IT + Observability

Predictions 2023

How a convergence of trends and technologies will reshape resilience in the year ahead

splunk>

The Fast Track to Foundational

The world of IT Operations has been in tremendous flux for more than a decade. The worlds of IT Ops, we should say: traditional ops, the many variations of DevOps, and the organizations that have pockets of both. All of these approaches grapple with the increasing complexity of infrastructure and applications. Hybrid, multicloud … microservices, Kubernetes, serverless.

One of the big topics in recent years has been observability, a modern approach to monitoring that provides complete visibility and context across the full stack of infrastructure, applications and the customer experience. Observability helps ensure digital health, reliability and performance.

And it's essential in today's hypercomplex environments.

"Every organization has a digital presence, with more and more moving parts," says Mala Pillutla, Splunk's group vice president for observability. "Especially for larger organizations, the complexity is increasingly volatile. They need Kubernetes monitoring, serverless monitoring and more. The success of your entire digital ecosystem, and therefore your business, depends on observability to keep it all running. So observability is no longer a differentiator — it's a core competency."

She says she sees two basic types of sponsor for observability. "One is your traditional ops team, a centralized, shared service that supports the entire org. The other is a loose grouping of AppDev, DevOps and SREs, and we tend to see them in cloud-native organizations where the teams are not centralized. The first group is focused on the transition from legacy, monolith architecture to cloud-native tools, and the second is not playing that longer game. They're already there; they want new tools with out-of-the-box value."

Simon Davies, Splunk's SVP and general manager in the Asia-Pacific region, agrees. He says he sees a wide range of legacy and cutting-edge organizations tackling the challenge differently.

"A lot of organizations in Asia don't have the same legacy technology debt, allowing them to leapfrog into new technologies," he says. "A lot of orgs are thinking about observability for the first time, with no legacy practice."

And others, says Dhiraj Goklani, Splunk's VP of observability, struggle to catch up. "Some folks are still asking, 'What is observability?' And they're still finding it hard to digest, while at the other end, it's definitely understood, and a must-have for cloud-native organizations."

Our State of Observability 2022 report found similar variance in Europe, both among types of organization and among countries. Organizations in France and the United Kingdom trailed the average in observability adoption, on average, while Germany outperformed the global baseline.

Garth Fort, Splunk's chief product officer, notes that all this complexity is going to keep complexifying.

"Our Predictions report last year talked about the growth of serverless, and that's continuing," he says. "We're still very early in the adoption of true service architectures. More of our customers are building apps using microservices and containerized architectures, and the way you monitor performance when a container may exist for mere milliseconds is so different from earlier, less dynamic architectures."

Observability, then, will continue to support hybrid, multicloud infrastructures as they sprawl toward the edge and incorporate machine learning, microservices, containers and all the rest, and as the very practice of IT operations continues to evolve.

"And observability tools will be easier to use, despite that complexity," says Ammar Maraqa, Splunk's chief strategy officer. "These solutions need to support the journey of any individual organization across the various phases of cloud, and that's the only way these solutions will succeed."

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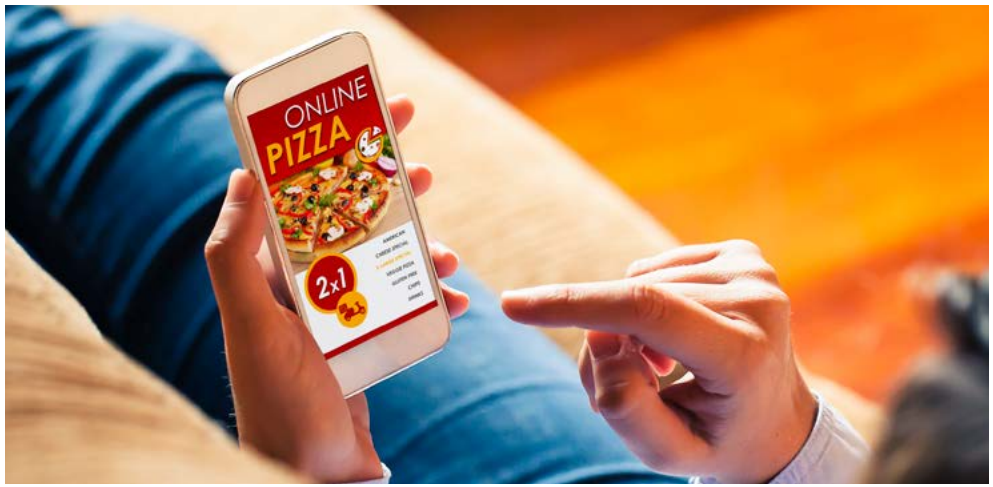
Prediction

Observability will be the new face of digital transformation — and digital experience.



At the start of the digital age, "digital transformation" was a useful term for a broad set of modernization efforts that were expected to deliver a variety of significant payoffs: Reducing costs; streamlining software development, product innovation and service delivery; improving forecasting and other strategic functions; automatically keeping the break room stocked with coffee and trail mix. These days, digital transformation is both faster and more focused. Especially since the arrival of Covid-19, DX efforts have focused on digital experience.

"Digital transformation, for most organizations today, is about providing a highly available, seamless digital experience for the customer," says Katie Bianchi, Splunk's chief customer officer.

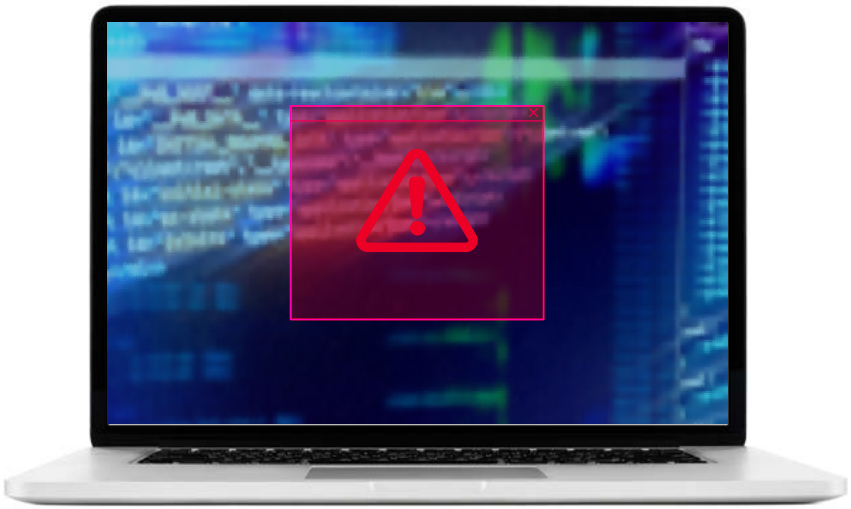
Chief Product Officer Garth Fort points to Splunk customer Papa John's, whose pandemic-era transformation was discussed at our annual .conf event. "Pre-pandemic, 40% of their business was digital. Post-pandemic, 90% of their orders come in through some sort of a digital interface," Fort says. "When any business sees that kind of e-commerce shift, their mobile app and their payment infrastructure and all that becomes absolutely mission critical. A lot of our customers in different industries had that sort of sudden pivot during the pandemic, whether it was in dealing with more digital customer interaction or in enabling widespread remote collaboration."

And don't expect a post-pandemic world where any of that changes back. "Accelerated digital transformation is here to stay," says Splunk Chief Strategy Officer Ammar Maraqa. And he says that in a more complex IT environment, fast and

fulfilling experiences are harder to deliver. “The complexity of greater, faster digital transformation is a challenge for most organizations. The tools to manage that complexity become even more important.”

That’s what makes observability the essential DX driver, Fort says. “It’s not good enough to be responsive when customers are having a problem on your network,” he says. “If we’re all doing our jobs right, the IT Ops team can remediate DX problems before the customer even sees them.”

A strong observability practice, he says, is the only way to get the alerts and insights that let you respond to a change in system behavior before the end user suffers. And not having those kinds of early-warning insights isn’t an option.



Prediction

IT spending *really* has to deliver measurable value.

It’s not a prediction, but an observation, to say that 2023 dawns amid considerable macroeconomic uncertainty. That tends to make companies more prudent about investments. While we’re not predicting that IT budgets will contract, they’ll certainly be more closely scrutinized.

“Right now, all the economic factors except employment point toward recession,” says Petra Jenner, SVP and general manager for Splunk in the EMEA region. “Companies are very concerned about investments in the face of a downturn. They’re purchasing only what’s needed right now, not making any forward-looking investments.”

“Companies are thinking clearly about which tech investments they want to make,” Splunk CEO Gary Steele agrees. “Real value has to be delivered, pretty quickly.”

We expect that value focus to center on digital experience, because nothing moves the needle more than direct improvements to how you serve your customers. And nothing moves it faster in the wrong direction than delivering a frustrating or broken interaction when better options are a click away.

Prediction

When observability is table stakes, automation will be the next differentiator.

Customer experience will shape digital transformation efforts in the years ahead. Focusing within the world of IT Operations, the big differentiator will be automation.

"Between the increasing complexity of systems and the huge shortage of tech talent, organizations will need a much greater reliance on automation just to keep up," says Spiros Xanthos, Splunk's SVP and general manager of observability, and a founder of observability startup Omnition.

Xanthos notes that the greater need to automate IT operations coincides with improvements in machine learning. "We've been collecting telemetry data for a long time, but that data was not structured enough for good automation," he says. "The poor signal-to-noise ratio allowed us to do some automation through AIOps, but it was very limited. Now organizations are increasingly able to collect data at full fidelity. That's going to change things dramatically, because the much higher quality data lets us build the models that we need essentially to automate processes right."

"The combination of AI/ML and automation is going to be really big," says Ammar Maraqa, Splunk's chief strategy officer. "The need is really there, because of the shortage of skilled IT and security talent and the increasing pressure on costs."

Katie Bianchi, Splunk's chief customer officer, also calls out talent issues. "Given ongoing talent shortages," she says, "automation enables you to scale domain expertise."

She says machine learning will both simplify and improve all business outcomes, from application performance to improved security detection. “In all those cases, ML provides better and more accurate insight so that we can see what’s coming next and orchestrate the best response,” she says.

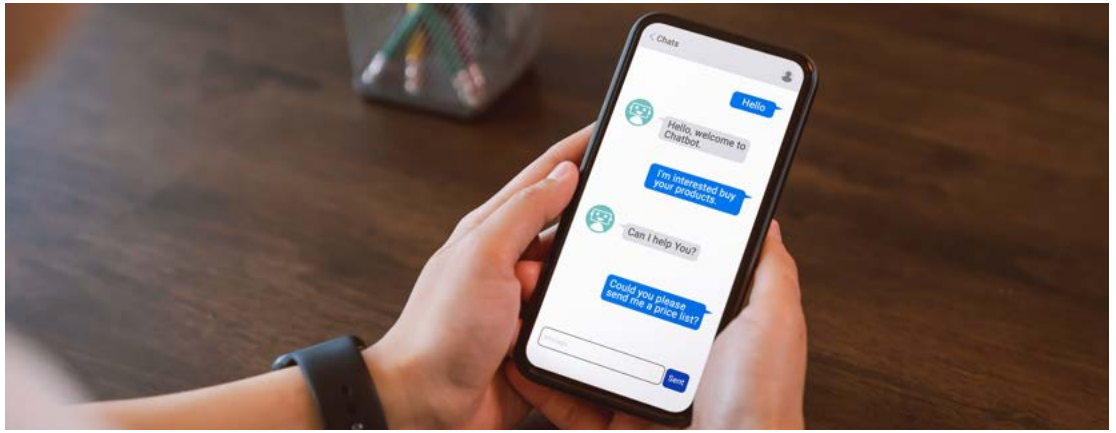
“Making automation smarter is the next big leap,” says Mark Woods, our chief technical advisor in EMEA. “It’s one thing to automate playbooks so that something a human would do happens at greater speed and scale. But the next step will be the application of more generalized learning to automation. Not just learning for a specific task, but something that’s trained up in one area that has applications across many areas.”

That will include a large range of things, from alerts and responses to system outages and cyberattacks, to streamlining peripheral processes and accelerating release velocity. Subho Majumdar, a senior applied scientist at Splunk, brings up process automation to more effectively onboard new talent.

“We have a lot of documentation that a new engineer might need to read when they join the company,” he says. “Imagine automating the onboarding process by using ML. Large language models could analyze all the internal documents and wikis to come up with role-specific recommendations for new hires.”

From new hire orientation to chatbots your customers can actually chat with, to greater resilience against threats and performance issues, expect automation to be the next big thing.

And then a few years after that, just like observability, expect it to become foundational.



Prediction

Observability and security data/tools will converge to create more resilient orgs.

There's a lot of talk about business resilience. It's the hot new buzzword. But it's also much more than that. We've identified two trends, covered in these next two predictions, that make meaningful contributions to the strength and durability of digital systems. The first is the convergence of data and tools from two formerly siloed aspects of resilience.

"There are cases, especially in highly regulated environments, for segregating some security data. But generally, there's a lot of overlap between what was traditionally Operations and Security," says Robert Pizzari, Splunk's VP of security in the Asia-Pacific region. "Progressive organizations are finding ways to optimize their data and tooling to accelerate time to resolution for any kind of incident."

"Where there's a strong push toward SRE-based engineering teams, a reliance on cloud-native tech, there's really no choice but to converge data and processes," says Dhiraj Goklani, Splunk's VP of observability in APAC. "You have to go down the DevSecOps path and bring it all together, baked into engineering best practices. Otherwise it's a disaster waiting to happen."

Spiros Xanthos, Splunk SVP and general manager of observability, sees the trend across the tech marketplace. "The industry is in consolidation mode," he says. "Consolidation of data and consolidation of tooling." Essential data, whether it's on-premises or in the cloud, can't be siloed. "The complex interconnectedness of applications running on the cloud makes availability and security tougher problems."

As the data comes together, and teams collaborate more across the DevSecOps spectrum, there's a tooling shift as well. Point solutions that see and serve only a fraction of the situation aren't helping resilience, and maintaining expertise across so many tools is a burden on fast-changing organizations. Splunk's 2022 State of Observability and State of Security reports both found that while the most mature organizations in both disciplines actually reported using as many or more tools than neophytes, the leaders had also dramatically reduced the number of vendors providing those tools.

"We're seeing that ourselves," Xanthos says. "Our own suite of cloud products has a number of tools, and we tend to see the more advanced customers adopt more of those tools."

"There's so much to be gained from this sort of convergence," says Chief Product Officer Garth Fort. "At .conf, we talked to the new CISO of REI, who was familiar with Splunk as a security tool, and he found that REI was already using Splunk for observability, so he was able to easily bring it over for security, using the same tools and the same data. And that applies to any technology — anytime teams can use a common tool with a common set of data, there's going to be big benefits."

Prediction

The CTO is rising, and the CISO is expanding.

The convergence of data and tools around the separate functions of IT resilience and cyber resilience are also affecting leadership, generally in one of two significant senior roles. First, many organizations are empowering the CTO, in part driven by the adoption of DevOps practices. And at other organizations, CISOs are taking greater responsibility for resilience in general, including not only combatting security attacks, but ensuring performance.

Start with the chief technology officer: "The role of CTO is becoming more prominent, and taking more responsibility for technologies like observability that span DevOps and traditional IT operations," says Mala Pillutla, Splunk's group vice president for observability. "Splunk's early customers were mostly the NOC and the SOC, but with the rise of observability we're seeing platform teams and centers of excellence under the CTO become a more significant constituent."

Chief Customer Officer Katie Bianchi spends most of her time talking to our customers and understanding how their IT and Security organizations contribute to overall business success, and she too has seen more leadership from CTOs.

"Today's CTO has taken on more responsibility. As more and more organizations shift to the cloud and their observability needs subsequently grow, CTOs now have much more responsibility across a broad range of applications and infrastructure."

It makes sense to Spiros Xanthos, Splunk SVP and general manager of observability, and a three-time founder/CEO. "Usually the CTO manages the development organization, or maybe the SRE organization as well, so they have a much bigger responsibility usually in the operations of the cloud infrastructure and applications running on it," Xanthos says. "At the same time, we're increasingly seeing that the CISO is not responsible strictly for security anymore, because the tools and data that provide cyber resilience can be used for availability resilience."

Which brings us to the chief information security officer. Years of effort to tear down data silos, and to provide tools that let

security teams see across the entire organization, have put CISOs in a great position to tackle any threat to IT systems.

"Not only do CISOs have these tools," Xanthos says, "but obviously, one of the first questions that must be addressed when you detect an availability problem is, 'Is this a security incident?'"

"We're starting to see the organizational dynamics and definition of mission reflect the convergence at the data layer," says Patrick Coughlin, Splunk's vice president of GTM strategy and specialization. "Job titles and job descriptions are changing to match, and the influence of the CISO is expanding across the enterprise to cover this broader definition of incident, meaning that the CISO is now weighing in on new decisions throughout the organization."

The CISO's move toward overall resilience and the CTO's more holistic responsibility for technology can happen at the same time within an org. Or not.

"It's not a uniform shift," Bianchi says. "Every organization achieves the balance it needs. But we're definitely seeing the scope of those two roles, CTO and CISO, expand."

With both options, we see organizations trying to achieve in their leadership what they've spent decades trying to build in their digital environments: centralized, unsiloed oversight, to deliver greater efficiency, stronger resilience and better strategic insights.

Prediction

How we'll mitigate the talent crisis: Broader recruitment, training in principles not tool skills, and automation.

The pandemic accelerated several notable trends in the human resources realm. Our Executive report dives deeper into the tension between recessionary forces and employee demands, but here we wanted to highlight efforts to mitigate the talent shortage that forever plagues IT and security teams alike.

"No matter what economic environment emerges, that very tight labor market won't change for security or IT," notes Splunk CEO Gary Steele. As a result, companies are trying harder to throw a wide net for talent, rather than a narrow net for skills. Hiring curious problem solvers rather than people with the four specific certifications in the job rec.

Dhiraj Goklani, VP of observability in APAC, agrees with that strategy, but notes that the problem isn't just a lack of STEM graduates. "In many markets across APAC, we see organizations building next-gen architectures and tooling such as observability to attract and retain a talented workforce."

That's where tools like GitHub Copilot will eventually allow smaller teams of developers to work faster, and allow less technical people to extend their abilities. (See our Exec Predictions report for the changes to IT that these large language models will bring.)

In addition to automation and hiring for talent, not narrow experience, software makers and the IT Operations and Security teams they serve will have to add a broader education component to their focused tool training.

"Organizations need to rely on their suppliers to build the ecosystem of talent that will deliver business outcomes most effectively," says Chief Customer Officer Katie Bianchi.

"Companies like Salesforce have been innovative because they recognized the need to build an ecosystem of talent that can use their platform to power major business outcomes. The goal is not to train teams just on using the solution, but also on using the solution to achieve business outcomes."

She says another onus on the supplier is to make the product as easy to use as possible.

"We're trying to move in that direction ourselves," says Lily Lee, senior manager of security solutions strategy. "In the case of security, my team is looking at how we can make our product education more broadly applicable, so we are not just teaching you Splunk, but also how to be a better threat hunter, how to be a better tier one or tier two analyst."

This approach will build a better talent ecosystem, and make the companies that invest in such career-level training more attractive to the very talent they're trying so hard to retain in the first place.

Prediction

AI/ML value is materializing all around us. MLOps will bring structure and transparency to extend that progress.

Years of artificial intelligence hype is finally paying off.

"In the classic adoption curve, we're past the hype and into the building phase," says Mangesh Pimpalkhare, vice president of product management for the Splunk platform. "We're just getting to the point of real value being realized."

The average user of software, whether it's a consumer's video streaming platform or a business user's customer resource management application, doesn't realize that their digital experience is enhanced by machine learning. Sure, it's all over the marketing copy, but the user experience is simply smarter, faster … better.

"The stage has shifted a lot in the last ten, even the last five years," says John Reed, principal product manager at Splunk specializing in AI. "In the early days, there was a lot of focus on the actual technology and manual, hands-on training. That's no longer the goal or end point. AI is becoming the lubricant to make things easier. The focus is not on the nuts and bolts underneath; it's about value."

"The software makers have figured out the underlying complexity, those nuts and bolts," Pimpalkhare says. "That lets customers focus on results."

But someone has to focus on the operational aspects of machine learning. Thus, a new discipline has emerged: MLOps.

"MLOps is DevOps for machine learning," says Joe Ross, a senior principal applied scientist at Splunk. "Machine learning has additional complexities. It's a combination of

software and data with a more complex lineage, so being able to characterize and describe how you got to certain outputs or outcomes so you can debug it or explain it to a regulator is more complex. Through MLOps, we're seeing the application of standard software lifecycle management practices to AI/ML. A lot of that is taking the shape of better tooling."

In fact, MLOps has spawned a sprawling industry of tools — frankly, more than the world needs.

"The MLOps market is completely saturated," Reed says. "There are hundreds of vendors providing different aspects of MLOps to make it work end-to-end, and there's limited innovation in that market. There will be massive consolidation over the next couple of years."

That's not at all to say that MLOps as a discipline is imploding. Far from it, Ross says.

"If you track job listings with DevOps in the title over time, the percentage has gone up quite a bit — it's no longer just the most technically progressive companies looking for those skills," he notes. "That will happen with the MLOps world as well."

So start hiring and training today to get ahead of tomorrow's talent crunch.

Prediction

Increased concerns about ethical AI will affect how ML is trained and maintained — and create new roles to do it.

Our third look at the increasing pervasiveness of machine learning is in terms of evolving ethical practices. Stories of unintended bias discovered in ML models regularly emerge. Fortunately, MLOps practices will bring more standardization and transparency, making it easier to assess models for fairness and to maintain and retrain to prevent biases from creeping in.

For more, we turned to Subho Majumdar who may not have written *the* book on ML ethics, but he certainly co-wrote *a* book on the topic (Practicing Trustworthy Machine Learning, just published by O'Reilly). Majumdar is active with multiple community efforts — Trustworthy ML initiative, Bias Buccaneers and AI Vulnerability Database — which are looking to guide and educate ML practitioners to develop ML models that are fair, safe, robust, explainable and that preserve privacy. Majumdar says that transparency, a necessary prerequisite of fairness and other values, is increasingly important.

"Trustworthy ML involves operationalizing ML while incorporating human values into your ML pipeline," he says. "The goal is to build trustworthy ML pipelines from the beginning, so you don't face biases and other problems in your outputs after the models are deployed in the real world".

Joe Ross points to model cards, which provide brief documentation about an ML model that increases transparency into the model and its outputs. A card would describe a model's uses and limitations, review bias and ethical considerations, and detail the data and methods used to train the model.

"And we're seeing work at HuggingFace and other repositories to ensure that we can understand the lineage of a model," he says. "This moves us toward being able to make scientific demonstrations of bias in the model as part of a standard review process that checks for a list of known biases."

Bias checklists, he says, could become a standard part of ML quality assurance, both when the model rolls out and over time, as additional data alters its outputs.

In addition to new processes, concern with AI ethics will also create new jobs. Majumdar foresees specific team roles for an AI ethicist, and for a prompts engineer, who would focus on how prompts not only influence the accuracy of the model's outputs, but its potential biases.

"As a community, we're progressing toward providing transparency to whomever the stakeholder is," Majumdar says. "If it's the government, that would mean transparently abiding by any regulations and compliance guidelines. If the stakeholder is the consumer, there needs to be a way to file a ticket or a complaint about any concerns on algorithmic decision-making. There is already an AI Incident Database, which tracks things that went wrong with deployed AI/

ML models. It's kind of like the CDC's vaccine effectiveness database, where you can submit any problem that occurred because of a vaccination. This is a complicated area, so it will take a few years for the ML community to figure things out. But I do think we are going to see more standards and best practices on trust and transparency in ML."

"Regulation is always behind the cutting edge technologies, whether you're talking about blockchain, ML, even ecommerce," says Mangesh Pimpalkhare, vice president of product management for the Splunk platform. And he's hopeful that some of the worst outcomes we've seen to date around data privacy and technologies such as social media will provide learnings to shape the next wave of technology.

"The wildness of tech will continue, but it won't take as long to reach a responsible endpoint. It's in the industry's best interest to establish effective self regulation ahead of lawmakers. You see some of that now, with self-declarative responsible AI initiatives."

Kriss Deiglmeier, who leads Splunk's social impact initiative, agrees that regulation isn't an immediate answer, and that the public won't be content to wait. "AI and data ethics are becoming more important to business, and in the short term it will be the responsibility of business to make their own progress," she says. "More regulation will follow, but it'll be different in each country or region."

The Importance of Resilience

The solution to a lot of problems in the ITOps world, anywhere on the traditional-DevOps spectrum, involves more time, money and people. Throw all that at most problems, and most problems can be resolved. Unfortunately, the turbulent global economy that is carrying us out of 2022 and into the new year means tighter belts all around.

But that's not so bad. It's not like IT teams are generally throwing around cash like a Kardashian on Rodeo Drive, anyway. IT leaders have always understood how to make the most of limited resources and focus on the most necessary wins. And that's exactly the attitude we're seeing across the board among our customers: quick wins and meaningful value.

"Leaders I talk to are very focused on extracting as much value as effectively and quickly as possible out of their data," says Chief Customer Officer Katie Bianchi. "And they want their suppliers to prescribe fast paths to value."

"Digital transformation is one of those things that you can't completely deprioritize," says Chief Strategy Officer Ammar Maraqa. "But organizations will be more nimble, with more incremental funding and a sharp focus on results."

And a lot of that focus will be on resilience, both observability into performance or security of data and systems. In terms of performance, it's one of the chief values any digital organization can offer (and we're all digital orgs now).

"Systems have to be resilient, because customer expectations have grown exponentially in our high-speed world," Bianchi says. "Application performance and availability are at the heart of a great customer experience and a growing, innovative business."

But as high as expectations have grown, we've also seen the tremendous evolution of the technologies that help us meet those needs. From observability to automation to machine learning, we predict that IT teams will have the tools and techniques to succeed.

Contributors

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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.

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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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Gary Steele
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John Reed
John is a Principal Product Manager at Splunk. His responsibility includes the strategy and execution of initiatives across Machine Learning and Core Search. Previously, John was a product manager at AWS, where he worked across the AI/ML service portfolio.

Mark Woods
Splunk's chief technical advisor in EMEA, Mark has been an engineer, consultant, entrepreneur and CTO. He helps executive teams and international policymakers understand the seismic potential of data-driven approaches.

Joe Ross
Joe is senior principal applied scientist at Splunk. Before joining Splunk, he worked in senior data scientist roles at SignalFx (before it was acquired by Splunk) and Ayasdi. He has a background in mathematics, and has publications in pure math and statistics.

Spiros Xanthos
Spiros is the general manager of observability at Splunk. Previously he was the CEO and Founder of Omnition, an observability platform for cloud-native applications that pioneered no-sample tracing and co-created OpenTelemetry until it was acquired by Splunk in 2019.

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