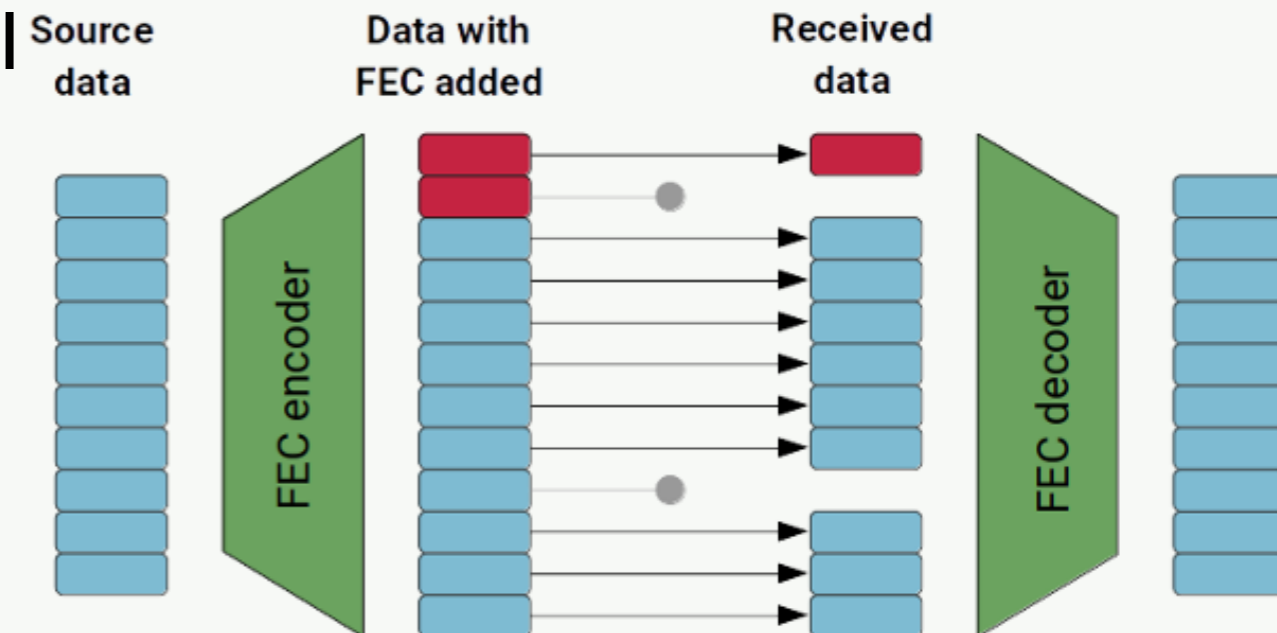INTINOR

#MADEINSWEDEN

Eurovision enhanced RTP over SRT

Roland Axelsson
Senior technical account manager

Bifrost Reliable Transport

Proprietary **point-to-point** transport protocol

- **Sender and receiver network bonding**
  - Ethernet + 3G/4G

- Error correction − FEC and ARQ

- **New: Ultra-low latency (<500ms)**

- Adaptive bitrate and resolution

- Redundant audio

- Cost management

Source data · Data with FEC added · Received data · FEC encoder · FEC decoder

BIFROST
RELIABLE TRANSPORT

Direkt link (encoder)

Direkt router

SDI in from somewhere

SDI out / in

Multiple protocols including
SRT, RIST, RTMP, RTSP, HLS, RTP, RTP+FEC, TCP

Eurovision enhanced RTP over SRT in combination with SMPTE 2022-7

Why?

Make it possible to get a redundant stream from a combination of

1. Internet 1 (using SRT) + Internet 2 (using SRT)

2. Internet (using SRT) + Dark fiber

3. Internet (using SRT) + Satellite

SRT has something called "path redundancy" but it's only supported by very few vendors and it only covers above use case 1.

What is SRT?

- Open protocol to transport anything live

- Error correction – FEC (redundant data) and ARQ (retransmission)

- Mostly used for sending MPEG-TS, but can actually send anything
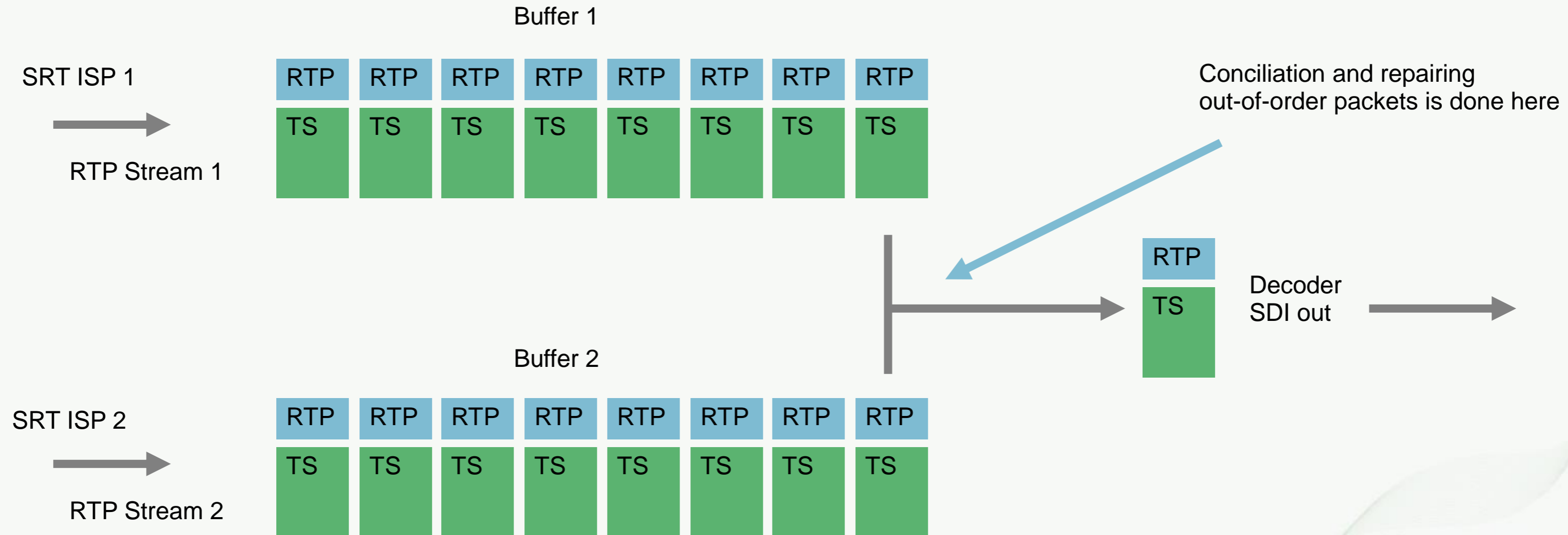
What is RTP?

- Adds a header with sequence number and timestamps

What is SMPTE 2022-7

- Seamless Protection Switching of RTP Datagrams

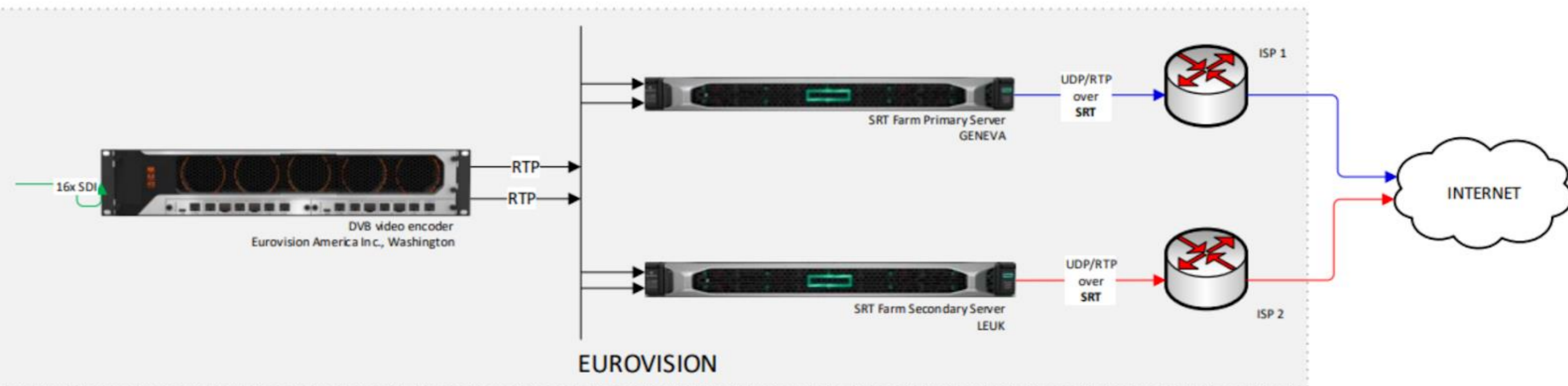 (receive from multiple redundant paths)

SMPTE 2022-7

- Decode from redundant streams

Buffer 1

SRT ISP 1

RTP	RTP	RTP	RTP	RTP	RTP	RTP	RTP
TS	TS	TS	TS	TS	TS	TS	TS

RTP Stream 1

Conciliation and repairing
out-of-order packets is done here

RTP
TS

Decoder
SDI out

Buffer 2

SRT ISP 2

RTP	RTP	RTP	RTP	RTP	RTP	RTP	RTP
TS	TS	TS	TS	TS	TS	TS	TS

RTP Stream 2

INTINOR
WE ARE DIREKT

www.intinor.com

Eurovision enhanced RTP over SRT

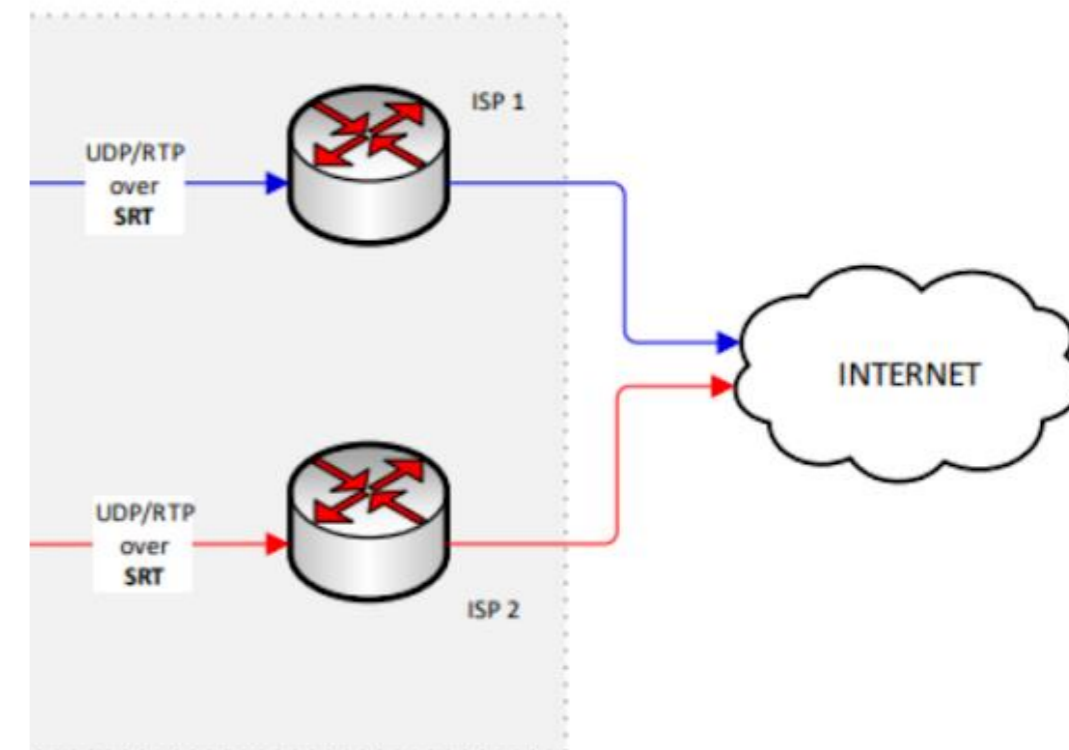Send redundant SRT streams using two different ISP

from two different locations

Eurovision enhanced RTP over SRT

Send redundant SRT streams using two different ISP from
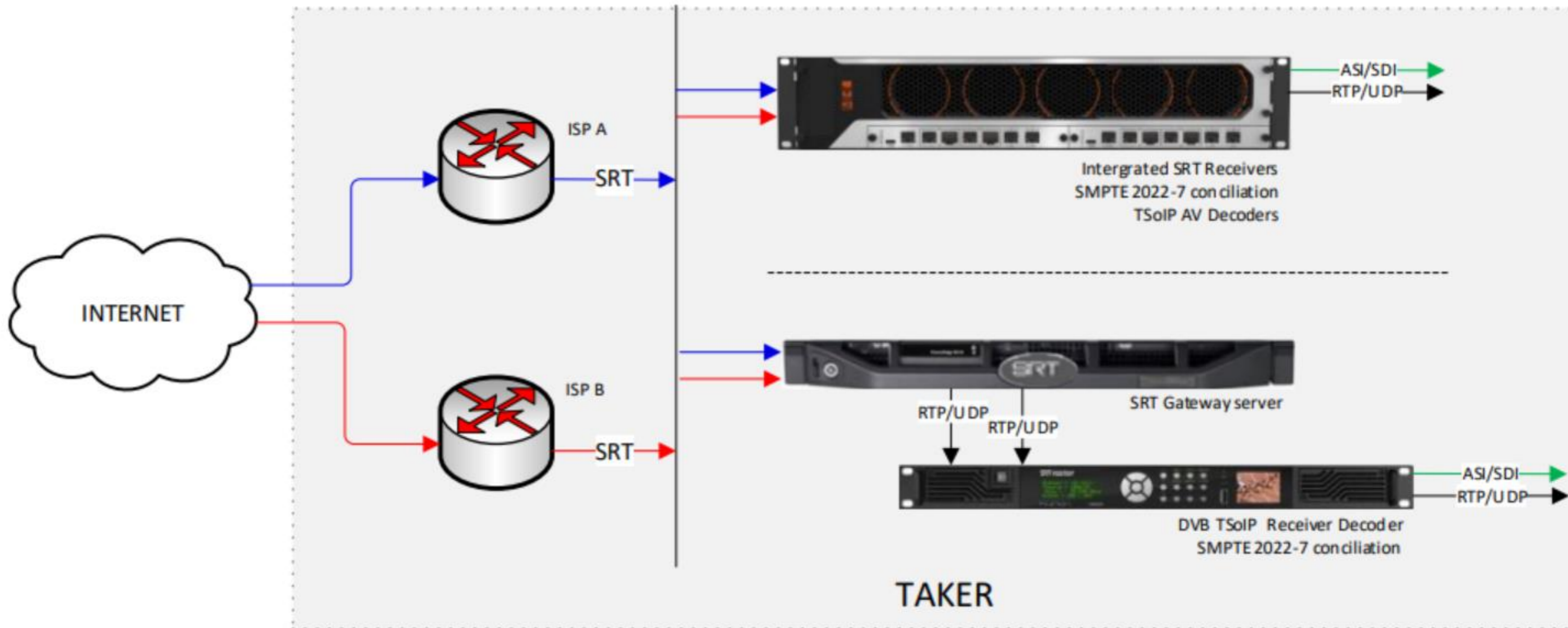
two different locations

16x SDI in

UDP/RTP over **SRT**

ISP 1

UDP/RTP over **SRT**

ISP 2

INTERNET

Supported on Intinor Direkt link from September 2023

Eurovision enhanced RTP over SRT
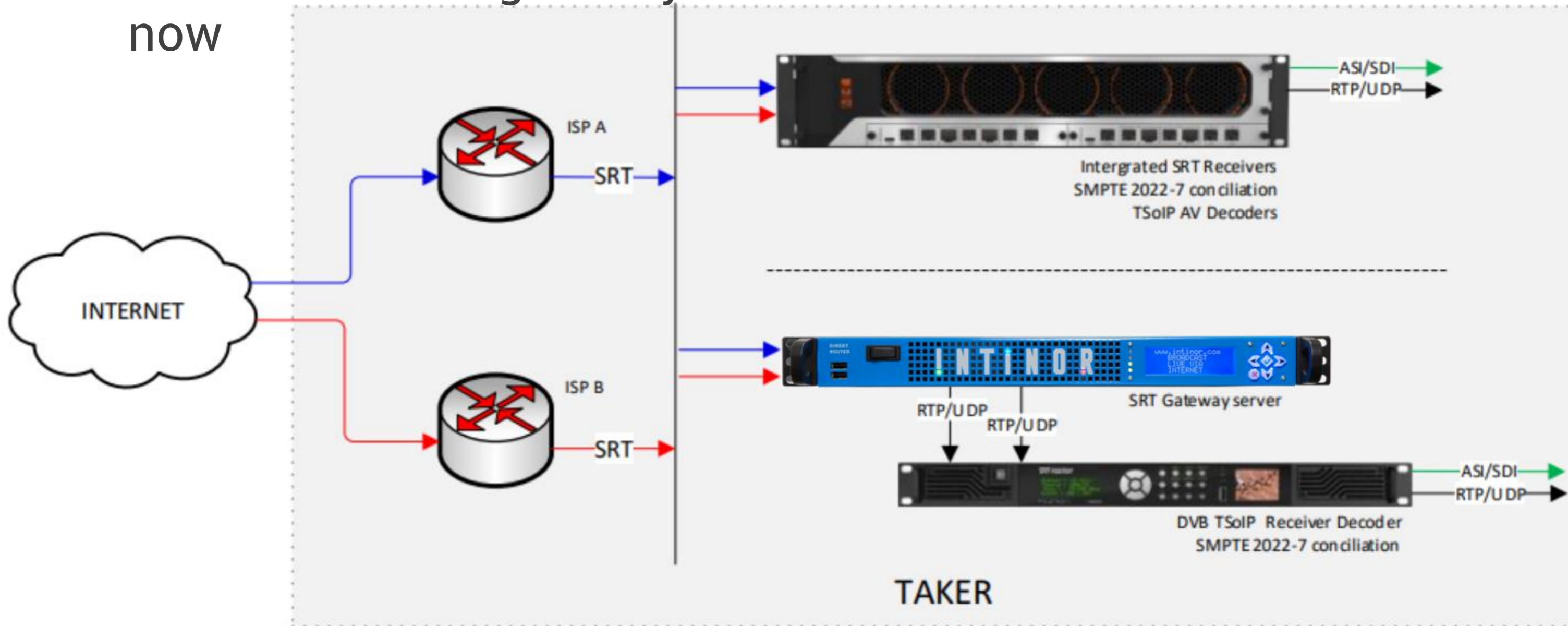## Receive redundant streams

Eurovision enhanced RTP over SRT
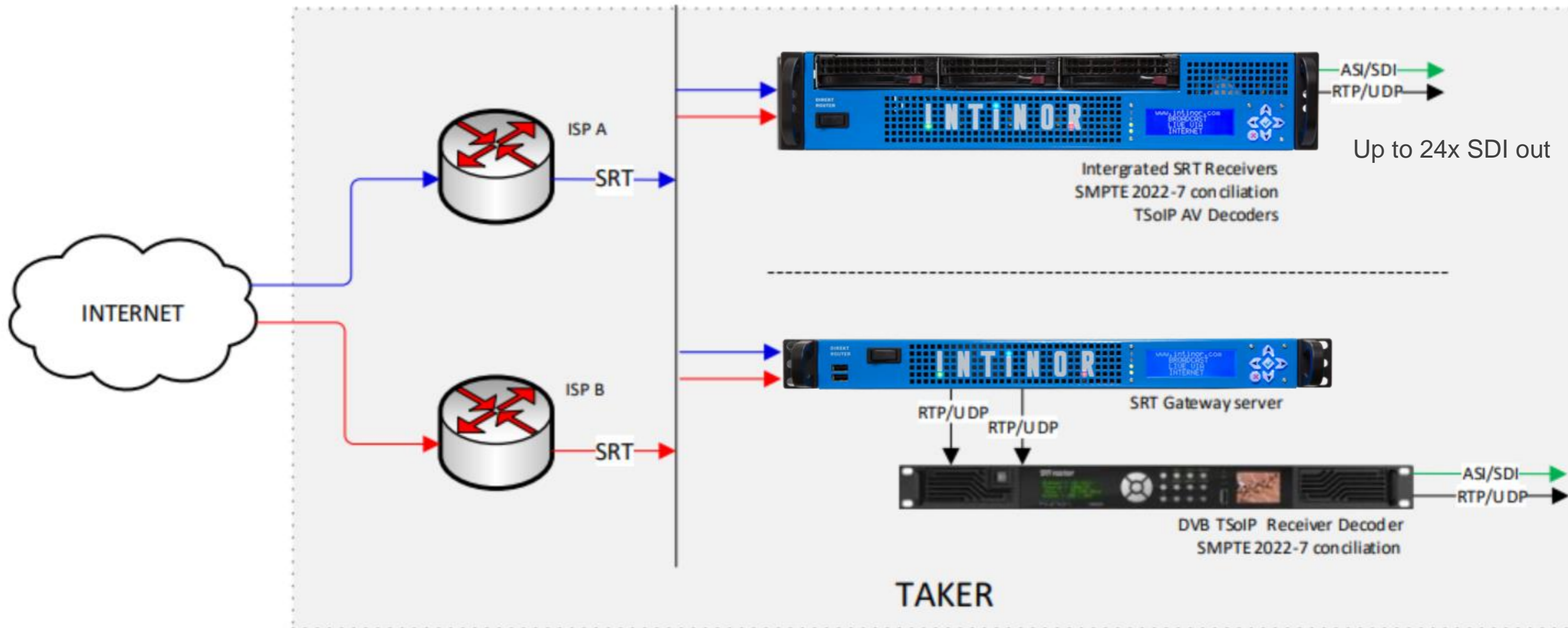Receive redundant streams
Intinor as a SRT gateway is available now

Eurovision enhanced RTP over SRT
Receive redundant streams –
SMPTE 2022-7 on Direkt router December 2023

Bottom line:

Sending video over Internet can be as robust or even more robust compared to a single fiber or a single satellite.

Just a lot more cost efficient.

But make sure to use redundancy for both
- Internet connections (most important) and
- Equipment

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FOR LIVE VIDEO OVER
PUBLIC INTERNET

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the best solution
for live video over public
internet!

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