SEBA Reference Model, with External BNG
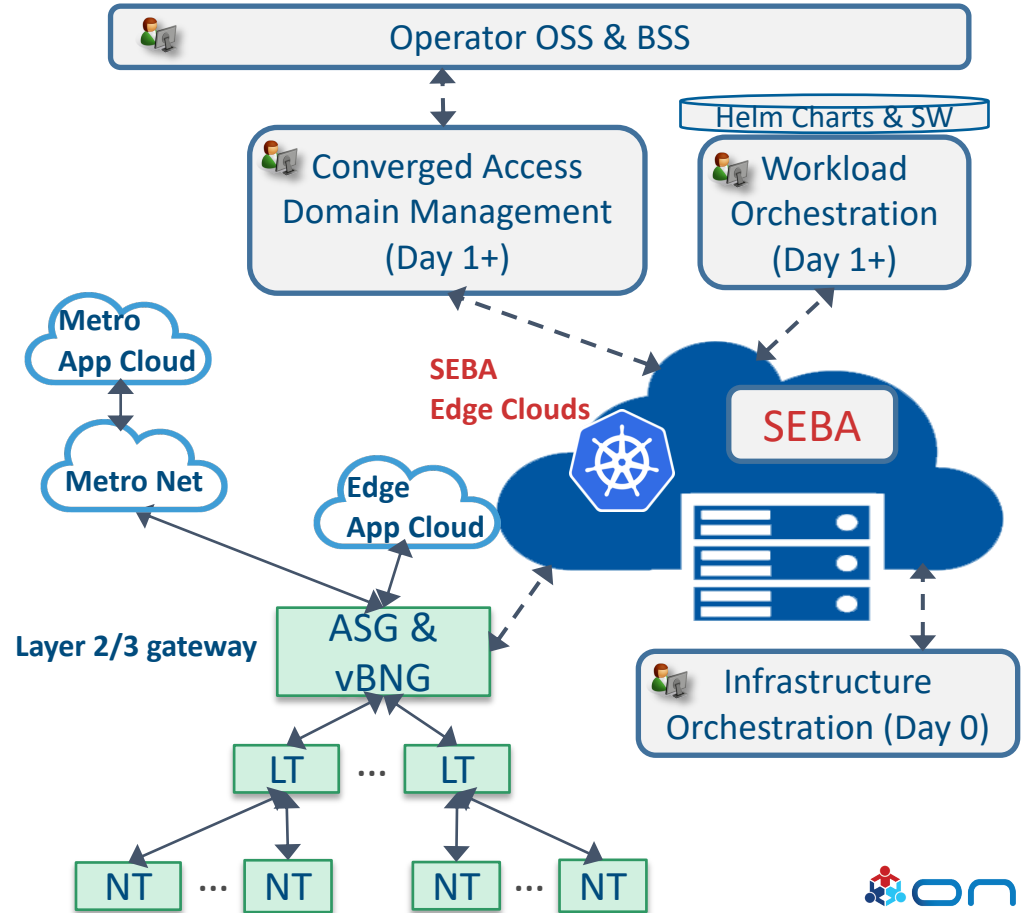
- Infrastructure Orchestration (Day 0) – Build SEBA Edge Cloud Infra HW & SW

- Workload Orchestration (Day 1+) – Deploy & Upgrade SEBA Software

- Access Domain Mgmt (Day 1+) – Configure, Monitor & Troubleshoot Access Networks & Services

- LT: Line Termination, e.g. OLT

- NT: Network Termination, e.g. ONT

- ASG: Aggregation & Service Gateway

- BNG: Broadband Network Gateway

  - Layer 2/3 Gateway

- Metro Network - Internet, Video, VoIP

- Metro App Cloud hosts value-added applications (AR/VR, AI/ML, etc.)

Operator OSS & BSS

External BNG Management

Access Domain Management (Day 1+)

Helm Charts & SW

Workload Orchestration (Day 1+)

Metro App Cloud

SEBA Edge Clouds

SEBA

Metro Net

External BNG(s) – Layer 2/3 gateway

Infrastructure Orchestration (Day 0)

Layer 2 traffic

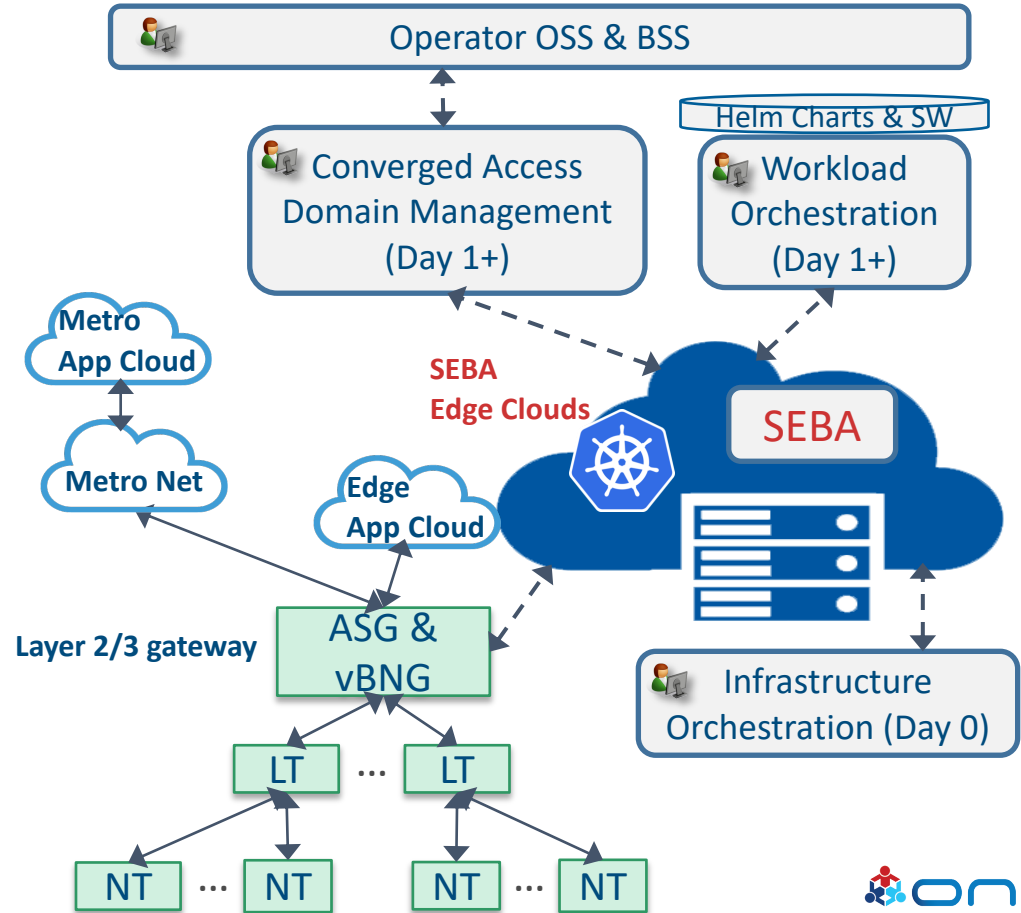ASG

LT ... LT

NT ... NT   NT ... NT

SEBA Reference Model, with Converged BNG

- vBNG: virtual BNG under SEBA management and control

- SEBA can program ASG & vBNG to route App traffic to Edge App Clouds

- Edge App Clouds can provide lower latency for applications than Metro App Cloud

- Edge App Clouds may converge with SEBA Edge Cloud and share resources

Operator OSS & BSS

Helm Charts & SW

Converged Access Domain Management (Day 1+)

Workload Orchestration (Day 1+)

Metro App Cloud

SEBA Edge Clouds

SEBA

Metro Net

Edge App Cloud

Layer 2/3 gateway

ASG & vBNG

Infrastructure Orchestration (Day 0)
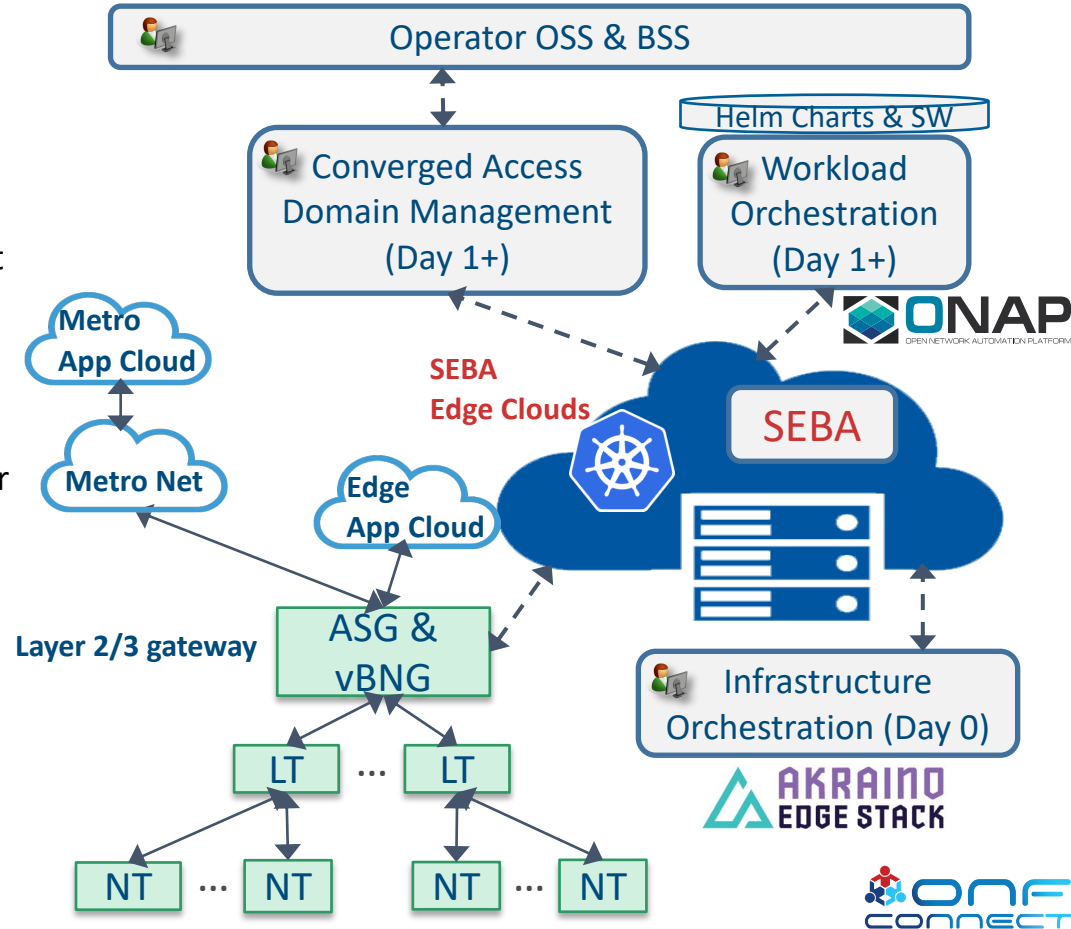
LT ... LT

NT ... NT   NT ... NT

SEBA at Small Scale

- Small number of SEBA Edge Clouds

  - And/or small Access networks

- A few techs orchestrate Infrastructure & Workload using manual tools & scripts

- A few techs connect more directly to few SEBA Edge Clouds for Day 1+

- OSS/BSS simplified or optional

- SEBA can include additional SW otherwise in OSS/BSS or Domain Management for -

  - GUIs for Configuration & Status

  - Security

  - Fault & Performance Management

  - Analytics & Logs

SEBA at Large Scale

- Large number of SEBA Edge Clouds

  - And/or large Access networks

  - And/or across multiple geo regions

- Automate OSS, BSS, and Domain Management to optimize tech & agent activities

- Automate Infrastructure Orchestration (Day 0) for many SEBA Edge Clouds

- Automate Workload Orchestration (Day 1+) for many SEBA Edge Clouds

- OSS/BSS and/or ONAP Automation

- Converged Access Domain Management

  - GUIs for Configuration & Status

  - Security

  - Fault & Performance Management
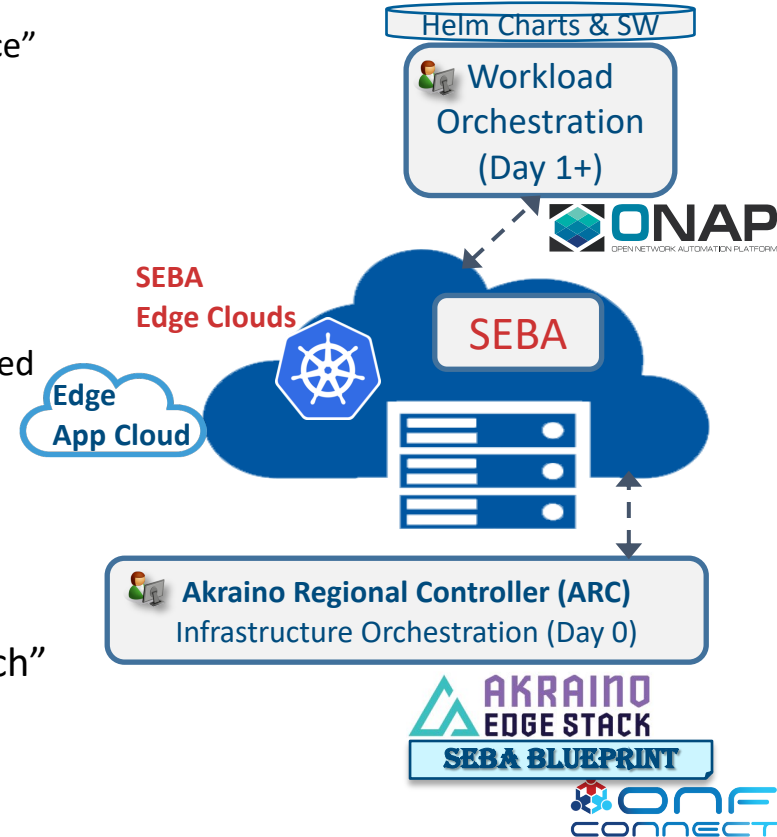
  - Analytics & Logs

Operator OSS & BSS

Helm Charts & SW

Converged Access Domain Management (Day 1+)

Workload Orchestration (Day 1+)

ONAP
OPEN NETWORK AUTOMATION PLATFORM

Metro App Cloud

SEBA Edge Clouds

SEBA

Metro Net

Edge App Cloud

Layer 2/3 gateway

ASG & vBNG

Infrastructure Orchestration (Day 0)

AKRAINO EDGE STACK

LT ... LT

NT ... NT   NT ... NT

ONF CONNECT

Infrastructure Orchestration – Akraino

- **SEBA for Akraino Telco Appliance BP Family**

  - Built from reusable components of the Akraino "Telco Appliance" blueprint (BP) family

- Automated Continuous Deployment

  - pipeline testing of the full SW stack

- Testing on multiple hardware platforms

  - Enables ongoing qualification & deployment of servers optimized for cost, space, power and environment

    - Chassis-based extended environmental range servers

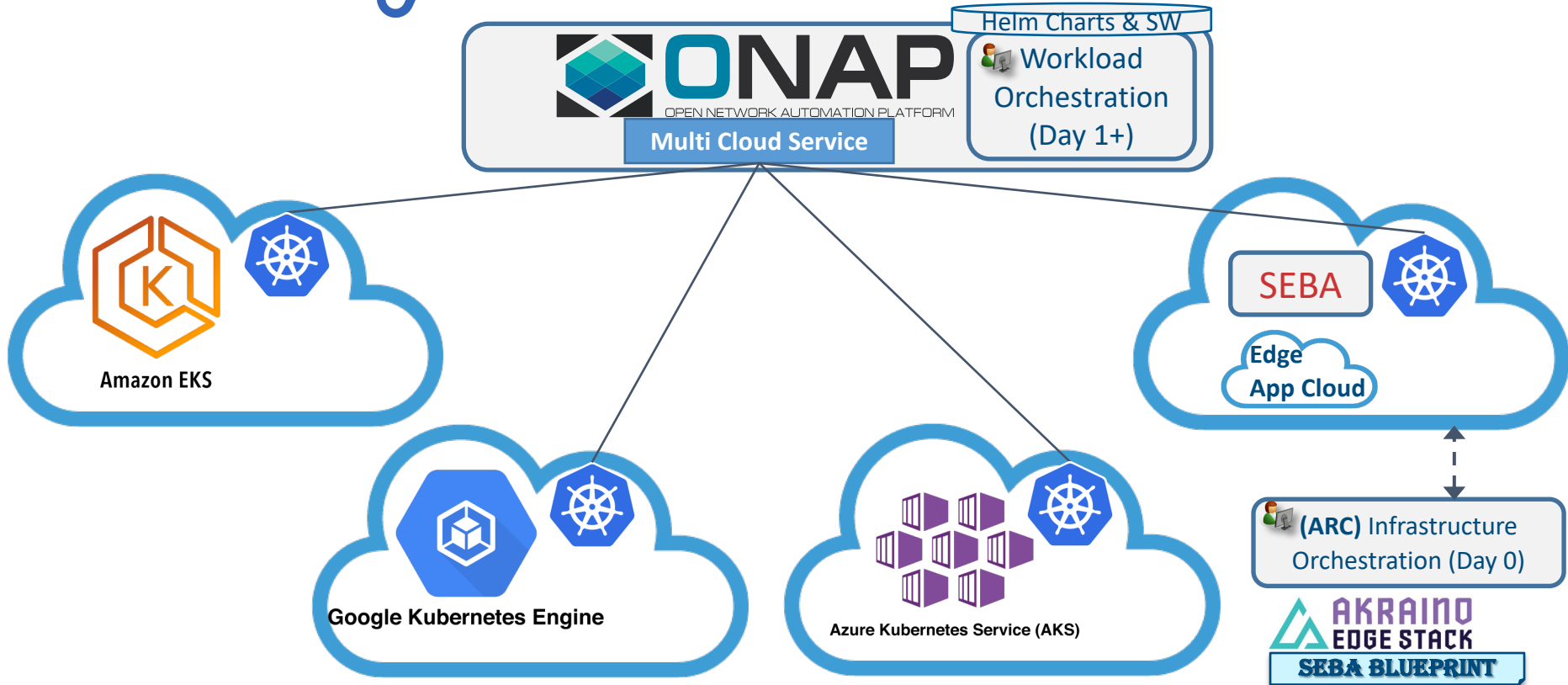   - Or commodity datacenter servers

- **Open Compute Project (OCP) Telco Project Specs & Designs**

- Integrated with Akraino Regional Controller for "zero touch" deployment of SEBA Edge Clouds

Workload Orchestration - ONAP

ONAP Kubernetes (K8s) Based Cloud Region Support

Container-as-a-Service (CaaS) Platforms – May serve as other SEBA Cloud Options

Additional Opportunities

- SEBA and COMAC Convergence
  - ASG and vBNG / Packet Gateway
  - Value-Added Application Hosting

- SEBA-as-a-Service
  - Multi-tenancy
    - Among multiple operators
    - Among different end users
      - Consumers
      - Enterprises
    - Value-Added Application Hosting (Gaming, CDN, IOT, AR/VR, AI/ML)

- Analytics-as-a-Service
  - Use spare SEBA cloud resources for enhanced analytics of cloud & access infrastructure
    - Cloud server health and performance analysis
    - Access network –
      - Optical transmission degradation analysis
      - FEC (Forward Error Correction) analysis

Thank You

Follow Up Links:

SEBA for Akraino Telco Appliance BP Family

Open Compute Project (OCP) Telco Project Specs & Designs

ONAP Kubernetes (K8s) Based Cloud Region Support