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APPLICATION NOTE

Delivering regionalised content through All-IP Content Distribution

Cost-effective, Robust and Personalised Content
Distribution

JUNE 2026

For decades, satellite connectivity has formed the backbone of broadcast content distribution through its global reach and total reliability. Yet the operating environment is changing rapidly. Broadcasters are producing richer, more dynamic content while facing increasing pressure to deliver personalised feeds tailored to individual affiliates and regional platforms. At the same time, distribution costs are under constant scrutiny, and in some regions geostationary C-band capacity is declining significantly due to spectrum re-allocation.

IP-based distribution, supported by near-ubiquitous connectivity, and cloud-native processing, offers a compelling way forward. When designed around compressed-domain operations and robust transport protocols, IP distribution can match, and in many respects surpass, traditional satellite distribution capabilities while unlocking new levels of flexibility and efficiency.

The Shift to IP Distribution

The industry is moving from “one-to-all” satellite broadcasts toward targeted, IP-centric delivery. This transition is driven by several converging factors:



- Declining availability of traditional GEO capacity in key markets
- Widespread adoption of IP video transport protocols, particularly SRT
- Accelerating use of cloud infrastructure for broadcast delivery platforms

In this new environment, content must be delivered reliably with mass fan-out to hundreds of endpoints, each potentially requiring its own configuration.

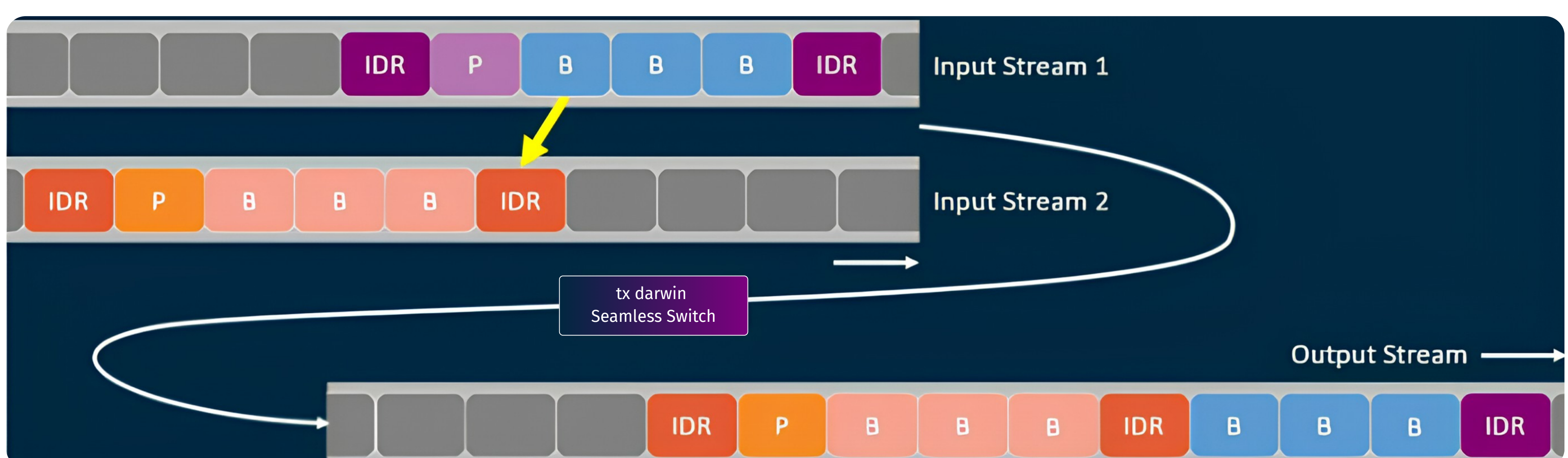
Addressing the Personalisation Challenge of Content Distribution in an IP World

With the desire for greater personalisation to individual takers or groups of takers, grows a challenge for technology to respond to that demand. IP delivered MPEG transport streams provide bandwidth efficiency and flexibility to be more targeted in content delivery than a one-to-all classic satellite transmission.

Content delivery customisation can go even further. Through decode-seamless transport stream switching it becomes possible to deliver and seamlessly insert additional IP services into program content.

Using decode-seamless switching techniques, operators can insert regional slates, alternative programming, blackouts, or localised content without disturbing downstream decoders. By leveraging IDR frames to splice non-coherent AVC or HEVC streams, these transitions occur cleanly and visually seamlessly. The result is a more relevant service for each affiliate or platform while maintaining perfect decoder compatibility.

Figure 1: Achieving a Seamless Switch: Stream Manipulation

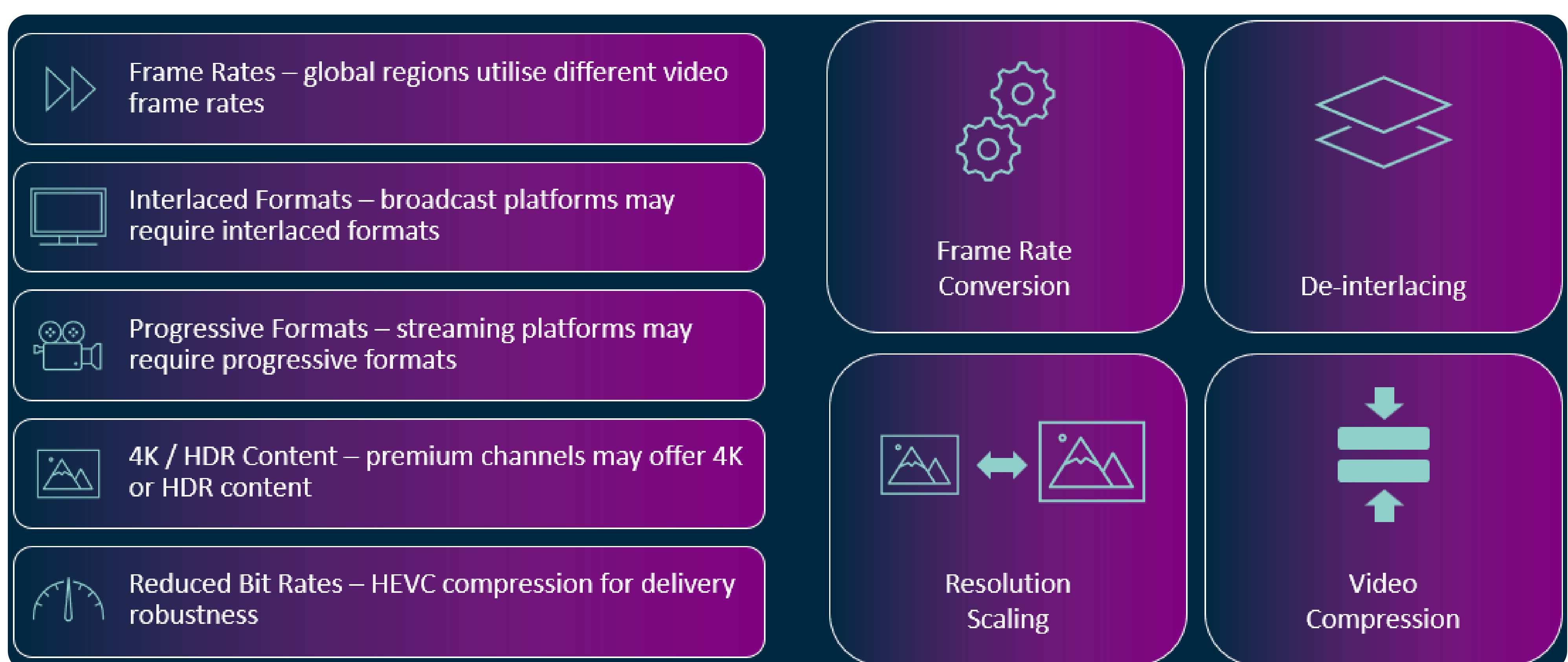


Matching Video Formats at the Edge

Regional and platform-specific requirements often demand different video formats - varying resolutions, frame rates, interlaced versus progressive scanning, or different compression standards. IP distribution makes it practical to deliver the right version to the right endpoint.

Operators can generate multiple output variants from a single source: AVC for maximum compatibility, HEVC for bandwidth efficiency or UHD/HDR delivery, and lower-bitrate versions optimised for edge networks. Where baseband processing is required (resolution scaling, de-interlacing, or frame-rate conversion), high-quality mezzanine compression (4:2:2 10-bit) provides the domain translation and minimises generational loss and preserves overall video quality.

Figure 2: Adapting video formats to meet diverse platform and regional requirements



Protecting High-Value Content

Live content often carries rights value measured in hundreds of millions or even billions of dollars. A robust IP distribution system must therefore incorporate multi-layered protection.

Strong AES-128 encryption within SRT streams provides secure delivery. Forensic watermarking adds an additional layer of traceability, helping content owners identify the source of any unauthorised redistribution.

Enabling Content Monetisation

SCTE-35 signalling remains the industry standard for frame-accurate ad insertion, blackouts, and regional monetisation. However, signalling formats and implementation details frequently differ between upstream sources and downstream takers.

Modern compressed-domain processing allows operators to parse, interpret, and re-format SCTE-35 messages to match the house standard of each recipient. This ensures that valuable advertising and sponsorship opportunities are not lost due to technical incompatibility, while SCTE 224 can be used for more sophisticated, audience-aware policy enforcement.

Ensuring Reliability at Scale

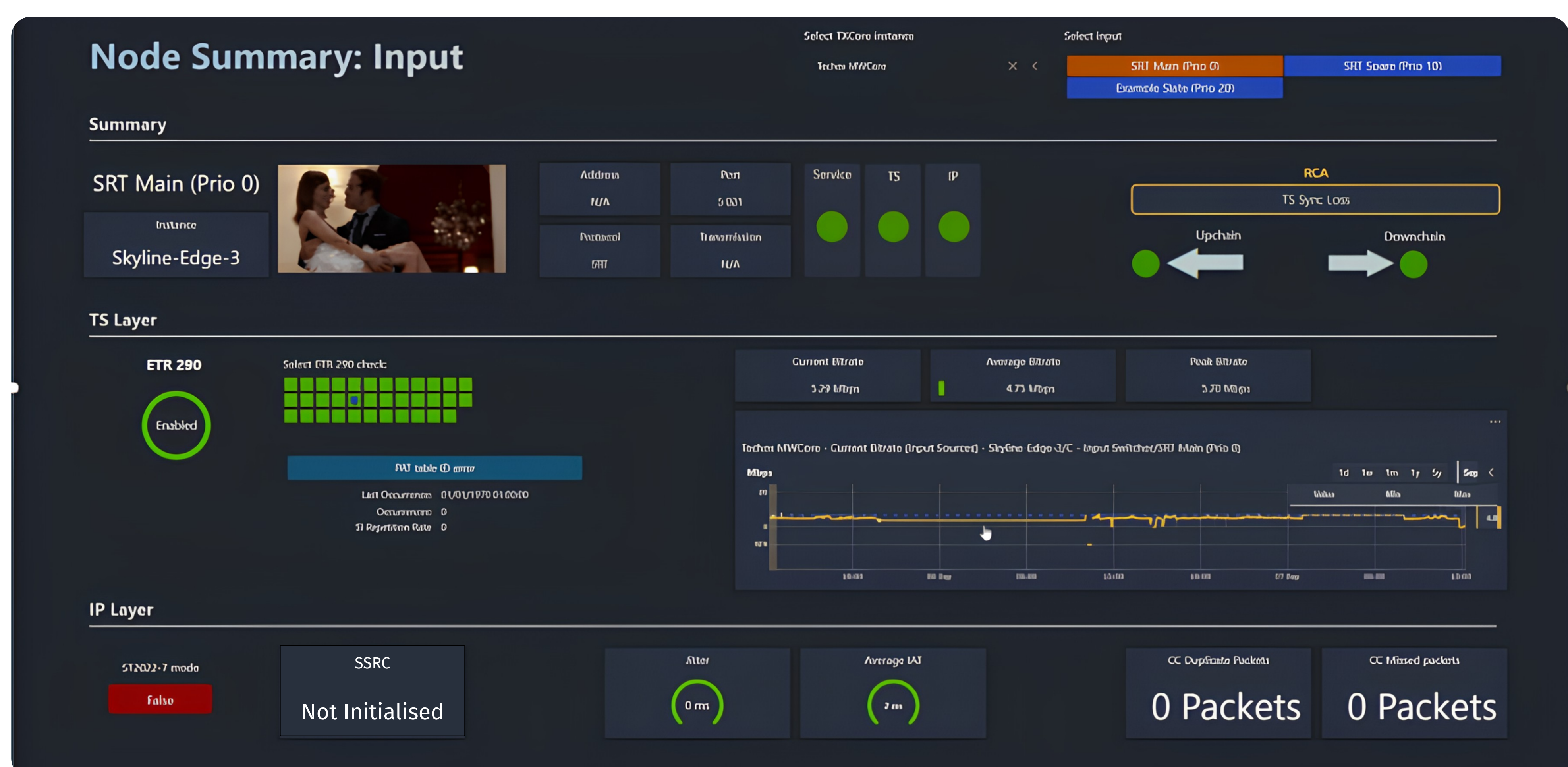
Reliability is non-negotiable. Broadcasters expect IP distribution to rival the legendary uptime of satellite links.

This is achieved through a combination of proven technologies:

- SMPTE 2022-7 seamless switching between diverse IP paths
- ARQ-based protocols such as SRT and RIST for reliable delivery over unmanaged networks
- FEC for packet loss protection
- TR 101 290 monitoring for continuous stream health validation

At scale, centralised orchestration and monitoring provide complete observability across all taker endpoints, enabling proactive issue resolution and auditable service delivery.

Figure 3: End-to-end Observability



Meeting Today’s IP Distribution Needs with tx darwin

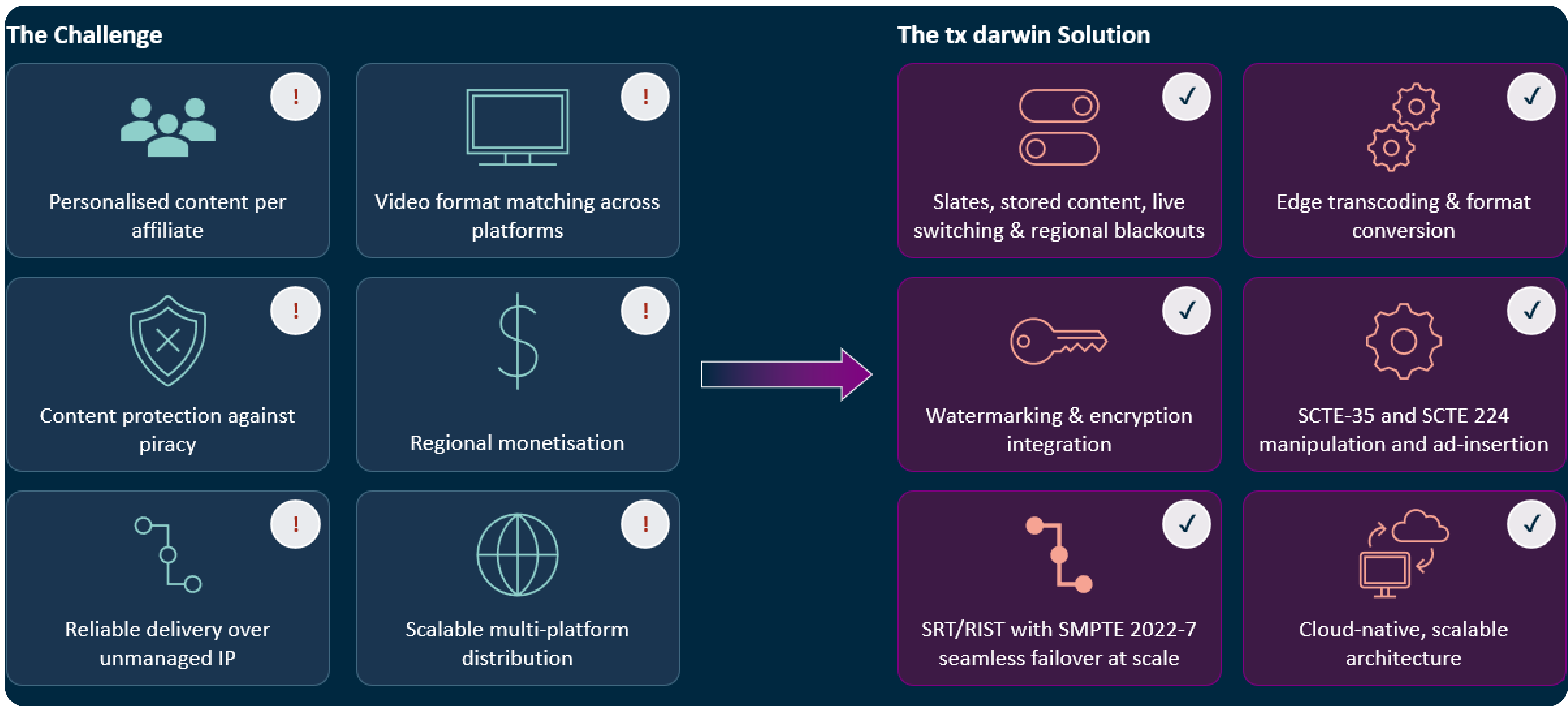
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tx darwin from Techex is purpose-built for this new reality. It brings together satellite-grade reliability with the flexibility and efficiency of modern IP and cloud workflows.

By maintaining content in the compressed (transport stream) domain wherever possible, tx darwin minimises processing overhead, reduces latency and cost, and preserves video quality. Its powerful stream manipulation capabilities, including visually seamless switching, audio PID remapping, SCTE signalling adaptation, and multi-variant output generation, enable operators to deliver highly personalised services at scale.

Whether supporting a handful of major affiliates or hundreds of smaller regional takers, tx darwin provides the automation, observability, and operational simplicity required for today’s fragmented distribution landscape.

Figure 4: Satellite-grade reliability meets IP flexibility for affiliate distribution



Conclusion

Techex’s tx darwin platform enables broadcasters and content owners to move confidently from traditional satellite distribution to a more agile, personalised, and future-proof IP model, without compromising the reliability their audiences and business depend on.

For more information

www.techex.tv

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