8070 | 8070 |
| IPMI (dedicated LAN) | 623 | 623 |
| Probe server | | |
| Listener | 8220 | |
| Volicon liver streamer | 4505 | |
| Volicon streamer | 4504 | |
| CEM | 88/8300 | 88/8300 |
| MediaHub | 8080/8081 | 8080/8081 |
| MSMQ | | 1801. 3527 |
| SNMP | 161/162 | 161/162 |
| Updater | 8400 | 8400 |
| IPMI (dedicated LAN) | 623 | 623 |
| Content export module | | |
| Volicon live streamer | | 4505 |
| Volicon streamer | | 4504 |
| CEM | 88/8300 | 88/8300 |
| MediaHub | 8080/8081 | 8080/8081 |
| Control module | | |
| MSMQ | 1801. 3527 | 1801. 3527 |
| CC Sphinx | 9312 95 | |
| DPI indexing | 8070 | 8070 |
| Thumbnails | 8500 | 8500 |
| Thumbnails Nginx | 88 | 88 |

Table: Server port utilization

| Client | | |
|-------------------------|-----------|-----------|
| Service | Incoming | Outgoing |
| HTTP | | 80 |
| HTTPS | | 443 |
| Access to streamer | | 4504 |
| Access to live streamer | | 4505 |
| CEM | 88 | 88 |
| Nginx | 88 | 88 |
| MediaHub | 8080/8081 | 8080/8081 |
| Web socket | 9090 | 9090 |

Figure: Client port utilization

5.2 IPMI LAN

If your site uses IPMI for management connect the server IPMI port to the IPMI LAN.

5.3 Network bandwidth

Provide sufficient bandwidth between the server and the monitoring facility. Size the bandwidth to be 1.2-1.5 times the sum of the viewed stream's bandwidth, with a minimum connection speed of 10 Mbps.

6 INITIAL O/S LEVEL SETUP

MIS servers run different versions of Microsoft Operating System and come with the Volicon MIS suite preinstalled. The administrative task is to integrate the servers into your network and set up end user accounts.

6.1 Active Directory (AD) integration

AD integration is an optional MIS module. A Volicon support engineer will need to be involved to configure the server.

6.1.1 Prerequisites

The following prerequisites need to be met for the AD integration to proceed:

- The support engineer needs to know the IP address or the fully qualified domain name (FQDN) of the AD server. The FQDN is more flexible and is preferred.
- Add the MIS web server to the AD domain.
- Create a simple domain user with a non-expiring password and notify Volicon support.
- Provide the support engineer with your organizational units (OUs) and their basic structure.
- Upgrade all the MIS servers to the latest qualified build prior to integration.
- Configure all your client browsers to have the web server address in their intranet zone or IE trusted zone.

6.1.2 AD operation

- After all prerequisites are met, you must define several groups in the MIS. To do so, you can access the system with a non-AD password through the URL <http://<server>/admin/>. When using AD integration, the user's set of permissions (including accessible channels and maximum number of concurrent channels played) is defined on the MIS groups (user management section).
- You must also create identical group names as defined in MIS in the AD. Once completed, the administration of users' access to MIS and their privileges will only be administered through the AD by adding or removing users as members of the different groups. Note: One exception is the number of

concurrent channels. By default there is no limit; if defined, the MIS settings will be used. Furthermore, if multiple groups define the number of concurrent channels, the highest number will be used even if it is set to unlimited.

- Initially, the user accesses the MIS system through a browser with only an IP address or a domain name. Access to the MIS system is provided automatically according to the user’s assigned group(s) in AD, matching the user by group name to the defined MIS groups. If the user is a member of several groups, their effective permissions will be the sum of all permissions of those groups.
- The user’s name is automatically created internally within the MIS upon first login. It is then associated with the user-generated content in the MIS (e.g., clips, programs etc.).

6.2 Antivirus exclusion storage areas

Ensure that any installed antivirus program does not interfere with MIS programs and services. Antivirus programs can use system resources needed by MIS services, causing them to hang or crash.

- Turn off all "on-access" scanning.
- Schedule virus definition updates and system scans to occur during low-usage times and when technicians are available to verify that restarts (if any) have completed running and have not hung up the system.
- Certain directories need to be open and free for continuous system access.
- Ensure that the following folders are removed from scans:

| | |
|--------------------------------------|-------------------------|
| C:\ProgramData\Redis | Object cache |
| C:\Program Files\Redis | Object cache |
| C:\Program Files\MariaDB 10.2 | Database |
| C:\Program Files\Volicon \ | MIS software |
| C:\thumbnails | Media thumbnail storage |
| C:\video\ | Content storage |

Table: Antivirus exclusion areas

6.3 Remote server Windows access

MIS administration management access uses the same web based user interface as other users. As an administrator (with admin privileges) you have access to system level configuration features that provide the ability to add and delete user accounts.

From time to time, direct access to the Windows server may be required. If the particular server is not equipped with local user access capabilities, the built in Microsoft RDP remote desktop features is handy. There are several precautions to keep in mind when using MS remote desktop to prevent interfering with MIS audio and video processing.

6.3.1 Server side Microsoft RDP

Each server that requires remote access will first need to have the feature enabled. Then select which accounts are able to remotely access the computer. The Windows administrator account is automatically granted access when remote desktop is set up.

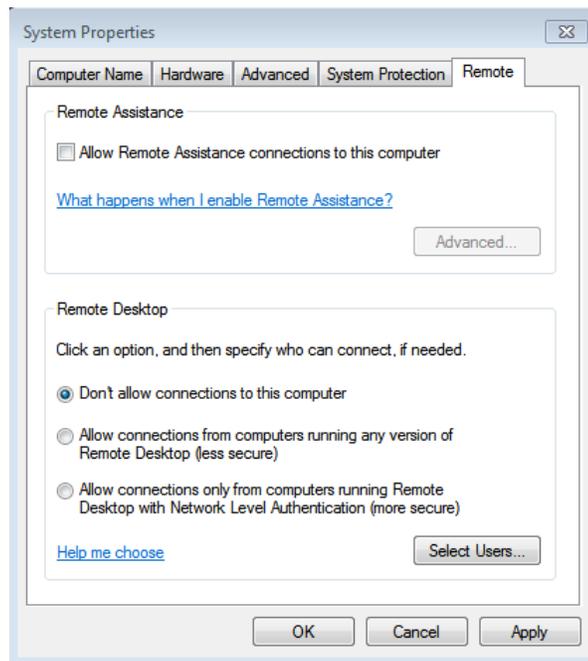


Figure: Sever side remote desktop

6.3.2 RDP client

Configure your settings by the following steps when you are using a remote desktop connection (MSTSC- Microsoft Terminal Services Client).

1. From the Start menu, find **<Remote desktop connection>**.
2. Open **Remote desktop connection**.
3. Click on the **<Local resources>** tab.
 - Note: If you are setting up remote access from Windows XP (no longer supported by Microsoft), change the “Remote computer sound” setting to “Leave at remote computer”, as this is required to ensure that the system remains working correctly.
 - If you are setting up remote access from Windows 7 or later, use the defaults for “Remote Audio”.
4. Uncheck “Printers” under **<Local devices and resources>**. Otherwise, the system will generate errors while trying to find and install printer drivers that do not exist on the server.
5. Optionally, select the clipboard to enable file copy operations between the server and the client PC. To save your changes, go to the **<General>** tab and press **<Save>**.

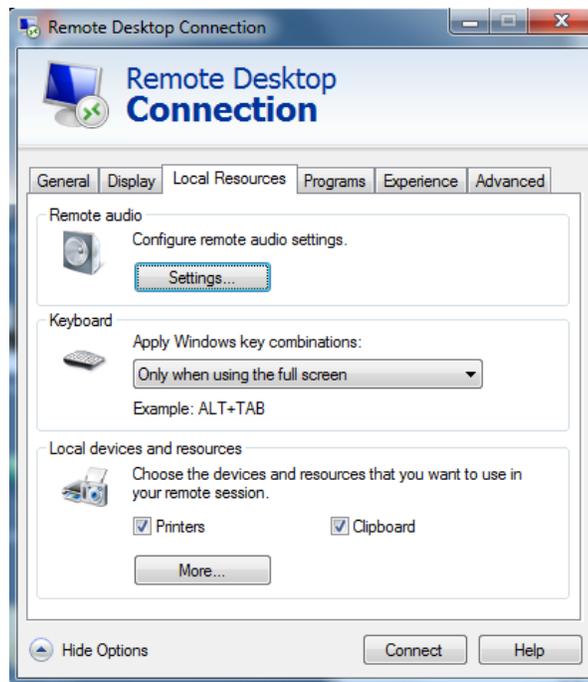


Figure: Windows 7 remote desktop local resources

6.3.3 Remote Windows Login

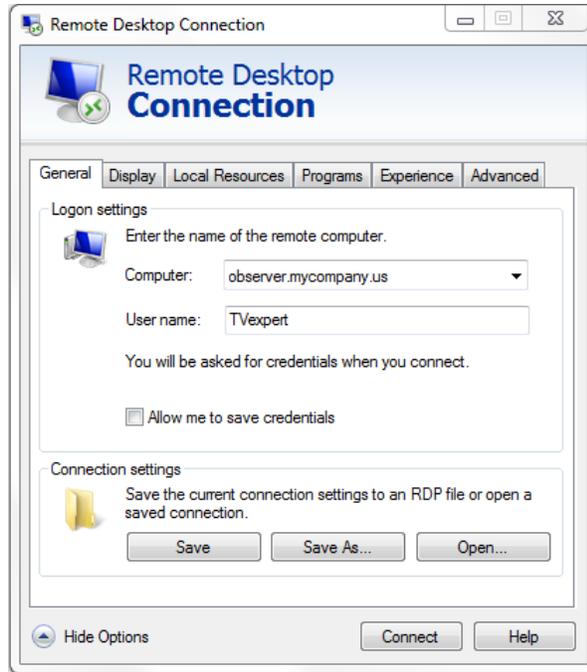


Figure: Remote desktop login

1. Open **<Remote Desktop Connection>**.
2. Enter the URL or IP address of the server.
3. Enter your user name.
4. If you check **<Allow me to save credentials>** Windows will save your log in information. Do this only on a secure PC you control.
5. Press: **<Connect>**.

If Windows is able to successfully connect to the remote machine you will be prompted for a password, unless you have saved your credentials. If you enter incorrect credentials, you will be prompted to enter them again.

Note: Only one person can be logged in at a time. A successful login will terminate an existing session.

If your computer is unable to connect to the remote server it throws this error message.

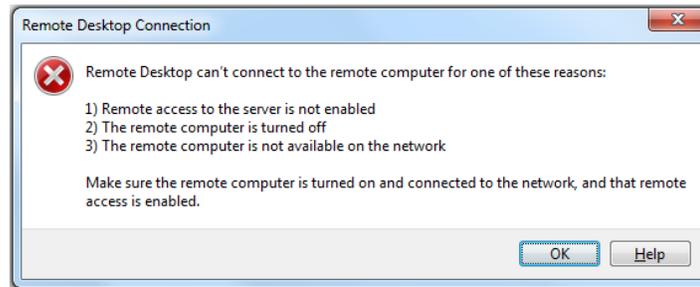


Figure: RDP unable to connect to remote server

6.3.4 Terminate remote session

Closing the window in Windows 7 and later will automatically terminate the session. If you are still using Windows XP (no longer supported by Microsoft), you need to explicitly terminate the session, not just close the window. Just closing the window will leave you logged in.

7 RAID DISK DRIVE ARRAY

RAID, an acronym for "Redundant Array of Independent Disks", is a storage technology that combines multiple hard drives to store data as if they were one logical drive.

Except in the case of the smallest systems (Scout) O/S software and data are stored separately. O/S software is stored on a two disk mirrored array using solid state drives for improved performance. Large servers use some form of RAID to insure data integrity, Volicon uses three RAID variants: 1, 5 and 6.

Most RAID configurations support write caching. Write caching improves write performance by caching write data in memory and then copying data to the disk array. These systems include battery backup of RAID controller memory to prevent data loss or corruption in the event of a power failure.

Volicon MIS uses enterprise-class SATA drives for maximum performance and reliability.

7.1 RAID variants

RAID 1

RAID 1, or disk mirroring, is the process of replicating the data to more than one disk. Both the disks are operational at the same time, so the system can read data from both simultaneously. This enhances the speed of read operations. However, the write operations are slower, as the system executes each write operation twice once on each disk. A minimum of two disks are required for a RAID 1 array. RAID 1 is used to increase reliability of O/S software.

RAID 5

RAID 5 can tolerate failure of *any* drive in the array without losing a single byte of stored data. RAID 5 is block-level striping with distributed parity. Striping and data are distributed by independent read and write operations. In a "write" operation, data to be recorded is striped across all array members interspersed with a parity block and distributed so as to place one segment containing the parity checksum on a different drive within each striping cycle. Sometimes defined as rotating parity, this scheme is the reason why it doesn't matter which drive in the array fails. A minimum of three disks are required for a RAID 5 array.

RAID 6

RAID 6 can tolerate the concurrent failure of two hard drives while precluding data loss and system downtime. RAID 6 provides a second layer of redundancy by means of two separate, independent parity blocks within each stripe written to the data storage subsystem array, distributed among each of the active members in the array. Thus, another moniker for RAID 6 is "double-parity RAID".

RAID 6 requires a minimum of four drives, but will typically have a significantly larger number of array members since performance, fault tolerance and cost efficiency are improved with a larger population.

7.2 RAID controllers

MIS uses [Broadcom](#) LSI MegaRAID SAS 9361-4i or 9361-8i RAID controllers. The 4i has 4 12 Gb/s SATA or SAS ports, the 8i has 8 12 Gb/s SATA or SAS drives. Except for the number of ports the controllers are identical. The 4i is used with the 4, 16, 24 HDD chassis. The 8i is used with the 8 HDD chassis.

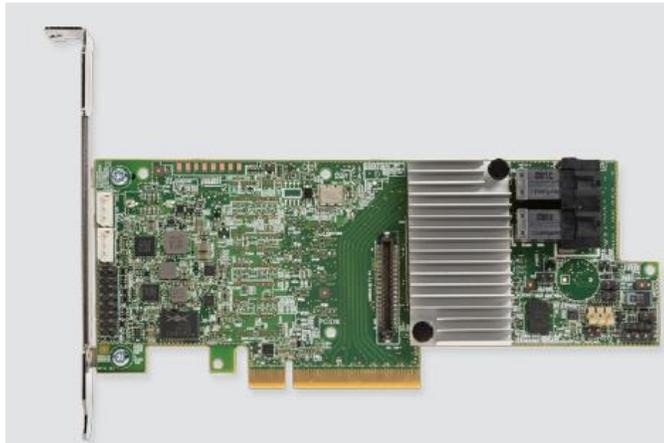


Figure: 9361-8i Controller

7.3 Accessing the RAID controller

As part of the initial build, Volicon installs the appropriate RAID controller. To access the controller, click the <MegaRAID> icon located on the server desktop.

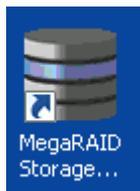


Figure: RAID controller desktop icon

The controllers will be automatically discovered in most cases. The controller on the local server will be found; however in some cases, discovery may include another networked server’s RAID controller.

Note the “Health” column in the figure below. It indicates if the array is working correctly without the need to log in.

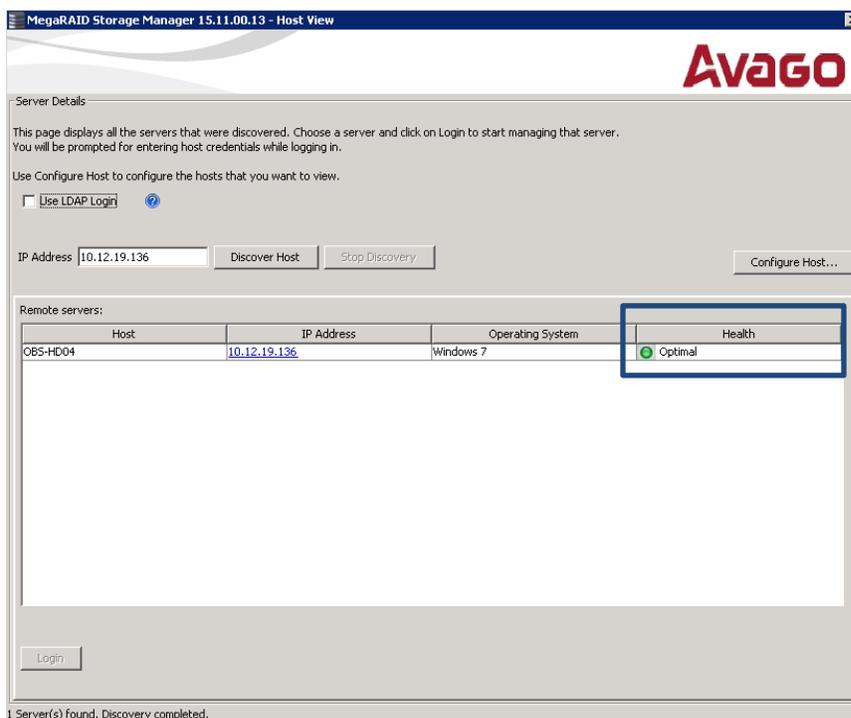


Figure: RAID controller automatic discovery

Double click to access the desired controller and log in to the controller. The controller uses the same credentials as the Windows login.



Figure: RAID controller login

7.4 Main MegaRAID screen

The main screen presents overall health status and details about individual drives. At the bottom of the screen, not shown, is a scrolling log file displaying real-time RAID information.

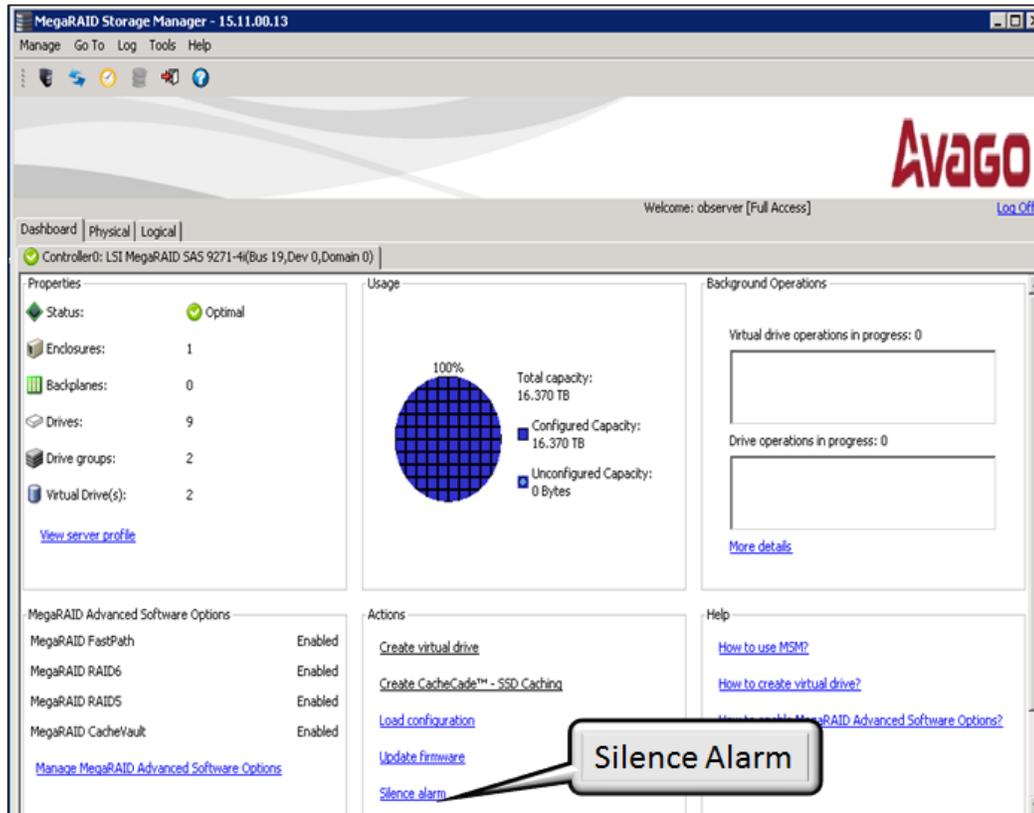


Figure: RAID system main screen

Click the <Physical> tab to display information about each drive in the system.

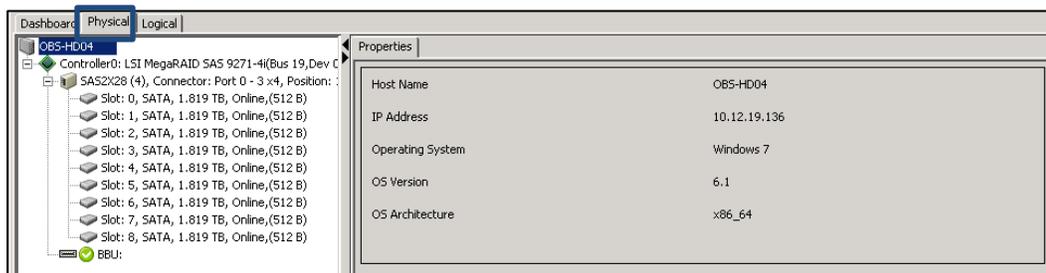


FIGURE: Individual drive status

7.4.1 Silencing RAID alarm

In addition to email notification, the controller sounds an audible alert. To silence the alarm press the <Silence Alarm> link in the center pane towards the bottom of the dashboard.

7.5 Email alerts

The RAID controller can be set to send out email alerts. Click on **<Tools>→<Monitor Configure Alerts>**. Volicon recommends limiting emails to the most critical and fatal, to minimize the number of emails sent by the system.

Click the **<Mail server>** tab to set-up the outgoing mail server and the **<Email>** tab to enter one or more recipient email addresses.

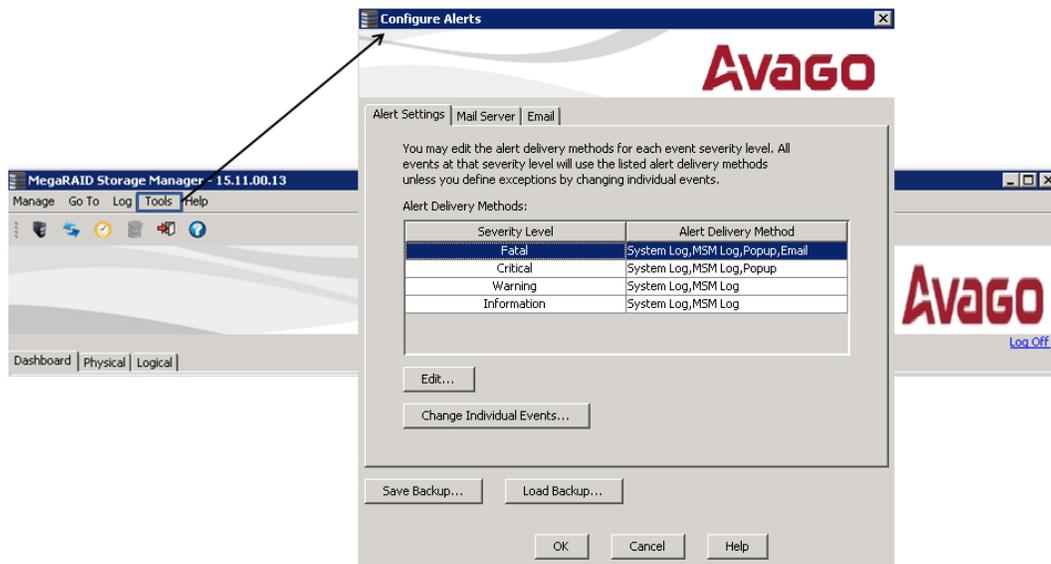


Figure: RAID email alerts

7.5.1 Alert Email outgoing SMTP server

To edit the outgoing mail server click the **<Mail Server>** tab.



Figure: Configure outgoing mail server

7.5.2 Alert Email addresses

Click the <Email> tab to add/delete email addresses. Use the <test> button the verify.



Figure: Add Email address

7.6 Hard disk drive (HDD) replacement

To replace an HDD on the hot swappable disk array, first remove the faulty bad drive and then insert a new replacement HDD. The RAID controller will automatically start rebuilding the array.

If the controller is reporting multiple drive failures, try reseating the hot swappable drives first.

8 CAPTURE CARDS

The capture card processes the analog or digital stream for MIS archiving. Normally MIS is configured to continuously ingest and record each channel. As such, you must dedicate a capture card port per channel. If you are using set-top boxes, they also need to be configured on a per-monitored-channel basis. Optionally MIS can be configured with the STB remote control feature allowing users to switch between dial numbers using the virtual remote control feature.

| Input | Ch | Output | Mfg. | Card Name |
|-------------------|------|--------|------------|-----------------------|
| RF-8VSB/clear QAM | 4 | No | Hauppauge | WinTV-quadHD |
| RF-DVB-C | 2 | ASI | DekTec | DTA-2136 |
| RF-DVB-S2 | 2 | ASI | DekTec | DTA-2137C |
| RF-AM radio | 6-24 | No | Sonifex | PC- AM(6-24) |
| RF-FM radio | 6-24 | No | Sonifex | PC-FM(6-24) |
| RF-DAB radio | 1-4 | No | Sonifex | PC-DAB(1-4) |
| Analog | 1 | No | Blackmagic | Studio 4K |
| Analog | 1 | No | Blackmagic | 4K Extreme 12G |
| Analog | 1 | No | Magewell | Pro Capture HDMI |
| Analog | 1 | No | Osprey | 260e |
| Analog | 4 | No | Osprey | 460e |
| HDMI | 1 | No | Blackmagic | Mini Recorder |
| HDMI | 1 | Yes | Blackmagic | Studio 4k |
| HDMI | 1 | No | Magewell | Pro Capture HDMI |
| HDMI | 2 | No | Magewell | Pro Capture Dual HDMI |
| HDMI | 1 | Yes | Blackmagic | 4K Extreme 12G |
| HDMI | 4 | No | Magewell | Pro Capture Quad HDMI |
| SD/HD-SDI | 2 | Yes | Blackmagic | Duo 2 |
| SD/HD-SDI | 4 | Yes | Blackmagic | Quad 2 |
| 3G-SDI | 1 | No | Blackmagic | Mini Recorder |
| 6G-SDI | 1 | Yes | Blackmagic | SDI 4K |
| 6G-SDI | 1 | Yes | Blackmagic | Studio 4K |
| 12G-SDI | 2 | Yes | Blackmagic | 4K Extreme 12G |
| ASI/SD-SDI | 1 | Yes | DekTec | DTA-2145 |
| ASI/SD-SDI | 3 | Yes | DekTec | DTA-2160 |
| Ethernet | 1 | n/a | DekTec | DTA-2160 |

Table: Capture cards

MIS supports multiple dedicated video output cards.

| Output | Ch | Mfg. | Card Name |
|-----------------|----|------------|--------------|
| RF-8VSB/QAM/DVB | 1 | DekTec | DTA-2111 |
| HDMI | 1 | Blackmagic | Mini Monitor |
| 3G-SDI | 1 | Blackmagic | Mini Monitor |

Table: Dedicated video output cards

TECH TIP

In instances where the card supports video output the output feed may be used to directly drive a video monitor. This capability must be configured using probe manager.

Please contact Volicon support for information regarding legacy video card support.

8.1 Blackmagic

MIS supports multiple [Blackmagic](#) acquisition cards. A common driver is used for all Blackmagic cards: currently V10.9.11

8.1.1 DeckLink 4K Extreme 12G

4K Extreme supports: two SDI input/output ports, one analog audio/video and one HDMI input and one HDMI output port. Card optionally supports fiber I/O.



Figure: DeckLink 4K Extreme 12G

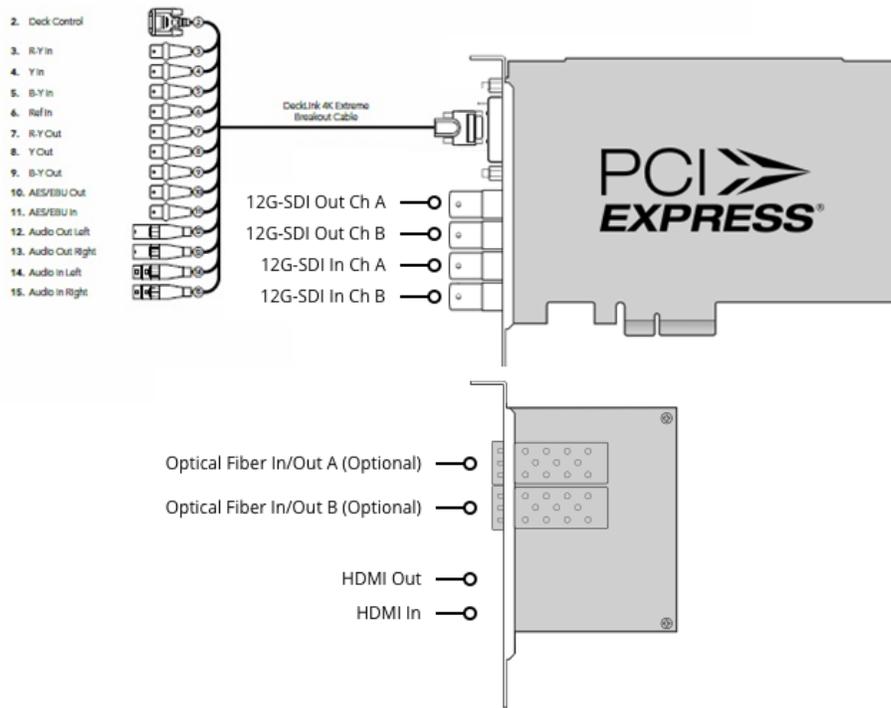


Figure: DeckLink Extreme & Breakout cable

8.1.2 DeckLink SDI 4K

Blackmagic DeckLink SDI 4K supports a single SDI input and output.



Figure: DeckLink SDI

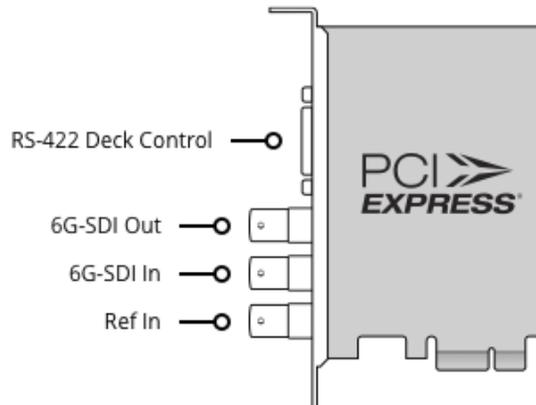


Figure: DeckLink SDI connections

Connect the SDI source to the Blackmagic DeckLink SDI card’s BNC coaxial connector Input.

8.1.3 DeckLink Studio 4K

DeckLink Studio 4K supports: one SDI input/output port, one analog audio/video and one HDMI input and one HDMI output port. Studio uses the same analog breakout cable at the Extreme 4K



Figure: DeckLink Studio 4K

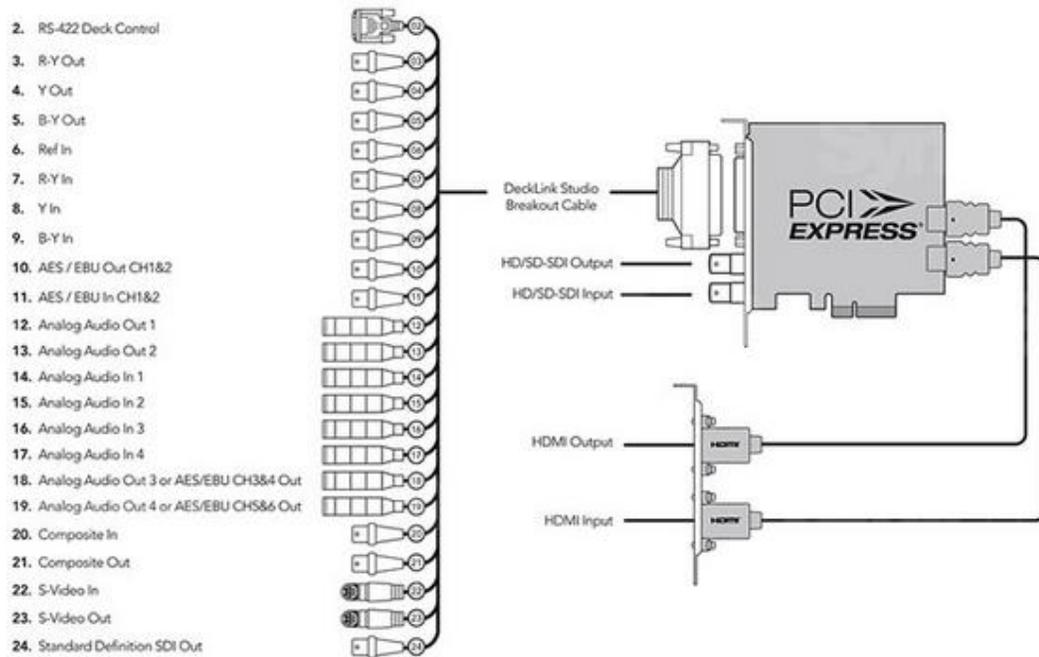


Figure: DeckLink Studio 4K connections

8.1.4 DeckLink Duo 2

The DeckLink Duo adapter supports 4 bidirectional HD/SD inputs/output.



Figure: DeckLink Duo

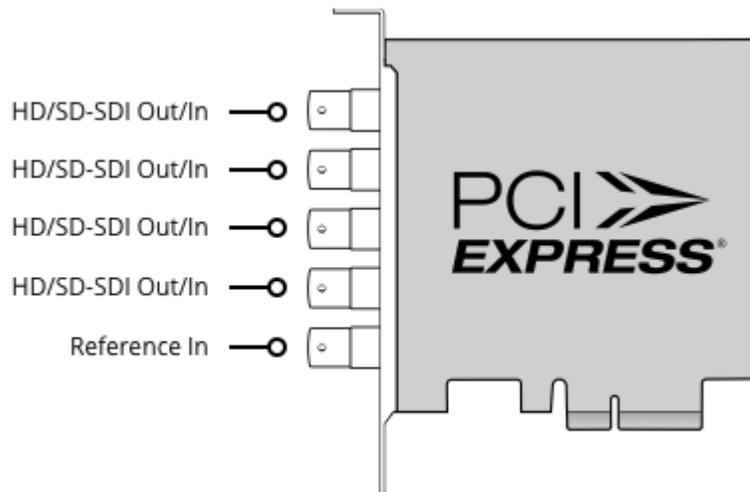


Figure: DeckLink Duo SDI/HD connections

8.1.5 DeckLink Quad 2

The DeckLink Quad 2 has 8 bidirectional SD/HD ports. The card has Mini BNC SDI connectors. An adapter cable is used to connect to standard BNC connectors.



Figure: DeckLink Quad SDI-SD/HD

8.1.5.1 DeckLink Quad 2 SDI-SD/HD connector diagram

Connections are made to the SDI inputs as shown.

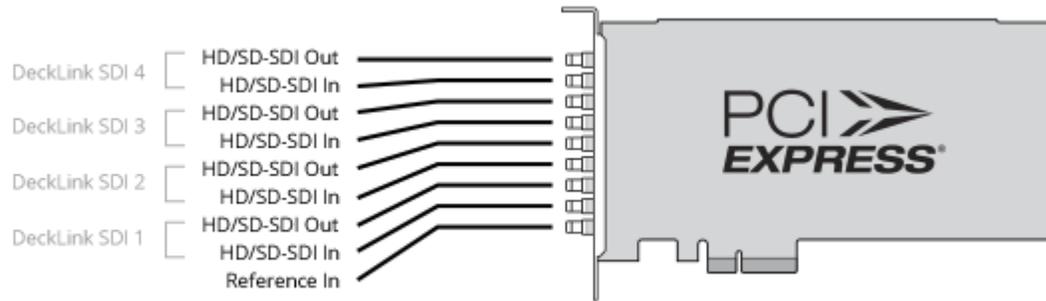


Figure: DeckLink Quad SDI-SD/HD connectors

8.1.5.2 Breakout cable BNC to mini BNC adapter

You will need the BNC to Mini BNC Connector breakout cable to use the DeckLink Quad SDI-SD/HD card. The cable is pictured below.



Figure: DeckLink BNC to Mini BNC adapter cable

8.1.6 DeckLink Mini Recorder

DeckLink Mini Recorder has a single SDI and HDMI input.



Figure: DeckLink Mini Recorder

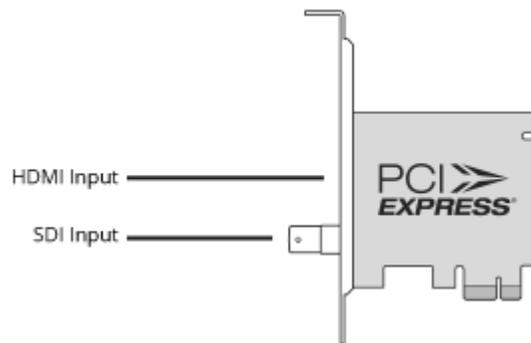


Figure: DeckLink Mini Recorder connections

8.1.7 DeckLink Mini Monitor

DeckLink Mini Monitor has a single SDI and HDMI output to drive an external monitor.



Figure: DeckLink Mini Monitor output

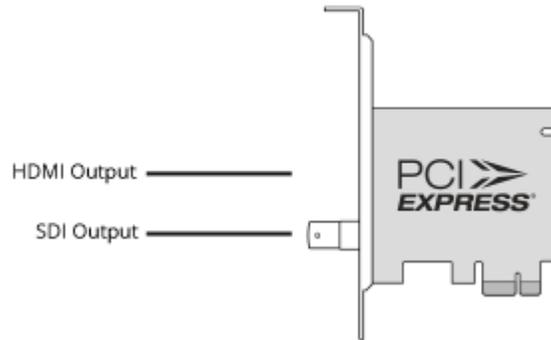


Figure: DeckLink Mini Monitor connections

8.2 DekTec

MIS supports multiple [DekTec](#) acquisition cards. A common driver is used for all DekTec cards: currently V4.23.0.240.

8.2.1 DTA-2111 Multi-standard VHF/UHF modulator

The DekTec DTA-2111 multiprotocol modulator supports 8VSB/DVB-C/DVB-T/QAM-B/QAM-C. The card is used to drive RF monitors.



Figure: DekTec DTA-2111 digital modulator

8.2.2 DTA-2136 Dual QAM-A/B/C cable receiver

The DekTec DTA-2136 has a dual channel DVB-A/B/C receiver. The card includes an ASI output port for each channel for local monitoring.



Figure: DekTec DTA-2136

8.2.3 DTA-2137C Dual DVB-S2 satellite receiver

The DekTec DTA-2137 is a dual channel DVB-S2 satellite receiver card. The card includes an ASI output port for each channel for local monitoring.



Figure: DekTec DTA-2137

8.2.4 DTA-2145 Dual ASI/SDI

The DekTec DTA-2145 has two ASI ports, one dedicated output the second configurable as input or output.



Figure: DekTec DTA-2145

8.2.4.1 DTA-2160 Triple ASI, GigE

The DekTec DTA-2160 has 3-ASI interfaces and 1 Gigabit Ethernet.

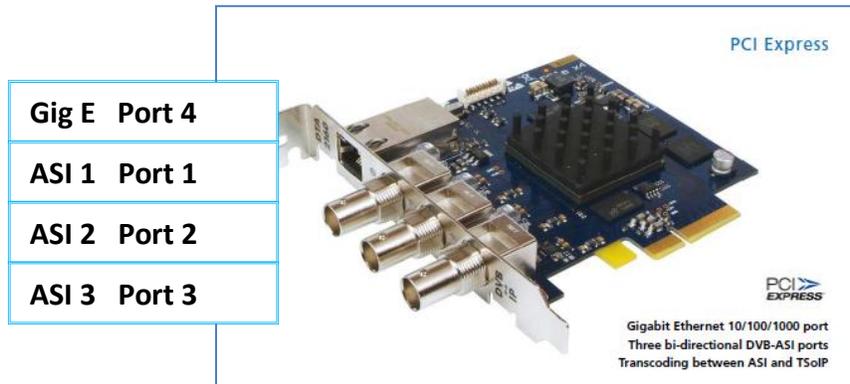


Figure: DekTec DTA-2160

| Physical location from top | Port type | Logical port number |
|----------------------------|--------------|---------------------|
| 1 | Gig Ethernet | Port 4 |
| 2 | ASI 1 | Port 1 |
| 3 | ASI 2 | Port 2 |
| 4 | ASI 3 | Port 3 |

Table: DekTec DTA-2160 connector ports

8.3 Hauppauge

MIS supports the Hauppauge 01609 capture card, current driver is V8.5.35313.

8.3.1 WinTV-quad HD

The [Hauppauge 01609](#) is a quad 8VSB ATSC/QAM capture card able to ingest four ATSC over-the-air or four unencrypted/unswitched cable QAM channels.



Figure: Hauppauge 01609

8.4 Magewell

MIS supports multiple [Magewell](#) HDMI capture cards. Magewell HDMI cards are used to ingest a maximum of four HDMI channels per card. A common driver is used for all cards: currently V1.3.0.38

8.4.1 Pro Capture HDMI

The single HDMI input card is primarily used to ingest a single HDMI stream but it may be used for analog audio/video.

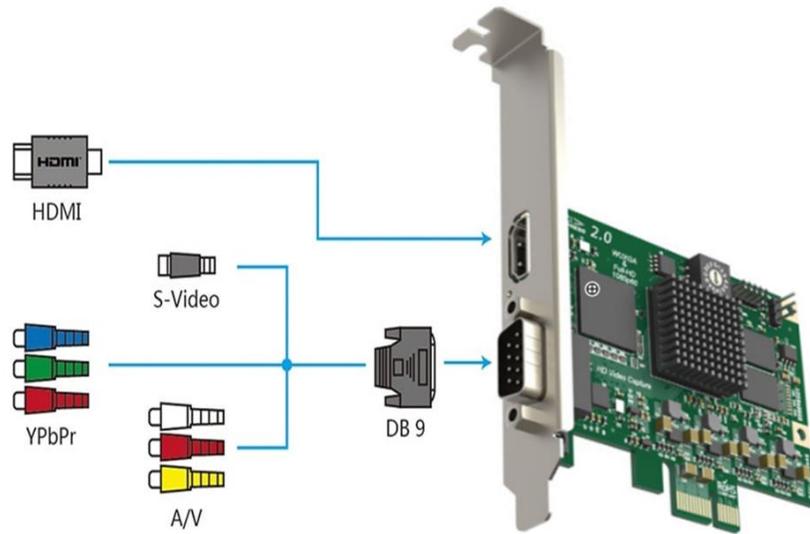


Figure: Pro Capture HDMI Inputs

8.4.2 Pro Capture Dual HDMI

The Pro Capture dual supports two HDMI inputs.

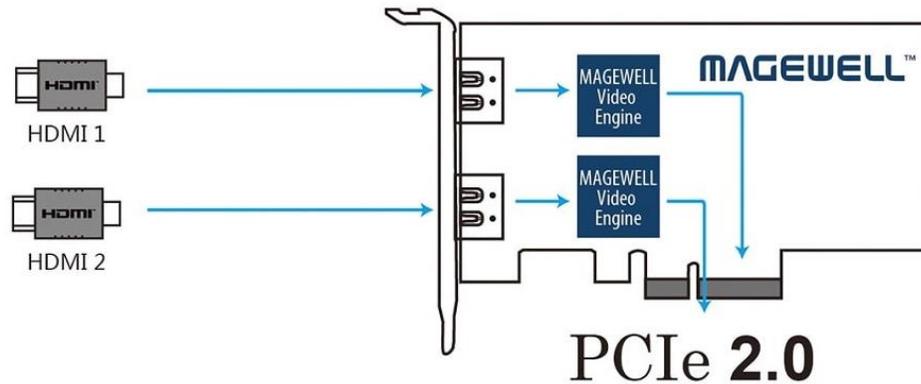


Figure: Pro Capture Dual HDMI inputs

8.4.3 Pro Capture Quad HDMI

The Pro Capture quad supports four HDMI inputs.



Figure: Pro Capture HDMI card

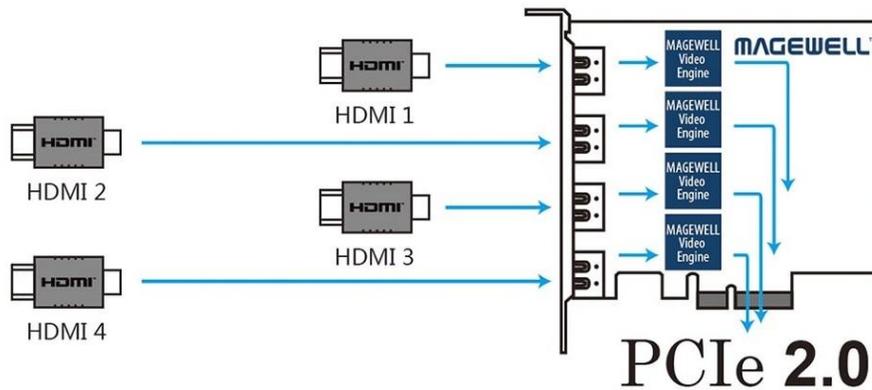


Figure: Pro Capture HDMI quad inputs

8.5 Osprey

MIS supports multiple [Osprey](#) capture cards. Osprey cards are used to ingest a maximum of four analog channels per card. A common driver is used for all cards; currently V5.0.7.32.

8.5.1 260e Analog capture card

The 260e supports a single: component, S-video and composite video and balanced or unbalanced stereo audio inputs.



Figure: Osprey 260e and breakout cable

8.5.1.1 YPrPb – component video input breakout cable



Figure: Component video input

8.5.1.2 S-video input breakout cable

Connect the S-video adapter to the breakout cable. Note in this configuration Composite 1 is still available but not at the same time as S-Video.



Figure: S-video input

8.5.1.3 Composite video input breakout

The card supports three composite video channels but only one can be active.



Figure: Composite video input

8.5.2 460e Analog capture card

The Osprey-460e supports four: composite video inputs. A breakout cable is used to connect four stereo audio channels.

MIS encoder channels are configured as follows:

- Video Input A and Audio Left 1 / Right 1
- Video Input B and Audio Left 2 / Right 2
- Video Input C and Audio Left 3 / Right 3
- Video Input D and Audio Left 4 / Right 4



Figure: Osprey 460e

8.5.2.1 Audio breakout cable 9-pin mini-Din

The pin assignment for the Osprey 460e audio break out is as follows:

| | |
|----------------|---------|
| 1. Audio input | Left 1 |
| 2. Audio input | Right 1 |
| 3. Audio input | Left 2 |
| 4. Audio input | Right 2 |
| 5. Audio input | Left 3 |
| 6. Audio input | Right 3 |
| 7. Audio input | Left 4 |
| 8. Audio input | Right 4 |
| 9. Ground | Ground |

Table: Osprey audio breakout

8.5.2.2 460e rack mount breakout panels

The 460e card supports rack-mounted breakout panels. These can be used to facilitate cabling or balanced audio inputs using XLR connectors.



Figure: Osprey composite video and stereo audio breakout panel

It provides rack connection to the four composite video and stereo audio. This is identical to the flying lead breakout cable.



Figure: Osprey video breakout panel

It provides rack connection to the four video channels configured individually as: Component, S-Video, and Composite.



Figure: Osprey balanced audio breakout panel

It provides rack connection to 4 balanced stereo channels.

8.6 Sonifex

MIS supports multiple Sonifex AM, FM and DAB radio acquisition cards.

8.6.1 PC-AM6-32 AM radio capture card

The PC-AM6-32 is used to ingest AM radio. It is available in versions from 6-32 channels in 6 channel increments. Current driver: V8.00.00.3508



Figure: PC-AM6-32 AM radio card

8.6.2 PC-FM6-32 FM radio capture card

The PC-FM6-32 is used to ingest FM radio. It is available in versions from 6-32 channels in 6 channel increments. Current driver: V8.00.00.3511.



Figure: PC-FM6-32 FM radio capture card

8.6.3 PC-DAB1-4 DAB radio capture card

The PC-DAB1-4 is used to ingest DAB digital radio. It is available in versions from 1-4 ensembles in 1 ensemble increments. Current driver: V8.00.00.3503



Figure: PC-DAB1-4 DAB radio capture card

8.7 Set-top box interconnect

If you are using a Set-Top box (STB) as an input source, assign one STB per encoder input and connect the output of each STB to the associated capture card input connector. Composite, component, and HDMI video interfaces are currently supported, depending on the specific capture card.

Normally each STB is statically set to a particular channel (dial number) for 24/7 ingest. Optionally; the encoder may be configured for virtual STB remote controller allowing MIS to select channels either automatically via the scheduler or manually under user control. A USB IR blaster enables MIS to control the STB.

TECH TIP

MIS is recording and logging content: as such it is only able to support HDMI without HDCP security.



Figure: Typical STB rear panel

8.8 STB remote control

When an encoder is connected to a STB the STB is typically set statically to a particular dial number (service). This enables MIS to record the channel 24/7 for subsequent playback and analysis. Optionally an encoder may be configured for STB remote control emulation. In that case MIS uses an [USB IR emitter](#) to emulate STB remote control commands. Each Encoder/STB pair configured in this fashion needs a dedicated USB IR remote controller. Position the IR emitter so it is seen by the STB IR receiver but not other STBs in the rack. The emitter is located inside the controller behind an IR transparent window. Optionally a cabled IR emitter may be used.

This option allows users to manually interact with the STB or create a schedule to automate channel switching and program capture.

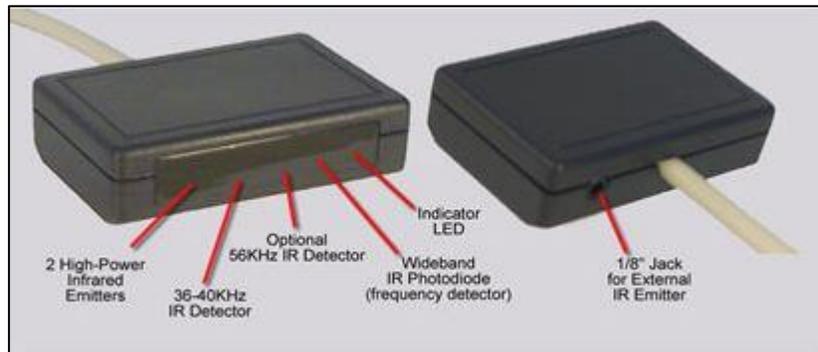


Figure: USB IR remote control

9 WHAT NOT TO DO ON THE SERVER SIDE

This section lists events and configurations that should not be applied to any of the MIS servers.

- *Do not run a web client application on the encoder server or central server.*
- *Install antivirus software with caution (see section “**Antivirus Exclusion Storage Areas**”).*
- *Do not load/execute any additional applications on the server.*

10 MIS LOGIN

1. Enter the URL or IP address of the MIS central server.
2. You will be prompted for your log in credentials (username/password).

TECH TIP

Add the IP address or the MIS domain name to the "Trusted Sites" list in Internet Explorer.

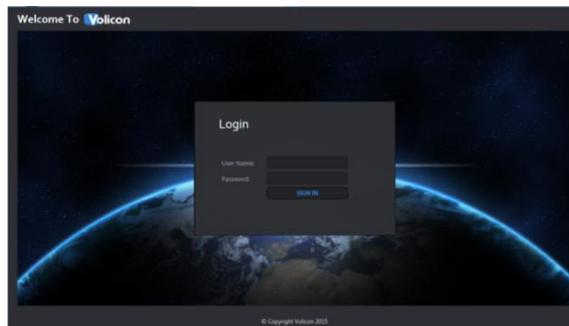


Figure: MIS home page with tools dropdown menu

Assuming you entered your account credentials correctly, you will be greeted with the MIS home page. The specific icons displayed reflect installed MIS options. As an administrator your account has access to all installed features. The <Tools> menu in the upper right corner is always available.

10.1 Logging out

To log out, click the <Gear> icon at the upper-right corner of any MIS page. The <Gear> icon appears on all pages so you don't have to go back to the home page to log out. This opens another menu; click on <Log out> at the bottom. MIS asks you to confirm that you really want to log out. As with the home page, the specific options you see are dependent on your account settings.

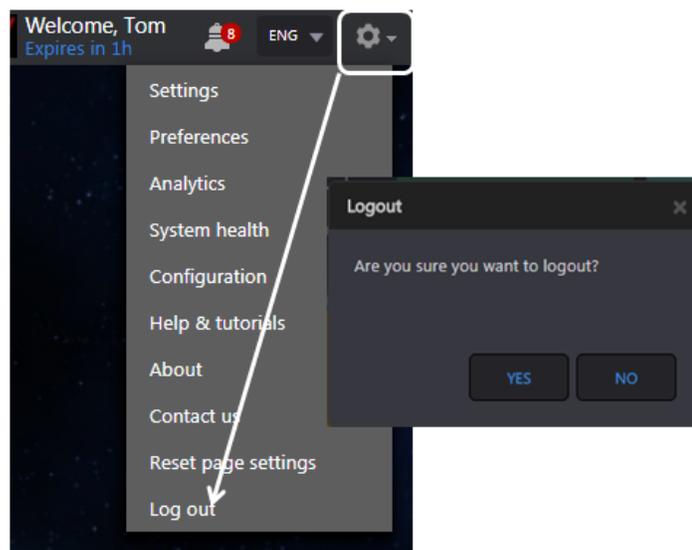


Figure: Log out

10.2 Browser support

MIS supports Chrome, Edge, Firefox and Safari browsers. These browsers use HTML5. Note that MIS only supports the Safari browser when used on the Mac OS. MIS does not support Safari on Windows.

MIS supports Internet Explorer 11. IE requires use of downloaded ActiveX media player.

10.3 Internet Explorer settings

MIS currently supports Internet Explorer versions 11. When using Internet Explorer you must set "Compatibility mode".

1. After you log into MIS left click the **<Gear>** symbol at the upper right of IE; then choose "Compatibility View Settings". Note: this is the IE tools icon, not the lower tool icon for MIS.
2. The URL or IP address of the MIS server should automatically populate under "Add this website". Click on **<Add>** to set IE to access the MIS web site in compatibility mode.

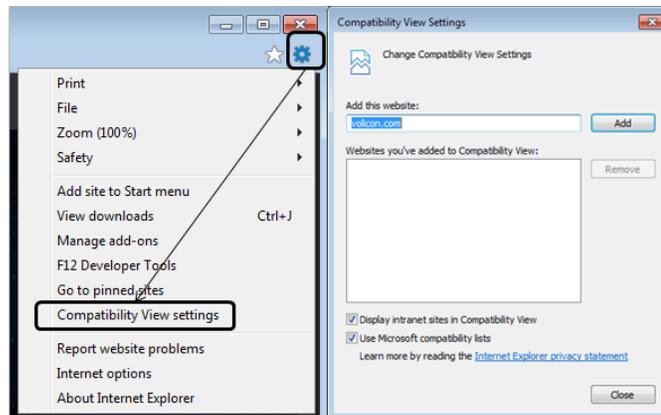


Figure: Setting IE compatibility view

3. Next, set the location of the MIS server as a trusted site. This enables the player to use ActiveX even if other IE settings restrict its use.
4. From the same **<Tool>** icon used to set compatibility mode, select "Internet Options". Select the **<Security>** Tab and click on **<Trusted Sites>**. Then click the **<Sites>** button. The MIS web site URL should be under "Add this website to the zone:" In our example it is <http://observer2.Volicon.com>. The IE default policy to allow placing a server in a trusted zone is that it must use SSL/TLS security (HTTPS). If the MIS server does not use SSL/TLS, you need to uncheck the "Require server verification" check box. Press **<Add>** to update the trusted site list, then **<Close>**.
5. To verify you successfully added MIS click **<Trusted Sites>** again, then **<Sites>**. The MIS server URL should show in the "Websites" box.

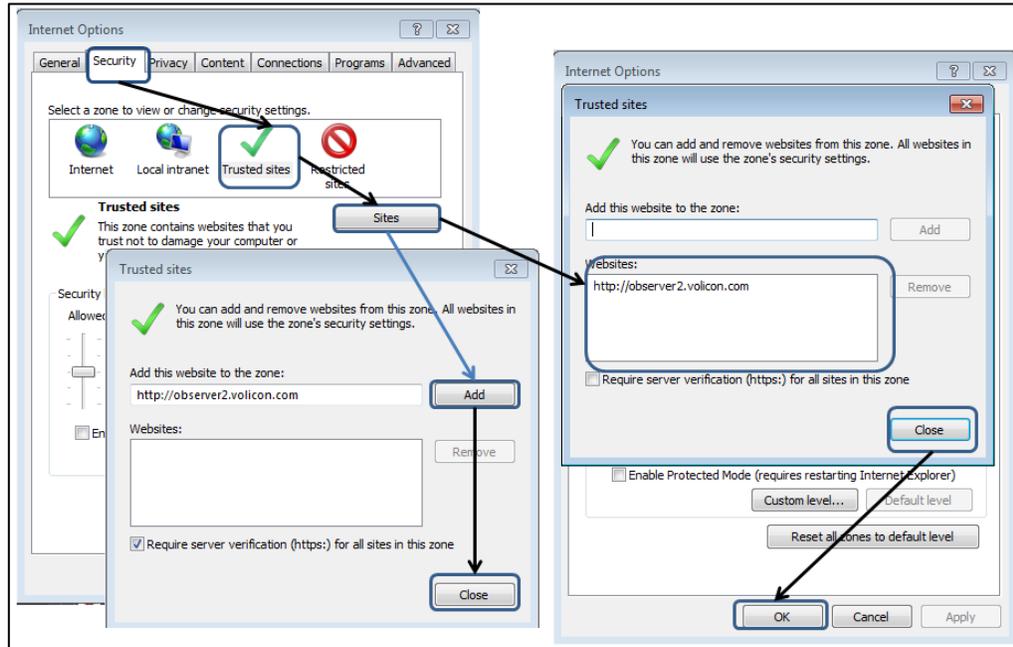


Figure: Add MIS to IE trusted sites

10.4 MIS ActiveX media player

When using IE to access MIS, a customized ActiveX media player is required.

10.4.1 Installing the media player

When using IE, the first time your computer connects to MIS, you will be asked to install the ActiveX media player. This should take approximately 30 seconds.

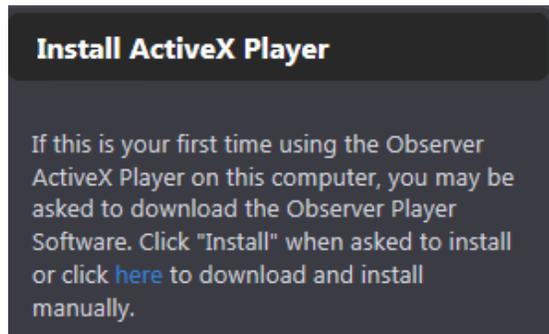


Figure: Request to install media player

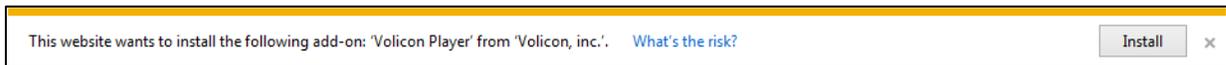


Figure: Windows security warning

Accept the warning by clicking **<Allow>**. MIS will launch the Media Player Setup Wizard.



Figure: Media player setup wizard

If an older version of the media player has been installed, it will be removed automatically. Click **<Next>** to continue. Accept the terms of the License Agreement and click **<Next>** again to continue.



Figure: License Agreement

You have the option of choosing into which folder MIS will install the media player. Unless a support engineer has instructed you otherwise, accept the default folder and click **<Install>**.

Internet Explorer must be shut down to install the media player. Log out of MIS and shut down IE, then click **<OK>** to proceed.

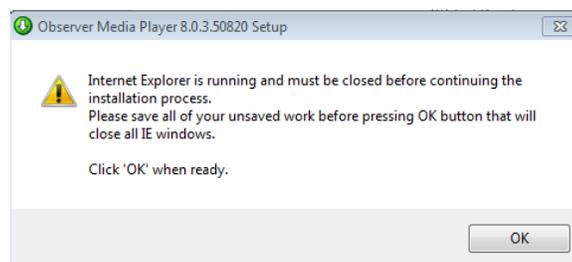


Figure: Shut IE down to install

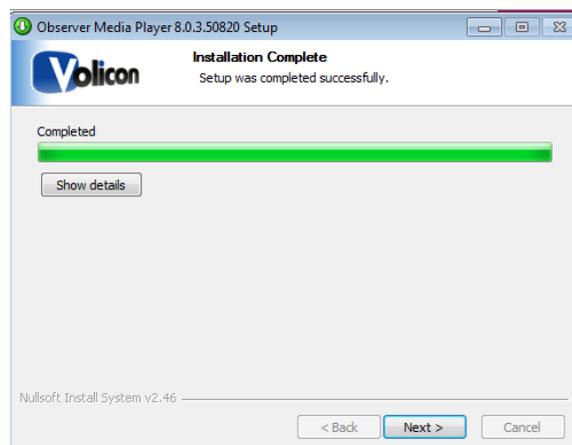


Figure: Player installation progress

10.4.1.1 Optional Settings

MIS will present you with the “Optional settings” window.



Figure: Optional settings

Optional setting: Internet Explorer shortcut

If you want to add a quick connect button to your Internet Explorer tool bar, enter the URL or the IP address of the MIS server in the field provided. Leave the field empty if you do not want MIS on your tool bar.

Optional settings: Intel video adapter workaround

If your computer has an older Intel video card, or a video card with an Intel chipset, Volicon recommends you enable the Intel “flickering video” workaround checkbox as a precaution. Enabling the checkbox will not affect the performance of Intel chip sets that do not have issues with multiple video streams, but it will protect you in the event the chipset is one of those with known issues.

Optional Settings: Favor quantity over quality

Volicon recommends you check the “**Enable Favor Quantity over Quality**” checkbox for the best experience using Internet Explorer to run multiple players.

Make your choices and click **<Next>**.

MIS presents you with the “Completing the Media Player Setup Wizard” window.



Figure: Completing the media setup wizard window

Click **<Finish>** to exit setup.

10.4.2 Updating the media player

From time to time, you may receive notification that there is a new version of the player available. Follow the prompts and install the upgrade. You will be prompted to shut down IE to perform the install.

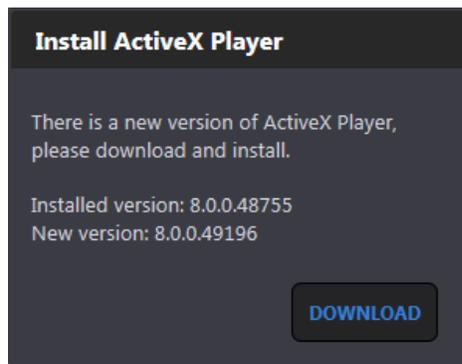


Figure: Update MIS ActiveX media player

TECH TIP

Upgrading the player requires administrator rights, just like the initial installation.

10.4.3 Removing the media player

To remove the media player, go to <Control panel>→<Programs and features> (Windows 7), then remove the “Media Player”.

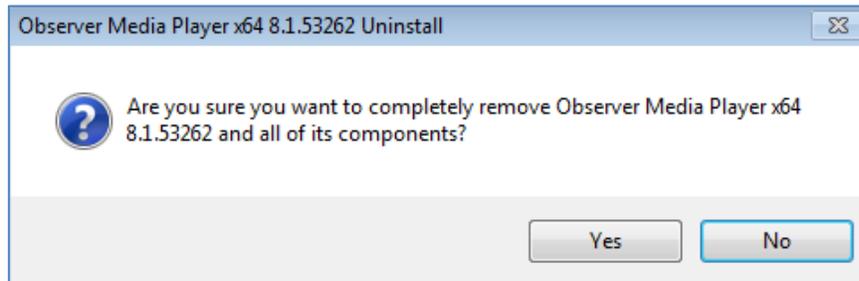


Figure: Removing the media player

10.5 MIS welcome page

The main action buttons are in the center of the screen.

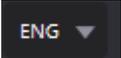
- Your account name is displayed in the upper-right corner along with the session expiration time.
- If MIS detects an idle session, it will time out and close the session.
- If the dashboard fault notification widget is enabled a bell icon appears to the right of the user name.  If there are active faults, the quantity is displayed in a red circle. Click the icon to display fault details.
- If MIS is localized use the dropdown  to the left of the Gear icon to change the active language.
- Click the  **<gear>** icon in the upper-right to log out or access MIS management features.
- The main menu gives you access to various MIS features. As an administrator you are primarily concerned with the gear icon in the upper right of the screen.



Figure: Welcome page

11 MIS WEB BASED CONFIGURATION

MIS configuration is web-based, except for a few specific exceptions. Your admin tools are a superset of the user tools. As a MIS administrator, you have the ability to set which aspects of MIS each user account is able to access.

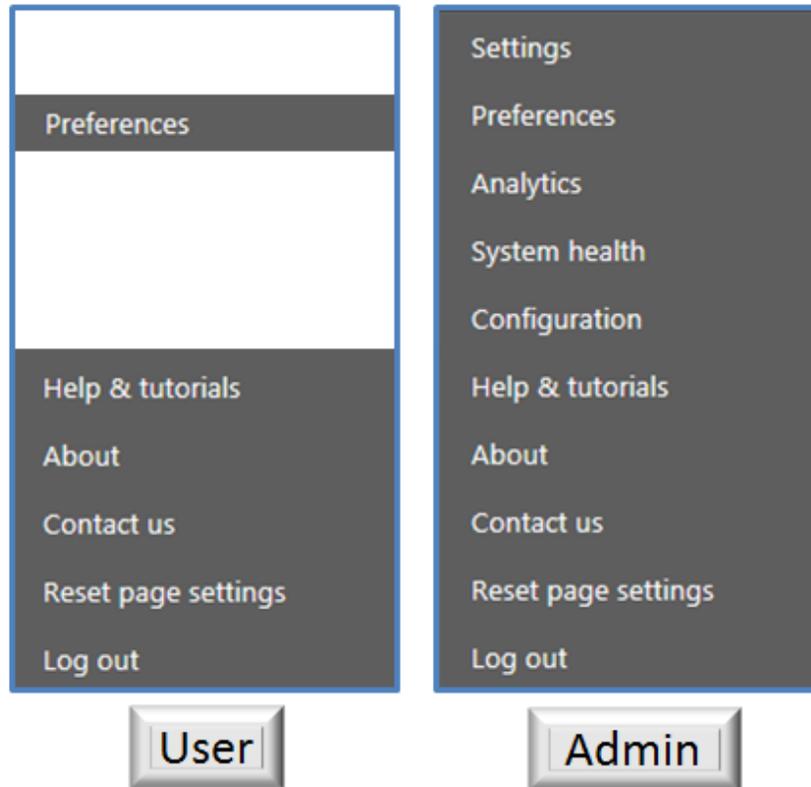


Figure: User vs admin tools

- **Settings** – configure the central server
- **Preferences** – user specific setting and time zone
- **Analytics** – displays various usage reports
- **System Health** – displays status of various MIS components
- **Configuration** – configure probe groups, probes and encoders
- **Help & tutorials** – link to embedded tutorials
- **About** – displays MIS and ActiveX player version
- **Contact us** – Link to Volicon support page
- **Reset page setting** – clears user data such as selected channels
- **Log Out** – terminate user session

11.1 System architecture

The central server is the heart of MIS. It has an overarching responsibility for all aspects of the system. Depending on size, MIS will utilize one or more probe servers. The responsibility of the probe is to ingest and store programs. The probe utilizes capture cards to enable MIS to interface with various program sources.

The MIS probe ecosystem is organized in a hierarchal manner. There are several layers that make up the system: bouquets groups, probes, and encoders.

Bouquet(s): are logical associations of streams independent of location.

Group(s): this level associates multiple probes under one unified heading. Groups can be created by input source, geography, network capture location, etc.

Probe(s): each server, as a whole unit, contains anywhere from 1 to 16 video, audio and metadata capturing inputs/channels. It stores the recorded content locally and streams out the recorded content to end users.

Encoder(s): this is the proxy copy created for each item of video content recorded by the system. There is a direct one-to-one relationship between each probe video input and the proxy stored on the probe.

You must assign each probe server in the system to a probe group. Use groups to help you organize your streams and manage alerts, since a probe group often shares a geographical territory or a specific service area.

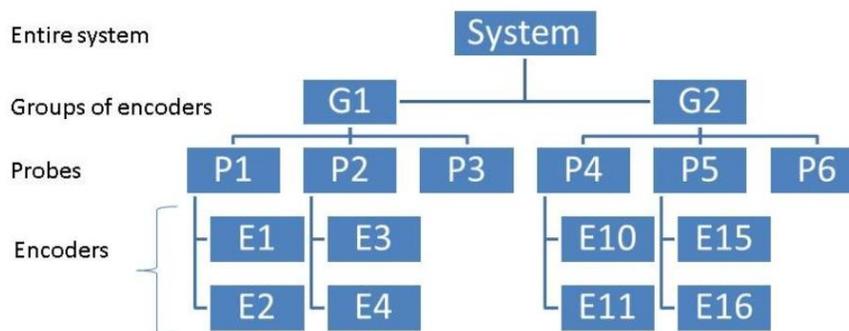


Figure: Probe architecture

11.2 Settings: central server

The setting section is used to configure central server behavior: channels, profiles, user accounts, etc.

- **Home:** takes you back to the main page
- **System:** Configure overall settings
- **SNMP receivers:** Configure listening ports to receive SNMP messages
- **Channel sets:** Logical channel grouping independent of physical encoder
- **Distribution profiles:** Specifies how clips are exported
- **Roles:** Specify which aspects of MIS each user role able to access
- **Users:** Contains list of all user accounts
- **STB:** Configure STB remote control features

11.2.1 Home

Takes you back to the MIS home page.

11.2.2 System

Use this page to configure system-wide global settings.

11.2.2.1 System – general

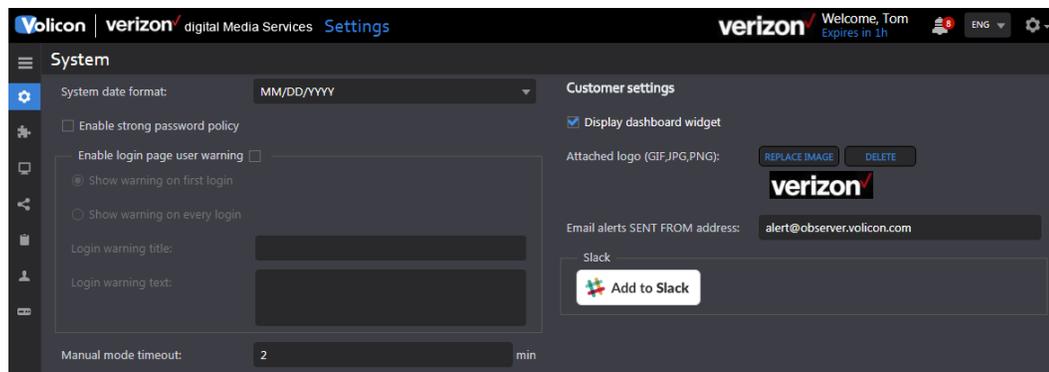


Figure: System general

| | |
|---|--|
| System date format | Dropdown to select desired year-month-day format |
| Enable strong password policy | Requires users to periodically reset passphrase and use combination of characters to create strong passwords; system will refuse to accept passphrase if it doesn't meet these requirements and prompts user with requirements: <ol style="list-style-type: none"> 1. A minimum of eight characters 2. One uppercase letter 3. One lowercase letter 4. One number 5. One symbol character 6. No repeating characters |
| Enable login page user warning | Allows you to display a warning message when user logs in; can be set to occur on first log in or every log in |
| Show warning on first or every login | Sets if warning is displayed each time a user logs in or only the first. |
| Login warning title | Message title |
| Login warning text | Text message displayed when users prevented from accessing system: example: <i>"System maintenance underway – system will be back online by 5AM Tuesday."</i> |
| Manual mode timeout | Automatically disconnects user remote control of STB; Only one entity can be in control at a time. |
| Display dashboard widget | Adds  alerts icon at the top-right of each page; indicates the number of active faults; clicking icon provides details about each fault |
| Attached logo | Attach company logo; permissible file types: JPG, GIF, PNG |
| Email alerts sent address | From email address used for email sent by central server |
| Slack | MIS is able to send QoE alerts via Slack; may be enabled/disabled; not relevant to all implementations |

Table: Central server – general settings

11.2.3 SNMP receivers

This section configures MIS to accept polling requests from the “Network Management Systems” (NMS). The MIS SNMP implementation is read-only. The management console is able to query MIS for status but not change settings via SNMP. MIS issues traps reporting unusual events to the management console.

-  **Select/deselect page:** Toggle between select and deselect of all receivers
-  **Add receiver:** Create new receiver
-  **Delete:** delete selected receivers
-  **Customize columns:** use this feature to select which columns to display

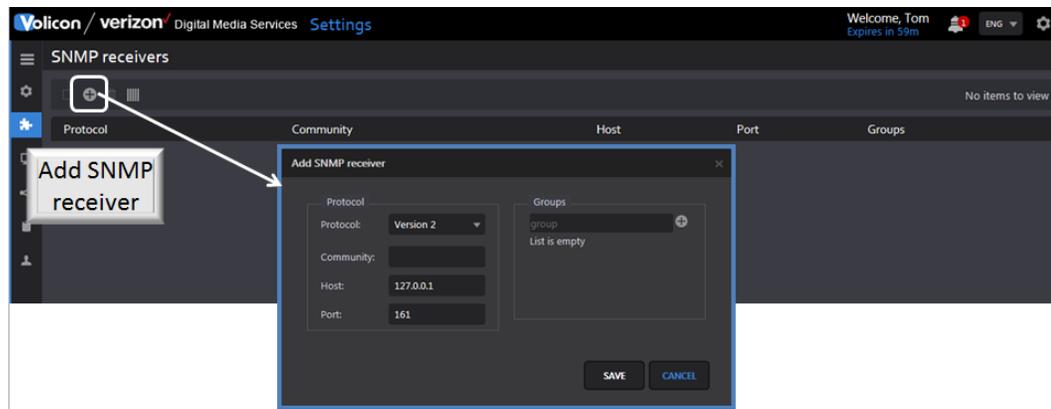


Figure: SNMP receivers

| | |
|------------------|--|
| Protocol | Enter the version your NMS uses. MIS supports SNMP v1 and SNMP v2 |
| Community | Public by default (unrestricted access), a password is required to establish connectivity with the SNMP receiver |
| Host | This is the URL or IP of the destination where the trap is to be sent; set it to localhost if all requests originate on the same machine as central server |
| Port | Enter the port used for SNMP traffic with the host; well-known SNMP is port 161 |
| Groups | This is a list of active directory groups. |

Table: SNMP receiver settings

11.2.3.1 Add/edit SNMP receiver settings

To create a new SNMP receiver, click the **<Add receiver>** button at the top of the page. To edit an existing receiver, hover over the receiver name and right click on the **<Edit>** icon on the right-hand side. Enter the appropriate values and press **<Save>**.

11.2.4 Channel sets

This page is used to define channel sets. Using channel sets enables the administrator to create a logical channel grouping independent of the probes in which the specific encoder is located. If channel sets are not used individual encoders are displayed under their associated probe.



Expand/Collapse all: Toggle between select and deselect of channel sets



Add new channel set: Create new channel set



Customize columns: use this feature to select which columns to display

11.2.4.1 Add/edit channel set

To add a channel set click the **<Add new channel set>** icon at the top of the page. If your system has a large number of encoders, use the encoder filter field to restrict which encoders are displayed. To edit an existing channel set, hover over the channel set and click the **<Edit>** icon. Enter or change the name of the channel set and select the desired Encoders. Press **<Save>** when you are finished.

Example: “AJN” is set, which includes four encoders from probe DEMO-TS and six encoders from probe WIN7. The number of encoders assigned to a specific channel set is displayed in parenthesis to the right of the set name.

| Channel | Display name | Assigned sets | Status | Probe |
|---------|---------------------|-------------------------------|---------|---------|
| QAM2 | WORLD | AJN, DEMO, TS | running | DEMO-TS |
| WHOH-HD | WHOH-HD | AJN, DEMO, Share Channels, TS | running | DEMO-TS |
| THIS-TV | THIS-TV | AJN, DEMO, TS | stopped | DEMO-TS |
| OTT10 | AJN_Balkans_915 | AJN, DEMO, OTT CLOUD | running | WN7 |
| OTT11 | AJN_Documentary_399 | AJN, DEMO, OTT CLOUD | running | WN7 |
| OTT12 | AJN_Documentary_915 | AJN, DEMO, OTT CLOUD | running | WN7 |
| OTT13 | AJN_English_255 | AJN, DEMO, OTT CLOUD | running | WN7 |
| OTT8 | AJN_Balkans_255 | AJN, DEMO, OTT CLOUD | running | WN7 |
| OTT9 | AJN_Balkans_399 | AJN, DEMO, OTT CLOUD | running | WN7 |
| ASL_DPI | ASL_DPI | AJN, DEMO, TS | running | DEMO-TS |

Figure: Settings channel set

11.2.4.2 Delete a channel set

Hover over the desired channel set and press the **<Trash>** icon.

11.2.5 Distribution profiles

The distribution profiles specify how clips exit the MIS environment. Export defines what data is included (e.g., audio language, video resolution and metadata). Export settings apply to both saving clips on the user’s workstation and publishing them to remote sites. Publishing requires two additional profiles: destination and publish. Destination defines social media destinations where the clips will be sent along with any necessary account credentials. Publish defines in what format the clip should be encoded and specifies one or more previously defined destinations.

| Profile name | Created by | Created at |
|--|------------|---------------------|
| <input type="checkbox"/> 1. Simple | qa | 2016-11-28 21:04:18 |
| <input type="checkbox"/> 2. DFXP sub | qa | 2016-11-28 21:04:57 |
| <input type="checkbox"/> 3. Banner | qa | 2016-11-28 21:05:39 |
| <input type="checkbox"/> 4. SMI + banner | qa | 2016-12-05 18:23:16 |

Figure: Settings distribution profiles



Select/deselect all: Toggle between select and deselect of all profiles.

-  **Add export profile:** Create new export/destination/publish profile
-  **Delete:** delete selected profiles
-  **Customize columns:** use this feature to select which columns to display.

11.2.5.1 Export

To create a new export profile, click the **<Add>** icon at the top of the page. To edit an existing profile, hover over the profile name and click the **<Edit>** icon at the far right.

The video profile opens on the right side of the page. To select a new profile use the **<Choose an encoder as profile base>** dropdown. This sets the rest of the page defaults based on the configuration of the specific encoder. Once the profile is updated, enter a descriptive name into the profile name line. This is the name that will be displayed.

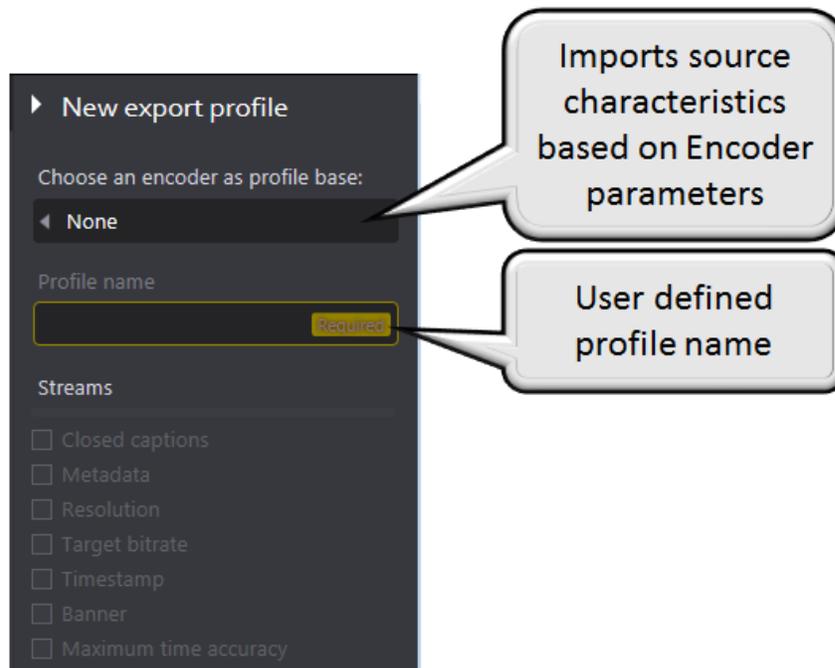


Figure: Export profile Pt 1

The audio/video settings allow you to select video and audio versions if the encoder offers multiple version of the channel. You are able to restrict the export to solely audio or video if desired.

Closed Captions enables CC – if you try to select this option and the encoder does not support CC, an error message appears at the top of the screen. Select the CC language if more than one exists. The default setting “Burn to video” includes the CC as part of the video clip. The other option “Export to file” saves only the CC portion in the file type specified. If you select “Export to file” use the associated dropdown to select the file type to save the CC. Use “Adjust xx seconds” to adjust CC time in seconds so it will fit the video.

When metadata is checked and metadata is included in the clip it will be exported with the clip; otherwise, it is suppressed. Use the radio button to select which metadata to include.

Resolution, “Target bitrate” and “Reduce resolution by half” allow you to the export the clip in a different resolution and bit rate then it was ingested by MIS. Set both parameters using the dropdown menus. MIS will transcode the stream to these setting prior to export.

Timestamp defaults to central server time zone (auto). If you want to use a different time zone select **<Other>** and use the dropdown to select a time zone as an offset from UTC. Use the **<Format>** option to delete unnecessary timestamp fields.

The banner allows you to superimpose an image from your workstation. The permissible file formats are; JPG, PNG, GIF, TIF, BMP and WEBP. MIS allows flexible placement, size and degree of transparency.

Maximum Time Accuracy provides frame by frame timing accuracy.

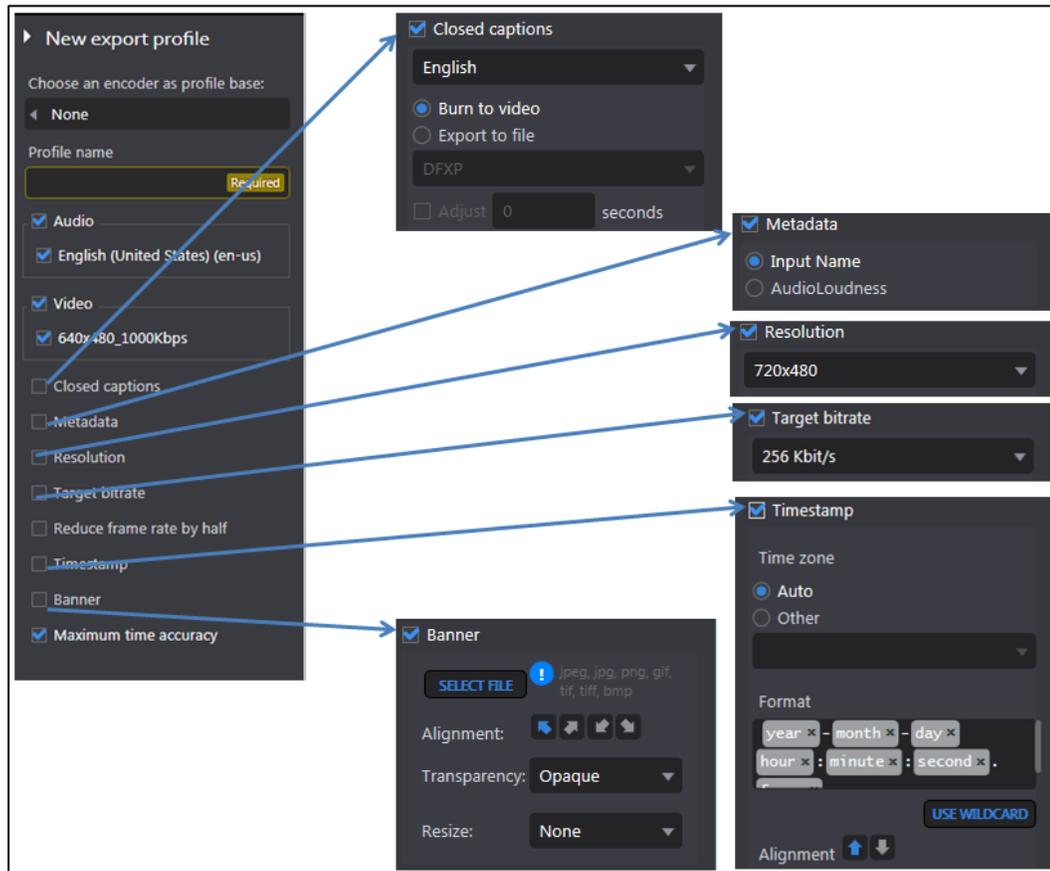


Figure: Export profile Pt 2

11.2.5.2 Destination

To create a new destination click the **<Add>** icon at the top of the page. To edit an existing destination, hover over the destination name and click the **<Edit>** icon at the far right.

If the new destination is similar to an existing one, hover over the existing destination and press the **<Duplicate>** icon located at the far right of the destination field. The system will duplicate the destination and add a numeric identifier (1) for the first duplicate, (2) for second and so on. Then use the **<Edit>** function to make changes.

To delete a destination, hover over the name and press the, **<Delete>** icon. If you want to remove multiple destinations, check the ones to delete and use the **<Delete>** icon in the middle of the page.

A list of available destinations appears in the right-side pane. Click on the desired destination. A new panel will open asking for additional information. In some cases, you will need to log into the remote site and manually fill out some of the text fields. The account name you used to log in will be automatically displayed to the right of the destination name. This allows you to create multiple destination profiles going to the same social media site.

The **Archive** is a special case, only a single **Archive** is permitted.

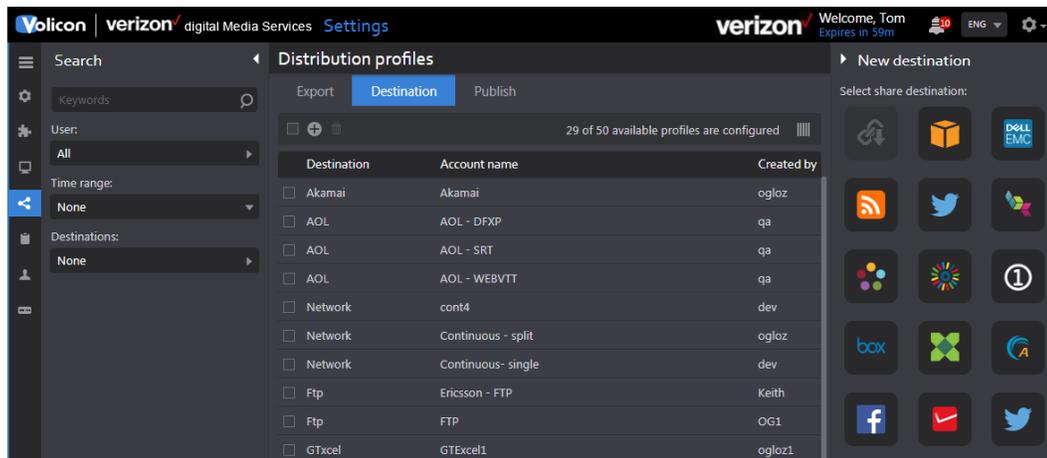


Figure: Settings distribution profiles

11.2.5.3 Publish

To create a new publish profile click the **<Add>** icon at the top of the page. To edit an existing profile, hover over the profile name and click the **<Edit>** icon at the far right. Once this is complete, it is possible to publish video clips to multiple destinations simultaneously.

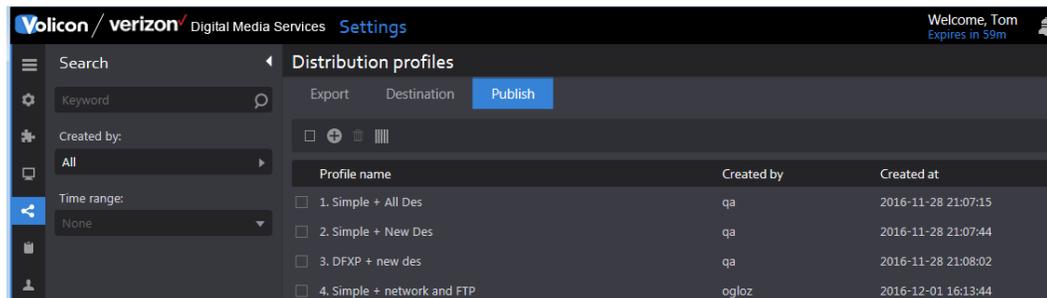


Figure: Publish profile

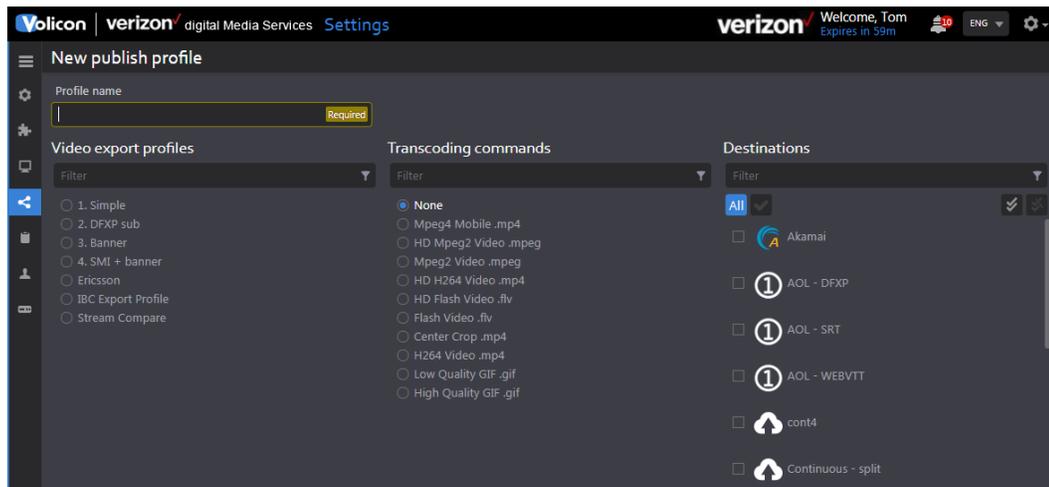


Figure: Create new publish profile

A new page pops up with four sections:

| | |
|------------------------------|---|
| ProfilenName | Type the new name or edit the old one |
| Video export profiles | Check one of the existing export profiles; the export profile specifies if output is video/audio or both and configures various video options; if none of the existing export profiles is appropriate, you need to create a new one |
| Transcoding commands | Select one of the transcoding options if you want to use a compression scheme rather than the one specified in the export profile |
| Destination | Select one or more of the previously configured destination profiles |

Table: Publish profile

11.2.6 Roles

This section enables you to create named roles with specific access permissions. When an account is generated, it is associated with one or more role. The administrator account is unique in that it has permissions for all MIS features and cannot be deleted.

| | |
|---------------------|--|
| Applications | Applications grant the user access to; Share, Deliver, Review, Comply, and Monitor |
| | Clicking top-level function automatically selects all features for |

| | |
|------------------------|---|
| | that function. If you want to restrict access to a subset, uncheck specific features |
| Admin pages | Sets access to admin tools: Settings, Configuration, System health and Analytics |
| Permissions | This defines how the role is able to utilize MIS features |
| Channels | This sets which channels are accessible by role. Each entry consists of one or more channel set |
| Users | This displays all user accounts associated with the role |
| Other Settings | This sets session timeout and maximum number of concurrent videos |
| Publish profile | This selects the social media sites each role is able to export |

Table: Roles

To add a new role click the **<Add>** icon at the top of the dashboard. This opens an empty role. Since roles can be complex, and often times there are only small differences between roles, use the duplicate feature to simplify the task. Select a role that is as similar to the new one as possible, and then click the **<Copy>** icon. Type in the new name and click **<OK>**. Then access the new role and make any necessary changes.

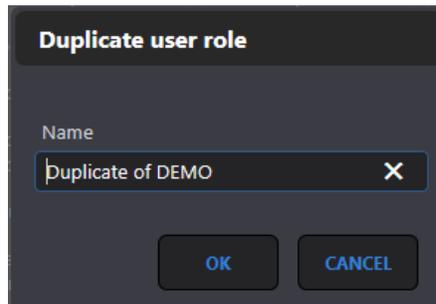


Figure: Creating a duplicate role

11.2.6.1 Applications

For the remainder of this section we will be using the Users’ role as an example. The same rules apply to any role.

Example: looking at the Users’ role, we note it allows access to all MIS features except Deliver and the admin screens.



Figure: Settings user roles

11.2.6.2 Admin pages

This section displays tools normally limited to administrators, however they may be associated with any roll.

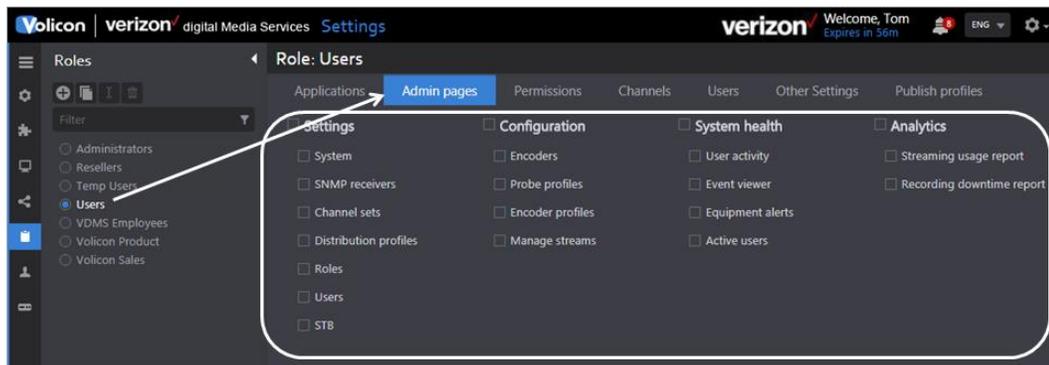


Figure: Settings admin pages

11.2.6.3 Permissions

This section defines in great granularity how each **Role** is able utilize MIS.

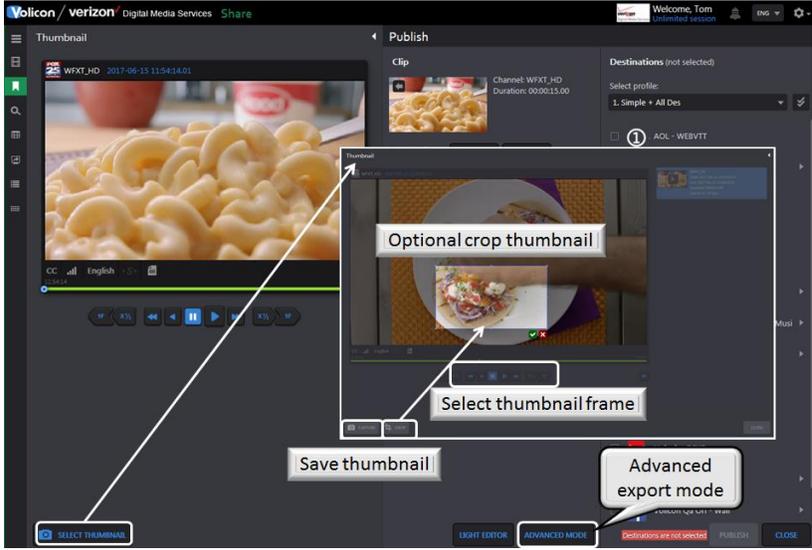
| | |
|---|--|
| Clips | Determines if user is able to create, edit and delete Bookmarks |
| Programs | Determines if user is able to create, edit and delete programs |
| Mobile | Normally MIS is accessed from fixed workstation; allows access from smart phones |
| Multiview | If checked the roll is able to administer Multiview |
| Advanced share | Turns on the <Advanced options> icon allowing user to override predefined export profile  |
| Management console administrator | Users with this permission are able to control other user's jobs from the management console page: start/restate or delete |
| Share light editor | Enable limited bookmark video editing using the light editor |
| Export | Specify if role is allowed to export and whether or not programs ingested via transport stream can be exported |
| Player | Enable media player to access programs in long term storage |

Table: Roles - permissions

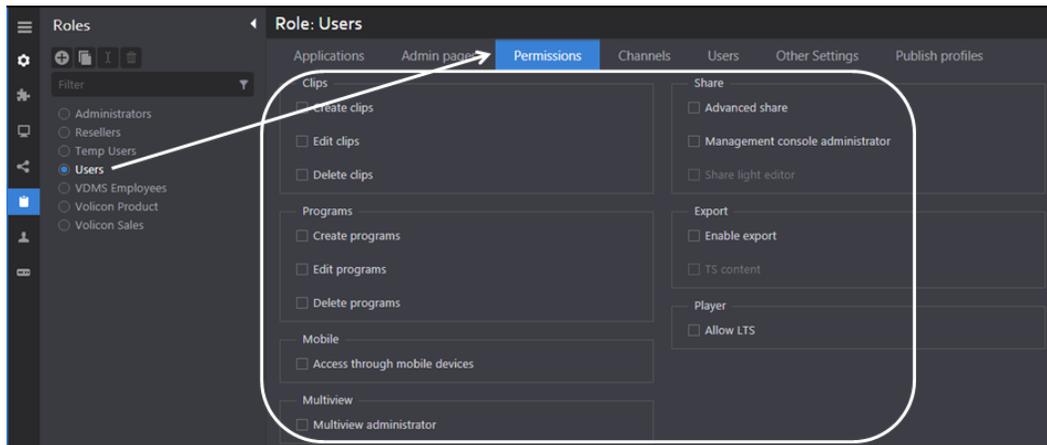


Figure: Roles - permissions

11.2.6.4 Channels

This section defines the channel sets each role is able to access. To add a channel set to a role click the **<Add new channel set>** icon at the top of the page. A list of previously defined channel sets is displayed on the right of the page. Using channel sets allows you to logically group associated channels regardless of how and where they are ingested into MIS.



Expand/Collapse all: Toggle between displaying channel set name vs all channels within as set



Add new channel set: Create new channel set



Customize columns: use this feature to select which columns to display

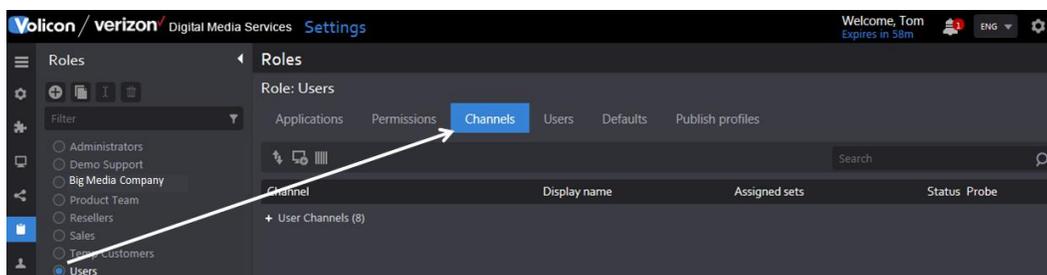


Figure: Roles - channels

11.2.6.5 Users

This page lists all users assigned to the specified role. An account may be assigned to more than one role. To add an account to a role click the **<Add new user>** icon. A list of all account names appear in the right-hand pane. If the list is lengthy use the **<Filter>** option at the top to limit the display to matching search criteria.

To remove an account from the role hover over the account name. The name is highlighted in blue. Click on the **<Delete>** icon at the right to remove the account.

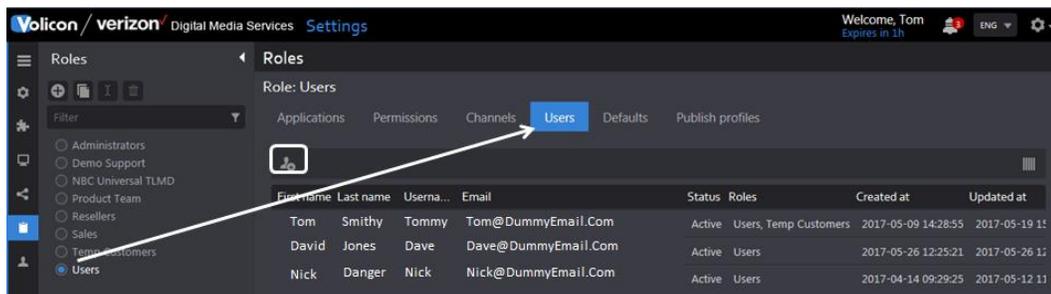


Figure: Roles – users assigned

11.2.6.6 Other settings

This section specifies common behavior for the role.

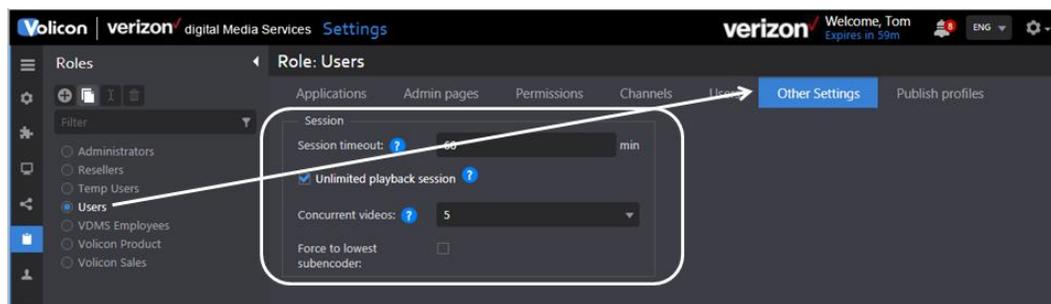


Figure: Roles – other settings

| | |
|-----------------------------------|---|
| Session timeout | Idle timeout; user will be automatically logged out of the system |
| Unlimited playback session | Inhibits automatic inactivity timeout when playing a video |
| Concurrent | Maximum number of simultaneous videos a role is able to |

| | |
|------------------------------------|--|
| videos | play; use the dropdown to set the value |
| Force to lowest sub-encoder | If checked, and program is ingested in multiple resolutions/bit rates, then lowest resolution/bit rate is used |

Table: Roles – other settings

11.2.6.7 Publish profiles

This section assigns a distribution profile to the role. This allows accounts assigned to the role to export clips to all destinations defined in the distribution profile. Use the **<Add>** icon to add additional distribution profiles to the role or hover over the profile name to edit. Hover over and click **<Delete>** to remove it from the role.

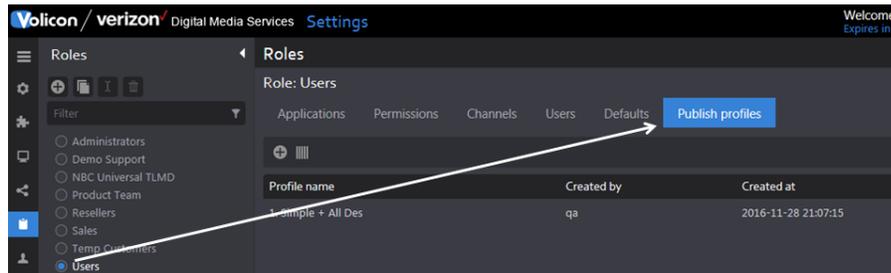


Figure: Roles - publish profiles

11.2.7 Users

This page displays all user accounts. If your system has a large number of users, use the dashboard search feature to restrict how many accounts are displayed. The admin account is built into MIS and cannot be deleted.

Accounts are in either active or inactive status. Active accounts are able to log in, whereas inactive accounts are not. This allows the administrator to temporarily restrict access without having to delete the account.



Add new user: add new user to system



Export list: create spreadsheet of accounts



Customize columns: use this feature to select which columns to display

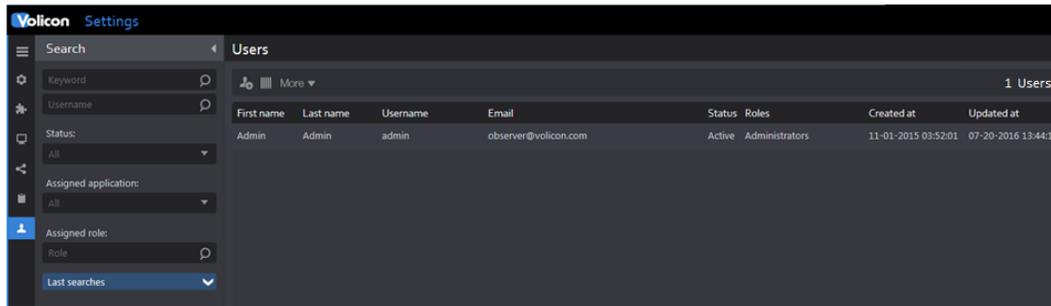


Figure: Settings users

11.2.7.1 Adding/modifying account

Click **<Add new user>** to create a new account or hover over an existing account and press the **<Edit>** icon at the extreme right of the entry. The edit user panel at the right of the page lets you modify account features. The **<Roles>** dropdown section (toward the bottom of the page) allows you to specify which aspects of MIS the account is able to access.

▶ Add user

User name: Required

Status: Active ▼

Password: Required

Confirm password: Required

First name: Required

Last name: Required

Email: Required

Roles: None ▼

Figure: Add new user

11.2.7.2 Change password

From time to time it may be necessary for the MIS administrator to change a user’s password. Use the **<Edit>** feature and enter the new password twice.

11.2.7.3 Suspend account

If you need to temporarily prevent a user from accessing MIS, use the **<Edit>** feature to change Status from Active to Inactive. This prevents the user from logging into the system but does not delete the account.

11.2.7.4 Delete account

To delete an account hover over the name and click on the **<Trash>** icon at the extreme right of the account name.

11.2.7.5 Export user account list

MIS allows you to create an Excel spreadsheet of user accounts. Click the  **<Export>** icon at the top of the page. A status message at the top of the screen indicates the file is being created and when it is ready to export. When the file is ready, a dialog box opens allowing you to view it or save to your workstation.

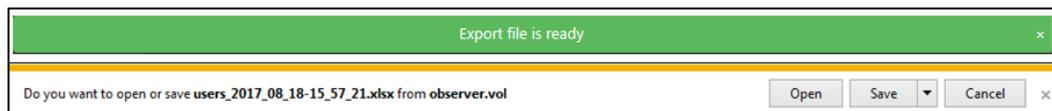


Figure: Export account list

11.2.8 Set-top box

This tab is used to define programs available when using the Set Top Box remote control feature. In general this feature set will be configured by Volicon support.

11.2.8.1 Services

Services are a list of programs available on the STB. To add a new service select **<Services>**, tab and click on the **<Add>** icon. This opens a new pane to the right of the screen. Enter the desired **Name** of the new service and whether is linear or scripted. **Linear** mode simply selects a particular STB channel. **Scripted** mode runs a script under control of MIS to send commands to the STB.

To edit an existing service hover over the desired service and click the **<Edit>** icon.

To delete a service hover over the service and click the **<Trashcan>** icon.

-  **Check all:** toggle between select and deselect of all services
-  **Add new service:** Create a new STB service
-  **Delete service:** delete any selected services
-  **Export all services:** create spreadsheet of STB services
-  **Delete all:** delete all selected services
-  **Customize columns:** use this feature to select which columns to display



Figure: Creating a new STB Service

11.2.8.2 Bouquets

Bouquets are collection of services. This allows you to refer to a group of services rather than an individual service. To create a new **Bouquet** manually click the **<Add new bouquet>** icon. This opens a new pane to the right of the screen. Enter the desired name of the Bouquet and descriptive information. Use the **Services** pulldown to associate previously defined services with the Bouquet.

-  **Check all:** toggle between select and deselect of all bouquets
-  **Add new bouquet:** Create a new STB bouquet
-  **Add new bouquet from EPG:** Create bouquet from EPG

-  **Delete bouquet:** delete any selected bouquets
-  **Add service to all bouquets:** add a new service (channel) to all bouquets
-  **Change service dial number on all bouquets:** change service dial number for all bouquets
-  **Delete service from all bouquets:** delete service from all bouquets
-  **Delete all:** delete all bouquets
-  **Customize columns:** use this feature to select which columns to display

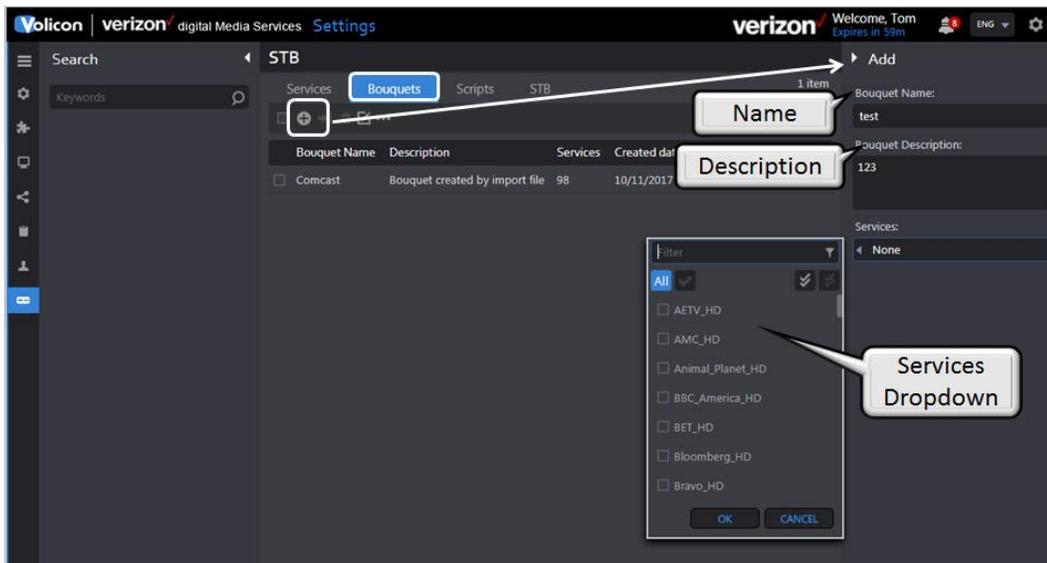


Figure: Create STB Bouquet manually

MIS allows you to use the electronic program guide (EPG) to create a Bouquet.

Click the  **<Add new Bouquet from EPG>** icon. Enter the name and optional descriptive text for the Bouquet. Specify: Country, Postcode and Lineup (delivery method) to select the list of available services. The services list defaults to all services. Uncheck services to remove them from the Bouquet.

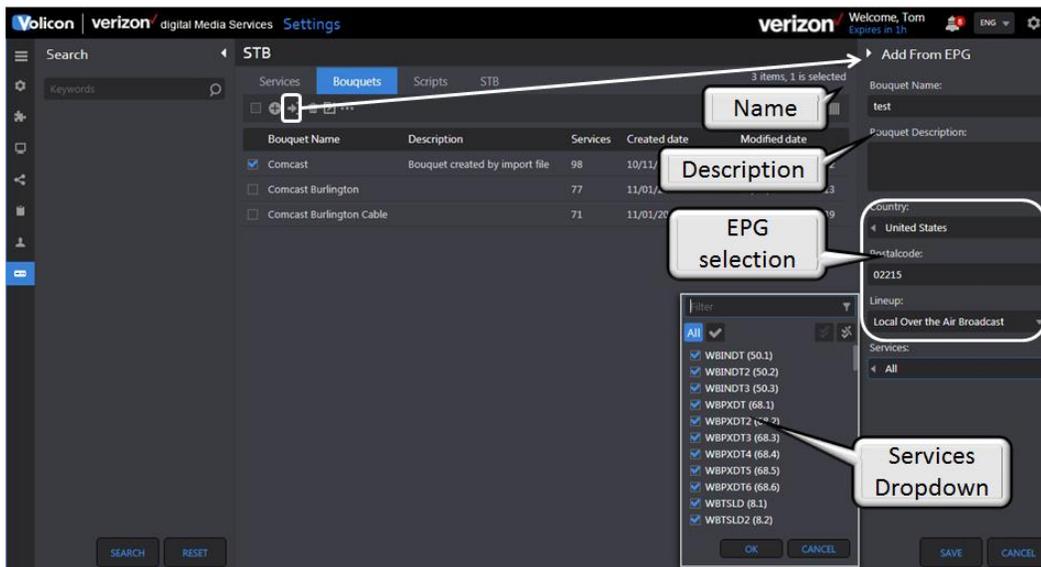


Figure: Create STB bouquet from EPG

Use **<Add service to all bouquets>** to add a new service (channel) to all bouquets. Use **<Change service dial number on all bouquets>** to change the service (channel) dial number to all bouquets. Use the **<Delete service to all bouquets>** to remove a service (channel) to all bouquets. These three features make changes to all bouquets whether or not they are selected.

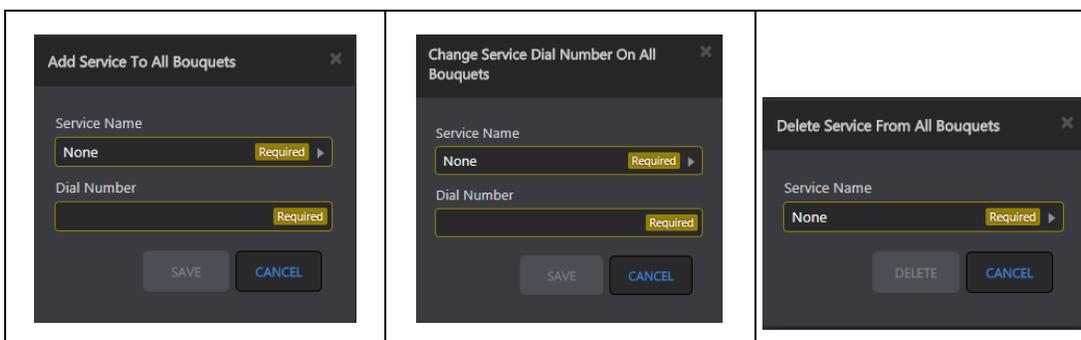


Figure: Changing service in all bouquets

To edit a Bouquet hover over the name and click the **<Edit>** icon.

To delete a Bouquet hover over the name and click the **<Trashcan>** icon.

To export or import Bouquet services hover over the name and select the appropriate icon. This will export or import a spreadsheet on your computer.

11.2.8.3 Scripts

Scripting is used to send precanned messages to the STB. To create a new **Script** select **<Scripts>**, turns blue, and click on the **<Add>** icon. This opens a new pane to the right of the screen. Enter the desired name of the **Script** and descriptive information. In the **Script** box type the script commands.

-  **Check all:** toggle between select and deselect of all scripts
-  **Add new script:** Create a new STB script
-  **Delete script:** delete any selected scripts
-  **Delete all:** delete all scripts
-  **Customize columns:** use this feature to select which columns to display

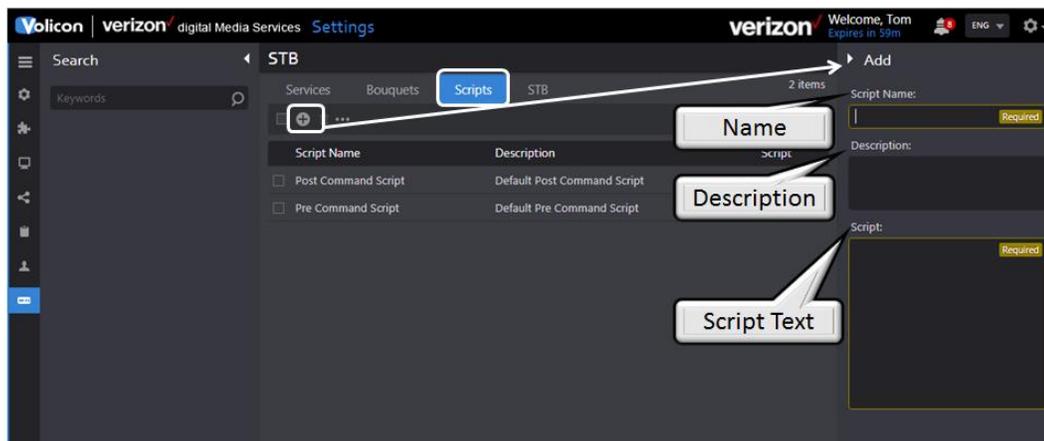


Figure: Creating a new STB Script

11.2.8.4 Lineups

Lineups represent a set of services that an encoder should scan. Lineups consist of services and are associated to a bouquet, although services across bouquets can be added. Once an encoder is configured with a lineup, it will start round-robin scanning each service, executing it's configured script. Within a lineup, users can override the default service schedule or script.

-  **Check all:** toggle between select and deselect of all lineups
-  **Add new lineup:** Create a new STB lineup

-  **Import:** Import lineup
-  **Duplicate:** create a duplicate lineup
-  **Delete:** delete selected lineups
-  **Customize columns:** use this feature to select which columns to display

11.2.8.5 STB

STB associates an image of the physical remote control and defines hot zones to allow user to manually control the STB. To create a new **STB** select **<STB>**, turns blue, and click on the **<Add>** icon. This opens a new pane to the right of the screen. Enter the STB name. Upload Remote control image mapping file and IR command file. If desired enter an initial and end command sequence to be pre-pended and post-pended to commands.

-  **Check all:** toggle between select and deselect of all STB
-  **Add new STB:** Create a new STB
-  **Import:** Import lineup
-  **Delete:** delete selected STBs
-  **Customize columns:** use this feature to select which columns to display

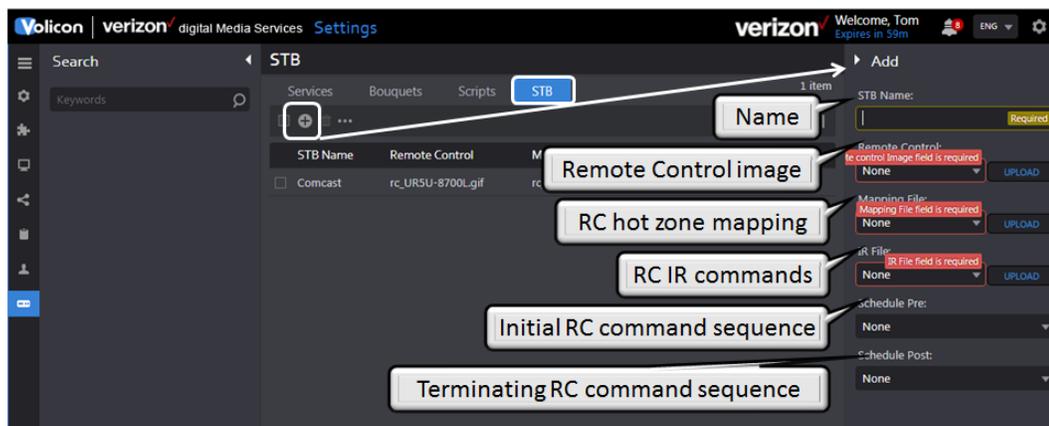


Figure: Creating a STB Remote Control

11.3 Preferences

This section allows you to customize the way MIS displays information for your account.

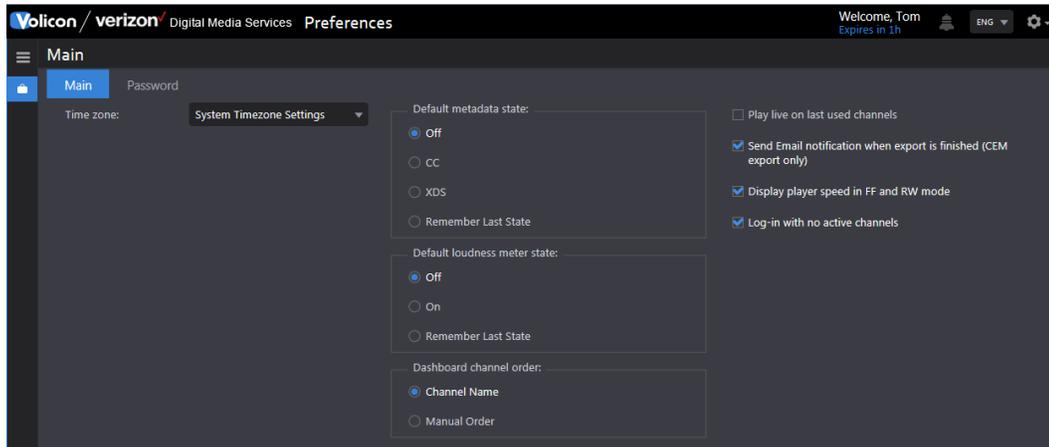


Figure: Preferences

11.3.1 Home

Takes you back to the MIS home page.

11.3.2 Main

If you make changes to any of the main sections press the **SAVE CHANGES** **<Save>** icon at the bottom of the page. If MIS is able to successfully save your changes, it displays a banner at the top of the page.



Figure: Preferences successfully updated

11.3.2.1 Time zone

MIS defaults to the same time zone as your computer. If you want to override that setting and select a different time zone, use the time zone dropdown.

11.3.2.2 Default states

The default metadata state and default loudness meter state controls viewer behavior. For example, if CC (closed captioning) is selected, and the channel is closed captioned, it will be displayed by default whenever the channel is opened. To override the default behaviors, turn off CC.

The Dashboard Channel Order allows you to customize how channels are displayed (future feature not yet implemented).

11.3.2.3 Other

When “Play live on last used channels” is checked, the channel viewer automatically plays the channel in real-time.

When “Send email notification when export is finished (CEM export only” is checked MIS sends an email to the address associated with your login.

When “Display player seed in FF and RW mode” the media player add speed display in fast forward and rewind.

When “Log-in with no active channels” is checked previously selected channels are deselected at each login.

11.3.3 Password

MIS allows users to change their own passwords.

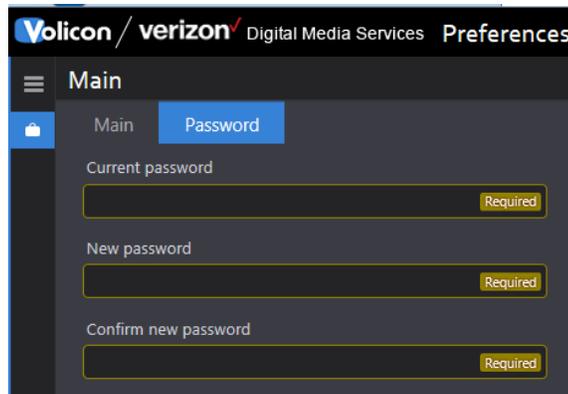


Figure: Preferences password

The system requires the new password to be entered twice. If they do not match when you attempt to update your password, MIS displays an error message, and your old password continues to be in force.

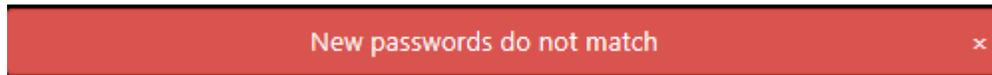


Figure: New password does not match

11.4 Analytics

This section allows you to view and generate reports based on historical system operational data.

11.4.1 Home

Takes you back to the MIS home page.

11.4.2 Streaming usage report

This report documents how much time each user has spent viewing streaming data and how much data they have consumed. If desired the report can be exported to your workstation as an Excel spreadsheet.



Download aggregated report: save report to a spreadsheet

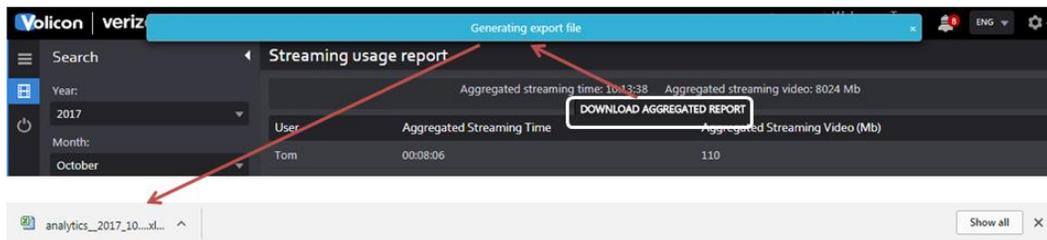


Figure: Exporting streaming usage report

Aggregated streaming time: 10:13:38 Aggregated streaming video: 8024 Mb

[DOWNLOAD AGGREGATED REPORT](#)

| User | Aggregated Streaming Time | Aggregated Streaming Video (Mb) |
|--------------|---------------------------|---------------------------------|
| Tom | 00:08:06 | 110 |
| admin | 00:46:02 | 950 |
| Aimee | 00:01:19 | 16 |
| Anant | 01:45:00 | 1514 |
| Jeff | 00:03:12 | 61 |
| PatrickP | 00:05:49 | 107 |
| Eyal | 00:09:32 | 133 |
| c.piacentini | 00:01:26 | 17 |
| Ari | 00:07:45 | 302 |
| Jim | 05:26:55 | 3788 |
| Ed | 00:04:34 | 21 |
| Takahashi | 01:02:52 | 688 |

Figure: Streaming usage report

11.4.3 Recording downtime report

This report documents when an encoder fails to properly record a program. The search function allows you to tailor the report to specific dates and times and encoders. As with other reports it can be exported as a spreadsheet to your workstation by pressing the  <Export> icon.

31 items

| Encoder | Monthly Downtime | Monthly % UpTime |
|----------------|------------------|------------------|
| ABC - WCVB | 00:15:18.00 | 99.9437 |
| ABC - WCVB TS | 232:42:58.17 | 48.6247 |
| ABC - WGBH SDI | 00:21:00.22 | 99.8053 |
| CBS - WBZ | 00:15:02.21 | 99.9446 |
| CBS - WBZ SDI | 00:27:53.13 | 99.8974 |
| CBS - WBZ TS | 09:11:33.00 | 97.9700 |
| CNN - SCTE35 | 10:45:12.50 | 97.9620 |

Figure: Recording downtime report

11.5 System health

System Health is composed of four sections: Users Activity, Event Viewer, Equipment Alerts, and Active Users. Each of the sections has provisions to export the data to an Excel spreadsheet.

11.5.1 Home

Takes you back to the MIS home page.

11.5.2 User activity

This page displays all activity initiated by users: like logging in and out and creating various clips. For purposes of this page the System is considered a user, so System initiated events are also displayed on this page.

 **Customize columns:** use this feature to select which columns to display

 **Export list:** exports activity list to an spreadsheet

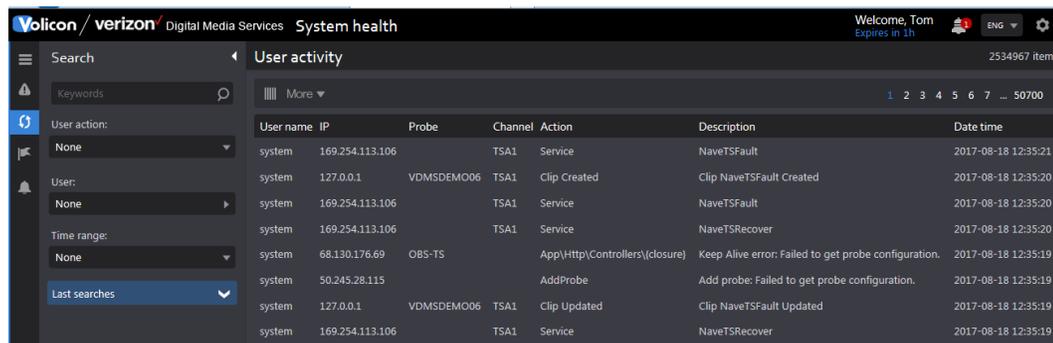


Figure: User activity

11.5.3 Event viewer

This page displays internal system messages between the various MIS subsystems.

 **Customize columns:** use this feature to select which columns to display

 **Export list:** exports activity list to an spreadsheet

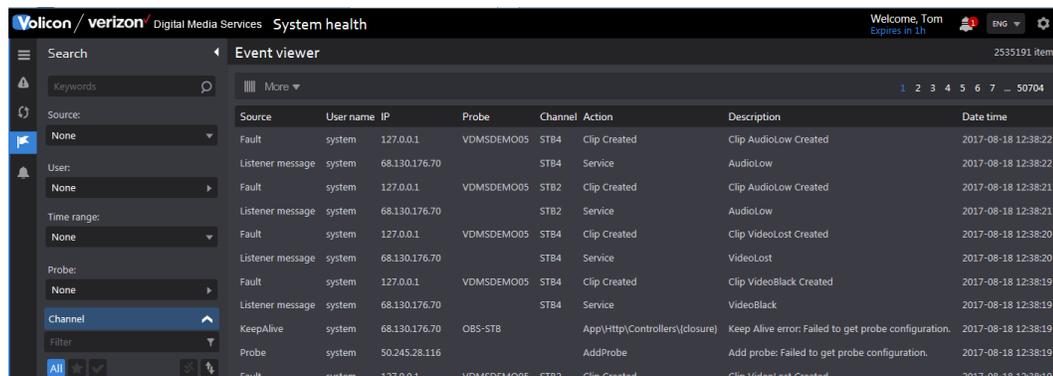


Figure: Event viewer

11.5.4 Equipment alerts

An equipment alert reports anomalous system behavior. Use the search function to restrict the display to specific: alert types, date/time or channel.

Use the **<Enable alert>** and **<Disable alert>** icons at the top of the page to control the alert function.

You can manually create an alert by clicking the **<Add Alert>** icon at the top of the page. The section at the upper left specified one or more email addresses and alert name and subject header. The system defaults to the email of the alert creator but more can be added if desired.

Under that is an advanced section that allows you to inhibit alerts from specific date and times.

The center section lets you select failure modes and recovery events.

Lastly the channel list at the right lets you tailor the alert to specific channels.



Check all: Toggle between select and deselect of all alerts



Create new alert: Create new alert event



Remove selected alert: delete selected alerts



Enable alert: enable selected alert(s)



Disable alert: disable selected alert(s)



Customize columns: use this feature to select which columns to display

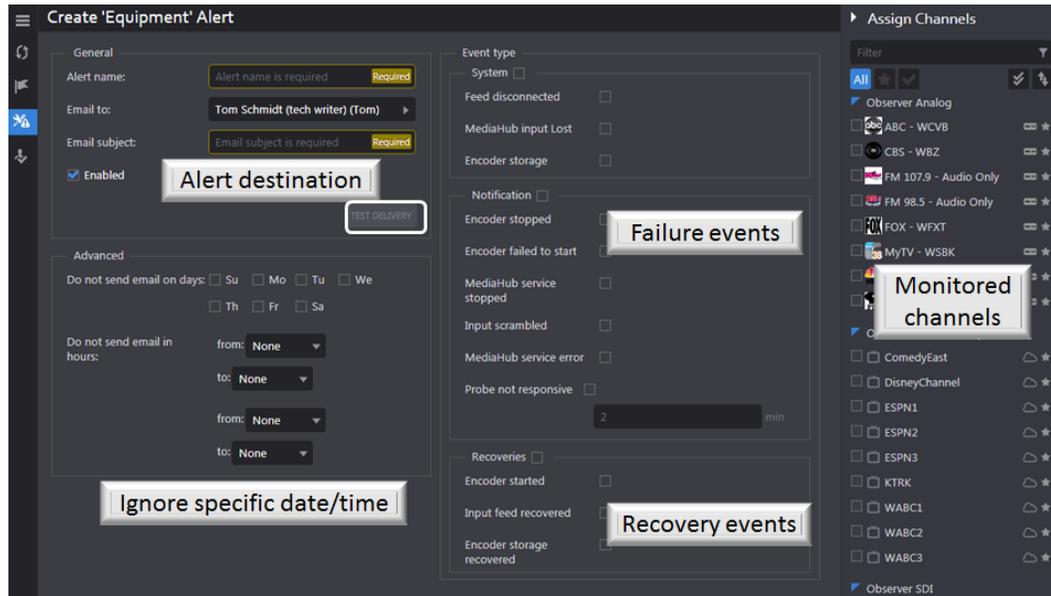


Figure: Creating a new equipment alert

11.5.5 Active Users

This page displays users currently logged on the system. To manually log a user out, hover over the account (account is highlighted the account in blue). At the extreme right click the **<Logout>** icon. The user will need to log back in. To prevent the user from accessing MIS go to **<Settings> <Users>** highlight the account and click on **<Edit>**. Change the account status from active to inactive.



Customize columns: use this feature to select which columns to display

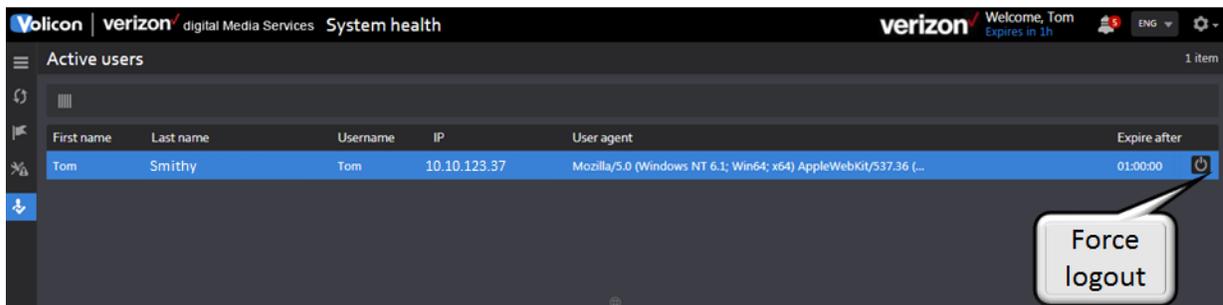


Figure: Active users

11.6 Configuration: probes and encoders

This section configures individual encoders and the probe servers they are attached to.

- **Home:** takes you back to the main page
- **Encoders:** Configure probes and encoders
- **Probe profiles:** Create common profile shared by multiple probe servers
- **Encoder profiles:** Create common profile shared by multiple encoders
- **Manage streams:**

11.6.1 Home

Takes you back to the MIS home page.

11.6.2 Encoders

The probe configuration page contains two sections. The left-hand pane is the dashboard. It allows you to select the desired group, or **<All>** groups. The right-hand pane provides a hierarchal view of the group, probes and individual encoders. In the dashboard to the right of each group is a number indicating how many probes and encoders are in the group.

At the top of the dashboard there are three icons that allow you to  create a new group,  rename a group and  delete a group. Below that is a text search bar in case there are a large number of groups.

Under the probe section click the **<Encoder>** icon to display how many encoders are configured in each probe server. Encoders are hardware capture cards capable of ingesting one or more streams (channels). Select **<Media Hubs>** to display how many media hubs are configured in each probe. A media hub is software running on the probe responsible for transport stream ingest and streaming stored h.264 video to end users. **<TS inputs>** lists transport stream ingest card sources in each probe server.



Add probe: Volicon support is responsible for adding additional probes. Use this icon to assign an IP address to a new probe sever.

 **Sync all probes in group:** syncs all displayed probe groups with the current configuration.

 **Expand/collapse all:** toggles display between just probes and probes with associated encoders.

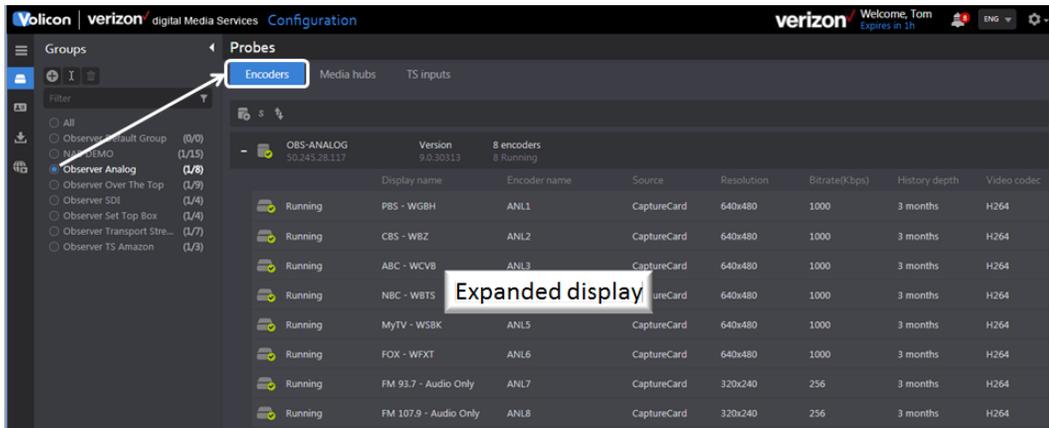


Figure: Expanded encoder display

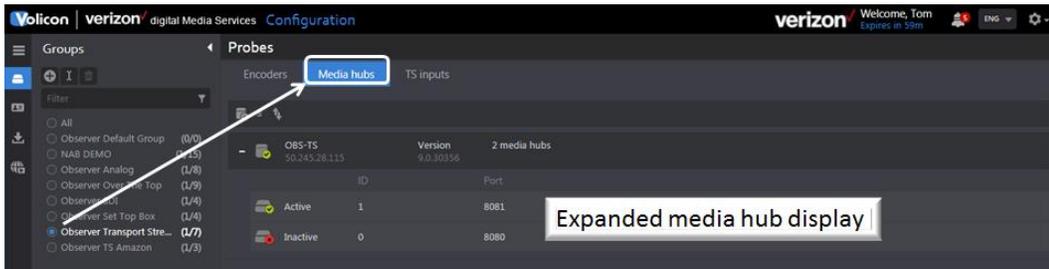


Figure: Expanded media hub display

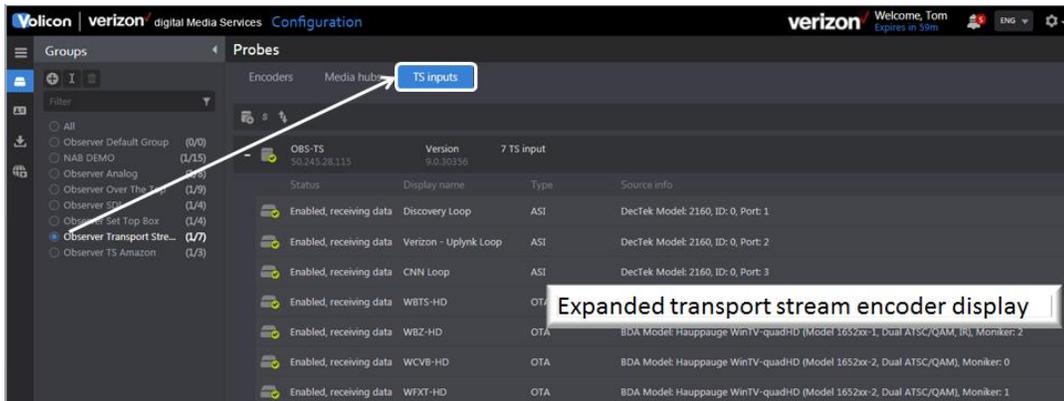


Figure: Expanded TS encoder display

Probe status indicates if it is inaccessible,  or  running and accessible.

The status of each encoder is displayed in text to the right of the name next to a color-coded icon (**green** checkmark – all is well, **red** X stopped).

Hovering anywhere on the probe line turns the background **blue** and displays five icons in the upper-right corner: **<Assign profile>**, **<Create & assign profile>**, **<Sync>**, **<Edit>** and **<Delete>**.

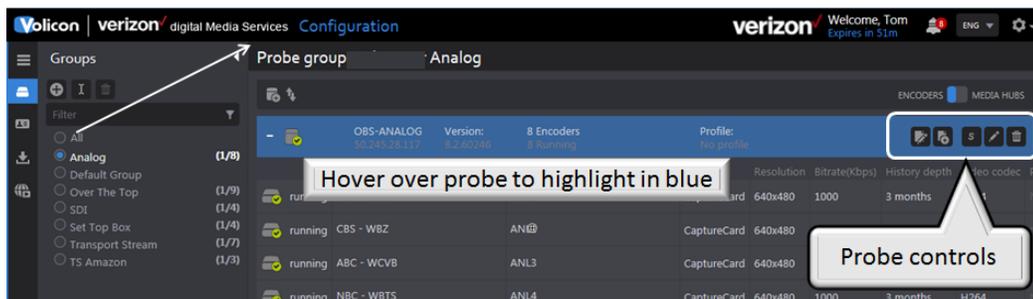


Figure: Probe controls



Assign profile: is a planned future feature.



Create and Assign Profile: is a planned future feature.



Sync: synchronizes the probe. A pop-up asks if you want to sync with **<Current>** or **<Previous>**. Selecting **<Current>** updates the probe with the changes you just made to its configuration. Selecting **<Previous>** allows you to revert to the old probe configuration. This comes in handy if the changes you made did not yield the desired results.

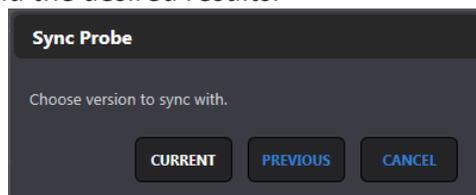


Figure: Probe sync



Edit probe: is the same as clicking on the probe name and opens the probe edit window.



Delete: Removes the entire probe. This only applies to empty groups when no probes have been assigned.

11.6.2.1 Create a probe group

The top of the “Groups” dashboard has three icons: **<Add>**, **<Rename>** and **<Delete>**. Selecting **<Add>** allows you to create and name an empty group. Once created, the next step is to assign one or more probe servers to the group.

To create a new probe group, press the **<Add>** icon to open the “Create probe group” dialog box. Type the desired name and press **<OK>**. MIS will display confirmation at the top of the page once the probe group has been saved.

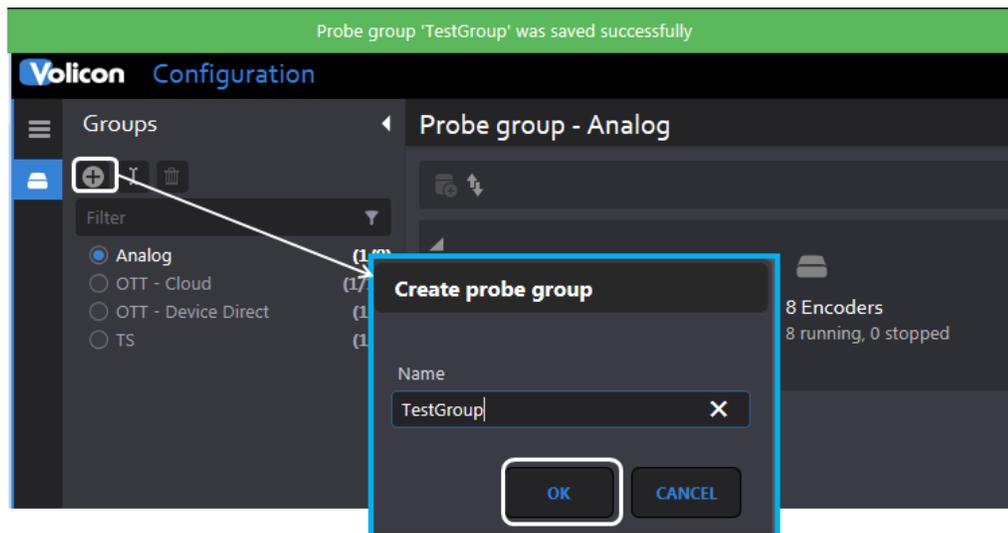


Figure: Create a probe group

To add probes to a probe group, select the desired group (in this example, the new TestGroup we just created) and press the **<Add>** icon at the top of the page. Enter the IP address of the probe in the right hand pane and press **<Save>** at the bottom of the page. Do this for each probe you want to add to the probe group.

The **profile** entry feature is intended to simplify management of multiple probes.

Note: A probe may only be associated with a single probe group.

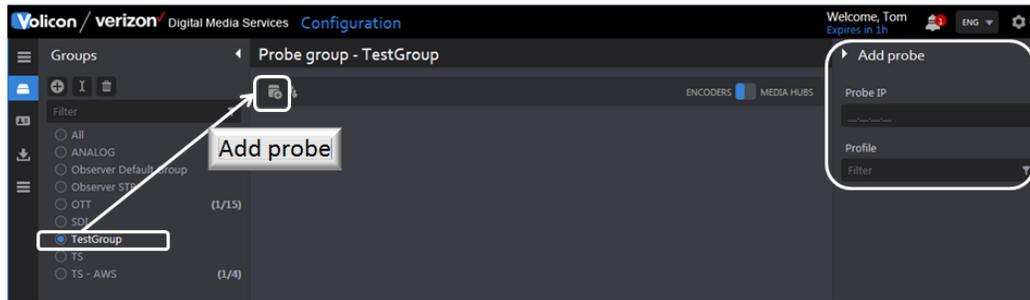


Figure: Assign probe to a probe group

11.6.2.2 Rename a probe group

This lets you rename the group. Select the group you want to rename and press the **<Rename>** icon at the top of the dashboard. A new dialog box will appear. Enter the new name and press **<OK>** to effect the change, or **<Cancel>** to keep the existing name. A message indicating the change was completed will momentarily appear at the top of the screen.

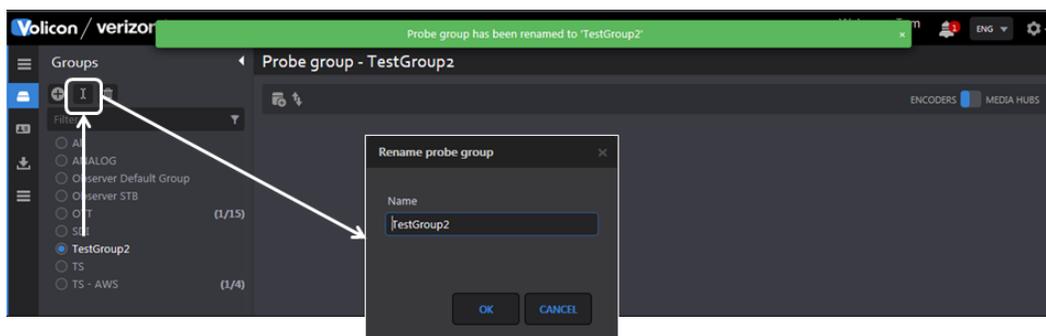


Figure: Rename a group

11.6.2.3 Delete a probe group

To remove a probe group select the group to be removed and press the **<Trashcan>** icon. A dialog box will open to confirm the action. Press **<Delete>** to remove the group. Note: this simply removes the Probe Group; it does not affect the physical Probe servers.

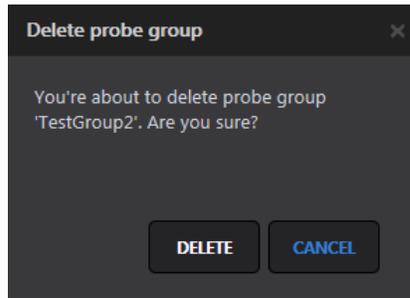


Figure: Delete probe group

11.6.2.4 Adding a probe

Volicon support is responsible for adding probes and encoders to the system and updating relevant license information.

11.6.2.5 Editing a probe

Hovering over the desired probe highlights it in blue. The probe **<Edit>** icon at the upper-right of the page opens with four options: **<Probe>**, **<Streamer>**, **<NTPSERVICE>** and **<License>**.

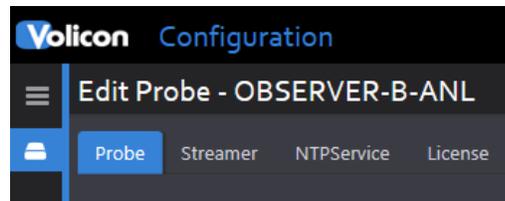


Figure: Edit probe

Edit probe: Probe section

The probe section is divided into three subsections: “General”, “Probe information” and “License Information”.

General: configurable probe fields

This subsection allows you to rename the probe, assign it to a different group and specify the LAN and WAN IP addresses of the probe server. Use the probe group dropdown to assign the probe to a different group. If you want to assign the probe to a new group, you must first create an empty group using the dashboard.

The probe name was created by Volicon Media Intelligence service support when the probe was initially created and cannot be changed by the customer. To change the probe name seen by users, edit the “Display name” entry.

The probe IP address is normally set statically, but dynamic addressing may be used via DHCP.

| Probe | Streamer | NTP Service | License |
|---------------|--------------------------|-------------|---------|
| General | | | |
| Name: | OBS-ANALOG | | |
| Display name: | OBS-ANALOG | | |
| Probe group: | Observer Analog | | |
| LAN IP: | 50.245.28.117 | | |
| WAN IP: | 50.245.28.117 | | |
| Support DHCP: | <input type="checkbox"/> | | |

Figure: Configurable probe fields

Probe status information

Except for the <Indexer counter host> this is a read-only status display.

| Probe information | |
|------------------------|---------------------|
| Status: | true |
| Last keep alive: | 04/06/2018 11:27:31 |
| Listener status: | true |
| Is64BitOS: | true |
| Central server scheme: | HTTP |
| Central server host: | 52.207.171.105 |
| Central server port: | 80 |
| Indexer counter host: | 52.207.148.58 |
| Number of encoders: | 8 |
| Software version: | 9.0.30313 |

Figure: Accessible probe information display

If the probe is not accessible, the date of the last keep-alive is displayed.

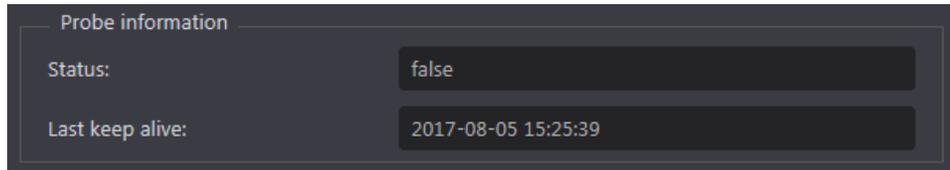


Figure: Inaccessible probe status

Level license info

The bottom-most section is also read-only and displays licensing information.

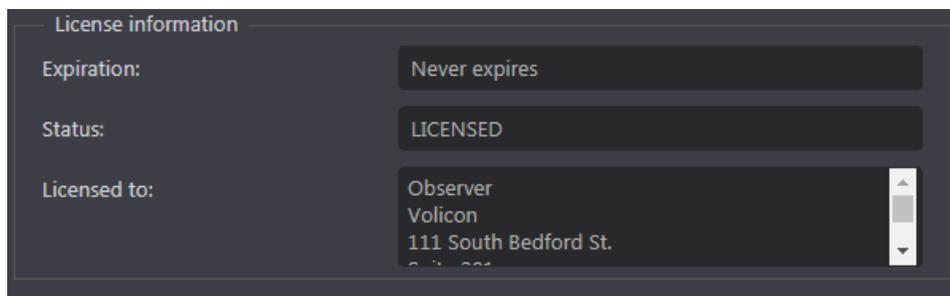


Figure: High-level license information

Edit probe: Streamer section

The “Steamer” section allows you to change the IP port values used to stream video. These should normally be left in their default settings.

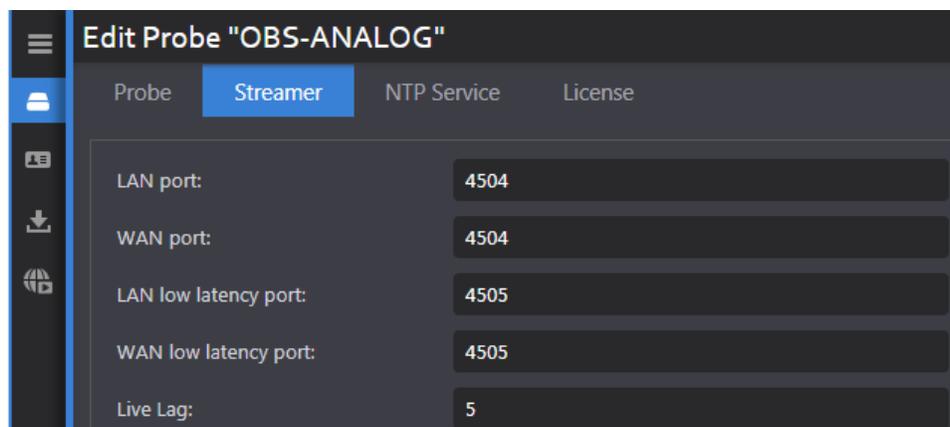


Figure: Streamer ports

Edit probe: NTP service section

Accurate timing is critical for successful MIS operation. Many aspects of MIS require millisecond timing accuracy. This section allows you to change which

network time protocol (NTP) time server MIS uses and how often it is polled. MIS defaults to the Microsoft NTP server defined in Windows.

In some cases, this setting is locked by Volicon Media Intelligence service. In that case settings are read only and  appear to the right of polling interval and server.

1. If you run an internal corporate time server, change the configuration to point to it.
2. Another option is to use a NTP server pool. This has the advantage of redundancy, in which you can select geographically nearby servers to minimize transit time latency. The NTP Pool Project is popular and can be found at <http://www.pool.ntp.org/en/>.
3. A third option is to use the Windows operating system as preconfigured, pointing to the public Microsoft NTP server: time.windows.com.

Poll interval: This setting is only active if the SpecialInterval flag is set.

Set the polling interval value to an integer; select the units from the **<Interval>** collection. Volicon Media Intelligence service recommends setting the polling interval to 3600 seconds.

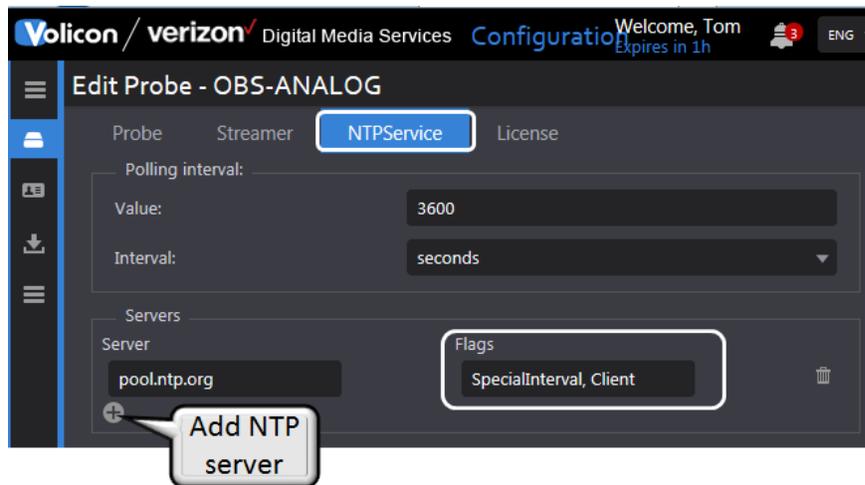


Figure: NTP time service

NTP server

Enter the URL or IP address of the desired NTP server. Add additional servers for redundancy. If the active server throws an error or does not respond, MIS will automatically switch to the next server on the list.

NTP flags

In general use the system defaults when adding NTP servers, unless instructed otherwise by Volicon Media Intelligence service support.

| | |
|--------------------------|---|
| SpecialInterval | Normally W32Time (Windows Time service) will poll the remote NTP server on a floating interval based on the quality of the time samples being returned. Setting the SpecialInterval flag changes this behavior to a fixed static interval; use the polling interval section to set the interval |
| UseAsFallbackOnly | Setting this flag tells the time service to try the other time servers before using this one |
| SymmatricActive | The host sends periodic messages regardless of the reachability state or stratum of its peer; the host announces its willingness to synchronize and be synchronized by the peer |
| Client | The host sends a request to the NTP server and expects a reply at some future time; the host announces its willingness to be synchronized by, but not to synchronize the peer. |

Table: NTP Flags

Once the server and flags are selected, use the **<Add Server>** button to add the new NTP server. To delete a server, use the **<Delete>** button.

Edit probe - license section

This read-only section displays each licensable feature and, where applicable, how many instances are allowed. Each feature consists of three entries: **allowed configured** and **running**.

- **Allowed** indicates the maximum quantity authorized by the license. In instances where the feature is selectable to be either enabled or disabled, its corresponding value will be displayed as **YES** or **NO**.
- **Configured** indicates how many instances are currently configured.
- **Running** is a real time display of the status of each feature.

| | |
|--------------------------------|------------------------------|
| AC-3 | Dolby AC-3 audio channels |
| AFD | Active Format Description |
| Closed caption indexing | Closed Captioning monitoring |

| | |
|-----------------------------|---|
| Detectors | Specifies how many encoder detectors (video/audio/metadata) are allowed to run |
| DolbyE | How many encoders can be configured with DolbyE |
| Extra audio streams | Number of additional audio streams that can be configured in addition to main audio |
| Full res channels | # Native uncompressed channels – counts to total limit |
| HD channels | # of HD channels – counts toward total channel limit |
| Interactive services | Scripting module for Interactive Services |
| Long term storage | LTS option not subject to automatic purge |
| Loudness measurement | Monitor audio to insure it complies with FCC guidelines |
| Nave | Nielsen Audio Video Encoder logging |
| OTT channels | # of over the top channels – counts toward total limit |
| TS channels | # of transport streams – counts toward total limit |
| Total channels | Absolute # of monitoring channels |

Table: License details

11.6.2.6 Creating and editing encoders

Hovering over an encoder highlights the encoder in blue and displays four icons:

<Assign profile>, <Create and assign profile>, <Sync> and <Edit>.

Assign profile: is a future feature not implemented.

Create and assign profile: is a future feature not implemented.

Sync: updates the encoder with the latest configuration. As with probes, you have an option to sync to changes or revert to the previous configuration.

Edit: accesses encoder specific configuration details.

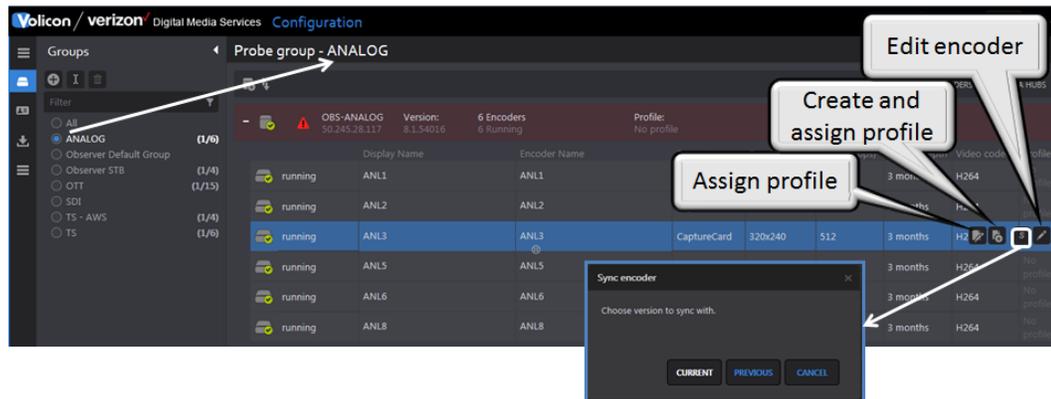


Figure: Syncing and editing an encoder

11.6.2.7 Adding an encoder

Volicon support is responsible for installing probes and encoders.

11.6.2.8 Encoder configuration

Press the <Edit> icon to access details about the encoder.

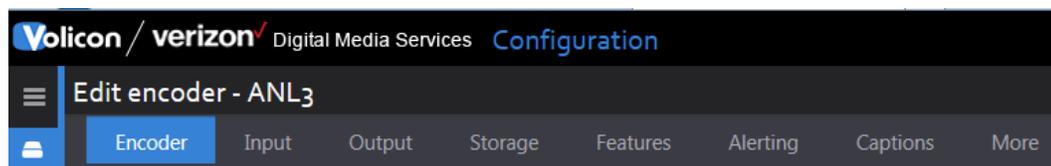


Figure: Encoder sections

Each encoder has eight configuration subsections.

- **Encoder:** configures specifics of name and display icons.
- **Input:** streaming ingest settings, this varies by stream type and how it is ingested by MIS.
- **Output:** configures specifics of how MIS stores each channel and sub-encoders.
- **Storage:** configures storage location and duration.
- **Features:** enable loudness, thumbnails and NAVE.
- **Alerting:** sets error detection thresholds.
- **Captions:** configure Closed Captions and subtitles.

- **More:** configures miscellaneous settings.

At the bottom of each page is a **<Save>** button. MIS will prompt you to save changes if you attempt to leave the section without saving changes.

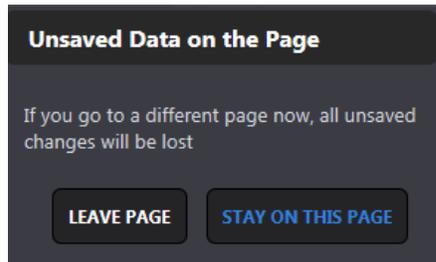


Figure: Unsaved change warning

Encoder - encoder section

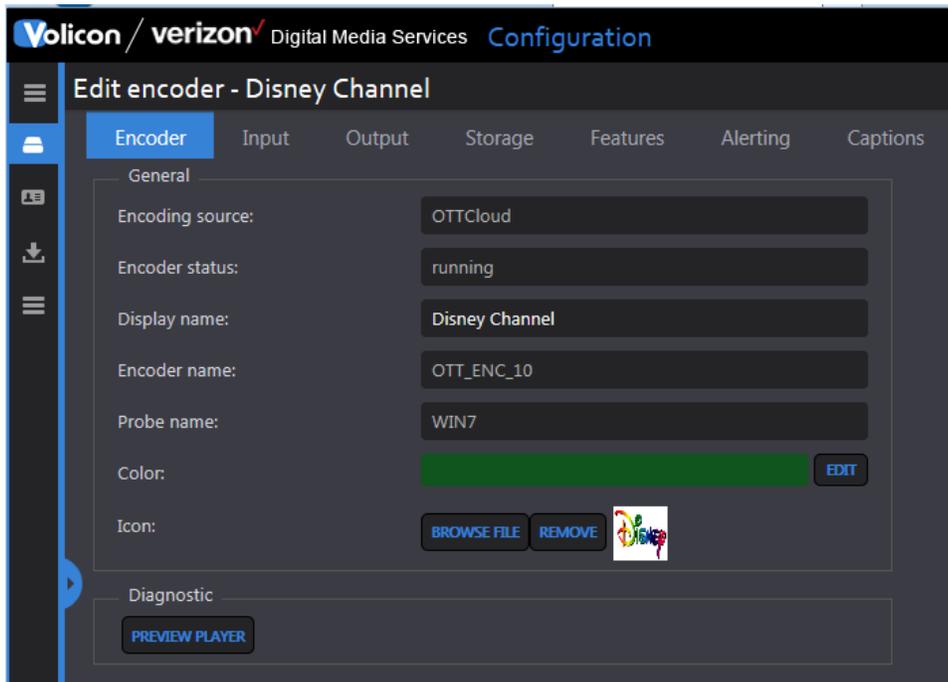


Figure: Encoder settings

| | |
|-----------------------|---|
| Encoder source | Indicates input type: video capture card, transport stream, OTT cloud, or device direct |
| Encoder status | Real time encoder status: running or stopped |
| Display name | Encoder name presented to users, used to create a user- |

| | |
|---------------------|--|
| | friendly name for the channel |
| Encoder name | Read-only name created by Volicon |
| Probe name | Probe server on which the encoder is installed |
| Color | Dropdown used to color code the player |
| Icon | Used to add an icon to channel name: <Browse File> icon used for workstation access to upload the desired icon; typically the channel logo, but may be any JPG or PNG image |
| Diagnostic | Opens media player for the channel |

Table: Encoder information

RPM settings

This section is configured when an encoder input is part of the Volicon Remote program monitor (RPM) suite or the encoder is equipped with the STB remote control feature.

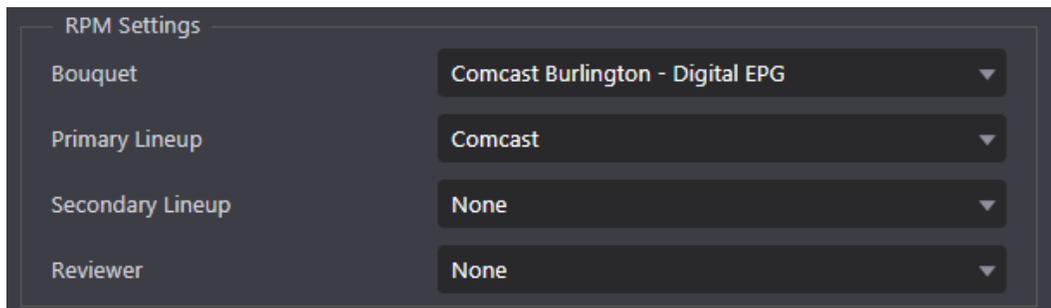


Figure: STB remote control feature

| | |
|-------------------------|---|
| Bouquet | A bouquet is a logical group of channels. If the encoder has been configured for STB remote control the dropdown associates a Bouquet with this STB. If more than one bouquet has been defined use caution when changing bouquets to insure the services are available on this STB. |
| Primary lineup | List of station dial numbers (services) associated with the input |
| Secondary lineup | Alternate station list |

| | |
|-----------------|--|
| Reviewer | |
|-----------------|--|

A Reviewer is used to attribute a fault to the originating STB or to a broader service issue. When an Encoder is assigned a Reviewer (of another Encoder on the same Probe with the same Bouquet), the Reviewer will verify if the fault is repeatable on a separate STB. If the fault is repeatable, then the fault will be reported, if not, then the fault will be squelched.

Table: RPM – STB configuration section

Encoder – input section

This section is dependent on how the program is ingested by the MIS. Currently, there are four types of video acquisition.

- **Video Input:** capture card used to interface MIS to program source, typically a set-top box
- **Transport Stream (TS):** IP based direct program access
- **Cloud:** IP based, typically via CDN streaming
- **Device direct:** tethered cell phone acquisition

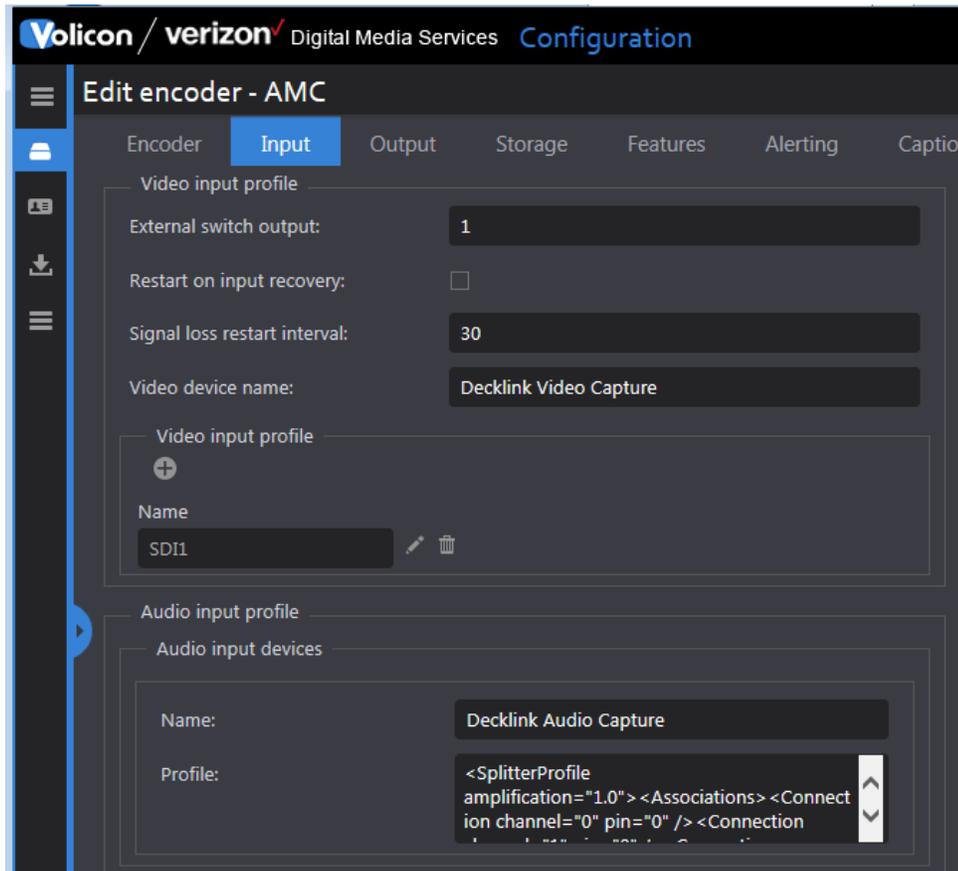


Figure: Video and audio input profile (capture card and transport stream)

| | |
|-------------------------------------|--|
| External switch output | If external A/V switcher used, entry specifies which switcher output port feeds associated encoder input, assuming the switcher has more than one output port set value to 1 if external input switch not used |
| Restart on input recovery | Automatically restarts encoder when its input is recovered; relevant for Blackmagic cards only, to avoid time stamp issues |
| Signal loss restart interval | During periods of no input, encoder automatically restarts at specified interval, to avoid time stamp issues |
| Video device name | Text string with the card name and channel ID if the card supports multiple channels |
| Name | Required text field |

| | |
|-----------------------|---|
| Connector type | Dropdown to select video connector |
| Format | Dropdown to select type: i.e., PAL-B 1080i, frame rate and resolution |
| Add format | Used to open dialog to create another format |

Table: Video input (capture card and transport stream)

| | |
|----------------|---|
| Name | Card name and additional information about audio input type |
| Profile | Audio profile in XML format |

Table: Audio input (capture card & transport stream)

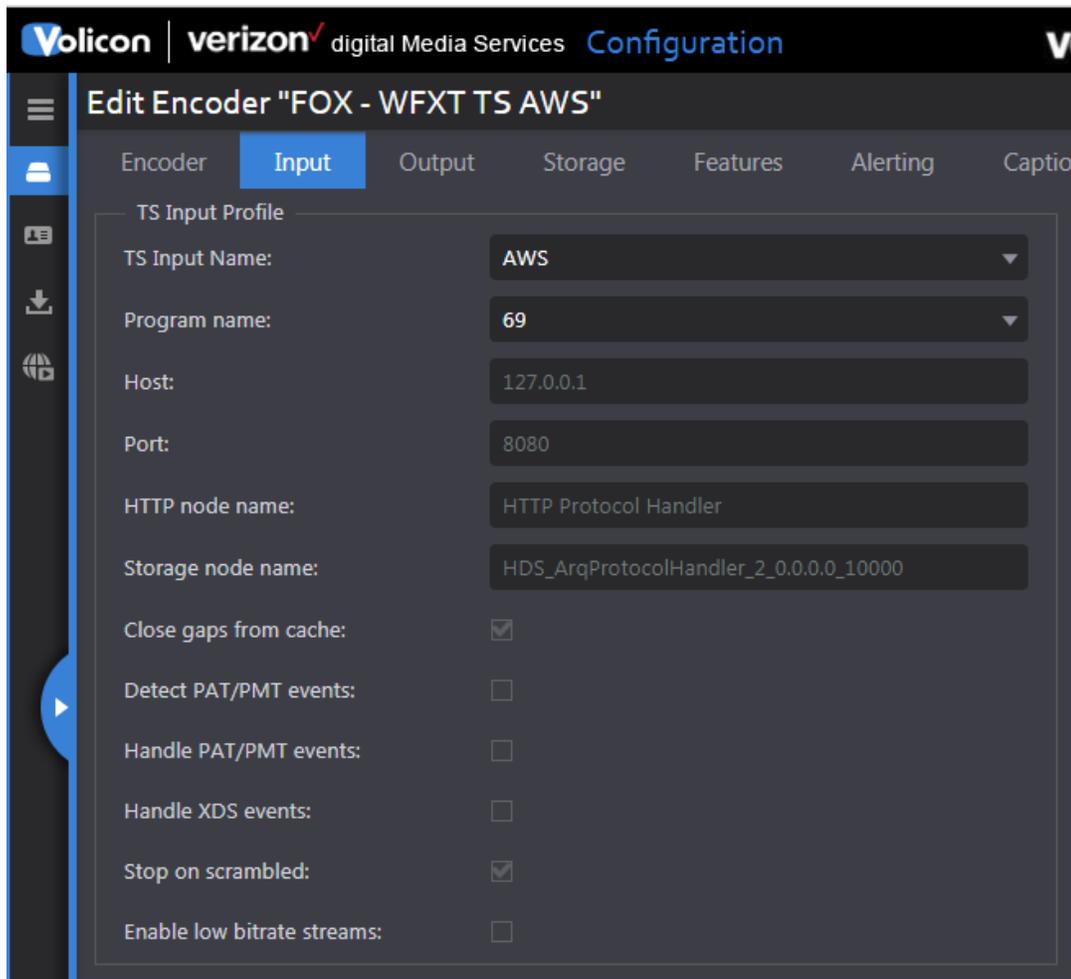


Figure: Transport stream input

| | |
|-------------------------------------|--|
| TS input name | Stream name |
| Program name | Program ID and name within the stream |
| Host | IP address or URL of the program source |
| Port | IP port address to access the program |
| HTTP node name | The name of the HTTP node, as configured in the Media Hub, for streaming data of the required PID |
| Storage node name | The name of the storage node, as configured in the Media Hub, where data for the required PID is stored |
| Program name | Name of the program used to encode the TS stream |
| Close gaps from cache | If encoder loses feed, it keeps recording black screen, until feed returns; allows downtime to be represented in the recorded data |
| Detect PAT/PMT events | Deprecated, no longer used |
| Handle PAT/PMT events | Deprecated, no longer used |
| Handle XDS events | System to process Extended Data Services events and log them |
| Stop on scrambled | Ignores encrypted streams so MIS does not generate erroneous alerts |
| Enable low bit rate streams: | Enable/Disable handling of low bit rate streams; usually disabled due to slowing down recovery in event of connection loss; if nearly no payload. (e.g., black video) this should be enabled |

Table: Transport stream input

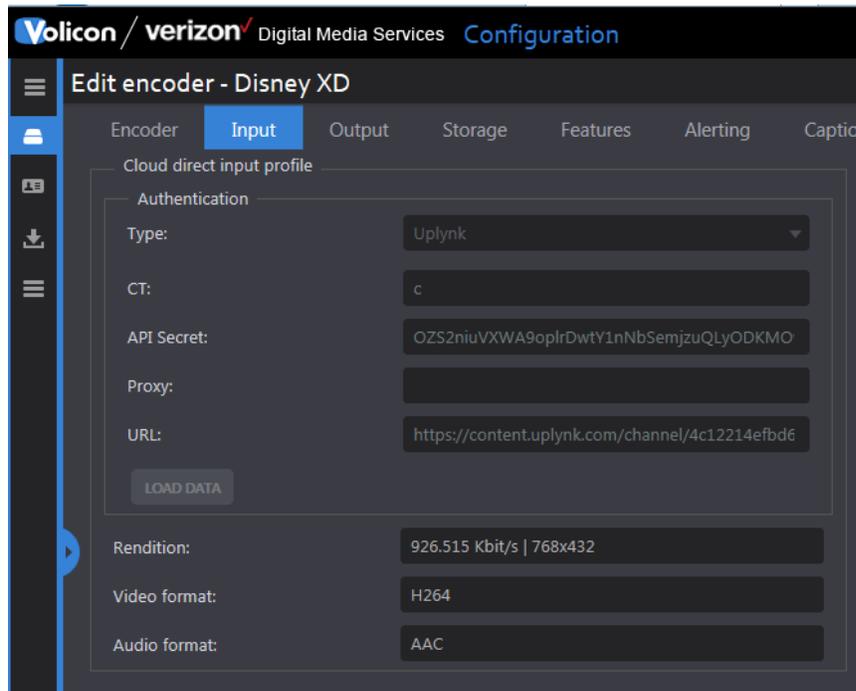


Figure: Cloud input

| | |
|---------------------|---|
| Type | Dropdown to select program source server: No Authentication, Akamai, Uplynk CMS |
| ACL | Akamai parameter |
| Shared key | Akamai parameter |
| CT | Uplynk parameter |
| API secret | Uplynk parameter |
| Proxy | URP or IP of proxy server if used |
| URL | Channel-specific URL |
| Load data | Saves profile data |
| Rendition | Bitrate and resolution |
| Video format | Normally, set automatically based on input feed, but may be set manually |
| Audio format | Normally set automatically based on input feed, but may be set manually |

Table: Cloud input

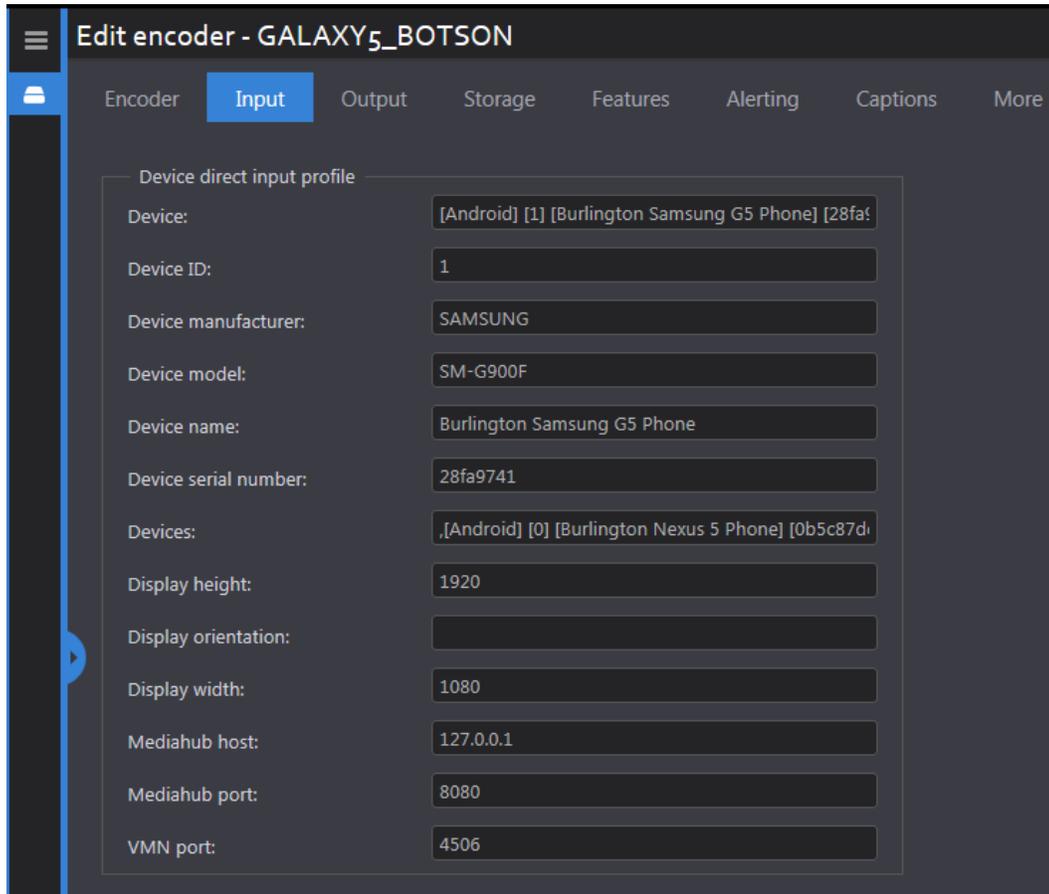


Figure: Encoder device direct input

| | |
|-----------------------------|--|
| Devices | Smart phone used to capture the program |
| Device ID | ID of the device as the Media Hub configured it |
| Device manufacturer | Smart-phone manufacturer |
| Device model | Smart-phone model name |
| Device name | The name of the device to be shown in Media Hub |
| Device serial number | The hardcoded serial number of the device, automatically detected |
| Devices | A list of all devices connected to the server |
| Display height | Height in pixels |
| Display orientation | Landscape or portrait; if left blank defaults to portrait |
| Display width | Width in pixels |
| Media Hub host | Media Hub IP address typically: localhost |
| Media Hub port | IP port typically 8080 to avoid conflicting with other web servers |
| VMN port | Port used to stream content from the device |

Table: Encoder device direct input profile

Encoder – output section

Unlike inputs, the output settings are the same for all encoders, regardless of how the program is ingested into MIS.

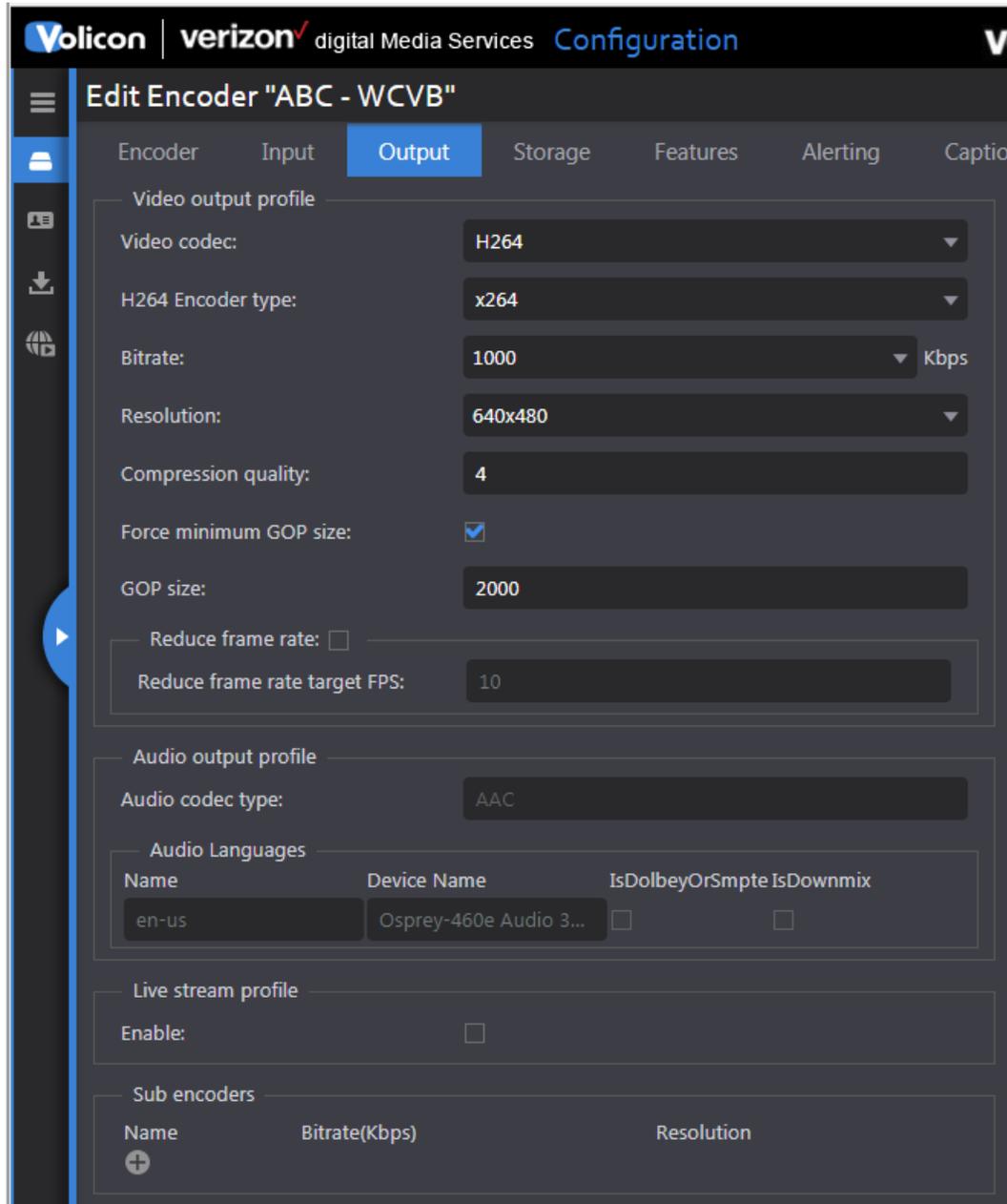


Figure: Encoder output

| | |
|-------------------------------------|--|
| Video codec | Dropdown to specify how MIS encodes the program for storage. MIS supports; H264, WMV3, WMVA, and WVC1 |
| H264 encoder type | MIS supports multiple implementations: x264, MainConcept, MFT, CUDA |
| Bitrate (Kbps) | Dropdown to specify program bitrate for storage |
| Resolution | Dropdown to specify screen resolution for storage |
| Compression quality | Compression quality is a tradeoff: the higher the level of the less storage required at the expense of greater CPU processing |
| Force minimum GOP size | Optional field to set MPEG group of picture structure; setting defines amount of frames dependent on preceding frames before another I frame; MPEG removes redundancy, spatially within a frame and temporally among frames; I frames (key frame) is the only frame that can be decompressed without reference to other frames |
| Reduce frame rate | Reduces frame rate to reduce output bandwidth consumption |
| Reduce frame rate target FPS | Output frame rate value |

Table: Encoder output - video output profile

| | |
|-------------------------|--|
| Audio codec type | Dropdown to specify how MIS encodes audio for storage: AAC, WMA and WMApro; when configuring audio codec type that describes the audio codec used by this encoder, codec changed for each audio streams feed |
| Audio Languages | Specifies one or more audio channels |

Table: Encoder output - audio output profile

| | |
|---------------|--|
| Enable | Live stream used to view low-latency video on monitor page; note: this feature CPU intensive |
|---------------|--|

Table: Encoder output -live stream profile

Sub encoders

Each encoder has a primary video codec that creates the channel stream digital multimedia archive. If desired, additional sub encoders may be configured. Sub-

encoders are typically set for lower resolution and bit rate, in comparison to the primary codec that serves specific monitoring or file exchange requirements.

Sub-encoders have the same server requirements as the identical setting for the primary codec sequentially; CPU cycles are needed for the compression engine and disk storage is needed for the resulting file.

| | |
|------------------------|--|
| Name | System created name derived from bit rate and resolution |
| Bit rate (Kbps) | Dropdown selection of bit rates |
| Resolution | Dropdown selection of screen resolution |
| Add/Delete | Adds or deletes a sub encoder |

Table: Encoder output -sub encoders

Encoder - storage section

This section defines where video is stored, how long it is saved and the disk threshold.

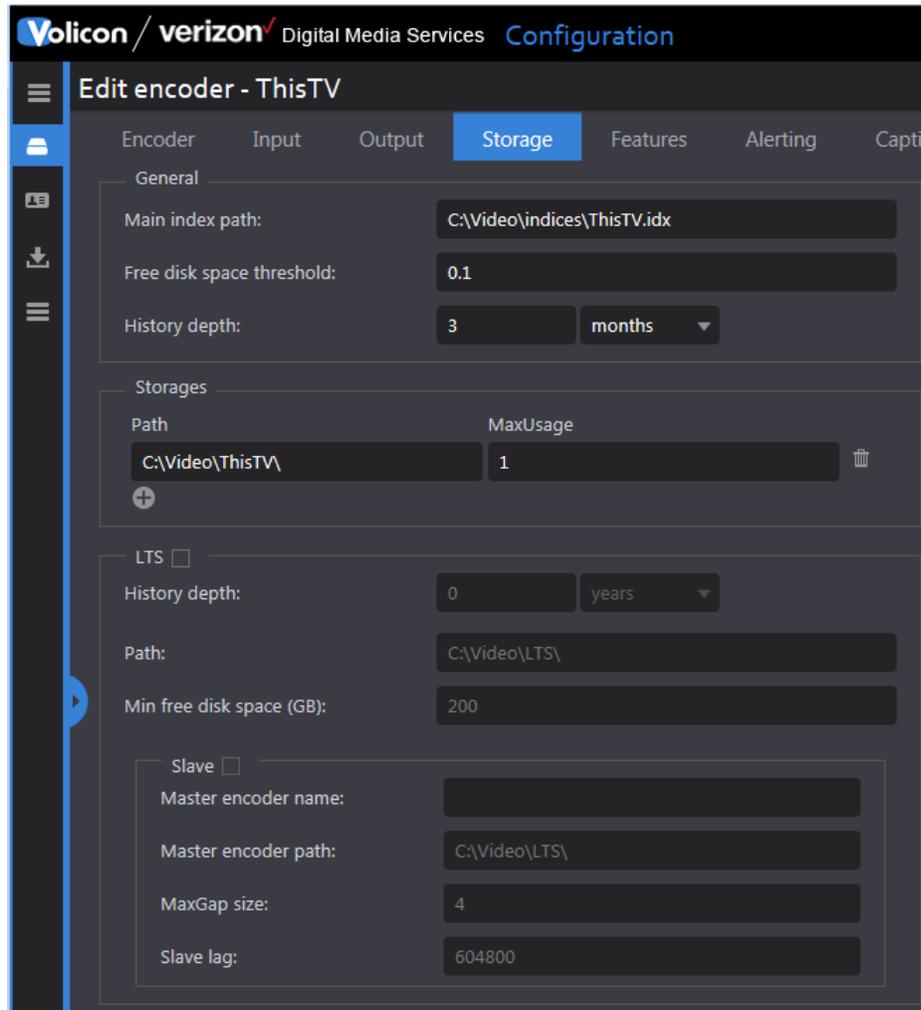


Figure: Encoder storage

| | |
|----------------------------------|--|
| Main index path | Example: C:\Video\indices\AB1.idx; normally set by Volicon to default path on main HDD |
| Free disk space threshold | Space not be used by MIS, kept free for other use; value to be between 0 and 0.9, where 0 means no free space reserved and 0.9 means 90% of storage location kept free |
| History depth | Specifies how long programs are stored; numeric value specifying how many unit intervals video will be stored. Example: value of 30 and Interval of days will store video for 30 days |

Table: Encoder storage - general

| | |
|-------------------|--|
| Path | Absolute path to the storage location |
| MaxUsage | The maximum percentage of the total size of the storage location used by the channel |
| Add/Delete | Add/remove storages |

Table: Encoder storage - storages

| | |
|----------------------------|---|
| History depth | Specifies duration of program storage, streams normally stored in local storage; if inadequate, contact Volicon support to configure LTS; numeric value of unit intervals video will be stored: dropdown specifying minutes, hours, days, weeks, months, years; setting value to 0 means data not saved |
| Path | LTS storage location; typically C:Video\LTS\ if LTS is running on the same computer |
| Min free disk space | Minimum disk space available on archive machine before archiving: value is in Gigabytes |
| Slave | Specifies if this encoder is a backup encoder for another system |
| Master encoder name | The name of the master encoder; only relevant when backup encoder is used |
| Master encoder path | Absolute path to the storage location of the master encoder; only relevant when backup encoder is used |
| MaxGap size | The maximum gap size between files |
| Slave lag | Specifies how long slave will wait before starting to archive its content; setting this to less than 1 week not recommended may cause master and slave to archive needlessly |

Table: Encoder storage - long term storage (LTS)

Encoder - features section

This section specifies audio loudness monitoring, DPI and AFD metadata processing, thumbnails and NAVE.

Loudness monitoring

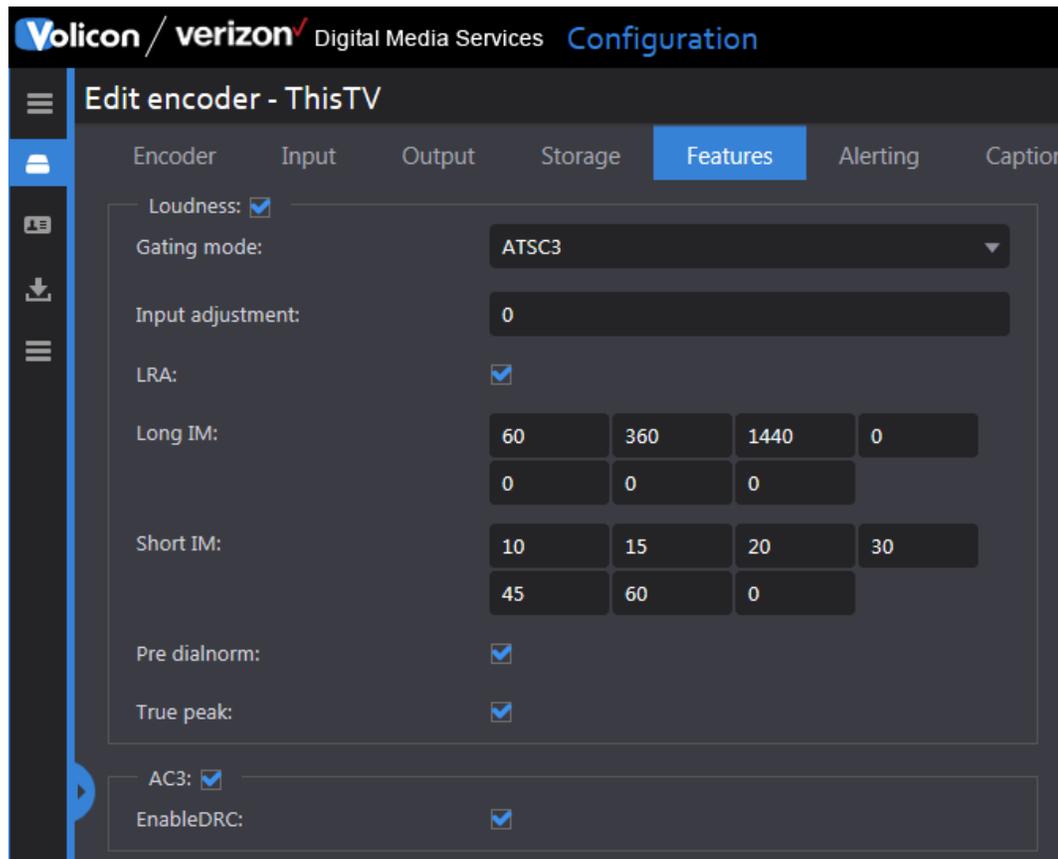


Figure: Encoder features - loudness

| | |
|-------------------------|---|
| Loudness | With optional loudness module enabled, MIS performs loudness meter measurements to meet following standards: EBU R 128, BS-1770-1, BS-1770-3, ATSC A/85 and EBU Tech 3341/2/3; MIS loudness module accurate per each video frame and takes measurement every 100 milliseconds; measurements able to be done with/without gating windows (-10 dB but adjustable) |
| Gating mode | Dropdown to select: ATSC1, ATSC3 or EBU |
| Input adjustment | Adjustment to input level for fine tuning; a floating point value will be added to the input measurement |
| LRA | Loudness Range Measurement (LRA) quantifies variation in time-varying loudness measurement; supplementary to main audio measure, program loudness, of EBU R 128; measures variation of loudness on macroscopic time-scale loudness units (LU); LRA computation based on measurement of loudness level specified in ITU-R BS.1770 - with different gating threshold; LRA not to be confused with other measures of dynamic range |
| Long IM | Long-form Integrated measurements: greater than two minutes; total of seven user-defined, configurable measurements (e.g., 1 hour, 6 hour, 1 day, 5 day intervals); long-term default setting: 60, 360, 1440, 0, 0, 0, 0 |
| Short IM | Short-form integrated measurements two minutes or shorter; total of seven user defined, configurable measurements (e.g., 10s, 30s, 60s); short-term default: 10, 15, 20, 30, 60, 120, 0 |
| Pre dialnorm | Dialnorm indicates level of average spoken dialogue within encoded audio program; short and long-term values are often factory preset; Dialnorm not to be enabled when an encoder ingesting digital audio stream (e.g., optical, s/pdif or Dolby AC-3) |
| True peak | Enables monitoring the value of the audio signal waveform of a program in the continuous time domain; detects peak loudness that otherwise would escape the sampling process |

Table: Encoder features - loudness

| | |
|-------------|---|
| AC-3 | Dolby – Adaptive Transform Acoustic Coding 3 enable/disable |
|-------------|---|

| | |
|------------|-----------------------------------|
| Enable DRC | Dolby – Dynamic Range Compression |
|------------|-----------------------------------|

Table: Encoder features AC-3

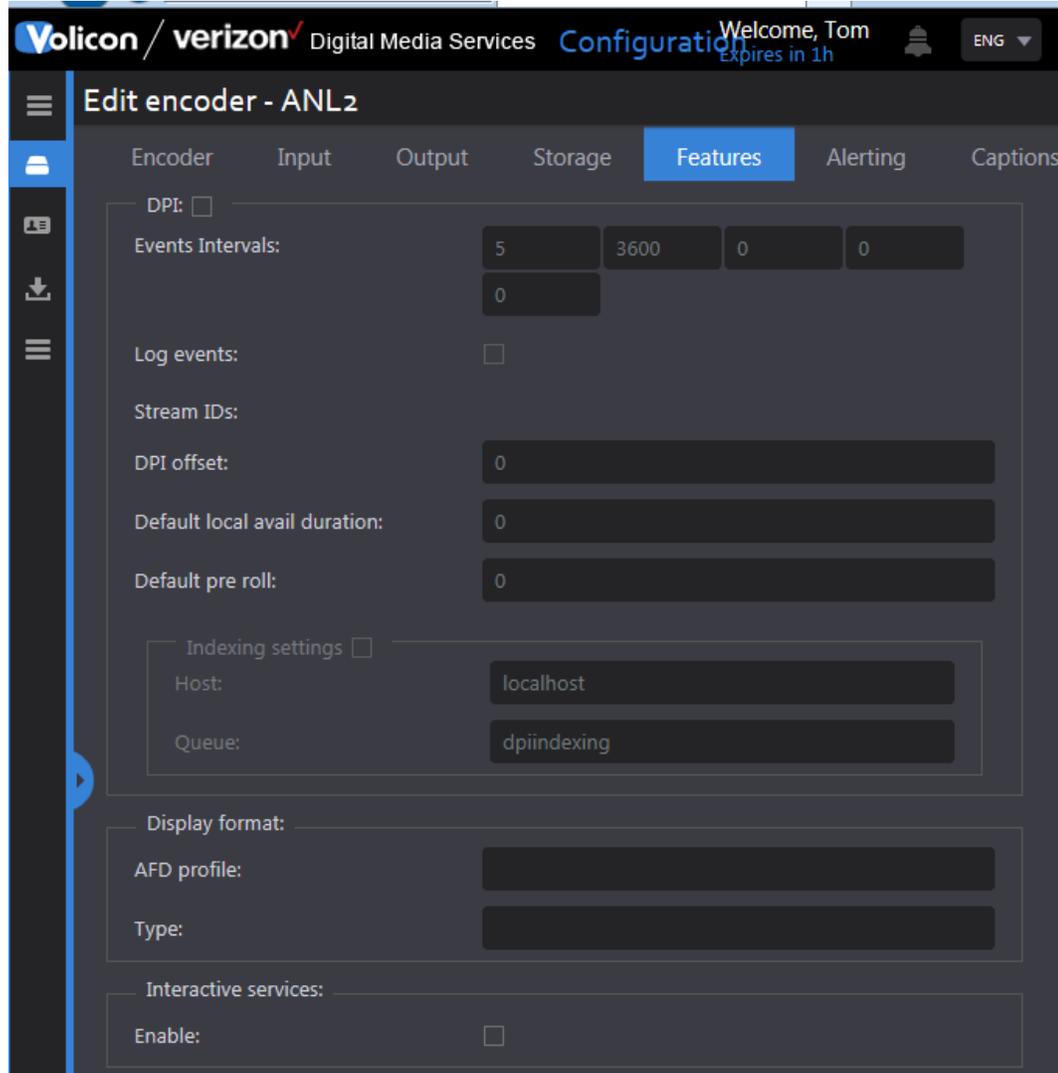


Figure: Encoder features – DPI and AFD

| | |
|--------------------------------------|--|
| DPI | Digital Program Insertion |
| Events interval | List of intervals to be monitored for in/out DPI events |
| Log events | Enable/disable logging of DPI event to a database |
| Stream IDs | List of DPI streams to be monitored |
| DPI offset | Offset of DPI event relative to A/V (in milliseconds) |
| Default local avail durations | Default location available duration to use (in milliseconds) |
| Default pre-roll | Default pre-roll time before local avail (in milliseconds) |
| Indexing settings | New feature not yet implemented. |

Table: Encoder features - digital program insertion (DPI)

| | |
|--------------------|---------------------------|
| AFD profile | AFD profile in XML format |
| Type | Not used in MIS |

Table: Encoder features - active format description (AFD)

| | |
|---------------|--|
| Enable | Only applies to RPM systems – identify objects and images on screen; used for channel change verification. |
|---------------|--|

Table: Encoder features - interactive services

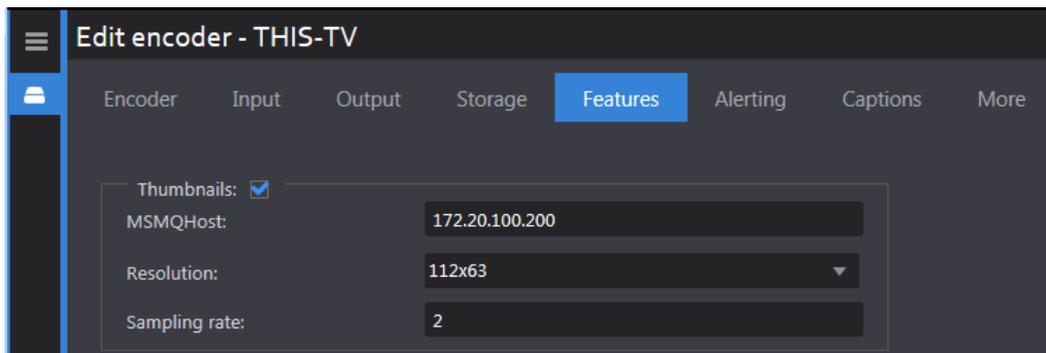


Figure: Encoder features - thumbnails

| | |
|--------------------------|---|
| Thumbnails enable | Checkbox to enable/disable thumbnails |
| MSMQHost | IP address or URL of Microsoft Message Queuing used to access video clip thumbnails |
| Resolution | Dropdown used to specify thumbnail image resolution |
| Sampling rate | Every x seconds, saves an image to the storage |

Table: Encoder features - thumbnails

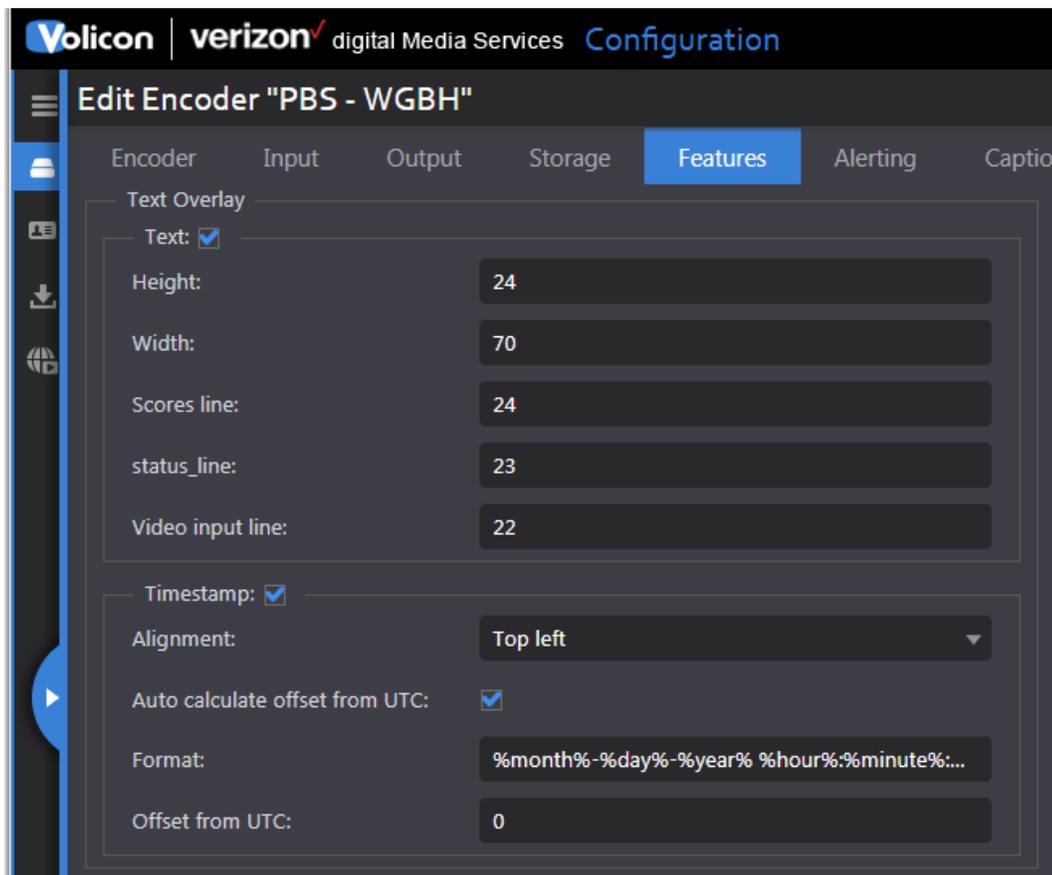


Figure: Encoder features - text overlay

| | |
|-------------------------|--|
| Text | Enable/display of embedded text |
| Height | Number of free text lines |
| Width | Number of characters in a free text line |
| Score line | Line on which the scores will be burnt in 1-based index system |
| Status line | Line on which scores to be burnt in a 1- based index system; if using default height, this is line before last |
| Video input line | Setting for the video input line burnt into the video |

Table: Text overlay

| | |
|---------------------------------------|--|
| Timestamp enable | Turn on timestamp overlay for this encoder channel |
| Alignment | Dropdown to position the info on player screen |
| Auto calculate offset from UTC | Based on probe’s time setting |
| Format | Specifies how time is displayed: %month%-%day%-%year%%hour%:%minutes%:%second%/frame% |
| Offset from UTC | Manually sets a time zone offset; setting overrides probe O/S time zone setting; MIS uses value instead of offset in probe |

Table: Timestamp

NAVE

Encoding of television signals, such as in the Nielsen system, is used for audience measurement (e.g., to accurately identify television distributors, including broadcast stations or cable networks). The Nielsen Media approach installs metering devices at the user's premises. This device identifies stations and networks to which the end user tunes. By encoding content with a NAVE unit, ratings data for programming can be provided, whether it is received in a digital, analog, or combined viewing environment. Reading the aforementioned watermarks or other codes inserted into the television signal at the distribution source through the NAVE unit captures this end user data.

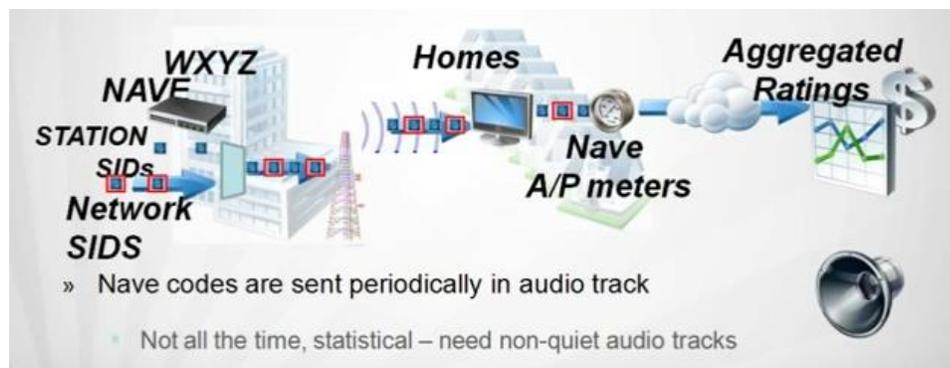


Figure: NAVE watermarking

NAVE is a system capable of inserting Nielsen Media Research proprietary NAVE source identification watermarking directly into the audio portion of compressed digital ATSC transport streams prior to broadcast. NAVE devices can simultaneously insert watermarking data on multiple independent digital television programs being broadcast, whether they are standard definition (SDTV) or high definition (HDTV). The watermark is capable of identifying the Provider Content (PC), the network the content was distributed to (NT) and the final distributor (FD), say in the case of local broadcast station or cable channel. The watermarks include a timestamp, so if content viewed is time shifted (VOD) within a reasonable time frame, that usage data is also captured.

If any station's NAVE encoder is interrupted, the meter device installed in Nielsen sample premises collects and stores passive signatures for all non-encoded programming viewed. These signatures are downloaded each night to Nielsen's operations center. To identify viewing, the passive signatures collected from the meter device in the premises are matched against the signatures in the library.

The feature allows you to define the watermarks to be accepted, and the faults/recoveries to occur, by configuring the watermark's creation time and the number of good watermarks that should be received per period.

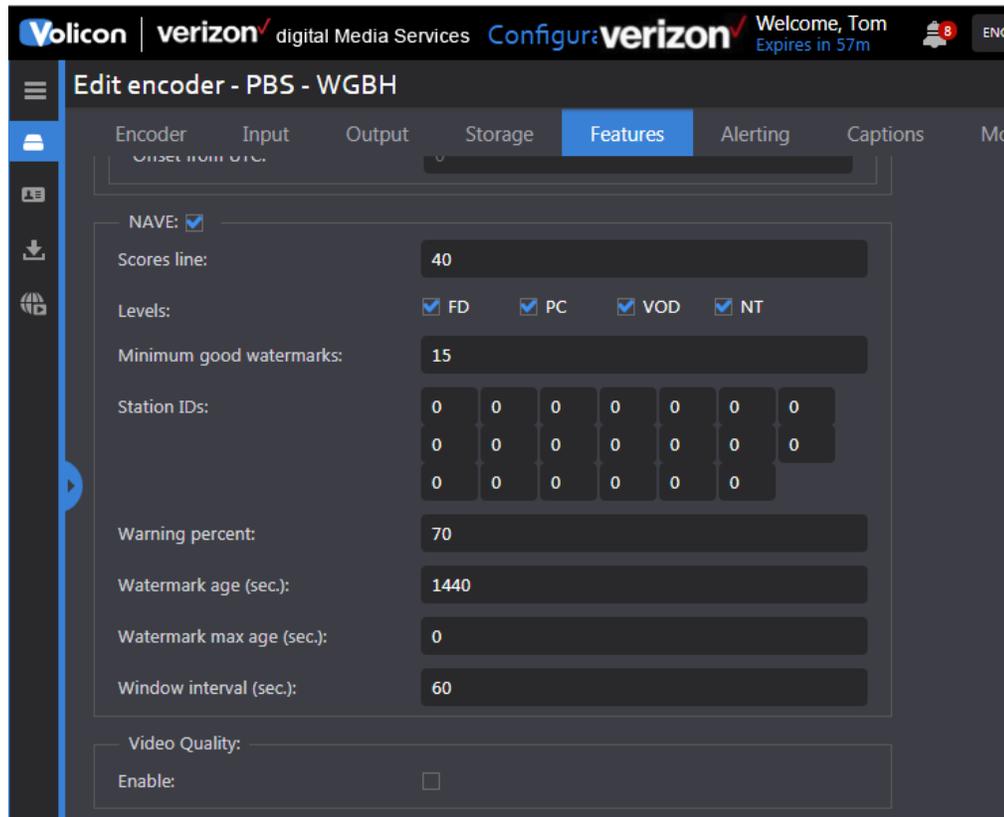


Figure: Encoder features – NAVE

| | |
|--------------------------------|---|
| Enable | Enable/disable Nielsen Audio Video Encoder monitoring; requires subscription to Nielsen service |
| Score line | Percentage of good watermarks in the monitored window; labeled “Error Percent” in early versions of MIS |
| Levels | Filters watermarks by level: Final Distributor (FD): entity that delivered content to customer Provider Content (PC): entity that originated content Video on Demand (VoD): time shifted viewing Network (NT): Network that delivered the content |
| Minimum good watermarks | If number of good watermarks during sliding window is lower than minimum value, fault detected |
| Station IDs | List of good watermarks you intend to accept; if field is left empty, all watermarks will be detected; if some channels support more than one station ID (SID) insert into the SID array all IDs you intend to accept; a single SID is sufficient to satisfy <i>Minimum Good Watermarks</i> and <i>Watermark Percentage recovery</i> variables to avoid faults and stay recovered |
| Warning percent | If value greater than score line but less than warning percent, warning message will be sent; other cases to result in recovery |
| Watermark age | The watermark’s time from its creation |
| Watermark max age | Filters out watermarks older than threshold and reports no faults on these; if left at 0, variable watermark age taken; example: if watermark is 10 days old, any older watermarks to be ignored; if the watermark’s age less than threshold, it will be processed as regular watermark |
| Window interval | Faults detected and recoveries enabled during sliding window interval; example: if you define 30-second window, for each second, 30-second window will be checked (0-30, 1-31, 2-32...) against parameters used |

Table: NAVE

| | |
|----------------------|---|
| Video Quality | Requires optional module to monitor video quality |
|----------------------|---|

Table: Quality Monitoring

Encoder - alerting section

The alerting feature configures MIS to constantly monitor program streams. If the stream does not meet the monitoring criterion for the duration specified, an alert is generated. A single alert is dispatched for each event. If the stream returns to normal in excess of the recovery time, a new alert is generated if the stream once again falls outside monitoring parameters.

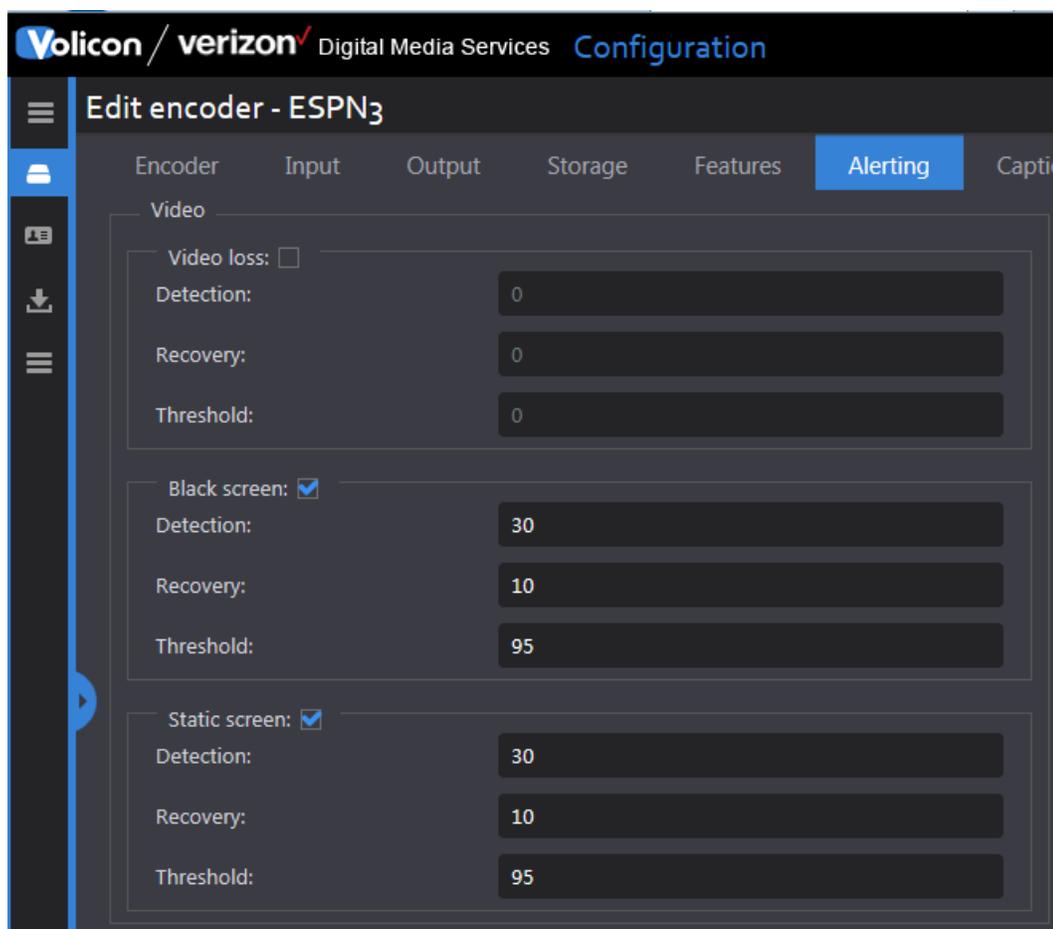


Figure: Encoder alerting - video

| | |
|----------------------|--|
| Video loss | When video framing loss (commonly known as “sync”) detected by hardware and persists over video duration threshold, then a VIDEOLOST alert generated; only duration threshold is configurable; not threshold level; example: video lost signal = TRUE over duration of 31 sec exceeding cycle time and duration threshold; when notification enabled, SNMP trap and email messages sent (if configured by the admin) |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Black screen | When percentage of black pixels (BS) in video frames of incoming signal exceeds certainty threshold and persists over duration threshold; when notification enabled, SNMP trap and email messages sent (if configured by the admin) |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Threshold | Default: 95% |
| Static screen | Detected when video frame pixels at same frame location are compared (for color and luminosity) to pairs of consecutive video frames; and percentage of matching pixels that match exceeds static screen (SS) threshold and duration threshold; when pixel color, luminance and locations matching between pairs of consecutive video frames exceed 95% of all video frame pixels for longer than 30 seconds, a video static alert is declared; when notification is enabled, SNMP trap and email messages sent (if configured by the admin) |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Threshold | Default: 95% |

Table: Encoder alerting - video

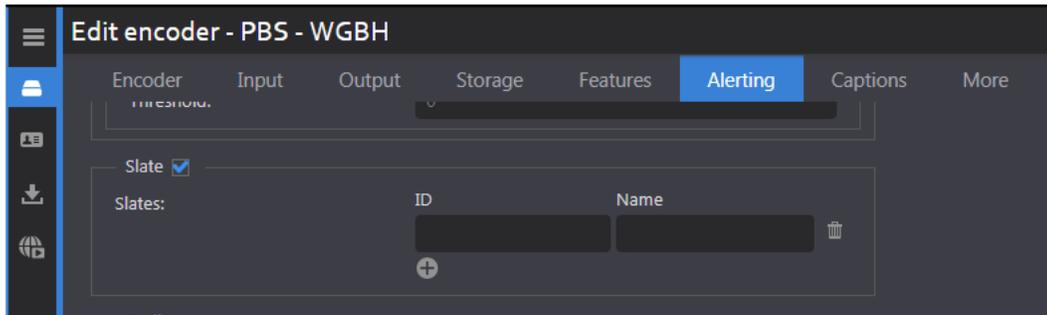


Figure: Encoder alerting – slate

Generates an alert when matching slate ID is detected.

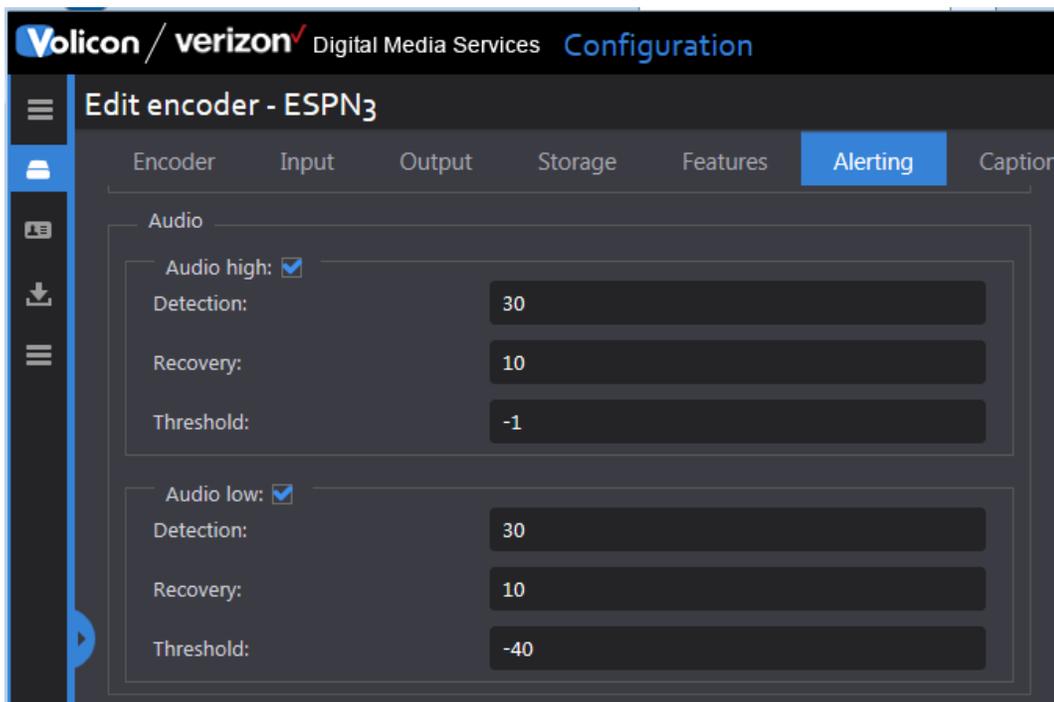


Figure: Encoder alerting - audio

| | |
|--------------------|---|
| Audio high: | <p>Audio high fault is detected when the incoming audio stays above the high-level threshold long enough to exceed the audio duration threshold</p> <p>Audio high alert example: Audio alert is configured on a channel; certainty threshold = -1 dB; duration set to default of 30 seconds; audio input signal detected = 2 dB (above certainty) for six minutes (exceeding the cycle time for the lineup plus the duration threshold); media fault is detected, generating an audio alert and automatically creating a fault clip, which is stored under the clips (Fault Clips section on the MIS media player); when notification is enabled, SNMP trap and email messages sent (if configured by the admin); if you wish to change certainty, duration, or recovery levels, please contact MIS support.</p> |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Threshold | Default is -1dB |
| Audio low | <p>Low audio fault is detected when the incoming audio stays below the low-level threshold and fault duration fault exceeds the duration threshold; when notification is enabled, SNMP trap and email messages sent (if configured by the admin)</p> <p>Note: disable audio alert detection on channels with frequent silence.</p> |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Threshold | Default: -40dB |

Table: Encoder alerting - audio

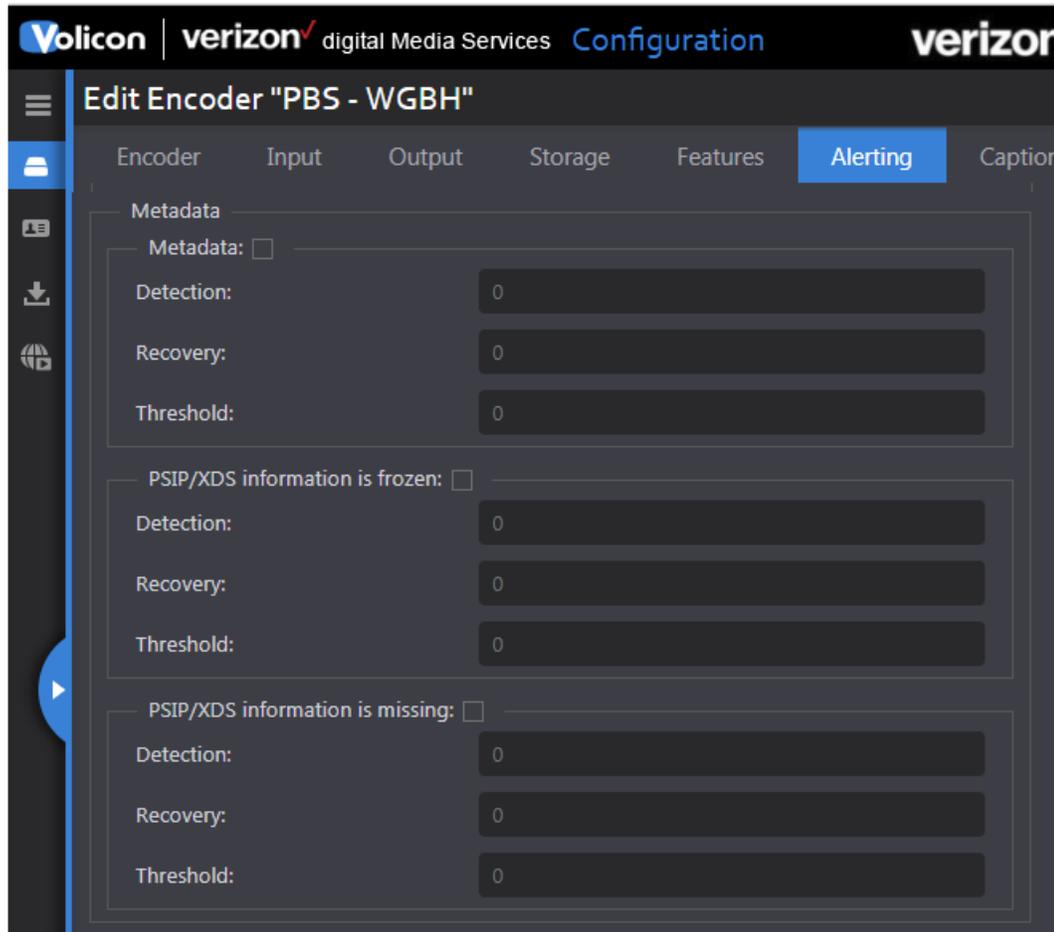


Figure: Encoder alerting - metadata

| | |
|------------------------|--|
| Metadata | Monitors embedded channel metadata |
| Detection | Default: 30 seconds |
| Recovery | Default: 10 seconds |
| Threshold | Defines number of metadata instances missed in detection threshold duration; example if threshold set to 5, and more than 5 instances missed during 30-second window then alert is generated |
| PSIP/XDS frozen | Monitors if PSIP/XDS content hasn't changed for a prescribed period of time. |
| Detection | Default: 1800 seconds |

| | |
|-------------------------|---|
| Recovery | Default: 0 seconds |
| Threshold | Default: 95 |
| PSIP/XDS missing | Monitors if PSIP/XDS information isn't present for a prescribed period of time. |
| Detection | Default: 60 seconds |
| Recovery | Default: 0 seconds |
| Threshold | Default: 95 |

Table: Encoder alerting - metadata

Encoder captions section

This section determines how MIS processes closed captioning and subtitles.

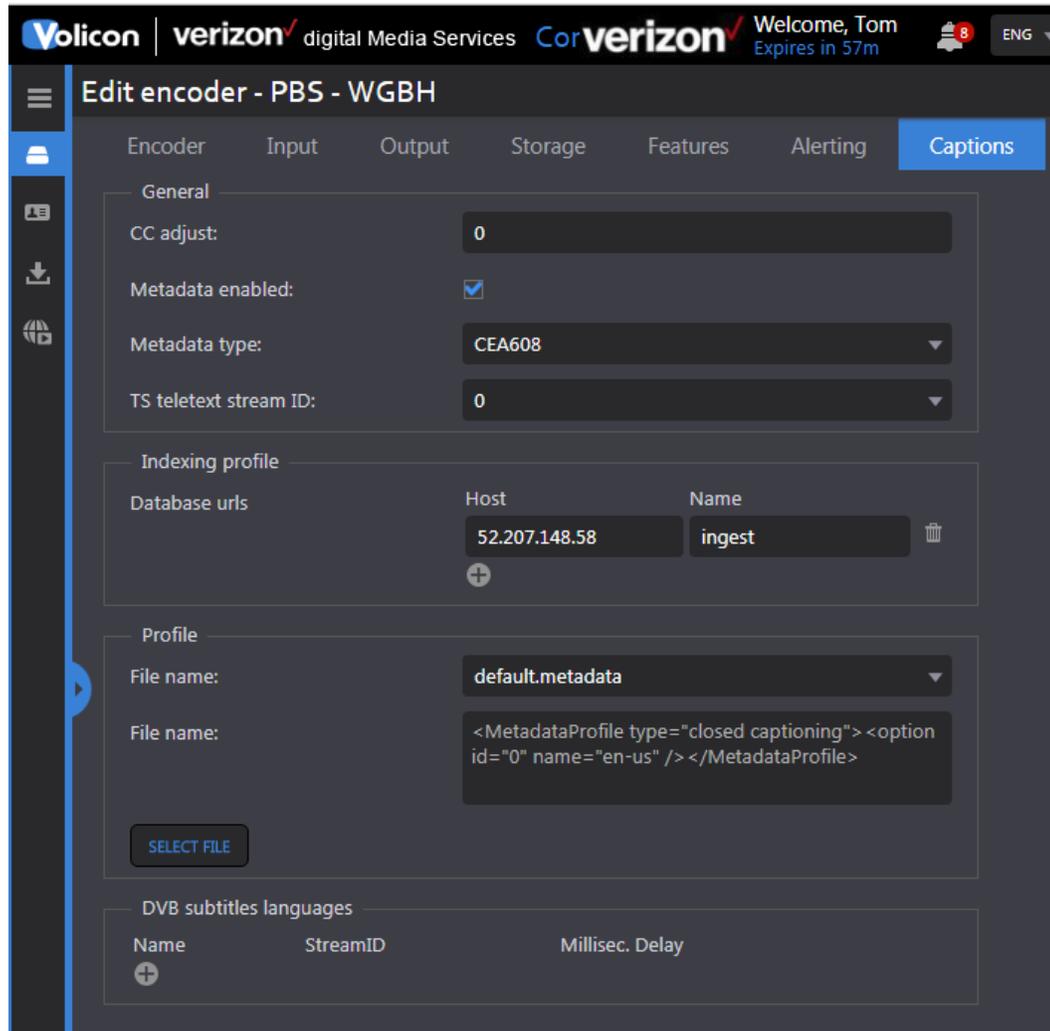


Figure: Encoder captions

| | |
|------------------------------|---|
| CC Adjust | Not currently relevant to MIS |
| Metadata enabled | Enable/disable CC monitor |
| Metadata type | Dropdown to specify which data format the channel is using |
| TS teletext stream ID | The ID of the Teletext stream inside the transport stream program |

Table: Encoder captions - closed captioning

| | |
|----------------------|--------------------------------------|
| Database URLs | Host and profile name |
| Add/Delete | Add or remove metadata database URLs |

Table: Encoder captions - indexing profile

| | |
|------------------|--|
| File name | The database name; <Select File> to add additional profiles |
|------------------|--|

Table: Encoder captions - profile

| | |
|------------------------|---|
| Name | Name of the language |
| StreamID | Stream ID of the subtitle language |
| Millisec. delay | Delay of subtitles in relation to video; used to synchronize subtitles to video |
| Add/Delete | To add/remove subtitle language |

Table: Encoder captions - DVB subtitles language

Encoder - more section

This section configures MIS to recover from encoder errors and sets encoder hibernation time.

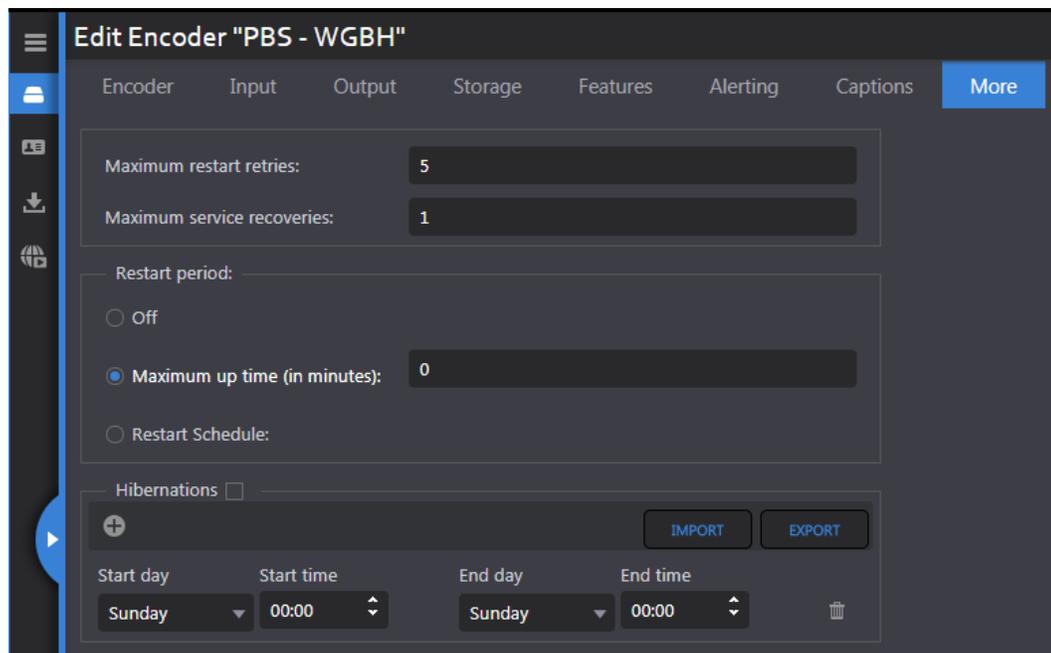


Figure: Encoder more section

| | |
|-----------------------------------|---|
| Maximum restart retries | The maximum number of times watchdog will attempt to restart the encoder |
| Maximum service recoveries | The maximum number of times watchdog is allowed to restart the entire service |

Table: Encoder more - error recovery

The restart period can be used to force the encoder to restart based on uptime or at a specific date and time.

| | |
|-------------------------|--|
| Off | No forced restart |
| Maximum up time | Restarts encoder when elapsed run-time is exceeded |
| Restart schedule | Force restart at specific date and time |

Table: Encoder more - restart period

| | |
|-------------------|-----------------------------------|
| Start | Hibernation start day/time |
| End | Exit hibernation day/time |
| Add/Delete | Add and remove hibernation events |

Table: Encoder more - hibernation

11.6.3 Probe profiles

The proposed feature is not yet implemented.

11.6.4 Encoder profiles

The proposed feature is not yet implemented.

11.6.5 Manage streams

Proposed feature not yet implemented.

11.7 Help & tutorials

Pressing <Help> displays numerous online tutorials. It also displays a link to the Volicon Verizon digital media services customer service support page.

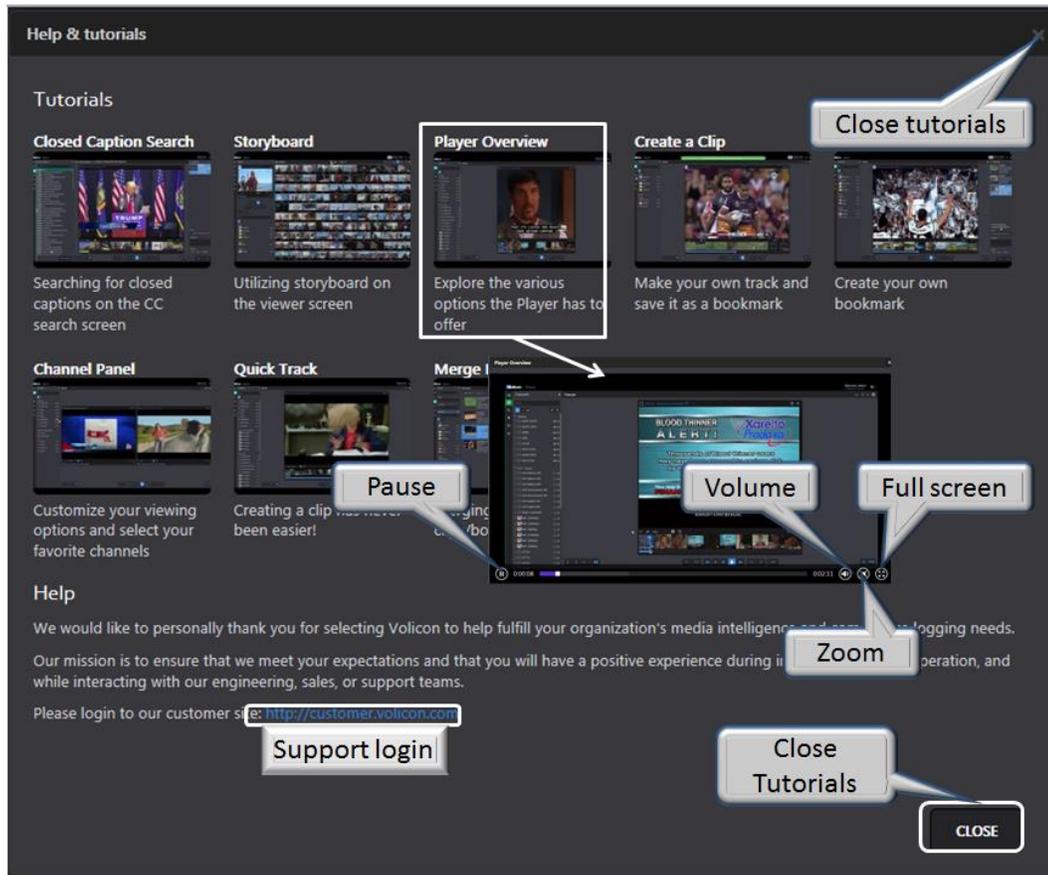


Figure: Customer support help request

11.8 About

Press <About> to view MIS system and ActiveX software versions.

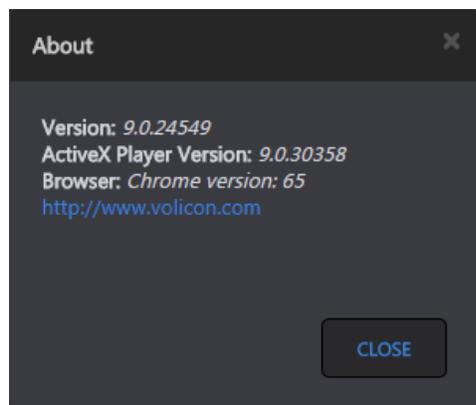


Figure: About display

11.9 Contact us

This is a link to the Volicon Verizon digital media services contact us web page:

<https://www.verizondigitalmedia.com/about/contact-us/>

11.10 Reset page settings

Clears user page settings, such as selected channels.

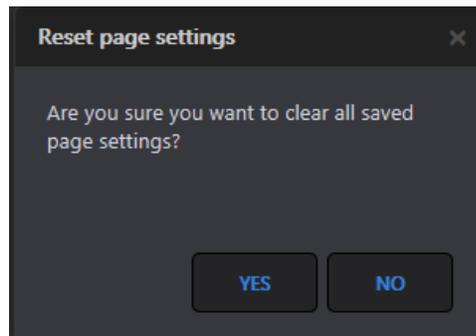


Figure: Reset page settings

11.11 Log out

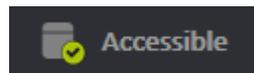
When you attempt to log out, you will be prompted to confirm the request as shown in the Login section. If you have any unsaved changes, a warning message asks if you want to save them; otherwise they will be lost. The same warning occurs whenever you attempt to change pages if there are unsaved changes on the page.

12 SYSTEM MONITORING PROCEDURE

The following system procedures are intended as a guide to monitor MIS system health. Network logging issues might be caused by a variety of causes (e.g., missing media streams, configuration issues, environmental changes or unexpected scenarios encountered by the system).

12.1 Probe status

Access the probe and encoder status by clicking **<Tools> → <Configuration>**, and select a **<Probe group>** to open the respective **group** page. Probe and encoder status is denoted by a color-coded icon to the left of the name.



Accessible

If the probe is accessible, the status icon is green.



Inaccessible

If not, it is red. Green simply indicates the probe server is accessible, not necessarily that all encoders are working normally. To check on individual encoders, expand the display to show encoders.

12.2 Encoder status

The encoder status is a green, red or amber ball to the left of the item name.



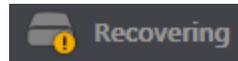
Running

This indicates the probe or encoder is operating normally.



Stopped

This indicates the probe or encoder has stopped and needs to restart.



Recovering

Probe or Encoder is rebooting.

Hibernation means the probe is down as scheduled.

Dummy Mode means the source is not available.

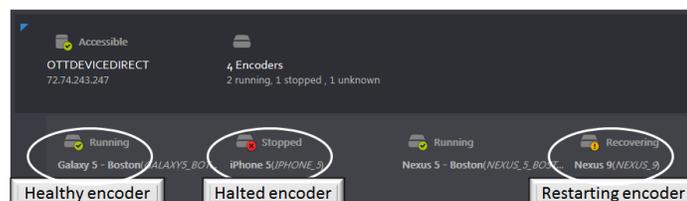


Figure: Group, probe and encoder Status

12.2.1 Encoder fault corrective actions

If the issue is due to the source media not being present, try to resolve it with the responsible party. (Note the corresponding probe server name and address through <Central Config> → <Encoders>).

Otherwise, if the encoder still is in red status, it could be stopped. The probe must be restarted using the probe manager.

12.2.2 Monitor live media streams

To verify the encoder operation, from the <Configuration> → <Probe Group> hover over the desired encoder and click <Edit encoder>. Press <Preview player> located in the diagnostic section. This opens a media player in live mode and will either display the stream or throw an error message at the top of the page.

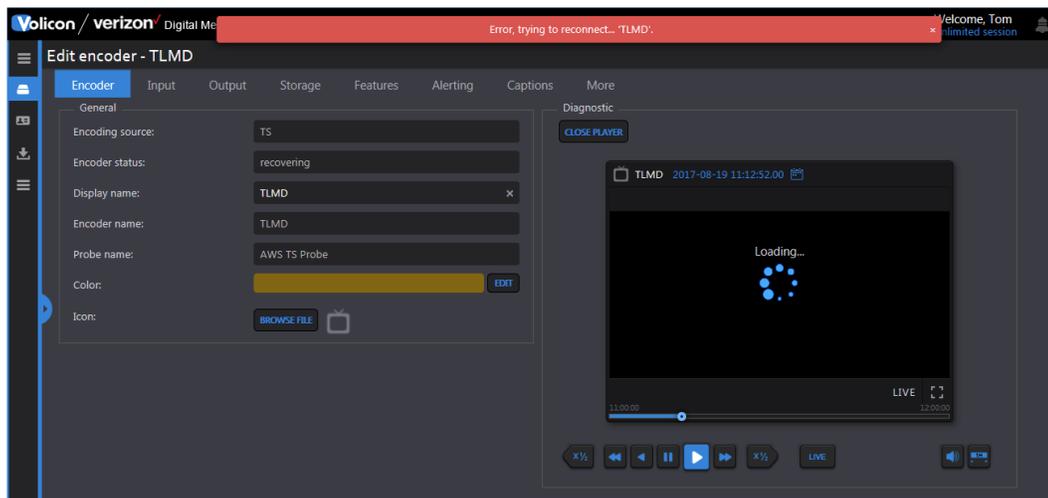


Figure: Encoder diagnostic

12.2.3 Memory and CPU utilization

To check memory and CPU utilization, log into the server. Open the system “Task manager” by right clicking on the task-bar of the server desktop. Select the <Performance> tab and examine “CPU usage” and “Physical Memory” usage. These values should be under control, but if for some rare reason the CPU usage or memory usage is too high, contact MIS customer support to report it and request suggestions on how to proceed.

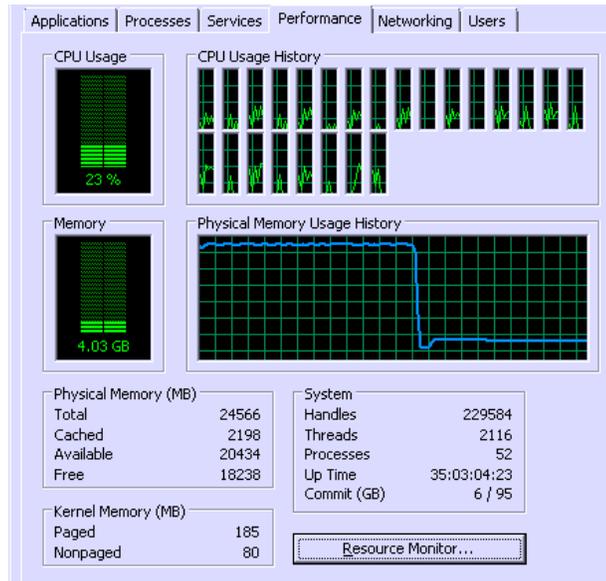


Figure: CPU and memory usage

12.3 Video storage utilization

Check the video storage utilization by right clicking on the mounted video folder and selecting the “properties” item from the popup menu. The “video properties” window will appear.

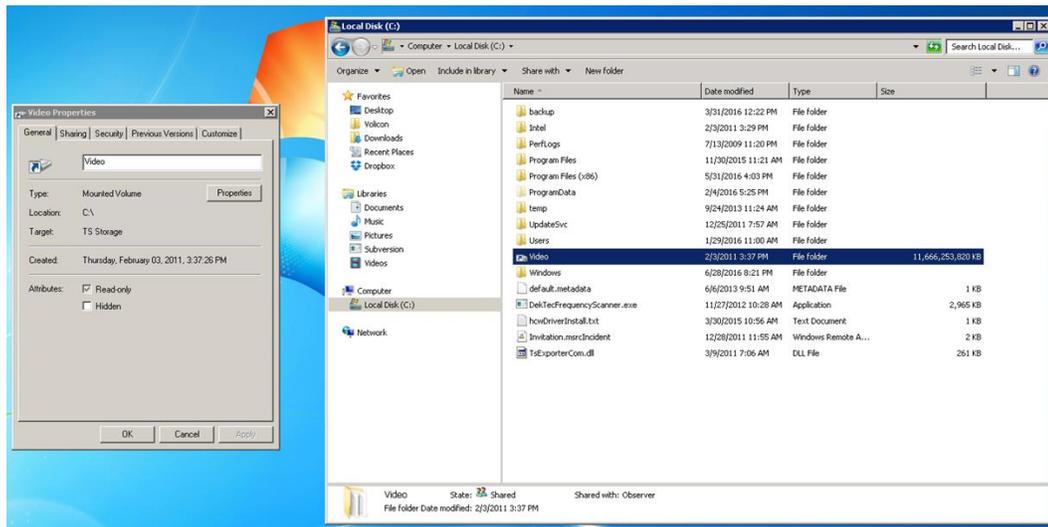


Figure: Select video properties

Click the <Properties> button to open the “(C:\Video) Properties” window as shown below. The <General> tab contains the video storage utilization pie chart

with “used space” and capacity values. Their ratio: “Used space”/”capacity”, is the video storage utilization.

Insure this value levels off after reaching the specified MIS storage capacity (e. g., 6 months of storage).

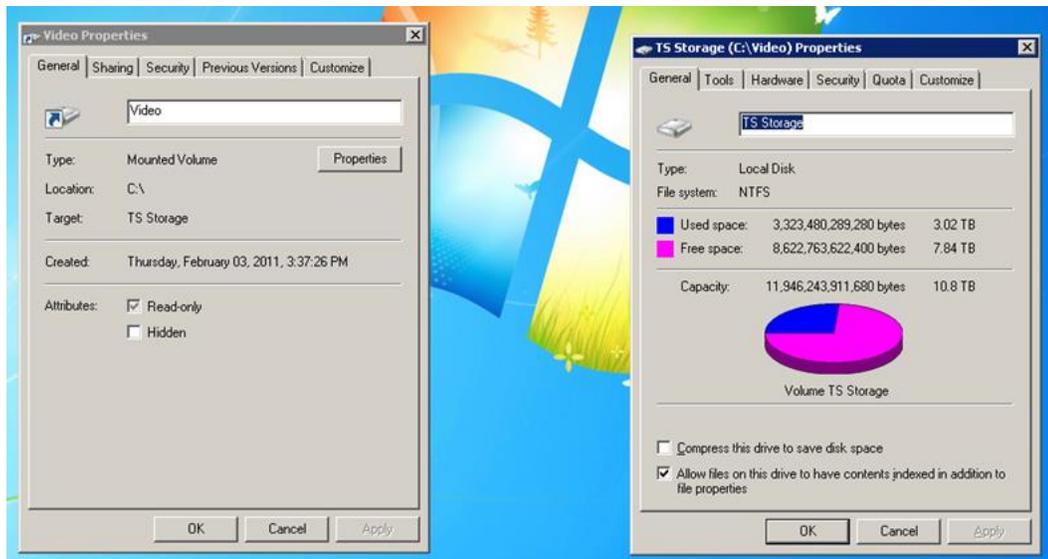


Figure: Video properties display

13 TROUBLESHOOTING AND MAINTENANCE

A useful troubleshooting method is using the divide-in-half method. Find a logical partition and check if everything up to that point is working correctly. If it is the problem lies higher if not lower.

13.1 No video playing

- Verify probe and encoder status as documented in the monitoring section.
- Use the encoder preview player to verify service functionality.
- Insure probe server(s) is accessible.
- Verify media streaming ports 4504 and 4505 are not blocked.
- For a stream captured using a STB verify STB is operating normally, settings have not been changed and it is properly connected.
- For RF based streams: Cable, Sat or OTA verify the raw signal is present.
- For IP based sources verify the encoder's hostname/IP address for each stream/channel is not blocked by a firewall.
- For IP streams check the remote site is up. Use a site accessibility test tool like: <https://www.uptrends.com/tools/uptime>
- Contact Volicon support for additional troubleshooting assistance.

13.2 User login

One common issue in large organizations is that sometimes users cannot access the MIS system transparently, and the username/password dialog pops up. This is caused when the browser cannot determine which webserver is in the intranet security zone (i.e., accessed by IP). The solution is either to access the server by server name (FQDN) or to add the web server to the trusted security zone in IE.

13.2.1 Forgotten user password

From time to time a user may forget their password. From **<Tools>** → **<Settings>** → **<Users>** hover of the specific account and press the **<Edit>** icon. Under the **Edit user** section access the **<Change a password>** feature to reset the user's password. Enter the new password twice and click **<Save>**. Let the user know their new password. If desired once they are able to log back into the system they have the ability to change their password to something else.

For security the system does not store actual user passwords, so it is impossible to tell the user what their password is if they forget.

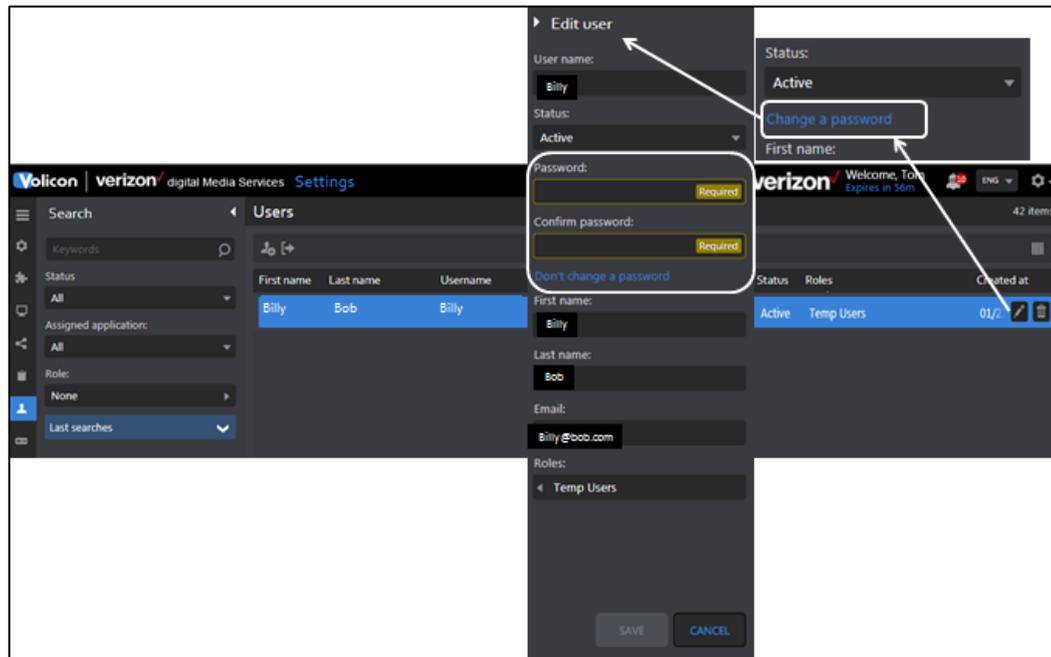


Figure: Change user password

13.3 Client machine not working

After a MIS software upgrade, or when you notice inconsistent MIS client behavior, try deleting the internet browser cache.

13.4 Install player CAB file

When a systems administrator needs to install the ActiveX media player on multiple machines, or the firewall blocks player download from the web server, it's more convenient to work with the installation CAB file. You can download the cab file from the MIS Web server address: <https://MIS-url-addresss/MIS.cab>

When the download completes, double click on the CAB file and accept the install prompts to install the media player.

13.5 MIS Licensing problems

To keep the MIS license valid avoid; enabling/disabling or changing onboard hardware or software.

13.6 Volicon technical support and documentation portal

If you need support from Volicon Verizon digital media services, please fill out a service request at our [support](#) web page:

<https://www.verizondigitalmedia.com/platform/volicon-media-intelligence/volicon-support/>

In response, a case ticket number will be opened with a specific technician assigned to help with the issue. Then, when you email or call back, please refer to your case ticket number until the case is closed.

For access to [online documentation](#) use:

<https://mip.volicon.com/documentation/>

14 SNMP NOTIFICATION

MIS sends SNMP notifications to external systems (e.g., your Network Management System (NMS)) using the alert notification variables shown in the “SNMP Notification Settings” Table. You must configure the IP addresses of your NMS stations in MIS to enable this capability.

MIB definitions are common across all MIS products.

14.1 MIB variables

SNMP V2 MIB variables with definitions are listed in the “EncoderTraps_v2.mib” file or a similar *.mib file located on the MIS server in the “Program Files\Volicon\docs” directory. The MIB file should be used in addition to the “MIB variables” table below.

The MIS can send SNMP V2 trap messages both for media-related alerts that create fault clips and for system critical events that do not generate clips.

| Alert variable Names (in MIB) | OID Strings | Description |
|--|-------------------------------|--|
| volEncoder | PREFIX = 1.3.6.1.4.1.23 522.1 | Probe server name OID type and prefix for OIDs below |
| volEncoderName Octet String | PREFIX.2 | Name of encoder that detected the alert; (names) configured during installation and usually not changed by the user |
| volEncoderHostname Octet String | PREFIX.3 | Probe server hostname, IP or DNS name; unique hostnames required within servers on the NMS monitored network |
| volAlertClipID Integer | PREFIX.11.1 | Generated with each new event (e.g., media defect) to identify it |
| volAlertDescription Octet String | PREFIX.11.2 | Textual description of the alert |
| volAlertClipRef Octet String | PREFIX.11.3 | Alert clip ID and URL for its location on the web server e.g., http://MIS-url.com/clip_view.php?id=158079 |
| volStreamName Octet String | PREFIX.11.4 | Stream/scanner name to help identify the link/STB location |

| | | |
|---------------------------------------|--------------|--|
| volAlertEnum Integer | PREFIX.11.5 | Grouping: event(0), test(10), service(20), encoder(30), storage(40), license(50), AFD fault(100), video(200), metadata(300), power(400), Video Lost(500) |
| volAlertName Octet String | PREFIX.11.6 | E.g., AUDIOLOW, ENCODER STOPPED |
| volAlertType Integer | PREFIX.11.7 | Signals the NMS SET(1) or CLEAR(0) alert states, e.g. alert is SET |
| volCertainty Integer | PREFIX.11.8 | Degree of alert type percentage (e.g., 96 percent of black screen) |
| volAudioLevel Integer | PREFIX.11.9 | Integer value of audio Level in dB |
| volAudioPin Integer32 | PREFIX.11.10 | Audio Pin number audio language pin; for now single language is used; Pin always 0 |
| volEventTime Octet String | PREFIX.11.11 | Time when the alert has occurred, e.g., 2010-10-31 20:57:21 |
| rpmChannelID Octet String | PREFIX.11.12 | Channel number in the lineup; stored in a string (e.g., "124") |
| rpmChannelName Octet String | PREFIX.11.13 | Lineup channel/service name (e.g., Fox) |
| rpmChannelQAM Octet String | PREFIX.11.14 | Channel group name for any group of channels logically related |
| volAlertSeverity Integer32 | PREFIX.11.15 | Designates priority for a corresponding problem to get resolved: info(1), warning(2), minor(3), major(4), critical(5) |
| oidAlertLevel Octet String | PREFIX.11.16 | Alert level (category) with one of the following possible values: probe (1), group (2), system (3) |
| oidGroup Octet String | PREFIX.11.17 | Name of the affected probe's group |
| oidProbe Octet String | PREFIX.11.18 | Name of affected probe machine |

Table: MIB variables

VolAlertName, VolAlertEnum, and VolAlertType variables indicate when to set or clear NMS internal alarms. System related traps (other than for media), though not used to set or clear alarms, provide important information about the defect source, such as volAudioLevel and volAlertSeverity.

14.1.1 MIB variables alert example

A real-time trap from an audio alert was traced to build this table specifically, the **notification variables** in the leftmost column. The last column illustrates examples to set and clear an SNMP alert:

| Notification variables name | OID Strings | Description | Alert SET / CLEAR |
|-----------------------------|--|--|--|
| volEncoder | PREFIX = 1.3.6.1.4.1.23522.1 | Probe server name OID prefix for OIDs below | |
| trapEncAlerts | PREFIX.12 = 1.3.6.1.4.1.23522.1.1 2 | ID identifying an MIS trap; binds all other variables in it | |
| volEncoderName | PREFIX.2 = 1.3.6.1.4.1.23522.1.2 Octet String (Size 0...32) | Encoder stream name | Value: ENC1 |
| volEncoderHostname | PREFIX.3 Octet String (Size 0...32) | Encoder hostname or IP address | Value: ObsRpmVa |
| volEncAlerts | PREFIX.11 | Object identifier | |
| volAlertClipID | PREFIX.11.1 Integer32 | Clip ID created on this alert | Value: 6 (Value: 9) |
| volAlertDescription | PREFIX.11.2 Octet String | Textual description of the alert | Value: LOW AUDIO LEVEL /(AUDIO-OK): History Channel 66; encoder: ENC1 Audio level: -69. (-34) Server time: 2010-09-29 18:52:41 |
| volAlertClipRef | PREFIX.11.3 Octet String | URL to the clip created for this alert | Value: IP Address |
| volStreamName | PREFIX.11.4 Octet String (Size 0...32) | Stream (scanner in RPM) name | Value: P1 |
| volAlertEnum | PREFIX.11.5 Integer [enumerate] | Alerts enumeration | See following table for "volAlertEnum" |
| volAlertName | PREFIX.11.6 Octet String (Size(32)) | Alert nickname | <u>Value: AUDIOLOW</u> |
| volAlertType | PREFIX.11.7 Integer32 (0/1/2) | Type of alert: set (1), clear(0), or warning (2) | <u>Value: 1</u> |

| | | | |
|-------------------------|--|---|----------------------------|
| volCertainty | PREFIX.11.8 Integer32 | Certainty in percentage | Value: 0 |
| volAudioLevel | PREFIX.11.9 Integer32 | Audio level in dB units | Value: -69 (-34) |
| volAudioPin | PREFIX.11.10 Integer32 | Audio Pin | Value: 0 |
| volEventTime | PREFIX.11.11 Octet String (Size(32)) | Event time in format 2011/02/09 18:21:33 | Value: 2010-09-29 18:52:41 |
| rpmChannelID | PREFIX.11.12 Octet String (Size(32)) | Lineup channel ID (usually a channel number) | Value: 66 |
| rpmChannelName | PREFIX.11.13 Octet String | Lineup service name | Value: History Channel |
| rpmChannelQAM | PREFIX.11.14 Octet String (Size(32)) | Lineup channel group | Value: Westside |
| volAlertSeverity | PREFIX.11.15 Integer{ info (1), warning (2), minor (3), major (4), critical (5)} | The degree of priority to correct the problem | Value: 4 |
| oidAlertLevel | PREFIX.11.16 Integer{ probe (1), group (2), system (3)} | Alert level | |
| oidGroup | PREFIX.11.17 Octet String (32) | Name of affected probe group | Value: Burlington News |
| oidprobe | PREFIX.11.18 Octet String (32) | Name of affected probe server | Value: Probe66 |

Table: MIB variables alert example

14.2 SNMP notification signaling

Various alert-related SNMP traps are listed below.

| <u>VolAlertName</u> | <u>MIS RPM alerts (fault clips)</u> <u>Set /Clear and Notify (w/o clear) alerts</u> | <u>VolAlertEnum</u> |
|----------------------------|--|---------------------|
| <u>VIDEO-OK, AUDIOLOW</u> | Set AUDIOLOW alert | <u>200</u> (VIDEO) |
| <u>VIDEO-OK, AUDIOLOW</u> | Clear AUDIOLOW event | <u>200</u> |
| <u>VIDEO-OK, AUDIOHIGH</u> | Set AUDIOHIGH alert | <u>200</u> |

| | | |
|-------------------------------------|--|-------------------------|
| <u>VIDEO-OK, AUDIOHIGH</u> | Clear AUDIOHIGH alert | <u>200</u> |
| <u>VIDEOLOST, AUDIOLOW</u> | Set "video lost" alert | <u>500</u> (VIDEOLOIST) |
| <u>VIDEOLOST, AUDIOLOW</u> | Clear "video lost" alert | <u>500</u> |
| <u>VIDEOBLACK, AUDIOLOW</u> | Set "video black" alert | <u>200</u> (VIDEO) |
| <u>VIDEOBLACK, AUDIOLOW</u> | Clear "video black" alert | <u>200</u> |
| <u>VIDEOSTATIC, AUDIOLOW</u> | Set "video static" alert | <u>200</u> |
| <u>VIDEOSTATIC, AUDIOLOW</u> | Clear "video static" alert | <u>200</u> |
| <u>VIDEOMOTION</u> | Set "video motion" alert | <u>200</u> |
| <u>VIDEOMOTION</u> | Clear "video motion" alert | <u>200</u> |
| <u>SCRIPTERROR</u> | System detected syntax error in the script | <u>200</u> |
| <u>CCLOST</u> | Set "closed captions lost" alert | <u>300</u> (METADATA) |
| <u>CCLOST</u> | Clear "closed captions lost" alert | <u>300</u> |
| Equipment Error | "Equipment error" event | |
| STB Faulted | "STB faulted" alert | |
| NAVE-WM-FAULT | Set "NAVE WM fault" alert | <u>50</u> |
| NAVE-WM-RECOVERY | Clear "Nave low watermark" alarm | <u>50</u> |
| NAVPERC-FAULT | Set "NAVE percentage fault" alert | <u>60</u> |
| NAVE-PERC-WARN | Set "NAVE percentage warning" alarm | <u>60</u> |
| NAVE-TS-FAULT | Set "NAVE TS fault" | <u>70</u> |
| NAVE-TS-RECOVERY | Clear "NAVE TS fault" | <u>70</u> |
| GPI FAULTS | Set "GP faults" alert | <u>0</u> |
| GPI FAULTS CLEAR | Clear "GP faults" alert | <u>0</u> |

Table: SNMP notification signaling

14.3 System alerts

Most of the equipment and link related alerts are detected at the probes and forwarded to the CS. The CS generates the event log and event viewer entries. Since these alerts do not generate SNMP traps, parameters like "AlertEnum" are not critical.

| Alert name | <u>Description of MIS events</u> (No SNMP only event log) |
|-----------------------|--|
| Power | Toggle "STB Power" event |
| Test | "Test" event |
| Service stopped | "Service Stopped" event |
| Service started | "Service Started" alert |
| Probe down alert | "Probe down Alert" |
| Probe recovered alert | "Probe recovered Alert" |
| Encoder stopped | "Encoder stopped" alarm |
| Encoder started | "Encoder started " alert |
| AFD fault | "AFD fault" alert |
| Storage error | "Hard disk file error" event |
| License | "License expiration" event |

Table: System alerts

15 REVISION HISTORY

15.1 MIS releases

| Version | Build number | Date | Description |
|---------|--------------|------|-------------|
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15.2 Revision change history

| Date | Description |
|------|-------------|
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