The Sleepless CIO

Five issues keeping Chief Information Officers (CIOs) up at night — and what to do about them

A Nokia eBook
71% of senior IT decision makers say IT is a strategic, competitive asset.

So why can’t they use it that way?
## The 5 issues

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| 1 | Pressure to launch new apps and services  
**Keeping up with customer and employee demands** |
| 2 | Shadow IT  
**Eroding security, consistency and control** |
| 3 | Massive information volumes  
**Straining IT infrastructure and imposing extra costs** |
| 4 | Siloed legacy systems  
**Creating unmanageable complexity** |
| 5 | Vendor lock-in  
**Keeping costs high and preventing best-of-breed technology decisions** |

For all of these reasons, CIOs are seeking the **flexibility, speed and scalability** of cloud-based networking and communication infrastructures to respond to emerging business opportunities faster and more cost effectively.
Get new apps out the door
Large, dynamic enterprises are under near-constant pressure to launch new apps and services that will keep business flowing. And the network is having a hard time keeping up.

In most enterprises, the simplicity, integration and scalability achieved by virtualizing compute and storage technologies hasn’t yet been matched on the network side of things — slowing down responsiveness and weighing down the bottom line. At the same time, poor integration often means that adding communication and collaboration capabilities to individual applications requires organizations to stand up an entire communication silo instead of simply using available functions.

All of this points to a single conclusion: To achieve the right level of agility and cost effectiveness, the next logical step is to virtualize the network and leverage cloud-based platforms.

Computing and storage have become highly virtualized, instantaneous and easily consumable — but that’s little help when the network is cumbersome, constrained and inefficient.
Software-defined Networking (SDN) delivers the network performance and agility required to launch new applications and services faster within highly virtualized enterprise data center infrastructures. How? By virtualizing the data center network. SDN accelerates application development and simplifies compliance by configuring and managing the network centrally, in an automated and abstracted fashion.

On the communication front, enterprises need to roll out apps quickly and responsively to a wide range of devices. What’s required here is a private cloud-based communication platform with strong application programming interfaces (APIs) that can deliver whatever communication functions are needed to any application on any device.

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<th>What CIOs want for their enterprises</th>
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<th>The Nokia Solution</th>
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<tr>
<td>Network virtualization of any data center infrastructure</td>
<td>SDN technology to deliver centralized, policy-driven networking in and between data centers</td>
<td>Nuage Networks Virtualized Services Platform (VSP)</td>
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<tr>
<td>An application-driven approach to communications and collaboration</td>
<td>Private cloud-based communications with robust APIs that can deliver applications on any device</td>
<td>Nokia Rapport for Large Enterprise</td>
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As of June 2014, Gartner found 55% of enterprises were thinking about SDN adoption and another 18% were engaged in non-production evaluations of the technology.1

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Bring IT out of the shadows
The pressure to be agile and the blending of work and personal life are both legitimate drivers of today’s “bring your own X” reality — whether it is “bring your own device”, “bring your own application” or “bring your own cloud”.

However, that agility and seamlessness come at the cost of control for the enterprise. Security is hard to manage. Lost devices (and their data) may be irrecoverable. The network may be exposed to intrusions and other threats, and compliance can be nearly impossible to enforce.

But what’s the alternative? For teams and departments being driven to deliver results and respond to opportunities right now, many organizations’ IT and network capabilities simply aren’t fast or nimble enough to meet their needs.

According to CIO Insight, 81% of line-of-business workers and 83% of IT staff admit to using non-approved software as a service (SaaS) apps.²

The solution has to start with the infrastructure. Organizations need control — a full view of the network, its applications and devices to ensure peak performance and compliance. The configuration and optimization of IT assets also need to be simpler. Hitting that mark requires policy-based networking to automate processes and ensure consistency.

Control and centralization have to extend to communication applications, such as text, audio, video or collaboration-related, to ensure user privileges and security settings are inherited and to manage interconnection with legacy telecom systems.

### The Solution

#### Get agile

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<td>Faster, simpler configuration and better performance from technology assets</td>
<td>SDN-based private cloud that supports policy-based networking</td>
<td>Nuage Networks VSP</td>
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<tr>
<td>Transform your communications into a corporate asset that can be built into any service or application</td>
<td>Communication framework where all apps inherit user privileges, security and legacy telecom interconnections</td>
<td>Nokia Rapport for Large Enterprise</td>
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Even though shadow IT is hard to control and manage, **59% of organizations** allow BYOD or employees do it anyway to get work done.³

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³ Penn Schoen Berland (PSB) conducted 1500 interviews in January 2015 among large enterprise business decision makers in the US on behalf of Nokia.
Drowning in data
The Issue

Getting the network to manage the deluge

Data is at the heart of enterprise operations, massive volumes of it, streaming through the WAN, stored in data centers — high-bandwidth video and applications, lightning-fast transactions and more.

Facilitating this constant flood of information puts enterprise networks under major strain. The connectivity required can be costly, and security is a constant concern given the sensitivity and privacy of much of the data involved.

According to the Scandinavian research institute SINTEF, as of 2013, 90% of the world’s data has been created over the last two years.⁴

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In the WAN and between data centers, enterprises need fast and secure connectivity. They also need to strike an optimal balance between performance and cost — choosing cost-effective solutions for non-critical applications and reserving robust connectivity for what's truly mission-critical. All of this requires intelligent, flexible, high-performance networking.

That means IP/MPLS with advanced traffic management and engineering to handle diverse data flows smartly, ensuring quality of service (QoS). It means having a data center interconnect (DCI) solution that provides data center connectivity that's not only high performing but also secure. And, it means leveraging SDN technology to enable centralized, policy-based network management.

### The Solution

**Interconnect with agility and intelligence**

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<td>Centralized, policy-driven networking for control and compliance in and between data centers</td>
<td>SDN for private cloud that enables centralized, automatic policy enforcement between data centers</td>
<td>Nuage Networks VSP</td>
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<td>Faster and cheaper connections for non-critical applications such as video</td>
<td>Software-defined WAN (SD-WAN) for cost-effective branch connectivity to support high-bandwidth applications such as video</td>
<td>Nuage Networks Virtualized Network Services (VNS)</td>
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<td>Secure, high-performing links between data centers</td>
<td>DCI technology that intelligently connects multiple sites</td>
<td>Nokia Data Center Interconnect</td>
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<td>Handle massive amounts of data and transactions with scalable, resilient and secure networking infrastructure</td>
<td>High-performance private WAN technology that scales with advanced QoS and traffic engineering</td>
<td>Nokia Private WAN</td>
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Gartner predicts that by 2017 the web-scale IT approach will be used by 50% of all global enterprises.5

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4 Break down the silos
Many enterprise legacy systems are built from discrete technologies that don’t play well together. That’s resulted in highly complex, siloed environments that throw up obstacles to agility and ratchet up costs. This is especially true when it comes to communications, where many organizations still need a PBX to support desk phones, another silo for messaging, another for video conferencing and more.

So how can the silos come down?

Enterprises are often provisioned to handle maximum loads, which is costly and inefficient — causing infrastructure to lie idle or run at very low capacity.
An open, private cloud-based communication framework allows enterprises to own and control their network-based communications. IT departments can then take advantage of whatever communication and collaboration tools best meet their business needs, taking a best-of-breed approach to applications.

Such a solution allows enterprises to cap legacy network silo spending by embedding a single communication engine in the private cloud. It also makes it easier to adapt the communication experience to meet the needs of employees, teams, clients and business partners. This requires a truly open approach as well as open and available APIs and SDKs so communication functions can be built into any service or application.

### The Nokia Solution

**Cap. Adapt. Transform.**

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<td>Use communication and collaboration capabilities you need, when and where you need them</td>
<td>Communication engine embedded in your data center that can adapt the communication experience to meet your needs</td>
<td><strong>Nokia Rapport for Large Enterprise</strong></td>
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According to Gartner, companies spend an average of **$537 a year** per employee on voice network services.6

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5 Vendor lock-in
It’s common for enterprises to buy into a particular vendor’s technology stack — persuaded by the promise of a better user experience, the comfort of familiarity, and the convenience of having “one throat to choke” when problems need solving.

But there are challenges that come with being tied to a single vendor. In some ways, these are more pronounced today than ever before because budgets are tighter, turnaround times are shorter, and the pressure to roll out new features or upgrade technology is nearly constant.

To start with, few vendors’ technologies are best of breed in all things for all large enterprises. That means some aspects of a single-vendor solution are bound to perform better than others, yet enterprises aren’t free to choose what’s truly best for each function. As well, having only one option for maintenance, new features or scalability limits an organization’s power to negotiate price or be at the mercy of the vendors’ roadmap. The result is that many enterprises find themselves faced with higher expenses than necessary.

What’s a CIO to do?

Lock-in binds the enterprise to a specific vendor’s technology suite and can be an obstacle to agility and affordability.
To be agile and responsive while keeping costs under control, enterprises today need access to open platforms that accommodate best-of-breed options within any environment, regardless of vendor.

That kind of openness provides the freedom to choose the technologies they need along with multiple connectivity types and providers, and to roll out and consume network services using any off-the-shelf hardware that suits the budget and operational needs of the business.

Having an open platform is especially valuable where communications and collaboration are concerned. These kinds of tools and applications are vital for day-to-day productivity within most enterprises, yet vendor lock-in can hold organizations back from giving their workers exactly what they need when they need them. The freedom to choose best-of-breed technologies is key.

### The Solution

#### The freedom to choose

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<td>Freedom to consume network services across multiple connectivity types and providers</td>
<td>SD-WAN that allows the enterprise to choose the best technologies to seamlessly connect locations without expensive proprietary hardware</td>
<td>Nuage Networks VNS</td>
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<tr>
<td>Freedom to choose best-of-breed technologies and minimize hardware costs</td>
<td>A private cloud built on SDN that openly supports multiple cloud platforms and hypervisors</td>
<td>Nuage Networks VSP</td>
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<tr>
<td>Open multivendor platform for best-of-breed communications and collaboration</td>
<td>Private cloud-based communications framework that caps costly telecom network silos and enables greater integration</td>
<td>Nokia Rapport for Large Enterprise</td>
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The European Commission says vendor lock-in is a significant enough expense that it should be part of an organization’s total cost of ownership (TCO) calculations.\(^7\)

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The CIO’s next steps

How can a CIO get a grip on these various issues and start moving the enterprise toward some of the more agile, flexible, scalable and high-performing technologies identified in this eBook?

Set a specific vision
Define your desired future state for the enterprise. From that, identify the long-term needs you’ll have to meet to implement new systems, and prioritize which piece your business demands you to work on first.

Get clear on costs
Analyze your budget to determine exactly where you’re spending most. Which capabilities account for the biggest proportion of your costs? That may further narrow down where you want to start your network infrastructure evolution.

Keep security front and center
Make sure any solutions you adopt will provide the freedom and flexibility you need to get business done without opening up vulnerabilities in your network.

Focus on the future
Your IT evolution should yield strong results in the short and medium terms, but make sure you’re choosing wisely for the long term as well. You want your enterprise IT environment to be able to keep up with change over time, considering that change is the only thing you can really count on.
Solutions we provide

SDN for private cloud
Our Nuage Networks VSP delivers centralized, policy-driven networking, simplified configuration and automation to ensure compliance, and enables optimal use of your IT resources. The VSP lays the foundation for an open, dynamically controlled data center network.

SD-WAN
Nuage Networks VNS leverages SDN to create solutions that unleash the power of the cloud, letting you choose the technologies that best suit your needs — regardless of vendor — and seamlessly connects remote locations with your data center without expensive proprietary hardware.

IP communications
Streamlined, efficient, and built specifically for large enterprises, our Rapport for Large Enterprise is an open, adaptable private cloud-based communications solution that supports best-in-class voice and video, rapid service innovation and seamless mobile integration. It allows you to adopt an apps-first approach to communications and cap your costly telecom network silo spending.

Private WAN
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 go way beyond the capabilities of typical IT systems, enabling you to scale your network and seize the opportunity of the cloud.

Data center interconnect
Our highly automated 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 give users anywhere, anytime, any device access to business-critical data, benefits from cloud-ready data center connectivity, and the ability to enjoy scalable, secure, high-performing, multisite data center connectivity.
Don’t lose sleep

Nokia invents and delivers trusted, simple, adaptable large enterprise networks that respond efficiently and cost effectively to emerging business opportunities and shifting customer needs. The world’s IP networking and cloud specialist, Nokia brings its leadership in IP and optics, its innovations in communications, and the dynamic venture Nuage Networks to meet the most demanding requirements of large networks to unleash business value.

Talk to Nokia about how we can help ease the pain of vendor lock-in, shadow IT, siloed systems, and massive volumes of information with our Large Enterprise solutions.

For more information, visit https://networks.nokia.com/large-enterprises