NOKIA

Adaptive IT solutions for agile financial services

Unleash more value for your customers

Customers want access to fast and transparent financial services anytime, anywhere, on any device. What does that mean for you?

It means you need a flexible infrastructure to securely and seamlessly connect your branches and data centers — no matter how distributed they are. It means you need to develop and launch new apps and services at lightning speed, and put best-of-breed communication and collaboration tools in the hands of your employees and customers.

And of course you need to do all of this while meeting strict regulatory and privacy requirements and keeping costs under control.

The agility to deliver

Nokia can provide your financial services organization with an efficient, cost-effective infrastructure that adapts to emerging IT needs, business opportunities and shifting user demands. Leveraging our proven software-defined networking (SDN) and open communications and collaboration platforms, you can create and deliver private cloud-based services that allow your organization to:

- Support explosive growth in digital financial transactions

- Rapidly develop and deploy applications that better connect you to customers and partners

- Quickly adapt and transform the user experience through new web-based services and mobile applications

- Build multilayer security that defeats hackers, prevents mistakes, tracks every change, and enables flexible reporting

- Choose the technologies that best meet your needs and price points, regardless of vendor

- Quickly modernize data centers and connect branch offices without massive physical infrastructure changes

- Change compliance verification from an arduous task to a reporting option

Implement even the most ambitious global service without scalability or performance concerns.

A platform for digital growth

Nokia has helped many large financial services institutions support their global business and handle explosive growth in financial transactions on digital devices with state-of-the-art private and hybrid cloud environments. Our open, multi-vendor approach is a good fit with the strategies of innovative financial services to work with open platforms.

At the heart of our solution is the Nokia Nuage Networks Virtualized Services Platform (VSP). The Nuage Networks VSP is an adaptable software-defined networking (SDN) solution with a well-designed API that enables easy integration with a digital bank's own systems. It delivers policy-driven network automation and virtualization along with flexible scalability and programmability to handle global scale digital workloads and customer demand..

"At BBVA, we carry critical financial information in our data centers and across our network. To meet demand from our growing number of digital customers, and ensure the most effective handling of critical financial information, we looked to Nuage Networks to eliminate static network provisioning models, automate our network and increase flexibility across our hybrid cloud environment."

Pascual de Juan, Global Head of Innovation, BBVA Digital Bank

Beyond traditional financial services

Enable digital banking anytime, anywhere

Financial institutions require new ways of creating value — and new approaches to conducting digital business. Innovation is central to providing a flexible, convenient customer experience that builds loyalty and grows your customer base. Nokia helps financial institutions embrace innovation and reap the rewards of digital banking:

- **Respond faster to opportunity and change:** Our Nuage Networks Virtualized Services Platform (VSP) gives your application designers the capability to request the right network resource without having to be a network administrator. Network administrators can set up application templates that safely and efficiently provide "guide rails" for application designers — and eliminate administrative drudgery.

- **Streamline control of your data center network:** The Nuage Networks VSP delivers the best of both worlds — a single centralized policy for efficiency and intelligent execution at the endpoint — to simplify operations and reduce costs throughout your network. You can deploy best-of-breed technologies that best meet your needs, regardless of vendor, without replacing the existing hardware in your data center or WAN.

Expand your options by leveraging virtualized and non-virtualized (bare metal) resources without limit.

- **Ensure business continuity:** Nokia's highly automated Data Center Interconnect (DCI) solutions protect your data — and your customers' data — by ensuring business continuity and disaster recovery. At the same time, our DCI solutions let you turn up connectivity faster, with better asset utilization and cost control. Scalable, real-time, low-latency encryption ensures security and regulatory compliance.

- **Provide a new communications and collaboration experience:** Our powerful, private cloud-based communications engine, Rapport™ for Enterprise, lets you adopt an app-first

approach and embed communications into your new web-based services and mobile applications — while keeping telecom network costs under control. Rapport for Enterprise breaks vendor lock-in and decouples your apps from the communications backend, with seamless interoperability across vendor technologies.

- **Achieve transaction-ready speeds:** In financial services transactions, a millisecond can make a million-dollar difference. Our integrated IP and optical solutions provide high-performance, low-latency connectivity at speeds up to 400 Gbps. We provide a best-in-class foundation that exceeds throughput and reliability demands of typical IT systems.

> "With its Virtualized Network Services (VNS), Nuage Networks offers enterprises a new operational model for delivering and consuming cloud services consistently from private and public data centers to their branch locations and distributed users. Within this context, a comprehensive application-centric policy framework can significantly simplify today's complex networking workflows, deliver greater agility, and result in compelling OPEX savings."
>
> Brad Casemore. IDC

Establish next-generation branches

Branches are expensive to operate and maintain, and yet continue to provide a valuable touchpoint with customers. Nokia technologies let you supercharge your WAN and connect your branches cost-effectively with a network that supports innovative new services while making maintenance and upgrades easy:

- **Connect securely and seamlessly:** Adaptive, programmable and open, Nuage Networks Virtualized Network Services (VNS) connect your branch locations with full visibility for management and control. The Nuage VNS gives you secure access to applications and data so you can deliver the reliability and performance that daily business demands, adopt new business models, and achieve policy-driven outcomes. It also connects your remote locations to the data center without expensive and cumbersome proprietary hardware. With the Nuage VNS you can mix and match available networks from multiple providers and use any available access technologies.

- **Deploy next-generation communications and collaboration services:** Rapport for Enterprise delivers communication services throughout your enterprise, adaptable to the needs of your business within any branch or line-of-business application. Our open ecosystem and APIs free you to choose the technologies that meet your requirements no matter what soft client, desk phone, app or PBX is being used. As well, we make it easy to roll out and modify apps quickly and securely to meet user expectations. From remote-assistance ATMs to in-branch video consultation services, Nokia lets you seize emerging opportunities to keep your customers satisfied.
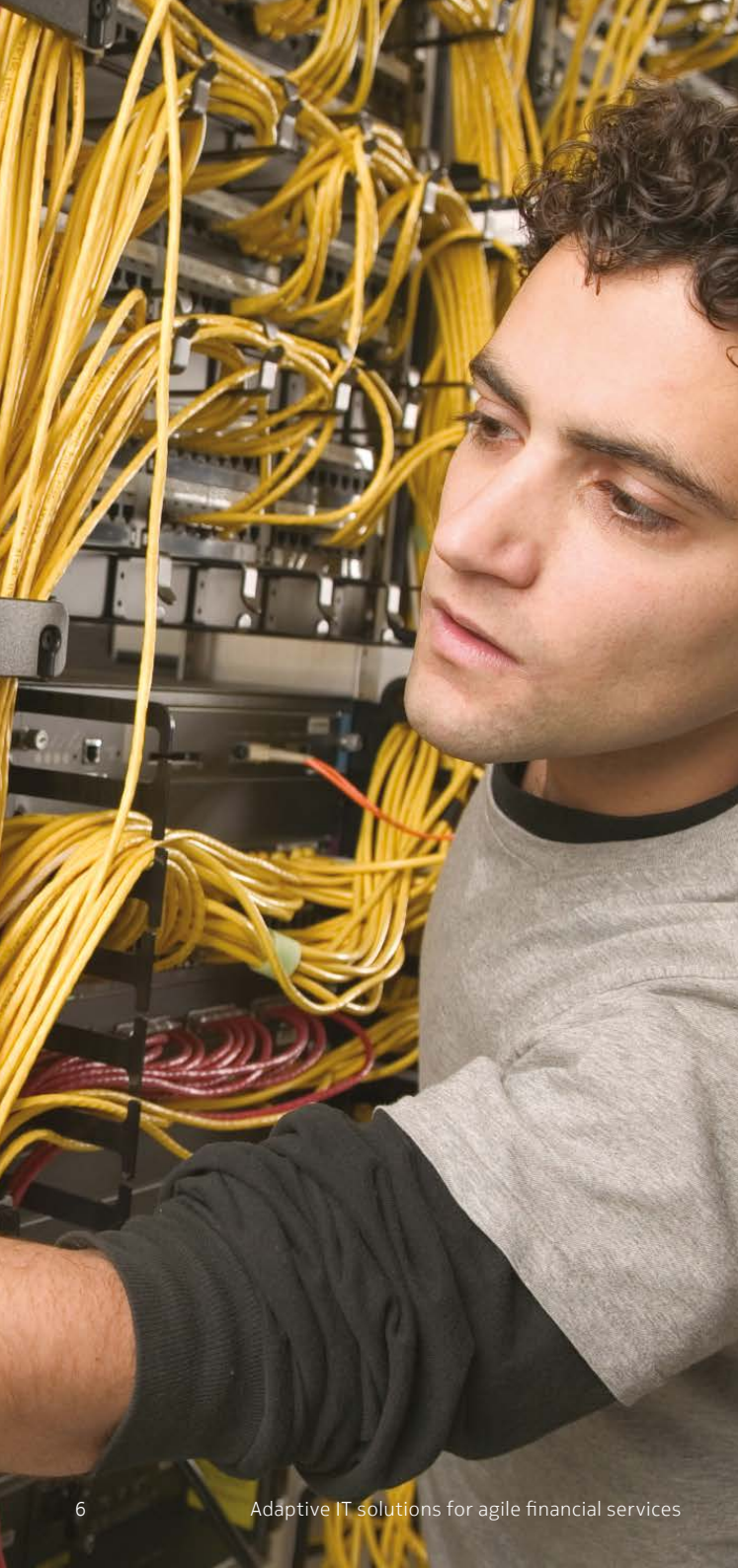
Transform your network

You need a robust, secure network to support your daily operations and allow information to be shared and accessed across a large number of sites — nationally or globally. Nokia can help you:

- **Optimize your IT resources:** The Nuage Networks VSP is a software-defined networking (SDN) approach that extends the life of existing IT assets, minimizing CapEx. It also lowers OpEx by streamlining operations via the automated execution of intelligent policies defined by the networking team. From the physical network perspective, we also provide highly integrated IP and optical solutions that ensure available resources are used and shared efficiently.

- **Enable highly reliable business continuity and disaster recovery:** Our DCI solutions provide scalable, secure data center connectivity for all your daily business needs. Synchronous DCI securely mirrors or replicates business-critical data across sites in real time for robust business continuity and disaster recovery. Latency optimization ensures DCI applications can be fine-tuned depending on the distance between sites.

- **Ensure security and compliance:** Protect your organization with the policy-based approach of our Nuage Networks VSP, which enforces security for virtual machines, Linux Containers, applications and bare metal (non-virtualized) resources at the network's first connection point — impeding hackers' ability to penetrate the data center. With tracking and reporting of every network event requiring a security response, auditing and compliance are a breeze.

- **Protect confidential data:**
  We safeguard your IP network from distributed denial of service (DDoS) and other forms of attack so your customers' private data stays safe. Our optical security measures include AES 256 bit hardware encryption that adds less than 20 nanoseconds of latency, and a secure and scalable key management tool that manages encryption keys independently of the network management system. Optical intrusion detection continuously monitors optical links for unauthorized optical fiber tapping.

- **Leverage advanced IP routing and optical transport:**
  Our integrated IP and optical portfolio allows you to implement advanced enterprise networking that handles unpredictable traffic with agility and control. The portfolio includes our 7750 Service Router for multiservice IP, 1830 Photonic Service Switch for next-generation WDM multiservice transport, and the 5620 Service Aware Manager (SAM) for unified IP and Optical management with enhanced network visibility and operational control.

Trusted. Simplified. Adaptable.

Nokia has delivered open, scalable infrastructures to customers around the world for years.

We combine our knowledge and expertise with leading IP and optical solutions, innovative communications frameworks and the dynamic Nuage Networks SDN platform to meet financial institutions' most demanding requirements. Let us help you evolve to a trusted, simpler, more adaptable infrastructure that meets your need for speed, performance and capacity.

- **Data center network automation:** Our Nuage Networks Virtualized Services Platform (VSP) delivers software-defined networking (SDN) capabilities including centralized, policy-driven networking, simplified configuration and automation to ensure compliance and enable optimal use of your IT resources. With support for cloud platforms such as OpenStack, CloudStack and for all major hypervisors, the VSP lays the foundation for an open, dynamically controlled data center network.

- **Virtualized network services:** We leverage SDN technologies from Nuage Networks to create a WAN that unleashes the power of the cloud, letting you choose the technologies that best suit your needs — regardless of vendor — and seamlessly connect remote branch locations with your data center without expensive proprietary hardware.

- **Enterprise IP communications:** Rapport for Enterprise, our private cloud-based communications engine, allows you to quickly adapt your user experience with new web-based services and mobile applications while capping your costly telecom network silos.

- **Data center interconnect:** Our highly automated Data Center Interconnect (DCI) solutions deliver the flexibility and capacity for faster service turn-up and assured business continuity while improving asset utilization and lowering costs. You can enjoy scalable, secure, high-performing, multi-site data center connectivity for the cloud era, giving users anytime, anywhere, any-device access to business-critical data.

- **IP routing and optical transport:** Building on our history of innovation in IP and optical technologies, our full suite of products provide a best-in-class foundation that can deliver throughput and reliability demands that exceed the capabilities of typical IT systems, enabling you to scale your network and seize the power of the cloud.

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For more information on our solutions for financial services enterprises, visit the website **here.**

NOKIA

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.