



Edge Computing Solutions Powering the Fourth Industrial Revolution

Improve security, operational efficiency, customer experience, and application performance with next-generation distributed solutions.

RESEARCH BY:



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



Dave McCarthy
Research Director,
Edge Strategies, IDC



Navigating this InfoBrief

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

Introduction	3	Edge Security: Realized/Expected Improvements.....	13
Edge Solutions: A Strategic Imperative.....	4	Edge Application Delivery Solutions.....	14
Organizations Are Taking Both Short-Term and Long-Term Views on Edge Benefits.....	5	Edge Application Delivery: Realized/Expected Improvements.....	15
Technology Providers and Managed Services Are Key to a Successful Edge Journey.....	6	Edge Intelligent Solutions.....	16
Milliseconds Matter in Edge Solutions.....	7	Vertical Industries Require a Diverse Set of Edge Use Cases	17
Top Challenges at the Edge.....	8	Edge Intelligent Solutions: Realized/Expected Improvements.....	18
Evaluating Edge Solutions	9	Demographics	19
Edge Storage Solutions	10	About the Analysts	20
Edge Storage: Realized/Expected Improvements	11	Message from the Sponsor.....	21
Edge Security Solutions.....	12		

Introduction

Advances in computing power, artificial intelligence, IoT, and machine learning are enabling organizations to speed the pace of growth and create innovative experiences in retail, healthcare, smart cities, and other vertical industries — leading to the advent of the Fourth Industrial Revolution, where data is:

- 1 Acquired from a diverse set of devices and locations
- 2 Analyzed in real time to identify valuable insights
- 3 Acted upon using a combination of distributed infrastructure and applications

This IDC InfoBrief examines the results of a global survey of business leaders in seven industries to understand what motivated them to move workloads to the edge, the benefits they have received as well as expect, and how four edge technology solutions are essential to success in achieving their business objectives.

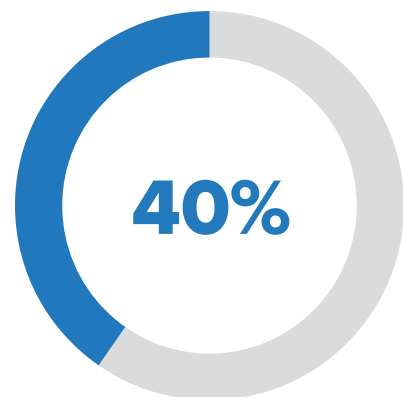
IDC Market Predictions

- By 2023, over 50% of new enterprise IT infrastructure deployed will be at the edge rather than in corporate datacenters, up from less than 10% today; by 2024, the number of apps at the edge will increase 800%.
- By 2024, 75% of enterprises will prioritize infrastructure agility and operational efficiency, leading to a five-times increase in the adoption of cloud-native architectures for core business applications.

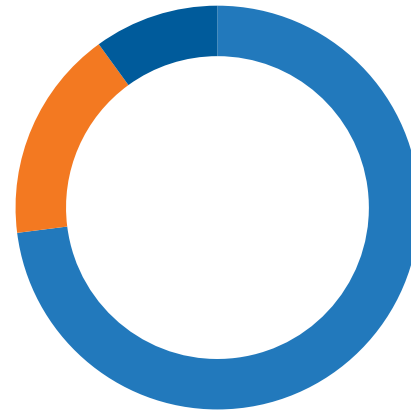
Edge Solutions: A Strategic Imperative

Edge computing has become a top priority for C-suite executives and is critical to the success of strategic business objectives.

Organizations have instituted KPIs for measuring the effectiveness of edge solutions, including cost, security, compliance, performance, and uptime.



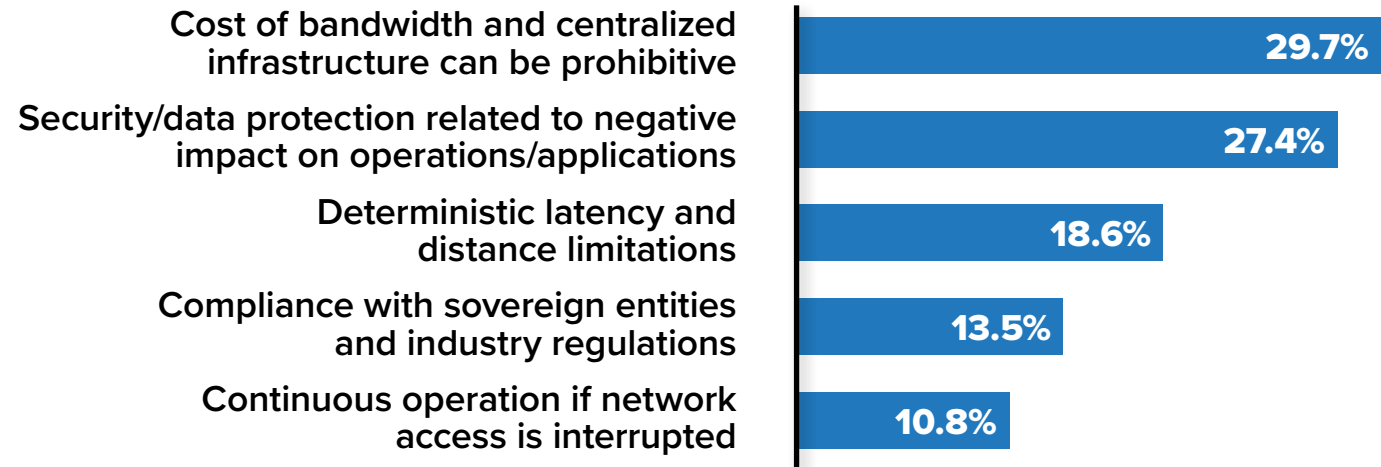
40% of organizations plan to invest in new edge solutions in less than **1 year**.



73% view edge as a strategic investment.
17% state it is required by business operations.

Two thirds of respondents indicated they were “in production” of adopting edge services spanning single and multiple locations.

Primary motivations for deploying edge solutions



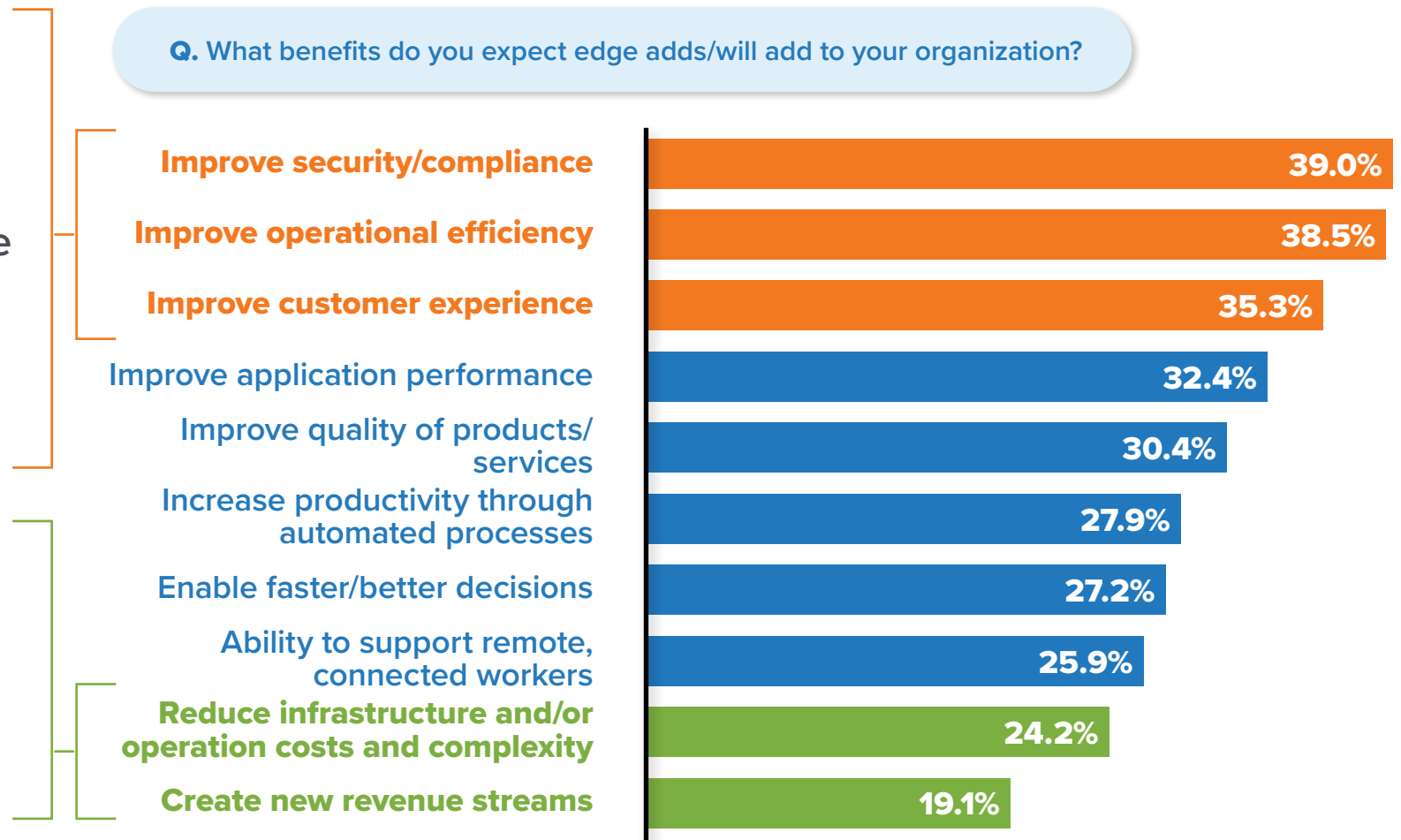
Note: % corresponds to number of respondents - total sums to 100%.

Source: IT Infrastructure Deployment for Edge Survey, IDC, June 2020
 Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Organizations Are Taking Both Short-Term and Long-Term Views on Edge Benefits

Initial edge deployments are focused on short-term needs that serve as a foundation for future projects. These include areas like improving security and compliance by limiting the movement of data and improving operational efficiencies that result in better customer experiences.

As these deployments mature, opportunities arise to achieve long-term benefits such as reducing the cost of infrastructure and applications as well as creating new revenue streams.



Note: % corresponds to number of respondents – multiple dichotomous table – total will not sum to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Technology Providers and Managed Services Are Key to a Successful Edge Journey

Q. Who manages your organization's edge solutions?

54% of organizations look to technology service providers as the primary source of edge solutions.

73% prefer a flexible managed service model with subscription-based services when considering new edge solutions.



Note: % corresponds to number of respondents – total sums to 100%.



IDC predicts that by 2024, over 75% of infrastructure in edge locations will be consumed/operated via an as-a-service model, as will more than half of datacenter infrastructure.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

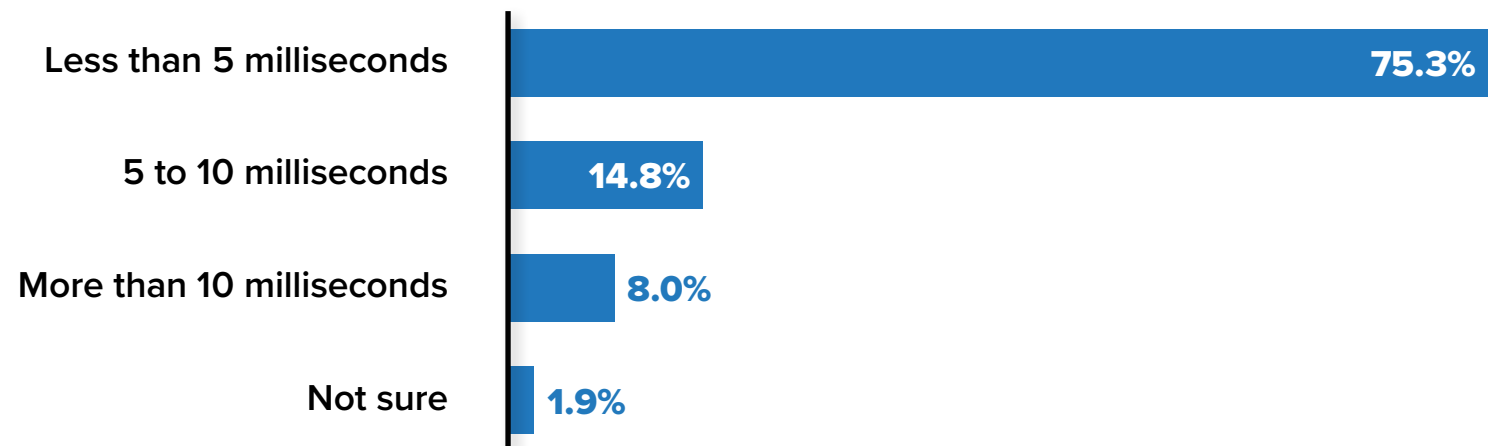
Milliseconds Matter in Edge Solutions

Edge solutions can address latency issues inherent in centralized computing paradigms by distributing resources closer to where data is generated and consumed.

This is critical for many industries that rely on real-time analysis of data to drive process automation and rich customer experiences.

The diversity of industry requirements means placing infrastructure and applications in a variety of deployment locations, including factories, warehouses, hospitals, and retail stores.

Maximum latency required for your organization's edge initiatives



Note: % corresponds to number of respondents – total sums to 100%.

75% of organizations expect **less than 5 ms** latency for edge applications.

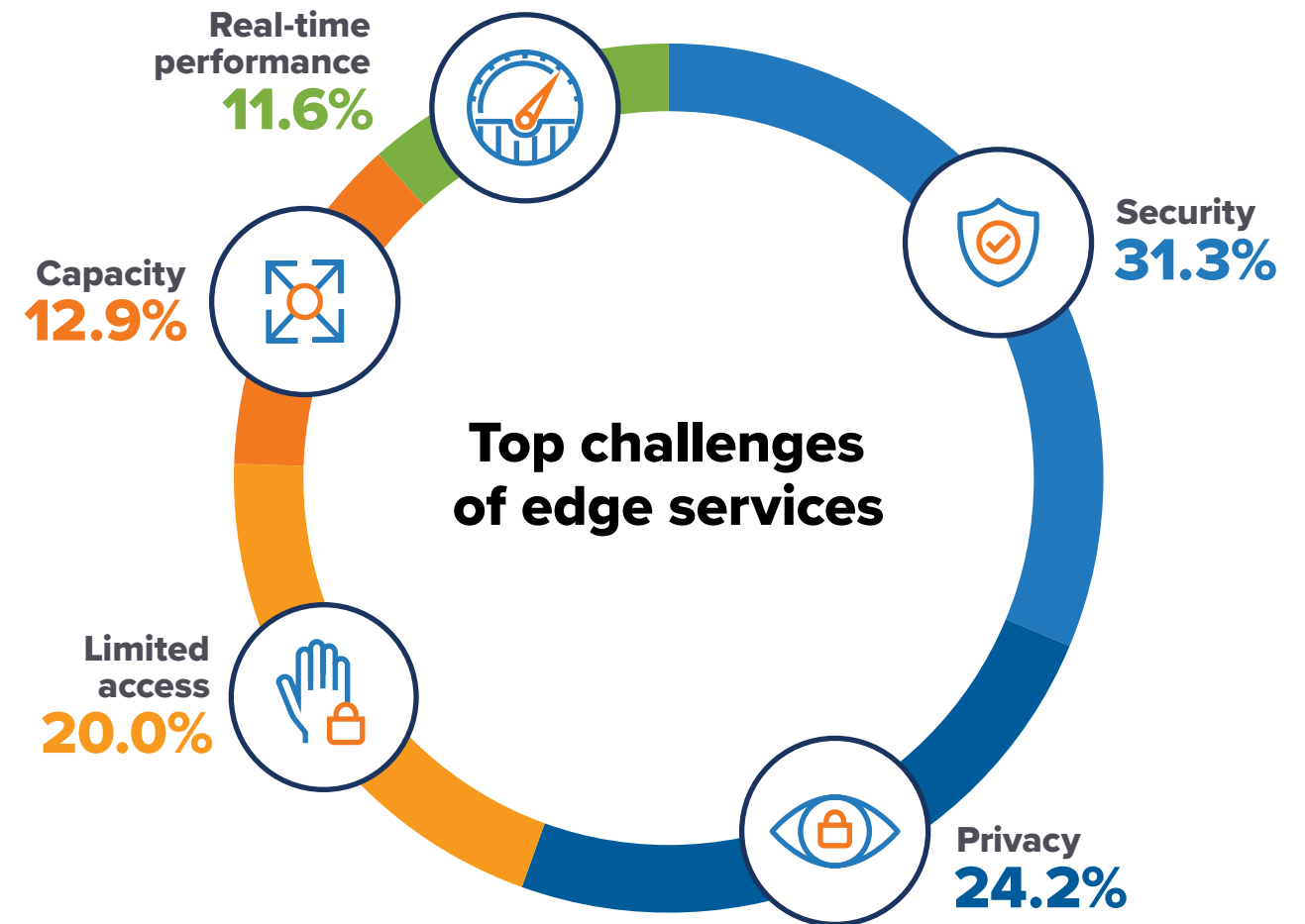
45% require **real-time** access to data in edge locations.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Top Challenges at the Edge

The edge has inherent technical and business limitations related to reduced compute capacity, potential for privacy and threat exposure, and limited access.

- ▶ Security stands out as a top concern for CXOs.
- ▶ CISOs want assurance that they get the same security at the edge that they have in centralized models with well-defined perimeters. Due to its distributed architecture, the edge can mitigate massive security threats.
- ▶ Well-architected edge solutions will balance utilization of core and edge resources to address several of these challenges.



Note: % corresponds to number of respondents – total sums to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Evaluating Edge Solutions

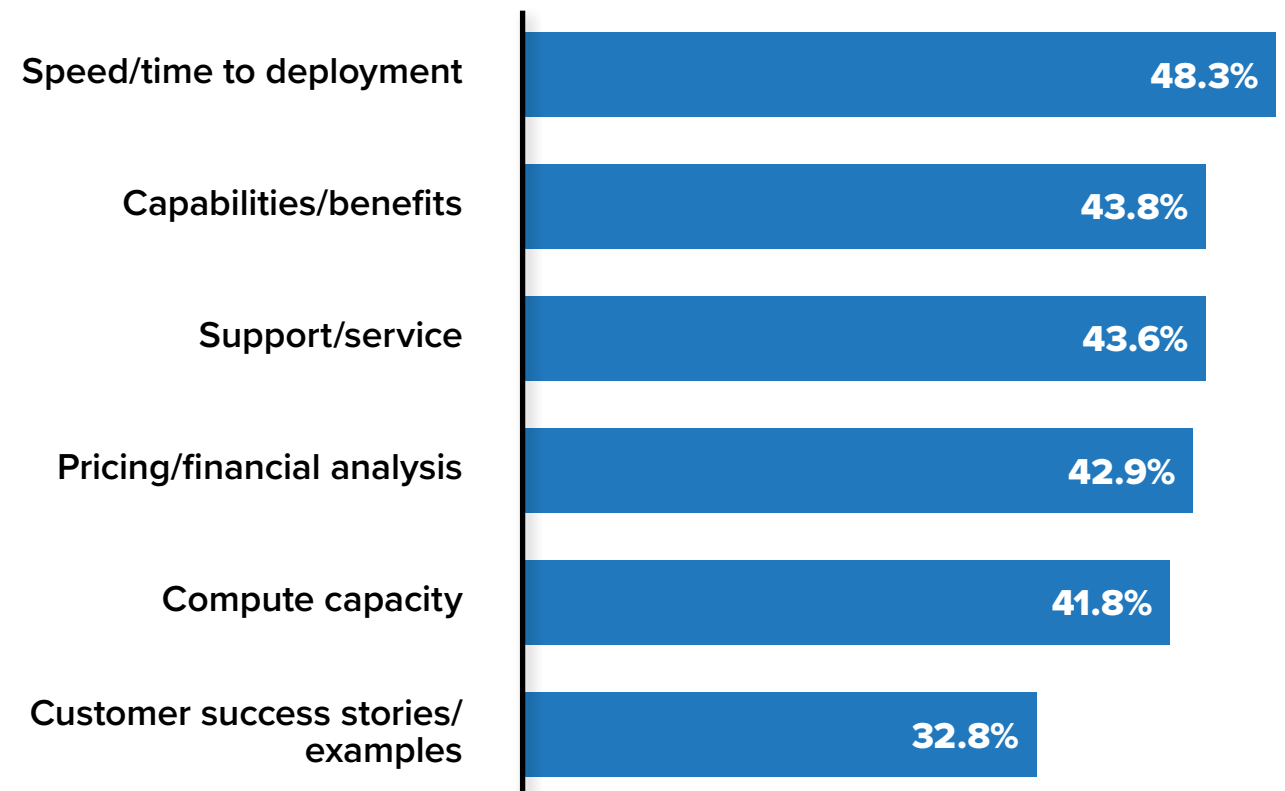
As CXOs develop an edge strategy, solutions are chosen based on their ability to achieve defined and measurable KPIs.

Speed of deployment is a top consideration given the need to adapt to rapidly changing business requirements and operating conditions.

Four edge technology solutions that garner significant interest:

- 1 Storage
- 2 Security
- 3 Application delivery
- 4 Intelligent solutions

Q. What do you look for when evaluating an edge solution?



Note: % corresponds to number of respondents – multiple dichotomous table – total will not sum to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Edge Storage Solutions

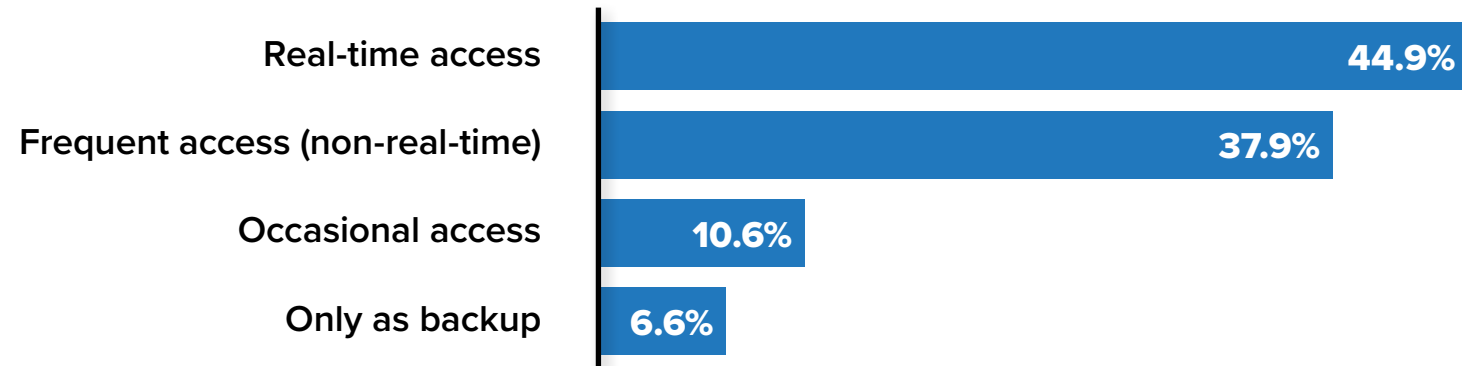
Edge storage solutions are a set of storage-as-a-service use cases that are involved in acquisition, analysis, and acting on valuable data created from various remote sources.

45%

prefer real-time access to edge data, including operational, business-critical, and customer information.

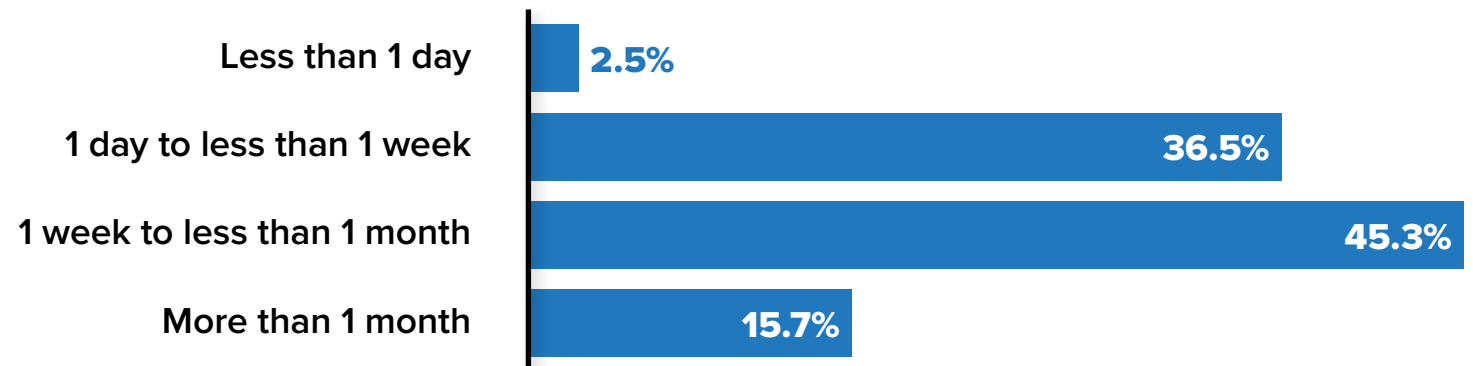
Security and performance are top considerations when deploying these services.

Q. How often do you expect to access this data at the edge?



Note: % corresponds to number of respondents - total sums to 100%.

Q. What is the typical retention time for this data at the edge?



Note: % corresponds to number of respondents – total sums to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

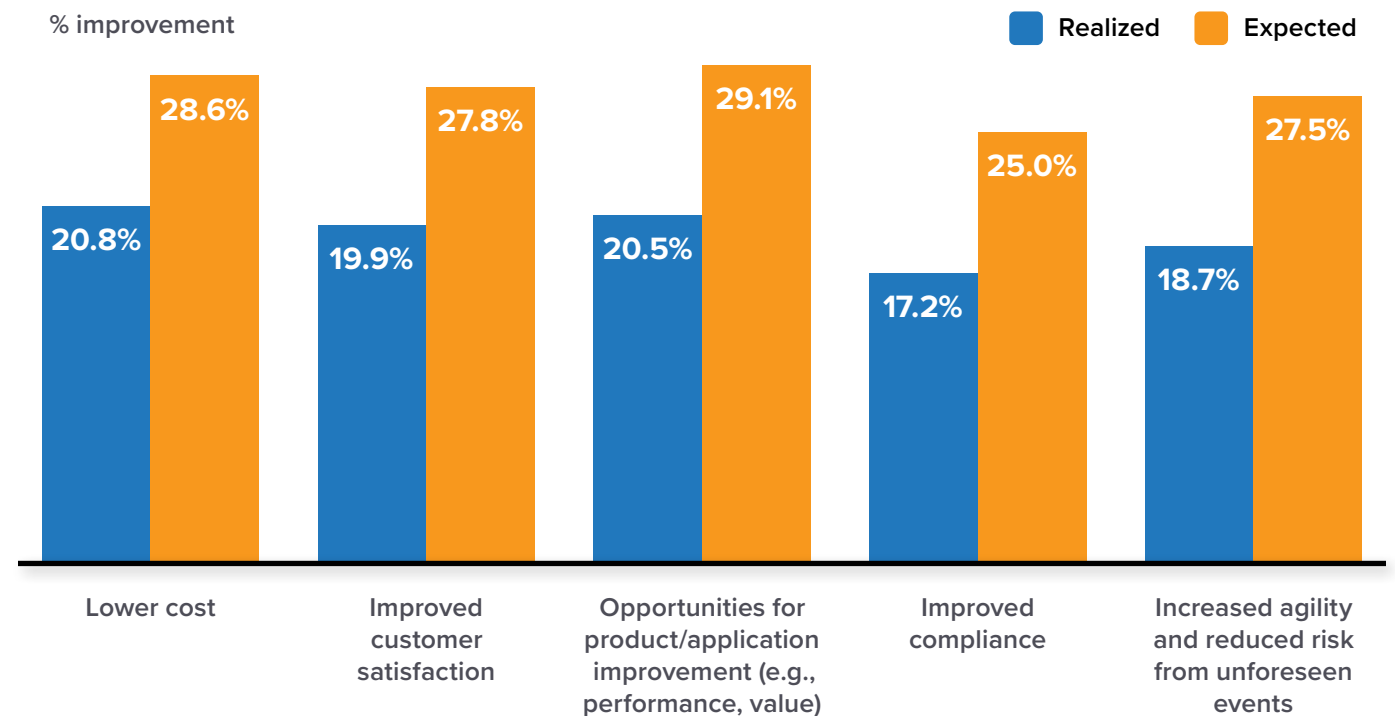
Edge Storage: Realized/Expected Improvements

CXOs measure the success of storage edge solutions across several strategic KPIs: **cost, customer satisfaction, product performance, compliance, and agility.**

As the chart indicates:

- ▶ **Realized improvements ranging from 17% to 20% are material, indicating an attractive investment in storage (edge) solutions.**
- ▶ **Respondents have higher expectations as storage edge solutions mature, with improvements ranging from 25% to 29%.**

Q. What percent improvement in the following has your organization realized or expected from **storage (edge) solutions**?



Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

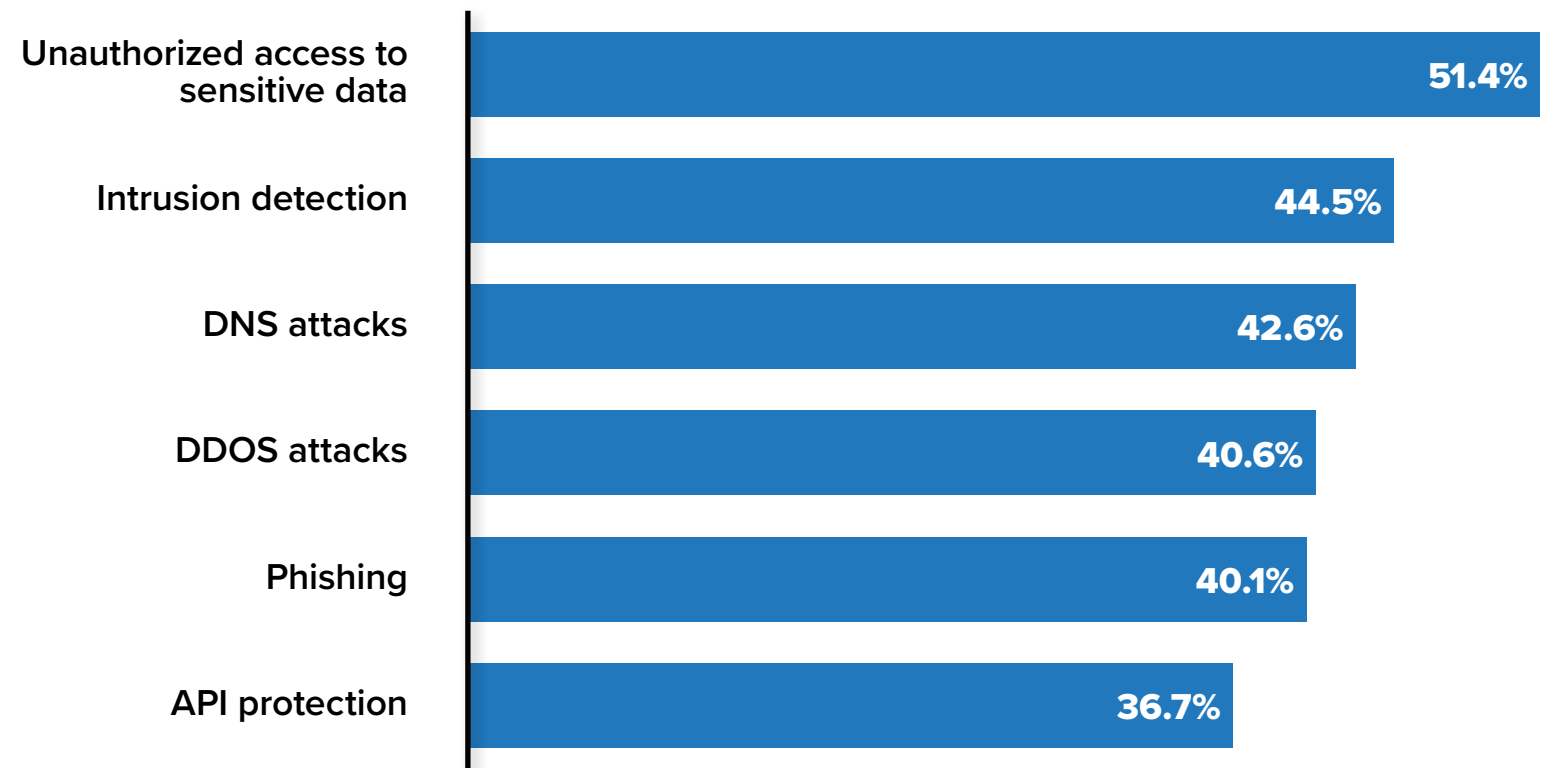
Edge Security Solutions

Edge security solutions are a set of applications that are running at the edge to protect valuable data for workloads, mitigate attacks, and minimize risk.

Unauthorized access, intrusion detection, and DNS attacks are top vulnerabilities to mitigate with security edge services.

Privacy, compliance, and limited access are top challenges of security edge services.

Q. What types of security vulnerabilities are most important to mitigate?



Note: % corresponds to number of respondents – multiple dichotomous table – total will not sum to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

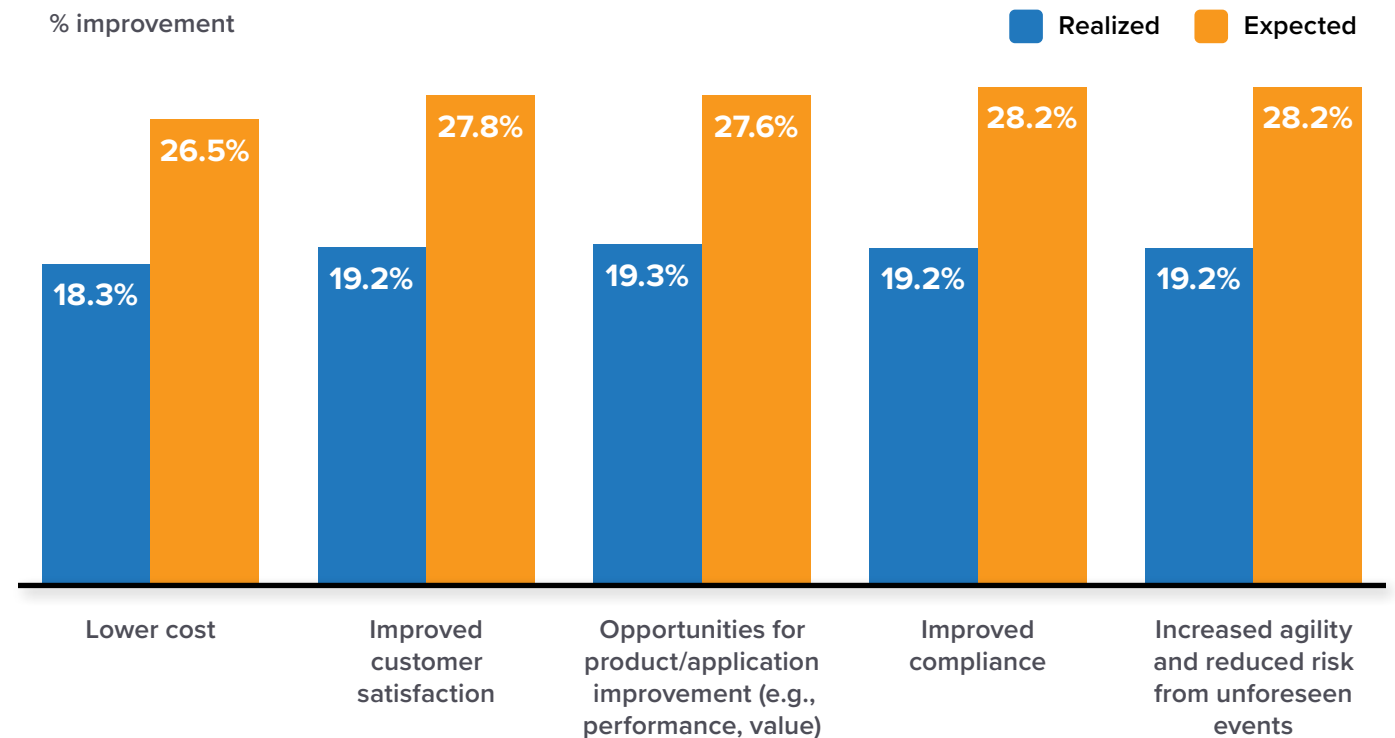
Edge Security: Realized/Expected Improvements

CXOs measure the success of security edge solutions across several strategic KPIs: **cost, customer satisfaction, product performance, compliance, and agility.**

As the chart indicates:

- ▶ **Realized improvements ranging from 18% to 19% are material, indicating an attractive investment in security (edge) solutions.**
- ▶ **Respondents have higher expectations as security edge solutions mature, with improvements ranging from 26% to 28%.**

Q. What percent improvement in the following has your organization realized or expected from **security (edge) solutions**?



Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

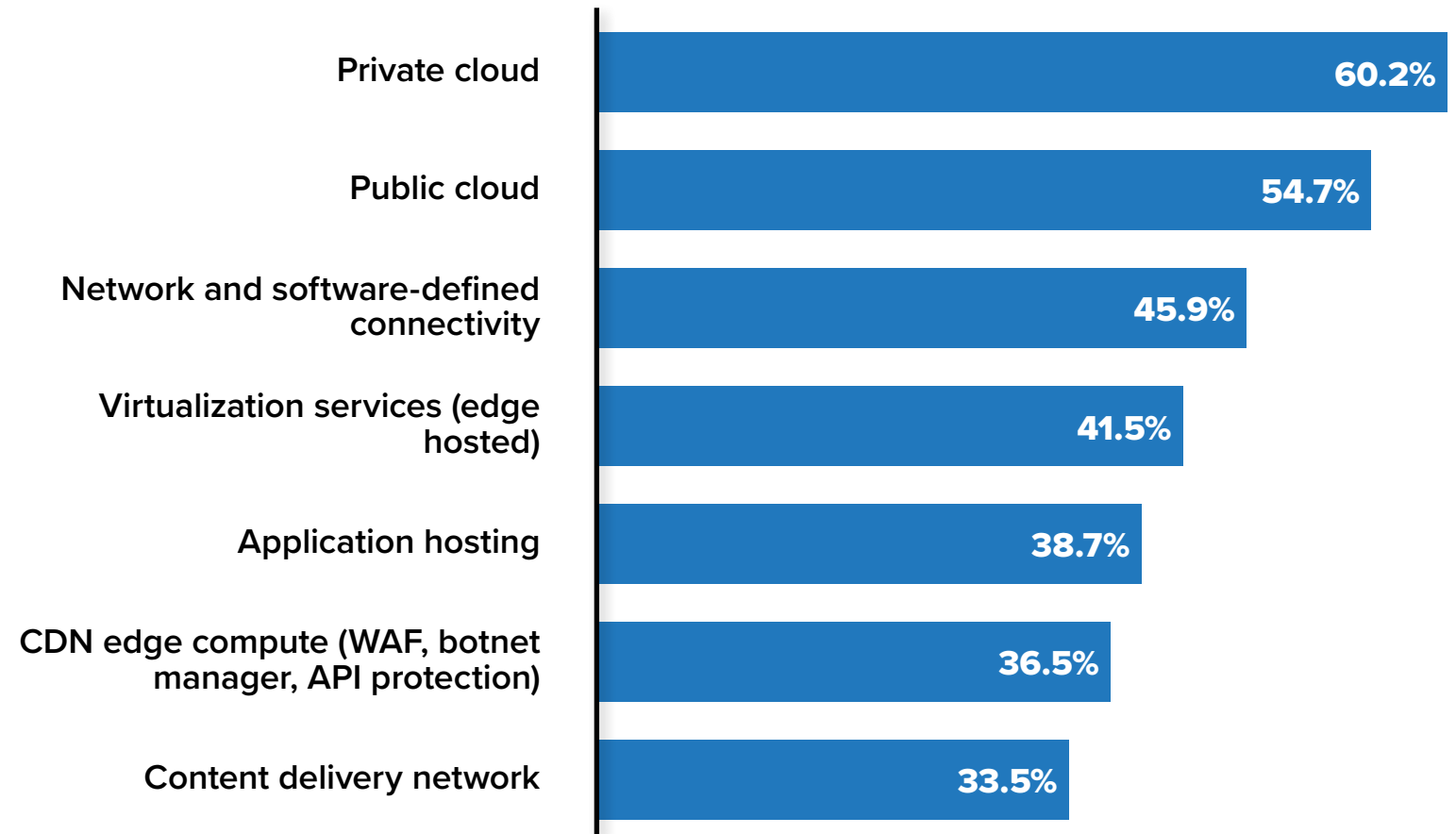
Edge Application Delivery Solutions

Edge application delivery solutions enable distributed computing to support high-bandwidth applications and workloads, improve application performance, and support varying customer software development pipelines.

69% of organizations view application delivery services as relevant to their organization's edge strategy.

Security and performance are top considerations when deploying these services.

Q. What key enabling technologies are relevant to your environment?



Note: % corresponds to number of respondents – multiple dichotomous table – total will not sum to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

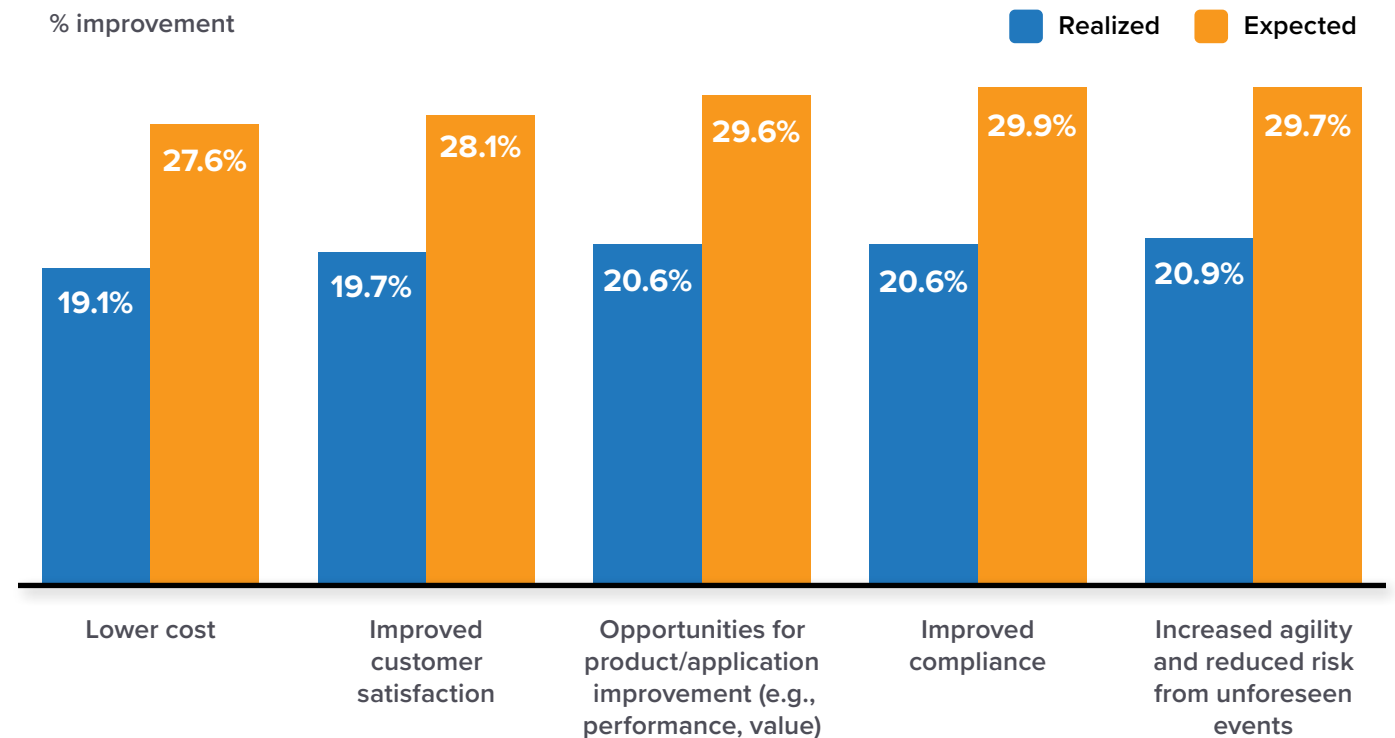
Edge Application Delivery: Realized/Expected Improvements

CXOs measure the success of edge application delivery solutions across several strategic KPIs: **cost, customer satisfaction, product performance, compliance, and agility.**

As the chart indicates:

- ▶ **Realized improvements ranging from 19% to 20% are material**, indicating an attractive investment in edge application delivery solutions.
- ▶ Respondents have **higher expectations** as edge application delivery solutions mature, with improvements ranging from **27% to 30%.**

Q. What percent improvement in the following has your organization realized or expected from **edge application delivery solutions**?



Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Edge Intelligent Solutions

Edge intelligent solutions address four key operational factors:

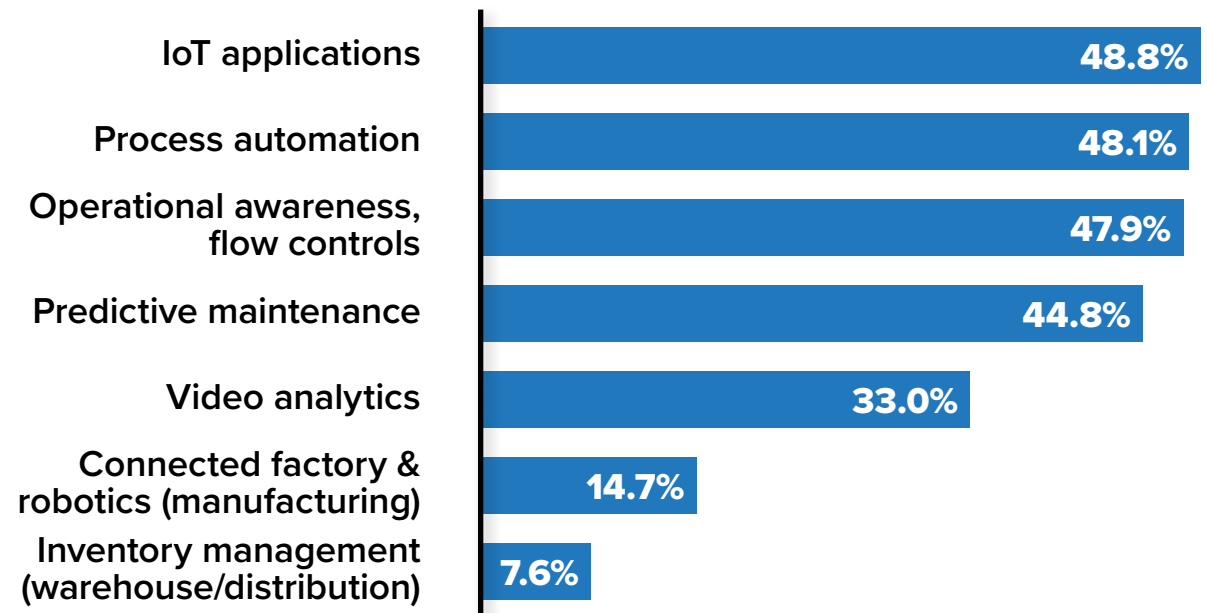
- 1 Low-latency responsiveness for real-time applications
- 2 Cost efficiency by limiting the movement of data
- 3 Regulatory compliance for data sovereignty
- 4 Autonomous operation when the network is not available

There are two main categories:

- 1 Asset-intensive: machine-generated data that is characterized as high-volume and high-velocity
- 2 Interactive-intensive: human-generated data that is often unstructured and introduced by new business models

Intelligent solutions are vertically oriented and designed to achieve business-focused outcomes, integrating both edge and cloud technology with enterprise systems.

Main use cases for organizations considering edge intelligent solutions



Note: % corresponds to number of respondents – multiple dichotomous table – total will not sum to 100%.

Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Vertical Industries Require a Diverse Set of Edge Use Cases



Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

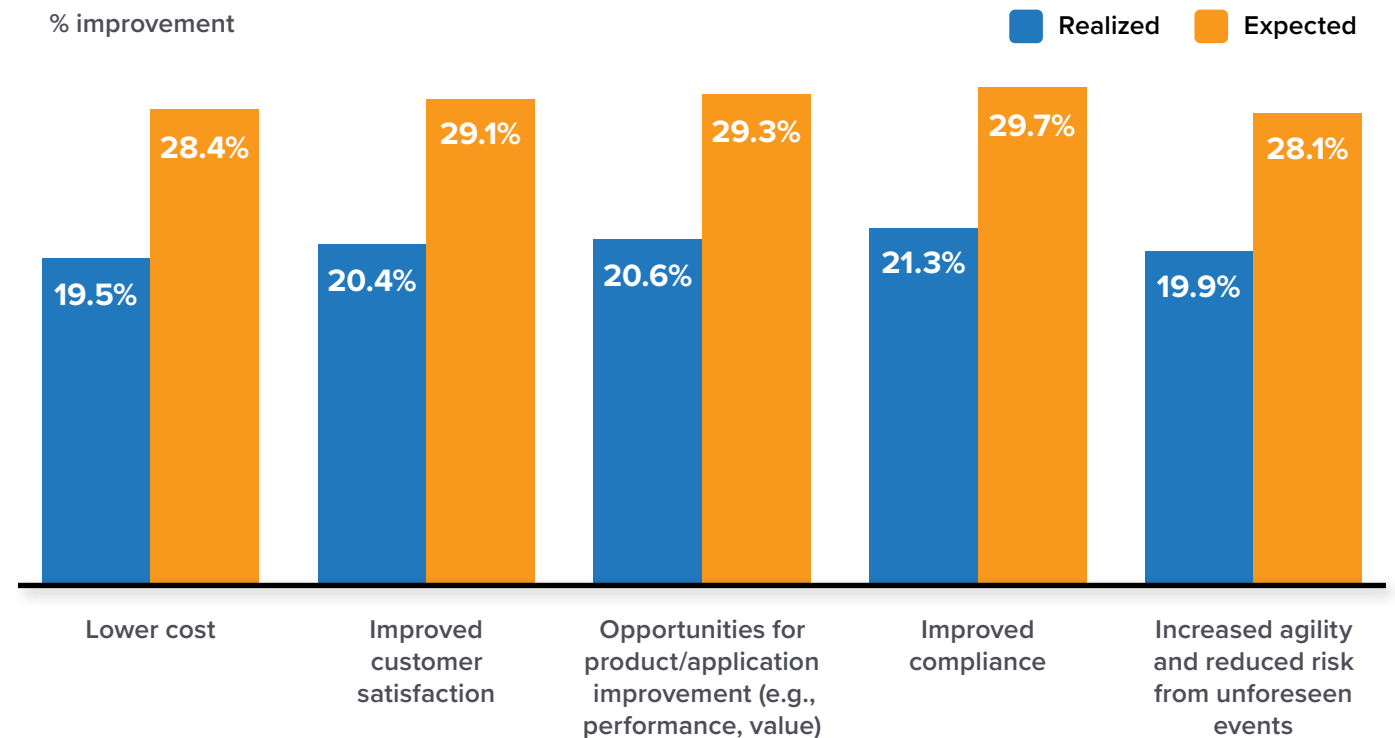
Edge Intelligent Solutions: Realized/Expected Improvements

CXOs measure the success of intelligent edge solutions across several strategic KPIs: **cost, customer satisfaction, product performance, compliance, and agility.**

As the chart indicates:

- ▶ **Realized improvements ranging from 19% to 21% are material**, indicating an attractive investment in intelligent (edge) solutions.
- ▶ Respondents have **higher expectations** as intelligent edge solutions mature, with improvements ranging from **28% to 30%**.

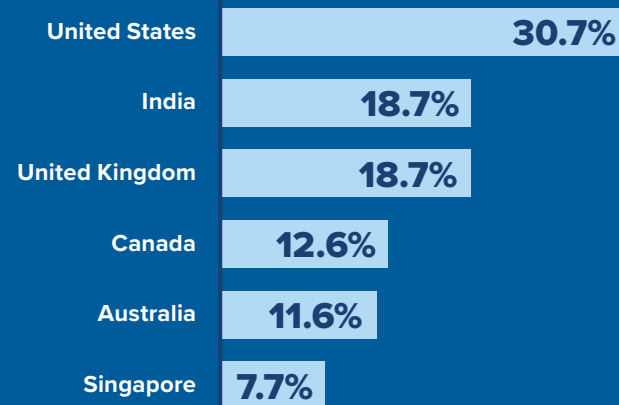
Q. What percent improvement in the following has your organization realized or expected from **edge intelligent solutions**?



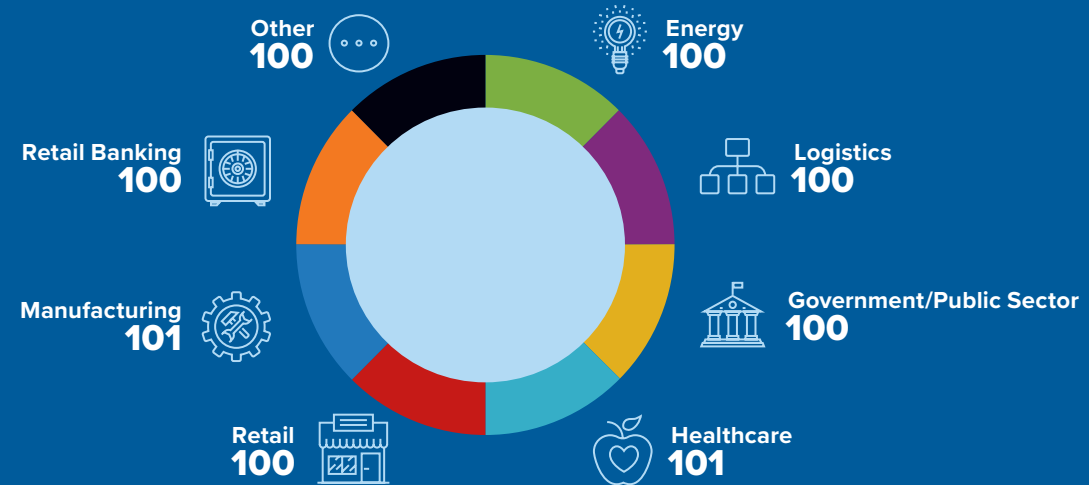
Source: Edge Services Thought Leadership Survey, IDC, September 2020, n = 802

Demographics

IN WHICH COUNTRY DO YOU PRIMARILY WORK?



WHICH INDUSTRY CLASSIFICATION BEST REPRESENTS THE PRINCIPAL BUSINESS ACTIVITY OF YOUR CORPORATE HEADQUARTERS (i.e., the ultimate parent) ORGANIZATION?



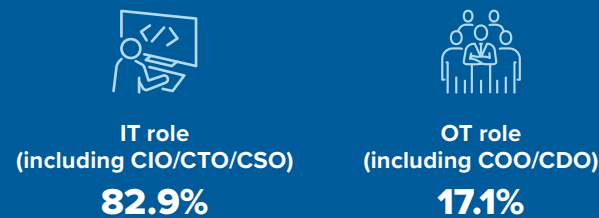
HOW MANY PEOPLE ARE EMPLOYED BY YOUR ORGANIZATION?

(Organizations <1,000 were screened out.)

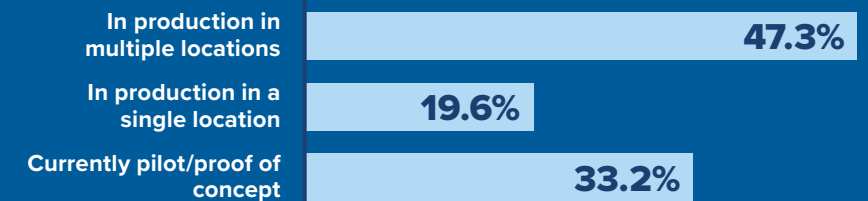


WHICH OF THE FOLLOWING BEST DESCRIBES YOUR ROLE?

(Roles less than director-level were screened out.)



WHICH OF THE FOLLOWING BEST REPRESENTS YOUR ORGANIZATION'S ADOPTION OF EDGE SOLUTIONS?



n = 802

About the 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 Director,
Edge Strategies, IDC

Dave McCarthy is a research director within IDC's worldwide infrastructure practice, focusing on edge strategies. In this role, he provides both qualitative and quantitative analysis of distributed computing paradigms that extend beyond centralized datacenter and cloud infrastructure. Benefitting both technology suppliers and IT decision makers, Dave's insights delve into how edge computing compliments IoT, AI, and other next-generation technology to accelerate digital transformation initiatives.

[More about Dave McCarthy](#)

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 network infrastructure, cloud connectivity, edge computing, connected security, voice, collaboration, and enterprise-class services into an advanced application architecture.

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, and workloads.

Visit Lumen at lumen.com/edge

Visit Intel at intel.com/edge



IDC Research, Inc.

5 Speen Street
Framingham, MA 01701
USA
508.872.8200

[idc.com](https://www.idc.com)

[@idc](https://twitter.com/idc)

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications, and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

IDC Custom Solutions

This publication was produced by IDC Custom Solutions. The opinion, analysis, and research results presented herein are drawn from more detailed research and analysis independently conducted and published by IDC, unless specific vendor sponsorship is noted. IDC Custom Solutions makes IDC content available in a wide range of formats for distribution by various companies. A license to distribute IDC content does not imply endorsement of or opinion about the licensee.

Copyright 2021 IDC. Reproduction is forbidden unless authorized. All rights reserved.

Permissions: External Publication of IDC Information and Data

Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

IDC. Doc. #US47222020