Drive Business Innovation in Financial Services with a Service-Aware Network

Agile networks enable financial services to capture the next wave of growth
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Executive Summary
The digital age has arrived, and financial firms are embracing this change to make faster and more informed decisions, deliver exceptional service to clients, and capture new growth opportunities. Banks are modernizing the way they deliver services, engaging customers with personalized services, and increasing back-office efficiency by fully digitizing business processes while grappling with a challenging regulatory environment. Insurance firms are engaging today's tech-savvy customers with mobile apps and using risk analytics to reveal valuable insights that can increase profitability. Firms are making faster, smarter, and better investment decisions based on the most current market data, social media, and sentiment analysis. Exchanges and market data providers are focused on shaving off every millisecond and microsecond in the face of unprecedented data volumes. All of these imperatives are creating a call for more agile networks, as well as challenging the underlying assumptions of how networks are built and delivered.

Introduction: A Call for a More Agile Network
In an era when customers and business managers expect everything instantly, having IT systems that can adapt at the speed of the market—and turn on new services or applications with the click of a button—is critical. But many financial firms are finding that their IT infrastructures are lagging behind, making them an impediment to moving quickly in an always-on world. Proprietary and obsolete hardware limits innovation and drives up operational costs. Deploying new revenue-generating services, swiftly capitalizing on new opportunities, or meeting peak performance demands simply can’t depend on a series of complicated and manual changes to IT systems and infrastructure.

Yet, in many data centers today, configuring the network for new applications and services takes days or even weeks. In today’s lightning-fast market, business applications can’t wait for the network. The network needs to be there, automatically and instantaneously, for every application. The network must become aware of the services it delivers and adapt dynamically to changes. These requirements are changing the fundamental assumptions of how networks are built and delivered.

Financial services firms must shed their legacy approach to IT, proprietary systems, and rigid processes. They need to build an agile, service-aware IT infrastructure that allows the business to readily embrace new mobile apps, big data analytics, data-driven decision making, and cloud services in all of its forms. Adapting quickly can bring success, while failure to evolve rapidly can lead to unhappy customers and lost opportunities.

Having a robust and well architected communications network is key to the business agility that organizations need to succeed in a digital economy. In a service-aware network, automation and orchestration tools streamline operations; big-data style analytics automatically adjust network service levels; and the business can innovate and create customer-facing services rapidly while mitigating risk and lowering operational costs.

Build a Scalable, Service-Aware Network
Agility is essential to capturing the next wave of growth in financial services. Firms may serve millions of customers, and the difference between profits and loss can be measured in a split second. To accelerate the deployment and operation of revenue-generating products and services, firms need scalable, service-aware networks powering their data centers and cloud services.

A service-aware network is the foundation of business agility. IT services are flexible and available instantly when needed. Workloads move fluidly within and across data centers as demand for data and applications changes. IT can use private clouds, public clouds, or hybrid clouds as business needs dictate—and without compromise. Network changes are automated through software, instead of the IT staff’s painstaking manual labor. It’s all about flexibility on demand.

A service-aware network starts with a simple, open, and smart architecture. By simplifying the network architecture and how it gets managed, the network needs fewer devices and fewer layers and can react to needs quickly, securely, and accurately. An open network gives IT greater flexibility to add new applications and services as the business evolves. And it’s less expensive to buy and operate than a proprietary network.

Virtualizing the network is critical to delivering higher levels of service agility and innovation. Software-defined networking (SDN) and Network Functions Virtualization (NFV) reorganize the network into multiple layers—an IP-based underlay infrastructure with virtual networks overlaid on top. Virtualizing the network facilitates better resource management, orchestration, and service enablement. Businesses can readily deploy network resources to adapt to changing workloads as well as embrace shared IT models such as cloud and platform services.
The choice of network topology is critical to the ability to deploy new applications and services simply and cheaply. IT needs the freedom to choose the right network fabric for the application, whether using an IP Clos architecture for the very largest data centers; a spine-and-leaf architecture for high performance and low latency in midsize and large data centers; or a single control plane for smaller data centers. This enables IT to evolve their data centers as future requirements emerge and as business changes. For maximum investment protection, data center switches should support multiple fabric architectures and different deployment scenarios.

Businesses need to make decisions faster than ever. Having fast networks—40 Gbps, 100 Gbps, and beyond—is table stakes. For real-time applications where ultra-low-latency is critical, firms can take advantage of switches that integrate powerful compute resources and customizable logic directly into the switching infrastructure. Compute-integrated networking can deliver a competitive edge when scaling the performance of real-time, mission-critical applications such as market data feeds, social media feeds, order execution routing, big data analytics, and transaction timestamps.

Streamline Operations with DevOps, Automation, and Orchestration

Leading companies are turning to DevOps, network automation, and service orchestration to streamline operations and deliver IT services dynamically and cost effectively.

DevOps allows companies to move swiftly and boldly, while reliably delivering services to millions and even billions of users. DevOps changes the relationship between software development and IT operations teams, transforming it into a collaborative partnership that breaks down traditional silos. Ongoing improvements in real time are becoming the norm, rather than long-term, standalone IT projects. DevOps was once the domain of Internet companies, but it is increasingly being embraced in financial services.

By adopting more agile operating practices and speeding up software release cycles, firms can actually deploy new code more frequently but with less risk. They can fix problems faster without disrupting the business, and this allows firms to launch new digital products faster and respond more quickly to market opportunities.

Automation makes it possible to dynamically align data center resources with the business and application needs. Automation takes human interaction out of the workflow and increases the repeatability of tasks while eliminating the possibility of manual errors and outages. IT staff is freed from repetitive and mundane network tasks, allowing them to focus their resources on projects that deliver greater business value.

Automation requires a shift in the traditional IT mindset of rack, stack, and command-line control to set up or reconfigure network devices, as zero touch provisioning (ZTP) becomes the norm. A good starting point is to automate common support tasks and common configurations, but it’s also a good opportunity to optimize and standardize IT processes and create a new framework that will service IT and the business in the digital age. IT can embrace common open-source tools for scripting and automation.

As firms see success with automation, they progress to service orchestration. Orchestration builds on automation, but encompasses multiple workflows, so that entire business workflows can be orchestrated from end to end, increasing efficiency and driving greater value.

With the agility and efficiency created by automation and orchestration, firms can bring new revenue-generating services to market faster through automated service fulfillment, service assurance, and capacity management processes. The end result is a better user experience, which drives business benefits like customer satisfaction, employee productivity, and greater customer advantage.

Use Network Analytics to Improve Visibility

Big-data style network analytics are essential for virtualized data centers. IT must have insight into the network’s performance to ensure service quality, monitor services, troubleshoot, plan for capacity changes, and bill and charge back to customers and business units.

But applications and workloads are moving dynamically across servers in the same data center or even across data centers. As they move, the underlying network reconfigures on the fly; the network topology is no longer static. In an overlay network, the physical switches, routers, and other devices no longer serve as the anchor points to collect network metrics and observe traffic flows. That means IT lacks the visibility into virtual systems and networks that it had with physical systems.
How IT gains that visibility is changing. The performance metrics must follow the workloads wherever they go and keep pace with any changes in the environment. That means the overlay network must be correlated with the events and performance data of the underlay, compute, application, and storage infrastructures. By aggregating and analyzing this data, it’s possible to create a complete picture of the network. Analytics are key to monitoring operational status, performance monitoring, and troubleshooting, as well as gaining insight into customer behaviors and optimizing workflow.

With coordinated, end-to-end data collection, analysis, correlation, and visualization, IT can understand how workloads and applications behave across physical and virtual infrastructures. IT can identify performance hotspots and monitor microburst and latency details to maximize network reliability for mission-critical applications.

The end result of network analytics is a real-time operational view that can be used to optimize the business.

**Manage Security and Risk**

Service agility is an imperative, but so is mitigating risk. The financial services sector is under unprecedented attack from cybercriminals intent on stealing sensitive data and committing fraud. A data breach can have implications that extend beyond a single company to impact the entire financial marketplace. At the same time, with more regulatory requirements than ever, financial services firms face the challenge of implementation and compliance but also creating a culture that balances risk with growth.

Firms must continue to strengthen their defenses to protect their sensitive data, brands, and bottom lines—and even their firm’s survival. Financial firms are shifting toward predictive capabilities as well as bolstering their defensive capabilities to protect their business-critical infrastructure. Firms must have multilayered, advanced security protection for their physical and virtual environments, and be able to ensure that even as workloads and users move, security and other policies are enforced. When IT has greater insight and control over the network, attacks can be stopped before they do lasting damage.

**A Strong Partner in Your Digital Transformation**

Juniper Networks works with leading companies around the world to increase the service agility of their networks. With simple, open, and smart networks, financial services firms can bring innovative new services to market faster and at lower costs. They can leverage Juniper’s expertise, experience, and partner ecosystem to build agile, service-aware networks.

Juniper is a leader in high-performance, highly reliable routing, switching, and security, with solutions deployed in some of the most complex networks in the world across banking, capital markets, and insurance providers. A broad ecosystem of solution, services, delivery, and consulting partners can provide businesses with a complete offering that enables innovation.

**Conclusion**

A service-aware network provides financial services firms with an agile infrastructure to identify new market opportunities, attract and retain customers with differentiated services, and respond to a broad array of competitive and industry challenges. Adopting new technologies and processes, like a service-aware network and DevOps, can help firms improve performance, lower costs, and build a foundation that will remain flexible and agile into the future.

**About Juniper Networks**

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at [www.juniper.net](http://www.juniper.net).