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TLC308-R

Bringing 5G edge cloud deployment flexibility to New Zealand

Nilay Rathod

GM Technology Automation
Spark, New Zealand

Ratan Kumar

Principal Solutions Architect
Amazon Web Services

Owen Law

Senior Solutions Architect, 5G/Edge
Amazon Web Services

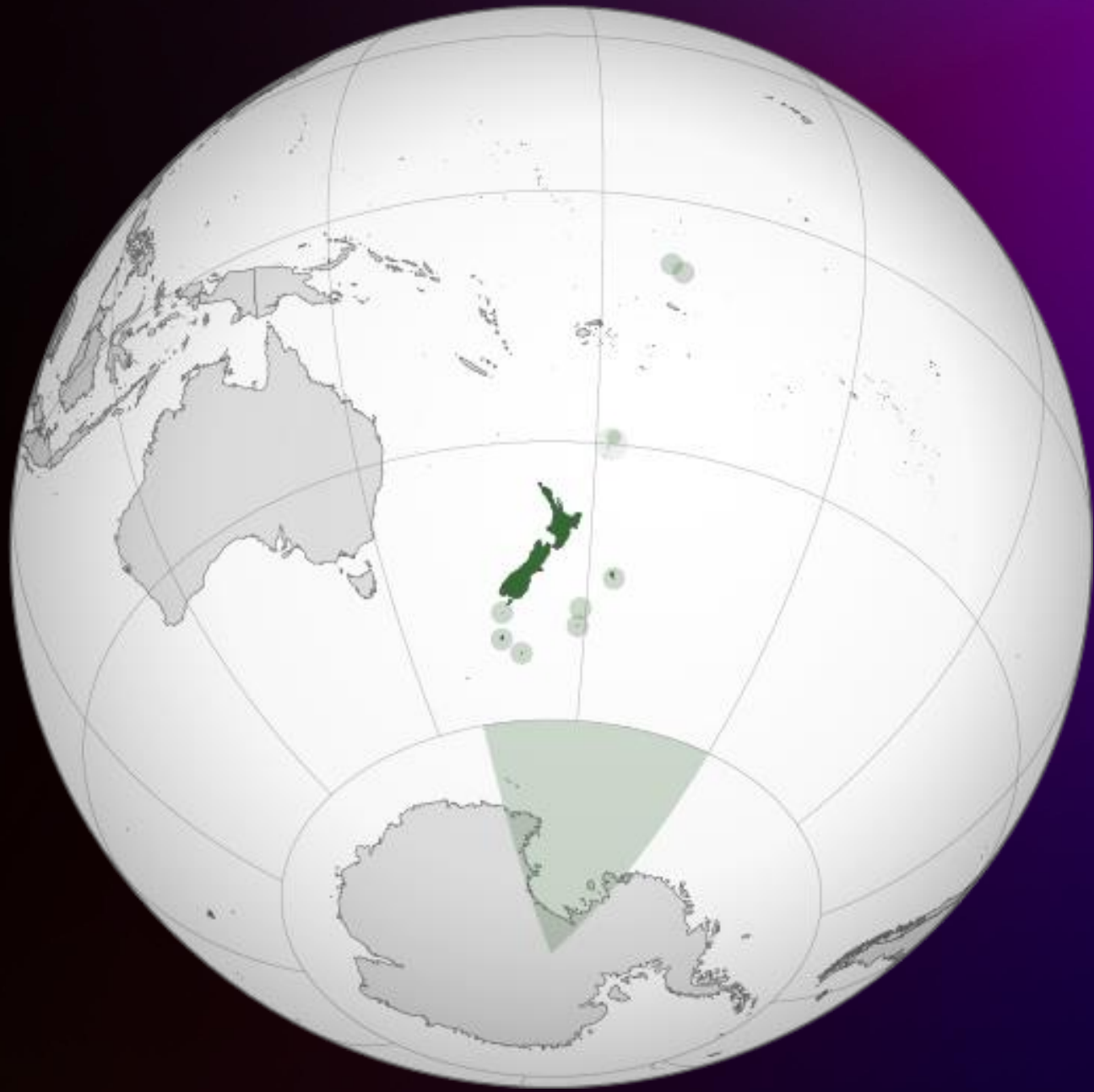
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Digital Connectivity in New Zealand

Better and faster connectivity

- Digital inclusion and wellbeing
- Better use of technology for sustainable farming, tourism
- Growth and greater prosperity across regions



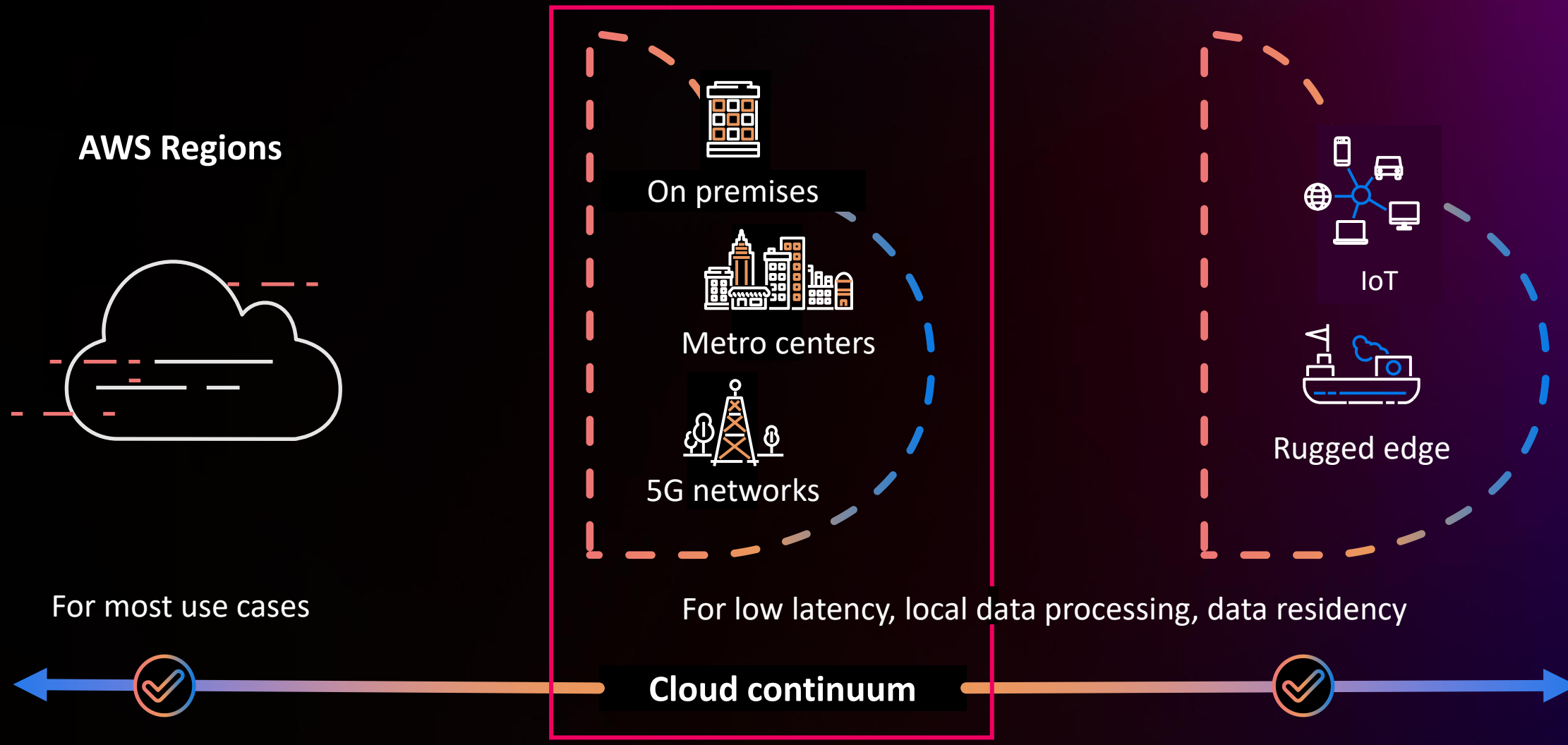
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Reinventing 5G cloud-native networks

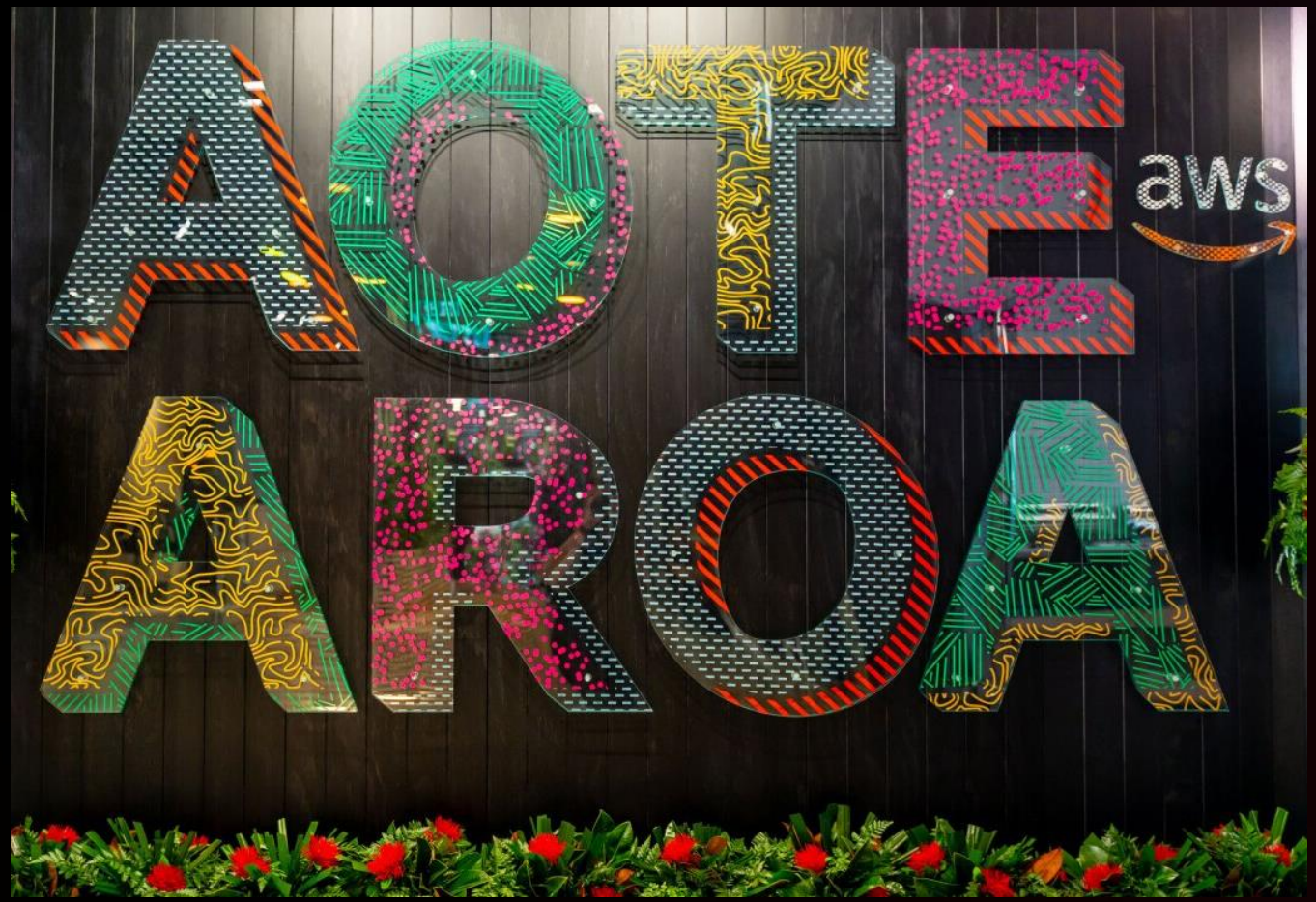
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Deliver cloud where customers need it



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AWS supporting the ingenuity of 5 million Kiwi builders



AWS Local Zone in New Zealand: coming soon

AWS Region in New Zealand: expected in 2024

Investing $7.5 billion NZD over 15 years

Creating 1,000+ jobs and adding $10.8 billion to GDP

Free training to support future builders

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Spark nz | Part of Spark Business Group

NZ'S LARGEST TELCO AND DIGITAL SERVICES PROVIDER

2.5 M

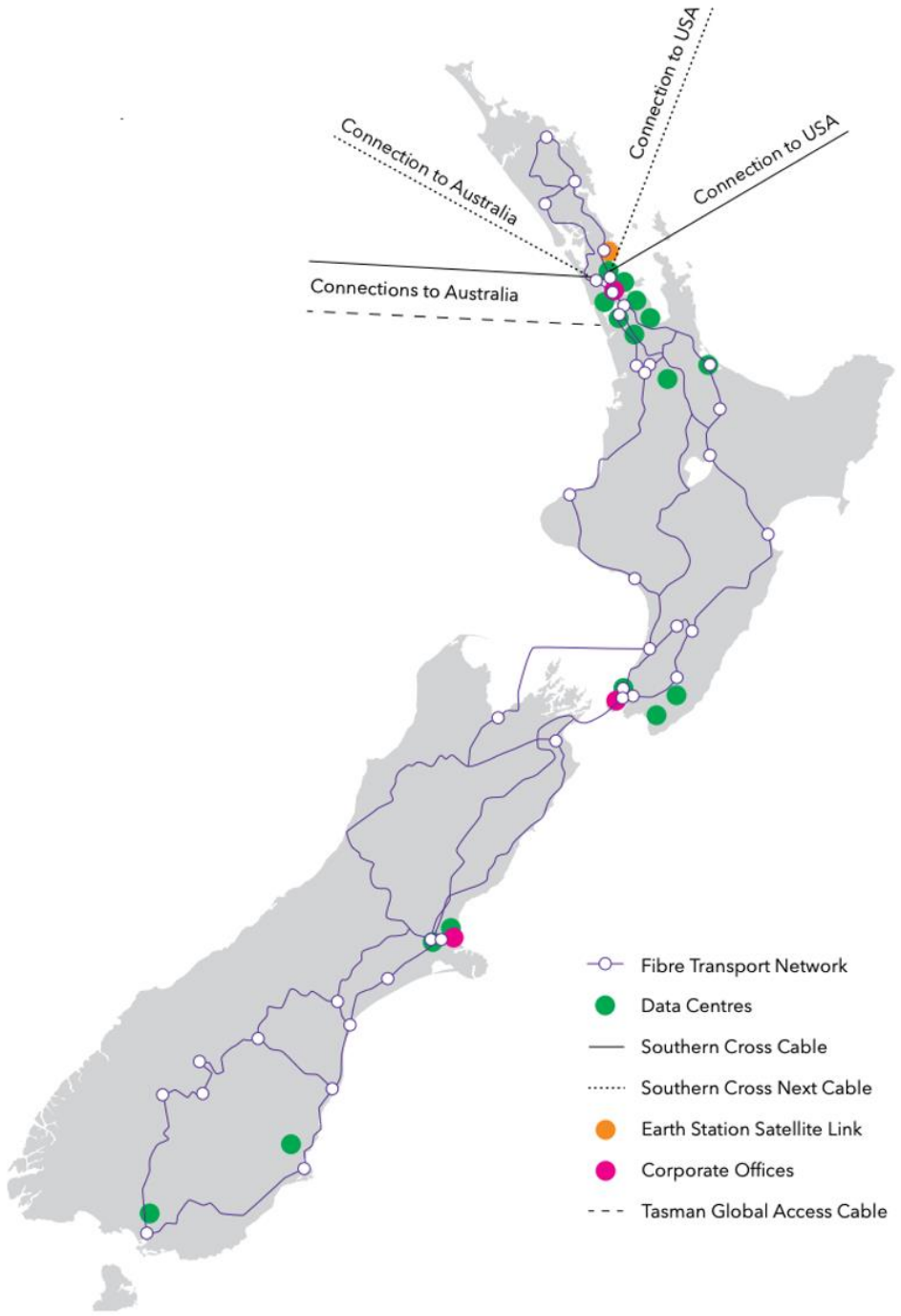
mobile connections

704 K

broadband connections

98%

of NZ reached by 4G network



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Spark vision for 5G network

Hybrid, cloud-native and fully automated

Elastic, secure, and resilient

Artificial intelligence (AI)-driven assurance

Faster time to market

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Spark’s digital innovations journey

Setting the capabilities, people, and cultural foundation for innovation



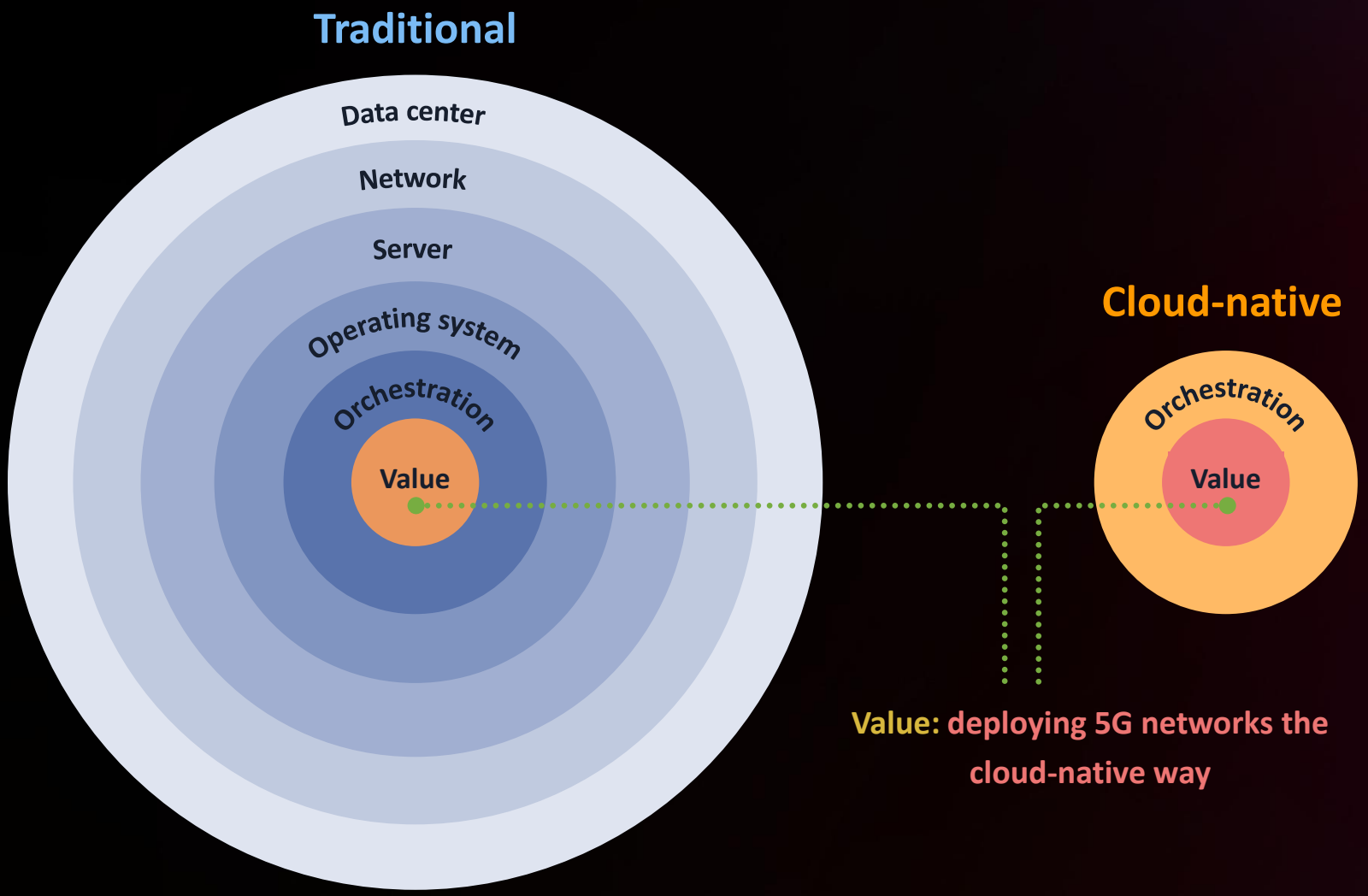






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Why cloud-native architecture?



- Reduce complexity and get straight to delivering **value**
- Spin up as much infrastructure as you need (servers, databases, operating systems) in seconds
- All the developer has to do is orchestrate the infrastructure they need (via code) and the application code itself

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Timeline of progress on this vision

Initial POC Mavenir 5GC in AWS Sydney

Q4 2021

AWS Outposts, AWS Snowball deployed on premises

Q2 2022



AWS at the edge

MAVENIR

Deployed 5GC on AWS Outposts

Q3 2022

750 Mbps

Qrious

Successful trial of private 5G on AWS

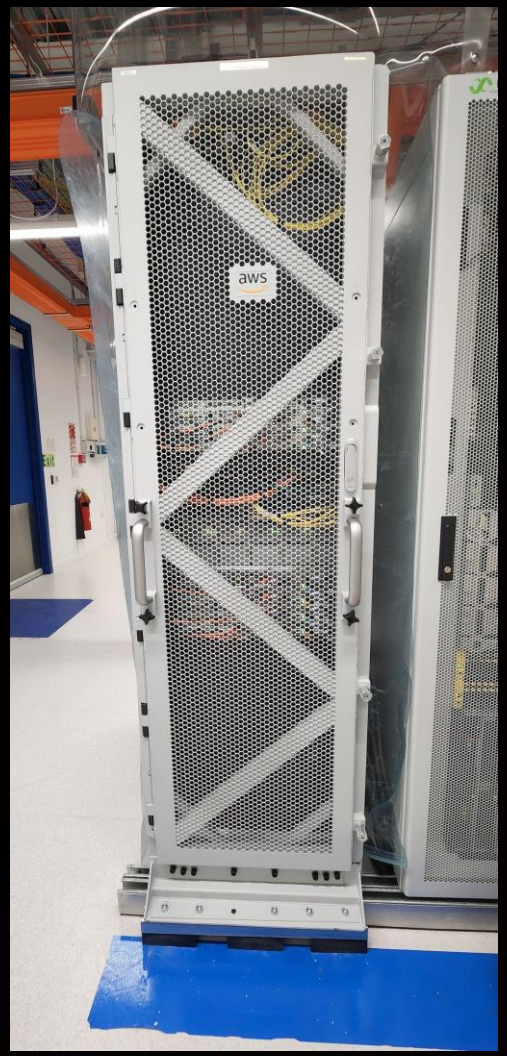
Q3 2022

Single digit ms latency



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Trialing NZ's first 5G standalone network



- First 5G stand-alone core trial deployment in NZ targeting **fixed wireless access** use case
- **AWS Outposts rack** (3* m5.24x large) installed inside Spark DC with local highspeed network connectivity to on premises
- Extend the **same API and automation capabilities** as used for deploying in AWS Region
- Completed trial ahead of schedule, including **end-to-end integration** between Spark's RAN and cloud-native 5G packet core deployed on Outposts
- **Learnings:** cloud-native 5G deployment is possible; AWS infrastructure, when available in NZ, will give us lots of different deployment options

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First 5G edge pilot with EnviroNZ





- World's first deployment of Mavenir 5G core on **AWS EKS Anywhere** and **AWS Snowball Edge**
- Targeted at addressing the **health and safety risk** at the waste management site
- Hazard detection system using AI model deployed on AWS Snowball Edge delivering **single-digit milli-second latency**

Qrious aws MAVENIR

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What next

1 Finalize 5G SA deployment architecture

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What next

2 Jointly innovate 5G use cases for enterprises

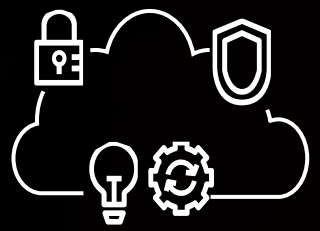
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What next

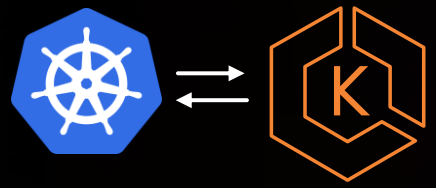
3 90% NZ population with 5G coverage before 2024

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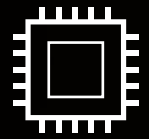
Key architecture considerations



Flexible, distributed hybrid edge infrastructure to enable **resilient network architecture** and **service availability** across New Zealand



Consistent container runtime and tooling to support seamless 5G core network functions deployment across Region and on-premises/edge locations

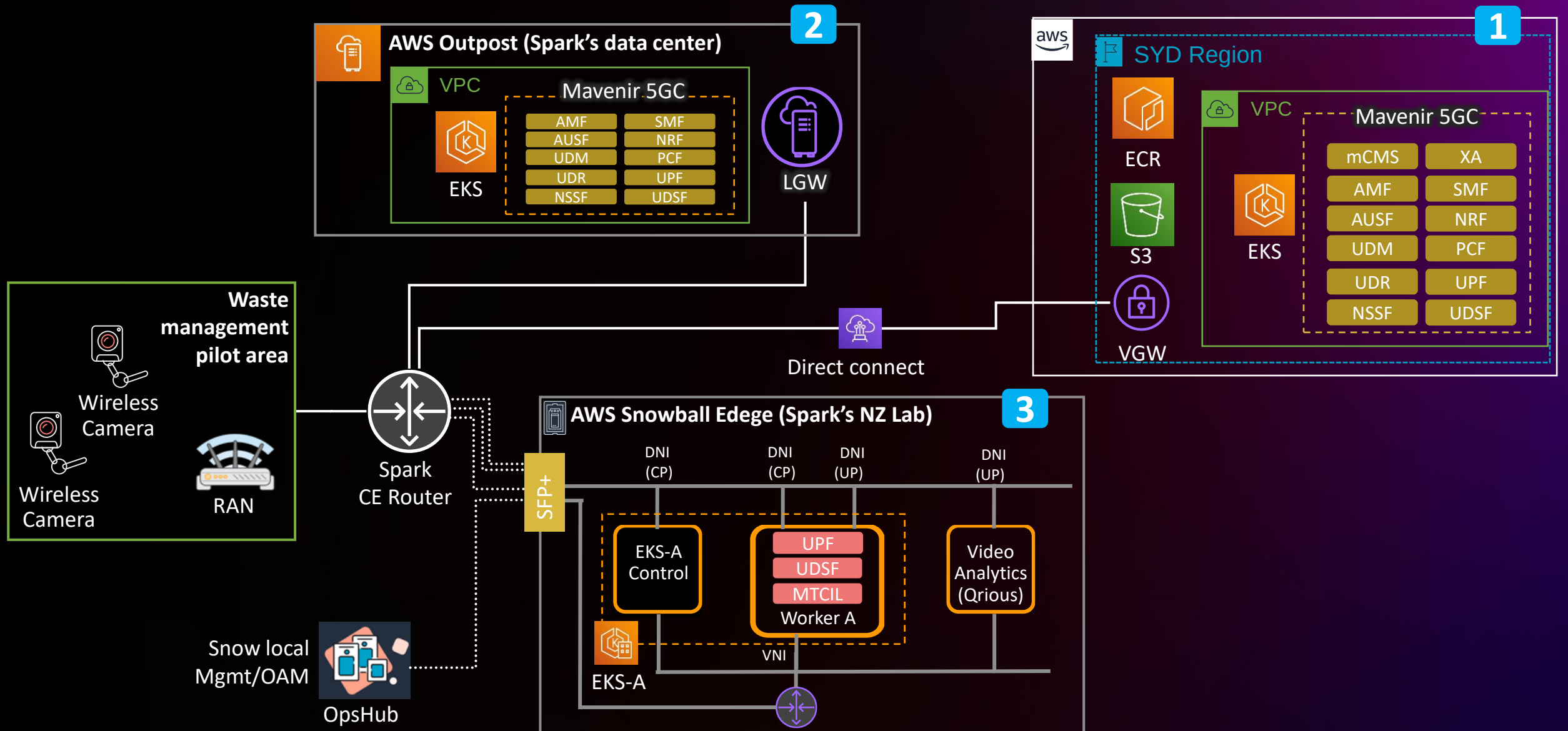


Seamless extension of cloud-trained machine learning (ML) model to GPU enabled edge for video analytics application

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Deployment architecture summary

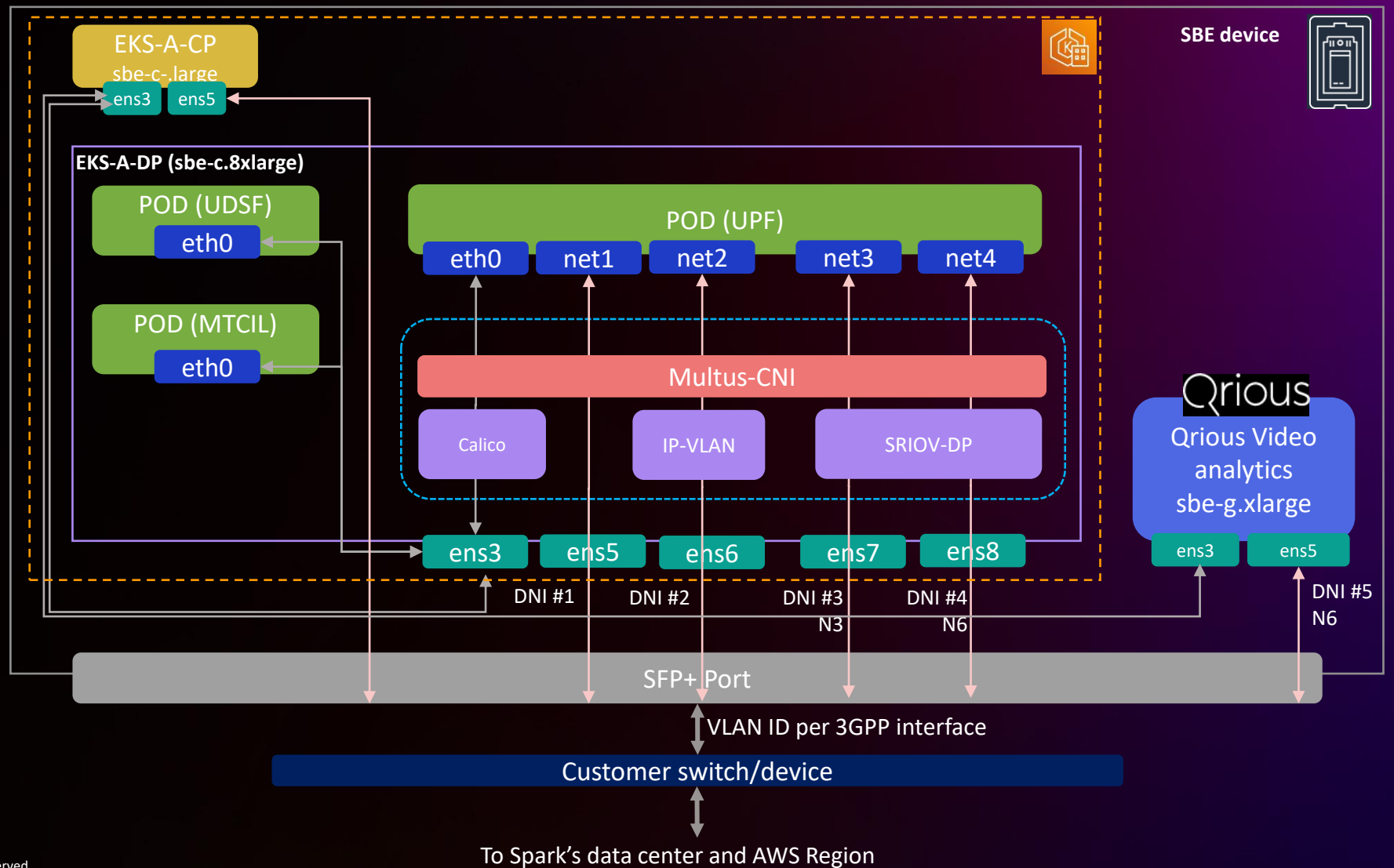


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Snowball Edge deployment architecture

Deployment summary:

- World-first **EKS-A on Snow** deployment for Telco network workloads
- Hybrid architecture with Mavenir **5G Core dataplane** deployed as container workloads on Snowball Edge
- Implementation of advanced container networking including **Multus CNI** and **SRIOV** to support 5GC accelerated networking
- Qrious video analytics deployed as **GPU backed EC2 instance** on the same Snowball Edge device



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Architecture vision for end-to-end 5G across NZ

- **Fully managed, secure hybrid cloud to edge infrastructure** providing the foundation for nationwide 5G deployment via distributed control plane and data plane placement to fulfill resiliency requirements across north and south island
- **Cloud elasticity** leveraging in-country AWS Region and Local Zone to achieve 5G core capacity burst, high availability failover and disaster recovery use cases
- **Fast time to market** via compact, distributed AWS Snowball Edge and managed container platforms to address targeted enterprise, industry vertical and digital divide use cases
- Cloud native 5GC as a initial step to leverage native AWS tooling and to deploy **unified network automation** and **AI-enabled service assurance** on cloud

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