

The Road to a Software-Defined Architecture

IDG Research reveals that IT leaders are pushing toward implementation of software-defined technologies and are facing challenges on the way.

Application delivery is critical. And increasingly, applications provide businesses with differentiation in their markets by enabling users to improve customer engagement, optimize productivity and increase revenue. But users can't do any of these things if application performance or availability is poor, or deployment times cause delays.

CIOs recognize the importance of application delivery and as such, their IT organizations are starting to deploy software-defined technologies to improve responsiveness to business needs and simplify IT operations. As they do so, however, they encounter a number of challenges. To better understand the environment, IDG Research Services, on behalf of F5, surveyed IT decision makers regarding their software-defined anything (SDx) deployments. This paper explores the challenges they are facing and offers a solution to overcoming them.

The Push Toward a Software-defined Architecture

Although SDx has been available for some time, organizations are just beginning to embrace the technologies that fall under this moniker. While less than a quarter of those surveyed by IDG Research say they have deployed some form of software-defined technology in production, and 15 percent are in the initial implementation phase, the majority of survey respondents are still evaluating these technologies. It's likely that these organizations are attempting to sort through the various options and determine which is best for them.

The umbrella of SDx technologies includes, among other terms, software-defined networking (SDN) and software-defined data center (SDDC). With SDx, the computing infrastructure is virtualized and delivered as a service. In this environment, management and control of the networking, storage and/or data center infrastructure is automated by intelligent software rather than manually

on an individual component basis.

Why are organizations showing interest in SDx now? The survey results suggest these technologies are playing an important role in enabling the business. A whopping 90 percent of IT leaders say improved network stability/reduced risk of downtime and errors is critical or very important, indicating that the need to improve service levels is driving SDx adoption.

Furthermore, improving time to market is also a key driver, with 75 percent citing a reduction in provisioning time as being critical or very important. And in those instances where the business is driving the move to SDx, time to market is the number one factor.

The benefits and capabilities IT decision makers hope to achieve from an SDx implementation also harken back to the need to improve service levels. Scalable application delivery across hybrid environments is cited by 63 percent of respondents as the top service they expect to be provided by a software-defined architecture. Application failover and disaster recovery, and server health monitoring came in second and third, respectively.

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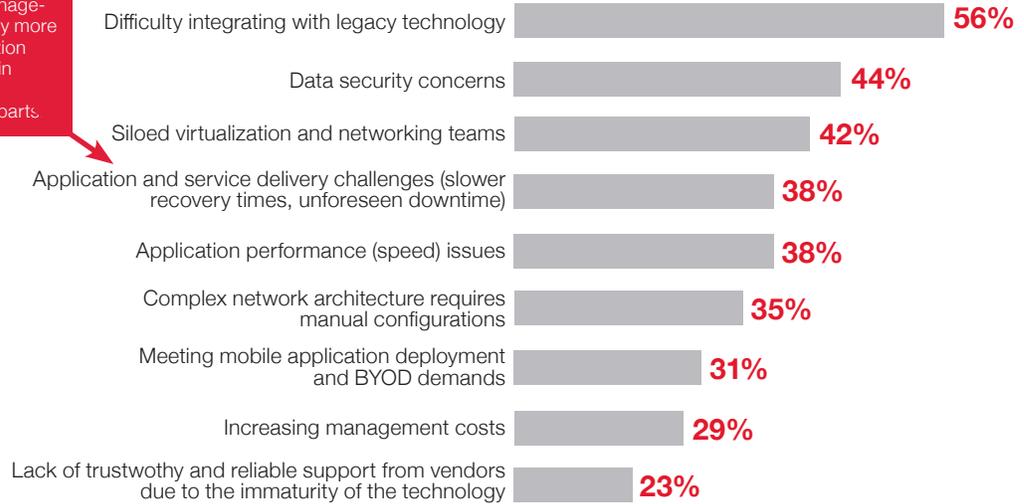
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Challenges Encountered/Expect to Encounter in Moving SDx from Test Stage to Production

Those in middle management are significantly more likely to see application delivery challenges in comparison to their senior-level counterparts.



Source: IDG Research, January 2015

SDx: Challenges in Deployment

To realize the benefits and capabilities that IT organizations hope to achieve from SDx, the vast majority of survey respondents recognize their software-defined architecture must be able to provide the complete stack of services required by applications.

Most SDx solutions enable software-defined networking by automating Layers 2 and 3 of the Open Systems Interconnection (OSI) model. There are only a few services operating in Layers 2 and 3 that organizations deploy to deliver applications. The majority of them operate at Layers 4-7. Load balancing, caching, acceleration, encryption, web application security and ID federation are examples of services that operate at these layers. Layers 4-7 of the OSI model add value to applications with services that provide security, scale and optimization. Often they are not automated via the SDx, so they must be configured manually or by using a variety of different tools and APIs.

There's often a disconnect between the dynamic nature of the data center and the manner in which network services are configured and

deployed. Most IT leaders cite data security concerns as their primary challenge, followed by siloed virtualization and networking teams, application and service delivery challenges, and application speed issues. Every change, no matter how minor, requires a manual process that can delay application deployment anywhere from days to weeks. This process is made more complicated when networking and operations teams operate in silos and it becomes unclear who controls what services when technologies cross over traditional physical, logical, and operational boundaries.

Solution: Look at the Full Stack

These challenges underscore the need for a full-stack approach to application delivery. In addition to automating application deployment via SDx, organizations need to automate the deployment of application delivery services inside the software-defined data center. Unless IT organizations automate the advanced application services at Layers 4-7 in addition to the services at Layers 2 and 3, they are missing a significant opportunity to reduce costs and time.

The VMware NSX and F5 BIG-IQ Cloud integrated solution creates an agile environment that reacts swiftly and delivers fast, available and secure applications in the SDDC.

Additional benefits include:

- Automated delivery of BIG-IP software-defined application services
- Maximum availability of applications to reduce downtime risk
- Responsive network to performance loads incurred by an application
- Deep application-layer security services to protect applications
- Self-service of pre-approved application delivery network service policies
- Consistent network performance, availability and security policies across virtualized and non-virtualized network segments

Here's where the partnership and deep integration between VMware and F5 becomes of critical value, making it easy for IT organizations to take a full-stack approach to application delivery. A joint solution from VMware and F5 extends VMware NSX functionality and interlocks it with F5® Software-Defined Application Services™ (SDAS), enabling organizations to automate the deployment of existing F5 BIG-IP application delivery services inside the SDDC.

NSX provides an API-based distributed service insertion platform that allows F5 to integrate its management and control planes to enable automated deployment and orchestration of application services. IT organizations can configure and apply BIG-IP services as part of the normal flow of virtual machine and virtual network provisioning, even without leaving the NSX console.

F5 SDAS is the next-generation model for delivering application services. It creates an application service fabric that can extend F5 application delivery services to all applications, regardless of their location. These include a number of security services such as SSL

encryption, intelligent application monitoring, as well as connection management, load balancing and TCP offloading. All of these services are combined into the F5 iApps policies, thereby simplifying the service provisioning process via re-usable templates.

BIG-IQ Cloud is F5's centralized Application Delivery Controller management and orchestration platform. It is integrated with the NSX network virtualization platform to automate the provisioning and deployment of BIG-IP application delivery services for SDx environments. BIG-IQ Cloud integrates with NSX to expose F5 application services to both network and virtualization administrators, delivering SDAS and NSX network virtualization from a single administrative standpoint, thereby addressing the challenges that arise from siloed virtualization and networking teams.

Conclusion

Business users are demanding more from their applications. They want them available from anywhere, at any hour. By deploying SDx technologies, IT organizations are looking to improve application availability, quality of service and deployment times. But they must not stop there. IT leaders must consider the entire application stack, as shown by the challenges facing survey respondents in the IDG research.

A deeply integrated solution like that from VMware and F5 enables IT organizations to automate the full application stack, thereby addressing the challenges IT organizations encounter with SDx—namely data security, siloed virtualization and networking teams, application and service delivery challenges, and application speed.

BIG-IQ Cloud and NSX integration allows automatic deployment of F5 software-defined application services, reducing deployment time and simplifying operations for application layer acceleration, security and availability services. ■

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