



Problem. Solved.

Accelerating time to market for new communication services
using CommScope Multi-Domain Service Orchestration

COMMScope®

Launching services faster

Problem. Solved.

Even as **communication service providers (CSPs)** are being stressed by high traffic volumes, increasingly convoluted infrastructure and complex network management, competitive forces are pressuring their profit margins. To prevail in this harsh environment, CSPs such as cable operators and telcos must look beyond transport to offer advanced services to their customers while cutting operating costs and streamlining the creation of new revenue-generating services. Service offerings need to move from the drawing board to the market in weeks or even days, rather than months—but traditionally siloed, proprietary, fragmented network infrastructure often prevents this.

At CommScope, we understand the operational challenges our CSP customers face. For over 40 years, we've provided the network expertise and innovative solutions CSPs need to increase efficiency, decrease total cost of ownership and improve service delivery.

When a global service provider customer needed to streamline workflows between its services networks and business support

systems (BSS), CommScope was ready. Our Multi-Domain Service Orchestration team designed and deployed a unique open-source solution that enabled the customer to slash its costs while accelerating time to market.

Problem. Solution.

The problem: For CSPs, complexity often drowns opportunities for new service creation

Without an agile infrastructure, CSPs are unable to capitalize on revenue-generating services efficiently or scale the network infrastructure that delivers them. One reason is that the IT stacks within a tier-one CSP's multiple business units tend to become increasingly convoluted over time. Eventually, it becomes impossible to create and launch new services without massive changes to the IT and network infrastructure and exhaustive coordination across departments. Traditionally, multiple touches by multiple people with specialized skills are required to manage the interaction between a CSP's networks and the BSS handling functions such as order management, billing and payments. When multiple networks interface with the BSS layer directly, a complex spaghetti of network connections results.

For one global service provider, the time required to design and deploy new services—combined with high operating costs and the inability to change services promptly—were major business challenges. The path to simplifying the creation and rollout of products and services lay in abstracting complex networks to make them more consumable at the BSS level across multiple business units. This approach called for the adoption of a standard API set and creation of a network-based service orchestrator to expose the APIs globally.

CommScope Multi-Domain Service Orchestration

For automated orchestration of network elements

- Consultation
- Design
- Integration
- Custom development

CommScope solution: A professional services team that thinks the way CSPs think

To launch products faster, the service provider had begun migrating its traditional enterprise media network to a virtual software-defined network (SDN). The company set out to transform its organization using next-generation control planes managed by an orchestration layer. The overall strategy to simplify its OSS/BSS systems called for deploying the orchestration layer over 20 business units and standardizing on a set of TM Forum Open APIs.

The media business unit has led the way in supporting the company's strategy by replacing the convoluted interface between its networks and BSS systems with an organized orchestration layer. By automating formerly manual tasks like data entry for processing orders and complex activation schemes, network orchestration minimizes human intervention while moving the infrastructure toward more efficient software-defined networking and digitized IT stacks.

The media business unit needed a professional services partner that offered both a mastery of custom software development and a unique understanding of multi-domain service orchestration. They chose CommScope's Professional Services software-defined services team. CommScope offers a spectrum of consultation, design, integration and custom development services that enable service providers to automate the orchestration of their network services. The engagement began with the discovery of existing management systems, workflows and processes, followed by the creation of a reference architecture and blueprint, a proof of concept for the activation function, and a production rollout.

Often, CSPs face infrastructure challenges too complex for any single vendor or closed system to adequately address. For that reason, CommScope has used its customization expertise and software development skills to create a powerful Multi-Domain Service Orchestration offering not tied to any vendor roadmap. CommScope integrates platforms and systems to provide policy-driven, closed-loop processing for lifecycle management of services and resources. This approach separates the services layer from the network resource layer and automatically configures and coordinates hardware and software elements.

CommScope core competencies

- **Platforms and standards:** ONAP, TM Forum Open API, Cloudify, KeyLines Visualization
- **Cloud native design:** Microservices, Kubernetes, RESTful API
- **Cloud platforms:** OpenStack, AWS, Azure, Google Cloud
- **Tools:** Camunda, Docker, Robot Framework
- **DevOps:** CI/CD, Git, BitBucket, Jenkins, Ansible, Nexus
- **Languages:** TOSCA, YANG, HTML5, Drools, BPMN, Java, Python

CommScope's open-source approach uses enabling technologies like SDN and network function virtualization (NFV) to drive more efficient resource utilization and to give the service provider more control. CommScope developed a custom orchestrator using open-source software and standards, including Topology and Orchestration Specification for Cloud Applications (TOSCA), TM Forum Open APIs, and MEF Lifecycle Services Orchestration specifications.

Components of the orchestrator include:

Open Networking Automation Platform (ONAP)—an open-source networking project hosted by the Linux Foundation and developed by communication service providers rather than vendors. It serves as the core end-to-end service orchestration platform.

Cloudify—an open-source software product for cloud and NFV orchestration. It provides services modeling while leveraging the OASIS open standard modeling language (TOSCA) as a domain orchestrator.

Drools—a forward- and backward-chaining, inference-based rules engine that is used as the central policy manager and business rule management system.

KeyLines—a powerful network virtualization toolkit which, along with Angular 5 (a comprehensive JavaScript framework), is used to create an interactive presentation of network and service topology, service assurance support, search capabilities, monitoring and insights.

Result: the open-source approach slashes operating costs and reduces time to market

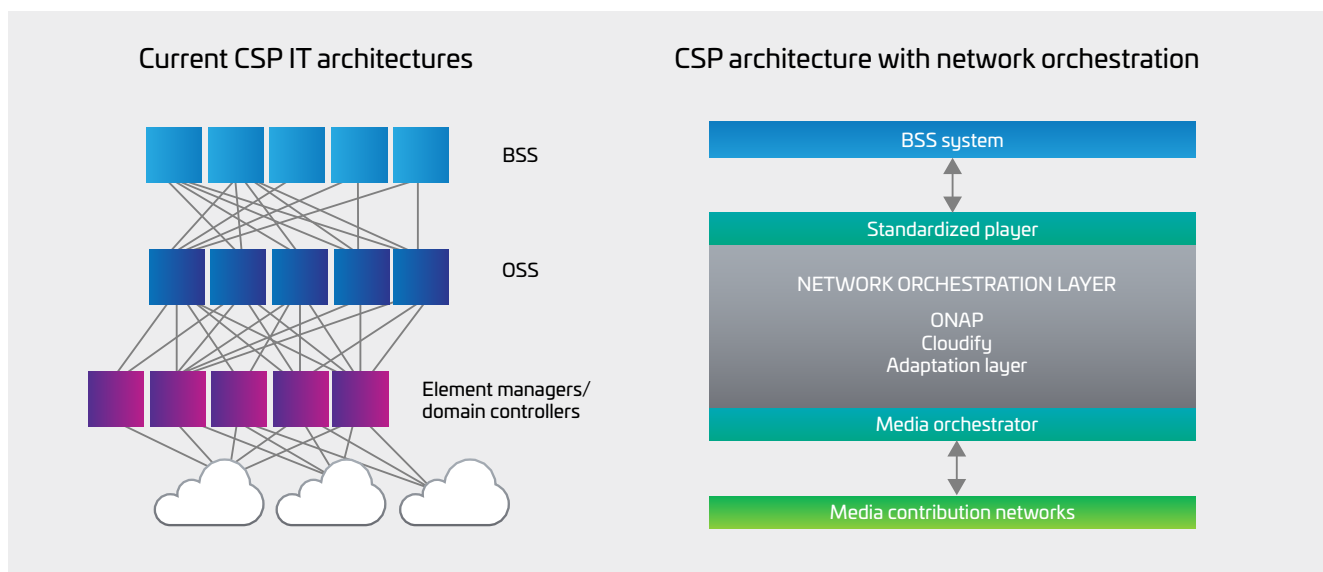
The service provider's contribution networks no longer interface with BSS systems through a tangle of convoluted connections. By abstracting the complexity of the network using an orchestration layer and standard APIs, CommScope has greatly simplified the topology. Now the engineering and architecture teams can present a complex network to the BSS layer in a simple way that vastly reduces manual interactions for tasks such as network activation. Orchestration has removed the "swivel chair" factor for operators who no longer have to interact manually with multiple networks; instead, they engage at the BSS level only while the orchestrator composes what has to happen at the network level.

Self-service "catalogs" of modular building blocks are a feature of the new design. Now network resources such as switches and gateways can be abstracted as catalog items. The network-level catalog is exposed to the business layer to be used by product designers to create media, wireless, VPN, security and other products. The service provider can, in turn, use these product catalogs to create services at the consumer level.

CommScope has developed an orchestration framework that will take the customer into the future. The service provider's media business unit has led the way in proving the efficacy of an open-source orchestration framework and open standards sufficiently hardened to handle real-world production environments (including failure proofing, backup and restore). The company has hailed its media business unit for spearheading the effort to digitize its networks and IT stacks to create a future-proof and compliant business.

The time for this transformation is perfect. Multiple drivers—ranging from Representational State Transfer (REST) APIs to cloud assets, NFV, SDN and others—have come together to make network orchestration an important infrastructural streamliner for CSPs, using ONAP as the "glue." With expertise and leadership from CommScope, the service provider is now positioned to evolve its delivery of new services to exploit the power of the open-source approach, while maintaining integrations with legacy platforms that still—for now—generate the majority of revenue.

The service provider plans to expand the orchestration framework beyond its media domain to other business units, paving an agile path for creating and launching services more quickly on a modernized network infrastructure.



Current CSP Architecture vs. CSP Architecture with Network Orchestration



CommScope—Problem solved

For CSPs such as the one referenced here, CommScope is helping to rewrite the future. With our long-term global perspective and customer commitment, we are developing the solutions and strategies that enable our customers to adapt to the increasing complexities of network ownership. We help keep them agile, efficient and ready for whatever is next.

For more information on how the CommScope Professional Services team can help simplify your network to accelerate time to market [visit our website](#) or contact your account manager or channel partner.

CommScope pushes the boundaries of communications technology with game-changing ideas and groundbreaking discoveries that spark profound human achievement. We collaborate with our customers and partners to design, create and build the world's most advanced networks. It's our passion and commitment to identify the next opportunity and realize a better tomorrow. Discover more at commscope.com.

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