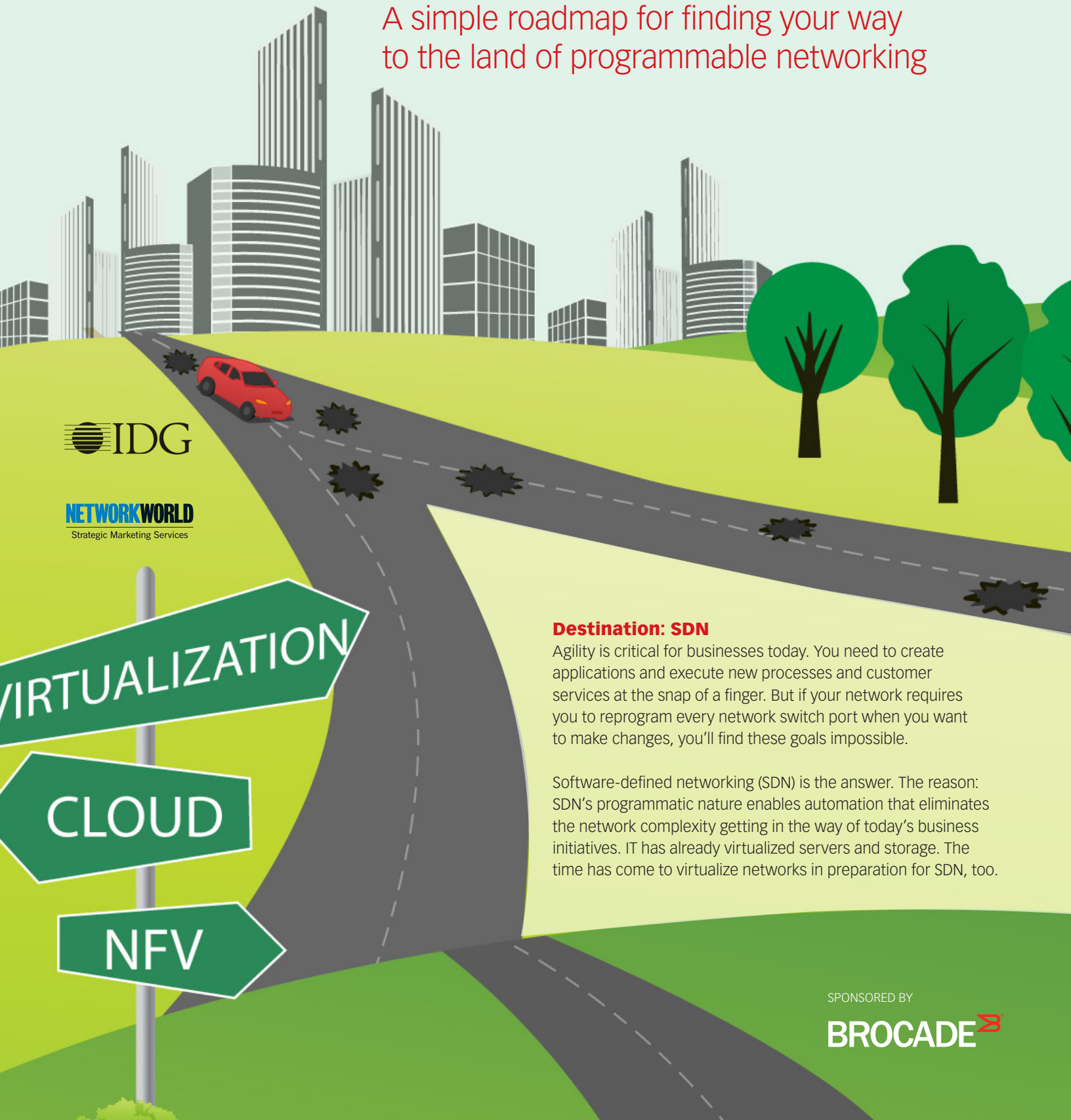
SDN: **HOW DO YOU GET THERE FROM HERE?**

A simple roadmap for finding your way to the land of programmable networking



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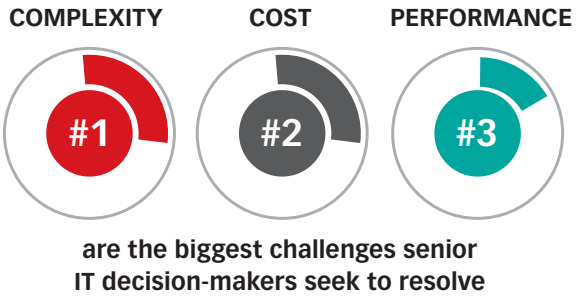
NETWORKWORLD
Strategic Marketing Services

Destination: SDN

Agility is critical for businesses today. You need to create applications and execute new processes and customer services at the snap of a finger. But if your network requires you to reprogram every network switch port when you want to make changes, you'll find these goals impossible.

Software-defined networking (SDN) is the answer. The reason: SDN's programmatic nature enables automation that eliminates the network complexity getting in the way of today's business initiatives. IT has already virtualized servers and storage. The time has come to virtualize networks in preparation for SDN, too.

FIGURE 1

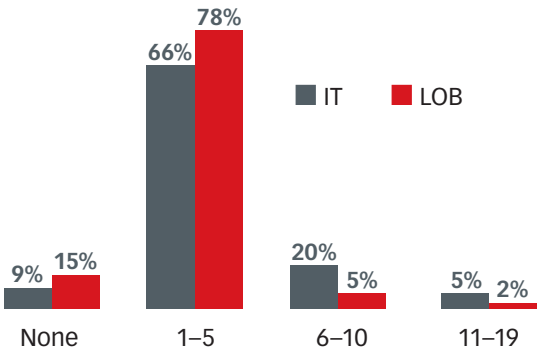


are the biggest challenges senior IT decision-makers seek to resolve

SOURCE: Vanson Bourne, 2014

FIGURE 2

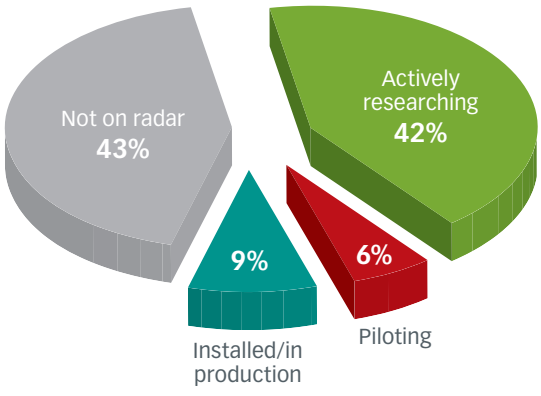
NUMBER OF NON-IT APPROVED SaaS APPS USED IN YOUR DEPARTMENT



SOURCE: Stratecast, 2013, N+ 300 LOB managers, 300 IT managers in companies with 1,000+ employees

FIGURE 3

ENTERPRISE SDN PROGRESS



SOURCE: Network World, "2014 State of the Network"

Some enterprise lines of business (LOBs) are working around IT to get things done and stay competitive. Departments might purchase cloud services on their own, for example (see figure 2). Problem is, this ad hoc IT circumvention causes chaos and quickly becomes expensive without anyone in charge of the overall plan or budget.

So how do you get your network to be as nimble as you need it while reining in rogue behavior that could be costing money and even putting your company at risk?

Chart a reasonable route to SDN. Build a roadmap with the following key milestones, and you'll be there before you know it.

MILE 1: Start considering SDN in all your network decisions.

Begin by accounting for SDN in all of your thinking and planning. Consider SDN as you approach staffing and process changes and as you evaluate new products and technology.

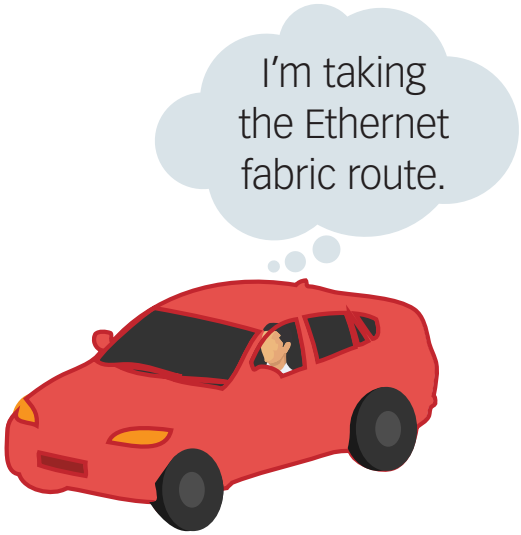
Ask yourself: "Are the people, process, and technology decisions we're making today paving the way for SDN? Or are they creating obstacles?" You want to be sure that the former is the case.

- **PEOPLE.** What kind of people do you need to make SDN a success? Will the skill sets of your current staff do the trick? You'll need people who understand open-source software and tools, so you should begin accumulating this expertise through recruitment or training or both. Keep an eye out for folks with the programming and integration skills to make future SDN controllers work with your back-end apps while executing on any policy and business rules you want to enforce.

- **PROCESSES.** Your NetOps processes and your approach to handling IT requests will change as you grow more automated, too. Prepare to transition to the day when network engineers no longer manually make physical network changes using CLI commands. Instead, you'll create a template and a business policy, push a button, and the change will propagate through the network. How will job descriptions and work processes be different under those circumstances? Think that through and then organize your people and processes around it.

In an SDN world, users might directly request services through a Web portal. LOB requests might appear in the form of a service-level agreement (SLA) for an application capability with specified uptime, security, response times, and so forth — rather than for a specific server or a certain-sized network pipe. Consider designating an individual or group to serve as the liaison between IT and the LOBs to understand business needs at the customer level and translate them into IT action.

People don't adjust to new processes overnight, so planning and training are key.



- **Evaluate SDN-ready equipment and begin implementing an Ethernet fabric.** Purchase only network equipment that is SDN-ready and Ethernet fabric-based from now on. That doesn't mean you are turning on SDN today. But you are future-proofing your capital investments for the day that you do, while at the same time gaining business value and agility from automation inherent in Ethernet fabrics.

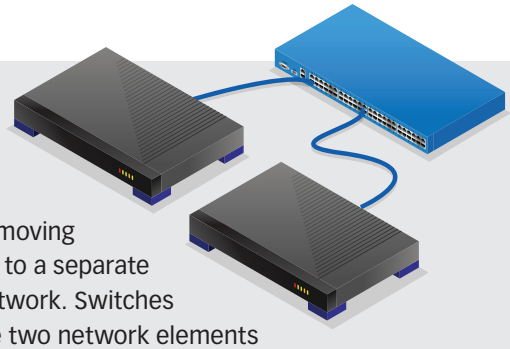
SDN-ready equipment is designed at the hardware level to work with an SDN controller but might not have software support enabled yet. Ethernet fabric is physical infrastructure that automates networking tasks, consolidates management, and optimizes the entire infrastructure.

SDN creates automated, programmatic networks in software on top of the physical infrastructure. As such, SDN isn't useful if the underlying network foundation remains static and must be manually provisioned. In other words, SDN without an Ethernet fabric would be like running a Ferrari on a dirt road. And make sure your SDN-ready equipment supports open, industry-standard technologies (see box) for further automation.

The good news is that you don't have to swap out all your existing switches and replace them with fabric switches. You can start with one pair of fabric-enabled switches, which will auto-discover one another and automatically load-balance traffic while maintaining full compatibility with the "old" Ethernet switches that still must be manually programmed. Then replace the older switches as business rules dictate over time.

MILE 2: Phase in SDN.

Continue to build out your Ethernet fabric and, when you are ready, add an SDN controller — where the "brains" of the network reside. Start with a few services that take advantage of SDN. Expand the number of programmable, automated services as your capabilities and confidence grow.



Open Components for Your Ethernet Fabric

OpenFlow 1.3: An industry-standard method of moving the control plane portion from individual switches to a separate controller, which becomes the "brains" of your network. Switches "speak" OpenFlow, as does the controller, and the two network elements use the protocol to exchange network messages.

REST (Representational State Transfer): A universal API that allows lots of apps and infrastructures to intercommunicate.

TRILL (Transparent Interconnection of Lots of Links): An IETF-standard alternative to the Spanning Tree protocol for determining the best path between two switches in an Ethernet fabric. Unlike STP, TRILL leaves no links sitting idle and avoids STP's notorious broadcast "loop" problem.

MILE 3: Review, refine, and optimize your network.

As you expand your Ethernet fabric and tune your skill sets and processes, expand your SDN scope to cover more services and applications. Continually review how you are doing with people, processes, and technology; do more of what's working and less of what's not working.

Conclusion

Enterprise networks are complex — so much so that they've become an impediment to meeting today's dynamic business requirements. Going forward, you'll need the automation and programmatic benefits of a software-defined network to achieve the business agility you seek. But SDN will only work if your physical network foundation can keep up, so it needs a measure of automation, too. To prepare for your SDN journey, start migrating your network foundation to an Ethernet fabric. Fabrics have the intelligence to automatically update path information and policies at the hardware level. You can start small and add to the fabric as business needs require. That automation will prepare you for SDN automation at the software level when you are ready. Enjoy the ride.

36%

Strongly Agree or Agree that software-defined networking (SDN)/ network virtualization will radically change their network for the better.

SOURCE: Network World, "2014 State of the Network"