Next-gen service assurance enablement

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The need: automation and self-service
Evolving network use

Technology progression
- Accelerating innovation and business models

Tomorrow’s web
- Physical and digital world integration

Information islands
- Hyper giants driving Internet traffic

On-demand networks
- Service chaining

Next-gen mobility
- Machine mobility and autonomous vehicles

Smart data management
- Traffic optimization, deep analytics
Changing network approach

Physical

Proprietary hardware and software
Supplier dependency
Configure networks
Manual operations
Separate wireless, wireline and IT
Open loop assurance

Virtual

Interoperability
Open source, cloud-based
Program networks
Automation w/ orchestration
Integrated operations
Closed loop assurance
Legacy environment

- Solid structure
- Built on proven standards
- Reliable
- Time tested
- Successful performance record
- Expert silos

Source: Gartner (May 2016)
Tomorrow’s world

• Destroy silos
• Cross functional teams
• Automated

Source: Gartner (May 2016)
Next-gen technology enablement

Self-organizing networks

Open source

Network technology

DevOps and Agile

Customer devices

Cloud and microservices
Closed loop service assurance

**Network Virtualized Function**

**Assurance loop 1**
Automated self-healing

**Assurance loop 2**
Manual resolution executed from playbook

**Assurance loop 3**
Manual trouble resolution

Observe Orient Decide Act

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Functional scope for SA transformation

Service assurance transformation requires fundamental changes across all activities performed by operations organizations

- Fault management
  - Proactive detection of fault-causing anomalies
  - Intelligent drill-down to offending VNF or resource
  - Adaptive self-healing of impacted resources

- Performance management
  - Service and VNF-level performance targets
  - E2E closed loop performance optimization
  - Predictive detection of perf. bottlenecks

- SLA/OLA management
  - Customer-driven service SLAs
  - SLAs for individual VNF
  - OLAs to manage performance

- Configuration management
  - Centralized repository of “golden config.”
  - Version managed configuration changes
  - Template driven diffusion of config. changes

- Inventory management
  - Real-time views of service, VNF, and PNF active and available inventory
  - Single “source of truth”

- Change management
  - CI/CD-based change mgmt
  - Security validation integrated into change procedures

- Lifecycle management integrated into VNF onboarding process
- DevOps with early operations engagement during on-boarding

VNF on-boarding and configuration
Hybrid environment – PNFs and VNFs

Transform to service intelligence
• Apply service intelligence to legacy PNFs
• Automate manual tasks supporting legacy PNFs
• Apply automation across legacy environments

Open loop
• Reactive, manual correlation + repair, time elapses

Closed loop: zero touch
• Automated tool configuration/provisioning
• Automated policy-based service descriptors
• Faults trigger the orchestrator to reconcile
• Integrated machine learning analytics

Open loop remains until closed loop is proven
Alignment with business imperatives

Service assurance plays a critical role in enabling the different aspects of business imperatives driving the transformation to the cloud.

1. Reduce CAPEX/OPEX
   - Reduced infrastructure costs, e.g., virtual probes
   - Open-source software and flexible licensing for tools
   - Reduced labor required for manual operations tasks

2. Efficiently manage operations
   - Reduced man-hours wasted on tool config.
   - Automated with telemetry for authoritative reporting
   - Closed loop automation for self healing and optimization

3. Meet growing business volumes
   - Simplified planning to for growth in network traffic
   - Self-service support for customers and Care
   - Traffic-driven auto-scaling with machine learning

4. Improve service agility
   - Acceleration of service launch processes
   - Seamless onboarding of new services into SA platform
Driving change

- Open API interface (REST/JSON)
- Open data storage
- Metrics/KPIs for standards & benchmarking
- VNF support - NETCONF and full YANG models
- Security standards
- Standardized OSS/telemetry templates
Thank you.

It is not necessary to change.
Survival is not mandatory.

- W. Edwards Deming