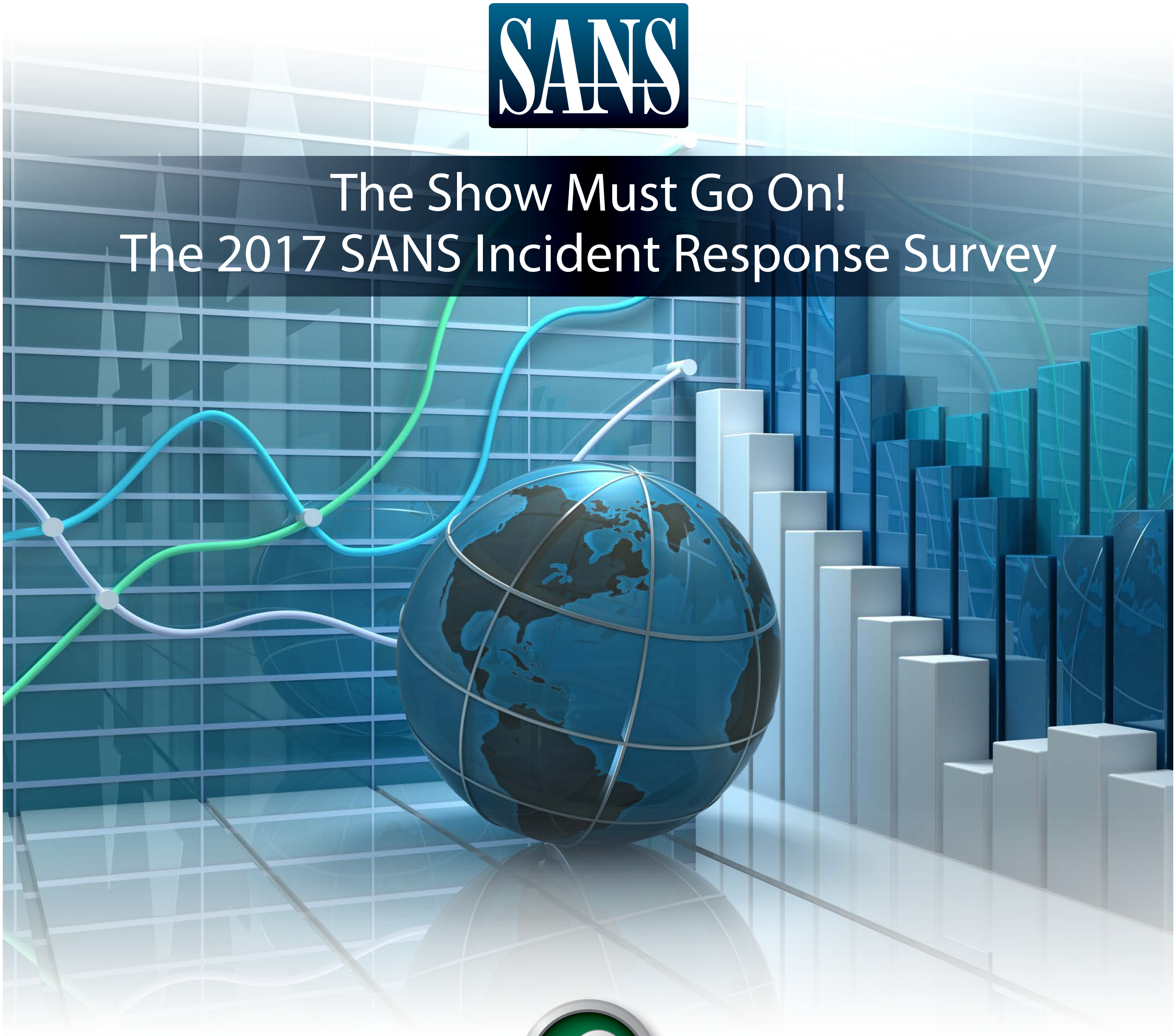
The Show Must Go On!
The 2017 SANS Incident Response Survey



A SANS Survey

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Executive Summary

The year 2016 brought unprecedented events that impacted the cyber security industry, including a myriad of events that raised issues with multiple nation-state attackers, a tumultuous election and numerous government investigations. Additionally, seemingly continuous leaks and data dumps brought new concerns about malware, privacy and government overreach to the surface.

Despite the onslaught of troubling news, our incident response (IR) teams had to continue defending their organizations—even as the attackers' skill level increased with each new tool dump. The year 2016 could've easily been the year that IR teams threw up their hands in frustration, but instead they persevered. That's why SANS has settled on the theme "The Show Must Go On" for our 2017 Incident Response Survey. Survey results show that not only did our teams continue to defend, but they also improved.

Key Results

87% responded to at least one incident in the past year

50% reported a dwell time of less than 24 hours

68% reported malware as the root cause of the incidents they investigated

84% of organizations now have at least one dedicated IR team member

53% of organizations are reporting their security operations centers (SOCs) as mature or maturing in their ability to respond

This year's survey shows that IR teams are:

- Detecting the attackers faster than before, with a drastic improvement in dwell time
- Containing incidents more rapidly
- Relying more on in-house detection and remediation mechanisms
- Receiving budget increases to help support their operations

Any one of these improvements is enough of a reason to celebrate; together, they show a different story. Combined with continuous consumption of threat intelligence and an appreciation for endpoint detection, IR may finally be seeing a pivotal industry shift. Our survey results show that, overall, organizations are building IR teams that suit their environments and their unique set of issues. Moreover, they provide effective response times to help protect the organization. Teams are growing in size, and budget finally seems to be slipping as the No. 1 hurdle to success. Again, the show must go on!

However, this year's survey also shows that despite noticeable improvements, we still have room to improve. Malware still looms as the root cause of a large majority of incidents. IR teams are still suffering from a shortage of skilled staff, and respondents still face lack of ownership and business silo issues that can delay effective containment and remediation. As much as IR teams are improving, there is still plenty of leeway for better business integration. Finally, organizations need to assess their IR teams more often and with more vigor to help the teams improve from within.

Overall, the results of 2017 Incident Response survey were very promising and show that things are getting better *in the right places*. In the following pages, we examine the results of the survey in detail and offer guidelines and feedback on how our industry can continue to improve. The show must go on—but it is far from over.

This Year's Landscape

Respondents to the 2017 SANS Incident Response Survey included organizations from diverse and global industries. Results showed healthy global growth, with double-digit representation in each continent, which is important to help teams build global IR support. Additionally, this year's respondent base held a wide variety of roles, ranging from C-suite positions to analyst roles.

Incident Response Around the World

This year's survey respondent base showed a diverse range of organizations. Over 35% of our respondents originated from a technology-based organization, specializing in either cyber security, telecom or other technology services. Consistent with previous years, the banking and finance industry had a strong representation in the top three industries. Table 1 provides the top 10 industries represented in the survey results.

Table 1. Top 10 Industries Represented

Industry	Percentage
Cyber security	17.3%
Banking and finance	13.7%
Technology	12.3%
Government	9.6%
Manufacturing	6.3%
Telecommunications/ISP	5.8%
Education	5.5%
Healthcare	5.2%
Retail	3.8%
Utilities	3.0%

The survey results also highlighted a shift in global presence from our respondents. Approximately 67% of our respondents indicated they had operations in the United States, down 3% from 2016.[1] Organizations also showed an increase in operations in Europe and Asia, with single-digit reductions in South Pacific, Central/South America and the Middle East areas. While the survey does not inquire about the reason for the change in global operations, it is possible that organizations are aligning to favorable political conditions. Increased global presence may also be the result of recent mergers, acquisitions and consolidations. Figure 1 provides a snapshot of international operations in 2017.

TAKEAWAY

The 2017 survey shows that even with U.S.-based corporate headquarters, incident responders are continuing to grow in global operations and experience. This will lead to diverse, skilled teams capable of providing comprehensive IR services.

In what countries or regions does your organization perform incident response activities? ***Select all that apply.***

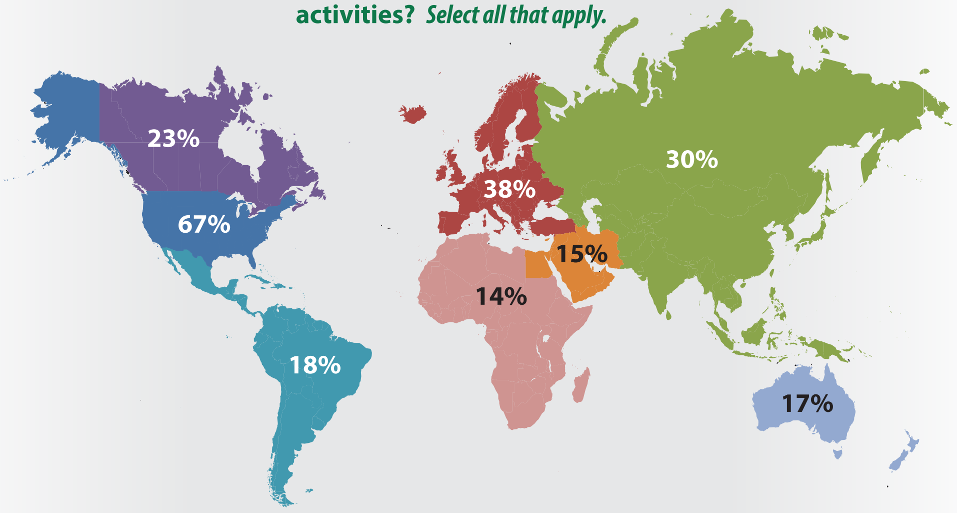

Figure 1. International Operations in 2017

The shift in international operations is also supported by a new question introduced in this year's survey, asking respondents for their primary headquarters location. The addition of this question allows us to measure how much international exposure our respondents maintain, given the corporate office location. Most of our respondents (59%) are primarily headquartered in the United States, with Europe and Asia rounding out the top three, at 20% and 8%, respectively.

[1] "Incident Response Capabilities in 2016: The SANS 2016 Incident Response Survey," June 2016, www.sans.org/reading-room/whitepapers/analyst/incident-response-capabilities-2016-2016-incident-response-survey-37047

Incident Response: Size Doesn't Matter

This year's survey also saw the modification of a question that allows us to better represent the size of our respondent's organizations. With the extra breakout of organizational size, we can better discern whether IR is largely a problem for small, medium or large organizations. Approximately 17% of our survey respondents had more than 50,000 employees, with about half of that number having more than 100,000 employees. Conversely, 39% of our respondents represent organizations with fewer than 1,000 employees. Figure 2 provides a breakdown of responding organization sizes.

Attackers are not picky, and everyone is a target.

How large is your organization's workforce, including both employee and contractor staff?

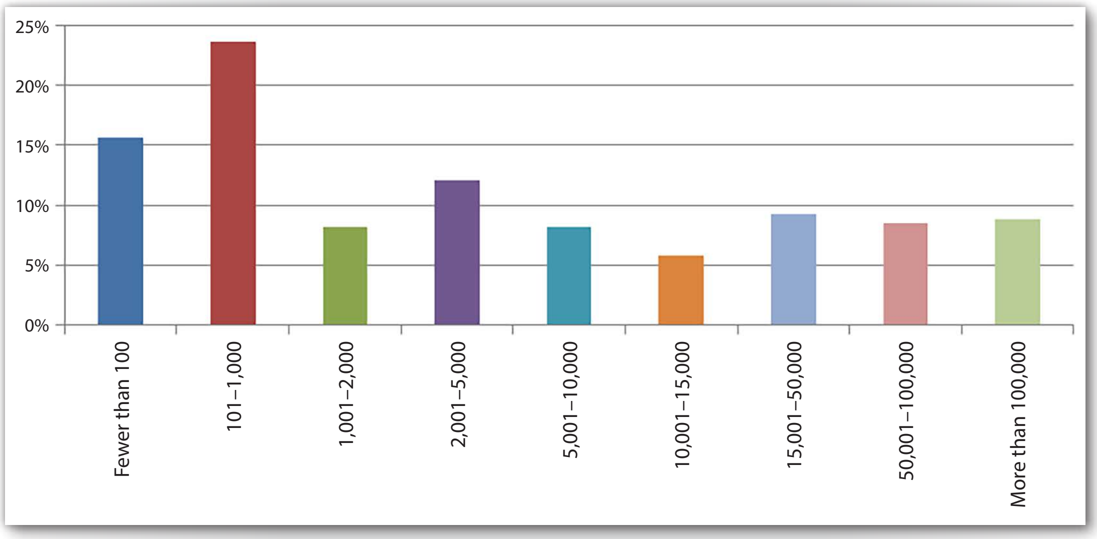

Figure 2. Respondents' Organization Sizes

The strong representation of both small and midsize organizations solidifies the message that all IR teams are hearing and feeling: Attackers are not picky, and everyone is a target. Modern threats are no longer limited to massive organizations with significant intellectual property or financial transactions. As commodity threats such as ransomware continue to rise, organizations of all sizes are finding that IR teams, no matter how small or large, are a critical part of the business.

Incident History

For some organizations, increased international exposure is not always a benefit. For some IR teams, it may mean improved capabilities and an addition of skilled members to the team. In other cases, organizations are expanding, both horizontally and vertically, faster than the information security department can keep up. An increased operational burden can mean a decrease in incident reporting and response, without a complementary decrease in incident occurrence.

In both 2016 and 2017, 87% of our respondents reported responding to at least one incident within the past 12 months. Of these groups, 21% in 2016 and 20% in 2017 reported responding to at least 100 incidents. So, organizations are improving slightly. However, it is concerning that approximately 9% of respondents were unsure whether any incidents had occurred. Figure 3 provides the breakdown of the number of incidents survey respondents faced.

TAKEAWAY

Organizations are reporting an increase in the number of incidents detected, however a decrease in the number of incidents resulting in actual data, system or device breach. This is fantastic! This shows that not only are IR teams reporting more incidents, but they are also able to detect them early enough to prevent a significant breach from occurring.

Over the past 12 months, how many incidents has your organization responded to?

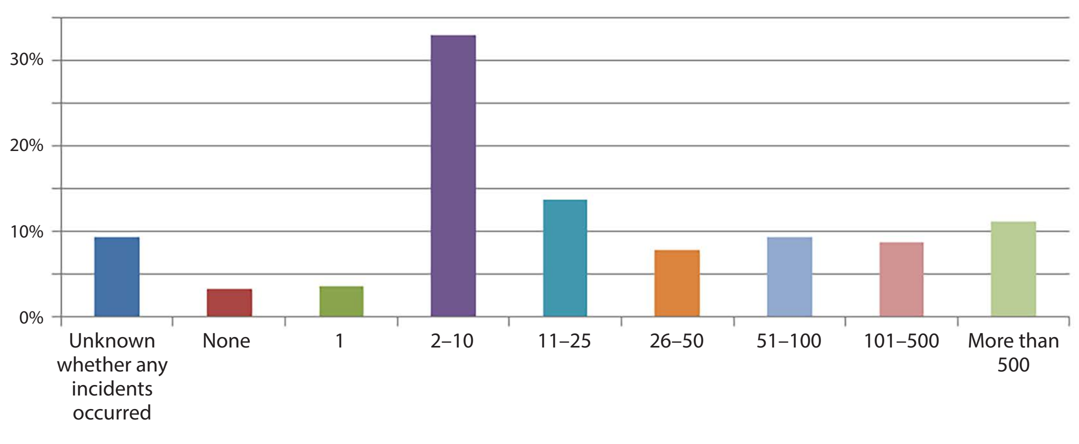

Figure 3. Incidents Requiring Response

Teams are still responding to many incidents. But that may demonstrate IR maturity, as teams are able to implement effective detection mechanisms and/or have the resources to respond to more incidents. These responses may also indicate better incident classification by the information security team. To effectively determine whether an organization is experiencing both an increase in incidents AND an increase in breaches, organizations need to have the metrics available to determine how many incidents subsequently led to breaches.

When compared against organization size, our survey results indicate that, as expected, larger organizations respond to more incidents than smaller organizations. This can likely be attributed to a larger exposure surface via more employees and business support needs. However, our respondent distribution continues to show that organizations of all sizes can suffer a varying number of incidents. Figure 4 provides a comparison of organization size and the number of incidents they respond to.

Number of Incidents Responded to by Organization Size

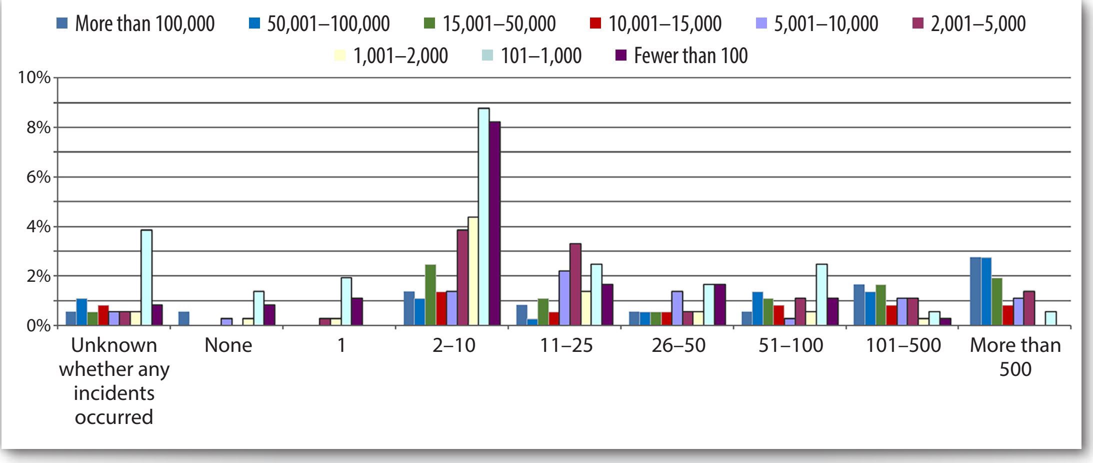

Figure 4. Organization Size and Number of Incidents Responded to

Our 2017 survey respondents reported that 29% of incidents did not result in an actual breach of information, systems or devices. Only 10% of respondents said that more than 25 incidents resulted in an actual breach, down from 39% in last year's survey! Interestingly, organization size did not appear to have any significant impact. Figure 5 provides a breakdown of incident-to-breach conversions from our 2017 respondent base.

How many of these incidents resulted in actual breaches of information, systems or devices?

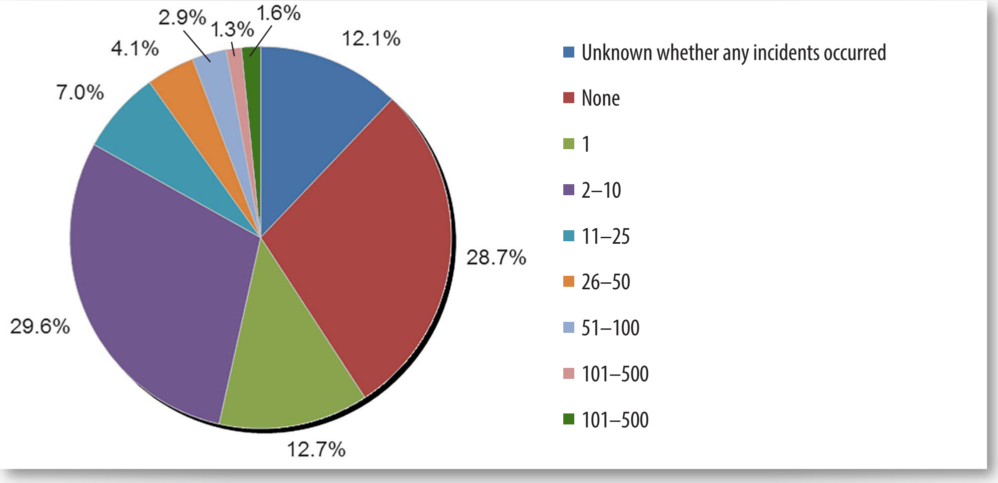

Figure 5. Incidents Versus Breaches

The information presented in Figures 3 and 5 is promising for multiple reasons. It illustrates that IR teams are maturing, accepting the simple fact that attacks are a part of life. They recognize that it is how well we detect and contain those attacks that's most important. With that new recognition, organizations are comfortable reporting a higher number of incidents. This comfort level likely stems from the confidence that the IR team can handle the higher number of incidents and prevent actual data breaches. However, improved response statistics do not mean that teams can rest on their laurels.

Attackers often only need one incident to convert to a breach, and they can do so very quickly. IR teams should interpret these results as confirming that their investments in detecting incidents are paying off by preventing breaches and that their organizations may be experiencing increased security. Additionally, such results can also help the information security department evaluate whether investments in certain areas are yielding a greater return on investment than others and assist in future budget prioritization.

Are Things Getting Better?

One question we are always trying to answer at SANS, especially given our extensive offering of classes and community events, is whether things are improving. Previous surveys have tackled this question by looking at how quickly organizations have responded to and remediated incidents. This question, while seemingly straightforward, mistakenly assumes that each time frame is singular. This year, the survey took a different route.

Containing the Attacker

In previous years, the IR survey has looked at two key time frames: time from compromise to detection (the "dwell time") and the time from detection to remediation. These two questions did not consider the crucial middle step of containment, where an organization halts attacker activity.

Containment is a crucial step in the IR process and is the goal that IR teams work toward before achieving remediation. In some cases, remediation and containment are performed in unison, but often they are separate goals. Our survey respondents liked the new classification, and our results show that things are getting better.

TAKEAWAY

Dwell times are shrinking, indicating that IR teams are improving and responding and/or classifying events faster than before.

This year, 50% of respondents reported a dwell time of fewer than 24 hours, a sizable increase from last year's results, in which 40% attained that measure! Additionally, 53% reported a detection to containment time of less than 24 hours in 2017. More than ever, these are obvious signs that our IR teams and times are improving. Figure 6 provides a breakdown of both dwell times (compromise to detection) and detection to containment times.

On average, how much time elapsed between the initial compromise and detection (i.e., the dwell time)? How long from detection to remediation?
Please check both columns as they apply.

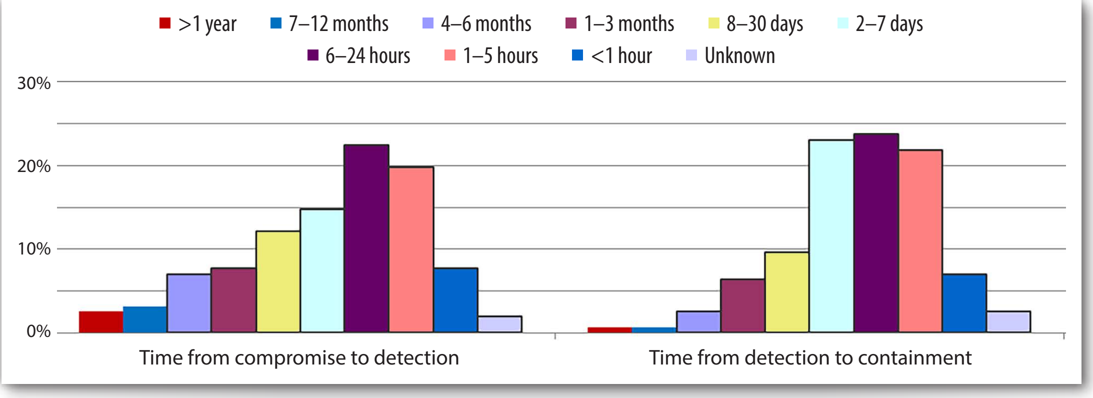

Figure 6. Dwell and Containment Times

Containing an attack as quickly as possible is important to prevent an attacker from performing additional activities or re-entering the environment. In some cases, organizations may catch an active attacker moving throughout the network and either actively stealing data or looking for data to steal. In breaches where an attacker has already compromised an environment, there may be little evidence of recent activity. Inactivity does not diminish the importance of containment. Instead, it amplifies it. Attackers may be waiting for an opportunity to re-enter the environment and may not be exposing all their capabilities.

The critical step following containment is remediation. Whereas containment may utilize known indicators and tactics, techniques, and procedures (TTPs) to block attacker activities, remediation involves short-, medium- and long-term implementations. The goal of remediation is to close known holes, upgrade vulnerable systems, permanently close entry vectors, and/or wrap new security measures around business processes, to name a few.

Approximately 82% of this year's survey base reported that remediation activities take place within one month of containment, with 33% performing these activities within 24 hours. Figure 7 provides insight into this year's remediation times.

On average, how much time elapsed between containment and remediation?

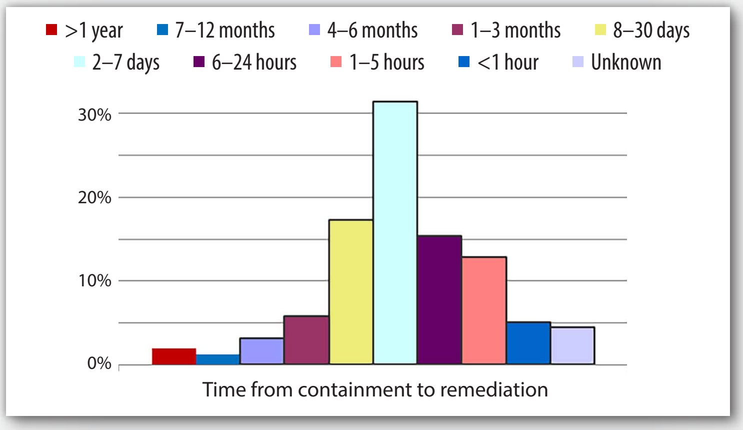

Figure 7. Time from Containment to Remediation

The data presented in Figure 7 continue to highlight good news for IR. Depending on incident severity and the amount of remediation needed, completion within 30 days may seem idealistic for even the most agile organizations. Our survey respondents are showing that time to contain and remediate is not a problem for them, freeing up incident responders to continue responding to incidents.

It is not surprising to any incident responder that attackers will utilize a multitude of methods to compromise a network, if necessary. Each year we strive to see whether attackers are changing their methods or discovering new ways to compromise organizations. As our IR teams continue to mature, we expect to see attackers shift and expose new tactics that will keep our teams on their toes.

Root Cause for Concern

This year's survey indicated that although IR teams are seeing improvements, root causes of incidents remain consistent. Malware infections were the root cause of incidents or confirmed breaches for 68% of respondents. Similar to findings from last year's survey, this is likely due to the ever-growing popularity of attacks utilizing ransomware and other commodity malware. While the survey did not call out ransomware directly, 7 of the 11 respondents who selected "Other" listed ransomware as the root cause. Figure 8 provides a breakdown of the underlying nature of breaches, as experienced by our respondent base.

What was the underlying nature of these breaches?
Select all that apply.

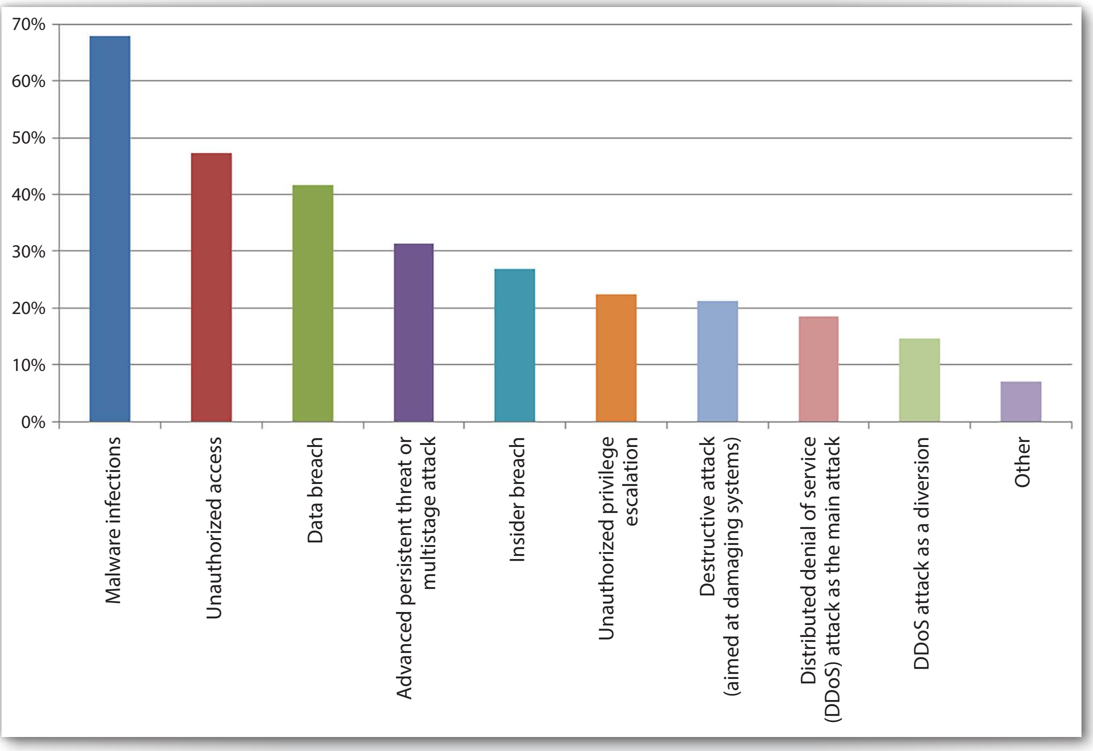

Figure 8. Root Causes

Nearly 55% of the survey respondents indicated that damaging attacks, such as destructive or Distributed Denial of Service (DDoS) attacks, were the root cause for confirmed breaches. The leading presence of malware-based and destructive attacks aligns with what incident responders are seeing in the current landscape, which continues to see a proliferation of attackers looking for quick financial gain. Naturally, as attackers find successful ways to make money, they will continue to repeat the methods until the well has run dry.

However, not all attacks are seeking immediate financial gain. To dismiss attacks with other goals would be inappropriate. In fact, our survey results illustrate that financial data may not be the top goal of data breaches. Approximately 50% of this year's respondents reported that employee information was the data exfiltrated from or otherwise compromised within the organization's environment, reflecting the long-term value of personal information, such as Social Security numbers, as opposed to PCI or other financial data. Individual customer information and intellectual property completed the top three types of data that attackers sought to steal, respectively. Figure 9 provides a breakdown of data types compromised by attackers in 2017, according to our respondent base.

What type of data was exfiltrated from the environment or otherwise compromised in the breach? ***Select all that apply.***

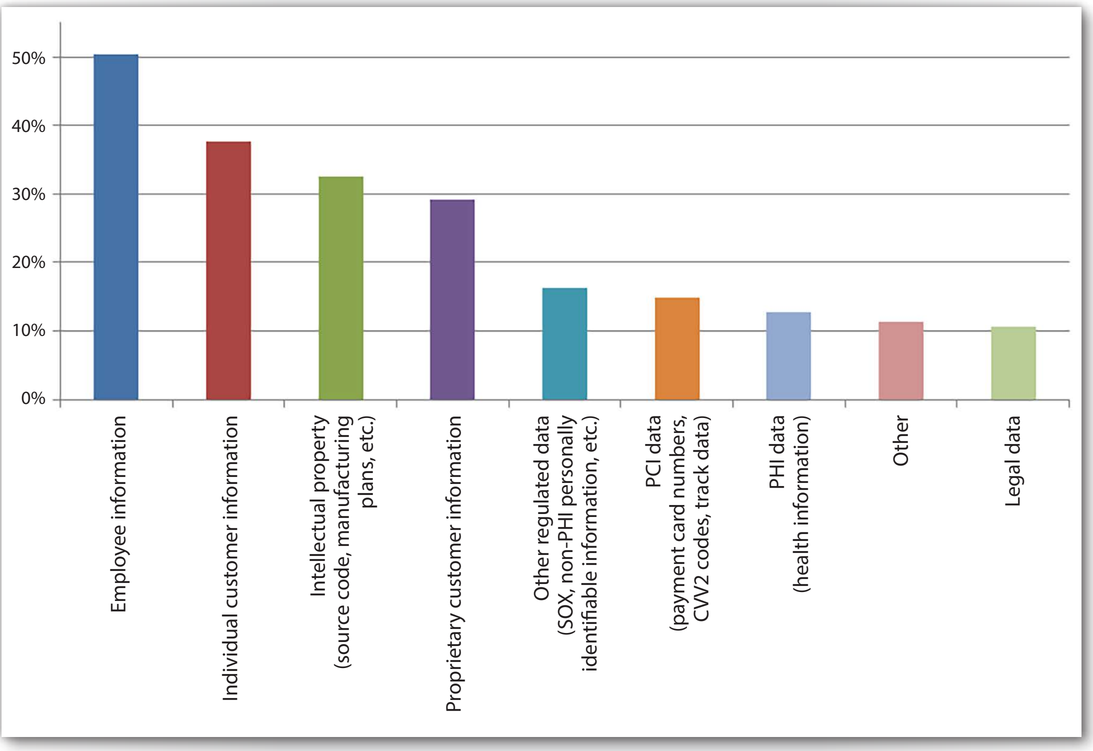

Figure 9. Data Targeted

The importance of understanding the types of data attackers may be seeking helps organizations determine where to prioritize their defensive spending. It should also serve as a guide for incident responders to adjust alert severity. Teams may want to consider adjusting the monitoring of systems that contain highly sought-after data and/or critical business functions. Protecting sensitive data should not be prioritized based on attacker preferences. Instead, organizations should consider the business impact of data theft and scale accordingly.

IR: It's What's Inside that Counts

In previous sections of this survey overview, we've analyzed key statistics that organizations can use to measure whether they were effective at preventing incidents from turning into breaches or responding to breaches as quickly as possible. While these metrics are useful to gauge whether investments in IR are yielding fruit, those in management positions must also analyze the maturity of their teams.

Growing Up or Growing In?

While previous sections have shown promising statistics that IR teams are improving, in certain areas our respondents felt their organizations still had plenty of room to grow. Approximately 53% of our respondents indicated that their SOC's ability to respond to events was mature or is maturing, compared with 52% in 2016. This assessment is a somewhat surprisingly flat result, considering previous results had shown that teams are improving compared to years past. Even more concerning, 39% of our respondents indicated that their SOC was still immature.

However, measurement of a SOC's response abilities is difficult to gauge within a single year. When we compared the survey results against our 2015 and 2016 data, effectively mapping three years' worth of survey results, considerable improvement is obvious. Respondents during this time frame clearly show noticeable uptrends in mature (2%) and maturing (12%) SOCs, with a welcome 5% decrease in immaturity.

Figure 10 provides a breakdown of SOC maturity results from 2015 to 2017.

What is the maturity of your security operations center's (SOC's) ability to respond to events?

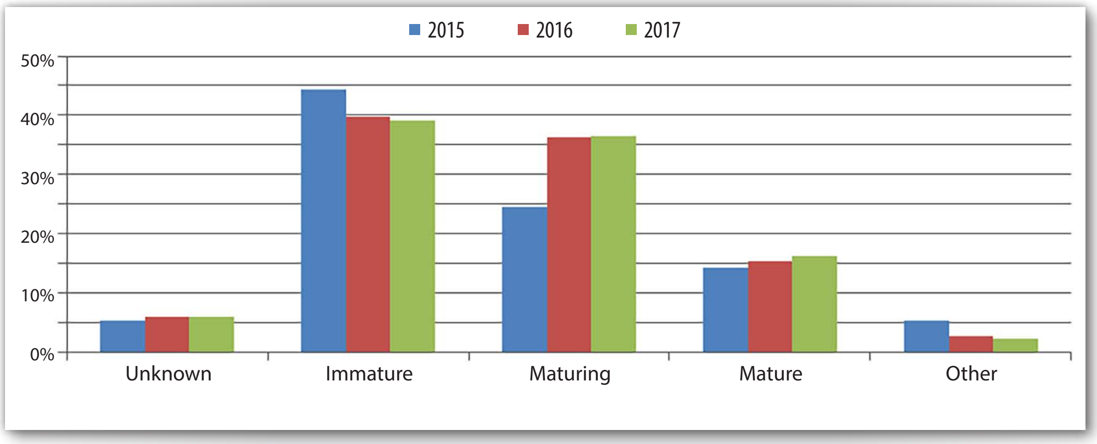

Figure 10. SOC Maturity

Note that while this survey may show little change in SOC maturity, it is not necessarily negative for IR. It may be a sign of additional responsibilities given to the SOC, and survey respondents are aware that the organization is in an improvement process. As we'll see shortly, some statistics do lean toward increased in-house security reliance, which may explain the increased level of responsibility.

An immature SOC assessment may also stem from newly formed or growing teams. This year's survey reported that approximately 84% of organizations had at least one core dedicated IR team member, and 55% had one or more dedicated IR team members during a surge response, compared to 76% and 55%, respectively, in last year's results. Once again, this is healthy growth that shows IR teams are expanding. Our respondents reported the greatest upticks in teams with one to six total core members, indicating that smaller organizations are adding IR members as the business allows, or smaller teams are finally receiving the support that they need. Table 2 provides a breakdown of this year's core IR team size.

TAKEAWAY

Confidence in SOC and IR teams may result in additional capabilities. While a vote of confidence may increase morale and help justify spending for IR improvement, be careful not to saddle incident responders with duties that are outside their scope of capabilities.

Table 2. Core IR Team Size

	Unknown	None	1–2	3–5	6–10	11–20	More than 20
Dedicated internal IR team	3.6%	11.7%	36.4%	25.9%	14.2%	4.5%	2.8%
Drawn from other internal staff (security group, operational/administrative IT resources)	5.3%	14.6%	27.9%	21.9%	13.8%	5.7%	7.3%
Outsourced services (e.g., MSSP-managed services security provider) with dedicated IR services (alerts, response)	13.4%	42.9%	18.6%	8.5%	4.9%	2.4%	4.0%
Other	5.3%	17.4%	2.0%	0.8%	0.0%	0.8%	0.0%

This year's survey results show that not only are teams expanding, but so are the mechanisms organizations are using to detect and remediate against alerts. Survey results indicate that organizations are involving multiple types of systems in their investigations and that these systems are moving mostly in-house. Corporate-owned devices, such as laptops and smartphones, internal network devices and on-premises corporate data services constitute the top three types of in-house systems utilized during investigations. Top outsourced devices include typical contenders such as corporate systems hosted in the cloud. Figure 11 provides insight into use of in-house and outsourced systems by our respondent base.

What systems are involved in your investigations?

Check only those that apply. Please indicate whether your capabilities for these investigations exist in-house, are outsourced or both.

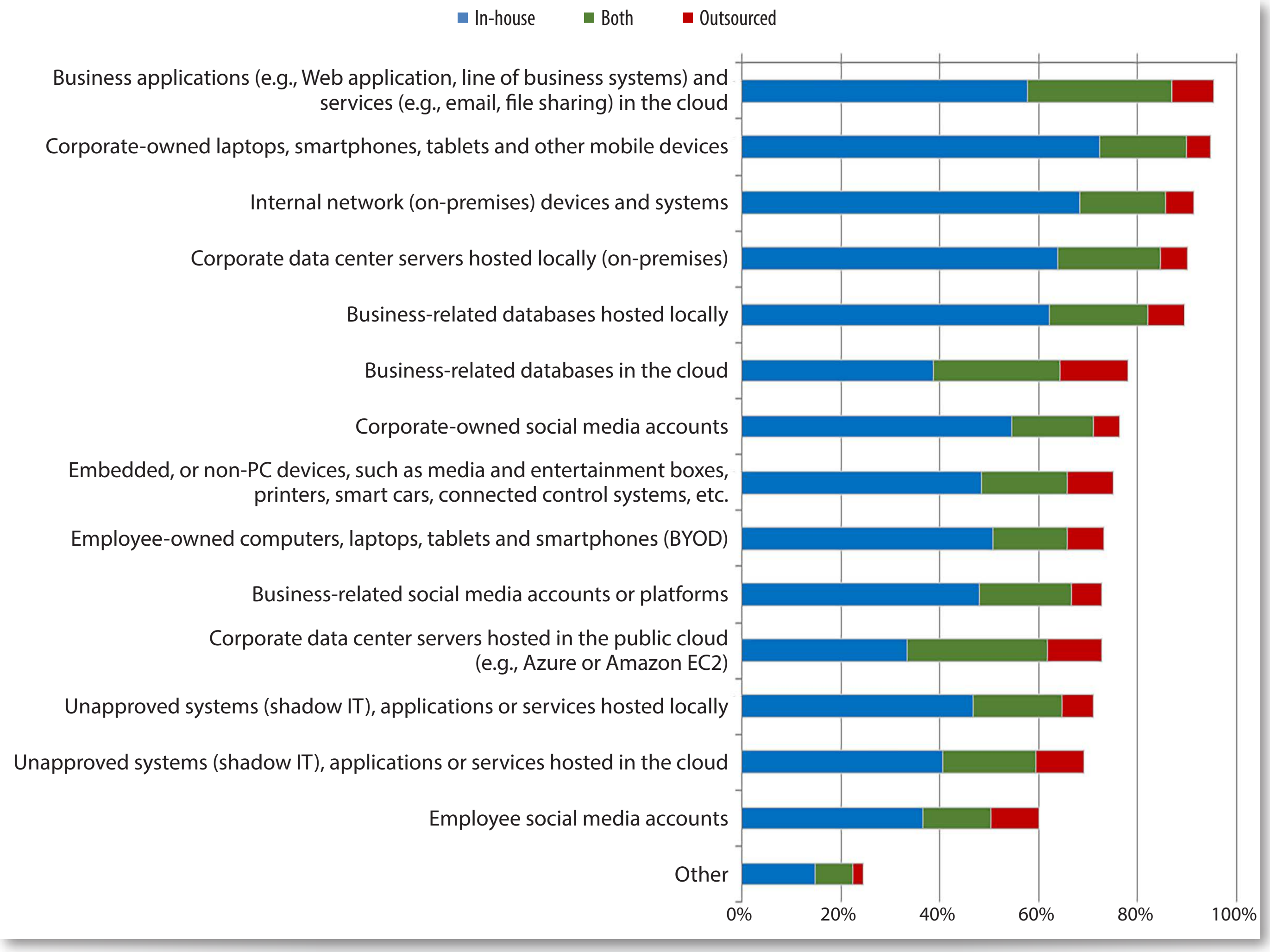

Figure 11. Systems Used in Investigations

While the numbers and types of systems involved in investigations are good signs of organizations bringing capabilities in-house, our survey results indicate that there is still plenty of room for detection capability integration. Integrated detection capabilities lead to improved containment times that, in turn, improve the organization. This year’s survey showed little change in detection integration, which may be stifling teams’ ability to shorten response times even further. Respondents indicated that IDS/IPS/Firewalls, secure web gateways, and security information and event management systems (SIEMs) are highly integrated, while screen capture tools, sandboxing and perimeter SSL decryption remain the largest unintegrated mechanisms. Table 3 provides a snapshot into our respondent’s detection integration results.

Table 3. Integration of Detection Systems

Capabilities Used to Identify Impacted Systems	Highly Integrated	Partially Integrated	Not Integrated
IPS/IDS/Firewall/UTM alerts	51.2%	39.0%	6.3%
Log analysis	37.6%	46.3%	10.2%
Security information and event management (SIEM) correlation and analysis	41.0%	34.6%	12.7%
Secure web gateway (on-premises and/or cloud proxy)	42.4%	30.7%	14.6%
Network flow and anomaly detection tools	27.8%	44.9%	14.6%
Network packet capture or sniffer tools	25.4%	40.5%	21.5%
Network-based scanning agents for signatures and detected behavior	38.5%	33.7%	14.6%
Sandboxing	19.0%	34.1%	33.7%
User notification or complaints	29.3%	40.0%	17.6%
Host-based intrusion detection (HIDS) agent alerts	32.7%	37.1%	16.1%
Endpoint detection and response (EDR) capabilities	36.1%	34.1%	15.1%
Services availability monitoring	32.7%	33.2%	18.0%
Third-party notifications and intelligence	22.9%	40.0%	20.5%
SSL decryption at the network boundary	23.4%	28.3%	31.2%
User activity monitoring tools	24.9%	35.1%	22.9%
Endpoint controls (e.g., NAC or MDM)	27.8%	38.5%	16.1%
Network traffic archival and analysis tools	28.8%	35.1%	18.0%
Intelligence and analytics tools or services	24.4%	41.5%	15.6%
Homegrown tools for our specific environment	17.1%	36.6%	27.3%
Case-management systems	22.9%	32.2%	25.4%
Third-party tools specific for legal digital forensics	18.0%	30.2%	31.7%
File integrity monitoring (FIM)	16.6%	27.8%	34.1%
Behavioral monitoring (profiling)	13.2%	30.2%	34.1%
Visibility infrastructure to optimize connected security systems	19.0%	34.1%	24.4%
Browser and screen capture tools	15.6%	24.4%	37.1%

It is worth noting that while many organizations have dreams of unlimited security capabilities, the selection of devices that get integrated may be determined by regulatory factors. In this year's survey, we sought to understand what regulatory forces may underlie IR improvements. Approximately 64% of this year's respondent base reported that Payment Card Industry (PCI) regulations are driving their IR improvements, followed by SOX at 43% and HIPAA at 34%, respectively. Figure 12 provides a breakdown of industry regulations driving IR capabilities.

Specify the industry regulations driving your IR capabilities. ***Select all that apply.***

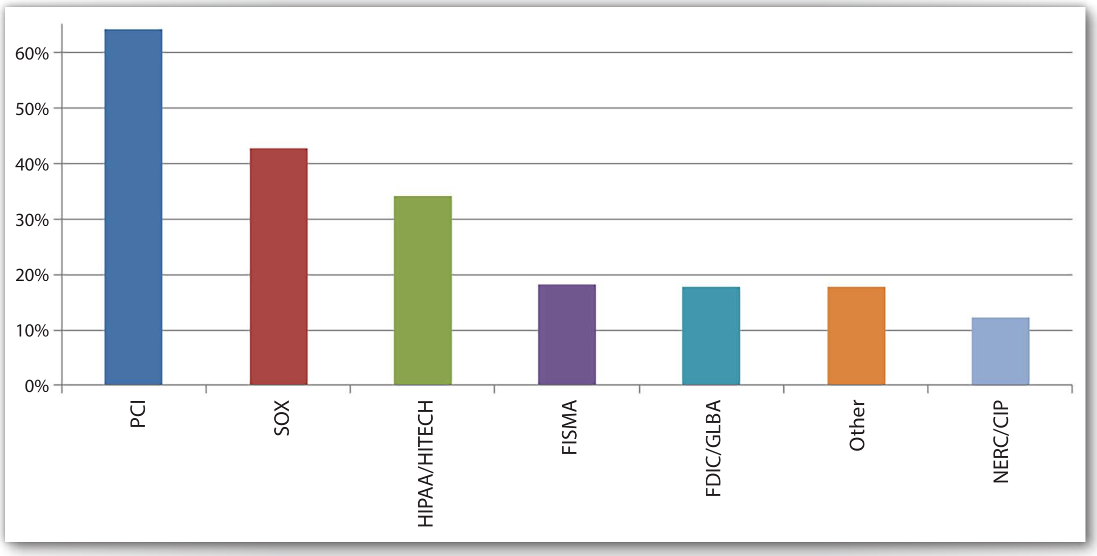

Figure 12. Regulations Driving Incident Response

Incident Response + Threat Intelligence

Our survey respondents indicated that threat intelligence continues to be an important element of IR. Approximately 73% of our respondents are using threat intelligence; however, more than half of those respondents are using threat intelligence that is included with previously purchased tools. Unfortunately, this leaves 27% of the respondent base not utilizing threat intelligence, which is consistent with last year's survey. Figure 13 provides a breakdown of threat intelligence consumption.

TAKEAWAY

Confidence in SOC and IR teams may result in additional capabilities. While a vote of confidence may increase morale and help justify spending for IR improvement, be careful not to saddle incident responders with duties that are outside their scope of capabilities.

Are you using threat intelligence (TI) feeds to speed detection and response?
Select the most appropriate.

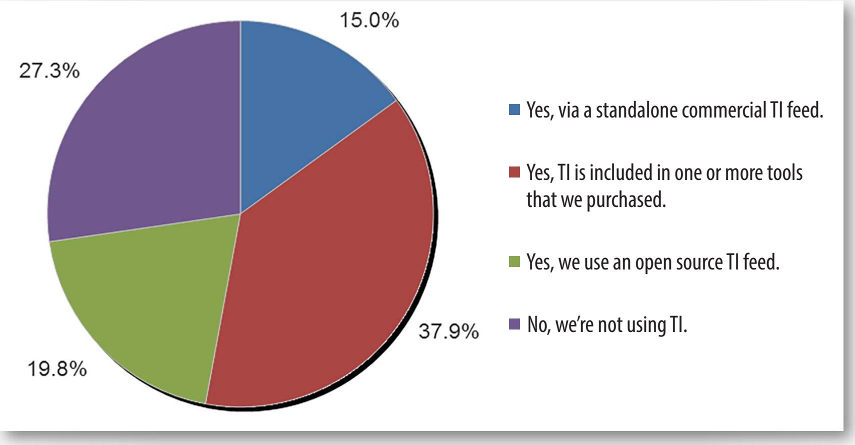

Figure 13. Use of Threat Intelligence

The lack of threat intelligence in over a quarter of our survey respondent base is a troubling trend that has remained consistent year-over-year. The use of threat intelligence can be crucial to early detection and/or mitigation of attacker threats, and it may assist in preventing incidents from converting into data breaches. For those respondents that do utilize threat intelligence, 51% reported using both third-party and internal discovery intelligence to help detect communications between systems and malicious IP addresses. Rounding out the top three, respondents are also using threat intelligence to detect malicious IP addresses and find host and network indicators of compromise. Figure 14 provides a breakdown of threat intelligence utilization within our respondent base.

What kind of threat intelligence are you using?

Please indicate what is being delivered through third parties, what is developed internally, or both. Select only those that apply.

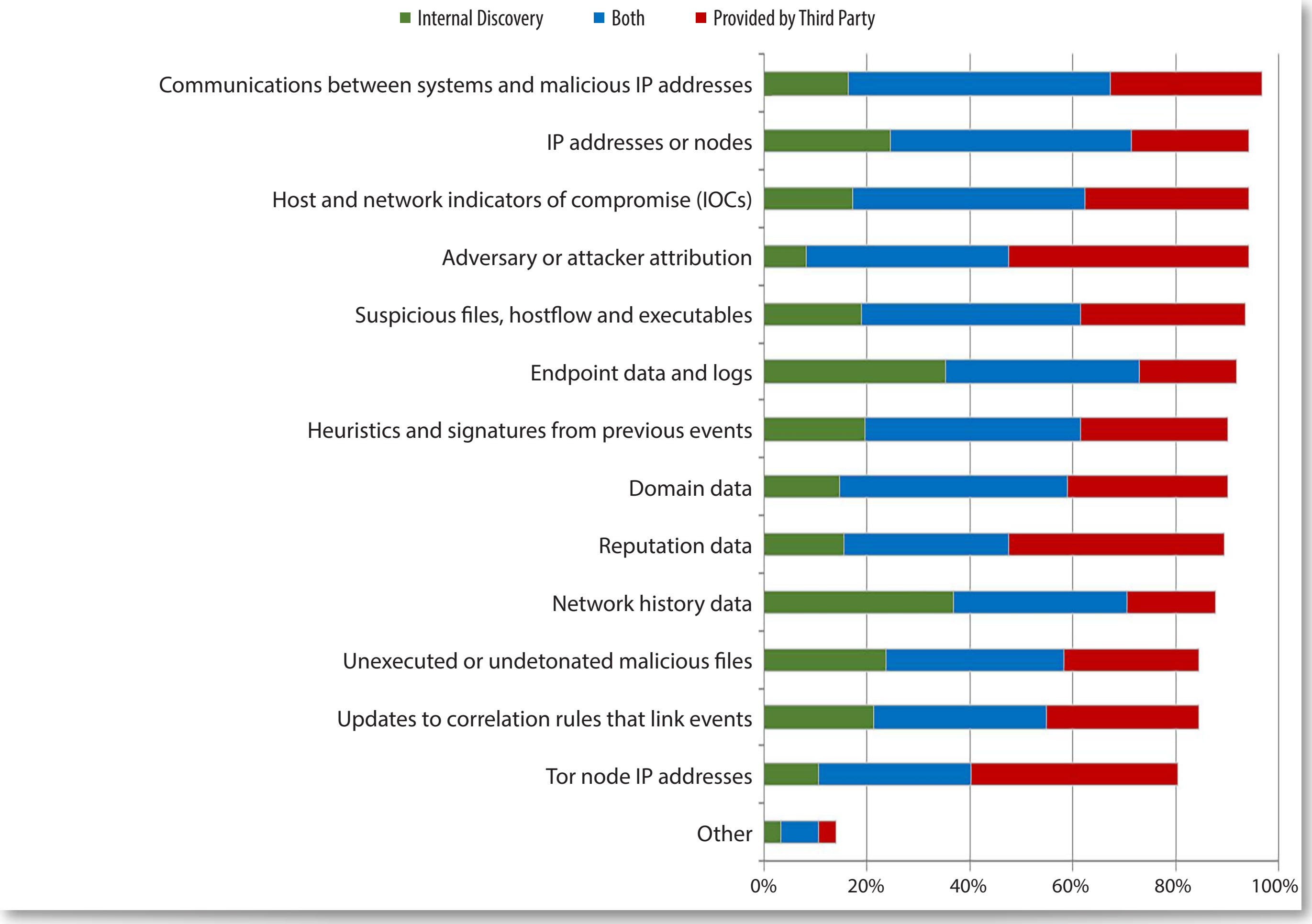

Figure 14. Types of Threat Intelligence in Use

Admittedly, stagnation in the use of threat intelligence is not beneficial for incident responders. To look for useful information, our teams may look internally for data available. Luckily, we are seeing improvements in this area. Approximately 83% of respondents reported that active endpoint data is a crucial part of their investigations, with 66% also utilizing alerts from security devices such as antivirus and IPS/IDS. Figure 15 provides a breakdown of data utilized by our respondents during their investigations.

TAKEAWAY

When IR teams don't have access to the external threat data they want, they look internally to enrich the data available to them. Although this internal focus can help the IR team understand the environment better, it increases operational demands. Effective use of relevant threat intelligence can only help make IR teams more powerful and efficient, and organizations of all sizes should include it in their programs.

What data do you prefer as evidence when investigating alarms?

Select your top three preferences. Order is not important.

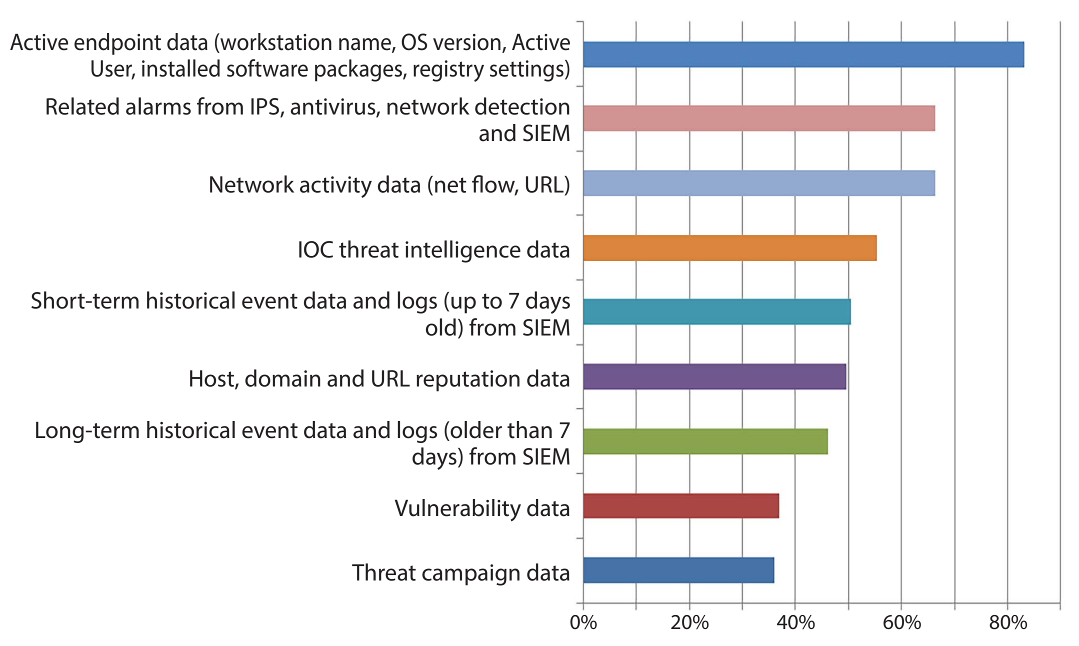

Figure 15. Overall Data Type Preferences

The data presented in Figure 15 is yet another sign of improvement across IR teams. The teams should continue to look internally to mine, enrich and act upon the data they do have available. Collecting data from internal systems and paying attention to alerts generated by security applications in place will harden the IR team and increase its operational knowledge of the organization's environment.

Where We're Going

In previous sections of this survey, we highlighted areas where IR teams are clearly improving. Dwell times are dropping and IR teams are growing with more in-house capabilities. Teams are learning to mine their own internal data, which when combined with external threat intelligence, will help reduce detection, containment and remediation times. This next section examines what our survey respondents have in store for the future.

Experience, the Best Teacher

Undoubtedly, one of the best learning methods is experience. A key part of the IR process is to examine lessons learned from incidents to pinpoint how the team can increase its maturity. Unfortunately, only 58% of our survey respondents indicated that they review and update IR processes at least periodically. A remaining 31% of respondents do not assess their program, and 11% do not have any plans to do so. Figure 16 provides a breakdown of IR effectiveness and maturity assessments.

TAKEAWAY

Assessing your organization's IR program is crucial to its future success. Not only are teams unable to mature if they don't know where their weaknesses are, but security assessments, in general, help the organization determine where to focus next year's spending and IR process improvements.

Do you assess the effectiveness and maturity of your IR processes?

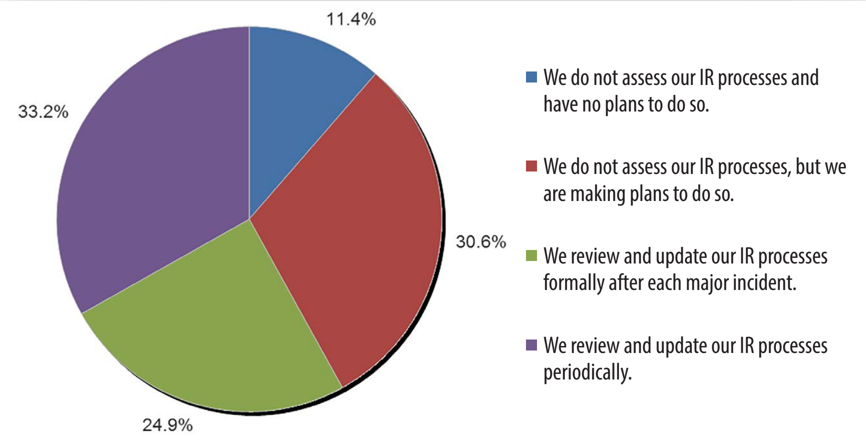

Figure 16. Assessment of IR Processes

For those organizations that do assess their IR processes, we saw a healthy mix between the following assessment activities:

- Well-defined metrics
- Internal IR exercises
- Measuring improvements in accuracy, response time and reduction of attack surface

Most survey respondents indicated that they perform at least one of the above, but multiple respondents indicated that they perform more than one! Multiple assessment methods help the IR teams mature and are crucial to future development. Figure 17 provides a breakdown of assessment activities performed by incident response teams.

How do you assess the effectiveness and maturity of your IR processes?

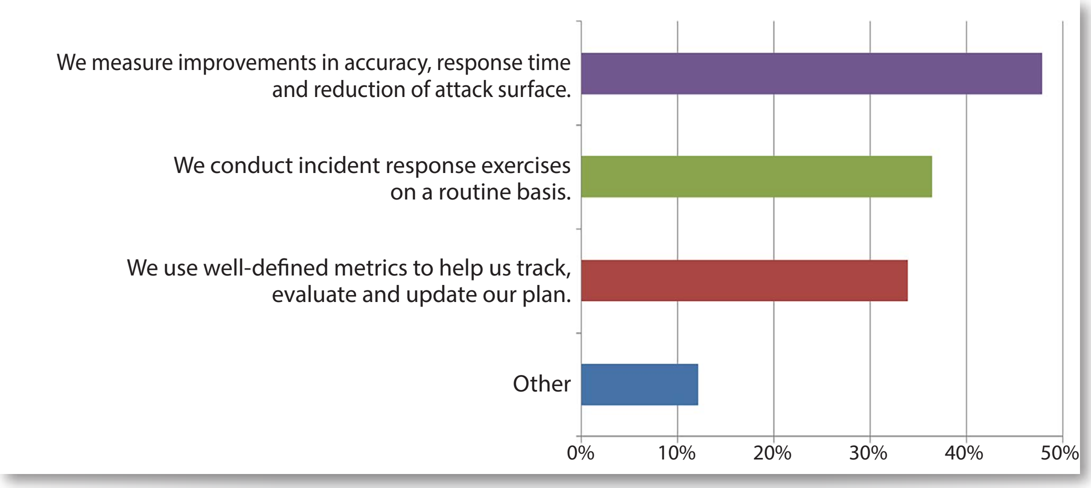

Figure 17. Assessment Methods

Sprinting Harder with Hurdles

It's safe to say that no organization wants to suffer a security incident and, if time and money were of no concern, would happily staff elite IR teams. Alas, organizations must make do with the resources they have available. That being said, each year we look to examine hurdles currently facing IR teams to understand how shifts in spending or priorities may be shaping team capabilities.

Lack of resources—including time, staff or budget, plus a staffing/skills shortage—ranked as the most commonly cited impediments to effective IR. Vaguely-defined processes and owners round out the top three impediments facing current IR teams. Table 4 provides a listing of the top 10 impediments as reported by our respondent base.

Table 4. Top 10 Impediments Facing IR Teams

Rank	Impediment	% Response
1	Lack of resources (time, staff, budget) to effectively execute improvements	48.7%
2	Staffing and skills shortage	47.1%
3	Vaguely defined processes and owners	32.1%
4	Budgetary shortages for tools and technology	31.0%
5	Not enough visibility into events happening across different systems or domains	30.5%
6	Organizational silos between IR and other groups or between data sources or tasks	26.7%
7	Lack of procedural reviews and practice	23.0%
8	Too much time needed to detect and remediate	19.8%
9T	Difficulties in detecting sophisticated attackers and removing their traces	18.2%
9T	Integration issues with our other security and monitoring tools	18.2%
9T	Lack of ability and resources to support deployment of multiple security systems	18.2%
9T	Lack of comprehensive automated tools available to investigate new technologies, such as BYOD, Internet of Things and use of cloud-based IT	18.2%
10	Lack of controls over devices that leave the network perimeter	17.6%

While the data in Table 4 show teams still facing hurdles, there is good news! Between 2016 and 2017, budgetary shortages fell from 40% in 2016 to 31% in this year's survey, which may indicate that money is finally being freed up for our teams to use. Having extra money available may mean that teams can finally hire additional staff or purchase technologies to help shorten IR times, increase environment visibility and enhance staff expertise.

Additional survey results indicate that teams should be focusing available money on additional training and staff certifications, reported by a whopping 68% of our respondent base as improvements that the organization will be making over the next 12 months. Other improvements planned by our survey respondents, as shown in Figure 18, include better definition of processes and owners, more automated reporting and analysis, and security analytics.

What improvements in IR is your organization planning to make in the next 12 months?
Select all that apply.

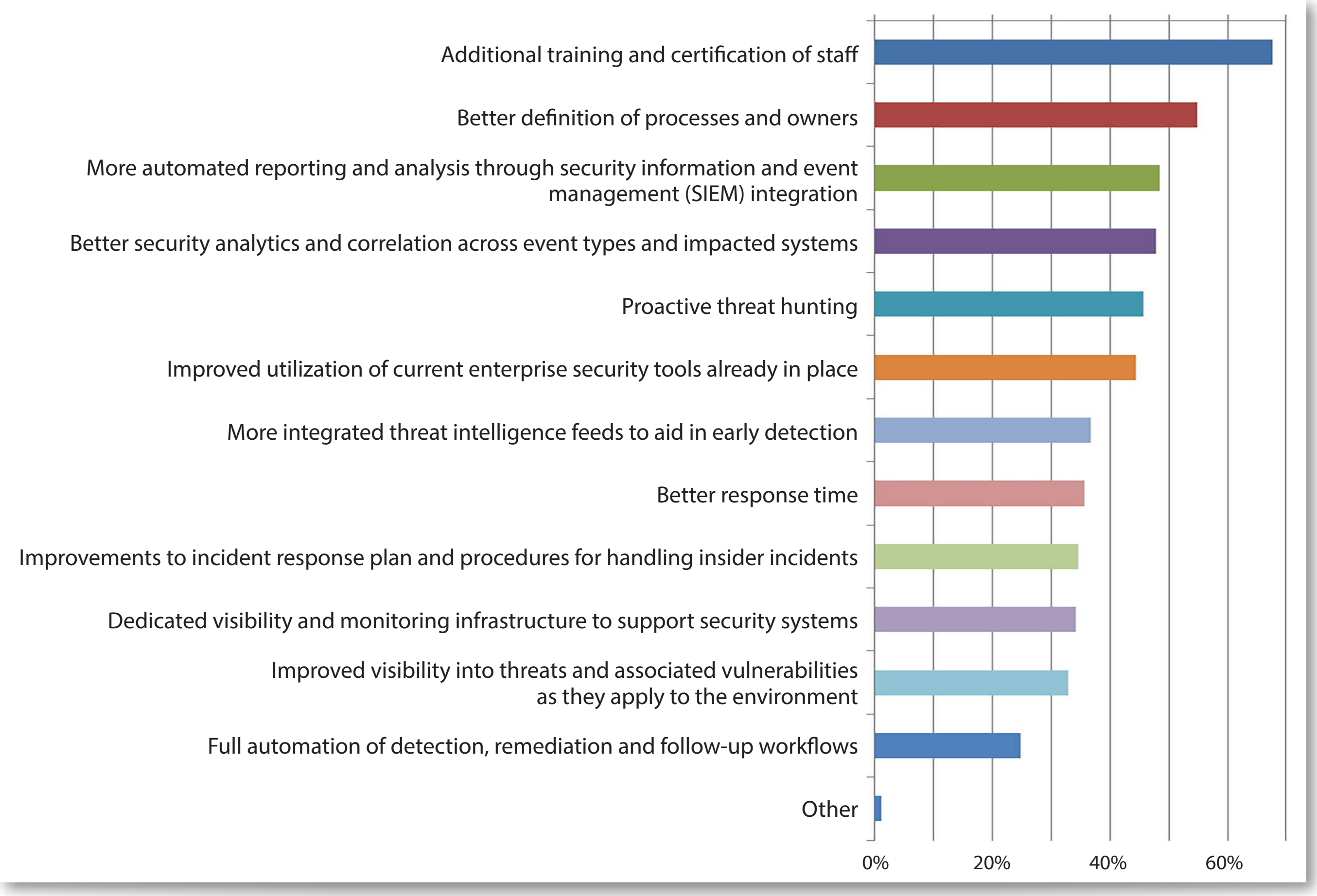

Figure 18. Improvements Coming in the Next 12 Months

TAKEAWAY

Survey respondents show promising increases in IR budgets over the next 12 months. Organizations should ask their teams directly where the additional funding can best be applied. Our survey results indicate that teams want more resources, additional training and better-defined processes.

Without a doubt, organizational focus on increased staff training and better definition of business process and owners strikes directly at the impediments reported previously in Table 4. Coupled with an increase in security spending, teams may finally have the means available to reach additional levels of improvement and maturation. Over a third of respondents were unable to provide budgetary information. But 11% of our respondent base reported that IR budgets will likely see a 4–5% increase over the next 12 months, with approximately 10% reporting an increase of more than 10%! Figure 19 provides a breakdown of planned IR budget increases over the next 12 months, but does not illustrate the unknown responses.

What percentage of your security budget is currently assigned to incident response, and what percentage is planned for the next 12 months?

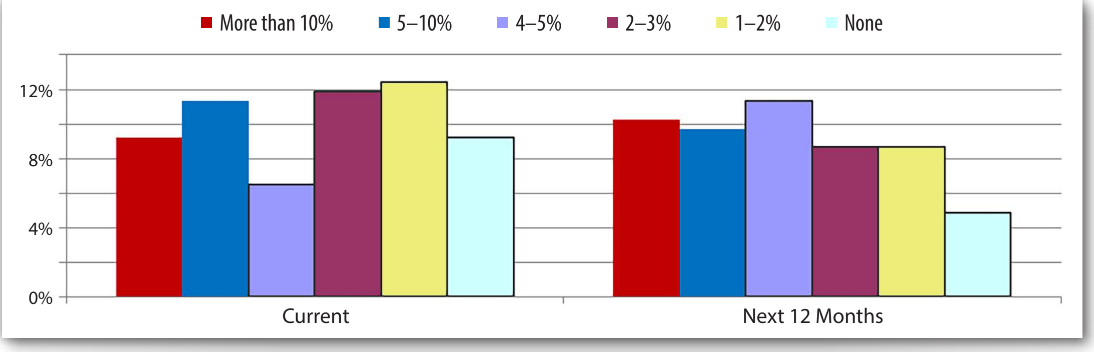

Figure 19. Incident Response Budgets for the Current and Next Year

Conclusion

If the events of 2016 fostered such growth in IR, one might be tempted to wish for equally or more dire events in 2017. However, that model is not sustainable! Instead, a better outlook would be to hope that global security incidents of the past continue to spur growth and maturity for our IR teams. This year's survey clearly outlined where teams are improving. For many, however, the improvements were too long in coming. Surveys from years past show that many issues and impediments have remained in the top 10 for too long.

This year's survey theme was: "The Show Must Go On." It's a reflection of the fact that regardless of what events take place in the world, how advanced our attackers become, or what the next advances in data breaches may be, our IR teams will be ready. IR teams will continue to expand globally, developing a wealth of expertise in the process. Budgets will continue to improve, providing opportunities to hire additional staff and/or train existing team members. But IR sits at a bittersweet juxtaposition: The more success IR teams have, the less we will hear about them. So, while the show must go on, let's hope that the next acts are relatively uneventful, devoid of surprises and full of opportunities for our teams to grow and mature.

About the Author

Matt Bromiley is a SANS Digital Forensics and Incident Response instructor and a GIAC Advisory Board member. He is also a senior managing consultant at a major incident response and forensic analysis company, bringing together experience in digital forensics, incident response/triage and log analytics. His skills include disk, database, memory and network forensics, as well as network security monitoring. Matt has worked with clients of all types and sizes, from multinational conglomerates to small, regional shops. He is passionate about learning, teaching and working on open source tools.

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