CBC/Radio-Canada World Largest IP Facility

Denis Pare, VP Sales

Embrionix

Who I am

- Denis Pare
- Vice President of Sales at Embrionix
- 3 years at Embrionix
- 18+ Years at Miranda/Grass Valley
  - Channel Management
  - Key Account Management
  - Team Management
- Skotel

Agenda

- Project Overview
- Network Topologies
  - Production
  - Playout
- Processing CBC Approach
- SDI Gateway
- Configuration and Monitoring
- Standalone HDMI Gateway
- Benefits

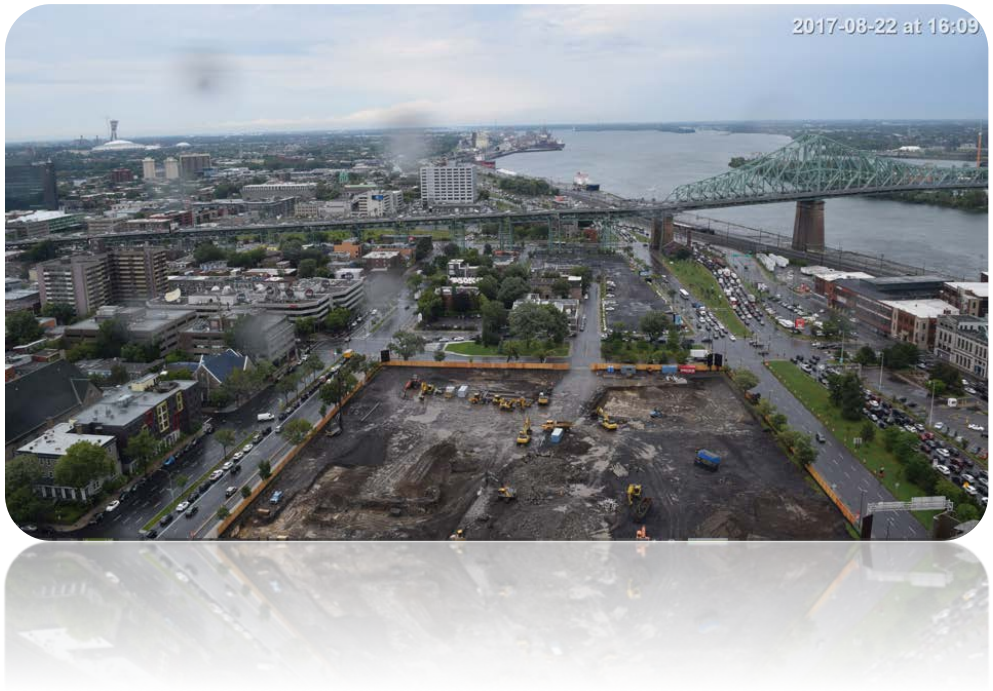
Project Overview

Who is CBC/Radio-Canada

- Canadian public broadcaster
  - TV, WEB and Radio
- Produce and broadcast in English and French across Canada
- Two main hubs, Toronto for English and Montreal for French
- Montreal NOC is moving into a new full IP Facility

- Brand new IP facility
- Going from 121,000 m^2 to 37,000 m^2
  - 3 Production Sets (2 Control Rooms)
  - 10 News Production Areas (4 Control Rooms)
  - 40 TV playout channels, 40 WEB channels and 180 Radio channels
  - Broadcast across Canada
- Uses SMPTE ST 2110 across the facility
- HD as well as UHD Content

- Project Timeline
  - August 2017: Construction started



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  - Fall 2017: POC Regional Station

140km from Network

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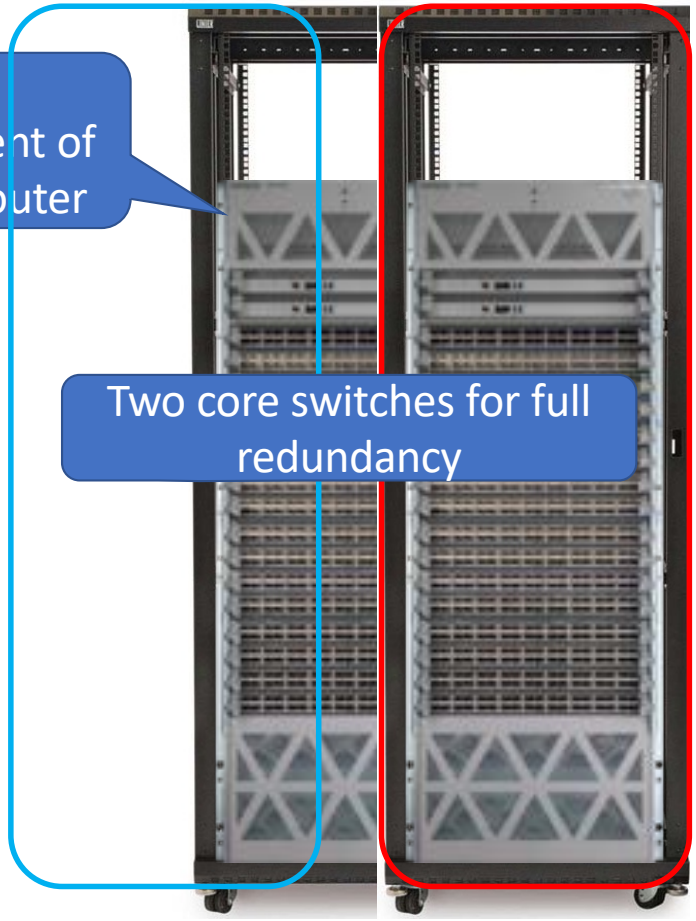
  - August 2018: Get the keys of the data center
  - January 2019: First test on prime time live show
  - Today (July 2019)
  - January 2020 to fall 2020: Moving in

Network Topologies

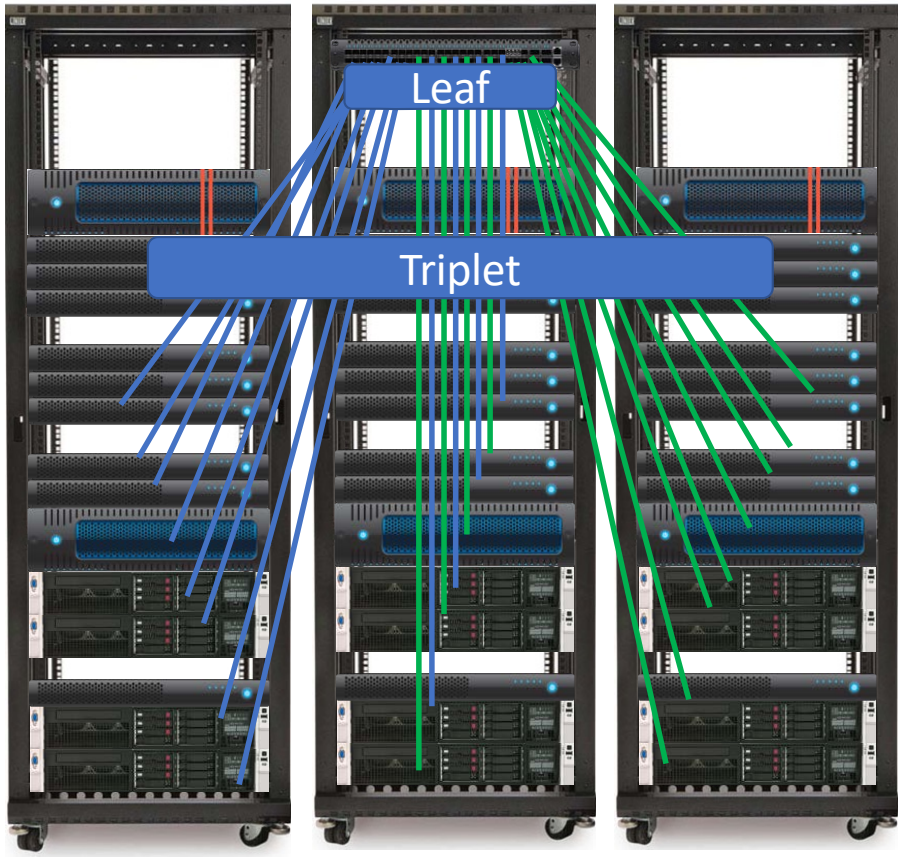
DATA CENTER

1152 ports
This is the equivalent of
6900 square HD router



Two core switches for full redundancy

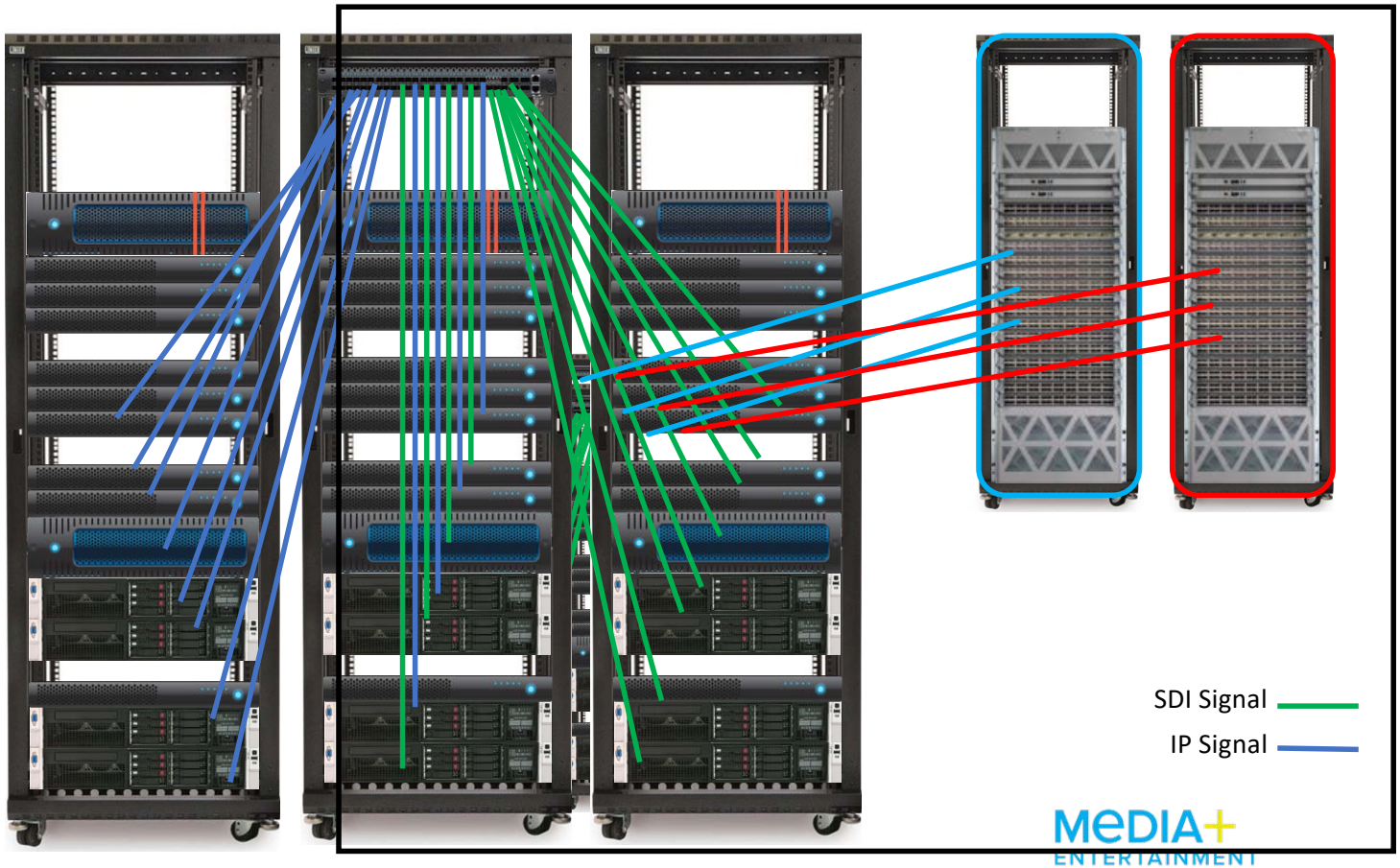
DATA CENTER



SDI Signal

IP Signal

DATA CENTER




IP SHOWCASE THEATRE


SMPTE

Production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SMPTE

Studio Floors

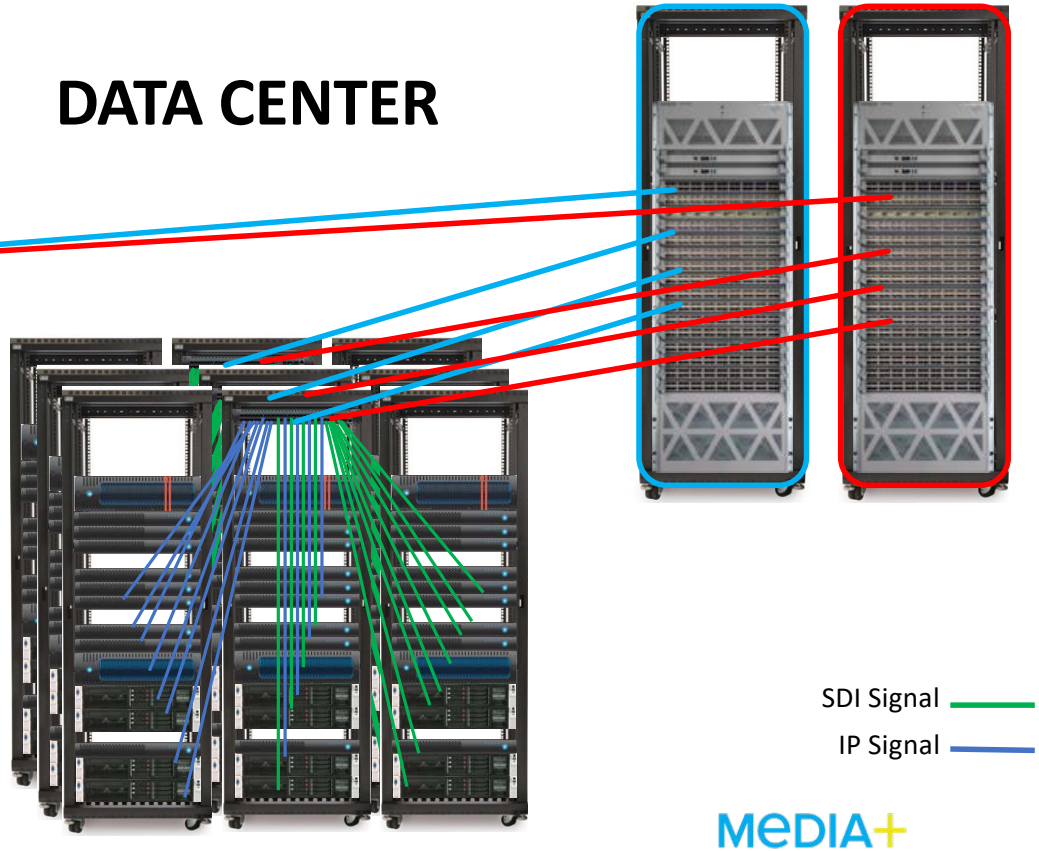
IP Audio device

IP Video device

HDMI Gateway

14 Closets

DATA CENTER



SDI Signal

IP Signal

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MEDIA+ ENTERTAINMENT TECH EXPO


IP SHOWCASE THEATRE


SMPTE

Playout


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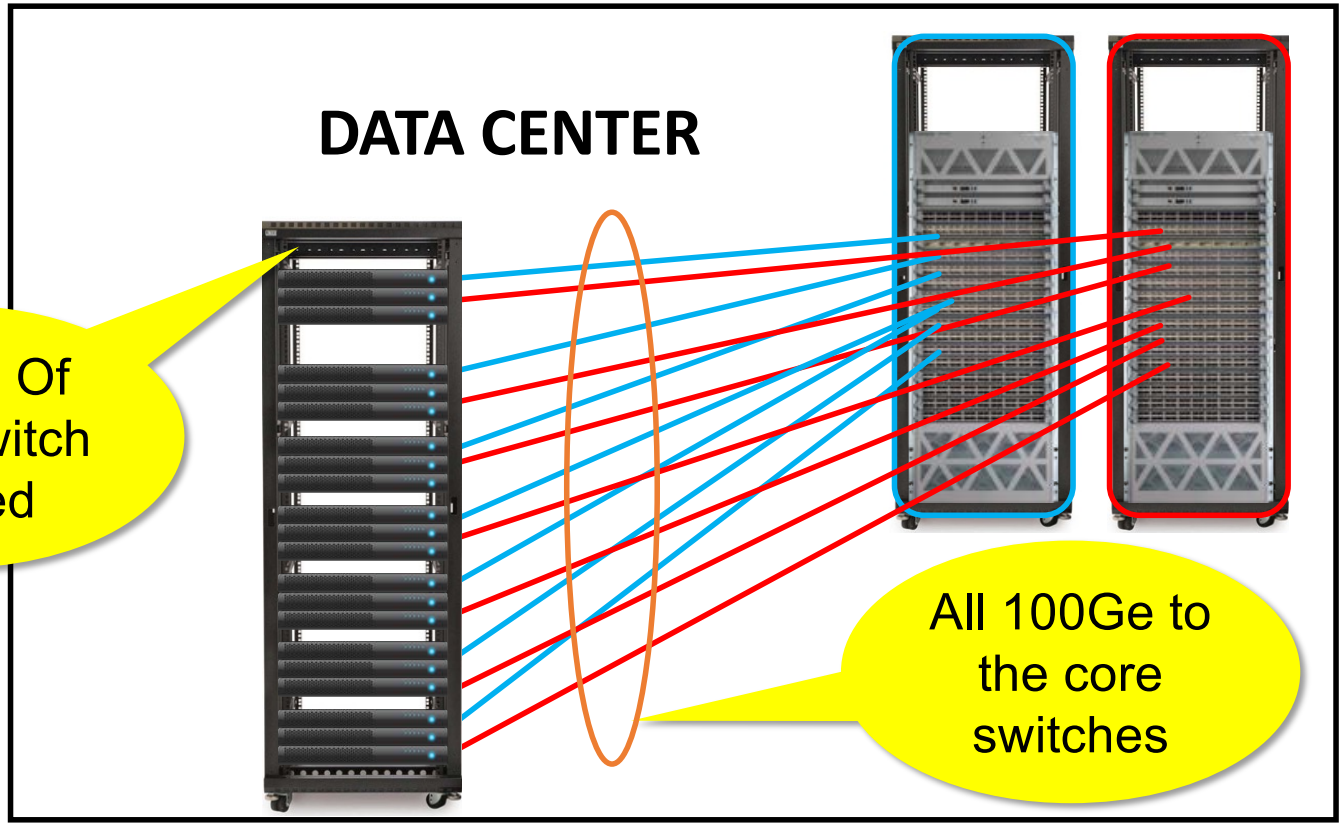
TECH EXPO

Centralized Playout



Signal Processing

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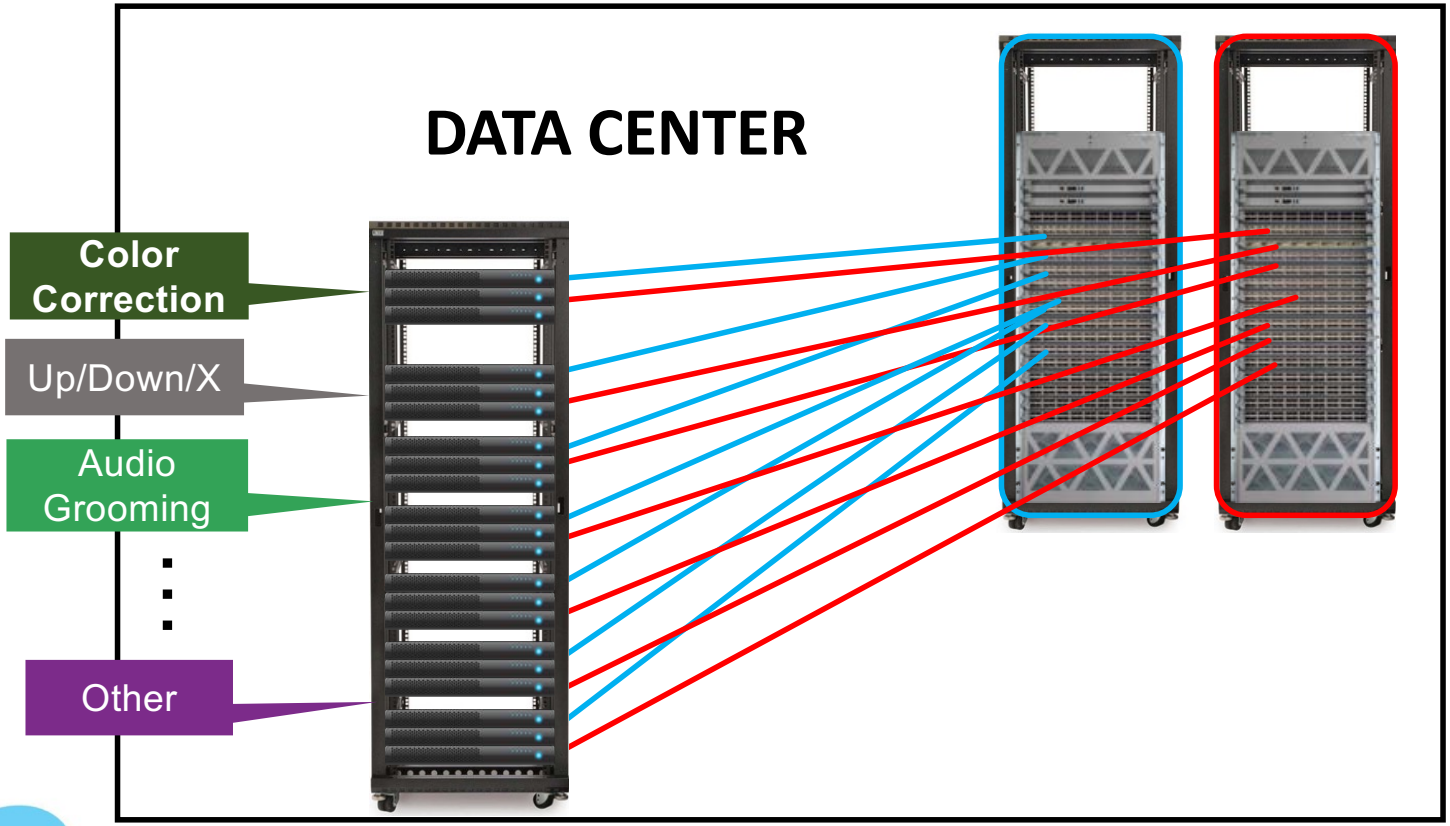
Centralized Processing




IP SHOWCASE THEATRE


SMPTE

Gateway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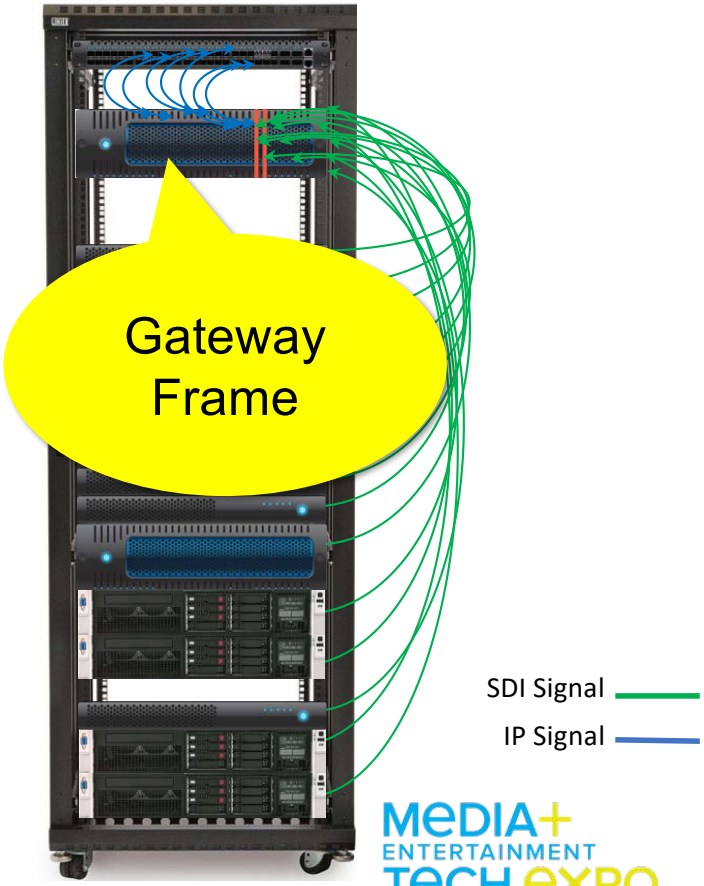
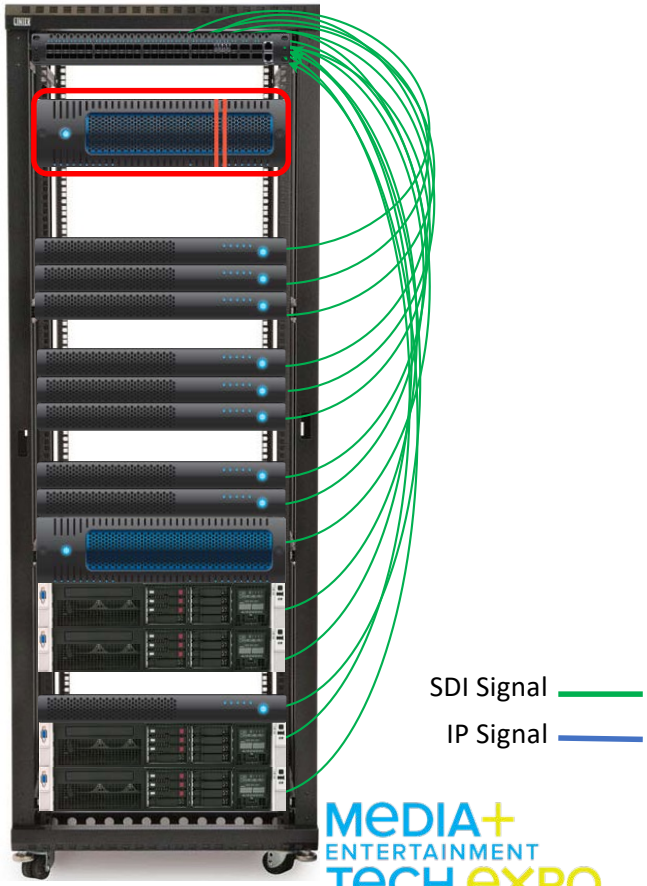
SDI Signal Aggregation

- Most providers propose a Gateway Frame to convert SDI to/from IP
- SDI signals need to be wired to that Gateway Frame
- Then the Gateway Frame is wired with fiber to a Top Of Rack switch



SDI Signal Aggregation

- CBC decided on a different approach
- Using SFP's as gateway directly into the COTS TOR
- The network becomes the gateway frame



SDI Signal Aggregation

Then Encapsulate or
De-encapsulate into
ST 2022-6 or ST 2110
(ST 2022-7)

Up to 2 HD SDI
in or out

SDI Signal Aggregation

CBC ST 2110 Gateways requirements

- Hitless redundancy
- Dual channel support
- 4x AES67 audio flows
  - Up to 16 channels each
- Support of wide senders
- LLDP protocol (position discovery)
- Ember+ or NMOS control protocol
- Frame Synchronisation
- Clean switching
- Quiet Switching

SDI Signal Aggregation

Then Encapsulate or De-encapsulate into ST 2110 (ST 2022-7)

Uses a 25Gb version for UHD (2x 12Gb for 4K)

SDI Signal Aggregation

SFPs insert into a 25Ge COTS aggregation switch

Configuration and Monitoring

Configuration & Monitoring

- Third party interface
  - Ember+
  - NMOS
  - RESTful API
- Monitoring
  - SNMP
  - RESTful API

HDMI Standalone Gateway

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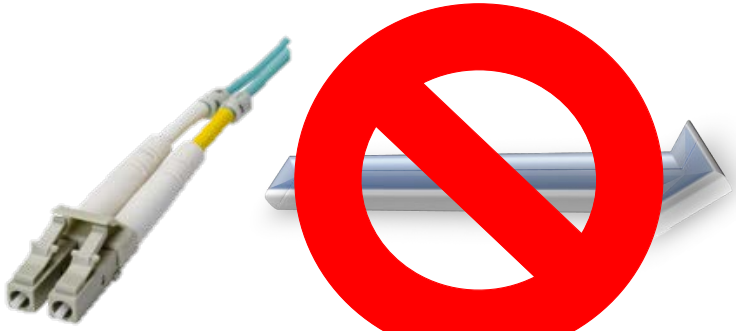


IP

Monitors with
SDI or HDMI Inputs

Monitoring ST 2110

Monitoring ST 2110

4K ULTRA HD

emVIEW

HDMI 2.0 UHD Outputs
(3840x2160p 60Hz)

ST 2022-7
Redundancy

Dual Net 25GE
Aggregation

Data Center

Monitoring ST 2110

4K ULTRA HD

emFUSION-6

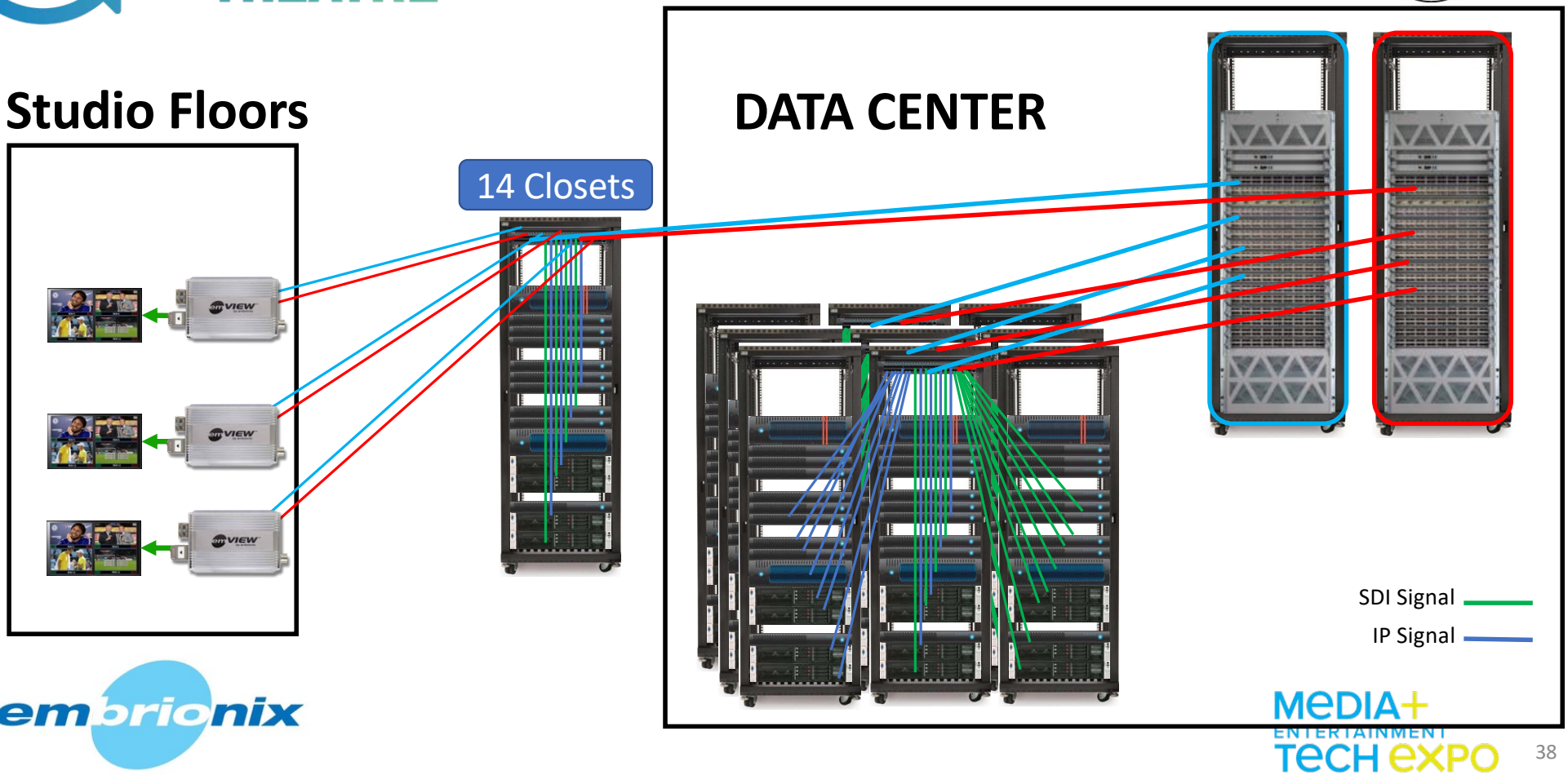
2x HDMI 2.0 UHD Outputs
(3840x2160p 60Hz)

ST 2022-7
Redundancy

Dual Net 25GE
Aggregation

Data Center

Monitoring ST 2110



Benefits

- ✓Distributed architecture
  - ✓Allowing flexibility & important cable reduction
- ✓Scalability
  - ✓Ease of adding equipment
- ✓Agility
  - ✓HD, 4K in the same network…may be 8K 😉

Thank You

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