

2026

State of Industrial AI

Report for Utilities

A global view of AI and its impact on security, growth, and innovation in operational technology across the utility industry



Introduction

Over 175 utility decision makers participated in the 2026 State of Industrial AI Report.

Following the success of the inaugural 2024 State of Industrial Networking Report, this edition looks at how utility firms worldwide are adopting Artificial Intelligence; the challenges they face; and the opportunities for AI-powered transformation. We spoke to decision-makers at firms in 19 countries, operating with annual revenues over \$100 million.

This report provides a utilities-specific view of the 2026 State of Industrial AI research, highlighting where the sector is seeing progress, where constraints remain, and what foundations are required to move from targeted deployments to secure, repeatable scale.

Cisco, in association with Sapio Research, undertook this study to establish levels of AI adoption in industrial networking; the operational outcomes organizations are achieving from AI investments; barriers to scale; and how to align for success.



Executive summary



Industrial AI demands network modernization

AI implementation is placing unprecedented demands on utilities' underlying infrastructure.

- 52% of utilities expect significant increases in connectivity and reliability requirements
- 97% of decision-makers say reliable wireless networks are vital for enabling AI
- Reliable connectivity (52%), bandwidth (46%), and mobility (39%) are top network requirements for AI at scale

Network readiness now determines AI success, with infrastructure limitations directly constraining the ability to scale deployments.



Cybersecurity is both the #1 barrier and the #1 asset

Expanding AI adoption elevates cybersecurity risk.

- 41% cite cybersecurity concerns as a top obstacle to AI adoption
- 49% identify security as their biggest networking challenge
- 87% expect AI to improve their cybersecurity posture

While security gaps are limiting AI scale today, utilities view AI as a tool to strengthen detection, monitoring, and resilience.



IT/OT collaboration is critical to AI at scale

Effective collaboration between IT and OT teams directly impacts AI outcomes.

- 44% continue to operate with limited or no IT/OT cooperation
- 43% cite siloed IT / OT ownership as a major challenge to AI adoption
- 33% say OT domain expertise is critical to scaling AI

While disparate teams slow AI deployment and increase operational risk, IT/OT alignment accelerates scalability, stability, and security.

Table of contents

Introduction	2	Implications for AI scale in utilities	20
Executive summary	3	Section 4: Cybersecurity & industrial AI interconnectedness	21
Introduction letter	5	Cybersecurity is the #1 obstacle to AI adoption	22
Section 1: Sector overview	6	Cybersecurity as a foundational requirement	23
AI adoption has reached active deployment	7	Cybersecurity threats of greatest concern	24
Operational improvements drive AI adoption	8	AI strengthens cyber defense	25
AI adoption evolves from efficiency to resilience	9	Section 5: IT/OT collaboration – the operating model for scaling AI	26
Cybersecurity concerns limit AI adoption	10	IT/OT collaboration in utilities remains uneven	27
Section 2: AI outcomes, ROI & investment urgency	11	Independent teams limit AI confidence & outcomes	28
Utilities expect AI to deliver operational and sustainability gains	12	Skills required to scale industrial AI	29
Energy management as a core AI use case	13	Section 6: Future outlook – scaling AI across industrial operations	30
AI investment brings high expectations	14	Confidence in scaling industrial AI	31
Investment priorities for enabling AI	15	How transformational will AI be for utilities?	32
AI investment priorities shift with maturity	16	Section 7: Key takeaways for utility leaders	33
Section 3: AI runs on the network: infrastructure as the foundation for scale	17	Priorities for utility leaders	34
AI adoption rewrites industrial infrastructure requirements	18	Section 8: Industrial AI partner considerations for utilities	35
AI is coupled to grid operations and network visibility	19	Section 9: Demographics & firmographics	37

Introduction letter

I'm excited to introduce Cisco's 2026 State of Industrial AI Report – an evolution of our State of Industrial Networking Report. As industrial operations continue to transform, artificial intelligence is rapidly emerging as a gamechanger across manufacturing, utilities, transportation, and beyond. 2025 was the year for many to experiment with AI in industrial settings; 2026 promises to be the year when many organizations move from pilots to real, production-ready AI projects.

This year's report is informed by the perspectives of 1,000 operational leaders across 19 countries and 21 industries. It highlights not only the tremendous potential of AI to enhance productivity, resilience, and safety, but also explores the challenges organizations face as they integrate AI into their industrial networking strategies – from data management to cybersecurity to IT/OT collaboration.

At Cisco, we remain committed to supporting our customers' digital transformation journeys. Our deep expertise in both IT and OT has positioned us to help organizations harness AI, enabling smarter, more secure, and more agile industrial networks at scale. Listening to our customers continues to be our top priority, and this year's survey reveals powerful insights about how industrial leaders are approaching AI adoption – and what's on their minds for the year ahead.

We're seeing companies bring AI to life in impactful ways: from deploying machine vision to ensure product quality in manufacturing, to rolling out AI-powered automated guided vehicles (AGVs) and autonomous mobile robots (AMRs) that are reshaping material handling and logistics, to leveraging agentic operations that drive more autonomous, adaptive, and efficient workflows across industrial environments. Additionally, AI is playing an increasingly critical role in cybersecurity for OT, where the scale and complexity of machine data demand intelligent, automated approaches that go beyond human capabilities.

We hope this report serves as a valuable resource, offering context and benchmarks to guide your strategy, partnerships, and innovation initiatives. By working together, we've already seen the extraordinary business outcomes that industrial networking for AI use cases can deliver. As the critical infrastructure for the AI era, Cisco is dedicated to empowering organizations to realize the full potential of industrial AI. We look forward to helping you unlock even more possibilities in the coming year.

Vikas Butaney

Senior Vice President and General Manager
Cisco Secure Routing and Industrial IoT





Section 1

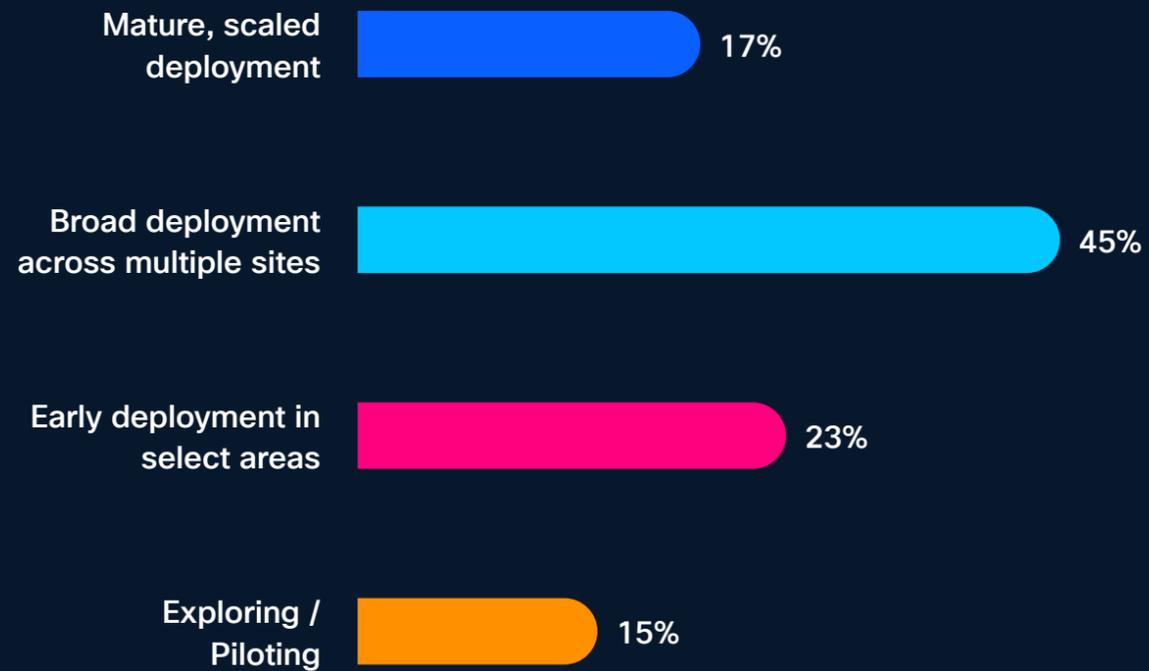
Sector overview

AI adoption has reached active deployment

Industrial AI adoption in the utilities sector is no longer experimental.



62% of utility firms are actively deploying AI at scale.



Q. Which of the following best describes your organization's current stage of AI adoption in industrial operations? Select one



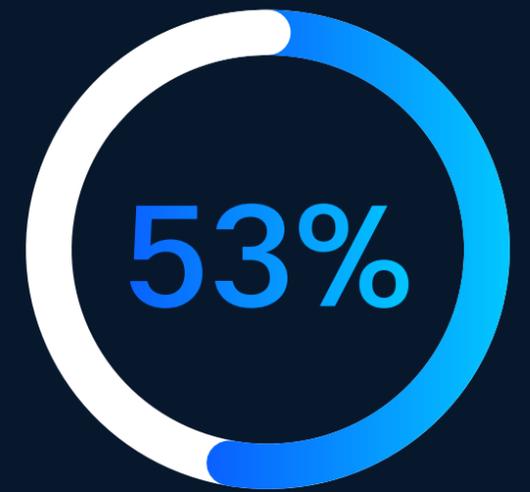
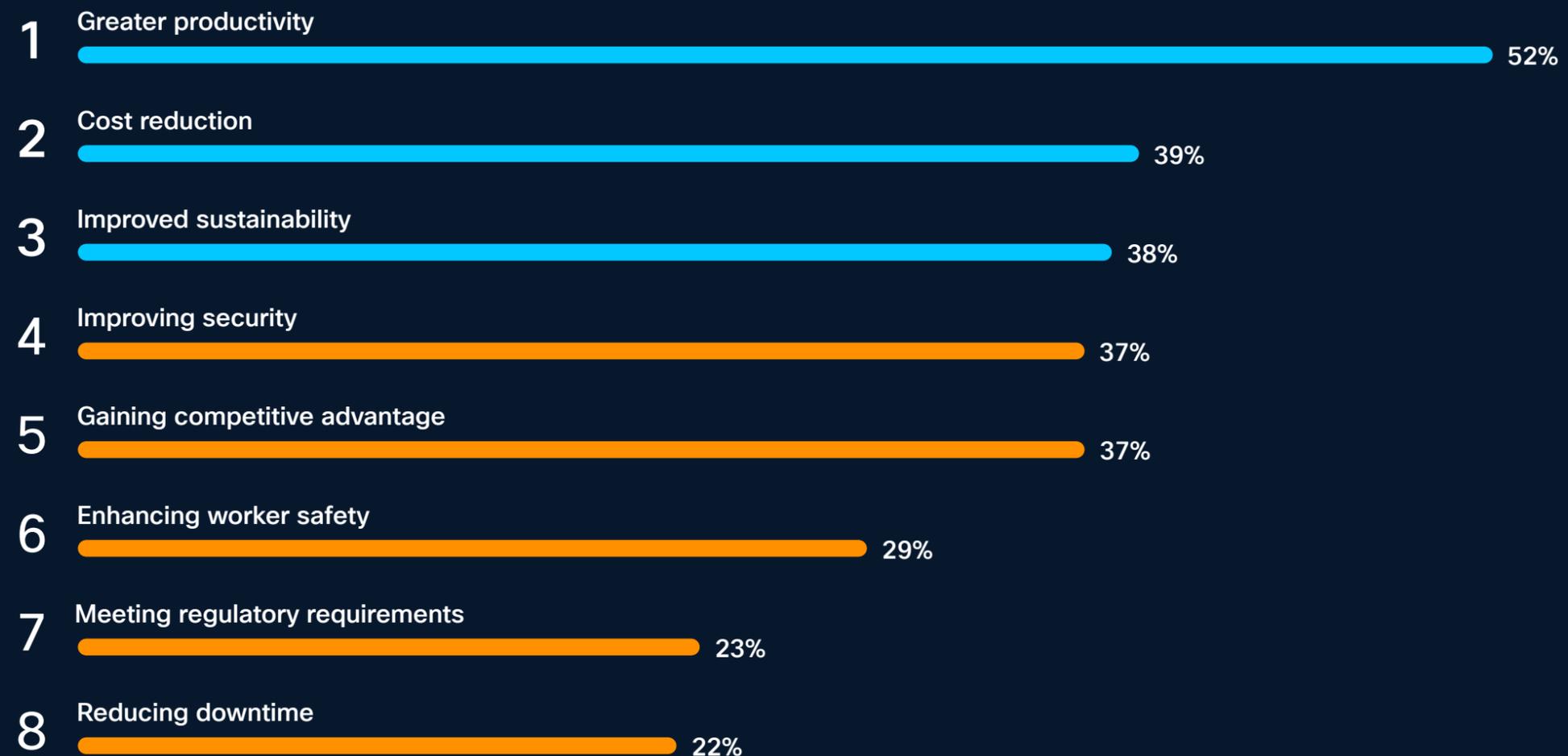
“

The global AI In Energy Market size was estimated at USD 11.30 billion in 2024 and is anticipated to reach USD 54.83 billion by 2030. The increasing demand for energy efficiency and sustainability is propelling companies to adopt AI technologies that optimize energy management and enhance operational efficiencies.”

Source: Grand View Research "AI in Energy Market (2025 - 2030)"

Operational improvements drive AI adoption

Operational improvement is the dominant driver of AI adoption in utilities, with a focus on measurable outcomes that support reliability, efficiency and long-term asset performance.

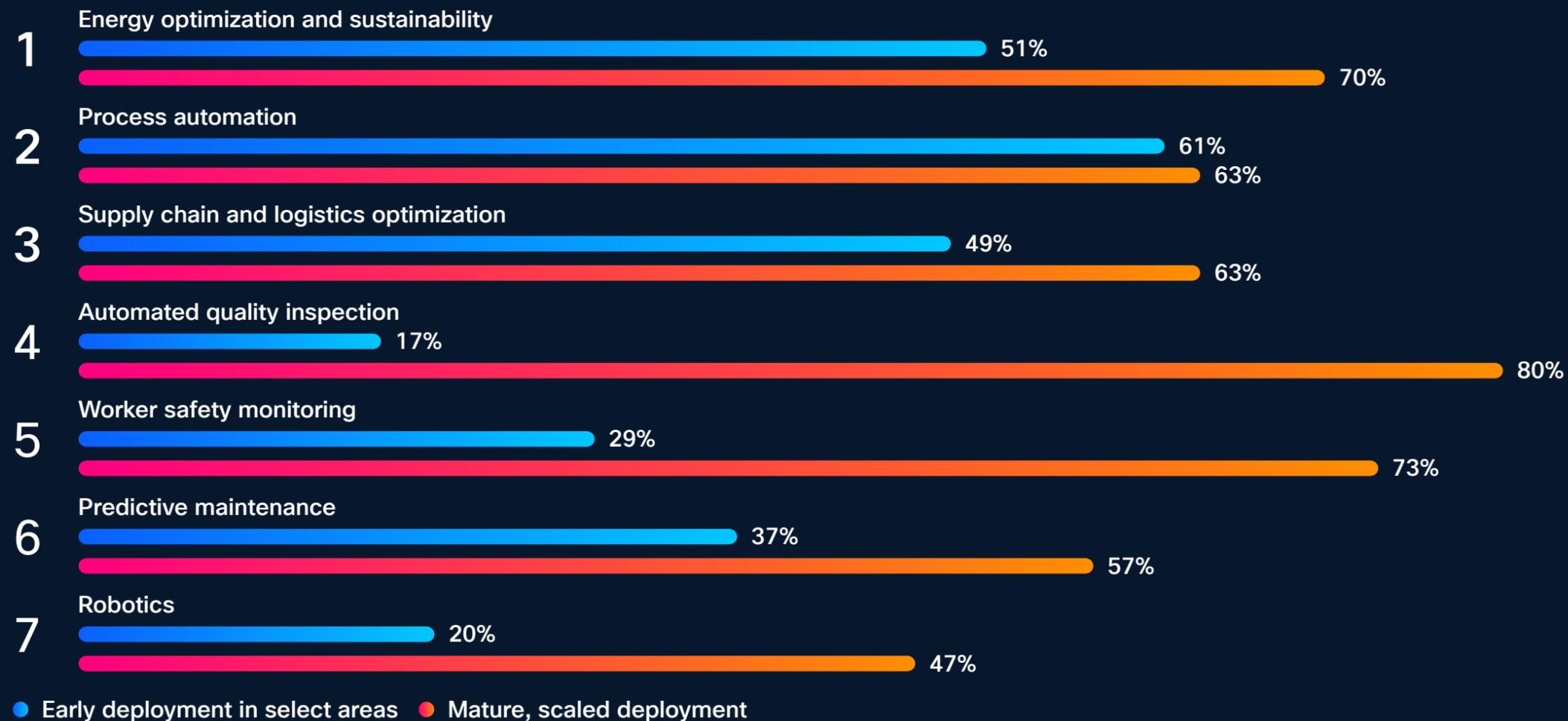


of utilities expect to see AI outcomes within the first twelve months or have already seen results, reinforcing efficiency as the primary starting point.

Q. What are the primary drivers behind your organization's interest in AI?

AI adoption evolves from efficiency to resilience

Early adoption in utilities is characterized by operational use cases that support sustainability, system reliability, and efficiency—reflecting a pragmatic approach to AI adoption.



As AI maturity increases, investment is increasingly applied to risk mitigation and safety-critical functions, indicating broader alignment with long-term resilience and workforce protection.

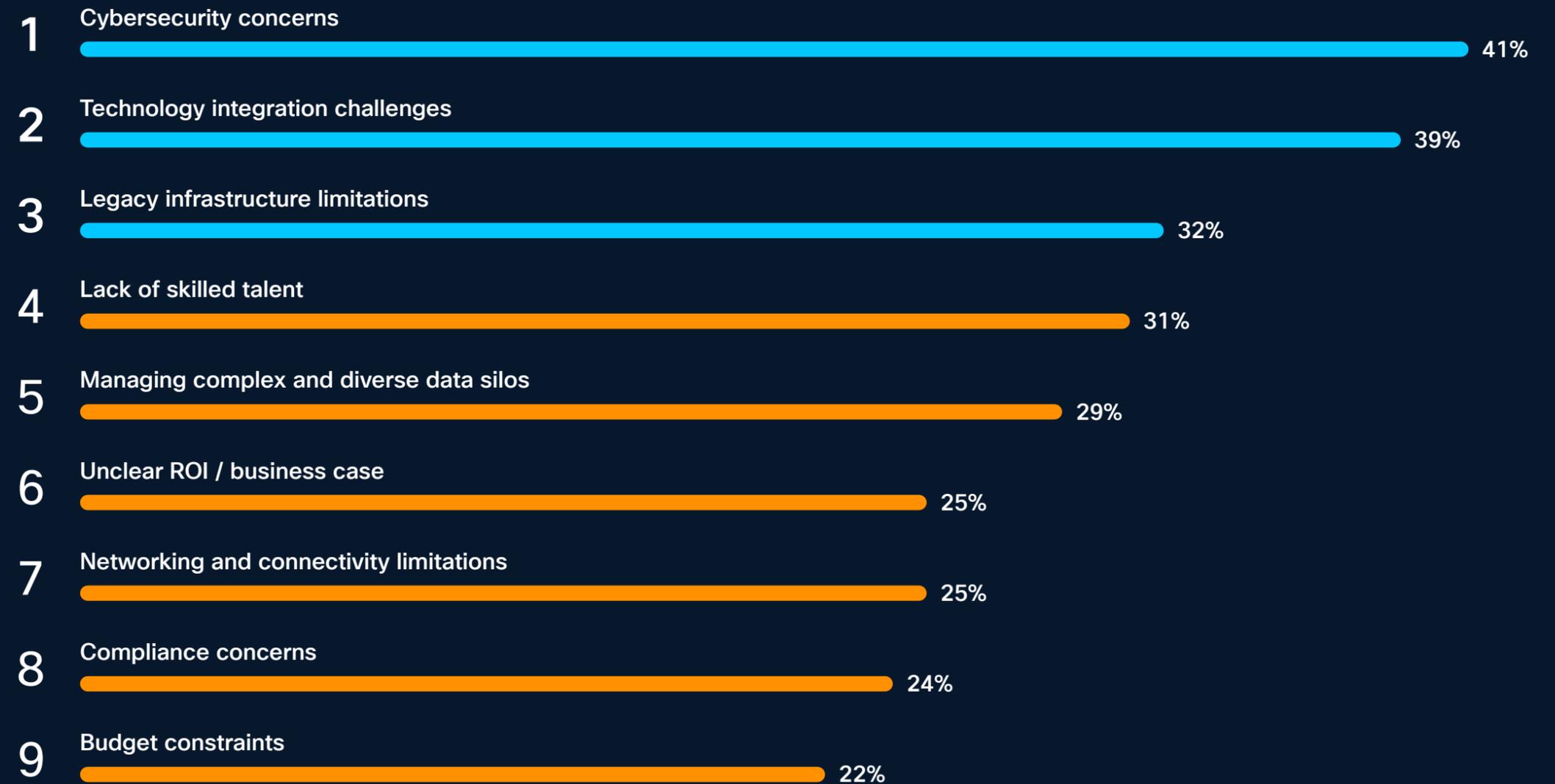
Q. Which AI use cases are you currently exploring or deploying in your industrial operations?

Cybersecurity concerns limit AI adoption

Despite steady progress, AI at scale in the utility sector is hindered by cybersecurity and infrastructure-related challenges.

While cybersecurity remains the most significant constraint, legacy infrastructure limitations stand out as a more pronounced barrier in utilities than in the global findings (32% vs 25% global)—indicative of the need for a careful, incremental approach to integrating AI into legacy operational environments.

As AI maturity increases, technology integration challenges also become more pronounced (39% average vs. 47% among mature adopters). For utilities, the ability to integrate AI safely and reliably into long-lived, mission-critical systems remains a central challenge.



Q. What are the biggest obstacles your organization faces in adopting AI?

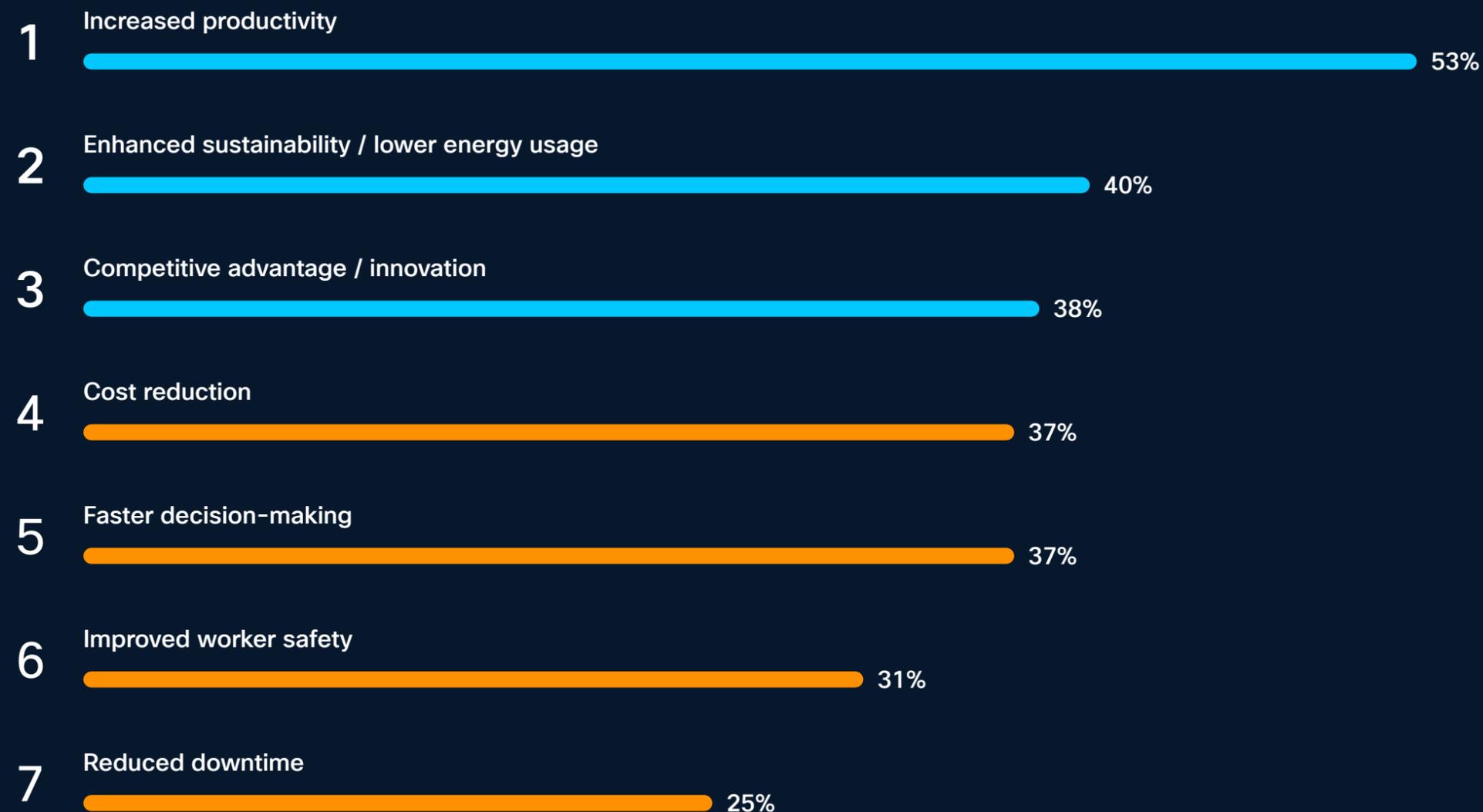


Section 2

AI outcomes, ROI & investment urgency

Utilities expect AI to deliver operational gains

Utility firms' expectations for AI align with investment drivers: combining operational gains with energy efficiency outcomes that are integral to grid and asset operations.



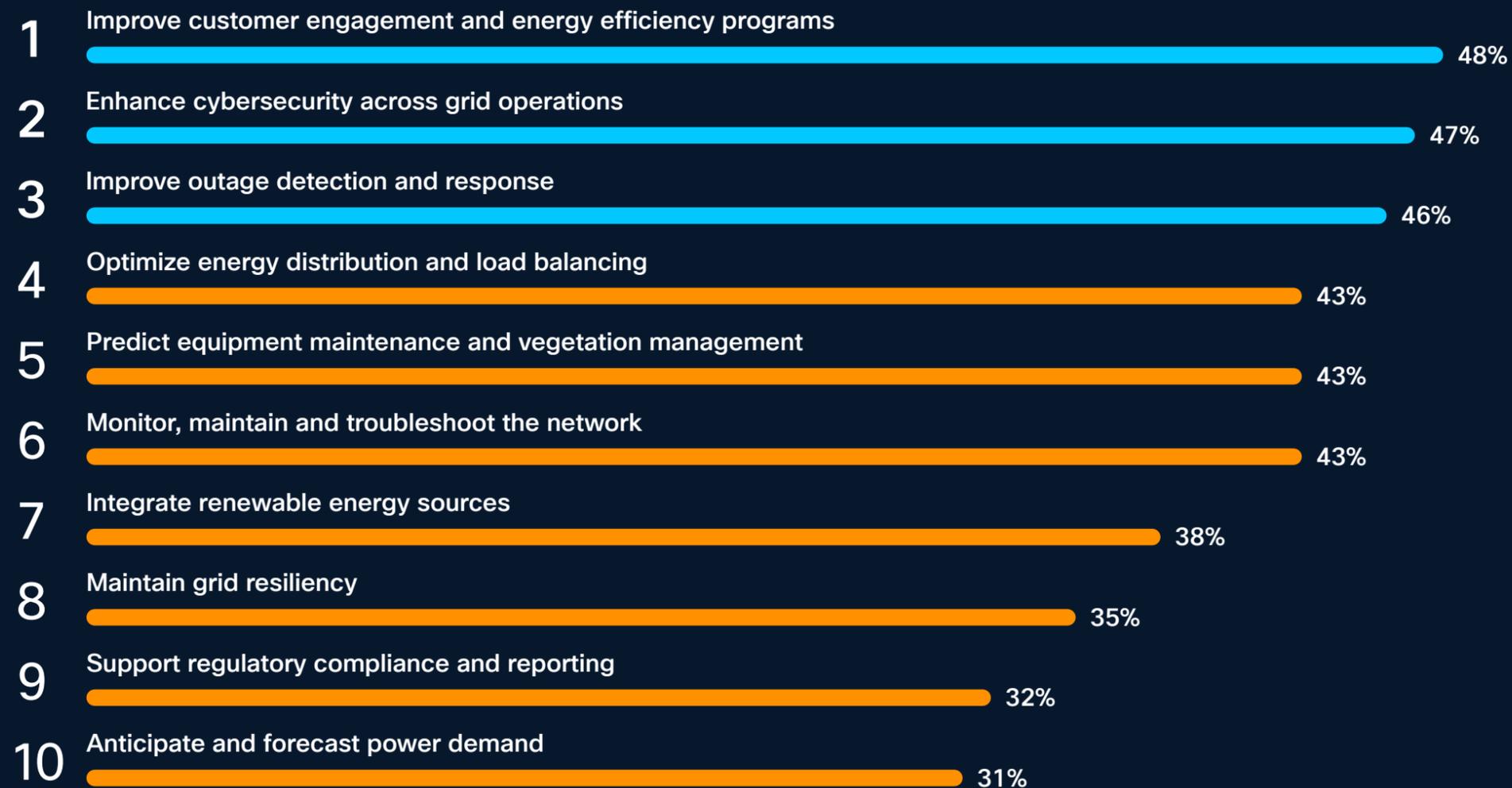
Unique to utilities, sustainability and energy efficiency rank second only to productivity—reflecting the dual mandate facing the sector: improving operational performance while supporting energy transition, resilience, and regulatory obligations.

AI is viewed as a practical enabler of efficiency and reliability.

Q. What outcomes would you most like to achieve from AI investments?

Energy management as a core AI use case

Energy management and efficiency are central to utilities' AI strategies, with sustainability and energy efficiency ranking as a top-two expected outcome of AI adoption (40%), second only to productivity (53%).



Utilities are using AI to help manage growing system complexity, particularly as renewable generation, distributed energy resources, and variable demand increase operational volatility.

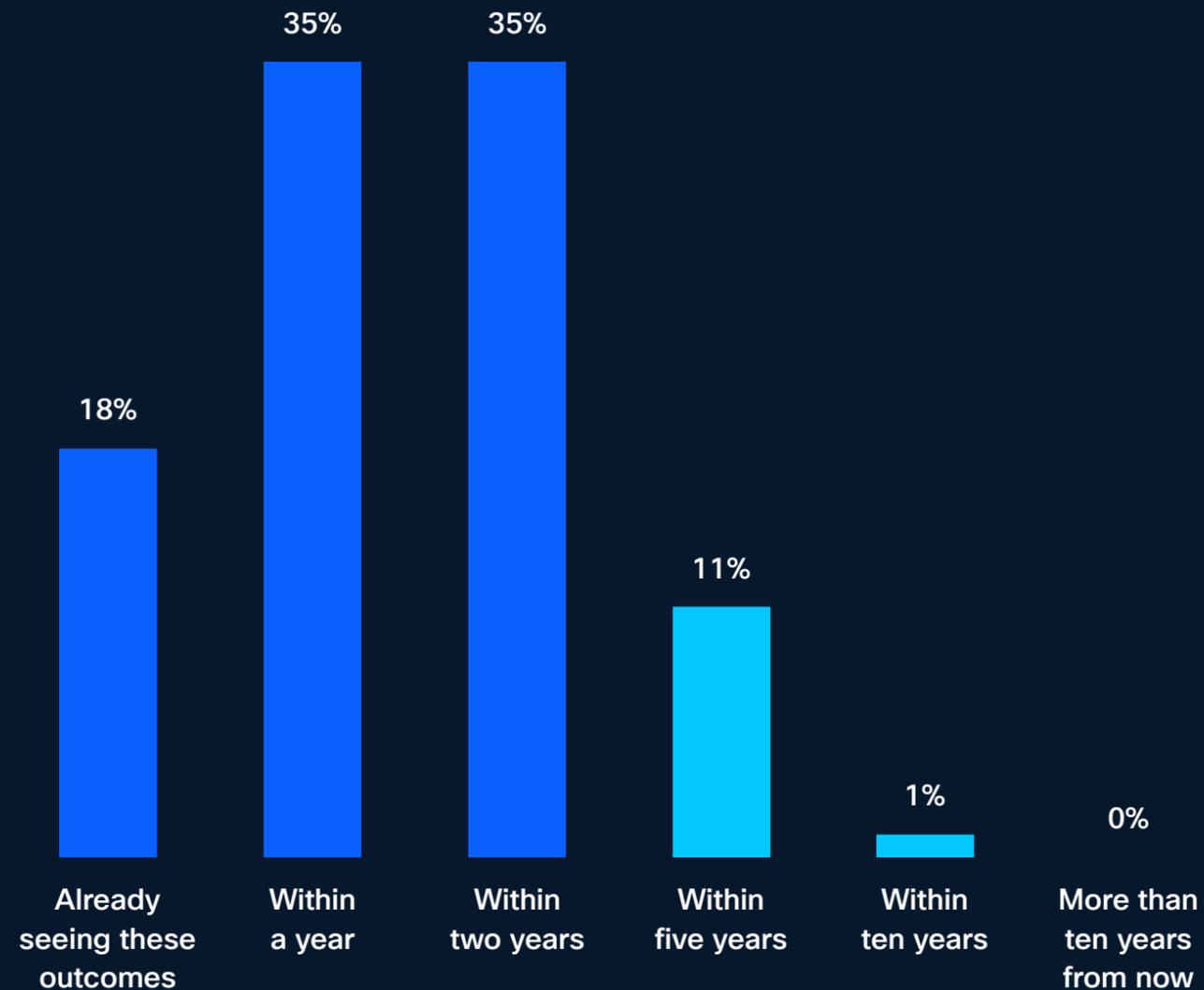
Q. Over the next 5 years, our organization plans to use AI to: Select all that apply

AI investment brings high expectations

Leaders in utilities expect AI initiatives to deliver value quickly, reinforcing the sector's execution-led approach to adoption.



anticipate returns within the next two years.



Q. When do you expect to see these outcomes?



Expectations reflect investment in AI use cases that demonstrate tangible operational impact.

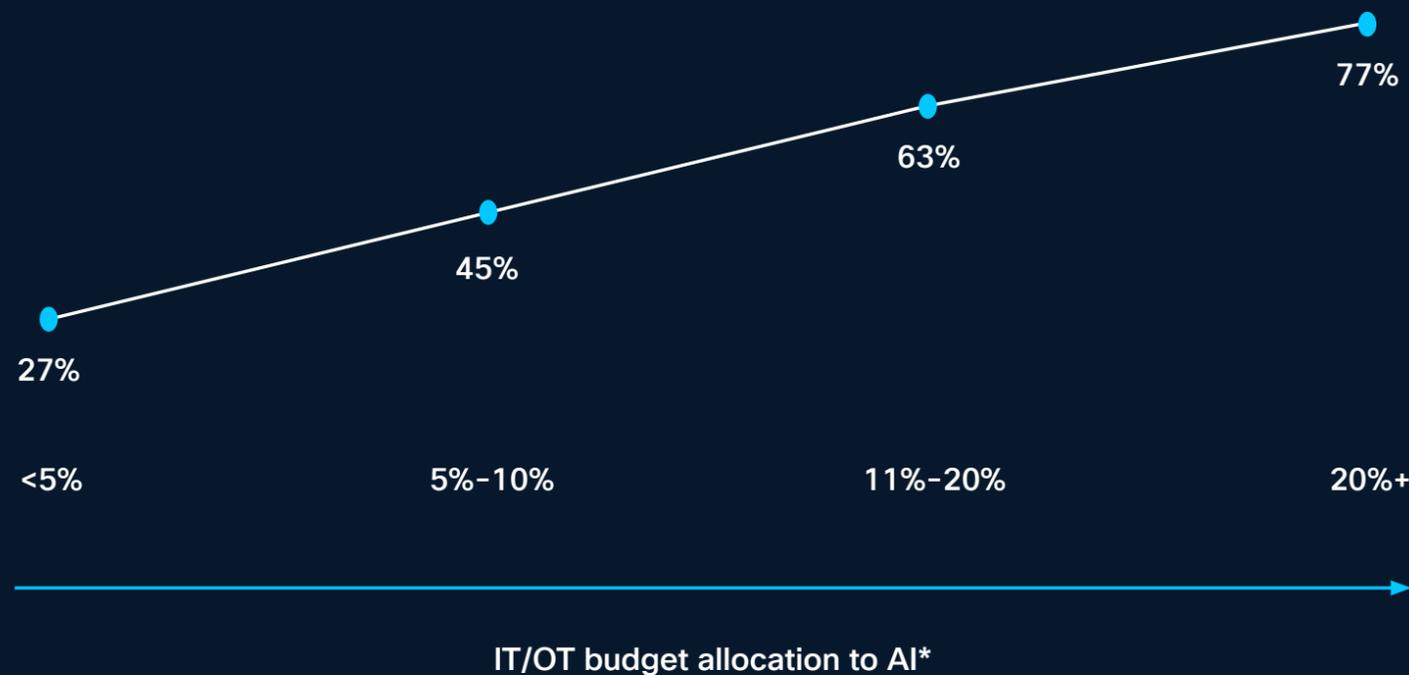
Investment priorities for enabling AI

Utilities are increasing their AI investment, signalling sustained commitment to adoption.

This investment momentum reflects growing confidence in AI's ability to support key operational objectives—but brings higher expectations around infrastructure, security, and operating models that support rapid, scaled deployment.



Percentage expecting outcomes within a year

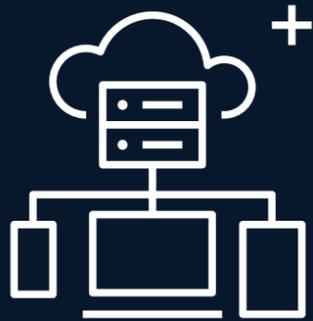


AI accounts for 13% of utilities' networking budgets, and 80% of organizations plan to increase that investment—raising expectations for scalable, production-ready deployments.

*Correlation data taken from overall sample of 1,200 industrial decision-makers

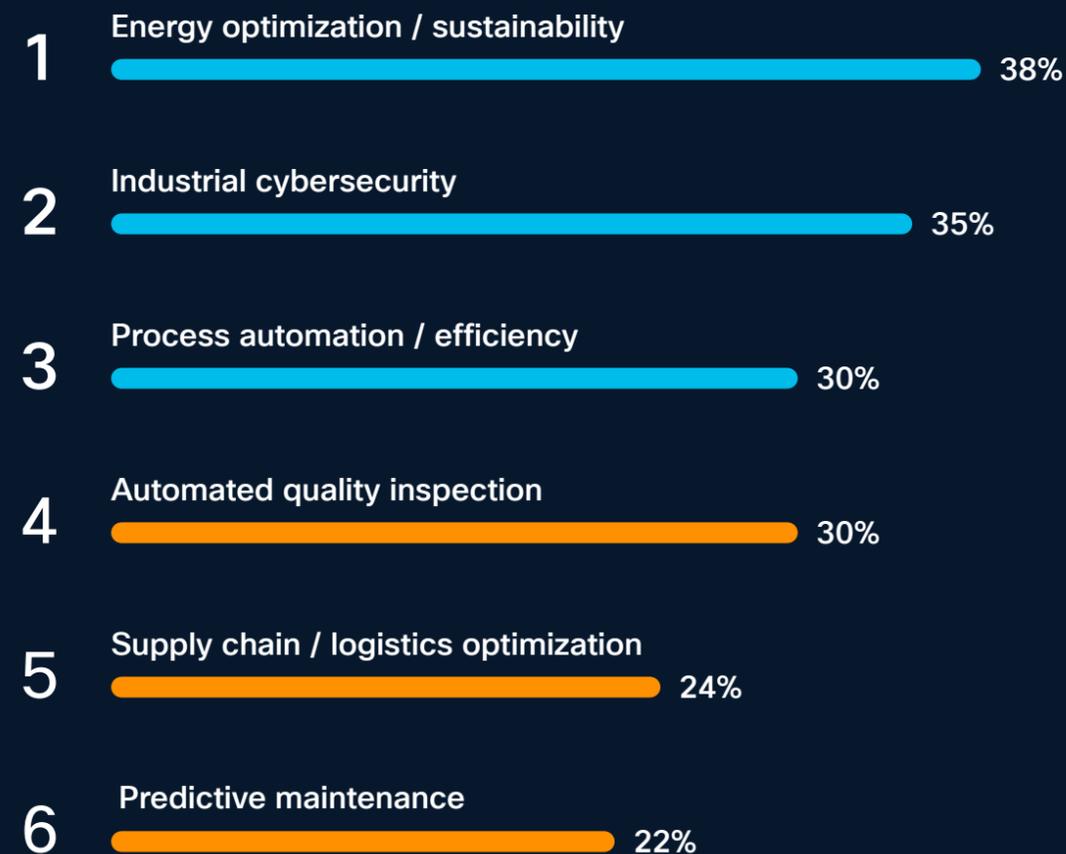
AI investment priorities shift with maturity

As maturity increases, utilities direct incremental AI investment toward areas where operational efficiency, resilience, and risk management intersect, supported by autonomous decisioning, sensors and vision systems.



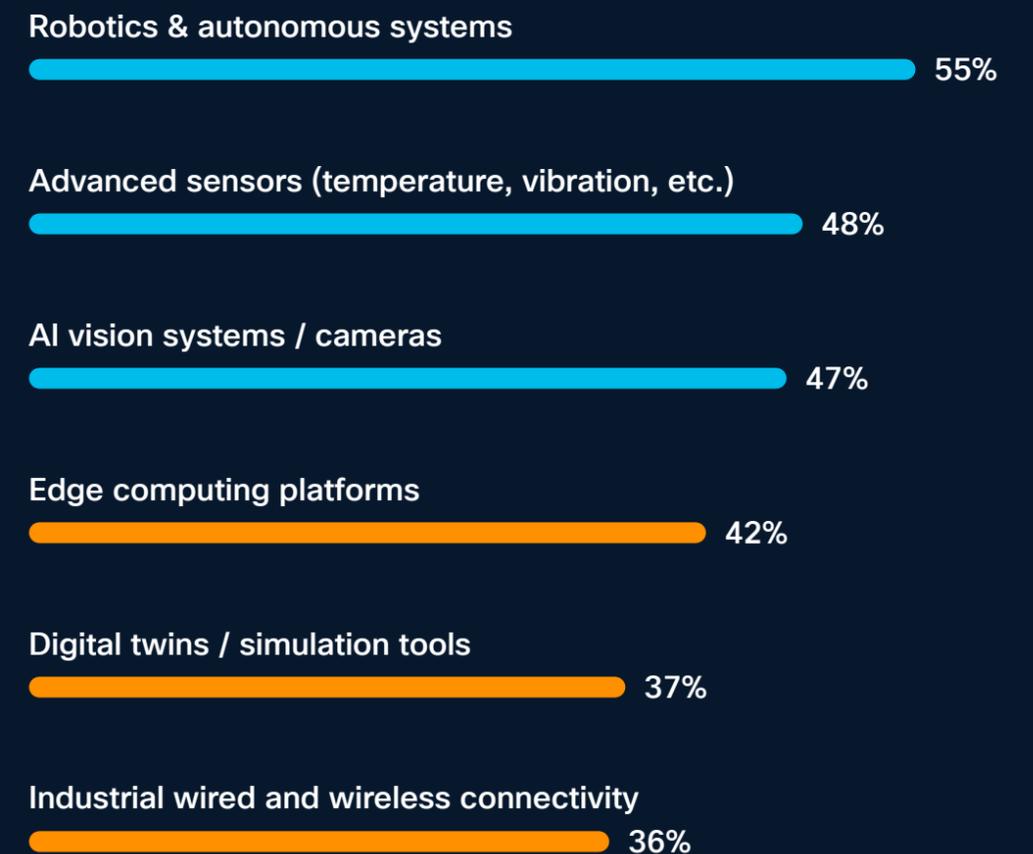
Scaling AI requires shifting from human-in-the-loop workflows to machine-to-machine decisioning—driving investment in connectivity, edge, and data infrastructure.

Investment priorities:



Q. What are your top priority areas for AI investment in industrial operations?

New technologies:



Q. What new technologies are most critical to enable AI in your industrial operations?

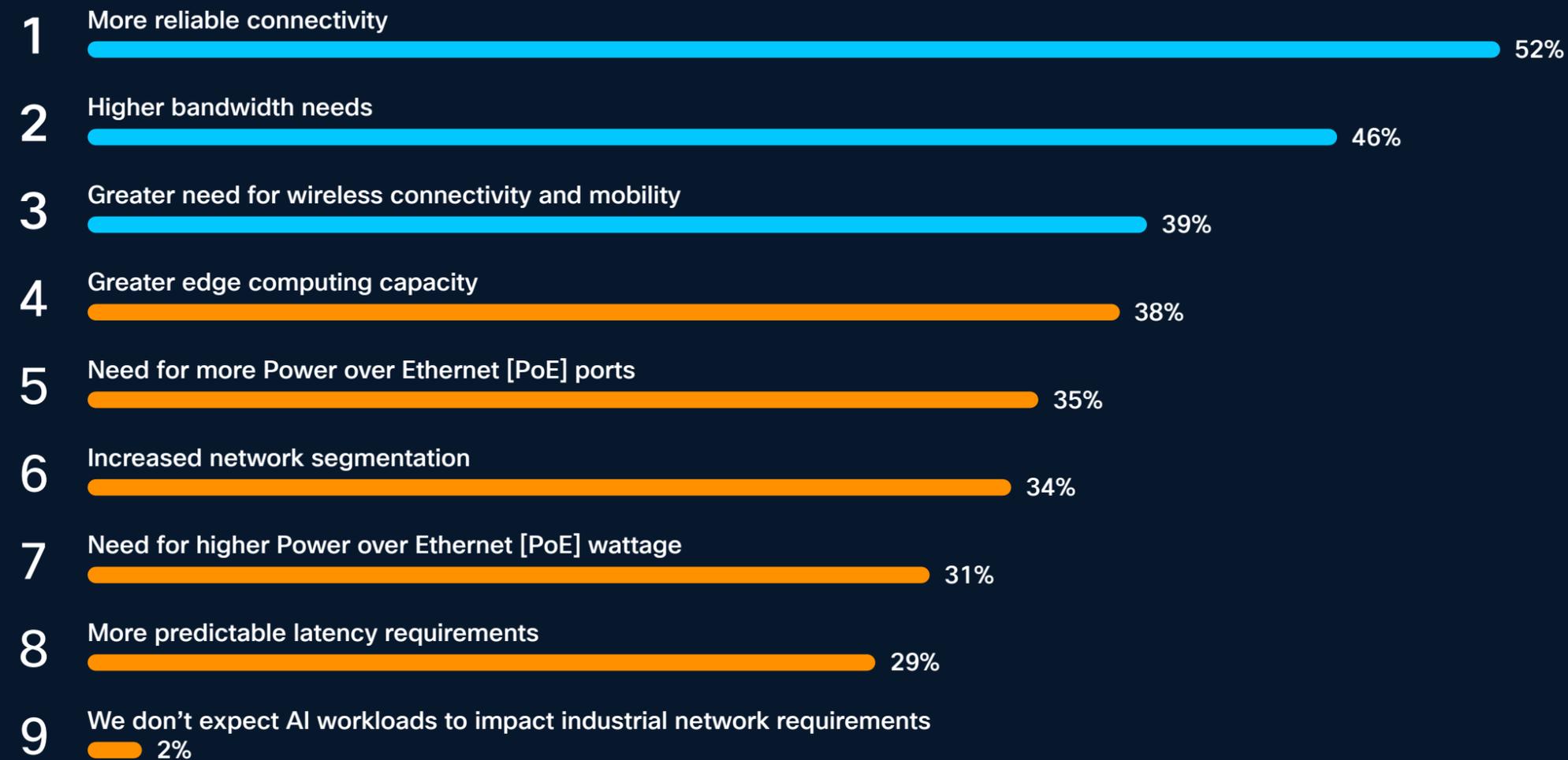


Section 3

AI runs on the network: infrastructure as the foundation for scale

AI adoption rewrites industrial infrastructure requirements

AI workloads introduce new performance, power, and reliability requirements that exceed traditional industrial network design assumptions.



Q. How do you expect AI workloads to impact your industrial network requirements? Select all that apply.



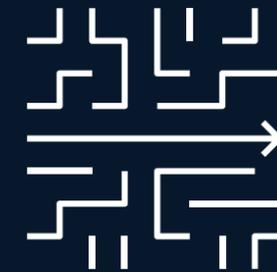
expect AI workloads to have an impact on their industrial networks.

AI is coupled to grid operations and network visibility

AI adoption in utilities is tightly coupled to grid operations and network visibility; performance and reliability determine whether deployments can scale across industrial environments.



Q. In which areas of your grid operations do you expect to see the greatest business impact from AI in the next 3-5 years? Select all that apply



As AI-enabled monitoring and automation expand, the reliability, resilience and real-time visibility of operational networks become foundational to AI outcomes and success.

In safety- and service-critical environments, confidence in AI outputs is tied to confidence in the underlying networks.

Implications for AI scale in utilities

AI scale in utilities is shaped by operational integration. Utilities that succeed in expanding AI adoption are those that align:



Energy management objectives



Grid operations and network modernization



Data, connectivity, and control environments

In utilities, AI delivers the greatest value when it is embedded directly into grid and energy operations, supported by resilient infrastructure and coordinated operating models.

AI scale is inseparable from broader efforts to modernize networks, improve visibility, and strengthen operational foundations.

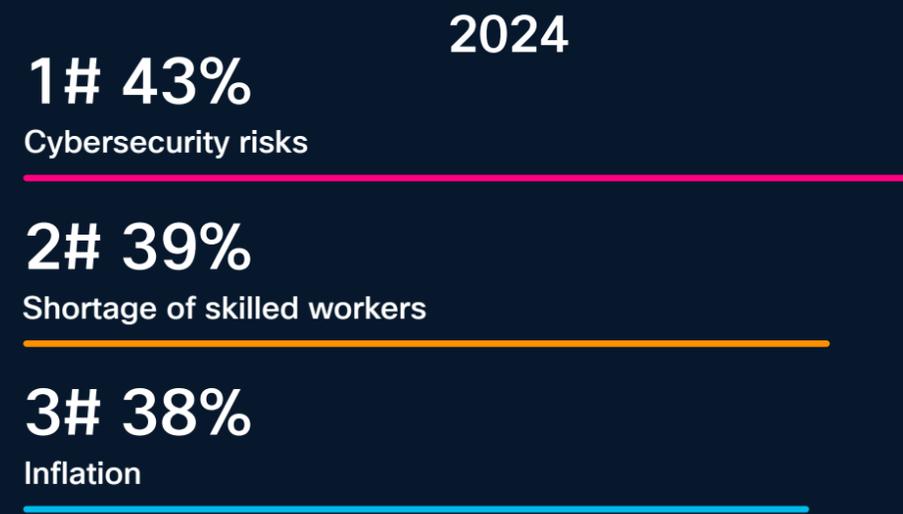


Section 4

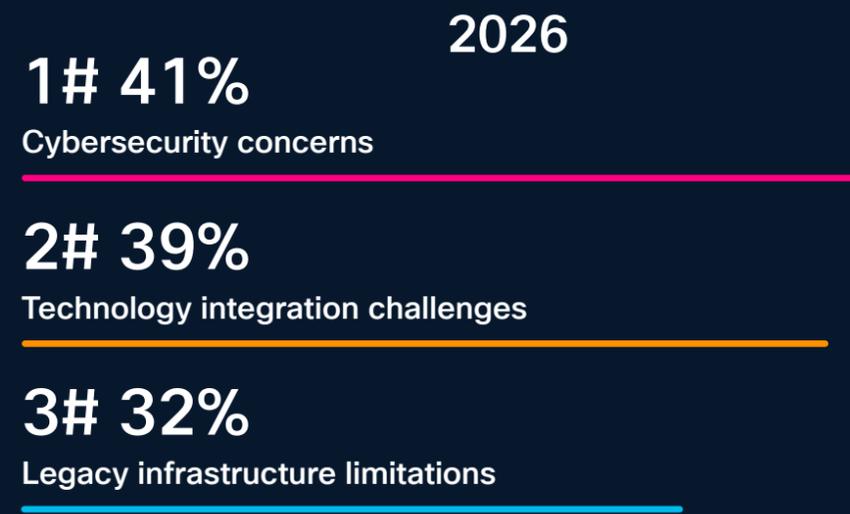
Cybersecurity and industrial AI interconnectedness

Cybersecurity is the #1 obstacle to AI adoption

As operators of critical national infrastructure, utilities face a distinct cyber risk profile. AI adoption increases the volume, velocity, and criticality of operational data, heightening the importance of secure, resilient, and well-governed IT/OT environments.



Q. What are the biggest external obstacles to your organization's growth?



Q. What are the biggest obstacles your organization faces in adopting AI?



In 2024, cybersecurity emerged as a top priority for industrial networking teams; today, it remains the leading concern, with 49% of utilities citing security as their top networking challenge.



Cybersecurity as a foundational requirement

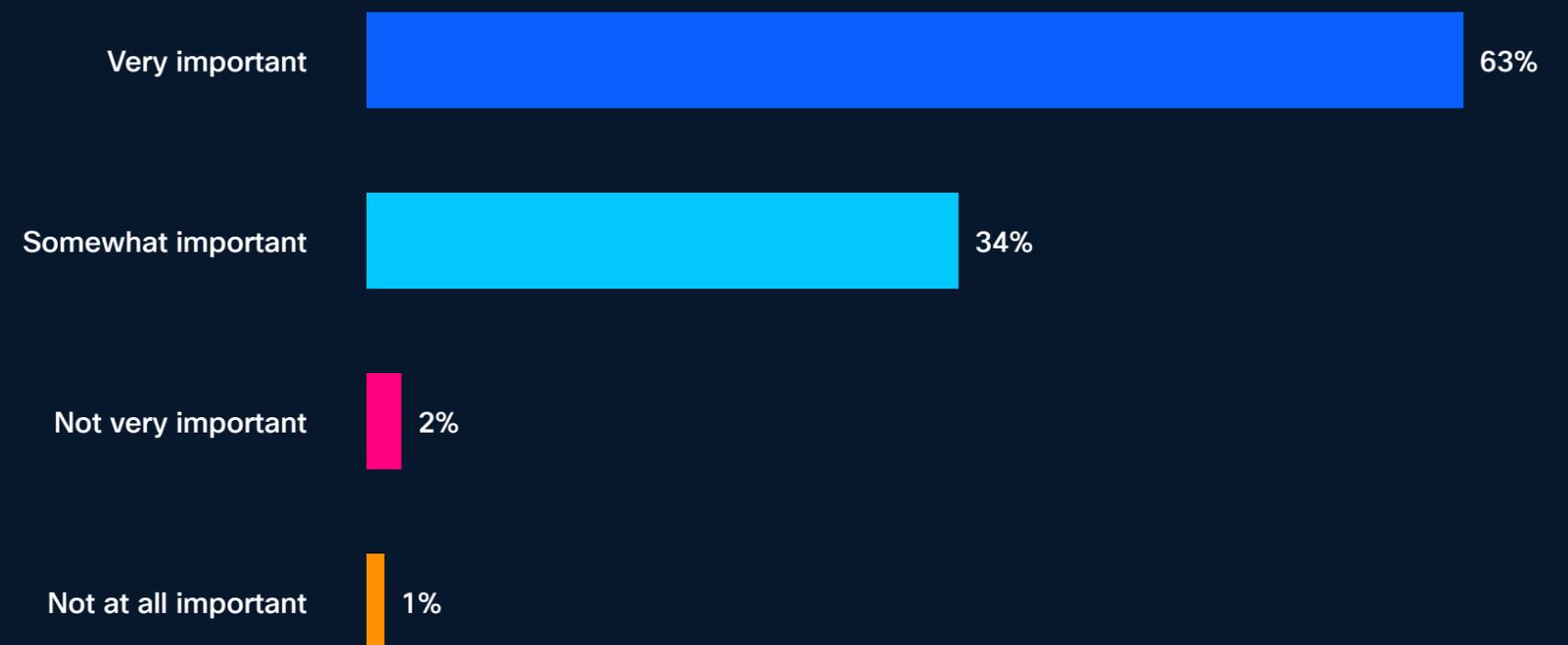
Despite being a barrier to AI at scale, cybersecurity is widely recognized as a foundational requirement for AI-ready infrastructure in utilities.



97% of utilities say cybersecurity is 'somewhat' or 'very important' in AI-ready infrastructure deployment.

This emphasis strengthens with AI maturity, as organizations further along in adoption increasingly view cybersecurity as a core enabler of AI-ready infrastructure: 83% of mature / scaled adopters state cybersecurity is 'very important'.

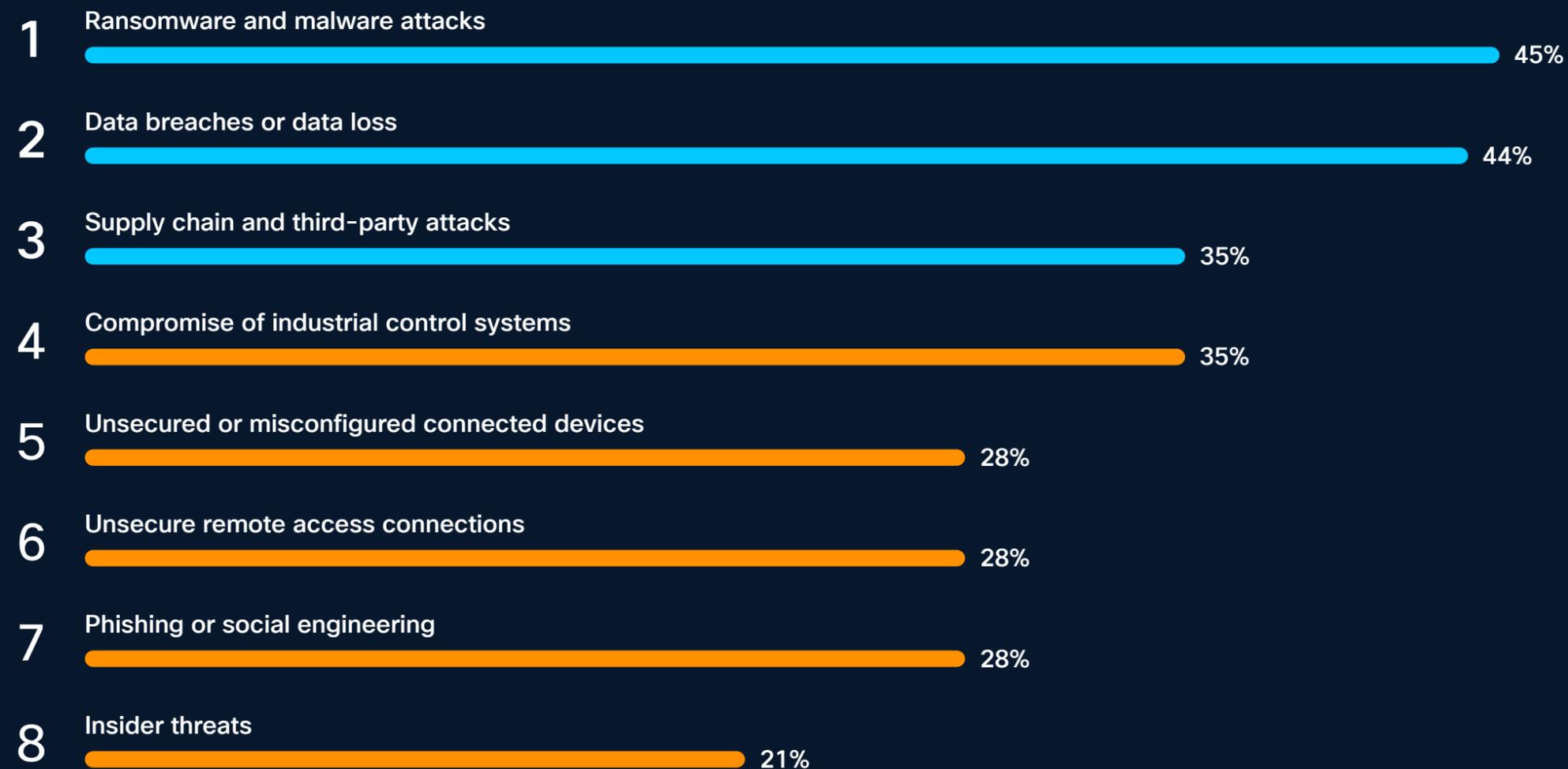
Q. How important is cybersecurity in your AI-ready infrastructure deployment? Select one



AI adoption in utilities is not gated by technical feasibility, but by confidence that deployments meet stringent security expectations.

Cybersecurity threats of greatest concern

Utilities' cybersecurity concerns reflect the realities of operating distributed, interconnected, and safety-critical systems.



These risks are amplified as AI increases the volume of operational data collected, shared, and analyzed across grid and field environments. Third-party dependencies and device proliferation further extend the threat landscape, reinforcing the need for end-to-end visibility and control.

Q. Which types of cybersecurity threats are you most concerned about when increasing connectivity to enable AI in your industrial operations?

AI strengthens cyber defense

Despite concerns, utilities do not view AI solely as a source of additional risk—but part of the solution.

87% see AI as an enabler of stronger cybersecurity, for example through:



Improved anomaly detection



Faster identification of unusual patterns or behavior



Enhanced visibility across large, distributed environments

With security acknowledged as essential, utilities rank industrial cybersecurity second in importance for AI investment (35%), after only energy optimization (38%).

Utility companies see the greatest benefit where AI and cybersecurity are designed together, rather than treated as separate initiatives.



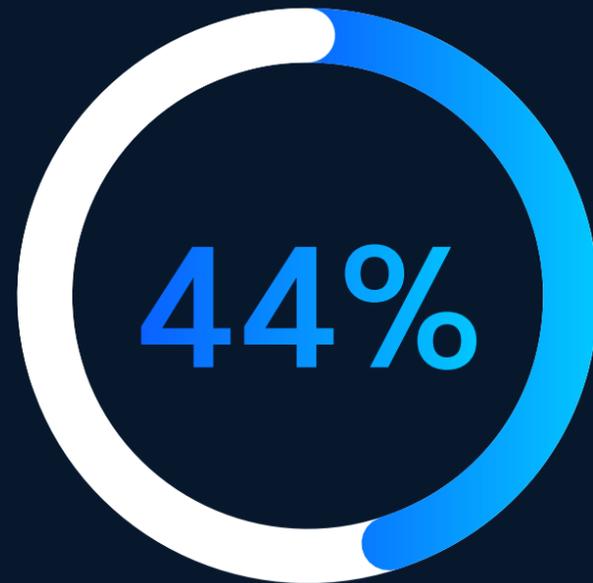


Section 5

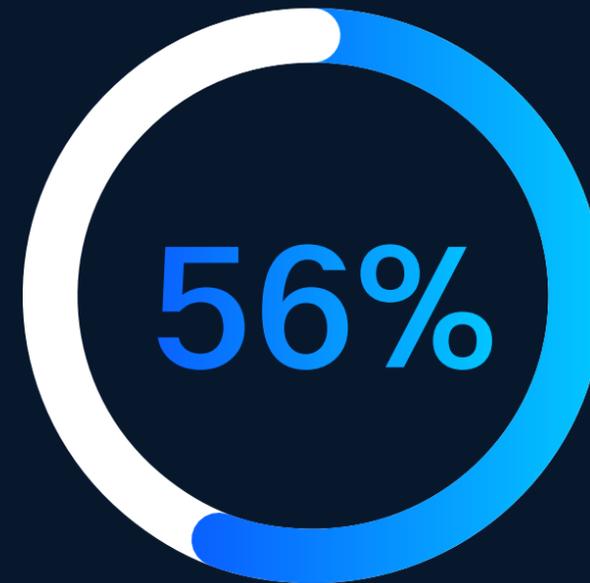
IT/OT collaboration – the operating model for scaling AI

IT/OT collaboration in utilities remains uneven

Utilities report generally positive levels of collaboration between IT and OT teams, though alignment is far from universal.



Little to no collaboration



Completely/mostly collaborative

A meaningful percent of utilities still operate with loosely or minimally coordinated teams. Organizational collaboration has not yet become aligned with the demands of scaled industrial AI, a potential constraint as AI deployments scale beyond individual sites or functions.

Independent teams limit AI confidence & outcomes

There is a clear relationship between stronger IT/OT collaboration and higher confidence in scaling AI across utility operations.

Utilities with closer alignment between digital and operational teams report:

- Greater confidence in deploying AI securely and consistently across energy and grid environments

Organizations with limited IT/OT collaboration experience:

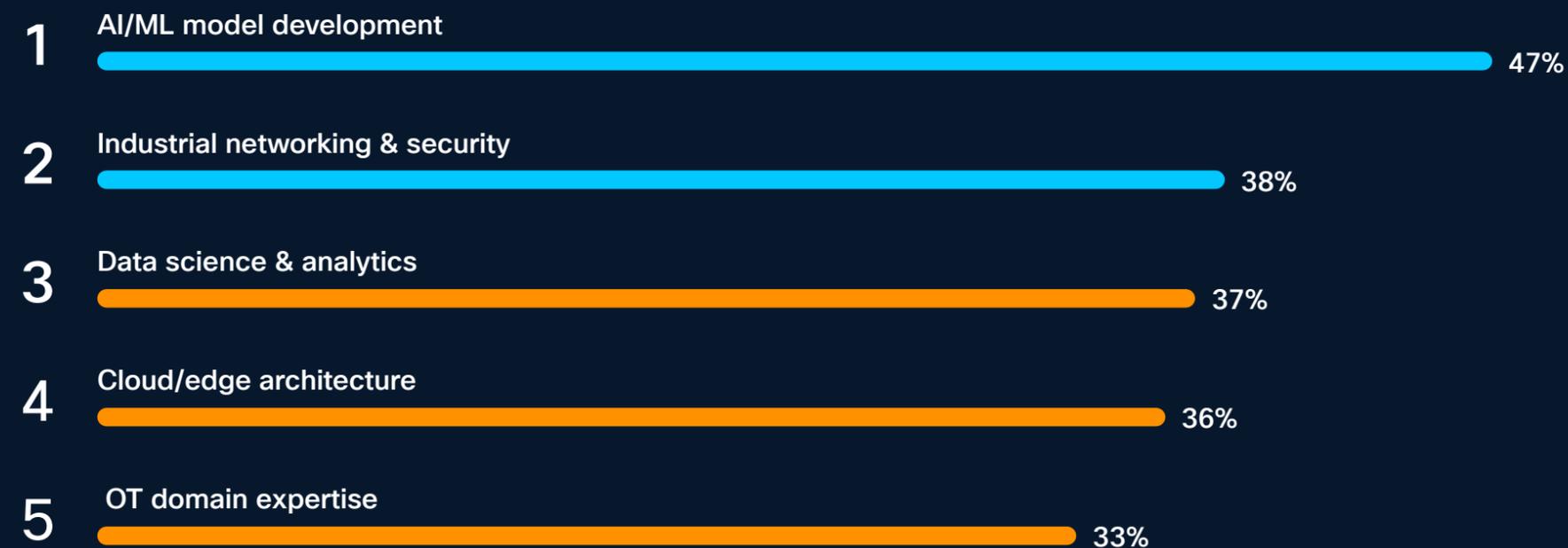
- Greater wireless instability and lower network reliability
- Slower deployment timelines driven by fragmented ownership

These findings demonstrate that organizational structure influences confidence, performance and deployment as AI adoption accelerates.



Skills required to scale industrial AI

Utilities identify a broad mix of skills as critical to scaling industrial AI, reflecting the need to bridge digital innovation with operational execution.



Q. Which skill sets are most critical for scaling AI in industrial operations?

As industrial AI becomes more deeply embedded in energy systems and grid operations, the ability to scale adoption increasingly depends on how effectively IT and OT teams operate together. In utilities, where digital platforms, operational technology, and regulatory obligations are tightly interdependent, organizational alignment is as critical as technical capability.



Section 6

Future outlook – scaling AI across industrial operations



Confidence in scaling industrial AI

Utilities report high confidence in their ability to expand AI adoption over time, particularly where deployments are aligned with core operational priorities such as reliability, safety, and compliance.



are confident in their ability to scale AI across operations



are confident in their ability to meet compliance requirements for AI



believe the benefits of AI outweigh any potential risks

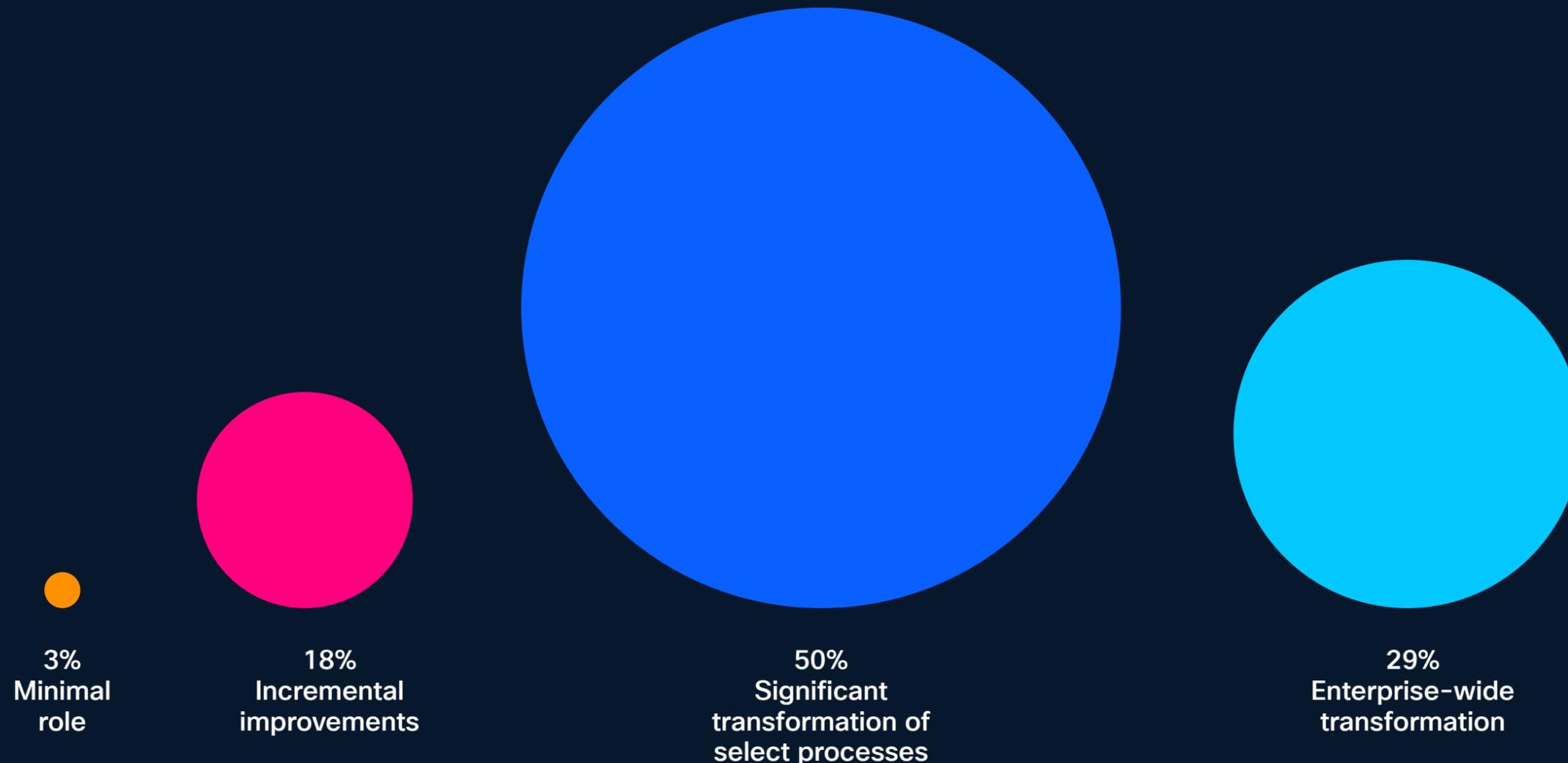
Confidence increases materially with:

- Higher AI budget allocation
- Higher AI maturity

At the same time, confidence is conditional. Utilities recognize that scaling AI depends on continued progress in network modernization, cybersecurity, and infrastructure readiness.

How transformational will AI be for utilities?

Utilities expect AI to be transformational in impact, but still incremental in execution.



This reflects the realities of regulated, asset-intensive environments, where transformation must be:

- Phased
- Tightly governed
- Proven in operation before broader rollout

Utilities expect AI value to come from substantial cumulative improvements in efficiency, resilience, and decision-making across energy systems.

Q. Over the next 5 years, what role do you expect AI to play in transforming your industrial operations?

Section 7

Key takeaways for utility leaders



Priorities for utility leaders

1

Treat AI as an operational capability, not an innovation program

AI initiatives should be governed and funded as part of core operational strategy, with success measured in resilience, efficiency, and system performance.

2

Build cyber-resilience and data governance into AI scale from the outset

Scaling AI safely depends on investing in cyber-resilience and data governance in parallel with AI capability.

3

Align IT and OT around infrastructure

IT/OT collaboration should be anchored around shared responsibility for secure, resilient infrastructure, rather than isolated AI use cases.



Section 8

Industrial AI partner considerations for utilities



Industrial AI partner considerations

As industrial organizations look to scale AI across increasingly complex environments, partner choice becomes a strategic decision.

#1 Partners should be able to support:

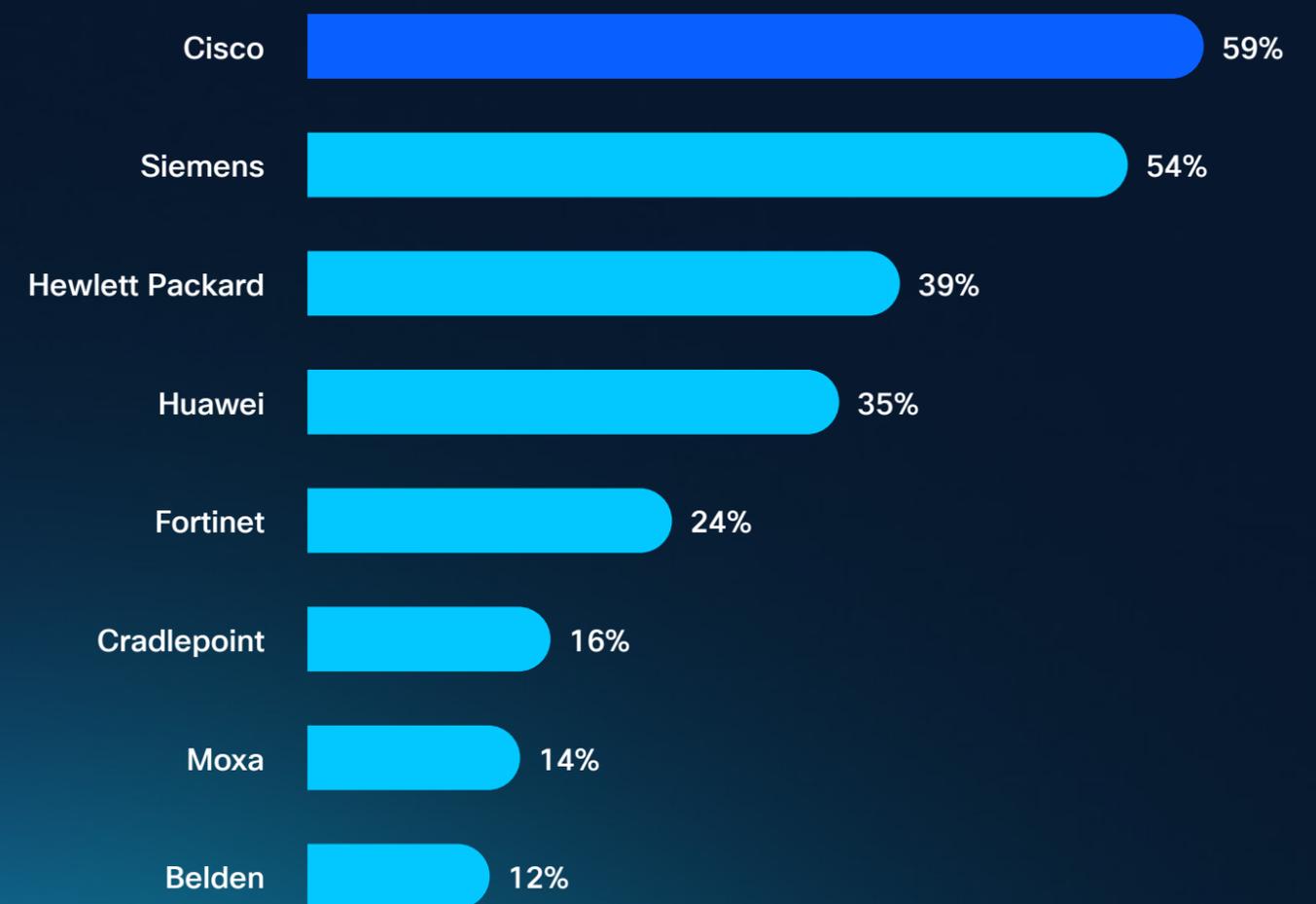
- Reliable, high-performance connectivity
- Secure, segmented architectures
- Predictable operations in production environments

#2 Prioritize partners with deep expertise in:

- Industrial networking
- Cybersecurity and segmentation
- Edge compute and mobility
- Visibility across IT and OT environments

#3 Select a partner with recognized high trust:

- Respondents to our survey ranked Cisco as the most-trusted to provide AI-ready networking infrastructure



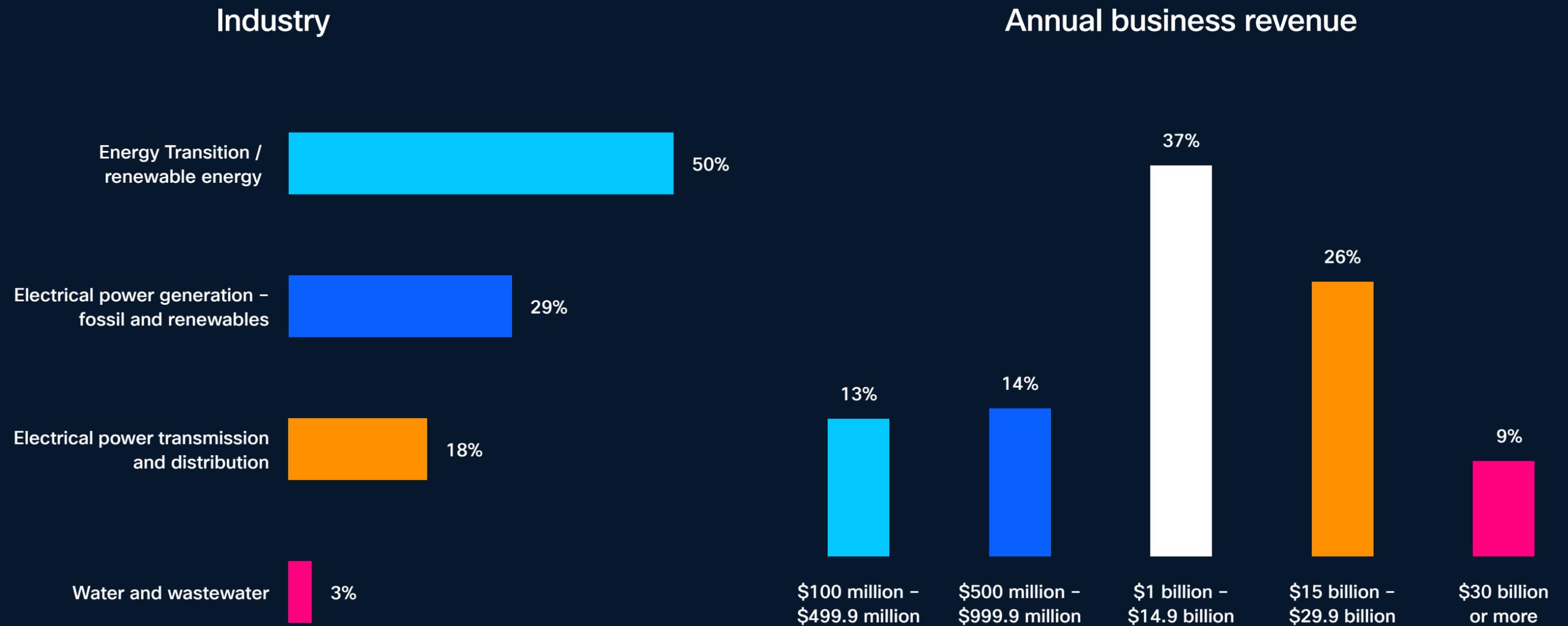
Q. Which of the following vendors do you most trust to provide AI-ready networking infrastructure to enable your industrial AI use cases? Select up to three



Section 9

Demographics & firmographics

Demographics & firmographics



Demographics & firmographics

Job role



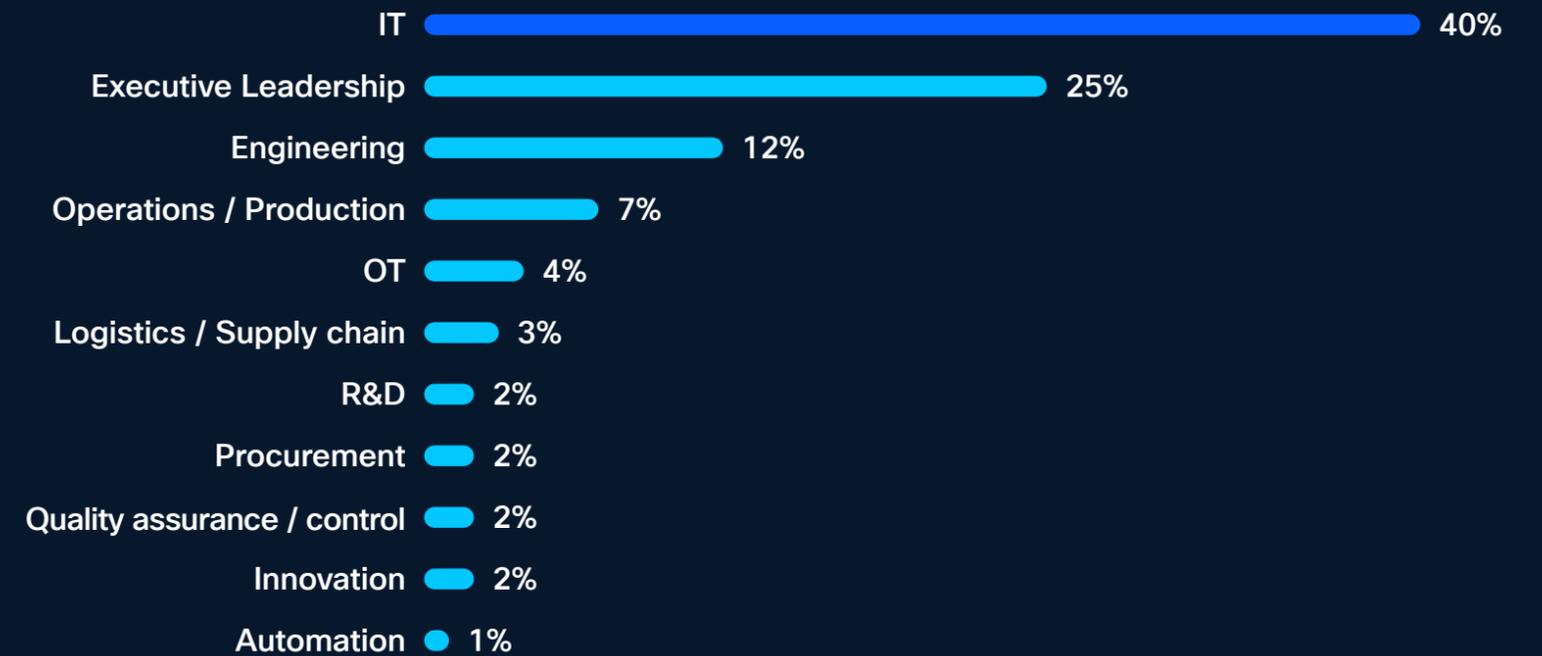
● Manager	43%
● Director	22%
● Head of department	10%
● Vice President / Senior Vice President	10%
● C-Suite	15%

Employment



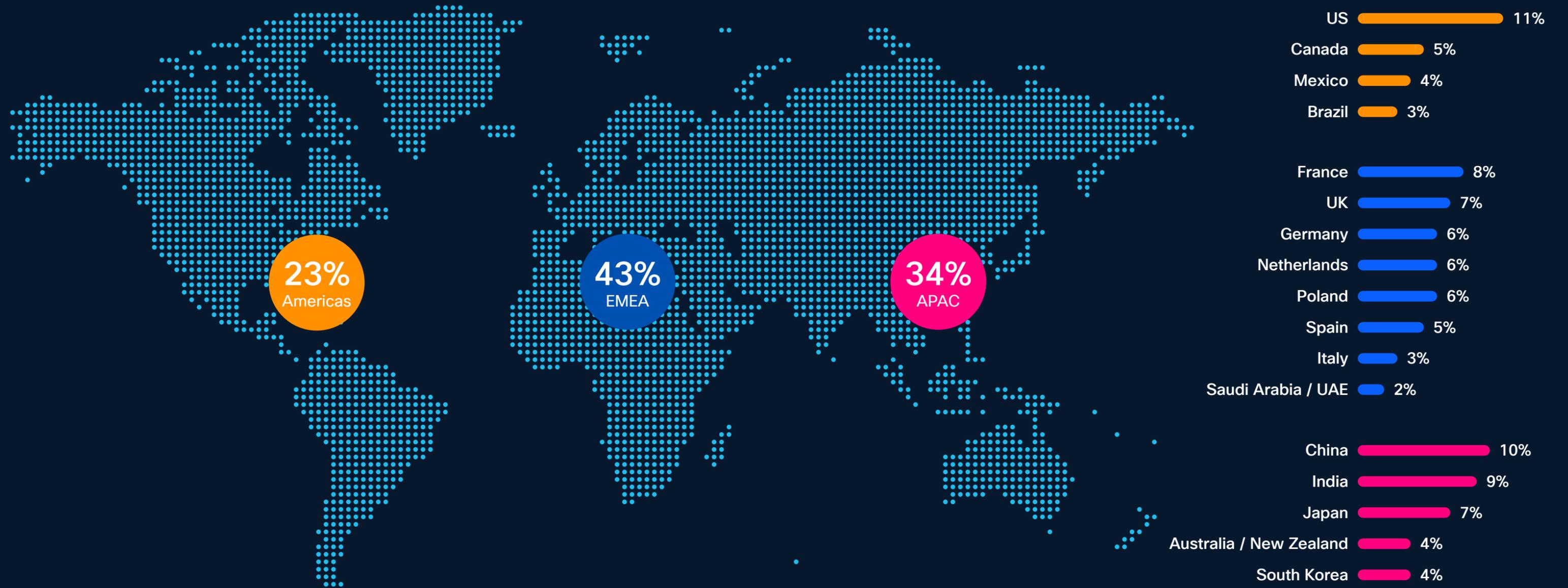
● Employed full-time	98%
● Employed part-time	2%

Department



Demographics & firmographics

Country



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