

Edge computing is improving business outcomes by helping companies grow faster, create scalable business models, and generate immediate profitability. It does this by deploying applications wherever they are needed, increasing business agility.

Edge Computing: The New Path to Improving Business Outcomes

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Introduction

Most CIOs today are either planning or executing a digital transformation strategy. This involves modernizing the business by becoming more data driven, with the goal of automating operations, delivering new customer experiences, and increasing the overall pace of innovation.

Retailers are implementing new technologies, such as real-time inventory tracking and contextual promotions, in their stores. Manufacturers are implementing video analytics to improve safety and reduce product defects. Warehouses are deploying robotics to improve the accuracy of order picking and shipments.

In all of these situations, new types of data are being generated to power these capabilities. But where do these applications reside? Traditional thinking would expect to find them in a centralized datacenter, whether owned by the company or in the public cloud. However, centralized approaches have inherent limitations that impede the performance of these new digital applications.

This is why edge computing has risen to the top of CIO priority lists. It can address these limitations by distributing applications closer to where data is acquired, analyzed, and acted upon. According to IDC's *Worldwide Edge Spending Guide*, worldwide spending on edge computing is expected to reach \$176 billion in 2022, an increase of 14.8% over 2021. That spending is forecast to grow to nearly \$274 billion in 2025 as enterprises look to edge solutions as a key enabler of their business objectives.

The edge is also an area where IT and OT systems converge, and digital-first organizations need the ability to run these applications on a common infrastructure. Edge computing is able to create a modern operating environment that can be centrally managed in order to maximize the value of critical business data while maintaining a security profile that meets cyber-resiliency requirements.

AT A GLANCE

KEY STATS

- » 74% of organizations expect to increase spending on edge solutions over the next two years.
- » 72% of organizations reported improved operational efficiency by deploying workloads at the edge.
- » 67% of organizations are concerned about the availability of in-house staff and skills.

KEY TAKEAWAYS

Edge computing has emerged as a necessary complement to the cloud, helping organizations gain real-time insights from data generated in the field. Service providers are playing a key role in designing and managing edge solutions.

Current State of Edge Computing

Over the past decade, there has been a trend toward cloud computing. The ability to quickly provision resources, scale on demand, and pay for only what you use has removed many barriers to innovation. A common theme in the industry was that all workloads would eventually be migrated to a hyperscale cloud datacenter; it was just a matter of time.

However, that migration did not happen. Enterprises discovered several limitations when placing certain workloads in the public cloud:

- » **Latency/performance:** The roundtrip time it takes for data to be transmitted to a remote datacenter and processed can be prohibitive for real-time applications that require quicker response times than the cloud can deliver.
- » **Cost:** The proliferation of Internet of Things (IoT) and other connected equipment has led to an increase of data generated in remote locations, which can be expensive to transmit and store for long periods of time in a core datacenter or the cloud.
- » **Compliance/digital sovereignty:** Whether GDPR in Europe or the California Consumer Privacy Act in the United States, there continue to be more digital sovereignty regulations dictating rules for where data can be stored. Corporate governance policies can also restrict the movement of data.
- » **Resiliency:** Although public clouds are considered highly reliable, there have been significant outages that have negatively impacted customer business operations. Additionally, there is always the possibility of a disruption in network access between a site and the cloud.

These limitations are driving interest in edge computing. Edge computing is not a replacement for cloud but a complement, helping complete a hybrid IT strategy. It allows customers to find the best execution venue for their applications. In some cases, edge applications are deployed on premises. In others, edge applications are deployed in a nearby service provider facility. Having flexibility in deployment options is essential.

While many cloud decisions are driven by developers, the shift in focus to edge has elevated the influence of IT. According to IDC's 2022 *EdgeView Survey* of IT and business decision makers, 42% said IT management is a valuable link between the business and the C-suite because many edge decisions are part of a broader corporate strategy.

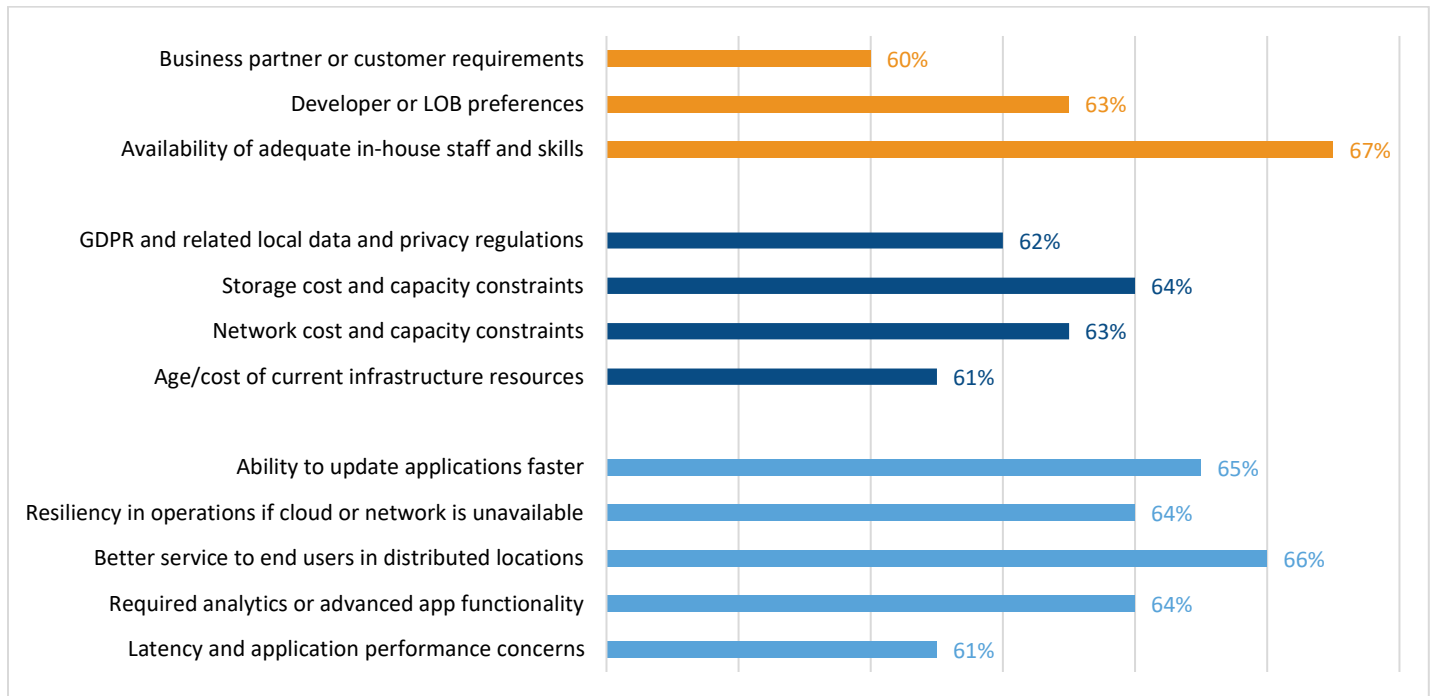
Edge can be the unifying point for multicloud environments. IDC reports that 64% are currently using multiple public cloud providers, and that number is only increasing over time. This is mainly driven by the fact that each cloud has unique strengths and enterprises are maximizing the use of those capabilities in their applications. Edge service providers often have high-speed interconnects to the major cloud providers, solving one of the key multicloud challenges.

Given that edge computing is still new for many organizations, there is often a desire to work with a professional services organization to augment internal teams. In IDC's *EdgeView Survey*, 41% of respondents said they have taken advantage of strategy and transformation services to understand how edge computing can improve existing systems. Once the strategy is created, the next step is to perform a readiness assessment to map the existing set of infrastructure and applications. This assistance can also extend to the implementation phase with 40% of enterprises using migration and integration services.

Figure 1 illustrates important edge deployment criteria grouped into skills, costs, and performance considerations with business leaders and application developers continuing to shape and influence edge decisions.

FIGURE 1: **Edge Deployment Criteria**

Q Rate the following criteria you use when deciding to deploy workloads at edge locations.



n = 904

Note: Values represent the percentage of respondents who rated the criteria 4 or 5 based on a scale from 1 to 5, where 1 = least impact and 5 = most impact.

Source: IDC's EdgeView Survey, 2022

The Business Perspective

While often talked about in a technology sense, edge computing is supporting business transformation strategies in several areas. IDC data shows that:

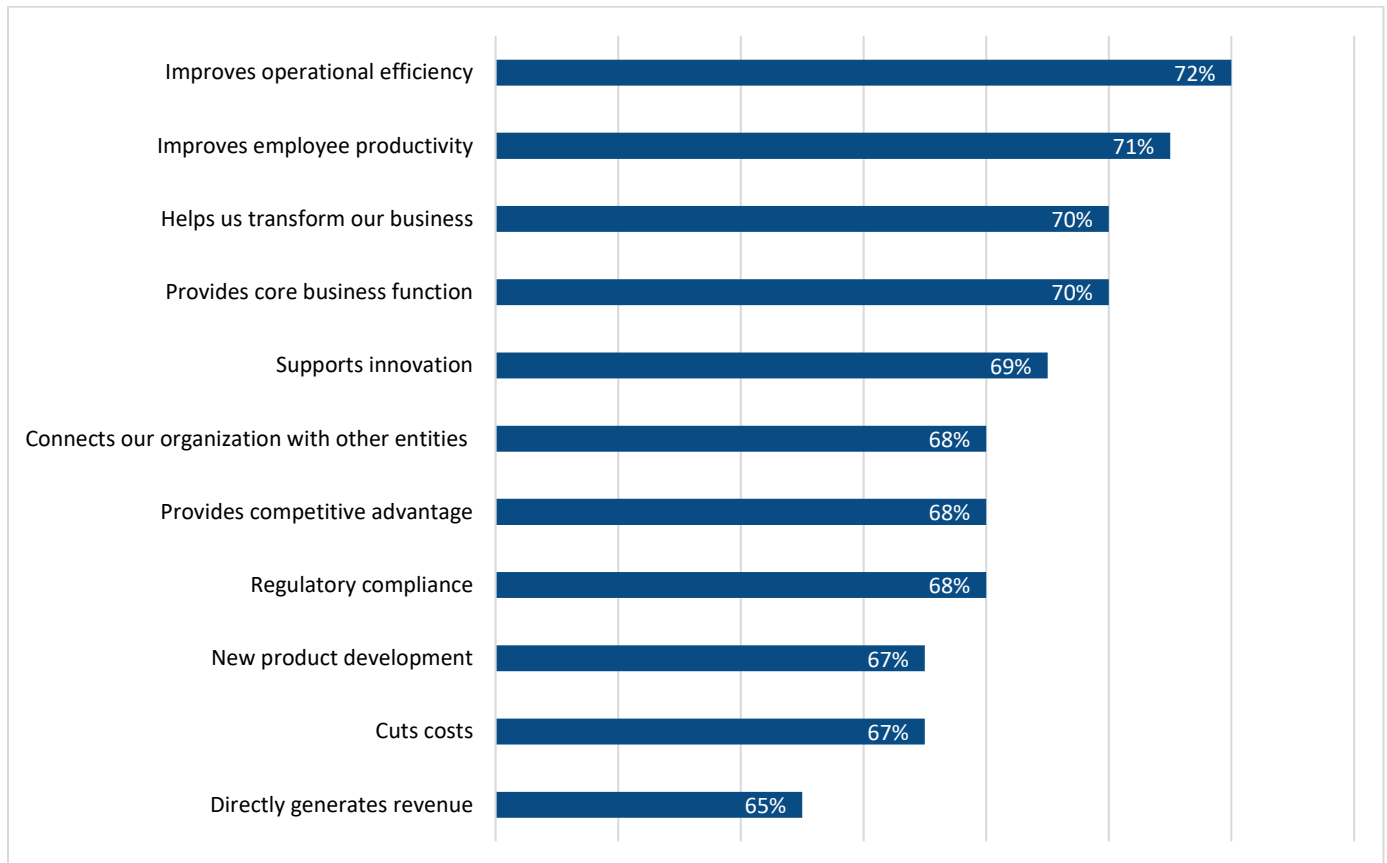
- » 72% of organizations are investing in edge to create a scalable business model.
- » 70% of organizations are generating immediate profitability from edge solutions.
- » 69% of organizations view edge as necessary to growing quickly.

These are not one-time initiatives. According to IDC research, 74% of organizations expect to increase edge spending over the next two years by an average of 37%. As edge applications demonstrate business value, the increased investments are targeted to improve performance, add more resource capacity, and meet new business requirements. Edge computing is not a short-term trend; rather, it is a long-term strategy. Figure 2 illustrates the benefits that

organizations achieve when implementing edge solutions, with operational efficiency, employee productivity, and core business functionality having the most impact.

FIGURE 2: **Edge Benefits**

Q How important are the following benefits when deploying workloads at the edge?



n = 904

Note: Values represent the percentage of respondents who rated the benefits "important" or "very important."

Source: IDC's EdgeView Survey, 2022

While there are many new use cases associated with edge computing, 70% of respondents in IDC's 2022 *EdgeView Survey* indicated they are more focused on modernizing existing infrastructure. For example, retailers have long had standalone servers and storage in the back of their stores. However, these systems typically supported simple applications such as point-of-sale terminals. Today, the amount of technology being implemented in stores can be overwhelming: videocameras, security systems, smart lighting, HVAC controls, digital signage, inventory systems, RFID scanners, and other IoT devices. Not only is managing all of these individual systems difficult (especially without a local IT staff), but protecting the data that they hold to maintain privacy is a top concern.

This is driving the need to implement cloud-native technology, but without the limitations of the public cloud. Edge computing managed by a service provider is the cloud without restriction. In many cases, edge applications can be

hosted in a private cloud in a nearby datacenter without sacrificing performance or availability. Protecting data at the edge is top of mind, with compliance, security, and privacy requirements influencing edge infrastructure decisions.

Across industries, organizations are focused on investments that support a secure, high-performance platform. Today, many are focused on building a foundation, investing in key infrastructure components such as network, security, and systems management. IDC expects that over the next two years, more organizations will deploy AI and ML applications at the edge that can discover new insights and automatically implement that knowledge within the business.

This will require organizations to develop a comprehensive, seamless edge/core management strategy as they seek to extract more value from edge data and as data management practices are subject to greater scrutiny and regulations. Skills and resource availability to execute on edge projects will continue to be a challenge for the foreseeable future, which is why service providers play an important role in enabling enterprises to take advantage of these new technologies.

Considering Lumen

Lumen is a multinational technology company that enables companies to capitalize on emerging applications and power the Fourth Industrial Revolution (4IR). Its mission is to further human progress through future technologies. The focus of Lumen is the Lumen Platform for Amazing Things, which the company claims is the fastest, most secure platform for next-generation business apps and data. Lumen is helping customers in the 4IR handle the complex and data-intensive workloads of next-generation technology and businesses.

Lumen has an extensive portfolio of edge solutions:

- » **Edge Bare Metal:** Lumen Edge Bare Metal offers flexible access to a distributed edge network of high-capacity bare metal cloud servers designed to significantly reduce latency and geared to maximize security, performance, and orchestration control.
- » **Edge Private Cloud:** Lumen Edge Private Cloud on VMware Cloud Foundation brings together software-defined networking and vSAN storage to deliver a completely integrated hyperconverged infrastructure as a service that transforms the datacenter to meet the demands of the digital age with a managed service for Kubernetes and full-stack modernization.
- » **Edge Gateway:** Lumen Edge Gateway is a vendor-agnostic edge computing solution that enables on-demand experiences for virtualized network, security, and IT functions to reduce hardware costs and optimize network and IT personnel time.
- » **Network Storage:** Lumen Network Storage delivers block, file, or object storage designed for near-zero latency with cloud-like flexibility, scale, and predictable pricing that can easily be spun up wherever enterprise data demands without daily on-premises hardware management — and without egress fees.
- » **Dynamic Connections:** Lumen Dynamic Connections quickly turns up new cloud-based applications and services with secure, high-performance cloud and datacenter connections that shift workloads to where they are most valuable, when they are most valuable — all with a consistent, predictable cost model.

- » **SASE:** Lumen SASE Solutions unify network and security management for distributed enterprises. A centralized, cloud-based experience makes it easy to quickly design and purchase the solution and then add sites and users. Professionally managed or self-managed options suit a variety of needs.
- » **Managed and Professional Services:** Lumen's experienced Managed and Professional Services team enables customers to innovate, scale, and drive efficiencies in edge applications by providing advisory, project, and ongoing management services that can deliver lasting results across virtually every industry and stage in the IT life cycle.

Challenges

Given that edge computing has so much potential to dramatically improve business outcomes, it is not surprising that the edge computing market is highly competitive. This competition can be challenging for enterprises that must decide which technologies to select as well as how best to manage them.

With approximately 400,000 route miles of fiber and over 150,000 on-net fiber locations, Lumen is recognized more as a leader in global networking and less as a full-service infrastructure provider. However, investments in the Lumen Platform are quickly changing that perception, and in the case of edge computing, Lumen's strengths in network, security, and managed IT infrastructure give the company a key advantage over its competitors.

Conclusion and Essential Guidance

In today's business environment, the ability to innovate quickly and maximize the value of data is critical to achieving and sustaining competitive advantage. As CIOs create strategies to modernize infrastructure and applications, they are realizing that a distributed architecture provides the flexibility, resiliency, and agility needed to meet the objectives of their organizations.

Edge computing is a newer, yet critical aspect of this distributed architecture. It can increase the speed and accuracy of business decisions by deploying applications closer to where data is acquired, analyzed, and acted upon. It can also reduce costs and improve security by limiting the movement of sensitive data.

IDC recommends starting with a definition of the desired business outcome and an evaluation of existing technology investments to determine where additional investments are needed. To accelerate the process and avoid common pitfalls, many organizations see value in working with a managed services provider that can design, build, and operate the solution.

Lumen is helping its customers improve ROI with flexible, enterprise-grade edge computing solutions that include compute, storage, networking, and security elements that can be deployed in Lumen edge datacenters or on premises. By combining its edge computing solutions with its global network and services capabilities, Lumen is well positioned to enable the next generation of modern applications, wherever they are needed.

Lumen is helping its customers improve ROI with flexible, enterprise-grade edge computing solutions.

About the Analyst



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Dave McCarthy is a Vice President within IDC's worldwide infrastructure practice, where he leads a team of analysts covering cloud and edge strategies. Dave's insights delve into how hybrid and distributed cloud platforms provide the foundation for next-generation workloads, enabling organizations to innovate faster, automate operations, and achieve digital resiliency.

MESSAGE FROM THE SPONSOR

Lumen is a technology company that enables organizations to benefit from emerging applications that power the Fourth Industrial Revolution. We provide the fastest, most secure platform for next-gen applications and data that integrates global network infrastructure, cloud connectivity, edge computing, connected security, voice, collaboration, and enterprise-class services into an advanced application architecture for industries across the globe.

As data is dramatically shaping the future of all humankind, Lumen and Intel are working together to relentlessly unleash the potential of data, leading to more capable and efficient edge computing, and pervasive technologies across devices, systems, processes, data analysis and workloads.

To learn more and Lumen and Intel, please visit

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