VideoFlow

Broadcast With CONFIDENCE.

Selecting the Protocol for Reliable Broadcast Over IP Ecosystems

Technical Report

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Professional Live Broadcast over IP Networks is Reality

The use of IP networks for digital video contribution and distribution is now a reality. Reliable connectivity is in the heart of any professional broadcast operation, and that comes with a high monthly price tag to ensure reliable service. There is another way. Products and technologies enabling professional live broadcast over IP networks had matured to a point the become the foundation for any contribution and distribution networks.

The reliable internet streaming transport (RIST) and secure reliable transport (SRT) are the two main activities for recommending an industry-standard that guarantees vendor interoperability. The RIST Forum and the SRT Alliance are two industry activities promoting their standard to the professional broadcast industry.

What's Available?

RIST

RIST is an activity group within the video services forum (VSF) built of both equipment vendors like VideoFlow, Cobalt, ZiXi, and Net Insight, and users like AWS and BBC that together recommend on the best protocol for video delivery over IP. RIST enables any broadcast equipment vendor to broadcast over any IP network, including over the Internet, and to ensure video quality, service continuity, and secured connection in a multi-vendor environment. The RIST Forum is promoting RIST as the broadcast industry standard to ensure a smooth change to professional broadcast over IP.

SRT

SRT is an open-source video transport protocol and technology stack that optimizes streaming performance across unpredictable networks with secure streams and easy firewall traversal, bringing the best quality live video over the worst networks. The SRT Open Source project, driven by Haivision and the SRT Alliance. The alliance comprises 100+ industry companies using the same reference code to assure interoperability.

Vendor Proprietary Implementation

RIST and SRT are the signs for mature technologies that consider the industry requirements over the benefits of a specific vendor. For example, VideoFlow as a leading contributor to RIST, waved its ARQ patent for use by any vendor to make RIST the best protocol for broadcasting over IP.

Vendors like VideoFlow and ZiXi developed features and capabilities to enable video delivery over IP networks a long time before RIST and SRT had begun. Many of these features and capabilities are now part of industry standards like RIST. However, the standard still has a distance to go before it offers the full set of capabilities and features provided by vendors like VideoFlow today.

How to Select the Right Protocol?

Vendor interoperability is mandatory but not sufficient to ensure a reliable service over IP and, in particular, over the Internet. It takes pedigree, technology, and experience to bring the right product into play. RIST or SRT does not include all the necessary features to ensure a reliable service like VideoFlow's adaptive encoder rate control. Hence a decision on selecting a product starts with considering RIST or SRT features that are vendor implementation-dependent like dynamic load share and innovative features offered by each vendor to top up RIST or SRT like VideoFlow's output failover.

The table below provides easy technology comparison comparing top features required to ensure reliable service using each reliable delivery protocol:

Feature/Quality	VideoFlow	ZiXi	RIST	SRT
ARQ	☑	☑	☑	☑
Hybrid ARQ/FEC	☑	☑	☒	☒
Encryption	☑	☑	☑	☑
Prioritized Packet Flow	☑	☒	☑	☒
Hitless Redundancy (SMPTE 2022-7)	☑	☑[1]	☑[3]	☒
Null Packets Deletion (NPD)	☑	☑[1]	☑[4]	☒
Bitrate Bonding	☑	☑[1]	☑[3]	☒
Dynamic Load Share	☑	☒	☑[3]	☒
Adaptive Encoder Rate Control	☑	☑[2]	☒	☒
SPTS Adaptive Rate Control for Distribution	☑	☒	☒	☒
MPTS Adaptive Rate Control for Distribution	☑	☒	☒	☒
Input Failover	☑	☑[1]	☒	☒
Output Failover	☑	☒	☒	☒
NETCONF	☑	☒	☒	☒

Notes:

1. *Not available in the edges. Requires a broadcaster to implement.*
2. *Works with selected encoder vendors.*
3. *Implementation dependent. Available in RIST Simple profile (TR-06-01).*
4. *Implementation dependent. Available in RIST Main profile (TR-06-02).*

Conclusion

There are many points to consider when selecting a protocol for reliable live broadcast over IP networks and in particular over the Internet. Here are the main two that guarantee advertising revenues:

1. Path Redundancy – Ensure connection reliability with
    a. Input failover
    b. Output failover
    c. Dynamic load share
    d. Hitless redundancy
2. Adaptivity – Ensure service reliability
    a. Adaptive encoder rare control for contribution
    b. SPTS adaptive rate control for distribution
    c. MPTS adaptive rate control for distribution

However, selecting the protocol is only the first step in the decision process. You no longer need to compromise or patch a solution. Chose products offering all the tools you need in a single compact solution.

For example, VideoFlow products offer features that increase the operational efficiency in a single compact solution to build a video delivery over IP ecosystem that enables to broadcast with confidence. Here is a partial list of these features:

- Wake up on peer for disaster recovery
- ETR290 stream monitoring
- Realtime network monitoring and debug tools
- Confidence monitoring
- Transcoding
- Publisher
- IGMP listener
- Diverse protection
- Shared protection
- Odd/even protection
- High availability

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