



# Best of Show

## 2023

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## 9992-ENC/9992-DEC Series

The Reliable Internet Stream Transport (RIST) series of Specifications from the Video Services Forum (VSF) provides a set of best-in-class mechanisms for content contribution over the internet. Cobalt Digital is an active member of the RIST Activity Group, and Cobalt products provide a set of rich RIST features.

The RIST Protocol provides low-latency, reliable, secure content transport over the Internet. However, the advanced packet recovery mechanisms in RIST cannot, by themselves, overcome the situation where the delivery network runs out of bandwidth due to external factors. It is simply not possible to transport a 5 Mbps stream on a 4 Mbps pipe.

The solution to this problem is Source Adaptation. The receiver sends feedback information to the sender,

who adjusts the stream to match. If the sender is a video encoder, it can do so by dynamically varying the bit rate.

This type of solution exists already in the market – for example, all cell-bonding products do this to a certain extent. However, what is new here is that the Video Services Forum published an open Industry Specification for this functionality: VSF TR-06-4 Part 1, “RIST Source Adaptation,” approved in November 2022. With TR-06-4 Part 1, users are not tied to some proprietary implementation – it is possible to mix and match senders and receivers from different vendors. VSF TR-06-4 Part 1 can be downloaded from the VSF website.

Cobalt continues to add capabilities to its award-winning software-defined family of 9992-ENC/

DEC encoders and decoders that meet the evolving needs of today’s broadcast facilities. Cobalt Digital just released the first commercial implementation of TR-06-4 Part 1 Source Adaptation in the 9992-ENC/9992-DEC series of broadcast encoders and decoders. The 9992 series offers traditional broadcast features combined with advanced network options to provide a perfect solution for sports, newsgathering, video contribution and affiliate distribution. The product also includes support for VSF TR-

06-2 Null Packet Deletion, which allows the receiver to create a compliant Null-Padded Constant Bitrate (CBR) transport from a rate-adapted incoming stream, and support legacy downstream devices.

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## Sapphire 8JSX-8S

JPEG-XS is a lightweight video compression scheme that combines extremely low latency (on the order of a few lines of video) with good bandwidth savings, when compared to baseband video. Carriage of JPEG-XS over IP networks is defined in SMPTE ST 2110-22 and VSF TR-08:2022. Such JPEG-XS streams can be combined with ST 2110-30 audio and ST 2110-40 ancillary data.

The Sapphire 8JSX-8S is the highest density openGear converter on the market. It can accept up to eight independent input JPEG-XS streams (each with its associated audio and ancillary data essences) and convert them to individual SDI outputs. Up to five Sapphire 8JSX-8S cards can be installed in an openGear

frame, for a total of 40 SDI conversions per 2RU. Each Sapphire card has two SFP cages, supporting both 10G and 25G Ethernet interfaces, and optionally ST 2022-7 Seamless Switching. Sapphire is capable of ST 2022-7 Class-C operation, which makes it ideal for use in WAN environments.

For control, the Sapphire 8JSX-8S card includes full support for NMOS IS-04/IS-05, as well as the standard openGear DashBoard management interface.

Sapphire 8JSX-8S is the ideal choice for receiving large numbers of JPEG-XS streams over a LAN or WAN and driving devices such as a router or a monitor wall. The openGear form factor allows Sapphire 8JSX-8S to be combined with

other processing in the same chassis, and the high density translates into space and power savings. The primary use for bulk JPEG-XS conversion is feeding large numbers of monitors, in space-constrained environments such as trucks and OB vans. In such environments, power and rack space are at a premium, and thus the ability to combine multiple conversions in a 2RU frame is very desirable. This also saves on 10/25G switch fiber ports, which are still expensive. Finally, there is a large number of openGear frames deployed around the globe, and the openGear form factor allows the customers to combine this functionality with other processing functions as desired.

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## SafeLink-8TS-VM (Virtual Machine)

The Reliable Internet Stream Transport (RIST) series of Specifications from the Video Services Forum (VSF) provides a set of best-in-class mechanisms for content contribution over the internet. Cobalt Digital is an active member of the RIST Activity Group, and Cobalt products provide a set of rich RIST features.

The low latency, advanced security and high reliability of RIST make it the ideal protocol for cloud ingress and egress. To provide this functionality in the cloud, a gateway is needed. Such a gateway would need to convert between RIST and the simpler UDP/RTP protocols used inside the cloud.

The Cobalt RIST product line includes the SafeLink Gateway, an openGear card that can provide eight channels of conversion between RIST and plain UDP/RTP. SafeLink is compression-agnostic and can protect any type of transport stream. Each input channel can support independent/unrelated primary/backup streams, or SMPTE ST 2022-7 seamless switching or bonding. Each output can replicate the outgoing stream to up to eight destinations. SafeLink is ideal for providing link protection to existing encoding/decoding infrastructures.

SafeLink can also support up to eight RIST Main Profile tunnels, each of which can support any arbitrary number of streams. The SafeLink Gateway is designed to provide RIST functionality to legacy devices.

Cobalt is now releasing a cloud version of the SafeLink Gateway, available as an AWS instance — no need to buy any hardware, it can work in any virtual machine. The cloud version has the exact same functionality as the openGear card and exposes the same configuration interface using the DashBoard application. The user can tailor the level of performance by selecting one of the various CPU architectures supported.

- Using Cloud SafeLink, customers can:
- Reliably and securely receive content for further processing in the cloud from any RIST device, both from Cobalt and other vendors.
  - Provide primary/backup workflows to increase reliability.
  - Reliably and securely transmit content from the cloud to any RIST device, both from Cobalt and other vendors.

Cloud processing is great,

but content needs to get there, and once processed, needs to come back. Some users have large amounts of dedicated bandwidth for this, and can use simple transfer protocols, especially if they are working with files. However, for those who are working with live content, and only have traditional non-dedicated internet links, a more advanced protocol (RIST) is needed, in combination with advanced compression. SafeLink can operate as the in-ramp and out-ramp to/from the cloud in such situations.

Many vendors offer encoders/decoders with RIST support, but something needs to “catch” the content as it comes in, and once processed, reliably and securely send it where it needs to go. Moreover, customers may have redundant processing paths, and a logical “switch” between them is needed at the cloud.

The openGear version of SafeLink can do this at the customer premises, and now SafeLink Cloud can do the exact same functionality on the cloud side in a cost-effective manner, since instances can be spun up and down on demand in a pay-as-you-go model.

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