



# The Ultimate openGear Applications GUIDE 2023





# WHY openGear?

openGear® is an open-architecture, modular frame system that frees users to choose the feature, performance, and budget options that best meet the needs of their broadcast, production, or distribution facility and enables them to maintain common control and monitoring through the DashBoard control system for the openGear ecosystem. Introduced as the world's first modular infrastructure platform open to any manufacturer, the Emmy Award-winning openGear today provides solutions derived from hundreds of individual signal processing cards from dozens of vendors.



## Free Common Control System

DashBoard, available for free, provides a unified control system across openGear products from all manufacturers. This allows for simple setup, monitoring, alarms, and management. With the included Custom Panel panel builder, users can easily create custom workflows across multiple products to suit their exact needs.



## High Reliability

The oGx fourth-generation openGear modular infrastructure platform is built for 24/7 operation. Redundant power and adaptive cooling ensure maximum reliability, while front-loading, hot-swappable modules and a passive backplane make maintenance service a snap and eliminate downtime.



## Comprehensive Portfolio

openGear offers a wide range of best-of-breed modular infrastructure solutions, including distribution, conversion, branding, audio, data, fiber, timing, and more all in a compact, economical frame. The openGear platform has the flexibility to support signal types and formats from analog to UHD to IP, and it is architected to meet the most complex processing demands of evolving IP and UHD applications.

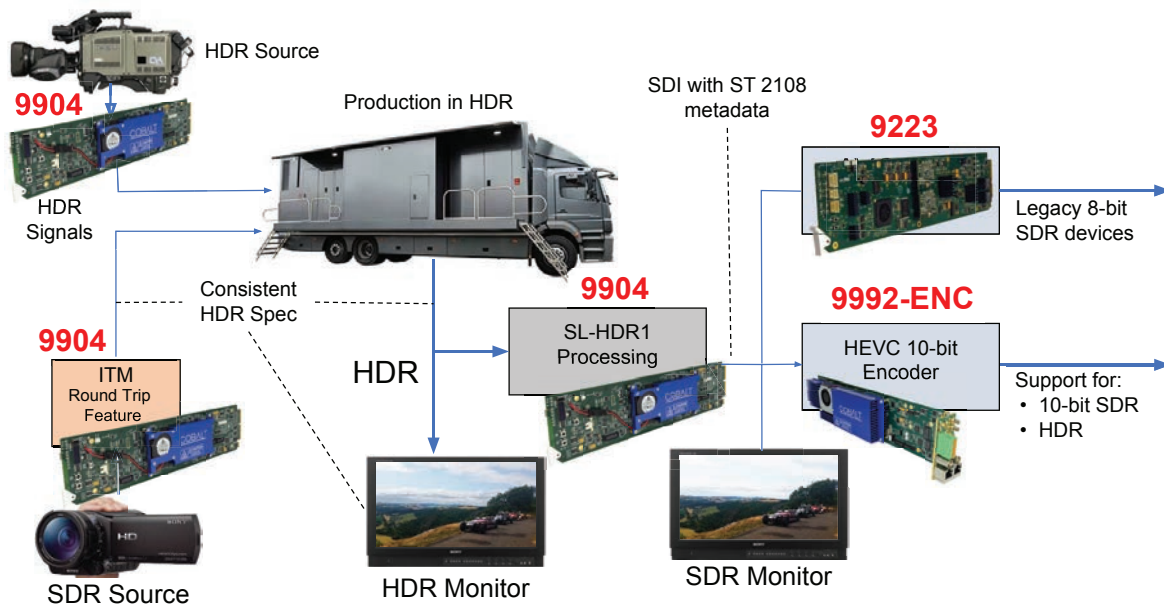


## Future-Proof Investment

The openGear industry-standard platform is a lasting investment that is both backward-compatible and future-proof. Users benefit from continuous development by an extensive ecosystem of manufacturers, ensuring best-in-class solutions at competitive prices. The platform allows users to take advantage of a pay-as-you-go model, buying only the modules they need today, with room for future growth.

## Application

### End-to-End HDR Workflow



High Dynamic Range (HDR) is one of the technologies taking consumer video to the next level. Cobalt Digital has a complete set of tools to provide this HDR experience in a seamless fashion.

For the highest quality, the best approach is to produce in HDR. However, there are always legacy SDR sources and content that needs to be integrated into this workflow. For basic static conversion Cobalt has real-time 3D-LUT support, and you can use pre-defined LUTs from NBCU and BBC, or you can roll your own. For a more advanced dynamic conversion, Cobalt offers Technicolor’s Intelligent Tone Management, which analyzes the content scene-by-scene and optimizes the conversion process. The new Reversible ITM process (RITM) also includes additional metadata to recover the original SDR signal.

Once you have produced your HDR content, you may need to create an SDR version to support legacy devices. Cobalt has multiple options for this, including 3D-LUTs for basic static conversion. The best option is the SL-HDR1 technology, which can provide an SDI signal that includes an SDR base layer, with suitable metadata that allows a compatible device to recover the HDR signal. For signals originally converted from SDR sources, the RITM process guarantees no quality degradation.

Finally, the Cobalt 9992-ENC/DEC series of encoders and decoders have full support for the required HDR signaling.

## Application

### ST 2110 Gateway and Processing



- Supports IS-04/IS-05 NMOS for automatic discovery and configuration
- Native ST-2110 input/output interfaces to the audio/video processing elements
- Same functionality as the 9904/9905 series (9904-UDX-4K-DSP not supported)
- Cost-effective, easily manageable, integrated solution
- Processing HD, 3G and 4K IP streams with no quality compromises
- JPEG-XS support coming in 2023

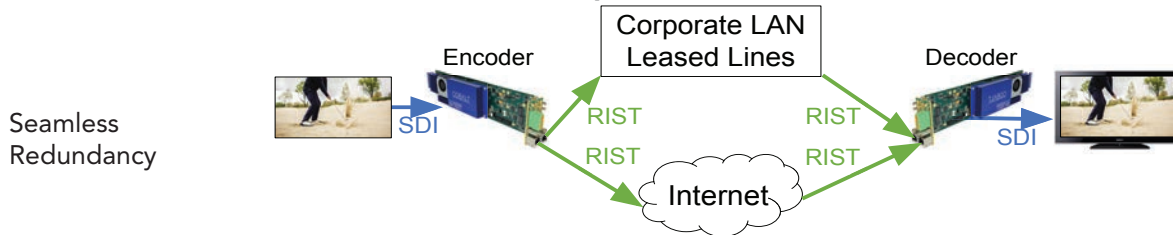
The challenge in building a facility based on SMPTE ST 2110 uncompressed video over IP is that many processing elements (scalers, color correctors, etc.) have legacy SDI inputs and outputs. To deploy such processing elements into an ST 2110 facility, gateways are required, making the process complex and error-prone. The Indigo 2110-DC-01 option to the Cobalt 9904-UDX-4K and 9905-MPx cards is the solution – it adds native ST 2110 support to these processing cards, while retaining the SDI connectivity for legacy applications.

Indigo 2110-DC-01 features two 25G Ethernet ports, with full support for ST 2022-7 seamless redundancy. For ease of integration, Indigo supports NMOS IS-04/IS-05, either in-band with the streams, or out-of-band using the control Ethernet.

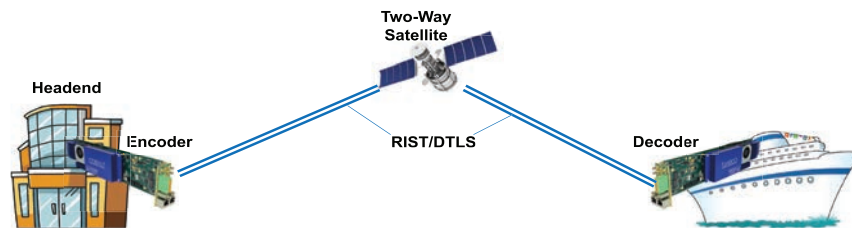
If you need a native ST 2110 solution for 4K/3G/HD/SD with up/down/cross conversion capabilities, frame sync, audio embedding/de-embedding, and HDR processing, look no further than the 9904-UDXP-4K/9905-MPx + Indigo 2110-DC-01 combo.

## Application

### Reliable Internet Stream Transport (RIST)



Ship-to-Shore  
Content Over  
Satellite



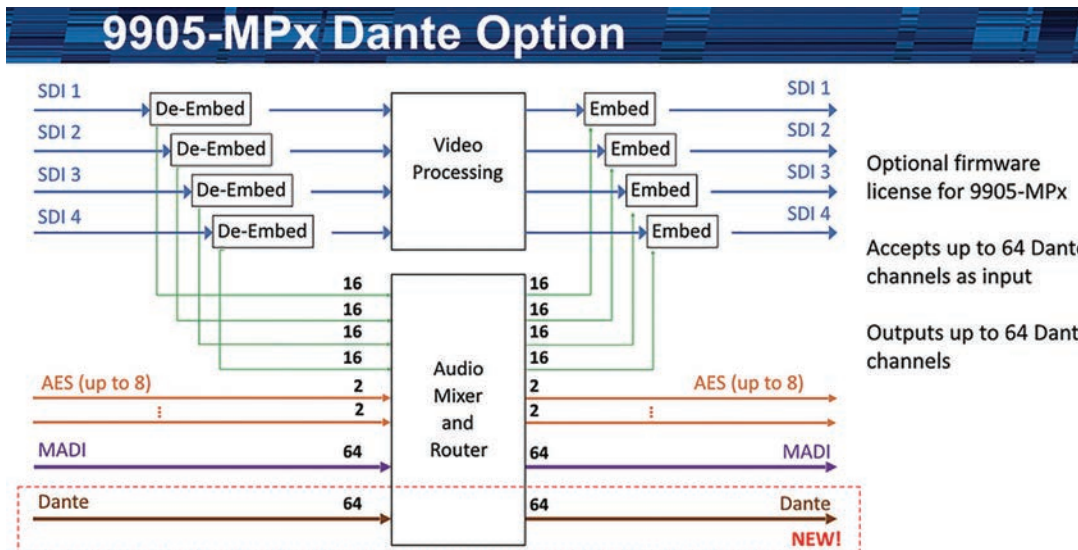
With the Reliable Internet Stream Transport (RIST), you can use your current Internet service for low-latency, reliable, secure audio/video contribution – without being tied up with a vendor-proprietary solution. RIST is an open specification from the Video Services Forum and is currently widely available in the industry. RIST support in the Cobalt encoders and decoders includes:

- Low latency reliable transport over the Internet using best-of-class technology
- Multi-link support:
  - Bonding: combine the bandwidth of multiple links into a higher capacity pipe
  - Seamless Switching: use multiple links in parallel to ensure that, if a link goes down, the streams remain intact without glitches (compatible with ST 2022-7)
- Security:
  - Encryption: both AES 128 and AES 256 are supported, to protect your valuable content in flight
  - Authentication: certificate-based authentication ensures that the communication endpoints are authorized
- Multi-channel synchronized decoding
- Adaptive encoding: encoder bitrate adaptation based on network conditions

Additionally, Cobalt offers the SafeLink Gateway, which can add RIST support to legacy devices. The SafeLink gateway is available as an openGear card and (coming soon) as a software package.

## Application

### High Density Baseband Audio/Video Processing



If you need best-of-class high-density processing with no compromises, look no further than the 9905-MPx. It provides four completely independent processing paths, each capable of operation up to 3G-SDI. Each path provides the following functionality:

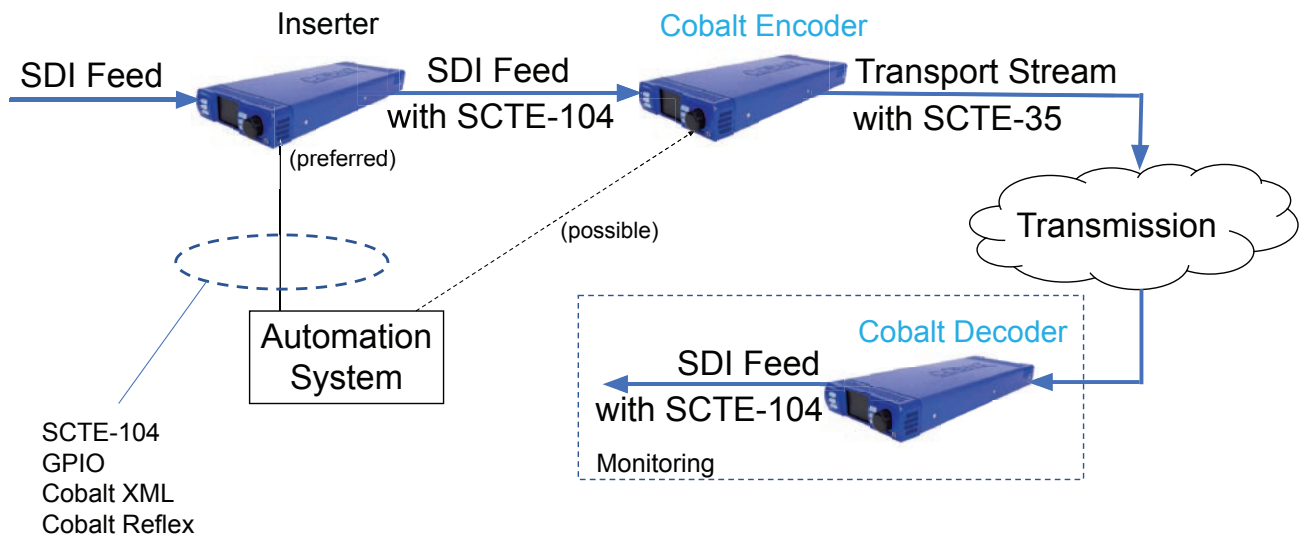
- Up/Down/Cross conversion with full ARC control for conversions to/from 4:3 and 16:9 formats
- Frame sync
- Color correction
- Audio embedding/de-embedding, with full routing control between the four paths and the discrete AES/MADI inputs/outputs
- Extensive audio mixing capabilities
- Per-channel independent 3D-LUT support
- Optional Fiber I/O available

For high-density applications, six 9905-MPx cards can be installed in an openGear frame, for a total of 24 independent paths in a 2RU format.

The 9905-MPx can be converted to a 4K up/down/cross converter with frame sync capabilities using an optional license key.

## Application

### Dynamic Ad Insertion (DAI)



Cobalt has a complete programmer-side ad insertion solution, ready to connect to your traffic system. Our ancillary data inserters and frame syncs can be licensed to add SCTE-104 triggers to an SDI signal, in a frame-accurate manner. These devices can be interfaced with your traffic system using the following options:

- GPIO signals
- SCTE-104 signaling over TCP
- Easy-to-use Cobalt's own openly available XML-based protocol

This functionality is available for the 9902-UDX, 9922-FS and 9950-EMDE-ANC and 9904-UDX cards.

For compression applications, all Cobalt encoders support SCTE-104 to SCTE-35 conversion, plus SCTE-104 over TCP. Additionally, the 9992-ENC encoder supports SCTE-35 insertion on HLS manifests. On the receive side, all Cobalt decoders can receive a transport stream with SCTE-35 markers and convert them back to SCTE-104 ancillary data packets on SDI.

All the solution elements are available as standalone devices using the Cobalt BBG-1300-FR or as openGear cards.



openGear

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