State of Application Strategy Report

2021

Financial Services Edition

Contents

Key Findings

Digital Transformation Has Leapt Forward, with Financial Services Organizations Out Front

We all know how much the world has changed in the last year, which was filled with newly remote work, education, and consumer activities. As the results of the most recent F5 State of Application Strategy survey make clear, however, the COVID-19 pandemic also vastly accelerated a global digital transformation toward a more data-driven future. Progress that might normally have taken a decade has leapt forward in a single year. Financial services organizations, already leading this effort, continue in their place at the vanguard.

Financial services organizations that long ago began expanding the digital dimension of their interactions with customers went even farther in 2020, with a dramatic increase in remote work, lobbies locked to customers without appointments, and consultations taking place digitally, not in offices or conference rooms. The newly distributed workforce and unprecedented urgency in the need to conduct business via technology have greatly accelerated digital transformation.

In 2020, providing secure digital access to products and services was not enough. A streamlined and supportive user experience—achieved through reduced latency, enhanced performance, and better data security in the face of increasingly sophisticated attacks—has become critical to business survival. Data security and regulatory compliance also remain a challenge. Yet IT infrastructures and skillsets

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100% of respondents have embarked on digital transformation.

typically don't change as quickly as the shifts forced on businesses by the pandemic. As a result, organizations are embracing the public cloud and SaaS, rapidly ramping up AI operations (AIOps), and seeking application security and delivery technologies that are easy to deploy and provide data for decision-making.

Key survey findings that support these conclusions reflect changes in four strategic areas intended to improve the customer experience and defend the digital business:

1. Modernization of applications and architectures has continued, with APIs a method of choice.
2. Additional growth in SaaS security and multi-cloud approaches, including use of the edge, are making multi-cloud availability an imperative.
3. Telemetry is growing in importance to provide insights that nearly everyone is now missing.
4. Organizations have made strong progress toward improving adaptability with AI-assisted business.

Financial Services Progress in Digital Transformation

We asked:
Please select the projects that are the current focus of your digital transformation mission. Select all that apply.

We learned:
Nearly three-quarters of financial services organizations are undertaking digital expansion projects focused on scaling their businesses with technology.

Phase 1:
Task Automation

30%

Phase 2:
Digital Expansion

70%

Phase 3:
AI-Assisted Business

57%

Last year, we noted that digital transformation occurs in three phases: task automation, digital expansion, and AI-assisted business. While organizational efforts may focus on multiple phases at once, the emphasis over time indicates change within an organization. The incredible progression of surveyed organizations through these three phases in a single year can be seen in the adoption rate of AI and machine learning, a marker of late-phase transformation, which has more than tripled across industries.

AIOps is the **number one strategic trend** over the next 2-5 years.

In addition, fully 100% of respondents in financial services organizations—an industry that is clearly leading the way in digital transformation—indicated their organizations were working on digital transformation. That's up from 84% last year. Nearly three-quarters are deep in phase two, the automation of business processes, and most are looking toward AI-assisted business.

This astonishing progress has driven significant changes in organizations' outlooks for the future—including which trends financial services professionals consider most strategic over the next 2–5 years. Consequently, telemetry from application security and delivery technology has never been more important to ensure security and IT alignment with business outcomes.

F5 insight

With applications as the beating heart of our increasingly dispersed but hyper-connected world, no financial services business strategy can be complete without an application strategy.

About the survey

Of the survey's more than 1500 global respondents, more than 125 were individuals with decision making responsibilities in financial services organizations, which include banks, investment firms, insurance companies, credit card companies, and others involved with the management of money. The majority of respondents were in organizations with more than 1,000 employees, and nearly a quarter of these respondents from companies with more than 10,000 employees. (Financial services respondents were far more likely to work in a large organization than the average respondent.) For the first time, the survey screened respondents to include results only from those with authority making decisions about technology vendors.

01

Application Modernization Marks Digital Expansion

Over the past year, organizations across industries and around the globe were forced to enable remote work at unprecedented levels and invent new ways of serving customers using technology. Financial services were no exception, though the industry already had a solid head start using digital technology to drive revenue, enhance customer engagement, and deliver on the promise of digital trust.

In our 2020 report, we noted that nearly all financial services organizations were deep into digital transformation, with a focus on increasing their speed to market and providing differentiated customer experiences. The impact of the COVID-19 pandemic on financial services was to accelerate progress into the later phases of digital transformation.

Last year, most organizations across industries were still focusing on the first phase, task automation—improving efficiency by digitizing IT and business functions, from the provisioning of virtual machines to accounts payable systems. This year, the majority have progressed to the second phase, digital expansion, with a focus on business process automation, orchestration, and the creation of more seamless digital experiences. A full 70% of financial services organizations are at this level—the highest rate of any industry. Already leaders in automation of business processes, financial services organizations still saw a 13% jump in automation and orchestration efforts, and a huge 40% increase in application modernization.

More financial services organizations have reached phase two of digital transformation **than in any other industry.**

Nearly everyone is modernizing applications

For many organizations, application modernization has become a focus as they work to both satisfy regulatory and data protection requirements and provide customers with the seamless and secure multi-channel digital experiences those customers demand in a competitive industry.
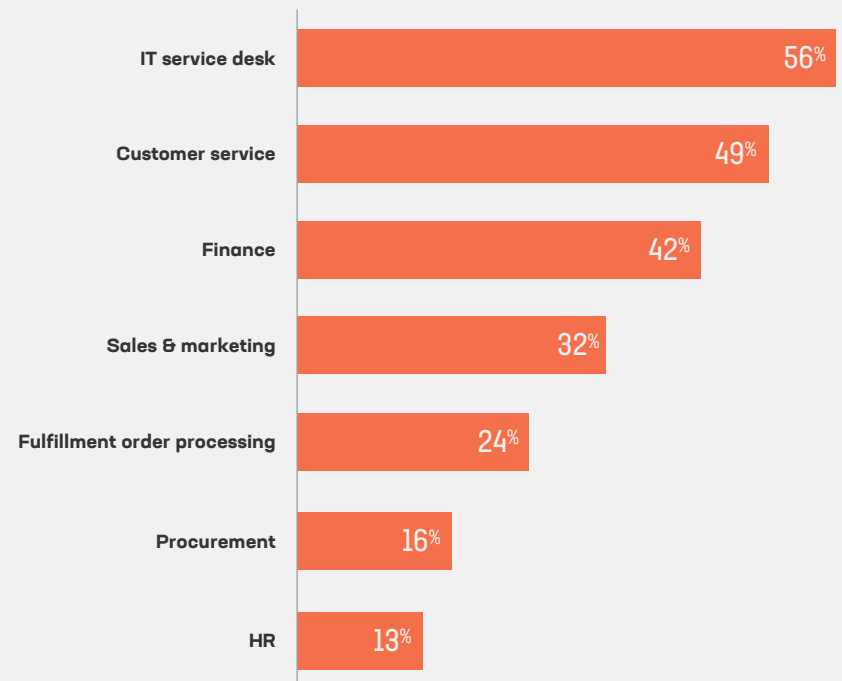
Financial Services Modernization Priorities

We asked:
Which business functions are priorities for your digital transformation initiatives? Select all that apply.

We learned:
Once employee productivity is well supported, customer service functions take priority for modernization by financial services organizations.

IT service desk	56%
Customer service	49%
Finance	42%
Sales & marketing	32%
Fulfillment order processing	24%
Procurement	16%
HR	13%

Through modernization, businesses can adapt to changing user expectations, with digital applications becoming the default. More than four of five financial services respondents (83%) told us they were modernizing applications, particularly IT service desk and customer service applications, with finance applications close behind them.

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83% are modernizing applications.

Of course, there are many ways to modernize applications. The methods can be grouped into four broad categories:

1. Enabling modern interfaces via APIs.
2. Enabling modern interfaces via modern components.
3. Refactoring to adopt modern architectures and design approaches.
4. Performing lift and shift to the public cloud, effectively modernizing operations.

About two thirds of all respondents globally are using at least two of these methods. The use of APIs is particularly popular in financial services, with nearly three-quarters (71%) using that method, a significantly higher proportion than across other industries. Financial services organizations have also published considerably more APIs than any other vertical, undoubtedly due to the movement toward open banking as well as their overall leadership in digital transformation. This position was underscored by year-over-year growth in API call volumes per month. The percentage of financial services respondents who reported volumes of over 10 million API calls per month skyrocketed from 10% in 2020 to 48% in 2021.

The reliance on APIs increases the importance of application security and delivery technology

The popularity of APIs has significant implications for application security and delivery technology. APIs are vulnerable attack targets because, by definition, they expose application logic and sensitive data to other applications or third parties. As they proliferate, organizations need to mitigate the growing risk by deploying API gateways (which provide a layer of security) and API security services (which can protect the business logic).
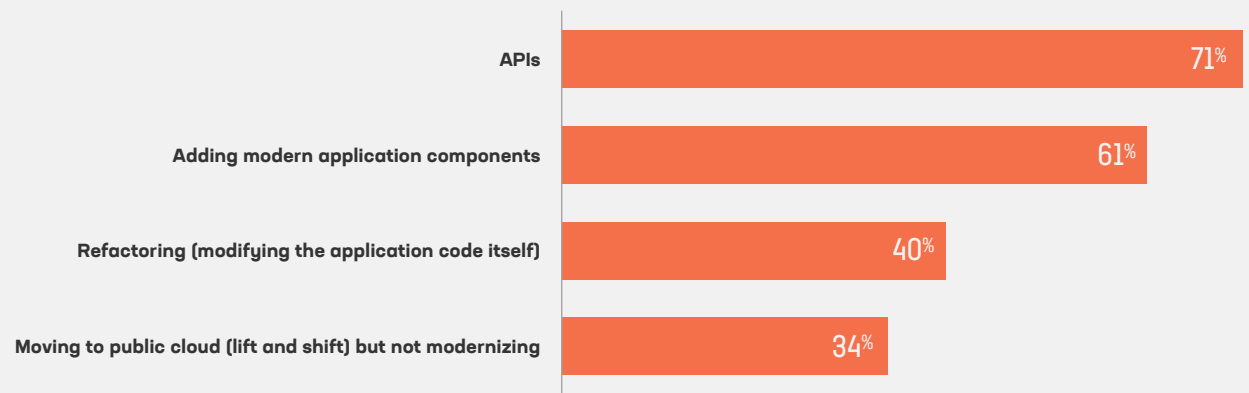

Financial Services Modernization Methods

We asked:
What methods are you using to modernize applications?

We learned:
While most financial services organizations use two or more methods, APIs are the most common.

Method	%
APIs	71%
Adding modern application components	61%
Refactoring (modifying the application code itself)	40%
Moving to public cloud (lift and shift) but not modernizing	34%

As you might expect, financial services organizations are more likely to have implemented an API security solution than organizations in other industries, with more than two-thirds of respondents (69%) already having such a solution in place or planning to implement within the year. An even higher proportion of financial services organizations—the highest in any industry at 83%—have or will soon have an API gateway in place.

The more API calls an organization handles, the more likely it is to have adopted both API security and API gateway solutions. Financial services organizations handling more than 10 million API calls per month are more than twice as likely to have deployed an API security solution (82%) as those handling fewer than 1 million API calls per month (32%). As modernization proceeds, we expect deployments of API services to continue to increase.

F5 insight

The explosion of app modernization and the integral role of APIs create the need for an API-first application security and delivery strategy. API-related vulnerabilities and mitigating technologies that once received little attention are becoming essential to managing the expanded attack surface. We expect more decision-makers to recognize this need to think first of API application security and delivery.

02

Complex Multi-Cloud Strategies Have Become the Norm

As digital transformation proceeds, environmental complexity is rising while the composition of the enterprise app portfolio shifts. When 2021 survey results are compared with those from 2020, we see that traditional applications, especially those built for client/server and three-tier architectures, are slowly being replaced by modern and mobile applications.

Application portfolios are evolving as a natural consequence of older, legacy applications being consolidated, superseded, or replaced, with three types of change responsible:

- Traditional but aging applications that once served as a user interface are retired and replaced by modern and mobile applications.
- Creating new applications and extending others with APIs and modern components—part of efforts to provide customers with satisfying digital experiences—necessarily increase the application workloads in the portfolio and add new tools into the tech stack.
- Traditional applications are increasingly replaced by SaaS as vendors offer new, cloud-friendly alternatives.

Global survey respondents noted a dramatic decrease in client/server and three-tier web architectures, which dropped twelve points and four points, respectively. Both were used from the 1980s through the early 2000s as "modern" interfaces, compared to monolithic, core business applications. Today, those applications are increasingly being provided by SaaS.

Financial services organizations were already leading cloud and SaaS adoption, and 21% of financial services respondents expect to increase their public cloud deployments, compared to just 15% of other respondents. Interestingly, COVID-19 had somewhat less impact on application deployment plans than for other industries, with the majority of financial services organizations indicating the pandemic did not change their plans for public cloud, colocation, SaaS, or on-premises hosting—which suggests they've already embraced the benefits of a multi-cloud strategy.
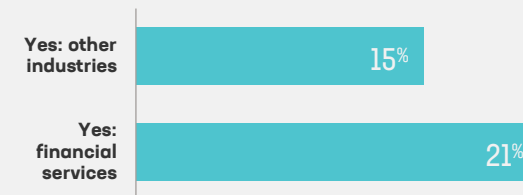
Financial Services Public Cloud Expansion

We asked:
Do you expect the percentage of your applications utilizing public cloud to increase?

We learned:
Financial services organizations are embracing the public cloud at a higher rate than other industries.

Yes: other industries	15%
Yes: financial services	21%

On-premises deployments aren't going away

Alongside today's digital transformation efforts, survey respondents suggested that some applications will remain on premises and others may be repatriated to accommodate significant interdependencies. In particular, traditional applications that are tightly coupled to core business functions likely will remain in on-premises data centers because the risk of disruption is too high. Financial services organizations are slightly more likely than others to have plans for repatriating applications, and eight points more likely to cite application interdependencies as the reason for doing so.

Nonetheless, as digital transformation continues, we expect applications to become still more distributed, with ongoing reductions in the share of traditional applications and architectures and similar, but smaller, increases in modern architectures as they replace older systems. As a result, the vast majority of financial services organizations will continue to manage both traditional and modern applications

and architectures. This expectation is supported by the 87% of all survey respondents who say they juggle both now—an 11-point jump compared to last year.

In fact, most organizations are operating more architectures than ever, with nearly half managing five different architectures, a full 30 points higher than in 2020. These complex portfolios are likely to keep expanding as new technologies emerge. This level of complexity has major implications, not only for IT tools and skillsets but also for how organizations ensure security and performance for applications hosted in a variety of environments.

Moving more slowly to the edge

For many industries, the edge has become a new imperative in our increasingly distributed reality. Cloud data centers, while supporting ubiquitous access, are
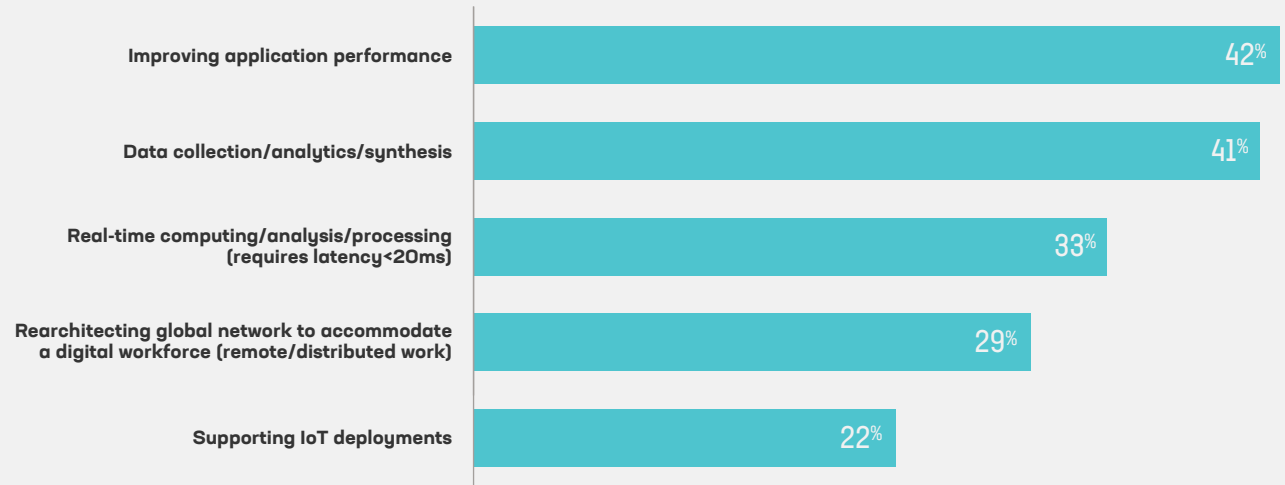
Financial Services Edge Use Cases

We asked:
What are the primary use cases underpinning your current or future edge deployments? Select all that apply.

We learned:
Improving performance and data analytics motivate edge deployments nearly equally for financial services firms.

Use Case	%
Improving application performance	42%
Data collection/analytics/synthesis	41%
Real-time computing/analysis/processing (requires latency<20ms)	33%
Rearchitecting global network to accommodate a digital workforce (remote/distributed work)	29%
Supporting IoT deployments	22%

only slightly more distributed than on-premises data centers. By contrast, the edge enables organizations to deliver applications closer to users, and 9% of financial services organizations are already hosting application security and delivery technology at the edge. The top edge use case for financial services is improving application performance, followed by data analytics.

68% plan to deploy at the edge.

In a sense, the edge is just the next step outward in an expanding universe of distributed applications, with benefits—and drawbacks—aligned with those of multi-cloud strategies. The financial services industry, however, is adopting the edge at a rate somewhat slower than most others. Although more than two-thirds are planning

edge deployments within the next year, that figure for all other industries is 76%. Furthermore, only a quarter of financial services professionals expect the edge to represent a top strategy in the near future.

Security and related compliance issues at the edge, which can involve assets the organization doesn't control, are probably responsible for this hesitancy. In addition, the financial services industry is more likely than others to expect workers to eventually return to their offices at least part of the time, rather than continuing to support a fully remote workforce, so the potential performance enhancements of the edge may hold less attraction. On the other hand, programming that can be done at the edge offers more control over where and how that code is hosted, or which assets reside at which edge. As edge programming develops, financial services organizations are likely to embrace the edge more fully.

Use of Service-Level Agreements by Financial Services Organizations

We asked:
Which of the following service-level agreements (SLAs) do you apply to the components that modernize traditional applications?

We learned:
Application services are important to meeting these SLAs, and telemetry from those services can help.

Security	94%
Availability	91%
Performance	84%

Application security and delivery technologies must apply everywhere

As applications are deployed in the cloud and at the edge, the application security and delivery technology that protects and optimizes those apps must be deployed with them. The critical roles these enabling technologies play for customer experience and service level agreements (SLAs) are recognized by more than four of five financial services respondents, who display greater sophistication than average regarding telemetry from these solutions.

In fact, decision-makers in this industry, who are more likely than in any other to appreciate the importance of these technologies, are nearly unanimous in noting their importance to meeting SLAs, particularly those related to security and availability. Approximately two-thirds of financial services respondents apply response time, uptime, and service reliability SLAs to the components that modernize applications (such as APIs). Service reliability, in particular, aligns with business outcomes, and 95% of financial services organization call data from their application delivery and security solutions important for keeping IT aligned with business outcomes.

Financial services remain committed to their on-premises data centers for the deployment of application security and delivery technology, with more than three-quarters (77%) hosting these solutions in on-premises data centers. This figure compares with 71% of all other respondents. A similar three-quarters of financial services organizations (76%) view protecting customer data as a primary benefit of application security and delivery solutions, which explains their relative reluctance to host those technologies in the cloud. Only 57% do so, compared to 70% of all other respondents.
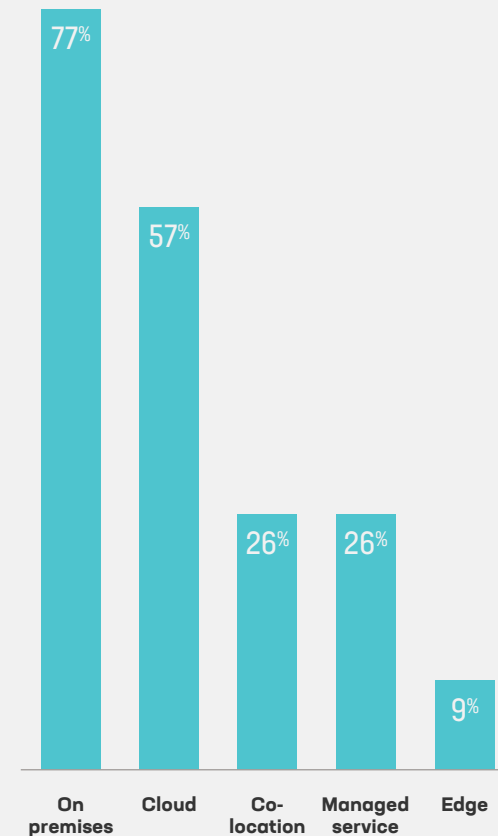
Hosting of Application Security and Delivery Technology in Financial Services Organizations

We asked:
How are your application services hosted? Select all that apply.

We learned:
Most financial services organizations are committed to on-premises deployments as a means of protecting customer data.

Category	Percentage
On premises	77%
Cloud	57%
Co-location	26%
Managed service	26%
Edge	9%

No matter where such application security and delivery solutions are hosted, they need to be available in all environments for consistency and ease of use. Remarkably, the multi-cloud availability of these solutions has become the top criteria for those making decisions about them in the financial services industry. Across industries, multi-cloud availability jumped from number eight last year to number three, behind only ease of use and cost. The greater importance financial services places on multi-cloud availability probably reflects both the growing percentage of organizations managing multiple architectures and the desire to simplify management of critical applications across environments.

In considering these trends, a question arises: How do organizations determine whether their efforts are improving application performance? Survey respondents had plenty to say about the state of monitoring and telemetry in their enterprises.

92% of financial services organizations report that application security solutions are equally important to deploy in the cloud and in on-premises data centers.

F5 insight

The fast-moving efforts to modernize applications and enhance the digital experience will intensify IT management challenges. Architectural complexity will likely only increase, exacerbating existing issues with tool or skill availability, IT processes, and cross-architecture analytics.

That means application security and delivery technology that's easy to use and works across architectures is more crucial than ever—not only to make the lives of IT teams easier but because without such support, other efforts to improve application performance and create seamless digital experiences can't yield maximum returns to the bottom line.

03

Financial Services Organizations Have Data but Lack Insights

As digital transformation proceeds, the organizations best able to harness data from their applications, APIs, and app security and delivery technology will enjoy a competitive advantage based on the ability to make better, faster decisions and more quickly protect performance and data. According to survey respondents, however, sufficient data does not necessarily deliver the insights they really need.

What causes the gap? It's apparently not the tools. More than two-thirds of financial services respondents believe they already have the tools they need to report on the health of high-priority applications. What may be missing, based on survey responses, are related skillsets, with only 5% of financial services respondents indicating that their IT employees have all the automation and orchestration skills they need.

98% are missing insights they need.

Respondents in financial services organzations say they need more insight than their current tools provide. Their top three missing insights are:

- The root cause of application issues.
- The root cause of performance degradations.
- Possible attack.

To drive digital transformation forward and further integrate IT into core business strategies, analytics need to provide additional insights.

F5 insight

For most financial services organizations, greater progress in the third phase of digital transformation will involve not only more telemetry and the tools needed to put it to use, but also a cultural change in which business units use the resulting insights for strategic decisions. Only then will IT be an integrated partner as well as an enabler.
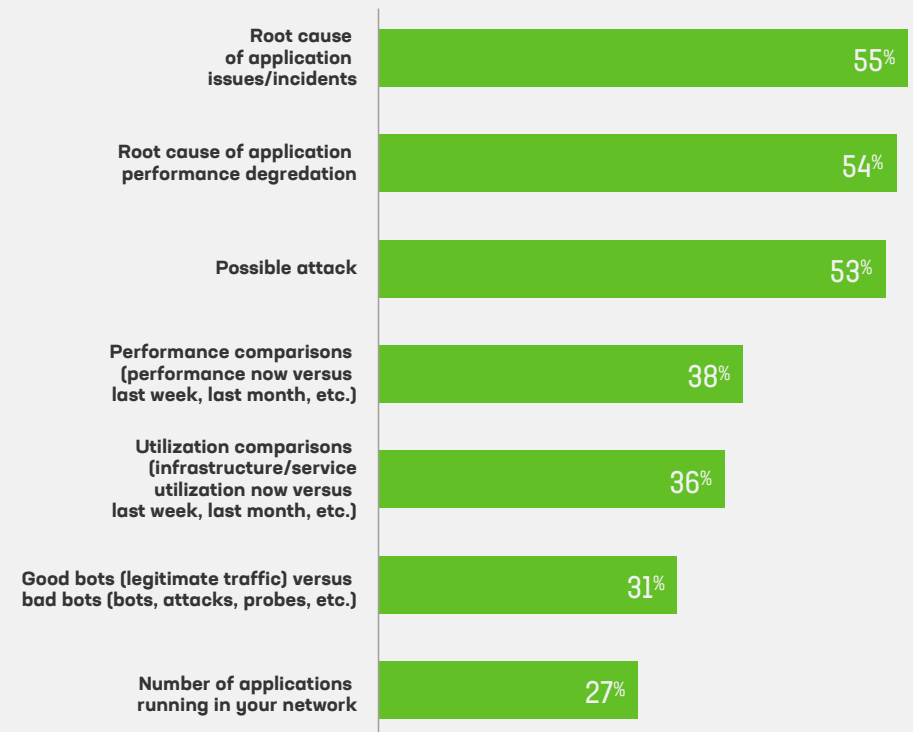
Top Missing Insights for Financial Services Organizations

We asked:
What insights are you missing from your monitoring/reporting/ analytics solutions? Select all that apply.

We learned:
Half of financial services organizations need better insight into the root causes of security and performance issues.

Insight	%
Root cause of application issues/incidents	55%
Root cause of application performance degredation	54%
Possible attack	53%
Performance comparisons (performance now versus last week, last month, etc.)	38%
Utilization comparisons (infrastructure/service utilization now versus last week, last month, etc.)	36%
Good bots (legitimate traffic) versus bad bots (bots, attacks, probes, etc.)	31%
Number of applications running in your network	27%

04

AI-Assisted Business and Automation Will Improve Adaptability

AI-assisted technologies can provide the missing analytics organizations need. That's one factor driving financial services toward AIOps, which can be defined as platforms that combine big data and machine learning to enhance a broad range of processes and tasks for IT operations. These include performance analysis, anomaly detection, event correlation, and other security methods that can help protect digital assets against increasingly sophisticated attacks. With AIOps, organizations can better manage large volumes of data and use it to predict and mitigate availability and performance issues.

Although most financial services organizations continue to work on application modernization, a majority are also well into this third, AI-focused phase of digital transformation. In fact, financial services trail only the telecom industry in leading the way, and finance professionals call AIOps their number one strategic trend over the next 2–5 years.

As AI increasingly takes hold, particularly for those farther along in their digital transformations, financial services organizations will be able to capitalize on a parallel evolution from visibility—with its focus on postmortem analysis—to real-time observation and control. They'll gain the ability to respond faster to changing conditions and threats, especially when aided by automation, so they can deliver the great customer experiences that result in higher conversion rates, greater retention, and increased profitability.

This stage enabling real-time response is where nearly three quarters of all survey respondents find themselves now, at least in part. More than half are looking forward to the impact of AI, which can help them transition toward applications that can adapt proactively and in real time to better defend themselves and respond to situational changes.

81% of financial services organizations are already using AI or plan to by the end of 2022.

The strategic importance of AIOps is not only about adaptability, though. Growing challenges in automation also make AIOps an important trend for the near future.
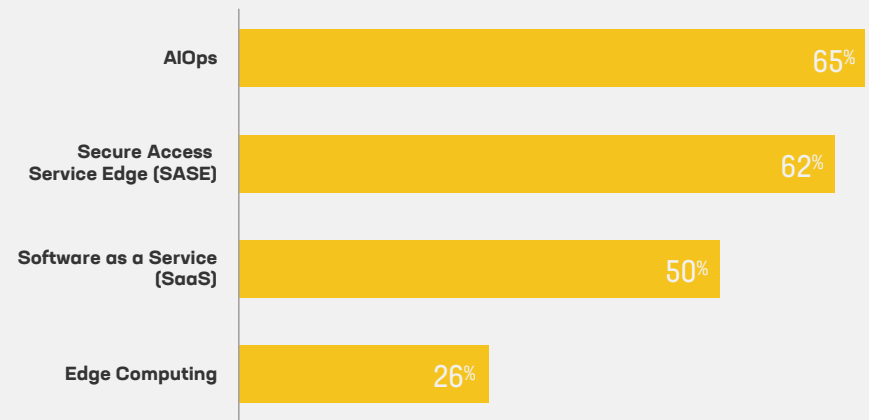
Top Trends for Financial Services Organizations

We asked:
Which technology trends do you think will be strategically important for your organization in the next 2-5 years?

We learned:
AIOps narrowly outpolled SASE as financial services organizations pursue the insights and automation needed for higher performing, more secure applications.

Trend	Percent
AIOps	65%
Secure Access Service Edge (SASE)	62%
Software as a Service (SaaS)	50%
Edge Computing	26%

Automation is not automatic

Automation is fundamental to digital transformation, but there is risk in assuming you can simply provide IT with the right tools and APIs and automation will magically ensue. Although the majority of organizations feel they have the toolsets they need, almost as many are experiencing significant frustration related to those tools. That frustration is caused by integration across existing toolsets, with nearly half citing toolset integration as their top automation challenge. A skills deficit is also a significant problem. This struggle with tools and talent likely increases the value of solutions that are available in all environments.

Treating infrastructure as code is beneficial

In this fraught environment for automation, nearly half of financial services organizations say they now treat infrastructure as code. Those who do provision and manage infrastructure, including platforms, container systems, and services, through declarative or scripted definitions—code. Those definitions take the place of manual configuration or traditional configuration tools. As a result, configurations, policies, profiles, scripts, and templates are separated from the hardware or software on which they're deployed and can be stored, shared, revised, and applied like code can.

48% treat infrastructure as code.

This approach has tangible benefits. The responses of organizations that use this approach indicate that they are:

- Twice as likely to deploy more frequently, even when using automation.
- Four times more likely to have fully automated application pipelines.
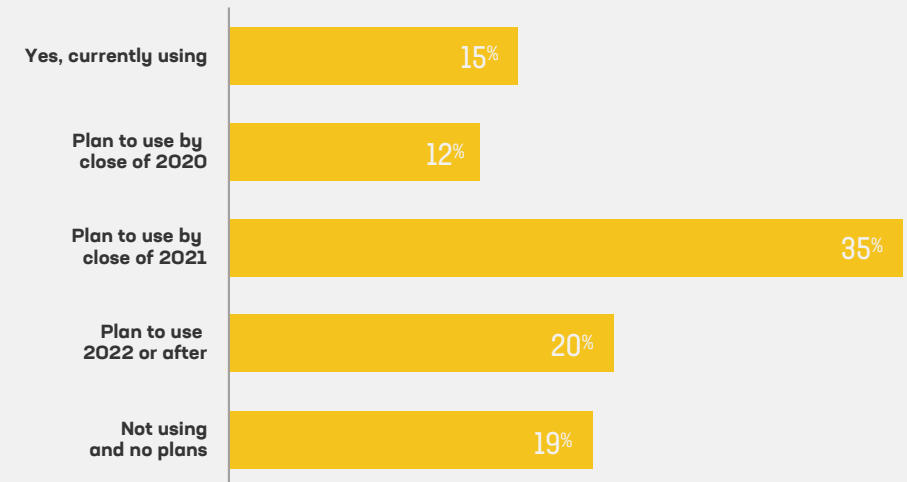- Twice as likely to have more than half of their application portfolios deployed using fully automated pipelines.

AI Use Among Financial Services Organizations

We asked:
Are you using currently using and/or planning to use AI and/or machine learning to protect your applications?

We learned:
Financial services organizations expect to quickly increase their proportions of AI-assisted business.

Yes, currently using	15%
Plan to use by close of 2020	12%
Plan to use by close of 2021	35%
Plan to use 2022 or after	20%
Not using and no plans	19%

These results suggest that treating infrastructure as code is a key to the improved security and customer experiences AI can deliver. We expect more financial services organizations to adopt this "secret sauce" as digital transformation proceeds.

Those treating infrastructure as code are **four times more likely** to have fully automated application pipelines.

F5 insight

Given a scarcity of skills and architectures of increasing complexity, financial services organizations with robust automation efforts—particularly those who treat infrastructure as code—will be better positioned for further progress toward AI-assisted business.
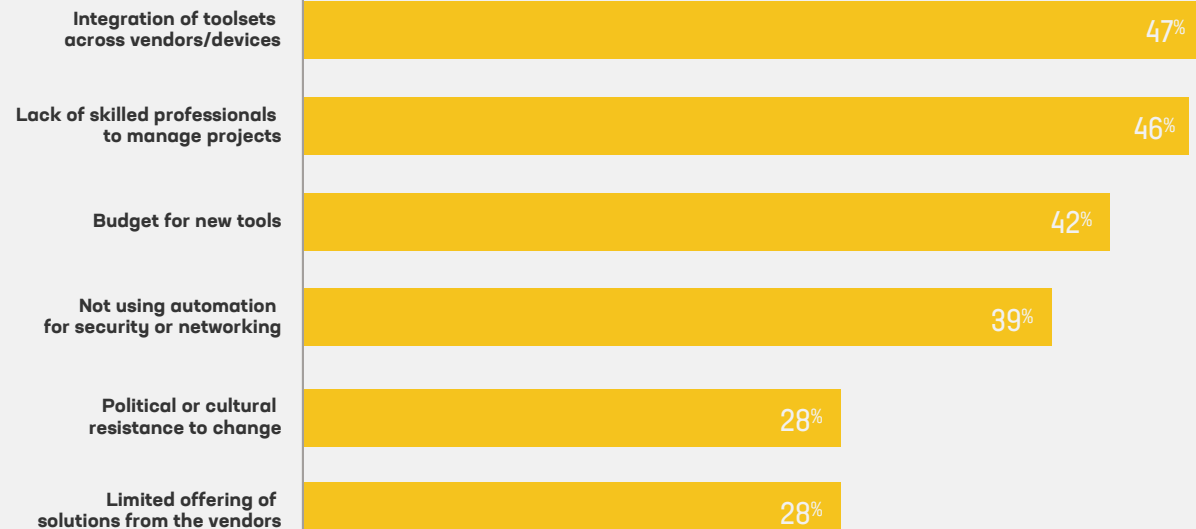
Automation Challenges for Financial Services Organizations

We asked:

As you think about the use of automation in the network, what do you find challenging, frustrating, or difficult? Please select up to three.

We learned:

Toolset integration is the top automation challenge for financial services organizations.

Challenge	%
Integration of toolsets across vendors/devices	47%
Lack of skilled professionals to manage projects	46%
Budget for new tools	42%
Not using automation for security or networking	39%
Political or cultural resistance to change	28%
Limited offering of solutions from the vendors	28%

Conclusion

Rewarding Customer Experiences Hinge on a Multi-Cloud Application Strategy

Financial services organizations around the world have risen admirably to the challenges of COVID-19, greatly accelerating their digital transformations—which were already leading the way relative to most other industries. They're generating incredible momentum toward realizing applications that are truly adaptive.

Further progress will require advances in two areas. The first is real-time application data. The second is the insights that data can deliver. Telemetry from application security and delivery technology must be available in every deployment location to provide those insights, as well as the automation that will enable more responsive, higher performance and more secure applications. Only organizations with both automation and the insights they need will be able to sort through overwhelming data, recognize looming availability and performance issues before they occur, and act quickly enough to ensure seamless digital experiences for customers while new, value-added services can be launched perfectly and ahead of competing options.

To achieve those prerequisites and make further progress toward AI-enabled business, financial services organizations need an application strategy that includes application security and delivery technology solutions that follow the apps across multiple environments, including the edge. Management of multiple architectures will continue as the norm, even as modernization proceeds, making multi-cloud availability critical. Only easy-to-use, multi-cloud solutions can deliver the telemetry needed to uncover insights and enable the AIOps that will deliver on the promise of digital transformation with improved customer experiences and stronger bottom-line performances.