

DEATH FROM ABOVE.
WHY APPLICATION
LAYER IS BLIND TO
BETTER INFRA.



BACKGROUND



SAULI KIVIRANTA



WHAT HAPPENS UP THERE?



WHAT HAPPENS UP THERE?

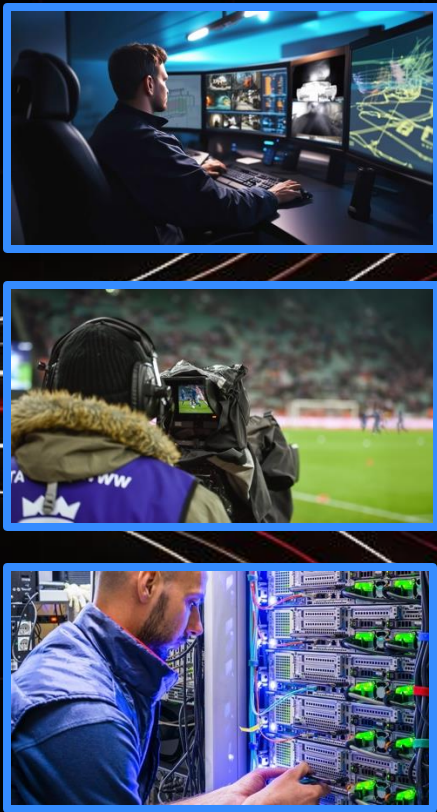
PACKET LOSS & LATENCY
= HEAD OF LINE BLOCKING

- WEATHER
- DISTANCE
- OBSTACLES
- CONGESTION
- INTERFERENCE



1%

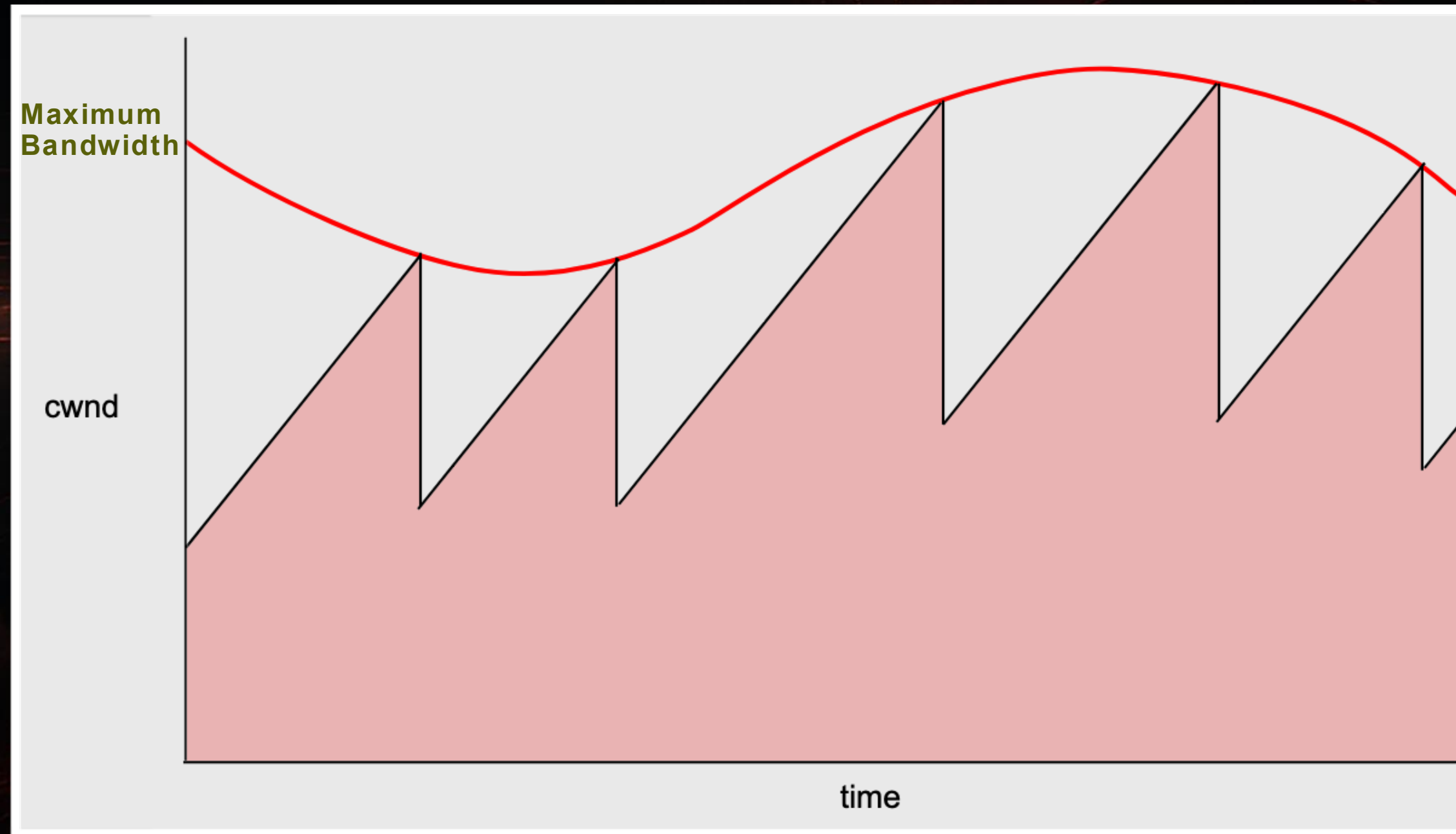
Packet loss



- RELIABILITY
- DELAYS
- EFFICIENCY
- SCALABILITY
- QUALITY
- USABILITY
- REACH

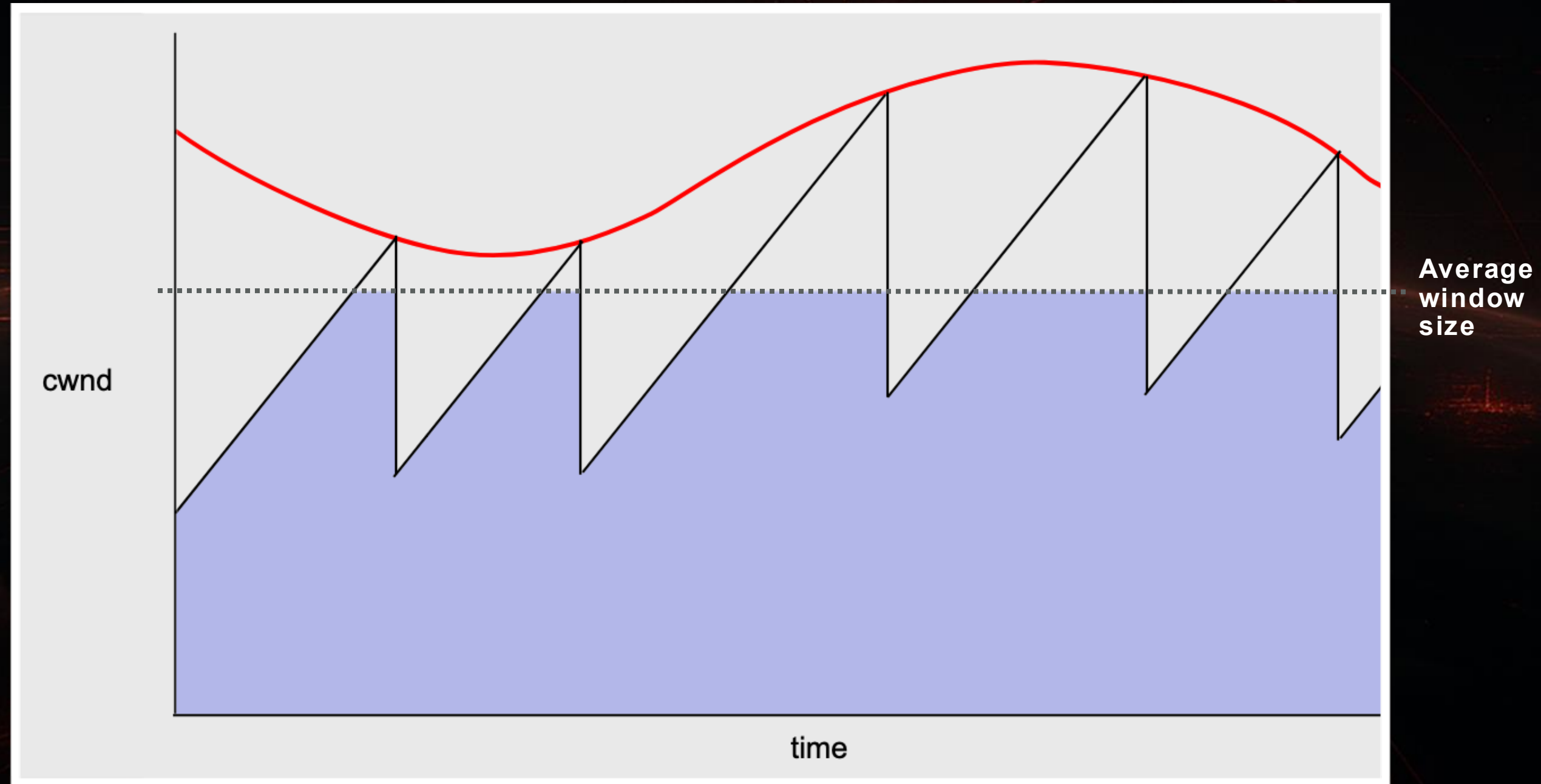
1000X
drop in performance

WHAT HAPPENS UP THERE?



CONGESTION CONTROL DILEMMA

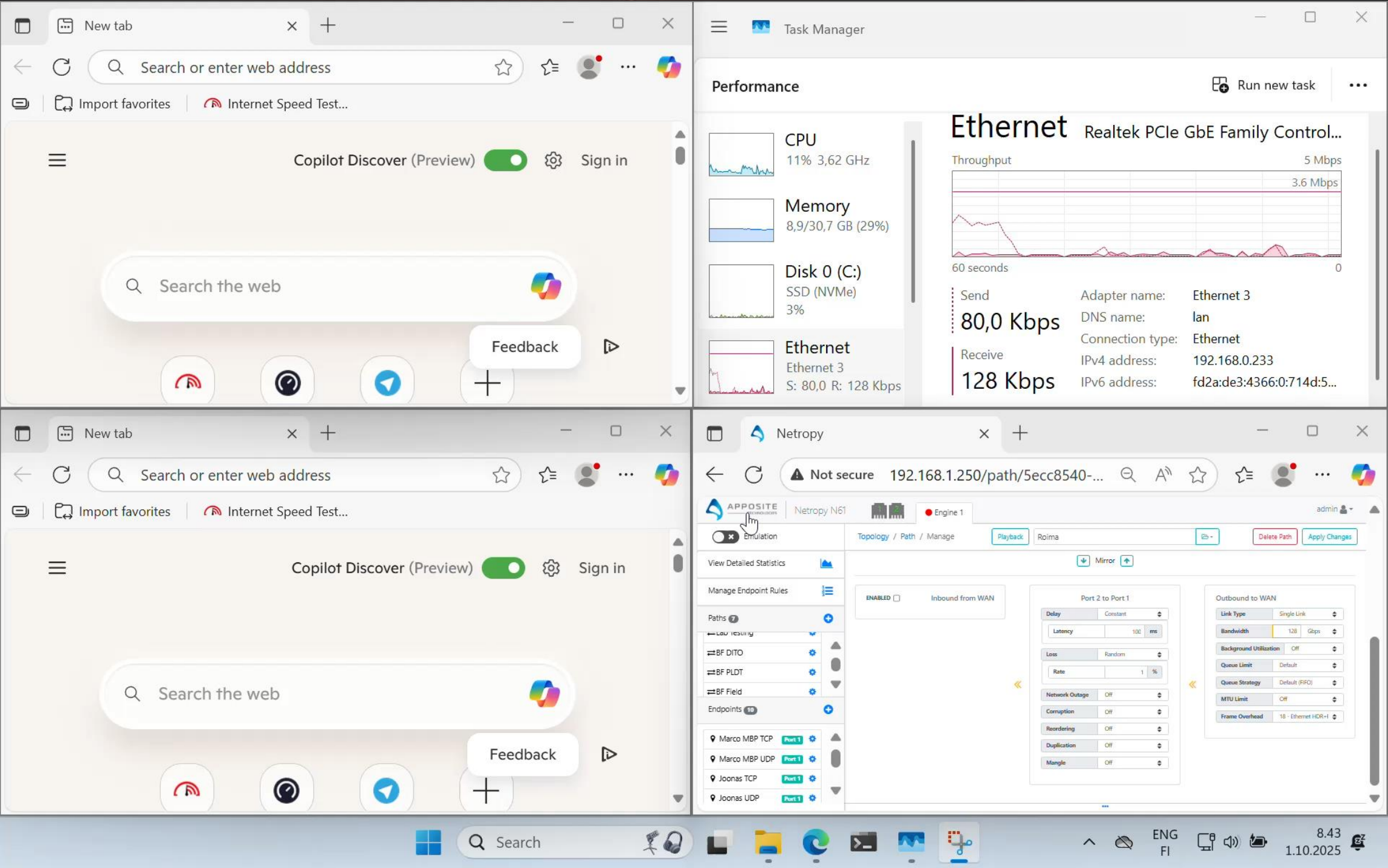
WHAT HAPPENS UP THERE?



CONGESTION CONTROL DILEMMA

WHAT HAPPENS UP THERE?

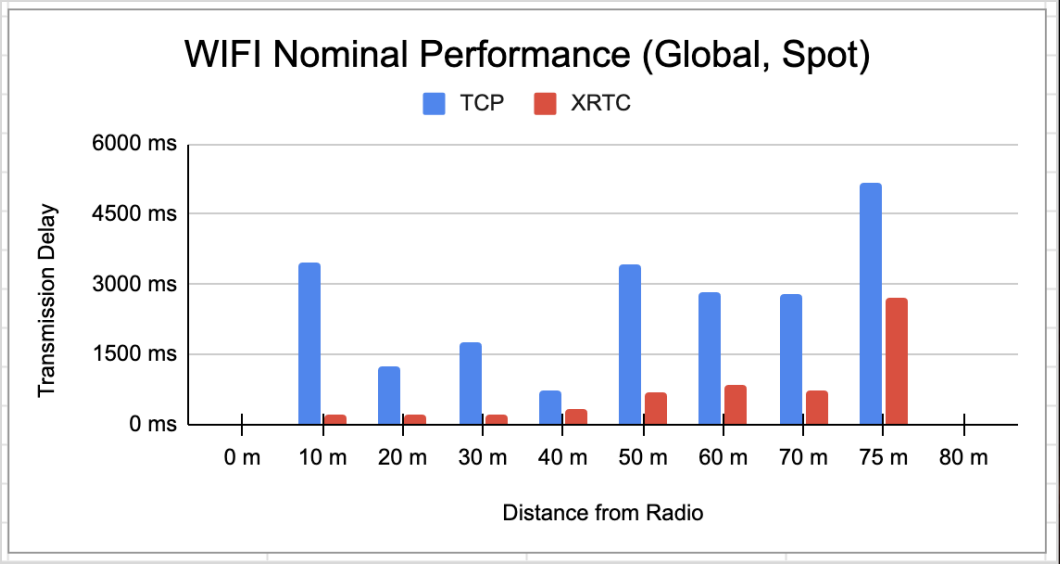
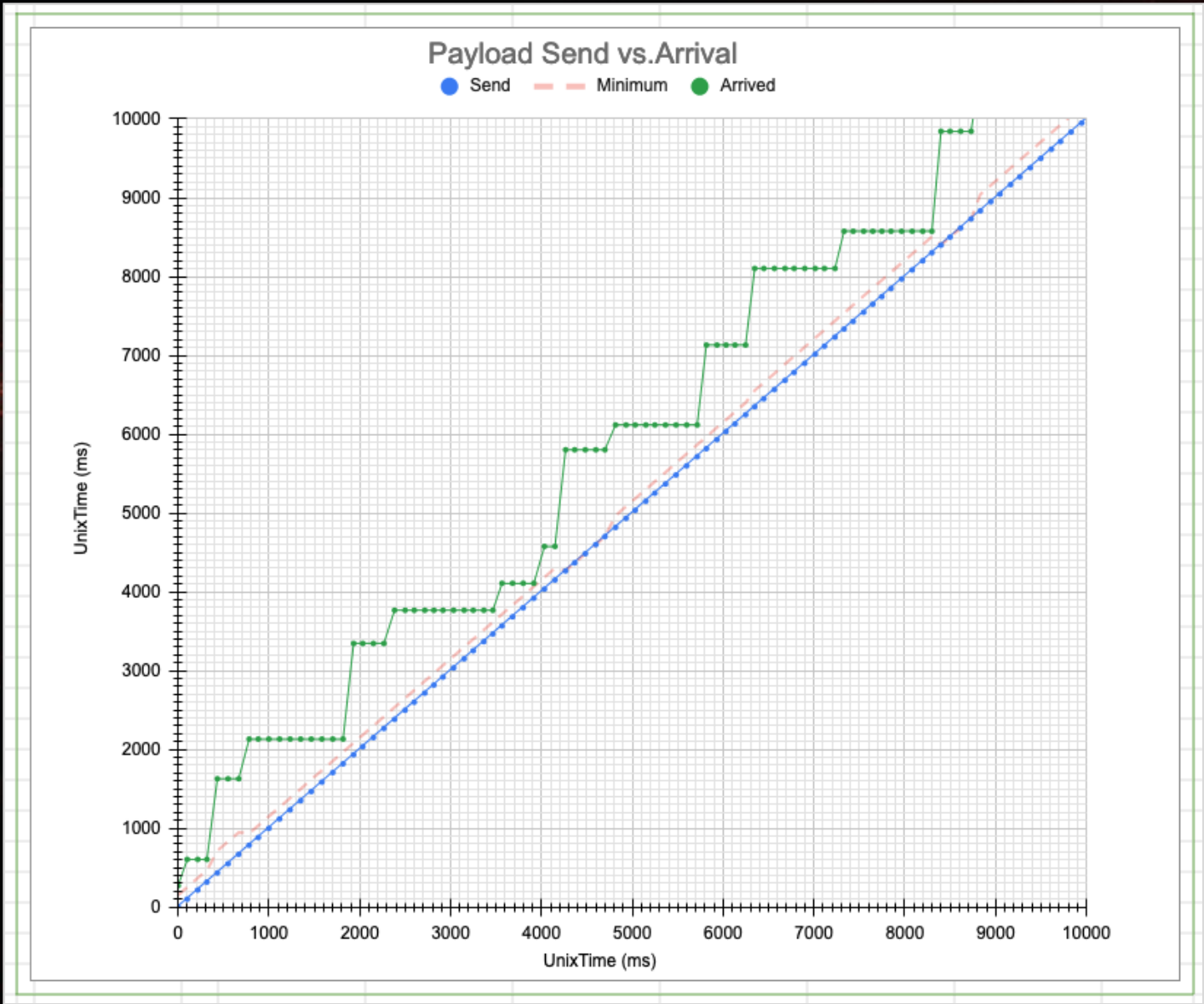
GOAL TO IMPROVE UTILIZATION



WHAT HAPPENS UP THERE?

FILE TRANSFER TESTS

33 ms



2G Network	TCP	XRTC accelerated
Location	average (kbps)	average (kbps)
1	300	800
2	150	800
3	10	600
5	100	800
23	50	700

File transfer has completely random performance from good to bad to horrible

CASE CAD/PLM REMOTE WORK

GOAL TO REDUCE LOADING TIMES



Application servers are located in Finland. Load 3D-CAD models from PLM-system. Global operations, work from home

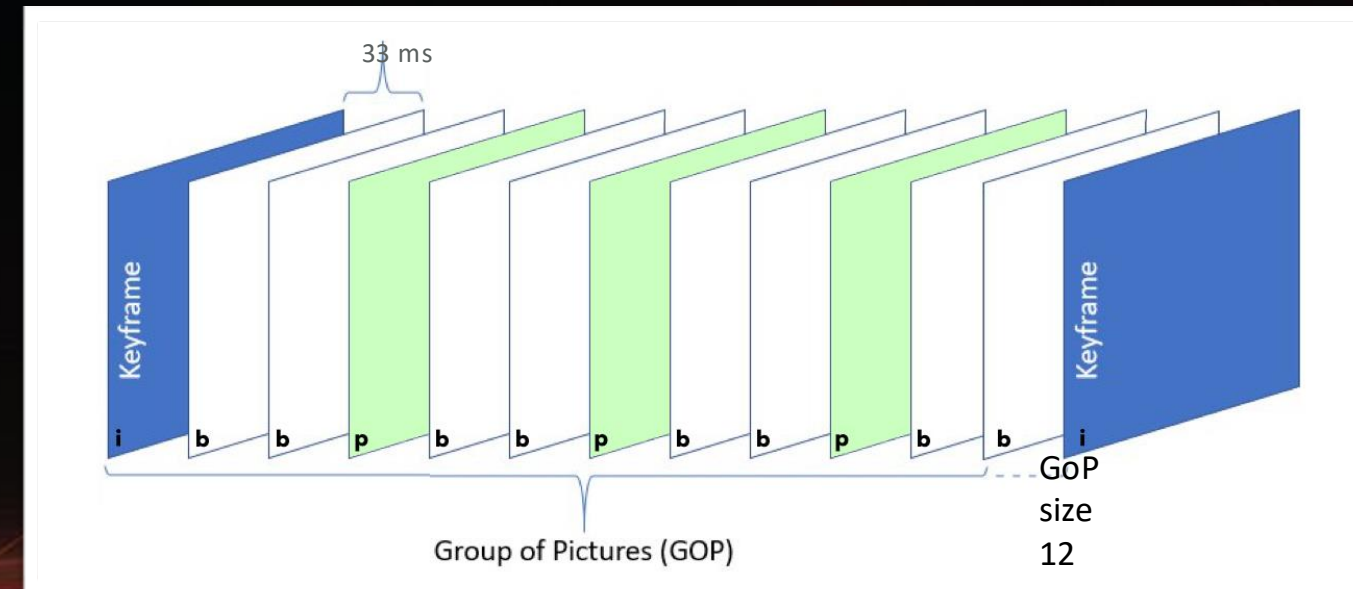
BEFORE

- CAD model loading took 24 minutes
- Poor user experience
- Lost work efficiency
- Lost customer cases

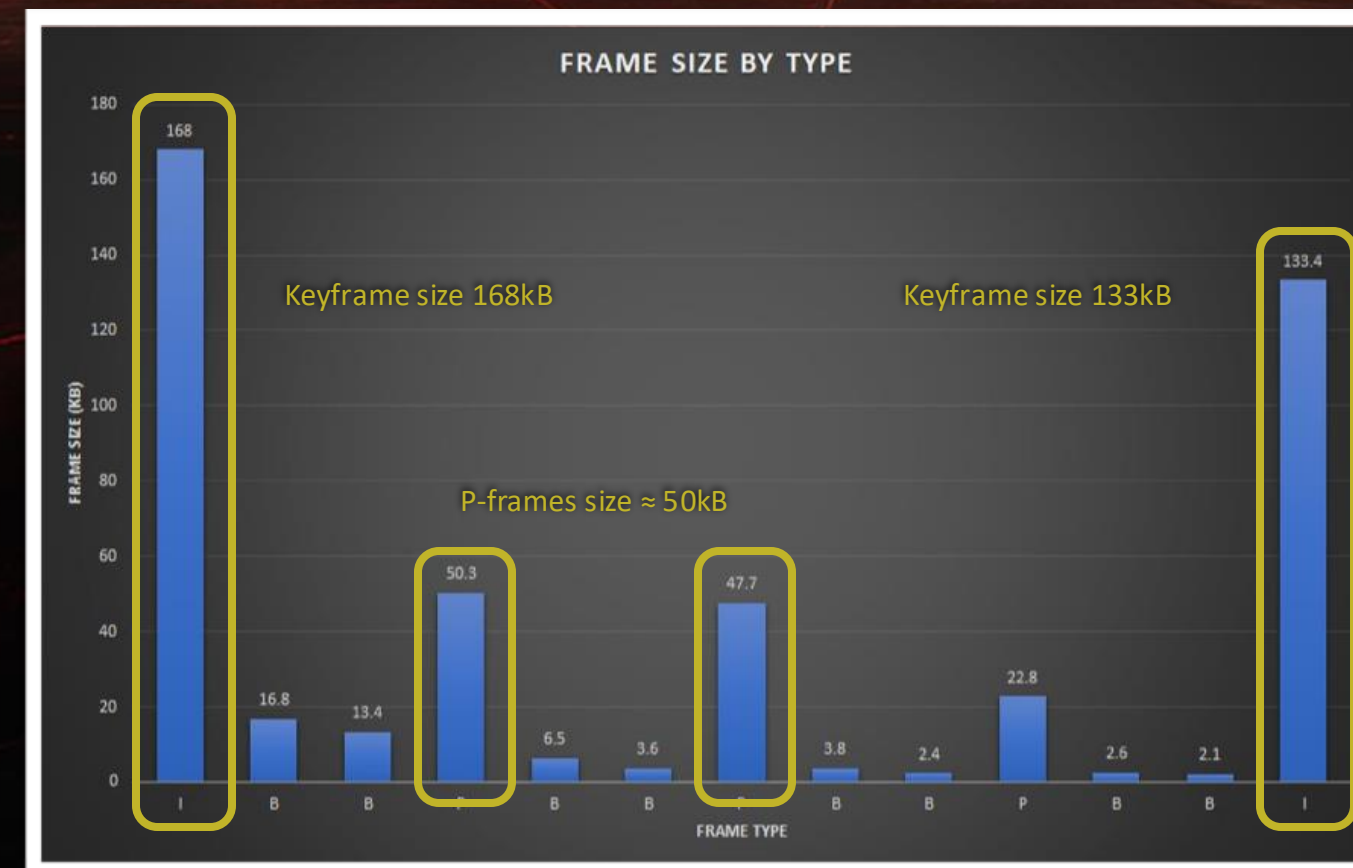


AFTER

- ✓ 6 MB file 7.3 x faster loading times
- ✓ 80 MB file 11.1 x faster loading times



Keyframes are bursts that cause TCP **window clipping** resulting in **HOLB**



No matter if it is video, IoT logs, OTA updates, game assets or just image gallery

HD video (H264) at 30fps is 5-150kB frames at 33ms intervals

VIDEO ACCELERATION

GOAL TO ENABLE
FOLLOW THE SUN
GLOBAL OPS



OpenGL renderer LOCAL PLAYBACK

OpenGL renderer XRTC PLAYBACK

XRTC-WebcamDemo

Australia

<https://au.dev.xrtc.org/v2> ☒ Compare with TCP

Ping (ms): 305 Camera Id:

OpenGL renderer TCP PLAYBACK

As you see, there is slight delay of XRTC accelerated stream

CASE REMOTE MONITORING & CONTROL

GOAL TO ENABLE REMOTE CONTROL



BEFORE

- 1 second delay (glass-to-glass)
- Operational distance 1.000 km
- Deployment constraints
- Reliability and firewall problems

AFTER

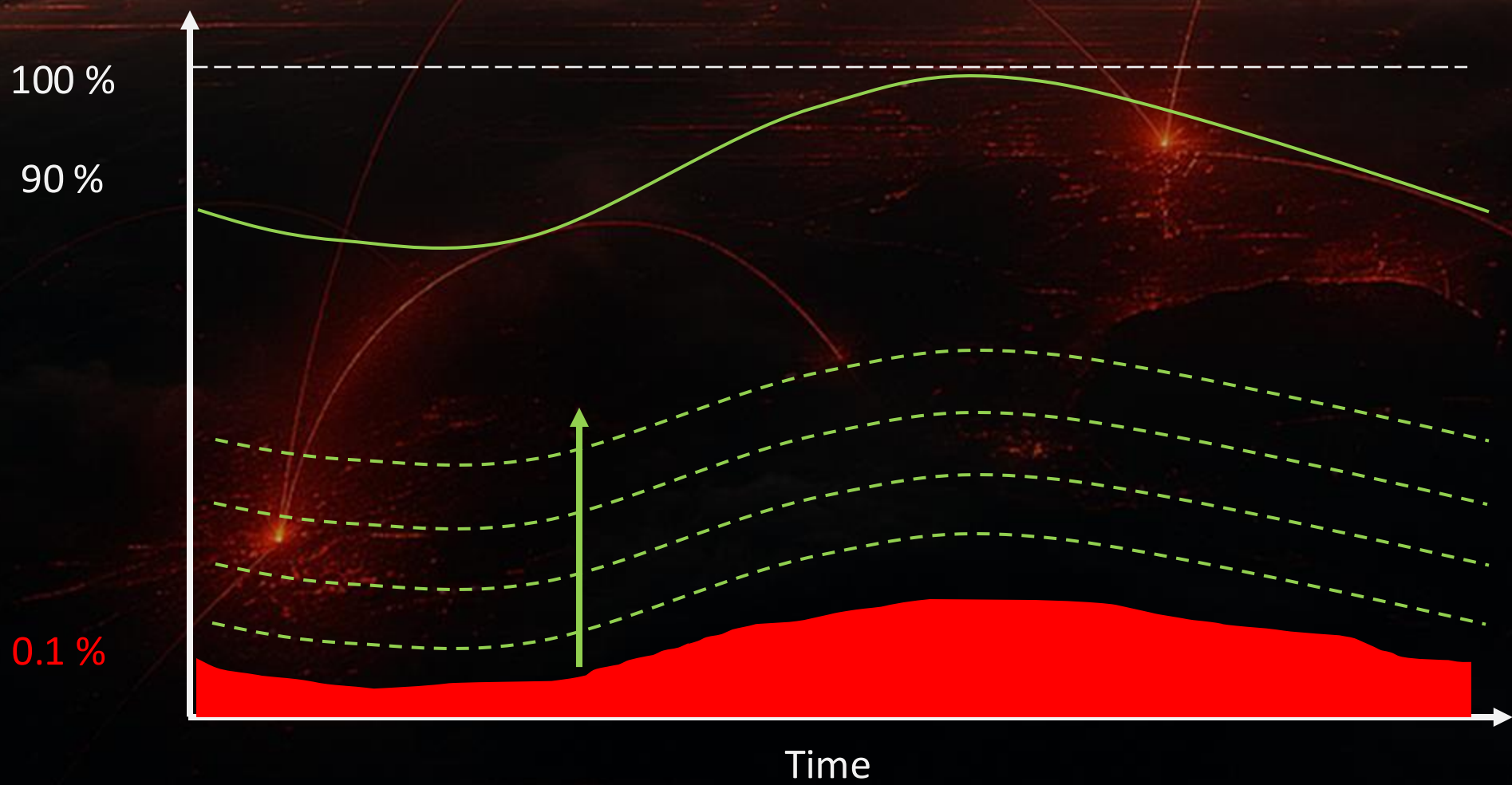
- ✓ 300 ms delay (glass-to-glass)
- ✓ Operational distance 10.000 km
- ✓ Secure access through firewall
- ✓ Easy installation

AXIS Q6135-LE PTZ camera
Underground mine at 400 m BGL.
Private 5G-network connection to
camera.



OPENING UP THE SKIES

MOBILE
SATELLITE
PUBLIC NETWORKS



Acquired performance

Theoretical maximum

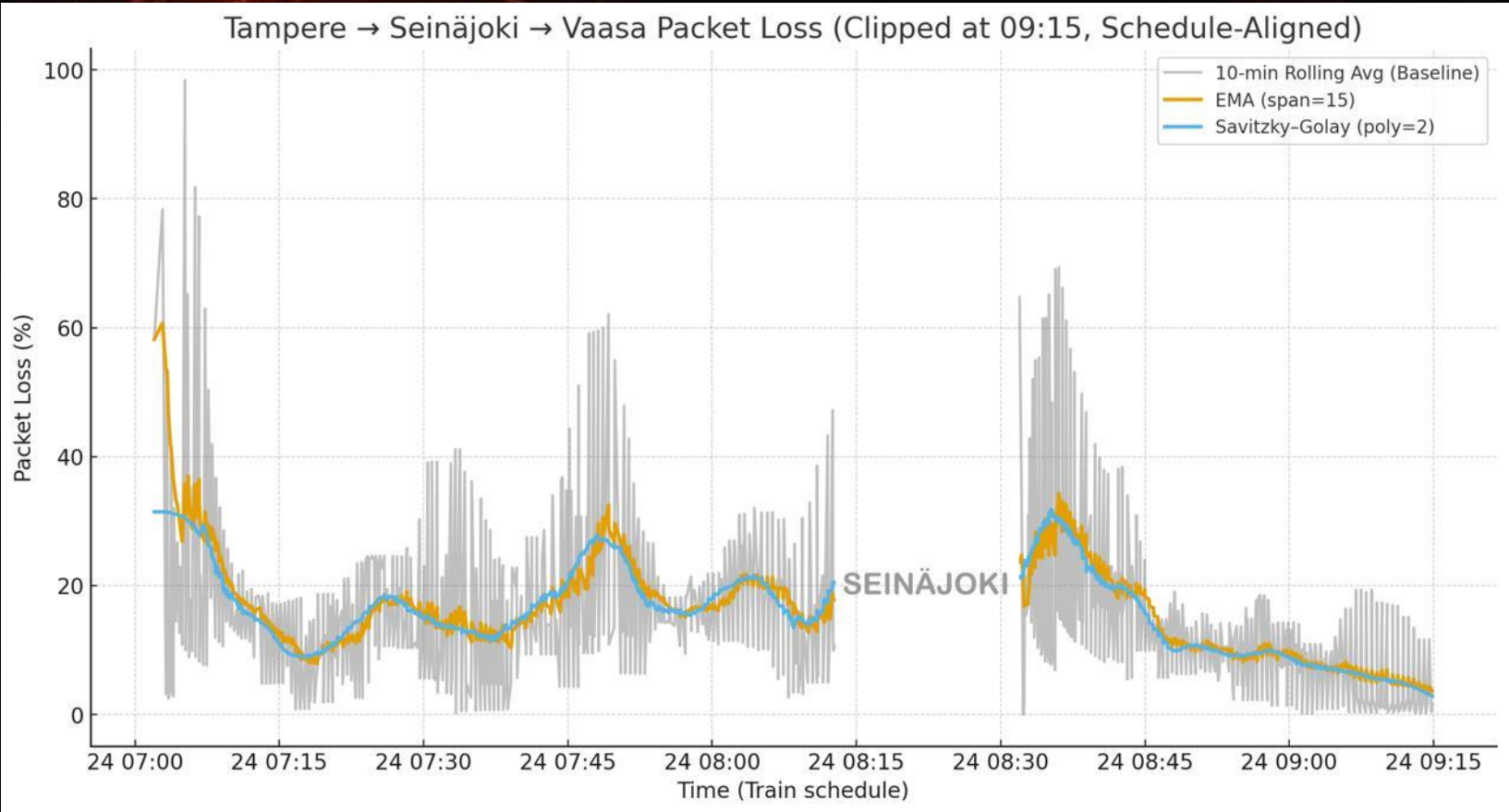
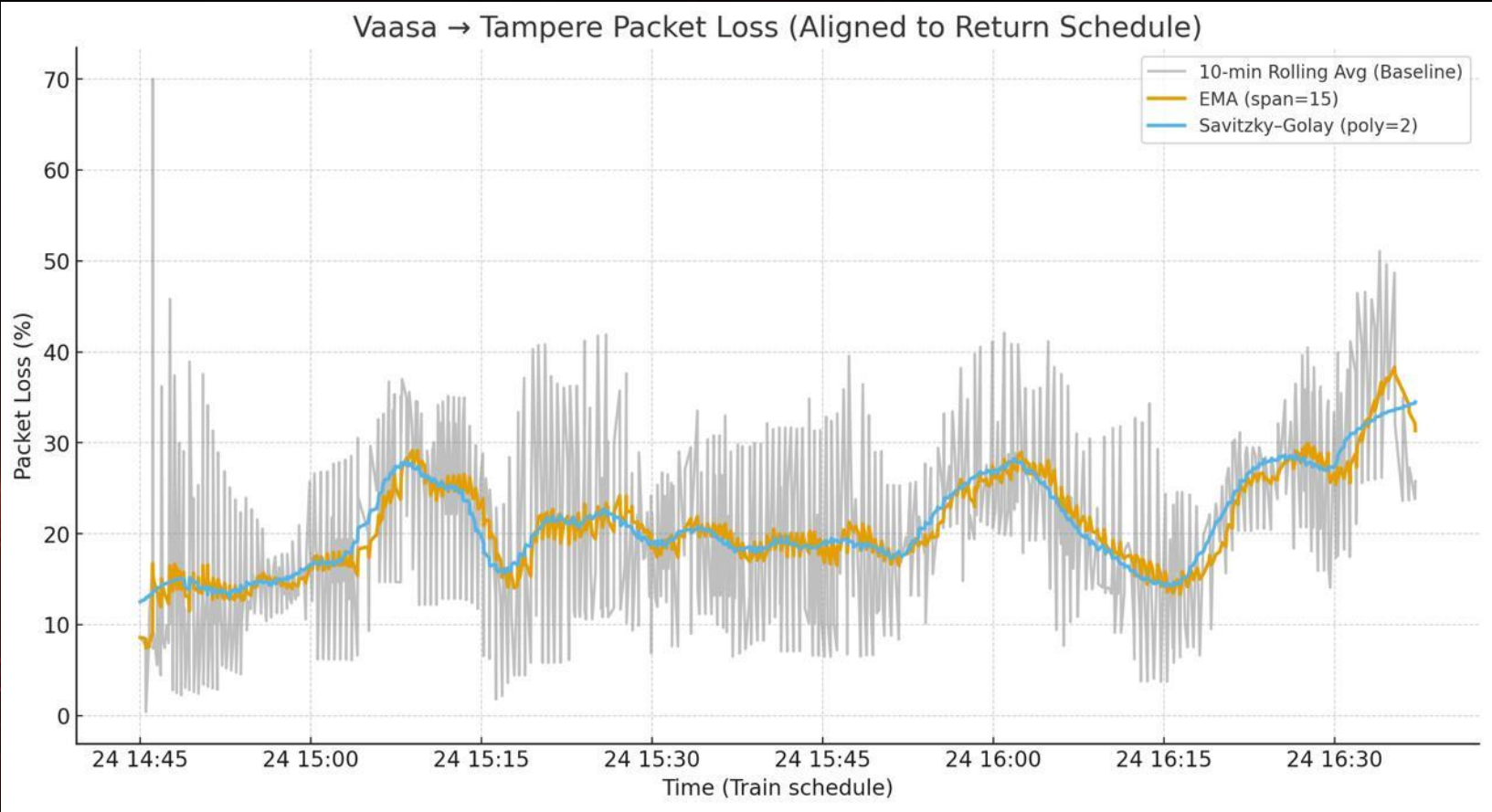
Visible to applications

VR WIFI TAMPERE – VAASA



SUMMARY

• PACKETS	178 000
• 24.9.2025	→ ←
• PL AVERAGE	14.7% 22.2 %
• RRT AVERAGE MS	61 67
• RRT P99 MS	159 189





THANK YOU!



SAULI KIVIRANTA
CEO
sauli.kiviranta@xrtc.io
+358 40 357 3272

WWW.XRTC.IO

