

Optimization of the Deployed Network & Slices

C: Near-Real Time Edge Analytics & Network Optimization ONAP Requirements

Description	<p>Edge cloud infrastructure (ECI) analytics is required for near-real-time correlation between various Events (e.g. Number of VM Power On/Off); Alerts (e.g. Cloud region CPU usage exceeds threshold) and Faults (e.g. loss of redundancy from a Host NIC perspective). Edge cloud near-real-time streaming infrastructure resource (CPU, Memory, Network etc.) utilization metrics are needed by OOF for inter-cloud resource optimization</p> <p>Key Enhancements needed</p> <ul style="list-style-type: none"> Enhance ONAP SDC to support new ECI Models Enhance ONAP Policy to support new ECI Policies Enhance ONAP Policy to synchronize ECI Policies with the ECI Analytics through ONAP Multi-Cloud Enhance ONAP Multi-Cloud to translate from vendor-specific to vendor-agnostic ECI Policies Enhance ONAP Multi-Cloud to translate from vendor-specific to vendor-agnostic Resource Utilization Metrics & Analytics and asynchronously communicate these over DMaaP
Rationale	<p>Near-real time decision making is critical for proactive self-healing and inter-cloud resource optimization</p> <p>Important to minimize effects of WAN latency and bandwidth for near-real time decision making -- ONAP Components are centralized whereas Edge Clouds are Distributed</p>
Impacted ONAP components	SDC (including Policy Design), Multi-cloud, Policy, OOF
Participating Companies	AT&T Amdocs China Mobile Ciena Cisco Ericsson Huawei Intel Nokia VMware

C: ONAP Optimization Framework Enhancements

Description	<p>Many services in ONAP require optimization functionality during the lifecycle of the service components.</p> <ul style="list-style-type: none"> Service design, deployment, management, scheduling, and dynamic reconfiguration The ONAP Optimization Framework provides declarative, model- and policy- driven system to support above needs. We would like to demonstrate OOF functionality using applications such as dynamic workload aware placement and migration of edge services for 5G. <p>Key enhancements needed are:</p> <ul style="list-style-type: none"> Enhance A&AI to inventory and store 5G related data Enhance Multi-cloud to provide streaming updates (near-real time and/or feed of statistical aggregates) Enhance OOF to provide near-real time solutions and evaluate it for large clouds Enhance Policy to support complex service modeling (e.g. complex constraints, nested resources and related policies) Enhance SDC to model & define constraint and optimization policies Enhance SO to support workflows related to management of 5G related network entities
Rationale	<p>Optimization needs for typical carrier deployments will involve large, distributed data centers, and will involve complex rules and constraints governing how multiple network elements are instantiated and managed. Hence, these are critical functional requirements for a carrier-grade ONAP. Specifically, within the 5G domain, efficient allocation of resources and dynamic, load- and cost-aware reconfigurations are valuable.</p>
Impacts	Impacted ONAP components are: A&AI, Multi-cloud, Policy, OOF, SDC, SO
Companies	Participating companies are: AT&T, Cisco, Intel, Netcracker, VMWare

C: ONAP Optimization Framework Enhancements

Candidates for OOF Enhancements in Casablanca:

Description	<p>OOF needs to support the following key optimizations in the context of 5G:</p> <ul style="list-style-type: none">• SON optimization to mitigate effects of changes to propagation conditions. SON optimization is effected by configuring the relevant 5G radio and backhaul network parameters. Other related SON use cases are energy optimization and load balancing.• Slice Optimization• Homing or placement of 5G VNFs on the Edge clouds during the 5G RAN instantiation. The workflows are similar to the service instantiation workflows supported in R2 (https://wiki.onap.org/pages/viewpage.action?pageId=16005528)• PNF support
Rationale	<p>Placement of Mobility Virtual Network Elements (CUs) across the highly distributed edge clouds is a fundamental requirement. Service Providers must also optimize the performance of the 5G RAN in real-time.</p>
Impacted ONAP components	<p>SO, Policy, AAI, MultiCloud, SDC (possibly)</p>
Participating Companies	<p>AT&T Amdocs China Mobile Ciena Cisco Ericsson Huawei Intel Nokia VMWare</p>