

Trends in TV Technology

by Brad Plant
Ross Video Ltd.

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Audience Measurement

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Audience Measurement

Why is it important?

Is it a global concept?

The early days

What was used?

- Surveys / Diaries
- Quarterly Sweeps

What were the problems?

- Mistakes / Human error
- Forgetfulness
- Subjectivity

Electronic People Meters

- Invented by a British company AGB, now TNS
- Know as the “Frequency based meter”
- Used in over 30 countries world wide
- Tracked the UHF/VHF frequency
- Still relied on Diary method to track individual shows
- Next Step: Audio Sample matching

Audio Watermarking

- An audio encoding technology to track program viewing
- Using psycho-acoustics, audio codes are inserted into the audio signal at audible frequencies that can not be heard by the human ear.
- This allows for channel and program tracking using a set-top box in the consumer's home
- What about compression?

Audio Watermarking

The NAES II Encoding

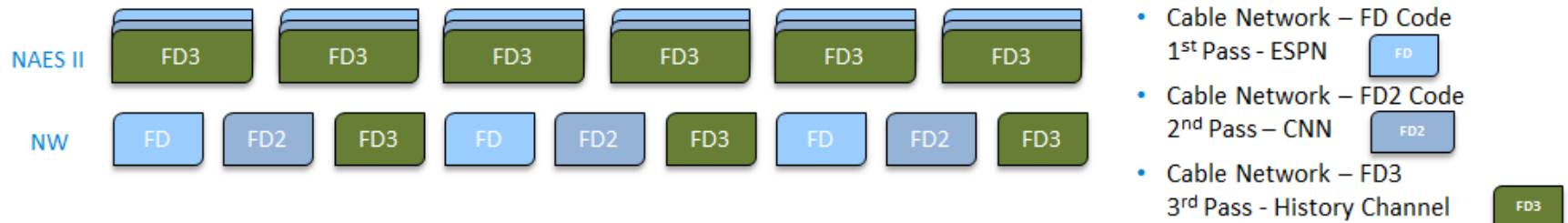
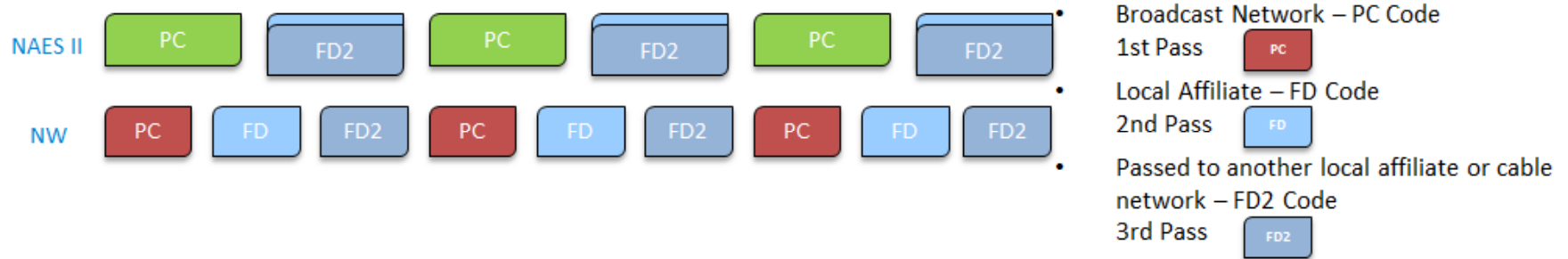
- Encoded between 4.5 – 6.2 kHz
- Only survived compression to 96kbps
- 2 code slots using time division multiplexing: How do we track a program from Network -> Syndicator -> Local Affiliate?
- Could easily be overwritten

Audio Watermarking

New Nielsen Watermarks

- Encoded between 2.99 – 4.8 kHz
- Survives compression to 16kbps
- 3 code slots using time division multiplexing
- Can not be overwritten
- Microphone detectable

Audio Watermarking



Watermarks Data Structure

Source ID	Mode	Type	DST/BRK	Course Time
16 Bits	1 Bit	2 Bits	1 Bit	29 Bits

- Source ID is unique for each encoder/distribution path
- Mode: 0 = Timestamp, 1 = Time in Content (TIC)
- Type: 00 = Program Content Code, 01 = Final Distributor 1, 10 = Final Distributor 2
- DST/BRK: If Mode bit = 0, DST/BRK indicates Daylight Saving Time (0 = Standard, 1 = DST), If Mode bit = 1, DST/BRK = 1 indicates Service Breakout
- Course Time is a Date/Time if TransType bit = 0, otherwise it is Time in Content (TIC)
 - Time value is seconds elapsed since Jan 1, 2010
 - If BRK = 1, 29 bits identifies Breakout Type, Provider

Watermarks Design Considerations

Nielsen Watermarks coexists with NAES II and does NOT negatively impact NAES II based crediting

- Same SID and Distribution Source ID

Tracking becomes more accurate

The Future of Audience Measurement



Live streaming to the iPad



Can't detect audio watermarks



Transcode watermarks to ID3 Tags

Audience Measurement around the World

- Nielsen offers audience measurements in several countries in Asia as well as North and South America
- Europe doesn't rely on advertising income as a primary source of revenue and therefore ratings are not factored
- Middle east in the process of implementing audio sample matching, but it is being run by the broadcasters, not an independent body.



Automated Production Control Implementation and Integration Considerations

OverDrive

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Automated Live Production

An automated control room is not the same as a conventional control room



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slide 16



Control Room Design

Engineering Considerations

- Level of Automation
- Room Layout
- Manual Overrides
- Level of Redundancy





OverDrive

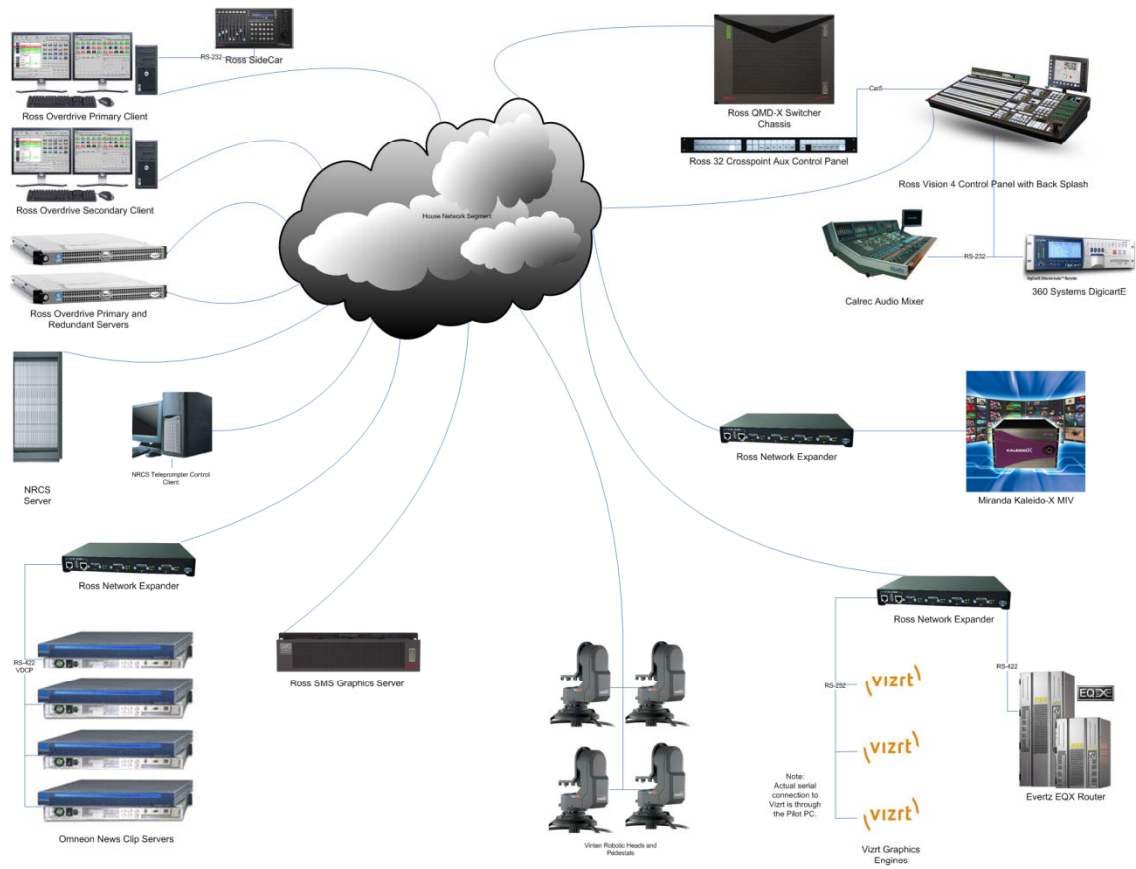
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Readiness for Automation

There are many steps to prepare for automation, but the first is to have a working control room with all the necessary media available





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Implementation Timeline

This is a timeline project, not an accordion



What is my Live Control?

The screenshot displays the OverDrive RunDownControl interface, which is used for managing live broadcast schedules and transitions. The main window is titled "MyRunDown" and contains a table with the following columns: Index, Shot Icon, Template, Audio, On-Air Status, Conflicts, Server Ch 1, Server Ch 2, and Server Ch 3.

Index	Shot Icon	Template	Audio	On-Air Status	Conflicts	Server Ch 1	Server Ch 2	Server Ch 3
4	Camera 1	RoboCam 1-1	AFV Disabled (2) FR: 0 + Channel 1 at 75%					
5	SOT	MLE Devices: 1 Additional Devices: 0	AFV FR: 0	On Air		Breaking News		00:01:12:32
6	Cam 2	RoboCam 2-2	AFV Disabled (4) FR: 0 + Channel 1 at 75%	Prepared				
7	SOT	MLE Devices: 1 Additional Devices: 0	AFV FR: 0	Shot Cued		Flood Warning		00:01:12:32
8	Cam 1	RoboCam 1-1	AFV Disabled (2) FR: 0 + Channel 1 at 75%	QuickRecall	QuickRecall			
9	L.OTS	CZ OTS L MLE Devices: 1 Additional Devices: 0	AFV Disabled (2) FR: 0 + Channel 2 at 75%	2 Incomplete	2 Incomplete			
10	VO	MLE Devices: 1 Additional Devices: 0	AFV (4) FR: 0 + Channel 1 at 75%	1 Incomplete	1 Incomplete			Missing clip
11	Camera 2	RoboCam 2-1	AFV Disabled (2) FR: 0 + Channel 2 at 75%	Shot Cued				
12	Cam 1	RoboCam 1-2	AFV Disabled (4) FR: 0 + Channel 1 at 75%					
		End of RunDown						

Other interface elements include:

- TIMERS:** A table showing program, shot, SMS, and server times.
- QUICK RECALLS:** A grid of buttons for various camera and audio sources.
- CUSTOM CONTROLS:** A grid of buttons for DSK (Display Source Key) and other control functions.
- PREPARED CUSTOMS:** Buttons for DSK1DK01, DSK2DK01, Run Teas, CREDSS, RUN FLAR, and HOSTDIGI.
- TRANSITIONS:** Buttons for Trans & Prep Out and Transition Out.
- ON-AIR CUSTOMS:** Buttons for PLAYSVRV, HSTBOSRV, and No On-Air Shot.
- SHOT STATUS:** A panel for RoboCam 2-2 showing a prepared clip.
- DSK CONTROL:** A panel for DSK 1-6 with Vtrt, STILL, and Cut/Auto buttons.



What is my Live Control?



OverDrive

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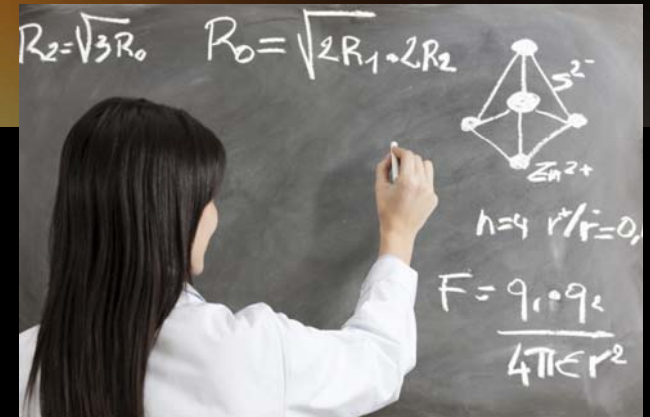
slide 23

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Beyond the Launch

Plan on advanced training

- Initial training helps build fundamentals and change the culture of productions
- Advanced training after a successful launch helps maximize the potential of a system
- Live production automation is designed to help improve the quality and consistency of your news cast





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Managing an Open Platform

Terminal Equipment

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Open Hardware Platforms

Industrial, Mil/Aero

VME
CompactPCI
uTCA



Telecommunications

ATCA
uTCA



Desktop Computing

PCI
PCIe
AGP



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Open Hardware Platforms



Galaxy 9500 1GB DDR2 PCI-E Video Card

95TGE8DC1CUM



Zotac GT240 1GB DDR-5 PCI-E Video Card

ZT-20406-10L



MSI N250-GTS-2D1G OC 1GB GDDR3 PCI-E Video Card

N250-GTS-2D1G OC

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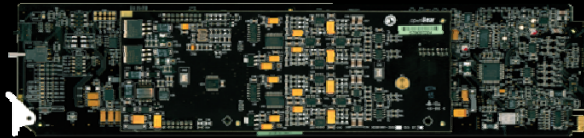
Open Hardware Platforms



Manufacturer A



Manufacturer B



Manufacturer C

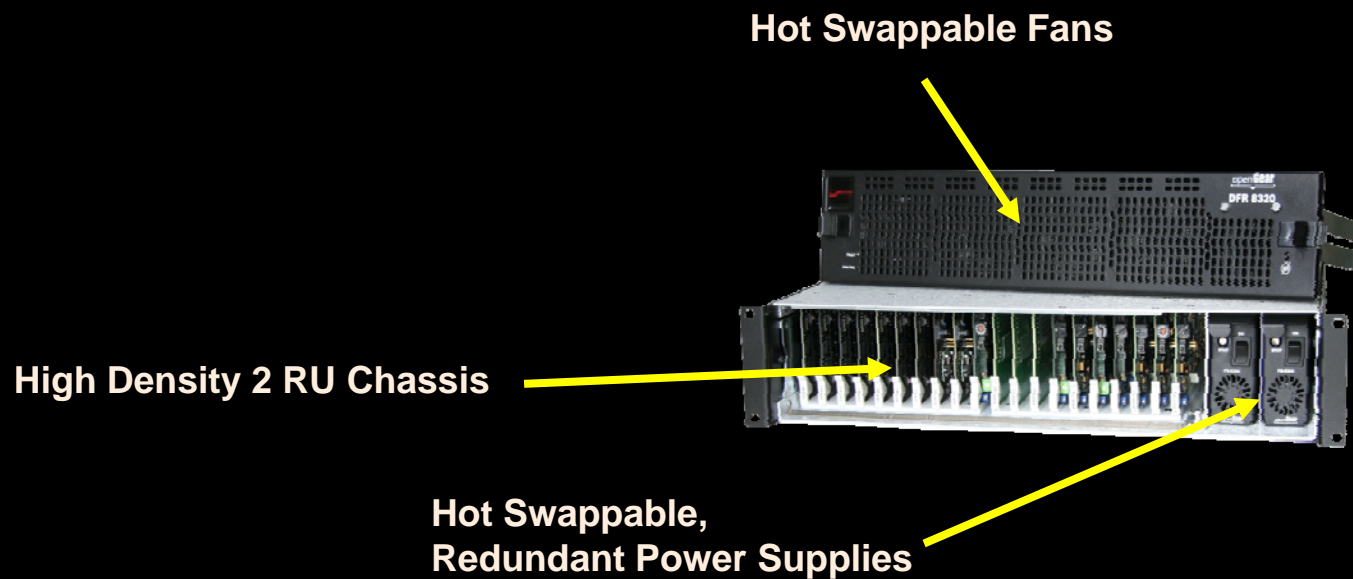
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The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame

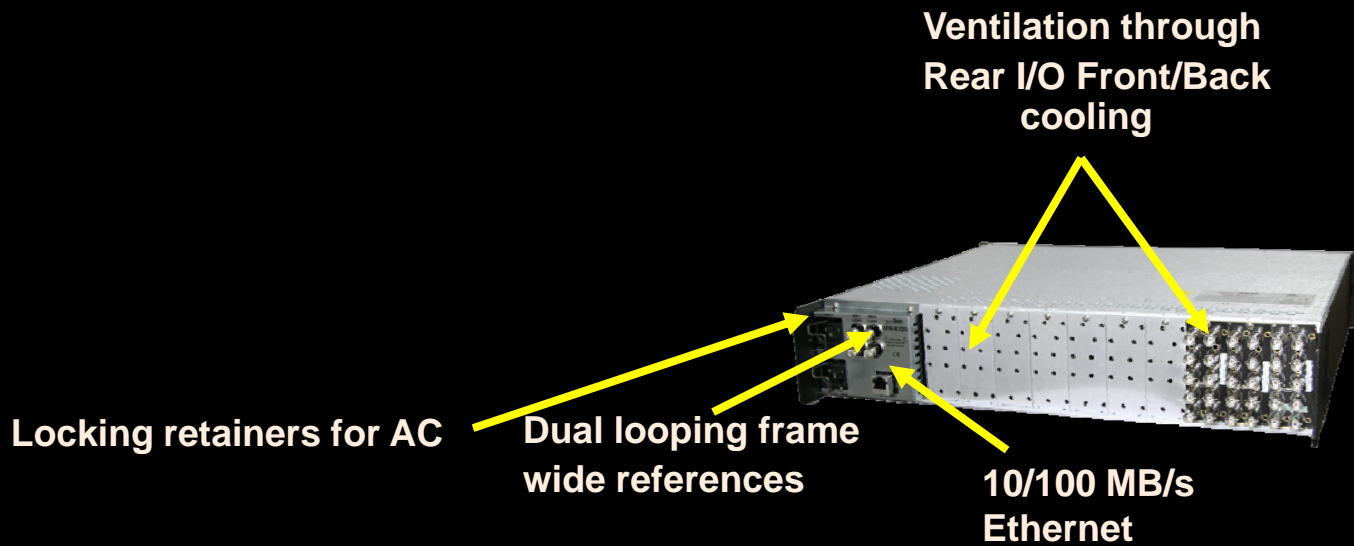


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The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame



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The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame

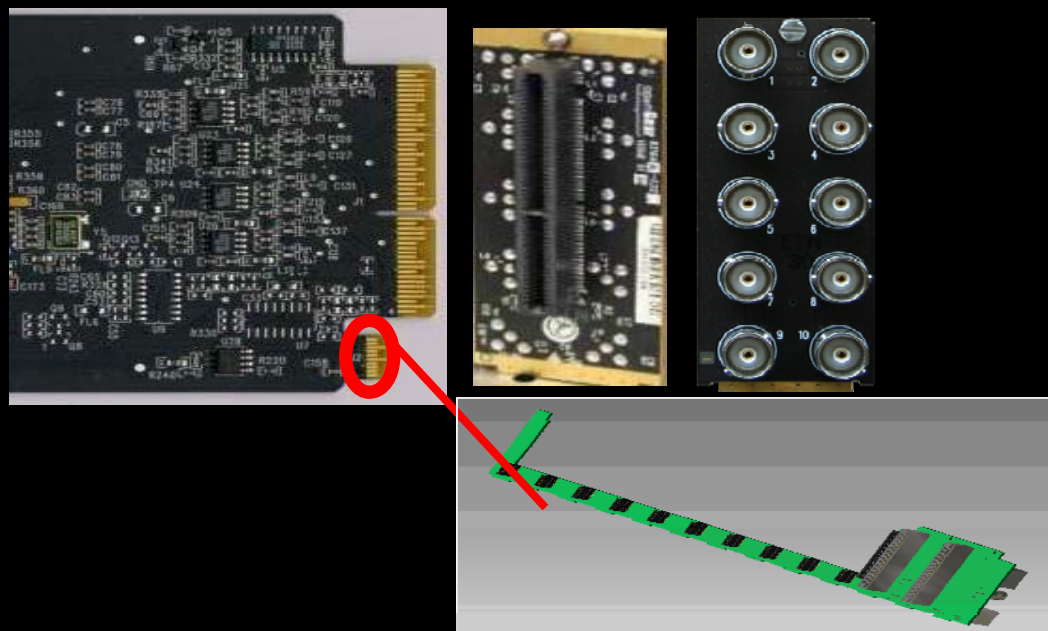
- One sole manufacturer of the frame
- 2RU model is the only model available
- 150W power supplies can be limiting to manufacturers
- Considerations for a new frame?
 - Power – More power means more heat
 - Control Bus: High Speed / GigE?
 - Other Sizes? 1RU, 3RU, 4RU



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The openGear Hardware Standard



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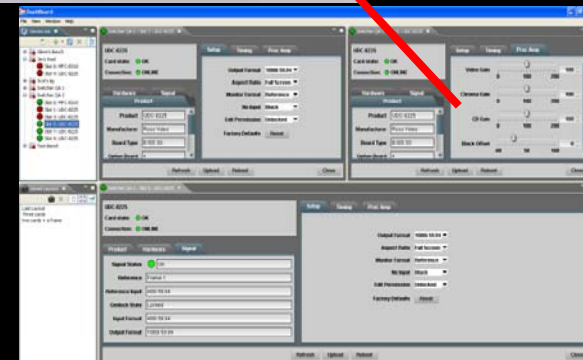
The openGear Control Standard

openGear Protocol

- Designed for network monitoring *and* control
- Does not require custom GUI's to be loaded
- Protocol is open and royalty free
- Ross Video provides free software
 - DashBoard

SNMP

- Simple Networking Management Protocol
- Excellent for system wide monitoring



openGear

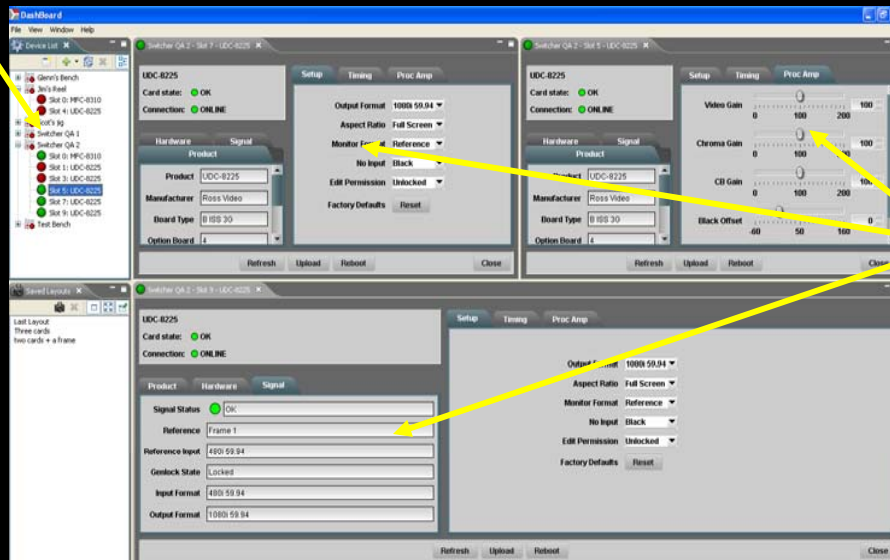
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DashBoard Control System

Navigation

OS Independent – runs on Windows, Mac OS/X, and Linux



Device Control windows

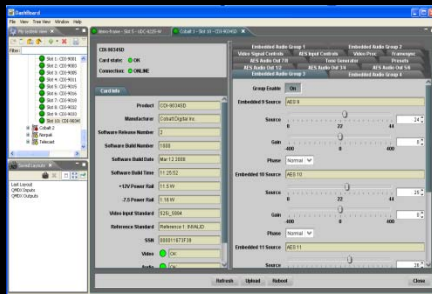


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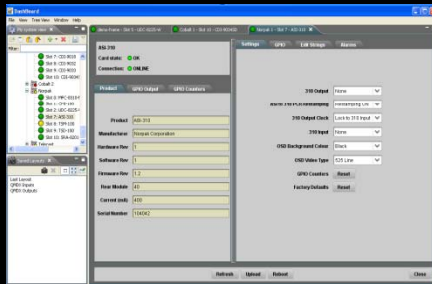


DashBoard Control System

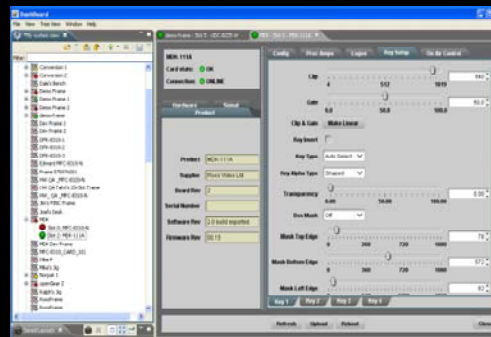
Vendor B



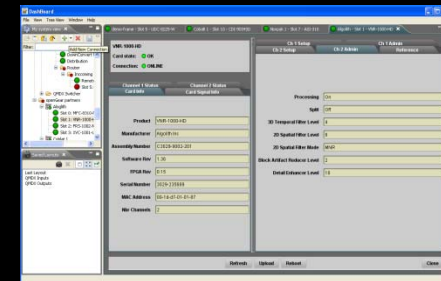
Vendor C



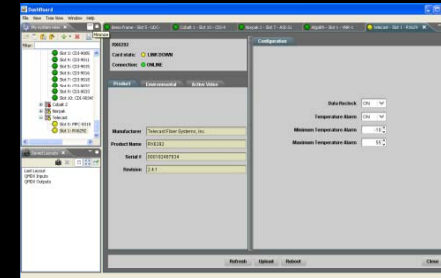
The Unsurpassed Power
of DashBoard
Vendor A



Vendor X



Vendor Y

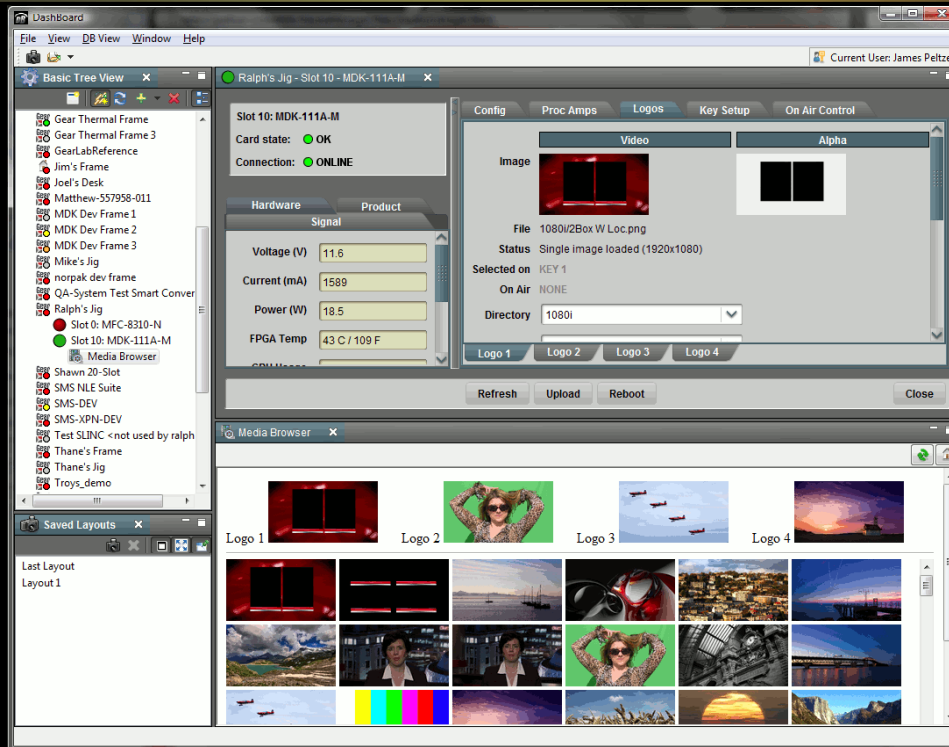


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openGear Connect



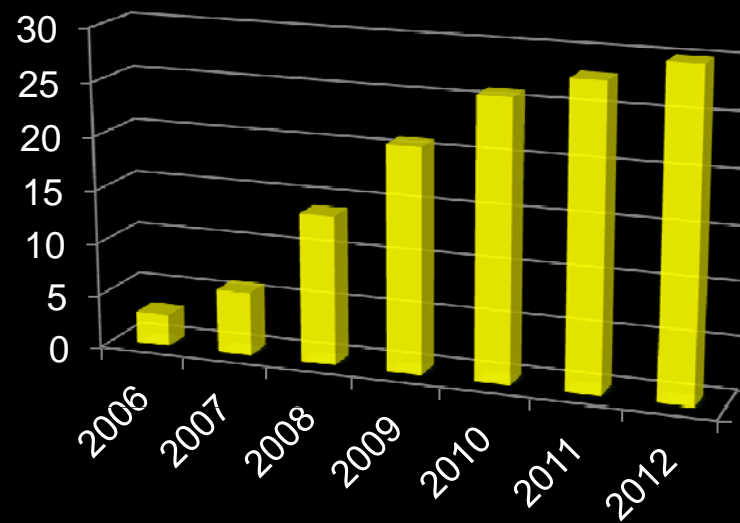
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openGear Acceptance

openGear Partners



www.openGear.tv

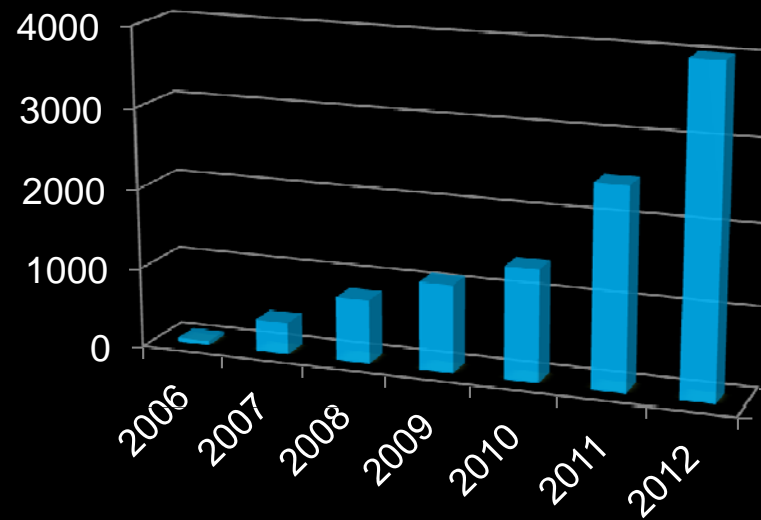


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openGear Acceptance

openGear Frames



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The openGear Goal

Provide the broadcast industry with the *most flexible and advanced terminal equipment* platform possible, with the opportunity to *select products from a wide range of technology leaders*, all in one platform, all under *one control system*.



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QUESTIONS?

Thank You
Brad Plant

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