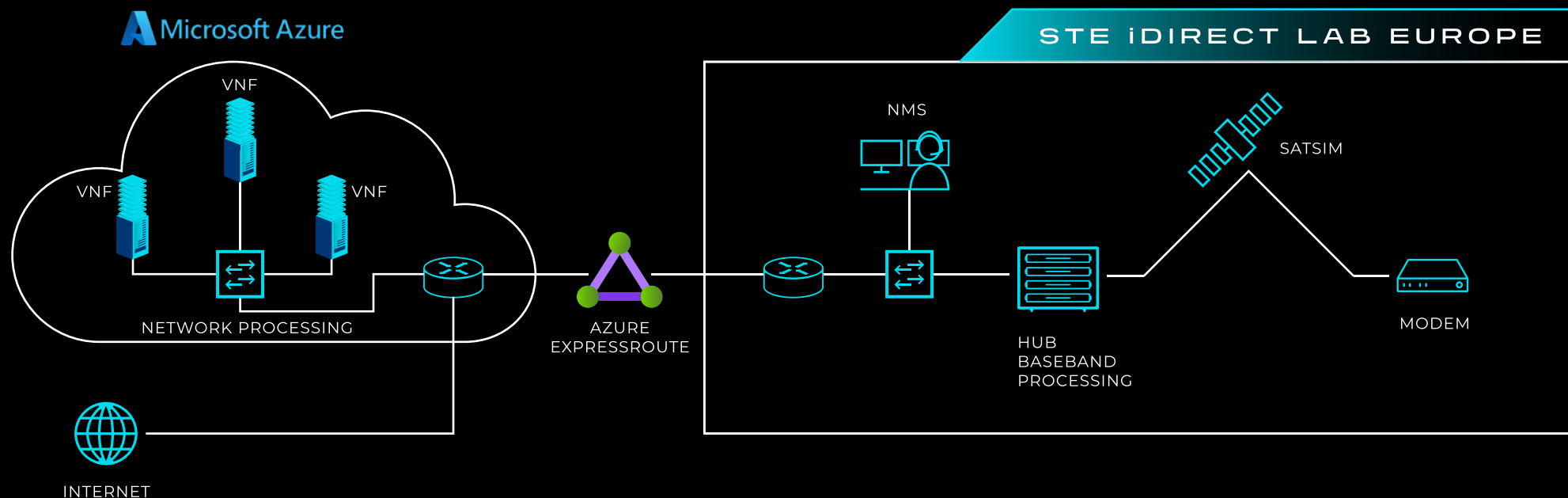


NETWORK PROCESSING IN CLOUD

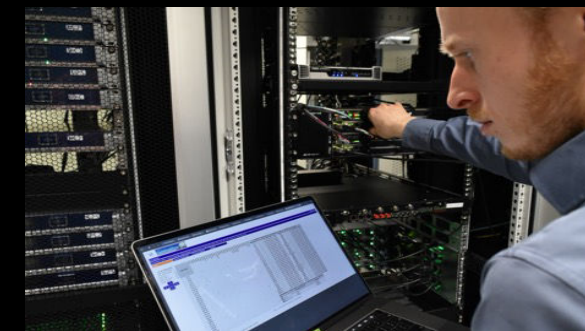
POC WITH MICROSOFT-VIRTUALIZED NETWORK PROCESSING FUNCTIONS ON AZURE CLOUD INFRASTRUCTURE DECOUPLED FROM BASEBAND PROCESSING

In a Proof of Concept demo we deployed our network processing virtualized functions on Azure Cloud Region Infrastructure, we showcased that satellite network architectures can be built from orchestrated Software Defined Network Functions with deploy-ability in cloud regions—all using commercial, off-the-shelf components.



VIRTUALIZED NETWORK PROCESSING

- Deployed on COTS in Azure Cloud Region
- iDirect network processing managed by Azure's portal
- Orchestrated NFV passed on to iDirect hub baseband using ExpressRoutes
- Sent over simulated satellite link to a modem



BENEFITS OF COUDIFICATION

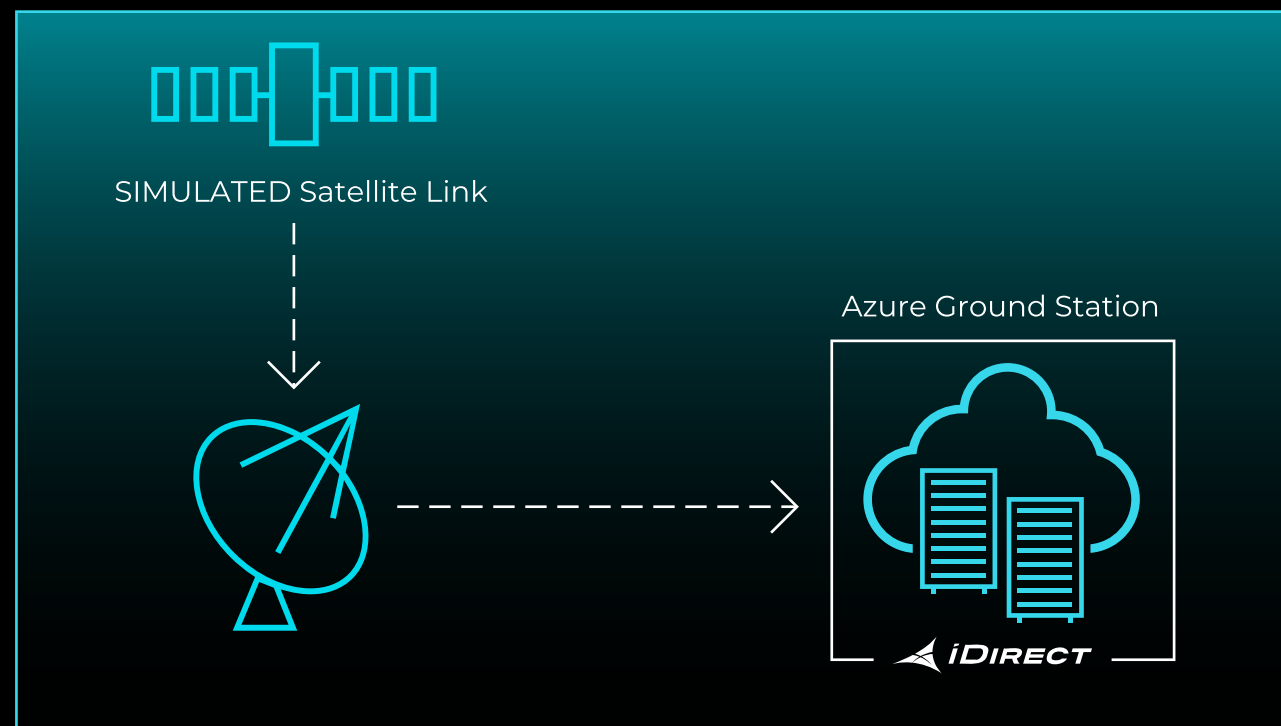
- Scale dynamically and more cost-effectively
- Faster, more optimized operations
- Increase revenue opportunity with CSP applications
- Leverage CSP's latest Security features

VIRTUALIZED MODEM

POC WITH MICROSOFT RUNNING A VIRTUALIZED MODULATOR AND DEMODULATOR FUNCTIONALITY ON AZURE CLOUD INFRASTRUCTURE



In several proof of concepts we set out to virtualize key aspects of our modem technology to enable our satcom solutions to run in an Azure cloud. We abstracted the software functionality from the hardware and ported our Modem Baseband Functions—namely, modulation and demodulation—to a COTS compute infrastructure provided by Azure. We leveraged Azure to orchestrate these baseband functions onto the cloud infrastructure.



VIRTUALIZED SCPC MODEM

- Deployed on Azure Operator far edge on-premises infrastructure
- Successful SCPC modem demonstration
- Showcasing containerized software running on COTS server in the Azure cloud
- Use of DIFI interface



BENEFITS

- Global Reach
- Save time in deployment
- Improve scale and flexibility
- Connect on demand

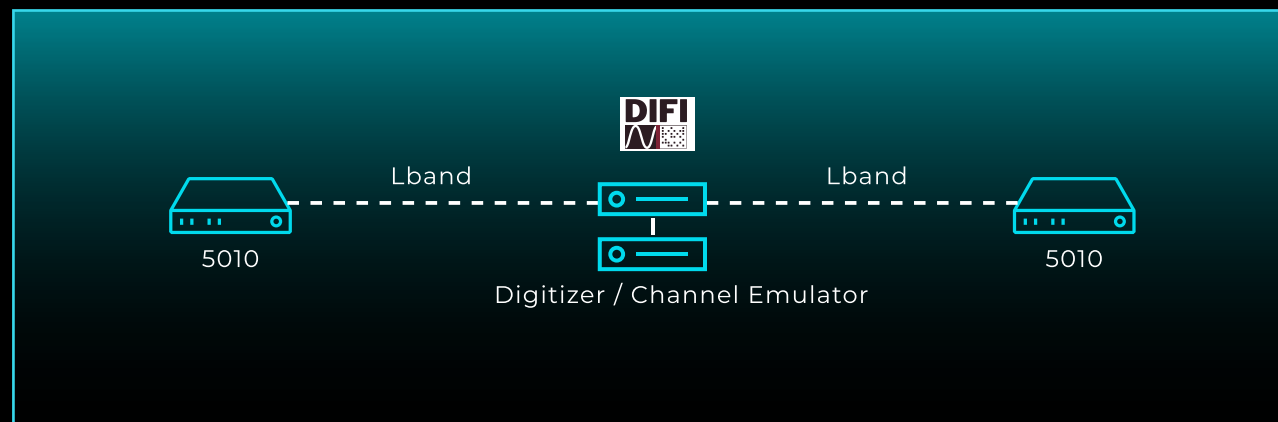


DIGITALIZATION

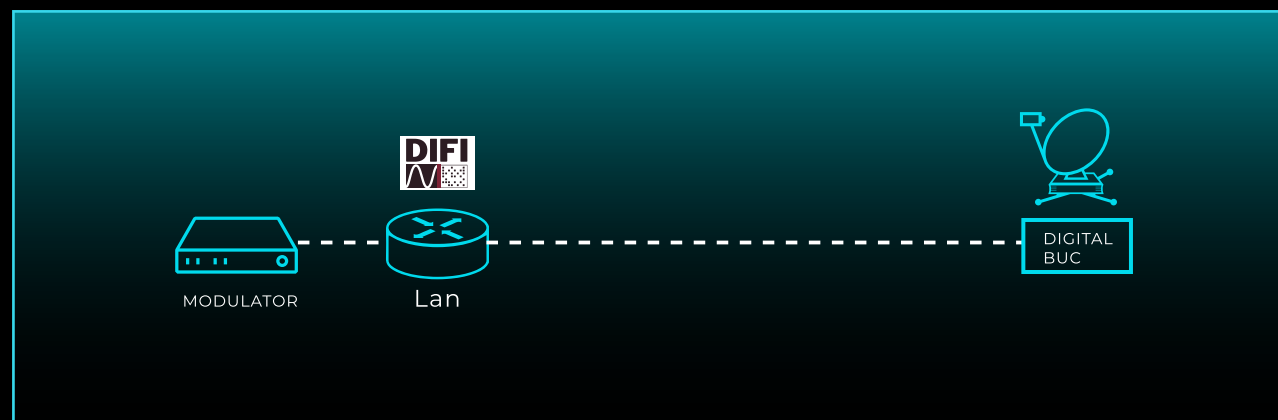
RADIO OVER IP – STANDARDS BASED DIFI

The digital transformation of the teleport is a critical part of the evolution of the satellite industry. We recently participated in two Proof of Concept (PoC) demos in partnership with Wavestream and with ETL to demonstrate the conversion of analog signals to digital signals, using the Digital Intermediate Frequency Interoperability (DIFI) 1.1 and 1.2 Standards which has been developed by the DIFI consortium.

MARCH 2024 SHOWCASING DIFI 1.2



MARCH 2023 – SUCCESSFUL DIFI 1.1 INTEROP



ETL DEMO

- Demo of Tx and RX of video IP traffic using MDM5010 mod and demod and a pair of ETL Digitizer running DIFI 1.2 over 100Gbe Optical Ethernet and then back-converted to L-Band

WAVESTREAM DEMO

- Demo of Tx of S2X carrier using iDirect MDM5010 and Wavestream BUC via DIFI 1.1 and then carrying it over 10 Gbps fiber connection
- Link included a digital modulator at the data source and a digital input BUC

BENEFITS

- Path of Virtualization requires full Digitized Radio over IP handoff
- Loss-less local transmission
- Simplified local signal management
- Flexible routing (i.e. redundancy)
- Standardized GW design
- Network vs RF engineers
- Improved monitoring options