A Strategic Look at Edge Computing
Improving business outcomes with connected data

Ghassan Abdo
Research Vice President, WW Telecom,
Virtualization & CDN, IDC

Dave McCarthy
Research Vice President, Cloud and Edge
Infrastructure Services, IDC

Navigating this InfoBrief

Click on titles or page numbers to navigate to each section.

In this InfoBrief

Edge deployment continues to increase. By implementing edge solutions, enterprises have experienced business benefits such as increased quality of products/services, improved customer experience, and increased productivity; and technical benefits such as security, increased productivity through automation, and improved application performance.

Managed service providers play a critical role for many; nearly half of enterprises surveyed relied "a great deal" on partners to deliver edge solutions. Customers are going to their existing infrastructure providers (61%) and MSPs (38%) as primary sources for edge computing.

Understanding and prioritizing use cases are essential to edge planning; the ability to analyze large amounts of data in real time and modernize existing infrastructure (e.g., move to IaaS at the edge) are key benefits of edge computing. Over half of respondents require latency range (5-20 ms) for time-sensitive use cases such as retail and healthcare, and one-third require even less latency (<5 ms) to support very time sensitive use cases such as manufacturing, AR/VR, and robotics.

The information in this InfoBrief is based on the Lumen Solutions Thought Leadership Survey, sponsored by Lumen and conducted by IDC.
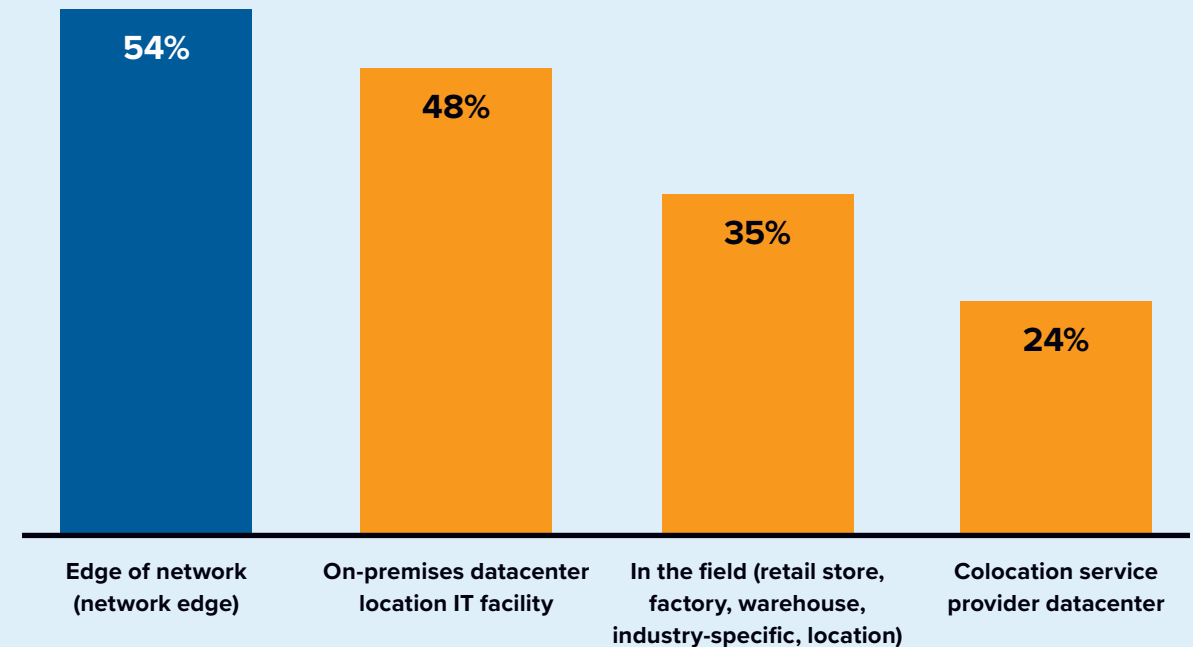
Momentum Is Building Behind Edge Deployment

54% of respondents are using edge solutions in production today with the most traction in financial services (57%), manufacturing (47%), technology/software development (44%) and media/entertainment/gaming (44%); these companies have production in multiple locations.

Majority of edge solutions are deployed within a single U.S. state, with a push towards national rollouts within two years

Service provider/telco edge is the primary deployment location for edge solutions

64% of respondents plan on new edge investments within one year

Edge Deployment Locations
(% of respondents)

Edge of network (network edge)	On-premises datacenter location IT facility	In the field (retail store, factory, warehouse, industry-specific, location)	Colocation service provider datacenter
54%	48%	35%	24%

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Strategic Partnerships Are Key to Successful Edge Implementations

Customers are going to their existing infrastructure providers (61%) and MSPs (38%) as primary sources for edge computing

Partner ecosystems rank highest in importance for financial services and media & entertainment companies

54%
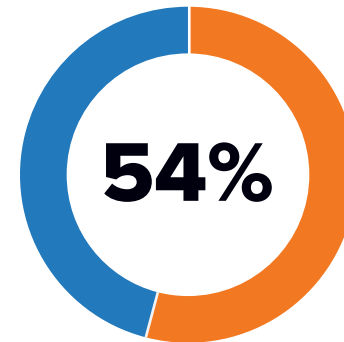
54% of all respondents leveraged external resources, with manufacturing requiring the most assistance
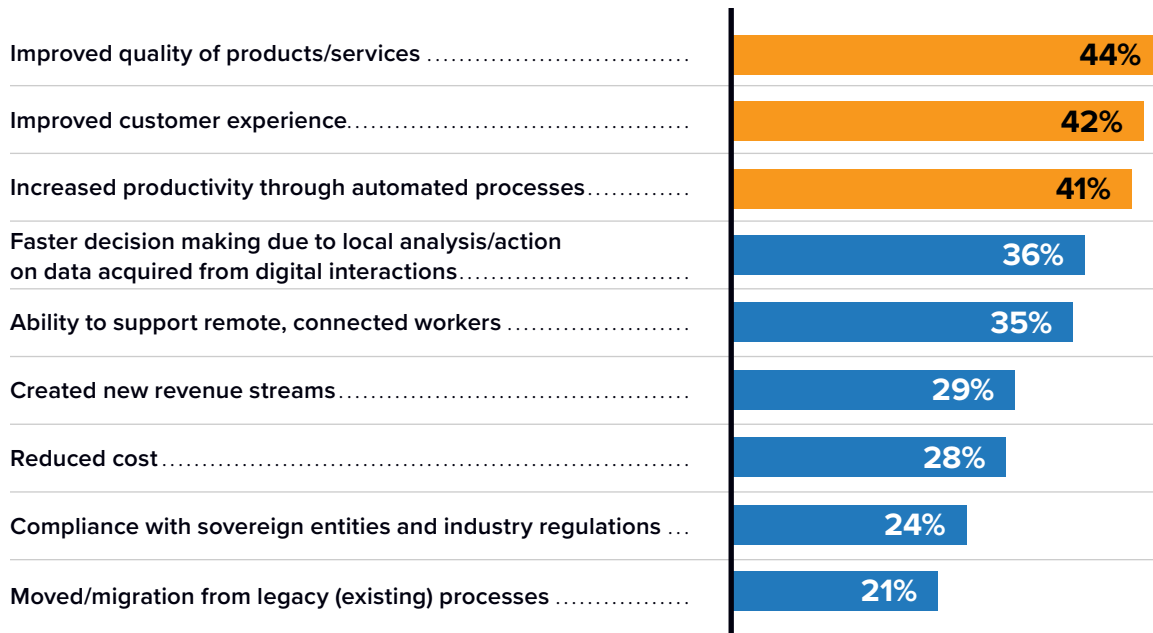
Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Business Outcomes of Edge Implementations Are Compelling

Top business benefits
Quality of products/services, improved customer experience, and increased productivity

Q: What are the primary business-related benefits/outcomes your organization **has experienced** by deploying edge computing solutions?
(% of respondents)

Benefit	%
Improved quality of products/services	44%
Improved customer experience	42%
Increased productivity through automated processes	41%
Faster decision making due to local analysis/action on data acquired from digital interactions	36%
Ability to support remote, connected workers	35%
Created new revenue streams	29%
Reduced cost	28%
Compliance with sovereign entities and industry regulations	24%
Moved/migration from legacy (existing) processes	21%

Top percentage improvements
Compliance, reduced cost, and faster decision making

Q: Approximately, by what percent have each of these business outcomes **improved** since your organization deployed its edge computing solutions?
(Mean % improvement)

Outcome	%
Improved quality of products/services	22%
Improved customer experience	26%
Increased productivity through automated processes	23%
Faster decision making due to local analysis/action on data acquired from digital interactions	27%
Ability to support remote, connected workers	23%
Created new revenue streams	26%
Reduced cost	27%
Compliance with sovereign entities and industry regulations	30%
Moved/migration from legacy (existing) processes	20%

Technical Outcomes of Edge Implementations

Top technical benefits
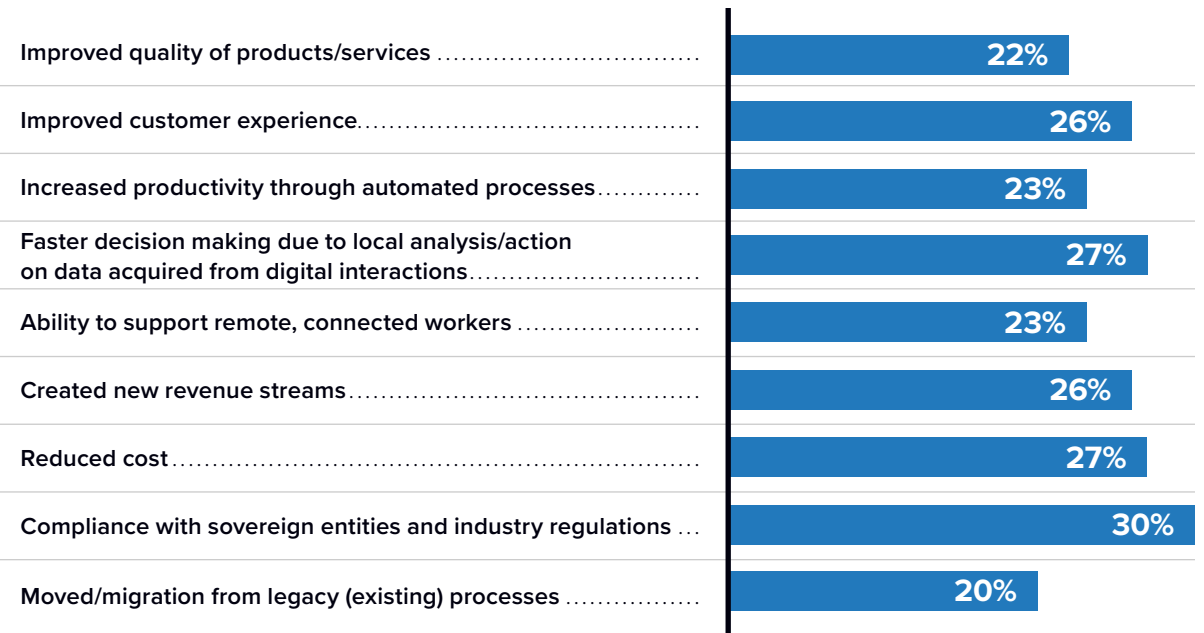### Security, automation, and application performance

Q: What are the primary business-related benefits/outcomes your organization **has experienced** by deploying edge computing solutions? (% of respondents)

Benefit	
Security/data protection	58%
Increased productivity through automating processes	53%
Performance	44%
Continuous operation if network access is interrupted	39%
Reduced infrastructure and complexity	37%
Optimized use of data	36%
Deterministic latency and distance limitations	33%

Top percentage improvements
Reduced infrastructure and complexity, deterministic latency, and application performance

Q: Approximately, by what percent have each of these business outcomes **improved** since your organization deployed its edge computing solutions? (Mean % improvement)
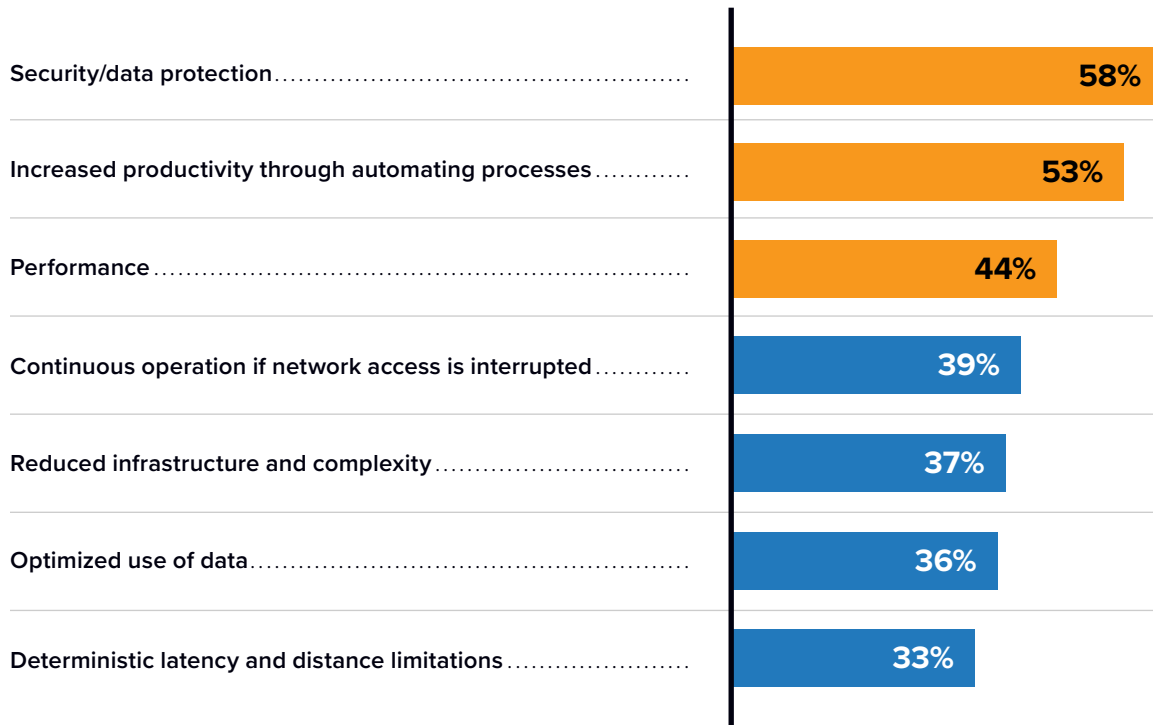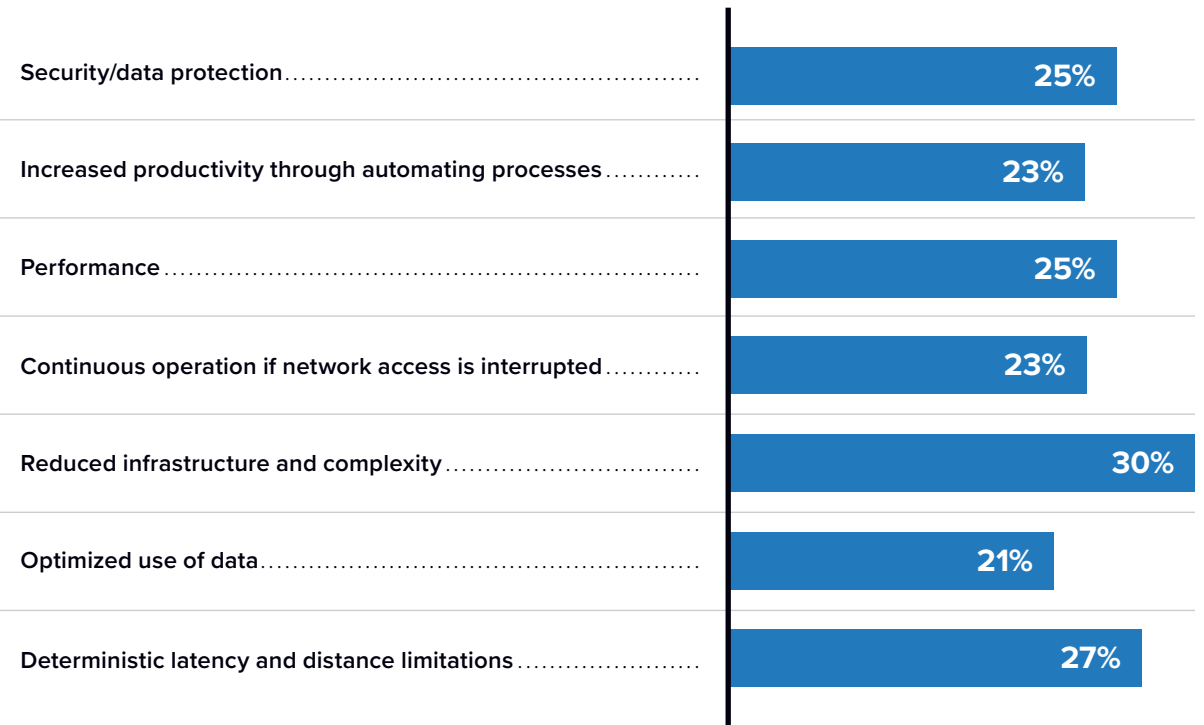
Outcome	
Security/data protection	25%
Increased productivity through automating processes	23%
Performance	25%
Continuous operation if network access is interrupted	23%
Reduced infrastructure and complexity	30%
Optimized use of data	21%
Deterministic latency and distance limitations	27%

n = 735; Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

The Decision Process Goes Beyond IT

The IT organization has primary responsibility for edge purchasing decisions, however, IT needs to collaborate with **networking decision makers, the CFO, the CTO, and LOB leaders.**

Q: In your organization, who is responsible for making the buying decision for edge?
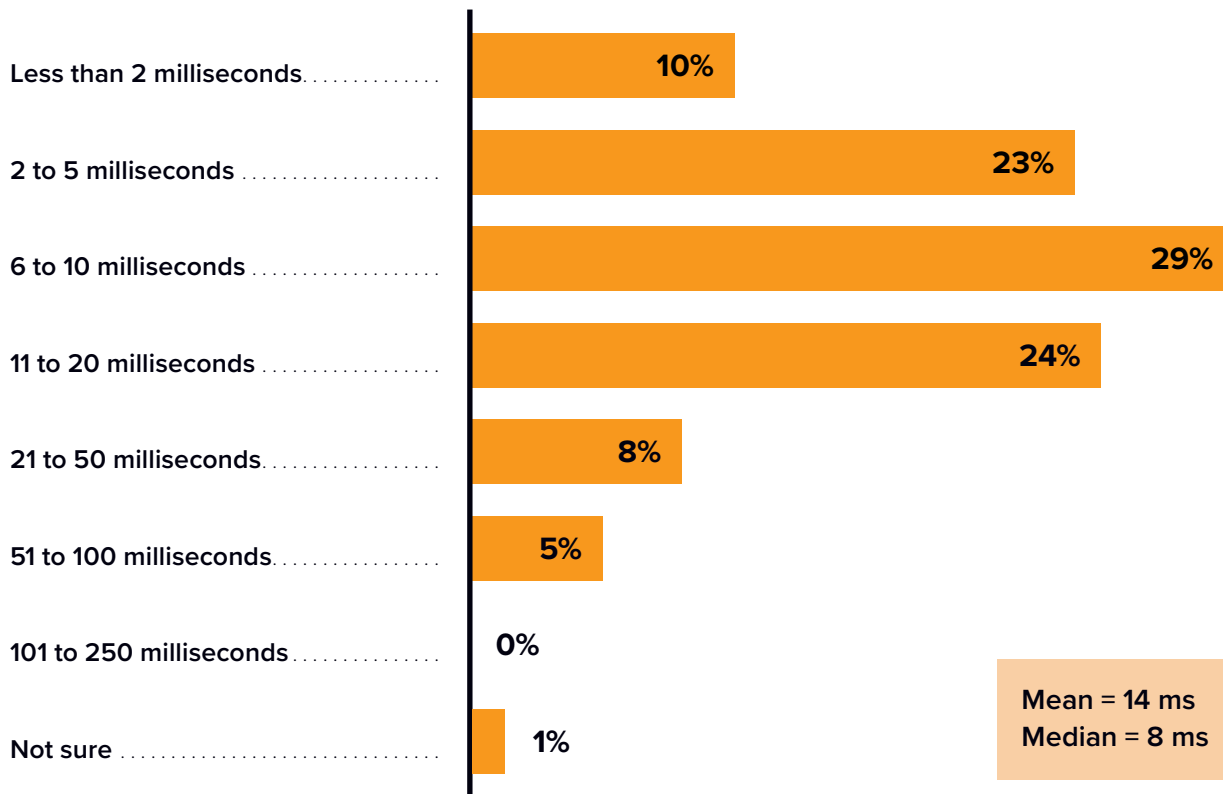(% of respondents — multiple responses allowed)

Category	Value
IT (CIO)	67%
Networking decision makers	36%
Finance (CFO)	34%
CTO	30%
LOB (business leader)	26%
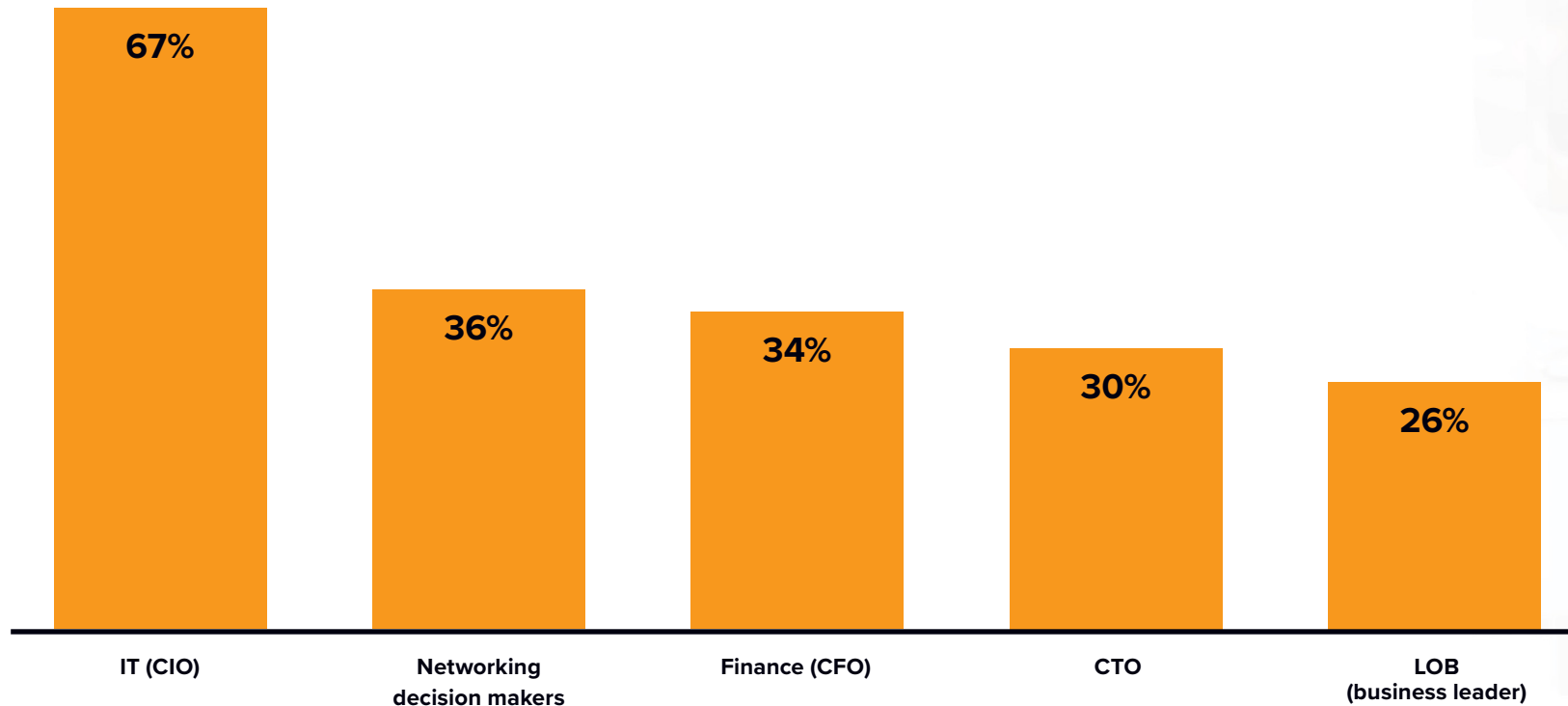
n = 735; Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Low Latency Required to Support Varying Edge Use Cases

85% of respondents indicate a latency requirement of 20 milliseconds or less

Q: What is the optimum latency required for your organization's edge initiatives?
(% of respondents)

Category	%
Less than 2 milliseconds	10%
2 to 5 milliseconds	23%
6 to 10 milliseconds	29%
11 to 20 milliseconds	24%
21 to 50 milliseconds	8%
51 to 100 milliseconds	5%
101 to 250 milliseconds	0%
Not sure	1%

Mean = 14 ms
Median = 8 ms

33% require latency <5 ms to support very time sensitive use cases such as manufacturing, AR/VR, and robotics

54% require latency range (5-20 ms) for time-sensitive use cases such as retail and healthcare
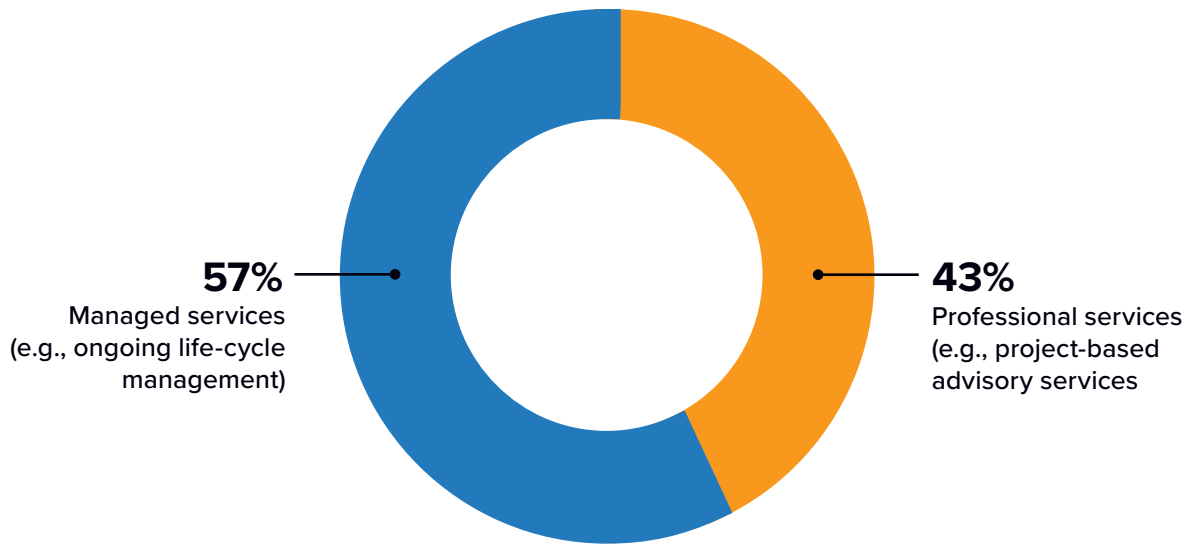
n = 735; Source: *IDC's Lumen Edge Solutions Thought Leadership Survey*, November 2022

Managed Services Providers Play a Critical Role

45% of survey respondents said they relied "a great deal" on partners to deliver edge solutions

Q: What type of assistance did you require from partners or external providers in your organization's deployment of edge solutions? (% of respondents)

57%
Managed services
(e.g., ongoing life-cycle management)

43%
Professional services
(e.g., project-based advisory services)

52% of organizations look for either co- or fully-managed solutions

There will be a significant shift to managed services for future deployments

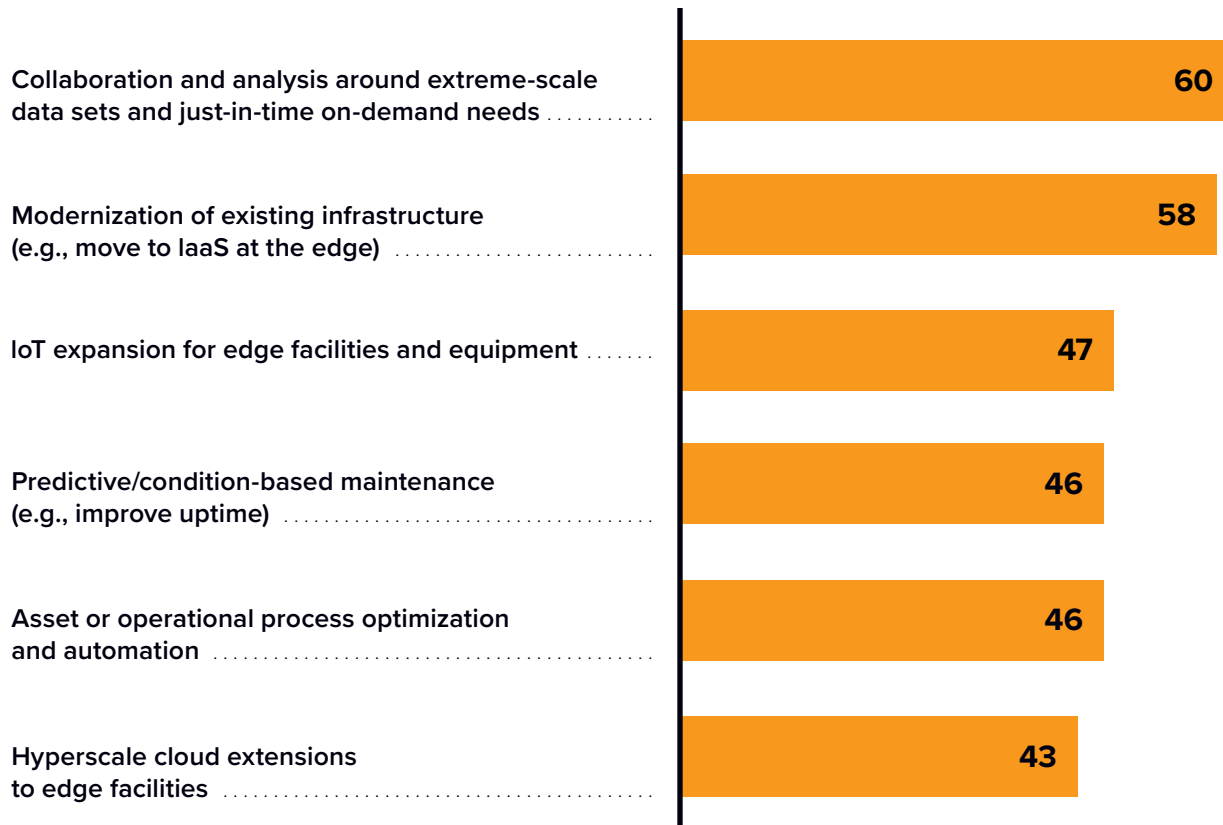Small and mid-size companies are more likely to use managed services

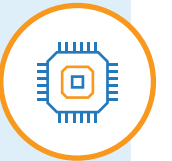Large enterprises have a higher percentage of project-based engagements

Understanding and Prioritizing Your Use Case Are Essential to Edge Planning

Q: Which of the following horizontal use cases have the highest priority in your organization?

(% of respondents — multiple responses allowed)

Use Case	Value
Collaboration and analysis around extreme-scale data sets and just-in-time on-demand needs	60
Modernization of existing infrastructure (e.g., move to IaaS at the edge)	58
IoT expansion for edge facilities and equipment	47
Predictive/condition-based maintenance (e.g., improve uptime)	46
Asset or operational process optimization and automation	46
Hyperscale cloud extensions to edge facilities	43

The ability to analyze large amounts of data in real-time is a key benefit of edge computing

Many edge computing projects begin as a modernization of existing infrastructure in the field

As IoT becomes more pervasive, edge computing adds scale in terms of number of devices and locations
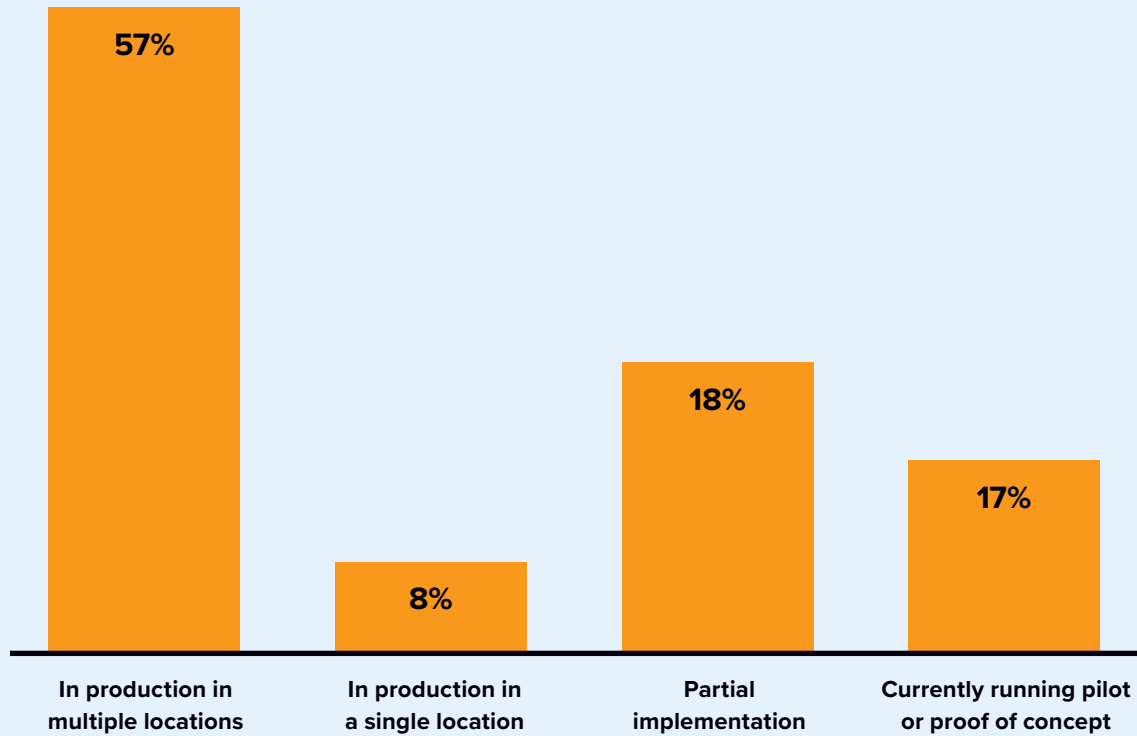
Financial Industry

The most significant **barriers** to edge adoption are **security compliance and budget**

Current Deployment Status
(% of respondents)

Deployment Status	Percentage
In production in multiple locations	57%
In production in a single location	8%
Partial implementation	18%
Currently running pilot or proof of concept	17%

Top Financial Industry Use Cases

1. Improved customer experience
2. Improve availability/security of mobile/web apps
3. Enabling innovative e-banking applications

Business Benefits

45% of financial services companies experienced faster decision processes and actions on customer data

▶ 42% improved quality of products and services
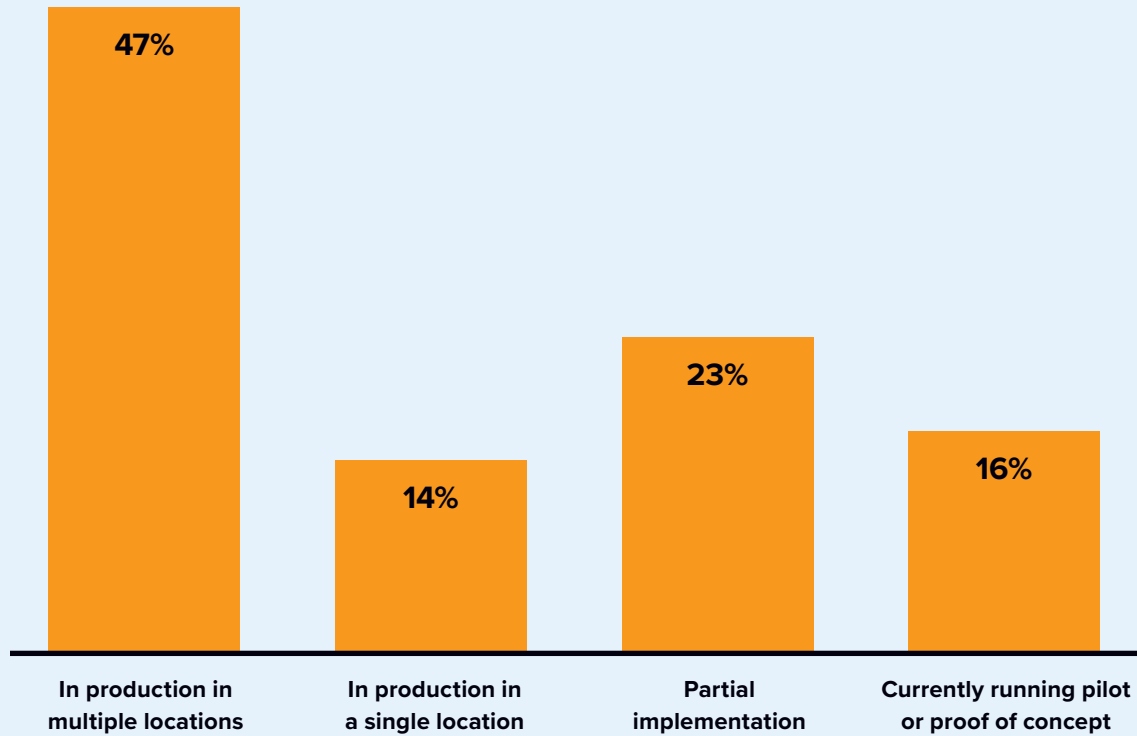▶ 40% improved ability to support remote workers

Technology Benefits

53% of financial services companies increased productivity through automating processes

▶ 52% improved security and data protection
▶ 42% improved application performance

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Manufacturing

The most significant **barriers** to edge adoption are **budget and security**

Current Deployment Status
(% of respondents)

Category	%
In production in multiple locations	47%
In production in a single location	14%
Partial implementation	23%
Currently running pilot or proof of concept	16%

Top Manufacturing Use Cases

1. Automated in-line optical inspection
2. Real-time system-wide process control
3. Productivity enhancements for existing facilities

Business Benefits

43% of manufacturing companies improved quality of products and services

▶ 42% improved customer experience

▶ 38% experienced faster decision processes and action on customer data

Technology Benefits

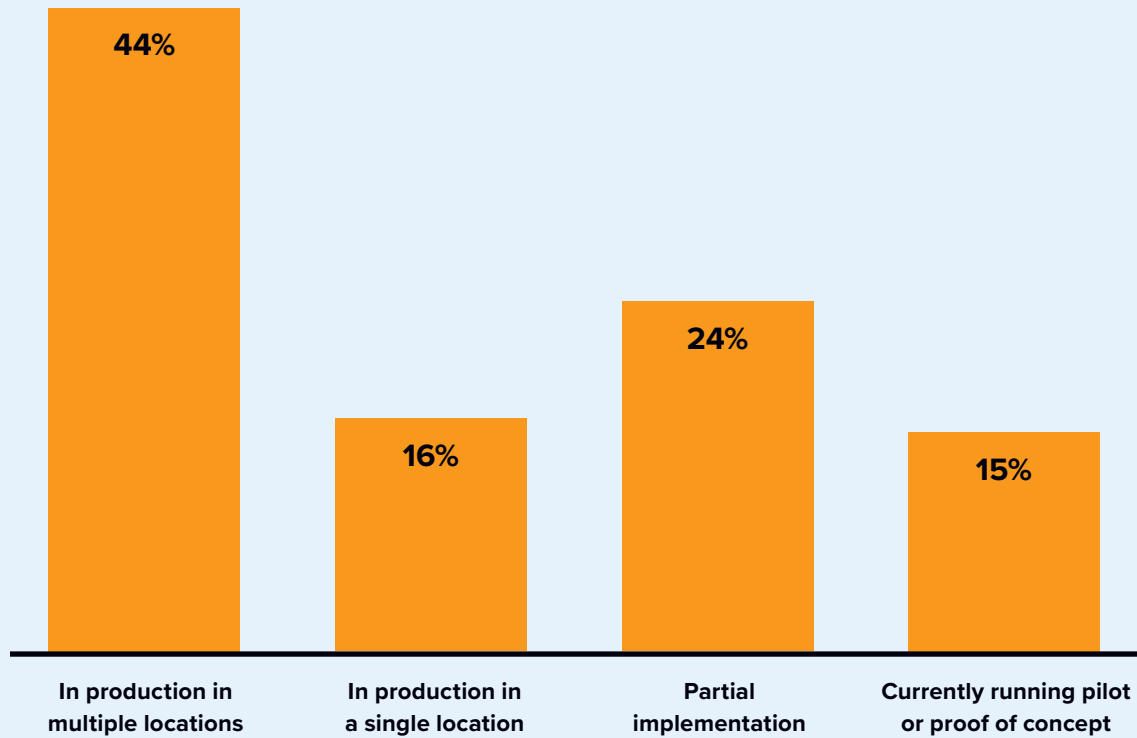**62%** of manufacturing companies experienced increased productivity through automating process

▶ 54% experienced better security/data protection

▶ 42% reduced infrastructure complexity

Tech/Software Development

The most significant **barriers** to edge adoption are **resources and staffing in key domains**

Current Deployment Status
(% of respondents)

44%	In production in multiple locations
16%	In production in a single location
24%	Partial implementation
15%	Currently running pilot or proof of concept

Top Tech/Software Development Use Cases

1. Cloud security
2. Enterprise applications (e.g., CRM, ERP, etc.)
3. Distributed P2P marketplace for cloud compute

Business Benefits

49% of tech/software development companies have realized improved quality of products and services

▶ 44% improved the customer experience

▶ 33% experienced faster decision making due to local analysis on data from digital interactions

Technology Benefits

59% of tech/software development companies have realized an increase in productivity through automation of processes
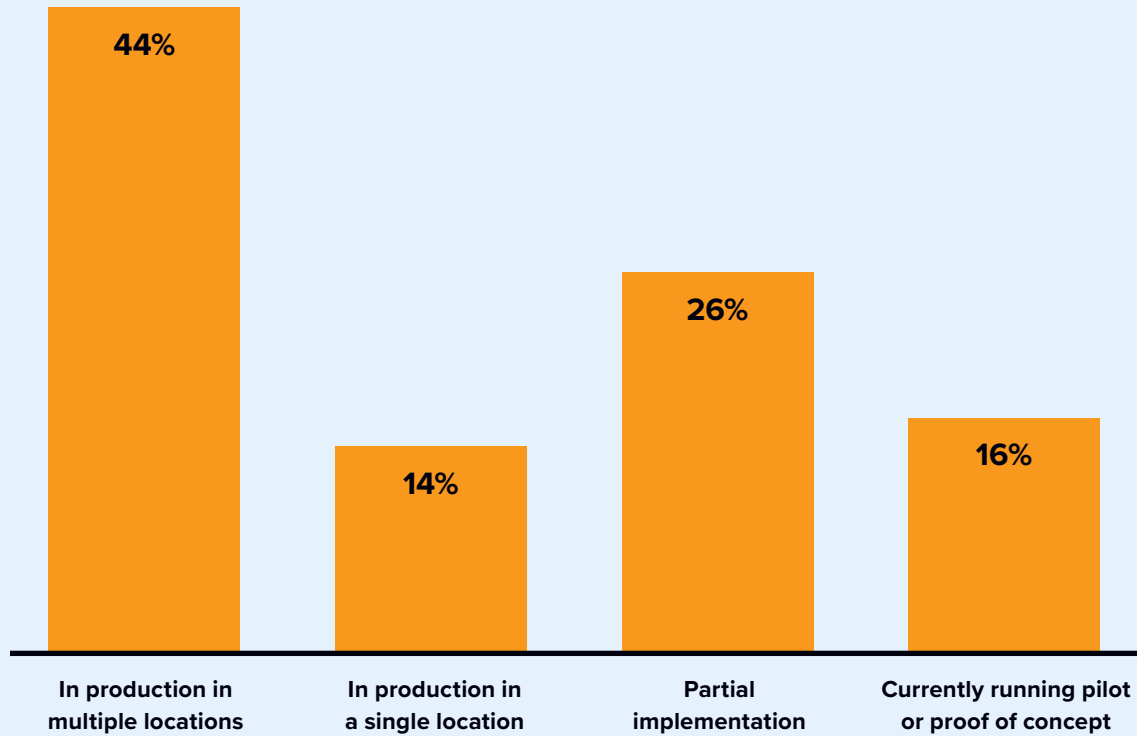
▶ 57% experienced better security and data protection

▶ 46% benefited from increased application performance

Media, Entertainment, Gaming

The most significant **barriers** to edge adoption are **time to deploy and security**

Current Deployment Status
(% of respondents)

44%	**14%**	**26%**	**16%**
In production in multiple locations	In production in a single location	Partial implementation	Currently running pilot or proof of concept

Top Tech/Software Development Use Cases

1. Personalization
2. Mobile gaming
3. Interactive/real-time streaming

Business Benefits

49% of media, entertainment and gaming companies improved quality of products and services

▶ 41% increased productivity through automating processes

▶ 38% improved customer experience

Technology Benefits

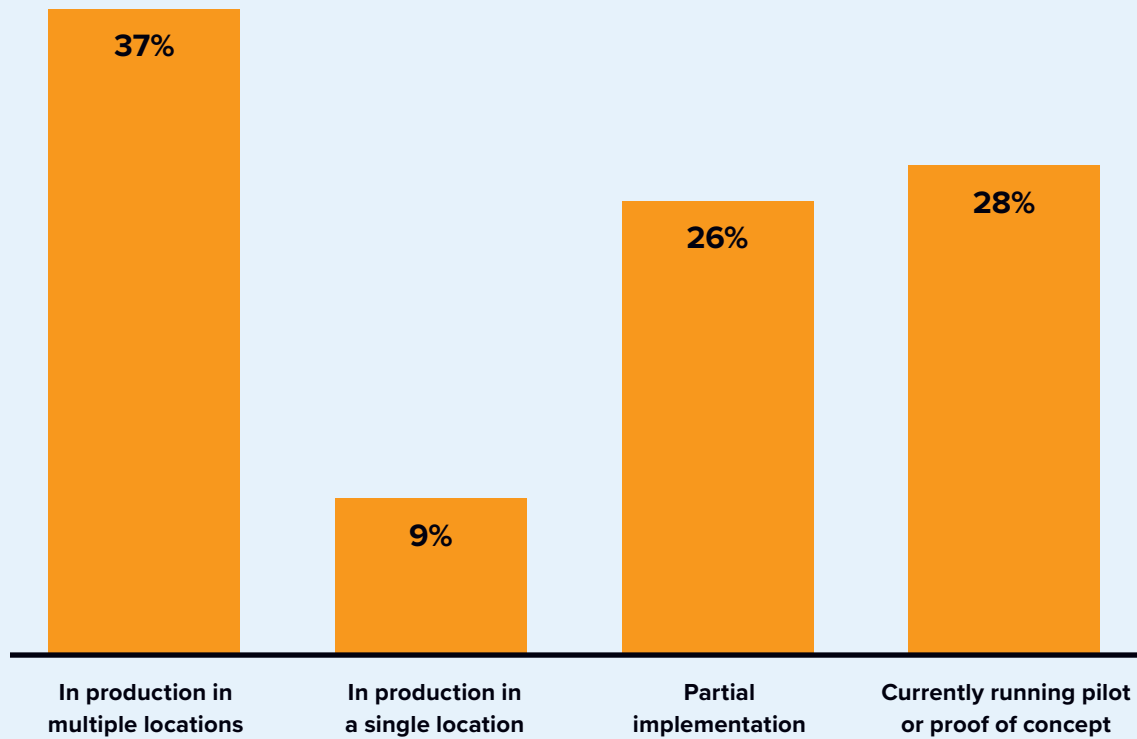**68%** of media, entertainment and gaming companies have realized improved security and data protection

▶ 60% increased productivity through automating processes

▶ 42% experienced deterministic latency

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Healthcare

The most significant **barriers** to edge adoption are **time to deploy and security/compliance**

Current Deployment Status
(% of respondents)

- **In production in multiple locations** — 37%
- **In production in a single location** — 9%
- **Partial implementation** — 26%
- **Currently running pilot or proof of concept** — 28%

Top Healthcare Use Cases

1. Healthcare systems aggregation for regional operations
2. Medical equipment tracking
3. Diagnosis and treatment systems

Business Benefits

47% of healthcare organizations improved customer experience

▶ 43% improved quality of products and services

▶ 42% benefited from increased productivity with automation

Technology Benefits

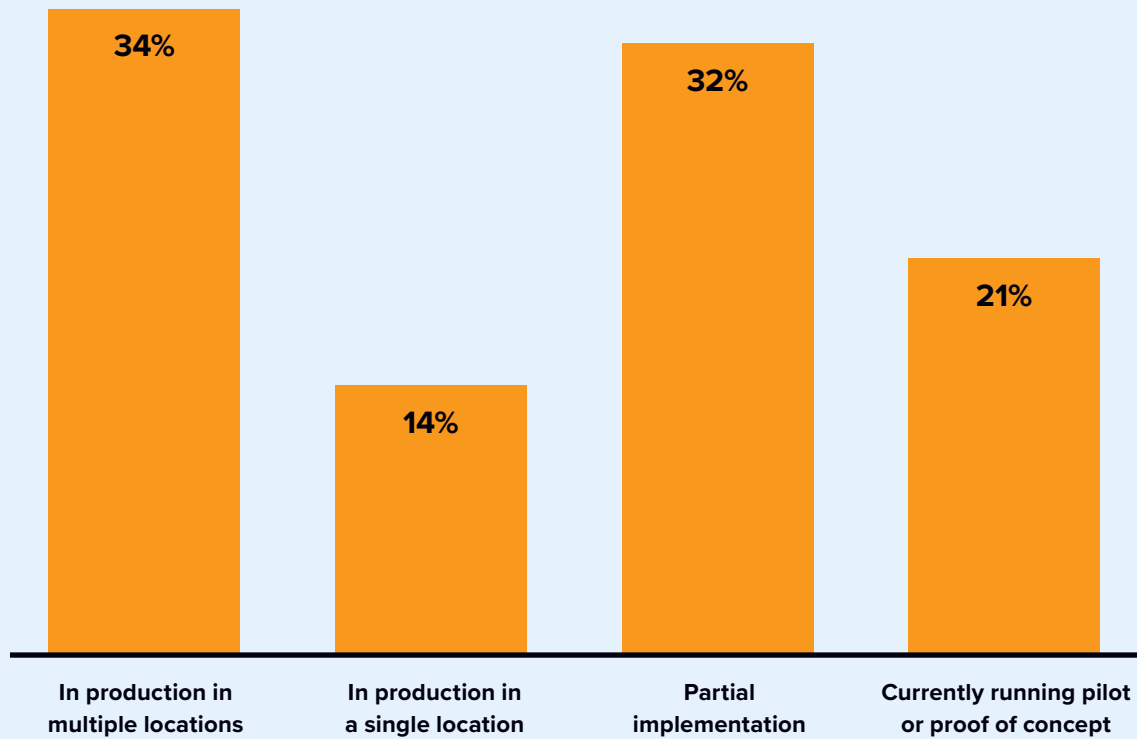**58%** of healthcare organizations realized improved security and data protection

▶ 54% improved application performance

▶ 41% reduced infrastructure and complexity

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Retail

The most significant **barriers** to edge adoption are **budget and security**

Current Deployment Status
(% of respondents)

- In production in multiple locations: 34%
- In production in a single location: 14%
- Partial implementation: 32%
- Currently running pilot or proof of concept: 21%

Top Retail Use Cases

1. Enhanced customer interactions
2. Inventory management and fraud prevention
3. Personalized promotions

Business Benefits

49% of retailers have realized improved customer experience by deploying an edge solution

- ▶ 42% have experienced lower infrastructure costs
- ▶ 41% have increased productivity through automation

Technology Benefits

57% of retailers have realized improved security and data protection
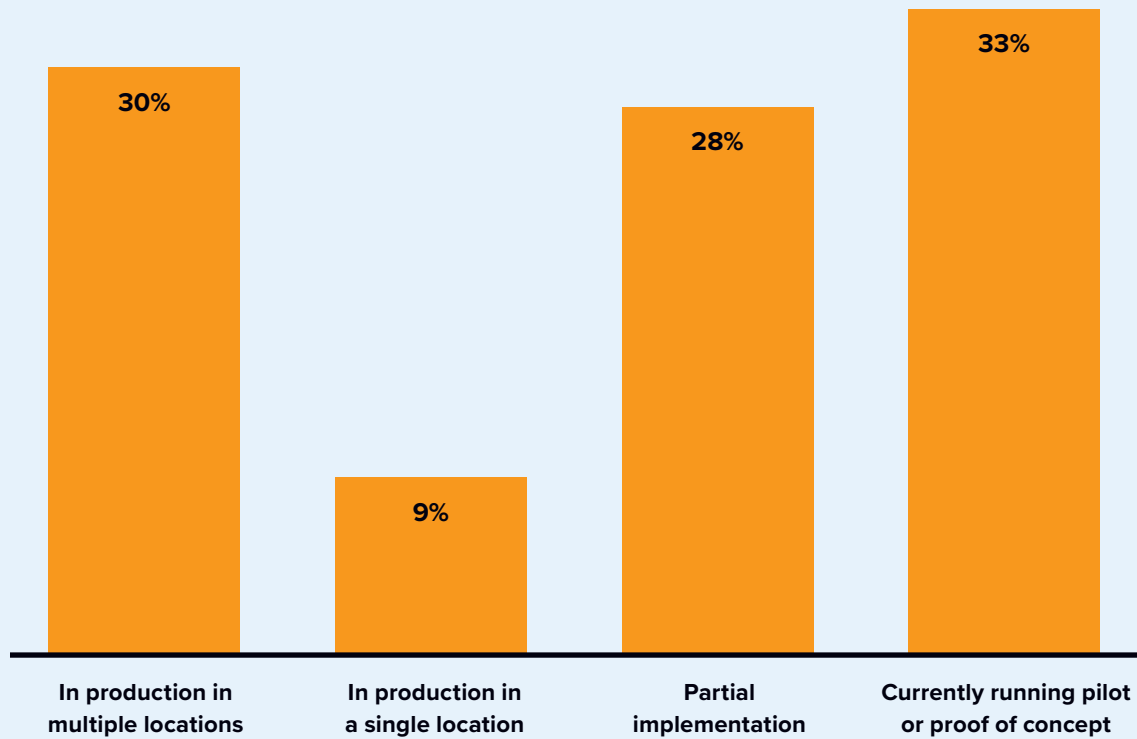
- ▶ 51% have experienced better application performance
- ▶ 48% have optimized their use of data

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Public Sector

The most significant **barriers** to edge adoption are **budget and supply chain**

Current Deployment Status
(% of respondents)

In production in multiple locations	In production in a single location	Partial implementation	Currently running pilot or proof of concept
30%	9%	28%	33%

Top Public Sector Development Use Cases

1. Contingency planning
2. Rich data analytics from video and other sensors
3. Traffic management

Business Benefits

44% of public sector entities improved products and services

▶ 42% improved productivity through automation

▶ 41% improved the customer experience

Technology Benefits

60% of public sector entities improved security and data protection

▶ 44% improved application performance

▶ 44% improved continuous operation if network access is interrupted

Source: *IDC's Lumen Edge Solutions Thought Leadership Survey,* November 2022

Implementing Edge Computing Is Key to Competitive Advantage

Business value far outweighs barriers to deployment

Embrace edge compute to improve operations and create **differentiation** in the market.

Select use cases that drive **meaningful** business and technical benefits.

Evaluate **network** partners based on their ability to support the additional demands of edge computing related to mission criticality and real-time networking performance.

Partner with a service provider that understands the customer business needs.

Work with a managed services provider to **de-risk** the deployment journey spanning design, implementation, deployment and support.

Implement a security strategy that leverages **scale** at the edge.

Capitalize on the economic benefits of **standardized** edge compute, storage, and networking elements.

Methodology

▶ **In October and November 2022,** IDC conducted a web survey to investigate how companies are combining edge architecture with technologies such as AI, AR, robotics, and video analytics to improve business performance and experience technology benefits.

▶ **735 U.S. enterprise decision makers** were interviewed at companies with 500 or more employees.

▶ **Approximately, 100 surveys** were completed in each of the following industries: financial services (fintech, retail banking), manufacturing, tech/software development, media/entertainment/gaming, healthcare, retail, and public sector (state and local government, higher education).

▶ **Respondents were Director or above in an IT or OT role** and were familiar with their organization's edge strategy or initiatives. They were involved in the decision-making process, and were an influencer or a user of IT and OT purchases and investments in their organization.

About the IDC Analysts

Ghassan Abdo
Research Vice President, WW Telecom , Virtualization & CDN, IDC

Ghassan Abdo, Research vice president in the Telecommunications group, covers the evolution of the Telco Cloud Ecosystem as well as the emerging Virtualized Enterprise Networking services. His primary focus areas include service provider SD-WAN and managed services, and emerging NFV-based virtual networking services as well as other managed WAN services.
In the Hosting & Cloud segment, Ghassan covers service provider managed hosting services, including hybrid managed private/public cloud services, colocation services, secure cloud connect, and CDN services.

More about Ghassan Abdo

Dave McCarthy
Research Vice President, Cloud and Edge Infrastructure Services, IDC

Dave McCarthy is a vice president within IDC's worldwide infrastructure practice, where he leads a team of analysts covering shared (public) cloud, dedicated (private) cloud, and edge strategies. Benefitting both technology suppliers and IT decision makers, 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. His research is available via syndicated research programs (subscription services), data products (IDC Trackers) and custom engagements.

More about Dave McCarthy

Message from the Sponsors

LUMEN® | **intel.**

Lumen is guided by our belief that humanity is at its best when technology advances the way we live and work. With approximately 400,000 route fiber miles and serving customers in more than 60 countries, we deliver the fastest, most secure platform for applications and data to help businesses, government and communities deliver amazing experiences.

With all-in-one infrastructure for the anywhere edge, our customers can benefit from compute, storage, and orchestration that makes it easy to scale up resources to the capacity, bandwidth, latency, processing power and number of locations needed. Discover how edge drives your productivity and efficiency with fully integrated infrastructure and solutions that can enhance your network's resilience, extend cloud services and maximize availability without sacrificing control.

Lumen and Intel are working together to relentlessly unleash the potential of the edge across devices, systems, processes, data analysis and workloads.

Learn more about Lumen   **Learn more about Intel**

IDC Custom Solutions

This publication was produced by IDC Custom Solutions. As a premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets, IDC's Custom Solutions group helps clients plan, market, sell, and succeed in the global marketplace. We create actionable market intelligence and influential content marketing programs that yield measurable results.

IDC

@idc | @idc | idc.com