IT + Observability
Predictions 2022
Rapid cloud acceleration, DevSecOps and the new battlefront for customer experience
The future keeps getting faster

The big story of 2020 and 2021 was rapid digital transformation, with an emphasis on cloud adoption. As we tack up our 2022 calendars, that storyline will continue. In part because most organizations still have plenty of modernizing left to do, and because the disruptions that turbocharged cloud adoption in 2020 aren’t entirely behind us.

“COVID-19 accelerated adoption of cloud services because cloud is the perfect vehicle for dealing with uncertainty,” says Splunk’s chief strategy officer, Ammar Maraqa. “And even in the most optimistic outlook, there’s still plenty of uncertainty ahead of us.”
While there was an initial rush into the cloud as a means of dealing with the pandemic, the continued progress comes with a more measured eye on security and resource management. While we all remember the mad scramble of those early COVID-19 shutdowns, Splunk Chief Product Officer Garth Fort, who observed that wave cloud migration from his former role at AWS, saw plenty of method to the madness.

“Most organizations saw Covid as an opportunity to do things they’d long wanted to do,” Fort says. Rather than invent whole new contingency plans on the fly, IT leaders had the green light to move forward on existing transformation roadmaps. “Most companies I interacted with executed their digital transformation well, so they’re continuing to move forward without a lot to clean up.”

That said, the ongoing acceleration of digital transformation has its challenges. Chief among them, says Shawn Bice, Splunk’s president of products and technology, is the sheer scale — and absolute criticality — of the undertaking.
“To stay relevant, organizations must reinvent themselves periodically. The introduction of the cloud set off a generation of reinvention, and now, the next wave of reinvention will be driven by data,” Bice says, explaining that data will move from being a record of what has already happened to being the catalyst that makes things happen. “The challenge, though, is the sheer size and scale of data that organizations now have to manage, across many formats and sources. To gain new insights from all this data, organizations need to quickly break down data silos to combine and analyze all their data regardless of where it resides, all while keeping it secure and in compliance with regulations and privacy policies.”

An immediate challenge for many organizations, Fort says, is talent. Not just to fill existing or newly defined jobs, but to bring new, blended skill sets across IT and lines of business.

“What’s really needed are those who combine some data science, some AI/ML competencies and traditional database administrator skills,” he says. “That’s generally not a combination you find very often, so it’s really worthwhile to find or develop that kind of talent.”

On top of all that, there’s the constant flux of customer preferences and market dynamics, throwing any number of wrenches into the best IT leaders’ works. We’ll explore some of those key challenges here.
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Observability is the next battleground for customer experience.

There was a time when early adopters of cloud services had a real advantage over competitors in terms of customer experience (CX). Now that cloud adoption is widespread, that competitive differentiator has become table stakes. The new CX differentiator is observability.

Observing customer interactions has always been mission critical. The ephemeral nature of applications and services makes it difficult to observe application performance. In a stateful world, you could sample portions of your application landscape and, if a problem was suspected, trace from customer initiation through completion. It wasn’t easy or perfect, but it was an option.

Today, in a stateless and serverless cloud-based world, unless you can grab all of the data generated from hundreds or thousands of constantly changing APIs and effectively extract relevant metrics and traces, as well as store the raw data flows, you’ll no longer be able to sense changes or look back in time.

What’s missing is observability, which allows companies to see how their complex webs of cloud services are actually performing, and diagnose problems that affect customer experience directly and fix them, whether it’s in the application code, the user interface or the infrastructure performance.

“The desire to understand the customer’s journey is inherently an observability problem,” says Nate Smalley, Splunk’s global director of IT operations and observability. “Understanding the customer journey and leveraging analytics to rapidly develop and test improvements relies not just on cloud infrastructure and fluid DevOps processes, but real visibility into how customers are interacting with your systems.”

“But cloud providers’ native cloud tools don’t give you end-to-end visibility across multicloud and hybrid cloud,” says Andy Hershey, group vice president for global cloud sales and GTM transformation. The cloud giants aren’t motivated to help you use other clouds, too.

“And you can’t really nail customer experience,” says Smalley, “until you can treat the customer as an observable component across the entire process.”
It’s almost a Catch-22: Observability becomes all the more essential to customer experience because organizations are creating more complexity in the pursuit of better customer experience.

"It’s not easy to provide great CX even with redundancy, so you need to monitor everything coming out of your cloud systems to determine that everything is performing well, that applications are healthy," says Splunk VP of Corporate Strategy Chris Grisanti. The slightest hiccup anywhere in your infrastructure can frustrate your customers.

Latency affects everything from search rankings to cart abandonment.

Moving to the cloud, Smalley says, was the 20% of the work that delivers 80% of the result. To go that last mile — where the differentiating advantage lies — requires the bulk of the effort.

“You look at the best digital commerce sites, at how they handle things, and you can feel the difference," he says. "As customers, we respond to experiences that are fast, easy to understand and aesthetically pleasing. The retailer is perfecting that experience by observing everything — how quickly the page loaded, whether you clicked a button, how all the services behind that web page and that button performed — across mobile and other platforms. That's the last 20%, interpreting all the activity to understand whether the experience resonated for the customer, and why or why not."

And observing, understanding and acting on that data is where customer experience lives and dies.
**Prediction**

Edge computing will have big buzz in 2022 — and will live up to the hype.

We peg 2022 as the year that edge computing hype hits its peak. There has been a conversation around edge for years, but the volume has been rising, and in the next year, you’ll be tempted to tune it out. Don’t.

The next multicloud is edge, our experts agree. Edge paradigms allow more computation to be done where the data is collected, and see only a necessary selection of data moving to the core. Right now, in the wake of spiking digitalization, tech leaders are ready to obsess over the value of the edge to cut costs, preserve bandwidth, and lead to smarter, faster actions. But it won’t happen overnight. There may be a good five-year curve before the edge becomes truly mainstream.

In that time, the value of edge computing will become even more compelling as the edge itself expands. “It will be driven by the combination of 5G and fiber to the last mile,” says Johnathon Cervelli, Splunk’s vice president of GTM Strategy. “When you can have a hundred million more objects connected wirelessly by cellular, each getting gigabit-per-second downloads, that’s pretty transformative in terms of sheer diversity of sensors and other objects that can — and will — exist.”

Hardware considerations — bandwidth and latency — are limiting factors on edge computing right now. It’s also a software problem, says Mike Saliter, Splunk’s vice president for platform sales, industries and advisory. “The software doesn’t exist for all the use cases, so even where you have the network capability and bandwidth, there’s still a need to get access to it and translate it, and that’s going to take time, just like the hardware rollout will.”

Edge computing gets most of its hype around big-vision examples like autonomous vehicles, but there are plenty of right-now examples, including how those self-driving cars will get all their sensors and chips in the first place.

“We’re helping customers with chipset manufacturing right now to monitor production lines in real time, because the minutest change is critical to the manufacturing process,” says Splunk Vice President of APAC Simon Davies. “They’ve got technologies from multiple providers involved at different stages in a process where sub-millisecond response time is needed, and that has to happen there, at the edge.”
Building that, and keeping it running, won’t be easy. Remember, "the edge" is a singular noun, but almost any instance of edge computing would involve hundreds or thousands of endpoints. So security and observability won’t be one-click challenges. We predict a five-year curve before edge computing is fully mainstream.

"Organizations are definitely still wrapping minds around the challenges of having things processed both centrally and at the edge," Davies agrees. "How do you achieve visibility and provide security across all that?"

Thus, as the excitement around edge expands and more powerful use cases continue to grow, expect much of the buzz around edge computing to focus on analysis on the edge, observability on the edge.

Don’t wait for the future to shake out, though. Garth Fort, Splunk’s chief product officer, notes that most organizations have edge challenges to solve already. "As a buzzword, edge computing tends to refer to cutting-edge industrial uses, but the mainstream edge has been here for a long time: mobile devices. That’s the aspect of edge that every organization needs to be thinking about."

Cervelli agrees. "After people solve, ‘how do I get to the cloud,’ their question is, ‘how do I get to the edge?’"

The potential, says Jesse Chor, VP of engineering for platform experiences, is too great to ignore. "Just ask yourself: What can my business do with that bandwidth and low latency?"

"Mainstream edge has been here for a long time: mobile devices."

Garth Fort, Chief Product Officer, Splunk
Prediction

Serverless is going to be big. Also, way more confusing than most people realize.

In general, serverless sounds like a sweet deal. Container-based apps run on servers that you don’t have to provision or manage, speeding up development, simplifying DevOps and allowing organizations to scale to meet sudden demand. And you only pay (by the millisecond) for the resources you use without having to provision the resources in advance. If your code is idle, so is the meter. Those, and other benefits, are powerfully persuasive, and the serverless offerings at the major cloud providers are picking up traction.

The primary value of serverless is scale. Serverless has been driven by consumer-facing offerings where it’s very difficult to predict the resources necessary to deliver good customer experience.

Streaming video is a great example. Can ESPN predict how many viewers will tune in to the last quarter of a college football game if the score is tied, or if a particular third-quarter play goes viral on social media? Can Twitter predict when a certain meme will drive an exponential increase in traffic or interactions? Better if you don’t have to. With today’s ephemeral cloud landscapes, these companies have an option when this happens: dynamic, horizontal scaling. But, as we talked about above, this demands whole new observability capabilities.

“I think all cloud services will be serverless in nature,” says Shawn Bice, Splunk’s president of products and technology. “It’s the simplest programming model for developers and customers: no server infrastructure to think about and scale.”

Bice, a veteran of Amazon Web Services, is very familiar with the serverless value prop. “Serverless is about simplicity for developer and customer. There should be no such thing as customers having to do the undifferentiated heavy lifting to scale to be larger or smaller. They shouldn’t have to think about instance at all.”

Will Cappelli, Splunk DevOps sales specialist and a former VP of research at Gartner, agrees that serverless and function-based architecture is a major trend. He just worries that it’s more complicated than it appears.
"What people don’t realize is that not only is the backend becoming function-based, but there is also a major revolution in programming languages used to create the entire stack, front and back," Cappelli says. “The issue is that all the challenges that microservices and containers present are cranked to 11 in a function-based architecture. We've gone from looking at application components with lifetimes of months to microservices measured in microseconds, and we'll need an atomic clock to measure the lifetime of a function in these stacks.”

Some potential serverless drawbacks are well-known. Long-running applications can actually cost more to run in a serverless environment, and there’s the danger of vendor lock-in: You’re writing code for a specific environment, such as AWS’s Lambda, and if you want to switch to, say, Azure's serverless offering, you may have trouble adjusting the code to run on Azure Automation.

“It’s true that serverless best caters to intermittent workloads,” Bice says. “But I don’t worry about ‘lock-in.’ You can take your data and your data model and leave anytime. If you’ve configured for serverless at AWS and want to go to Azure, or vice versa, you’ll probably want to stay serverless, so you can do relatively minor tweaks to the model. But you can do it.”

Cappelli says that the inherent complexity of moving to, and maintaining, a serverless environment, is a less-understood challenge that will bite a lot of organizations in the backend. Already, he says, DevOps teams are moving beyond microservices and containers into functions, and traditional monitoring won’t show them what’s going on. “It won’t be worth turning those tools on when stacks are composed of functions,” Cappelli says. “All they’ll get is a screen covered in alerts; a total mess.”

The need for observability and AIOps become much more of an issue, he says, and adds that the problem will reach mainstream awareness in the next couple of years. “As ever, it’s up to vendors providing management functionality to go to the business people and explain the solution to a problem they may not have recognized yet.”

But it’s something every organization will have to — and should — wrestle with.

“Early adopters are seeing huge wins in resource utilization, agility and customer experience,” says Splunk Chief Product Officer Garth Fort. “Anyone who’s not looking into serverless is missing a bet. On the five-year horizon, this is a major point of interest for any organization.”
Observability and AIOps will converge to unlock true value.

So it turns out that observability and AIOps have more to do with each other than we thought. “Historically and culturally they have been seen as distinct,” says DevOps Sales Specialist Will Cappelli, who first coined the term “AIOps” as a VP of research at Gartner. “But we’re realizing that observability and AIOps are inextricably linked, and I predict that this recognition of their inextricable intertwinedness will be commonplace by the end of 2022.”

Why the convergence of two previously separated practices? For one thing, DevOps teams need the same noise reduction and better recommendations that IT teams get through AIOps. Practitioners are realizing that it’s great to work with metrics, traces and logs, but the data from the complex systems in question is granular, low-level and high-volume. It’s useless if DevOps teams are unable to see patterns and make diagnoses to prevent and remedy incidents, and AIOps can provide faster insights, better correlation and greater noise reduction — and automate responses.

Kate Matsudaira, vice president of engineering at Splunk, agrees that observability really needs the ability to take action on data: “For an observability product to be successful, you have to take action. It doesn’t do any good to just point out problems, you have to know how to fix it. Give me a tool that explains that, that opens the Jira to get the repair started, and then shows me the UX impact.”

As for ITOps, teams now recognize they can learn a thing or two from observability practices when it comes to monitoring. “When IT teams acquire monitoring tools, they now ask whether prospective tools indeed have characteristics of an observability platform,” Cappelli says. “So the concept of observability is spreading into ITOps.”

Nate Smalley, global director of IT operations at Splunk, has also seen observability make its mark among IT departments. “We find now that folks have a hybrid approach to AIOps and take observability into account,” he says. “Teams will start working together and recognizing how centralized alerting and ML can help when something goes wrong. With ML, we’ll be able to semi-autonomously or autonomously route and direct alerts when critical issues occur.”

Essentially, AIOps tools will be enabling DevOps workflows. Cappelli expects that through the end of 2021 and into 2022, we’ll see more vendors explicitly join their observability message to an AIOps message. “This dependence will be seen,” he says, “the need for observability to feed AIOps to make it worthwhile, and the need for AIOps to make observability.”
Prediction

In the next two or three years, data residency laws will create new headaches for IT and business leaders.

Data residency laws are popping up everywhere, and any organization that does business across borders is likely to be affected. In recent years, more and more countries have rolled out laws governing how to handle data that originates within their borders. Often the motivation is privacy and the protection of citizens who may be customers of international organizations. National security is also cited, and in some cases, authoritarian regimes may use privacy protection as an excuse to keep a firm grip on information and gain access to cutting-edge technologies.

“It’s becoming an issue,” says Splunk VP of Engineering Kate Matsudaira. “We got a taste of it when the EU rolled out more stringent privacy protections with GDPR. We’re also seeing countries like Australia and Germany and China passing laws that say that data generated in a country can’t leave that country.”

Add India, Russia, Indonesia, Vietnam and Nigeria to the list, and you can see the headache being created for global businesses that want to compare sales figures, customer experience metrics or supply chain data.
“That has huge implications for a business that is primarily run elsewhere, or whose observability products run elsewhere, because they can’t pull data out of those countries,” Matsudaira says. “This is just the start of a lot of future legislation, and businesses that play internationally and the vendors whose data technologies they rely on have to think about how to build systems that work within these new parameters.”

If these foil organizations’ strategy to bring global data together centrally to run analytics for making decisions, the new strategy has to be a slightly siloed version of the same: Bring regulated data together in one place within the governing country, run analytics and generate reports, and export those reports, with data anonymized or aggregated to be compliant with regulation. Use those regional summaries for global analysis and reporting.

“Essentially, you do most of your data work in the originating area,” says Mark Woods, EMEA chief technical advisor, “so while data moves across borders only by exception, with the right tools and approach insight should still move freely.”

Obviously there’s a lot of refinement each organization will have to make, depending on its industry, data types and regions of operation. But it will be a new factor for business and IT leaders to manage. And the complexity is increasing all the time, Matsudaira adds.

“Engineering leaders especially need to start thinking about how their systems will work within different data privacy and residency laws,” she says, “and still deliver the results their businesses demand.”
Prediction

Organizations will adopt DevSecOps or face heightened risk of being breached.

There has been a certain buzz around DevSecOps in recent years. But it hasn’t gained the prominence of DevOps, which could lead observers to wonder whether this new movement will dominate or fail. And that’s the wrong question. Our experts tell us that while relatively few organizations will explicitly call themselves “DevSecOps” shops, the core idea of moving security earlier in the software development life cycle is already being adopted — and is essential.

Splunk Global Director of IT Operations and Observability Nate Smalley agrees that making security a shared responsibility throughout the software development life cycle and building security thinking into the earliest stages of development is vital. It’s also … not quite here yet.

“On the whole, we’re super early in the journey,” he says. “Two things you usually sacrifice if you’re building something fast are security and visibility. In the coming year, we’ll see a crystallization around the value of ‘shift left’ — right alongside cementing observability, organizations will cement security.”

He notes that this shift is harder than it sounds. Processes and roles have to be realigned, and new skill sets will be needed throughout the DevOps continuum. But in a world of dramatically increasing supply chain and ransomware attacks, organizations need to work it out.

“The faster organizations can recognize the need to start early in the pipeline process and do reviews, the better,” Smalley says.

Recognition of the ever-more-threatening threat landscape will drive the shift, as will compliance and regulatory needs. The increasing prevalence of cloud-first or cloud-native organizations also lend a natural gravity to DevSecOps. So how do forward-leaning organizations make the leap? Mike Saliter, Splunk’s VP of platform sales, says it’s crucial to get the people and culture aspect right by breaking down the cultural gap between developers and security professionals — two groups that have not traditionally worked in a close and collegial way.

“Security needs to go where the developers are,” Saliter says. “Devs don’t consult security tools. They solve problems on Slack. We need more integrations to get security where the devs are, whether it’s providing security results in GitHub or sending Slack notifications about some code issue.”
Getting there is (at least) half the fun

How do you sum all that up? Fast is the new slow, and the cloud delivers essential scale, resilience and capacity to innovate — but is anything but simple. Our predictions this year didn’t even revisit the progress of machine learning or the impact of upcoming 5G rollouts, and it still sounds like too much to keep up with. While every organization will have to deal with industry-specific challenges, the broad challenge will be adopting and managing complex hybrid multicloud infrastructure and the fast-changing applications sprawling across it.
Observability will be the essential ingredient in getting the performance and customer experience promised by all that cloud transformation.

“Companies will continue to pursue a multicloud strategy, rather than choosing any one public cloud provider,” says Splunk Chief Strategy Officer Ammar Maraqa. “Observability will be a strategic factor because comprehensive visibility and manageability are important, but the cloud providers won’t enable that.”

“Organizations, Splunk included, have a whole different type of performance and security challenges with infrastructure that’s so distributed,” says Johnathon Cervelli, Splunk’s vice president of Platform GTM Strategy. “There are definitely monitoring challenges to managing very complex, next-generation cloud native technologies — containers, Kubernetes, all that is very ephemeral, changing so much faster than humans could ever manage. It requires new technologies and whole new thinking to monitor all of it.”

It’s all evolving very quickly, and observability strategies must keep pace.
Contributors

**Shawn Bice**
Shawn joined Splunk as president of products and technology in 2021 after five years of meteoric growth at AWS, where he was vice president for database services. Before that, he was with Microsoft for 17 years leading SQL Server and Azure data.

**Simon Davies**
As vice president in APAC, Simon is responsible for the full portfolio of Splunk solutions in the Asia-Pacific and Japan markets. He is a veteran of Microsoft, Salesforce, Oracle and Citibank.

**Will Cappelli**
Will joined Splunk as a DevOps sales specialist from Gartner, where as VP of research he coined the term AIOps. Before Gartner, he also worked with the Giga Information Group, the Meta Group and Ovum.

**Garth Fort**
Garth joined Splunk in 2021 as SVP and chief product officer. He came from AWS, where he was director of product management and then general manager, after a two-decade tenure at Microsoft.

**Chris Grisanti**
Chris was a corporate strategy leader at Cisco before joining Splunk, where he’s VP of Corporate Strategy. He is also a former restaurateur who fondly quotes Peter Drucker: “Culture eats strategy for breakfast.”

**Johnathon Cervelli**
Currently VP of platform GTM strategy, Johnathon has been with Splunk for 13 years as a leader of multiple product and sales teams. He knows where all the bodies are buried.

**Ammar Maraqa**
Ammar is Splunk’s senior vice president and chief strategy officer. Back in the day, he led corporate strategy at Cisco, was part of the M&A team there, held product roles at Dell, and started his career as a consultant with Bain & Co.

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For more insights, get the 2022 predictions reports for data security and executive/emerging technologies.