State of Application Services

2019 REPORT / TELECOM EDITION

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Introduction

Telecom operators are preparing to deliver 5G and welcome intelligent network capabilities that include support for immersive content, real-time autonomous vehicles, and artificial intelligence. This migration is happening as they are simultaneously handling the demanding requirements of connectivity and bandwidth of today's mobile users, media empires, and business-critical applications.

To explore how the industry is responding to digital transformation and the application services required to thrive, we isolated telecommunications professionals' answers to our annual State of Application Services survey. Based on the results from 337 respondents, we found that network operators are leaders among their peers in other verticals in embracing new application services as well as the people, process, and systems changes required to monetize applications in the digital economy.

2019 Key Findings

01 80% of respondents are executing digital transformation.

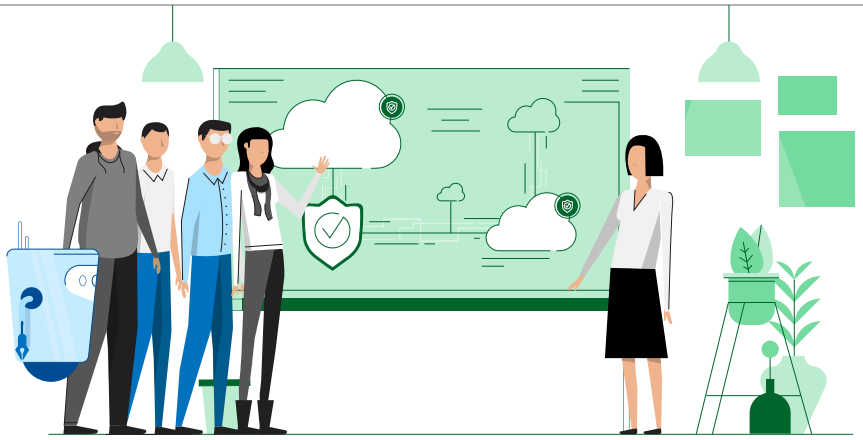
Four out of five (80%) of the telecom operator respondents are engaged in ongoing digital transformation initiatives. These IT organizations are re-evaluating their structures, processes, and workflows to reduce total cost of ownership as well as embrace more agile methodologies.

02 60% of respondents are employing containers, ushering in new deployments of application services.

The top application services currently deployed continue to be network firewall, SSL VPN, load balancing, antivirus and IPS/IDS, but the telecom respondents distinguish themselves in how they are embracing newer application services. The rise of containers has boosted the deployment plans for SDN, IoT, and API gateways, as well as service mesh.

03 71% of respondents are deploying network and security automation and orchestration initiatives—and developer-oriented solutions are leading the charge.

Automation and orchestration will become essential to the efficient management of the network for telecom operators. Cloud-based microservices architectures are essential to the agile delivery of 5G, but only with automation and orchestration can the operator keep up with the scale required while concurrently reducing operational costs. With silos breaking down and cross-functional teams speeding innovation, telecom organizations are embracing open-source technology and reporting higher adoption rates than peers in other verticals.



KEY FINDING 01

80% of respondents are executing digital transformation.

Four out of five (80%) of the telecom operator respondents are engaged in ongoing digital transformation initiatives. These IT organizations are re-evaluating their structures, processes, and workflows to reduce total cost of ownership as well as embrace more agile methodologies.

TELECOM OPERATORS ARE TRANSFORMING THE NETWORK TO RESPOND TO THE DIGITAL ECONOMY

For telecom operators, digital transformation is important to enable the industry to move to a model where services can expand and contract network resources based on user and traffic demands. Given the criticality of these attributes to the future of the network it is not surprising that telecom operators are ahead of the global average with four out of five (80%) of the respondents embarking on digital transformation initiatives.

We asked respondents which strategic trends will be important over the next 2–5 years and their answers were clear: new technologies that provide insights, enable agility and support virtualization to reduce total cost of ownership. The top five strategic trends for telecom are SDN (59%), NFV (54%), big data analytics (52%), IaaS (41%), machine learning and artificial intelligence (40%).

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"

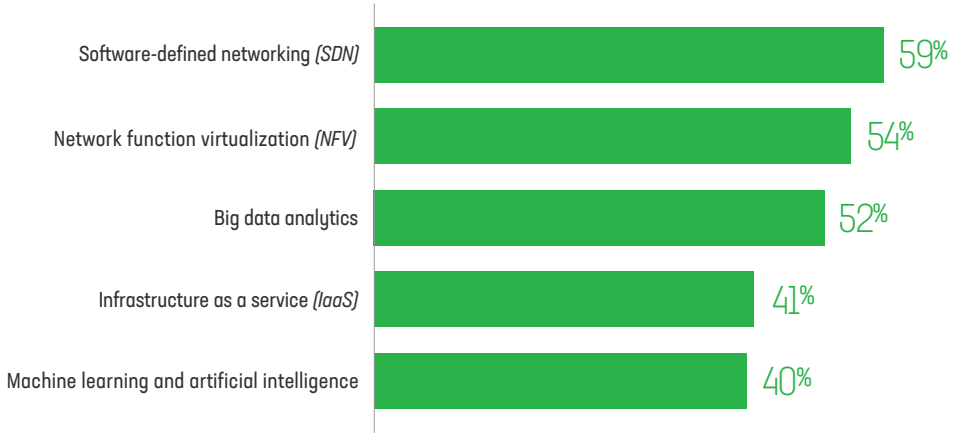


FIGURE 01: TELECOM STRATEGIC TRENDS

ANALYTICS, CLOUD, AND SDN DRIVE IT OPTIMIZATION

For telecom operators, virtualizing the network, adopting cloud, and employing analytics are the key building blocks to achieving IT optimization. Similar to last year, telecom respondents agree with the global results in ranking IT optimization as the number one benefit of digital transformation.

Next in the benefit line is business process optimization (61%). Telecom respondents distinguish themselves from the total respondents in citing new business opportunities (53%) as the number three answer. Telecom operators are also exploring opportunities to deliver employee productivity improvements (51%) as well as gain competitive advantage (41%).

These initiatives are where initial efforts to utilize machine learning and artificial intelligence are under way. Telcos are exploring how AI can improve customer service, make decisions in real time at the network, and reduce backhaul expenditures. All indications are that IT organizations—including telcos—are studiously evaluating processes, workflows, and organizational structures to prepare for the onslaught of change to come.

WE ASKED

"What benefits do you want from your digital transformation projects? Select all that apply."

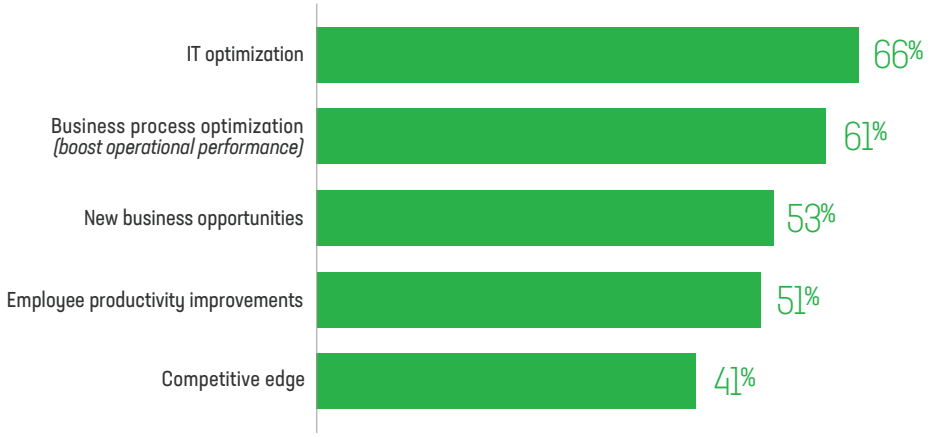


FIGURE 02: PRIMARY BENEFITS FROM DIGITAL TRANSFORMATION FOR TELECOMS

NEW TEAM STRUCTURES SPEED TIME TO MARKET

Telecom operators have realized that installing new systems to support new services is only half of the solution. To truly reduce CapEx and OpEx and achieve the agility to compete with cloud providers and new media organizations, leading telcos are finding that they need to drive change in their organizational structures in addition to making new IT investments.

Telecom transformation efforts are now also focused on people and process. They are beginning to transition away from siloed single-function teams (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 are intended to enable faster release cycles and enable IT to collectively focus on the optimization initiatives that drive innovation while monetizing the network.

WE ASKED

"How would you best describe your IT Infrastructure and operations (I&O) organization? Please include employees in all locations."

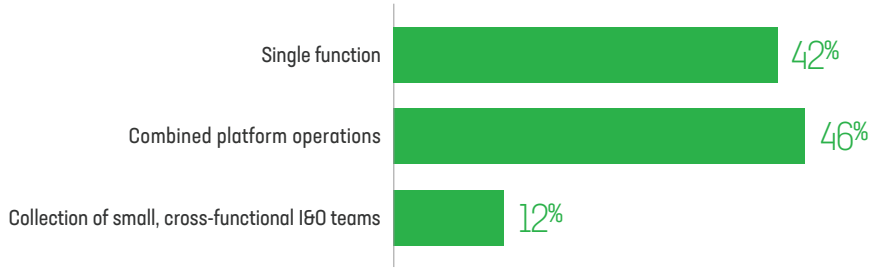


FIGURE 03: TELECOMS EMBRACE NEW ORGANIZATIONAL STRUCTURES

AUTOMATION AND ORCHESTRATION BECOME PARAMOUNT

For telecom operators looking to reimagine the services and applications deployed on the network, the need for automation and orchestration becomes ever more important. This is reflected in a 10% increase (from 56% in 2018 to 66% in 2019) in the percentage of respondents who reported that they are implementing automation and orchestration in support of digital transformation application decisions.

Operators are adopting new application architectures such as containerization (46%) and delivering more frequent releases, changing the speed of application deployments (45%). Additionally, they are taking advantage of agile development methodologies (44%). Taken together, these shifts all point to a changing application landscape, which is automated and influenced by responsiveness to business priorities.

WE ASKED

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

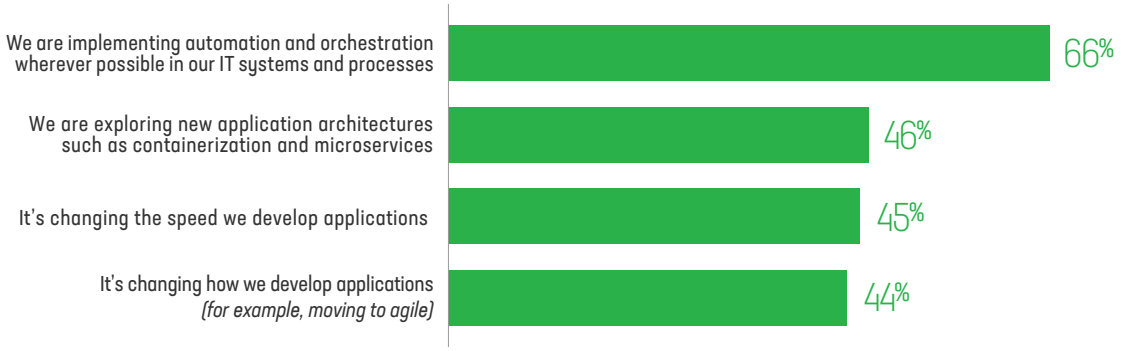
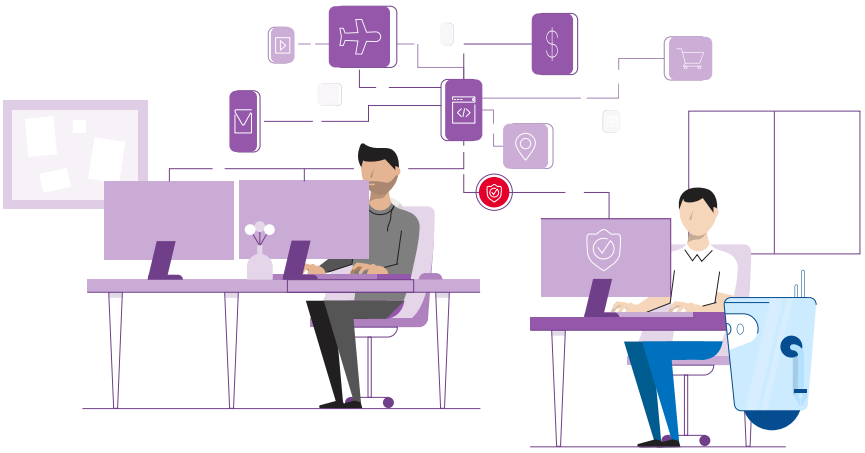


FIGURE 04: AUTOMATION AND ORCHESTRATION ARE OF PRIMARY IMPORTANCE

F5 INSIGHTS FOR KEY FINDING 01

Telcos are embracing change across people, processes, and systems in order to deliver on the promise of digital transformation. They recognize that they need to shift the architectures they are deploying (such as microservices and containerization), but they also need to reorganize their team structures in order to deliver on the time to market and agility required for the new network.



KEY FINDING 02

60% of respondents are employing containers, ushering in new deployments of application services.

The top application services currently deployed continue to be network firewall, SSL VPN, load balancing, antivirus and IPS/IDS, but the telecom respondents distinguish themselves in how they are embracing newer application services. The rise of containers has boosted the deployment plans for SDN, IoT, and API gateways, as well as service mesh.

APPLICATION SERVICES DELIVER SECURITY AND SCALE

Providing global connectivity across wireline and wireless networks brings a level of responsibility that is unprecedented in any other vertical industry. Telecom providers have a responsibility to their consumer, commercial, and government customers to deliver always-on network services with a keen understanding of the regulatory and wider social environments that they serve. Beyond connectivity, telecom providers are on a path to deliver transformational services to all vertical industries to offer increasingly connected experiences like smart cities, cars, appliances, and security systems.

Application services enable telecom providers to meet this responsibility head on. As a result, compared to their peers they are further ahead in the breadth of application services they deploy with on average 17 application services deployed. Across all verticals, only 27% of respondents deployed more then 20 application services but, in the telecom vertical, 40% reported deploying over 20 application services.

The top application services align with the global results for 2019 and are like the 2018 telecom results—availability and security services reign supreme. The prominent role of DNS in telecom is no surprise since many other industries rely on service providers for their DNS services.

WE ASKED

"For each of the application services below, please indicate your company's current deployment status."

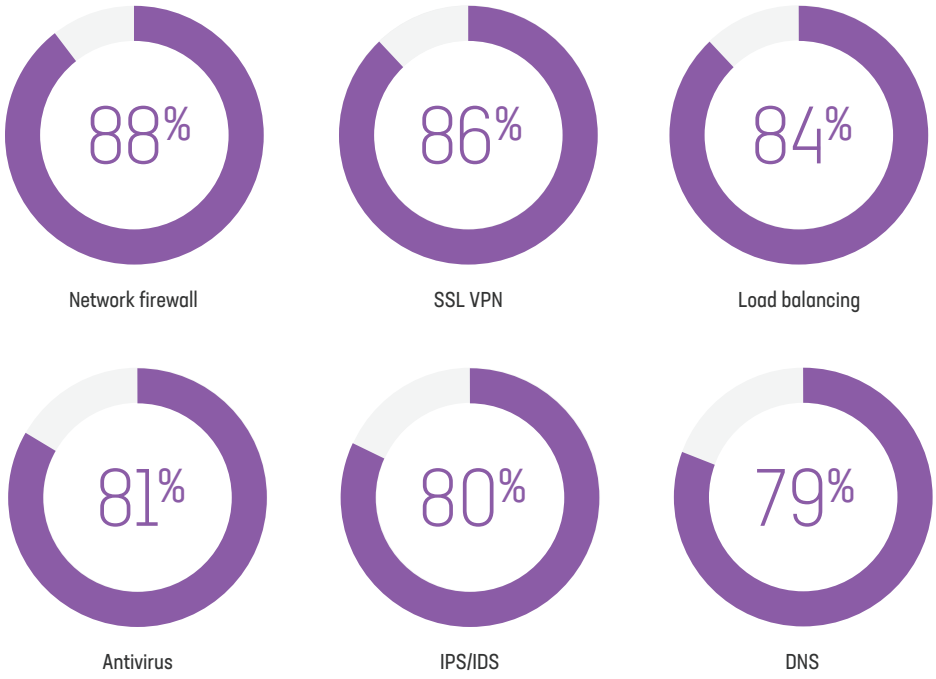


FIGURE 05: TOP APPLICATION SERVICES DEPLOYED TODAY

Digital transformation is ushering in interest in and deployments of microservices and containers, and the impact can be seen in the application services that organizations plan to deploy in the next twelve months.

WHAT THE RISE OF CONTAINERS MEANS FOR SDN GATEWAY DEPLOYMENTS

Telecom service providers are embracing containers with three out of five (60%) employing containers today. The push to virtualize the network and increase the speed to deliver new applications is driving the adoption of emerging technologies at impressive rates.

The rise of containers is having an impact on application services, particularly in the area of availability. This is our first report including Ingress control (HTTP routing) as an application service—and it is already widely deployed. Over half (54%) of respondents have deployed Ingress control and another 23% plan to deploy it within the next twelve months.

The rapid and robust adoption of containers is also a significant factor in the rise of SDN gateways to the top of the list of application services that will be deployed in the next year. This makes sense as Ingress controllers are used to route application traffic to containerized environments, and those environments increasingly rely on network overlay protocols like NVGRE and VXLAN—both of which are core capabilities of an SDN gateway solution. It is reasonable, then, to view the increasing strategic importance of SDN gateway services as an indicator of growing container deployments.

WE ASKED

"Which of the following application services do you plan to deploy in 2019?"

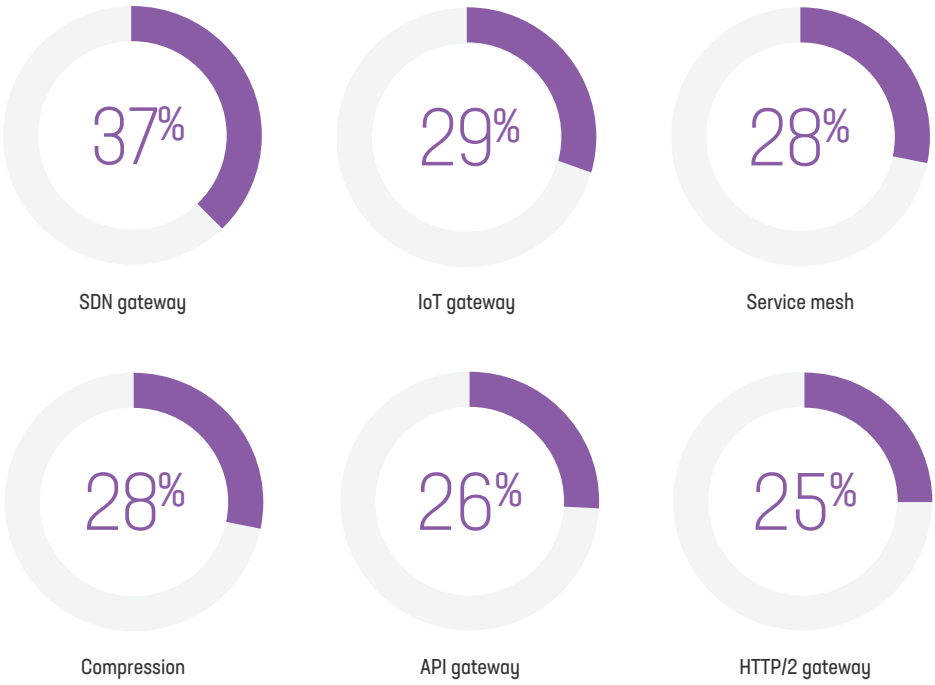


FIGURE 06: THE TOP APP SERVICES PLANNED FOR DEPLOYMENT IN 2019

The rise of containers can also be seen in responses stating preferences for application services form factors on premises. We've seen "containers" as a preferred form factor rise from 10% in 2018 to 18% this year. It is interesting to note that criticism of telecom providers is that they are slow to embrace change, and yet the results from this survey indicate that they are adopting new microservices technology at a faster rate than their peers. In the total respondent base, 14% reported containers as a preferred form factor. The technology pieces are finally available in the market to deliver on the CapEx savings and operational agility telecom customers have been demanding.

WE ASKED

"For on-premises application services, what is your preferred form factor?"

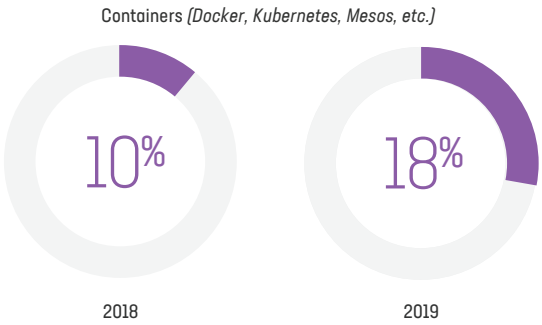


FIGURE 07: CONTAINER PREFERENCE SURGES YEAR OVER YEAR

For application security, the telecom vertical looks to compliance, policy, and ultimately the centralized security team to make the decision. We asked respondents how they decide which applications are protected by a WAF and the number one answer was that compliance, regulations, and policy dictates the decision. The number two answer was type of application which speaks to best practices in place for categorizing applications—ultimately by security leaders in the organization. The importance of centralized security teams likely contributes to the vertical's slightly higher confidence in their ability to withstand an application security attack; 56% reporting they are confident to withstand an attack on premises compared to 53% in the total survey respondent base.

WE ASKED

"How do you decide which applications will be protected by a WAF? Select all that apply."

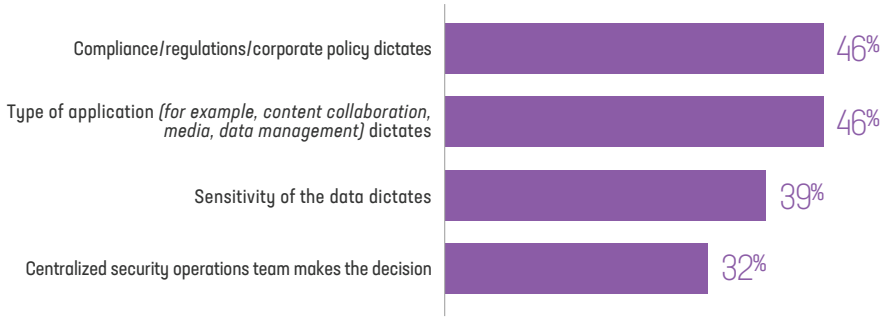


FIGURE 08: POLICY DICTATES MOST WAF DECISIONS

F5 INSIGHTS FOR KEY FINDING 02

The criticality and sophistication of telecom networks is distinguished by the breadth and depth of application services deployed today and planned for future adoption. Availability and security services are foundational, but telcos distinguish themselves in how they are embracing container form factors and newly introduced application services.

KEY FINDING 03

71% of respondents are deploying network and security automation and orchestration initiatives—and developer-oriented solutions are leading the charge.

Automation and orchestration will become essential to the efficient management of the network for telecom operators. Cloud-based microservices architectures enable the agile delivery of 5G, but only with automation and orchestration can the operator keep up with the scale required while concurrently reducing operational costs. With silos breaking down and cross-functional teams speeding innovation, telecom organizations are embracing open-source technology and reporting higher adoption rates than peers in other verticals.

AUTOMATION AND ORCHESTRATION DELIVER AGILITY DESPITE COMPLEXITY

Telecom operators are beginning to automate components of the network. One third (33%) of respondents reported automating all four key components of the production pipeline.

WE ASKED

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

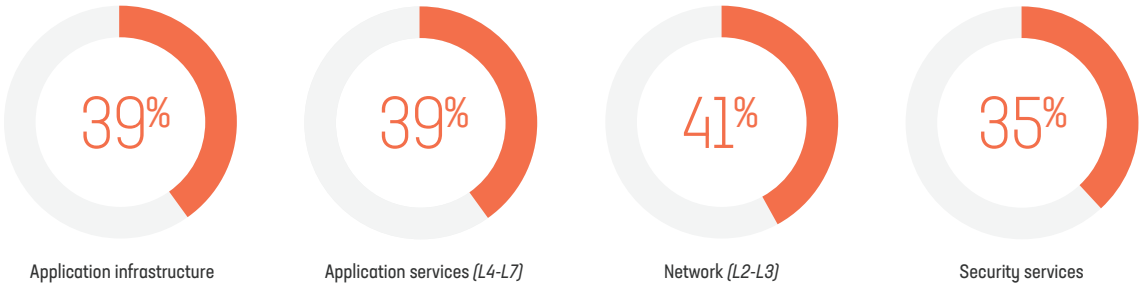


FIGURE 09: PERCENTAGE OF TELECOM RESPONDENTS AUTOMATING COMPONENTS OF THE PRODUCTION PIPELINE

The telecom respondents are basically on par to slightly ahead of the total respondent base—82% of telecom respondents have at least two of the key components automated compared to 80% of the global respondents.

Almost half (46%) are piloting or in production with self-service provisioning outside of IT—demonstrating that telecom providers are on a path to more frequent innovation.

WE ASKED

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

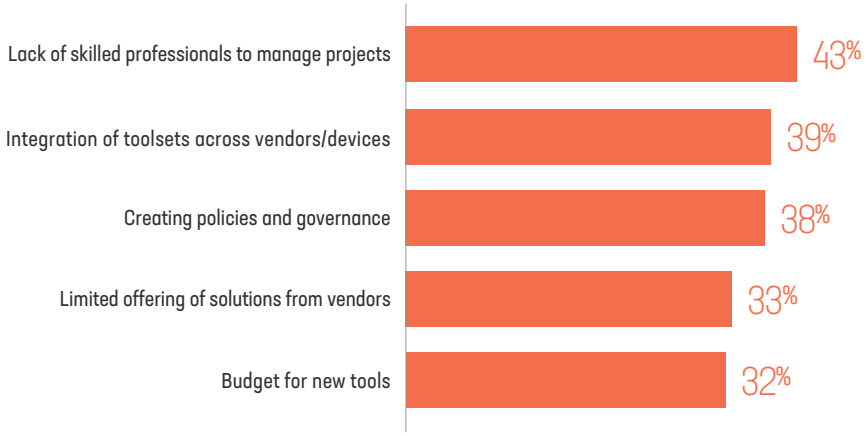


FIGURE 10: TELECOM NETWORK AUTOMATION CHALLENGES

When it comes to network automation challenges, the telecom respondents see lack of skilled professionals (43%) as the number one concern, which is similar to the total population—but integration of toolsets rises to the number two (39%) spot compared to the number 4 ranking for the total survey population. This is likely due to the diversity of applications and services running on the telecom networks. It is also related to the strong preference for open source. Telecom providers are drawn to open source in order to have the freedom to innovate and reduce CapEx. The tradeoff is that integration challenges tend to shift to the customer and require in-house expertise.

As telcos embrace containers, they again this year reported a clear preference for Red Hat OpenShift, with 31% using the container orchestration environment. Tied for second were Kubernetes and Docker Swarm. The preference for Red Hat is no surprise given that Red Hat has successfully embraced open source while offering commercial service and support to their customers.

PYTHON RULES SUPREME

The one thing everyone agrees on—regardless of role or team structure or industry—is that Python is the go-to tool when it comes to overall automation and orchestration. This is particularly true in the telecom vertical with over half (55%) of respondents reporting using Python for automation and orchestration. It has occupied the top spot in every iteration of this survey—40% in the total survey population—and we expect it to remain the favorite for the foreseeable future.

F5 INSIGHTS FOR KEY FINDING 03

The telecom respondents' adoption of automation and orchestration can be viewed as proof they are moving full steam ahead in meeting their goals of reducing CapEx and OpEx while increasing the speed of innovation. Embracing open source across technology categories, migrating to microservices, and automating the production pipeline all point to a telecom network in transition to meet the requirements of 5G.

Conclusion

As the telecom industry evolves to support a wide variety of use cases across different verticals, they are emerging as technology leaders. This year's results point to a push toward technological innovation through the adoption of microservices, artificial intelligence, and automation and orchestration. Application services will play a pivotal role in helping telcos optimize their application capital by maintaining uniform policies, security, and availability across their entire network.

LEARN MORE

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