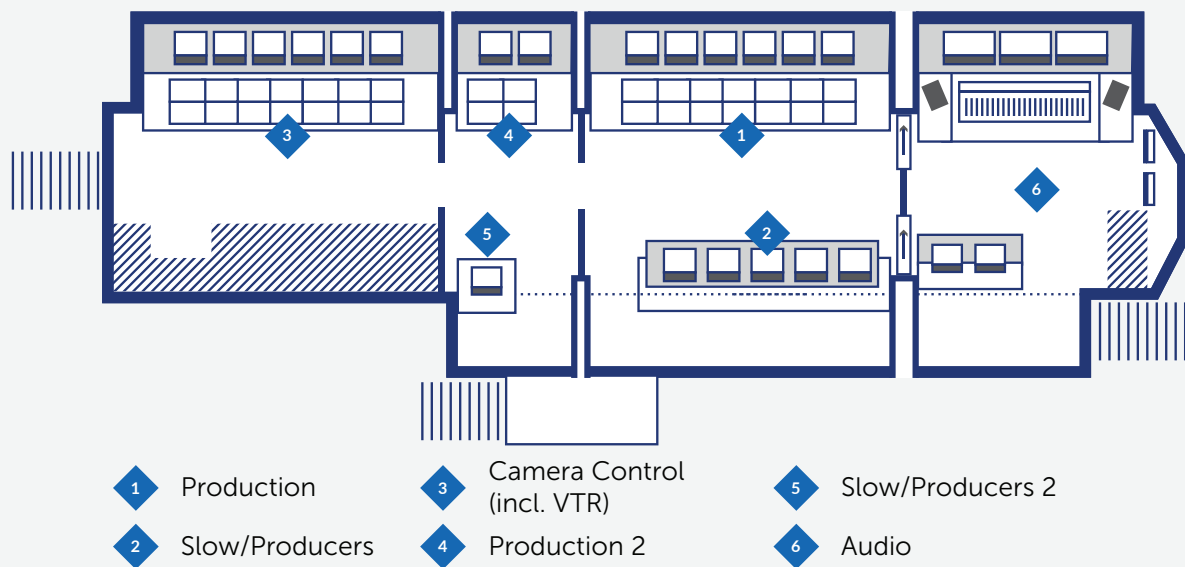


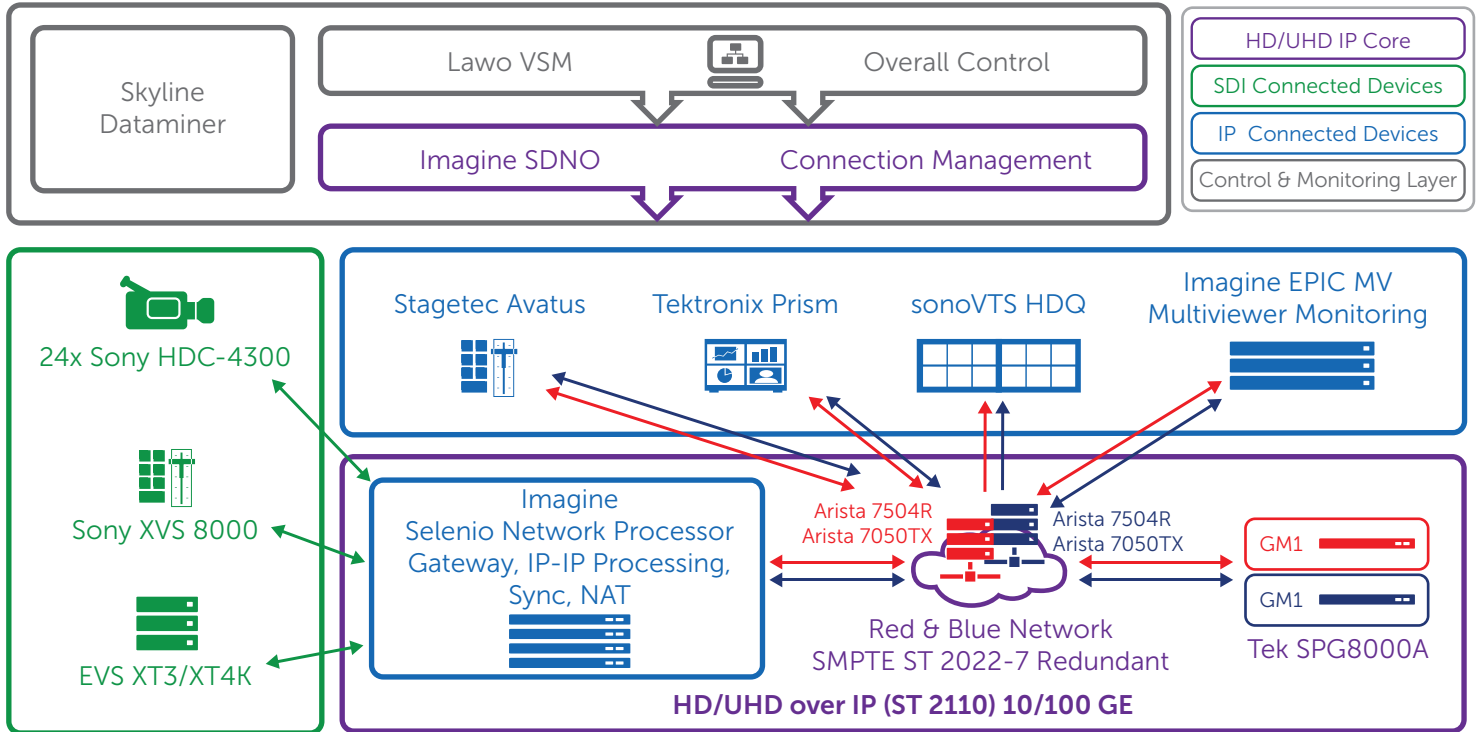
tpc is the leading broadcast service provider in Switzerland. UHD1, the latest addition to tpc's fleet of outside broadcast (OB) vehicles, is a 24-camera, all-IP truck that supports uncompressed UHD HDR production using SMPTE ST 2110.

## AT A GLANCE

- ✓ Produces live television entirely based on **SMPTE ST 2110**
- ✓ Routes all signals in IP using latest **100GbE** technology
- ✓ Supports productions in uncompressed HD and **UHD**, with or without **HDR**
- ✓ Delivers single-stream SMPTE ST 2110 UHD video – **industry first**

## FLOORPLAN





## DESIGN BASICS

- UHD/HD IP core uses a redundant set of Arista 7504R modular switches
- System's core IP format is SMPTE ST 2110-20/30/40
- The IP core includes an Arista 7050TX leaf switch with 1GE ports for audio devices
- Devices with SDI I/O, including cameras and replay servers, connect to IP core through **Selenio™ Network Processor** (SNP) using 100GbE interfaces
- SNP performs all key processing functionality:
  - Conversion between SDI and IP (ST 2110) for HD and UHD formats
  - PTP synchronization of all video, audio and data streams
  - Video and audio processing and delay for HD and UHD formats
  - Up/Down/Cross conversion for HD and UHD formats
  - Creation of HD monitoring proxies from UHD sources (for MV monitoring)
  - HDR processing and conversion (Slog3, HLG, PQ)
- Devices with native IP I/O, including waveform monitors and multiviewers, connect directly to the IP core through 1/10/25/40/100GbE ports
- **EPIC™ MV** monitors all ST 2110 signals in the system and streams layouts in ST 2110 over IP
- **Magellan™ SDNO** manages all connections in the system, executing connection requests received from control clients (e.g., Lawo VSM) and reporting status back to the clients
- Lawo VSM provides overall system control, e.g., preset recall, parameter settings, etc.

## KEY FEATURES

- ✓ SMPTE ST 2110-based, single-stream UHD deployment (2110-20 video and 2110-30 audio)
- ✓ UHD-to-HD proxy generation (including color space conversion) for bandwidth optimization
- ✓ Easy reconfiguration between HD and UHD
- ✓ Based on latest 100GbE technology
- ✓ Low-latency switching with SDI-like performance for HD and UHD
- ✓ Clean and clean/quiet switching of HD and UHD
- ✓ Low-latency video/audio processing in native IP
- ✓ Low-latency SDI<->IP conversion, including processing
- ✓ Low-latency joystick override function
- ✓ All streams separately routable in IP
- ✓ Low power consumption, low noise
- ✓ System recovers "as is" even after unexpected complete loss of power

## ENABLING TECHNOLOGY

### 44 x Selenio™ Network Processor | *IP Gateway, Synchronizer, Processor for Hybrid/All-IP HD/3G/UHD*



- SMPTE ST 2110 gateway for UHD (with or without HDR) and HD
- 100GbE interfaces with SMPTE ST 2022-7
- 4 independent processing blocks (synchronization, conversion, processing)
- 8xUHD or 32xHD per 1RU
- Frame sync to PTP with adjustable output phasing and delay
- UHD 2SI/SQD/12G support on BNC connectors
- 4 SFP+ interfaces for I/O expansion cages, e.g., video (optical) and/or MADI audio
- HD Proxy (as separate 1080i stream) for UHD signal monitoring

### 9 x EPIC™ MV | *Hybrid IP, UHD-Ready Multiview Monitoring Solution*



- Mosaic output in SMPTE ST 2110
- Ability to input proxies for UHD
- 48 HD inputs via 4x PCIe cards per 2RU
- 1 UHD/4 1080p displays
- H.264 and MPEG-2 CODECs standard
- Strong tally/UMD support, advanced content-based alarming
- PiP copies and sharing between devices
- Low latency; high video quality

### Dual-redundant Magellan™ SDN Orchestrator | *Software Control System for Hybrid Baseband/IP Facilities*



- Control System for HD/UHD/IP facilities
- Able to make an IP media network “look like a router”
- Support for all traditional routing paradigms
- Fast and deterministic switching
- Management of third-party edge device switching
- Ability to interface to Lawo VSM through existing switching protocol
- Seamless redundancy switching in main and backup network configuration (SMPTE ST 2022-7)
- High availability through 1+1 redundant configuration

### Dual-redundant Arista IP switch DCS 7504R | *Universal Spine and Cloud Networks*

- Modular chassis + up to 4 line cards
- 3 x 100GbE line cards, each 108 QSFP28 ports per switch
- Flexible configuration as 10/25/40/100GE ports SMPTE ST 2022-7 redundant setup

