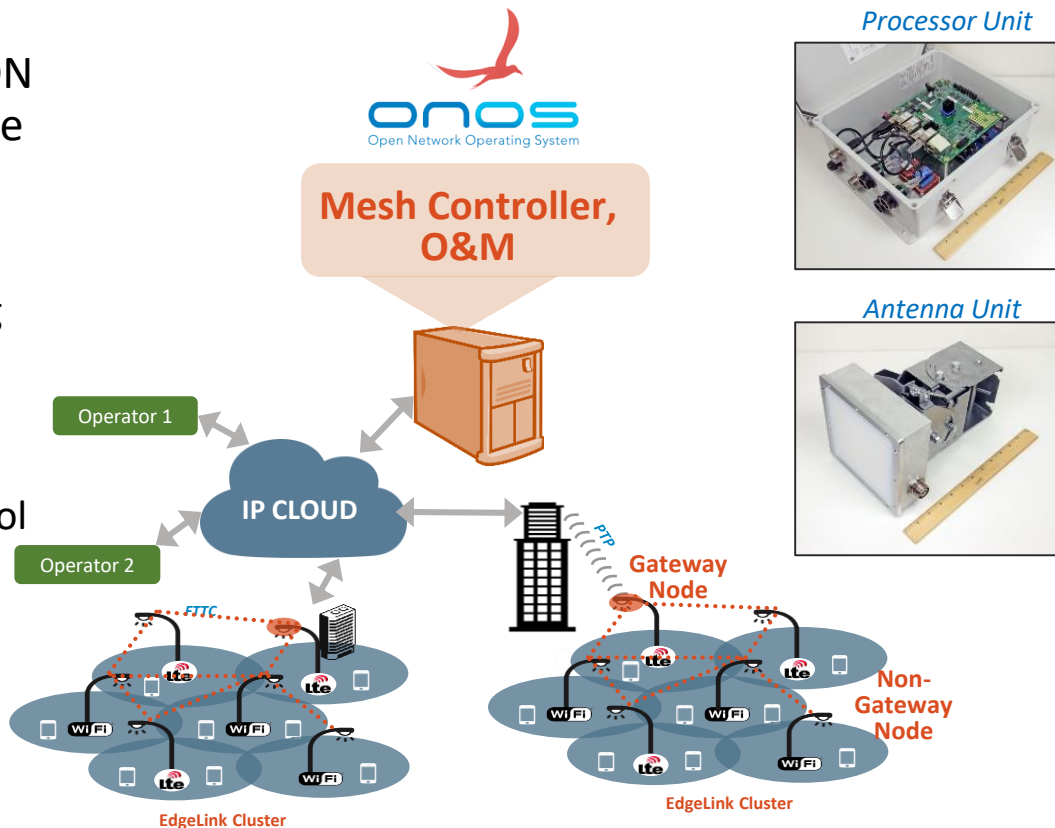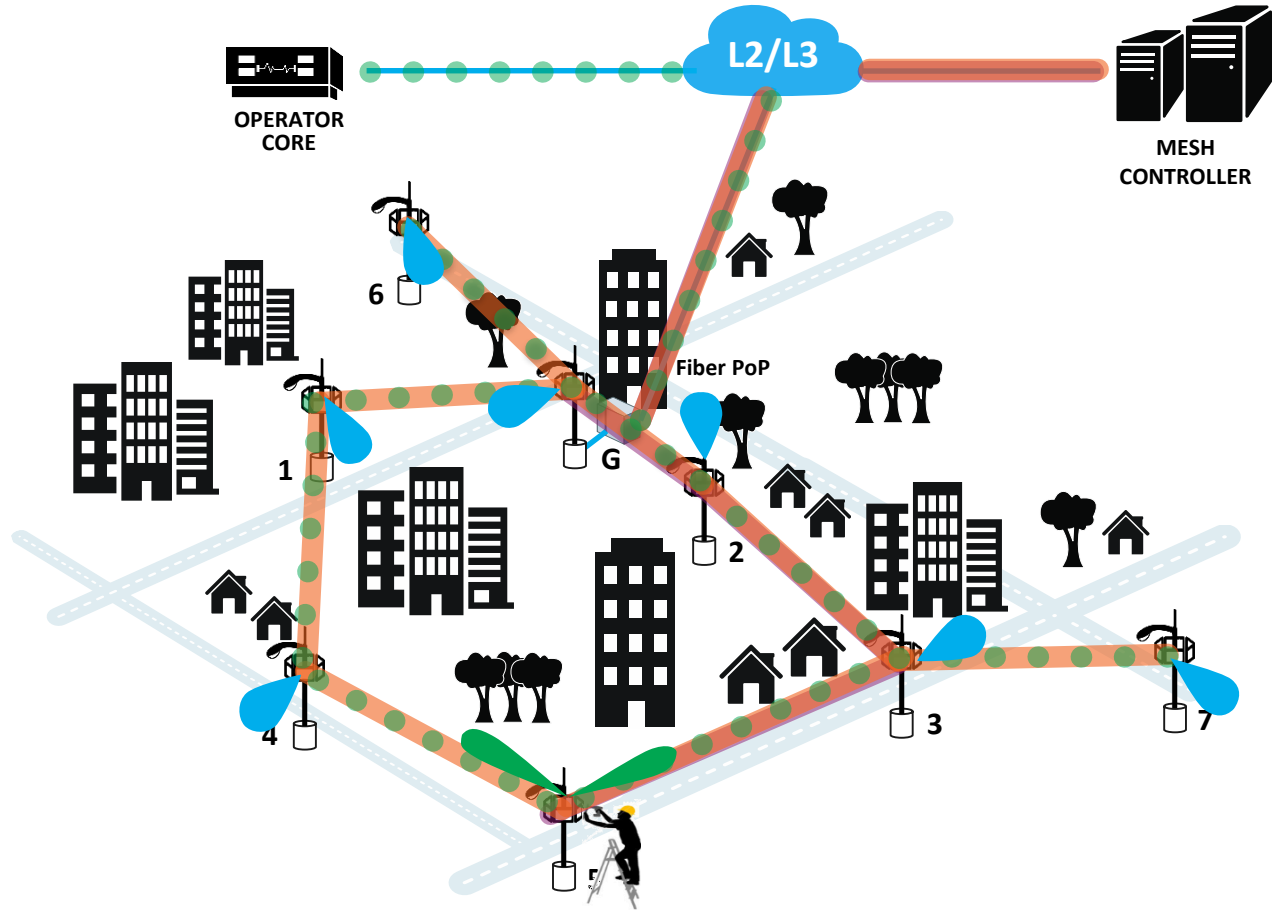# EdgeLink mmWave Mesh Network

System Architecture

- InterDigital's EdgeLink™ is an SDN controlled directional multi-node wireless mesh network

- Key System Components
  - **Multi-Sector Mesh Nodes** using commercial WiGig
  - **Mesh SW Agent** provides local node control
  - **Mesh Controller** provides control and management functions to mesh network

Processor Unit

Antenna Unit
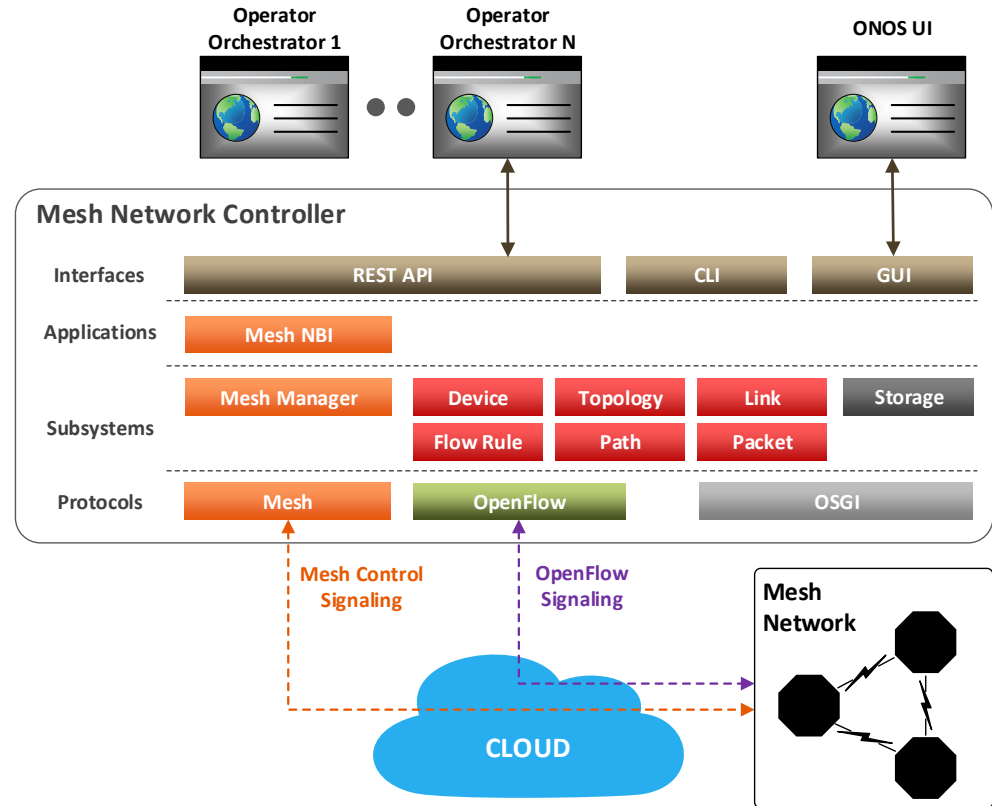
Self-Organizing Mesh Network

Simple self-configuration reduces installation costs

- Autonomous Neighbor Discovery
- Association & Hello Message
- Centralized Mesh Configuration & Path Computation
- Active Data Paths

OPERATOR CORE

L2/L3

MESH CONTROLLER

Fiber PoP

Mesh Network Controller

- Bundled as a Subsystem in ONOS SDN application

- Mesh Manager
  - Wireless Topology Management
  - Path Computation Engine – Primary and alternate path calculation
  - In-band Signaling

- Northbound Interface (NBI)
  - REST API – Transport slice and SLA orchestration

- Southbound Interface (SBI)
  - OpenFlow SDN Protocol – Primary path flow rule provisioning
  - Mesh Control Protocol – Mesh network topology management and alternate path flow rule provisioning

Mesh Node

- Multi-Sector, Point-to-Point, P-to-MP

- **Mesh SW Agent** implements the Control plane
  - Node and Sector state management
  - Neighbor Discovery and Selection
  - Signaling of link events or topology changes with the Mesh Controller
  - Link Failure handling and switching to alternate path

- mmW Sector interfaces and access ports are connected to a virtual bridge

- Frame forwarding flow rules programmed via the OpenFlow protocol