“The first rule of any technology used in business is that automation applied to an efficient operation will magnify the efficiency.

The second is that automation applied to an inefficient operation will magnify the inefficiency”

- Bill Gates
Topics

- ONAP overview
- Adaptive Policy
SDN/NFV = Unprecedented Transformation

Transformation

Business
Technology
Operations
Organization

Agility
Differentiation
Flexibility and Choice
Revenues

Design Time, model driven
Operational Expenses
Development Costs
More than MANO is needed.

OSS/BSS

Virtualized Network Functions (VNFs)

NFV Infrastructure (NFVI)

Legacy Networks

SDN Infrastructure

Portals

NFV MANO

NFV Orchestrator

VNF Manager (VNFM)

Virtualization Infrastructure Mgr. (VIM)

Service Mgmt.

Policy

Analytics

Design-Time Environment

GUI

Modeling

Catalogues
Introducing ONAP
Blending ECOMP, OPEN-O, and Linux Foundation Best Practices

- Deployment (> 2 years)
- Comprehensive functionality
- Enables self-service and automation

+ Model-driven (TOSCA/YANG)
- Adopts LF best practices
- Enable efficient VNF onboarding and insertion
ONAP Value Proposition

End-to-End Automation
- Complete lifecycle automation – design, inventory, control, operate, and metrics
- Orchestrate and automate across geographic and domain boundaries, technologies and layers
- Modular, model-driven approach
- Re-usable, nested service definitions simplify service development

Industry Harmonization
- Collaborative marketplace of ideas for global operators and solution providers
- Enable migration from proprietary, purpose-built orchestration tools
- Reduce market fragmentation with common, open development platform/APIs
- Support wide range of use cases and operating environments

Efficient Deployment
- Incorporates production-proven code
- Developed for both brownfield/ greenfield deployments to protect existing investments
- Modular platform components reduce integration cost and time
- Optimize operations through closed-loop network intelligence and analytics

A common platform for rapidly designing, implementing & managing differentiated services.
A Growing Ecosystem

ONAP represented > 55% all subscribers

2017

2018

LFN

MAC

TAC

ONAP

OPNFV

ODL

FDIO

PND

SNAS

THE LINUX FOUNDATION
How it works

Projects and sub-committees

ONAP Technical Steering Committee

Security
Architecture
Use Case
Modelling
Closed Loop
Legal

Projects produce!

Use Case
Architecture
Security
Closed loop

Project
Integration Project
Release

Project
Release
Project
Release
Project
An Active (and Growing) Developer Community

From inception
• 40,894 Commits
• 785 Authors
• 229 Repositories
• 15,787 Emails
• 652 Email senders

Last 60 days
ONAP Releases

6 month release cycle
Design Time

- Collaborative, catalog-driven “self-service” design studio
  - Define resources, services, and products
  - Create and manage models, processes, policies, and analytics for creation and lifecycle management
- Systematic evaluation, certification, and onboarding of technology supply chain
- Institutionalize content and models for consistent implementation and technology insertion
- Single platform to define and deploy instantiation, management, and control definitions and behaviors

**Product & Service Designers**
Run Time

- Autonomic framework that manages the full ONAP lifecycle of networks and services
  - Uses definitions/models provided by design modules
  - Orchestrate delivery & augmentation
  - Monitor & manage via analytics guided by SLAs & policies
- Control capabilities to execute configuration, real-time policies and control the state of distributed network components and services
- Instantiate, configure, and manage the lifecycle of resources, topology, and service implementations
Closed-Loop Automation

- Instantiate Service based on customer request or infrastructure needs; set up monitoring controls; test and turn-up service
- Distribute design templates and policies to various actors
- Define analytics governing service/resource behavior; ensure analytic applications are in place to manage behavior
- Specify policies governing service/resource behavior; adapt policy changes based on service lifecycle
- Design Service based on resource models and needs; design/define analytics & thresholds needed to monitor service; incorporate design changes based on service lifecycle
- Monitor service by listening to events; computing analytics based on data collection; publish events that require healing or scaling based on defined policies
- Actor(s) perform the required Actions to implement the changes; verify changes restore the service to needed levels
- Actor(s) publish events to record changes made for the the required conditions.
- Analyze behavior over time to identify changes needed in design, policies, analytics or thresholds governing response
VNF Ecosystem

ONAP Operations Manager

**Design-time**
- SDC
- VNF packaging/validation
- Portal Framework
  - Usecase UI
  - ONAP CLI

**Run-time**
- Dashboard OA&M (VID)
- External API Framework
  - A&AI
  - ESR
- Service Orchestration
- Common Services
  - DMaaP
  - CCSDK
  - Logging
  - App. Auth. Framework
  - Microservice Bus
- Multi-VIM/Cloud
  - SDN-C
  - Controller driver
  - Cloud/VIM driver
- Alarm Correlation (Holmes)
- DCAE
- APP-C
- VF-C
- sVNFM /EMS driver

**External components**
- OpenStack
- VMware
- RackSpace
- Azure
- ....
- Controller
- VNF
- EMS
- VNFM
- VNFs

**External components**
- VNF Validation Program
- University
- Integration
- VNF Requirements
- Modeling (Utilities)
Cloud/VIM Drivers

**Design-time**
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- ONAP CLI
- Portal Framework
- Usecase UI
- ONAP CLI

**Run-time**
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- Service Orchestration
- A&AI (ESR)
- External API Framework
- ONAP Operations Manager

**Common Services**
- Run-time
- SDN-C
- Controller driver
- Multi-VIM/Cloud driver

**External components**
- OpenStack
- VMware
- RackSpace
- Wind River
- Azure
- Controller
- VNFM
- EMS
- VNFs

**Integration**
- SDC
- SDC
- SDC

**ONAP CLI**
- VNF Validation Program
- Multi-VIM/Cloud
- Policy Frmwk
- VNF Requirements
- Modeling (Utilities)
- University
Closed Loop

ONAP Operations Manager

Run-time
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Design-time
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- CLAMP

 VF-C
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External components
- OpenStack
- VMware
- RackSpace
- Azure
- ......
Use Case: VoLTE
Use Case: vCPE
### Further use cases / scenarios

- 5G Use Case
- Acceleration Management
- CCVPN (cross domain and cross layer VPN)
- Change management
- Edge Automation
- Opensource access manager (OSAM)
- ETSI alignment
More Details

- Developer/community material
  https://wiki.onap.org

- Release documentation
  https://onap.readthedocs.io

- Amsterdam
- Beijing
- Latest
OPEN SOURCE NETWORKING DAYS