Digital Cohesion

Will Service Providers Play a Supporting or a Starring Role?

Table of Contents

Executive Summary

We are entering a new era, where powerful technologies seamlessly combine to make our lives more convenient and rewarding. In this era of Digital Cohesion, users will no longer request and interact directly with individual services. Instead, mega-services, based on our behavior and requirements, will be self-assembled on the fly.

For this to happen, networks will have to meet new standards for performance, interoperability, economics, and trust—all particularly important to service providers. While there is no doubt this will lead to disruption, it will also provide new opportunities.

Introduction

From the smartwatch that reminds us to exercise to the controller that allows us to remotely turn on the lights in our homes, technology is changing the way we live. Applications help us stay in touch, navigate unfamiliar territory, manage our time, monitor our health, learn new skills, and explore the world in ways that were impossible only a few years ago.

The pace of change is showing no signs of slowing; if anything, it is increasing, ushering in a new era that we call Digital Cohesion. Today we download and interact with applications on our phones and tablets. In Juniper's vision of Digital Cohesion, this won't be necessary; instead, applications will connect and self-assemble on the fly, delivering compelling mega-services that meet our immediate needs and enhance our lives. Technology will work in the background, automatically and continuously adapting to how we behave. Mundane tasks and decision making will be eliminated, freeing up that most valuable of resources: time.

For example, imagine the benefits of a mega-service that connects multiple micro applications like bracelets that measure your body's vital functions, medical records, fitness logs, calendars, and food sensors, all working together to enhance your health and avoid chronic illnesses.

A New Level of Network Innovation

Achieving Digital Cohesion will require a new level of network innovation—a Cloud-Grade Network (see sidebar). Four key factors—performance, interoperability, economics, and trust—will be particularly important to service providers, but will apply equally to anyone who wants to bring this vision to life.

Improving performance with the latest silicon developments and scale-out architectures will be essential to address the increasing number of use cases. The challenge will be to enable this capability without increasing complexity.

Interoperability has always been a critical requirement, but it becomes even more important with Digital Cohesion. Applications will need to spontaneously connect, exchange data, and trust each other; therefore, openness will be required at every network layer.

Cloud-Grade Networking from Juniper Networks

Cloud-Grade Networking enables service providers to meet the demand for new applications and personalized cloud services. Combining carrier-grade reach and reliability with enterprise-grade control and usability, Cloud-Grade Networking introduces a new set of principles for the way applications and services are architected, managed, delivered, and secured:

- **Platform First:** Networks and all of their components are extensible platforms that allow organizations to build unique services and applications across hardware, software, network functions, and the cloud.

- **Software-Defined Secure Network**: Protecting people, data, and infrastructure, SDSN includes pervasive detection and enforcement so that every IT component becomes an integral part of the security umbrella.

- **The Self-Driving Network™**: Autonomy happens when telemetry, workflow automation, DevOps, and machine learning are combined to create a network infrastructure that's responsive and predictive.

- **Everywhere Networking**: With disaggregation of the networking technology stack, applications can run in any cloud, cloud workloads can run on any device, and software can run on any hardware.

Getting the economics right will require focusing attention in two areas. First, most resources today are dedicated to maintaining legacy systems—just keeping the lights on. Automation will free up resources to focus on more strategic tasks, resulting in faster, less error prone services; a more predictive and adaptive network; and more efficient use of capital expenditure. At Juniper, we call this automated system The Self-Driving Network™.

Second, the use of existing cloud platforms will allow the rapid deployment of architecture and new services, paid for with operating expense rather than capital expense.

Trust will be another key requirement. Users need to know that their data is secure and cannot be modified. Consequently, security must be intelligent and built into every network element to defend against threats both inside and outside the network.

Service Provider Opportunities

So what does the Digital Cohesion vision mean for service providers? It clearly means disruption, but at the same time, it also opens up three important opportunities.

Mega-Services Infrastructure Provider

Service providers initially differentiated themselves with voice, SMS, and enterprise circuits. However, as these offerings became commodities, service providers looked to IP-VPN, Internet connectivity, and IP Multimedia Subsystem (IMS)-type services to distinguish themselves. More recently, SD-WAN, centralized cloud platforms, and on-demand services have become key differentiators.

Mega-services, on the other hand, have performance, interoperability, economic, and trust requirements that cannot be met with a centralized model. The distributed infrastructure employed by service providers today leaves them well positioned to satisfy these requirements and provide services that can be sold to cloud providers and consumers alike. To be truly competitive, however, service providers must make it easy and economical for customers by offering open, fully automated, on-demand solutions.

Digital Service Provider

While service providers may not be able to track consumers' likes and dislikes the same way Facebook and Google can, they still possess a lot of valuable data about consumers. They have offline data such as addresses and telephone numbers, billing and usage information, and details about how consumers are spending. In addition, they have a wealth of information about consumers' browsing habits and movements. By combining this data and making it anonymous—and/or obtaining customer approval to use it—service providers can create an asset that is invaluable to many organizations, including retailers, consumer goods companies, restaurateurs, and publishers. As a result, the data can be used to deliver exciting innovations that enhance the customer experience and create new revenue streams.

For example, many service providers offer Wi-Fi in public spaces such as malls. The ability to combine this technology with customer information puts them in the perfect position to know who is in the mall and which websites they are visiting. Service providers can share this information with businesses, who can then adjust their prices in real time through the use of coupons or electronic smart-labels to attract new business, ensuring a more pleasant shopping experience for customers and greater benefits for the stores.

Mega-Services Provider

When it comes to creating mega-services, service providers are limited only by their imagination. While the following may not truly be mega-services in the traditional sense, they are good examples of how service providers can take their services to the next level.

For instance, imagine a world where service providers can rapidly replace, augment, or modify infrastructure to deal with situations such as heavy traffic, adverse weather conditions, public events, natural disasters, or emergencies. Self-driving cars could be deployed as mobile autonomous 5G base stations in areas experiencing a power failure, or to regulate traffic lights based on traffic flow.

Suppose service providers could proactively identify low performing applications in the enterprise network and boost their performance. Problems such as office Wi-Fi coverage, peering issues, bandwidth limitations, or user saturation issues could be remedied by fixing peering issues, adding bandwidth on demand, deploying WAN acceleration, or proactively installing additional Wi-Fi access points. The result: higher customer satisfaction and increased brand value.

The Journey to Digital Cohesion

Which of these options a service provider chooses will depend on the organization's strategic objectives. However, all three will require at least some transformational change on the part of organizations. Standing still is not an option.
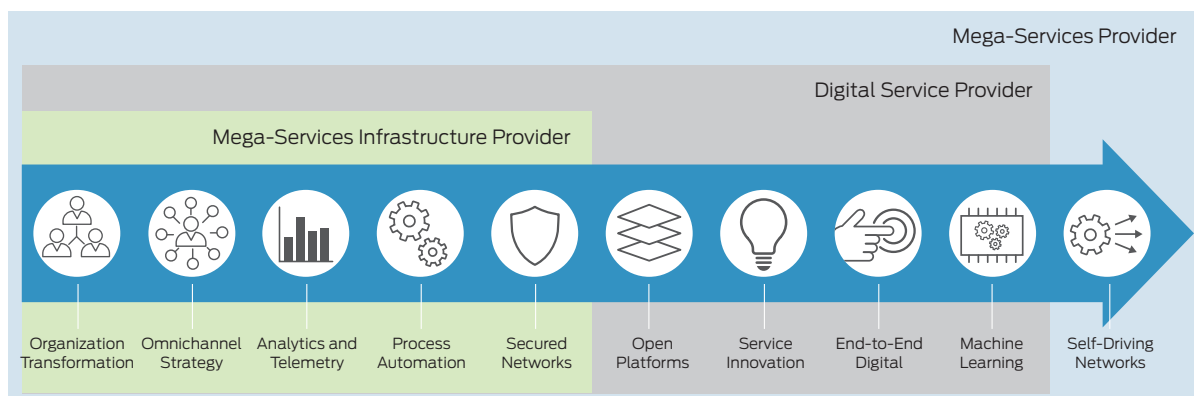

Figure 1: Three stages of digital readiness

Figure 1 shows the stages service providers will need to undergo on their journey to Digital Cohesion. While mega-services are not here yet, service providers can take steps now to prepare their organization for the coming era. The beauty of doing so is that, as they ready their networks for Digital Cohesion, service providers will add incremental benefits at each stage.

Stage 1—Mega-Services Infrastructure Provider

The first thing service providers must do is build the foundation for delivering mega-services, including:

- **Organizational transformation:** Changing roles and responsibilities to create new revenue opportunities by delivering new applications and rolling out new services faster.
- **Omnichannel services:** Building loyalty and advocacy by offering engaging customer experiences that are consistent across the Web, applications, call centers, and physical and online stores.
- **Process automation:** Embedding automation into the network, making it more cost-effective and agile, reducing human errors, and freeing up resources for innovation.
- **Analytics and telemetry:** Using analytics and telemetry data to make more informed decisions about network planning, optimization, and troubleshooting in order to deliver high-quality services.
- **Secured network:** Building customer trust by building automated remediation, real-time intelligence, and machine learning into every network element in order to defend people, data, and infrastructure.

Stage 2—Digital Service Provider

Next, service providers must develop the ability to rapidly innovate new services in response to customer needs:

- **Open platforms:** Avoiding expensive vendor lock-in with an open architecture that interoperates with a wide range of compute, storage, and networking hardware, virtualization schemes, and cloud applications, enabling the network to grow and evolve over time.
- **Service innovation:** Using virtualization and software-defined networking to quickly deliver customized user experiences anywhere they are needed in the network at far lower costs.
- **End-to-end digital:** Combining omnichannel services with automated back-end processes to maximize agility and respond quickly to market demands.
- **Machine learning:** Using algorithms to open up new opportunities to monetize data and add value for customers in ways that are not possible with traditional networking.

Stage 3—Mega-Services Provider

In the final stage, service providers must establish a highly efficient, predictive, and adaptive self-driving network that can deliver mega-services directly to businesses and consumers. The Self-Driving Network is programmed to independently carry out a service provider's intentions, eliminating the complex programming and management tasks currently required to run the network.

The Self-Driving Network will self-configure, monitor, manage, correct, defend, and analyze—all with little human interaction. The Self-Driving Network will also predict performance issues before users are affected.

In these ways, The Self-Driving Network will eliminate burdensome operational tasks and free IT staff to innovate. Operating costs will drop; security, reliability, and resiliency will improve; and the speed of business will accelerate.

Conclusion

Technology has brought about fundamental changes to how we live our lives—and there's more to come. New mega-services, brought about by Juniper's vision of Digital Cohesion, will provide key opportunities for service providers to play a supporting or a starring role.

Whichever opportunity service providers decide to pursue, network innovations will be required to deliver differentiated services to businesses and consumers. At Juniper, we offer solutions that can help—regardless of the direction service providers choose to go.

To discuss your Digital Cohesion future, please contact Juniper Networks at www.juniper.net/us/en/contact-us/ or visit www.juniper.net/us/en/dm/digital-cohesion/.

About Juniper Networks

Juniper Networks challenges the status quo with products, solutions and services that transform the economics of networking. Our team co-innovates with customers and partners to deliver automated, scalable and secure networks with agility, performance and value. Additional information can be found at Juniper Networks or connect with Juniper on Twitter and Facebook.

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2000673-001-EN   Aug 2017