

# 2022 Global Tech Outlook

A Red Hat® report

From June through August 2021, Red Hat surveyed 1,341 information technology (IT) leaders and decision makers to better understand where they are on their digital transformation journeys, their IT and non-IT funding priorities, and the types of infrastructure on which they are running their applications. The respondents mostly work at companies with more than US\$100 million in revenue.

This is the eighth year we've conducted this research. While we're always probing new aspects of technology usage, many of our questions are consistent from year to year, allowing us to explore trends over time.

**Read on to see what we gleaned from this year's survey in six key areas.**

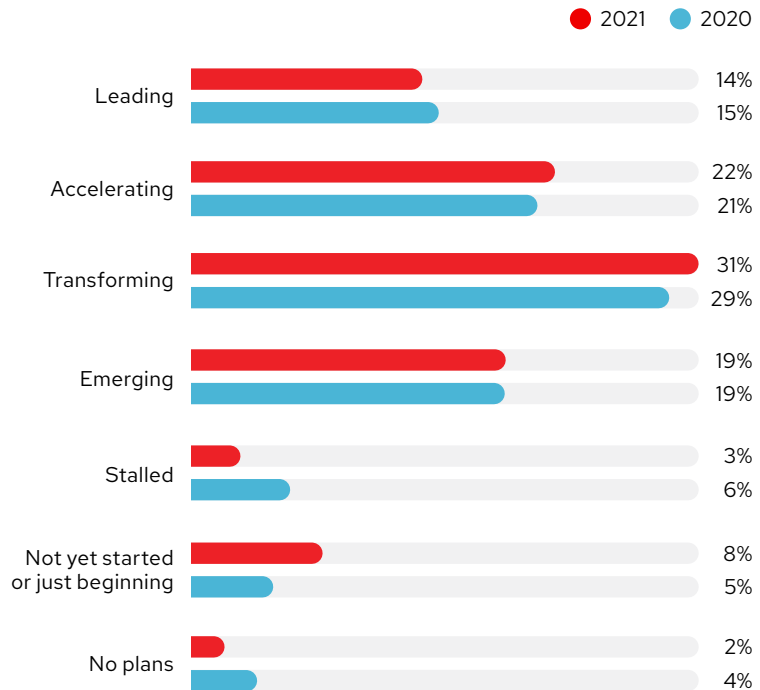
# 01

## Digital transformation continues apace.

Companies are significantly less likely this year to be stalled or have no plans, and more are transforming and accelerating their efforts.

**Chart 1**

*Currently, where is your company in its journey to digital transformation?*



Companies cited the global pandemic (52%) and revenue increases (22%) as reasons for their acceleration. The industries furthest along in digital transformation (leading) were utilities and energy (23%), healthcare (19%), and financial services (18%). See Chart 1 in the appendix for an industry respondent breakdown.

The stage at which companies placed themselves on their digital transformation journeys hasn't changed much since last year. For example, the percentage in the accelerating stage increased from 21% to just 22% this year. However, more significant differences were seen among those placing themselves in earlier stages: this year, respondents were less likely to either have stalled digital transformation plans (down from 6% to 3%) or have no plans (4% to 2%) and more likely to report having plans that were not yet started or just beginning (5% to 8%).

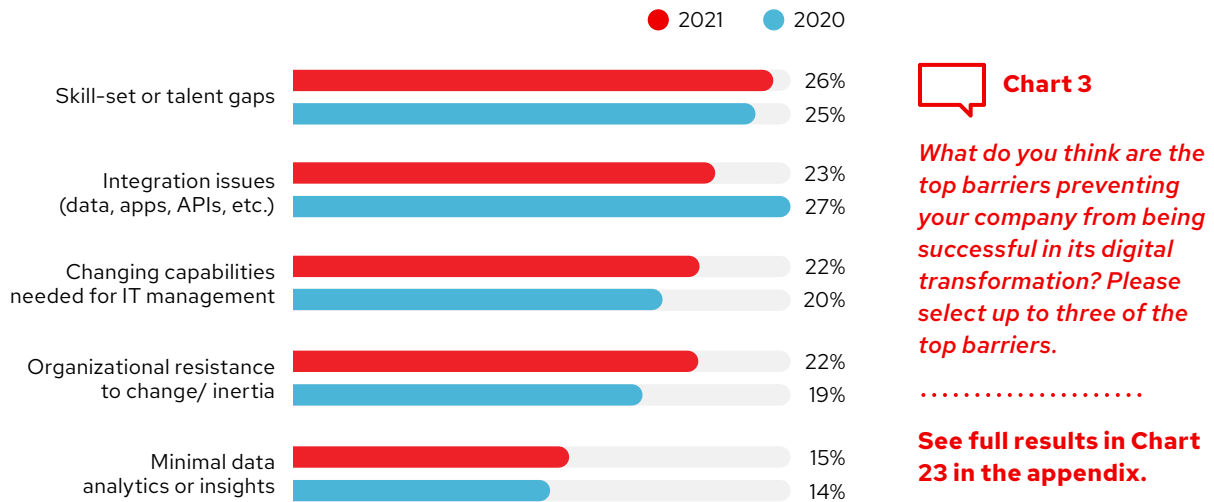
These shifts suggest that about half of companies without plans or with stalled projects in 2020 progressed their digital transformation initiatives. And while most companies have plans for digital transformation, newly created plans have likely made little progress over the past year.

Respondents drawn from a Red Hat customer list answered many of the questions in this survey similarly to those from a broader panel of IT leaders. But there was significant divergence in one area; 19% of Red Hat customers placed themselves in the leading stage compared to only 10% of other respondents.



Skill-set or talent gaps took the lead in this year's survey as the top barrier to digital transformation.

Fewer respondents selected integration issues among their top three barriers compared to last year (27% to 23%), and more chose organizational resistance to change or inertia (19% to 22%).

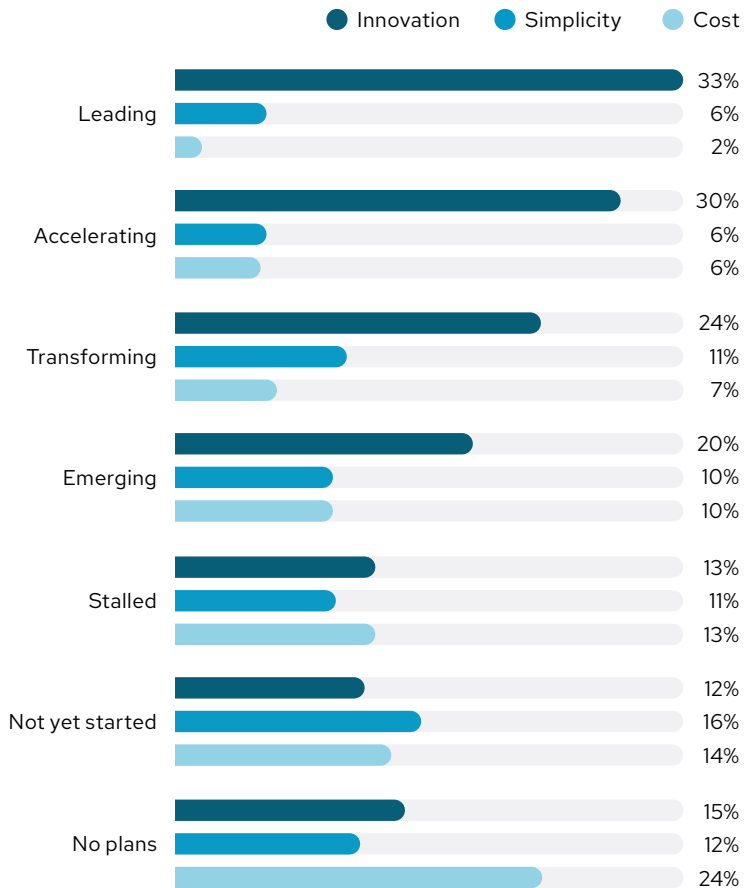


It's also interesting to see how organizational priorities shift between the different stages of digital transformation initiatives. Organizations in earlier stages were more likely to focus on cost reduction and simplification. But those in the emerging and other later stages most often chose innovation as their top priority. This pattern suggests that many digital transformation projects start as IT efficiency efforts but, later, come to be seen as crucial for improving competitiveness, revenue growth, and customer experience.

**Chart 4**

*If you were to characterize your absolute top priority for your company's digital transformation in a single term, which of the following would best fit?*

**Showing response options with greatest variance by digital transformation stage**

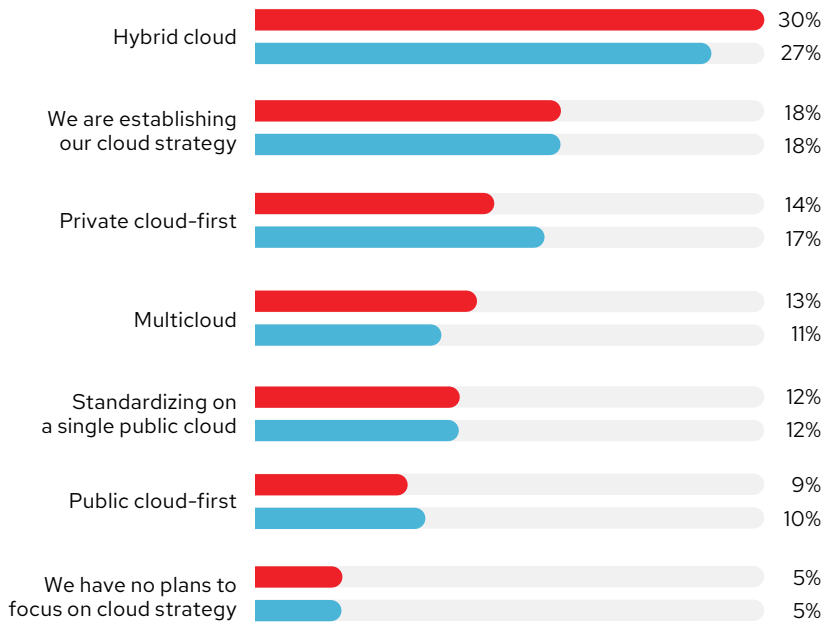


## 02

**Hybrid cloud strategies continue to dominate.**

While 18% of organizations are still establishing a cloud strategy, a hybrid cloud approach is most common (30%).

Hybrid cloud remains the most common cloud strategy overall. If we add organizations who chose multicloud—a term that many use interchangeably with hybrid cloud—the total selecting a cloud strategy relying on more than one cloud rises to 43%—up five percentage points from last year.

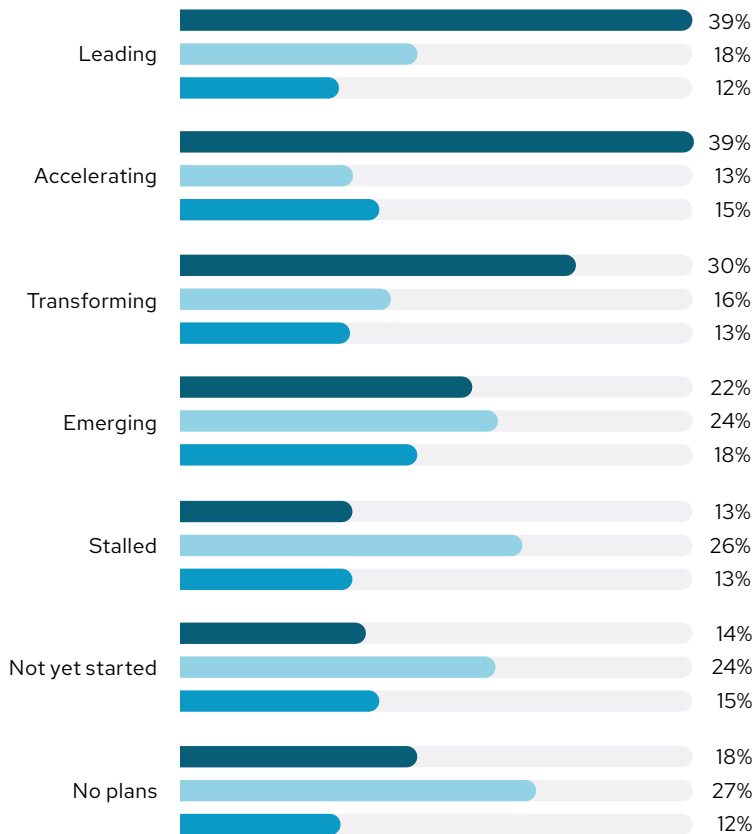


**Chart 5**

*Which of the following best describes your cloud strategy?*

- 2021
- 2020

Those in later stages of their digital transformation journeys were the most likely to be using a hybrid cloud strategy.



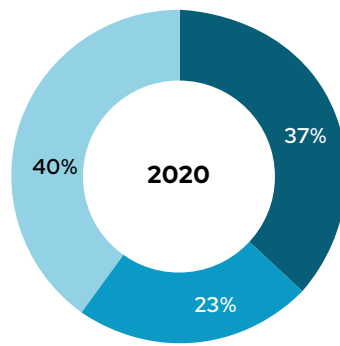
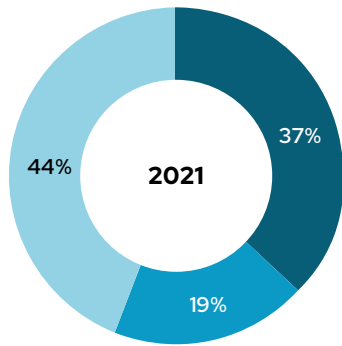
**Chart 6**

*Which of the following best describes your cloud strategy?*

**Showing response options with greatest variance by digital transformation stage**

- Hybrid cloud
- We are establishing our cloud strategy
- Private cloud-first

The plurality of self-managed applications (44%) are running on hybrid cloud infrastructure, up four percentage points from last year. Exclusive use of public clouds decreased by four percentage points while on-premise datacenter usage stayed the same.

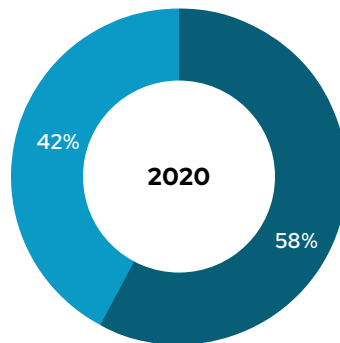
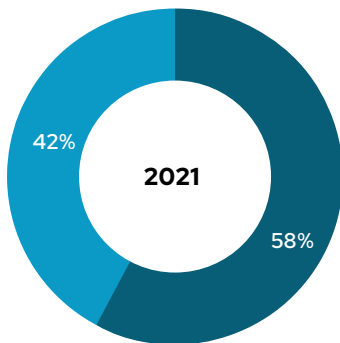


**Chart 7**

*Of the apps you're running yourself (not SaaS), what infrastructure do your applications run on?*

- On-premise (datacenter) only
- Public cloud only
- Hybrid (on-premise and public combined)

The percentage of applications running as Software-as-a-Service (SaaS) also remained the same this year at 58%.

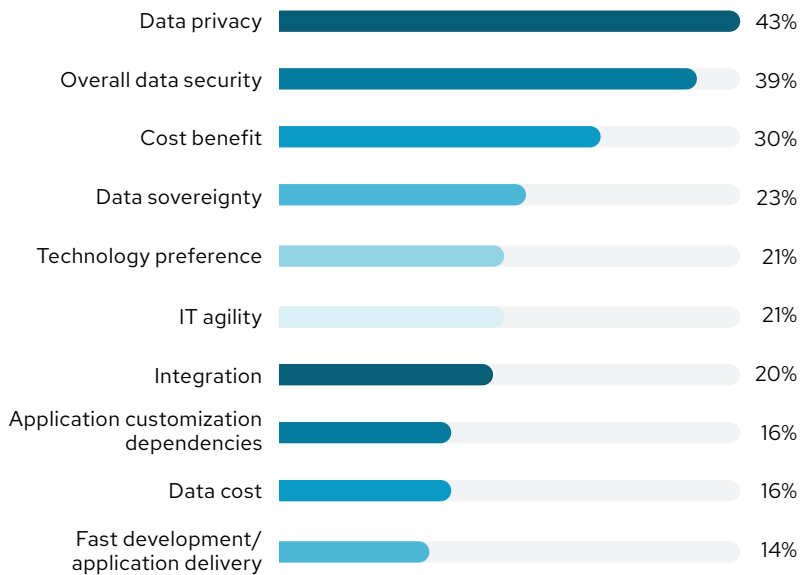


**Chart 8**

*What percentage of your enterprise applications are you consuming as a service (SaaS) versus building and managing yourself?*

- SaaS
- Self-managed apps

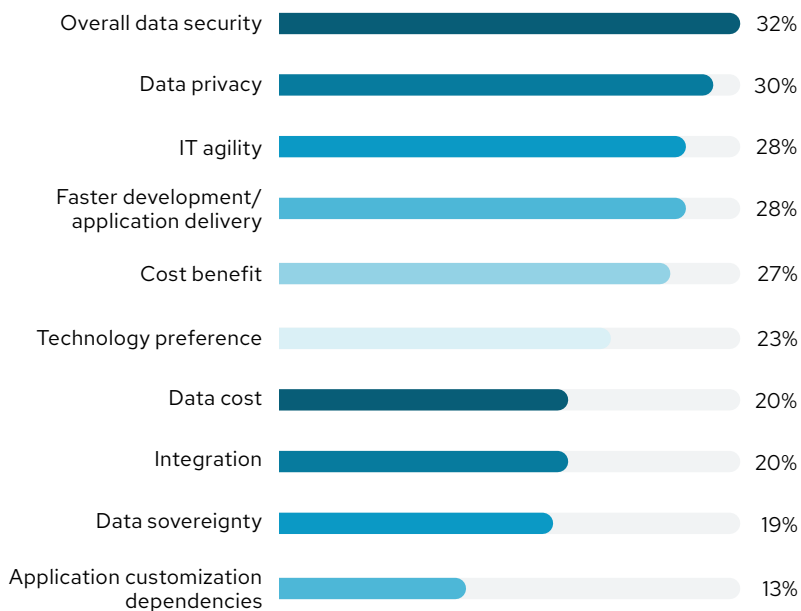
Why do respondents run applications on-premise? Data privacy (43%) and overall data security (39%) are well in the lead. Data sovereignty also appears in the top five reasons. These findings are not surprising; similar reasons have long motivated organizations to maintain, control, and operate private datacenters.



**Chart 9**

*What are the main reasons for having your applications run on-premise only today? Select up to three answers.*

How about public clouds? Why are they used? Data privacy and overall data security concerns predominate here as well, albeit with a smaller lead over other top reasons. This pattern captures a long-standing debate over the security trade-offs between on-premise and public cloud infrastructure. On the one hand, on-premise datacenters provide more control and visibility. However, many organizations likely lack the same level of operational expertise—including in the security domain—that major public cloud providers can bring to bear to protect the integrity of data and systems.



**Chart 10**

*What are the main reasons for having your applications run on public cloud only today? Select up to three answers.*

# 03

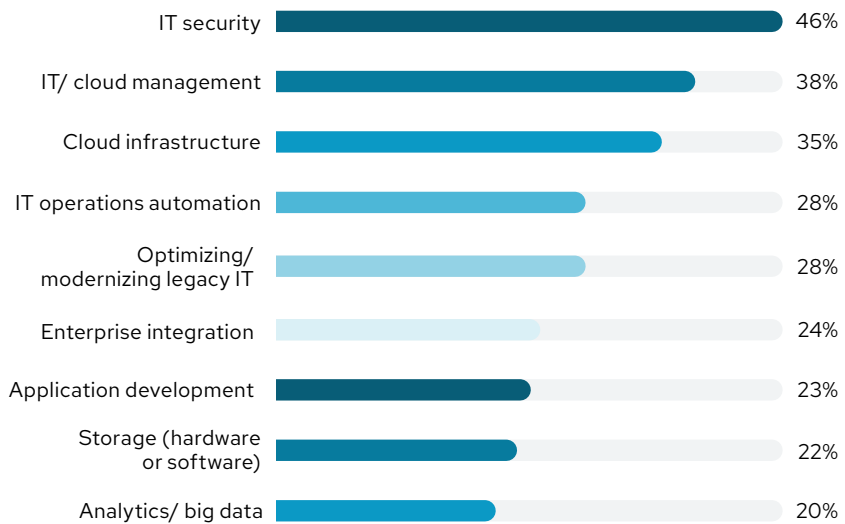
## Security is consistently top of mind.

Selected by 46% of respondents, IT security is by far the most common overall funding priority moving into 2022. This increased focus is also visible across other funding areas.

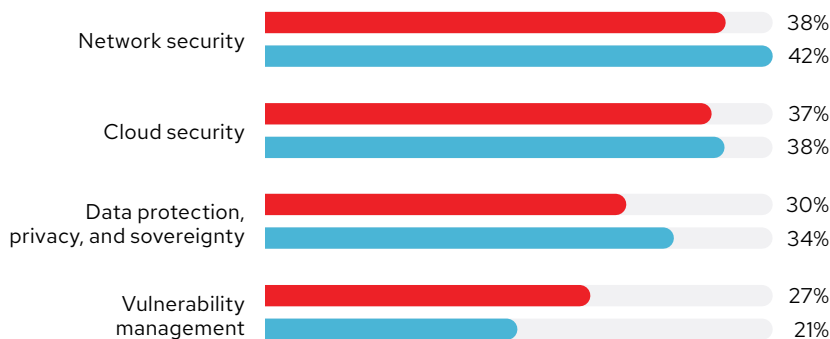
Security-related questions appeared throughout this survey. Among organizations' top IT technology funding priorities for 2022, IT security was by far the most common, selected by 46% of respondents, consistent with last year's results.

**Chart 11**

*Over the next 12 months, what are your company's top IT technology funding priorities? Select up to three answers.*



Network security remains the highest security funding priority at 38%, although that represents a four percentage point drop from last year. Cloud security was close behind at 37%. Vulnerability management saw the biggest increase in prioritization since last year; it shot up from 21% to 27% (see the full results in Chart 12 in the appendix).



**Chart 12**

*Over the next 12 months, what are your company's top funding priorities for security? Select up to three answers.*

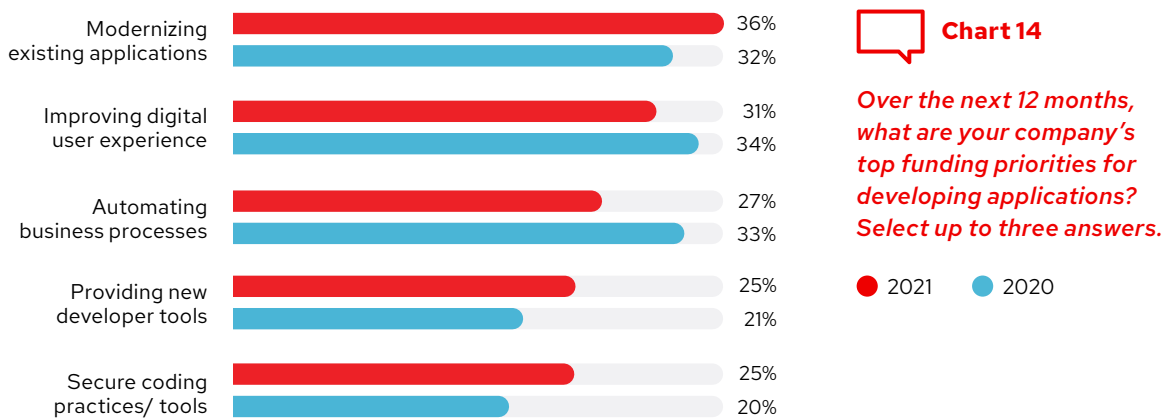
● 2021 ● 2020



The past year has seen a steady barrage of news headlines about data breaches. It's therefore somewhat surprising that the percentage of respondents identifying data protection, privacy, and sovereignty as top priorities declined four points to 30% this year.

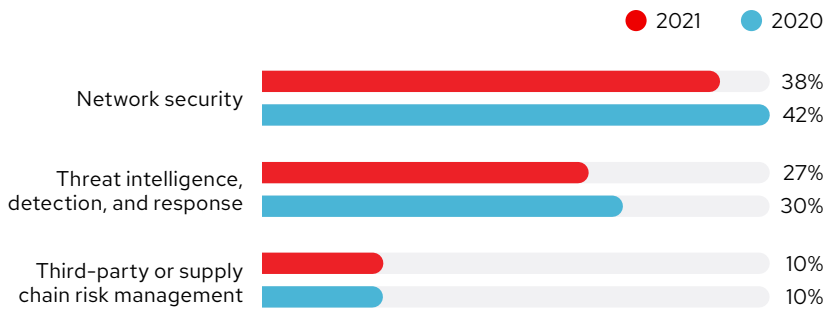
However, it became a more common priority among those in technology, transportation and logistics, and utilities and energy (see Chart 13 in the appendix); this could be related to the Colonial Pipeline breach, which had direct, well-publicized consequences for these industries.

Applications development also saw an increased focus on security this year. This year 25% chose secure coding practices and tools as one of their top three funding priorities compared to 20% last year (see the full results in Chart 14 in the appendix).



Clearly, not everything can be a funding priority, but less common funding priorities still warrant a closer look.

Particularly striking was that third party or supply chain risk management was the lowest security funding priority at 10%, the same as last year. This question primarily refers to the use of software components, such as libraries, as part of an organization's own applications. This code, which is often open source, makes up the large majority of most application code bases, so it's important to verify that these components and their dependencies are up to date and kept properly patched.



**Chart 15**

*Over the next 12 months, what are your company's top funding priorities for security?*

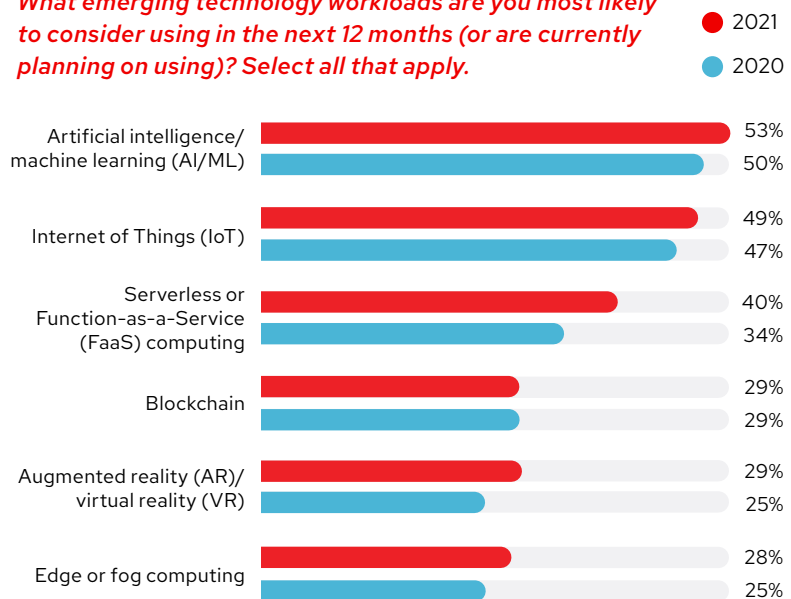
**See full results in Chart 12 in the appendix.**

Given well-publicized exploits in the supply chain, the lack of funding in this area is surprising and suggests that many organizations have yet to start seriously thinking about this important area of software security, at least in the context of a "supply chain." This aspect of the security landscape is worth tracking to see what changes in the near future.

The percentage of organizations considering or planning to use emerging technology increased across many workloads this year, with AI/ML at 53% and IoT at 49%.

**Chart 16**

*What emerging technology workloads are you most likely to consider using in the next 12 months (or are currently planning on using)? Select all that apply.*



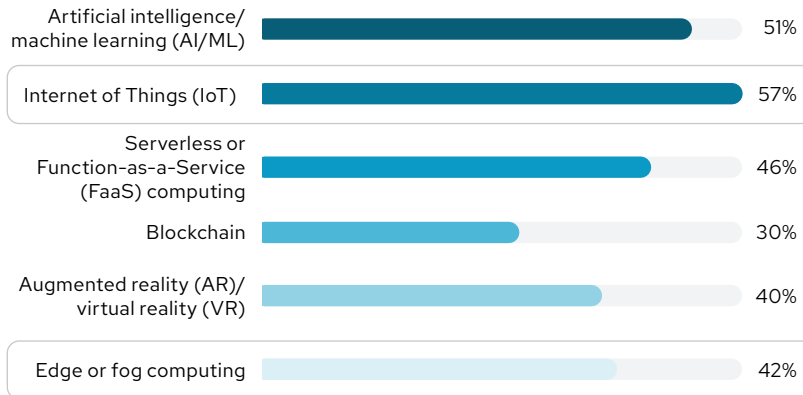
If you want to consider IoT and edge computing in combination, as is often the appropriate lens in the enterprise space, 61% chose one or the other or both, which puts that bucket of emerging technologies in the lead.

# 04

## Artificial intelligence and machine learning (AI/ML) and the Internet of Things (IoT) continue to dominate emerging technology planning.

If you consider IoT and edge computing in combination, 61% are planning to use one or the other or both in the next 12 months.

Telecommunications service providers in particular are more likely to focus on IoT and edge workloads and slightly less likely to be considering AI/ML.

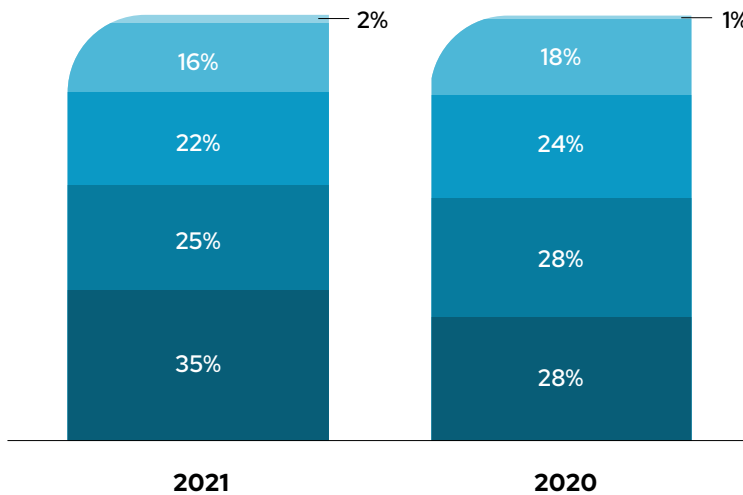


**Chart 17**

*What emerging technology workloads are you most likely to consider using in the next 12 months (or are currently planning on using)?*

**Showing telecommunications service provider respondents**

Selecting, deploying, and life cycle managing AI/ML tools and frameworks emerged as the clear top challenge to get a ML project up and running at 35%, seven percentage points above last year’s result. Collaboration across teams—historically harder to address—is receding in importance, as emerging solutions like managed cloud data services are helping organizations offload some of the operational complexity that can create isolation.



**Chart 18**

*What is your top challenge to get a machine learning project up and running?*

- Selecting, deploying, and life cycle managing AI/ML tools and frameworks
- Collaboration across teams to get ML models into production
- Getting IT to provision infrastructure
- Getting access to relevant data
- Other

# 05

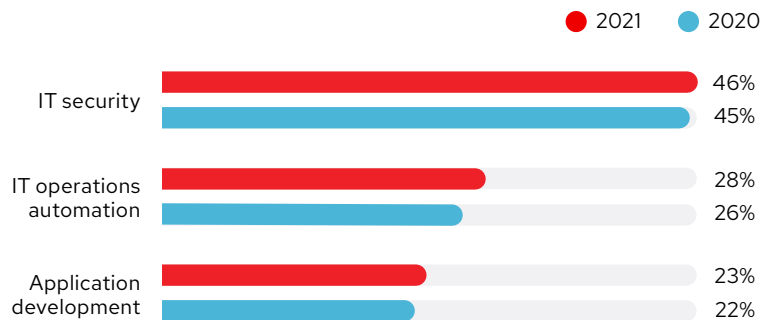
## Automation ticks up.

Like security, investments in automation are being prioritized across many areas going into 2022.

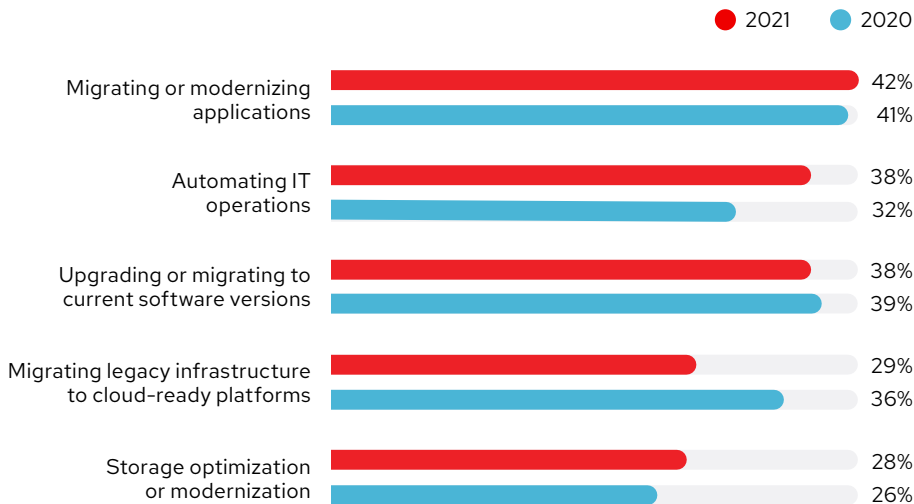
While IT operations automation is still middle-of-the-pack when it comes to top IT funding priorities (28%), that's up two percentage points from last year, and automation played into other funding priorities as well.

**Chart 19**

*Over the next 12 months, what are your company's top IT technology funding priorities? Select up to three answers.*



For example, automating IT operations was the second most common funding priority for optimizing legacy IT (38%), the biggest increase from the prior year.

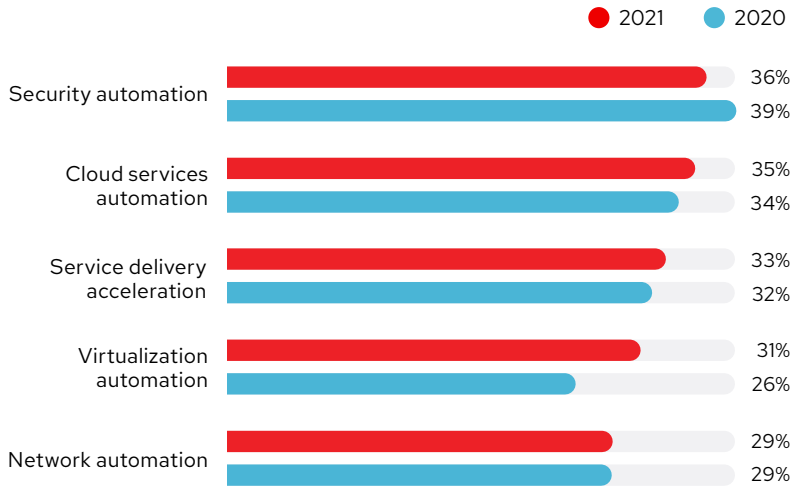


**Chart 20**

*Over the next 12 months, what are your company's top funding priorities for optimizing your existing (legacy) IT? Select up to three answers.*

**Chart is showing the top five answer selections.**

Security automation is again the top funding priority for automation overall at 36%, albeit with a small decrease from the prior year. This reflects how modern DevSecOps practices—and good security practices more broadly—require continuous and automated security throughout the software life cycle.



**Chart 21**

*Over the next 12 months, what are your company's top funding priorities for IT operations automation (e.g. Ansible®, Puppet, etc.)?*

**Chart is showing the top five answer selections.**

# 06

**Training and skills are a higher priority.**

Technical or technology skills training and people and process skills training each increased four percentage points to 37% and 32% respectively.

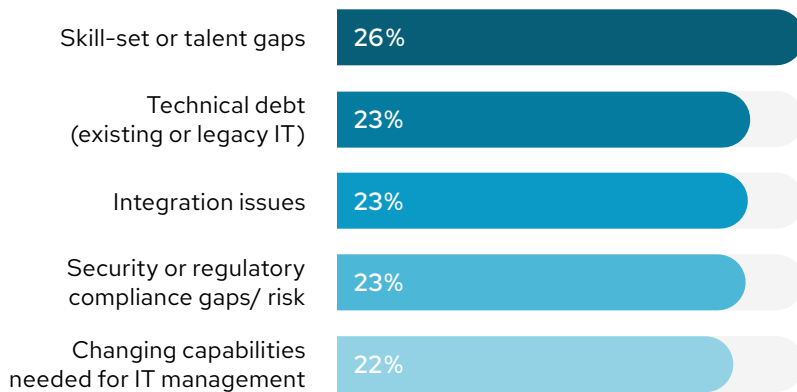
Among funding priorities outside of IT technology and solutions, training saw a substantial uptick this year. Technical or technology skills training and people and process skills training each increased four percentage points to 37% and 32% respectively (see the full results for Chart 22 in the appendix).

**Chart 22**

*Over the next 12 months, what are your company's top funding priorities outside of IT technology products or solutions?*



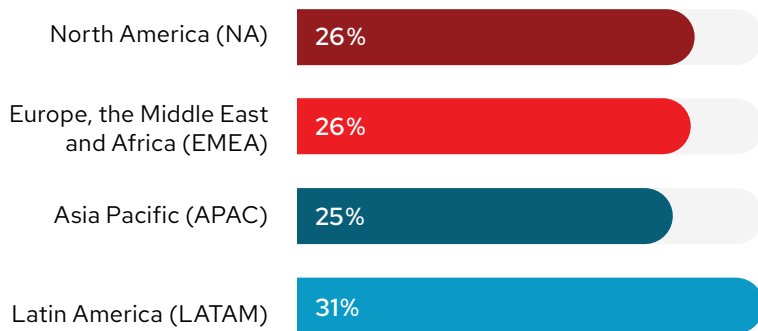
People are an important part of digital transformation. In fact, skill-set or talent gaps was this year's top barrier (26%) to digital transformation, which likely explains why that area leads non-IT funding priorities. This represents something of a shift from both prior survey results and more anecdotal evidence that technology has had a more historical emphasis than people in this area. (See full results for Chart 23 in the appendix.)



**Chart 23**

*What do you think are the top barriers preventing your company from being successful in its digital transformation? Please select up to three of the top barriers.*

Training was a particular priority among respondents from Latin America—primarily from Brazil and Mexico—relative to other geographies.



**Chart 24**

*What do you think are the top barriers preventing your company from being successful in its digital transformation?*

**Showing respondents by regional breakdown**

While these results do not tell us to what degree training priorities actually determine the allocation of money and time, anecdotally, many enterprises better publicized their employee training efforts over the past year.

## **Conclusion**

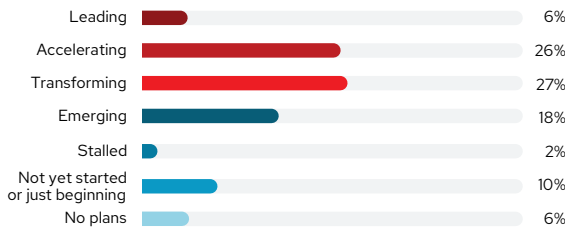
Watching what's happening in digital transformation matters because it pervades everything else. Digital transformation is the progressive accumulation of new approaches to people, process, and technology to create better business outcomes. Closing talent gaps, accelerating application development, and establishing a hybrid cloud platform are all part and parcel of an effective digital transformation strategy. This survey suggests that IT decision makers are generally focused on the right things. They're prioritizing security. They're prioritizing hybrid cloud infrastructures. They're prioritizing their people.

## Appendix

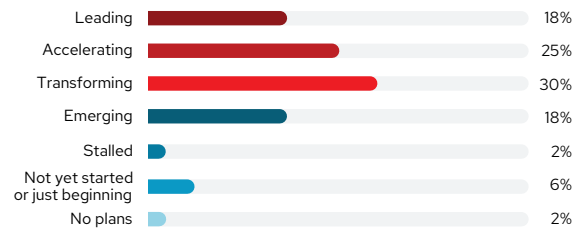
Original survey questions and answers have been condensed in the main text for readability. Please note that some charts highlight top selections rather than all response options. This appendix includes the charts with the full questions and answers as they were posed in the survey and some charts that were omitted from the main text.

**Chart 1 | Digital transformation can be described as the continuous process by which organizations adapt to or lead disruptive changes in their customers and markets by leveraging digital capabilities and innovative technology to create new business models, products, or services. Currently, where is your company in its journey to digital transformation? (Showing respondents by industry breakdown)**

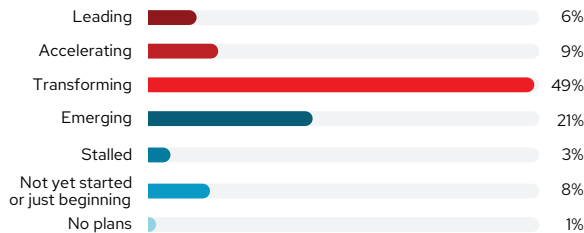
### Education



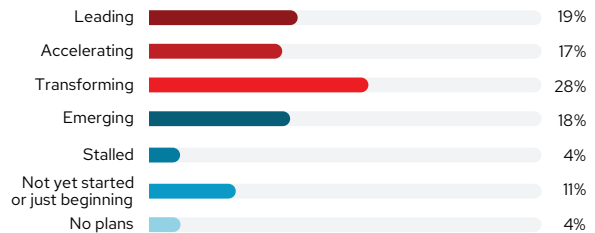
### Financial services or banking



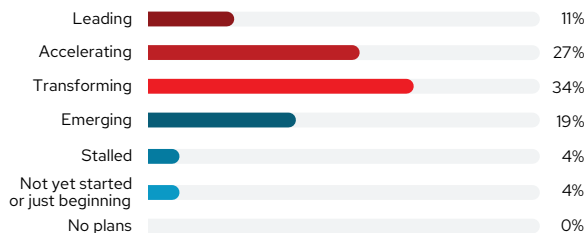
### Government



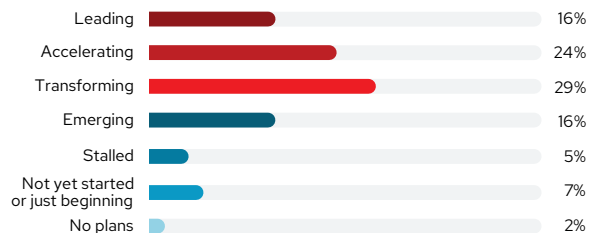
### Healthcare



### Manufacturing

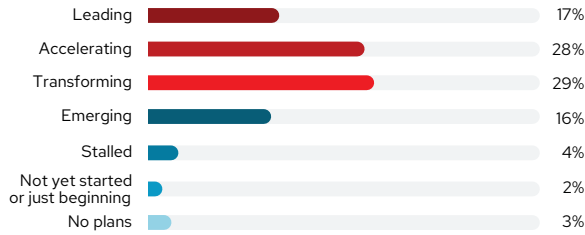


### Technology

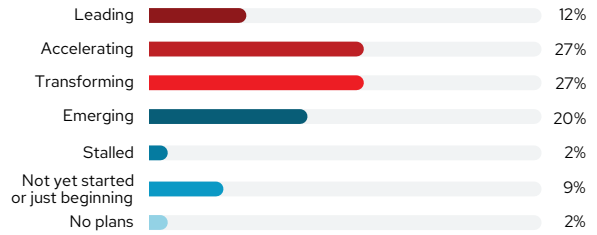




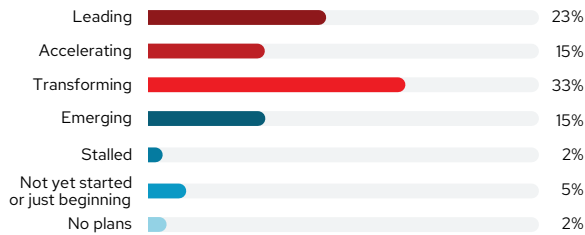
### Telecommunications



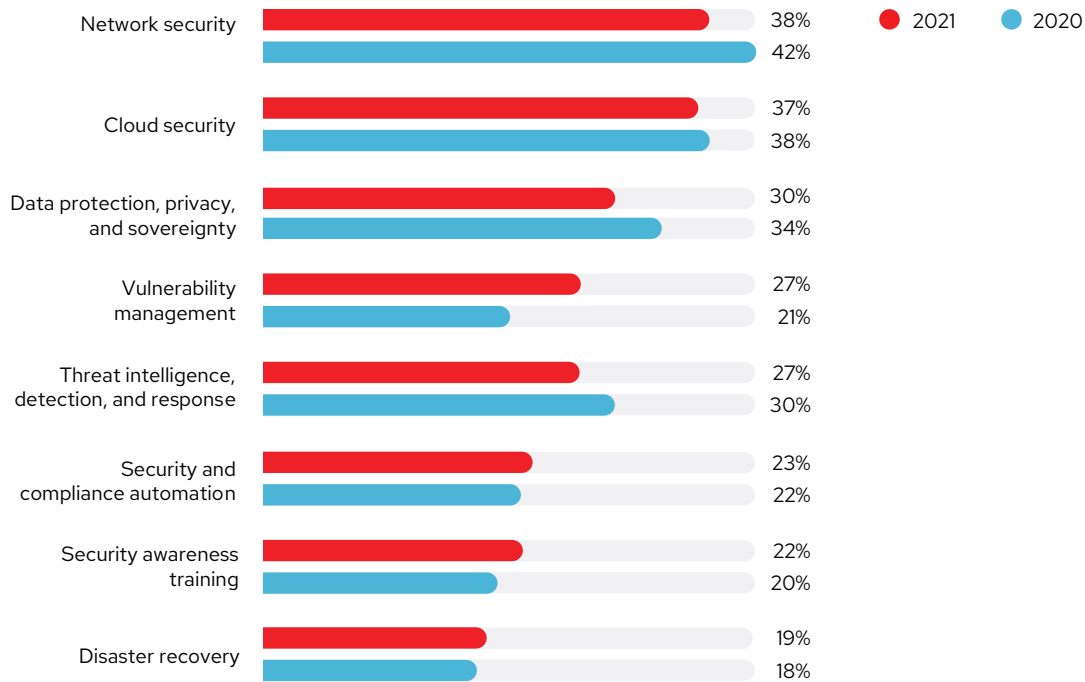
### Transportation and logistics

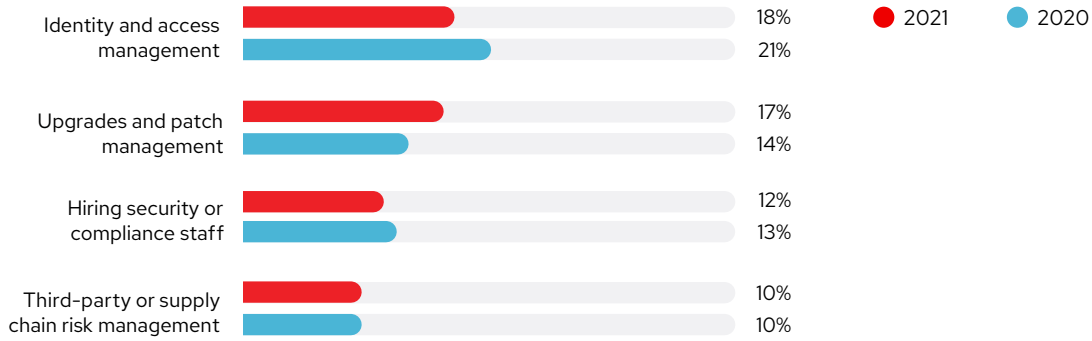


### Utilities and energy

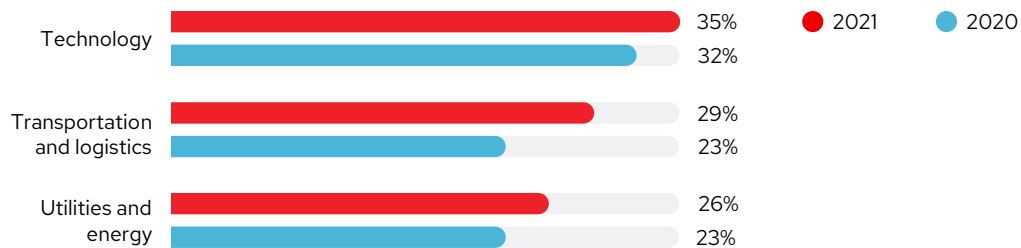


**Chart 12 | Over the next 12 months, what are your company's top funding priorities for security? Please select up to three of the top areas your company is investing in.**

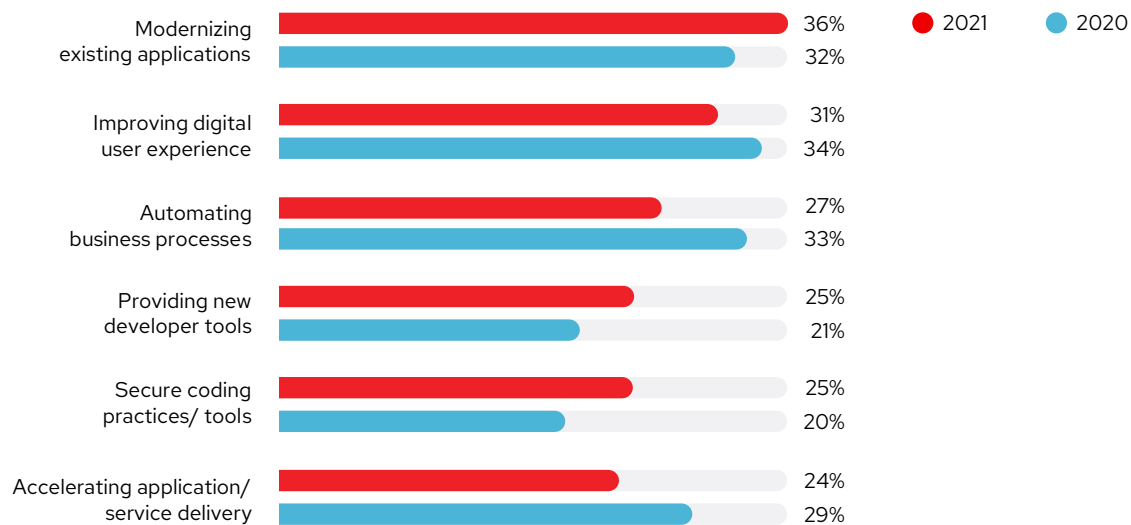


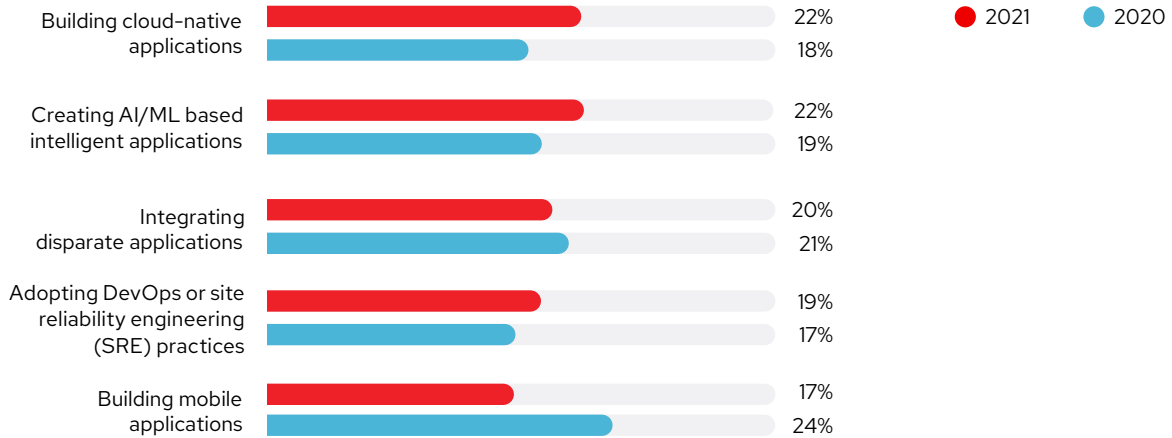


**Chart 13 | Over the next 12 months, what are your company’s top funding priorities for security? (Showing respondents who selected “Data protection, privacy, and sovereignty” by industry)**

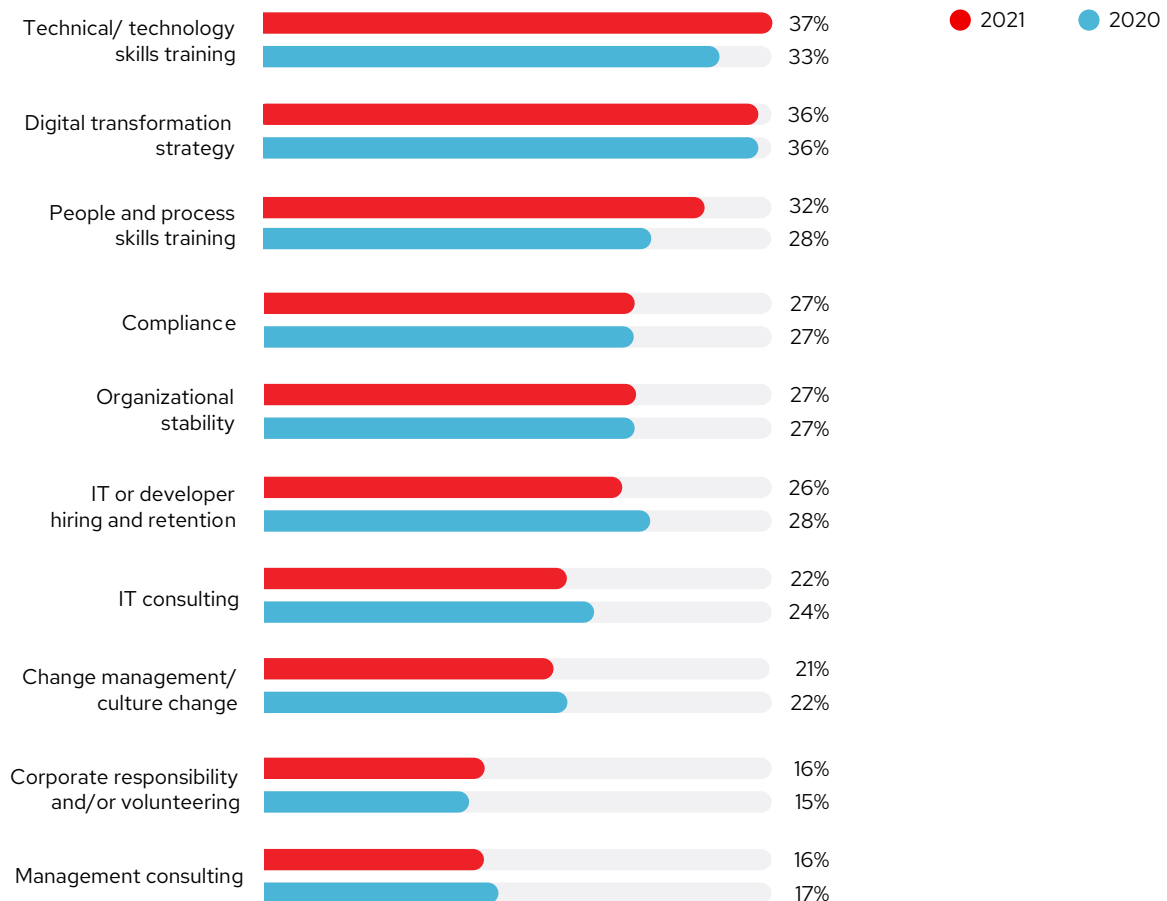


**Chart 14 | Over the next 12 months, what are your company’s top funding priorities for developing applications? Please select up to three of the top areas your company is investing in.**





**Chart 22 | Over the next 12 months, what are your company's top funding priorities outside of IT technology products or solutions? Please select up to three of the top areas your company is investing in.**



**Chart 23 | What do you think are the top barriers preventing your company from being successful in its digital transformation? Please select up to three of the top barriers.**

