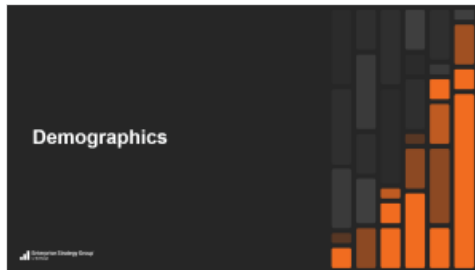
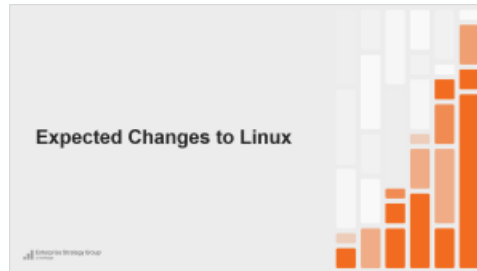
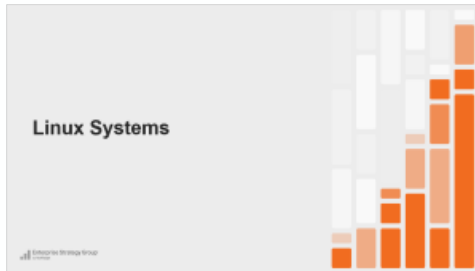
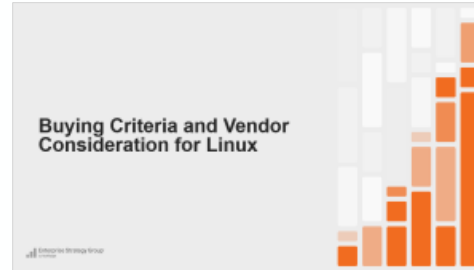
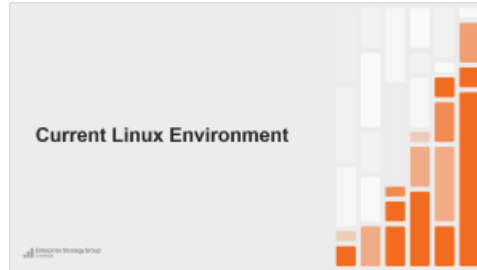
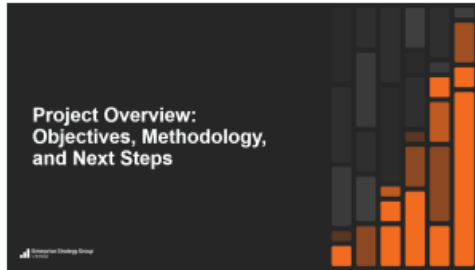


# Wind River Linux Market Requirements

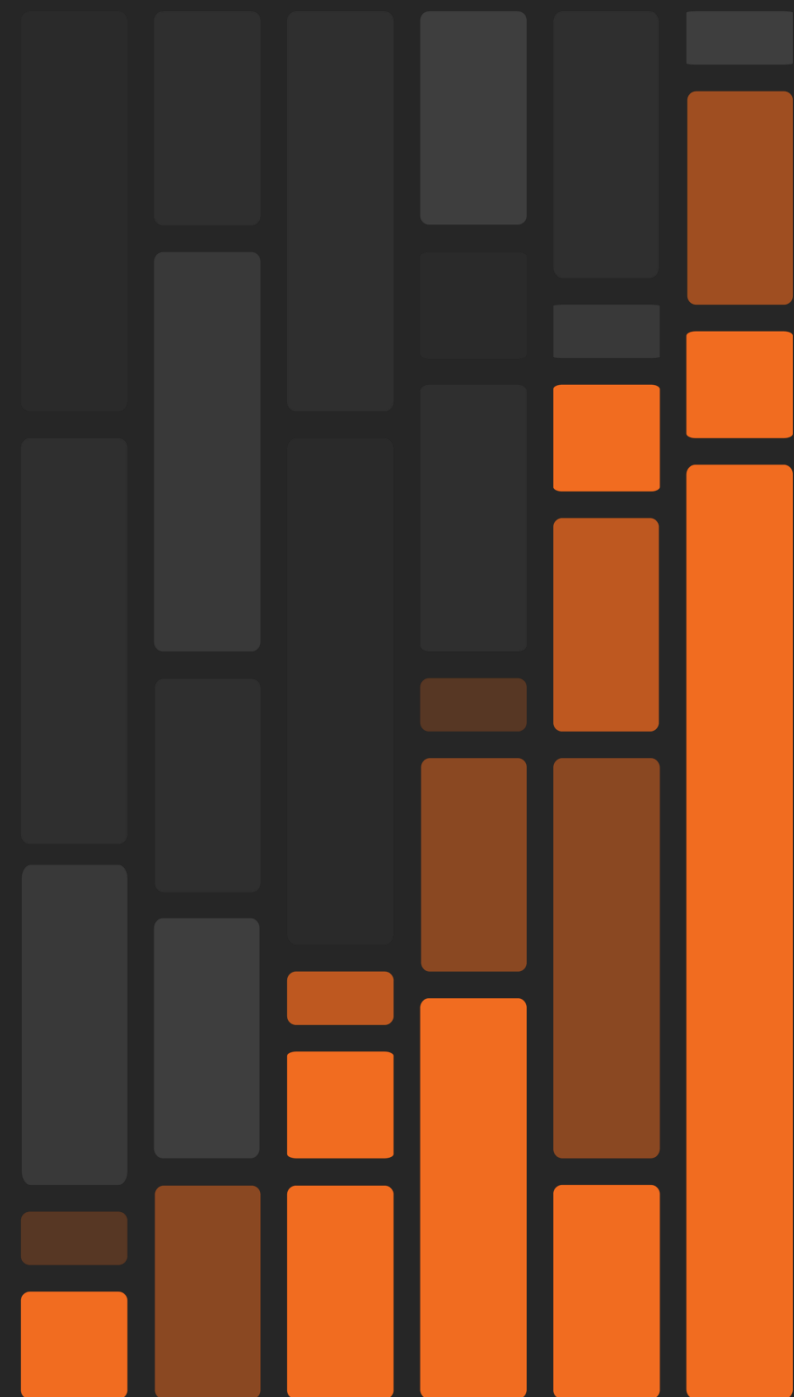
Noman Pathan | Market Research Analyst  
Torsten Volk | Principal Analyst, Application Modernization  
Adam DeMattia | Senior Director, Custom Research



# Table of Content



# Project Overview: Objectives, Methodology, and Next Steps



# Research Objectives

- Overview of the current Linux environment
- Buying criteria and vendor consideration that are top-of-mind for Linux users.

# Next Steps

- Webinar: Kick-off/Content call scheduled for October 17th.
- Research Insights Paper & Executive Summary: Kick-off/content call scheduled for October 11th.
- Will provide next steps for each asset in follow up email.

# Survey Details

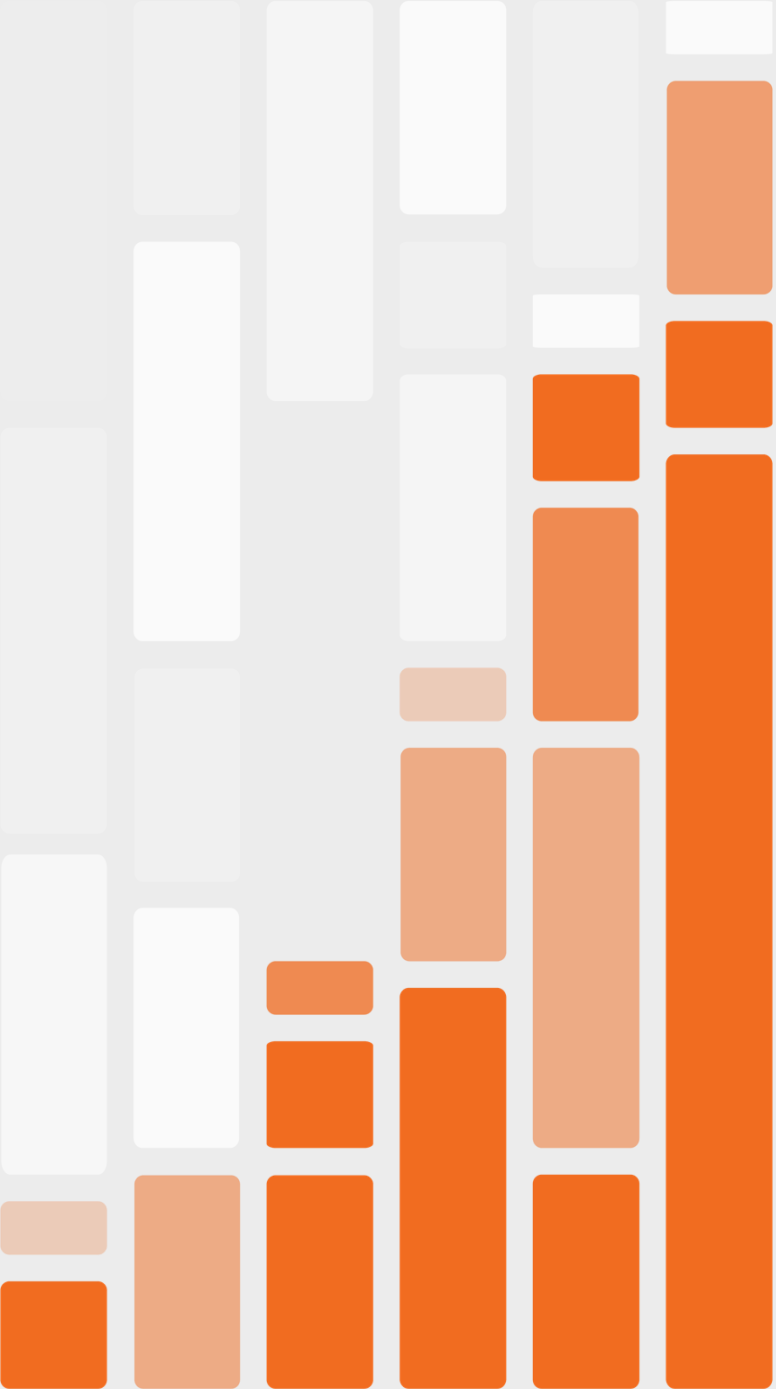
## QUANTITATIVE WEB-BASED SURVEY

- N=475 qualified completes
- North America (United States, Canada, 53%), Western Europe (France, Germany, United Kingdom, 26%), APJ (China, Japan, South Korea, 21%)
- Field dates: 8/22/2024-9/6/2024

## SURVEY RESPONDENTS

- IT decision makers with influence over the purchase process for data center compute solutions including server operating systems.
- Enterprise (2,000+ employees) organizations currently using Linux
- Complete demographics included at end of presentation.

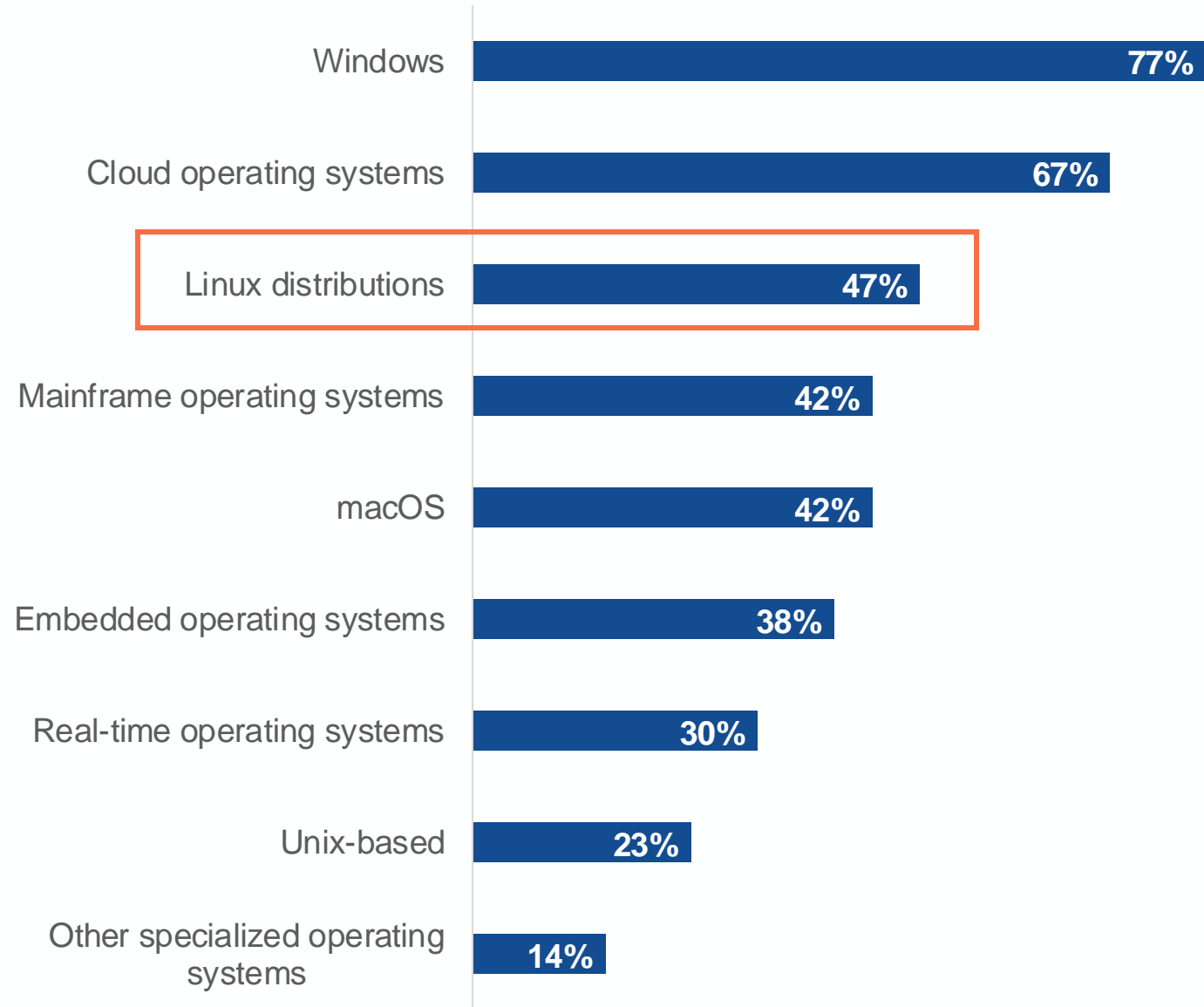
# Current Linux Environment



## Sample Included 50:50 Split Between Linux and Non-Linux Users

We learned what is holding organizations back from using Linux and what share of non-users are planning to adopt Linux in the future.

Once these questions were answered, non-Linux users were terminated.

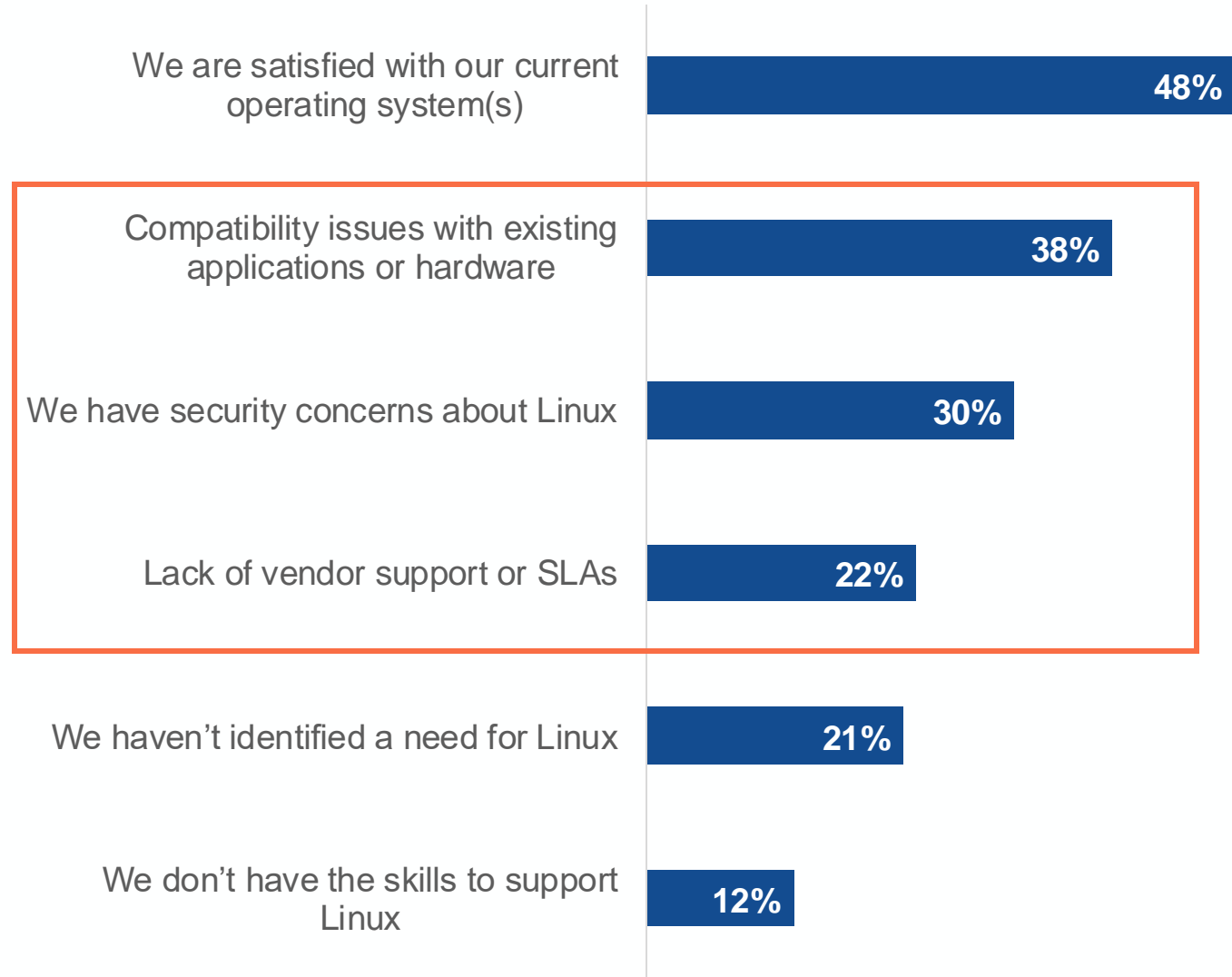


Question text: Which of the following types of operating systems is your organization currently using? (Percent of respondents, N=1,020\*, multiple responses accepted)

\*INCLUDES TERMINATED RESPONDENTS

# Three Key Factors Preventing Linux Adoption

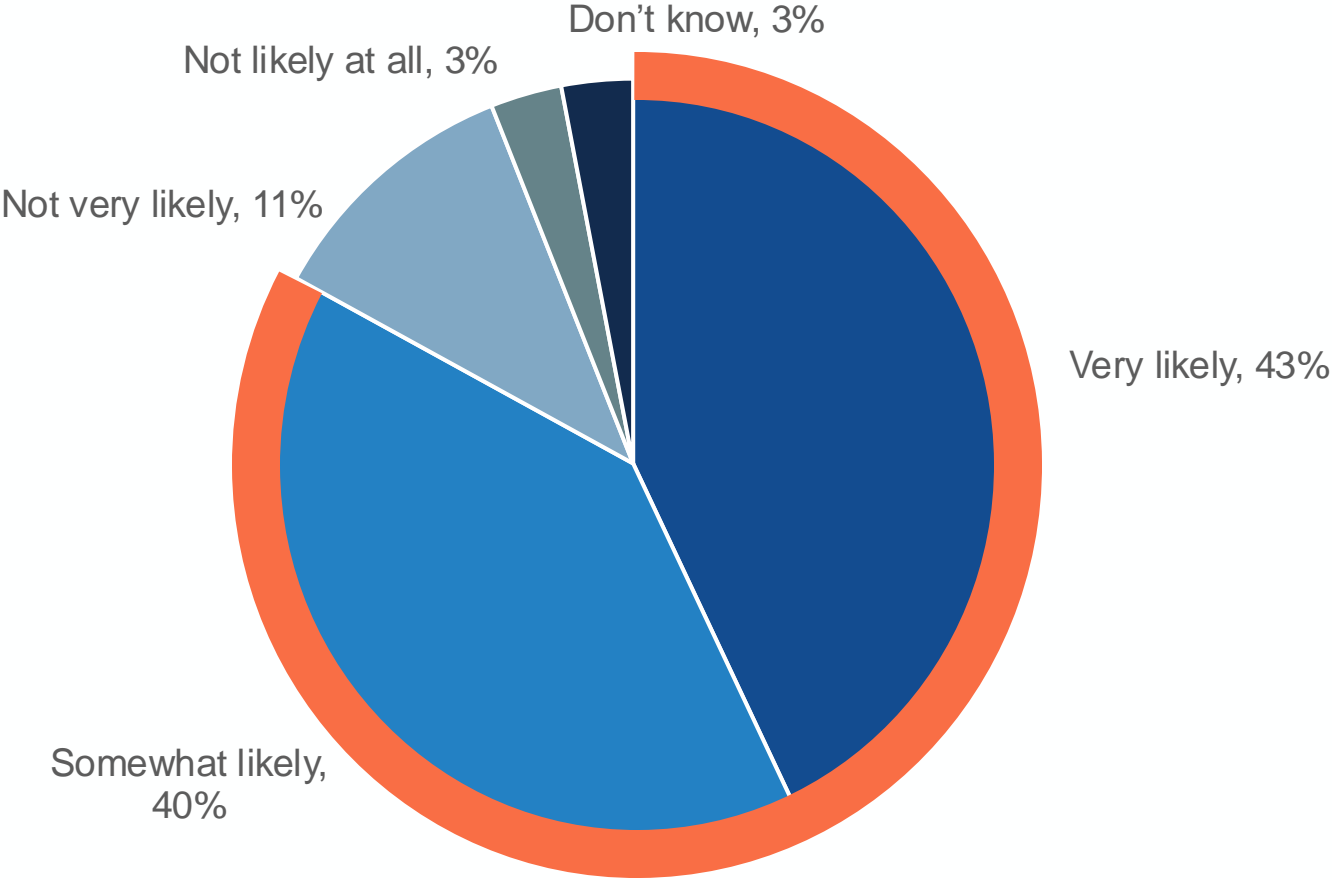
Addressing these concerns (i.e., compatibility issues, security concerns, lack of vendor support, etc.) can help win market share.



Question text: For which of the following reasons does your organization not currently run systems on the Linux OS? (Percent of respondents, N=545\*, multiple responses accepted)

\*TERMINATED RESPONDENTS

# Most Laggards Will Adopt Linux Eventually



83% of non-Linux users indicated it is “somewhat/very likely” that they will use Linux OS over the next 12-24 months.

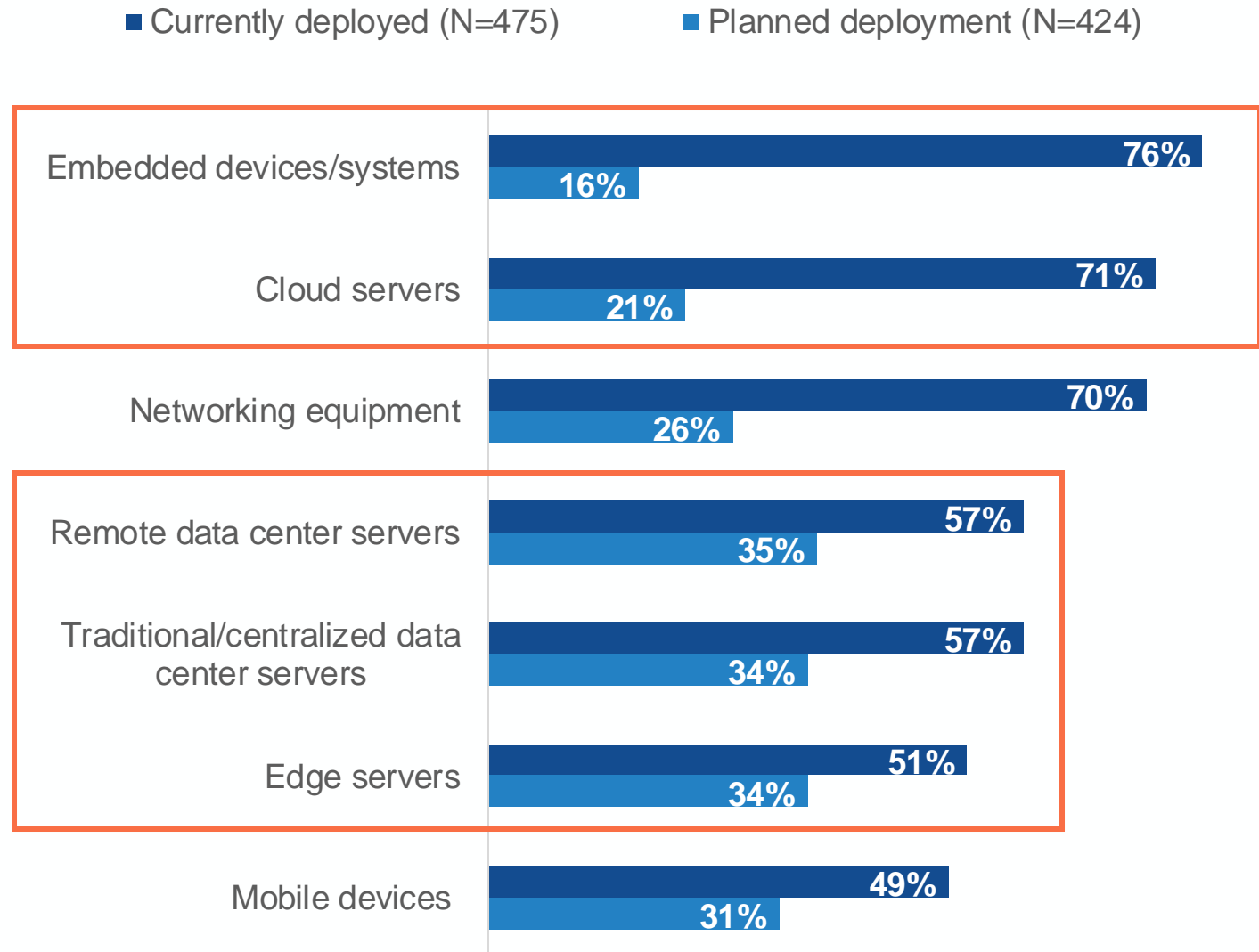
Question text: How likely is it that your organization will begin running systems on Linux in the next 12-24 months? (Percent of respondents, N=545\*)

\*TERMINATED RESPONDENTS



# Preferred Environments for Commercially Deployed Linux OS

Data center and edge server adoption of Linux expected to grow the fastest.

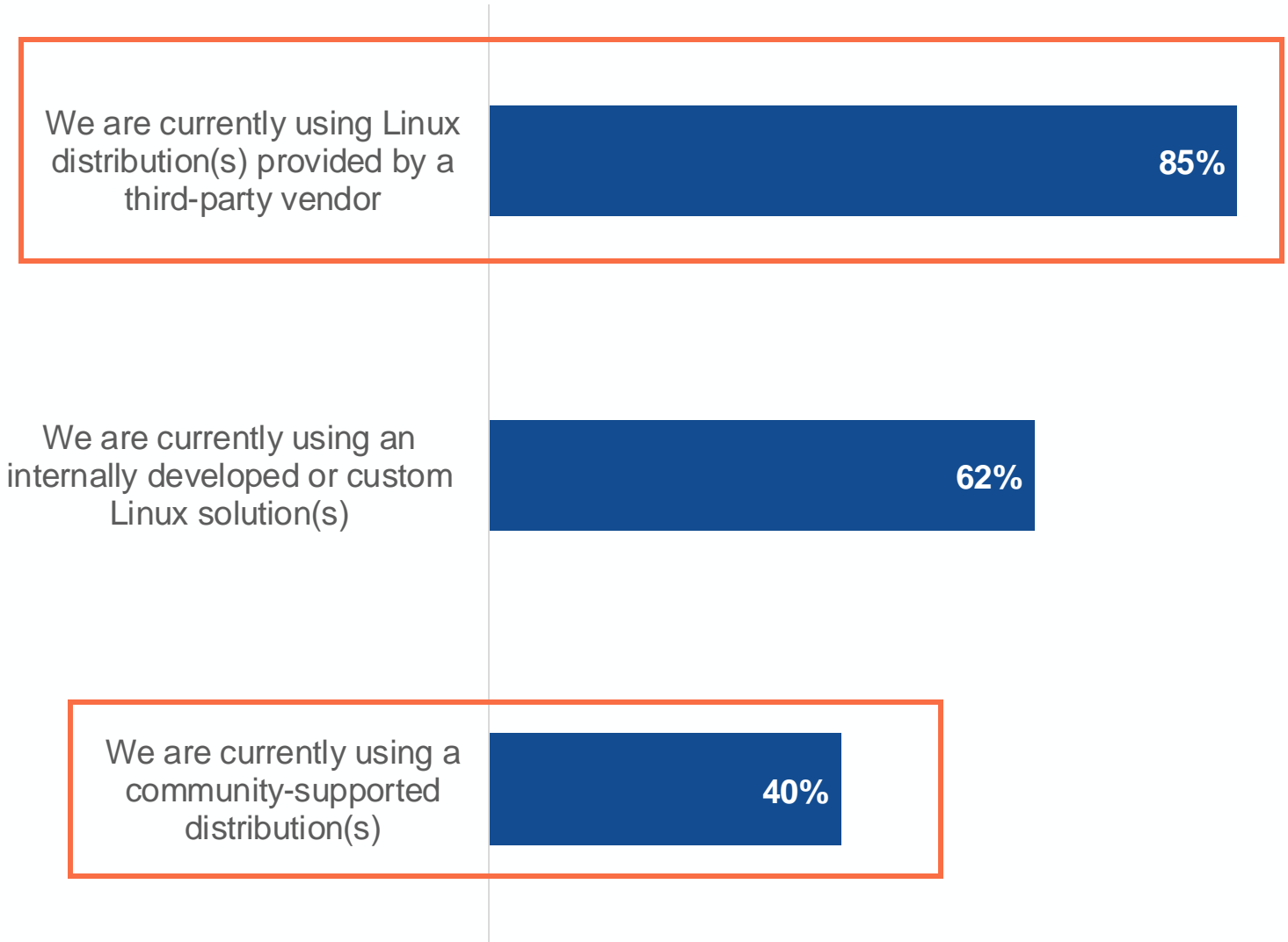


Question text: In which of the following environments does your organization use Linux operating system (Linux OS) for commercial deployments? In which of the following environments is your organization planning to use Linux operating system for commercial deployments? (Percent of respondents, multiple responses accepted)

# Importance of Third-party Vendor is Evident in Linux Adoption

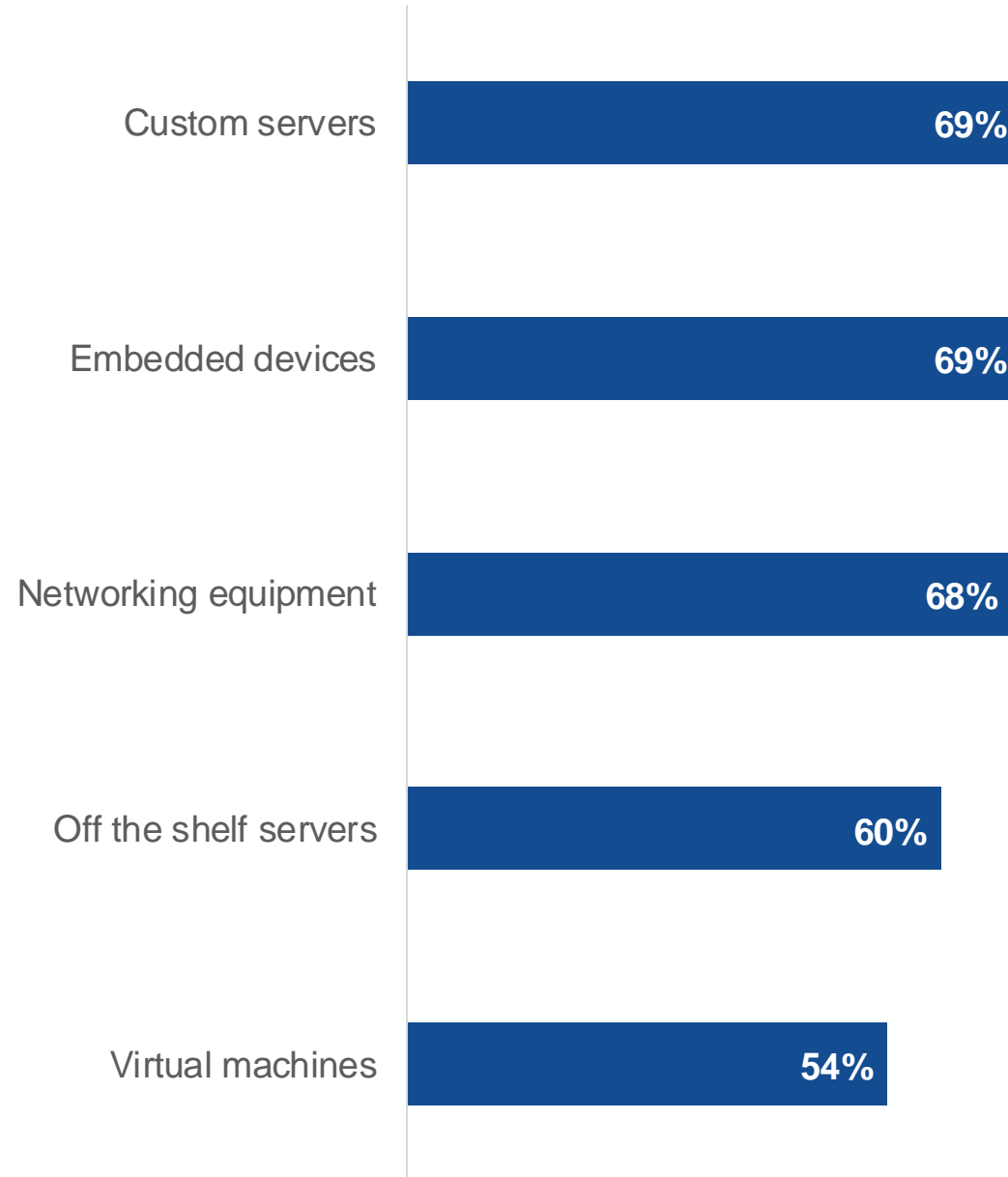
85% of organizations indicated they use a Linux distribution provided by a third-party vendor.

The 40% using community-supported distributions are up for grabs.



# Organizations have Diverse Hardware Support Requirements for their Linux OSes

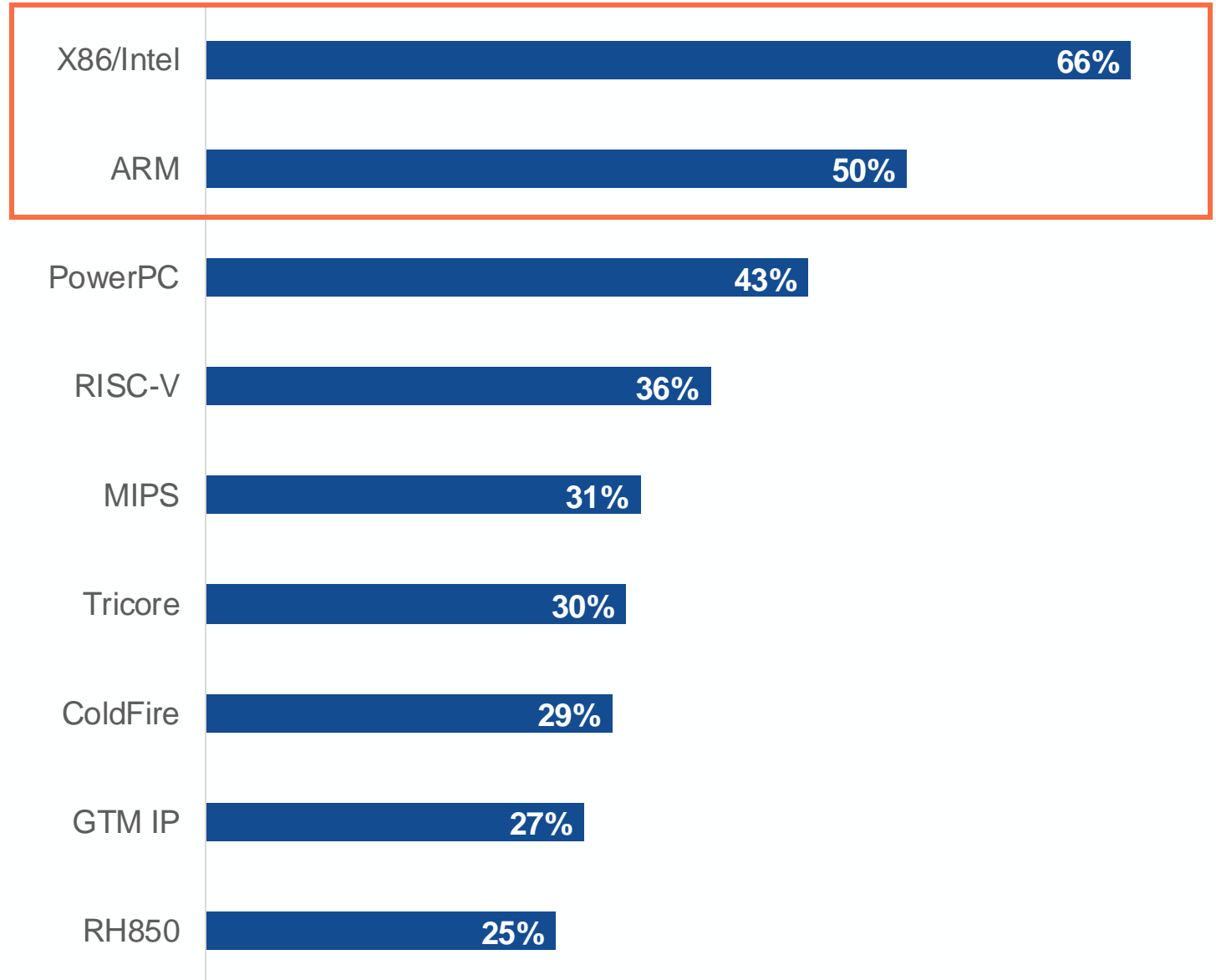
Supporting custom servers (ARM, RISC-V, DPUs, TPUs, NVMe-controllers, FPGAs, etc.), embedded devices and network equipment is critical.



# Processor Support Requirements for Linux OS

X86/Intel (66%) leads in terms of processor support requirements reflecting its architecture's dominance in both server and embedded systems.

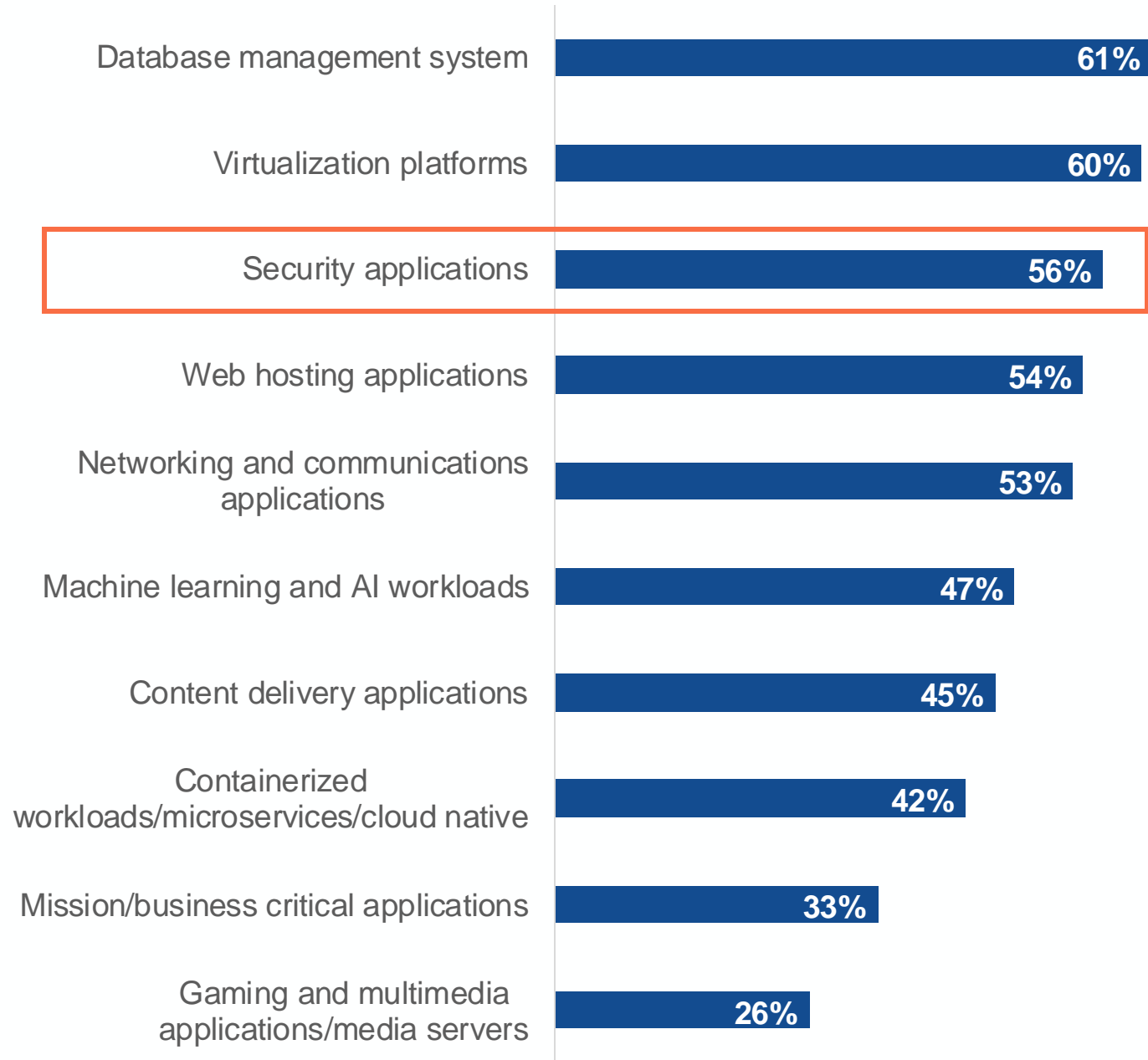
Wide range of CPU support requirements reflects the wide variety of use cases and industry-specific applications in which Linux is deployed.



# Linux Versatility on Full Display as it is Utilized Across a Wide Range of Mission-Critical Workloads

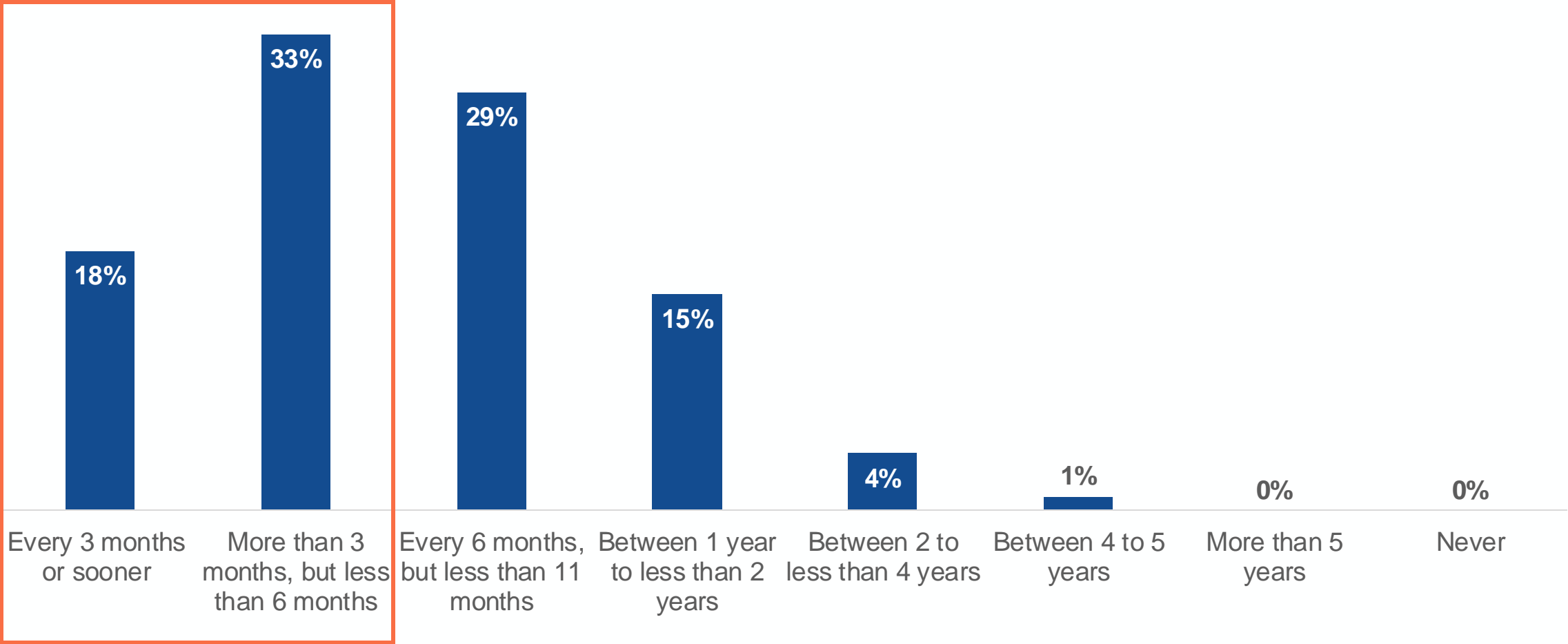
Linux plays a critical role in supporting enterprise database management (61%) and virtualization environments (60%).

- 56% of organizations are also utilizing Linux OSes for security applications (e.g., intrusion detection, encryption) which shows it is trusted for its robust security features in handling sensitive enterprise tasks.



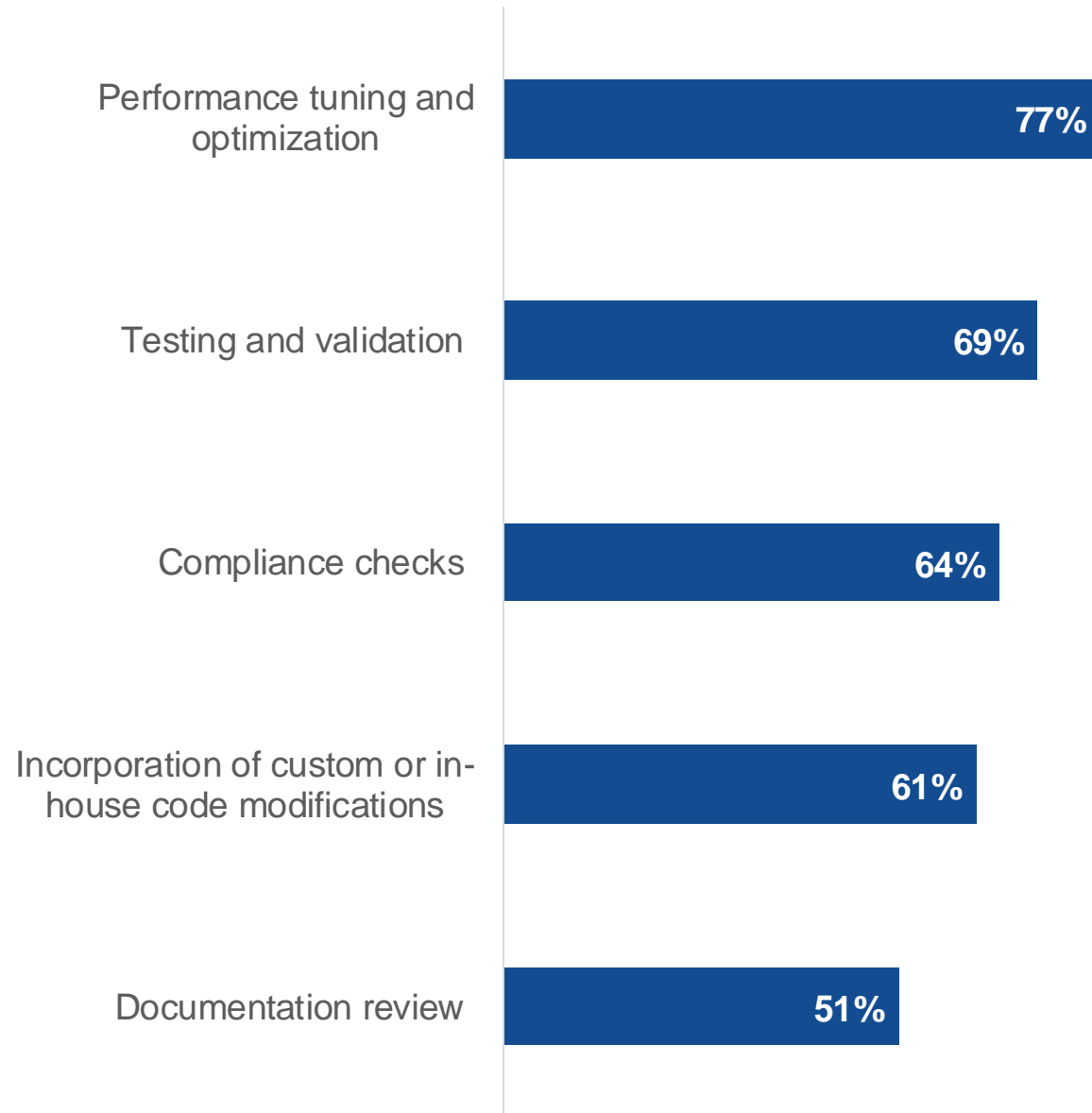
# On Average, Organization Refresh or Update (Excluding Patching) its Linux OSes Every ~8.9 Months

The majority of organizations (51%) have a proactive OS lifecycle management as they refresh or update their Linux OSes regularly in less than 6 months.



# Pre-deployment Process and Evaluation Steps

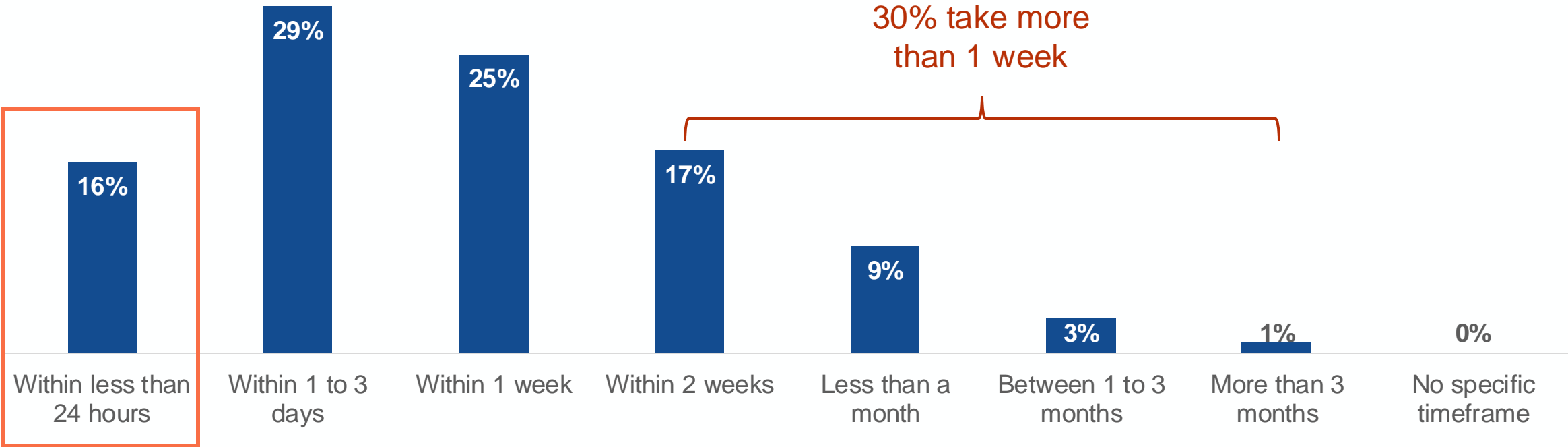
Performance tuning and optimization (77%) is the top priority during pre-deployment, which underscores the importance of ensuring Linux OS efficiency and high performance for workloads.



# Timeframe for Addressing Critical Linux CVEs

Worryingly, only 16% of organizations can address a critical Linux CVEs within less than 24 hours, while nearly a third (30%) take more than a week to perform the same task.

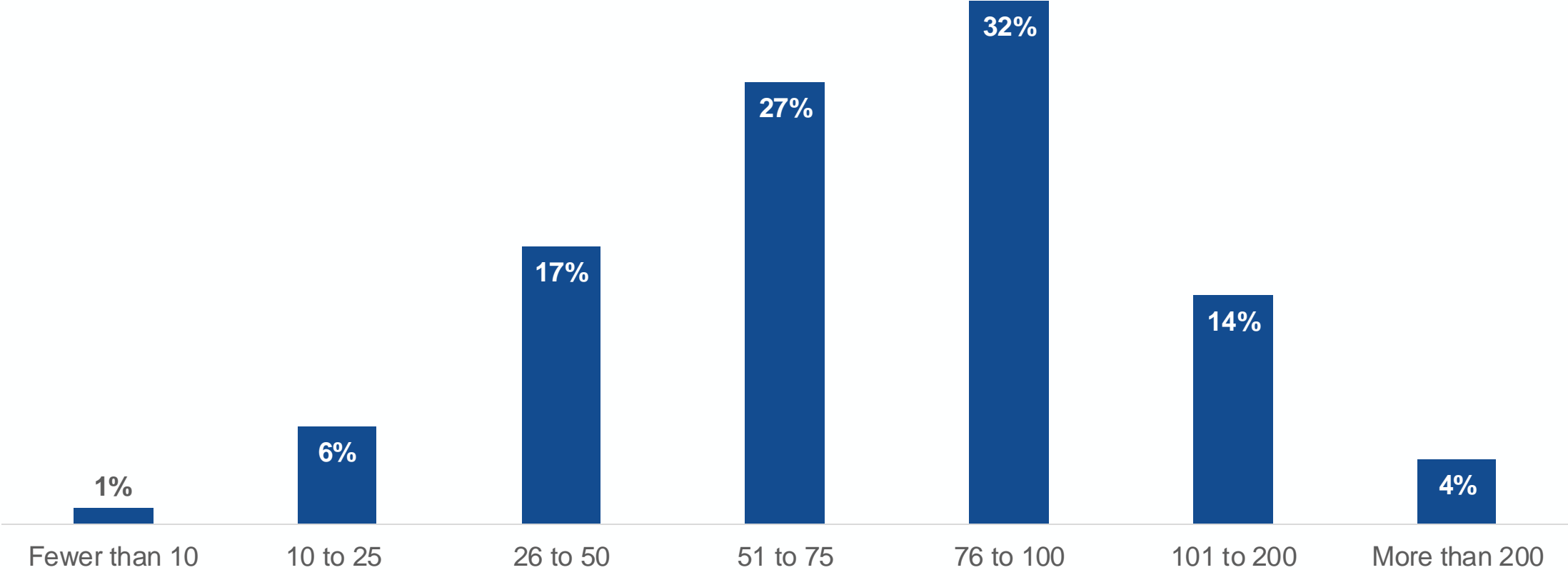
*“Common Vulnerabilities and Exposures (CVE) is a publicly listed catalog of known security threats. The catalog is sponsored by the United States Department of Homeland Security (DHS), and threats are divided into two categories: vulnerabilities and exposures.”*





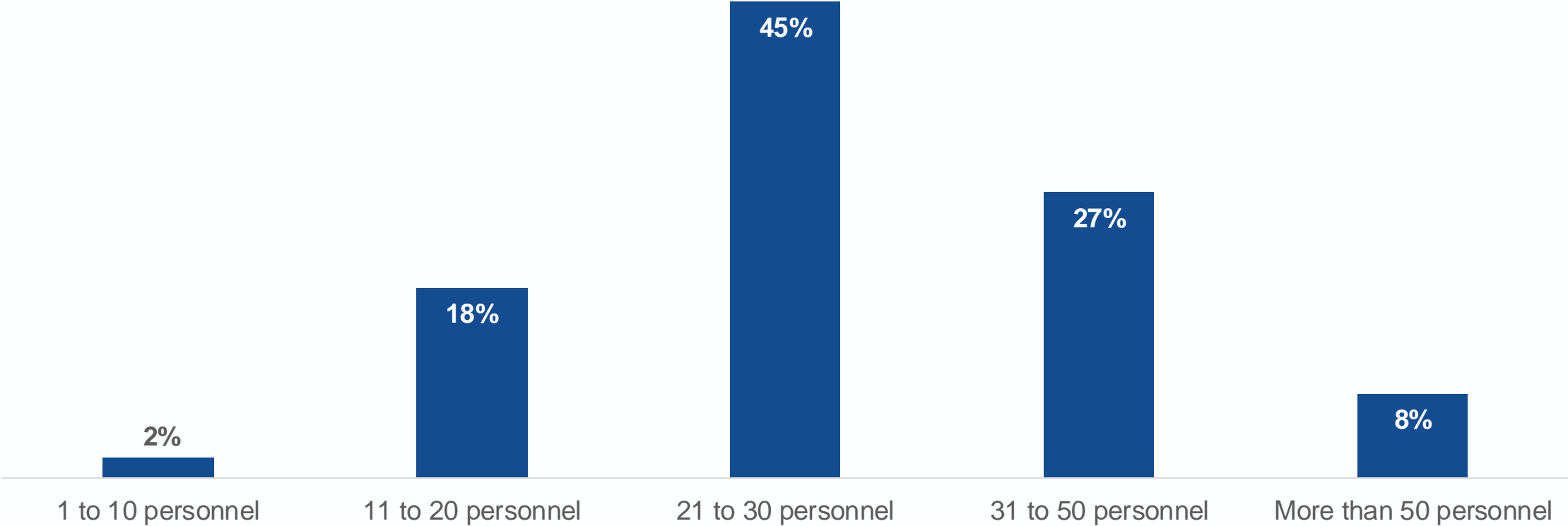
# On Average, Organizations Using Linux on Embedded Devices have ~82 Different Embedded Projects Running on Linux

Organizations have many parallel initiatives based on Linux. This reflects the broad and complex use of Linux in the embedded systems market.



# On average, Organizations Using Linux on Embedded Devices have ~29 Personnel Resources Allocated for a Typical Embedded Project

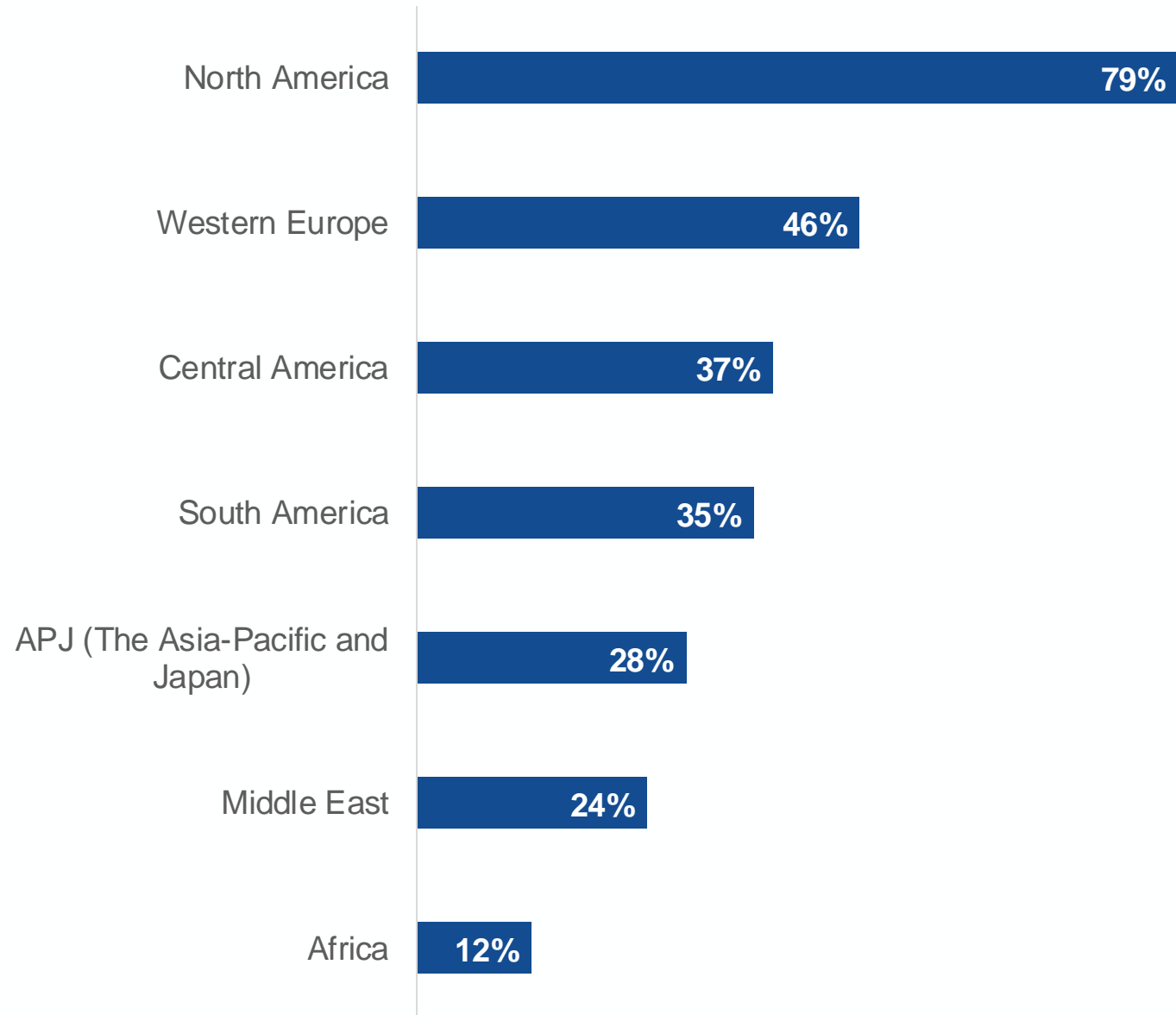
Projects often require larger teams. We can speculate that these are often multi-disciplinary teams consisting of developers, QA, and different operations roles. This can lead us to believe that embedded Linux projects require significant investments and are therefore of strategic value.



# Embedded Linux Projects are Geographically Dispersed in Our Sample

## Sample Composition:

- North America (United States, Canada, 53%),
- Western Europe (France, Germany, United Kingdom, 26%)
- APJ (China, Japan, South Korea, 21%)

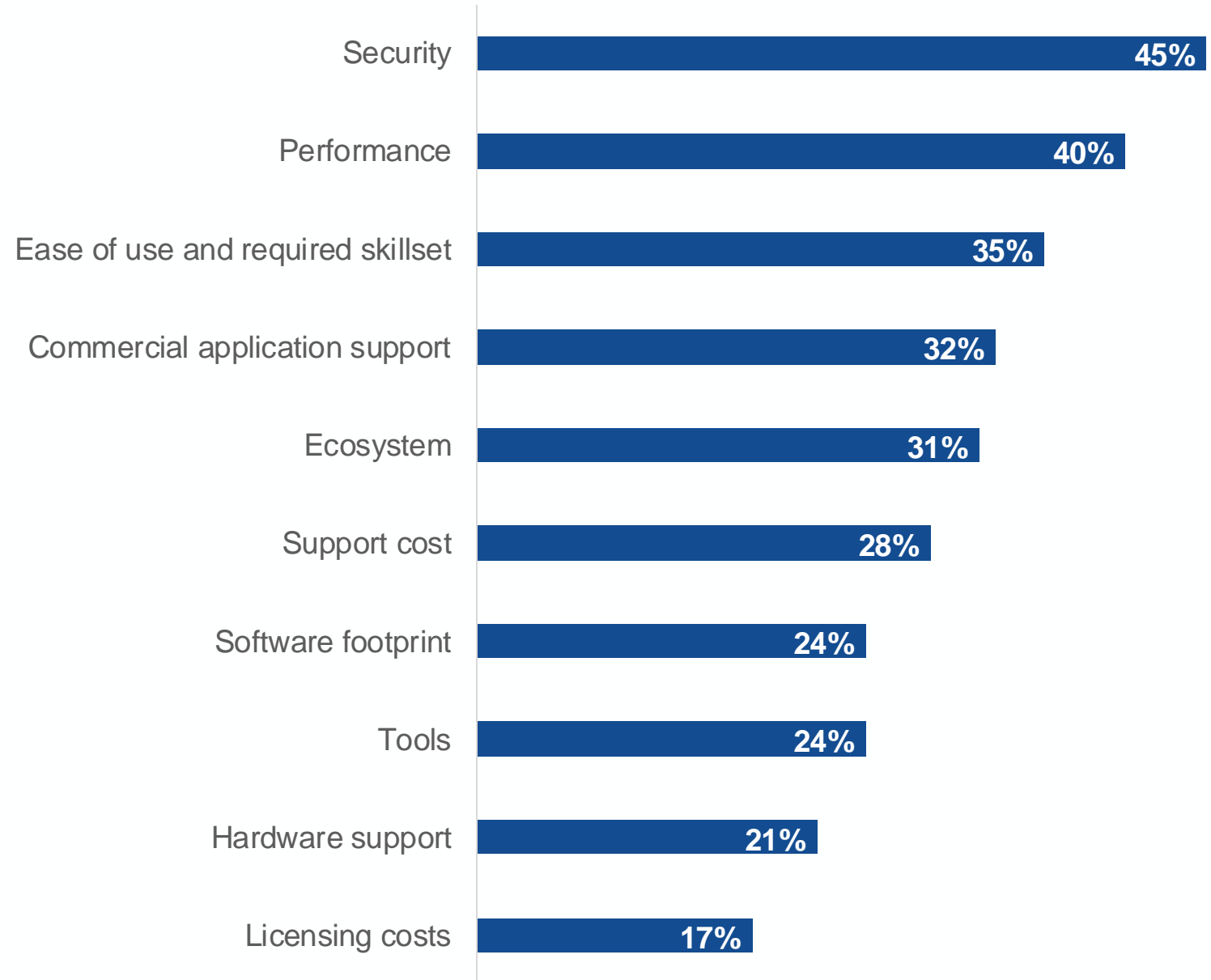


# Buying Criteria and Vendor Consideration for Linux



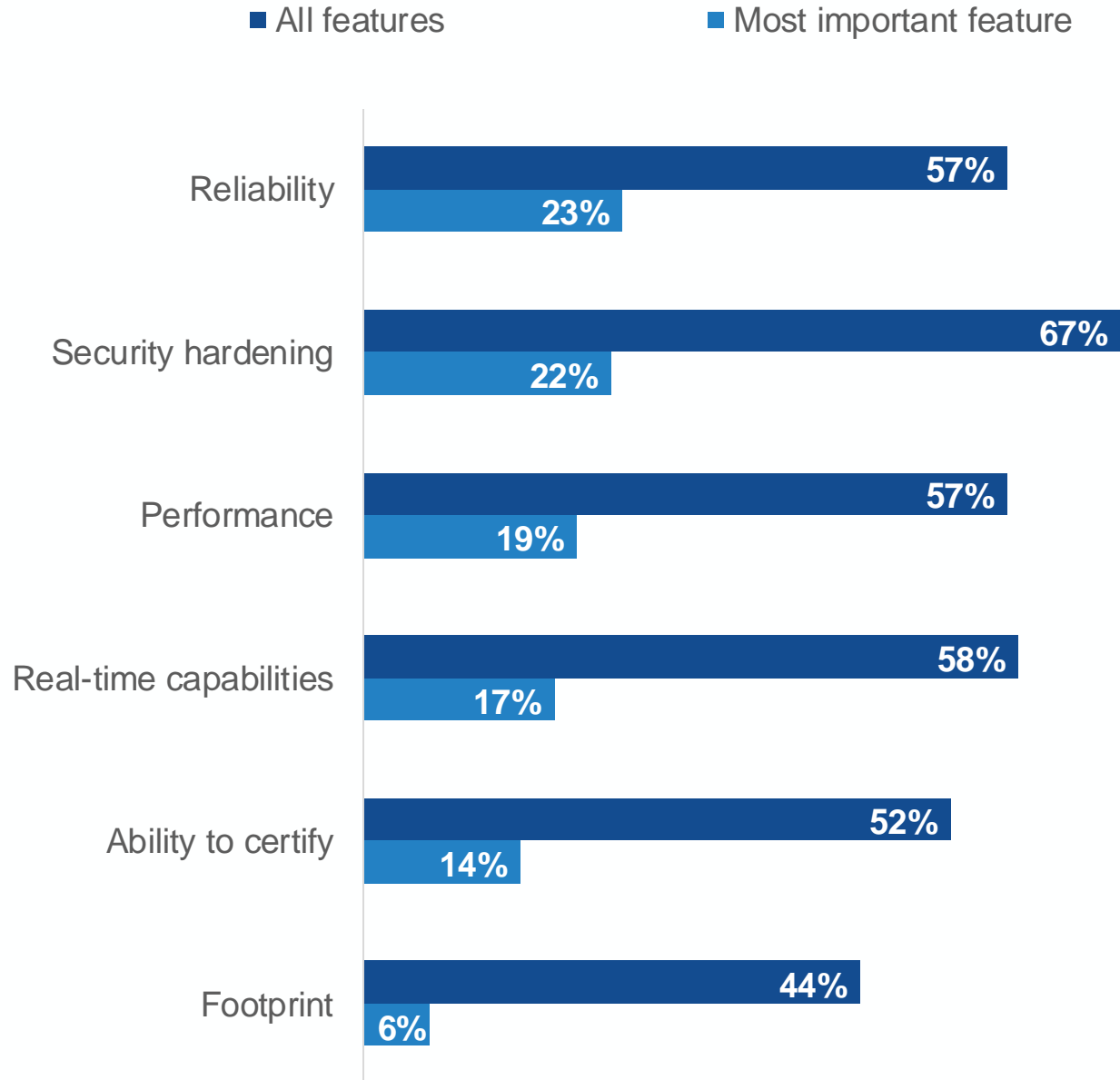
# Key Selection Criteria for Linux Solutions

Organizations are primarily driven by security (45%), performance (40%), and the ability to easily integrate and manage Linux solutions (35%) within their existing environments.



# Reliability, Security, and Performance Are Crucial for Embedded Linux

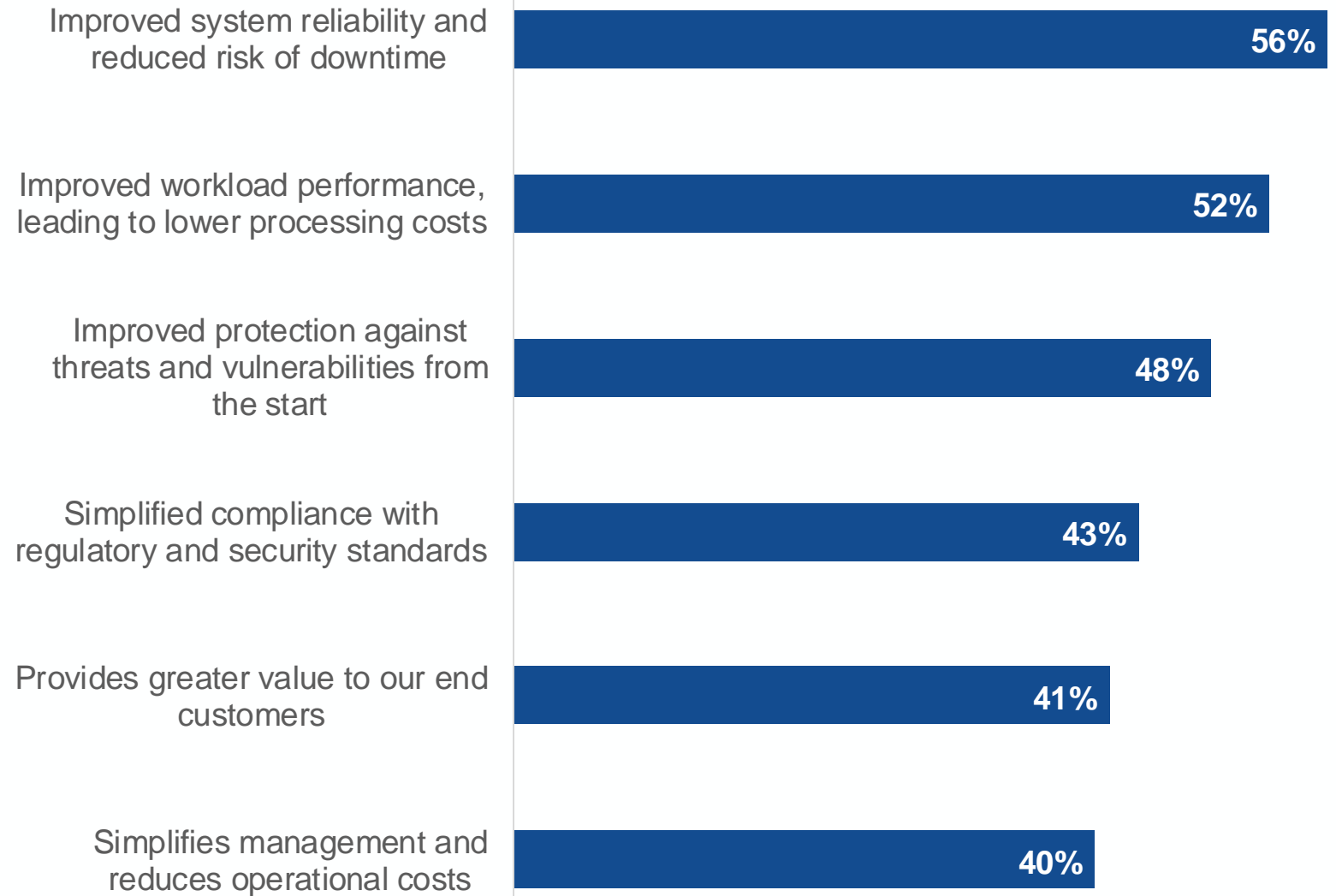
The top four features highlight the need for secure and dependable performance for embedded systems.



# Desired Key Benefits of a Security Hardened, Enterprise-Grade Linux Platform

The benefits range from improved system performance and reduced operational costs.

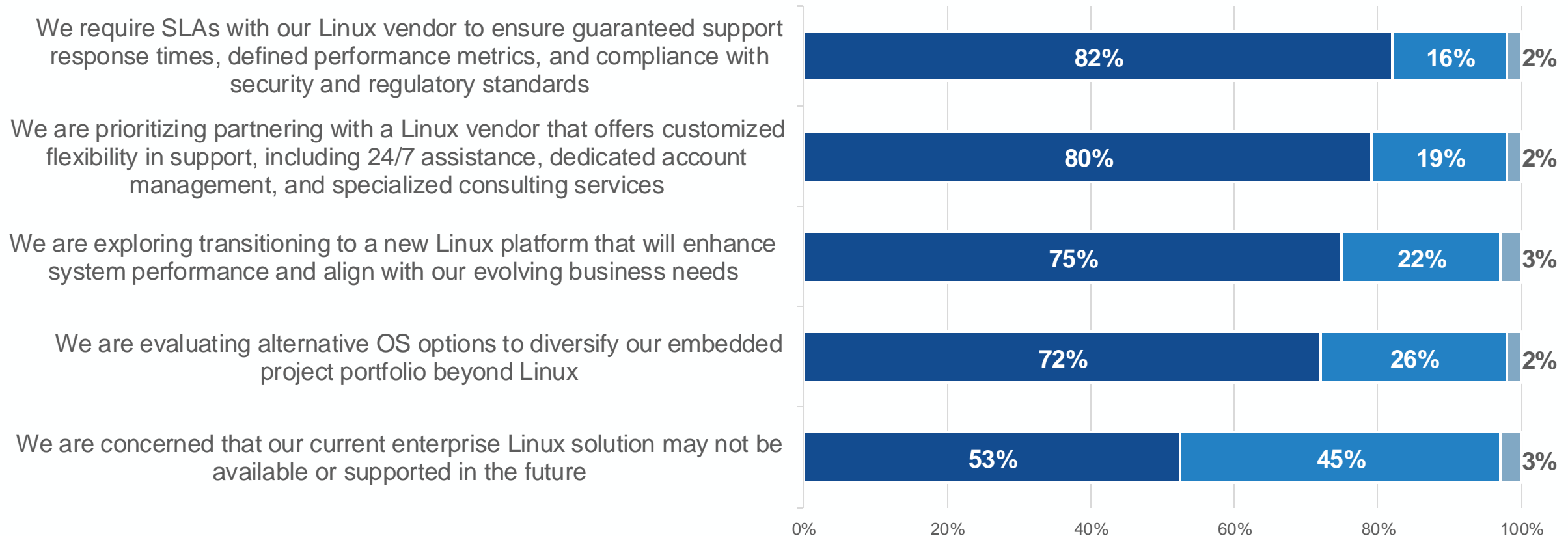
- Unplanned downtime (56%) means led to lost revenue and productivity and indicates that organizations are placing a premium on dependability as system reliability is critical for business continuity.



# Key Concerns and Strategic Priorities in Linux OS Adoption

82% of organizations require SLAs which highlights the critical need for guaranteed support, performance metrics, and security compliance to meet the demands of modern embedded and enterprise systems.

■ Yes ■ No ■ Don't know



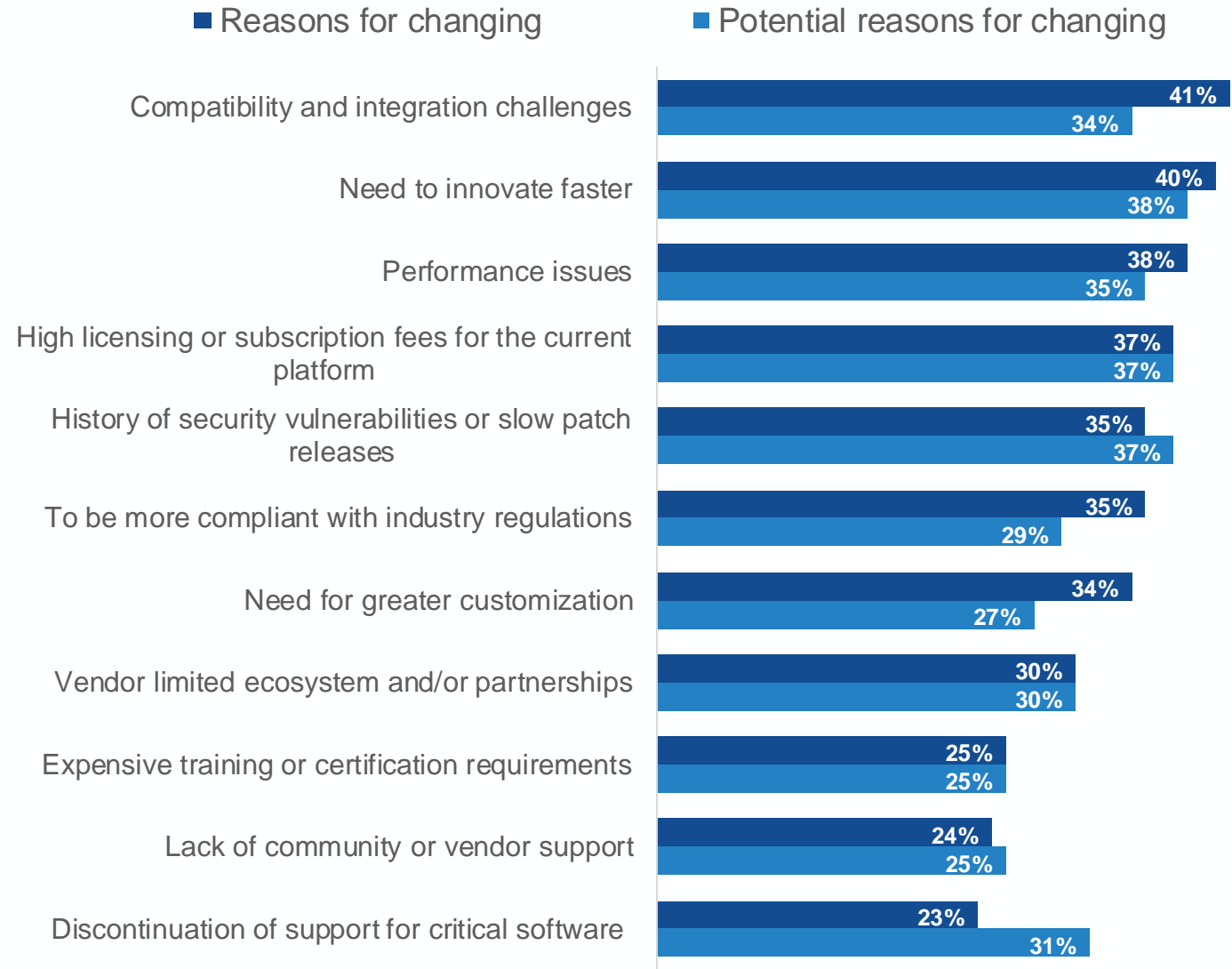


# Similar Story When Compared with Not Thinking About Switching Linux Platforms

Broad spectrum of reasons for change:

Compatibility, innovation, performance, cost, security and compliance all matter.

## Reasons for Changing Linux Platform

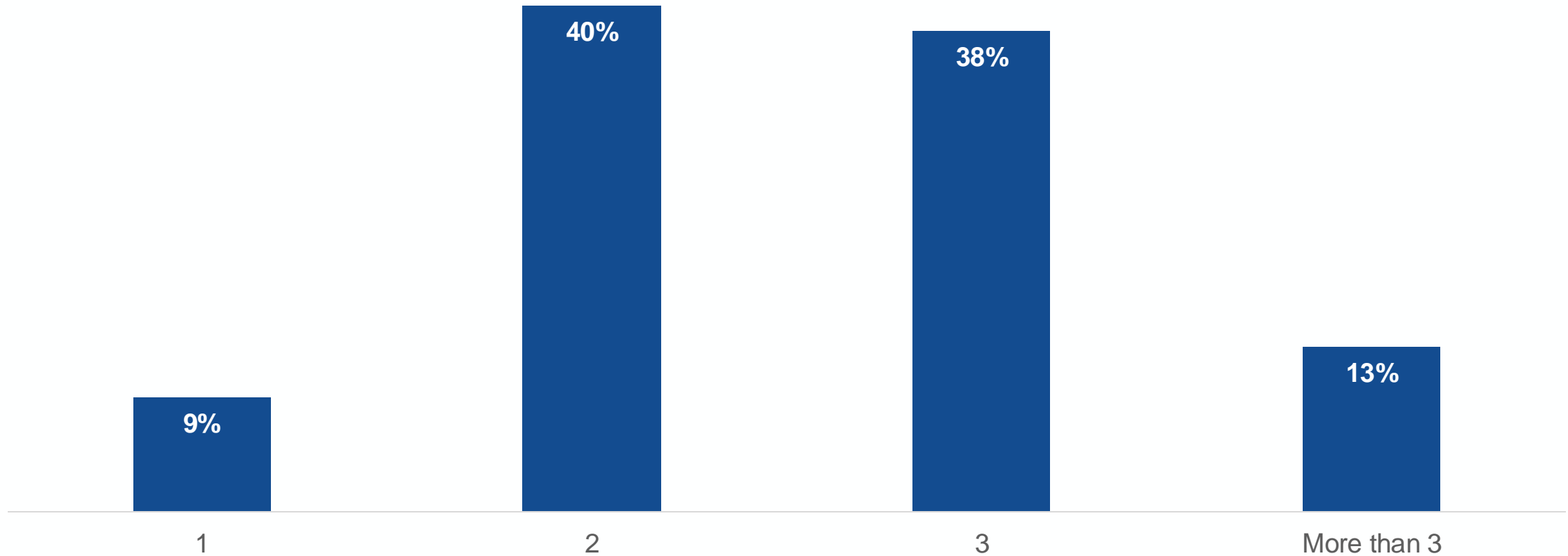


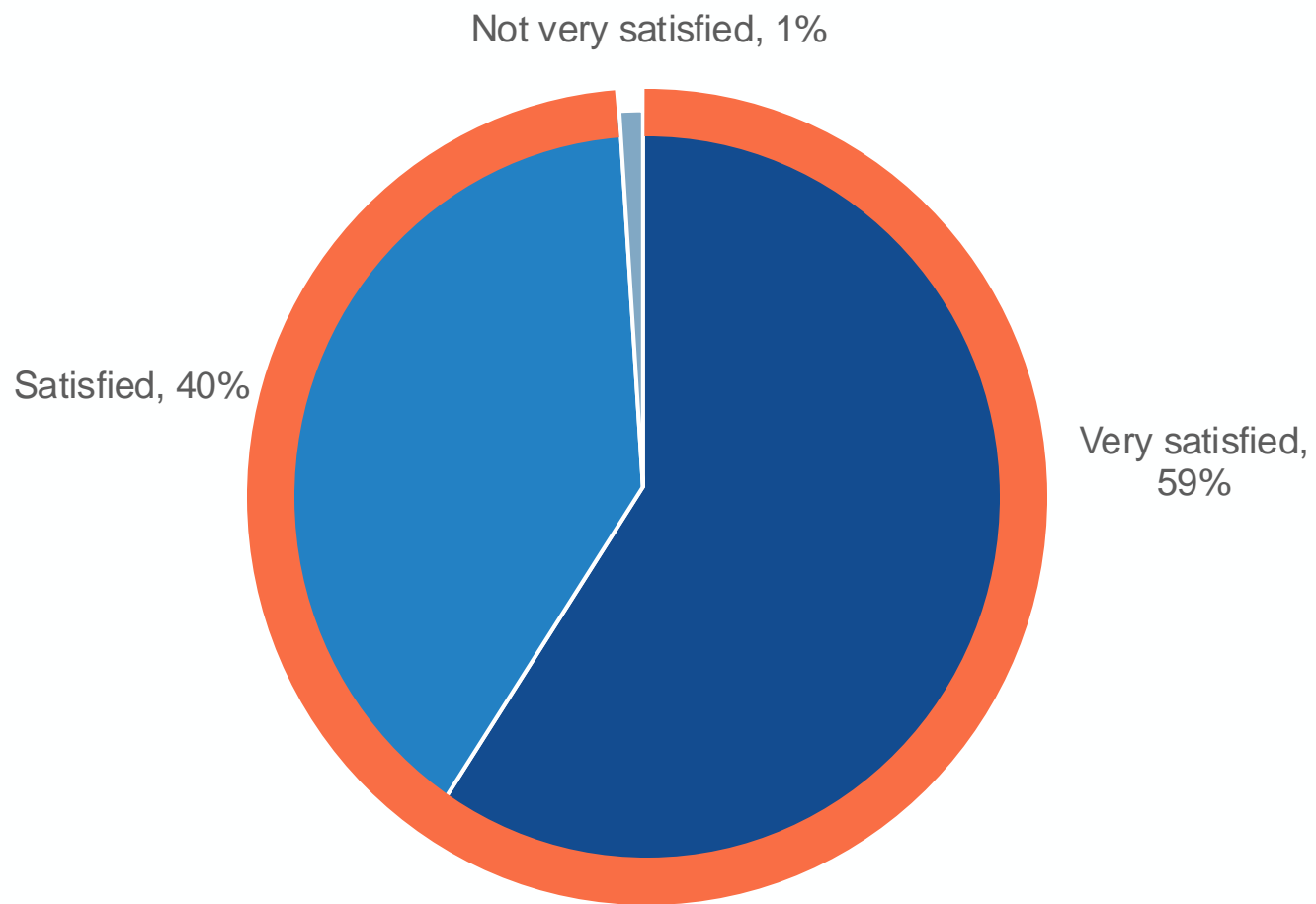
Question text: Which of the following reasons are motivating your organization to change its current Linux platform? (Percent of respondents, N=356, multiple responses accepted)

Question text: Which of the following reasons would motivate your organization to change its current Linux platform? (Percent of respondents, N=119, multiple responses accepted)

# Avoiding Vendor Lock-In

On average, organizations are using ~2.6 different vendors for Linux support.





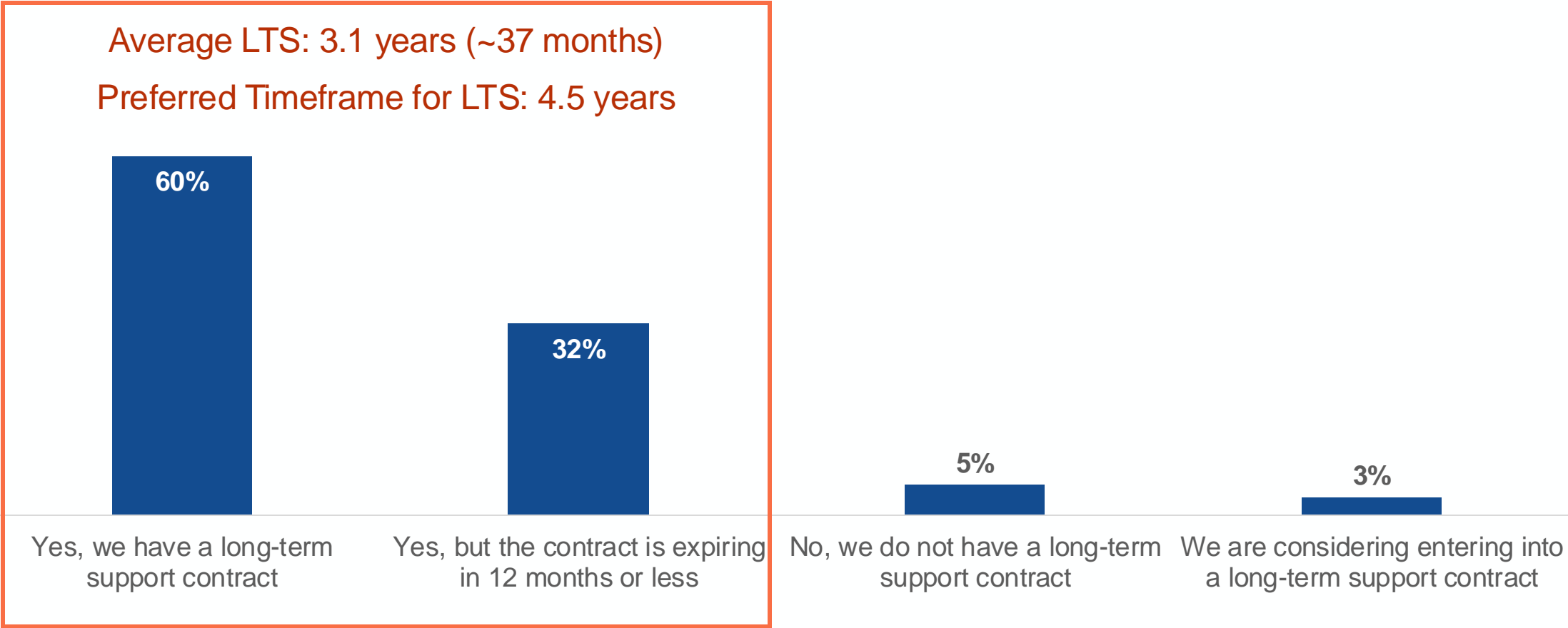
**99% of Organizations Indicated they are Satisfied with their Primary Linux Support Vendor**

---

Question text: How satisfied is your organization with its primary Linux support vendor? (Percent of respondents, N=475)

# Long-Term Support Contract with Primary Linux Support Vendor is the Norm

92% of organizations indicated that they have a long-term support contract with their primary Linux support vendors (with 32% indicating it will expire within the next 12 months).

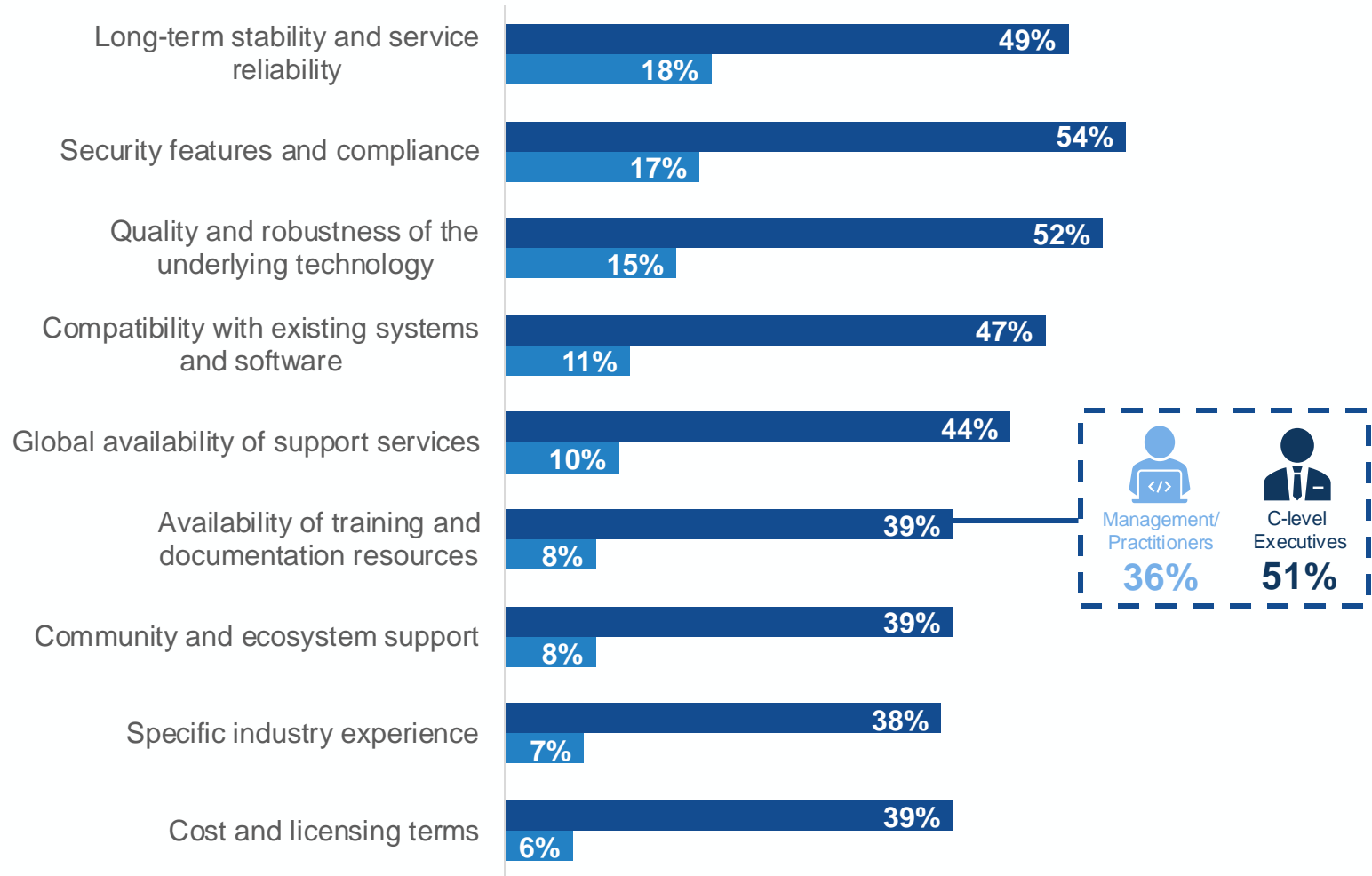


# Key Criteria for Choosing a Linux vendor: Long-term Stability, Security, and Quality of Technology

Executives are 1.4x more likely to include availability of training and documentation resources as one of the important characteristics when choosing a Linux vendor (51% vs. 36% of management).

## Important Characteristics When Choosing a Linux Vendor

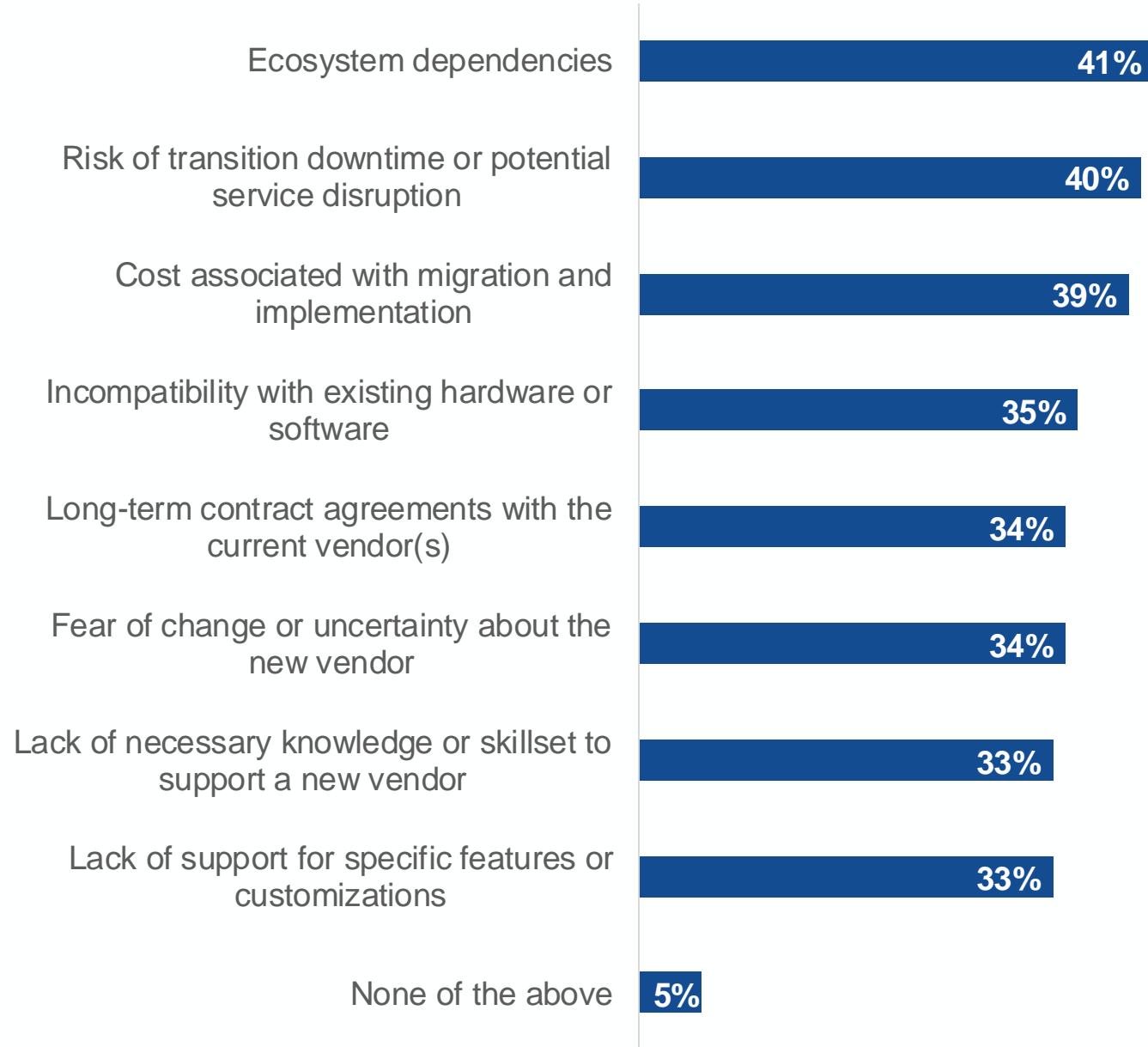
- All characteristics (multiple responses accepted, N=475)
- Most important characteristic (one response accepted, N=474)



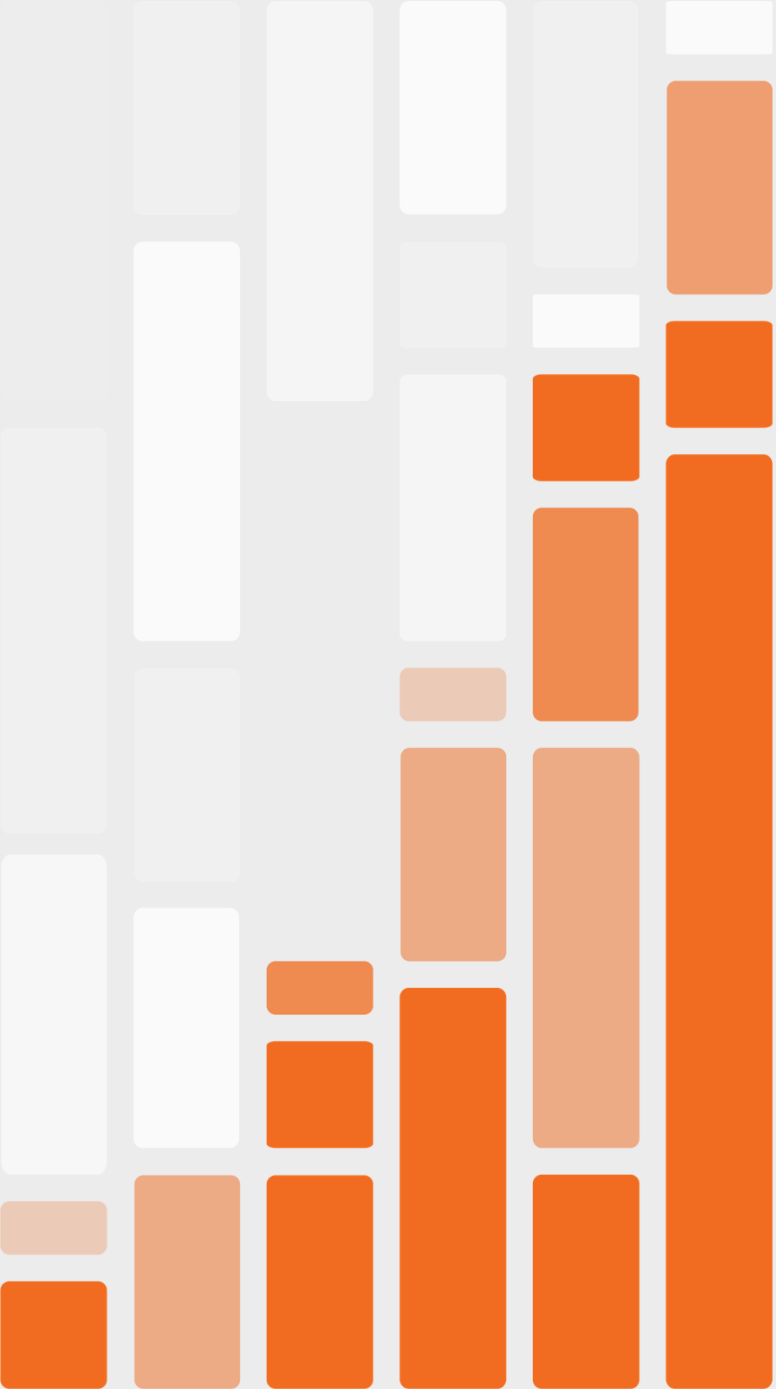
Question text: Which of the following characteristics are important to your organization when choosing a Linux vendor? Which of the following characteristics is the most important to your organization when choosing a Linux vendor? (Percent of respondents)

# It is Not Easy to Switch Linux Vendor

All of the data points are separated 8% or less.

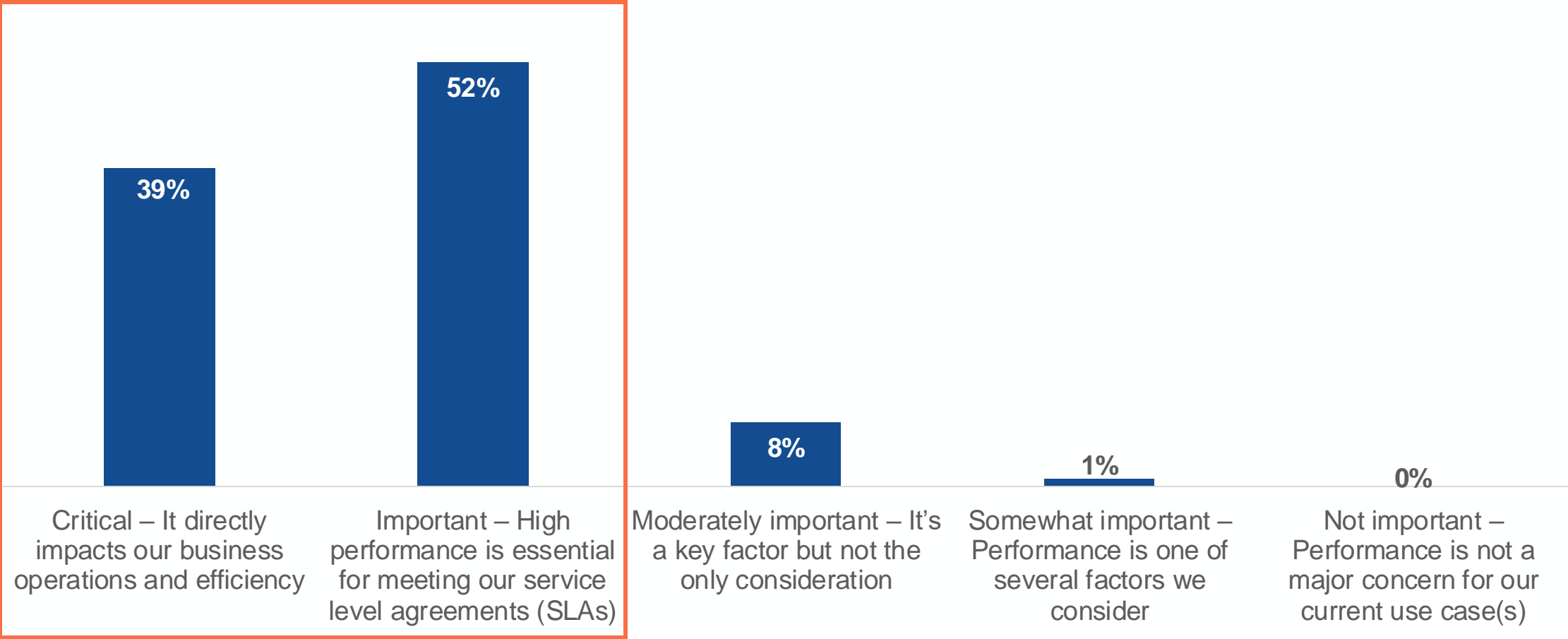


# Linux Systems



# The Importance of Performance Cannot be Understated

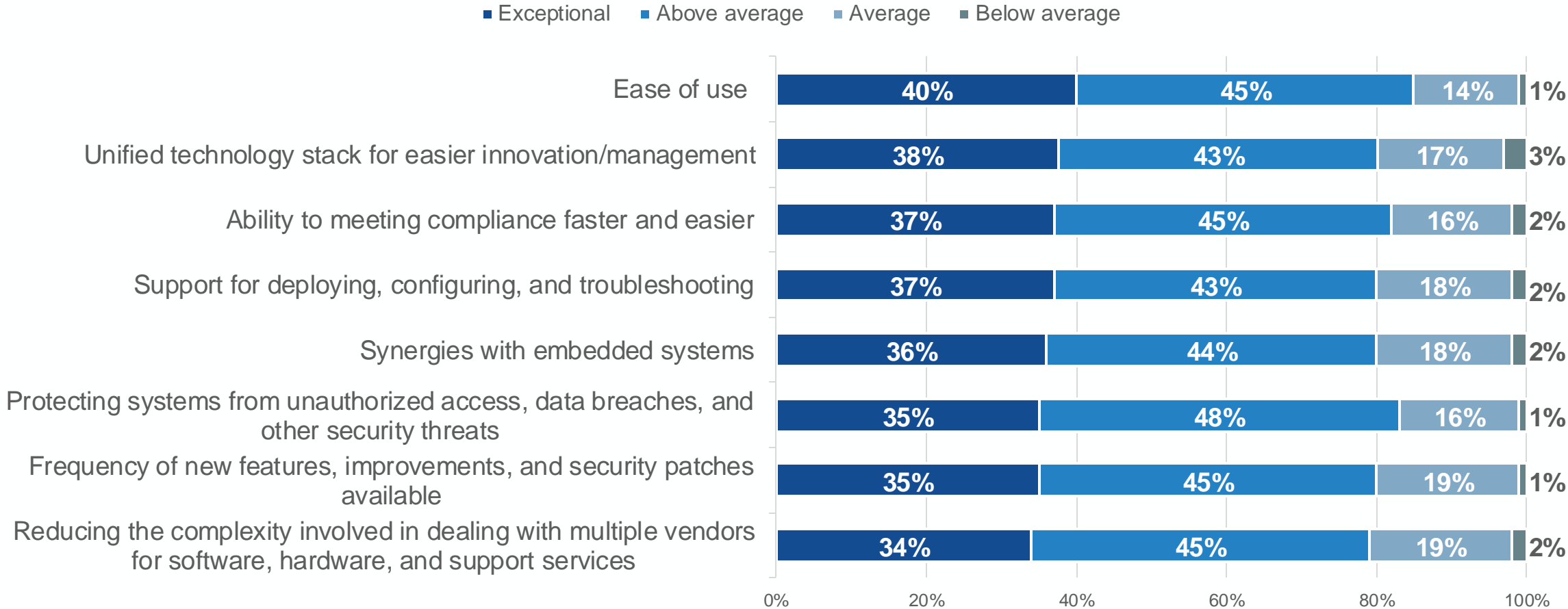
91% of organizations indicated that performance of workload processes and throughput for Linux systems is important with 39% saying it is critical as it directly impacts their operations and efficiency.





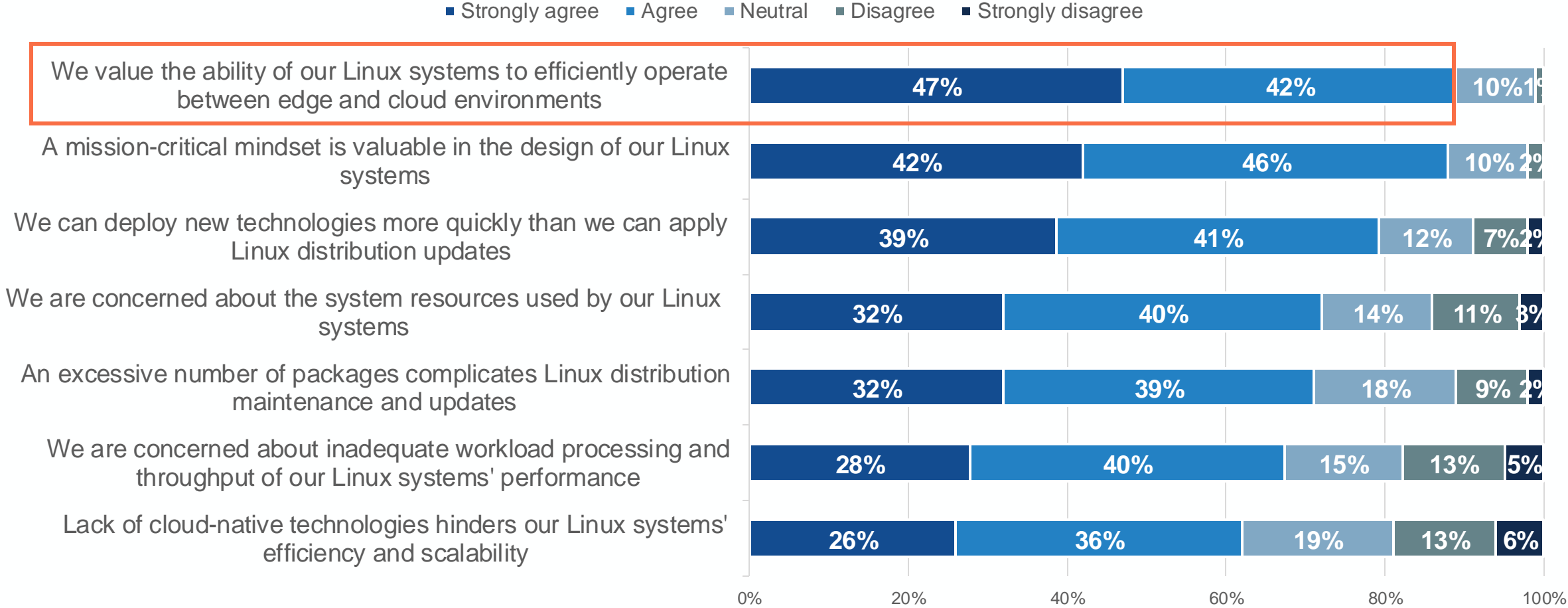
# Key Operational Aspects Where Linux Delivers: Ease of Use, A Unified Technology Stack, Meeting Compliance

Linux system’s ease of use means simplified management in ever increasing complex environments with a unified approach making it easier to deploy, manage and upgrade systems across environments.



# Key Linux Challenges and Priorities

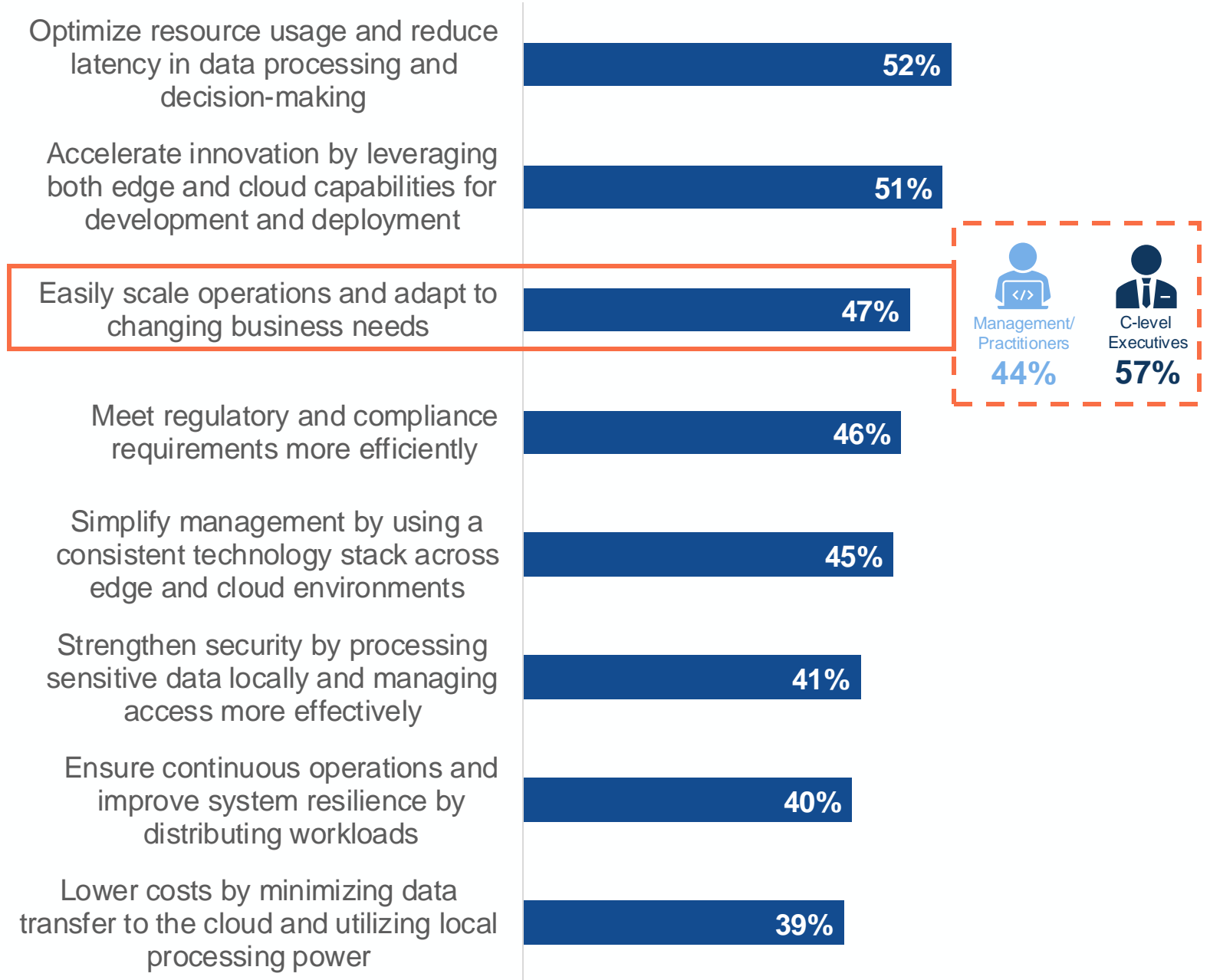
89% of respondents see value in their Linux systems' ability to operate seamlessly across edge and cloud environments which reflects the growing importance of hybrid models.



# Value of Linux for Seamless Edge-to-Cloud Operations

By processing data close to the source at the edge, organization can optimize resource usage and minimize latency (52%), accelerate innovation (51%) and more quickly adapt to market demands and scale and respond dynamically to business growth (47%).

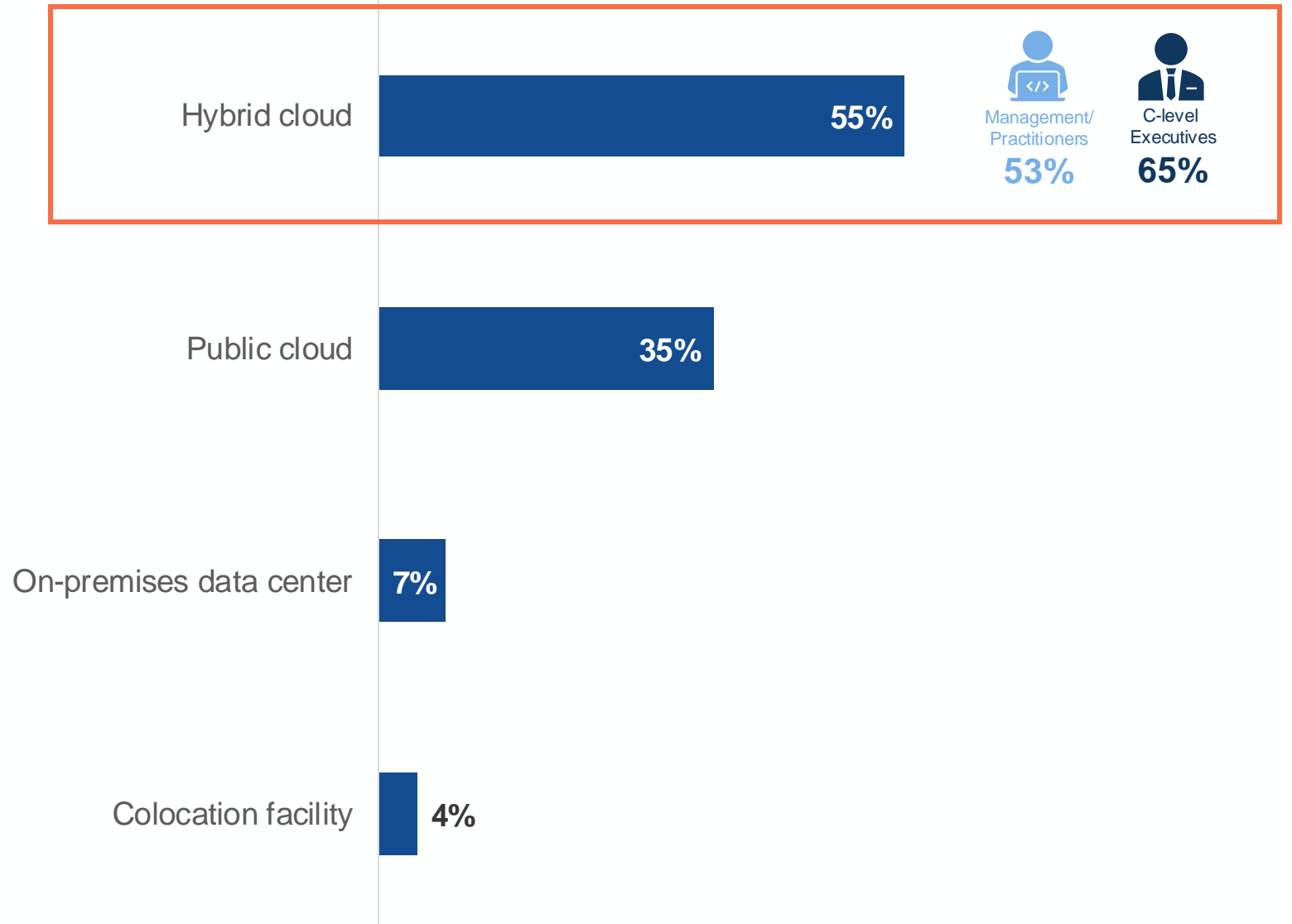
Executives are 1.3x more likely to value operations scalability and adoption to changing business needs (57% vs. 44% of management).



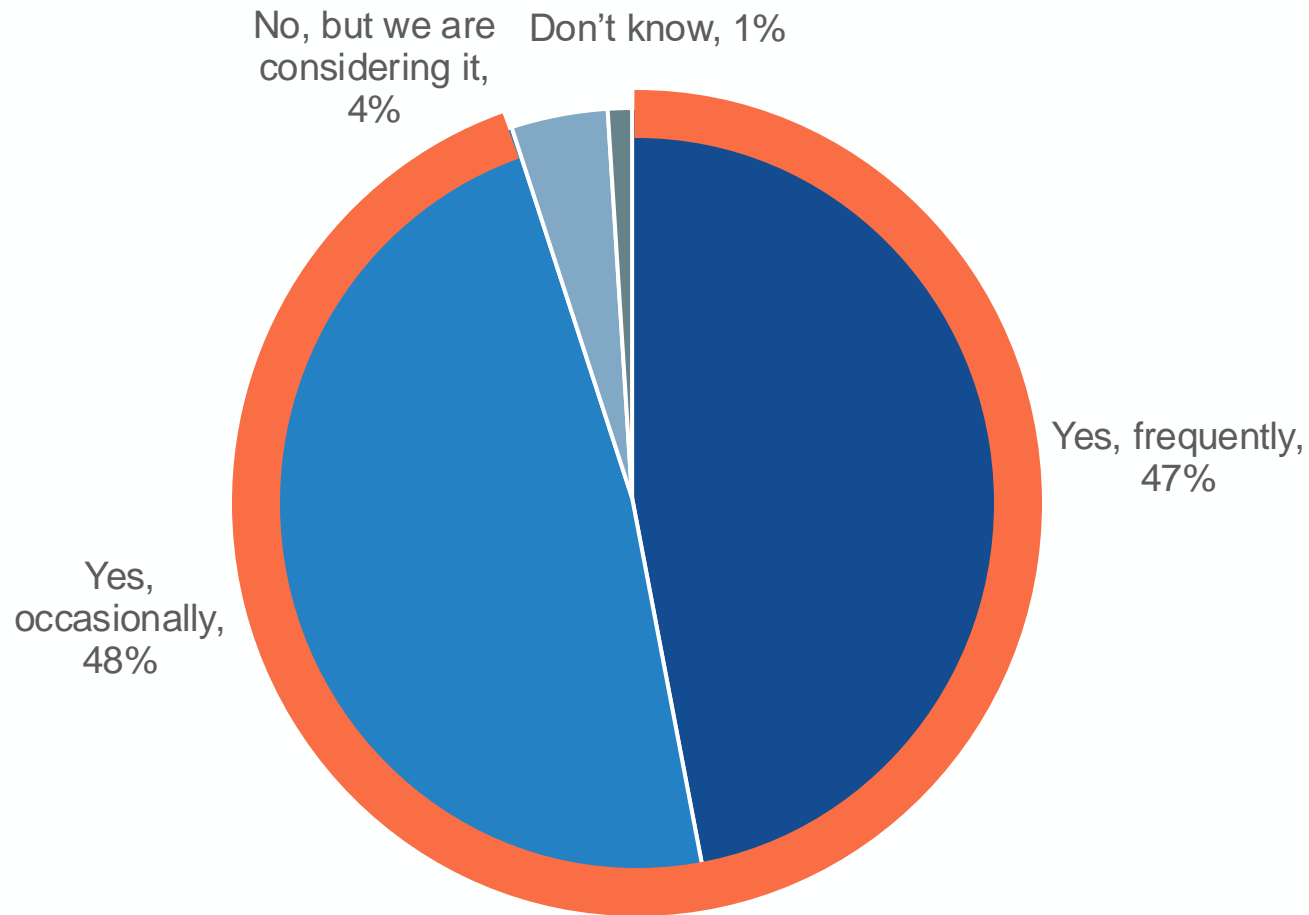
# Hybrid Cloud Dominates as the Primary Data Center Strategy

Over half (55%) of organizations describe their primary data center as hybrid cloud.

- Executives are 1.2x more likely to describe their primary data center as hybrid cloud.



## Distributed Architecture is the Norm



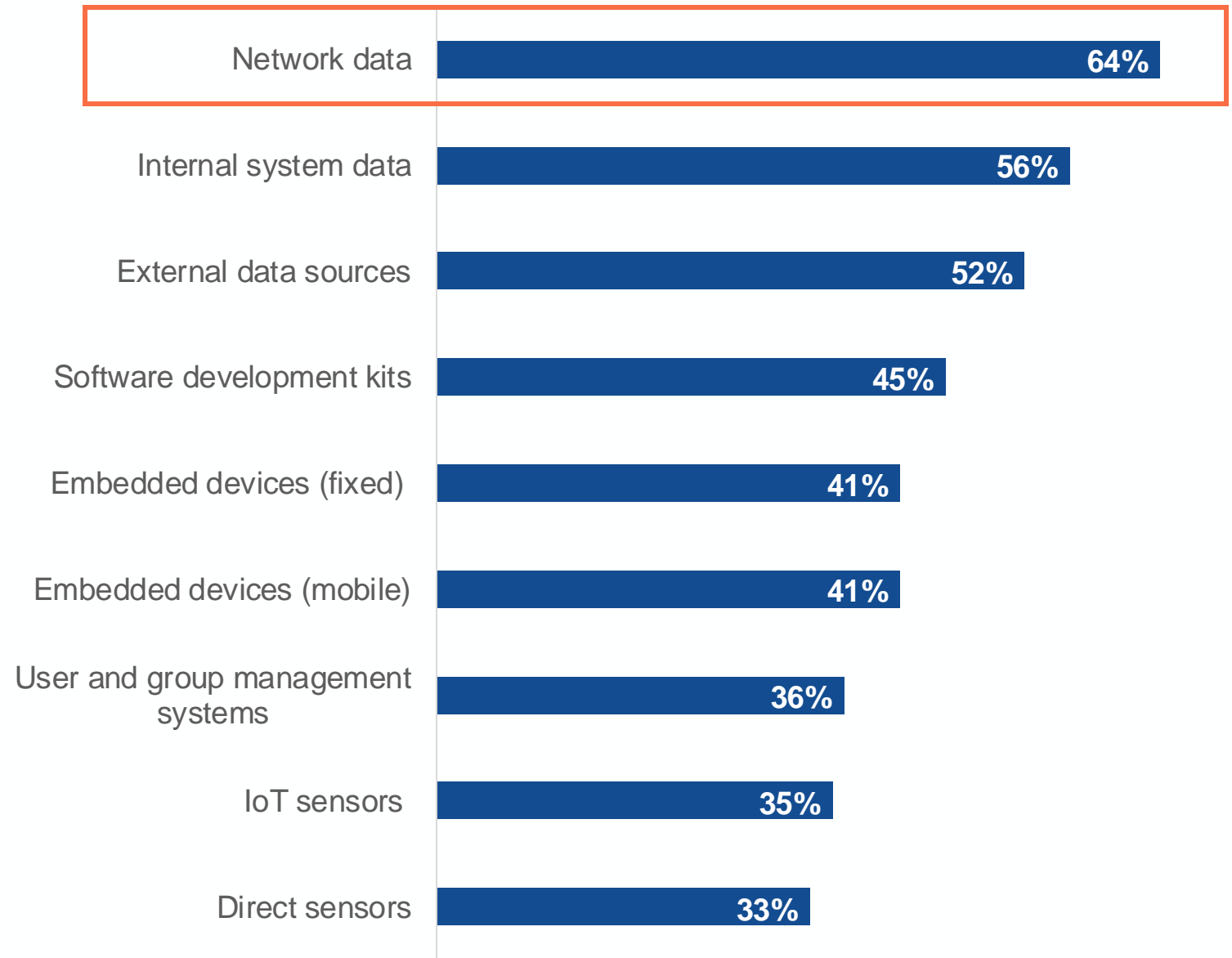
95% of organizations with on-premise/hybrid cloud as their primary data center indicated they develop applications for server workloads outside of traditional data centers.

Question text: Is your organization developing applications for server workloads that are deployed outside of a traditional data center (e.g., public cloud, regional data center, far edge, intelligent edge, intelligent gateway, sensors)? (Percent of respondents, N=294)

# Linux Systems Used Across Diverse Set of Data Sources

Network data (64%) tops the list of data sources processed by Linux systems.

- Underscoring the importance of Linux systems in managing and securing network operations.

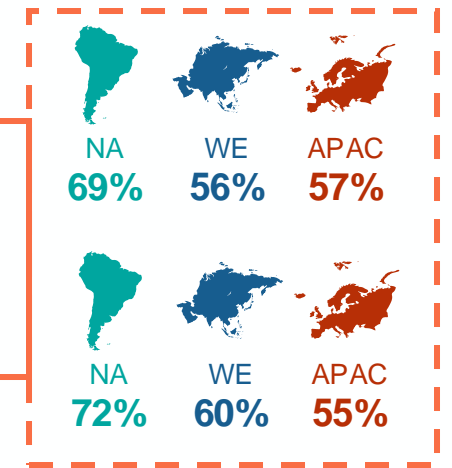
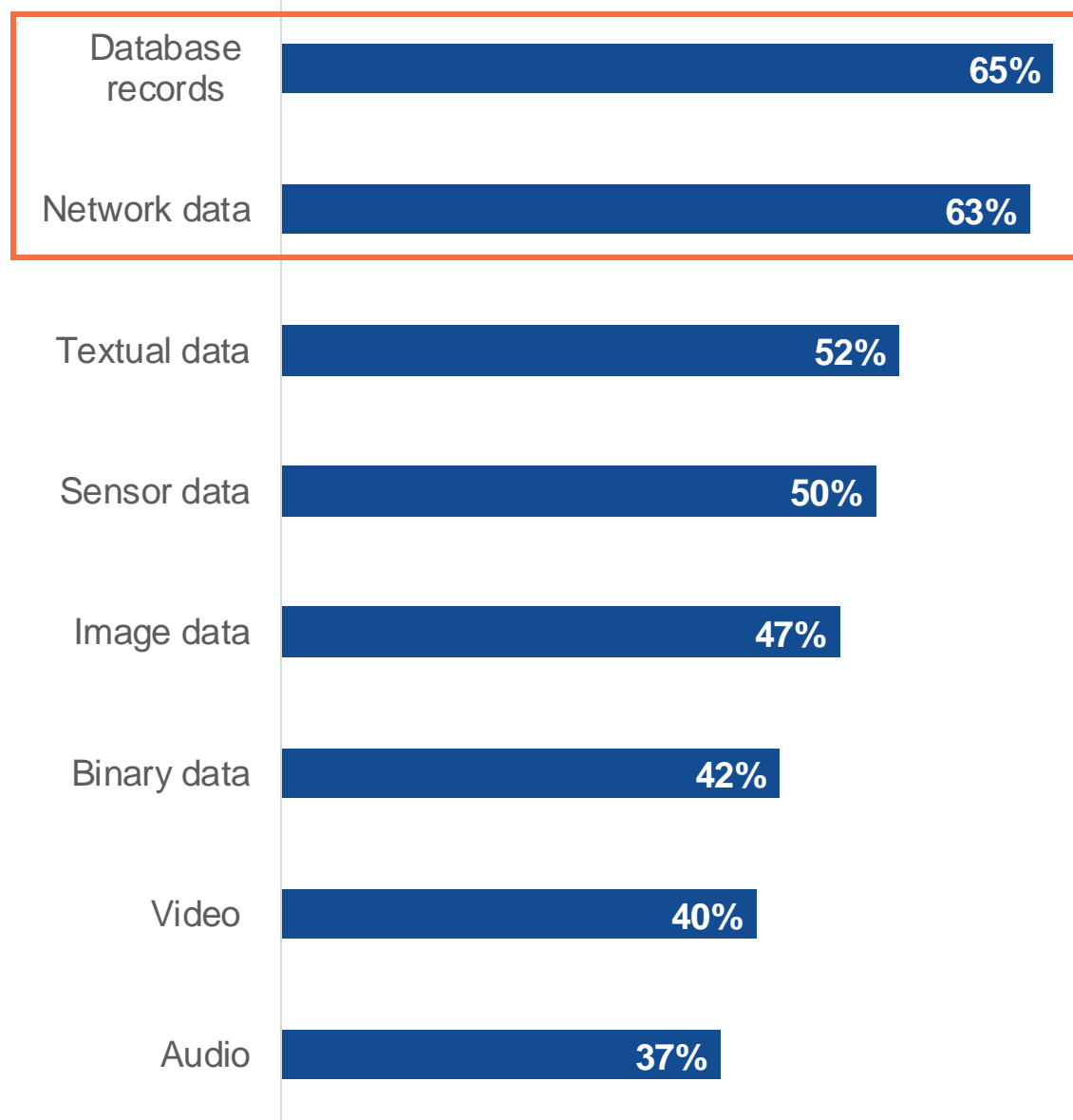


# Types of Data Handled by Linux Systems

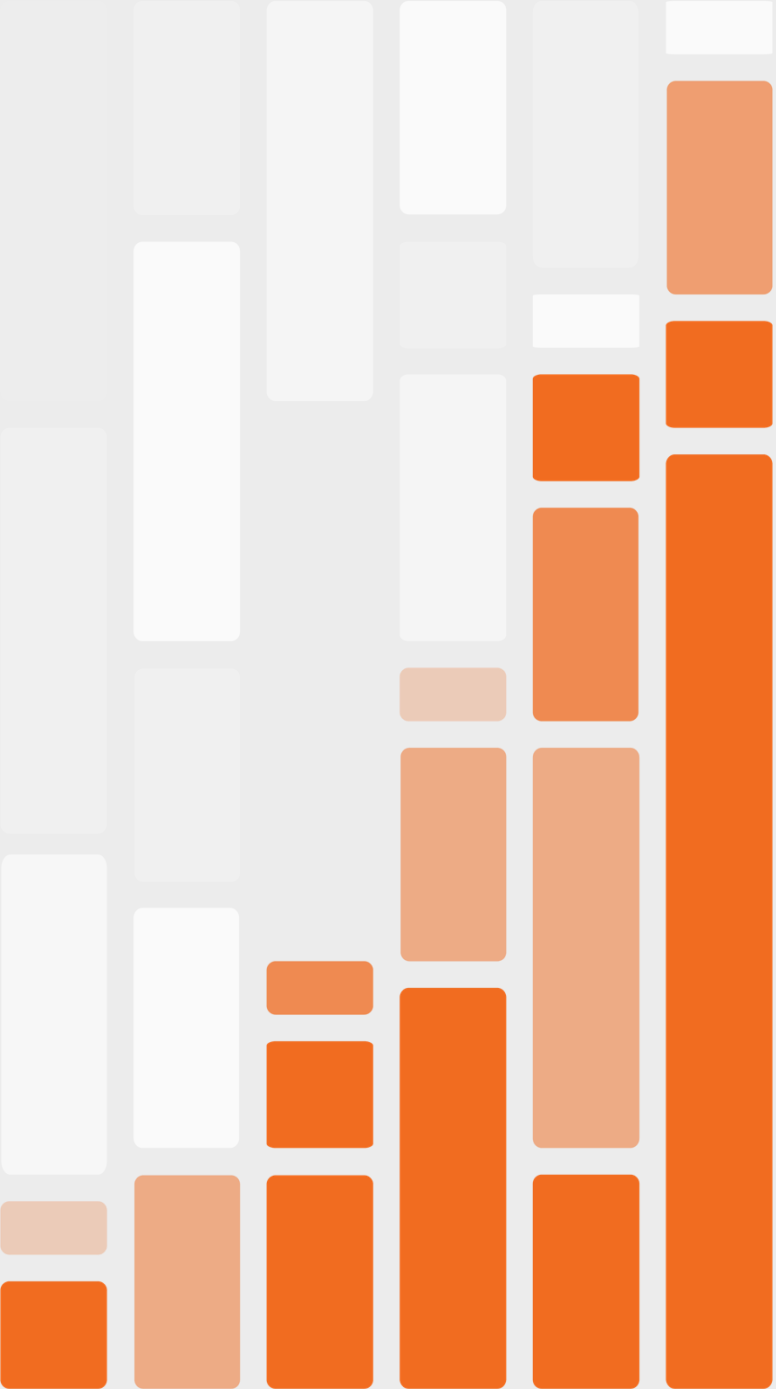
Network data (63%) is the second most common type of data source, indicating the focus organizations place on network traffic analysis, security monitoring, and communications.

By region (NA vs. WE and APAC):

- Databases records: 1.2x (on average)
- Network data: 1.3x (on average)



# Expected Changes to Linux

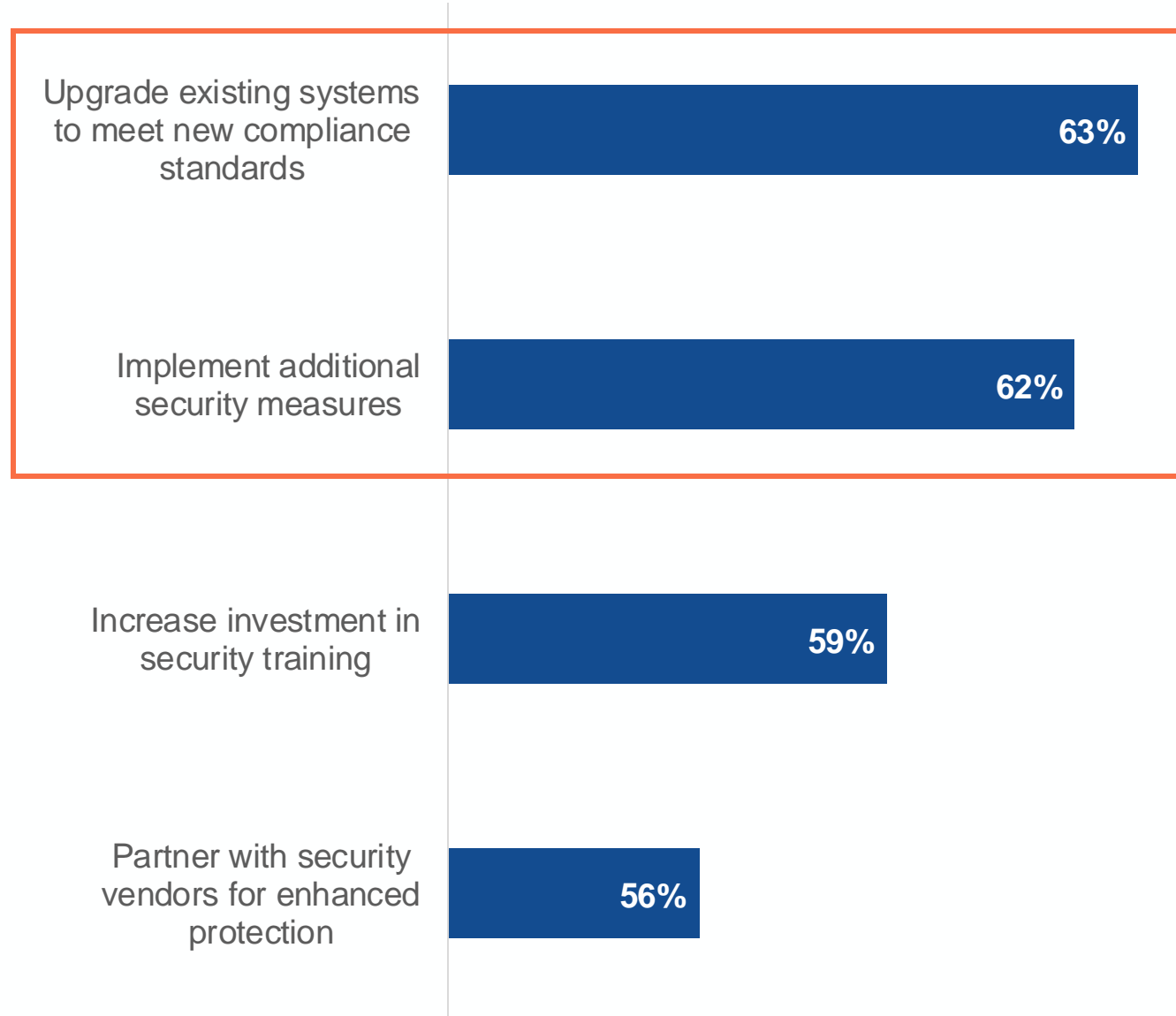




# Strong Focus on Regulatory Adherence and a Desire to Align with Evolving Security Frameworks

Compliance is non-negotiable as failing to comply can mean fines and reputational damage.

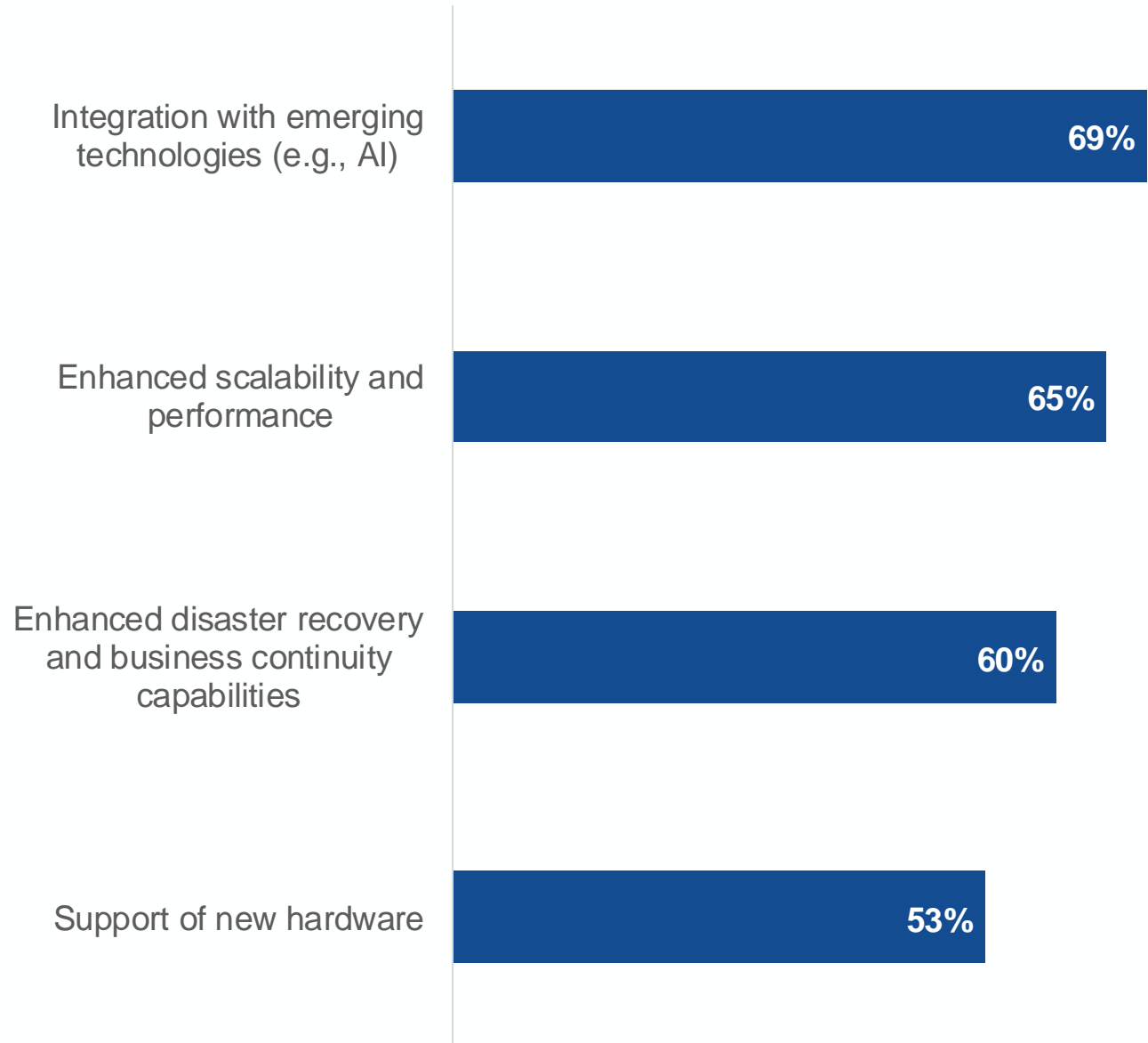
Organizations also plan to implement additional security measures as the threat landscape continues to grow.



Question text: How does your organization plan to address increasing security requirements and SLAs in the following 12 months? (Percent of respondents, N=475, three responses accepted)

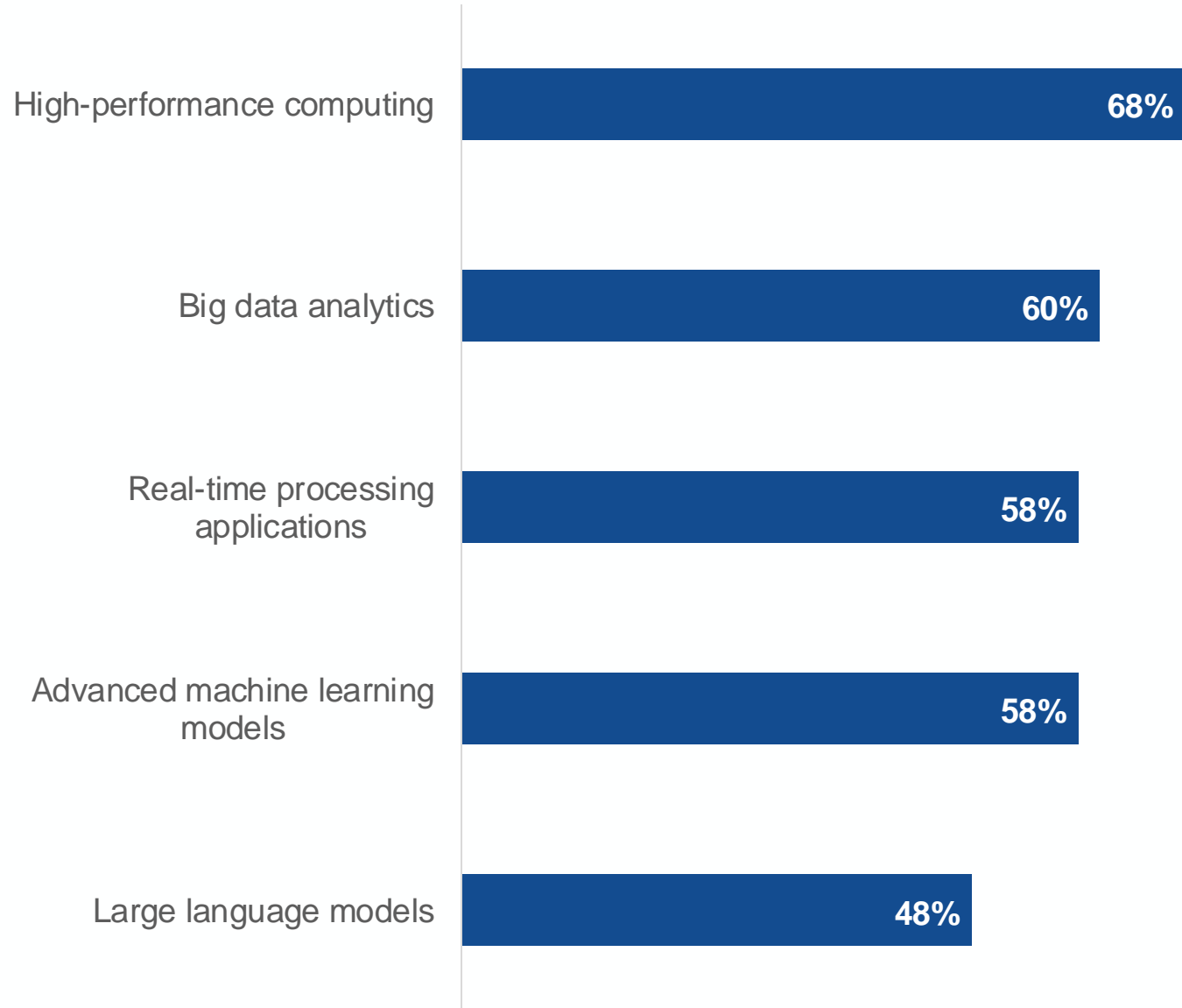
# Future Linux Requirements: AI is Looming on the Horizon

The highest priority for Linux systems over the next 3 years is its integration with emerging technologies (69%) and enhancing scalability and performance (65%).



## Wide Spectrum of Performance-Intensive Workloads Expected to run on Linux

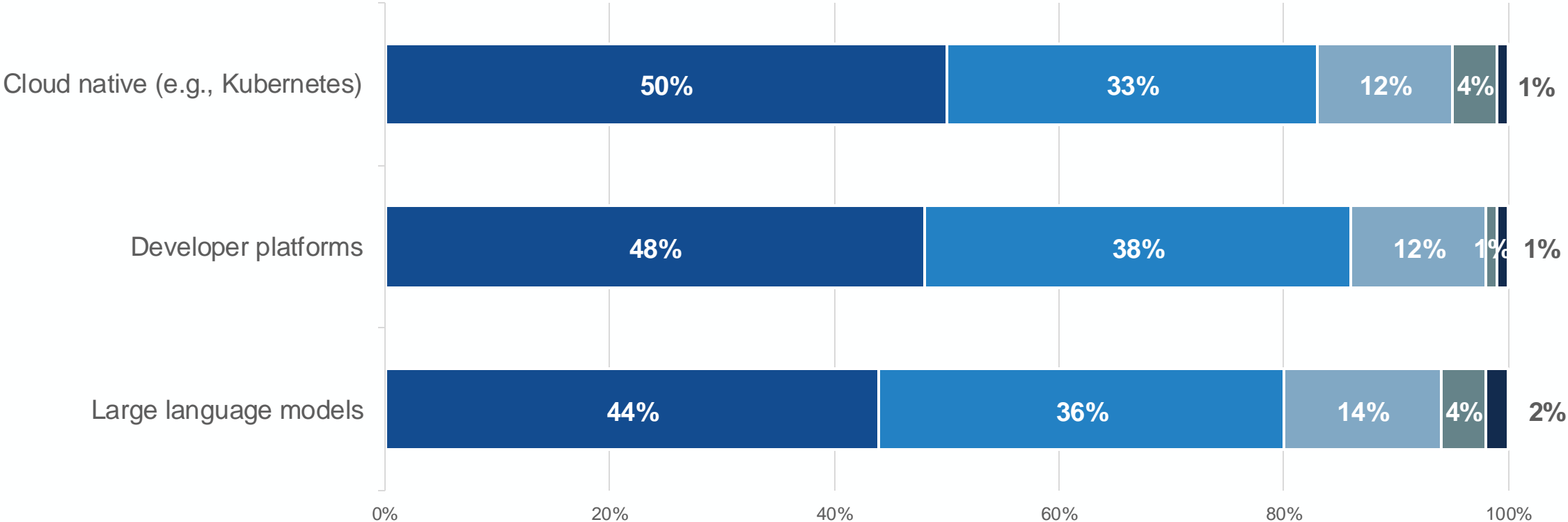
IT respondents were 1.2x more likely to indicate they will be running HPC (70% vs. 59% of developers/engineers) while developers/engineers are 1.3x more likely to indicate they will be running advance ML models (71% vs. 55%) on Linux systems in 3 years.



# Cloud Native App Development and Generative AI Have Found Broad Adoption

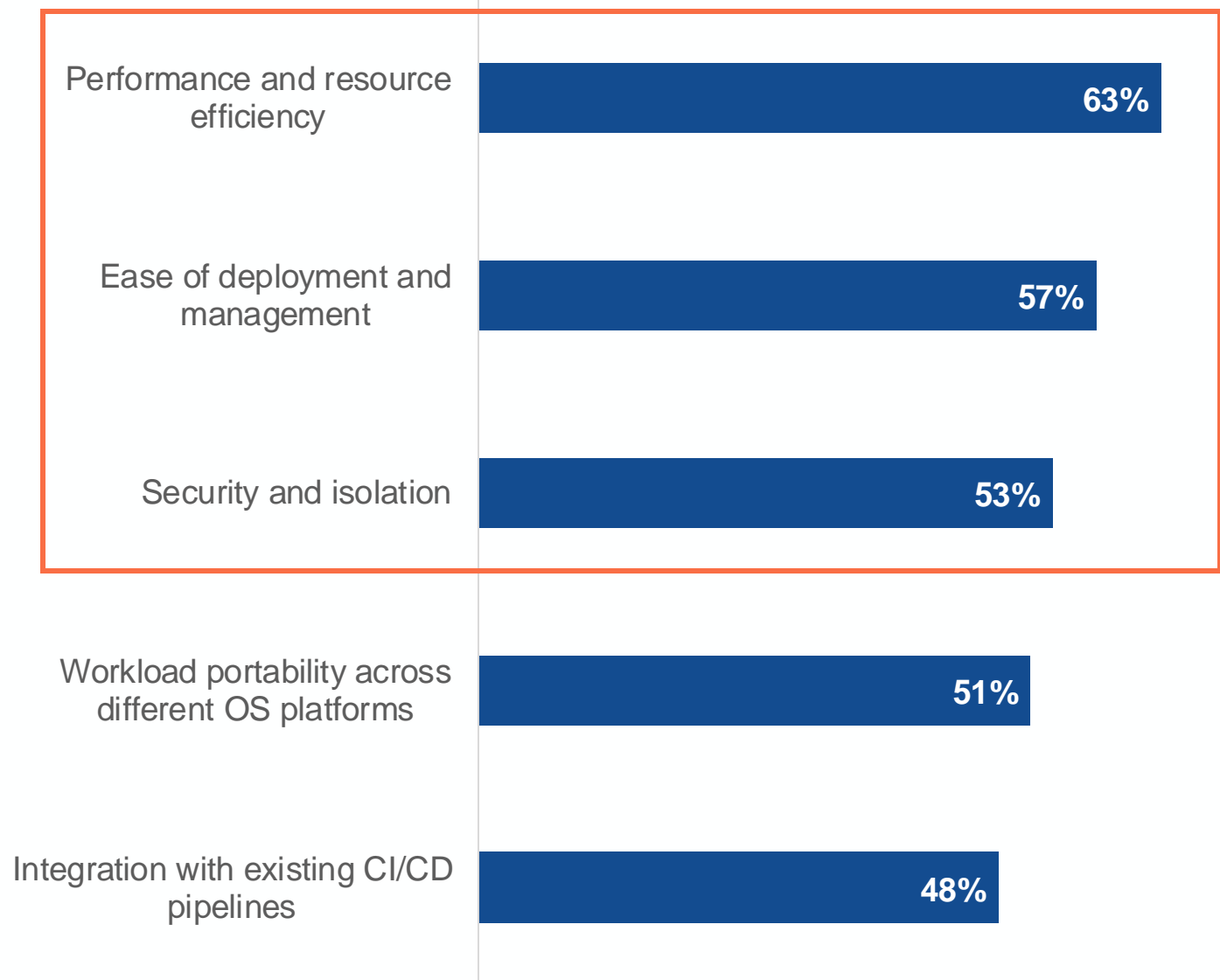
Organizations are not limiting themselves to one type of technology as ~96% of organizations indicate they are either currently using or plan to use these technologies over the next 12 months.

■ Extensively used ■ Selectively used ■ Plan to use it over the next 12 months ■ Plan to use it more than 12 months from now ■ Do not plan on using



# Important Factors for Application Containers

Performance, ease of management, and security top the list.





# Thank you

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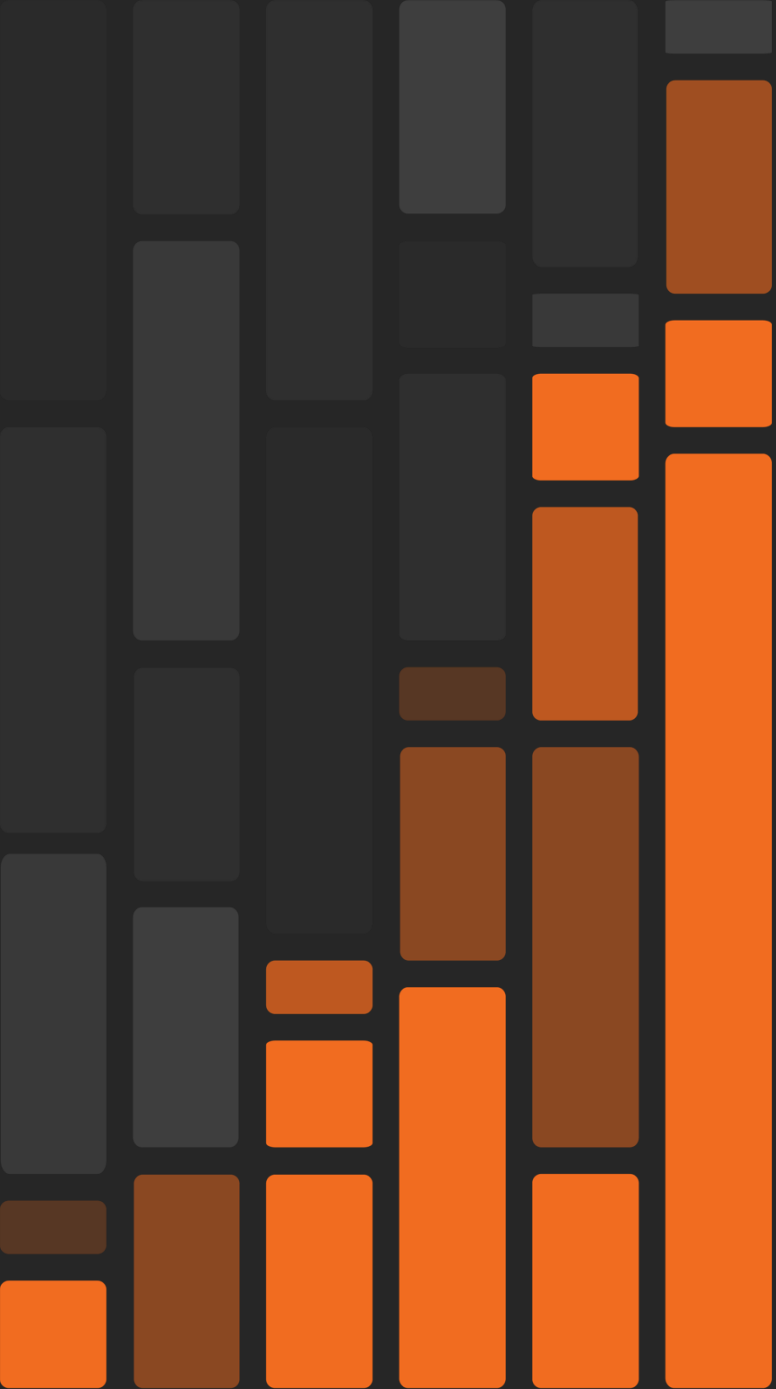
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# Appendix

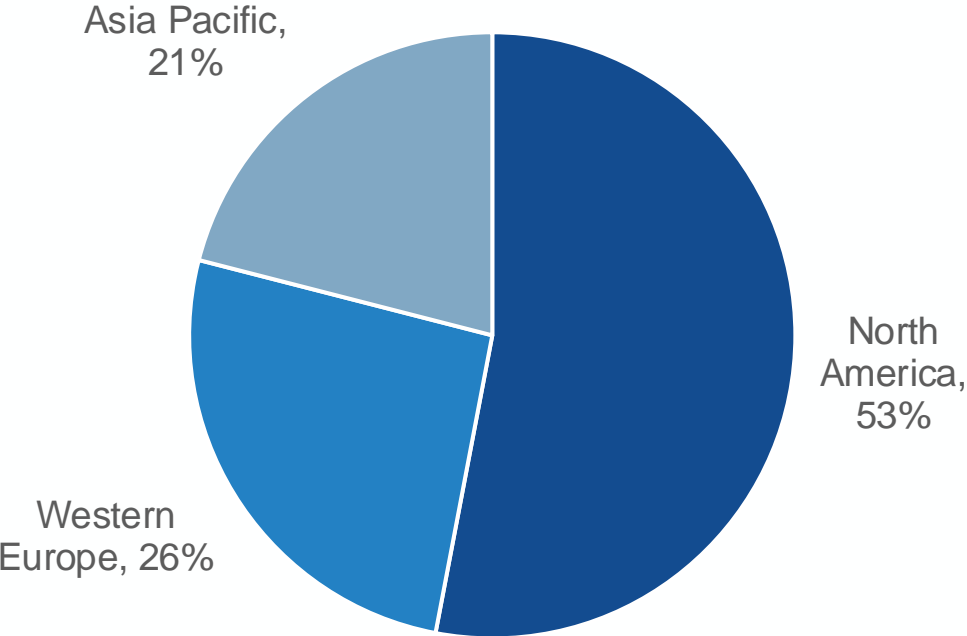


# Demographics



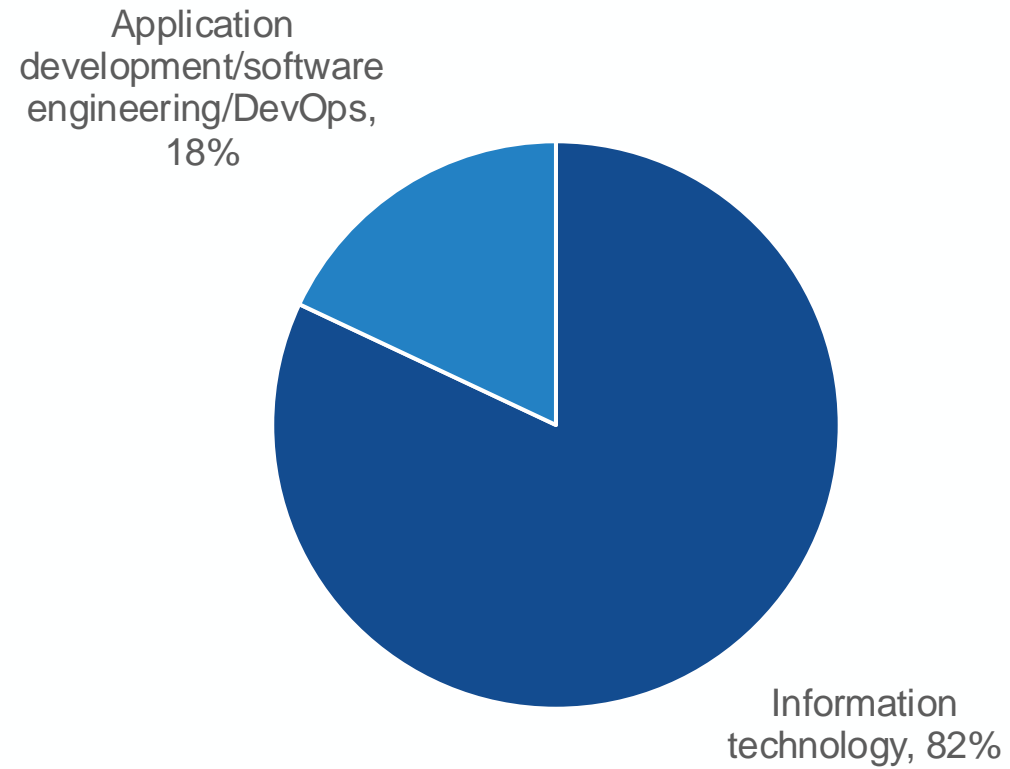


# Respondents by Region



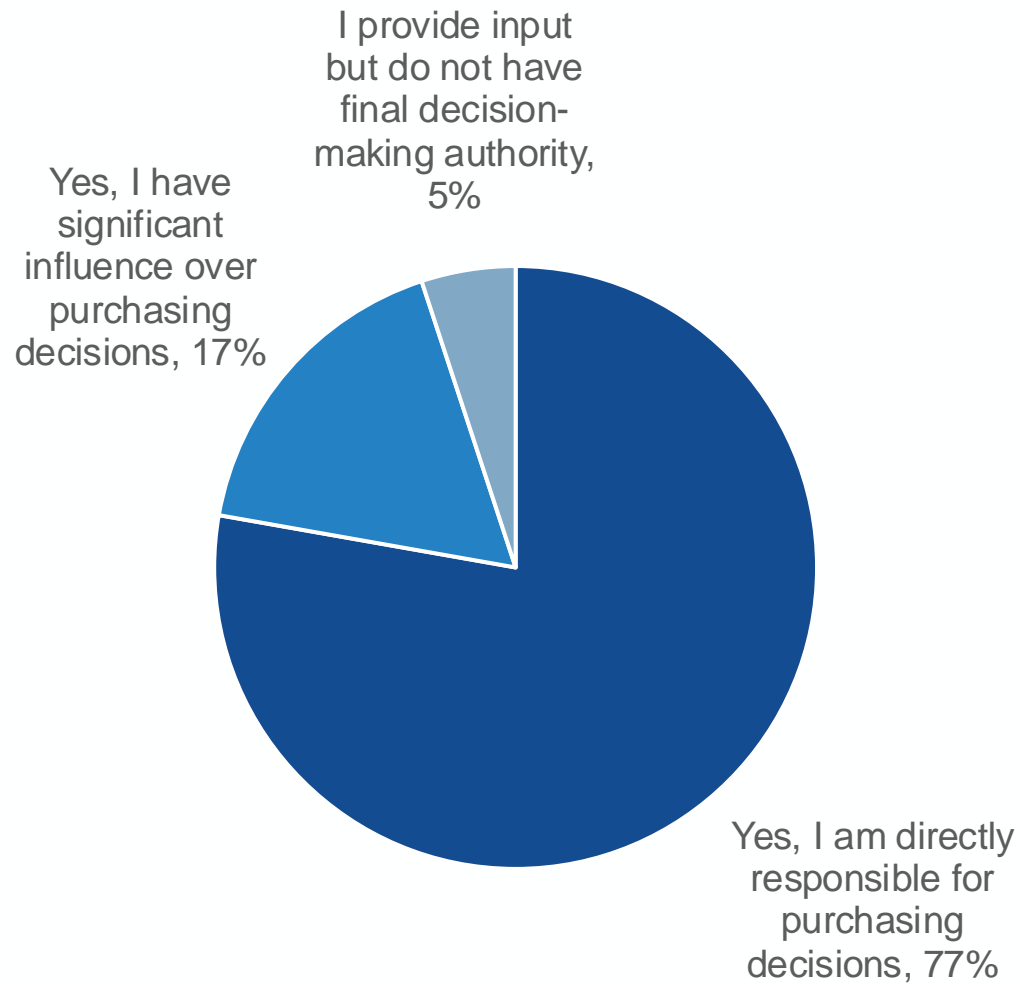
Question text: Respondents by region. (Percent of respondents, N=475)

## Respondents by Job Function



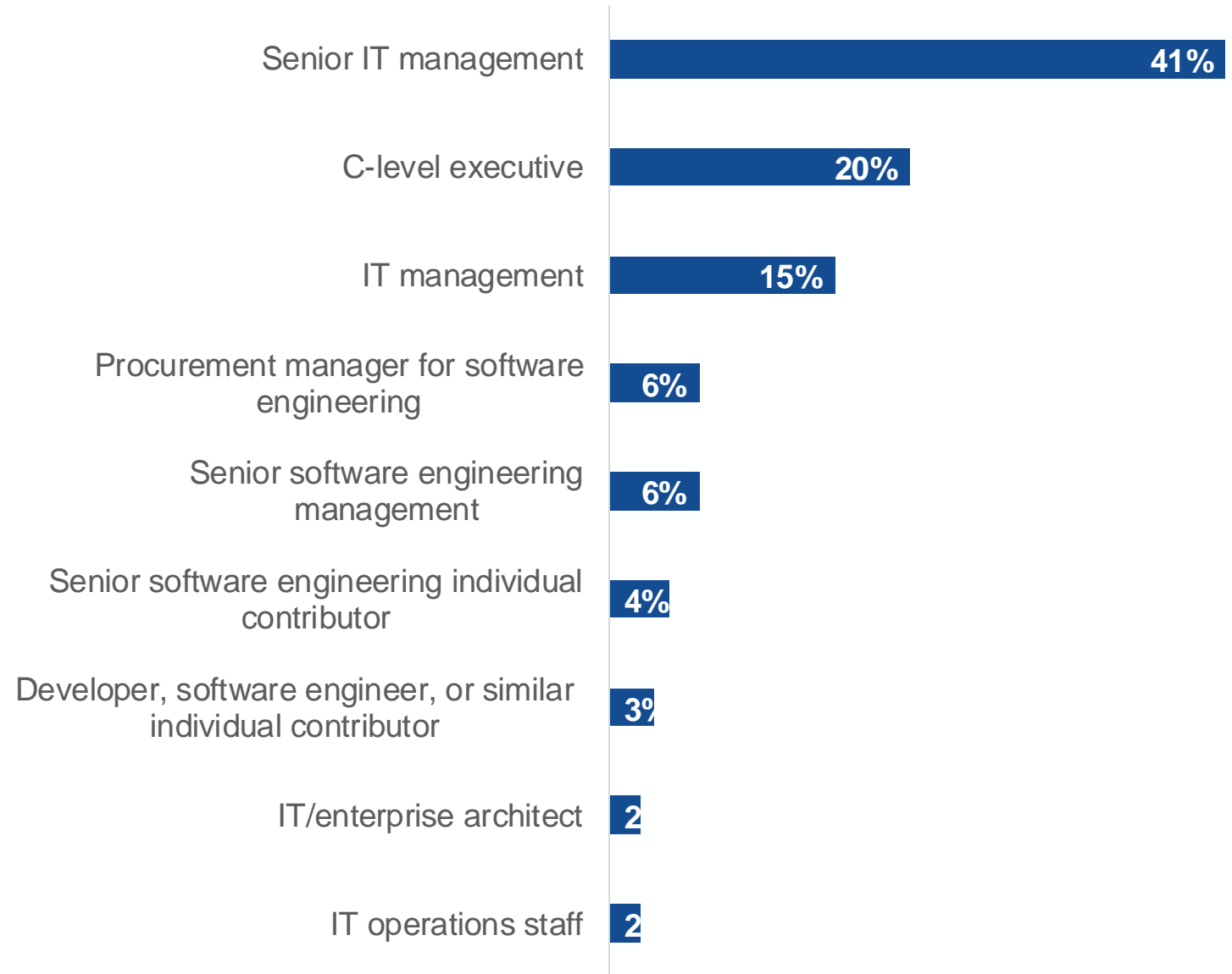
Question text: Which of the following best describes your current job function? (Percent of respondents, N=475)

## Respondents by Data Center Compute Solutions Purchasing Influence

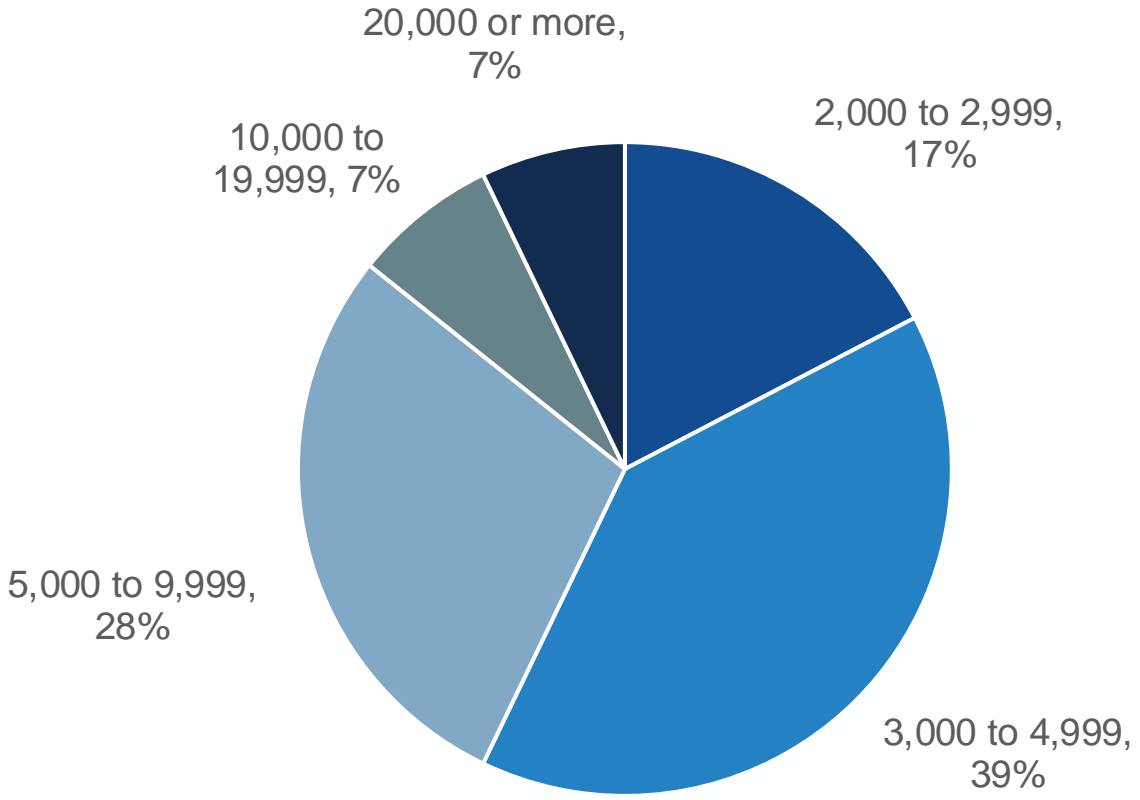


Question text: Do you have influence over the purchase process for data center compute solutions, including server operating systems, within your organization? (Percent of respondents, N=475)

# Respondents by Job Title/Level

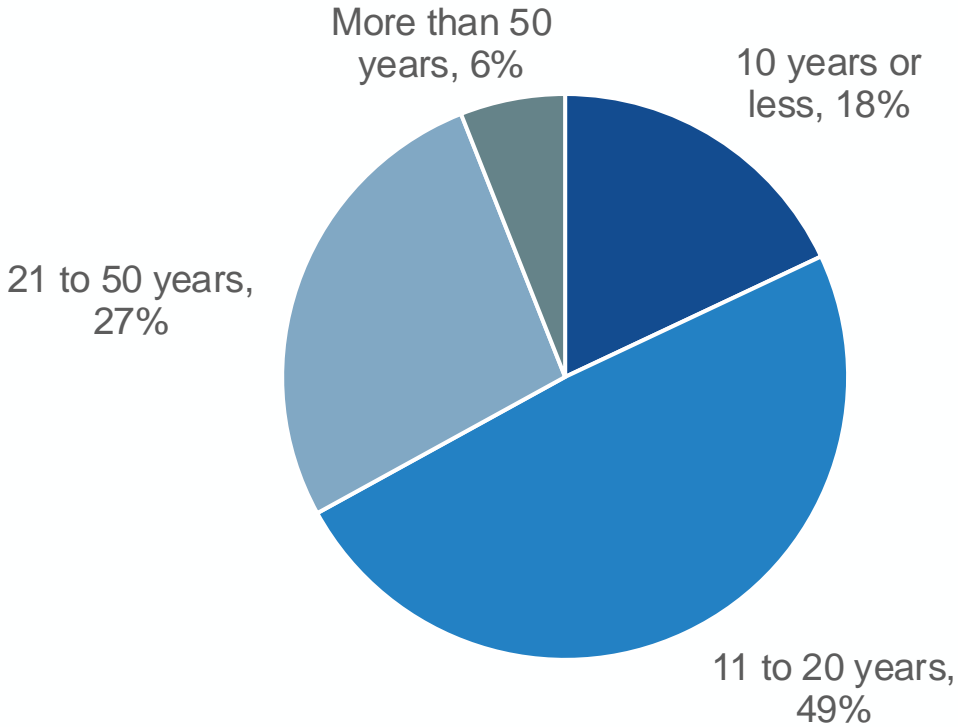


# Respondents by Number of Employees



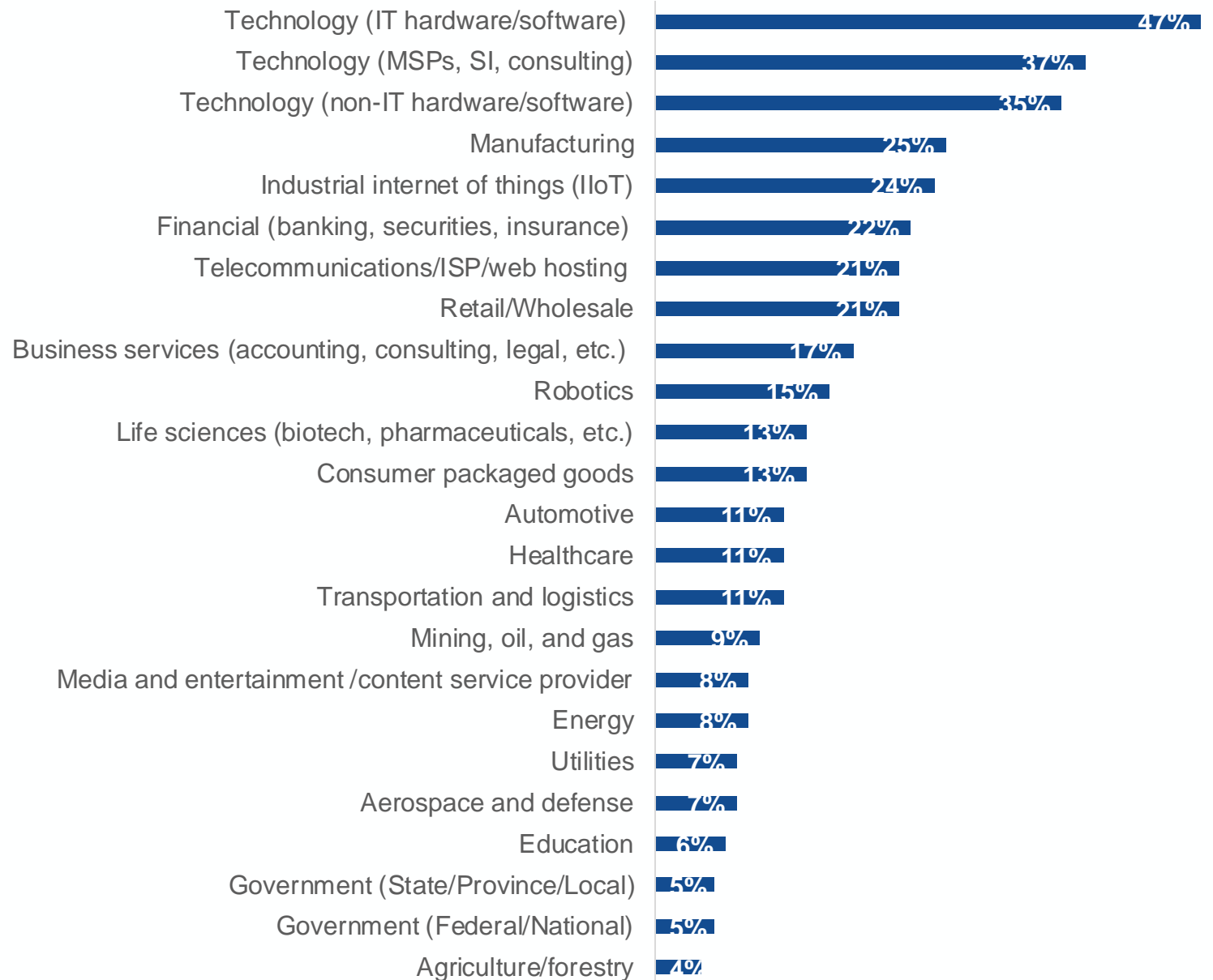
Question text: How many total employees does your organization have worldwide? (Percent of respondents, N=475)

# Respondents by Age of Organization



Question text: For approximately how long has your current employer been in existence? (Percent of respondents, N=475)

# Respondents by Industries Serviced with Linux Projects



# Respondents by Annual Revenue

