



# Computing on the Edge: Survey Highlights

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# Methodology

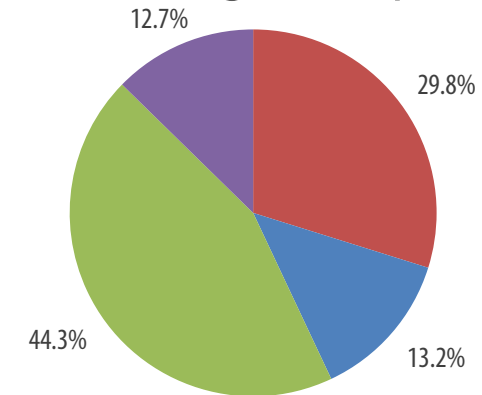
- Online survey of 600 US-based individuals
  - 48% came from medium-sized companies
  - 52% came from large enterprises
- Respondents involved with Edge Computing
  - Departments include IT, Operations, and more
- Industries include Technology, Manufacturing, Health Care, Finance, and more

# Edge Computing Understanding Still a Bit “Foggy”

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- No clear agreement on what it is
- More people expect endpoints than gateways, but over 44% believe it's both

What is Edge Computing?



- The collective of all end-devices connected to the Internet or dedicated network
- The collective of all access nodes to the Internet or dedicated networks
- The sum of the two above
- The last node/device in which a network operator or administrator has control

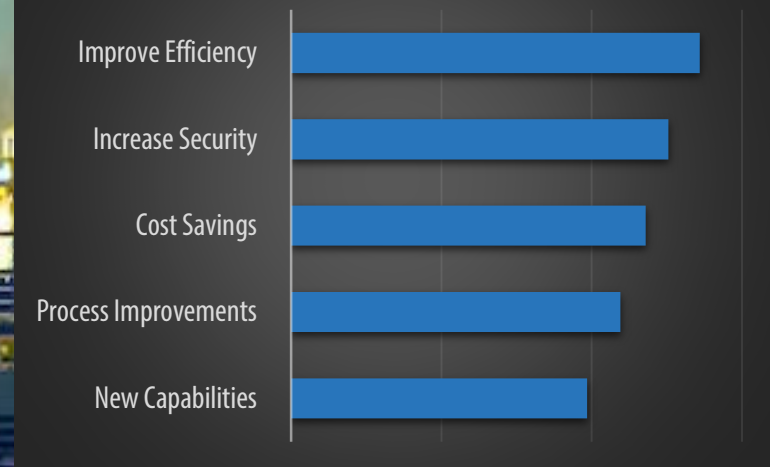


# Edge Computing Goals

- Improving efficiencies, increasing security, reducing costs, and improving processes are key goals for edge computing efforts
- The potential to bring new computing capabilities to an organization is also recognized as a Top 5 goal



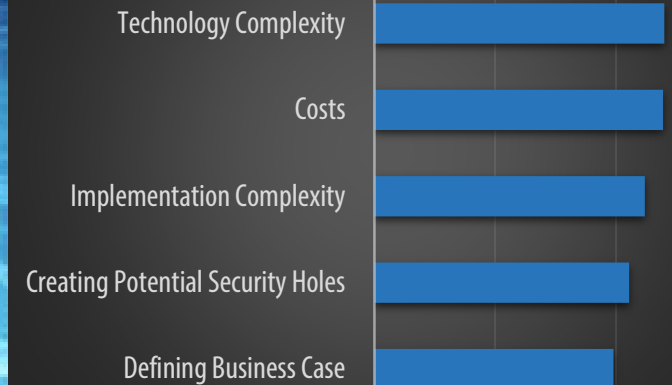
## Top Goals



# Edge Computing Challenges

- Complexity and costs still major barriers to adoption for edge computing
- Concerns about opening new security issues also very real
- Despite potential, defining a clear ROI for many edge computing efforts remains a challenge

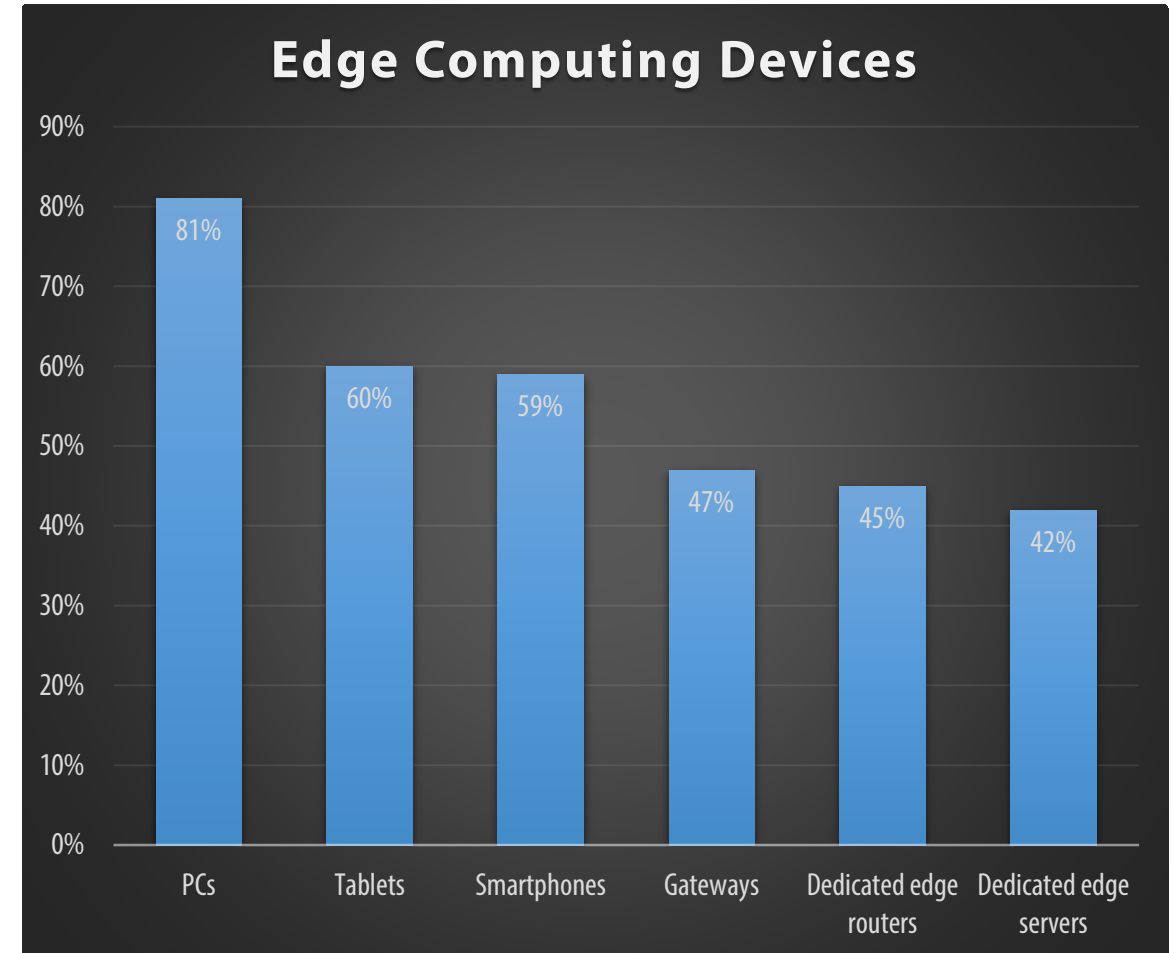
## Top Challenges



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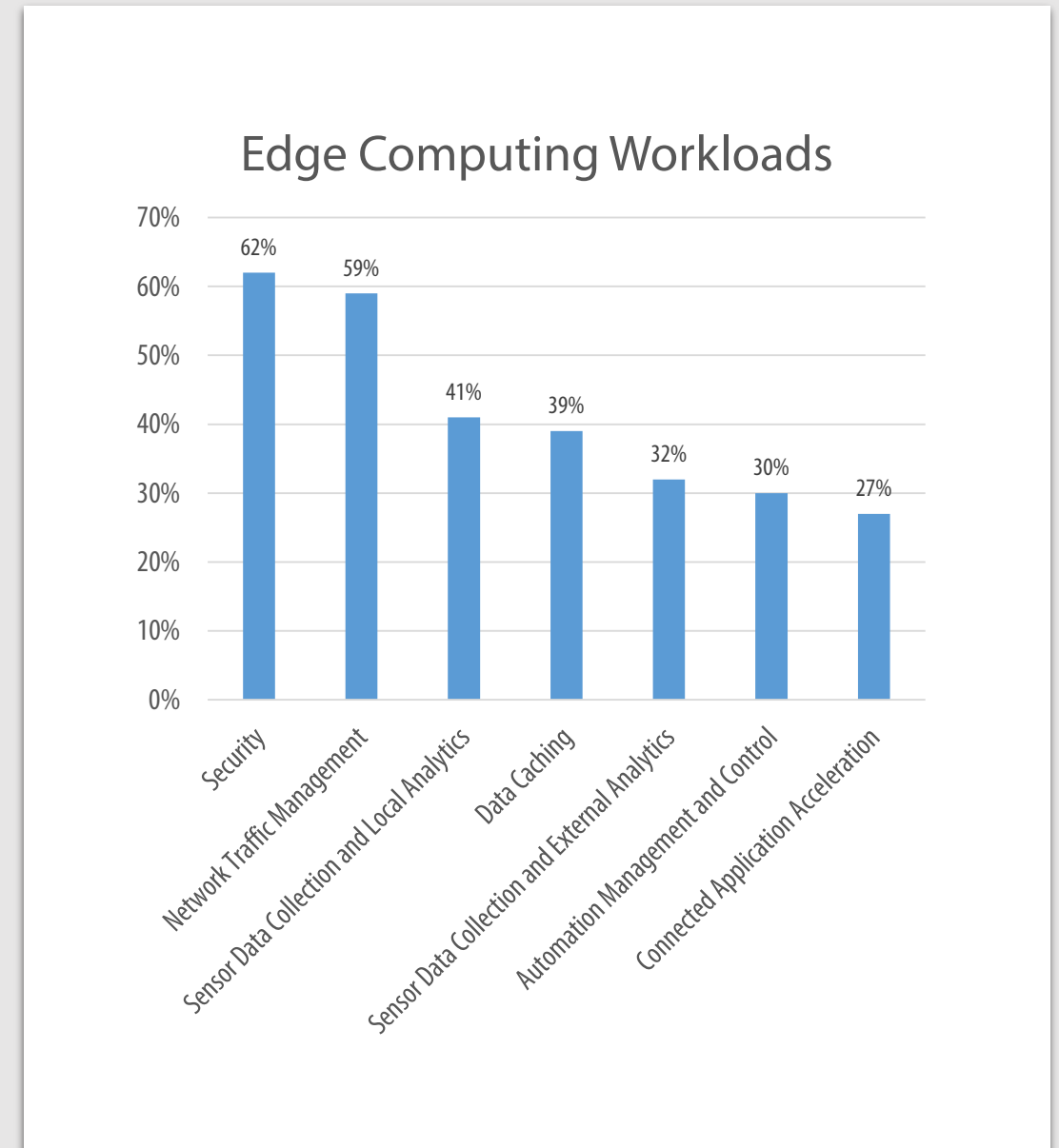
# Edge Computing Devices

- Traditional clients, such as PCs, still seen as the primary edge devices
- Gateways, dedicated routers and servers are also fairly widely deployed

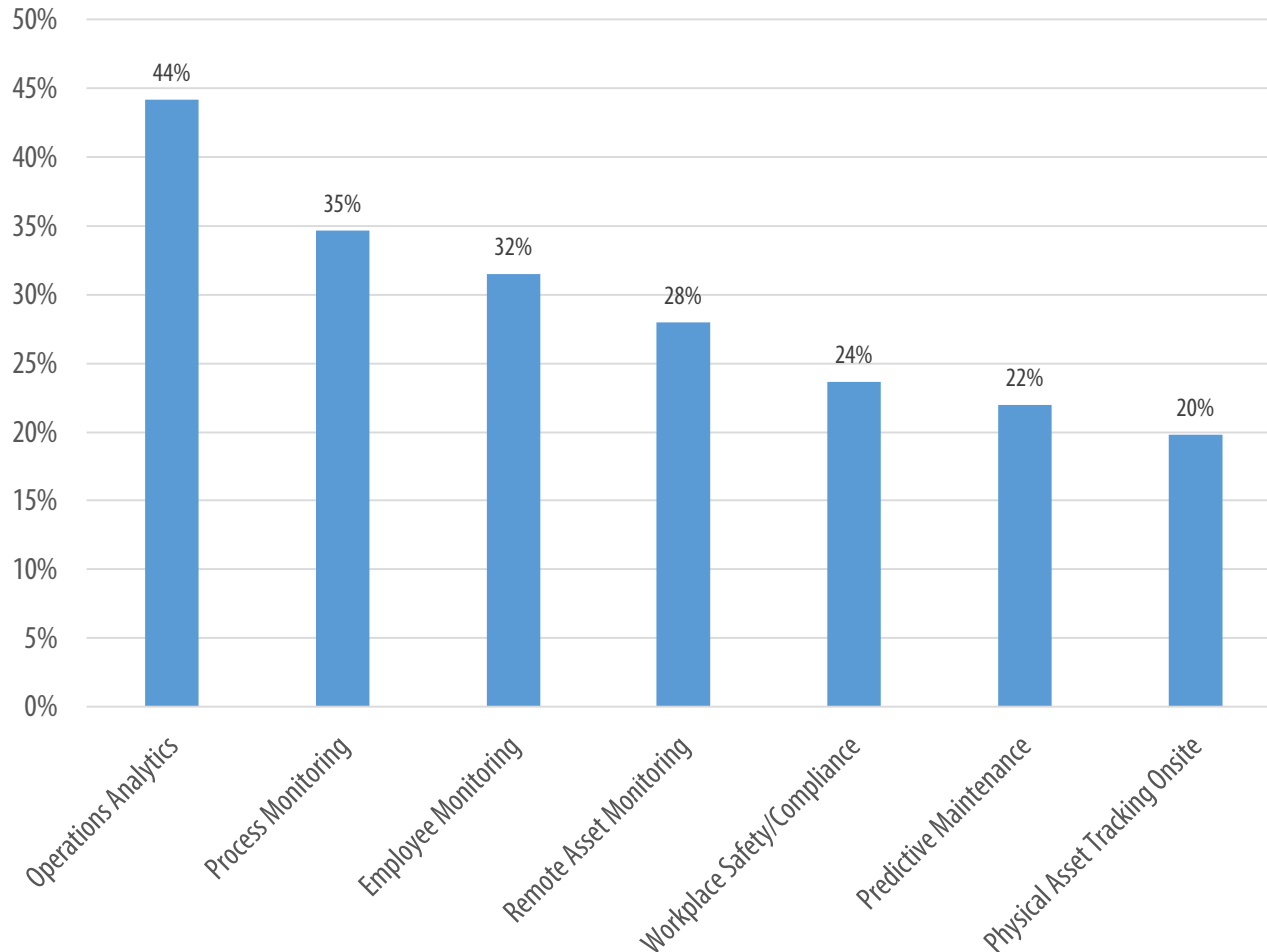


# Top Edge Computing Workloads

- Security and network management are top workloads, suggesting more traditional network perimeter monitoring efforts are still prevalent
- For sensor-based data collection and analysis, more companies doing local analytics than external



## Edge Computing Applications



## Top Edge Computing Applications

- Analyzing operations and monitoring processes, people and assets lead the list of specific applications
- Related safety applications for people and devices are also popular





# Edge Applications and Cloud Applications Strongly Connected

Only a minority of edge applications are  
completely new

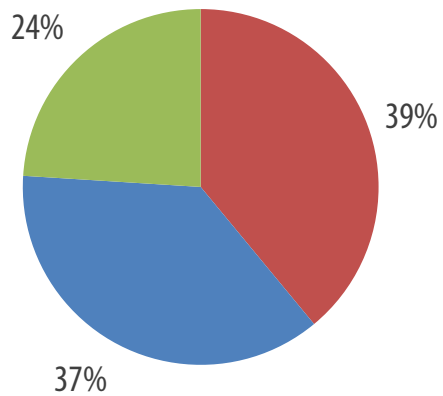


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NEW EDGE APPS vs. MIGRATED CLOUD APPS

39% <sup>New</sup> Apps

New Apps vs. Migrated Apps



- New for Edge Devices
- Partially Migrated from Cloud
- Completely Migrated from Cloud



Top 5 Reasons for App Migration

Improve Security
Reduce Costs
Reduce Latency
Improve Local Control
Reduce Network Traffic

EDGE COMPUTING APPS

61% <sup>Migrated</sup> From Cloud



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# Analytics Work for Edge Computing is Diverse

More still done in data center than on  
edge devices

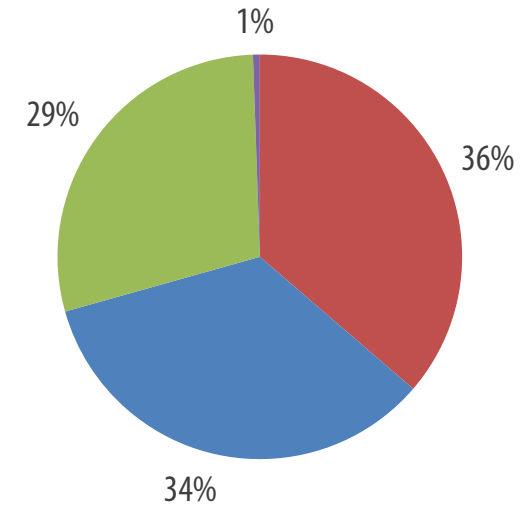
EDGE ANALYTICS LOCATIONS

36% <sup>In</sup> Data Center

34% <sup>On</sup> Edge

29% <sup>In</sup> Cloud

Edge Analytics Location



■ In corporate data center ■ On edge ■ In cloud ■ Other

Top 5 Data Types Analyzed

Usage Data

Network Traffic

Location Data

Device Status Data

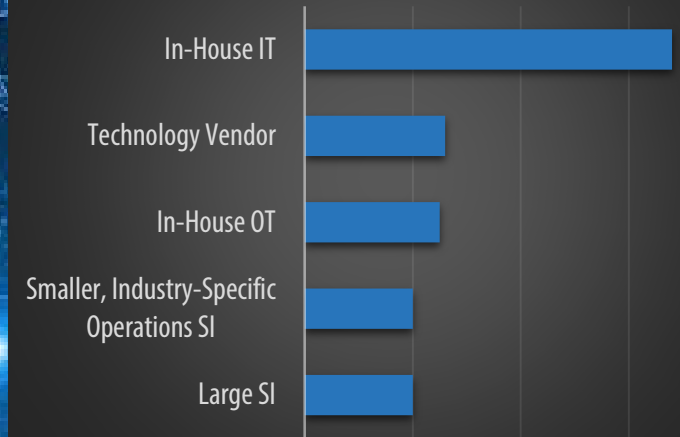
Environmental Data



# IT Dominates Edge Computing Efforts

Tech vendors still playing an important role, however

## Personnel Involved



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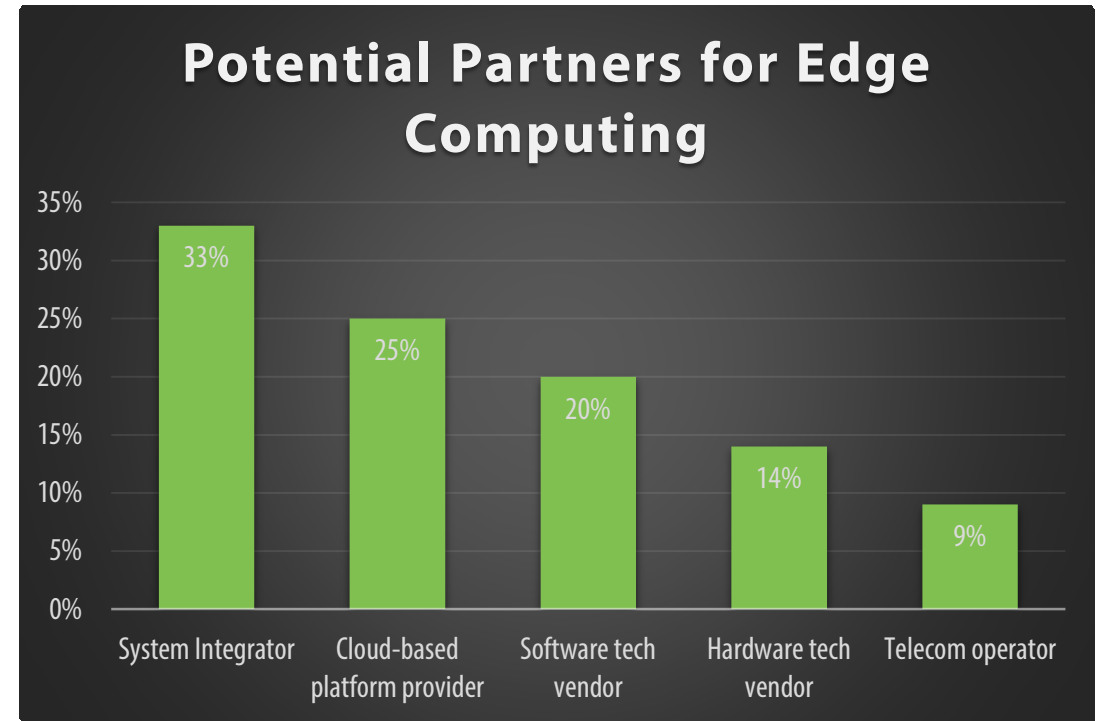


EDGE DEVICE MANAGEMENT

87% Done by IT

9% Done by OT

3% Done by Line of Business



CURRENT EDGE COMPUTING PARTNERS

31% Hardware Tech Vendors

# Core Technologies Used For Edge Computing

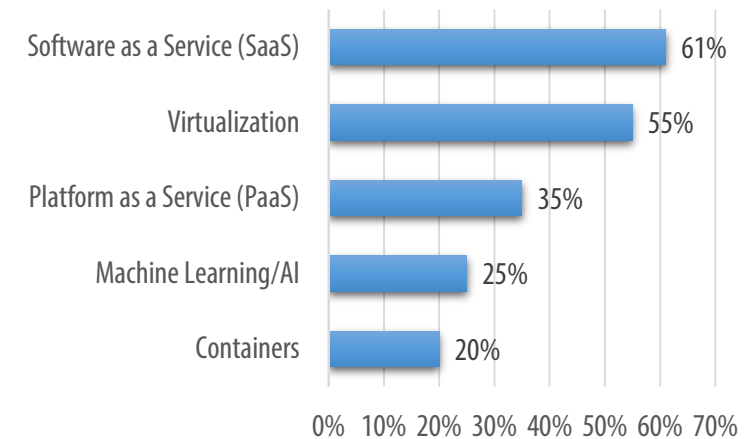
Despite the hype, both AI and containers only used by a small percentage of respondents



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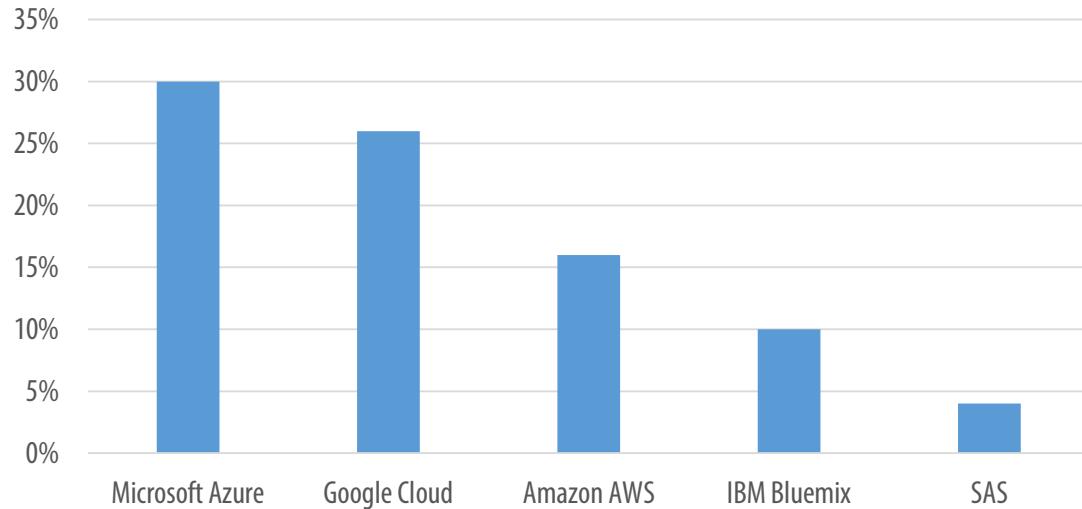
## Technologies Used



CLOUD PLATFORMS USED WITH EDGE COMPUTING

30% <sup>Use</sup> Microsoft Azure

Top 5 Cloud Platforms for Edge Computing



Top 3 Reasons for Using Cloud Platform

Cloud is used to manage the edge devices

Edge is used to deliver cloud services to end users/devices

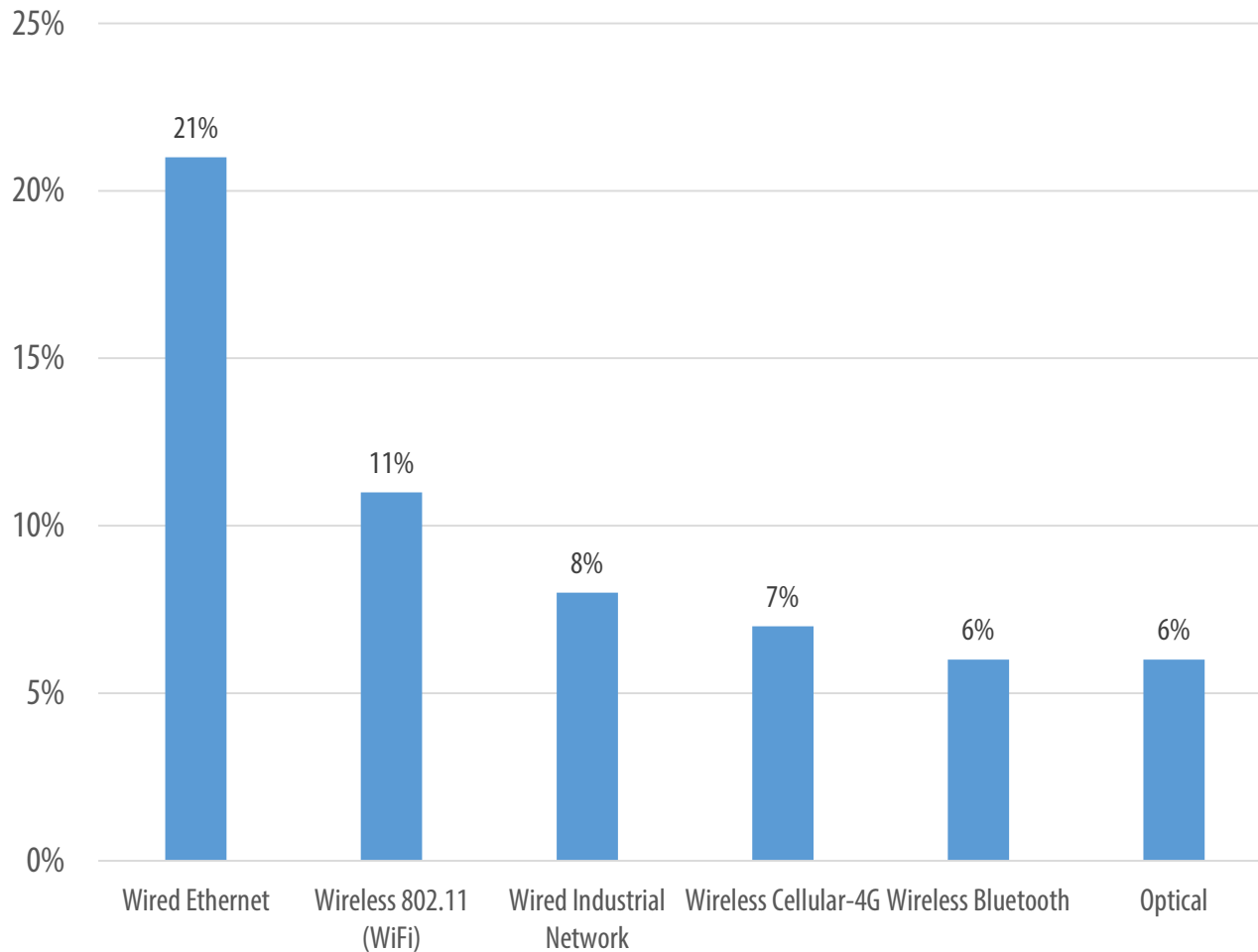
Edge devices used to help connect end user devices to the cloud

NO CLOUD PLATFORM

14%

<sup>Don't Use</sup> Any Cloud Platform

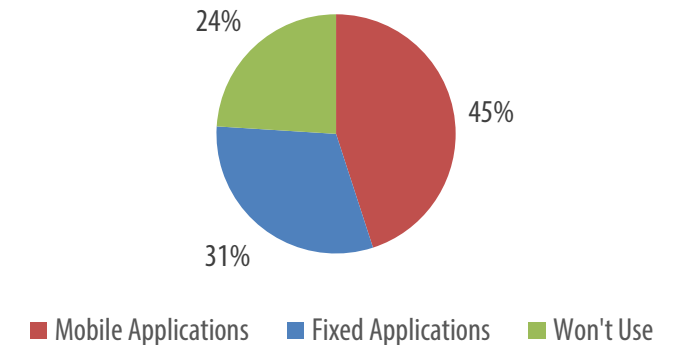
## Current Edge Connectivity



## Edge Computing Connectivity

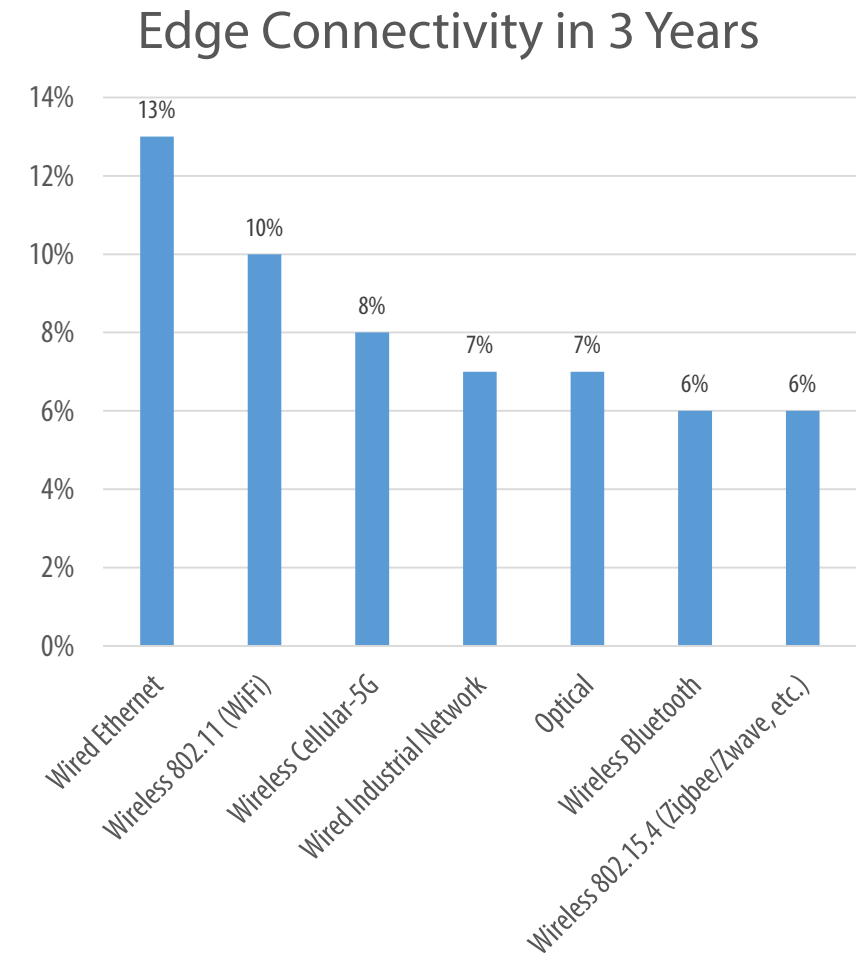
- Traditional methods dominate
  - Long tail of varied choices
  - Only two have more than 10% adoption
- 
- Paid cellular connections used for both mobile and fixed applications

### Paid Cellular Usage



# Future Edge Connectivity

- Within 3 years, 5G is expected to become the third most common connectivity choice
- Long tail of varied options will remain, however, creating challenges and complexity issues



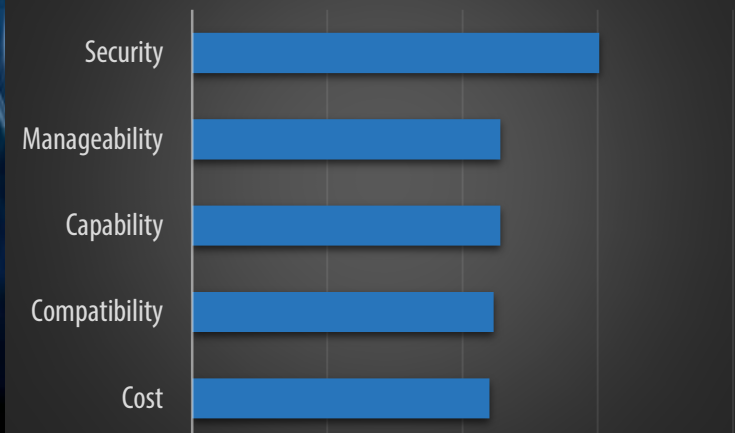


# Edge Computing Purchase Factors

- Security strongly outweighs other factors when making purchase designs for edge computing applications
- Cost barely makes the top 5 as more practical issues are key factors

## EDGE COMPUTING

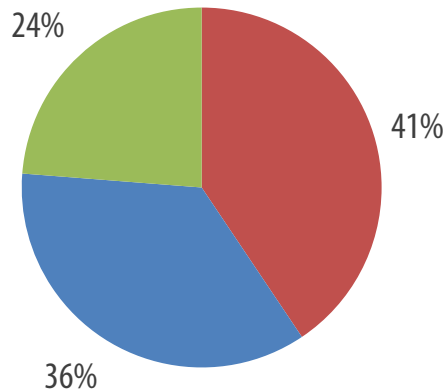
### Top Purchase Factors



PURCHASE METHOD

**41%** Prefer Working With Multiple SIs

Edge Computing Purchase Preferences



- Work with multiple system integrators or ISVs to buy the right devices for my ecosystem
- Buy integrated IoT solutions from a single vendor or as few vendors as possible
- Buy individual devices from multiple manufacturers



Top 5 Edge Computing Device Purchases
PCs
Dedicated Edge Servers
Dedicated Edge Routers
Gateways
Connected Sensors

PLANNED EDGE COMPUTING PURCHASES

**62%** Plan to Purchase Edge Servers

**52%** Plan to Purchase Edge Routers

# Final Thoughts

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- Edge computing still in early stages, being adopted primarily by companies with advanced technology skills
- Enormous diversity of workloads and applications being done across a variety of different edge devices
- Many types of analytics work being done, but focused on most practical issues first
- While ROI is important for edge, security, safety and monitoring of critical business elements are key
- Physical proximity benefits offered by edge computing will be an important factor in its growth



# Contact



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*For additional information and complete survey results, a 104-slide version of this report is available.*



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