

proofpoint.

Security Awareness Training

STATE OF THE PHISH

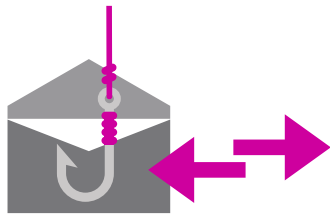
2019 REPORT



INTRODUCTION

What did the phishing landscape look like in 2018? Is general end-user awareness of phishing and other social engineering attacks improving? What are organizations doing to combat the phishing threat — and how successful are their efforts?

Our fifth annual *State of the Phish Report* answers all of these questions — and more. In this report, our focus mirrors that of cyber attackers: your people. You will see data related to the following:



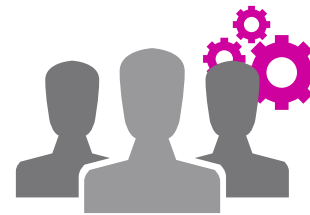
Tens of millions of simulated phishing emails

We compiled and analyzed data from tens of millions of simulated phishing emails sent to end users around the world in organizations of all sizes. Findings are based on phishing tests administered via our cloud-based Security Education Platform between October 2017 and September 2018.



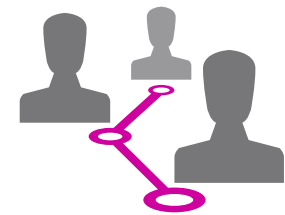
16 industries

We compare and contrast activities and results from organizations and their employees across 16 industries, including finance, healthcare, and manufacturing.



Nearly 15,000 survey responses from infosec professionals

We sent quarterly surveys to our global database of infosec professionals (customers and non-customers) throughout 2018. Their responses reveal the challenges they are facing, their views of the threat landscape, and the actions they're taking to fend off phishing attacks.



7,000+ technology user insights

Our third-party survey of more than 7,000 working adults — 1,000 each in the US, UK, France, Germany, Italy, Australia, and Japan — focused on common social engineering terms and attack vectors. Results provide a global perspective on the awareness levels of the average end user.

THREE PILLARS OF CONTENT

FOR THIS YEAR'S REPORT, WE FOCUS ON THREE KEY AREAS OF DATA AND ANALYSIS:

I The Extent of End-User Risk

Proofpoint threat intelligence continues to demonstrate attackers' focus on end users, and it validates the need to take a **people-centric approach to cybersecurity**. But what if organizations aren't following that model?

In this section of the report, you'll find the results of our **five-question, seven-country survey**, which was designed to gauge the fundamental cybersecurity knowledge of working adults around the world. We include global averages and country-by-country breakdowns for responses to each question. We also feature analysis by age groups, which examines how millennials — a key demographic for organizations worldwide — compare to baby boomers and others in terms of cybersecurity awareness.

II What Infosec Pros Are Experiencing

This section of the report reveals the results of our **quarterly surveys of infosec professionals**. We cover a number of key topics, including the following:

- The different types of social engineering attacks organizations are experiencing
- The frequency of phishing and spear phishing attacks
- How phishing is impacting organizations
- How organizations are using security awareness training tools to manage end-user risk
- Application of consequence models and escalation paths

We also take a high-level, regional look at the survey data, highlighting interesting variations among respondents who reside in one of three key business regions: North America, EMEA, and APAC.



Security Awareness Training: Outcomes and Opportunities

We close this year's report with an **in-depth look at the data gleaned from our Security Education Platform**. This SaaS-based learning management system (LMS) allows our customers to plan and execute phishing awareness training programs, as well as to gather business intelligence about these activities. You'll find the following results and analysis:

- Average failure rates across different phishing campaign types
- The simulated phishing templates and themes favored by program administrators
- Average failure rates by industry and department
- How personalization and program maturity influence failure rates
- Visibility into frequently attacked targets across multiple industries
- Phishing templates that most frequently fool end users
- Insights into end-user reported emails

USER RISK REPORT

Find out more about the cybersecurity knowledge levels of working adults around the world in our *2018 User Risk Report*.



[DOWNLOAD THE REPORT](#)

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SECTION 1

THE EXTENT OF
END-USER RISK

The *Human Factor 2018*, a Proofpoint report based on threat intelligence gathered from analysis of more than one billion emails per day, makes one thing abundantly clear:

Cyber attackers are increasingly focusing their attention on people, not technical defenses. As the report states, “Attackers are adept at exploiting our natural curiosity, desire to be helpful, love of a good bargain, and even our time constraints to persuade us to click.”

Proofpoint researchers reported the following:

- Email is the top attack vector, with threat actors using macro- and micro-level campaigns to target employees across organizational levels and job functions.
- The brand equity of large enterprises is under attack, with suspiciously registered domains outpacing defensive brand-registered domains at a ratio of 20 to 1.
- Millions of users are facing malvertising campaigns that feature fake browser and plugin updates laden with dangerous software and exploit kits.
- Cybercriminals are leveraging the lure of pirated content in their social media-based attacks. Approximately 35% of these scams tempted users with video streaming and movie downloads.

Knowing the landscape, we wanted to connect the dots to end-user knowledge levels and explore the potential vulnerabilities for organizations that are not running measurable security awareness training programs — meaning, they don’t have the tools in place to know which employees are actively engaging with training and progressively learning over time.

To make this connection, we commissioned a third-party survey of working adults from around the world. Participants were representative of workers who are currently employed by global organizations of all sizes: technology users who may or may not have a solid grasp of cybersecurity best practices.

We asked five relatively simple, multiple-choice questions of **7,000 end users across seven countries** (the US, UK, France, Germany, Italy, Australia, and Japan). All questions focused on fundamental cybersecurity concepts, including high-profile topics (like phishing and ransomware), and lesser-known but frequently experienced attacks like smishing (SMS/text message phishing) and vishing (voice phishing).

We found that, in general, end users are not familiar with commonly used infosecurity terms. In addition — and of particular concern — many are relying on IT teams to automatically discover and fix accidental downloads of malicious software. The lack of clarity with regard to the role of IT in attack prevention could be giving users a false sense of security and unnecessarily taxing infosec resources.

HUMAN FACTOR REPORT

Learn more about how cybercriminals are exploiting human nature by attacking people rather than technology.



DOWNLOAD THE REPORT

INTRODUCTION

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SECTION 1:
THE EXTENT OF END-USER RISK

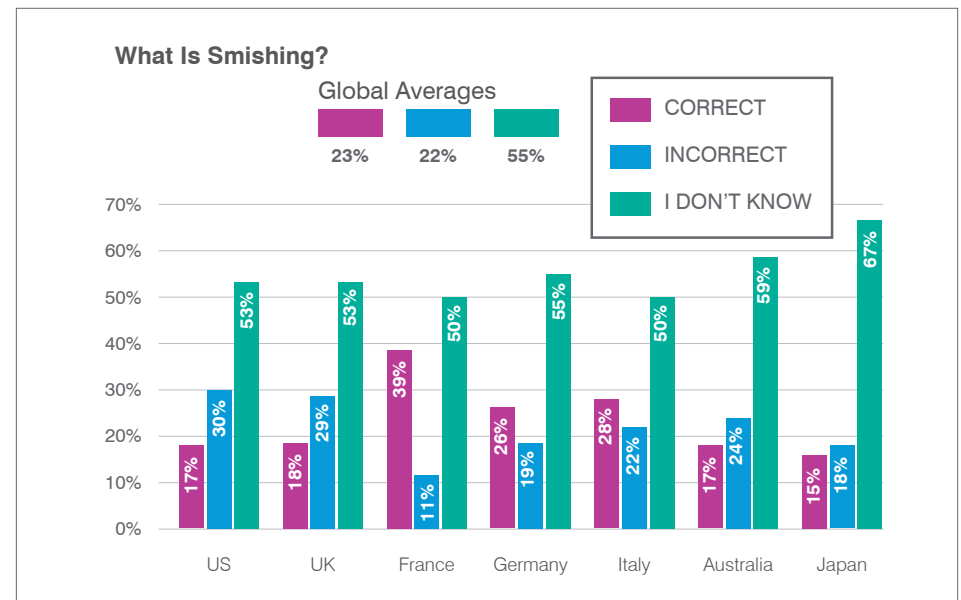
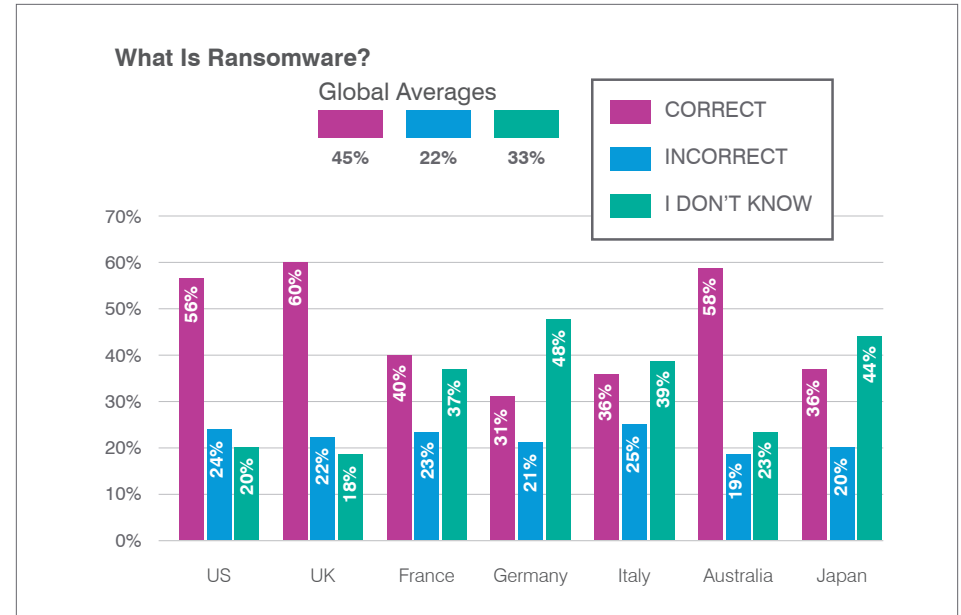
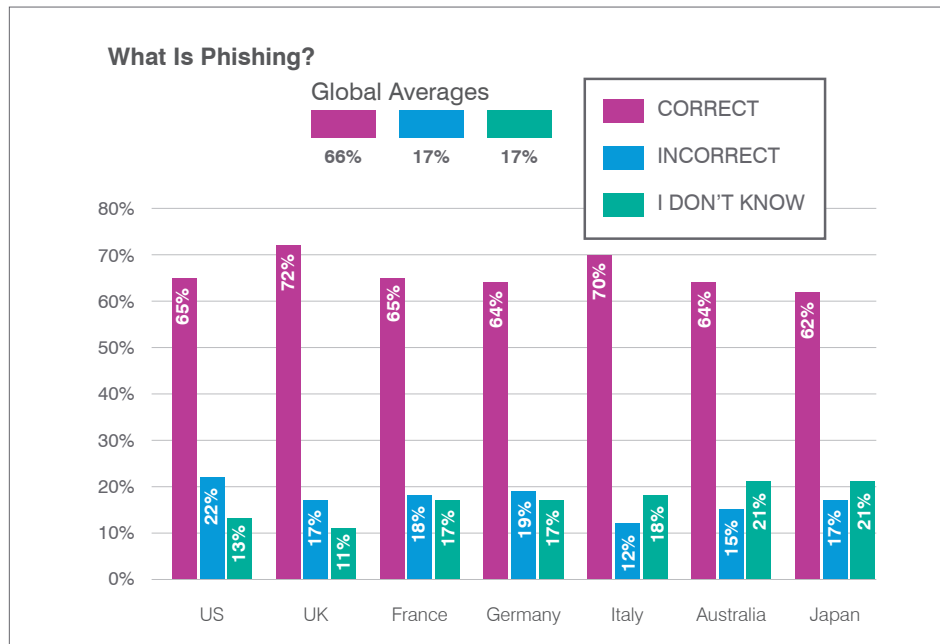
SECTION 2:
WHAT INFOSEC PROS ARE EXPERIENCING

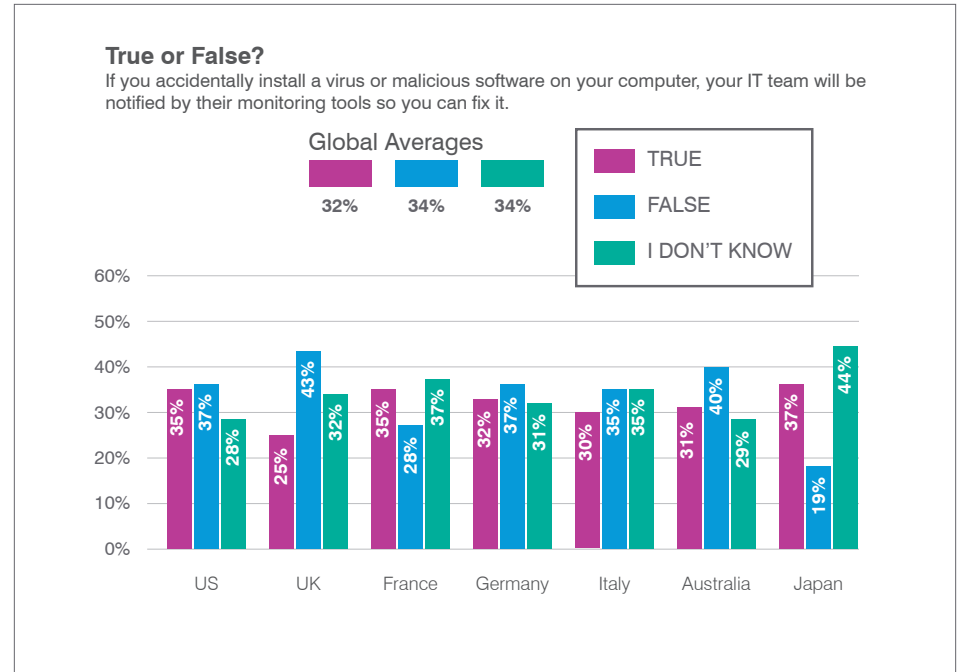
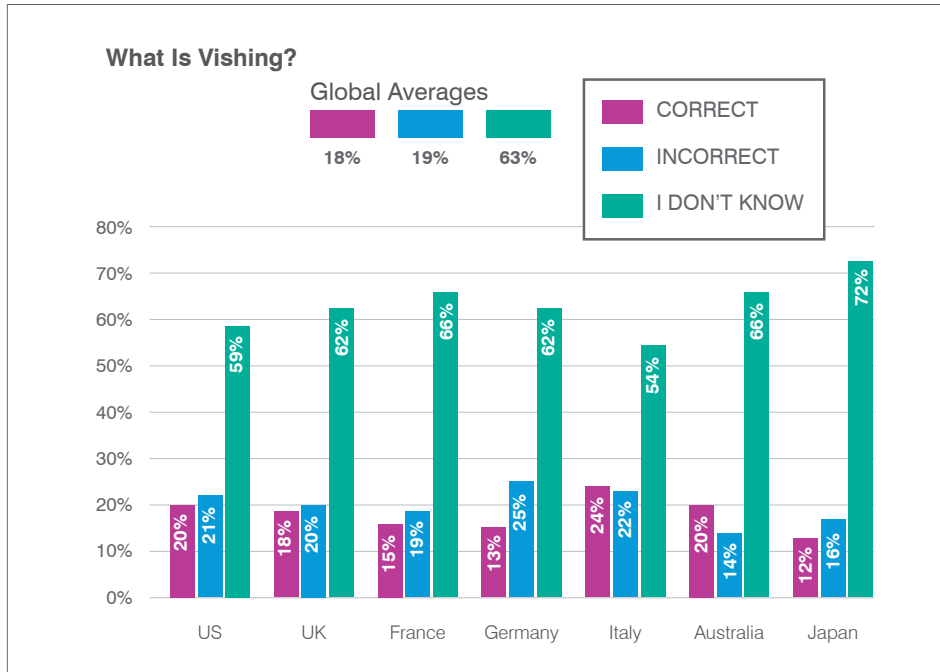
SECTION 3:
SECURITY AWARENESS TRAINING:
OUTCOMES AND OPPORTUNITIES

Five Questions

When it comes to the language that infosec teams are using when communicating to end users, it's important to recognize that there might be a fundamental disconnect. If the terminology isn't recognizable to users at a basic level, they are likely to tune out and think the information doesn't apply to them. If employees don't understand what you're asking of them, they will not progress in terms of cyber hygiene.

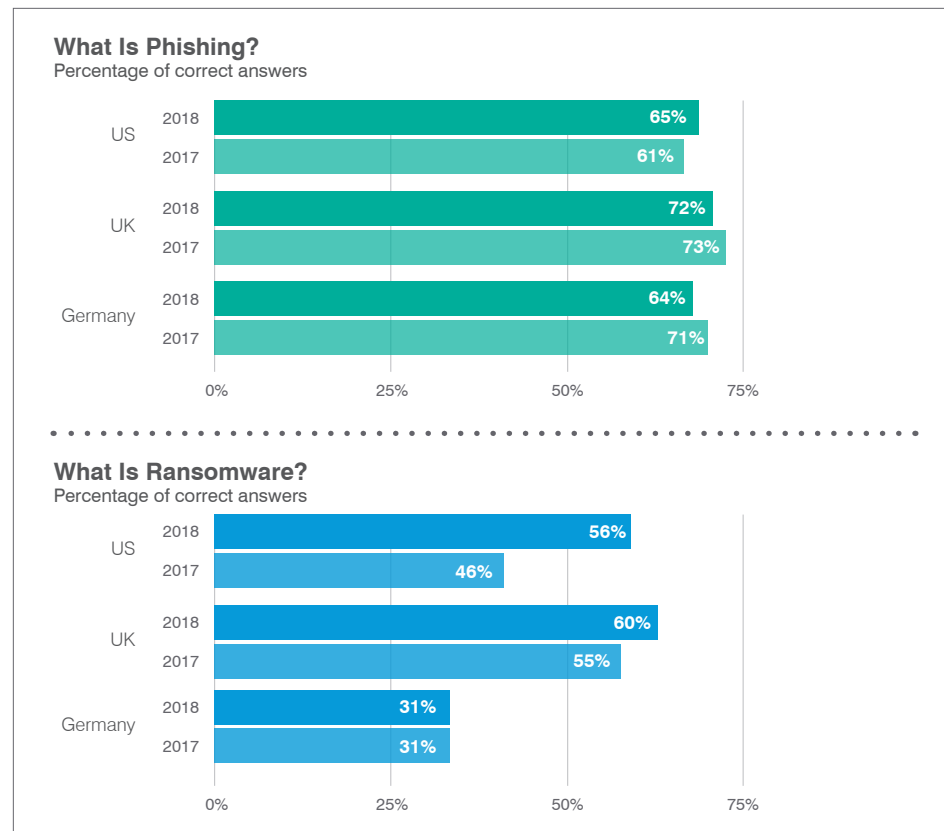
Following, you will see global averages for each question we asked, as well as country-by-country response comparisons. Multinational organizations in particular should **note the strengths and weaknesses of particular regions**, as this information can help guide assessment and training choices in global locations.





Year-over-Year Comparisons

Last year, we surveyed just 3,000 technology users across three countries: the US, UK, and Germany. Year-over-year comparisons between these countries' respondents show some bright spots: **Ransomware awareness increased significantly** in the US and the UK (with Germany holding steady), and **average understanding of smishing improved** among these users. But the news on phishing is mixed: The US gained some ground and the UK remained relatively steady, but German technology users took a significant step back.



What Is Smishing?
Average across US, UK, and Germany

2018

20% CORRECT

2017

16% CORRECT

RECOMMENDED: SPEAK THE RIGHT LANGUAGE, AND SPEAK IT FREQUENTLY

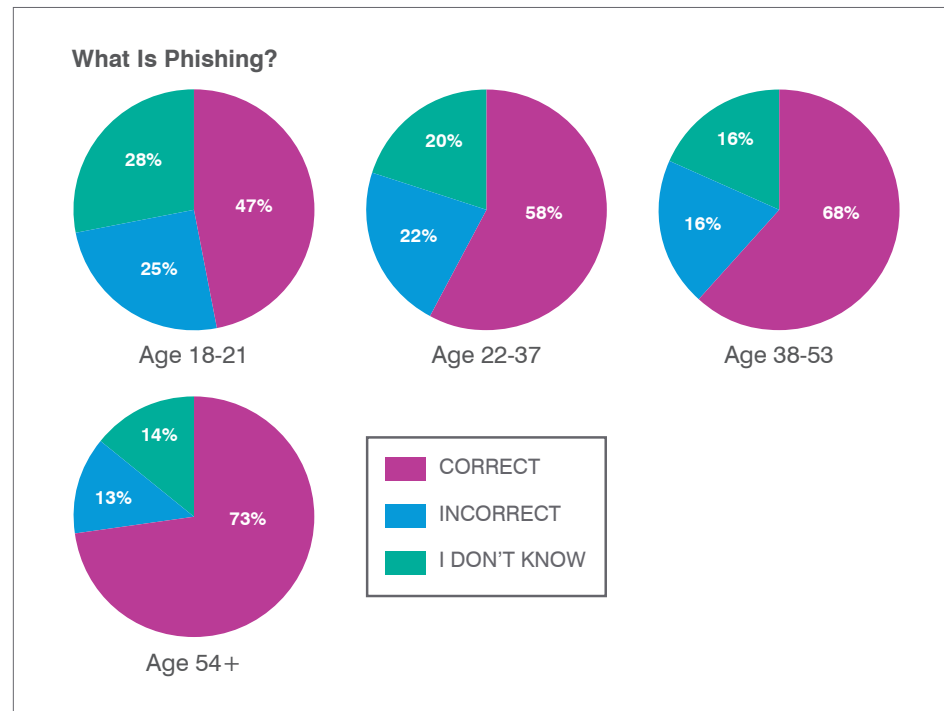
Infosec teams should make it a point to educate employees at a fundamental level. Terminology that is commonly used in some circles is not necessarily recognizable across all job functions ... even if those terms have a vital link to overall security postures.

Organizations must also recognize that workforce knowledge is not a constant, particularly when it comes to learning new skills. This is because education isn't a one-and-done proposition; new concepts introduced via cybersecurity training must be reinforced regularly over time in order for awareness to transition to understanding and, ultimately, behavior change.

The Millennial Question: Are 'Digital Natives' More Cyber Secure?

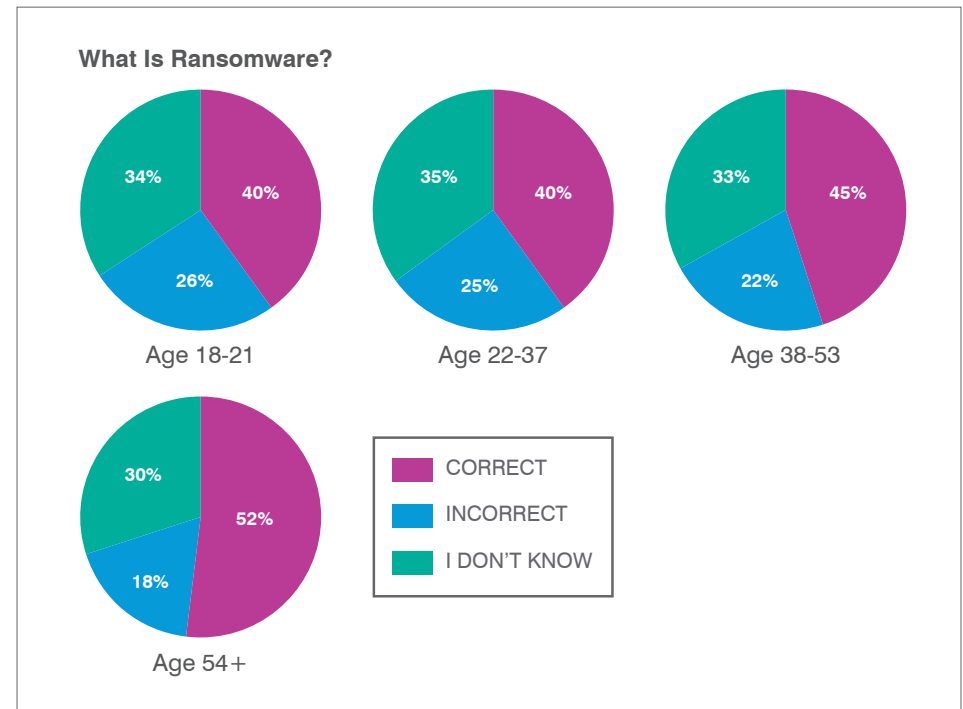
Much has been made of the millennial generation and its impact on the global workforce. Though much of the discussion has trended to philosophical differences between preceding generations of workers, it's worth considering the technological impact this device-heavy, data-generating population will have on employer networks and systems.

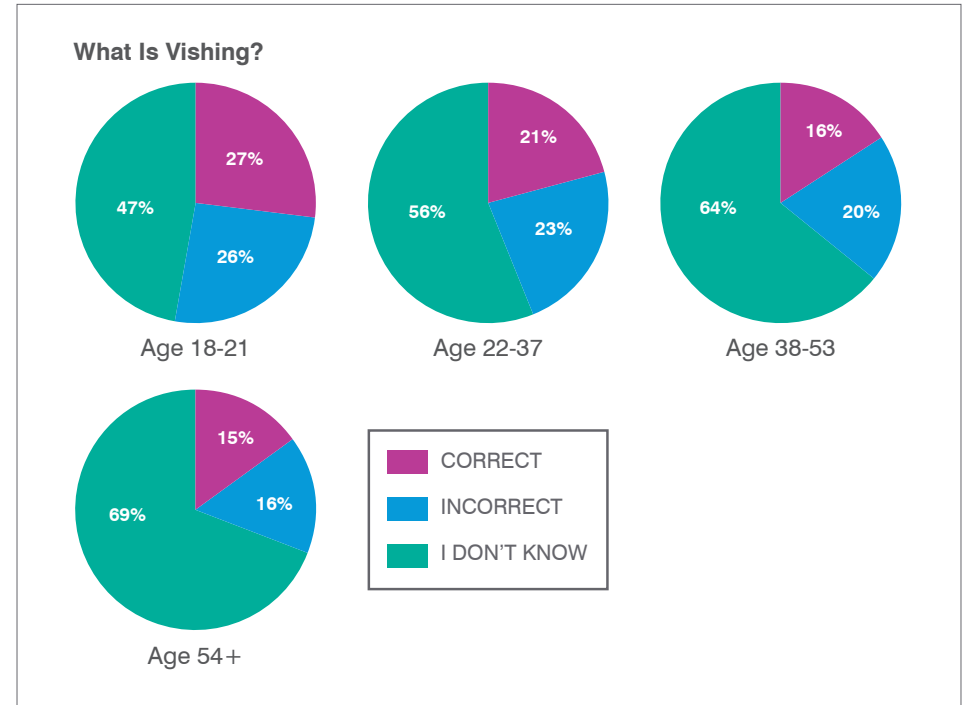
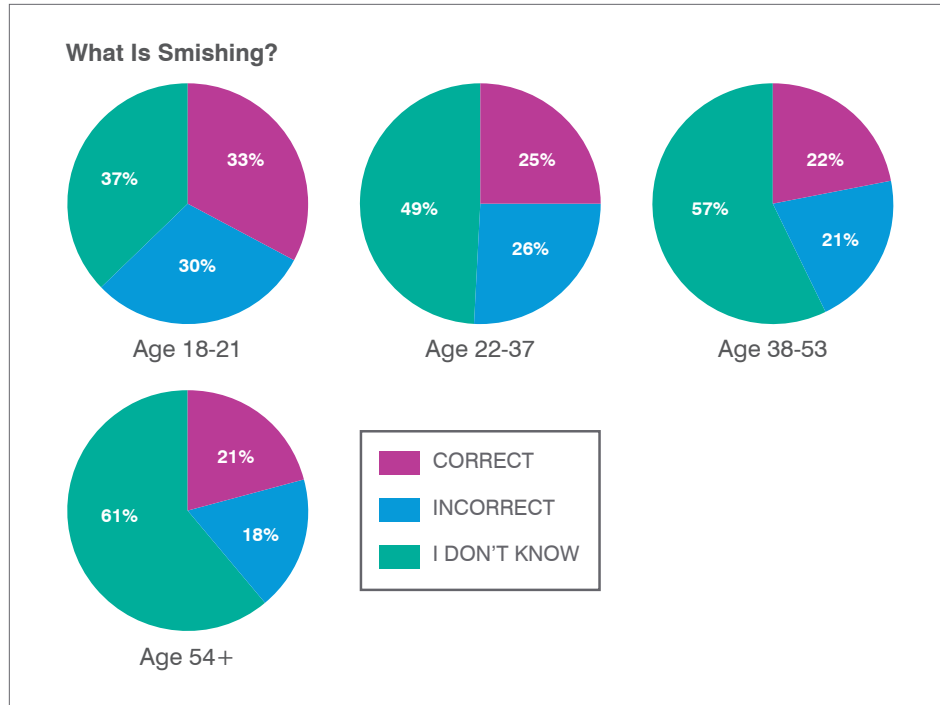
Clearly, these digital natives, as a collective, are far more cyber-savvy than their predecessors. Having been raised on smart devices and applications, there is little about technology that intimidates them. Unfortunately, it appears that a high degree of cyber comfort doesn't necessarily lead to a clear understanding of cybersecurity.



Note: According to Pew Research, millennials fell into the 22-37 age bracket and baby boomers were 54 and older in 2018.

As you will note in the charts, **millennials fall significantly behind** at least one other age group on all questions, and **baby boomers — arguably the least cyber-savvy demographic from our survey — outperform all others** in fundamental understanding of phishing and ransomware.





Some Thoughts on the Age Gaps ...

- Baby boomers and Gen X respondents (ages 38-53) exhibit much stronger recognition of phishing and ransomware, which we feel is likely due to longer-term exposure to security awareness training about these topics.
- Millennials and their younger counterparts are strongest in recognition of smishing and vishing, two more recent threat vectors — though less than a third of each group responded correctly, so not a great showing overall.
- The bottom line is that organizations should not assume that younger workers have an innate understanding of cybersecurity threats and/or best practices simply because they are more cyber-savvy. Clearly, security awareness training is needed across all age groups.

SECTION 2

WHAT INFOSEC PROS ARE EXPERIENCING

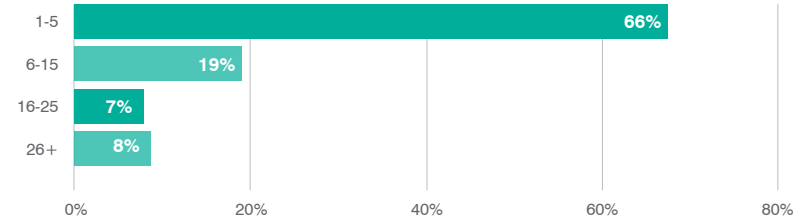
Each year, we survey our extensive database of infosec professionals — both customers and non-customers — to find out what they’re experiencing, how phishing and other social engineering attacks are impacting their organizations, and the tools they’re using to manage end-user risk. This year, we received **nearly 15,000 responses to our quarterly surveys** of security specialists from around the world. You will find the global averages for each set of responses, along with key highlights for three of the world’s largest business regions: North America, EMEA, and APAC.

How Often Are Organizations Experiencing Social Engineering Attacks?

Across the board, infosec professionals identified a more active social engineering landscape in 2018. The vast majority — 96% — said the rate of phishing attacks either increased or stayed consistent throughout the year, and more respondents said they experienced attacks during 2018 than in 2017. Phishing and spear phishing saw the biggest increases, but **all types of attacks happened more frequently than in 2017**.

Social Engineering Beyond Email

Of the 49% of respondents who said they experienced vishing and smishing, 50% dealt only with vishing attacks, 12% saw just smishing, and 38% experienced both types of attacks. In addition, these attacks happened with regularity; following are the number of attacks organizations experienced each quarter, on average.



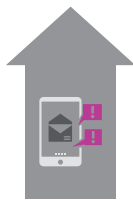
APAC residents **were five times more likely** than those in EMEA to experience 26+ smishing and vishing attacks per quarter.



83%

of survey respondents said they experienced phishing attacks in 2018.

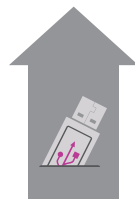
An increase from 76% in 2017



49%

experienced vishing (voice phishing) and/or smishing (SMS/text phishing) in 2018.

An increase from 45% in 2017



4%

told us they faced USB-based social engineering attacks via infected thumb drives.

An increase from 3% in 2017



64%

of infosec professionals experienced spear phishing in 2018.

An increase from 53% in 2017



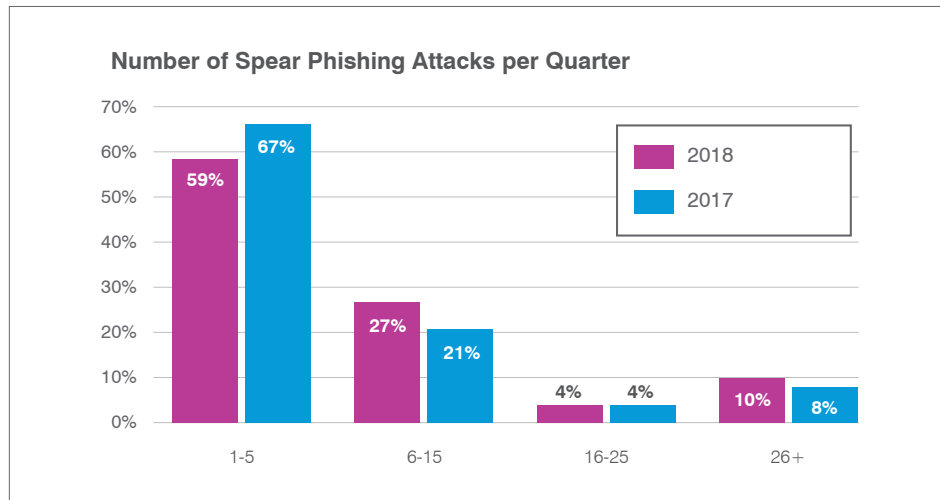
58%

of APAC infosec pros said phishing attacks increased in 2018, compared to 50% in North America and just 33% in EMEA.



FREQUENCY OF SPEAR PHISHING ATTACKS PER QUARTER

Not only did more infosec professionals experience spear phishing in 2018, but the frequency of attacks also increased. Below, we compare the 2018 and 2017 average numbers of attacks per quarter.

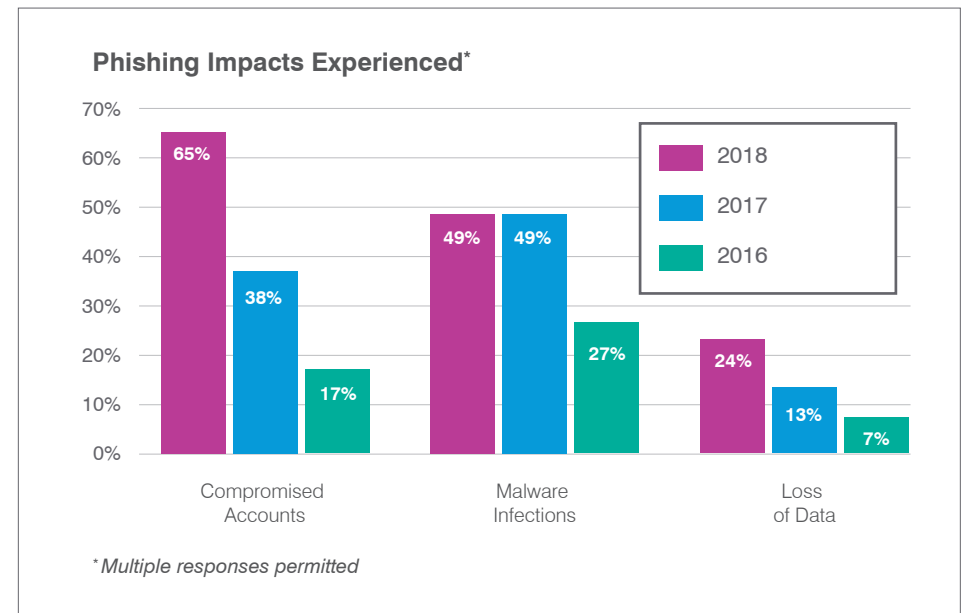




From a regional perspective, respondents in **North America were most likely (67%)** to say they experienced spear phishing in 2018, but they were least likely to face the highest rate of attacks per quarter. APAC respondents were about **twice as likely** as their North American counterparts to say they faced 26+ quarterly spear phishing attempts.

What Impact Is Phishing Having on Organizations?

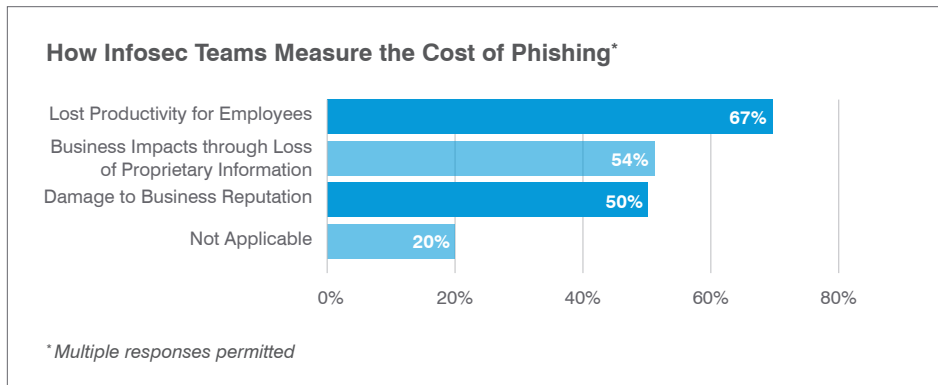
Since attackers use different phishing techniques and have different goals, organizations experience varying impacts from phishing attacks. Below, we compare responses to the question about phishing impacts from the last three years of our survey.

As you'll note, **credential compromise increased by more than 70%** since 2017, leapfrogging malware infections to become the most commonly experienced impact in 2018. This is of particular concern given that multiple services often sit behind a single password. In addition, **reports of data loss have more than tripled** since 2016. We believe the **significant increases across all three categories since 2016** not only speak to the growing phishing threat, but also to organizations' heightened awareness of — and attention to — the effect these attacks have on businesses.

APAC respondents were most likely to experience account compromise and data loss, while EMEA respondents were most likely to experience malware infections.

We also asked our infosec contacts how they gauge the cost of phishing within their organizations. A positive trend from last year: 80% of 2018 respondents said they measure phishing costs, up from 77% in 2017.



We also gave our respondents the option to comment about other phishing impacts they experienced in 2018. Though some responses triggered our curiosity (for example, one respondent was “not able to say” what was experienced, but said the impact was “significant”), most were fairly straightforward. The most common write-in responses about phishing impacts included the following:

- Financial losses, including fraudulent wire transfers, legal fees, and fines
- Compliance issues
- Greater burden on IT teams
- Damage to the reputation of infosec teams
- Investments in new technology, including multi-factor authentication (MFA)
- Frustration from customers and employees following a data breach

What Are Organizations Doing to Combat the Phishing Threat?

Naturally, infosec teams employ a wide range of technical tools — including email/spam filters, URL rewriting, advanced malware analysis, and threat monitoring platforms — in their defense-in-depth architectures. But they are also shifting to a more people-centric model by proactively identifying phishing susceptibility, measuring end-user risk, and delivering regular security awareness training. We’ve seen a much greater focus on measurement and business intelligence over the past few years, and the good news is that most infosec professionals say they can see their efforts paying off.



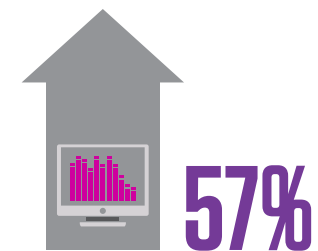
A 31% increase since we first asked this question in 2014



By a wide margin, computer-based online training (83%) and simulated phishing attacks (75%) are respondents’ preferred security awareness training tools.



The most common ways respondents gauge risk are via security awareness training performance (75%), business risk assessments (72%), technical policy violations (45%), and administrative policy violations (42%).



A 6% increase from 2017

What about Ransomware?

This is the first time we asked our database about ransomware attacks ... just in time to confirm what we've all been hearing: that **ransomware took a back seat** to other types of attacks in 2018.



10% of global respondents said they experienced a ransomware attack in 2018.

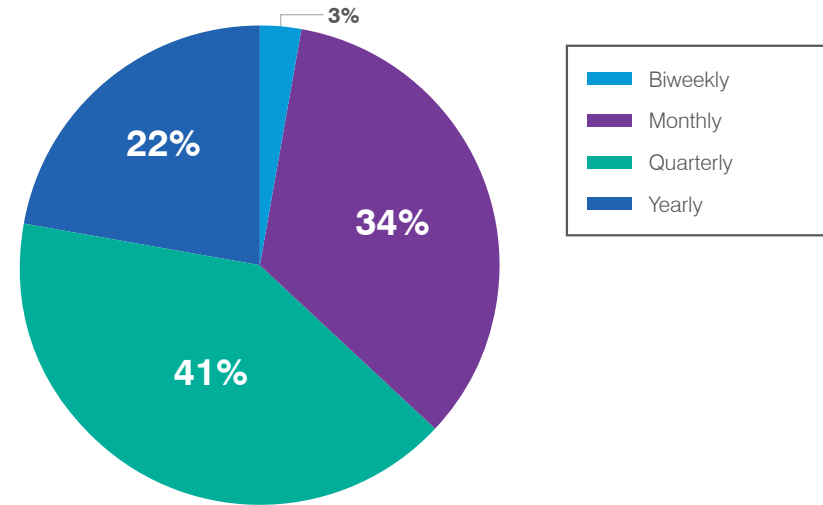
By a wide margin, EMEA respondents were most likely (21%) to say they experienced a ransomware attack in 2018.

Balancing Quality and Quantity

We've long spoken about the need for **regular cybersecurity education**; once-a-year programs simply will not drive knowledge retention or change end-user behaviors. Many regulatory boards agree as well, which is why it's good to see that the vast majority of those we surveyed opt for **monthly or quarterly training** (though we'd love to see that 22% in the pie chart trickle down to single digits).

That said, more isn't always more. It's important to **strike the right balance between quality and quantity**, and be thoughtful about how you structure your program. Repetition and reinforcement are key components of learning, but peppering users with too many messages can lead to confusion and frustration. This can contribute to training fatigue and leave employees feeling like cybersecurity education is a waste of their time.

Security Awareness Training Tools: Frequency of Use



APAC organizations are most likely to rely on yearly training, and they most commonly employ education methods that offer fewer opportunities for users to “learn by doing” — like cybersecurity videos and in-person training sessions. As such, it's not surprising to see that **these respondents were the least likely** to say they've been able to quantify a reduction in their end users' phishing susceptibility.

Consequence Models: Carrot vs. Stick

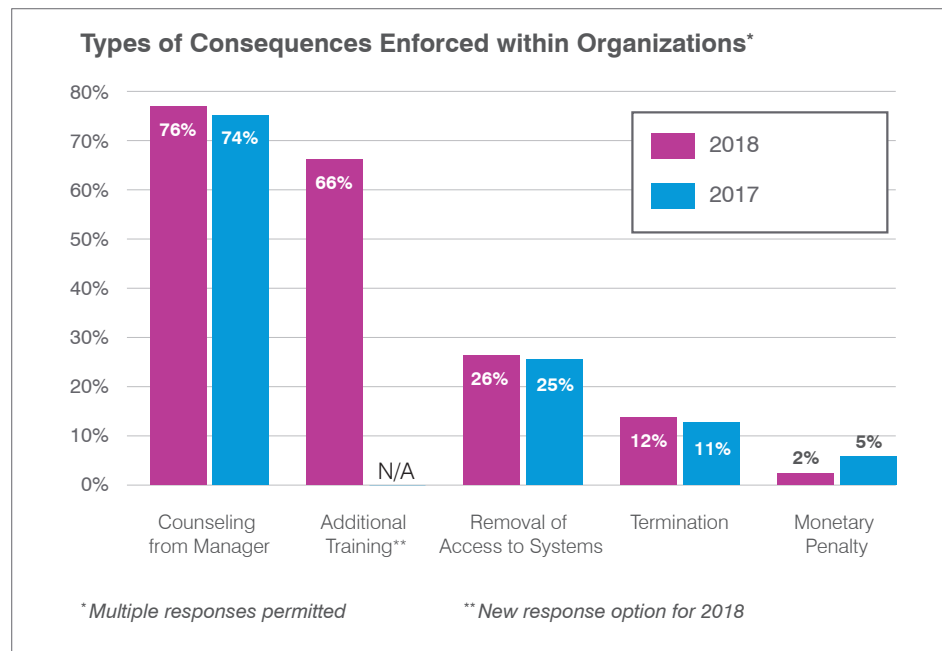
The “carrot vs. stick” debate has become more heated over the past few years, with organizations seeking every available opportunity to make end users take cybersecurity seriously. There are impassioned supporters on both sides: Some firmly believe in positive reinforcement, while others think the threat of punishment yields the best results.

We first asked our infosec contacts about consequence models for last year’s *State of the Phish Report*. This year’s responses show an overall decrease in the use of negative reinforcement techniques, as well as a move away from monetary penalties for repeat offenders.



42%

of respondents said there are ramifications for users who continue to click on simulated phishing attacks. A 7% decrease year over year



ARE CONSEQUENCES EFFECTIVE?

This year, we asked an additional follow-up question to those infosec professionals who said they’re using a consequence model: Do the punishments make a difference?



39%

Yes, the consequences have made a difference.



7%

No, they haven’t made a difference.



54%

Not sure, we haven’t measured it.

Here are our thoughts about implementing a consequence model: It’s **not a decision to be taken lightly**, and it should be a collaborative process that includes management, HR, and legal teams (and the latter two should take the lead if termination and/or monetary penalties are on the table). As well, we highly recommend **identifying ways to gauge effectiveness** to ensure that any ramifications tied to poor cybersecurity performance — which can breed negative feelings among end users — are generating the positive outcome that’s desired.

SECTION 3

SECURITY AWARENESS TRAINING: OUTCOMES AND OPPORTUNITIES

Our customers sent **tens of millions of simulated phishing emails** between October 2017 and September 2018 via our Security Education Platform. The data gathered from this SaaS-based LMS allows us to share valuable insights into the security awareness training tactics organizations are using and the progress they are making, both as a global population and by industry segment.

As you peruse the statistics and analysis, consider how the awareness of end users in these environments — which are actively embracing the use of phishing tests and training content — is likely to compare to the 7,000 average working adults we surveyed. We also encourage you to think about how taking a more people-centric approach to cybersecurity can help to change behaviors, build a culture of security, and enable a stronger last line of defense against phishing attacks throughout your organization.

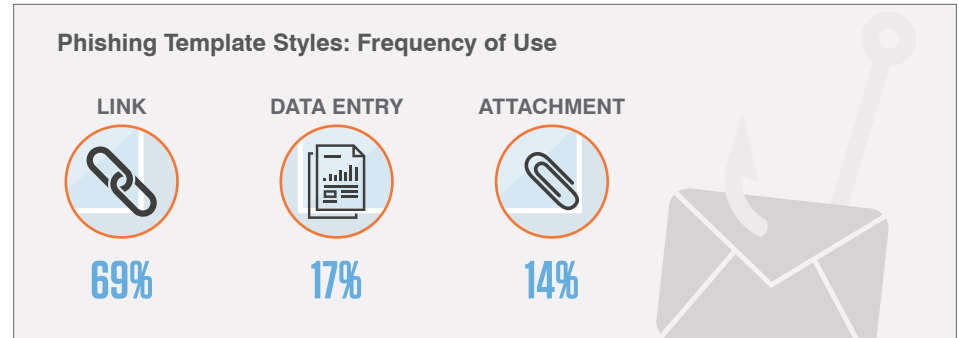


9% average failure rate across all phishing campaigns and all industries. No change from 2017

Preferred Phishing Template Styles

We observed a **9% average failure rate** across all simulated phishing campaign styles and all industries during our measurement period. This held steady from 2017, a good sign that end users continue to apply learned skills and remain alert to different phishing lures and traps.

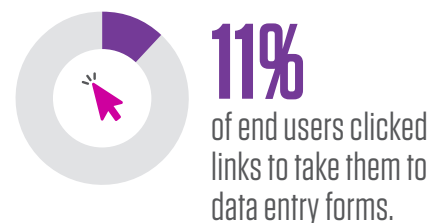
Within our platform, administrators can choose from link-based, attachment-based, and data entry-based templates, the latter of which ultimately request login credentials or other sensitive information from recipients. Used in 69% of campaigns, **link-based templates were the overwhelming favorite** in 2018.



RECOMMENDED: A GREATER FOCUS ON CREDENTIAL COMPROMISE

According to Proofpoint research, **instances of credential phishing quadrupled between Q2 and Q3 2018** — a dangerous trend given the serious ramifications of a successful credential compromise attack.¹

The average click rate of our customers' data entry campaigns trended higher than the 9% average failure rate, though only about 5% of tested users ultimately submitted credentials or other requested data. That said, any disclosure of credentials provides an open pathway for cybercriminals. Given this mix of opportunity and vulnerability, we recommend **more frequent use of data entry-based phishing campaigns** to test users' susceptibility to these types of attacks.



¹ Proofpoint, *Protecting People: A Quarterly Analysis of Highly Targeted Cyber Attacks*, Autumn 2018

Preferred Phishing Template Themes

Administrators can choose from (and customize) several hundred different templates within our ThreatSim® Phishing Simulations library. However, as in years past, nearly all of our customers' phishing campaigns reflected one of **four overarching template themes**: Corporate, Consumer, Commercial, and Cloud.

CORPORATE EMAILS

These types of emails look like official corporate communications. Examples include full mailbox notifications, spam quarantines, benefits enrollment messages, invoices, and confidential HR documents.

CONSUMER EMAILS

These emails mimic messages seen by the general public on a daily basis. Examples include emails about frequent flyer accounts, bonus miles, photo tagging, frozen accounts, big-box store memberships, social networking, gift card notifications, and more.

COMMERCIAL EMAILS

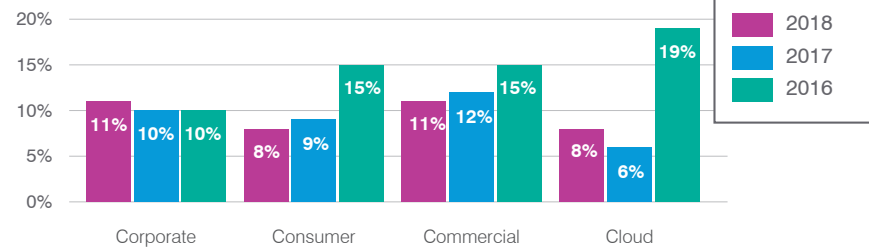
These are business-related emails that are not organization-specific. Sample topics include shipping confirmations, invoice payments, and wire transfer requests.

CLOUD EMAILS

Examples of these business-related emails include messages about downloading documents from cloud storage services, or directives to visit an online file sharing service to create or edit a document.

Usage frequency of these four template themes stayed relatively consistent compared to last year (though Corporate template themes regained pole position over Consumer themes). Failure rates also remained relatively consistent, with some minor year-over-year fluctuations. The good news: **The majority of gains made by our customers since 2016 are holding steady.**

Phishing Template Themes: Average Failure Rates



RECOMMENDED: MORE FREQUENT USE OF COMMERCIAL- AND CLOUD-THEMED CAMPAIGNS

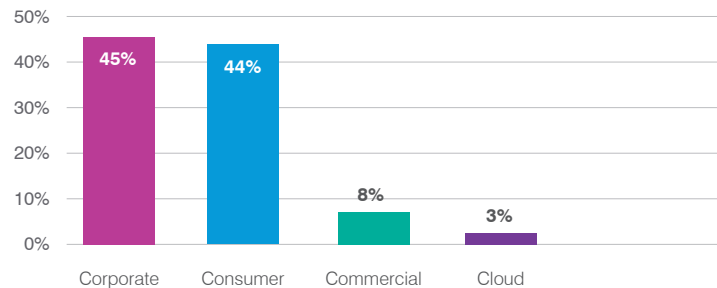
Point of fact: fluctuating failure rates aren't necessarily a bad thing. Over time, you should challenge your end users as they become more adept at recognizing and avoiding "easier" simulated phishing attacks — and these activities are likely to result in higher failure rates (at least initially, following the introduction of more difficult phishing tests).

It's also a great idea to **use a variety of template styles and themes when testing users.** Cybercriminals are agile, and the threat landscape doesn't stand still. In fact, Proofpoint researchers recently identified that attackers targeted different job functions in Q3 2018 than they did in Q2.²

Users are likely to see an assortment of real-world phishing emails, which means that organizations should regularly test employees (ideally on a monthly basis). Attackers often use commercial- and cloud-based lures to trap unsuspecting users, so it's concerning to see so many organizations shying away from using these themes, particularly given the steep rise of business email compromise (BEC) attacks across all industries.

² Proofpoint, *Protecting People: A Quarterly Analysis of Highly Targeted Cyber Attacks*, Autumn 2018

Phishing Template Themes: Frequency of Use in 2018



WHAT ARE THE MOST ‘SUCCESSFUL’ PHISHING CAMPAIGNS?

As we all know, some phishing tests are trickier than others. Here are some of the subject lines that **garnered the highest failure rates** among end users for campaigns that were sent to a minimum of 1,500 recipients:



- Toll Violation Notification
- [EXTERNAL]: Your Unclaimed Property
- Updated Building Evacuation Plan (also among the highest failure rates in 2017)
- Invoice Payment Required
- February 2018 – Updated Org Chart
- Urgent Attention (a notification requesting an email password change)

Failure Rate Comparisons across Industries and Departments

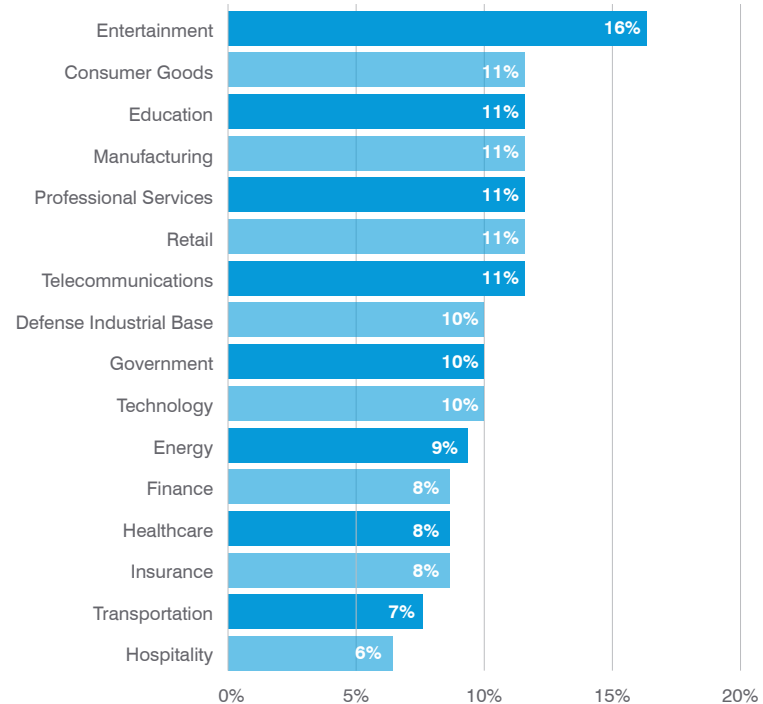
INDUSTRY DATA

Customers and non-customers alike want to know the same thing: How do their organizations compare with others in their industry? In this section, you’ll find **data about 16 different industries**; we reveal average failure rates across all simulated attacks, as well as failure rates specific to the three campaign styles (link-, attachment-, and data entry-based) and the four campaign themes (Corporate, Consumer, Commercial, and Cloud) noted prior.³

As you take note of the highs and lows in each category, it’s important to remember that, for the most part, **organizations primarily tested their users via link-based templates that reflected Corporate or Consumer themes**. With many of the highest failure rates coming in the lesser-used categories, organizations should consider incorporating some variety in their simulated phishing campaigns if they aren’t already doing so.

³ These 16 industries are representative of the majority of our customers, but not all. Some organizations self-identify as being a part of other less-common industry designations.

Average Failure Rates by Industry



Failure Rates by Template Style			
	Link	Attachment	Data Entry*
Consumer Goods	10%	3%	Click rate: 14% Submit rate: 4%
Defense Industrial Base	13%	2%	Click rate: 8% Submit rate: 4%
Education	13%	4%	Click rate: 10% Submit rate: 4%
Energy	9%	7%	Click rate: 10% Submit rate: 3%
Entertainment	14%	45%	Click rate: 6% Submit rate: 2%
Finance	9%	1%	Click rate: 9% Submit rate: 3%
Government	10%	6%	Click rate: 10% Submit rate: 3%
Healthcare	8%	1%	Click rate: 13% Submit rate: 6%
Hospitality	9%	1%	Click rate: 11% Submit rate: 3%
Insurance	9%	1%	Click rate: 10% Submit rate: 3%
Manufacturing	11%	6%	Click rate: 11% Submit rate: 4%
Professional Services	9%	14%	Click rate: 16% Submit rate: 4%
Retail	12%	6%	Click rate: 11% Submit rate: 3%
Technology	10%	1%	Click rate: 15% Submit rate: 5%
Telecommunications	11%	6%	Click rate: 11% Submit rate: 3%
Transportation	9%	<1%	Click rate: 13% Submit rate: 5%

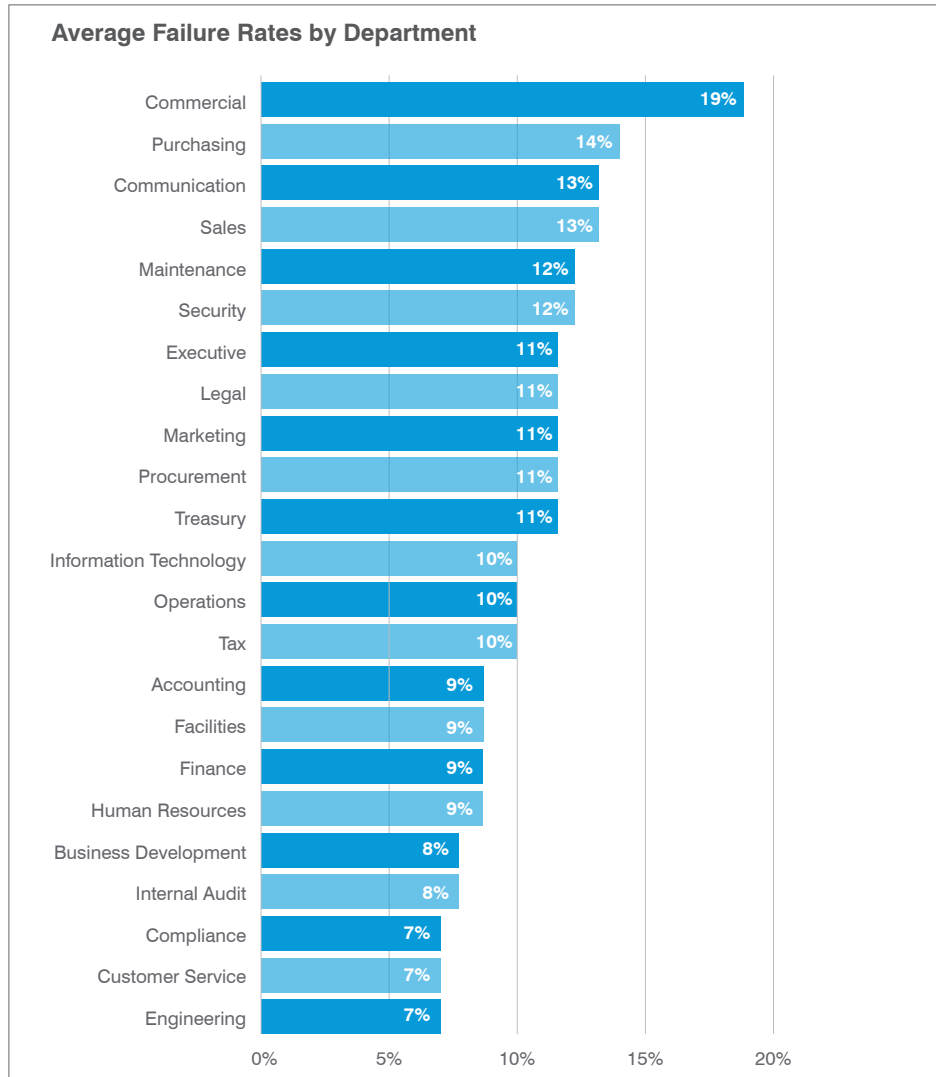
* For data entry campaigns, the click rate indicates the percentage of users who clicked the link within the phishing test, and the submit rate is the percentage of users who ultimately submitted the requested data.

Failure Rates by Template Theme				
	Corporate	Consumer	Commercial	Cloud
Consumer Goods	13%	10%	8%	3%
Defense Industrial Base	10%	30%	N/A*	N/A
Education	12%	9%	19%	11%
Energy	13%	6%	15%	7%
Entertainment	10%	10%	32%	10%
Finance	9%	6%	9%	5%
Government	11%	10%	11%	11%
Healthcare	10%	7%	12%	8%
Hospitality	8%	6%	3%	N/A
Insurance	8%	8%	10%	5%
Manufacturing	11%	10%	13%	9%
Professional Services	12%	10%	9%	7%
Retail	13%	9%	13%	4%
Technology	15%	7%	9%	4%
Telecommunications	9%	13%	9%	10%
Transportation	10%	4%	16%	6%

* "N/A" entries indicate that customers in this industry did not send any campaigns of this type.

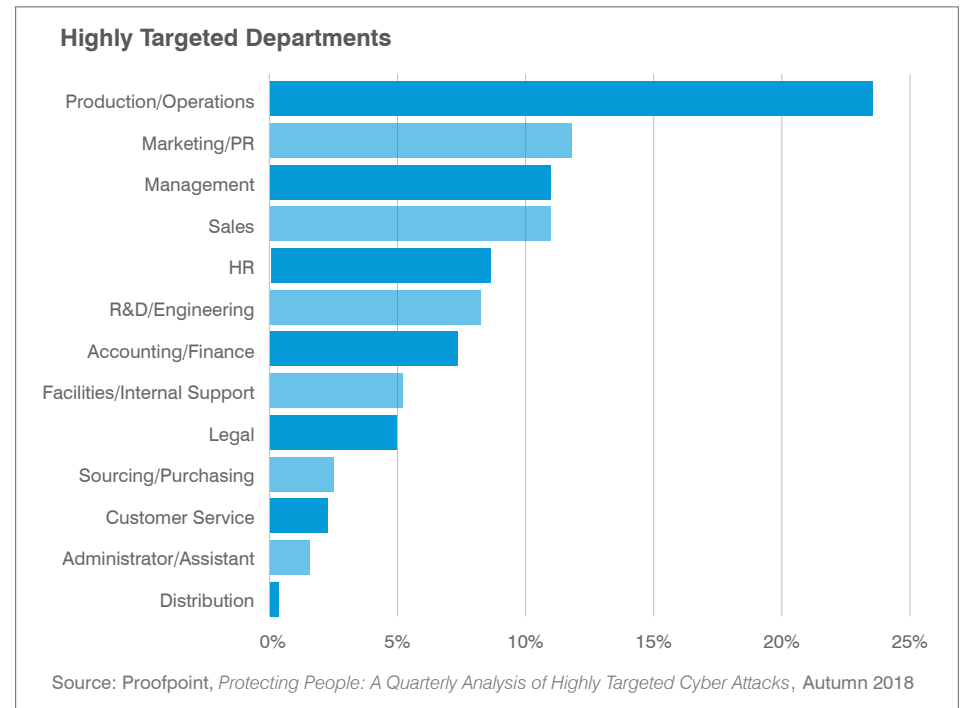
DEPARTMENT DATA

New this year, we examined departmental failure rates by isolating on our customers' most commonly used department classifications.⁴ All failure rates are based on a minimum of 2,500 emails sent (though some departments received upwards of 100,000 emails).



⁴ This represents a subset of our full data set, as not all program administrators group their end users by department, and many organizations use proprietary terminology for department classifications.

It's concerning that some of the highest failure rates were seen within **departments and roles that are likely to have access to some of the most sensitive organizational and customer data**, as well as those that are responsible for many of an organization's most essential business activities. And the complexity of the story only deepens when we compare these average failure rates to the most highly targeted departments identified by Proofpoint in its Autumn 2018 *Protecting People* report.



RECOMMENDED: KNOW YOUR ROLES

In examining these different pieces of data — knowing that the landscape shifts from organization to organization — it becomes clear that it's to infosec teams' advantage to be able to **detect which of their people/departments are being attacked**, and how cybercriminals are targeting specific job functions. When organizations can identify their "Very Attacked People (VAPs)," they can then **test specific departments and individuals**, isolate potential vulnerabilities, and deliver targeted security awareness training assignments to improve knowledge and reduce risk.

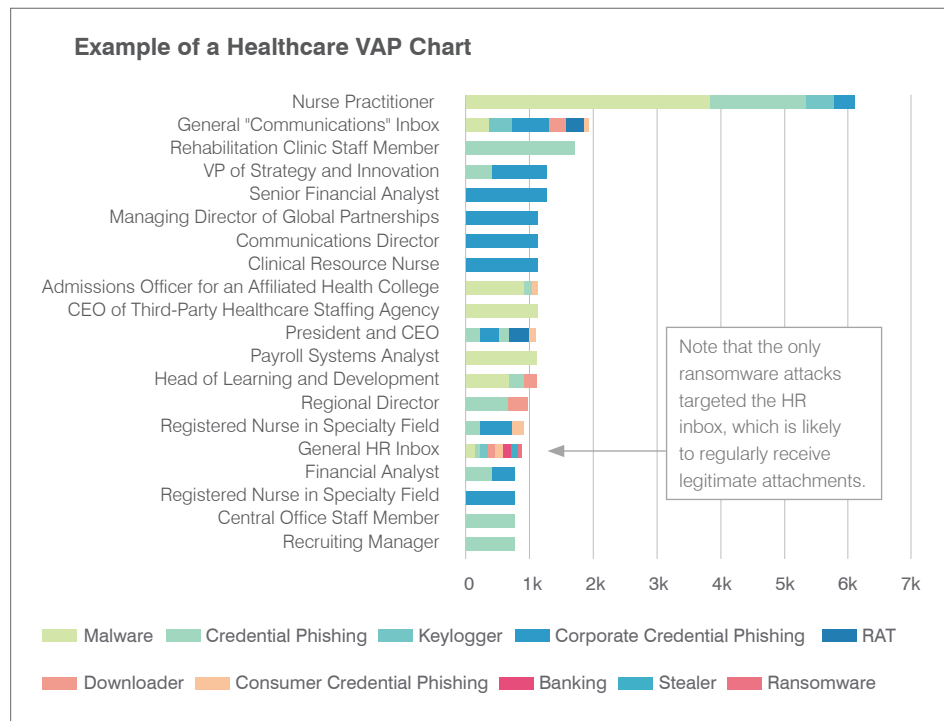
(See more about how VAPs vary by industry on the following page.)

IDENTIFYING (AND REMEDIATING) VULNERABLE HUMAN TARGETS

As we noted on page 19, cybercriminals target different roles and responsibilities within different organizations and different industries. This means that VAPs (Very Attacked People) will vary from industry to industry and organization to organization.

The two sample VAP charts below reflect anonymized data pulled from Proofpoint's proprietary threat analysis technology, which helps to detect, mitigate, and block advanced threats that target people through email. The charts show the top 20 most-attacked inboxes within a healthcare service provider and a manufacturer over a three-month span. The variances between the two clearly illustrate attackers' preparedness, agility, and tenacity.

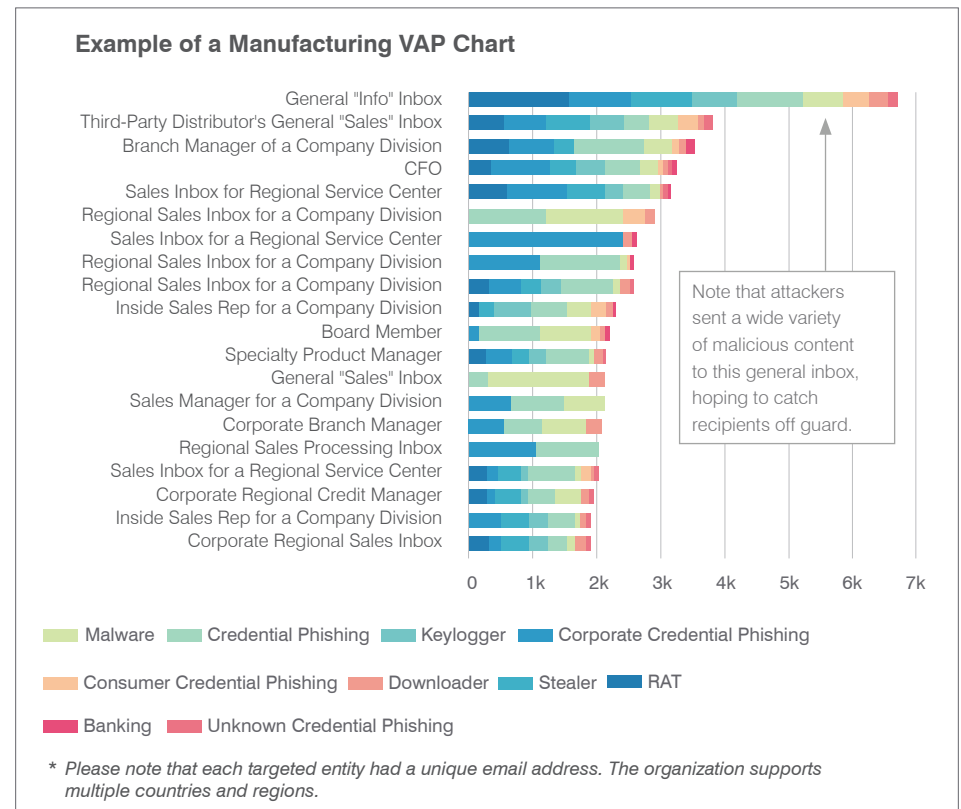
It's important to note the number of email aliases that are regularly targeted by attackers, and the varying job functions cybercriminals seek to exploit. Third parties — those with inroads to systems and data — also frequently find their way into the top tiers of VAP charts.



RECOMMENDED: GET TO KNOW YOUR VAPS

Proofpoint threat analysis allows organizations to identify the inboxes that face the largest number of attacks from outsiders, as well as the ways cybercriminals are attempting to breach defenses. Infosec teams can identify the people and places that are within attackers' crosshairs, and how many attacks are getting through. This offers a unique opportunity to move away from assumptions about vulnerabilities, and shift focus to areas that could be most prone to falling for attacks that slip past perimeter defenses.

A VAP chart is an eye-opener for many organizations ... but it also provides an advantage from a resource allocation standpoint. Infosec teams can use this information to quickly deliver the right training to the right people at the right time, helping to close potential knowledge gaps that could leave specific individuals open to compromise.



Getting Personal with Phishing Tests

As noted earlier in this report, our customers have the flexibility to utilize different campaign styles, themes, and messages in their simulated phishing attacks. They also have the option to use personalized fields within these tests. They can add first names and/or last names, as well as redisplay the recipient’s email address within the body of the message.

We found that **all types of personalization led to higher failure rates** than the 9% average. In particular, redisplaying email addresses inside of phishing tests seemed to lend a greater credibility to messages, subsequently elevating the likelihood of end-user interactions.

AVERAGE FAILURE RATES WITH PERSONALIZED FIELDS



How Program Maturity Influences Failure Rates

Our data shows a terrific trend for organizations that are committed to longer-term security awareness and training initiatives: **Average failure rates fall steadily as programs continue**, with the biggest gains happening in programs that have been running for at least a year. Even better, personalization factors have less impact over time (though they have a big impact in less-mature programs).

Failure Rates by Template Theme				
	Average Failure Rate	Custom First Name	Custom Last Name	Email Address Redisplay
<6 months	12%	12%	15%	15%
6-12 months	11%	12%	15%	16%
12-24 months	9%	9%	12%	13%
>24 months	8%	9%	9%	9%

RECOMMENDED: MAINTAIN CADENCE, EVEN AS PROGRAMS MATURE

We did note a point of concern in our analysis of maturity data: **Organizations tend to send fewer phishing tests once they reach the two-year mark of their program.** We saw a fairly significant drop off in activity levels of programs that are more than 24 months old compared to programs that are 12 to 24 months old (which have the highest campaign frequency).

Those who reduce the number of phishing tests as their programs mature are likely to see a plateau or even a regression in failure rates. The threat landscape is continually changing, and new scams appear weekly (if not daily). Instead of backing off once you reach an “acceptable” failure rate, **continue to challenge end users with more difficult tests to keep them thinking and learning.** And be sure to keep an eye to emerging threats and work those themes into your campaign cadence, regardless of how long you’ve been testing users.

RECOMMENDED: DON'T STOP WITH EMAIL

Email remains the easiest and most frequent attack vector ... but social engineering techniques are also used outside of email to gather data and infiltrate your organization. Cybercriminals regularly use pretexting, vishing, and smishing attacks to try to penetrate your defenses.

Smishing should be of particular concern given the **wide use of smart devices** and the **increased adoption of BYOD policies.** In our 2018 *User Risk Report*, more than 90% of the 6,000 working adults we surveyed have a smartphone, and 39% use these devices for a **blend of work and personal activities.**

Simulated smishing campaigns are not commonly used by our customers; the counts are in the tens of thousands, compared to the tens of millions of email phishing tests sent. But average failure rates on these assessments are similar to those for phishing: **7% of users clicked links sent to them via text message** during our measurement period.

With vishing and smishing attacks on the rise — and many organizations dealing with more than 25 of these types of attacks each quarter — now is the ideal time to consider how you are assessing your organization’s susceptibility to these threats and how you are educating users to spot and avoid them.

A Look at End-User Email Reporting

We strongly believe that **end-user email reporting is one of the best metrics for gauging the effectiveness** of security awareness training activities. An increase in reporting indicates that employees are being more diligent and thoughtful about the emails they receive. Their reporting also gives organizations an opportunity to capitalize on increased awareness to quickly identify and remediate malicious messages that slip through perimeter defenses.



RECOMMENDED: SIMPLIFY REPORTING AND REMEDIATION

To best take advantage of increasing phishing awareness, organizations should make it easy for end users to report suspicious messages **and** make it easy for response teams to take action.

An email client add-in — like our PhishAlarm® button — gives users a **quick, simple way to forward messages** to designated inboxes (with headers intact). In addition, **automated analysis** of reported messages — like that afforded by PhishAlarm Analyzer — filters whitelisted email addresses, system notifications, and simulated phishing attacks to allow infosec teams to focus on emails that are most likely to be phishing attempts.

To streamline even further, we recommend incorporating a solution like CLEAR. Closed-Loop Email Analysis and Response **integrates email reporting and remediation**, reducing the time it takes to neutralize an active threat from days to minutes. Once reported messages are analyzed against multiple intelligence and reputation systems, malicious emails can be deleted or quarantined with a single click.

Conclusion: Focus on the Battles and the War

We've all likely heard the phrase, "You won the battle but you lost the war." But the reality is that organizations must **consistently win daily battles** in order to have a shot at being victorious in the war against cybercrime.

Like it or not, end users play a significant role in those battles. When phishing attacks slip through network perimeters, **people become the last line of defense**. End users should not be left unarmed when they find themselves at these binary decision points: Should I or shouldn't I click this link ... download this attachment ... respond to this request for sensitive information? Those moments count.

Security awareness training provides an opportunity for organizations to be present in those moments. Effective education and learned skills can become the "whispers" in your end users' ears, guiding them to make the right choices.

INTRODUCTION

THREE PILLARS OF CONTENT

SECTION 1:
THE EXTENT OF END-USER RISK

SECTION 2:
WHAT INFOSEC PROS ARE EXPERIENCING

SECTION 3:
SECURITY AWARENESS TRAINING:
OUTCOMES AND OPPORTUNITIES



ABOUT PROOFPOINT

Proofpoint, Inc. (NASDAQ:PFPT), a next-generation cybersecurity company, enables organizations to protect the way their people work today from advanced threats and compliance risks. Proofpoint helps cybersecurity professionals protect their users from the advanced attacks that target them (via email, mobile apps and social media), protect the critical information people create and equip their teams with the right intelligence and tools to respond quickly when things go wrong. Leading organizations of all sizes, including over 50 percent of the Fortune 100, rely on Proofpoint solutions, which are built for today's mobile and social-enabled IT environments and leverage both the power of the cloud and a big-data-driven analytics platform to combat modern advanced threats.

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