The State of Application Services

2019 REPORT / DEVOPS EDITION
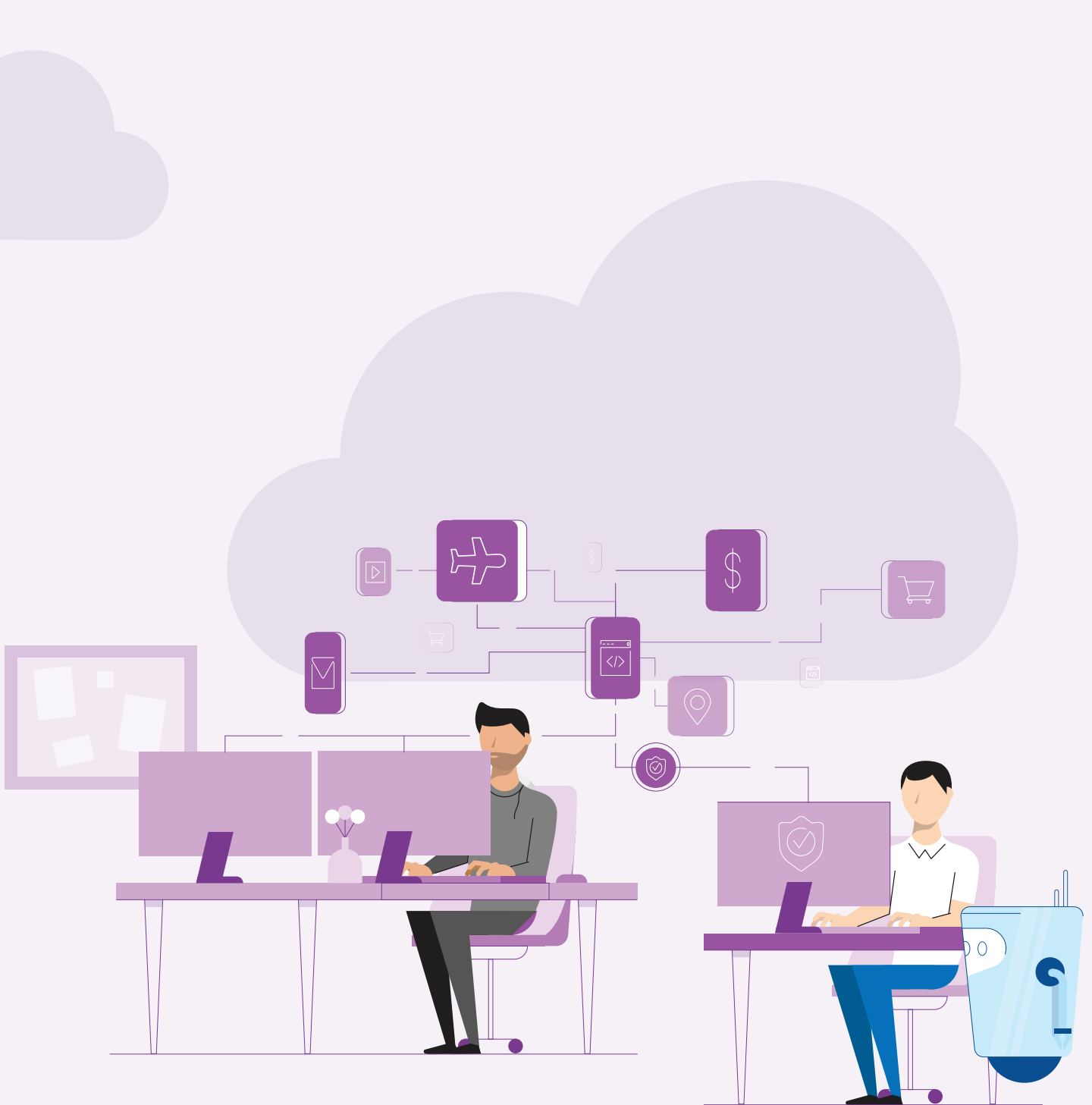
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Introduction

When F5 started its journey to understand the importance of application services within the context of emerging technologies, the DevOps movement was just beginning to trickle into the broader enterprise IT market. As applications have become the very foundation of our digital economy, the ability to develop, deliver, and deploy applications frequently and at global scale is integral to shareholder value.

We thought it would be interesting to look at the results of our 2019 State of Application Services survey specifically as it relates to DevOps, in order to shine a light on how intertwined DevOps and the digital economy are. As the transformation to DevOps ideologies continues, application services are evolving to take on an even more prominent role in delivery and deployment.

2019 Key Findings

01 52% of organizations are changing how they develop applications in support of digital transformation.

Organizations are making digital transformation a priority and that means DevOps practices are here in a big way. Enterprises are exploring new ways to deliver apps to production more frequently via automation, orchestration, containers, microservices, and more.

02 67% of collaborative and cross-functional teams deploy a WAF to protect applications.

As organizations embrace cross-functional teams, their ability to protect against application attacks directly relates to their use of application security services, like WAFs, which increase confidence in their ability to ward off an application-layer attack.

03 42% of organizations have automated their application services deployments.

It doesn't matter how fast the DevOps team delivers a new application if NetOps gets held up employing manual app services practices. The time has come for DevOps to bring NetOps into the automation pipeline.

KEY FINDING 01

52% of organizations are changing how they develop applications in support of digital transformation.

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DIGITAL TRANSFORMATION MEANS DEVOPS

This new digital economy is changing the entire application landscape. We asked respondents which strategic trends will be important over the next 2-5 years and their answers were clear: the future is all about analytics and machine learning. For the more than two-thirds (69%) of the organizations that have or plan to have digital transformation projects in place, the top five strategic trends are big data analytics (53%), IaaS (53%), software-defined networking (SDN) (47%), machine learning and artificial intelligence (43%), and real-time threat analytics (42%).

These trends make sense, because similar to last year, the majority of organizations (69%), across every region and vertical, ranked IT optimization as the number one benefit of digital transformation. The building blocks for IT optimization initiatives? You guessed it: analytics, smart cloud usage, and SDN.

The digital transformation/DevOps tie-in is evident: respondents with digital transformation initiatives are more than twice as likely to report utilizing DevOps methodologies as strategic than those who do not (19% compared to 7%).

WE ASKED

"Which technology trends do you think will be strategically important for your organization in the next 2–5 years? Select all that apply."

Big data analytics **53%**

Infrastructure as a service *(IaaS)* **53%**

Software-defined networking *(SDN)* **47%**

Machine learning and artificial intelligence **43%**
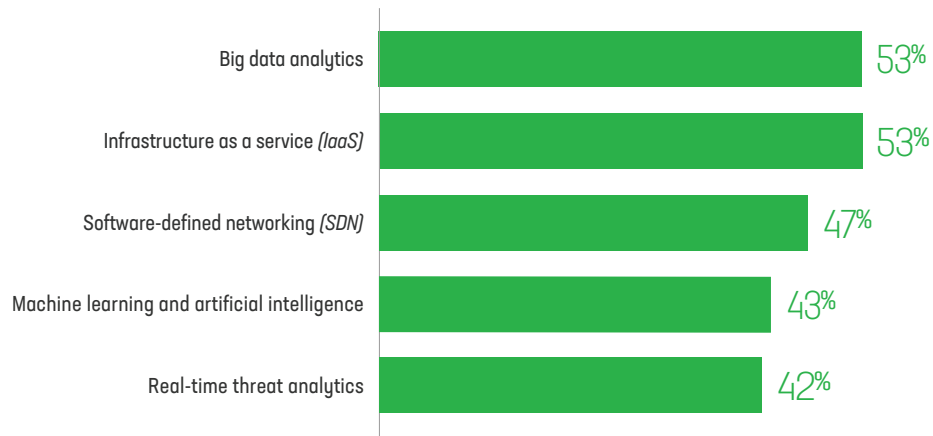
Real-time threat analytics **42%**

FIGURE 01: STRATEGIC TRENDS

There is inarguably a link between digital transformation and DevOps. Because of DX:

- 48% of organizations are moving to deliver apps to production more frequently

- 62% are automating and orchestrating IT systems and processes

- 52% are changing how they develop apps (e.g., incorporating Agile methodologies)

- 42% are exploring containers and microservices

From the very building blocks of applications all the way to the methods in place to move them to market, digital transformation means DevOps as a way to extend "continuous delivery" to "continuous deployment." Remember, "delivery" doesn't mean to market; it means to production where the deployment process kicks in and gets the application into a state acceptable for consumption.

WE ASKED

"How is digital transformation influencing your application decisions? Select all that apply."

We are implementing automation and orchestration wherever possible in our IT systems and processes — **62%**

It's changing how we develop applications — **52%**

It's changing how we deliver applications to production environments — **48%**

We are exploring new application architectures such as containerization and microservices — **42%**
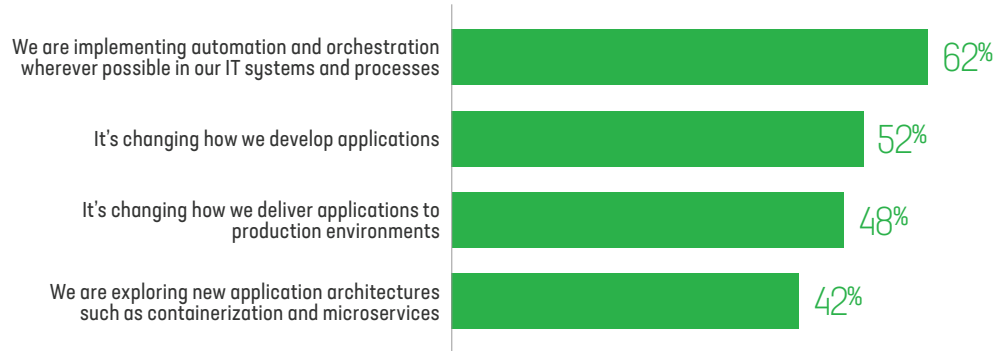
FIGURE 02: DIGITAL TRANSFORMATION INFLUENCING APPLICATION DECISIONS

DEVOPS USHERS IN NEW TEAM STRUCTURES

To truly capitalize on digital transformation initiatives, leading organizations are finding they need to drive change in their organizational structures in addition to making new IT investments. The organizations involved in digital transformation have transitioned away from siloed single-function teams (e.g., network, server, applications) to either combined platform operations teams or collections of small, cross-functional infrastructure and operations (I&O) teams. These new team structures facilitate faster time to market and enable IT to collectively focus on the optimization initiatives that drive meaningful results for the business. They're also far more effective in providing key performance indicators that deliver insights to drive business performance and growth.
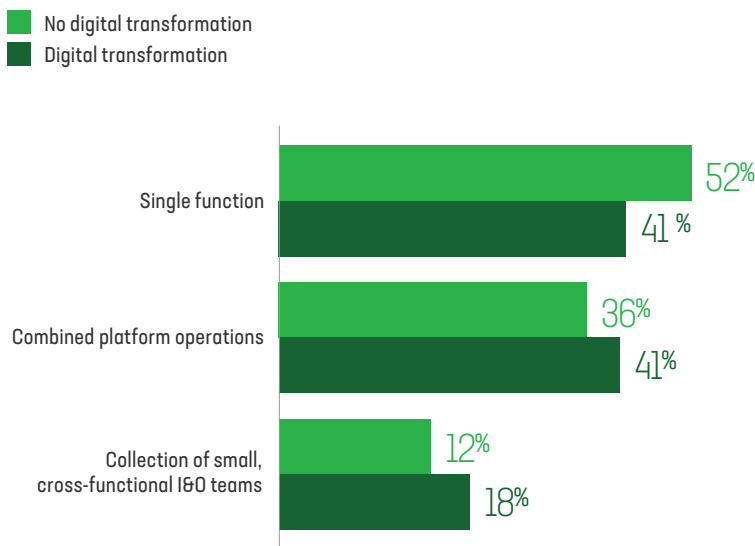

■ No digital transformation
■ Digital transformation

Single function — **52%** / **41%**

Combined platform operations — **36%** / **41%**

Collection of small, cross-functional I&O teams — **12%** / **18%**

FIGURE 03: DIGITAL TRANSFORMATION DRIVING CHANGE IN IT ORGANIZATIONS

F5 INSIGHTS FOR KEY FINDING 01

Organizations that are implementing digital transformation are more than twice as likely to view DevOps methodologies as strategic. The changes taking place to support digital transformation encompass a DevOps mindset across people, processes, and platforms.

KEY FINDING 02

67% of combined operations and cross-functional teams deploy a WAF to protect applications

As organizations embrace cross-functional teams, their ability to protect against application attacks directly relates to their use of application security services, like WAFs, which increase confidence in their ability to ward off an application-layer attack.

We see collaborative and cross-functional teams influencing application services deployments, specifically their use of security application services. Cross-functional teams are ahead of the curve in the use of modern application services like user behavior analytics (42%), runtime application self-protection (25%), and a cloud access security broker (23%) to secure their applications. Utilizing these technologies contributes to the greater confidence cited by cross-functional teams to withstand an application-layer attack.

WE ASKED

"Which technologies do you use to protect your applications? Select all that apply."
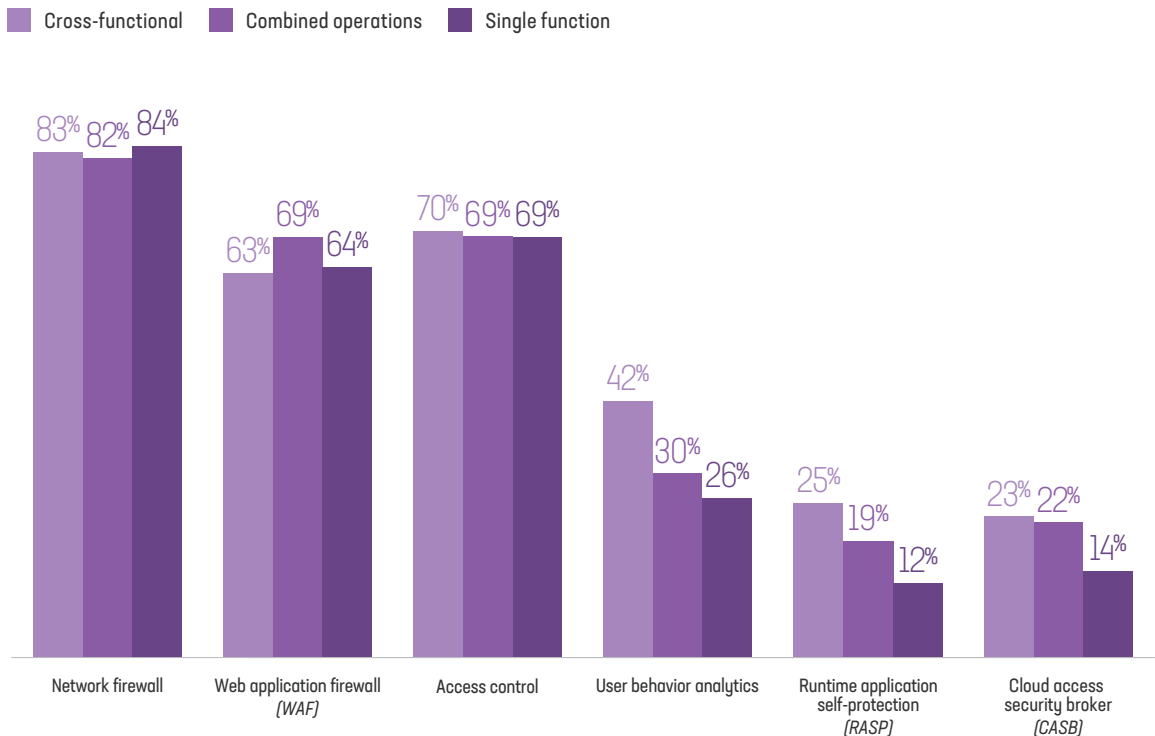

FIGURE 04: TECHNOLOGIES USED TO PROTECT APPLICATIONS

WE ASKED

"How confident are you in your ability to withstand an application-layer attack in the following environments?"

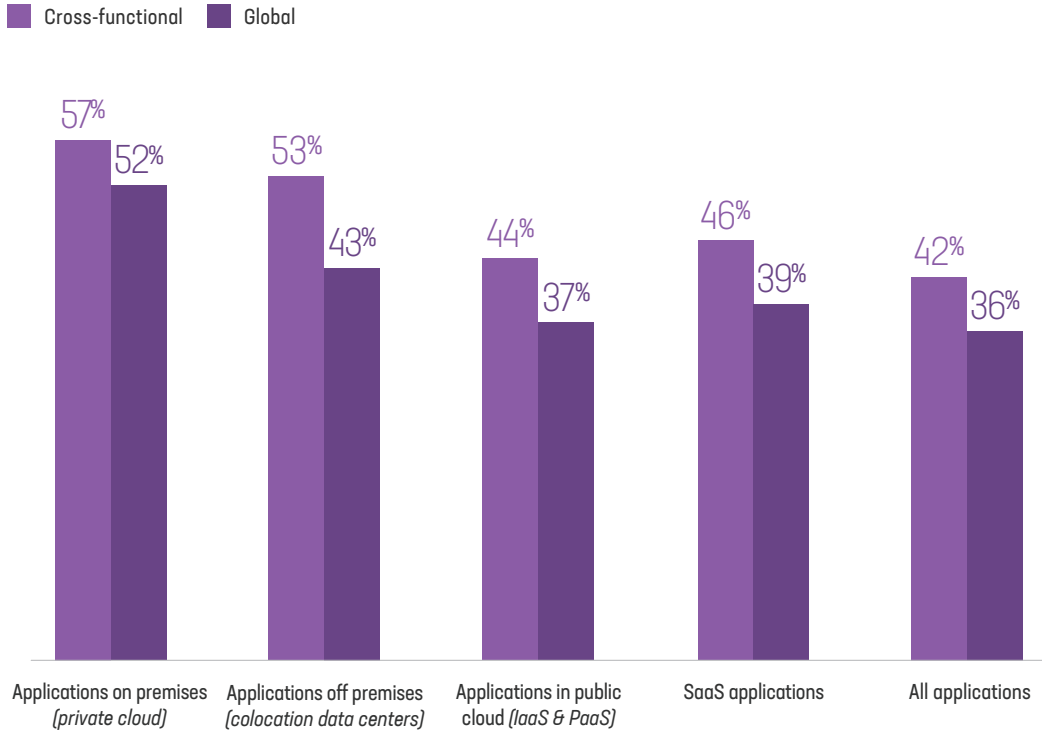■ Cross-functional   ■ Global

FIGURE 05: CONFIDENCE TO WITHSTAND AN APPLICATION-LAYER ATTACK

Digital transformation is cultivating interest in and deployments of microservices and containers. The impact of this can be seen in the application services that organizations plan to deploy in the next twelve months. The top app services planned for deployment by collaborative and cross-functional teams are similar to the overall survey results and reflect the need to respond rapidly to the ecosystems forming in the digital economy. Cross-functional teams plan to deploy DNSSEC (36%), IoT gateways (29%), HTTP/2 gateways (29%), API gateways (28%), and SDN gateways (25%). These initiatives fulfill the mission of cross-functional teams to secure and deliver applications from the cloud to the edge.
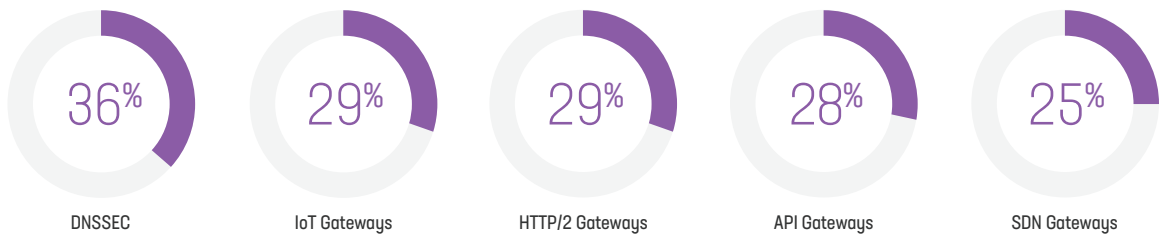

FIGURE 06: THE TOP APP SERVICES PLANNED FOR DEPLOYMENT IN 2019

F5 INSIGHTS FOR KEY FINDING 02

DevOps is influencing application services deployments. The increased confidence that cross-functional teams have in their ability to protect against an application attack is directly related to their leading use of newer application security services.

KEY FINDING 03

42% of organizations have automated their application services deployments.

It doesn't matter how fast the DevOps team delivers a new application if NetOps gets held up employing manual app services practices. The time has come for DevOps to bring NetOps into the automation pipeline.

DEVOPS DOESN'T END WITH DELIVERY

It doesn't matter how fast you can deliver apps if deployment gets delayed. While NetOps teams are warming up to automation and orchestration, they face significant challenges in speeding up deployments. DevOps is in the best position to help them.

DEPLOYMENT VS. DELIVERY
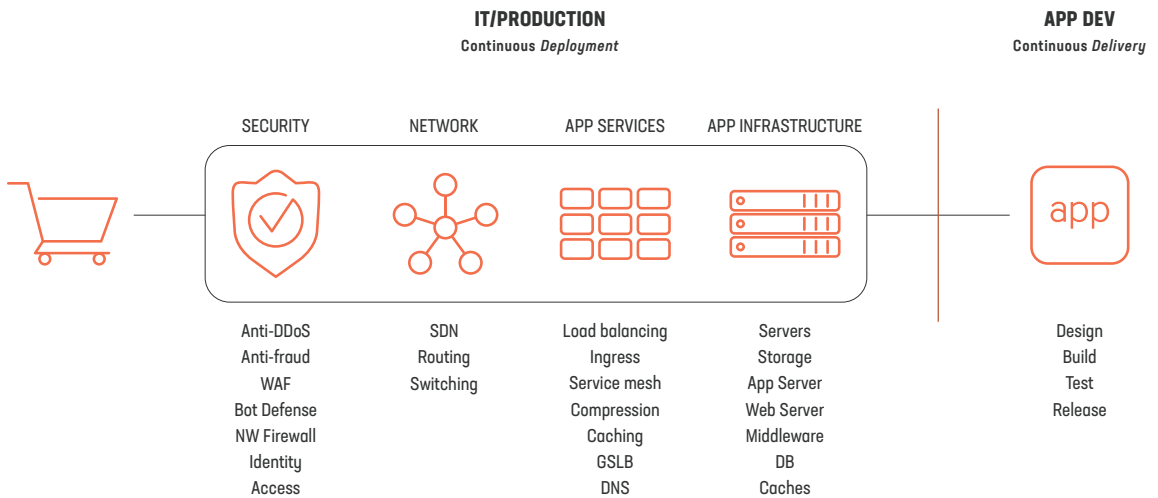
That's because "acceptable for consumption" does not just mean "the app is working okay." It encompasses a set of requirements that must be implemented and deployed in the form of application services. Scale, security, performance, monitoring. All must be in place before the application can be deemed "acceptable for consumption." That is what makes up the deployment pipeline today.

NETOPS NEEDS DEVOPS TO REALIZE THE PROMISE OF AUTOMATION AND ORCHESTRATION

Unfortunately, an altogether too accurate depiction of the state of automation in delivery and deployment is a wall. DevOps teams are doing continuous delivery, enabled by toolchains that are not only automated but easily integrated. On the other side of the wall, NetOps teams are trying to do continuous deployment but are still primarily using manual methods.

NetOps teams are tasked with provisioning, deploying, and operating the on-average 14 application services in use by organizations today. That includes everything from scalability (load balancing and Ingress control) and security (web application firewalls and bot defenses) to the services (IoT gateways and VDI) that improve performance of the entire stack supporting an application.

NetOps needs help identifying and putting into practice the tools and methodologies that not only enable integration across these disparate systems but drive the deployment process in a consistent, predictable, and repeatable manner. This is where DevOps can help NetOps build a successful continuous deployment practice.

DISPARITY IN PIPELINE AUTOMATION CAN LEAD TO FRUSTRATING DELAYS

There's a disparity between the rates of automation for the various app services components in a continuous deployment pipeline. This often comes as a result of NetOps dealing with a lack of specialized skills, misaligned policies, inadequate budget, and the wrong workflow integrations which typically leads to teams continuing to employ manual practices. Even those that have managed to automate pieces of the pipeline have not done so consistently—a mere 21% of organizations have automated all four key components (i.e., application infrastructure, application services, layer 2-3 networking, and security).

WE ASKED

"Which of the following four key components of the production pipeline have you automated?"

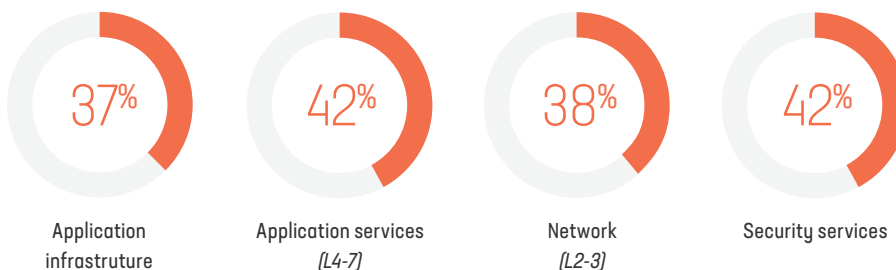| 37%	42%	38%	42%
Application infrastructure	Application services (L4-7)	Network (L2-3)	Security services

FIGURE 07: PERCENTAGE OF ORGANIZATIONS AUTOMATING COMPONENTS OF THE PRODUCTION PIPELINE

This is the difference between having an electric bike and a traditional one. You'll always have a hand in making the pipeline (or bicycle) work, but with automation (electricity), you're not responsible for so much of the legwork anymore.

In the past, before automation, the answer to speeding up deployments was to bring more people in. The more hands you had, the more work got done. But that doesn't work anymore. Throwing more people at the problem only compounds delays by adding on more communication layers and process potholes between delivery to production and delivery to the consumer.

Delays today can be frustrating to teams, and worse, often lead to skipping steps (like security) on the way out the door to make up time. To fix this, organizations need to find and address the factors slowing down continuous deployment.

WE ASKED

"What do you find most frustrating or challenging about automating the network?"

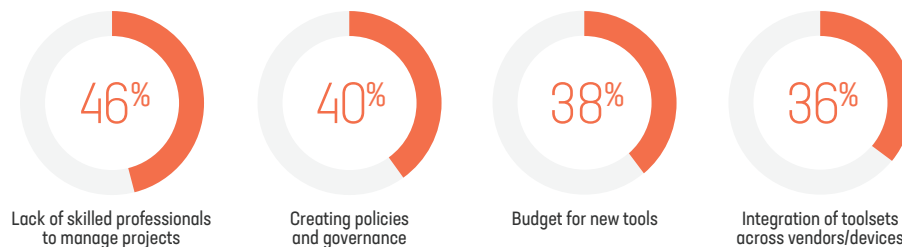| 46% | 40% | 38% | 36% |
| Lack of skilled professionals to manage projects | Creating policies and governance | Budget for new tools | Integration of toolsets across vendors/devices |

FIGURE 08: NETWORK AUTOMATION CHALLENGES

COLLABORATION WILL HELP ORGANIZATIONS BREAK DOWN THE WALL BETWEEN IT AND DEV

Culture has a very real impact on behaviors and practices. Team structure alone dramatically changes pipeline automation, with traditional single-function teams falling behind their contemporary, DevOps-driven counterparts. Organizations on the leading edge push for more collaborative team structures. In that same vein, a collaborative team should be aligned on key metrics. Shared metrics enable NetOps and security to work toward continuous deployment without penalty. Right now, nearly three-quarters of NetOps teams are measured on network uptime. Frequency of deployment barely registers for them. They are going to focus on keeping the network up because that's what they have to focus on. Shared metrics give NetOps permission to focus on what the business needs—faster, more frequent deployments.

Finally, empathy is required. NetOps is just as likely to place a high degree of importance on pipeline automation as DevOps. Remember, DevOps has a ten-year head start on NetOps in navigating and overcoming obstacles around integration, tools, and skillsets. Collaborative teams can help by promoting standardization on tools that span delivery to deployment (like Jenkins and GitHub/GitLab).

Host lunch and learns. Offer to mentor a NetOps counterpart, share insights, and links to tutorials and communities that can provide opportunities for NetOps to learn the tricks of the trade. Start an "Automation Center of Excellence" or community to help establish best practices, share solutions, and encourage the exchange of knowledge that addresses those unbalancing forces.

DevOps should not, and cannot, end with delivery. An application isn't really done until it's in the hands of its intended consumers. That means deployment—and its admittedly complex pipeline of devices and application services—needs to be automated to reduce the time it takes to get there. DevOps has the skills, the tools, and the experience to help fit NetOps move as fast as the business needs it to.

WE ASKED

"Are you providing self-service provisioning outside of IT?"

- Cross-functional
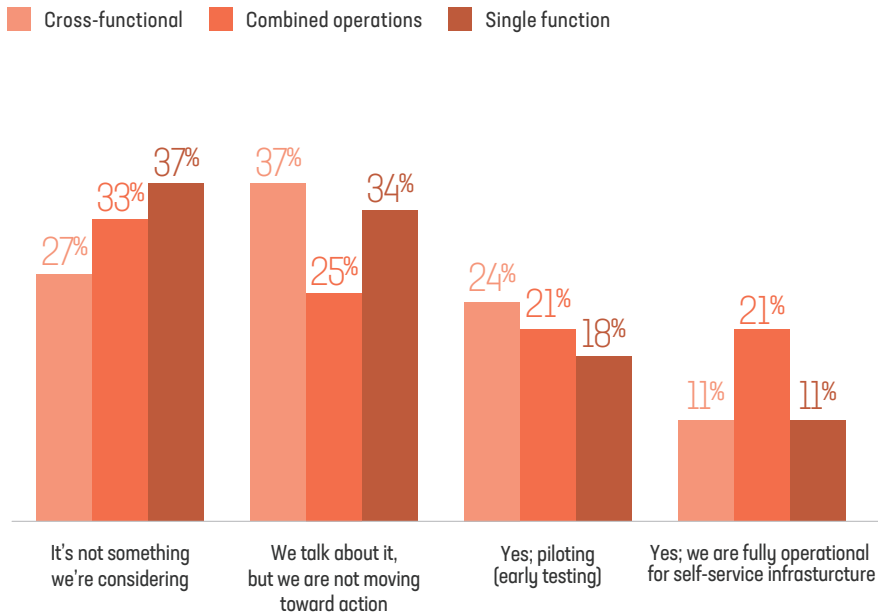- Combined operations
- Single function

FIGURE 09: COMBINED OPERATIONS TEAMS LEADING IN SELF-SERVICE PROVISIONING

F5 INSIGHTS FOR KEY FINDING 03

DevOps has had a ten-year head start on NetOps in overcoming obstacles around automation and orchestration. Collaborative teams and standardization on tools will enable organizations to automate the complete application lifecycle, including making sure the application has the appropriate application services. Don't let DevOps end with delivery.

Conclusion

The ability to develop, deliver, and deploy applications frequently and at global scale has never been more vital to organizational success than it is today. While DevOps has the tools and methodologies for continuous development, NetOps is often stuck deploying apps manually for a multitude of reasons. By breaking down the wall between DevOps and NetOps, organizations can create an efficient automation pipeline that follows the entire application lifecycle from initial development of an application to the moment a user gains access to it.

As apps are intrinsically linked to business success and as new IT organizational structures emerge, so too are new application services entering the market to support the delivery and deployment of applications. We see emerging application services like Ingress control and IoT gateways skyrocketing from initial deployments into production. These new application services, in conjunction with existing services such as firewalls and global server load balancing, are enabling organizations to deliver the availability, scale, and security required for applications that span multiple clouds.

LEARN MORE

To find out more about how DevOps methodologies are changing the way we do business, visit **f5.com/TK.**