Experiences from deploying the AETHER framework

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Aether Framework

First Open-Source 5G connected Edge Platform for enabling digital enterprise transformation

Provides mobile connectivity and edge cloud services for distributed networks as a cloud managed offering using cloud-based technologies

Optimized for multi-cloud deployments and simultaneous support for wireless connectivity over licensed, unlicensed and CBRS spectrums

Generally, Aether represents a complete, open 5G solution that:

- Democratizes availability of a robust and complete software-defined 4G/LTE and 5G platform for developers
- Is built upon a number of world-class component projects like SD-RAN and SD-Core

WHY AETHER?

Connectivity Service

- 5G performance, reliability and security
- Predictive end-to-end performance
- Leverage CBRS spectrum
- As easy to deploy as Wi-Fi

Connected Edge Cloud Service

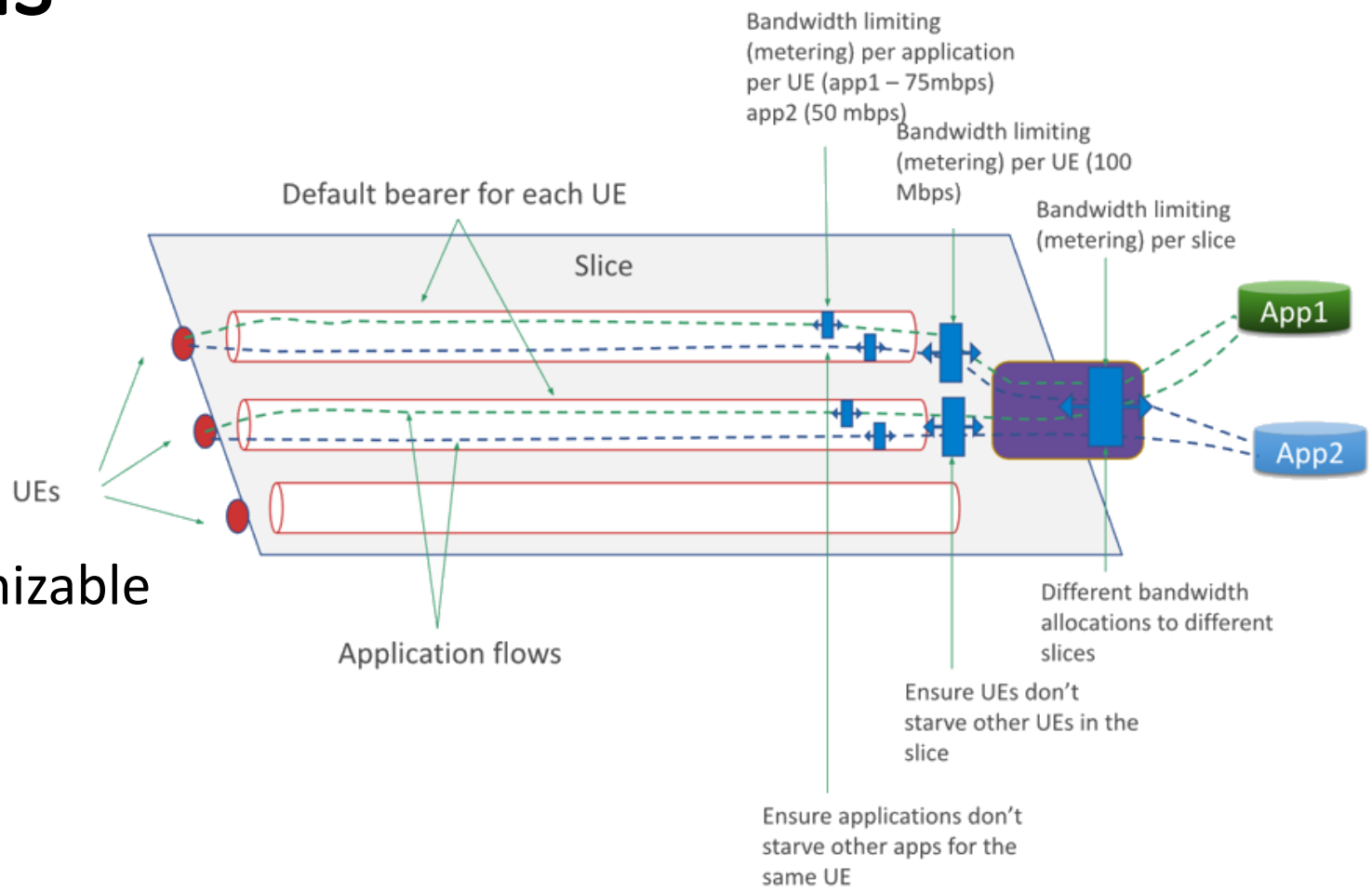
- Optimized for multi-edge sites
- Delivered as a cloud managed service
- Supports AI/ML driven IoT and OT applications
- Modernization of deployments with edge processing, filtering, data aggregation, compression and analytics to reduce bandwidth

End-to-End Slicing

- Allocation of dedicated slices for mission critical applications
- Provision of resources for deterministic latency and availability
- Interlink connectivity and edge processing for that kind of implementations

Aether Operations

- Quality of Service
  1. Per-Device-per-app
  2. Per-Device
  3. Per-Slice
- Security Guarantees
- Programmable and Customizable
- Fine-Grained Visibility
- Resource Optimization
- Verifiability



What is available?

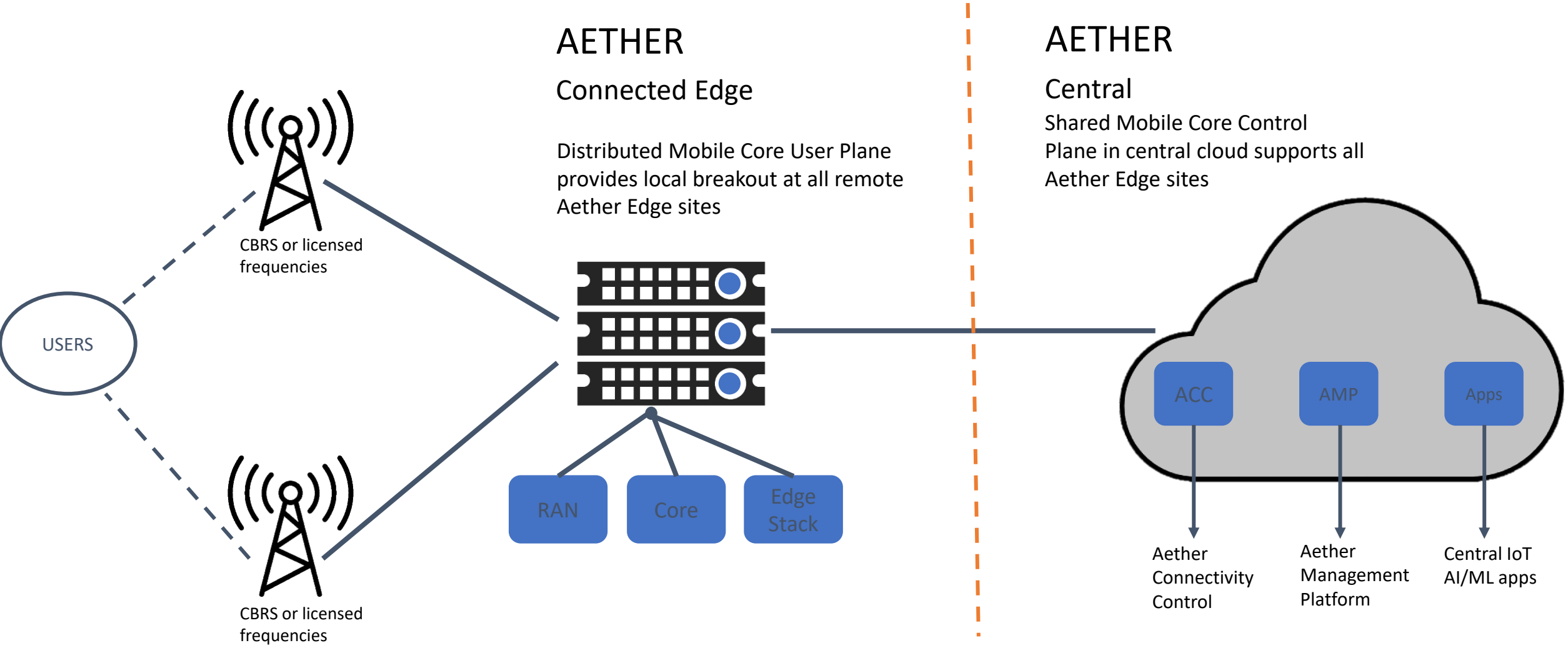
Options for deploying Aether:

- Aether-in-a-Box on Hardware Radios
  1. Overview = how to set up Aether with eNodeB and connect real devices
  2. AiaB: SD-Core / UPF/ ROC
  3. Sercomm Cell
  4. SIM Cards and End Devices
- Aether-in-a-Box for Developers
  - Overview = how to deploy SD-Core and ROC
  - AiaB: SD-Core / UPF/ ROC
  - OAISIM needed

Hardware-Radios

Developers

Architecture



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Our Setup

- Cloud Native Tools:
  - Openstack
  - Kubernetes

} **SD-Core Network Functions**

- Cells:
  - 2 CBRS LTE Sercomm → **Aether-in-a-Box on Hardware Radios**
  - OAI SIM → **Aether-in-a-Box for Developers**

- UEs:
  - iPhone 11

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CONNECTING WITH OTHER TESTBEDS

AETHER

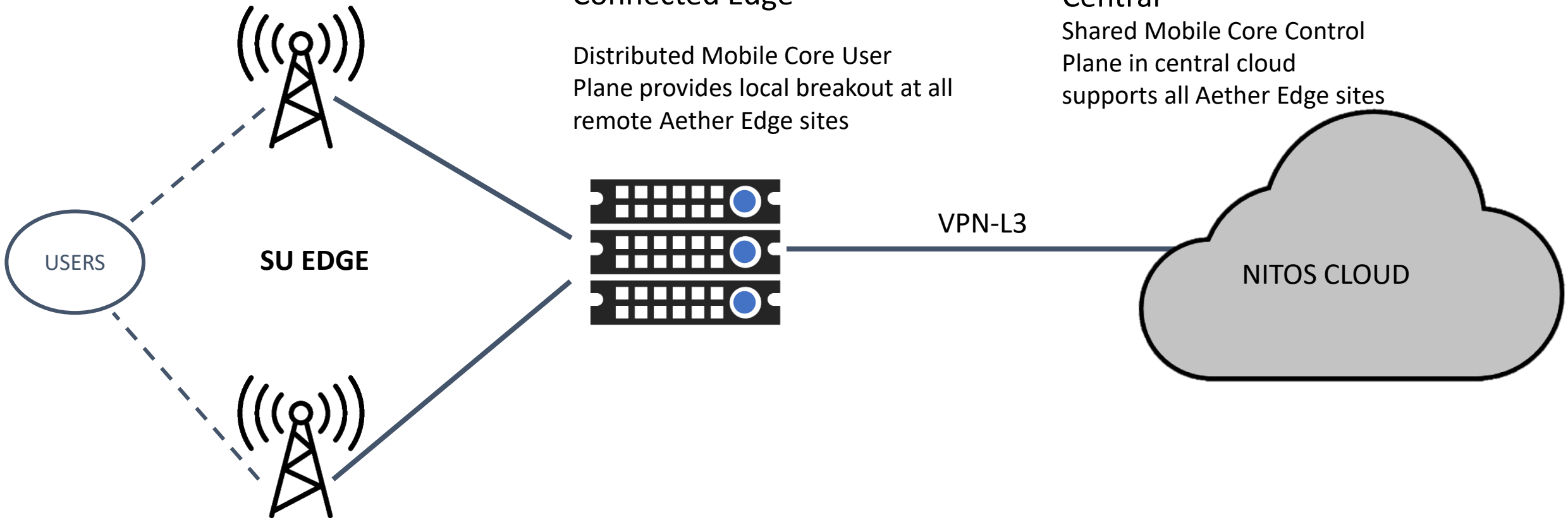
Connected Edge

Distributed Mobile Core User Plane provides local breakout at all remote Aether Edge sites

Shared Mobile Core Control

Central

Shared Mobile Core Control Plane in central cloud supports all Aether Edge sites



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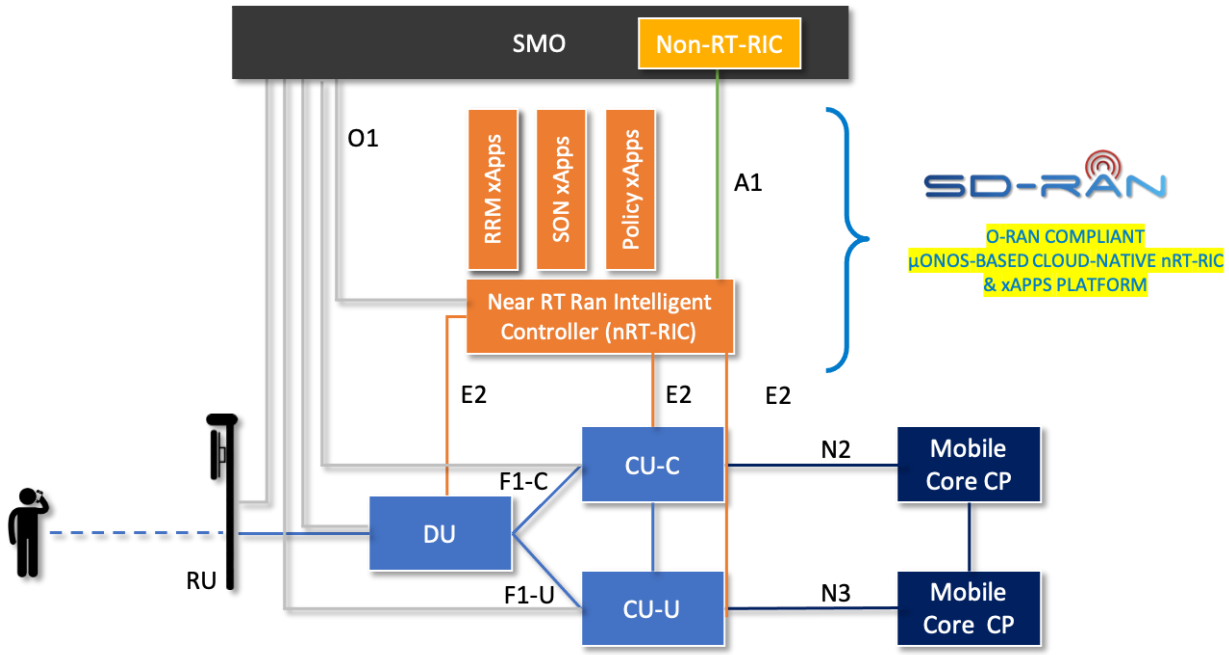
SD-RAN ARCHITECTURE – FUTURE SETUP

SD-RAN incorporates the O-RAN architecture:

- O-RAN compliant interfaces E2, O1, A1 and protocols ASN.1, SCTP, NETCONF etc
- Clustered micro-ONOS architecture for HA and Performance
- Integration with 3rd party xApp vendors

Available:

- With RAN simulators
- With real Devices OAI CU/DU
- Not yet Compatible to Aether in Hardware Devices



Conclusions

- Aether is a good Open-Source Private 4G-5G Edge-Cloud solution
- Provides QoS and Security
- Enables Monitoring of the network functions
- Enables Federated/Distributed experimentation

THANK YOU!
Any Questions?

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