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Edge Meets Cloud: A New Era Of Scalability And Security

Transform Your Operations With Integrated Environments

A FORRESTER CONSULTING THOUGHT LEADERSHIP PAPER COMMISSIONED BY MICROSOFT, JANUARY 2025

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Executive Summary

In today's technology landscape, most cloud and edge computing leaders share a unified, three-pronged vision: enhancing customer experience, bolstering operational resilience, and addressing strategic business initiatives. To achieve this vision, businesses are expanding cloud capabilities; fortifying cybersecurity functionality in AI and machine learning scenarios; and enabling an integrated technology infrastructure to support diverse business use cases. However, outdated legacy systems and siloed teams complicate the seamless implementation of secure, scalable business cases, AI scenarios, and cloud solutions.

In August 2024, Microsoft commissioned Forrester Consulting to evaluate cloud and edge leaders' top priorities. Forrester conducted an online survey with 622 global edge and cloud decision-makers to explore this topic. We found that respondents view cloud and edge integration as vital to addressing their current challenges. Respondents believe that integrating these environments will reduce network latency, lower cloud expenses, and facilitate data capture from a fragmented array of edge devices. In response to their challenges, an overwhelming majority of respondents (84%) expressed interest in a platform that could help consolidate their edge and cloud operations.

Key Findings

Surveyed cloud and edge leaders have aligned priorities. Respondents identified their top three business priorities as enhancing customer experience, increasing operational resilience, and improving data privacy practices. To meet these priorities, surveyed cloud and edge leaders' organizations are enhancing cybersecurity within AI and machine learning initiatives and expanding cloud services across business units.

Legacy systems and siloed teams prevent respondents from meeting their goals. Surveyed leaders' top challenges in meeting AI security and cloud expansion goals include issues with legacy applications; high integration and maintenance costs; siloed teams; and slow data processing and analysis.

Edge and cloud environment integration will alleviate top challenges. Respondents believe merging edge and cloud solutions will help reduce network latency, lower cloud costs, and enhance data capture from a wide range of edge devices. In response, 65% of respondents' organizations plan to merge edge and cloud environments in the next year.

Respondents desire a solution to help merge environments. An overwhelming 84% of respondents want a solution that helps consolidate edge and cloud environments and believe such integration would provide better security features, enhanced data analytics capabilities, and easier team collaboration.

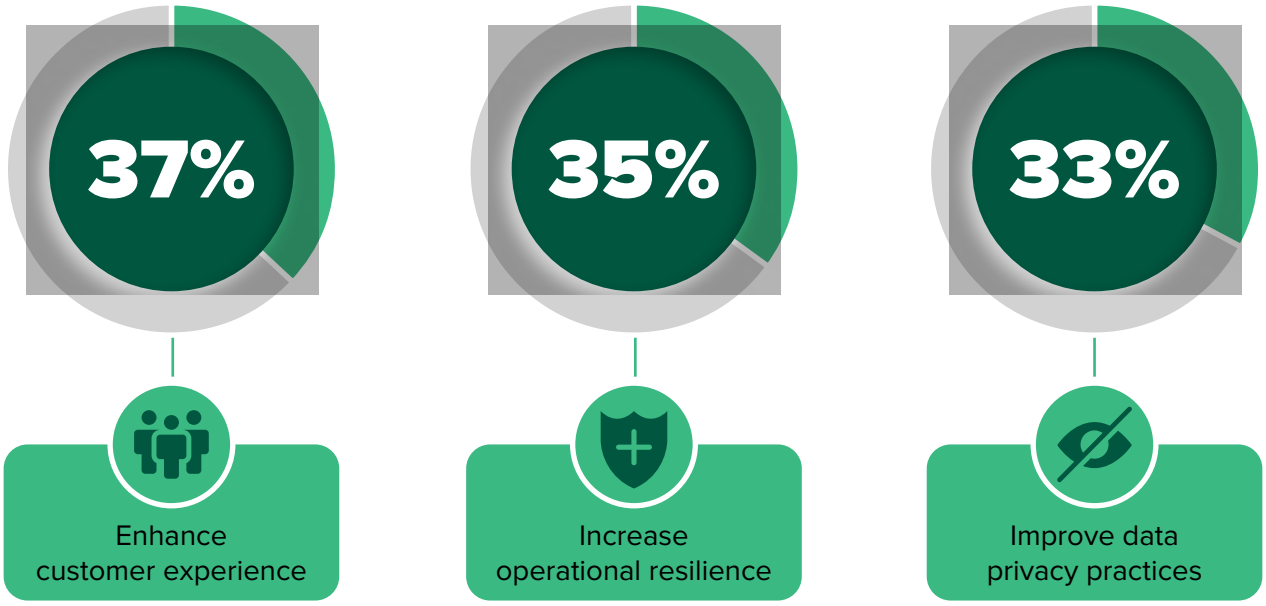
Aligning Ambitions: The Shared Strategic Vision Of Cloud And Edge Leaders

Today's technology leaders want to elevate customer experience, maintain operational efficiency, and ensure security. However, achieving these priorities across edge and cloud environments is complex and requires leaders to implement more streamlined, unified, and secure practices. In surveying edge and cloud leaders, we found that:

- **Respondents across cloud and edge have the same business priorities.** Respondents' top three business priorities over the next two years include enhancing customer experience, increasing operational resilience, and improving data privacy practices (see Figure 1).

FIGURE 1

Organizations' Top Business Priorities Over The Next Two Years

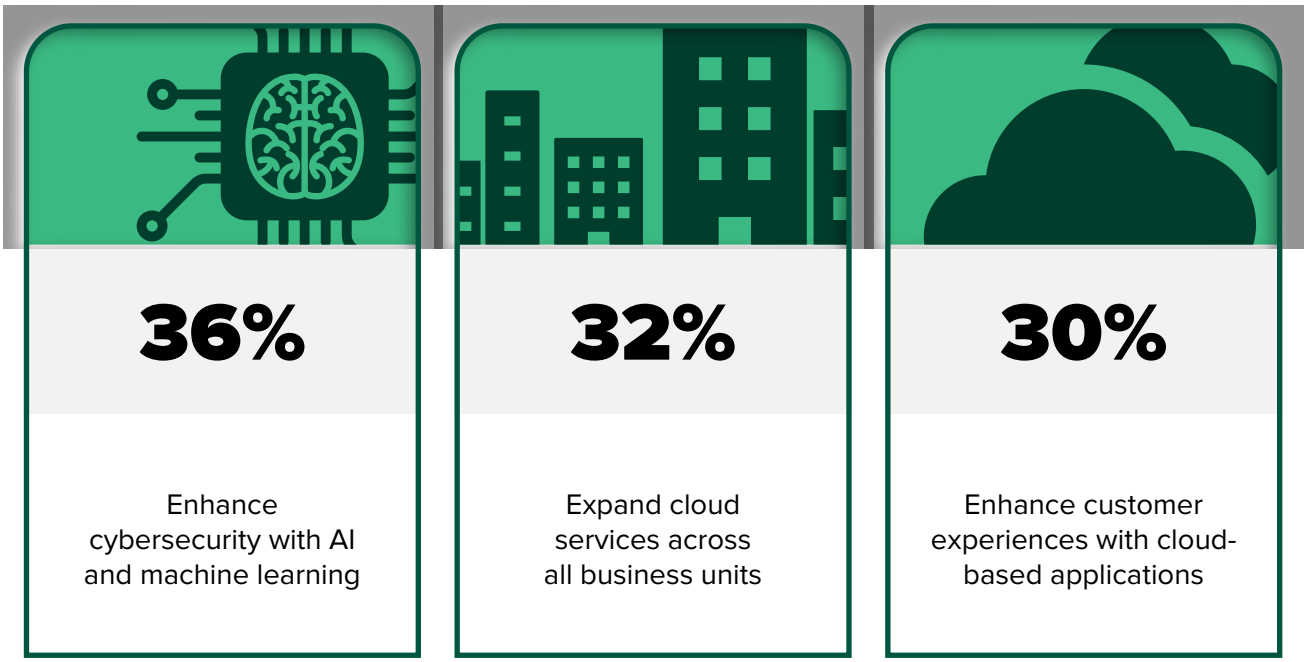


Base: 622 global edge & cloud decision-makers
Note: Showing top three responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, September 2024

- **Achieving top technology priorities will help respondents meet their business goals.** Respondents' top technology priorities include enhancing cybersecurity within AI and machine learning, expanding cloud services across business units, and enhancing customer experiences with cloud-based applications (see Figure 2). Extending cloud services across teams and customer touchpoints will help create business efficiencies and ultimately improve customer outcomes. And, by strengthening AI security, companies can scale their operations with confidence.

FIGURE 2

Organizations' Top Technology Priorities Over The Next Two Years



Base: 622 global edge & cloud decision-makers
Note: Showing top three responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, September 2024

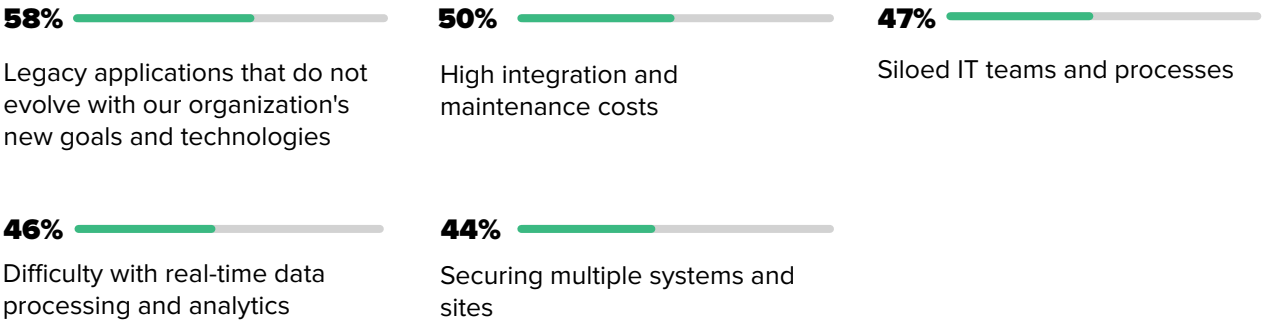
Redefining Scalability: Overcoming Outdated Technology And Siloed Teams

As surveyed technology leaders scale the cloud across their businesses, it is critical that their technology and teams are prepared for an integrated business environment. An integrated cloud-to-edge environment is important in key distributed scenarios (e.g., health, safety, retail, and e-commerce personalization) because captured data from edge environments needs to be sent to the cloud for further AI and machine learning trending analysis. However, outdated practices and siloed teams, platforms, and processes are preventing cloud and edge respondents from meeting their goals.

Respondents specifically noted that siloed and out-of-date processes prevent respondents from achieving their technology goals. To successfully scale the cloud, organizations need agile technologies, teams, and processes that can work across the business — but respondents currently struggle with out-of-date technology and processes. The top challenges impeding respondents from meeting their technology goals include outdated legacy applications, high integration and maintenance costs, siloed teams, and difficulty with real-time data processing and analytics (see Figure 3).

FIGURE 3

Top Challenges Impeding Organizations From Reaching Their Technology Goals



Base: 622 global edge & cloud decision-makers
Note: Showing top five responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, September 2024

RESPONDENTS ARE ACTIVELY WORKING TO ALLEVIATE THESE CHALLENGES

- **Respondents are focused on upskilling and enhancing their workforce to solve their top challenges.** To address their main challenges, respondents' organizations are actively expanding their workforce and upskilling employees (85%); consolidating data into a single, unified source (82%); enhancing their cybersecurity measures (70%); and integrating edge and cloud environments (70%).

65%

of respondents' organizations are planning to integrate their edge and cloud environments in the next year.

- **Integrating workflows and environments is a top priority.** Respondents are not just talking about integrating their workforces — 82% have plans to consolidate data into a single, unified source in the next year and 65% are planning to integrate their edge and cloud environments in the next year.

- **An integrated platform for cloud and edge will solve top technology challenges.** Respondents believe they can overcome their organizations' top challenges — legacy applications failing to evolve with new technology, high maintenance costs, and data processing difficulties — by merging cloud and edge platform solutions. This convergence would reduce network latency, lower cloud costs, and capture data from a wide range of edge devices (see Figure 4).

FIGURE 4

Top Benefits Of Integrating Edge And Cloud Platforms

64%
Reducing network latency and having faster responses

60%
Capturing data from the diversity of edge devices, which needs to be integrated with cloud data to conduct complex processing in a centralized location

59%
Reducing cloud costs (e.g., data transfer and egress)

53%
Improving application and workload performance with reduced latency

51%
Collecting input from mobile, IoT, and other devices to provide customers with real-time insights for greater values

Base: 622 global edge & cloud decision-makers
Note: Showing top five responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, September 2024

The Future: Seamless Integration Of Edge And Cloud

Seventy-five percent of respondents believe that merging edge and cloud environments is important and plan to unify their organizations' edge and cloud teams and data sources over time. However, many respondents find it difficult to attain the right skills and security practices for these environments — in fact, an overwhelming majority of respondents are open to investing in a solution that will help mitigate these challenges. Our research found that:

84%

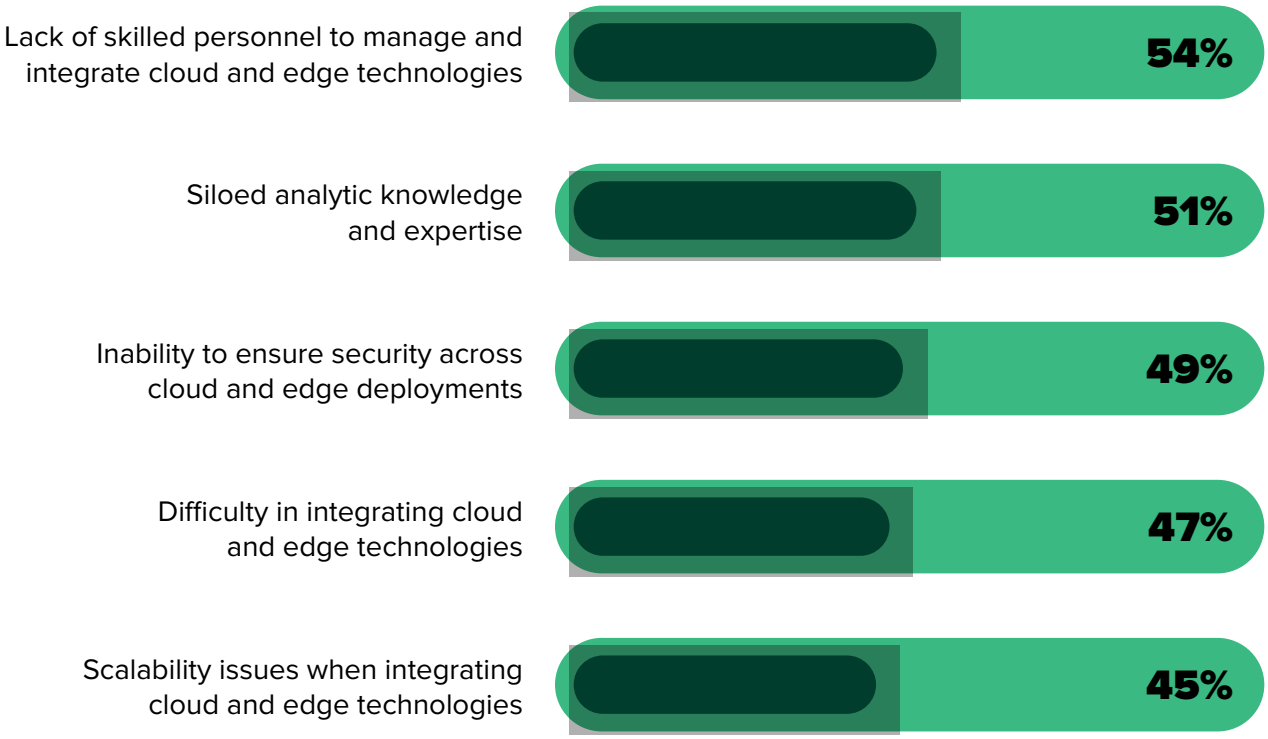
of respondents would value a solution to help consolidate IT teams, systems, and sites into a unified cloud-based framework across operations, security, and data.

- **Respondents are evolving siloed edge and cloud teams and data practices toward a more unified approach.** Only 9% of respondents said their edge and cloud teams are unified today. However, this number is likely to increase significantly: Survey results showed that 41% of respondents envision their edge and cloud teams becoming more unified going forward. To do so successfully, respondents' organizations will need to merge their edge and cloud data, leverage platforms that can reduce deployment complexity, and orchestrate workflows across these environments. Today, only 20% of respondents have a unified data source to access edge and cloud data, but 42% of respondents plan to unify their data from these sources in the future.

- **Surveyed cloud and edge leaders face challenges in unifying platforms.** Respondents from cloud and edge groups said they lacked the skilled personnel to manage cloud and edge technology integration and struggled with siloed expertise. Both groups are also concerned with their organization's ability to ensure security across cloud and edge deployments and have not yet integrated or scaled the two technologies (see Figure 5).

FIGURE 5

Organizational And Process Workflow Challenges With Edge And Cloud

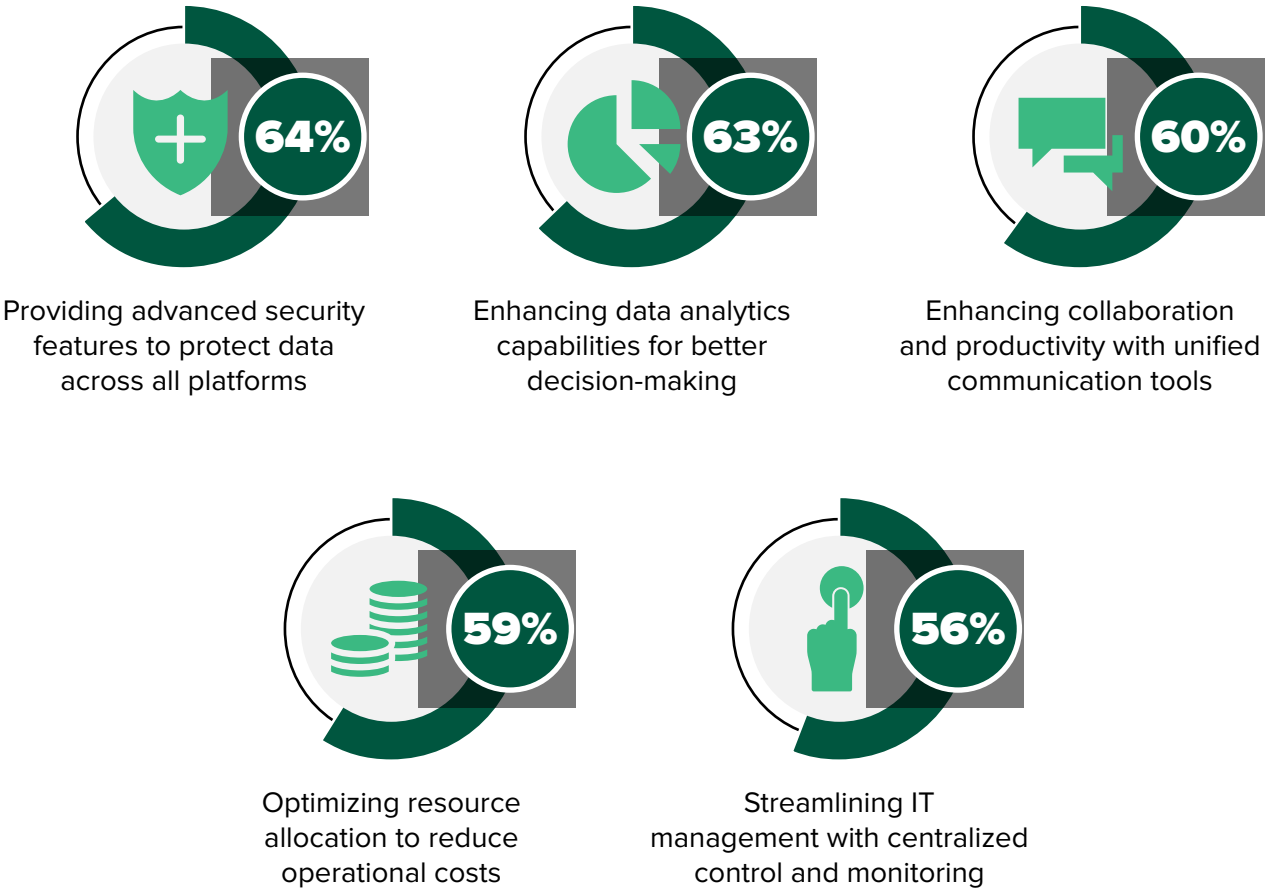


Base: 622 global edge & cloud decision-makers
Note: Showing top five responses
Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, September 2024

- **Respondents value a solution that would help consolidate edge and cloud.** Eighty-four percent of respondents would value a solution to help consolidate IT teams, systems, and sites into a unified cloud-based framework across operations, security, and data. This solution would help solve consolidation barriers by providing security features, enhanced data analytics capabilities, and collaboration (see Figure 6).

FIGURE 6

Benefits Of Implementing A Solution To Help Consolidate Edge And Cloud



Base: 622 global edge & cloud decision-makers
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Key Recommendations

Forrester's in-depth survey of 622 global decision-makers yielded the following recommendations:

Assess the existing alignment between your organization's cloud and edge priorities. In the past, edge and cloud teams operated with separate initiatives. However, future success requires an integrated environment that addresses aligned edge and cloud team priorities. Facilitate open communication and necessary collaboration between these teams to ensure platform, technology, and analytics integration, which enables intelligent use cases in central and distributed environments.

Seek an integrated platform to capture and distribute AI insights and software where it runs best. Siloed systems run software in a single place, which creates performance limitations as conditions change (e.g., more sensors are installed in a factory, more people gather for an event, cameras receive more video feed). Ensure your platform solutions support AI/ML, analytics, and portability to enable dynamic applications and software design strategies spanning your edge and cloud environments.

Address security and scalability across the integrated solution. The diversity of use cases, environments, and AI-enabled intelligent insight distribution must be addressed seamlessly across edge and cloud environments. Every new network connection, smart device, edge server, or micro data center is an attack surface for hackers. Evaluate platform solutions for security and scalability across these environments, facilitate easy access to actionable insights from captured data, and quickly detect security anomalies.

Extend cloud-native practices and patterns to edge environments. Building and supporting capabilities from cloud to edge requires embracing inherently distributed environments and workflows. Cloud-native platforms, practices, and patterns are already designed with this in mind, leveraging open standards to ensure portability and flexibility across environments. The scale and complexity of edge use cases demand abstractions for application deployment, while the diversity of hardware and devices at the edge calls for hardware-agnostic platforms, patterns, and networking solutions. Design applications with loose component coupling to promote better resource utilization and smoother upgrade paths.

Appendix A: Methodology

In this study, Forrester conducted an online survey of 622 global decision-makers at organizations to evaluate their adoption and deployment of cloud technologies to enable new edge-based opportunities. Survey participants included decision-makers in IT, analytics, and operations. Questions provided to the participants asked about top edge and cloud technologies features and use cases, current challenges, and potential cloud and edge improvements. Respondents were offered a small incentive as a thank-you for time spent on the survey. The study began in August 2024 and was completed in September 2024.

Appendix B: Demographics

United States	**23%**
Australia	**13%**
Singapore	**12%**
United Kingdom	**12%**
Germany	**11%**
Canada	**11%**
France	**11%**
New Zealand	**9%**

COMPANY SIZE	
500 to 999 employees	**13%**
1,000 to 4,999 employees	**41%**
5,000 to 19,999 employees	**34%**
20,000 or more employees	**13%**

TITLE	
C-level executive	**6%**
Vice president	**15%**
Director	**38%**
Manager	**40%**

DEPARTMENT	
IT	**68%**
Analytics	**19%**
Operations	**12%**

INDUSTRY (TOP 10)	
Retail	**17%**
Manufacturing and materials	**17%**
Financial services	**17%**
Healthcare	**17%**
Transportation and logistics	**3%**
Technology and/or technology services	**3%**
Consumer product goods and/or manufacturing	**3%**
Business or professional services	**3%**
Energy, utilities, and/or waste management	**2%**
Insurance	**2%**

Note: Percentages may not total 100 due to rounding.


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