IP Live
Production System
SONY

Transitioning to IP for Broadcast & Production

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Disruptive change in broadcast architectures

- SDI to IP, profoundly disruptive infrastructure change
- What's the driver?
  - Digital TV evolves… ATSC 3.0/NextGen allows new broadcast products
  - Expanding the source product… HD to UHD, SDR to HDR… new channels/OTT …
- How does the plant change to support new needs, in a flexible, practical, and supportable way
- Remote Production introduced new requirements
- IP Systems- planning, building, maintaining

Infrastructure Background

- Moving signals around, SDI (Serial Digital Interface)
- Moving to IP throughout… invasive networking overtakes infrastructure

The Production eco-system

SDI

Serial Digital

Camera , CCU

POV Camera , CCU

Server

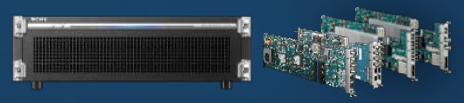
Peripheral

Other Devices

SDI Core Routing

Switcher

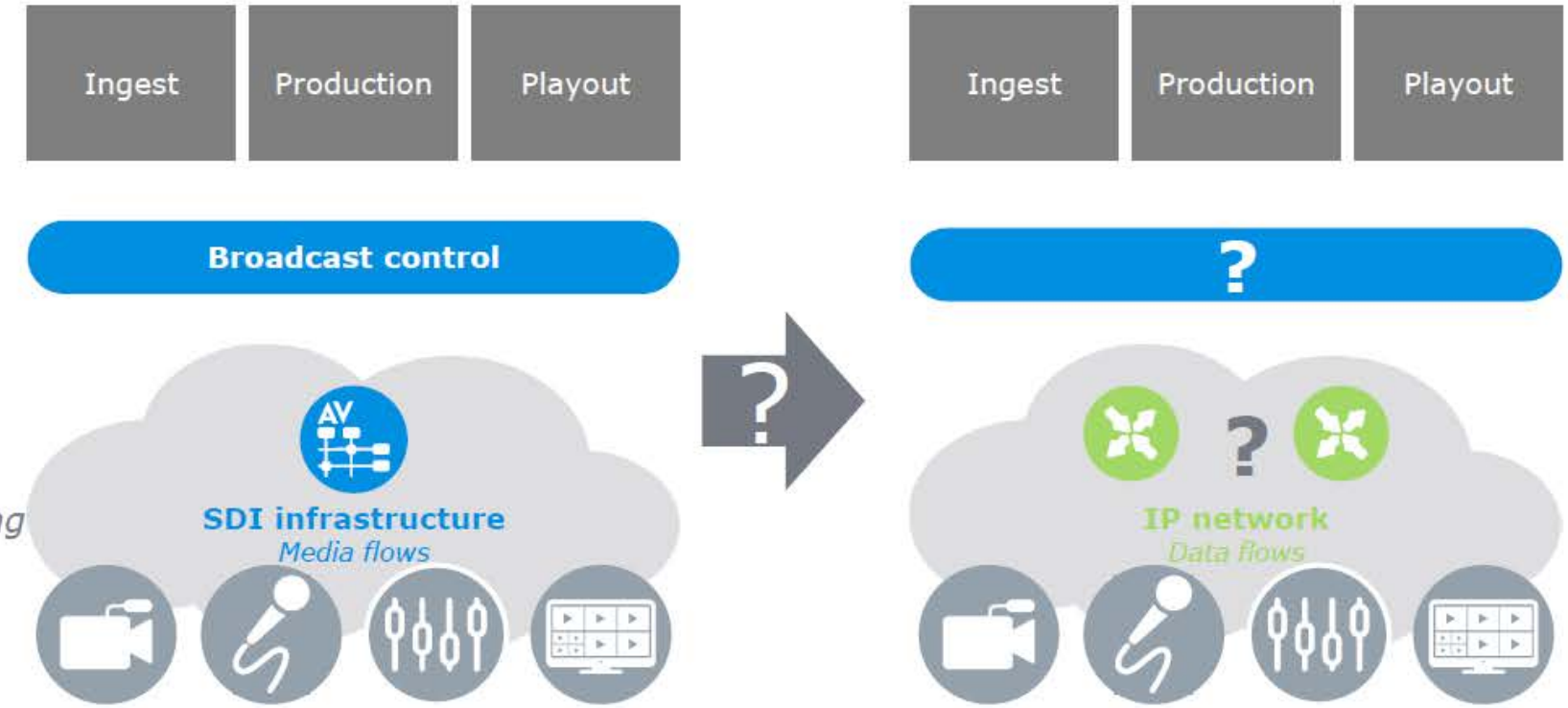
Peripherals



Multi-Viewer

Monitoring

How to make **IP** fit **Broadcast**



Media-centric
High performance
Deterministic routing
Low latency
Fast switching, etc

Data-centric
Best effort
Non-deterministic
Variable latency
Slow switching, etc

SDI infrastructure is **optimized for broadcast**

IP networks needs engineering to meet **broadcast needs**

The Production eco-system

SDI
Serial Digital

Move to IP

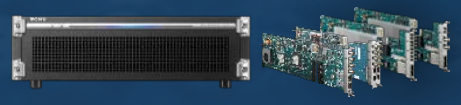
SDI Core Routing

Camera , CCU

POV Camera , CCU

Server

Peripheral



Other Devices

Switcher

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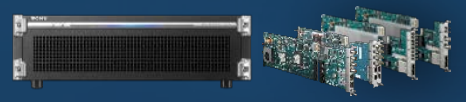
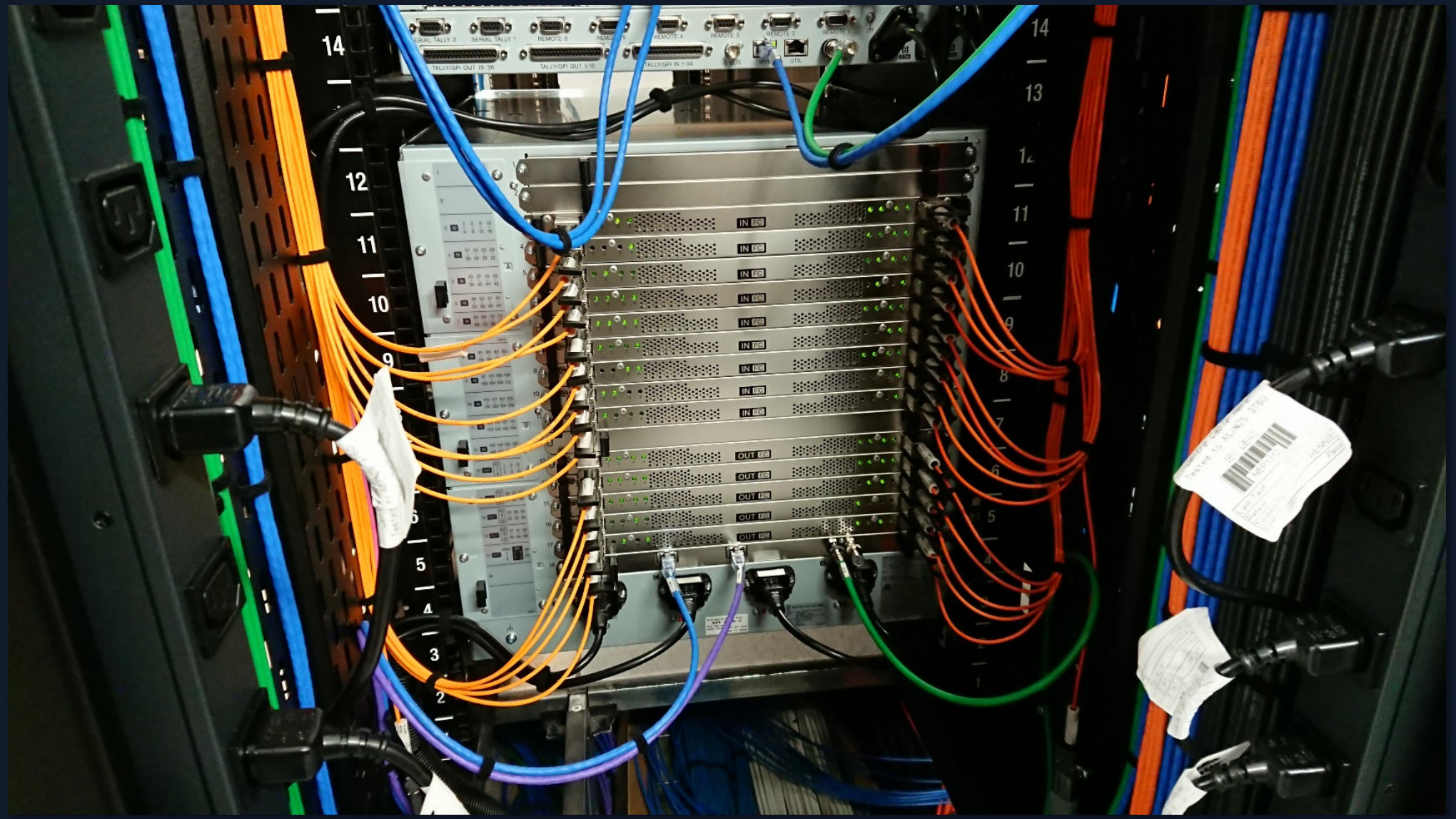


Multi-Viewer

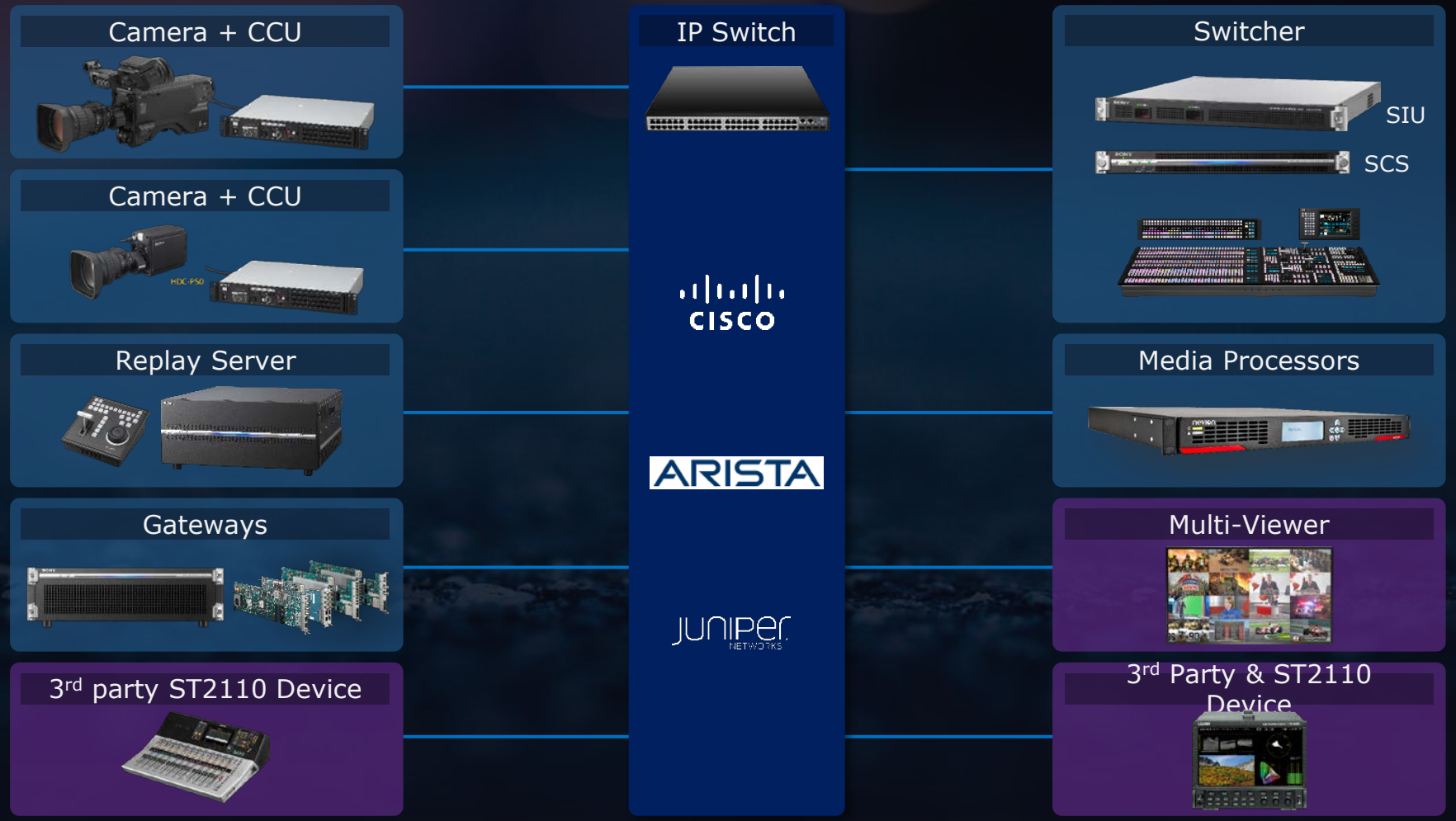
Monitoring

Streamlined, flexible IP signals



The Production eco-system

IP networked Systems



Practical migration of the plant- SDI to IP

- An SDI core… look ahead to the next tech refresh … evaluate/plan for an IP core
- Changing the machinery and…
- new technical support (staff) requirements

The IP toolset

- We’re past the bloody part ☺
- Standards help
- Upside: format flexibility, automation, resource sharing, path to cloud, …

World-wide SONY “IP Live” Installations

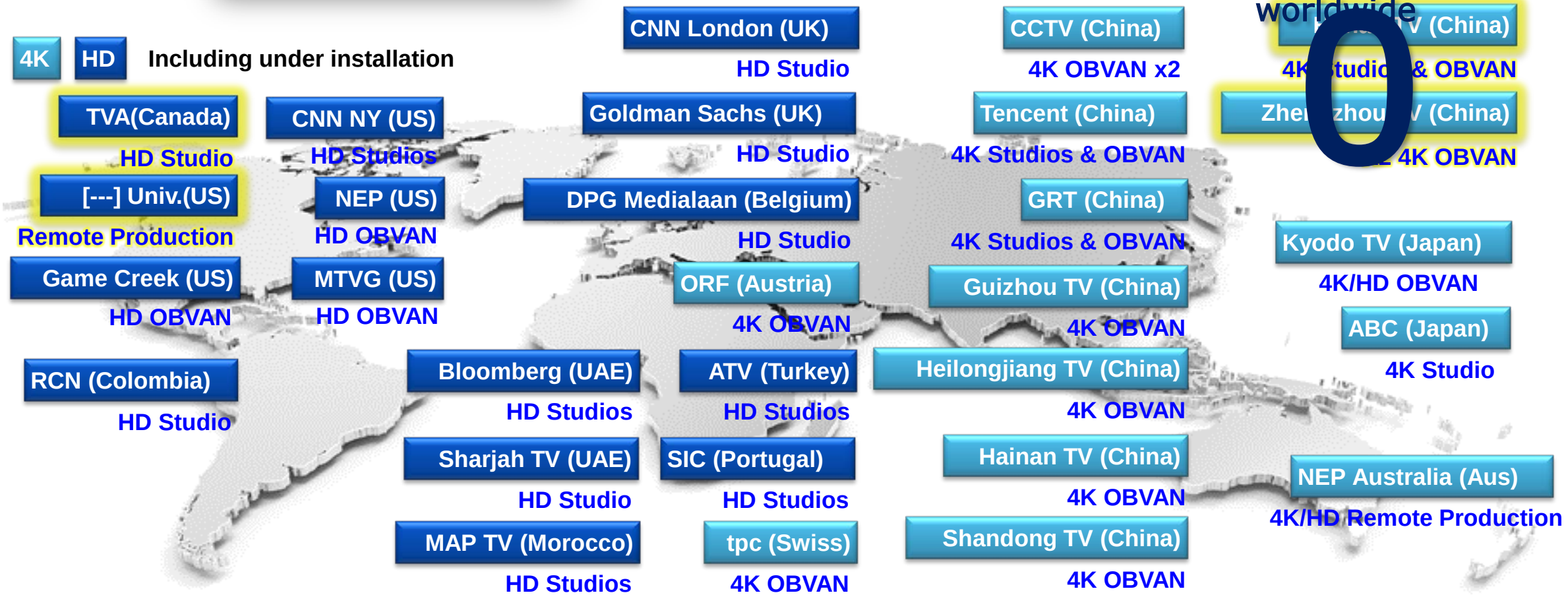
MORE THAN

150

OBVAN/STUDIO systems worldwide

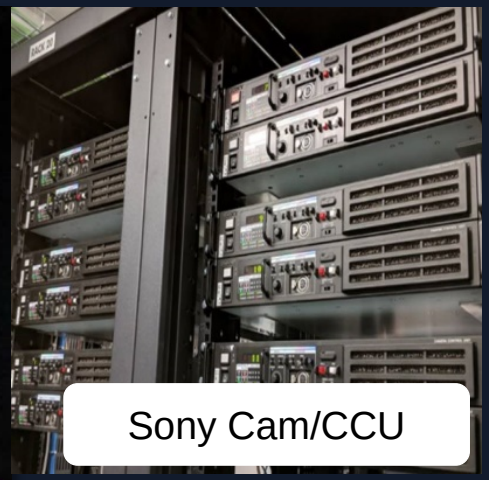
IP Live Production System

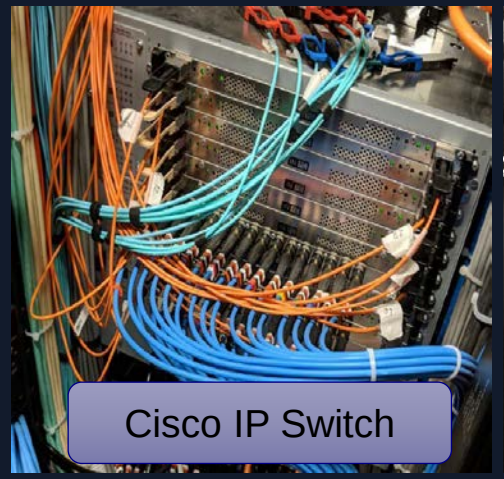
4K HD Including under installation

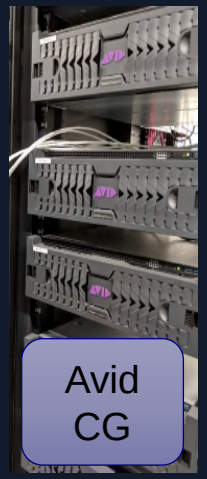


- TVA(Canada) — HD Studio
- [---] Univ.(US) — Remote Production
- Game Creek (US) — HD OBVAN
- RCN (Colombia) — HD Studio
- CNN NY (US) — HD Studios
- NEP (US) — HD OBVAN
- MTVG (US) — HD OBVAN
- CNN London (UK) — HD Studio
- Goldman Sachs (UK) — HD Studio
- DPG Medialaan (Belgium) — HD Studio
- ORF (Austria) — 4K OBVAN
- Bloomberg (UAE) — HD Studios
- ATV (Turkey) — HD Studios
- Sharjah TV (UAE) — HD Studio
- SIC (Portugal) — HD Studios
- MAP TV (Morocco) — HD Studios
- tpc (Swiss) — 4K OBVAN
- CCTV (China) — 4K OBVAN x2
- Tencent (China) — 4K Studios & OBVAN
- GRT (China) — 4K Studios & OBVAN
- Guizhou TV (China) — 4K OBVAN
- Heilongjiang TV (China) — 4K OBVAN
- Hainan TV (China) — 4K OBVAN
- Shandong TV (China) — 4K OBVAN
- [illegible] TV (China) — 4K [illegible] Studio & OBVAN
- Zhe[illegible]zhou [illegible]V (China) — [illegible] 4K OBVAN
- Kyodo TV (Japan) — 4K/HD OBVAN
- ABC (Japan) — 4K Studio
- NEP Australia (Aus) — 4K/HD Remote Production

Sample projects: IP, multi-vendor


Sony Cam/CCU


Cisco IP Switch


Avid CG

CALREC Audio

LAWO Converter

Harmonic Playout

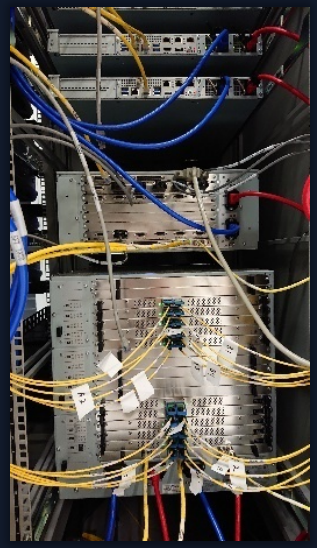
On-air Jan, 2019

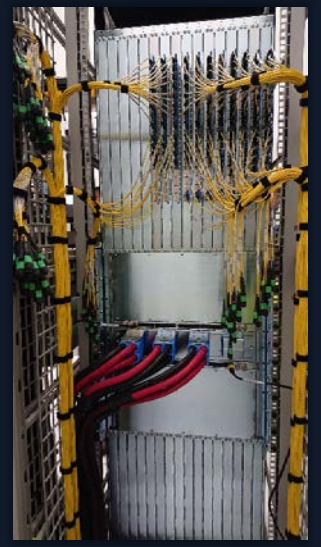
Sample projects

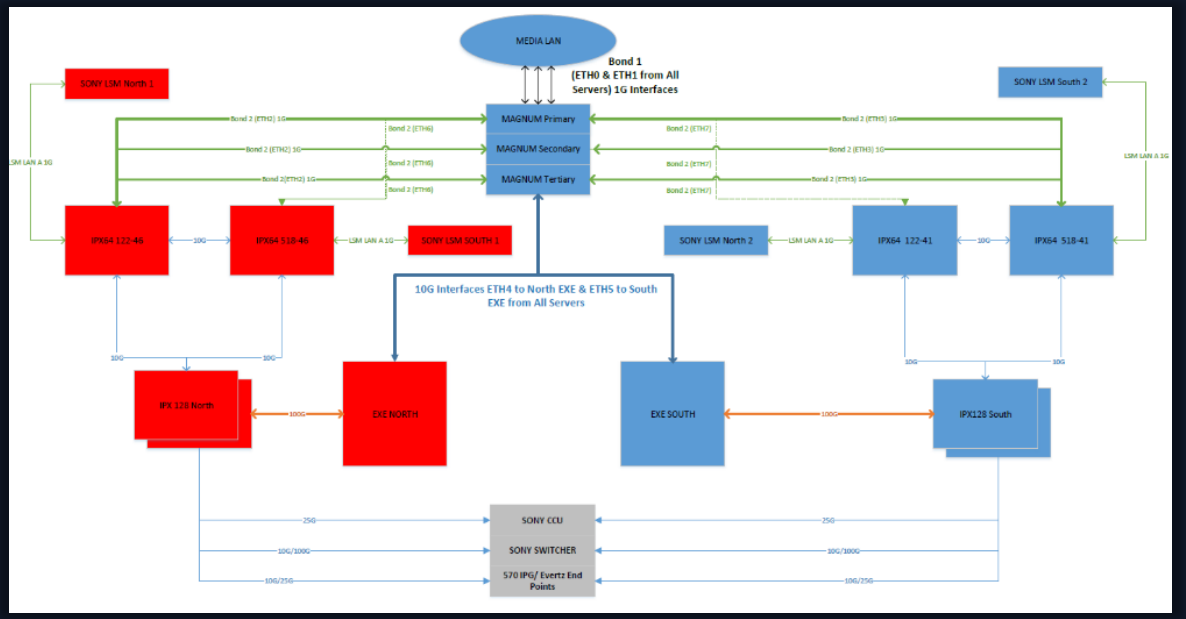
- 1st ST2110 Sony prime SI project & On-air Jan 26th, 2019

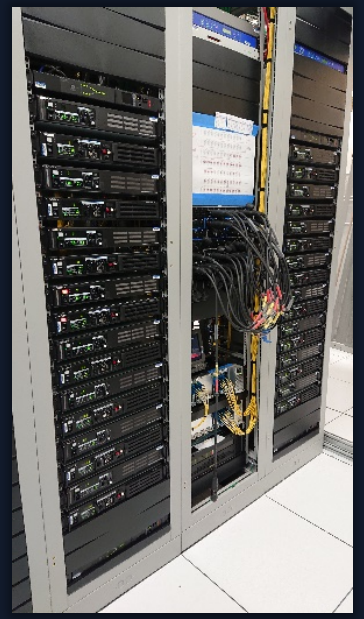
NYC facility: ST2110 HD covering 4 live Studios

On-Air May 2019









Major parts in the equation…

Cameras, switchers, monitors, replay servers, … get new IP cards, ethernet instead of coax

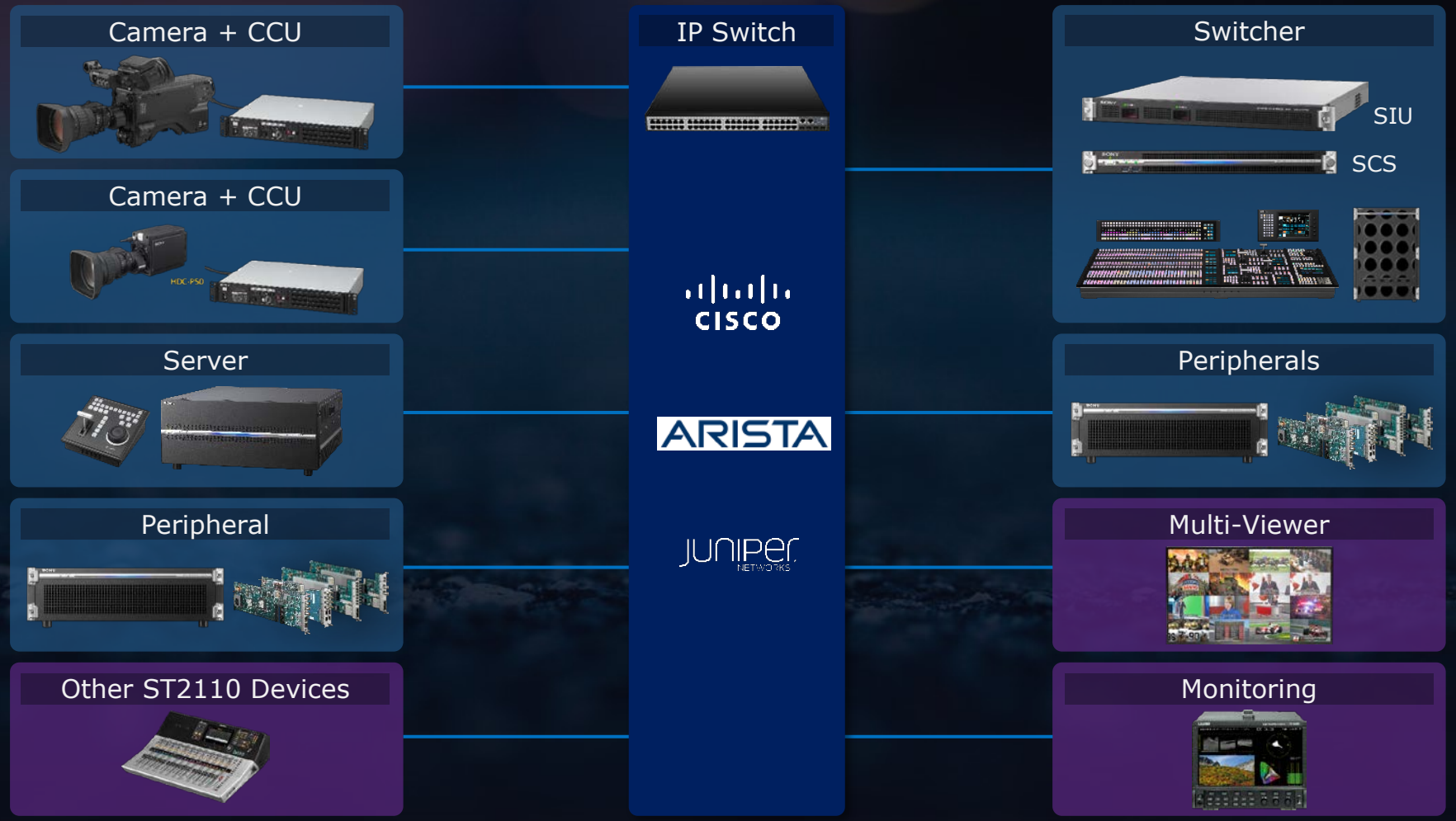
Can use both (SDI,IP) to transition and preserve legacy equipment

System overall- needs control, and automation to be practical

The Production eco-system

IP networked

SMPTE ST 2110



The Production eco-system

networked

SMPTE ST 2110

AMWA NMOS JT-NM

Camera + CCU

IP Switch

Switcher

SIU

SCS

Camera + CCU

Server

ARISTA

Peripherals

Peripheral

JUNIPER NETWORKS

everlz

Multi-Viewer

Other Devices

Monitoring

SMPTE ST 2110

Networked Media Open Specification (NMOS)

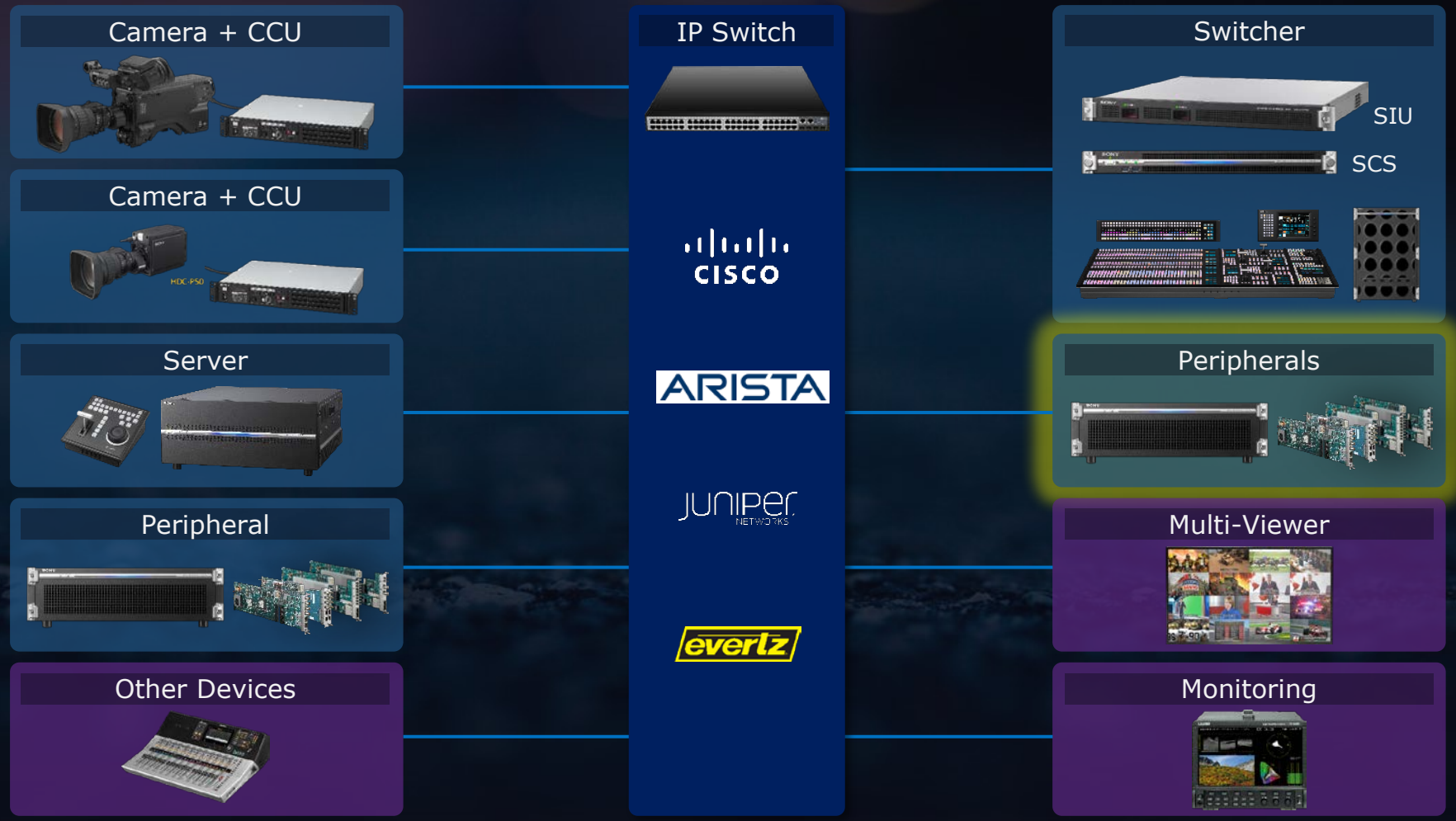
IS-04	Discovery & Registration	v1.2	Released in Oct 2017
IS-05	Connection Management (cross-point switching)	V1.0	Released in Oct 2017
IS-06	Network Control (topology discovery)	V1.0	Released in Oct 2018
IS-07	Event and Tally	V1.01	Released in Dec 2018
IS-08	Audio Mapping	N/A	Released

Look for…

The Production eco-system

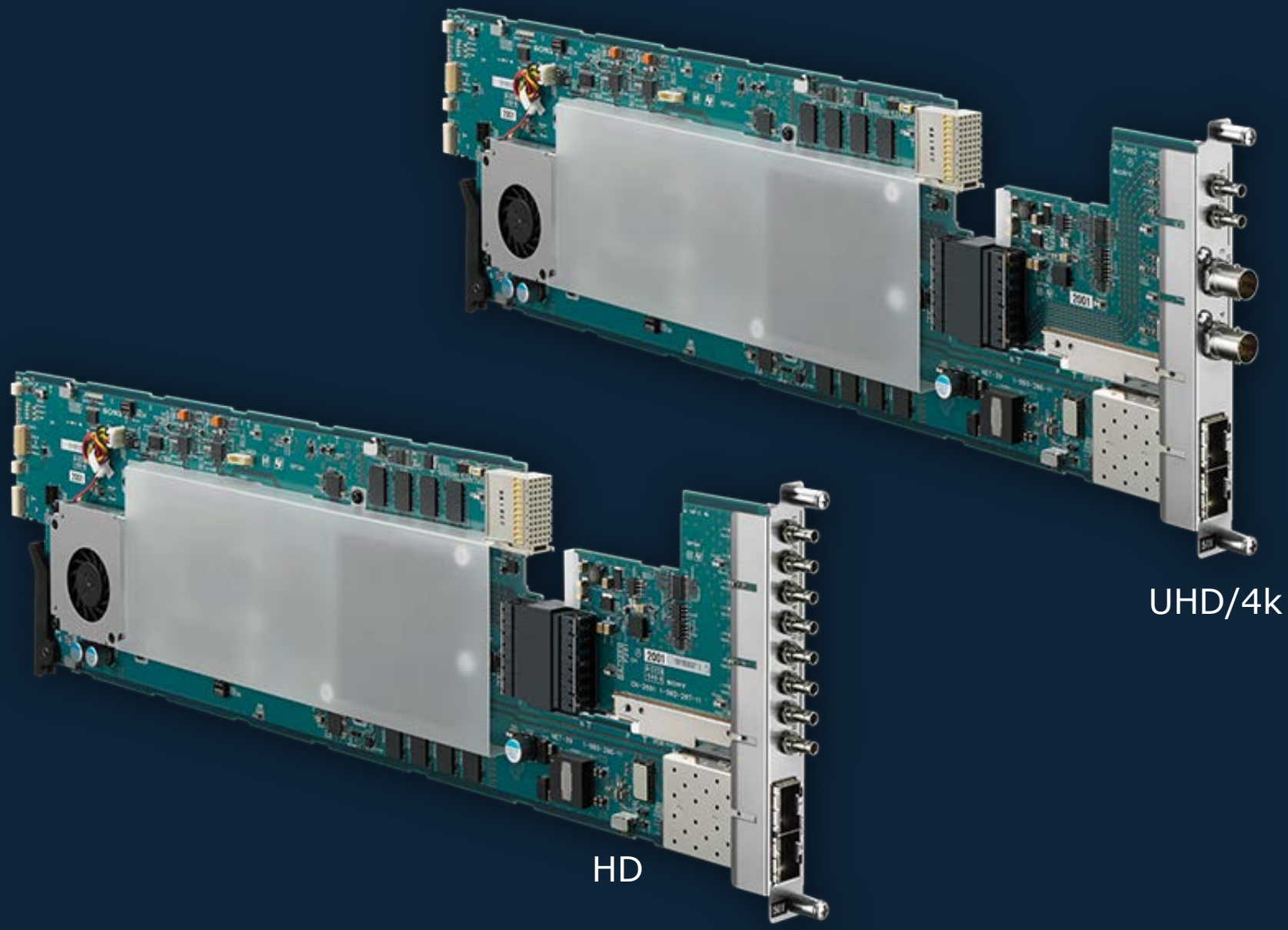
IP networked

SMPTE ST 2110



Edge Gateways

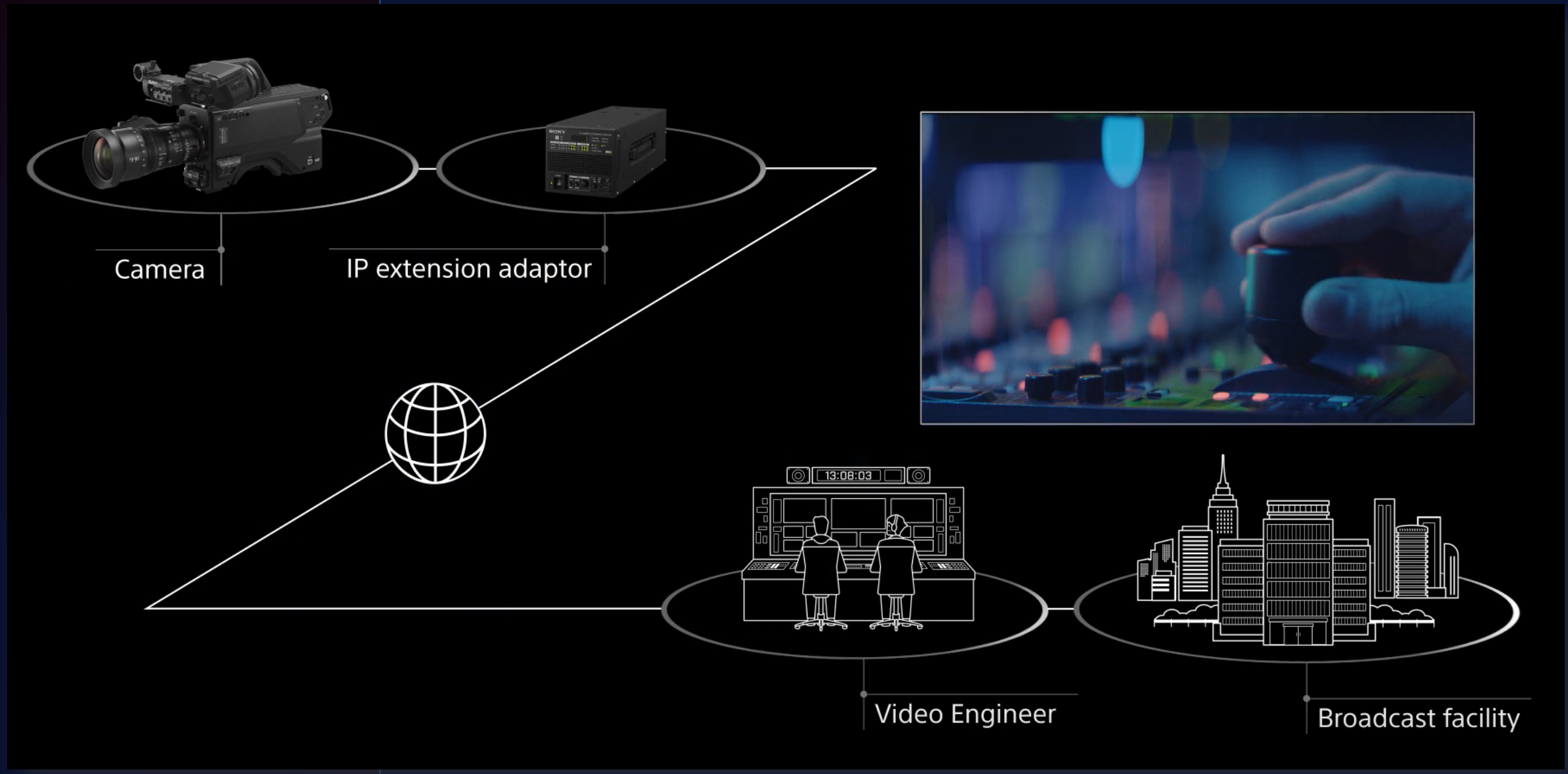
SDI IP Converter Boards



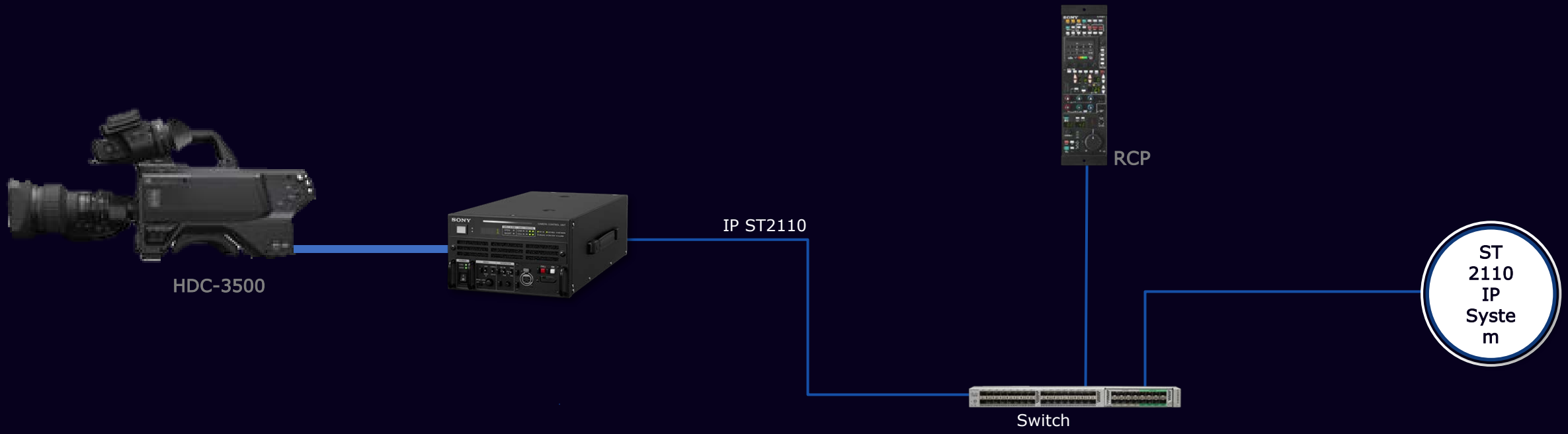
UHD/4k

HD

Remote signals and REMI

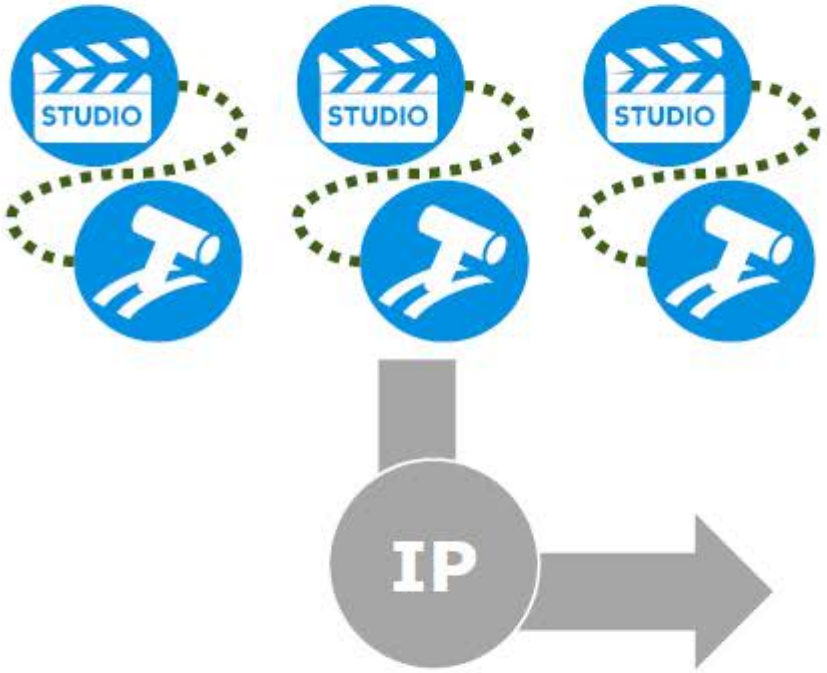


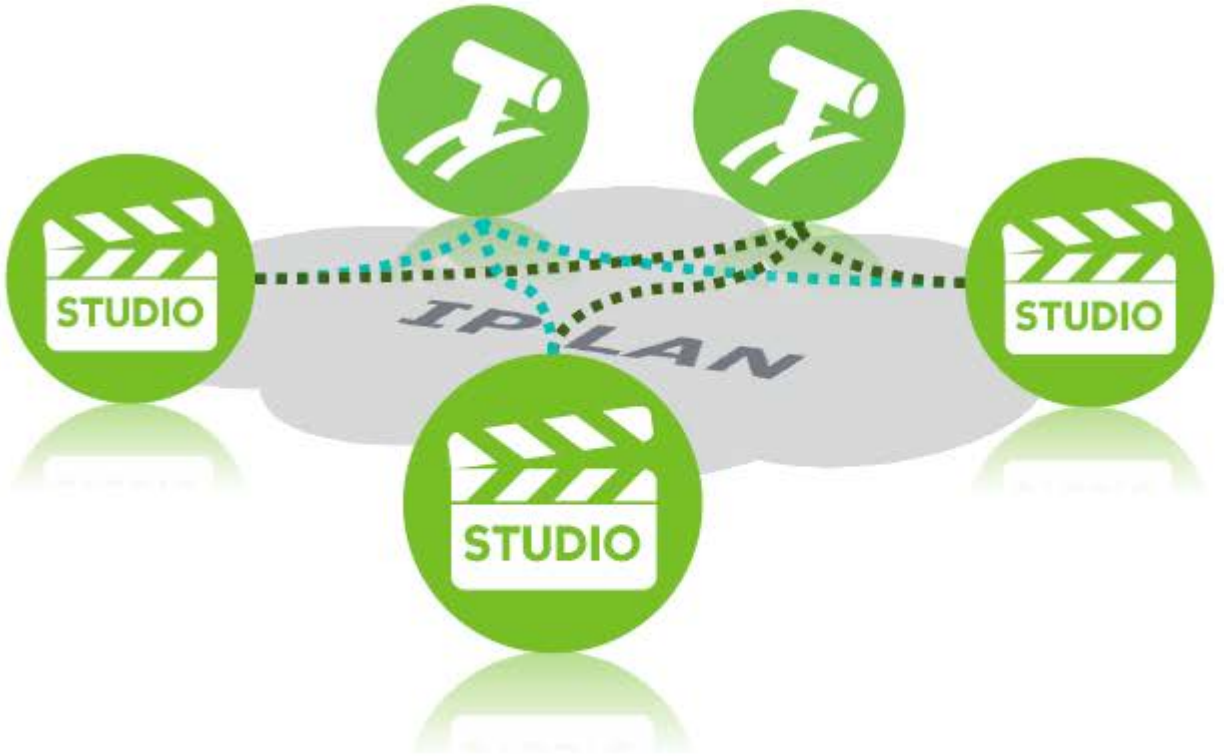
IP streams from the Camera



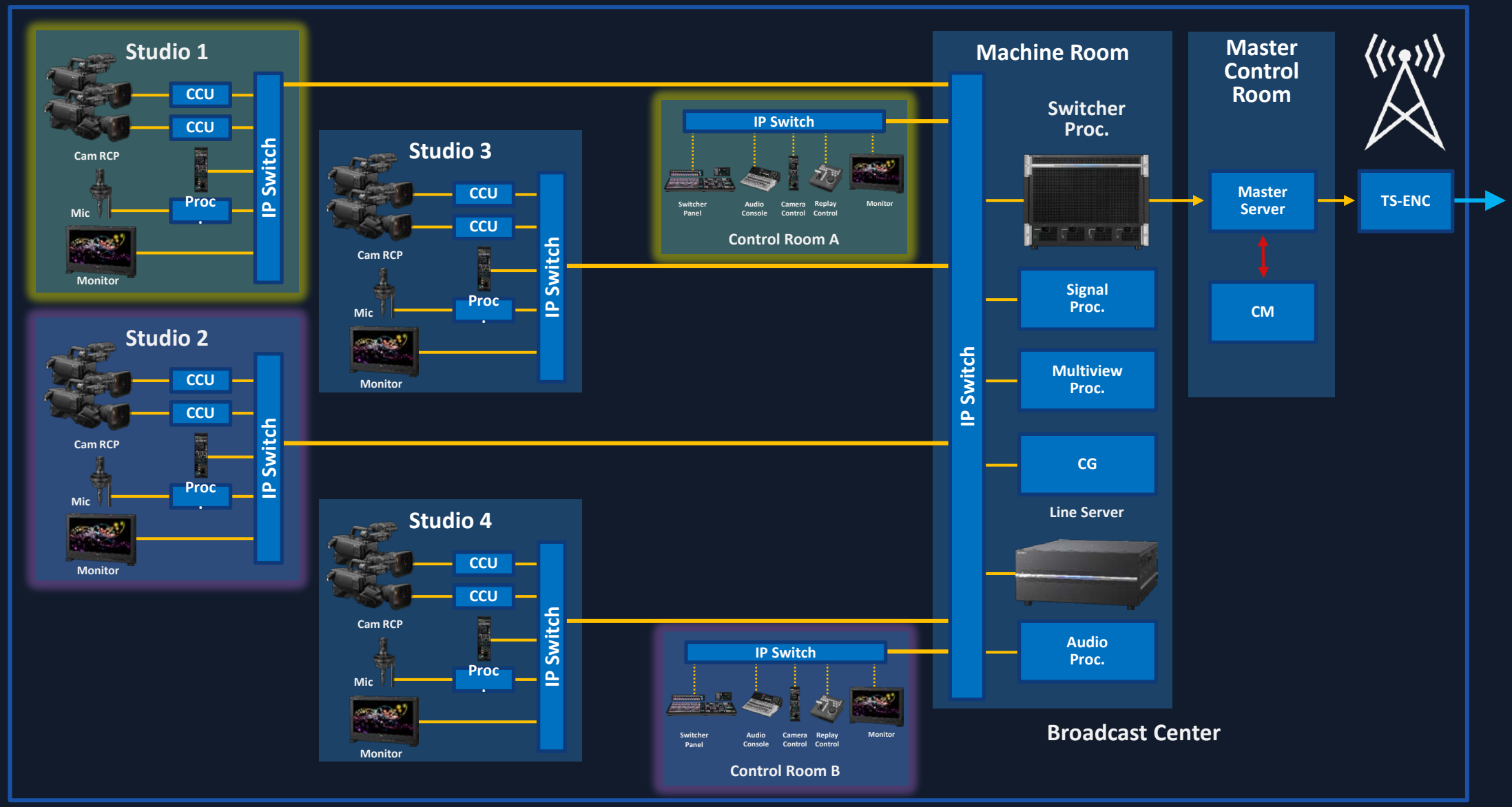
IP Live
Production System

Shared **production rooms**





Facility Management: Studio- Control Room Assignment



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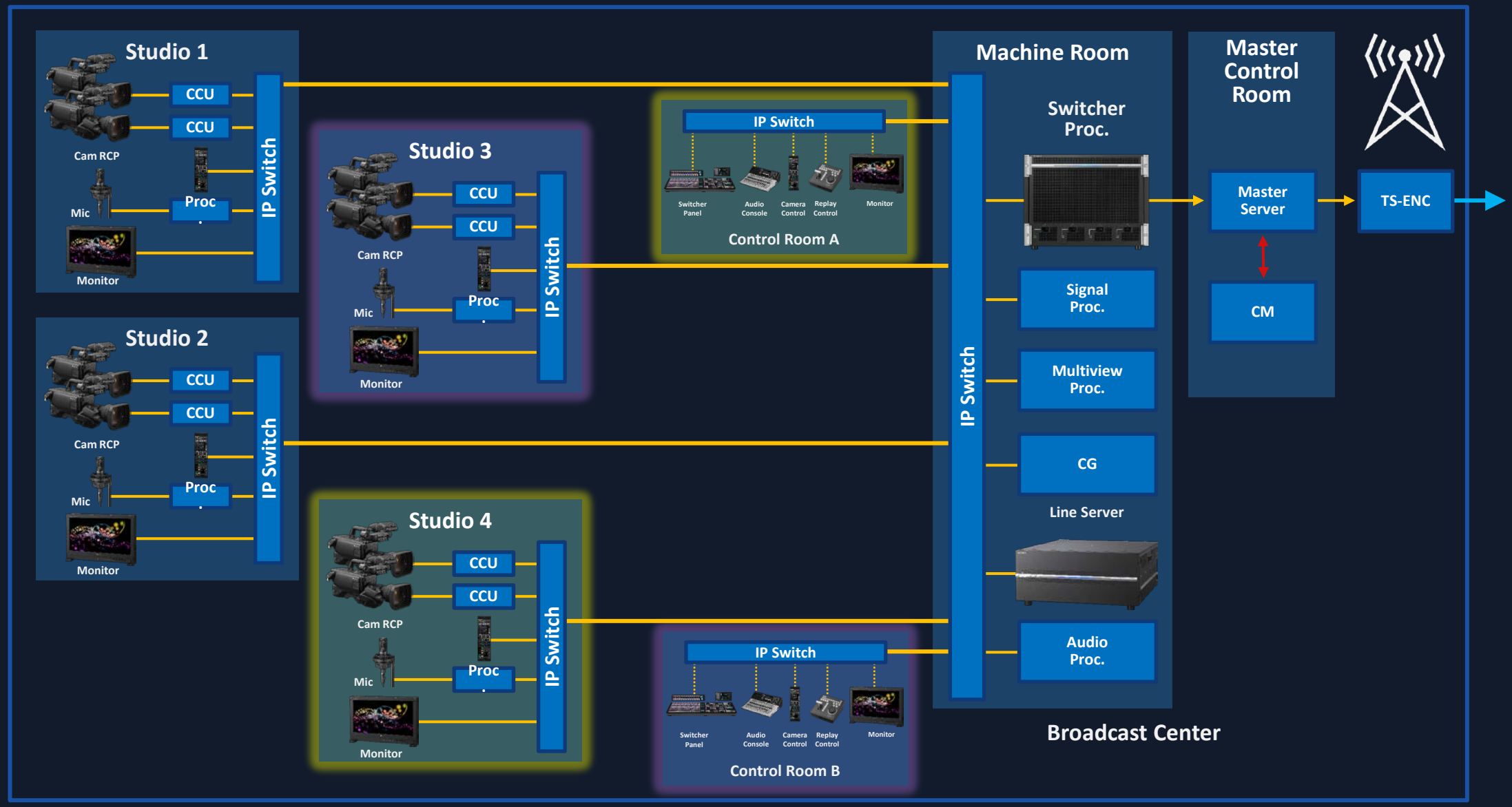
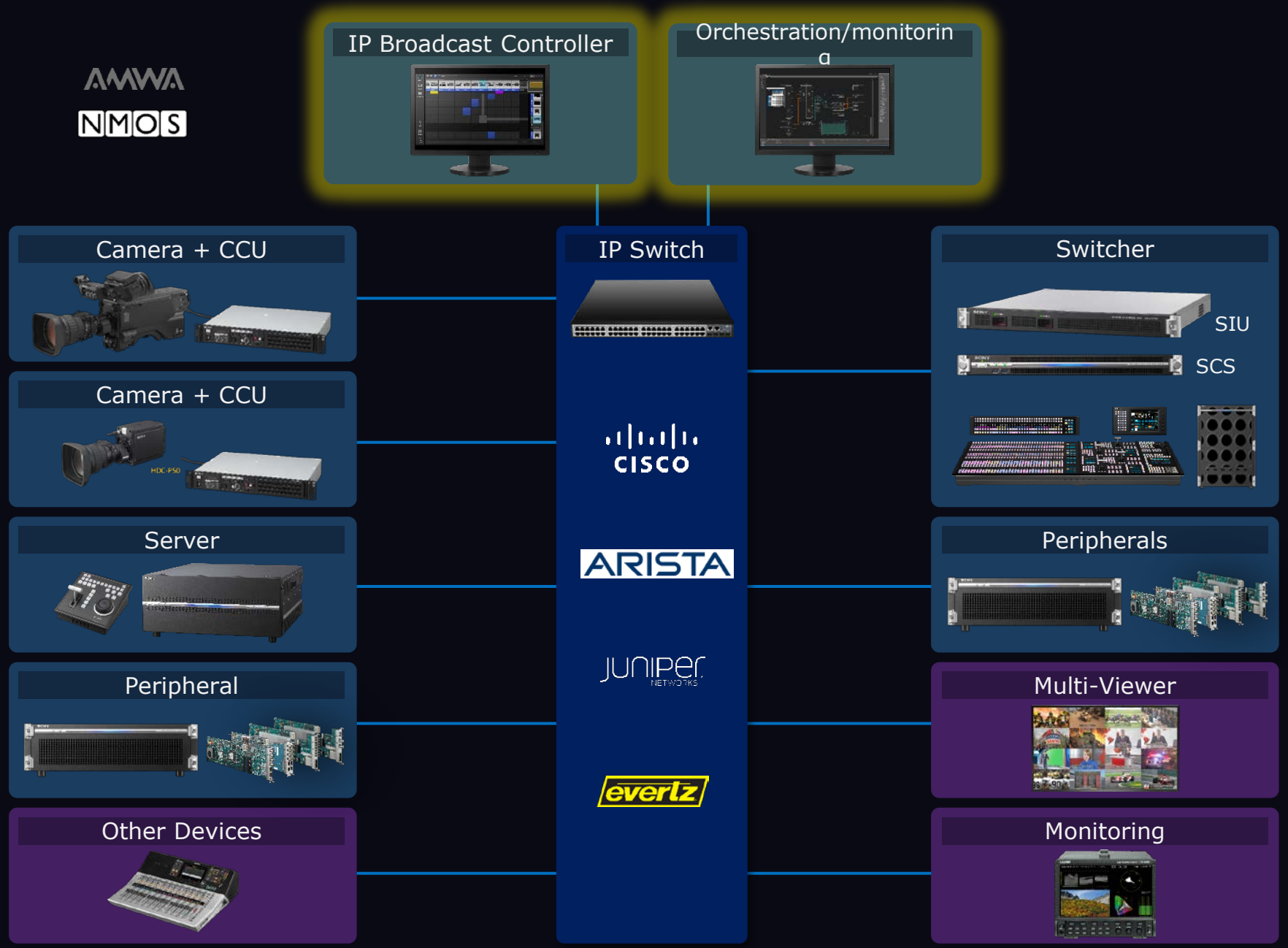


The IP toolset

- Major parts: IP controller, broadcast automation, network orchestration

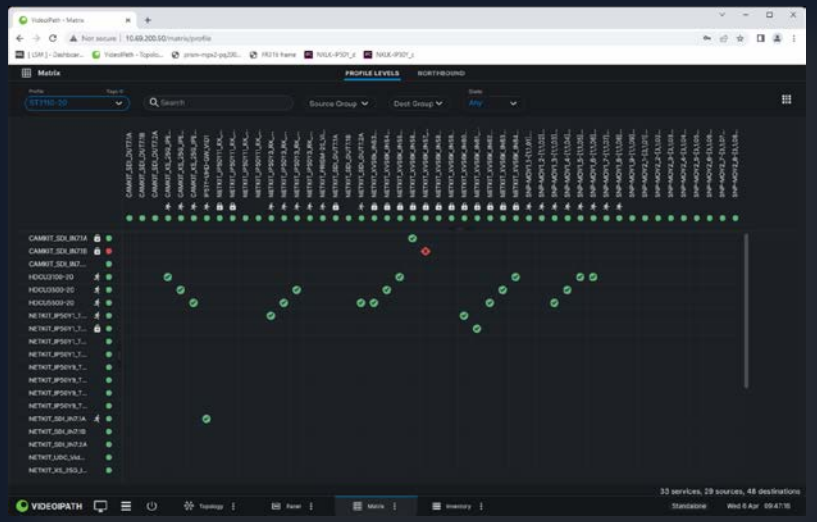
The IP eco-system



SMPTE ST 2110

nevion
VIDEOIPATH

IP Broadcast Controller

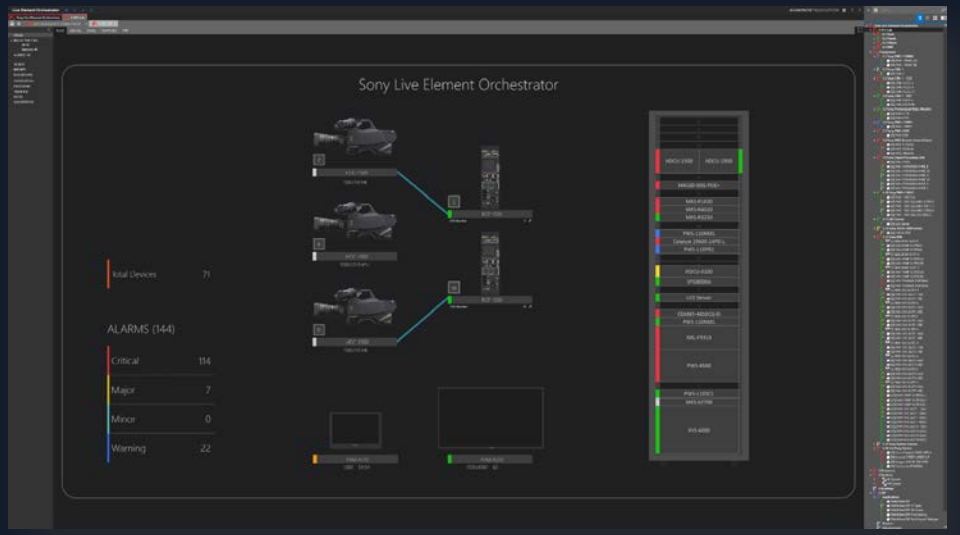


Essential broadcast control functionality

IS-04 Device Discovery & Registration
IS-05 Connection management, stream routing

Live Element Orchestrator

Orchestration/monitoring

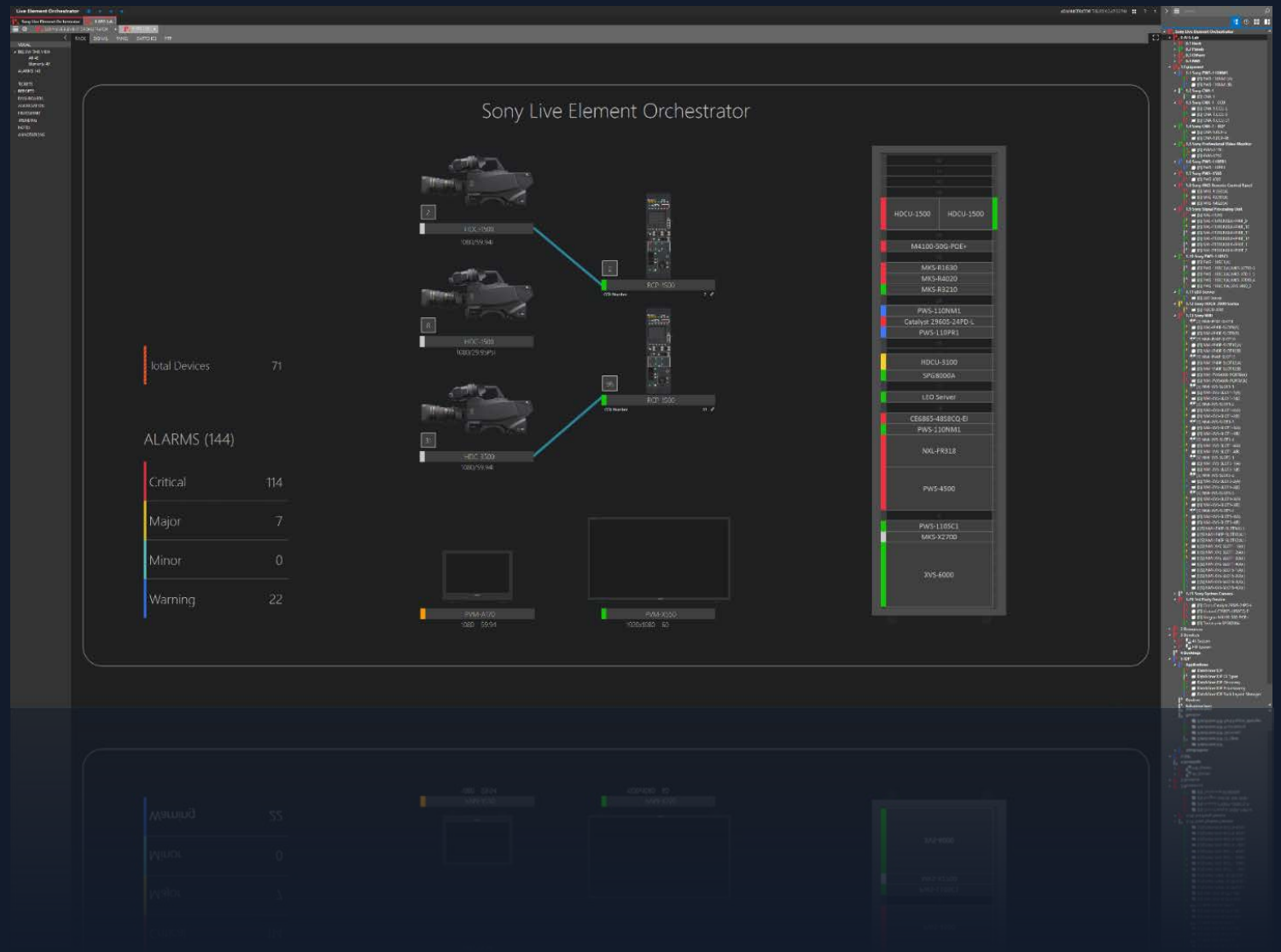


System Automation & Orchestration

Device monitoring
Device automation
Resource management

Component Orchestration

Centralized monitoring which consolidates alarms and network/equipment status

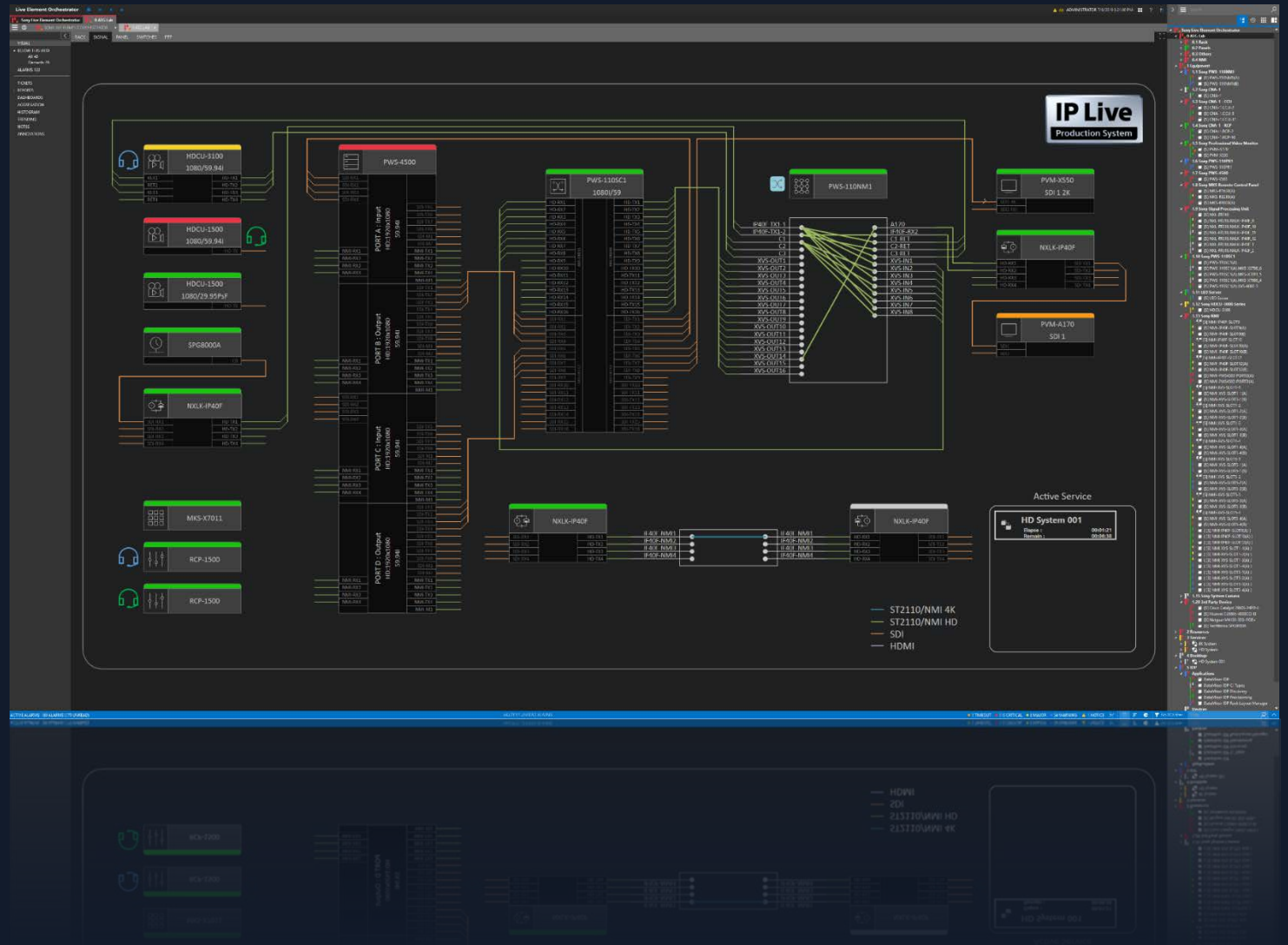


Component Orchestration

Centralized equipment configuration and setup so you can Save and Load preset configurations to groups of equipment

Resource Orchestration so video format changes can be managed and automated

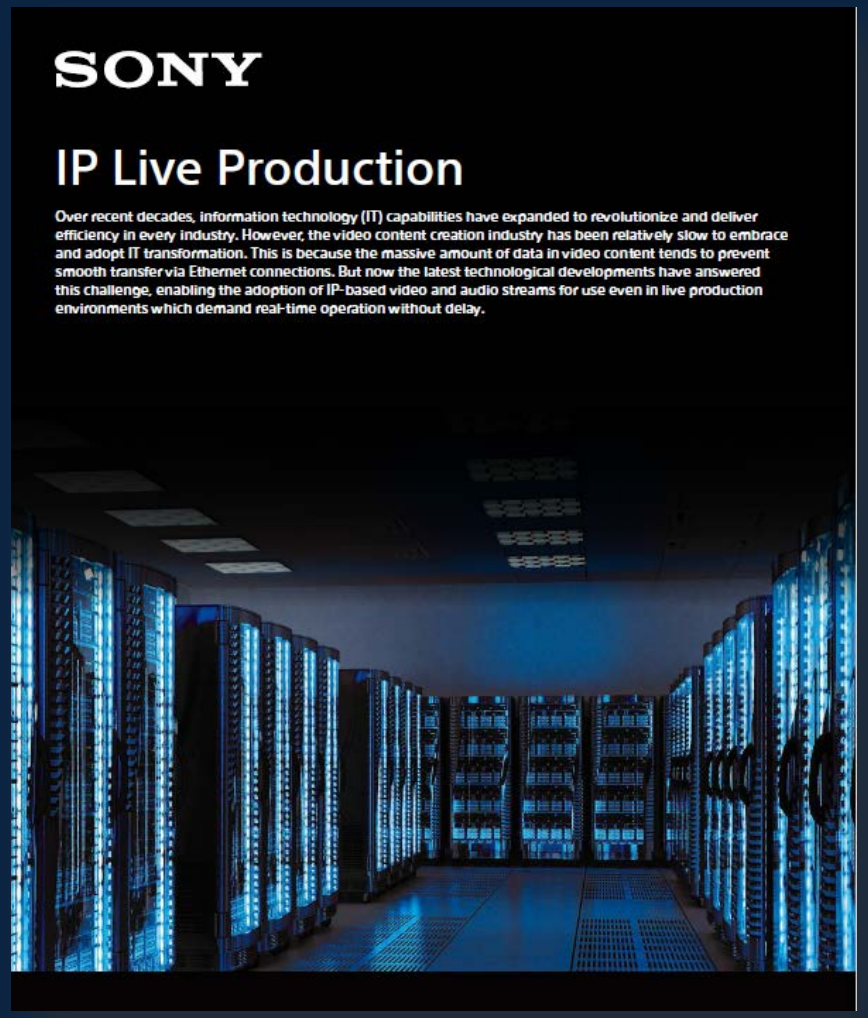
Central Dashboards for system management and lifecycle support

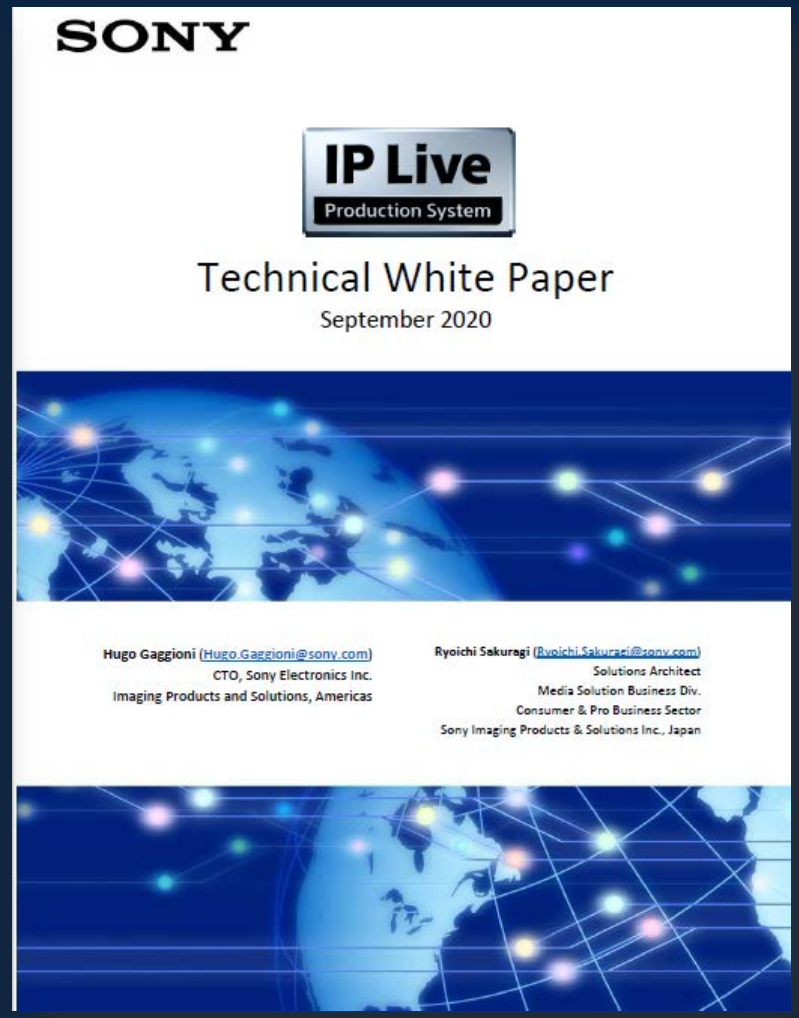


Conclusion

- Decisions ahead- business requirements/decisions about core products and services
- Moving past HD to take advantage of new platforms
- Prep early to understand machines … plus staff/support impacts

- White Paper on IP Live
- IP Live overview brochure





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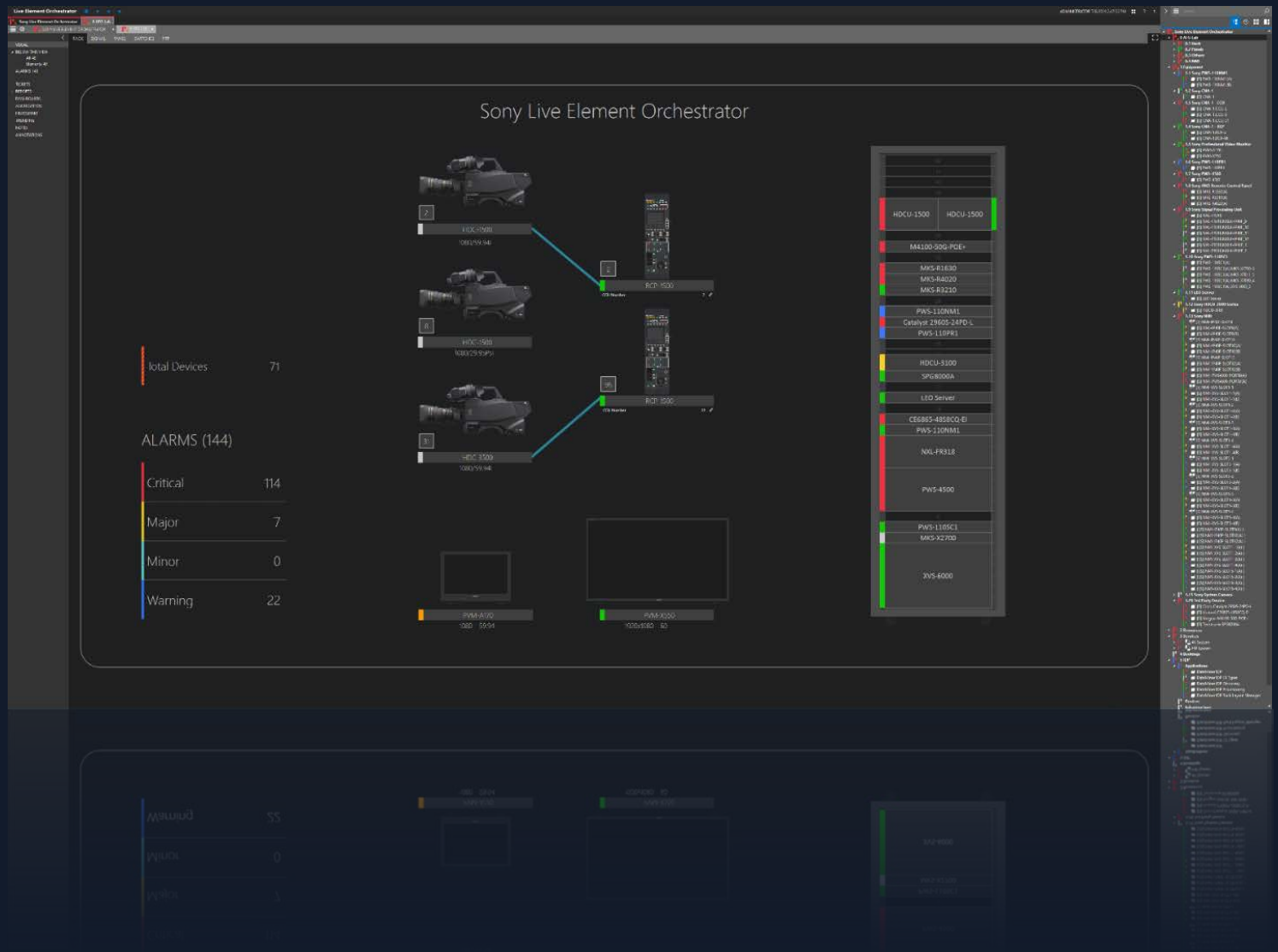
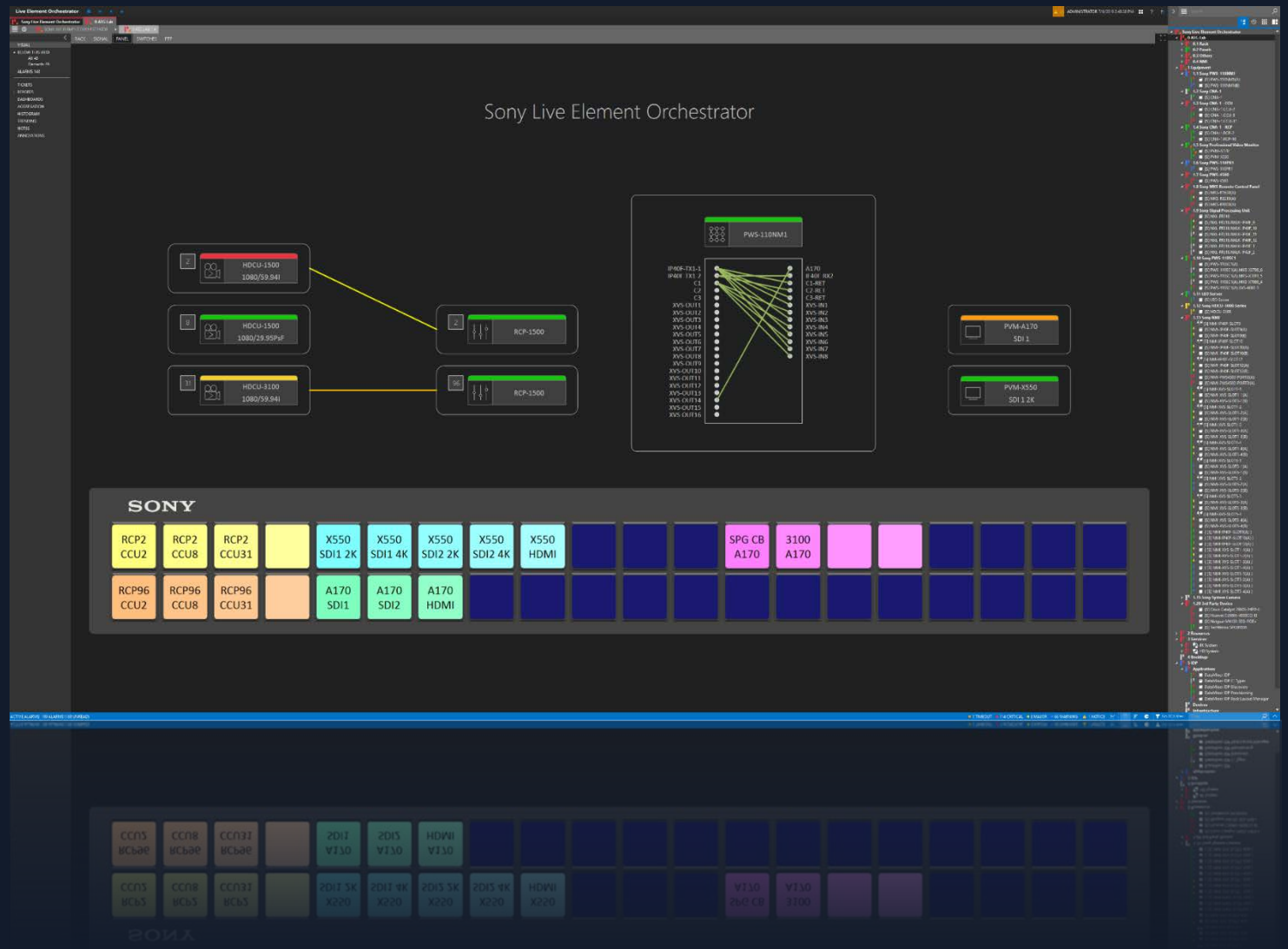


Live Element Orchestrator

Panel assignments for hardware or software system control and macros