

Optimized MPX over IP Broadcast Chain for FM

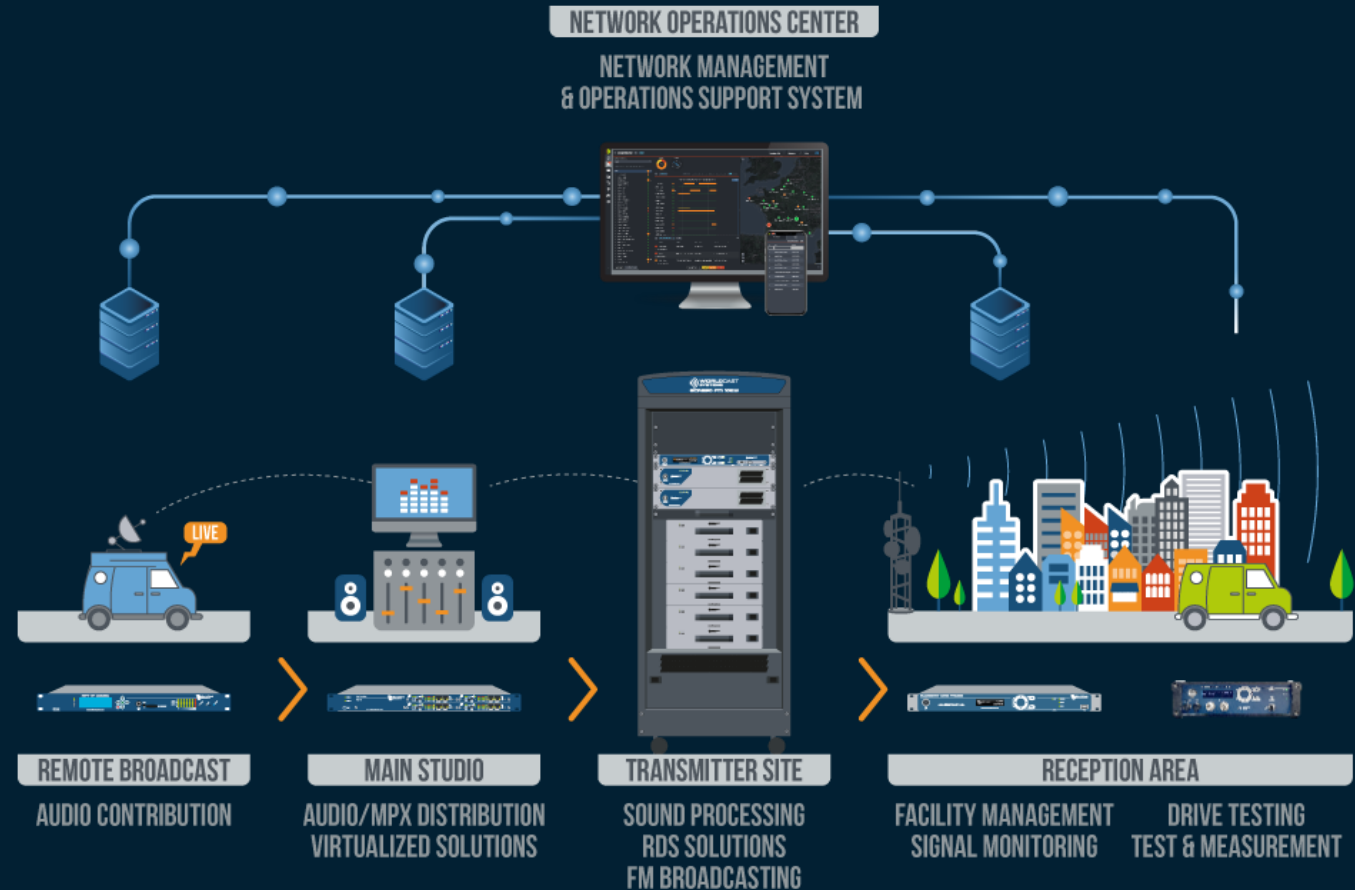
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WorldCast Systems

Solutions covering the entire broadcast chain.

Supplier of essential solutions for radio broadcast infrastructures, deployed by network operators, regulatory authorities and content providers.



Why optimizing the FM chain?

1 – To stay on-air 24/7

Remove points of failure

- **Reduce the number of components / hardware**
- **Streamline / Simplify the chain**

Redundancy of key elements

Monitor / notify

2 – To get the best sound quality

*The quality of an FM broadcast chain
is lower than
the quality of its weakest element.*

Simplify the chain (limit operations on the signal)

Check / measure transparency at each stage

Control / standardize the equipment base

3 – To reduce costs

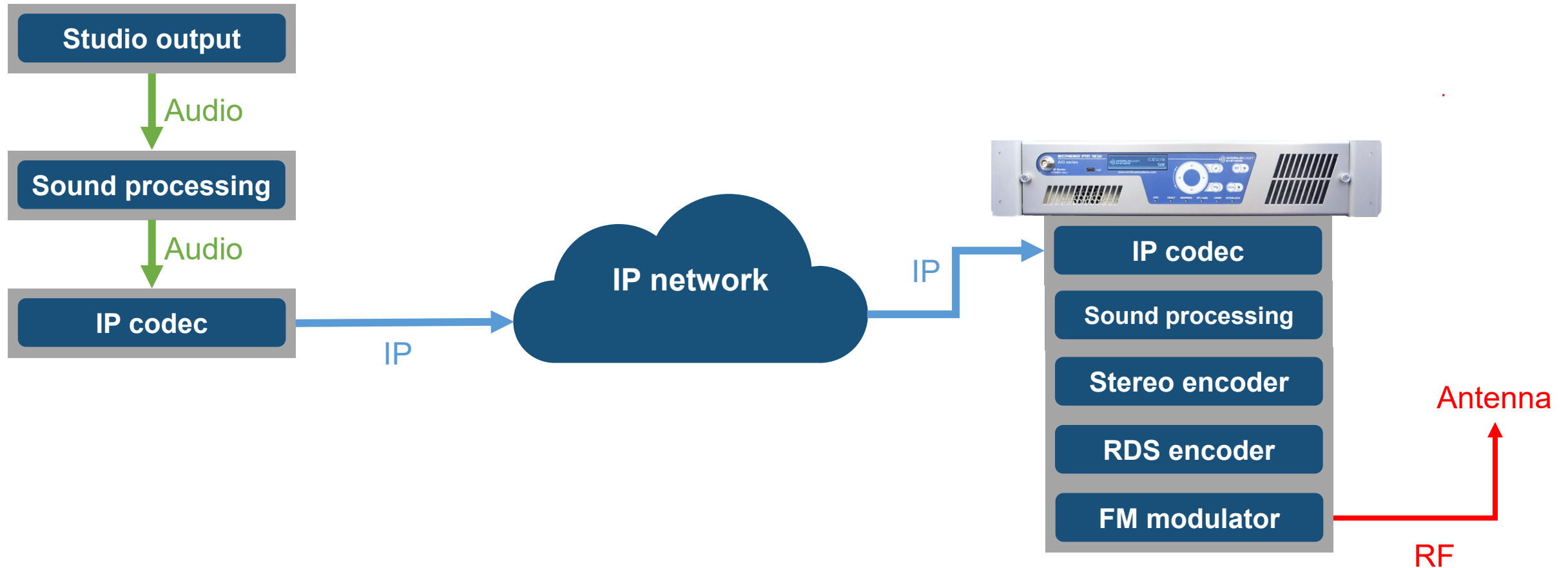
Purchase price, but also operating costs:

- Installation
- Cooling
- Power consumption
- Bandwidth
- Lifespan
- Support / maintenance
- ...

Less Hardware, More Software

From Hardware to Software

Software features at transmitter sites



Audio vs MPX over IP

MPX over IP benefits

- ✓ **Better signal control from the studio**
- ✓ **Easier signal standardization across sites**
- ✓ **Significant economies of scale**

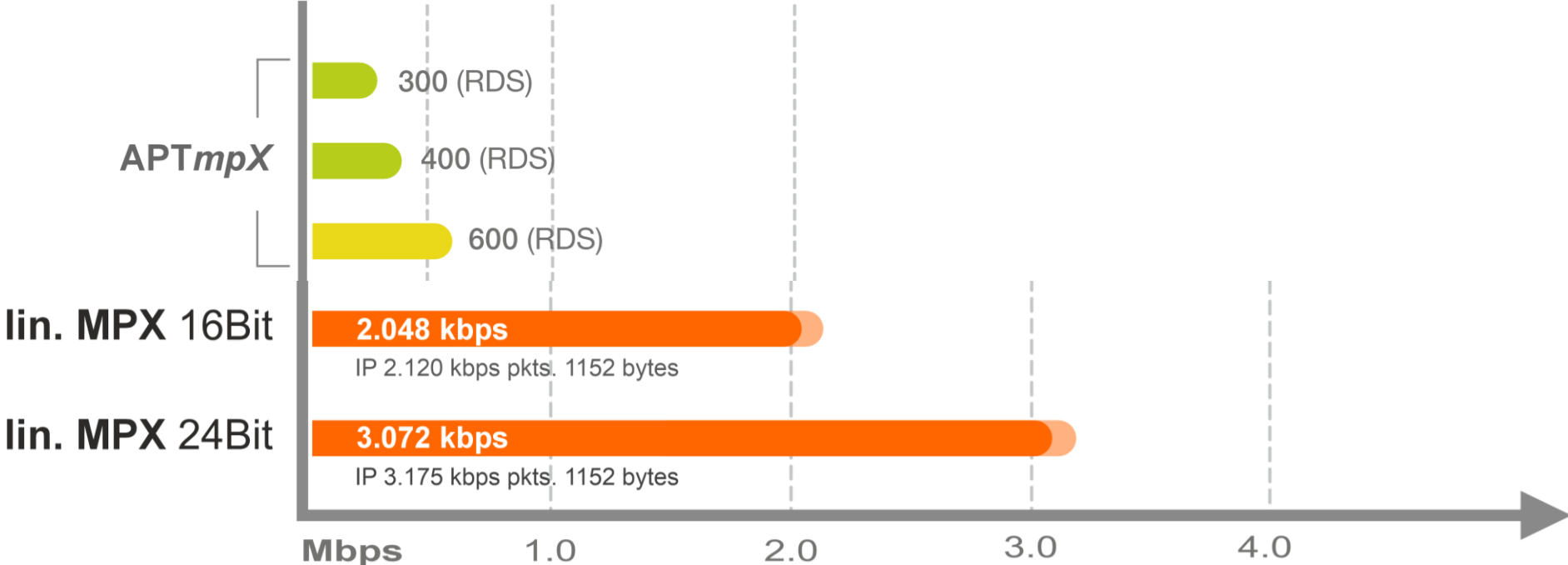
MPX over IP challenges

- 1. Requires high IP bandwidth**
- 2. MPX signal sensitivity**
- 3. Resilience to packet loss**

APT *mpX*

1 - IP bandwidth

APTmpX 3rd Gen. IP Bitrate Options



2 - MPX signal sensitivity

APT *mpX*

- **MPX integrity**

Audio, deviation, RDS...

- **Sound Transparency**

No added clipping, predictive algorithm, not psychoacoustic

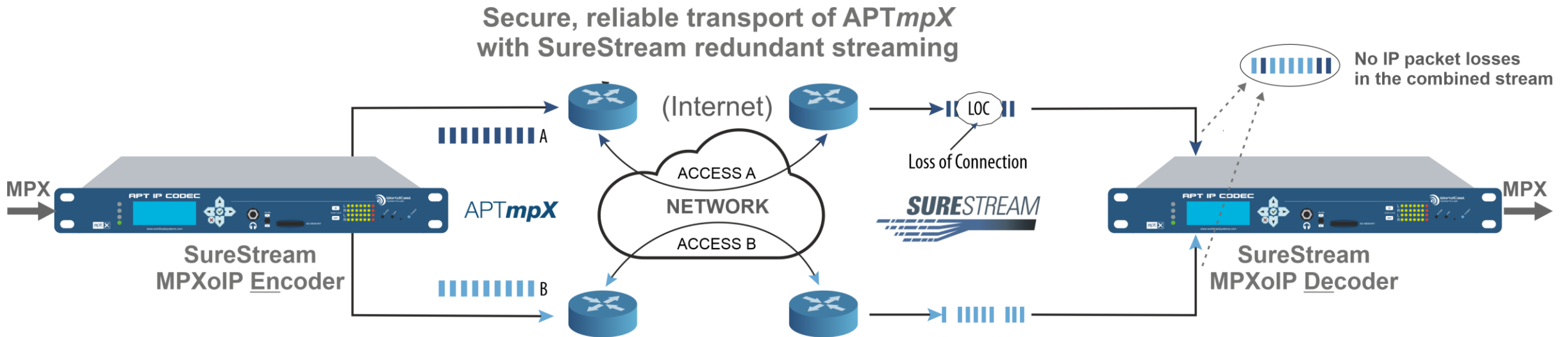
3 - Resilience to packet loss

APT *mpX*

- **No "key frame" packets**
- **Lost packets are replaced**
- **Deviation kept under control**
- **Minimal, if any, audible impact**

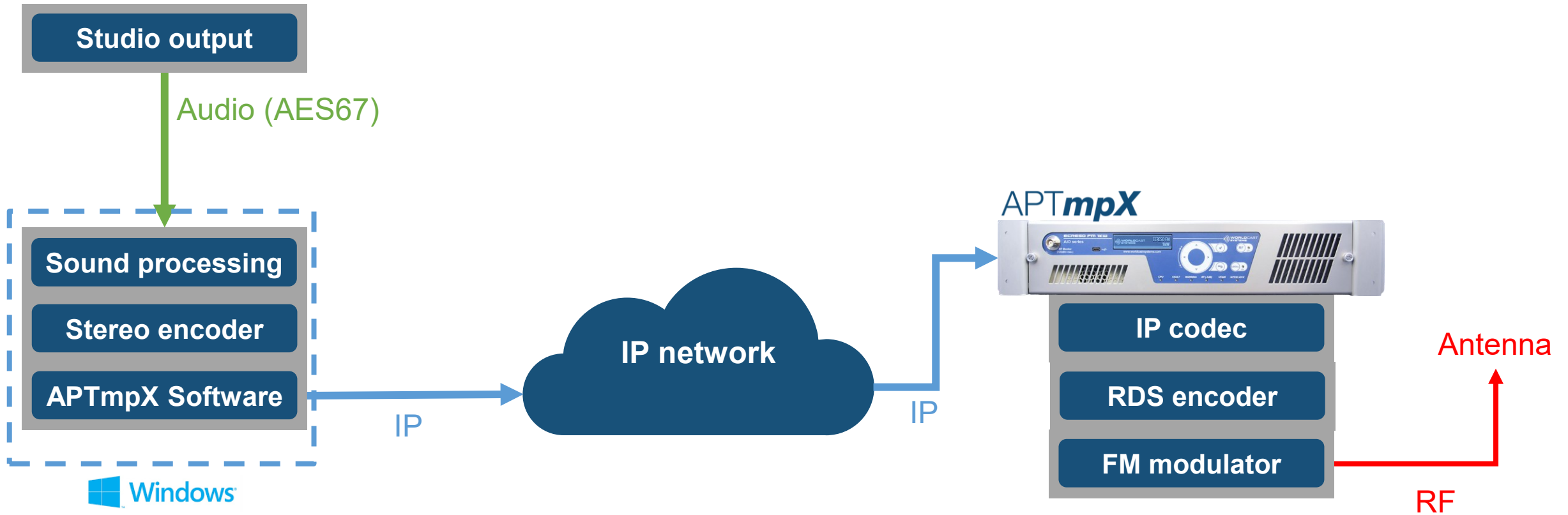
3 - Resilience to packet loss

- Redundant packets and links



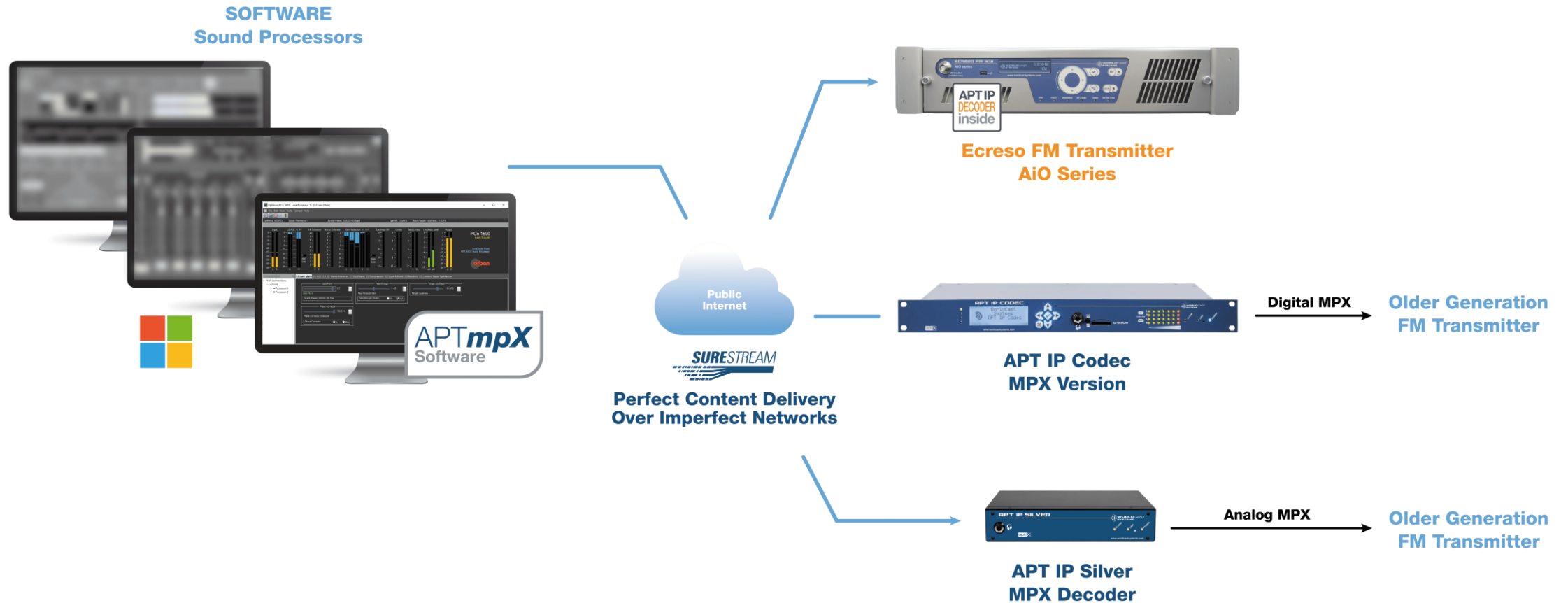
Virtualization at the Studios

Software solutions at the studio



Software solutions at the studio

Modern and retro-compatible



Case Study: Radio 100%



- **16 programs (main/local) and 50 frequencies**
- **Each program is processed in the studio by an Omnia 9s**
- **1 Linux server, 1 codec / Docker container**
- **Kybio (NMS) to manage the entire system**

Virtualized Codecs Benefits

- ✓ Savings
- ✓ Service availability
- ✓ Scalable
- ✓ Compatible with hardware codecs



THANK YOU
For listening

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