Agenda

- Overview
- High Level Architecture
- Design time Architecture
- Run time Architecture
- Summary
Outline

- Overview
- High Level Architecture
- Design Component Architecture
- Run-Time Component Architecture
- Summary
Linux Foundation Framework, Governance, Control
Bringing the best of both worlds together

+ 2+ years of Deployment Maturity at AT&T
+ Comprehensive: Design + Orchestration + Control + Policy + Analytics
+ Model-based design enabling self-serve capabilities for instantiation and closed loop automation

+ Open TOSCA model
+ Most Advanced Open Source Process & tool chain
+ Architected for ease of VNF insertion (SDK)

ONAP
OPEN NETWORK AUTOMATION PLATFORM
Open ECOMP and Open-O Merger into ONAP harmonized architecture
- Overview
- High Level Architecture
- Design Component Architecture
- Run-Time Component Architecture
- Summary
ONAP Architecture Overview

Three Main Groups

• Design
• Deploy
• Operate

Northbound
E-Services  BSS/OSS  Big Data

Design

Service Design and Create

Policy Design

Closed Loop Design

Run-Time

Service Orchestrator

Network Controller

Application Controller

Active and Available Inventory

Policy Engine

Data Collection, Analytics and Events

Southbound
Cloud Infrastructure  3rd Party Controller  VNFM/EMS

Application Controller

Desgin
▪ Overview
▪ High Level Architecture
▪ Design Main Component Architecture
▪ Run-Time Main Component Architecture
▪ Summary
ONAP SDC Architecture Overview

- Portal
- Design Managed Objects
  - Resource Onboard & Design
  - Service Design
  - VNF (Product) Design
- Design Studio
- Design Managed Functions
  - Policy (Rules) Design
  - Process (BPMN) Design
  - Analytics (Event-Driven) Design
- Reference Data
  - Catalog
    - Resource Model
    - Service Model
    - Product Model
  - Repositories
    - Product Model
    - Product Model
    - Product Model
    - Product Model
- VNF SDK
  - Certification Studio (ICE)
  - Testing & Certification
  - Distribution Studio
    - Content Mgmt & Distribution

- Project Management
- 3rd Party Vendor
- GUI
- Tester
- DevOps
- Developers
- Overview
- High Level Architecture
- Design Main Component Architecture
- Run-Time Main Component Architecture
- Main Process and Flows
## ONAP MSO (SO) Architecture and Interfaces Overview

### Interfaces

- **SDC**
  - Distribution of orchestration artifacts
  - UEB event notifications, HTTP artifact retrieval

- **AAI**
  - Query and update inventory
  - RESTful API

- **Multi-VIM**
  - Instantiation of virtual resources in the cloud
  - Openstack APIs (primarily Heat and Keystone)

- **SDN Controller**
  - Assign and configure network resources
  - Yang-based RPC and REST

- **App Controller**
  - Assign and configure application resources
  - Yang and/or event based API

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**SDC**

- **Service Recipes**
  - Catalog DB
  - Request DB

- **HEAT Templates**

- **Resource/Controller Adapters**

- **VNF Resource Adapter**
  - Cloud Platform Orchestrator

- **Network Adapter**

- **Controller Adapter**

- **BPEL Execution Engine**

- **Service Recipe**

- **API Handler**

- **Request Handlers**

- **Infrastructure Portal**

- **OCX/OMX**

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**SDN Controller**

- **Assign and configure network resources**
  - Yang-based RPC and REST

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**App Controller**

- **Assign and configure application resources**
  - Yang and/or event based API

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**AAI**

- **Query and update inventory**
- **RESTful API**
ONAP SDN-C Architecture and Interfaces Overview

DMaaS Message Router

Security Applications

Control Loop Applications

Service Orchestrators

API Handlers

Service Logic Interpreter

SDN-C Database

Service-related Artifacts for SLI, API Handlers, Network Adapters

Directed Graph Files – XML (Eng Rules)

Network Data Model Files – YANG (i.e. IPAG EMU)

Service Data Model Files – YANG (i.e. UNI port)

OpenDaylight

External API calls

A&AI

Inventory

API (REST)

API (REST)

API (REST)

API (REST)

Config Tree

Operational Tree

Config Tree

Operational Tree

OpenStack Adapter

VOIP VNF Adapter

VRR Smart Adapter Support CLI/NetConf/BGP

vCE/vPE Smart Adapter

BGPCEP Adapter

Etc.

vCE/vPE Smart Adapter

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OPENSTACK

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Etc.
ONAP APP-C Architecture Overview

- Configuration Management
- Control Loop Actions
  - Restart
  - Rebuild
  - Migrate
  - Suspend / Destroy
- Service Abstraction Layer
  - YANG/SLI Model Driven Services
- API
- DG Compiler
- Service & Config Repository
- Designer
- MSO
- Infrastructure Portal
- Adapters
  - A&AI Adapter
  - PO Adapter
  - NETCONF Adapter
  - VNF / APP Adapter...
  - UEB Adapter
- Other Components

- AIC PO
- VNF
- App1
- App2

- UEB
- DCAE

HANDS ONAP 2017

-amdocs
- AT&T
- CLOUDIFY
ONAP A&AI Architecture Overview

- Central registry to create a global view of inventory and network topology
- Receives updates from various inventory
- Provides standard APIs
ONAP DCAE Architecture Overview

- Data Collection, Analytics, and Events (DCAE) subsystem
  - gathers performance, usage, and configuration data from the managed environment
  - This data is then fed to various analytic applications, and if anomalies or significant events are detected
  - The primary functions of the DCAE subsystem are to
    - Collect, ingest, transform and store data as necessary for analysis
    - Provide a framework for development of analytics
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ONAP Service Lifecycle Management

DESIGN

ORCHESTRATE

OPERATE

PRODUCT CATALOG

OFFLINE IN LAB

CONTINUOUS REAL-TIME FULFILMENT

REAL-TIME IN PRODUCTION

REAL TIME OPERATION

HYBRID CLOUD

DESIGN—ONBOARDING
Design Flow – VNF and Service Design

1. Model vendor license
2. Build topology from vendor info (HEAT or manual)
3. Enrich model with monitoring, management dependencies etc.
4. Create VF and Service designs
5. Manually test models in lab
6. Deploy to product servers

- On board:
  - Technology Specialist
  - Asset Manager
- Design:
  - Service Designers and Operations
- Test:
  - Testers
- Deploy:
  - Operations

Suppliers

Develop

Deliver

Quarantine

Security and malware scanning

Partners