

Introduction

The transformation of network operations is long overdue, but communications service providers (CSPs) have avoided it for fear of disturbing mission-critical operations support systems (OSSs). In the early days of network virtualization, CSPs were adamant that they wanted to achieve NFV without affecting their existing operational systems. However, it is becoming increasingly clear that traditional OSSs will not be capable of managing virtualized networks for a variety of reasons. The majority of CSPs in a recent Heavy Reading survey on the future of OSS are exploring new operational approaches that draw on cloud technologies as these are well-aligned with the goals of network virtualization.

CSPs want to become operationally more agile and able to manage the virtualized network in near real time. This means becoming self-sufficient in the design and deployment of new customer-facing services since CSPs can no longer afford the crippling cost and time-consuming nature of engaging professional services organizations in these activities. Self-sufficiency implies using a model-driven and DevOps-style operational approach, which minimizes the need to develop custom code and standard IT tools – such as Business Processing Modeling and Notation (BPMN) and Topology and Orchestration Specification for Cloud Applications (TOSCA) – for building reusable, "micro" workflows, rather than complex per-service workflows and scripts. This combination of technologies can reduce service delivery times from weeks and months to hours and minutes.

Agility is achieved in the IT cloud environment through the microservices-based software design pattern, which enables applications to be developed, enhanced and deployed much faster than through traditional methods. An operational platform built out of microservices provides significantly more flexibility than monolithic OSS. Microservice components can be composed in different ways to address different management use cases and their loosely coupled, API-driven nature means that existing components can easily be upgraded and replaced and new ones added. Open source-based microservices are proliferating and such a platform allows operators and suppliers to take advantage of the pace of market innovation.

Multi-domain service orchestration is emerging as a key operational requirement for the virtualized network and is an example of a system that can be built from microservices-based platform components. NFV and SDN introduce new domains that must be managed in addition to physical network elements that continue to be managed by traditional OSS. CSPs want a means of managing the lifecycle of customer-facing services across all these domains using a single centralized, model-driven layer of orchestration. Multi-domain service orchestration is key to rapid service deployment and supports CSP self-sufficiency in service management.

This paper discusses the requirements for network operations transformation and outlines the benefits of new technology approaches that, when combined in an operational platform, satisfy the novel management needs of a virtualized network.

Operations Must Embrace Technology Change

Drivers for Network Operations Transformation

The list of drivers for network virtualization are a familiar litany: greater business agility, faster service delivery times, accelerated service innovation and new revenue