

Best Practices for Service Agility: Embrace Orchestration



Digital business transformation is disrupting businesses in every industry. This creates tremendous opportunities for service providers across the world. No industry will remain untouched by the ubiquitous connectivity of devices, processes, and people. But your networks are encountering major challenges, as they address these opportunities, while simultaneously meeting market demands for more mobile, social, and visual offerings – as well as rich media applications that demand higher performance. Among the most significant challenges is a lack of service agility.

This challenge starts with a cumbersome lifecycle, with slow service creation, modification, and end of life. These processes, in turn, affect business agility, hurting competitiveness and the bottom line. By being faster-moving and more nimble, you can turn this situation around into a crucial competitive advantage.

Three current industry initiatives promise to greatly improve the agility and speed with which you can provide your services and deliver many other benefits:

- The increased programmability between applications and networks, achieved through software defined networking ([SDN](#))
- The transformation of network architectures and operations through Network Functions Virtualization ([NFV](#)), which can achieve dynamic, elastic, and adaptable infrastructures
- The availability of software development ecosystems for broader participation, using open source and simpler open APIs to achieve faster innovation

When these capabilities are combined, they offer you a path to more dynamic, agile networks. But a successful move to greater agility requires best practices for deploying and using these new tools. Without these practices, the complexity and scale of your environment will impede progress toward greater agility.

Creating an Abstraction Layer for Control and Operations

Effective abstraction models are essential. They are used by automated systems to simplify and speed service creation and delivery. The Internet is based on abstraction models used by network layers and protocols that have allowed network Layers 1 to 7 to evolve independently.

It is a great example of abstraction in the transport and data-forwarding plane. But the control and operational layers are a different story. Suitable abstraction techniques have not been developed in the control layers of service networks until recently, and they still need to gain significant traction across the industry.

Abstraction can simplify service creation and management, which can significantly lower operational costs. When abstraction techniques are extended throughout a highly modular networking environment (for example by the use of NFV), the interaction between every relevant component can be easily and dynamically orchestrated. This results in greater service agility. This is the promise of SDN and NFV. But to achieve a truly agile, dynamic service environment, you will also need an open environment that opens up service creation to an innovative partner ecosystem.

Managing the Services Infrastructure with Orchestration

As your network evolves through modularity and abstraction toward a more services-oriented infrastructure, it needs to be managed in a new way. The industry's current focus is on service orchestration and automation. An effective orchestration solution must encompass the entire services infrastructure, not just data center environments. Many functions are located in centralized data centers and they must be orchestrated as part of various service offers supporting different applications. Other functions are distributed throughout the WAN, data center interconnects, in central offices, and in CPE. Data center orchestration has received a lot of attention, but WAN, access, and mobile packet core orchestration are also critical, because they are responsible for much of the rigidity and operational expense in your networks.

If orchestration systems cannot manage across your full infrastructure and services, overall service-agility improvement will be lessened. For example, without broad orchestration across data centers, the WAN, and other network elements involved in a service, something as basic as connecting two cities with multiple data centers in each is likely to result in higher-than-necessary costs. The reasons for the extra expense will include complexity, low utilization, and potential resilience problems, no matter how well each data center is orchestrated. The orchestration system must understand the service, the actions and resources in all data centers, and the current state of the WAN, along with how it can be rearranged to support the service.

The newest orchestrators automate the engineering and operations of multivendor physical and virtual infrastructure. They abstract the infrastructure and make it more open and programmable. This approach provides a consistent operational experience for optimizing and deploying innovative new services. These orchestrators allow you, your customers, and third-party partners to write and develop applications that build on network services to allow new user experiences.

One example of a network service is bandwidth scheduling. It provides visibility and reserves network resources over time, allowing greater ROI for new services. Applications that may take advantage of these capabilities include data center recovery (either on-demand or calendared), video streaming, and virtual private or hybrid cloud service migration.

It is time to rethink how services infrastructures are managed, given the huge projected scale of business digitalization, componentization through NFV, wider participation by more developers using open source, and applications-to-network interaction offered by SDN. Physical and virtual resources must be managed effectively together. Many legacy operation support systems (OSSs) and business support systems (BSSs) will need to be re-engineered or completely overhauled for the new services infrastructures. Managing all the services components and putting network functions together in the correct manner with very large-scale and excellent performance has become a paramount issue.

The key attributes of cross-domain orchestration include highly automated provisioning in real-time, or near real-time, across all service and network domains end-to-end, both virtual and physical. Automated provisioning allocates resources as needed to allow highly efficient services, to scale up as demand increases, and to scale down and release resources when demand decreases. Good orchestration systems will hide complex details from applications. They take care of whatever is needed to deliver a particular application or service quickly, efficiently, and cost effectively.

For More Information

- [Automating the WAN](#)
- [Automate Innovative Network Services](#)
- [Automating a New Class of Carrier Cloud](#)
- [Network Virtualization and Automation Solutions](#)
- [SDN for Service Providers](#)
- [Network Functions Virtualization](#)