THE STATE OF

# MONITORING


bigpanda

# Welcome

Last year, we kicked off the first-ever State of Monitoring survey with a clear goal: to shine a light on the world of IT monitoring and understand how shifts in this rapidly-changing landscape are affecting organizations and posing new challenges for IT.

The original goal was to collect about 500-600 responses – but to our delight, over 1500 IT pros responded in the span of a week. We were overwhelmed by the response. The results allowed us to produce a report that, for the first time, honed in on topics unique to the world of monitoring, such as: *What tools are most popular? What are the key monitoring challenges facing IT teams? How do alert storms affect IT performance? And which KPIs are organizations most commonly using to measure IT performance?*

This year, we're excited to bring back State of Monitoring for a second time – offering all new insights into a world that continues to evolve, fragment, and pose new challenges for IT professionals. In this year's report, you will note many similarities. For example, once again over 1500 IT pros responded to our call for participants. Also, many of the themes that we examine in the report are similar to last year, such as top monitoring challenges, the effect of alerts on IT performance, key performance KPIs, and the effects of agile development on IT operations.

However, in contrast to last year, we decided to do a couple of things differently: first of all, we recognized that the needs of enterprise organizations are inherently distinct from that of SMBs. So we decided to divide our rankings of the industry's most popular monitoring and ticketing/collaboration tools into two groups: Enterprise and SMB. In addition, we expanded the "Challenges" section of our survey to look at issues beyond the scope of monitoring alone – providing insight into just how vast concerns surrounding security, downtime, and efficient staffing are for leaders in the IT community.

Without a doubt, one thing that this year's survey confirmed is that nothing is slowing down. Code and infrastructure are being deployed and commissioned at a faster and faster rate, the number of tools it takes to effectively manage these services is multiplying, and the expectations placed on IT leaders to ensure customer satisfaction is increasing. The urgency to ensure reliability and uptime resonates across the board, and it's clear that IT leaders are focused on solutions that will not only work today, but can scale and adapt to tomorrow.

To learn more about the insights, the challenges, and the outlook shared by over 1500 of your peers, read on! And as always, we invite you to join the conversation: Tweet us your thoughts and feedback with the hashtag **#StateOfMonitoring**.

**Happy monitoring,**
Team Panda

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# The respondents

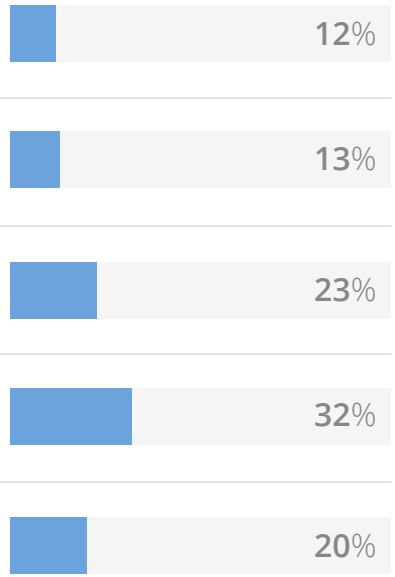
Over 1500 IT professionals participated in this year's survey. While the respondents represented a wide range of industries, company size skewed large, with the majority coming from companies with 1000 or more employees. Interestingly, team size demonstrated the opposite trend, with most respondents reporting a team of less than ten. This may signal that operational independence at larger enterprises is migrating away from a centralized IT, with a larger number of smaller, fragmented teams – or that there is increasing pressure on IT to expand their capacity, without increasing headcount. In other words, to do more with less.

# 1500+ IT professionals

## Top industries

| | |
|---|---|
| 1 | Telecomm, Tech, Internet & Electronics |
| 2 | Healthcare & Pharmaceuticals |
| 3 | Manufacturing |
| 4 | Finance & Financial Services |
| 5 | Education |

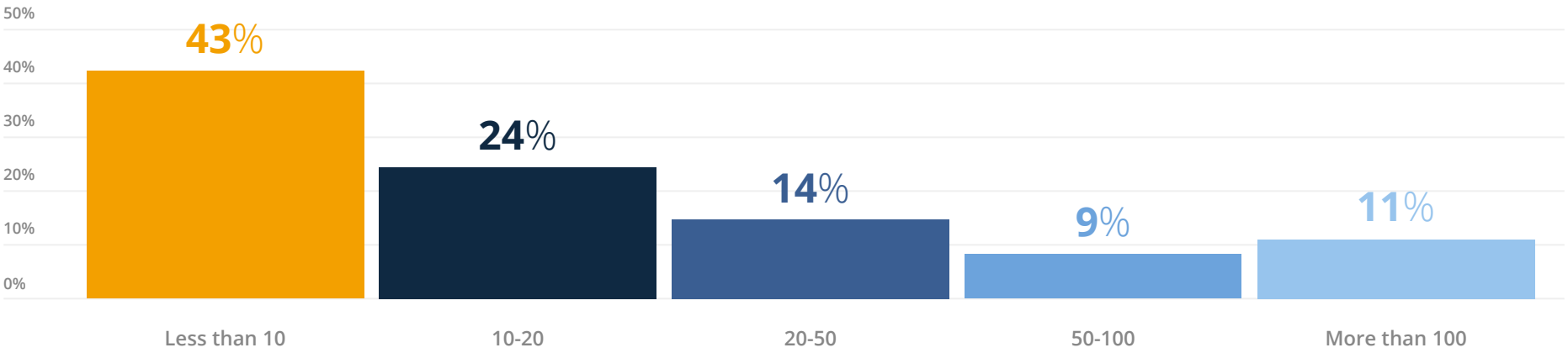
## Average company size



# 01 The respondents


| | |
|---|---|
| Individual contributor | 42% |
| Middle management | 28% |
| Senior management | 20% |
| Executive / C-Level | 10% |

## Team size



# The monitoring stack

The results of this year's survey confirm just how complex and diverse the modern IT stack has become. Keeping in mind that the numbers reported here are representative of each respondent's personal use, it can be inferred that the total number of tools deployed within an entire LOB or organization would be much higher. Not only did each individual respondent report using an average of 6-7 tools on a regular basis, over half stated that they are considering to further expand their stack in the coming year, reflecting the vast proliferation that exists in the number of tools required to effectively maintain and support IT applications and infrastructure.

**The average IT team member uses:**

**6-7**

tools on a regular basis

**3-4**

monitoring tools

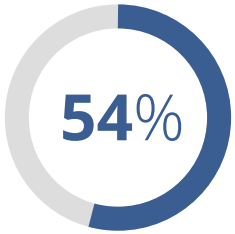
**+1**

deployment solution

**+2**

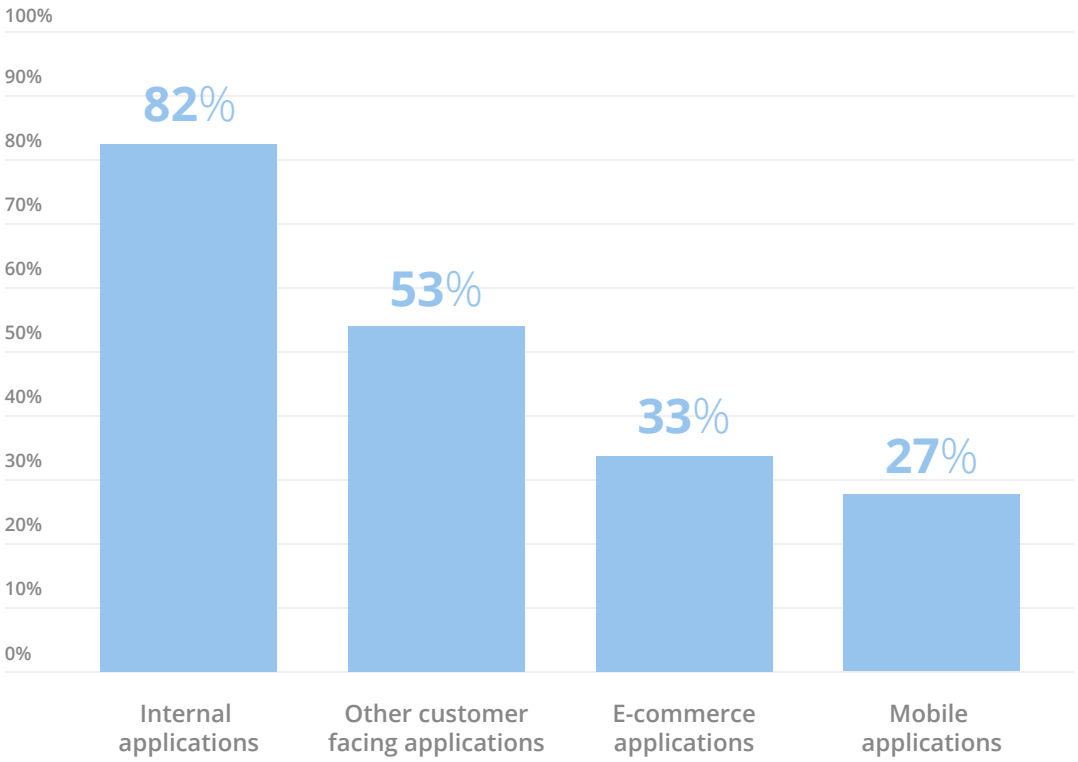
ticketing / collaboration tools

and **29%** use at least one in-house proprietary solution.




are planning to expand their monitoring stack in 2017 – by an average of **2 additional tools**.

**Top services monitored**



## SMB*

### Top monitoring tools

1. SolarWinds
2. Nagios
3. AWS Cloudwatch
4. Spiceworks
5. Splunk
6. New Relic
7. Pingdom
8. PRTG
9. Grafana
10. HP

### Top deployment tools

1. Jenkins
2. Puppet
3. Chef

### Top ticketing / collaboration tools

1. JIRA
2. Slack
3. Skype for Business
4. SharePoint
5. PagerDuty
6. Zendesk
7. Jabber
8. Trello
9. HipChat
10. ServiceNow

## Enterprise*

### Top monitoring tools

1. Solarwinds
2. Splunk
3. Nagios
4. HP
5. AWS Cloudwatch
6. Tivoli
7. BMC
8. AppDynamics
9. CA
10. Cacti

### Top deployment tools

1. Jenkins
2. Puppet
3. Chef

### Top ticketing / collaboration tools

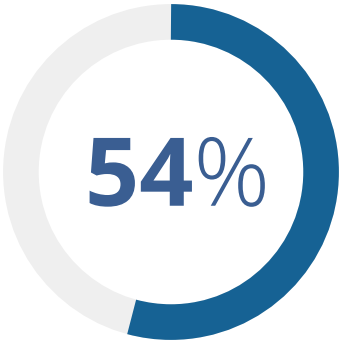
1. SharePoint
2. Skype for Business
3. ServiceNow
4. JIRA
5. BMC Remedy
6. Slack
7. Jabber
8. PagerDuty
9. CA Service Desk
10. HipChat

* SMB is defined as organizations with less than 1000 employees. Enterprise = +1000.

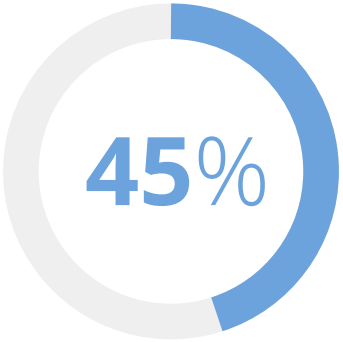
# Age of agile

Not only are IT teams dealing with more tools than ever before, but they're also having to manage more moving parts – which are evolving and churning out data at an unprecedented rate. This year's survey noted a distinct shift in the frequency of both code and infrastructure change, in addition to an increased adoption of DevOps practices and monitoring as code. All of these signals point to a widespread cultural shift in the way that IT operations and engineering teams are supporting the goals of agile development. Agile is no longer a novelty of startups or software companies. All organizations, regardless of their size or industry, recognize that agility is mission critical to remaining competitive and relevant – and as such, the assurance of delivering new features with both speed and reliability are increasingly becoming a shared responsibility between Dev and Ops.

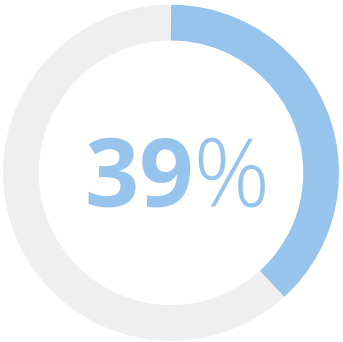
## 03 Age of agile




of respondents consider their organization to be agile.

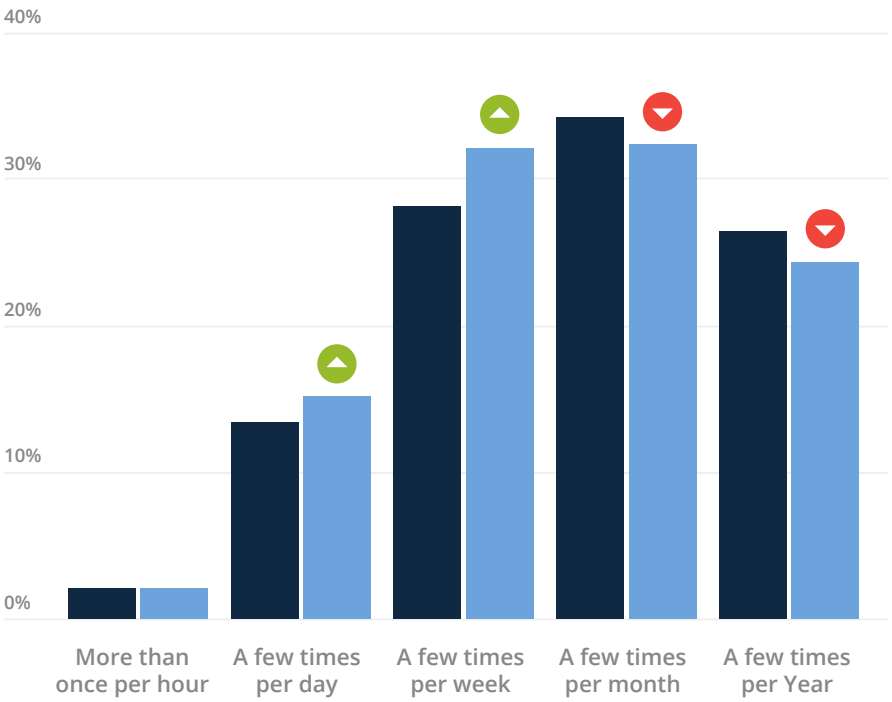



of respondents report that their organization employs DevOps, **up 4%** over last year. At enterprise organizations (1000+ employees), adoption is **up 8%**.

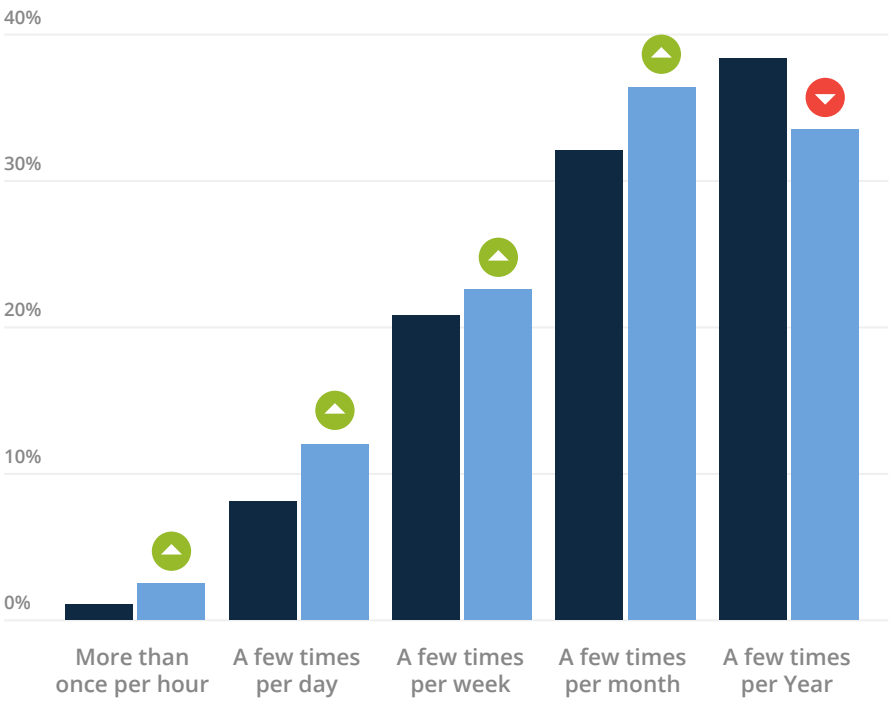



state that developers at their organization build monitoring into their code, a **3% increase** versus 2016.

## Frequency of code deployments




## Frequency of infrastructure changes



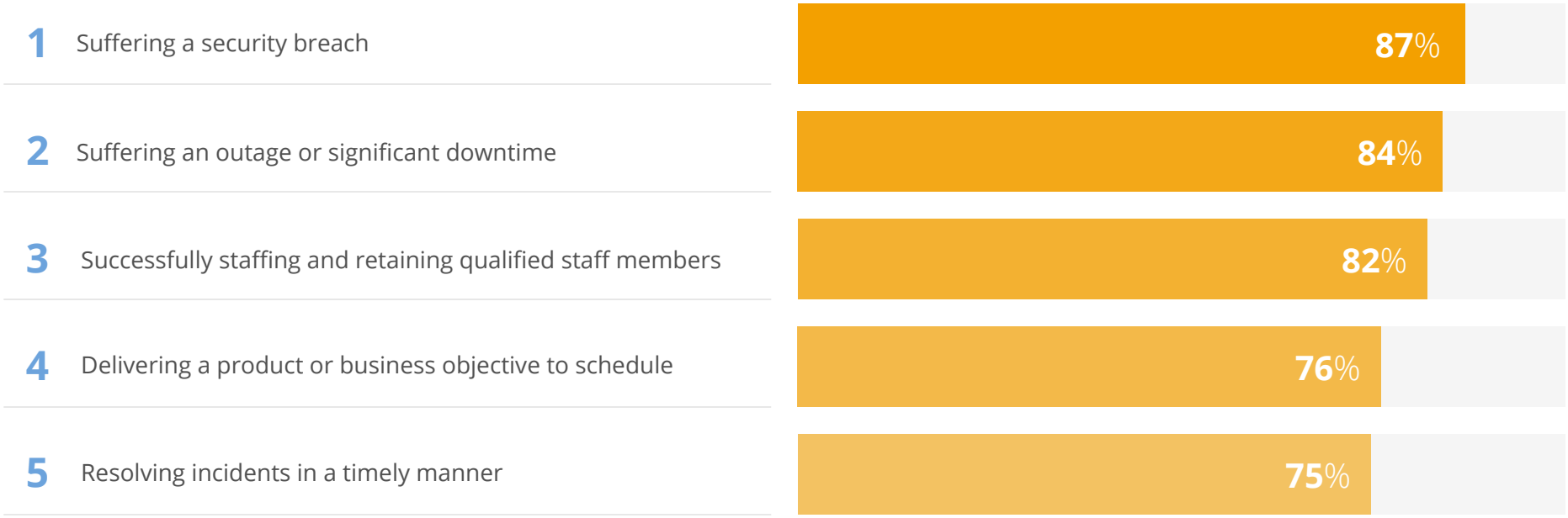

## More change. More frequently.

Across the board, the frequency of code and infrastructure change is on the rise. Between **2016** and **2017**, the number of respondents reporting daily or weekly code deployments increased, while monthly and yearly deployments declined. Similarly for infrastructure management, the number of respondents who reported that their organization makes just a few changes per year sharply declined, while all other response groups increased.

# Concerns and challenges

Like in 2016, we presented survey respondents with a list of common monitoring issues and asked them to identify how challenging each is for their organization. However, this year we expanded the scope of our inquiry to include a second section focusing on broader IT concerns. In both categories, each of the top five concerns were shared by at least three quarters of all survey participants – reaching upwards of 80%.

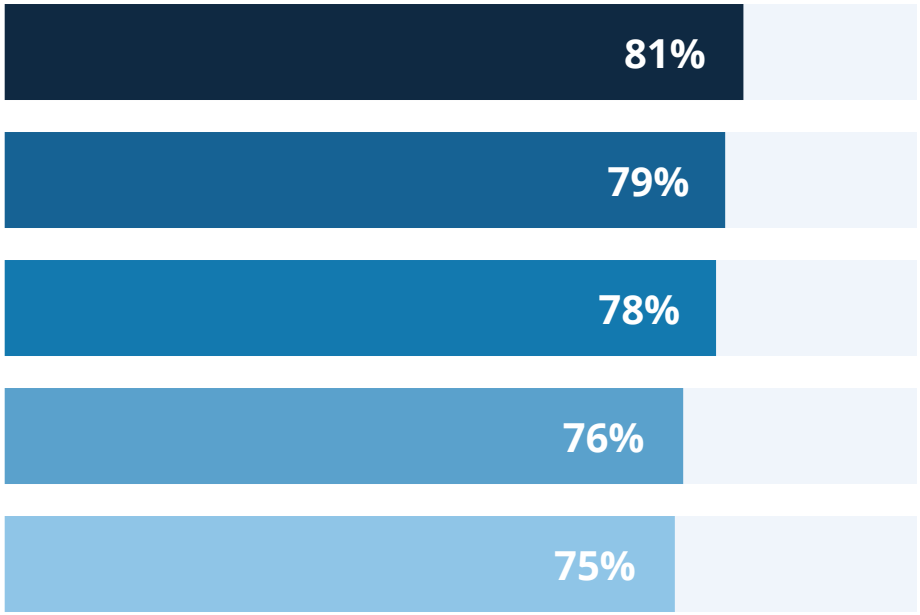
## Top IT concerns for 2017 *




* Based on the percentage of respondents who identified each statement as a concern or challenge for their organization

## Top five monitoring challenges *

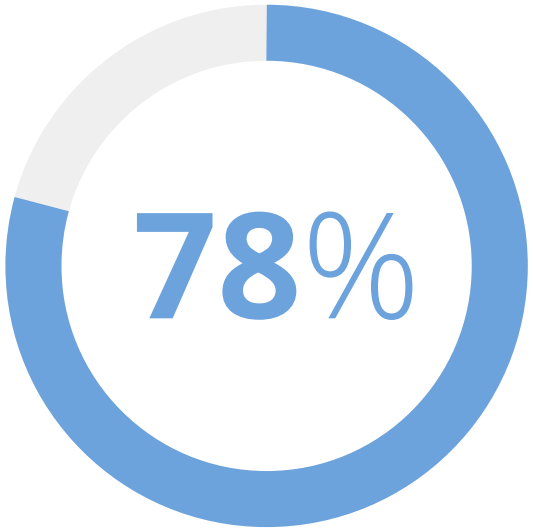
1. Quickly remediating service disruptions — 81%
2. Securing budget for the proper monitoring tools — 79%
3. Reducing alert noise from the organization's monitoring tools — 78%
4. Delivering a product or business objective to schedule — 76%
5. Quickly identifying service disruptions — 75%



* Based on the percentage of respondents who identified each statement as a concern or challenge for their organization

# Effect of alerts on IT performance

Given the increasingly fragmented and agile nature of modern monitoring architectures, it is perhaps unsurprising that alert noise has proven to be a persistent issue for IT teams. Over three quarters of this year's 1500+ respondents stated that reducing alert noise is a challenge – and across the board, the number of IT practitioners reporting high alert volumes (100+ per day) is on the rise. The fundamental issue is not that alert volumes are increasing – that is expected – but that alert storms appear to have a substantial effect on the ability of IT teams to effectively manage and remediate incidents, comply to customer SLAs, and meet business objectives. With all leading indicators suggesting that alert volumes are likely to continue their upwards trend, IT teams will be compelled to find a way to separate signal from noise in order to effectively scale.

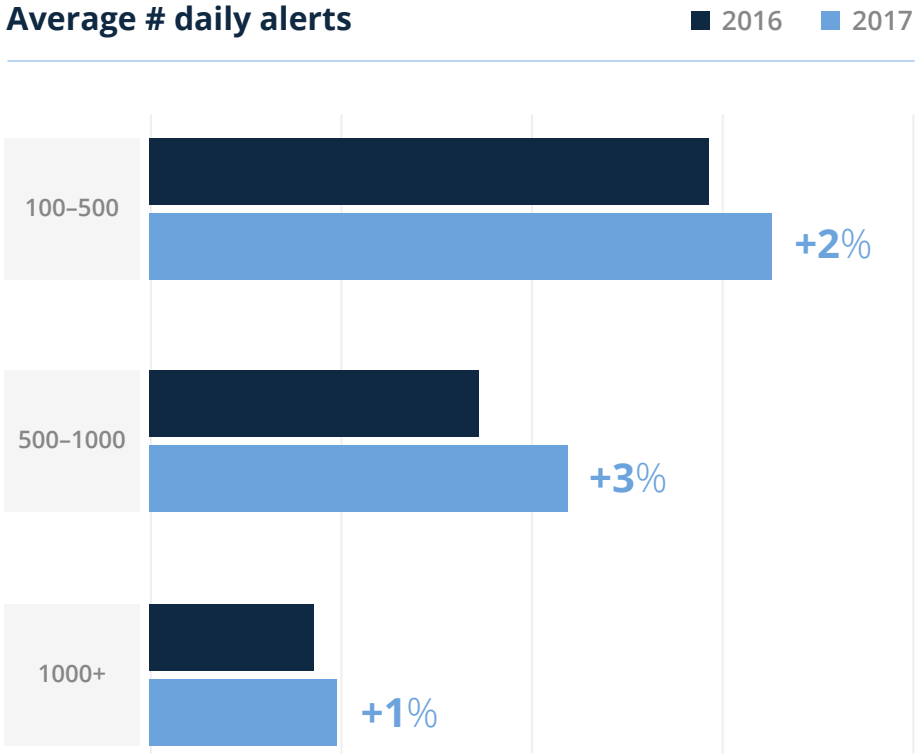



of respondents state that reducing alert noise is a challenge.

Among respondents that reported over 100 alerts per day, only **26%** are able to investigate and remediate the majority (**75-100%**) within 24 hours.

The number of respondents reporting **high alert volumes are on the rise**. All cohort groups above 100 alerts per day demonstrated an increase in comparison to 2016.

**Average # daily alerts**

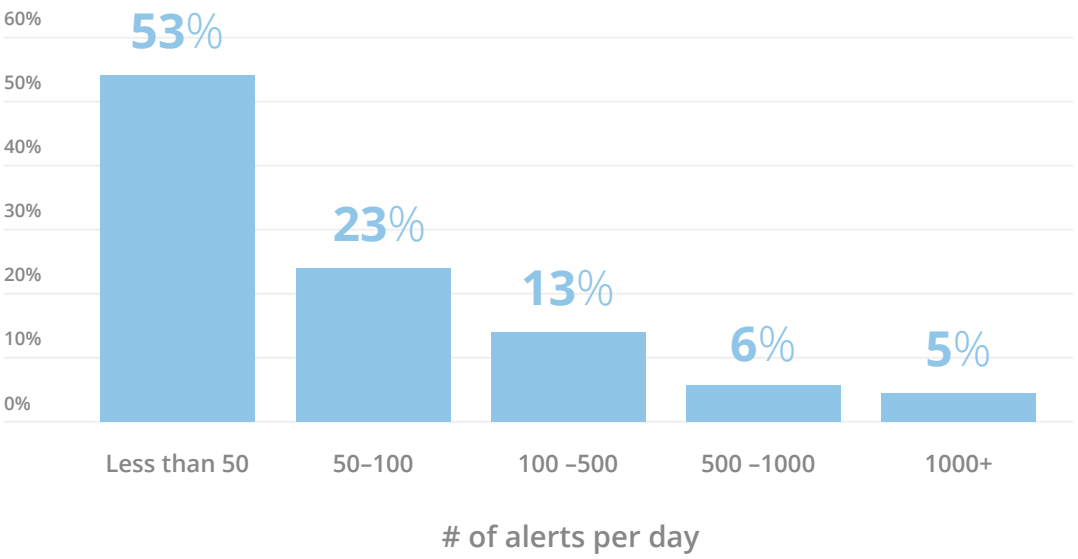



**% of respondents**

# The struggle is real

Across the board, respondents reported low satisfaction with their team's ability to respond to alerts. Even among those that receive less than 50 alerts per day, **only 53%** were satisfied. This number sharply drops as the number of daily alerts increases – to **just 5%** for organizations swamped in over 1000 alerts per day.

### Satisfied with ability to respond to alerts




### Teams that receive over 100 alerts per day are...

**15%**

more concerned about failing to comply to customer SLAs.

**9%**

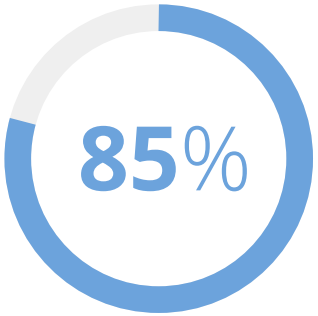
more concerned about resolving incidents in a timely manner.

**7%**

more concerned about delivering business objectives to schedule.

# Monitoring strategy: Satisfaction and performance

Similar to 2016, this year's survey findings reiterated the importance of a thoughtful and strategic approach to monitoring. Respondents who report that their organization has a defined monitoring process in place find alerts easier to handle and service disruptions easier to mitigate. Plus, those who are satisfied with their monitoring strategy demonstrate far better rates of remediation, in addition to a host of other benefits. But it's important to note that almost half of the 1500+ IT pros surveyed stated that their organization does not have a defined monitoring process in place, and just a fraction claimed that they are very satisfied with their current approach – a clear sign that IT teams have a long way to go when it comes to effectively addressing the challenges of modern applications and infrastructure.




**agree that a strategic monitoring process is important to their organization**, but **only 13%** are very satisfied with their existing process. In addition, **just 11%** are very satisfied with their monitoring strategy, based on overall investment (e.g. tools, headcount).


**of respondents report that their organization has a defined monitoring process in place.** Of those, **75%** are satisfied with their ability to respond to alerts – versus **40%** for those who do not have a defined process.

**Those who do not have a defined process find it more challenging to...**

**+15%**

identify service disruptions

**+13%**

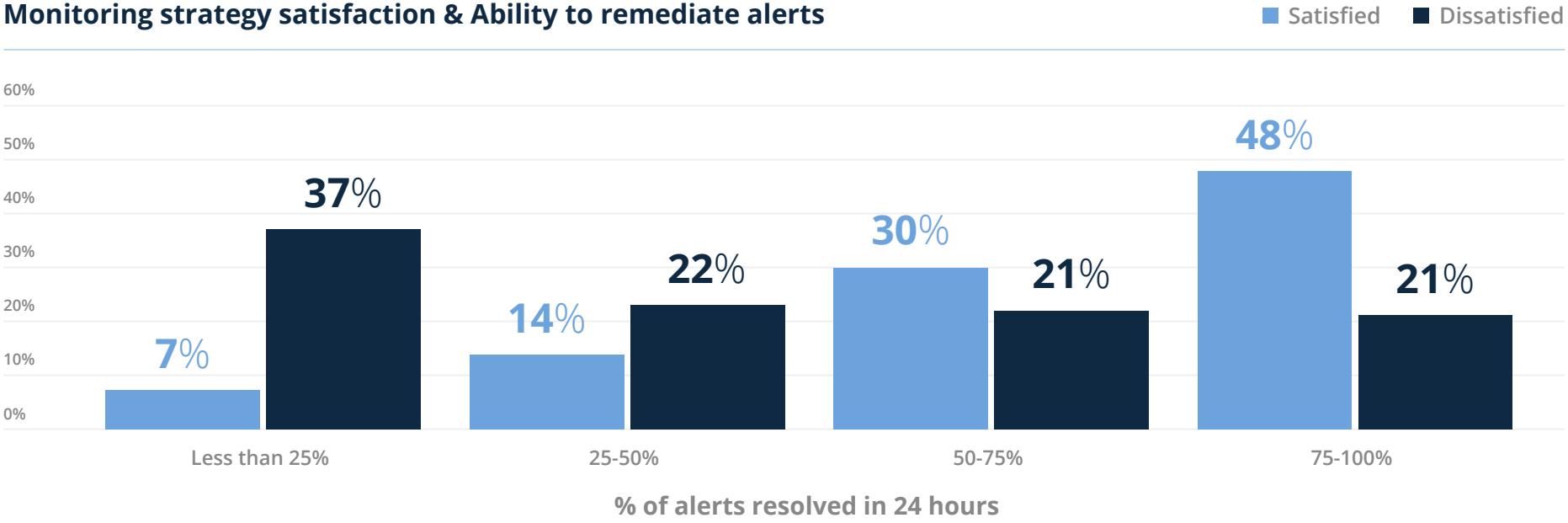
remediate service disruptions

**+14%**

learn from current disruptions to prevent future occurrences

**...versus those who do.**

## Monitoring strategy satisfaction & Ability to remediate alerts




There is a clear correlation between monitoring strategy satisfaction and the ability to remediate. Among those who are satisfied, the majority of respondents fall into the best-performing cohort group (75-100% of alerts resolved in 24 hours). This trend flips among those who are dissatisfied, with most respondents reporting the worst rates of remediation (less than 25% resolved).

### Among those who consider their organization's monitoring process to be strategic...

**70%** also have a process in place to identify the root cause of incidents.

**73%** report that developers build monitoring into their code.

**60%** agree that developers are actively involved in supporting applications.

**65%** consider their organization to be agile.

# Customer experience is king

Just as in 2016, customer satisfaction took the top spot as the leading performance KPI reported among respondents – far outranking metrics that some might consider "traditional" for IT practitioners, such as SLA compliance and MTTR. We believe the result is a clear indicator of the crucial role that the digital customer experience plays, now more than ever, as a competitive differentiator. Digital customers have come to expect consistent uptime and lightning-quick response times as standard. The difference between "expected customer experience" and "great customer experience" lies in factors such as usability, personalization, cross-platform support, and customer service. As a result, we predict that customer experience will increasingly become a C-level job.

## Top performance KPIs

| | |
|---|---|
| Customer satisfaction | 73% |
| SLA compliance | 46% |
| Incident volume | 43% |
| MTTR | 34% |
| Other | 6% |

# Your biggest monitoring challenge of 2017?

Like last year, we added two write-in sections to our survey to further clarify our overall findings with qualitative insights. In the first, we asked respondents to identify what they thought would be their biggest IT monitoring challenge of 2017. The most prominent theme was purely to address and improve their organization's overall monitoring strategy, followed closely by the desire to modernize the monitoring architecture, and to implement a solution to effectively manage alerts.


**We asked**

What do you anticipate will be your biggest IT monitoring challenge of 2017?

**Top themes**

1. Improving monitoring strategy
2. Modernizing monitoring architecture
3. Effectively managing alerts
4. Security
5. Budget
6. Cloud migration
7. Centralizing and consolidating monitoring tools
8. Scaling monitoring with growth
9. Improving root cause identification
10. Staffing qualified personnel

# If you could make one change to your monitoring strategy...

In our second write-in section, we asked respondents: if you could make one change to your current monitoring strategy, what would it be? Similar to our previous question, the most prominent theme was the desire to refine the organization's overall strategy or processes, followed by investing in new tools and centralizing/consolidating the monitoring stack.

# 9 If you could make one change to your monitoring strategy...

"Centralize monitoring into a single pane of glass"

"Make monitoring part of the process of developing apps"


"Obtain funding for better tools"

"Employ smarter alerting that takes the guesswork out of identifying root cause"

"Automate! Automate! Automate!"

**We asked**

If you could make one change to your current monitoring strategy, what would it be?

**Top themes**

1. Refining overall strategy or processes
2. Investing in new tools
3. Centralizing/consolidating the monitoring stack
4. Event management and alert correlation
5. Automation
6. Staffing qualified personnel
7. Refining monitoring metrics
8. Alert noise reduction
9. Securing additional funding
10. Improving incident management

# Key takeaways

- Doing more with less?
- More tools, more moving parts
- Alert noise is not getting any quieter
- An effective monitoring strategy is key
- It all boils down to the customer experience

# Doing more with less?

Over 1500 IT pros participated in this year's survey. The respondents represented a wide range of industries, and although company size skewed large (53% from organizations with 1000+ employees), team size demonstrated the opposite trend, with 43% reporting a team of less than ten. This could be reflective of the proliferation of applications and microservices, which has lead many larger organizations to shift away from a centralized IT to a number of smaller, specialized DevOps teams that share responsibility for a particular service or business unit.

On the other hand, it could be indicative that IT leaders are simply having to do more with less. If the latter, there are two potential reasons for this: first being that IT leaders are feeling the pain of the IT skills gap and simply unable to keep their team staffed with qualified candidates. This hypothesis is bolstered by the qualitative feedback we received when asking respondents to identify their biggest monitoring challenge for the upcoming year, as well as the one change they would make to their monitoring strategy. In both cases, staffing and retaining qualified personnel ranked among the top 10 themes. Alternatively, IT leaders may be facing pressure to expand their capacity, without increasing headcount.

# More tools, more moving parts

The findings of this year's survey not only confirm that IT practitioners are relying a growing number of tools to effectively do their job, but it also demonstrates that the underlying systems that they support are growing ever more agile and complex. According to the report, the average practitioner currently uses six-seven tools on a regular basis, and over half of respondents reported that they plan to further expand their stack in 2017 – by approximately two tools on average.

This means that we are likely to see that figure jump to 8-9 tools on average next year, and that's just per person. The total number of tools required organization-wide to effectively support agile development, uptime and reliability is no doubt much higher, particularly at the enterprise level.

This, paired with the fact that the frequency of both code and infrastructure change is on the rise, points to the growing complexity and noisiness of today's monitoring stack. Across the board, the number of respondents reporting daily or weekly code deployments increased, while monthly and yearly deployments declined. Similarly for infrastructure management, the number of respondents who reported that their organization makes just a few changes per year sharply declined, while all other response groups increased.

# Alert noise is not getting any quieter

With more tools and more moving parts to keep tabs on, it is perhaps little surprise that alert noise has proven to be such a loud – and painful – problem. More than three quarters of the 1500+ respondents stated that reducing alert noise is a challenge, and the number of respondents reporting high alert volumes (100-500, 500-1000, or 1000+ alerts per day) has increased across the board over 2016. This group reports extremely low levels of satisfaction with their ability to respond to alerts, which is reflected in the fact that only 26% are are able to remediate the majority (75-100%) within 24 hours.

Furthermore, those with high volumes of alerts are more concerned about complying to customer SLAs and delivering business objectives to schedule. However, if the proliferation of monitoring tools, as well as the frequency of code and infrastructure change, continue their upwards trend, then alert storms are only likely to become more prevalent and challenging for IT teams. While many organizations might try to remediate this issue by increasing headcount, in most cases it would be a “BandAid” solution, too costly to be feasible in the long run.

In order to implement a long-term solution that can scale to the challenges of big data, automation is key. While software and infrastructure management have made strides in this regard, service assurance has been left in the dust. In order to achieve true, long-term agility at scale, organizations must replace tedious manual processes by coupling monitoring automation with automated alert correlation and event management.

# An effective monitoring strategy is key

While it may sound like a no-brainer, the effect of a solid monitoring strategy – or lack thereof – cannot be underestimated. The benefits abound: those with a defined monitoring strategy in place find it easier to identify and remediate service disruptions, and those who consider their monitoring process to be strategic are also more likely to build monitoring into code, agree that developers are actively involved in supporting applications, and consider their organization to be agile.

In addition, there is a clear correlation between monitoring strategy satisfaction and the volume of alerts that can be investigated and resolved within 24 hours. However, despite all the evidence in support of its importance, only half of respondents reported that their organization has a defined monitoring strategy in place.

Even more troubling, a meager 13% agreed that they are very satisfied with their approach to monitoring, and just 11% are satisfied based on overall investment. As IT systems grow ever more noisy and complex, developing a future-proof monitoring process that can scale with organizational growth is an imperative.

# It all boils down to the customer experience

For two years in a row, customer satisfaction has far outranked all other performance metrics we included in our survey – including some that many might consider "traditional" for IT practitioners. Customer satisfaction was cited as a KPI by a whopping 73% of respondents, while the second most popular metric, SLA compliance, was cited by just 45%.

This vast gap indicates the pivotal role that the digital customer experience plays as a key competitive differentiator. It also signals an important shift in the way that IT performance is valued. Traditional metrics, such as MTTR and incident volume, are too heavily weighted on outcomes not closely associated with business services. Tracking the number of closed tickets or resolved incidents does not directly gauge the quality of the end user experience – and whether they are likely to buy or engage again.

In fact, digital customers have come to expect technical reliability as standard. The difference between "good" and "great" now lies in factors such as usability, personalization, cross-platform support, and customer service.

# Interested in more?

Check out

**The Modern NOC:**
**IT Ops Predictions for 2017**

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