OPEN SOURCE NETWORKING DAYS Singapore Automaton & Adaptive policy for next generation networks **Stephen Terrill** Liam Fallon



"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



- ONAP overview
- Adaptive Policy

SDN/NFV = Unprecedented Transformation





More than MANO is needed. . .



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



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

2018 ONAP represented > 55% all subscribers 中国移动通信 CHINA MOBILE ERICSSON **伊中国电信** alialia cisco ∂- amdocs State Bell HUAWEI IBM GIGASPACES (intel) (Jio) NOKIA vodafone Tech Mahindra **ZTE vm**ware^{*} ARM Ochietta CANONICAL Contact ciena accenture CertusNet Corianto JUNIPER HBC Microsoft Metaswitch RAISECOM MAVENIR REAKIS PCCW Global windstream 🤍 redhat. 2017

How it works





An Active (and Growing) Developer Community

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From inception

- 40,894 Commits
- 785 Authors
- 229 Repositories
- 15,787 Emails
- 652 Email senders



Last 60 days



ONAP Releases



6 month release cycle





ONAP Casablanca Architecture

(High-Level View with Projects)





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





VNF Ecosystem



Service Design



Orchestration



Controllers



Cloud/VIM Drivers



Closed Loop



Use Case: VoLTE





Use Case: vCPE



VX-LAN	IP/MPLS	VX-LAN	IP
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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 <u>https://wiki.onap.org</u>
- Release documentation
 <u>https://onap.readthedocs.io</u>



- Amsterdam
- BeijingLatest



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