



MODERNIZING IT:

Redefining App Delivery

By Lori Mac Vittie
F5 Principal Technical Evangelist



The next generation of app delivery is upon us. There is [no new box in the network](#) that will save us from the operational storm about to descend upon us. What we need is a new approach that shifts how app delivery tools and technologies are leveraged to support business and operational outcomes.

AN OPERATIONAL STORM MAKES LANDFALL

The global pandemic will be identified as a significant inflection point in history, impacting the course of politics, economies, and societies. It is also the defining point in time at which we leapt from a hybrid world into a digital one. That digital world was always our destination, always on the horizon, but the accelerated rate of transformation presented organizations with the opportunity and the impetus to leap firmly from one world into the next.

This leap, however, firmly landed businesses in a quandary. The frenzied focus on digital experiences left little time to evaluate the readiness of IT to operate the growth enabled by a digital presence. Even those the industry believed were best prepared—cloud providers and cloud-native companies—struggled to meet demand and experienced outages more than once during the pandemic. Zoom, Microsoft 365, Azure, Cloudflare, Slack, and gaming provider Steam all suffered significant outages in the third calendar quarter of 2020. ([Downtime Detector](#)) Throughout 2021, organizations across all industries endured significant incidents that caused digital blackouts for their employees and customers across the globe.

Thus, it's no surprise that technology leaders in every industry quickly recognized the growing challenge of operating a digital business at scale. It's also no surprise to see them putting into place plans to modernize technology as a result. The coupling of digital and workforce transformation is important because it gets to the heart of the biggest challenge facing a digital business: operational scale.

Digital businesses are able to operate in a marketplace several magnitudes larger than a physical business. This translates to more demand, which in turn requires more resources to secure and deliver the digital experiences through which business is conducted today.

Additionally, organizations are on track to digitize every business function, resulting in explosive growth of application workloads. Digitization does not stop there, as applications merely address the efficiency of completing specific tasks within a business process. Without workflows that digitize those processes, manual intervention still impedes the pace of business. A new layer of workloads focused on orchestrating workflows across applications to produce digital services is necessary, adding to the already complex environments resulting from digitization.

All this leads to an increased need for more resources to support a digital business.

83% OF EXECUTIVES AGREE THAT THEIR ORGANIZATION'S BUSINESS AND TECHNOLOGY STRATEGIES ARE BECOMING INSEPARABLE—EVEN INDISTINGUISHABLE. ([ACCENTURE](#))

MORE THAN 80% OF CEOs INTEND TO INCREASE SPEND ON TECHNOLOGY MODERNIZATION OVER THE NEXT 12 MONTHS, AND NEARLY THREE QUARTERS SAY THEY ARE UNDERGOING OR PREPARING FOR DIGITAL AND WORKFORCE/TALENT TRANSFORMATION. ([FORTUNE/DELOITTE](#))

THE HUMAN FACTOR

71% OF CEOS EXPECT LABOR/SKILLS SHORTAGES TO INFLUENCE OR DISRUPT THEIR BUSINESS STRATEGIES. (FORTUNE/DELOITTE)

Resources are not restricted to technology. People are required to operate the technology, just as people are required to develop the apps that deliver digital experiences to consumers. There is no future in which people are not involved in the operation of a business. But in a digital future, the number of people required to operate a business at scale **cannot** grow linearly with technology resources. Even if this was a viable operating model, the market simply cannot support it. Technology is required to enable people to scale expertise and, through them, scale the digital business.

Without technology, the cost to align operations and execute in a digital business rapidly outpaces revenue because the cost per service (per app) grows too high when relying on human operations. This means technology is not only important to grow business in a digital economy but is critical to *survive* in a digital economy.

*“Compare booking a taxi before 2010 to booking a Lyft or Uber today, you’re still hiring someone to drive you from one place to another. But now that service is offered in a way that is automated and flexible and adapts to changes in demand without a human operator in the middle. The traditional taxi service must anticipate demand well in advance and plan for capacity. **It is a manual staffing and planning exercise that is self-limiting.** Services such as Uber build in mechanisms to expand capacity more dynamically as demand increases. This is done automatically, with no human intervention save for the driver reacting to the data.”*

Geng Lin, F5 CTO

MORE THAN THREE-QUARTERS OF ORGANIZATIONS (77%) ARE EMBRACING SRE OPERATIONS. (F5)

TEAMS THAT PRIORITIZE BOTH DELIVERY AND OPERATIONAL EXCELLENCE REPORT THE HIGHEST ORGANIZATIONAL PERFORMANCE. (2021 STATE OF DEVOPS REPORT)

There are many names in the market today for the use of technology to scale operations. Digital or real-time operations and AIOps are among the leading contenders for what we will inevitably call this new operational model. But whatever we call it, the heart of the skillset needed to successfully execute on a digital operational model is bound up in a single term: site reliability engineering (SRE).

Coined by Google more than a decade ago, SRE is just beginning to significantly spread to a majority of businesses. The positive impact of this shift in operational approaches is clearly seen in greater deployment of applications in multiple clouds, more advanced workloads planned for deployment at the edge, and faster rates of AI adoption for lines of business, security, and operations.

The relationship of SRE to digital business is based on consistent research findings, which show that organizations demonstrating more maturity in SRE practices are 1.8 times more likely to report better business outcomes.

APP DELIVERY HAS GROWN INTO A DISCIPLINE THAT COMBINES TOOLS, TECHNOLOGIES, AND OPERATIONAL PRACTICES TO ENSURE APPLICATIONS AND DIGITAL SERVICES MEET SERVICE LEVEL OBJECTIVES (SLOS) FOR SCALABILITY, PERFORMANCE, AND RELIABILITY. (ENTERPRISE ARCHITECTURE FOR DIGITAL BUSINESS, O'REILLY)

MORE THAN THREE-QUARTERS OF ORGANIZATIONS (77%) OPERATE APPLICATIONS IN MULTIPLE CLOUD ENVIRONMENTS. (E5)

91% OF IT LEADERS SAID TRADITIONAL IT OPERATIONS ARE NO LONGER "FIT FOR PURPOSE" IN THE DIGITAL ERA. (PAGERDUTY)

Infusing these practices into the organization and scaling them to grow the digital business is the goal of modernizing ops. That puts the focus on optimizing and scaling the security and delivery of digital services, which points to the need for tools and technologies. Generally, this collection of tools, technologies, and services is known as *app delivery*.

The importance of app delivery to meeting service level objectives (SLOs) and aligning with business outcomes is undeniable. A strong plurality of organizations (82%) believe app delivery is important or very important to meeting SLOs. Indeed, these services have become so critical for organizations to achieve their technical and business goals that app delivery has become its own technology discipline.

The result is the emergence of modern app delivery.

MODERN APP DELIVERY

Modern app delivery is more than an approach, such as microservices or mobile apps, to delivering modern applications. Indeed, modern app delivery embraces the notion of *app delivery as a discipline* and addresses the core capabilities needed to operate and secure any application in any environment. This is an important point given that most organizations (70%) operate applications across a spectrum of architecture styles—from monoliths to microservices—and locations.

This mixed portfolio of architectural styles is one of the reasons organizations use so many different application security and delivery technologies in every environment in which they also operate applications. While microservices-based applications generally employ an ingress controller to provide load balancing and application routing, traditional applications tend to rely instead on proxy-based load balancing. An organization with both types of applications will likely deploy both types of application delivery technologies.

Moreover, modern app delivery cannot simply be thought of as new delivery models for app delivery alone. The shift of app delivery from hardware to software, from virtualization to containerization, or from on-premises to cloud-based delivery does not modernize app delivery; these shifts merely change locations, form factors, and cost models associated with app delivery. Rather, modern app delivery is a functional approach to defining app delivery, with the only criteria being the functional capabilities of its composite services.

The modernization of IT—and, in particular, its operational practices through the adoption of SRE—requires more than a functional approach. It demands a new way to deal with “digital incidents” in real time. That new way is a combination of tools, observability, and automation that support key SRE practices such as **application monitoring** and **automated SLO thresholding and alerting**.

The tools and technologies that enable SREs to quickly deal with incidents necessarily include app delivery. This is due to the nature of architectural dependency on app delivery services to provide scale, improve performance, and even protect applications and digital services. If an SRE must respond to degrading availability by scaling out a service, app delivery is in the critical path to accomplish the task. Thus, modern app delivery must also incorporate capabilities such as **observability** and **automatability**.

Furthermore, modern app delivery must support these functions and operational practices across a wide variety of environments. Organizations are already pushing the boundaries of what's possible today, adopting multi-cloud strategies inclusive of edge computing to [deploy many different types of workloads](#).

Together, the tools and technologies that deliver these capabilities across multiple environments in support of modern operational practices make up “modern app delivery.”

Modern Application Delivery



Tools and technologies

Key tools and technologies include **DNS, load balancing, API gateways, ingress control, service mesh, WAAP, and anti-fraud**.

82%

believe app security and delivery are VERY important to meet SLOs.



Capabilities

Key capabilities include **observability** and the ability to be harnessed to **automation** toolchains, in addition to performing specific traditional delivery and security functions.

52%

focus data and analytics projects on mining for performance and security insights.



Operational Practices

Key operational practices comprise **application monitoring, automated SLO thresholding and alerting**, and well-defined operational response plans.

77%

have adopted or plan to adopt SRE operational practices.

F5 State of Application Strategy 2022

Figure 1: The components of modern app delivery

This is a significant shift in mindset and approach to app delivery, which—like so many other capabilities in recent decades—has traditionally been simply bolted on to solve challenges *after* the design and development of an application.

MODERN APP DELIVERY IS A TECHNOLOGY DISCIPLINE

The next evolution of app delivery is not—indeed, *cannot* be—simply about technology and functions. It must also leverage synergies within the broader enterprise architecture and, therefore, the business. Meeting digital expectations with respect to availability and performance cannot be accomplished without technology to scale and optimize the applications that compose a digital experience. That technology has been, and remains, app delivery. The modernization of app delivery—and its elevation to a technology discipline—will greatly shape the capabilities of the entire digital business portfolio.

To learn more about modernizing architecture—especially app delivery—to serve a digital business, dive into our new O’Reilly book, [Enterprise Architecture for Digital Business](#).

