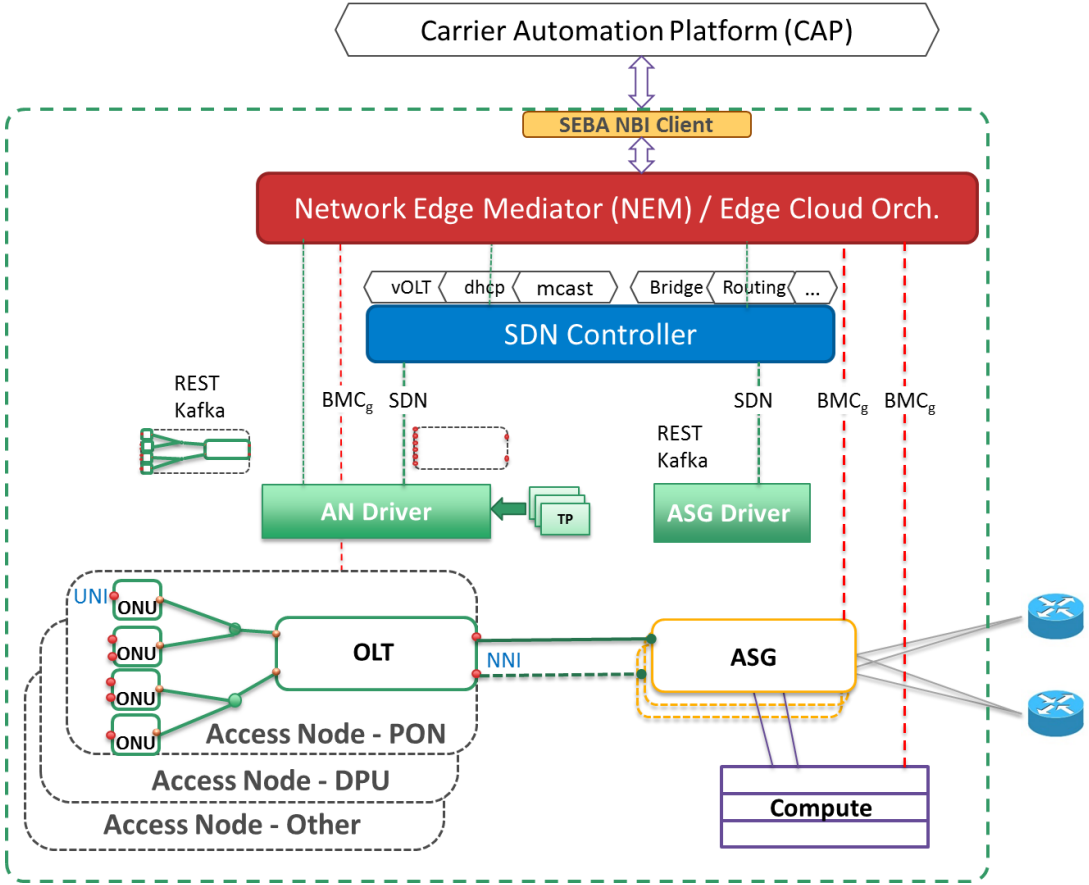
SDN-Enabled Broadband Access (SEBA)

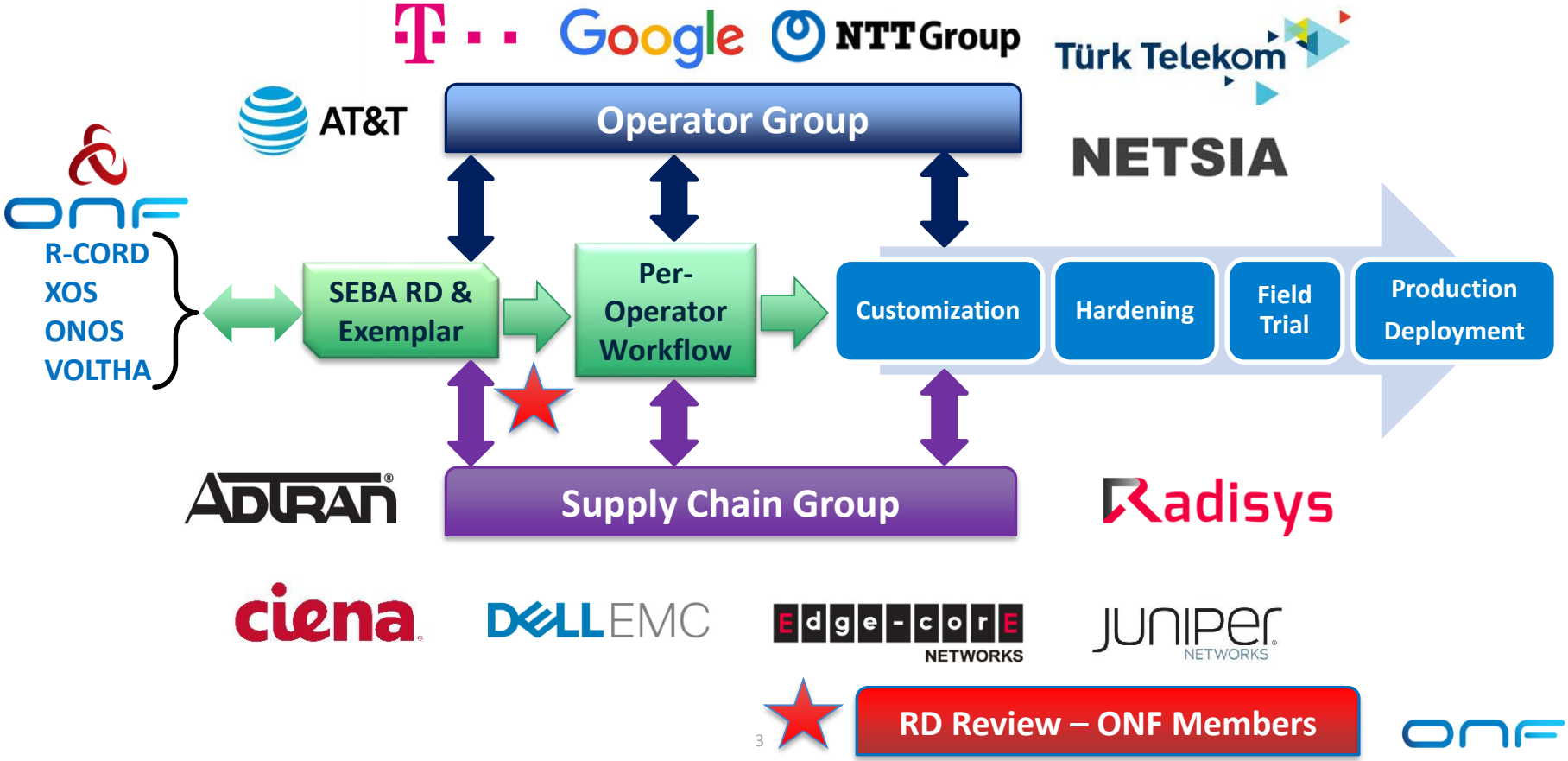
SEBA RD Team
Thomas Moore (AT&T)
December 4, 2018

SEBA Rationale, Assumptions & Architecture

- Operator-Driven
- Deploy in 2018
- Common infrastructure
- Containers run in Kubernetes as cloud underlayer
- Edge cloud orchestration option for convergence to Akraino EdgeStack (Linux Foundation)
- Enable any Northbound CAP - Legacy OSS and new systems like ONAP
- Integrate to existing networks as well as greenfield
- Aggregation and Service Gateway (ASG) enables Wireline Broadband Network Gateway (BNG) or Wireless PDN Gateway (PGW)



SEBA RD Team Activity



High Level SEBA AT&T Workflow

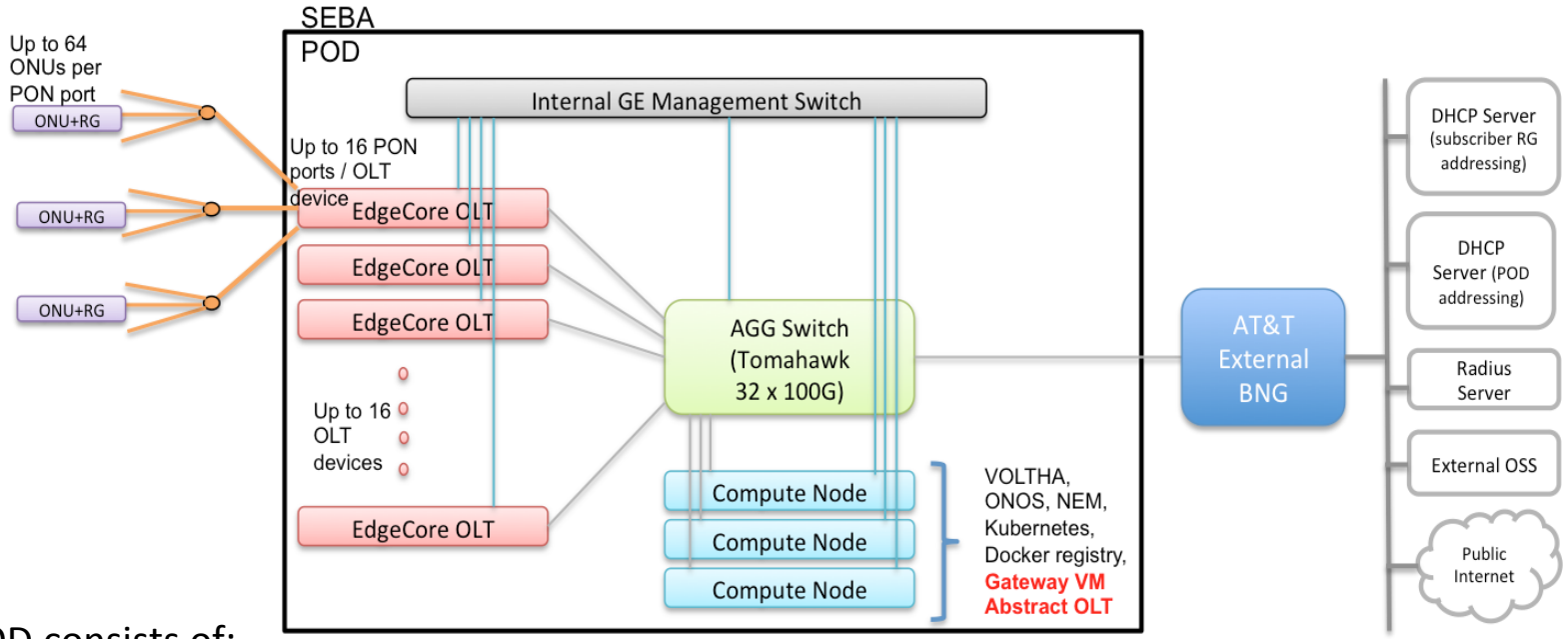
A high level overview of the AT&T workflow for SEBA and look at the ongoing AT&T field trials

Michael Gasser (AT&T)
December 4, 2018

Reference: SEBA AT&T Workflow

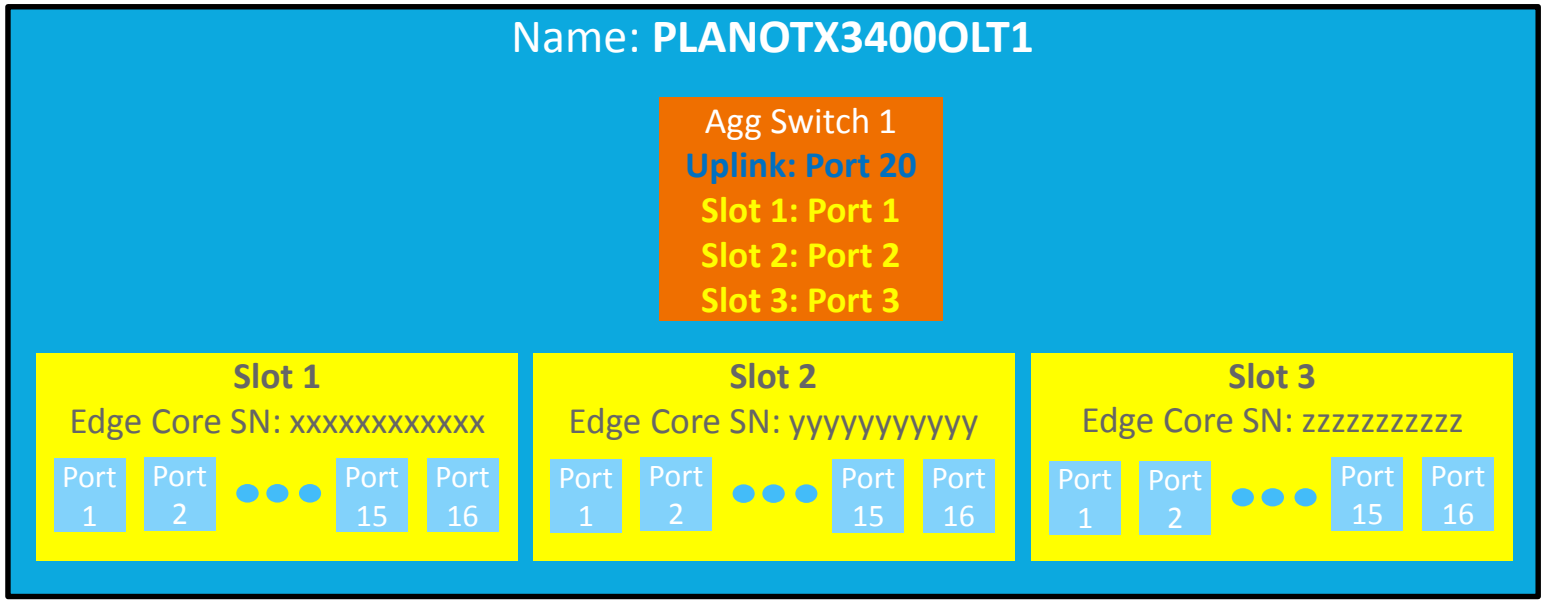
Link: https://wiki.opencord.org/pages/viewpage.action?pageId=4982370

AT&T SEBA Workflow



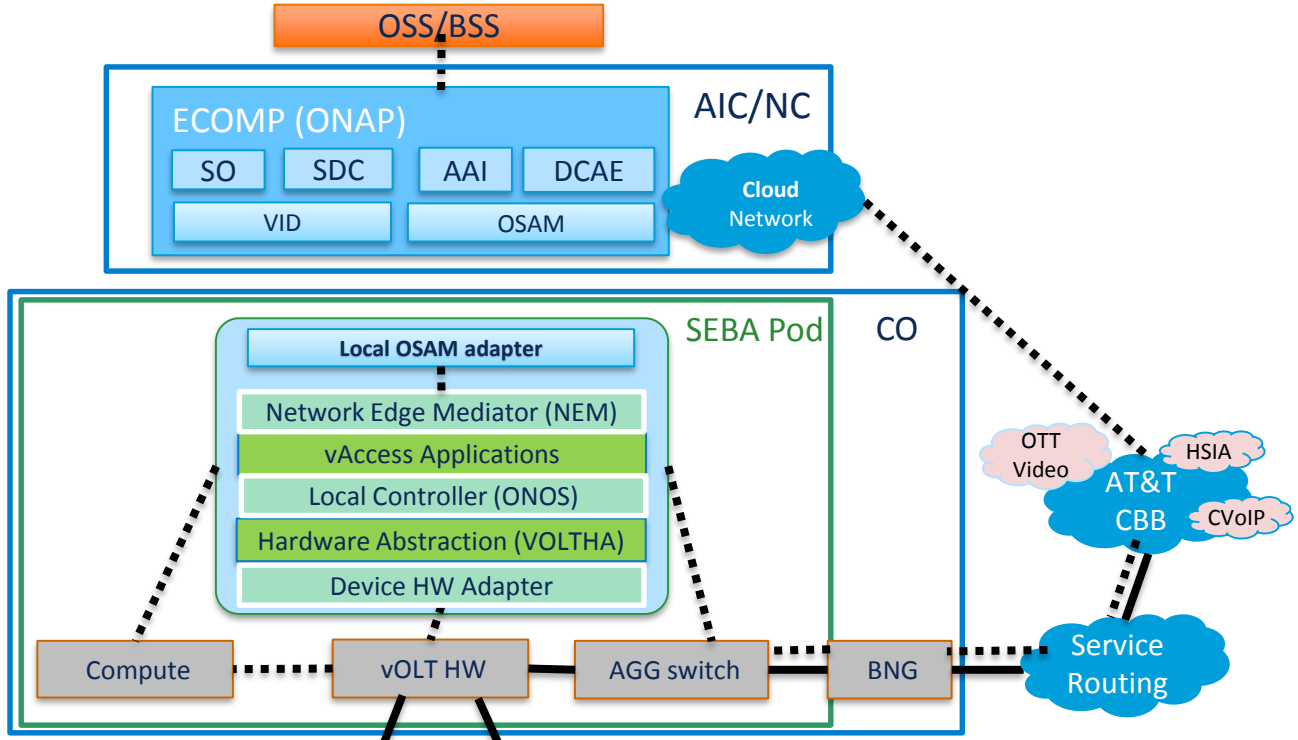
- POD consists of:
  - 3 Compute nodes
  - 1 AGG Switch
  - Up to 16 x 16 XGS PON Ports
  - Software Stack

Abstract OLT



- Builds a representation of the POD hardware as an OLT with uplinks, slots, and ports.
- Each port supports a split of ONTs
- Provides a consistent model to OSS/BSS with various hardware configurations
- Support provided for 1 port, 16 port, 24 port, etc. OLTs
- For AT&T the model will provide 16 ports per slot and up to 16 slots.
- ONT split ratio can be 1 of 2 models
- 32 ports with coexistence of GPON + XGS-PON
- 64 port greenfield

AT&T vAccess Architecture



OSAM – Open Source Access Manager

SEBA – SDN-Enabled Broadband Access

NEM – Network Edge Mediator

ONOS – Open Network Operating System

VOLTHA – Virtual OLT Hardware Abstraction

vOLT – virtual Optical Line Terminal (OLT)

PON – Passive Optical Network

DPU – Distribution Point Unit

BGW – Broadband Gateway

ONU – Optical Network Unit

Control Plane

User Plane

AT&T Workflow High Level Description

- OSAM provides upstream access to the POD
- POD Management
  - Operational personnel/systems maintain the POD
- OLT/ONT Management
  - Operational personnel/systems define the Abstract Model
  - Operational personnel/systems define manage the deployment of specific ONT HW to the Abstract Model (tied in by SN number)
- Service Provisioning
  - High Level APIs provide top down provisioning model via the Abstract Model
  - APIs include generic parameters such as service type, speeds, BNG mappings, and authentication details applicable to multiple access technologies
- Alarming, Status, and Trouble shooting
  - Alarms, Events, and PM information are streamed to Kafka, and transfer via a VES agent to DCAE
  - Data collection, alarm reporting and correlation, real time status are handled in ONAP
  - Status APIs using industry standard yang definition in the BBF provide on demand access for troubleshooting

AT&T vAccess Field Trial

AT&T has deployed the ONF's Software-Enabled Broadband Access (SEBA) open source software solution in two geographic locations enabling more than 120 living units.

The vAccess project helps realize the D2.0 architecture enabling us to support multiple wireline, wireless access technologies at the edge of the network which strategically minimizes latency for customer applications.

vAccess Trial POD

This strategic open source architecture is deployed using common Compute servers as used in a Data center, and an Open Compute Platform (OCP) based virtualized OLT (vOLT).

CO Trial Details:

- Our first application is 10G XGS-PON which will provide Multi-Gbps services for residential and business customers on the shared fiber