Closing the IT Security Gap with Automation & AI in the Era of IoT: Global

Sponsored by Aruba, a Hewlett Packard Enterprise company

Independently conducted by Ponemon Institute LLC

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Prepared by Ponemon Institute, September 2018

Part 1. Introduction

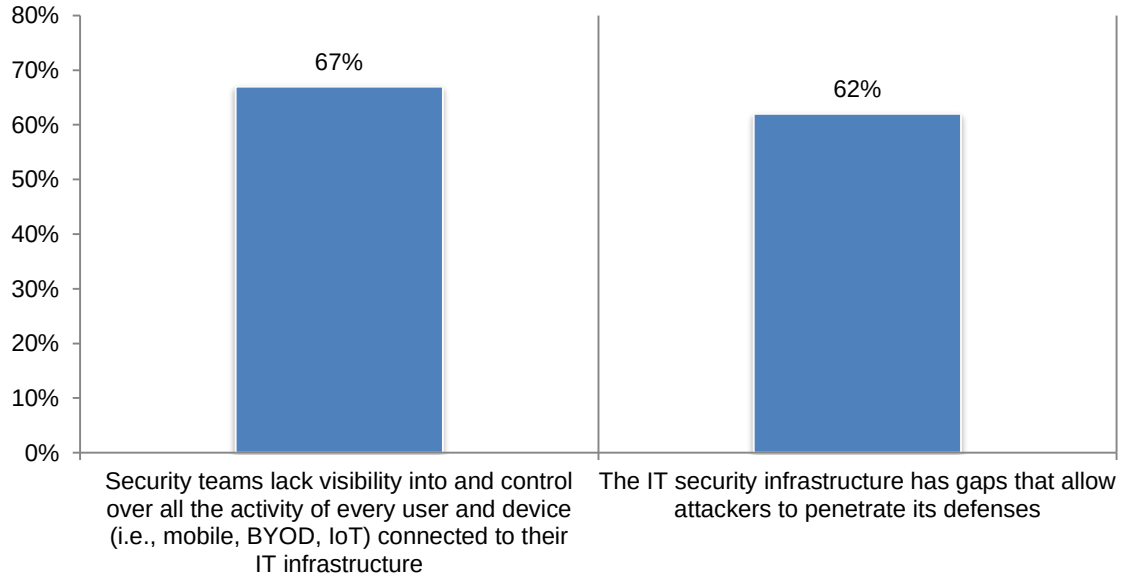
The purpose of this research, sponsored by Aruba, is to understand the reasons for the dangerous gap in modern IT security programs and strategies, a gap that is diminishing the ability of organizations to identify, detect, contain and resolve data breaches and other security incidents. The consequences of the gap can include financial losses, diminishment in reputation and the inability to comply with privacy regulations such as the EU's General Data Protection Regulation (GDPR).

Ponemon Institute surveyed 3,866 IT and IT security practitioners in the following three regions and eight countries: Asia-Pacific, EMEA, North America, Australia, Brazil, Germany, India, Japan, Mexico, Singapore and the United Kingdom. In this report, we provide the global findings.

The IT security gap allows attackers to penetrate companies' defenses. In the context of this research, the IT security gap is defined as the inability of an organization's people, processes and technologies to keep up with a constantly changing threat landscape. As shown in Figure 1, 62 percent of respondents believe that this gap in the IT infrastructure makes it easier for attackers to penetrate companies' defenses. The gap is caused by a lack of visibility into and control over all the activity of every user and device (i.e., mobile, BYOD, IoT) connected to their organization's IT infrastructure, according to 67 percent of respondents.

Figure 1. Consequences of an IT security gap

Strongly agree and Agree responses combined



The following findings illustrate the reasons behind and the problems created by the IT security gap.

The expanding and blurring of the IT perimeter is the main reason companies have an IT security gap. Fifty-five percent of respondents say it is hard to protect the expanding and blurring IT perimeter in light of IoT, BYOD, mobile and cloud. Other reasons for the IT security gap are shortages in skilled staff and the lack of visibility into what every user and device is doing while connected to the IT infrastructure (both 49 percent of respondents).

Compromised legitimate users are considered the greatest risk. Compromised and negligent users who have legitimate access inside the organization pose the greatest threat.

The IT security gap leaves the IT infrastructure vulnerable to attack. Only 38 percent of respondents are confident that attacks inside the IT infrastructure can be detected before they cause a cybersecurity breach, resulting in data stolen, modified or viewed by unauthorized entities. Fifty-one percent of respondents say attacks that have reached inside the network have the potential to do the greatest damage.

Despite all the investments in cybersecurity programs, breaches are still happening. As a result of the IT security gap, companies are unable to stop many data breaches. Almost half (49 percent of respondents) say it is difficult to protect complex and dynamically changing attack surfaces such as mobile, BYOD, cloud and IoT. Additionally, 48 percent of respondents said the lack of security staff with the necessary expertise is another key problem. A third reason is that today's attackers are persistent, sophisticated, well-trained and well-financed (46 percent of respondents).

The inability to secure IoT devices and apps is a primary driver behind the IT security gap. Sixty-six percent of respondents say their organizations are unable to, or have just a low ability, to secure their IoT devices and apps. More than half of respondents (51 percent) say IoT visibility is important for detecting attacks.

To achieve a strong level of IoT security, 52 percent of respondents say continuous monitoring of network traffic for each IoT device is required to spot anomalies early and achieve a strong level of security. NAC is also important for addressing IoT risks, according to 41 percent of respondents.

Why IoT devices are widening the IT security gap. Only 23 percent of respondents believe that IoT devices that simply monitor or perform minor tasks pose little threat to their organization's overall security. Seventy-one percent of respondents agree that legacy IoT technologies are difficult to secure. As a consequence, only 24 percent of respondents say their organization's IoT devices are appropriately secured with a proper security strategy in place.

The following findings describe the solutions for closing the IT security gap.

New technologies are needed to close the IT security gap. Sixty-four percent of respondents say new technologies, such as machine learning (ML), are needed to discover and understand threats that are active in the IT infrastructure. Currently, only 45 percent of respondents say their organizations are getting the full value from their current security investments. Steps that respondents believe are important to minimize the dangers of stealthy and hidden threats within the IT infrastructure include monitoring privileged users (53 percent), Security Information and Event Management systems (SIEM) (47 percent), and User and Entity Behavior Analytics (40 percent), which is increasingly seen as a way to monitor high value assets while "turbocharging" existing SIEM installations.

Application and endpoint visibility is critical to detecting attacks from the inside. Seventy-one percent of respondents say application visibility is critical to detecting attacks and 69 percent

of respondents believe endpoint visibility is important. Also important are cloud and network traffic visibility (64 percent and 63 percent, respectively).

Is AI-based ML hype or reality? More than half of respondents (51 percent) agree that AI technologies such as ML and behavioral analytics are essential to detecting attacks on the inside before they do damage. The top three security benefits of using these technologies are an increase in effectiveness of security teams, more efficient investigations and the ability to find stealthy threats that have evaded standard security defenses (63 percent, 60 percent and 56 percent of respondents respectively).

Most organizations are planning to use ML for security purposes. Currently 29 percent of respondents say ML is implemented extensively throughout their IT infrastructure (12 percent) or partially (17 percent). Forty-six percent of respondents say they will have ML in the next 12 months (26 percent) or in more than a year (20 percent).

The most beneficial aspect of automation is reducing the amount of time and effort required to investigate an alert. Respondents believe the most important benefit of automation technology is the ability to reduce the amount of time and effort required to investigate an alert (71 percent respondents), followed by a reduction in the number of false positives that analysts must investigate (68 percent of respondents).

This is especially important in complying with the recently enacted EU GDPR privacy standard. A key requirement is in the event of a personal data breach, the data controllers must notify the supervisory authority within 72 hours. Such notification should include detailed information about who was affected, the overall impact of the breach and actions taken to remediate the breach.

NAC is considered important to providing visibility to what is on networks. Respondents believe their NAC products provide visibility into what is on the network (53 percent) or that it is a key component of their overall security strategy (52 percent). However, more than half (51 percent) say NAC products are difficult to set up and administer.

Part 2. Key findings

In this section of the report, we provide a deeper dive into the findings of the research. The complete audited findings are presented in the Appendix of this report.

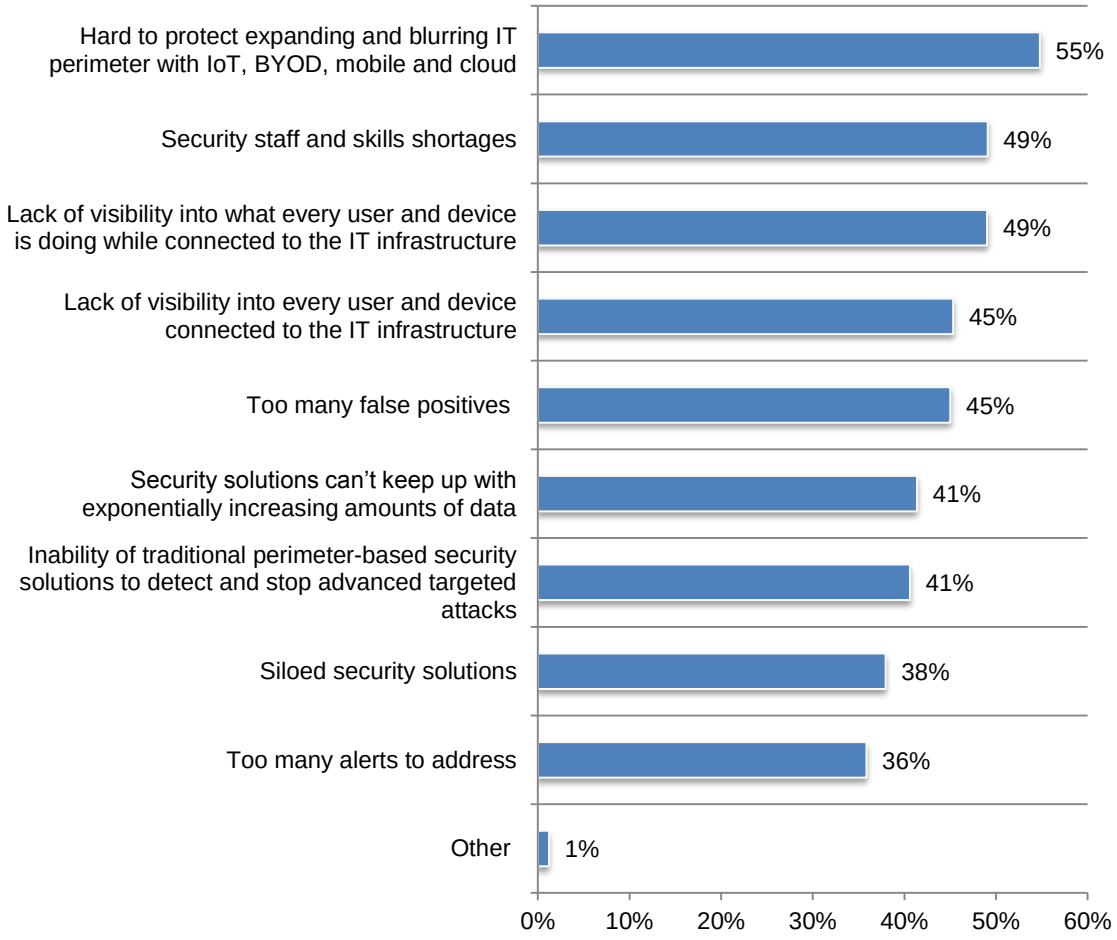
We have organized the findings according to the following topics:

- The IT security gap
- The risk of noncompliance with GDPR and other privacy regulations
- Is the IoT widening the IT security gap?
- Solutions for closing the IT security gap

The IT security gap

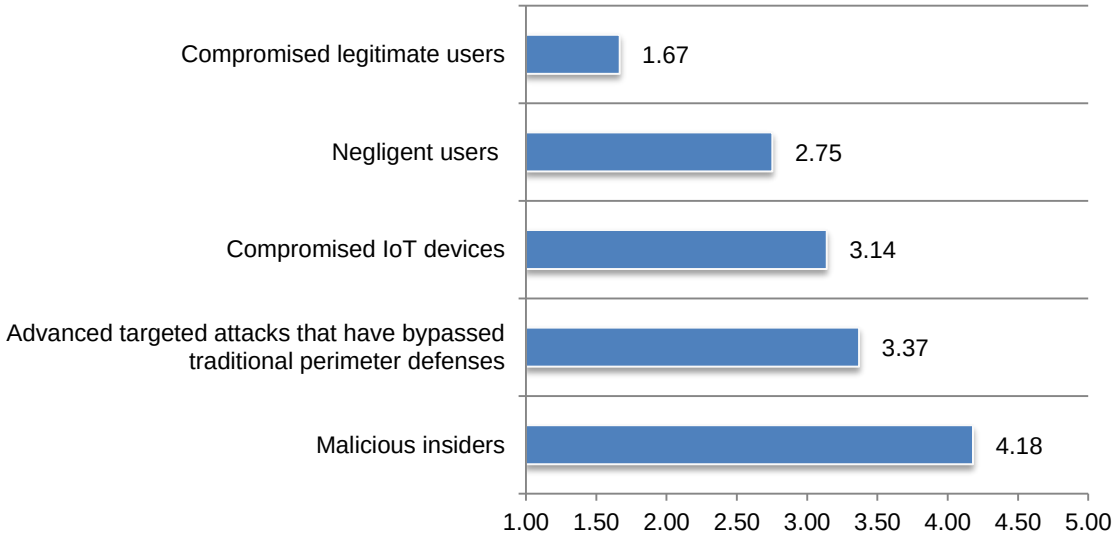
The expanding and blurring of the IT perimeter is the main reason companies have an IT security gap. According to Figure 2**,** 55 percent of respondents say it is hard to protect the expanding and blurring IT perimeter with IoT, BYOD, mobile and cloud. Other reasons for the IT security gap are shortages in staffing and the lack of visibility into what every user and device is doing while connected to the IT infrastructure (both 49 percent of respondents).

Figure 2. Why the IT security gap exists
Four responses permitted



Compromised legitimate users are considered the greatest risk. Respondents were asked to rate five factors that pose the greatest inside threat from 1 = highest threat to 5 = lowest threat. As shown in Figure 3, individuals who have legitimate access inside the organization pose the greatest threat. These are compromised legitimate users as well as negligent users. The inability to see and detect compromised IoT devices is also creating a significant risk for organizations.

Figure 3. Where are the greatest threats from the inside?
1 = highest threat to 5 = lowest threat



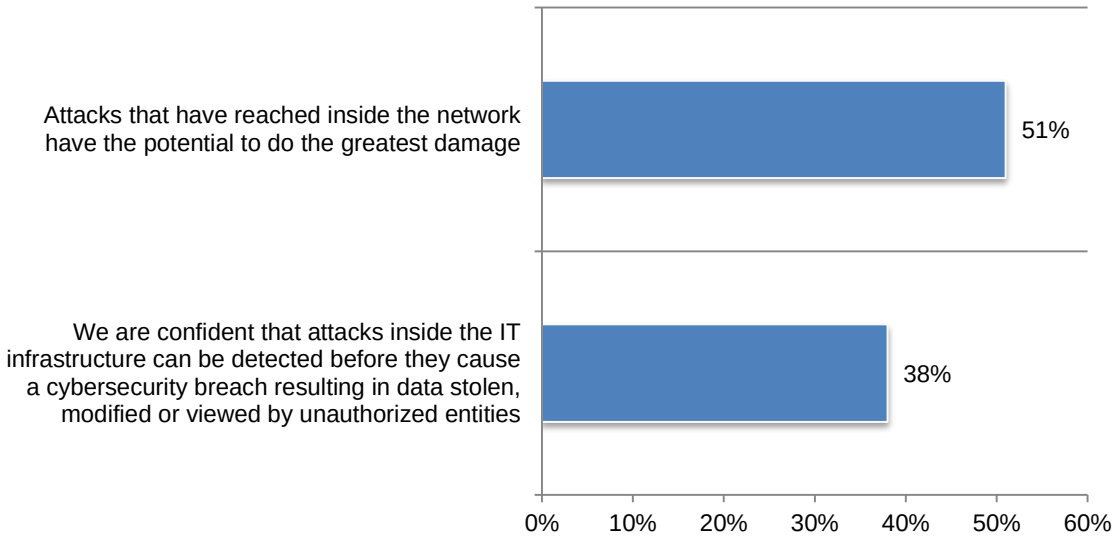
The risk of noncompliance with GDPR and other privacy regulations

IT security gaps exacerbate the risk of noncompliance with certain GDPR obligations. According to another recent Ponemon Institute study,[1] many companies believe their organizations are at a high risk if they fail to comply with specific GDPR obligations. Participants in this study believe that the greatest risk is for fines and regulatory action. Other cited risks include notification obligations, including operationalizing the right to be forgotten, conducting data inventory/mapping activities, obtaining/managing user consent, and establishing legitimate interest for data processing.

The IT security gap leaves the IT infrastructure vulnerable to attack. As shown in Figure 4, only 38 percent of respondents are confident that attacks inside the IT infrastructure can be detected before they cause a cybersecurity breach that results in data being stolen, modified, or viewed by unauthorized entities.

Fifty-one percent of respondents say attacks that have reached inside the network have the potential to do the greatest damage. According to the GDPR, in the event of a personal data breach, the companies must notify authorities within 72 hours. If there is a delay, companies must provide a "reasoned justification".

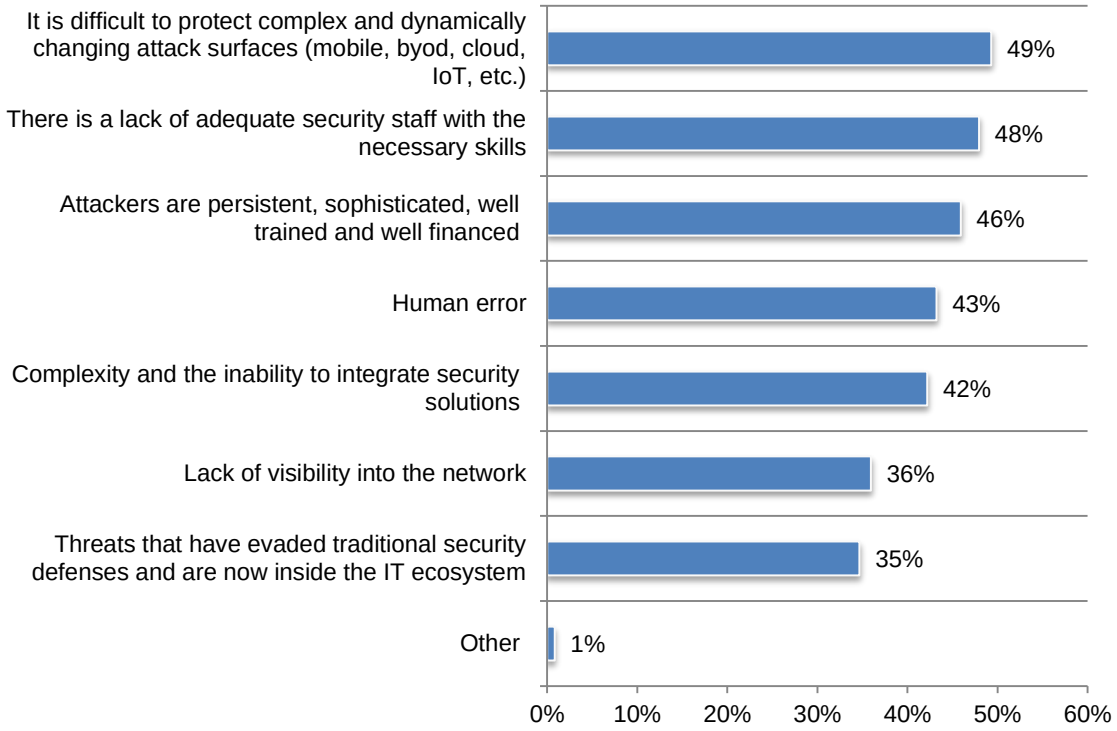
Figure 4. The IT security gap in the IT infrastructure
Strongly Agree and Agree responses combined



[1] *The Race to GDPR: A Study of Companies in the United States & Europe*, conducted by Ponemon Institute and sponsored by McDermott, Will & Emery, LLP, April 2018

Despite all the investments in cybersecurity programs, breaches are still happening. As a result of the IT security gap, companies are unable to stop all data breaches. According to Figure 5, almost half (49 percent of respondents) say it is difficult to protect complex and dynamically changing attack surfaces such as mobile, BYOD, cloud and IoT and 48 percent say there is a skills gap because of the lack of adequate security staff with the necessary expertise. Another reason is that today's attackers are persistent, sophisticated, well-trained and well-financed (46 percent).

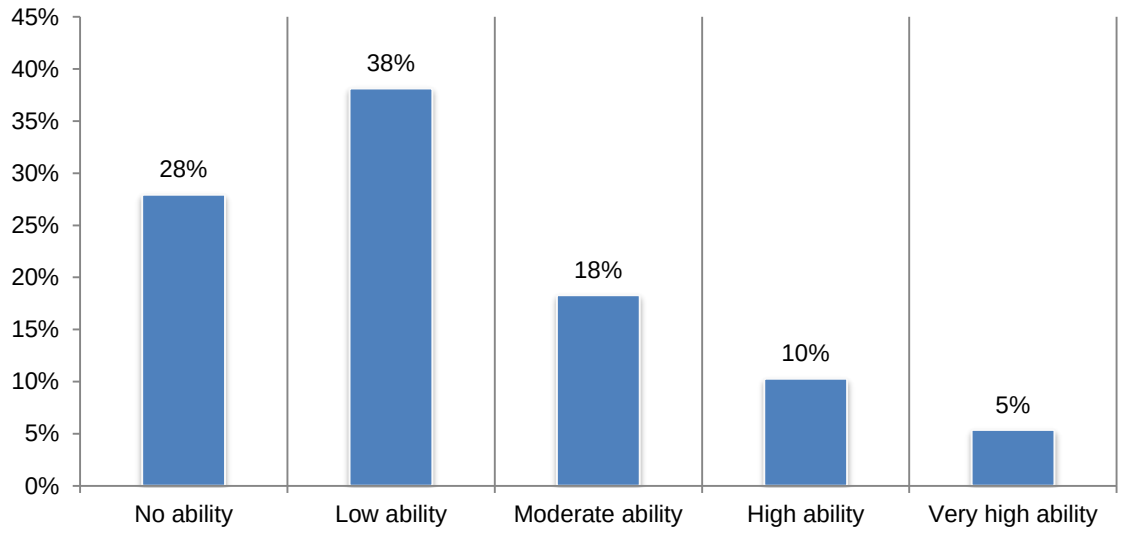
Figure 5. Why data breaches still happen
Three responses permitted



Is the IoT widening the IT security gap?

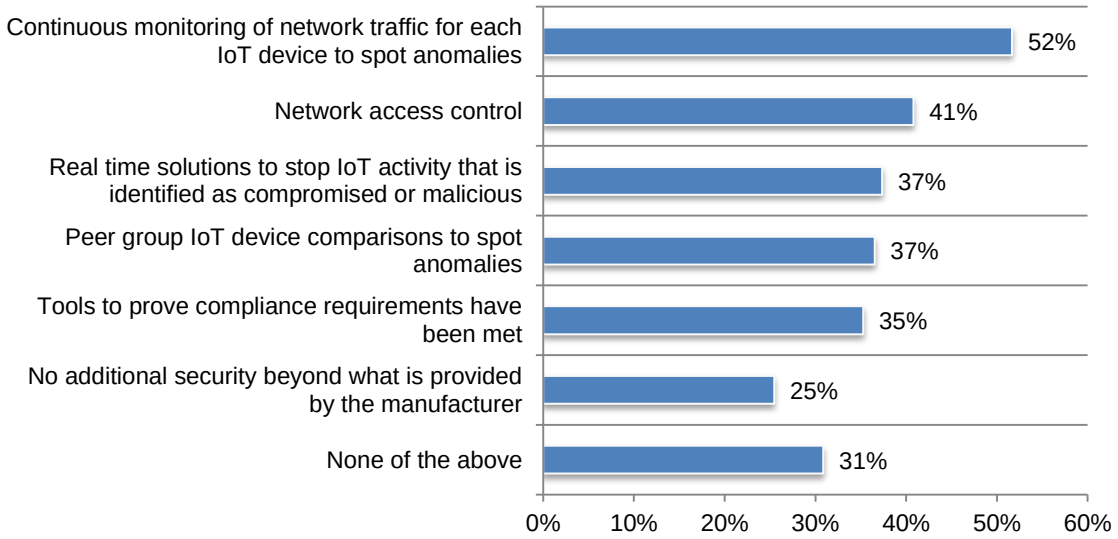
The inability to secure IoT devices and apps is exacerbating the IT security gap. Respondents were asked to rate their organization's ability to secure IoT devices and apps from 1 = no ability to 5 = very high ability. As shown in Figure 6, 66 percent of respondents say their organization has no, or a low ability, to secure their IoT devices and apps. More than half of respondents (51 percent) say IoT visibility is important to detecting attacks.

Figure 6. The ability to secure IoT devices and apps
1 = no ability to 5 = very high ability



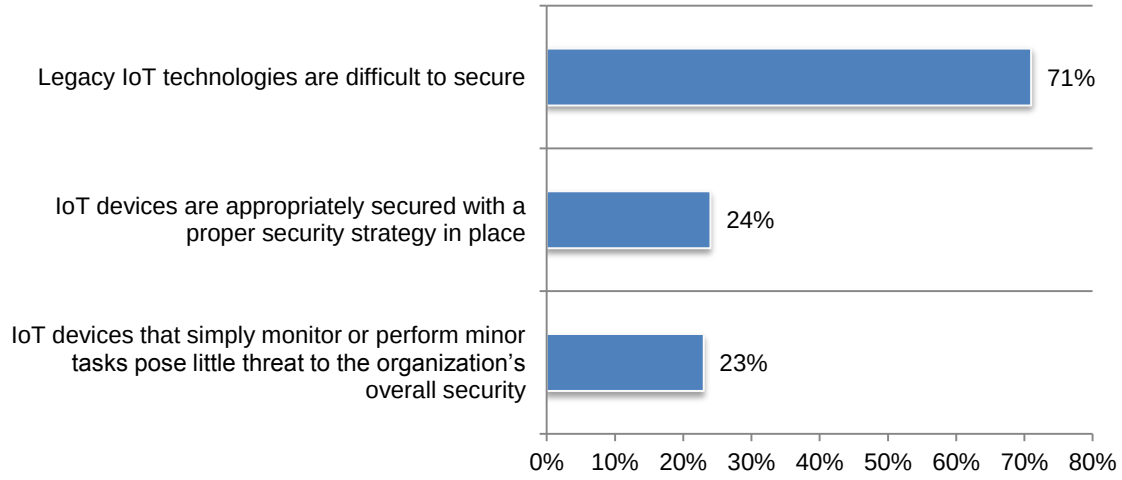
As presented in Figure 7, 52 percent of respondents say continuous monitoring of network traffic for each IoT device is required to spot anomalies and achieve a strong level of security. NAC is also important to addressing IoT risks according to 41 percent of respondents.

Figure 7. How to achieve a strong level of IoT security
More than one response permitted



Why IoT devices are widening the IT security gap. As described in Figure 8**,** 23 percent of respondents believe that even IoT devices that simply monitor or perform minor tasks pose little threat to their organization's security. Seventy-one percent of respondents agree that legacy IoT technologies are difficult to secure. As a consequence, only 24 percent of respondents say their organization's IoT devices are appropriately secured with a proper security strategy in place.

Figure 8. Perceptions about IoT security
Strongly agree and Agree responses combined

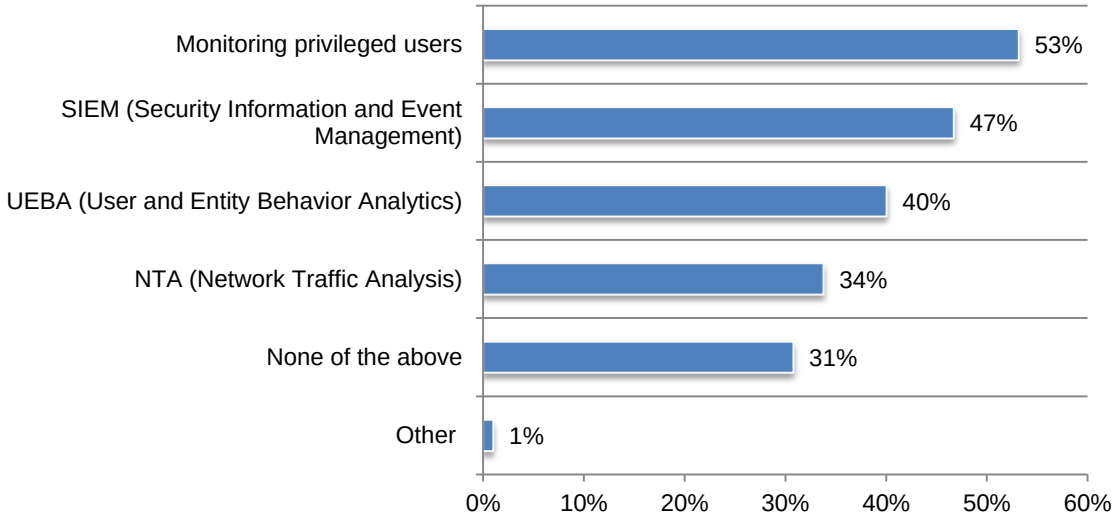


Solutions to closing the IT security gap

New technologies are needed to close the IT security gap. Sixty-four percent of respondents say new technologies such as ML are needed to discover, understand and neutralize threats that are active in the IT infrastructure. Currently, only 45 percent of respondents say their organizations are getting the full value from their current security investments.

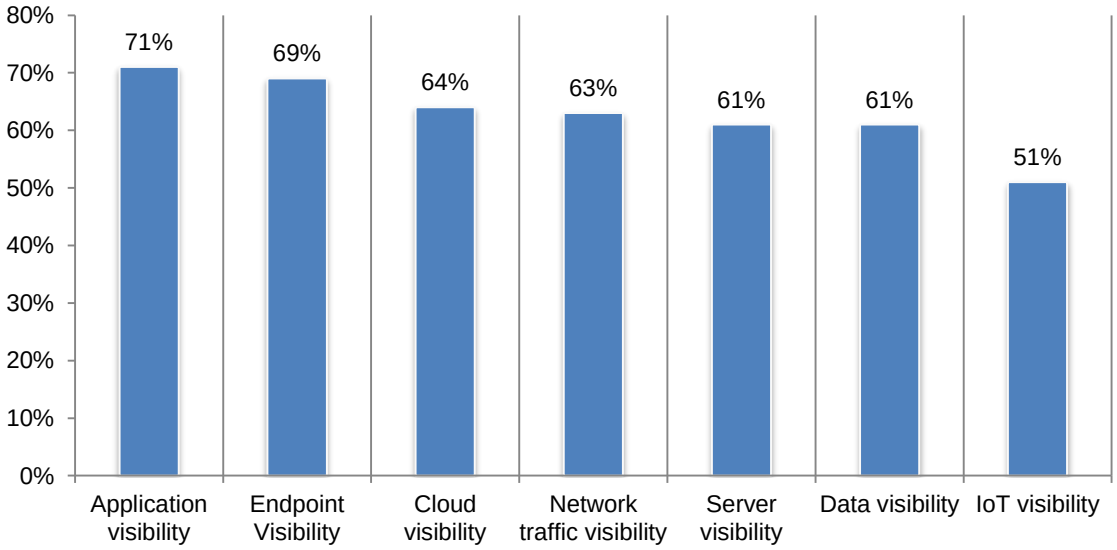
Figure 9 describes steps that respondents believe are important for minimizing stealthy and hidden threats within the IT infrastructure include monitoring privileged users (53 percent), SIEM (47 percent) and User and Entity Behavior Analytics (40 percent), which is increasingly seen as a way to monitor high value assets while "turbocharging" existing SIEM installations.

Figure 9. What steps can minimize stealthy, hidden threats within the IT infrastructure
More than one response permitted



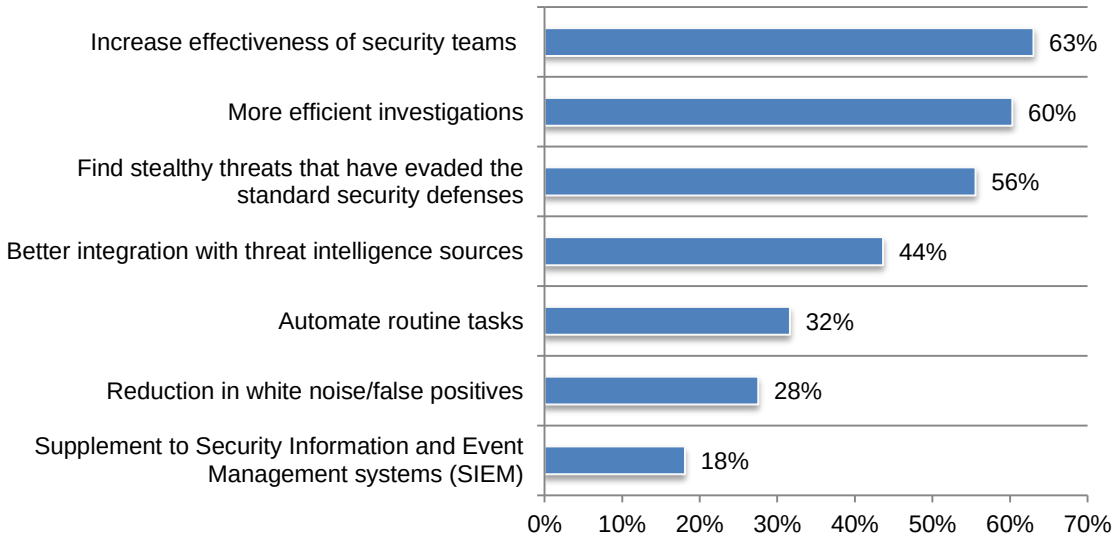
Application and endpoint visibility is most important to detecting attacks from the inside. Respondents were asked to rate the various types of visibility in terms of detecting attacks on the inside from 1 = not important to 5 = very high importance. Figure 10 shows that, 71 percent of respondents say application visibility is critical to detecting attacks and 69 percent of respondents believe endpoint visibility is important. Also important is cloud and network traffic visibility (64 percent and 63 percent, respectively).

Figure 10. The importance of visibility in detecting attacks on the inside
Very high importance and High importance combined



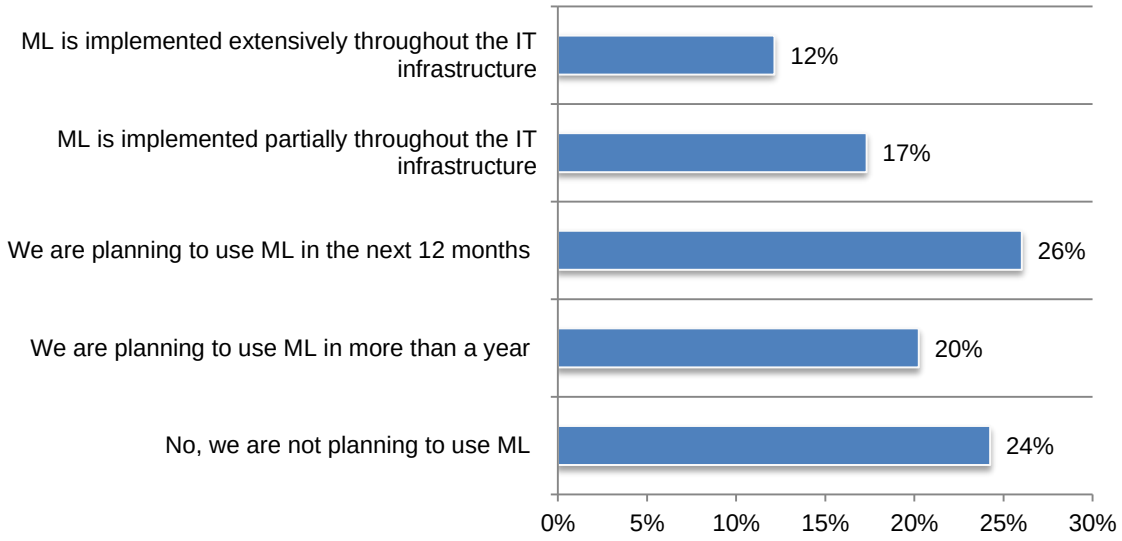
Is AI-based ML hype or reality? More than half of respondents (51 percent) agree that AI technologies such as ML and behavioral analytics are essential for detecting attacks on the inside before they can do damage. As shown in Figure 11, the top three benefits of using these technologies are an increase in effectiveness of security teams, more efficient investigations and the ability to find stealthy threats that have evaded standard security defenses (63 percent, 60 percent and 56 percent of respondents respectively).

Figure 11. The top security benefits from ML and advanced analytics
Three responses permitted



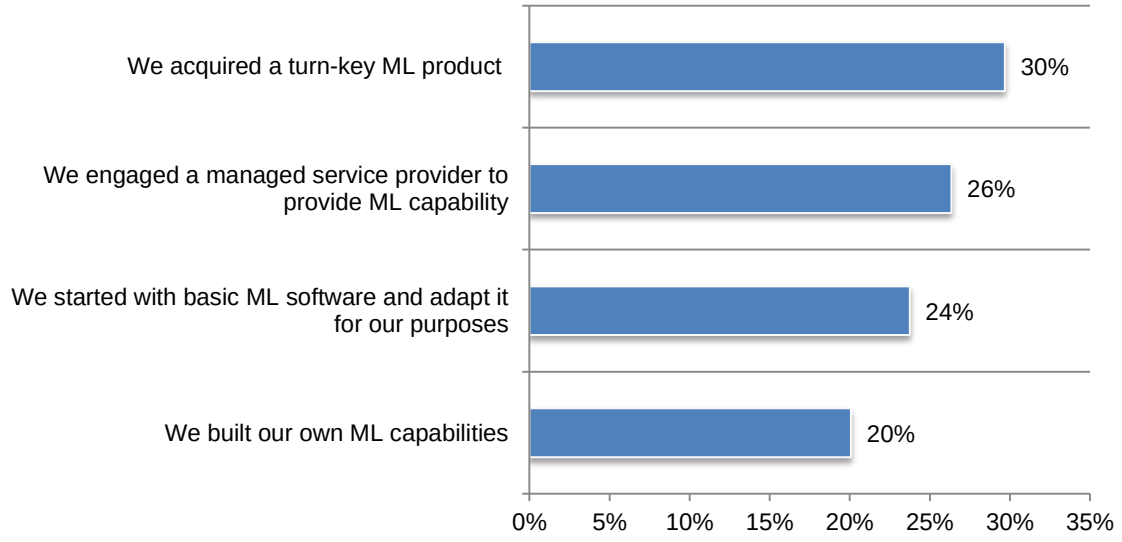
Most organizations are planning to use ML for security purposes. As shown in Figure 12, currently 29 percent of respondents say ML is implemented extensively throughout their IT infrastructure (12 percent) or partially (17 percent). Forty-six percent of respondents say they will have ML in the next 12 months (26 percent) or in more than a year (20 percent).

Figure 12. How ML is used



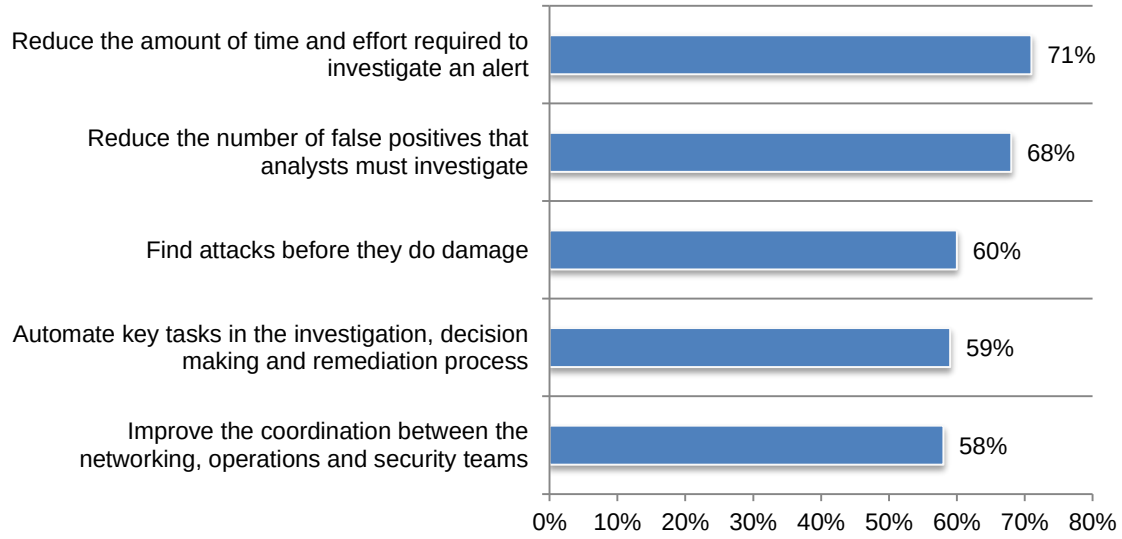
Of those organizations that have ML, 30 percent say they acquired a turnkey ML product or engaged a managed service provider (26 percent). Only 20 percent of respondents say they built their own ML capabilities.

Figure 13. How ML is deployed for attack detection



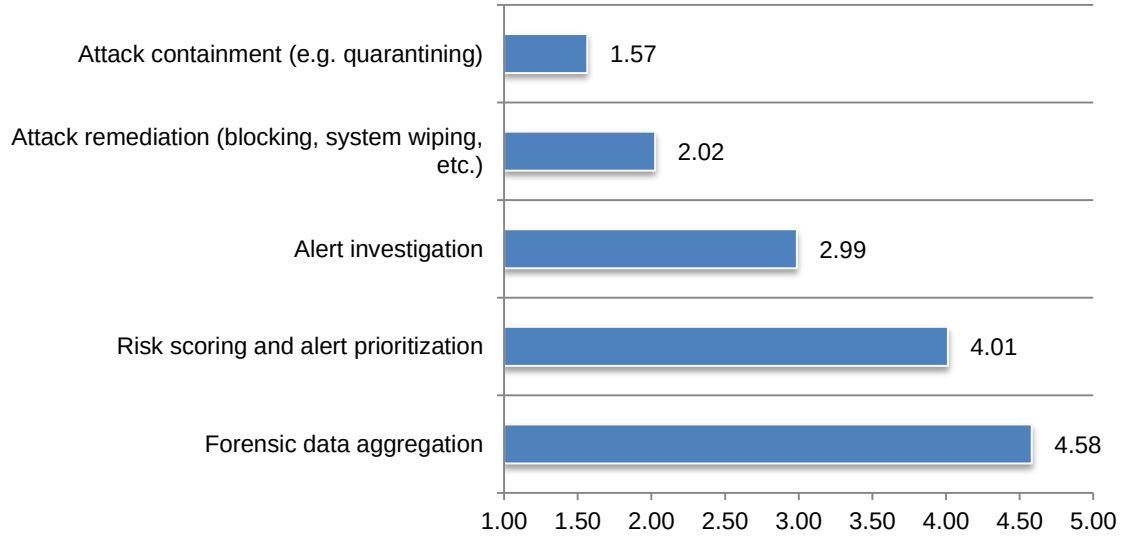
The biggest benefit of automation is considered to be reducing the amount of time and effort required to investigate an alert. Respondents were asked to rate the importance of specific benefits of automation to achieving a more efficient and effective security posture from 1 = not important to 5 = very high importance. Figure 14 shows the most important benefit of this technology is the ability to reduce the amount of time and effort required to investigate an alert (71 percent respondents), followed by a reduction in the number of false positives that analysts must investigate (68 percent of respondents).

Figure 14. Importance of benefits from automation
Very high importance and High importance combined



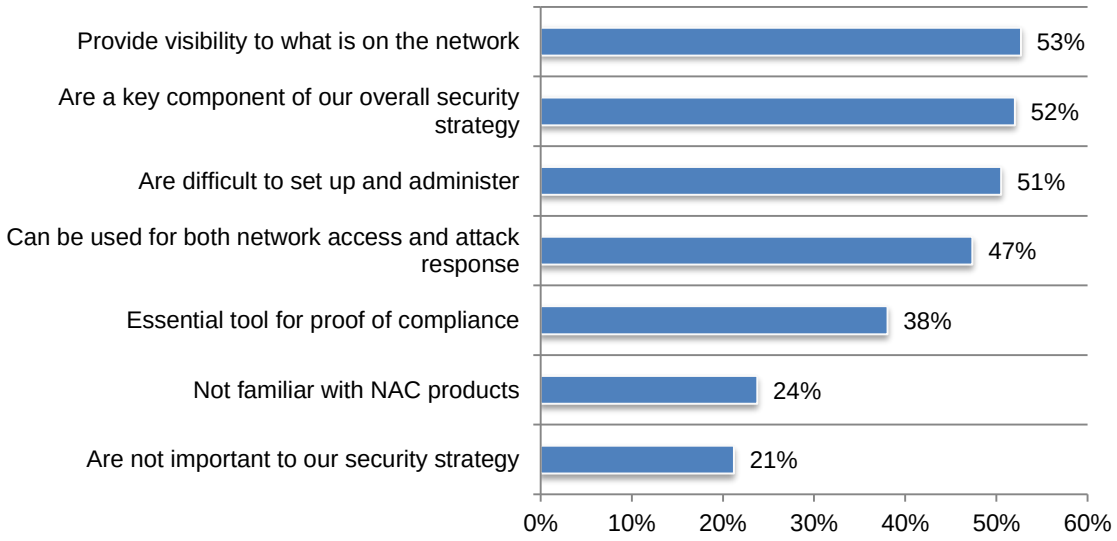
Respondents were asked to rate the following processes most likely to be automated by their organization from 1 = most likely to 5 = least likely. As shown in Figure 15, the processes that will most likely be automated are attack containment and attack remediation.

Figure 15. Processes most likely to be automated
1 = most likely to 5 = least likely



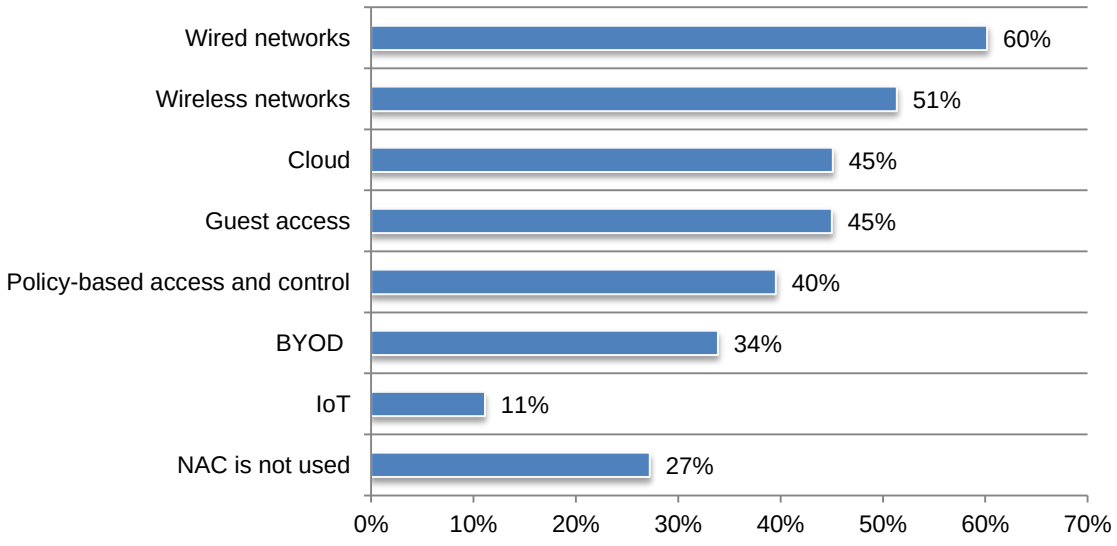
NAC is considered important for providing visibility into what is on networks. Respondents believe their NAC products provide visibility into what is on the network (53 percent) or it is a key component of their overall security strategy (52 percent). However, more than half (51 percent) say NAC products are difficult to set up and administer, according to Figure 16.

Figure 16. How NAC products are deployed
More than one response permitted



Seventy-three percent of respondents say their organizations deploy NAC. Most of them are deployed for wired networks (60 percent of respondents) or wireless networks (51 percent of respondents). However, only 18 percent of respondents are very confident or confident that they know all the users and devices connected to their network all the time.

Figure 17. Purposes for NAC products
More than one response permitted



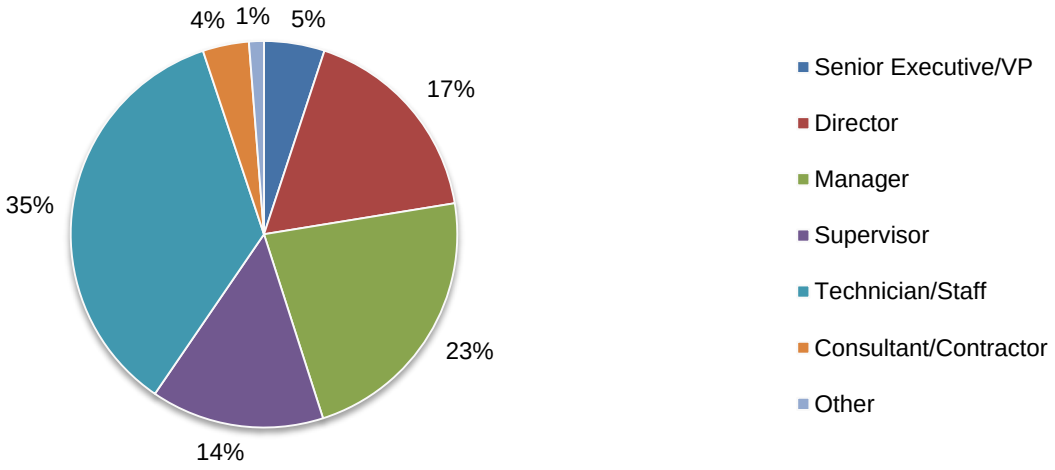
Part 3. Methods

The sampling frame is composed of 115,471 IT and IT security practitioners in the following three regions and eight countries: Asia-Pacific, EMEA, North America, Australia, Brazil, Germany, India, Japan, Mexico, Singapore and the United Kingdom. As shown in Table 1, 4,385 respondents completed the survey. Screening removed 519 surveys. The final sample was 3,866 surveys (or a 3.3 percent response rate).

Table 1. Sample response	Freq	Pct%
Total sampling frame	115,471	100.0%
Total returns	4,385	3.8%
Rejected or screened surveys	519	0.4%
Final sample	3,866	3.3%

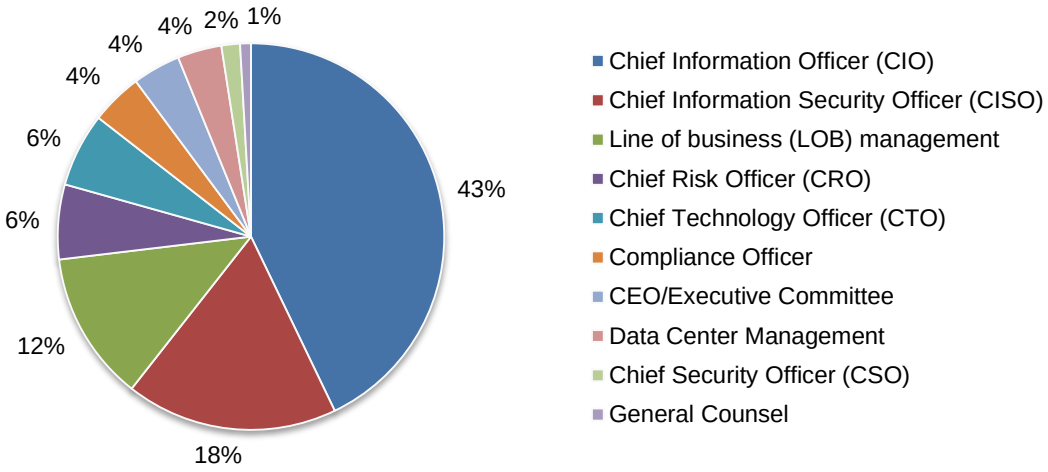
Pie Chart 1 reports the current position or organizational level of the respondents. Fifty-nine percent of respondents reported their current position as supervisory or above.

Pie Chart 1. Distribution of respondents according to position level



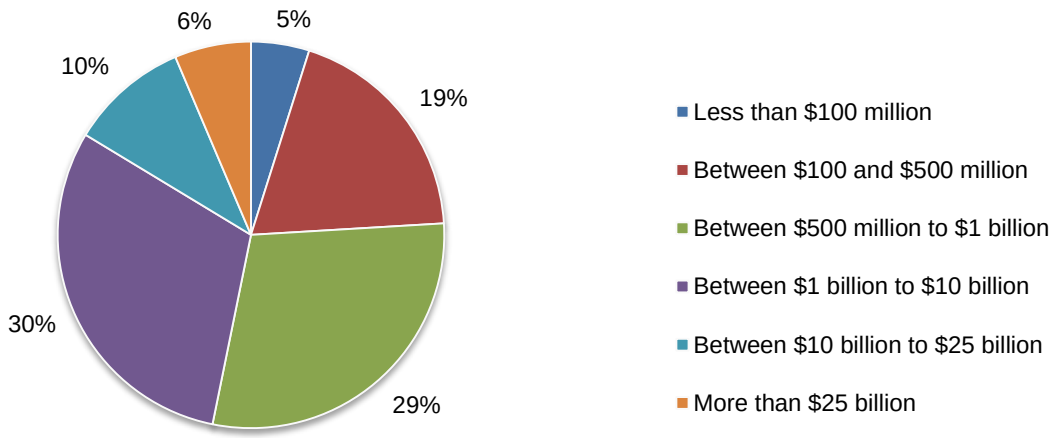
Pie Chart 2 identifies the primary person to whom the respondent or their IT security leader reports. Forty-three percent of respondents identified the chief information officer as the person to whom they report. Another 18 percent indicated they report directly to the chief information security officer and 12 percent of respondents report to a line of business leader.

Pie Chart 2. Distribution of respondents according to reporting channel



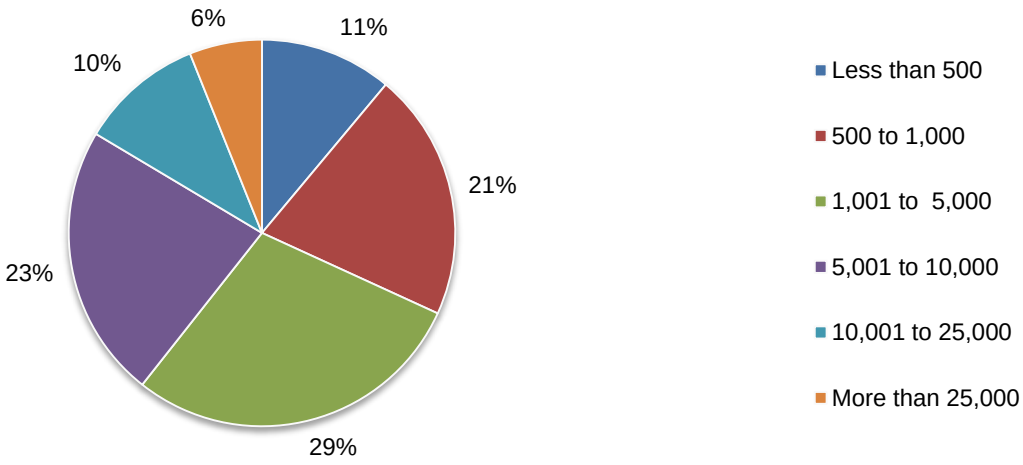
Pie Chart 3 reports the worldwide revenue of the respondents' organizations. Seventy-six percent of respondents reported their organization's annual worldwide revenue to be more than $500 million.

Pie Chart 3. Distribution of respondents according to worldwide revenue
US dollars



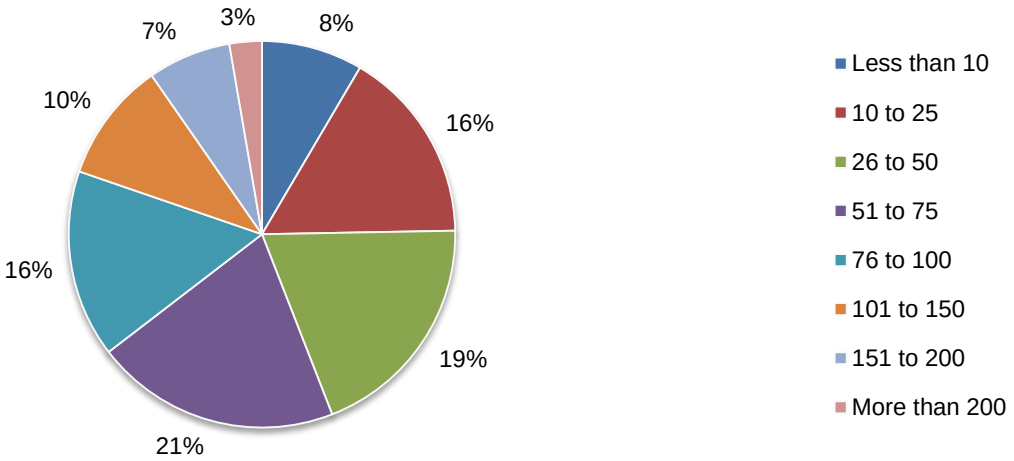
According to Pie Chart 4, 68 percent of respondents are from organizations with a global headcount of more than 1,000 employees.

Pie Chart 4. Distribution of respondents according to the number of employees within the organization



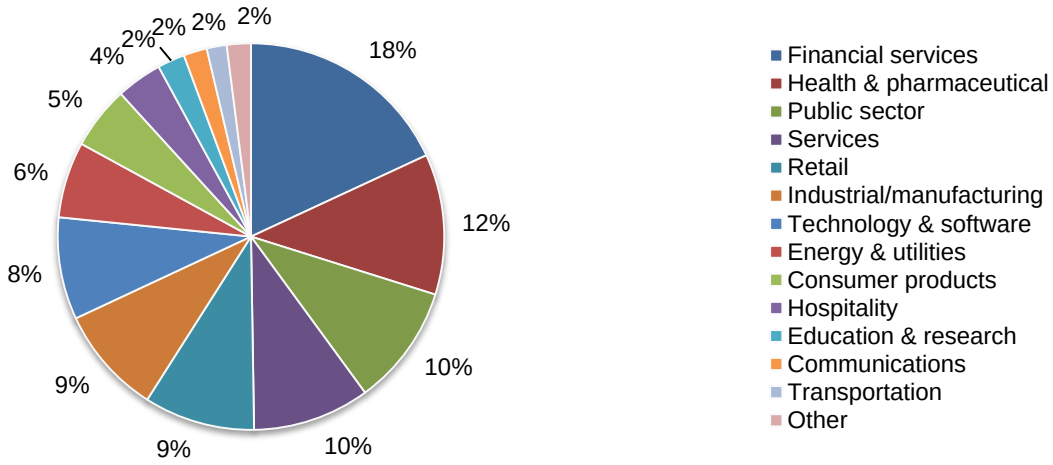
Pie Chart 5 reports the number of security solutions in use within the respondents' organizations. Seventy-six percent of respondents reported that their organizations are currently using more than 25 security solutions.

Pie Chart 5. Distribution of respondents according to the number security solutions



Pie Chart 6 reports the primary industry classification of respondents' organizations. This chart identifies financial services (18 percent of respondents) as the largest segment, followed by health and pharmaceuticals (12 percent of respondents), the public sector (10 percent of respondents) and the services sector (10 percent of respondents).

Pie chart 6. Distribution of respondents according to primary industry classification



Part 4. Caveats

There are inherent limitations to survey research that need to be carefully considered before drawing inferences from findings. The following items are specific limitations that are germane to most web-based surveys.

Non-response bias: The current findings are based on a sample of survey returns. We sent surveys to a representative sample of individuals, resulting in a large number of usable returned responses. Despite non-response tests, it is always possible that individuals who did not participate are substantially different in terms of underlying beliefs from those who completed the instrument.

Sampling frame bias: The accuracy is based on contact information and the degree to which the list is representative of individuals who are IT or IT security practitioners in various organizations in Asia-Pacific, EMEA, North America, Australia, Brazil, Germany, India, Japan, Mexico, Singapore and the United Kingdom. We also acknowledge that the results may be biased by external events such as media coverage. We also acknowledge bias caused by compensating subjects to complete this research within a specified time period.

Self-reported results: The quality of survey research is based on the integrity of confidential responses received from subjects. While certain checks and balances can be incorporated into the survey process, there is always the possibility that a subject did not provide accurate responses.

Appendix: Detailed Survey Results

The following tables provide the frequency or percentage frequency of responses to all survey questions contained in this study. All survey responses were captured March 6 to March 20, 2018.

Survey response	Global
Sampling frame	115,471
Total returns	4,385
Rejected surveys	519
Final sample	3,866
Response rate	3.3%
Same weights	1.00

Part 1. Screening

S1. What best describes your involvement in IT security investments within your organization?	Global
None (stop)	0%
Responsible for overall solution/purchase	50%
Responsible for administration/management	58%
Involved in evaluating solutions	68%
Total	176%

S2. What best describes your role within your organization's IT or IT security department?	Global
Security leadership (CSO/CISO)	38%
IT management	43%
IT operations	50%
Security management	53%
Security monitoring and response	65%
Data administration	29%
Compliance administration	16%
Applications development	25%
Data protection office	2%
I'm not involved in my organization's IT or IT security function (stop)	0%
Total	321%

S3. How knowledgeable are you about your organization's IT security strategy and tactics?	Global
Very knowledgeable	36%
Knowledgeable	48%
Somewhat knowledgeable	16%
Slightly knowledgeable (stop)	0%
No knowledge (stop)	0%
Total	100%

Part 2: Attributions

Q1. Please rate each one of the following statements using the agreement scale provided below each item.	
Q1a. Security teams lack visibility and control into all the activity of every user and device (i.e., mobile, BYOD, IoT) connected to their IT infrastructure.	Global
Strongly agree	32%
Agree	35%
Unsure	14%
Disagree	11%
Strongly disagree	8%
Total	100%

Q1b. New technologies such as machine learning are needed to discover and understand threats that are active in the IT infrastructure.	Global
Strongly agree	29%
Agree	35%
Unsure	16%
Disagree	13%
Strongly disagree	7%
Total	100%

Q1c. In my experience, the IT security infrastructure has gaps that allow attackers to penetrate its defenses.	Global
Strongly agree	29%
Agree	33%
Unsure	20%
Disagree	11%
Strongly disagree	8%
Total	100%

Q1d. My organization is getting the full value from our current security investments.	Global
Strongly agree	20%
Agree	25%
Unsure	27%
Disagree	18%
Strongly disagree	10%
Total	100%

Q2. What are the primary gaps in your organization's IT security infrastructure? Please select your top four choices.	Global
Security staff and skills shortages	49%
Too many alerts to address	36%
Too many false positives	45%
Security solutions can't keep up with exponentially increasing amounts of data	41%
Hard to protect expanding and blurring IT perimeter with IoT, BYOD, mobile and cloud	55%
Siloed security solutions	38%
Inability of traditional perimeter-based security solutions to detect and stop advanced targeted attacks	41%
Lack of visibility into every user and device connected to the IT infrastructure	45%
Lack of visibility into what every user and device is doing while connected to the IT infrastructure	49%
Other (please specify)	1%
Total	400%

Q3. Despite all the cybersecurity investments made by companies, why are breaches still happening? Please select your top three choices.	Global
It is difficult to protect complex and dynamically changing attack surfaces (mobile, BYOD, cloud, IoT, etc.)	49%
There is a lack of adequate security staff with the necessary skills	48%
Attackers are persistent, sophisticated, well trained and well financed	46%
Complexity and the inability to integrate security solutions	42%
Lack of visibility into the network	36%
Threats that have evaded traditional security defenses and are now inside the IT ecosystem	35%
Human error	43%
Other (please specify)	1%
Total	300%

Part 3. Attacks on the inside

Q4. Please rate each one of the following statements using the agreement scale provided below each item.	
Q4a. Attacks that have reached inside the network have the potential to do the greatest damage.	Global
Strongly agree	26%
Agree	25%
Unsure	21%
Disagree	17%
Strongly disagree	11%
Total	100%

Q4b. We are confident that attacks inside the IT infrastructure can be detected before they cause a cybersecurity breach that results in data being stolen, modified or viewed by unauthorized entities.	Global
Strongly agree	18%
Agree	20%
Unsure	20%
Disagree	26%
Strongly disagree	16%
Total	100%

Q5. Which of the following do you believe pose the greatest inside threat to your IT infrastructure? Please rank each threat from 1 = highest threat to 5 = lowest threat.	Global
Compromised legitimate users	1.67
Malicious insiders	4.18
Negligent users	2.75
Compromised IoT devices	3.14
Advanced targeted attacks that have bypassed traditional perimeter defenses	3.37
Average	3.06

Q6. What steps should be taken to minimize stealthy, hidden threats within the IT infrastructure? Please check all that apply.	Global
UEBA	40%
SIEM	47%
NTA (Network Traffic Analysis)	34%
Monitoring privileged users	53%
None of the above	31%
Other (please specify)	1%
Total	206%

Q7. Using the following 5-point scale, please rate the importance of the following types of visibility in terms of detecting attacks on the inside from 1 = not important to 5 = very high importance.	
Q7a. Network traffic visibility	Global
1 = not important	6%
2 = low importance	11%
3 = moderate importance	20%
4 = high importance	37%
5 =very high importance	26%
Total	100%
Extrapolated value	3.65

Q7b. Server visibility	Global
1 = not important	9%
2 = low importance	11%
3 = moderate importance	18%
4 = high importance	31%
5 = very high importance	30%
Total	100%
Extrapolated value	3.62

Q7c. Application visibility	Global
1 = not important	1%
2 = low importance	5%
3 = moderate importance	22%
4 = high importance	31%
5 = very high importance	40%
Total	100%
Extrapolated value	4.03

Q7d. Data visibility	Global
1 = not important	7%
2 = low importance	11%
3 = moderate importance	22%
4 = high importance	29%
5 =very high importance	32%
Total	100%
Extrapolated value	3.69

Q7e. Cloud visibility	Global
1 = not important	7%
2 = low importance	13%
3 = moderate importance	15%
4 = high importance	35%
5 = very high importance	29%
Total	100%
Extrapolated value	3.65

Q7f. IoT visibility	Global
1 = not important	9%
2 = low importance	15%
3 = moderate importance	24%
4 = high importance	26%
5 = very high importance	25%
Total	100%
Extrapolated value	3.43

Q7g. Endpoint visibility	Global
1 = not important	1%
2 = low importance	10%
3 = moderate importance	20%
4 = high importance	35%
5 = very high importance	34%
Total	100%
Extrapolated value	3.91

Part 4. AI-based Machine Learning – Hype or Reality?

Q8. AI technologies (machine learning, behavioral analytics) are essential to detecting attacks on the inside before they do damage.	Global
Strongly agree	22%
Agree	29%
Unsure	25%
Disagree	17%
Strongly disagree	6%
Total	100%

Q9. What are the top three key security benefits of using ML and advanced analytics? Please select your top three choices.	Global
Automate routine tasks	32%
Find stealthy threats that have evaded the standard security defenses	56%
Increase effectiveness of security teams	63%
Better integration with threat intelligence sources	44%
More efficient investigations	60%
Reduction in white noise/false positives	28%
Supplement to SIEM systems	18%
Total	300%

Q10a. What one statement best describes the use of ML for security purposes within your organization?	Global
ML is implemented extensively throughout the IT infrastructure	12%
ML is implemented partially throughout the IT infrastructure	17%
We are planning to use ML in the next 12 months (please skip to Q12)	26%
We are planning to use ML in more than a year (please skip to Q12)	20%
No, we are not planning to use ML (please skip to Q12)	24%
Total	100%

Q10b. What one statement best describes how ML is deployed for attack detection?	Global
We built our own ML capabilities	20%
We started with basic ML software and adapt it for our purposes	24%
We engaged a managed service provider to provide ML capability	26%
We acquired a turn-key ML product	30%
Total	100%

Q11. What best describes how the market considers ML-based attack detection solutions?	Global
It is important to be a standalone function as the last line of defense	21%
It is considered an important supplement to SIEM	15%
It will be a feature in other security products	29%
Too early to tell	35%
Total	100%

Part 5. Automation

Q12. Using the following 5-point scale, please rate the importance of the following benefits of automation to achieving a more efficient and effective security posture from 1 = not important to 5 = very high importance.	
Q12a. Reduce the number of false positives that analysts must investigate	Global
1 = not important	3%
2 = low importance	7%
3 = moderate importance	21%
4 = high importance	38%
5 = very high importance	30%
Total	100%
Extrapolated value	3.84

Q12b. Reduce the amount of time and effort required to investigate an alert	Global
1 = not important	1%
2 = low importance	5%
3 = moderate importance	23%
4 = high importance	41%
5 = very high importance	30%
Total	100%
Extrapolated value	3.95

Q12c. Find attacks before they do damage	Global
1 = not important	4%
2 = low importance	10%
3 = moderate importance	26%
4 = high importance	36%
5 = very high importance	24%
Total	100%
Extrapolated value	3.67

Q12d. Improve the coordination between the networking, operations and security teams	Global
1 = not important	6%
2 = low importance	10%
3 = moderate importance	26%
4 = high importance	30%
5 = very high importance	28%
Total	100%
Extrapolated value	3.63

Q12e. Automate key tasks in the investigation, decision making and remediation process	Global
1 = not important	5%
2 = low importance	12%
3 = moderate importance	24%
4 = high importance	29%
5 = very high importance	30%
Total	100%
Extrapolated value	3.65

Q13. Which of the following processes will most likely be automated by your organization? Please rank each process from 1 = most likely to 5 = least likely.	Global
Risk scoring and alert prioritization	4.01
Forensic data aggregation	4.58
Alert investigation	2.99
Attack containment (e.g. quarantining)	1.57
Attack remediation (blocking, system wiping, etc.)	2.02
Average	3.03

Part 6. Network Access Control (NAC)

Q14. What is your level of confidence that you know ALL the users and devices connected to your network ALL the time?	Global
Very confident	5%
Confident	13%
Somewhat confident	16%
Not confident	32%
No confidence	34%
Total	100%

Q15. What statements best describe your opinion about NAC products deployed by your organization? Please check all that apply.	Global
Are not important to our security strategy	21%
Provide visibility into what is on the network	53%
Are difficult to set up and administer	51%
Are a key component of our overall security strategy	52%
Can be used for both network access and attack response	47%
Not familiar with NAC products	24%
Essential tool for proof of compliance	38%
Total	286%

Q16. For what purposes are NAC systems deployed within your organization? Please check all that apply.	Global
Wired networks	60%
Wireless networks	51%
Guest access	45%
BYOD	34%
IoT	11%
Cloud	45%
Policy-based access and control	40%
NAC is not used	27%
Total	313%

Part 7. Internet of things (IoT)

Q17. Using the following 5-point scale, please rate your organization's ability to secure IoT devices and apps from 1 = no ability to 5 = very high ability.	Global
1 = no ability	28%
2 = low ability	38%
3 = moderate ability	18%
4 = high ability	10%
5 = very high ability	5%
Total	100%
Extrapolated value	2.27

Q18. What is required to achieve a strong level of IoT security within your organization? Please check all that apply.	Global
NAC	41%
Continuous monitoring of network traffic for each IoT device to spot anomalies	52%
Peer group IoT device comparisons to spot anomalies	37%
Real time solutions to stop IoT activity that is identified as compromised or malicious	37%
Tools to prove compliance requirements have been met	35%
No additional security beyond what is provided by the manufacturer	25%
Other (please specify)	0%
None of the above	31%
Total	258%

Q19. Please rate each one of the following statements using the agreement scale provided below each item.	
Q19a. IoT devices are appropriately secured with a proper security strategy in place.	Global
Strongly agree	11%
Agree	13%
Unsure	14%
Disagree	33%
Strongly disagree	29%
Total	100%

Q19b. Legacy IoT technologies are difficult to secure.	Global
Strongly agree	33%
Agree	38%
Unsure	18%
Disagree	9%
Strongly disagree	2%
Total	100%

Q19c. IoT devices that simply monitor or perform minor tasks pose little threat to our organization's overall security.	Global
Strongly agree	11%
Agree	12%
Unsure	17%
Disagree	29%
Strongly disagree	31%
Total	100%

Q20. Who within your organization is most responsible for ensuring the security of IoT devices and apps?	Global
Chief information officer (CIO)	34%
Chief technology officer (CTO)	5%
Chief information security officer (CISO)	18%
Chief security officer (CSO)	3%
Line of business leadership	11%
End-users of IoT devices	13%
Data Protection Officer (DPO)	0%
No one function has overall responsibility	15%
Other (please specify)	1%
Total	100%

Part 8. Your role and organization

D1. What organizational level best describes your current position?	Global
Senior Executive/VP	5%
Director	17%
Manager	23%
Supervisor	14%
Technician/Staff	35%
Consultant/Contractor	4%
Other	1%
Total	100%

D2. Check the Primary Person you or your leader reports to within the organization.	Global
CEO/Executive Committee	4%
General Counsel	1%
Chief Information Officer (CIO)	43%
Chief Technology Officer (CTO)	6%
Chief Information Security Officer (CISO)	18%
Compliance Officer	4%
Line of business (LOB) management	12%
Chief Security Officer (CSO)	2%
Data Center Management	4%
Chief Risk Officer (CRO)	6%
Other	0%
Total	100%

D3. What range best defines the worldwide revenue of your organization? (US dollars)	Global
Less than $100 million	5%
Between $100 and $500 million	19%
Between $500 million to $1 billion	29%
Between $1 billion to $10 billion	30%
Between $10 billion to $25 billion	10%
More than $25 billion	6%
Total	100%

D4. How many employees are in your organization?	Global
Less than 500	11%
500 to 1,000	21%
1,001 to 5,000	29%
5,001 to 10,000	23%
10,001 to 25,000	10%
More than 25,000	6%
Total	100%

D5. How many security solutions does your organization use?	Global
Less than 10	8%
10 to 25	16%
26 to 50	19%
51 to 75	21%
76 to 100	16%
101 to 150	10%
151 to 200	7%
More than 200	3%
Total	100%
Extrapolated value	68

D6. What best describes your organization's primary industry classification?	Global
Agriculture & food services	1%
Communications	2%
Consumer products	5%
Defense & aerospace	0%
Education & research	2%
Energy & utilities	6%
Entertainment & media	1%
Financial services	18%
Health & pharmaceutical	12%
Hospitality	4%
Industrial/manufacturing	9%
Public sector	10%
Retail	9%
Services	10%
Technology & software	8%
Transportation	2%
Total	100%

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