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Global Digital Trust Insights Survey 2021

Cybersecurity comes of age
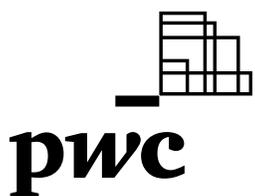
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Content

Cybersecurity comes of age

Five moves to get to the next level

Just decades after coming out from under IT's wing, the cybersecurity profession has matured. Since the Massachusetts Institute of Technology was granted the first US patent for a cryptographic communication system in 1983, the industry has grown by leaps and bounds — with a long list of growing pains.

Armed with the insight and foresight that only experience and wisdom can provide, cyber stands at a critical, pivotal and exciting time for the industry and the organizations and people it serves. Our findings from the Global Digital Trust Insights 2021 survey of 3,249 business and technology executives around the world tell us what's changing and what's next in cybersecurity.

No longer solely reactive — although it is that — cybersecurity has become more thoughtful and forward-thinking, with the knowledge and technologies to stop attacks before they start.

No longer technology-focused — although tech is very much in the picture — security leaders are working closely with business teams to strengthen and increase the resilience of the organization as a whole. As a result, cyber is leveling the playing field with attackers, pushing back and fending off as never before.

The timing couldn't be better. Recent shifts in business models have prompted many enterprises to speed up their digitization programs. CEOs and boards are turning to their CISOs for help increasing their resilience and creating business value.

Technology is maturing, too, simplifying cybersecurity's work and integrating it with the business as a whole. Digital solutions are adding layers of protection and continuously monitoring systems automatically for a simpler, more integrated approach to security.

CISOs are able to take the long, strategic view needed from them now. When spot fires are not demanding their attention, security managers are able to let their imaginations roam, for more creative solutions.

1 Reset your cyber strategy, evolve leadership for these new times
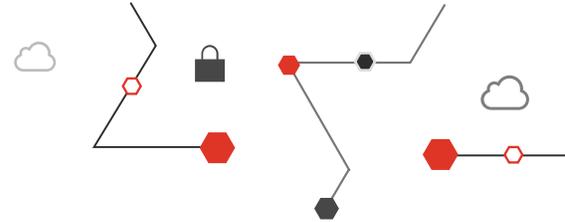
Business transformations are more sweeping and rapid

In the pandemic's first three months, CEOs report, their organizations digitized at surprising speed, advancing to year two or three of their five-year plans. The future is now: digital health, industrial automation and robotics, enhanced ecommerce, customer service chat bots, virtual reality-based entertainment, cloud kitchens, fintech, and more.

The health crisis and economic recession have stoked further change, according to our Global DTI 2021 survey: 40% of executives say they're accelerating digitization — perhaps taking on business strategies they hadn't imagined before.

Their digital ambitions have skyrocketed. Twenty-one percent are changing their core business model and redefining their organizations (the "redefiners"), while 18% are breaking into new markets or industries (the "explorers"). Both categories have doubled since our survey last year.

Doing things faster and more efficiently is the top digital ambition for 29% of executives ("efficiency seekers"), while 31% are modernizing with new capabilities ("modernizers"). More than one-third — 35% — say they're speeding up automation to cut costs, which is no surprise at a time when revenues are down.

Businesses are changing...
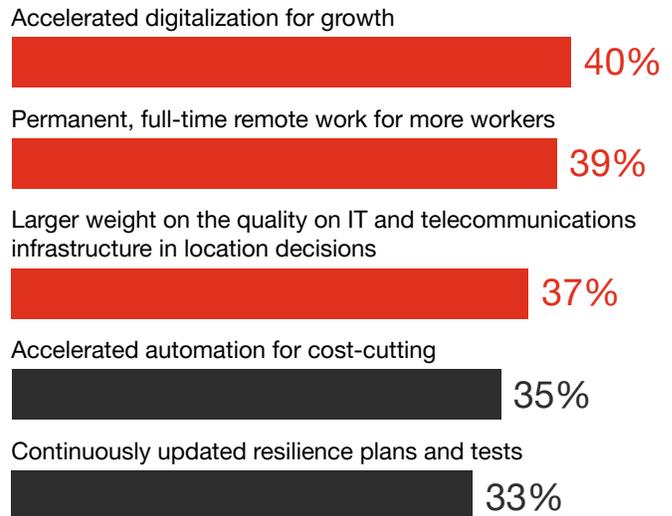
Accelerated digitalization for growth
40%

Permanent, full-time remote work for more workers
39%

Larger weight on the quality on IT and telecommunications infrastructure in location decisions
37%

Accelerated automation for cost-cutting
35%

Continuously updated resilience plans and tests
33%

Source: PwC Global Trust Insights Survey 2021, October 2020: base 3,249
Q: Which of the following changes are most likely to be impacts of the COVID-19 experience in your industry?

...and their ambitions are rising...

45% 31% ■2019 ■2020

35% 29%

9% 21%

9% 18%

| Efficiency seekers | Modernizers | Redefiners | Explorers |
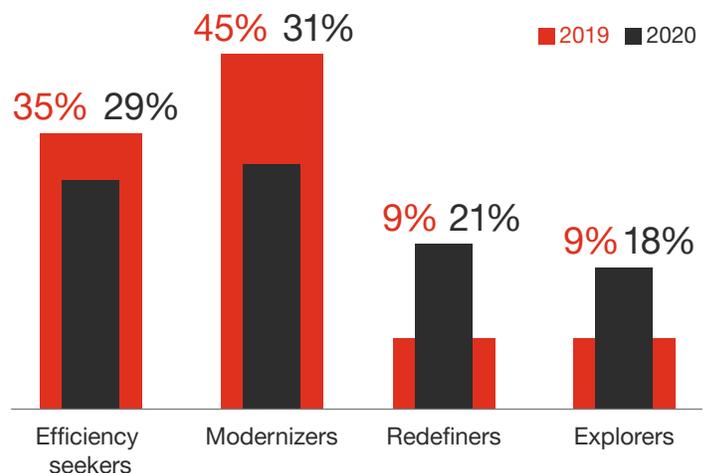
Source: PwC Global Trust Insights Survey 2021, October 2020: base 3,249
Q: What is the primary aspiration for your enterprise-wide, technology-driven business transformation or major digital initiatives?
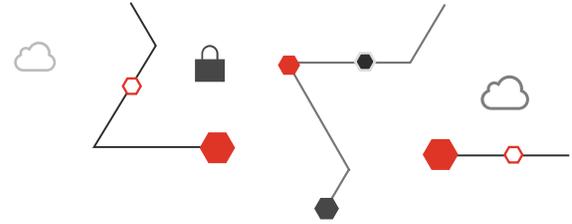
New times call for a resetting of cyber strategy

New technologies and business models — and the fast pace of adoption — bring new risks. But, like the high-powered brakes on a racecar, cybersecurity makes high-speed digital change a lot safer.

Nearly all (96%) say they'll adjust their cybersecurity strategy due to COVID-19. Half are more likely now to consider cybersecurity in every business decision — that's up from 25% in our survey last year.

Savvy CISOs are in step with the vision and goals of their enterprise as a whole, not just IT. "One of our key jobs is to engage with our partners throughout the organization that will help us achieve our objectives. If I haven't created a culture where people want to engage and proactively come to security rather than shy away from us, I don't think we'll be able to get there," said Katie Jenkins, CISO, Liberty Mutual.

...and so are their cyber strategies

Cybersecurity and privacy baked into every business decision or plan

50%
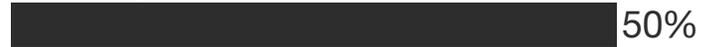
New process of budgeting for cyber spend or investments

44%

Better and more granular quantification of cyber risk

44%

More frequent interactions between CISO and the CEO or boards

43%

Greater resilience testing for more low-likelihood, high-impact events

43%

No change due to COVID-19

4%

Don't know/unsure

1%

Source: PwC Global Trust Insights Survey 2021, October 2020: base 3,249
Q: Which of the following changes are most likely to be impacts of the COVID-19 experience on cybersecurity in your industry?

"

One of our key jobs is to engage with our partners throughout the organization that will help us achieve our objectives. If I haven't created a culture where people want to engage and proactively come to security rather than shy away from us, I don't think we'll be able to get there.

—Katie Jenkins
CISO, Liberty Mutual
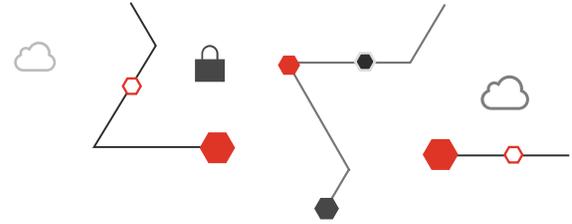
CISOs are evolving to the needs of business

New times also call for new CISO leadership modes. Forty percent of executives say they need the CISO to be a transformational leader (20%) or an operational leader and master tactician (20%).

These roles are encompassing and call for the multifaceted expertise that CISOs have built. The transformational CISO leads cross-functional teams to match the speed and boldness of digital transformations with agile, forward-thinking security and privacy strategies, investments, and plans. The operational leader and master tactician is a tech-savvy and business-savvy CISO who can deliver consistent system performance, with security and privacy throughout the organization and its ecosystem amid constant and changing threats.

Some CISOs already inhabit these roles, and are exhibiting four qualities most prized by executives: strategic thinking (38%), the ability to take smart risks (38%), leadership skills (36%), and ability to recognize and nurture innovation (34%).

From cybersecurity to digital trust

It's a critical juncture for cybersecurity and CISOs. A business-driven cyber strategy is the important first step for business and security leaders amid sweeping, rapid business digitization. This reset not only defines the expanding role of the CISO, it also affects the way the organization sets cyber budgets, invests in security solutions, plans for resilience, and enhances its security organization. It determines whether CISOs may grow to become stewards of digital trust, able to lead their organizations securely into the new era with strategies to protect business value *and* to create it.

CISOs need to play encompassing roles to help

Operational leader and master tactician
20%

Transformational leader
20%

Experience officer
16%

Enterprise risk authority
15%

Data value creator and protector
12%

Resilience czar
10%

Steward of costs
8%

Source: PwC Global Trust Insights Survey 2021, October 2020: Base 3,249
Q: What is the primary role your organization's CISO needs to play to help your organization achieve its growth and strategic objectives in the next two years?

2 Rethink your cyber budget to get more out of it
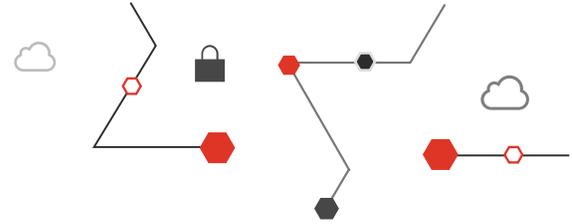
Cyber budgets will rise for half of the businesses surveyed

Fifty-five percent of technology and security executives in our Global DTI 2021 survey plan to increase their cybersecurity budgets, with 51% adding full-time cyber staff in 2021 — even as most (64%) executives expect business revenues to decline. Clearly, cybersecurity is more business-critical than ever before.

Still, 26% will need to do more with less, and 13% will have to make do with static budgets.

"The circumstances we find ourselves in with the economy are putting a lot of pressure on security organizations to make sure that the investments we're making are efficient and high-value," says Katie Jenkins, CISO, Liberty Mutual.

Getting the most value for every cybersecurity dollar spent becomes more critical as entities digitize: every new digital process and asset becomes a new vulnerability for cyber attack.

More are increasing cyber budgets than decreasing them in 2021
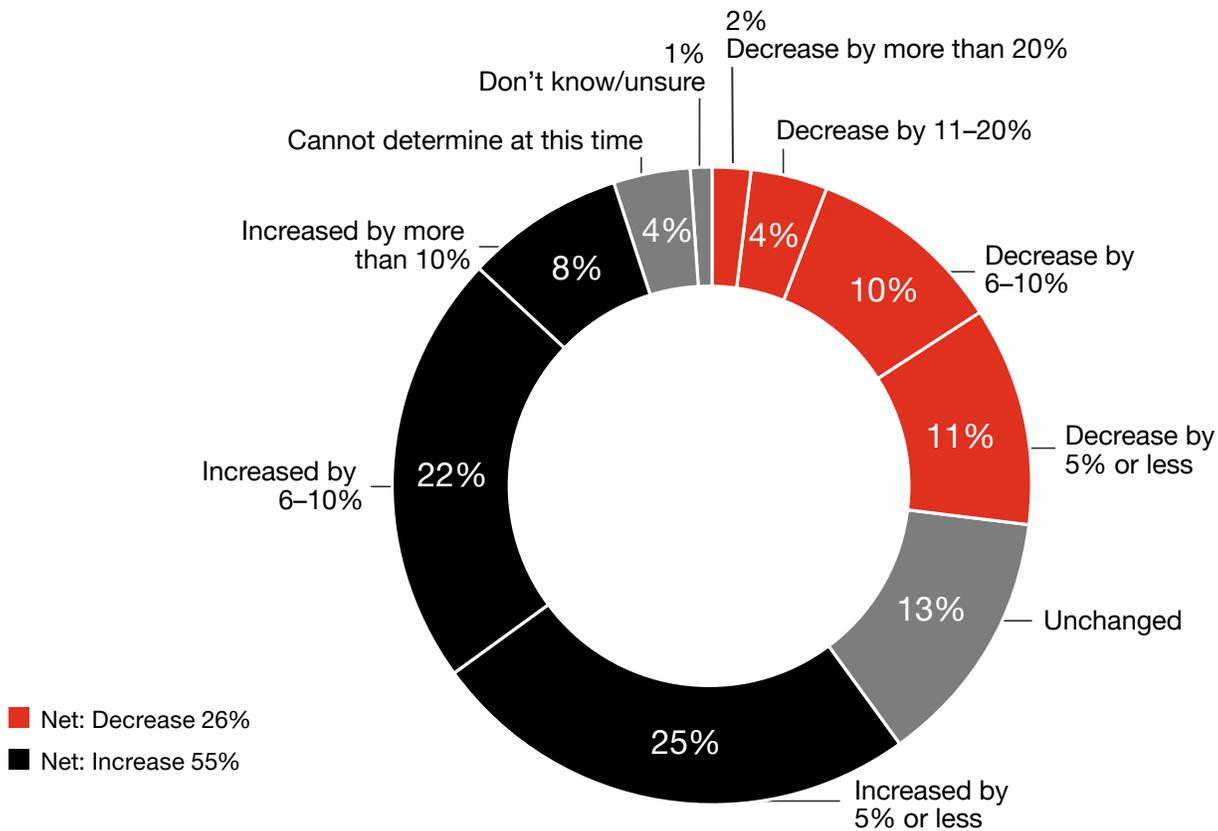
2% Decrease by more than 20%

1% Don't know/unsure

Decrease by 11–20%

Cannot determine at this time

4%

Increased by more than 10%

4%

8%

Decrease by 6–10%

10%

Decrease by 5% or less

11%

Increased by 6–10%

22%

13% Unchanged

25%

Increased by 5% or less

■ Net: Decrease 26%
■ Net: Increase 55%

"

The circumstances we find ourselves in with the economy are putting a lot of pressure on security organizations to make sure that the investments we're making are efficient and high-value.

—Katie Jenkins
CISO, Liberty Mutual
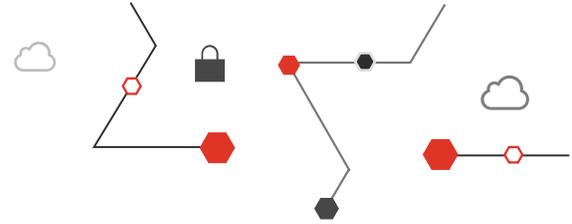
Most executives lack confidence in the budgeting process

More than half (55%) of business and tech/security executives lack confidence that cyber spending is aligned to the most significant risks. Or that their budget funds remediation, risk mitigation and/or response techniques that will provide the best ROI (55%). Or that budgets provide the resources needed for a severe cyber event (55%). Or that the process monitors the cyber program's effectiveness compared to expenditures (54%).

Cyber budgets could — and should — link to overall enterprise or business unit budgets in a strategic, risk-aligned, and data-driven way, but 53% lack confidence that their current process does this.

And with regard to preparedness for future risks, executives are not confident that cyber budgets provide adequate controls over emerging technologies (58%).

With confidence lagging in the process used to fund cybersecurity, executives say it's time for an overhaul. Forty-four percent say they're trying new budgeting processes, and considering how best to convince the CEO and board to assign needed funds. **Nevertheless, more than one-third strongly agree that organizations can strengthen their cyber posture while containing costs — thanks to automation and rationalization of tech.**

Confidence in current cyberbudgets and processes is low today

(Percentage of respondents who are not 'very confident')

Our cyber budget/process is:

Linked to overall enterprise or business unit budgets in a strategic, risk-aligned, and data-driven way

53.2%

Includes process monitoring the effectiveness of our cyber program against the spending on cyber

54.4%

Allocated towards the most significant risks to the organization

54.8%

Focused on remediation, risk mitigation, and/or response techniques that will provide the best return on cyber spending

55%

Integrated with decisions on capital requirements needed in the event of a severe cyber event

55.4%

Adequate digital trust controls over emerging technologies for security, privacy, and data ethics

58%

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: Regarding your organization's current cyber budget and processes, how confident are you with regard to the following?
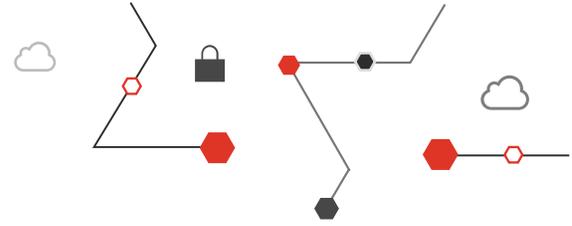
Putting a dollar amount on cyber risk is a must

Cyber managers can do more with less, but to do so they need to quantify cyber risk and use the information to make smart choices that protect the business's security, privacy, *and* cash flow.

Seventeen percent of the executives in our Global DTI survey have quantified cyber risks, and are realizing benefits from doing so. For instance, a highly acquisitive company that quantifies cyber risks can evaluate deal opportunities faster and more systematically. A financial institution that handles millions of transactions a day can do daily and weekly threat and vulnerability assessments — staying alert to the performance of underlying controls and any need to reallocate resources.

Cyber risk quantification is not for the faint-hearted, with many obstacles in the way: lack of a widely accepted model, lack of people who understand cyber and risks from a business lens, and lack of scalability. Nevertheless, nearly 60% are beginning to quantify risks or have implemented at scale. And nearly everyone else (17%) plans to begin risk quantification within the next two years.

Raising confidence in budget decisions

The economics of cybersecurity has long focused on the cost side (compliance, updating capabilities, and so on). This must change. The cyber strategy reset — considering cybersecurity in every business decision — means connecting cyber budgets to overall enterprise or business unit budgets in a strategic, risk-aligned, and data-driven way.

Putting a dollar amount on the *value* of a cyber project, in terms of risk reduction or less costly compliance, allows comparison of the costs and value of cyber investments so they can be prioritized. Quantification also makes it easier to measure the value of the overall portfolio of cyber investments against business objectives. This kind of rigor and sophistication will be increasingly demanded — especially as the markets and regulators hold CEOs and board members more accountable for cybersecurity and privacy.
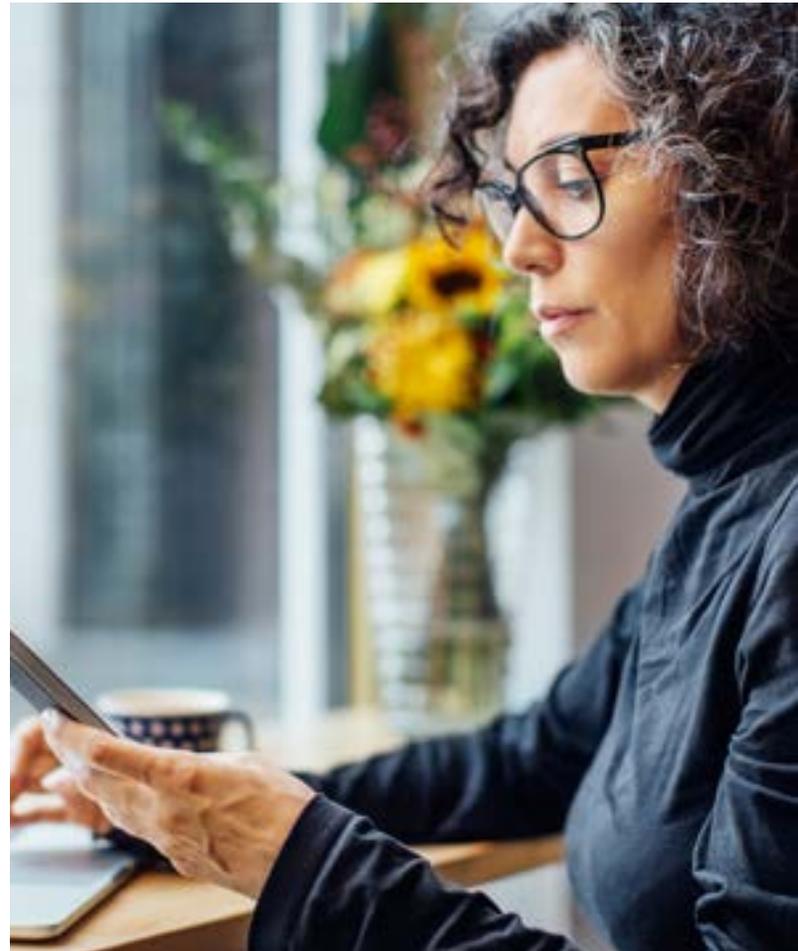
3 Invest in every advantage to level the playing field with attackers
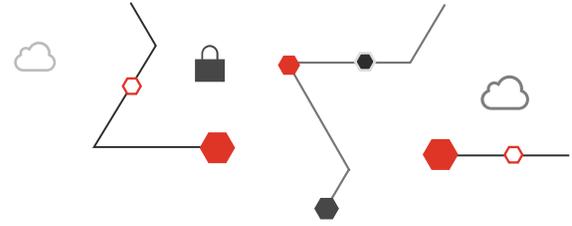
New technologies turning the tables on cybercrime

Innovation is changing the cybersecurity game, giving new advantages to defenders and leveling the playing field with attackers. Cyber startups are hot: in the past decade, some two dozen have attained IPO or M&A values of $1 billion, 10 of them in the last two years, according to CB Insights.

And the existing array of cyber solutions has matured, enabling a shift to Zero Trust architectures, real-time threat intelligence, security orchestration and automation, advanced endpoint protection, identity and access management, and other advanced technologies — prompted in large part by a threefold growth in cloud services.

Early switchers have taken advantage of these developments. But, more important, they're investing in the classic digital transformation trifecta — *people, processes, and technologies* — to close the wide lead that attackers have long held.

In our Global DTI 2021 survey, we looked at 25 new cybersecurity approaches and practices (see chart) and tracked the measures on which organizations say they've made significant progress.

New approaches and mindsets of the early switchers

A minority — between 15% and 19% — of executives say they're already benefiting from some of these new practices. This is the group we call, "early switchers."

Executives from large organizations ($1B+) are more likely to report benefits from making a strategic shift (their "cybersecurity team collaborates more with the business side in delivering business outcomes"); switching to advanced technologies ("investing in advanced technologies to improve the effectiveness of my organization's cyber defense and security detection capabilities"); and restructuring operations ("reducing the cost of cyber operations via automation, rationalisation and/or other solutions.")

Executives from the largest organizations ($10B+) are more likely to report gains from using security models and technologies such as Zero Trust, managed services, virtualization, and accelerated cloud adoption.
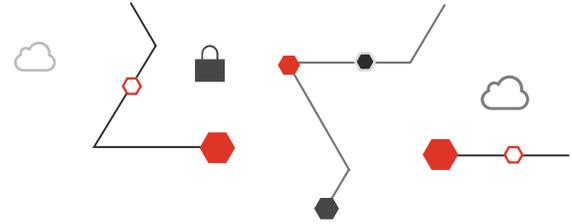
Businesses are moving to new approaches and thinking to improve cybersecurity

People

Improve the security function's skills set

19%	29%	29%

Cybersecurity team to collaborate more with the business side in delivering business outcomes

18%	27%	29%

The CISO's greater alignment with and influence on strategy through interactions with other executives

17%	26%	29%

Capabilities and processes

Embedding security and privacy business initiatives

18%	30%	29%

Managed services (e.g., managed security services, managed detection and response services)

18%	28%	29%

Enterprise-wide information governance model

17%	29%	28%
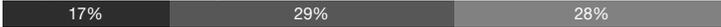
Quantification of cyber risks

17%	29%	30%

Better quantify cyber risks

17%	28%	29%

Unify the reporting across the organization on cyber risks

17%	27%	29%

Tie cybersecurity investments and spending to tangible business metrics or outcomes

17%	26%	28%

Move beyond business continuity planning to cyber resilience

16%	29%	28%
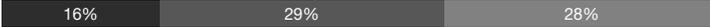
Opt-in to opt-out privacy

16%	27%	28%

Move to real-time processes such as threat intelligence, fraud detection, critical asset inventory, etc.

16%	28%	28%

Technology

Invest in advanced technologies for my organization's cyber defense and security detection capabilities

17%	27%	27%

Reduce the cost of cyber operations via automation, rationalization and/or other solutions

15%	25%	28%
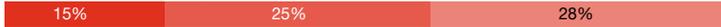
Architecture

Integrated cloud security+network security

18%	29%	29%
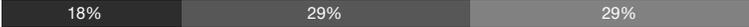
Border-less, de-perimeterized architectures

15%	27%	27%

Zero trust

15%	25%	26%
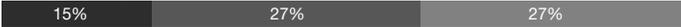
Automation

Real-time monitoring of effectiveness of security controls

19%	28%	29%

Modern identity and access management

19%	29%	29%

Visualization

18%	28%	27%

Modern data discovery, management, and governance

18%	28%	30%

Security orchestration and automation

18%	27%	29%

Accelerated cloud adoption

17%	29%	29%
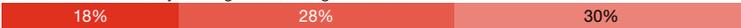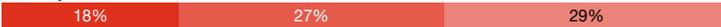
Application of artificial intelligence in cyber defense

17%	25%	28%

■ Realizing benefits from implementation

■ Implemented at scale

■ Started implementing
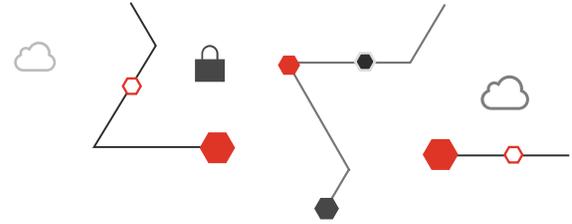
The greater the transformation, the higher the odds of significant progress

Overall, the 3,249 survey respondents reported making 'significant progress' over the past three years on an average of **six** measures, signaling better risk management, greater resilience, increased stakeholder trust, or faster digital transformation. The top outcomes — reported by 43% of executives — are improved customer experiences, quicker responses to incidents and disruptions, and better prevention of successful attacks.

But an elite group of early switchers — those who report realizing benefits from 20 or more of the 25 new practices — say they have made significant progress on at least **12** outcomes.

On the other hand, those who haven't yet shifted to new practices report significant progress on only two or three outcomes.

These findings suggest that investing in every advantage in technologies, processes and the capabilities of your people is critical to making meaningful headway against attackers. And it underscores the importance of having a CISO who can serve as transformational leader or operational leader/master tactician.

Progress on cybersecurity goals in the past three years (indexed scores)

74% Better risk management	77% Greater resilience
• Less burdensome employee experience • Lower costs of compliance • Lower costs of managing risks	• Faster response times to disruptions • Lower downtime and associated costs • Increased prevention of successful attacks
76% Greater trust	76% Business enablement
• Higher customer loyalty • Improved net promoter score • Greater compliance with regulations • Improved confidence of leaders	• Accelerated entry into new markets • Expedited launch of new products • Improved customer experience • Improved employee experience • More successful transformations

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: How much progress has your organization made in cybersecurity in the past three years?
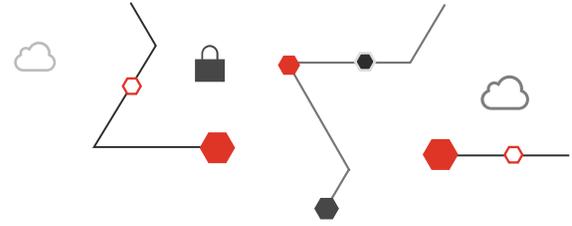
Cloud security is the next big switch

Companies are rapidly moving their operations (75%) and security (76%) to the cloud. They're doing away with static, inherently insecure legacy systems in favor of more dynamic, nimble integrated cloud/network systems that are secure by design.

CISOs who transition their organization to the cloud are able to build in hygiene mechanisms from the beginning — in automated ways. They're also able to eliminate friction from the system and simplify service delivery to their customers.

More than a third (35%) of executives strongly agree that moving to the cloud is foundational for the next generation of business solutions for their organization. And 36% strongly agree that new solutions exist to secure cloud infrastructures better than they have ever been in the past.

Small and medium-size organizations can also modernize

Larger organizations with more resources are applying new technologies and mindsets to turn the tables on attackers. But as the technologies become more affordable and the models refined, small and medium-sized enterprises can benefit as well.
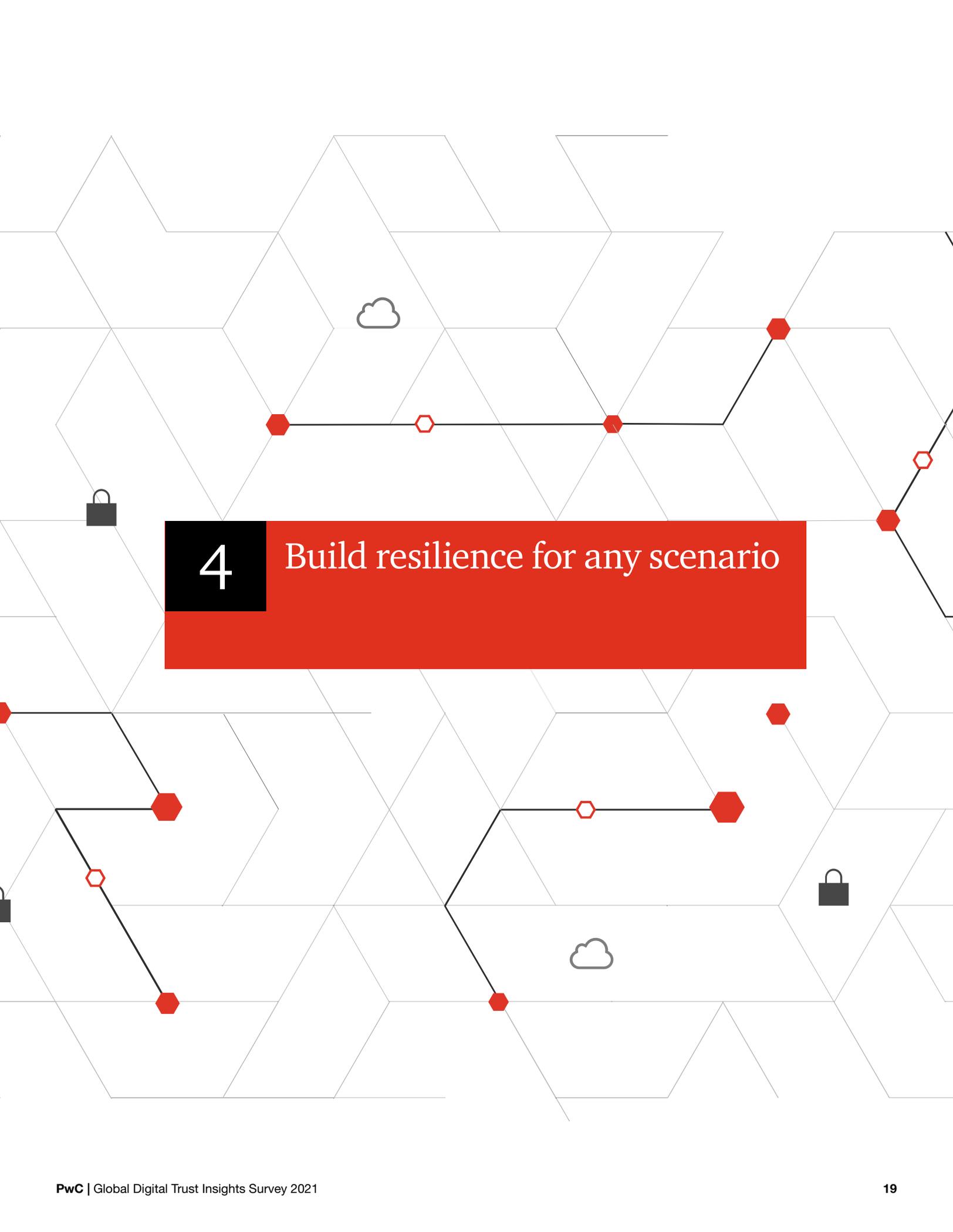
4 Build resilience for any scenario
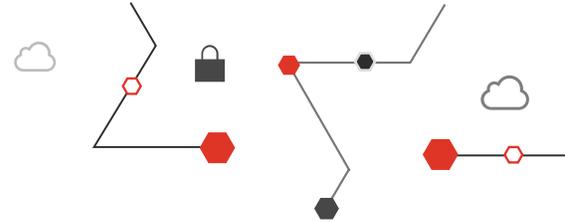
The threat outlook for the next year

In these uncertain times, businesses want certainty. Forty percent of executives in our Global DTI 2021 survey plan to increase resilience testing to ensure that, if a disruptive cyber event occurs, their critical business functions will stay up and running.

The likelihood of cyberattack is greater in 2020 than ever before. The year has brought a surge in intrusions, ransomware, and data breaches, along with an increase in phishing attempts.

We asked executives to rank the likelihood of cyber threats affecting their industry, and the impacts on their organizations, over the coming year. IoT and cloud service providers top the list of 'very likely' threat vectors (mentioned by 33%), while cyber attacks on cloud services top the list of threats that will have 'significantly negative impact' (reported by 24%).

Threats, actors, and events: relative likelihood and impact

Relatively low likelihood
Relatively high impact

Relatively high likelihood
Relatively high impact

(Respondents who have selected 'Don't Know' for Likelihood OR 'Impact Unknown at this time' for Impact have been excluded from this analysis to ensure that the same base is used on both scales.)

Hacktivist/hacker
Cyber criminal
Cyber attack on cloud services
Ransomware breach
Disruptionware attack on critical business services

State-sponsored attacks on critical infrastructure
Major disinformation
Competitor
Average
Nation-state
Current employee
Third party or contractor
Former employee

Third-party and fourth-party
Social engineering
Cloud service provider
Internet of Things (IoT)
Mobile

Scaled impact

Relatively low impact
Relatively low likelihood

Scaled Likelihood
Average

Relatively high likelihood
Relatively low impact

■ A1. Threat Vectors in the next 12 months   ■ A2. Events in the next 12 months   ■ A3. Major and successful attacks from these threat vectors

Relatively high-likelihood, high-impact threats

More and faster digitization means an increase in digital attack surface and potential for harm to the business. Most likely to occur in the next year and potentially most damaging, survey respondents said, are attacks on cloud services, disruptionware affecting critical business services (operational technology), and ransomware. **Are your investments addressing these threats?**

Fifty-five percent say it's likely or very likely that their cloud service provider will be threatened in the next year, 45% say the impact would be negative or very negative. Fifty-seven percent deem an attack on cloud services to be likely, and 59% say the impact would be negative or very negative. A similar number (56%) rate a ransomware attack likely or very likely over the next year, and 58% say the consequences would be negative or very negative.

Technology companies are attuned to the threats on cloud services: more executives in the technology, media, and telecommunications industry (TMT) assign "very high" likelihood to such threats.
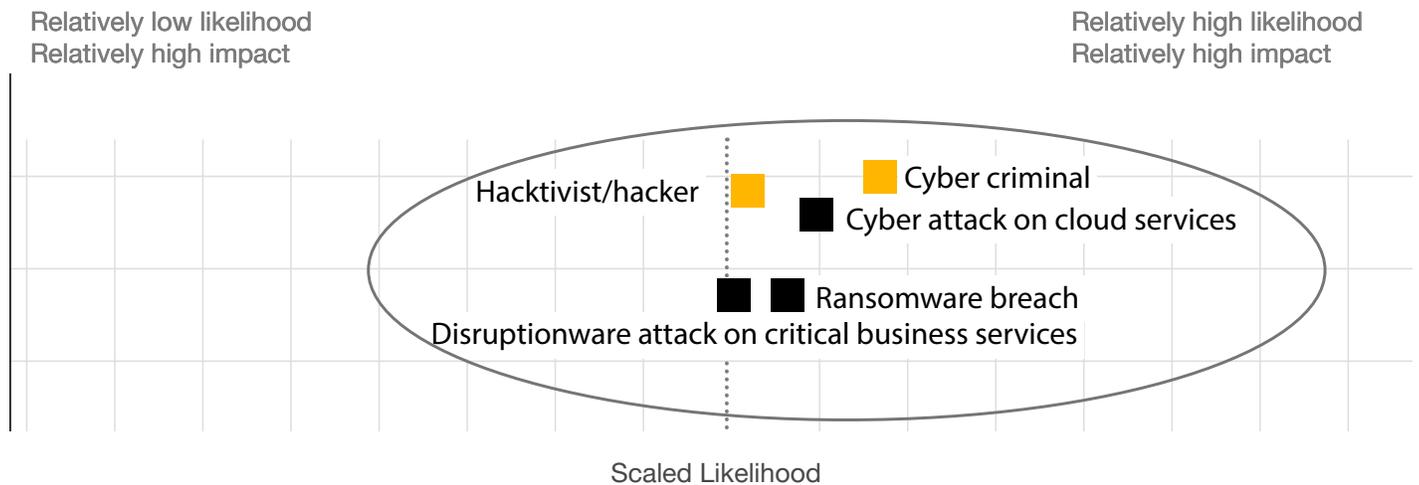
Relatively low likelihood
Relatively high impact

Relatively high likelihood
Relatively high impact

Hacktivist/hacker

Cyber criminal

Cyber attack on cloud services

Ransomware breach

Disruptionware attack on critical business services

Scaled Likelihood

■ A1. Threat Vectors in the next 12 months   ■ A2. Events in the next 12 months   ■ A3. Major and successful attacks from these threat vectors

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,217
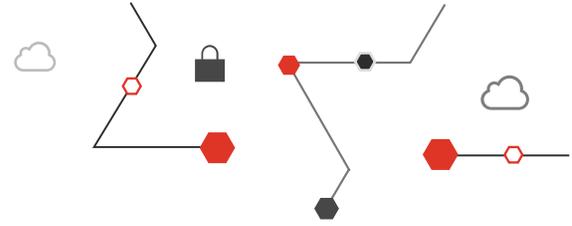
Relatively low-likelihood, high-impact threats

Next, we come to a cluster of threats considered low-likelihood, high-impact. Business leaders have been wrong before, however: in the World Economic Forum's Global Risk Report 2020, 'infectious diseases' was deemed an unlikely threat. We can't predict the future; we can only plan for it. **Have you tested resilience plans for a wider range of threats?**

In this category are disinformation attacks (54% likelihood and negative impact) and threats sponsored by nation-states (48% likelihood, 51% negative impact) and competitors (53%

likelihood, 56% negative impact). Executives in industrial manufacturing, financial services (FS) and TMT are particularly attuned to nation-states as threat actors.

Organizations have much to do to develop enterprise resilience, according to our study of resilience last year and a September 2020 poll of risk executives. Going forward, a key factor for most organizations will be the orchestration of separate business continuity, disaster recovery, and crisis management functions in most organizations.
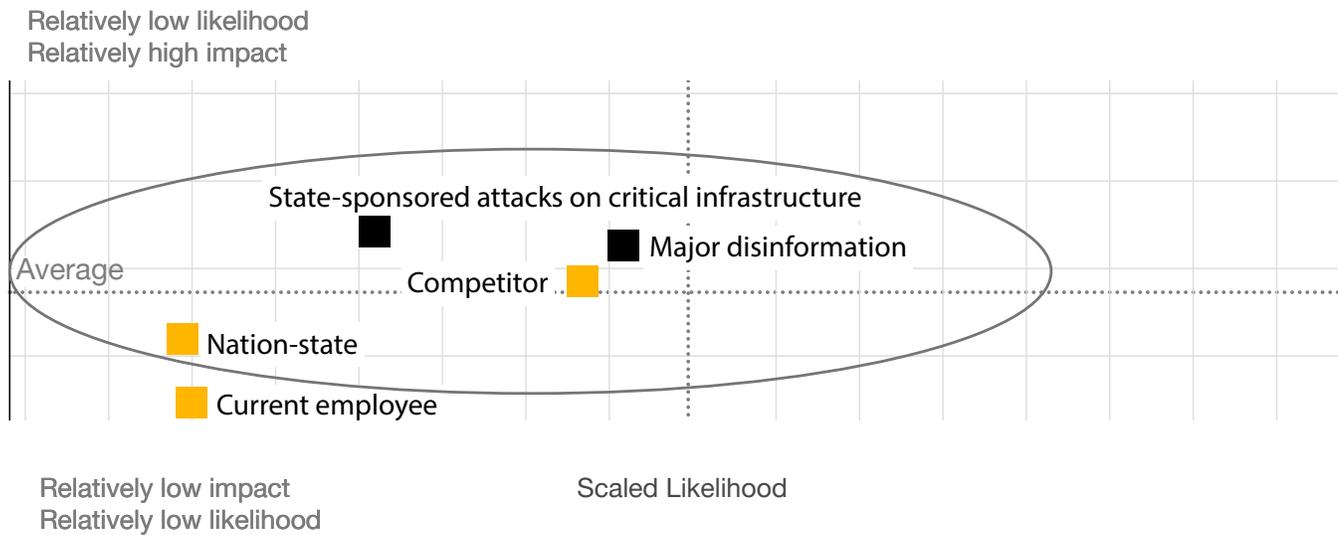
Relatively low likelihood
Relatively high impact

State-sponsored attacks on critical infrastructure

Major disinformation

Competitor

Average

Nation-state

Current employee

Relatively low impact
Relatively low likelihood

Scaled Likelihood

🟥 A1. Threat Vectors in the next 12 months   ⬛ A2. Events in the next 12 months   🟧 A3. Major and successful attacks from these threat vectors

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,217
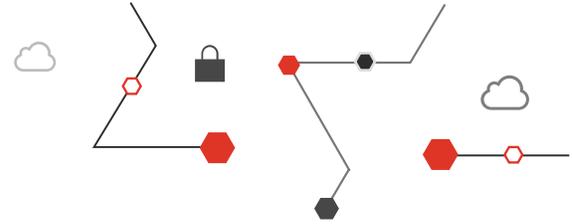
Relatively high-likelihood, low-impact threats

Relatively high in likelihood but lower in impact are ever-present threat vectors, such as attacks via IoT (65% likelihood, 44% negative impact) and cloud providers as well as those posed by third parties (58% likelihood, 51% negative impact) and social engineering (63% likely but negative impact for just 49%). Health industry executives are particularly concerned about the impact of attacks via third parties.

Good cyber hygiene is imperative to stave off these threats. Talent and tools that harness data in real time to detect threats and respond to them are progressing rapidly.
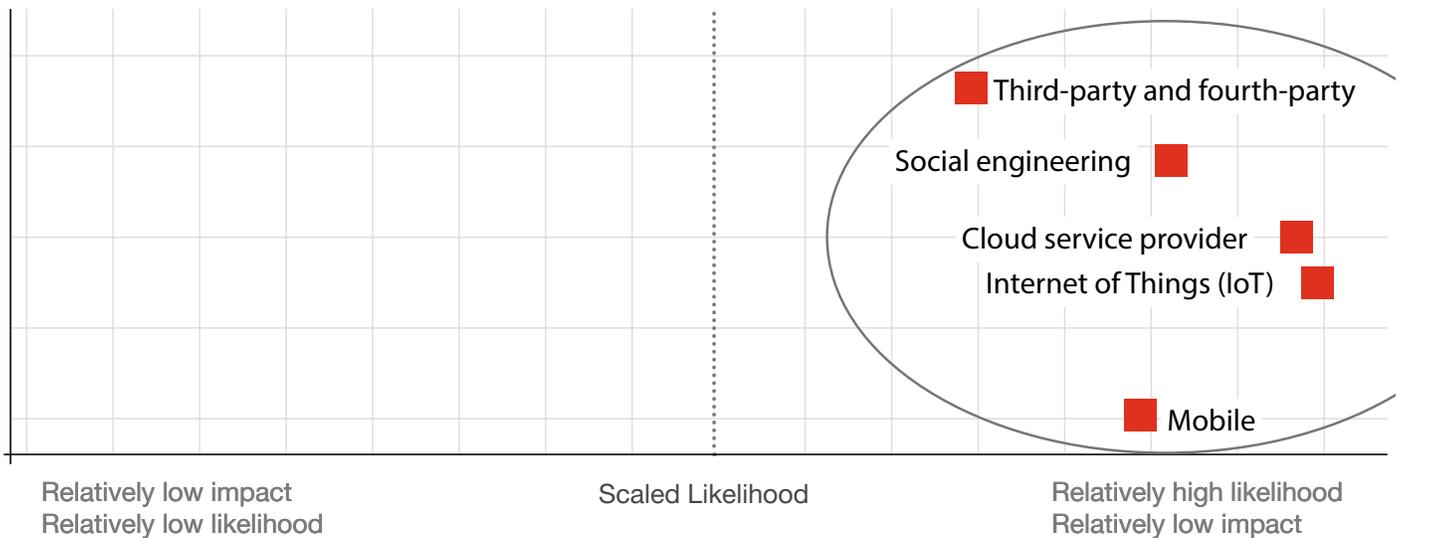
Third-party and fourth-party

Social engineering

Cloud service provider

Internet of Things (IoT)

Mobile

Relatively low impact
Relatively low likelihood

Scaled Likelihood

Relatively high likelihood
Relatively low impact

■ A1. Threat Vectors in the next 12 months   ■ A2. Events in the next 12 months   ■ A3. Major and successful attacks from these threat vectors

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,217
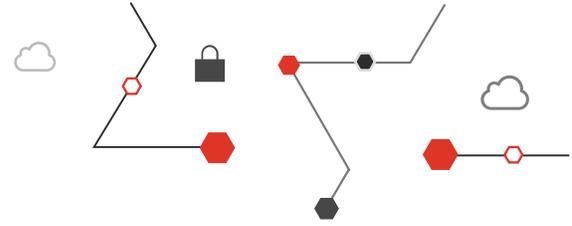
How ready are you for the coming threats?

More executives in FS, TMT, and health industries think misinformation and ransomware are very likely to occur in the next year. Executives in energy, utilities, and resources are more likely to predict a significant negative impact from almost all threats.

If you were to draw up a likelihood-impact grid containing the cyber threats, actors, and events your organization faces, what would it look like? How is your cyber spending allocated to address these?

And how would the cyber risks compare against the other threats your organization faces? "Aggregating information security risk and comparing it to all the various other risks that exist within the organization is powerful, and it's how organizations should look at enterprise risk," says Adam Mishler, CISO, Best Buy.

More than three-quarters of executives in our Global DTI 2021 survey say that "assessments and testing, done right, can help them target their cybersecurity investments."

"

Aggregating information security risk and comparing it to all the various other risks that exist within the organization is powerful, and it's how organizations should look at enterprise risk.

—Adam Mishler
CISO, Best Buy

5 Future-proof your security team
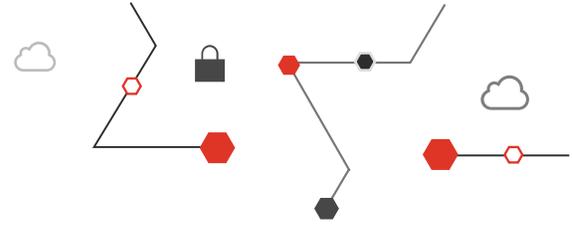
Wanted: 3.5 million people for 2021 cybersecurity jobs

More than half (51%) of executives in our Global DTI 2021 survey say they plan to add full-time cybersecurity personnel over the next year. More than one-fifth (22%) will increase their staffing by 5% or more.

Top roles they want to fill: cloud solutions (43%), security intelligence (40%), and data analysis (37%). Cloud security and security analysis are among the skills that a joint ESG and ISSA survey cited as being in shortest supply.

Hiring managers face tough competition in the cyber labor market. The most recent studies indicate that, in the US alone, 50% fewer candidates are available than are needed in the cyber field. Globally, some 3.5 million cybersecurity jobs are expected to go unfilled in 2021.

More than half of businesses are expanding their cybersecurity teams

1% Don't know

4% Decrease by 5% or more

12% Decrease by less than 5%

31% Stay the same

22% Increase by 5% more

29% Increase by less than 5%
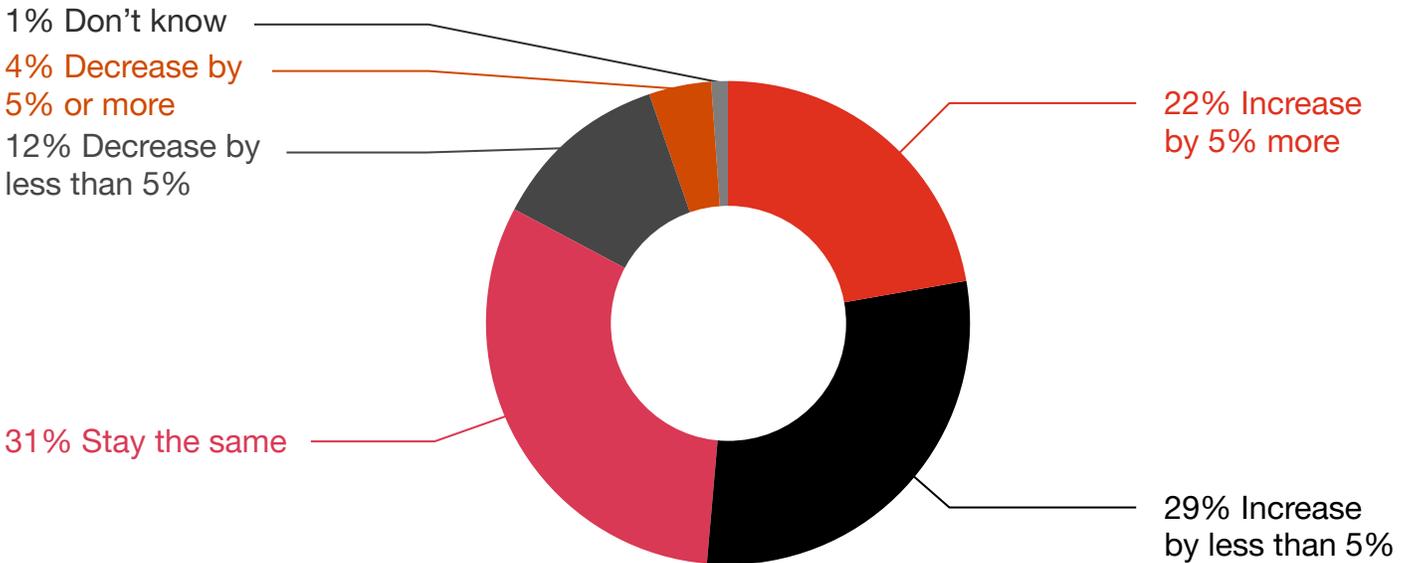
Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: How is headcount for your cybersecurity team changing in the next 12 months?
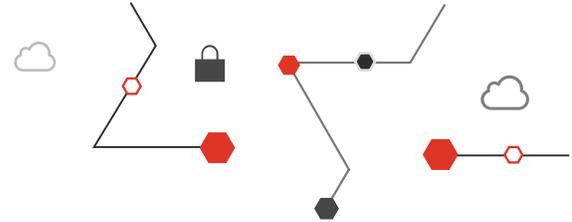
Hire for 21st-century skills: digital, business, and social skills

In their new hires, more than 40% of executives are looking for analytical skills (47%), communication skills (43%), critical thinking (42%) and creativity (42%). Shaping the future of cybersecurity — one that is in step with the business — means hiring the people who are ready to work collaboratively with others to tackle new, as-yet-undiscovered problems and analyze information.

These in-demand qualities correspond with the expanded role of the CISO as not merely a tech leader, but one who works with colleagues in the C-Suite and the business side to add value overall.

"Works well with others" is an increasingly important trait for advancement in cyber. CISOs used to look for the person who knew the most about how to configure a firewall or identity and access management, for example. Not anymore. They've realized that those skills could be taught a whole lot easier than executive skills. Good communications, good analytical thinking, and the ability to step outside the process and imagine new and better ways to do it — those soft skills are harder to teach.

To attract this new breed of cybersecurity professionals, organizations find the following to be most effective: flexibility, compensation, and training and "cutting-edge projects, technology, and work environment." Tuition support ranks high with employees in the technology, media, and telecommunications industry, as well.

New hires need to have digital skills, business acumen, and social skills

Digital building blocks

Skill	%
Cloud solutions	43%
Security intelligence	40%
Data analysis	37%
Data management	36%
Specific technology specialties (e.g., AI, IoT, blockchain, etc.)	33%
Networks (e.g., configuration, protocols)	32%
Financial and risk analysis	31%
Software development and QA	31%
Computer programming	31%
Privacy sprecialties (e.g., privacy engineering)	29%
Systems (e.g., privacy engineering)	29%

Business enablers

Skill	%
Analytical skills	47%
Project manager	40%
Communicating data	35%
Digital design	35%
Business process acumen	33%

Social skills

Skill	%
Communication	43%
Creativity	42%
Critical thinking	42%
Collaboration	41%
Adaptability	40%
Emotional intelligence	33%
Persuasion	28%

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: Which of the following skills are you looking for in your new hires in the next 12 months?
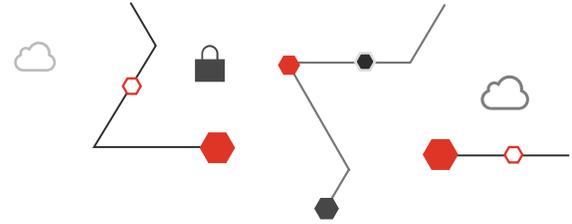
Hire from within: upskilling 2.0

Enterprises feeling the pinch of the cybersecurity skills gap may find much talent in their own backyards. Organizations are hiring from within, offering upskilling to increase current employees' skills in the same key areas they're hiring for: digital skills, business acumen, and social skills.

Organizations should challenge long-held beliefs about training, and design their programs to be people-powered, business-led, and results-oriented. This approach, which we call upskilling 2.0, uses techniques such as gamification to increase participation, improves effectiveness and recall by having students apply their newfound knowledge to challenges they face on the job, and rewards progress toward tangible business outcomes.

Executives set a good example: almost three-quarters (72%) of technology/security executives report spending three or more hours per week on work-related learning, and more than one-third (36%) devote more than seven hours per week to learning. Taking courses toward certification and taking online classes are top ways that executives say they keep pace with fast-evolving developments in tech and cyber, after networking with peers nationally.

Keeping up with technologies requires significant personal investment in learning

More than 10 hours per week
13%
16%

7–10 hours per week
23%
24%

3–6 hours per week
36%
31%

1–2 hours per week
19%
17%

A few hours per month
7%
8%

A few hours per quarter
1%
2%
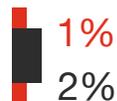
A few hours per year
1%
1%

Don't know
0%
1%

■ Tech/Security respondents   ■ Business respondents

Source: PwC Global Trust Insights Survey 2021, October 2020: base 3,249
Q: How much time do you personally devote to learning new things in the technology field that improve the way you do your job?
Tech/Security Respondents Only base: 1,623
Q: How much time do you personally devote to learning new things in the technology field that improve the way you do your job?
Business Respondents only base: 1,626
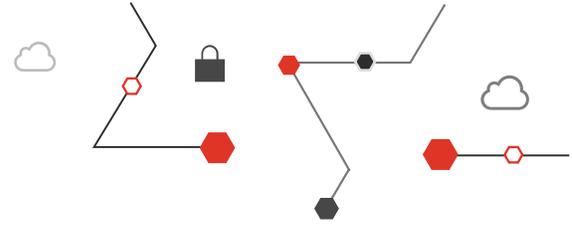
Access talent through managed services models

Other organizations may not have the resources to compete for cyber talent in this tough market. In such cases, using a reputable managed security services model can help provide companies with a diverse, readily available, highly skilled workforce. The best managed services providers continually invest in hiring, credentialing, and upskilling. They may also have apprenticeship programs that provide their staff with a range of experiences in different industries.

Managed services platforms — networks, the cloud, data, analytical tools, visualization,

machine learning — are constantly evolving. By moving to a managed services model, an organization can avoid not only technology investment costs but also the risks that legacy technology poses, including the need for constant upgrades.

An overwhelming majority — nearly 90 percent — of executives use or plan to use managed services. Eighteen percent say they're already realizing benefits from managed services, while 49% are starting to use them, and 18% plan to do so in the next two years.

About the survey

About the survey
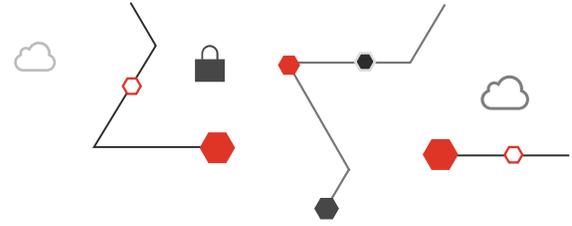
The 2021 Global Digital Trust Insights is a survey of 3,249 business, technology, and security executives (CEOs, corporate directors, CFOs, CISOs, CIOs, and C-Suite officers) conducted in July and August 2020. Fifty-five percent of respondents are executives in large companies ($1 billion and above in revenues); 15% are in companies with $10 billion or more in revenues. Female executives make up 28% of the sample.

Respondents operate in a range of industries: Tech, media, telecom (22%), Retail and consumer markets (20%), Financial services (19%), Industrial manufacturing (19%), Health (8%), and Energy, utilities, and resources (8%).

Respondents are based in various regions: Western Europe (34%), North America (29%), Asia Pacific (18%), Latin America (8%), Eastern Europe (4%), Middle East (3%), and Africa (3%).

The Global Digital Trust Insights Survey is formally known as Global State of Information Security Survey (GSISS).

PwC Research, PwC's global Centre of Excellence for market research and insight, conducted this survey.
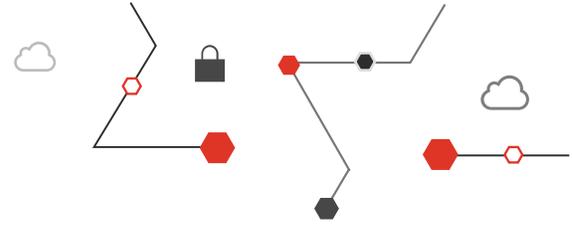
Job title
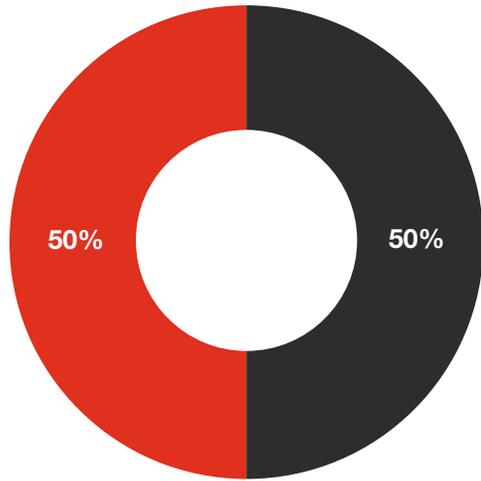
- ■ Net: Tech/security respondents — 50%
- ■ Net: Business respondents — 50%
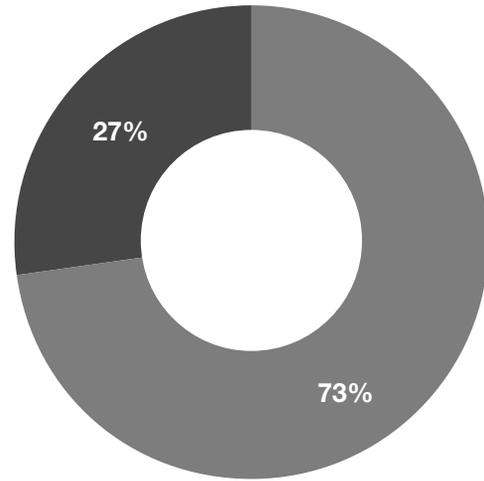
- ■ Net: C-suite — 73%
- ■ Net: Non C-suite — 27%

Chief Executive Officer (CEO)/ President/Managing Director	**21%**
Chief Information Security Officer	**10%**

Region

North America—29%	
Country	**Achieved**
Canada	100
United States	843

Eastern Europe—4%	
Country	**Achieved**
Romania	5
Russia	125
Ukraine	7

Western Europe—34%	
Country	**Achieved**
France	188
Germany	263
Ireland	30
Italy	100
Netherlands	54
Spain	100
Sweden	40
Switzerland	56
United Kingdom	265

| Asia Pacific—18%	
Country	**Achieved**
Australia	100
China & Hong Kong	133
India	110
Indonesia	31
Japan	100
Korea	30
Malaysia	30
New Zealand	30
Singapore	31

Latin America—8%	
Country	**Achieved**
Argentina	23
Brazil	109
Colombia	20
Mexico	120

Africa—3%	
Country	**Achieved**
East Africa (Kenya, Uganda, Tanzania)	18
South Africa	51
Southern Africa (Botswana, Malawi, Namibia, Zimbabwe)	5
West Africa (Nigeria, Ghana)	31

| Middle East—3%	
Country	**Achieved**
Bahrain	10
Kuwait	10
Oman	10
Qatar	10
Saudi Arabia	30
UAE	31

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: In which country do you primarily work?

Industry

| Sector	Industry	
Technology, media & telecommunications 22% Base: 717	Technology	15%
	Communications	4%
	Entertainment & media	4%
Retail & consumer 20% Base: 644	Forest, paper & packaging	5%
	Retail	5%
	Transportation & logistics	4%
	Consumer goods	4%
	Hospitality & leisure	3%
Financial services 19% Base: 625	Banking & capital markets	8%
	Private equity	4%
	Asset & wealth management	4%
	Insurance	4%
Industrial manufacturing 19% Base: 617	Engineering & construction	6%
	Industrial manufacturing	6%
	Automotive	4%
	Aerospace, defense & security	3%
Healthcare 8% Base: 264	Healthcare	5%
	Pharmaceuticals & life sciences	3%
Energy, utilities & resources 8% Base: 253	Energy, incl. oil & gas	4%
	Power & utilities	4%
Government/public services 4% Base: 129	Government/public services	4%

Source: PwC, Global Digital Trust Insights Survey 2021, October 2020: base 3,249
Q: Within which industry does your company mainly operate?
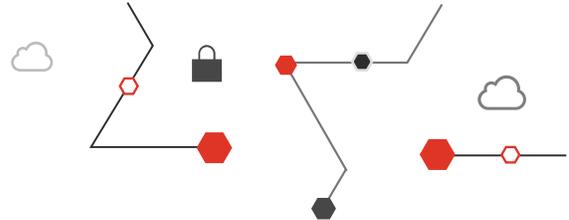
Employee size and gender

Category	Percentage
Up to 100 employees	4%
101–500 employees	10%
501–1,000 employees	18%
1,001–5,000 employees	26%
5,001–10,000 employees	16%
10,001–50,000 employees	12%
50,001–80,000 employees	5%
80,001–100,000 employees	4%
100,001 or more employees	5%
Don't know	0%

Net: Less than 1,000
32%

Net: 1,000–less than 50,000
54%

Net: 50,000–less than 100,000
9%
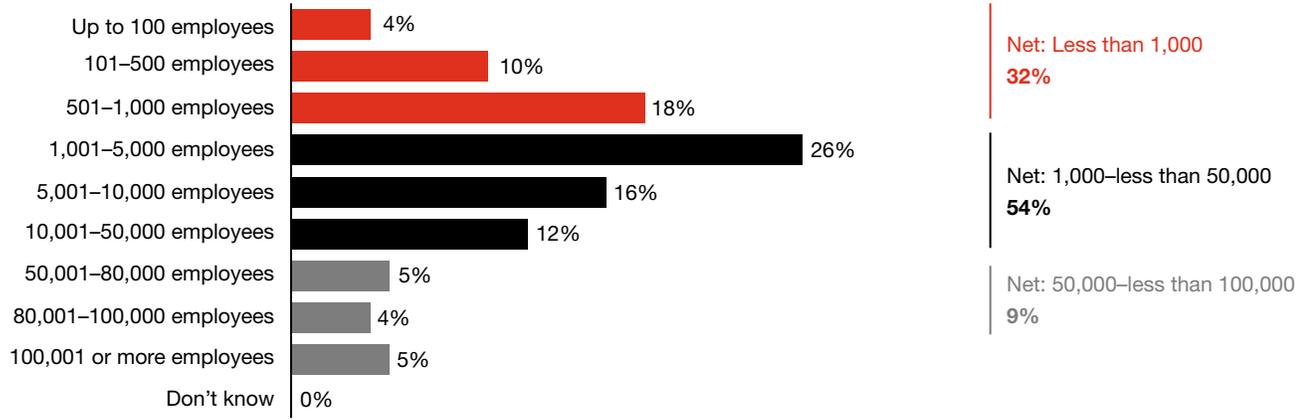
Female—**28%**

Male—**71%**

Prefer not to say & other **<1%**
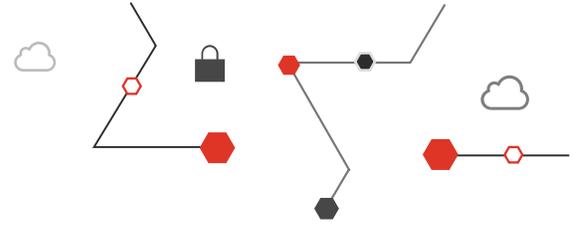
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