Trends in TV Technology

by Brad Plant
Ross Video Ltd.

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Audience Measurement

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Audience Measurement

Why is it important?

Is it a global concept?

copyright Ross Video - all rights reserved

The early days

What was used?

- Surveys / Diaries
- Quarterly Sweeps

What were the problems?

- Mistakes / Human error
- Forgetfulness
- Subjectivity

copyright Ross Video - all rights reserved

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

copyright Ross Video - all rights reserved

Audio Watermarking

- An audio encoding technology to track program viewing
- Using phsyco-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?

copyright Ross Video - all rights reserved

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

copyright Ross Video - all rights reserved

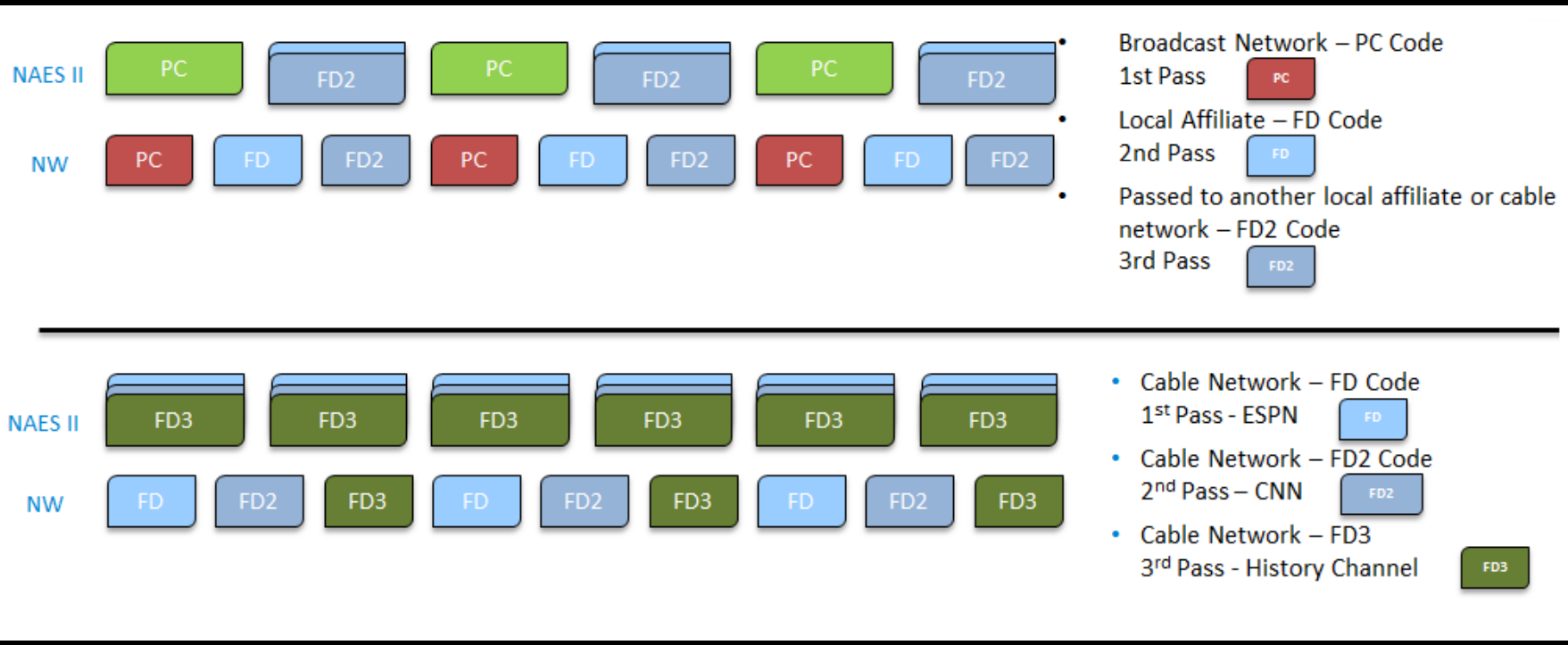
Audio Watermarking

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

copyright Ross Video - all rights reserved

Audio Watermarking



copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Watermarks Data Structure

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

copyright Ross Video - all rights reserved

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

copyright Ross Video - all rights reserved

The Future of Audience Measurement

Live streaming to the iPad

Can’t detect audio watermarks

Transcode watermarks to ID3 Tags

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

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 therefor 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.

copyright Ross Video - all rights reserved

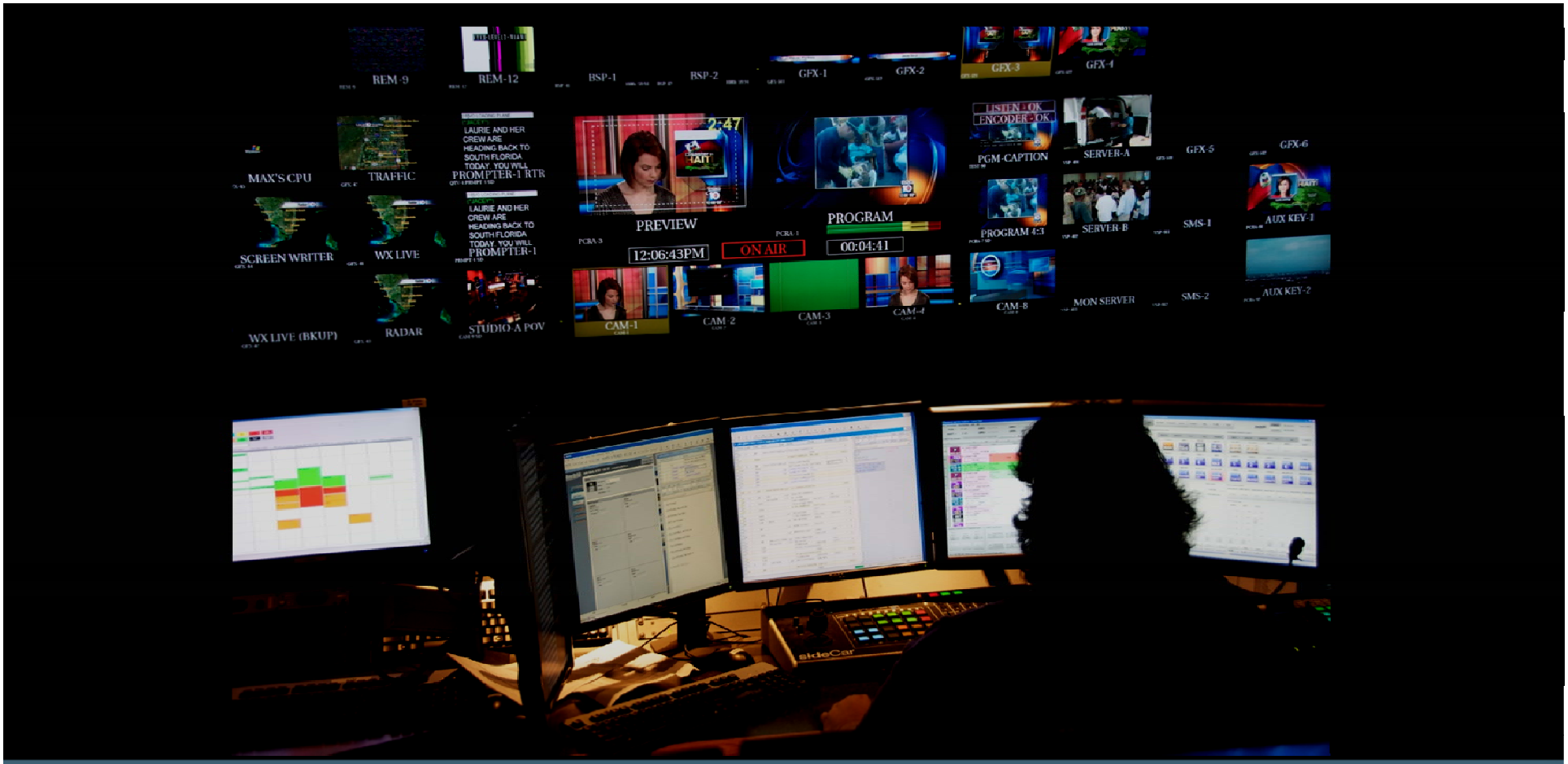
Automated Production Control

Implementation and Integration Considerations

OverDrive

copyright Ross Video - all rights reserved

ROSS
Live Production Technology



copyright Ross Video - all rights reserved

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

copyright Ross Video - all rights reserved

Control Room Design

Engineering Considerations

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

copyright Ross Video - all rights reserved

OverDrive

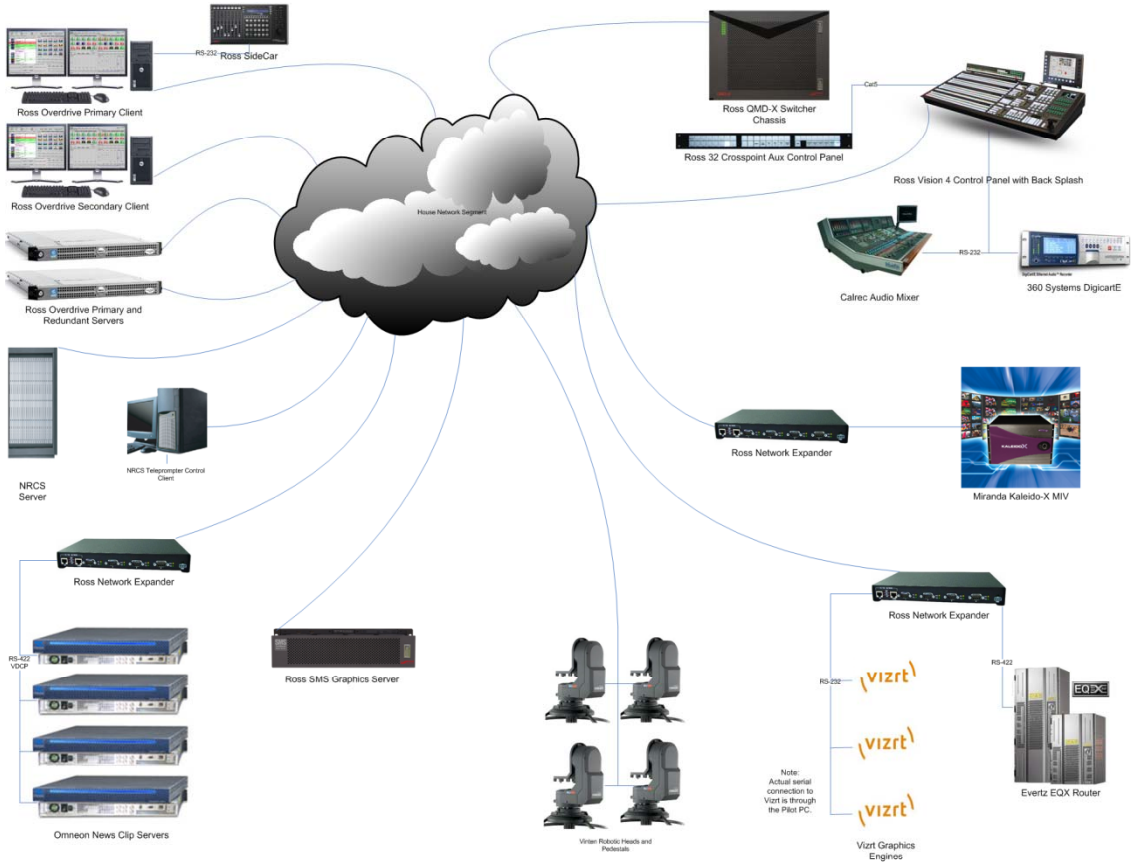
copyright Ross Video - all rights reserved

ROSS Live Production Technology

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

copyright Ross Video - all rights reserved



copyright Ross Video - all rights reserved

Implementation Timeline

This is a timeline project, not an accordion

copyright Ross Video - all rights reserved

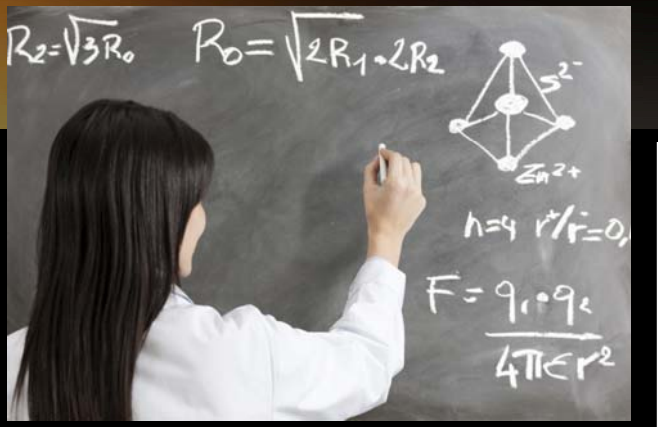
What is my Live Control?

copyright Ross Video - all rights reserved

What is my Live Control?

copyright Ross Video - all rights reserved

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

copyright Ross Video - all rights reserved

openGear

Managing an Open Platform

Terminal Equipment

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Open Hardware Platforms

Industrial, Mil/Aero

VME
CompactPCI
uTCA

Telecommunications

ATCA
uTCA

Desktop Computing

PCI
PCIe
AGP

openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Open Hardware Platforms

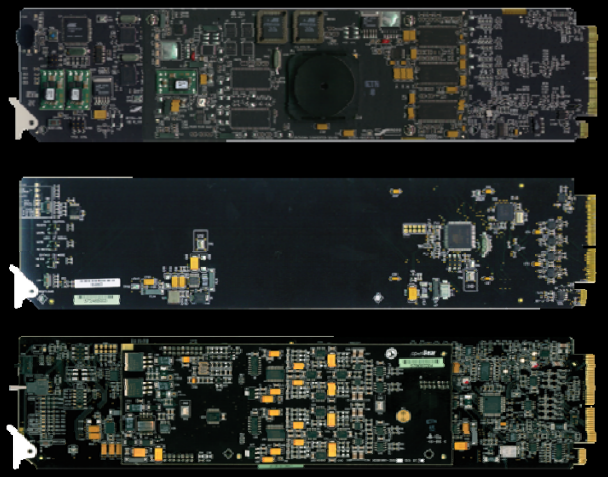
	Galaxy 9500 1GB DDR2 PCI-E Video Card 95TGE8DC1CUM
	Zotac GT240 1GB DDR-5 PCI-E Video Card ZT-20406-10L
	MSI N250-GTS-2D1G OC 1GB GDDR3 PCI-E Video Card N250-GTS-2D1G OC

openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Open Hardware Platforms



Manufacturer A

Manufacturer B

Manufacturer C

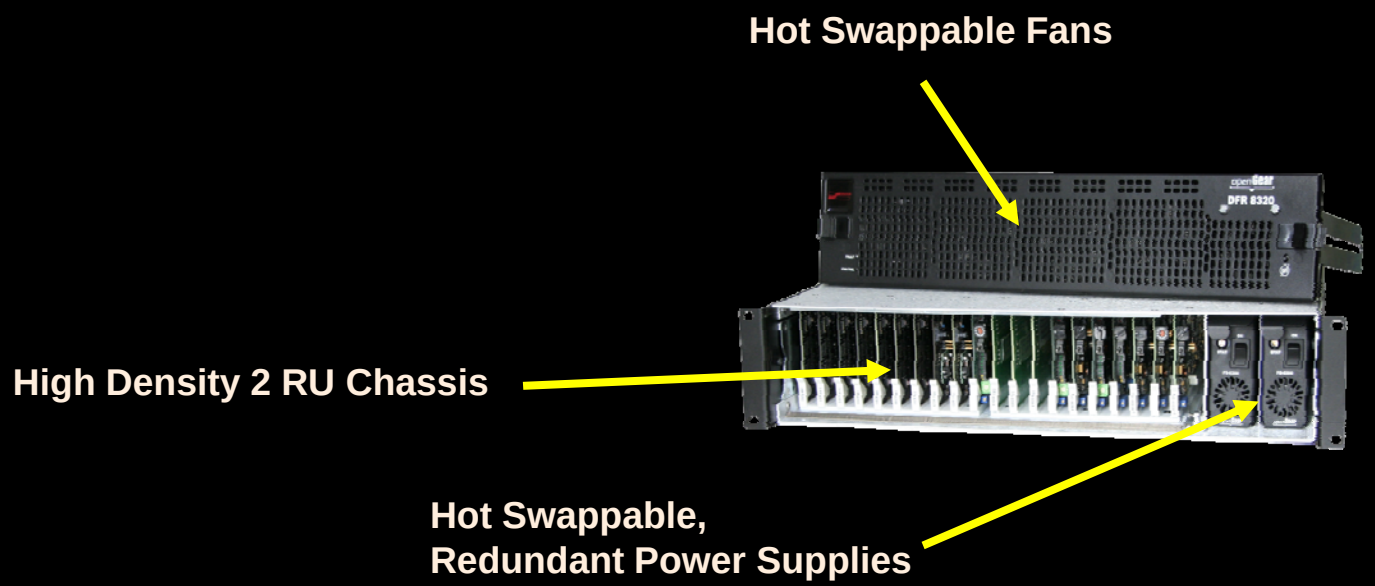
openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame



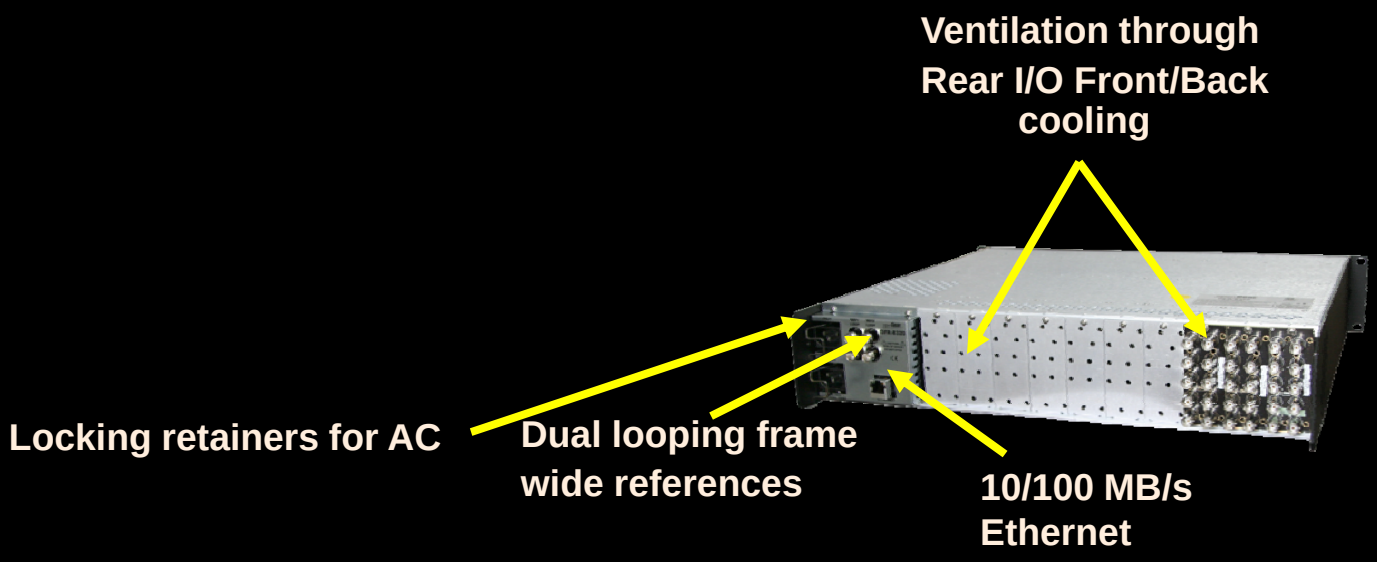
openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame



openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

The openGear Frame

DFR-8321 – openGear High Density, Multi Definition Frame

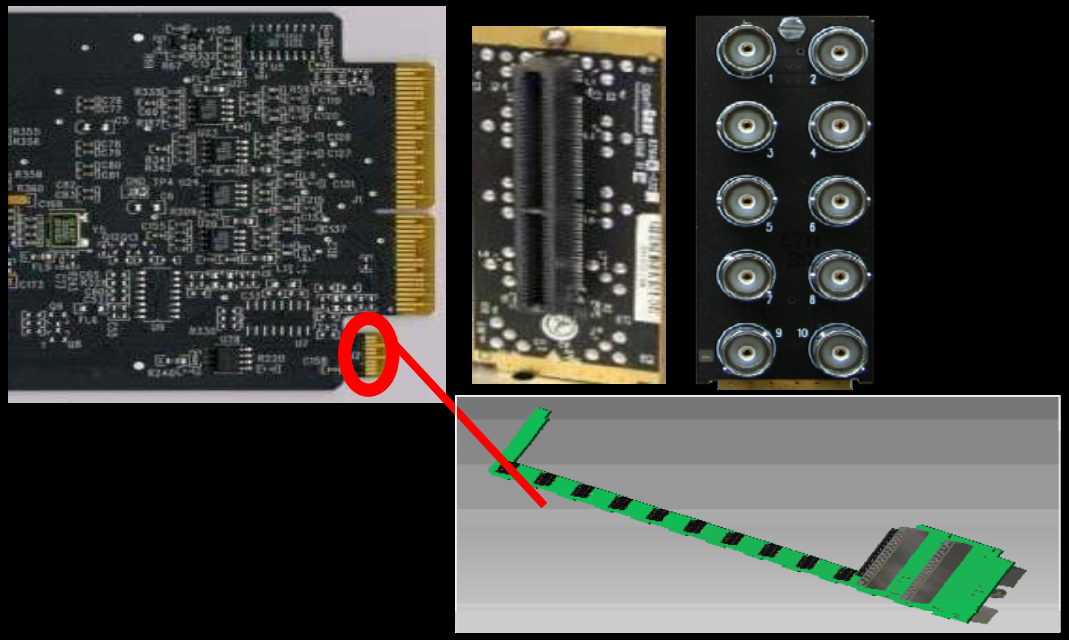
- One sole manufacturer of the frame
- 2RU model is the only model available
- 150W power supplies can be limiting to manufacturers
- Considerations for a new frame?
  - Power – More power means more heat
  - Control Bus: High Speed / GigE?
  - Other Sizes? 1RU, 3RU, 4RU

openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

The openGear Hardware Standard



openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

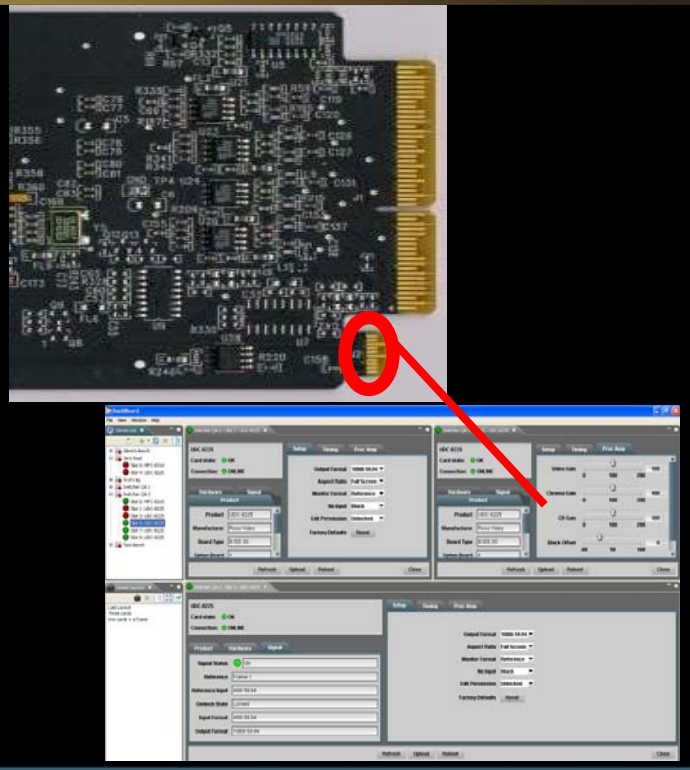
The openGear Control Standard

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



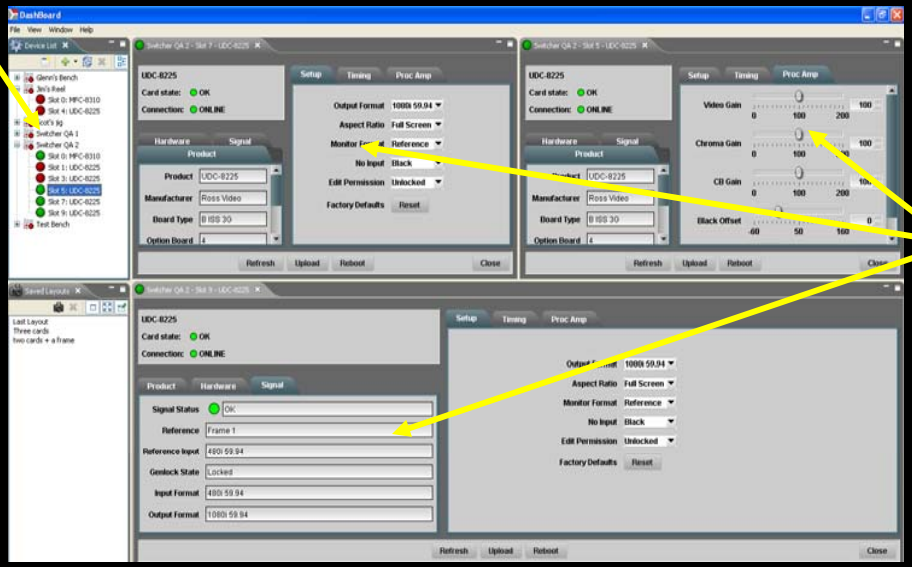
openGear

copyright Ross Video - all rights reserved

ROSS Live Production Technology

DashBoard Control System

Navigation



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

Device Control windows

openGear

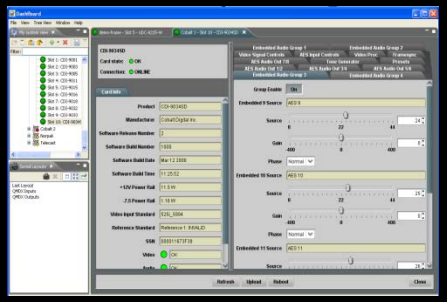
copyright Ross Video - all rights reserved

ROSS Live Production Technology

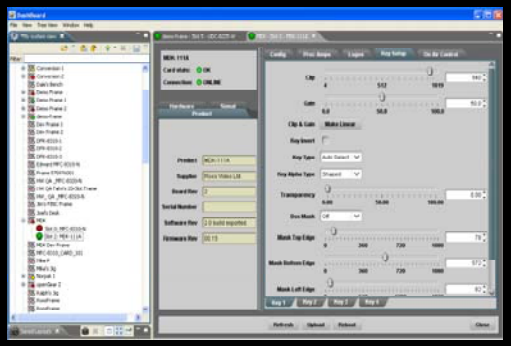
DashBoard Control System

The Unsurpassed Power of DashBoard

Vendor B

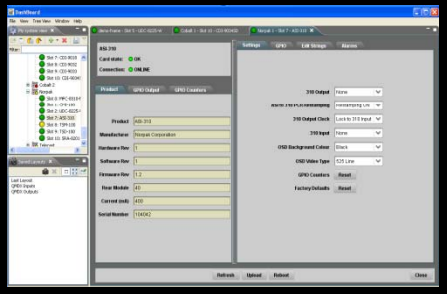


Vendor A

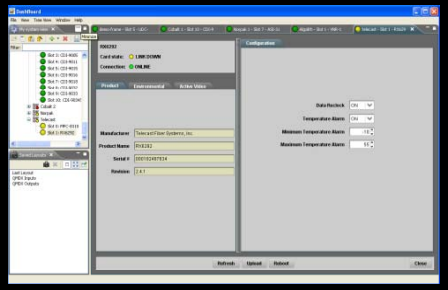


Vendor X

Vendor C



Vendor Y

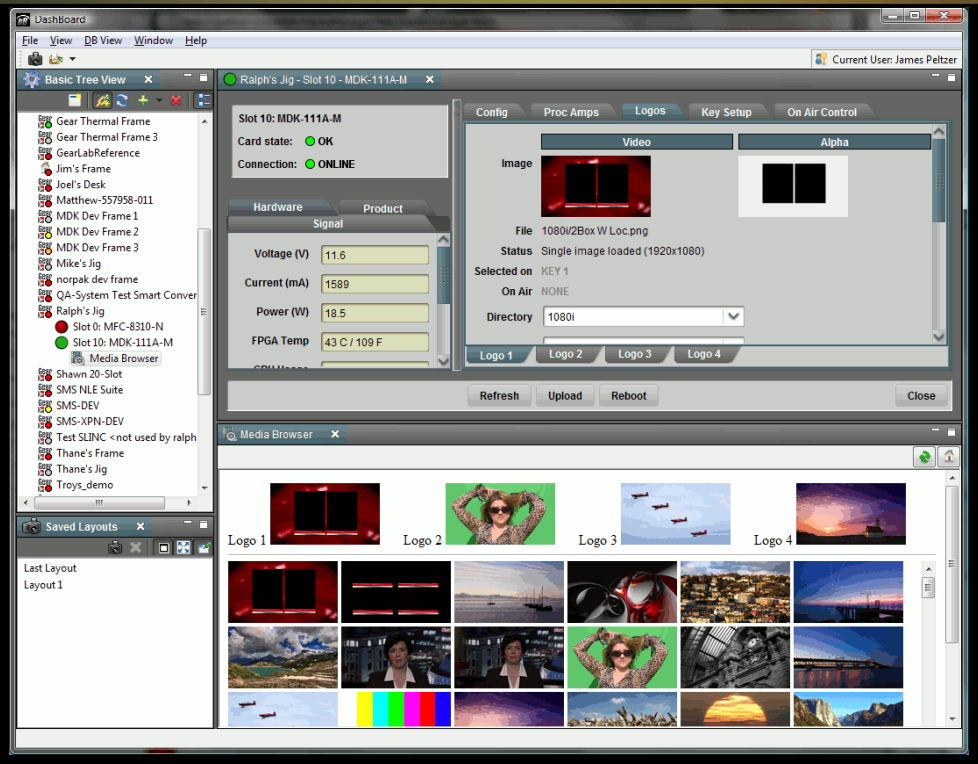


openGear

copyright Ross Video - all rights reserved

ROSS Live Production Technology

openGear Connect



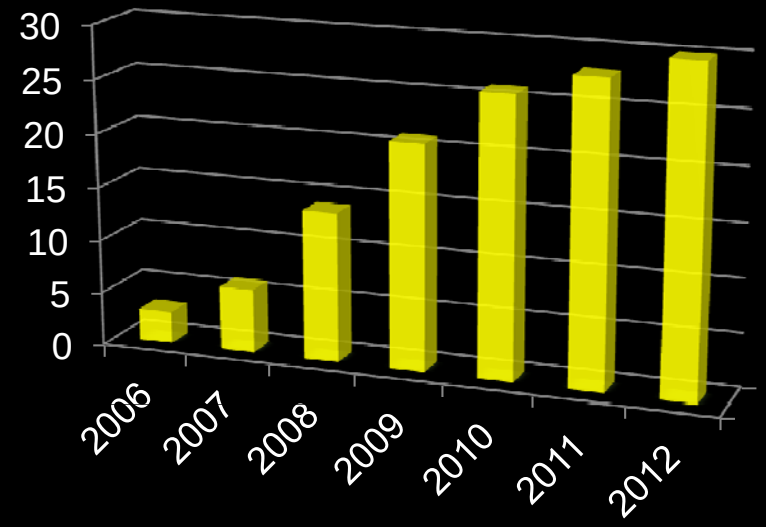
openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

openGear Acceptance

openGear Partners



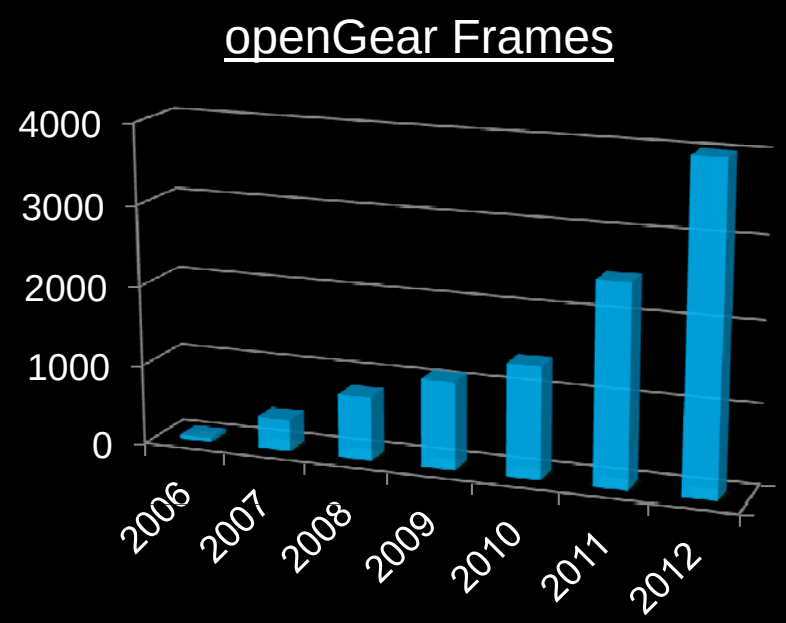
www.openGear.tv

openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

openGear Acceptance



openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

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*.

openGear

copyright Ross Video - all rights reserved

ROSS
Live Production Technology

Questions?

Thank You

Brad Plant

copyright Ross Video - all rights reserved

ROSS
Live Production Technology