



# 2022 Dynatrace CIO Report

*How to tame the data explosion and overcome cloud complexity*

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# Introduction

Organizations continue to increase the use of cloud-native and multicloud architectures to deliver better, more secure software faster. Teams have come to rely on a growing range of monitoring and data analytics solutions to maintain observability and security across their increasingly distributed technology stack. However, while these technologies enable IT, security, and development teams to drive digital agility and innovation, they also increase complexity and risk.

Log management and analytics have become a particular challenge, as teams find it ever more difficult to analyze and query large volumes of disparate and decoupled data quickly, and cost-effectively, to deliver meaningful value. The volume and complexity of data associated with modern technology stacks have grown beyond human ability to manage. As such, IT, development, and security teams are unable to drive digital transformation at the scale required by modern clouds, or the speed required by customers.

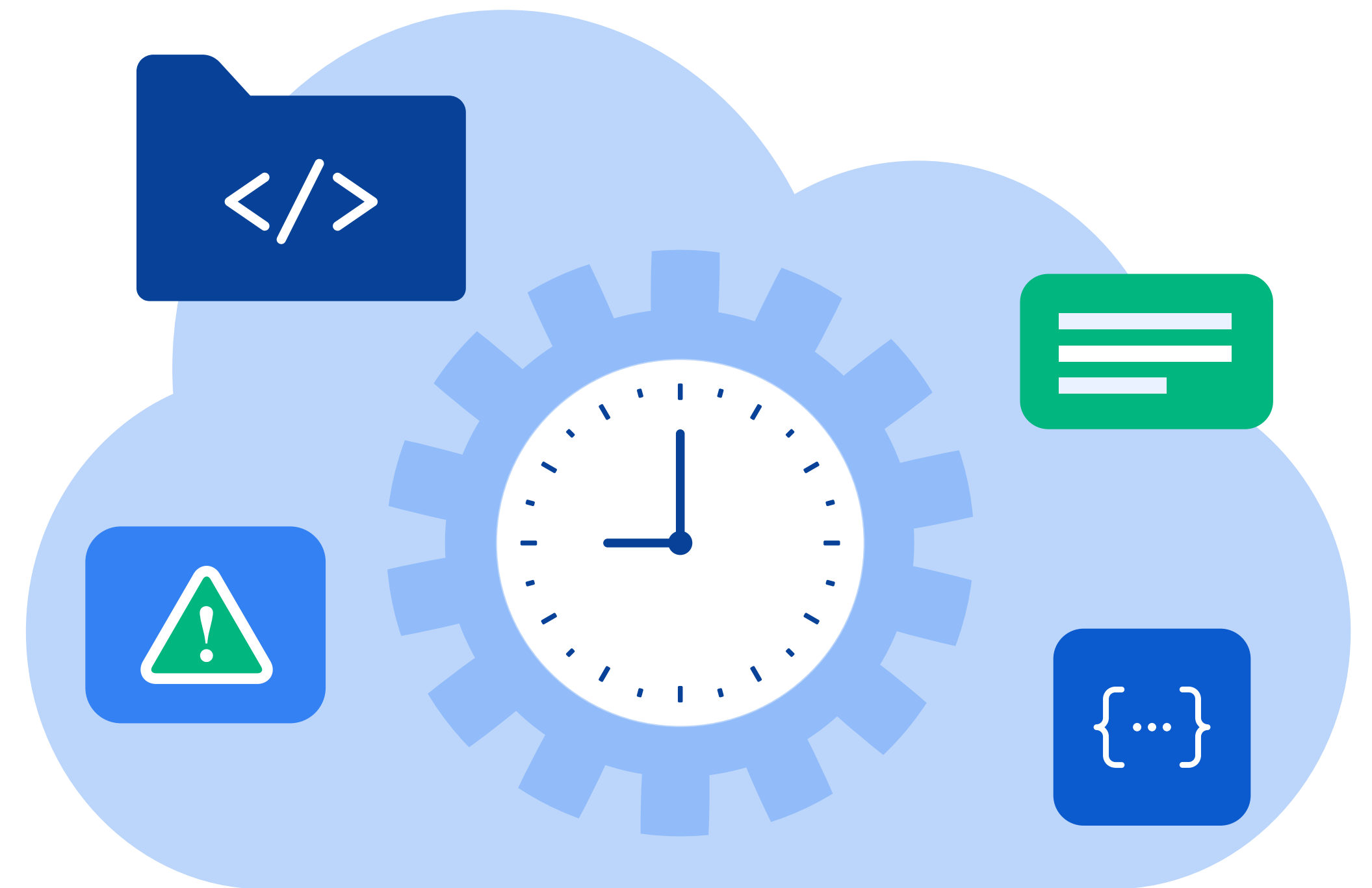
This report examines these challenges and highlights how organizations can overcome them with a new, more automated and scalable approach to observability and security.

## CHAPTER 1

# The drive to be cloud-native increases complexity

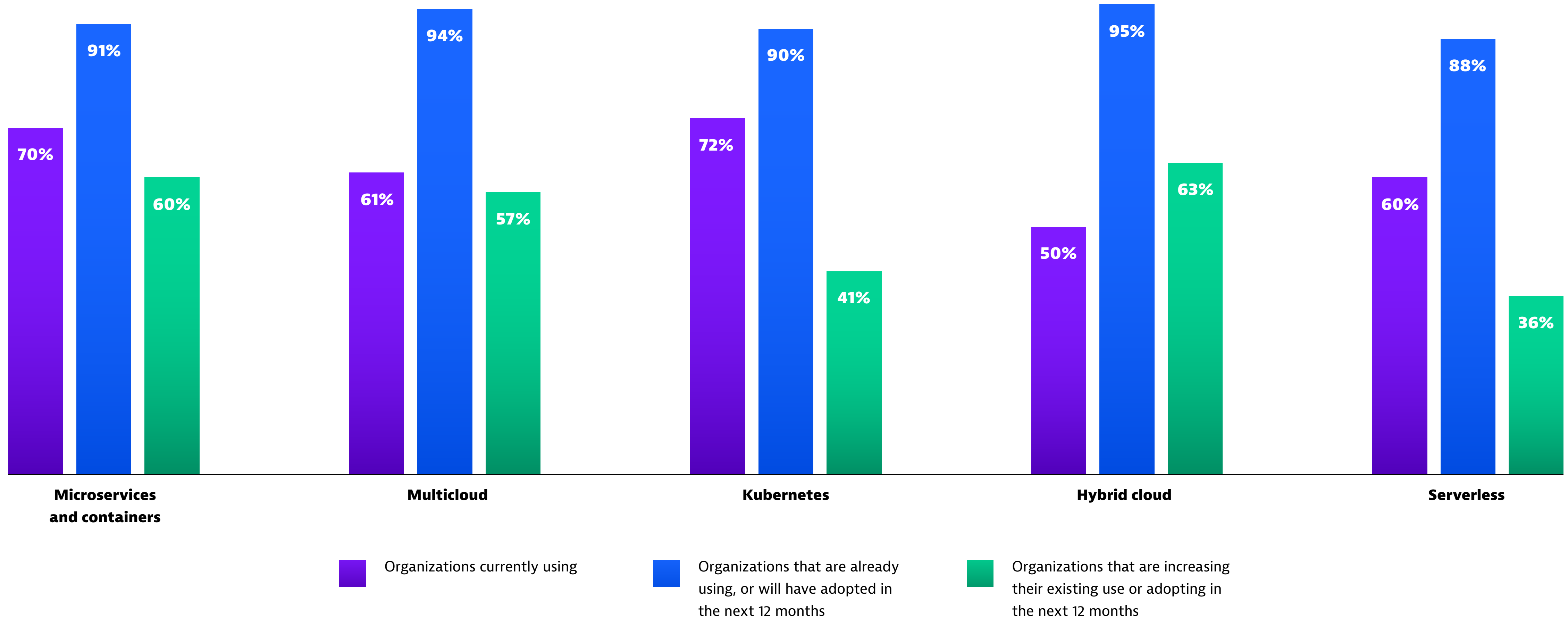
Multicloud, Kubernetes, and serverless architectures are the standard for building modern technology stacks. The choice and flexibility provided by cloud and digital service providers enable organizations to build architectures that are tailored to their unique needs. While this improves agility and accelerates the speed of innovation, it also means technology environments have become increasingly distributed and complex.

Containers are ephemeral, and user journeys span a widening array of platforms and technologies, which makes it more difficult for IT, development, and security teams to manage and optimize their digital experiences by proactively identifying key patterns and risks.



# The drive to be cloud-native increases complexity

Organizations are increasingly relying on cloud-native technologies and platforms, including the following:



# The drive to be cloud-native increases complexity

7

is the average number of **different platforms and systems** on which enterprise technology stacks are built.

35

is the average number of **different technologies** a single application transaction crosses from beginning to end.

77%

of organizations say their IT environment **changes every minute or less.**

29%

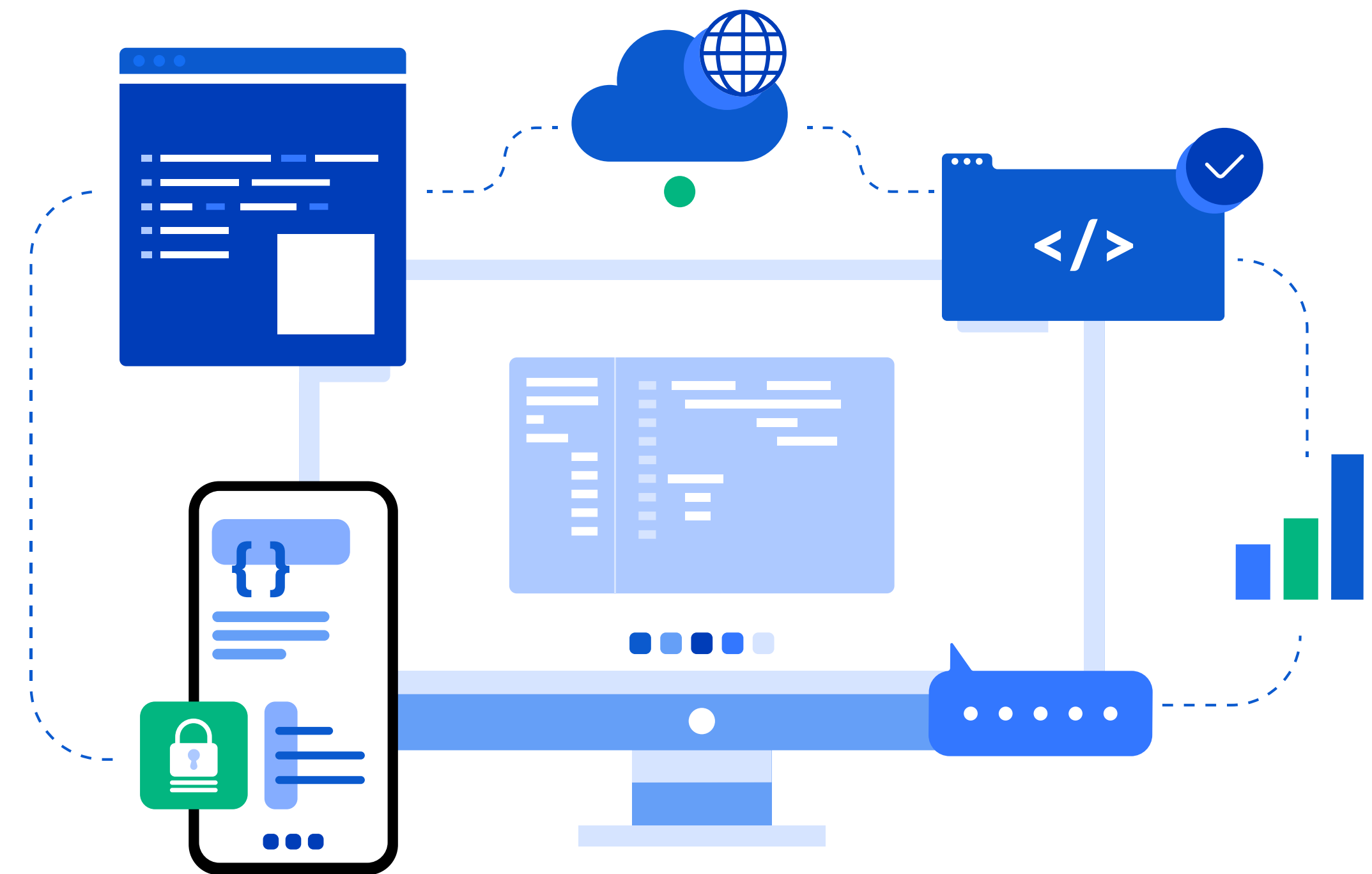
of organizations see a change in their IT environment at least **once per second.**

## CHAPTER 2

# Complexity has grown beyond human capacity

The scale of cloud-native technology stacks, combined with accelerated innovation and the growing reliance on digital services, makes it difficult for IT and application leaders to consistently deliver the best, most secure software, as each DevOps team adopts a different standard and tool set.

Every click, swipe, or tap from a user, every cloud instance that spins up, and every attempted cyberattack generates more data. Operations, development, and security teams must use this data to identify the necessary insights to optimize services and resolve problems effectively.

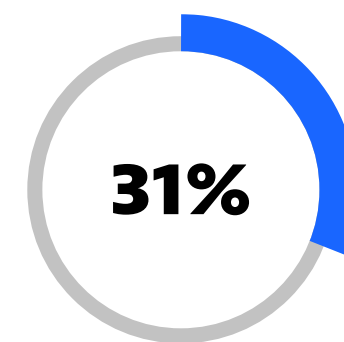


# 71%

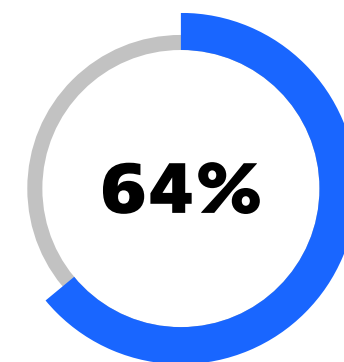
of CIOs from the world's largest organizations say the explosion of data because of cloud-native technology stacks is beyond human ability to manage.

## Data explosion requires automation

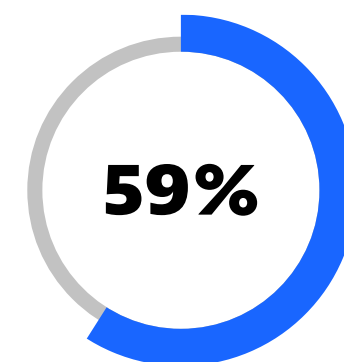
There is now simply too much data from too many different sources for teams to manage with the management and analytics solutions they've traditionally used.



is the average proportion of time that DevOps teams spend dealing with digital performance problems.



of CIOs say it has become **more difficult to attract and retain enough skilled IT Ops and DevOps professionals** to manage and maintain their cloud-native and multicloud environment.



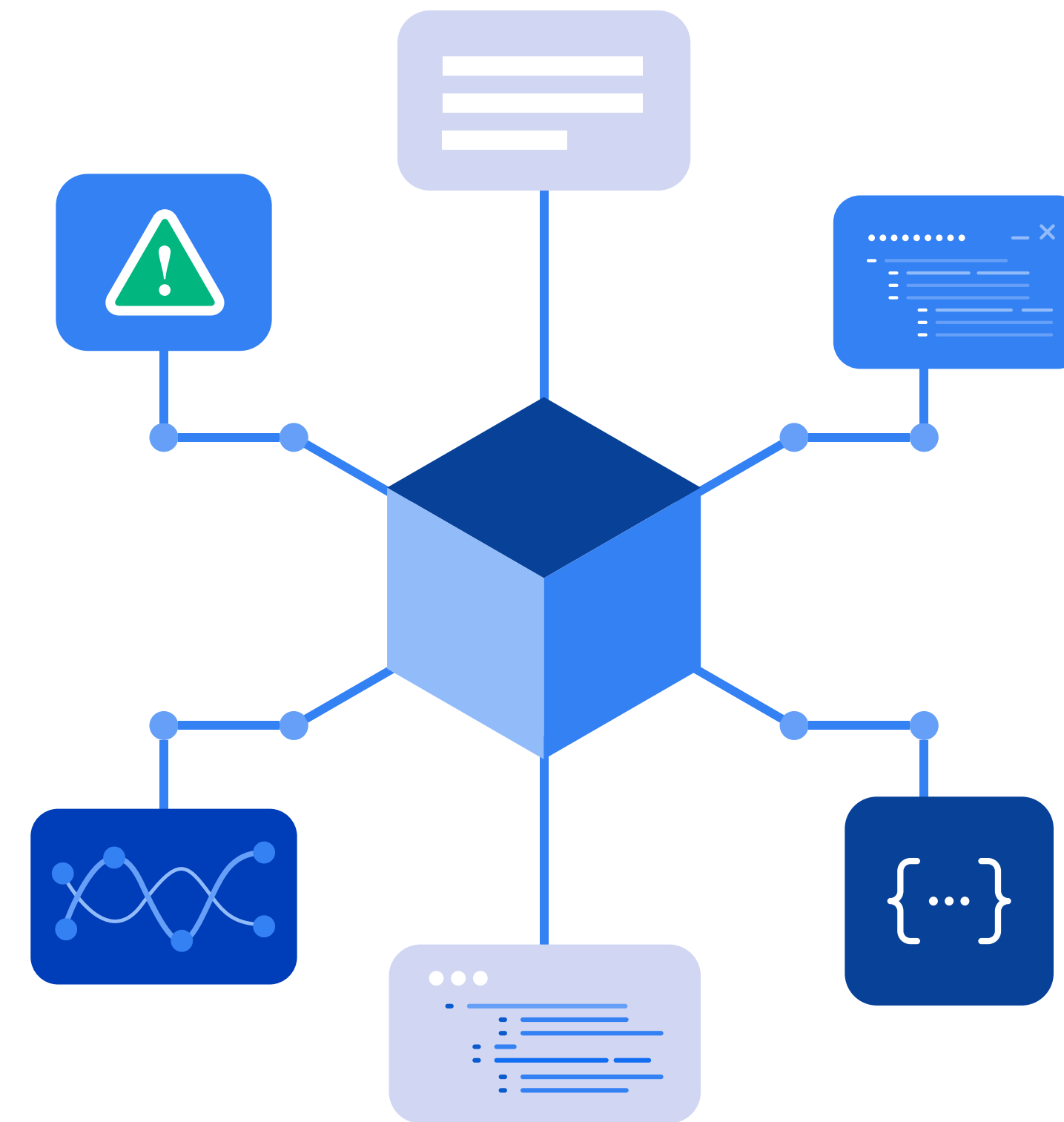
of CIOs say their **teams may become overloaded by the increasing complexity** of their technology stack if they don't identify a more automated approach to IT operations.



## CHAPTER 3

# Distributed architectures have created silos

Each new technology brings its own monitoring tool that IT, development, and security teams use to maintain visibility into its performance and availability. As a result, toolchains are expanding rapidly as organizations accelerate their adoption of distributed, cloud-native architectures. The challenge for teams is that each tool requires a different skill set to interpret the meaning in the data and has different ways of organizing and visualizing metrics. Additionally, each tool provides visibility into just one layer of the technology stack, creating data silos.



# Distributed architectures have created silos

When there is an issue, teams are forced to use their different tools and manually compare data to recreate what happened. It is common for teams to rely on trial and error to see if their fix resolved the issue or helped to optimize their infrastructure and software. This takes time from innovation and makes it difficult for teams to understand the wider picture of how their efforts to accelerate digital transformation affect the business.

10

is the average number of **monitoring tools** organizations use across their technology stacks.

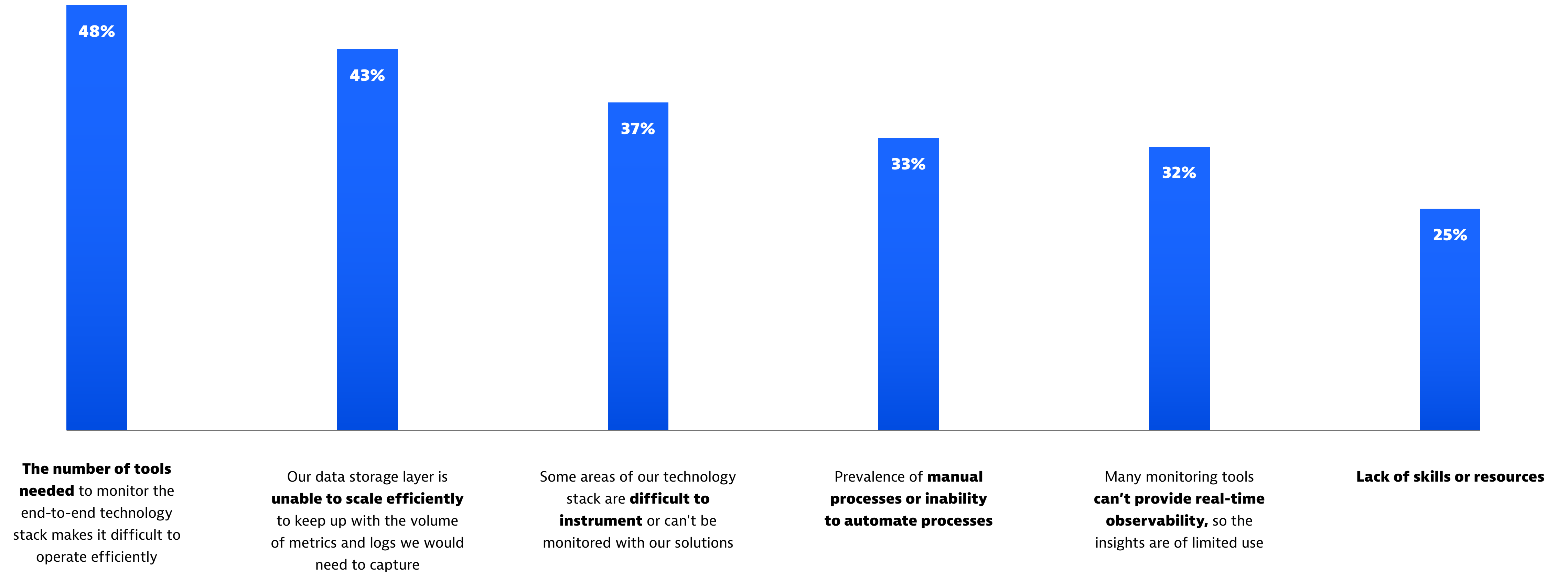
9%

is the average proportion **of the technology stack** into which organizations have end-to-end observability.

97%

of organizations say there **are barriers to extending observability and security** across their cloud-native and multicloud environments.

## The barriers to extending observability and security include the following:



## CHAPTER 4

# Log analytics is becoming less effective

Organizations rely on logs as a primary source of data to unlock the necessary insights to optimize software performance and security. Nonetheless, IT, development, and security teams have found their traditional log management and analytics solutions are unable to scale to address the explosion of observability and security data emanating from their technology stacks. It has become more difficult for teams to query high volumes of log data and retain the context of that data to drive business value.

This is because organizations opting for a low-cost, cold storage approach affects data visibility and speed, as it can no longer be queried. Conversely, keeping data in hot storage is too expensive.



# Log analytics is becoming less effective

Today, teams often need to decide which data they want to keep for maximum visibility, which data should be indexed in higher-performing compute environments, and which data should be retained in low-cost archives that are slow to access.

**43%**

of CIOs say current observability data ingestion and storage approaches **won't support their future needs.**

**10%**

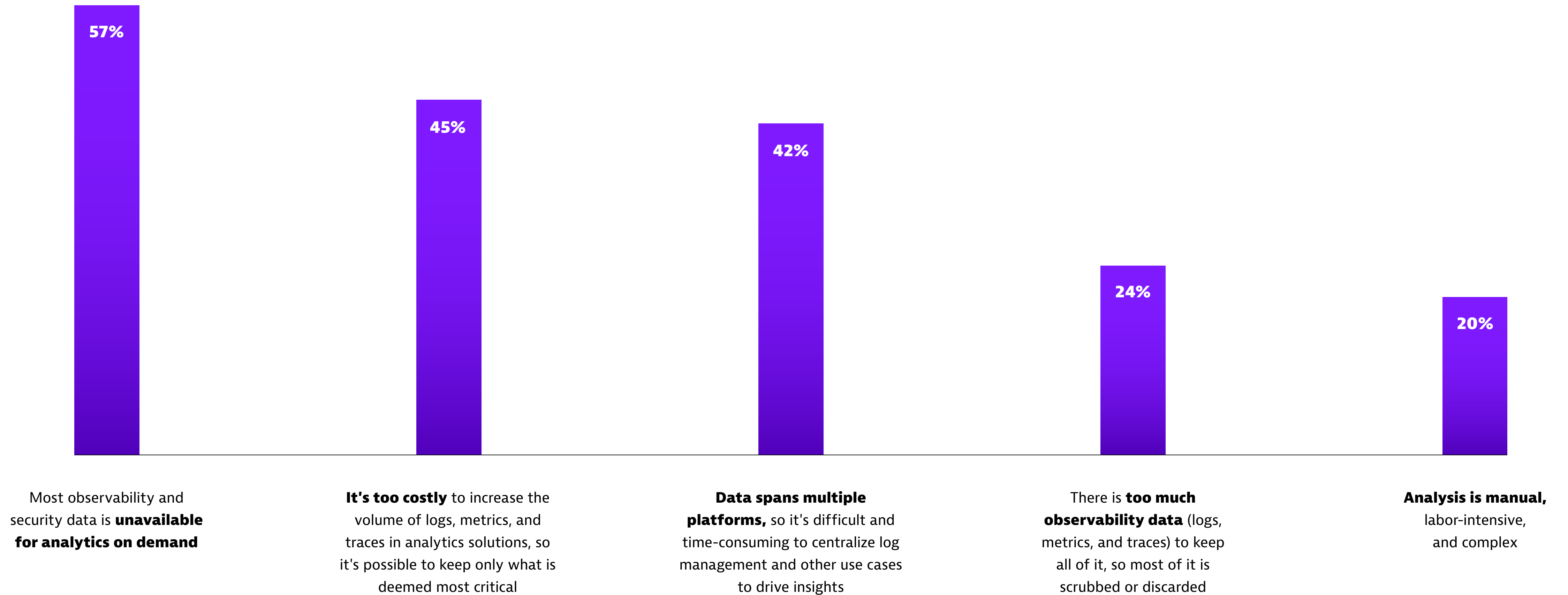
is the **average proportion of observability data organizations capture** for querying and analytics.

**63%**

of CIOs say the **cost and delays due to reindexing and rehydration make it difficult to unlock value** from increasing observability and security data.

# Log analytics is becoming less effective

Organizations say the challenges to unlocking greater value and insight from observability data include the following:



## CHAPTER 5

# Automation at limitless scale is essential

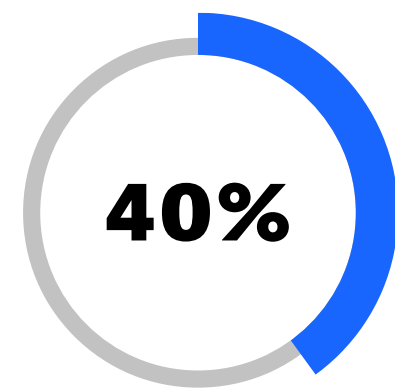
To overcome the complexity of their cloud-native technology stacks and the massive volumes of data they can generate, organizations need a more automated approach to operations and security, supported by an AIOps-driven approach. The most effective way to achieve this is with an end-to-end observability and application security platform that can capture all data in context and enable AI-powered, advanced analytics with high performance, limitless scale, and cost-effectiveness.



## Data lakehouse models bring better data insights

If organizations want to drive more innovation and achieve greater efficiencies, they will need to move away from solutions that rely on traditional data warehouse and data lake-storage models and embrace a modern data lakehouse-based approach featuring powerful processing capabilities.

This will enable them to harness petabytes of data at the speed needed to turn raw information into precise and actionable answers that drive AI/SecOps automation. In doing so, **organizations can free their skilled DevOps teams from routine, manual tasks** so they can achieve better business outcomes and sustained growth.



40% is the average amount of time teams spent “keeping the lights on” that CIOs estimate could be saved through automation.

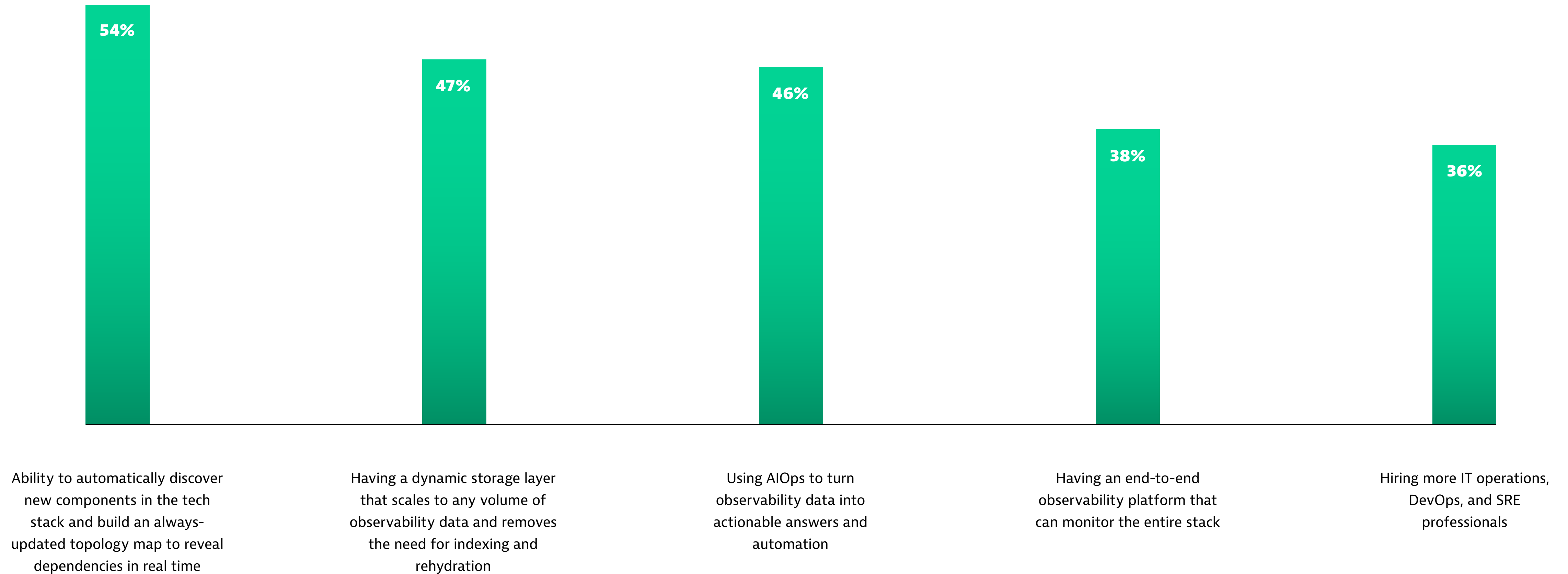
# 93%

of CIOs say AIOps and automation are increasingly key to alleviating the shortage of skilled IT, development, and security professionals and reducing the risk of teams becoming burned out by the complexity of modern cloud and development environments.

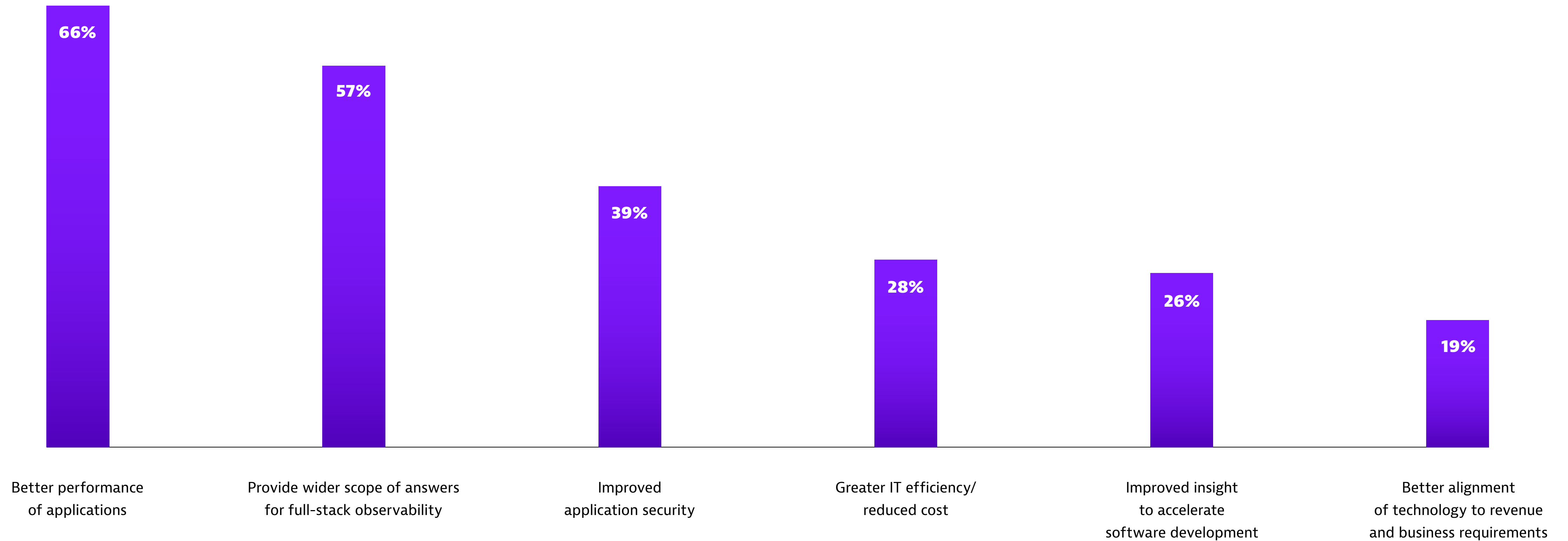


# Automation at limitless scale is essential

CIOs say the most valuable solutions to helping their teams overcome the complexity of their cloud-native technology stack include the following:



All CIOs agree there would be benefits to consolidating log management and analytics, citing the biggest advantages as the following:



# The Dynatrace difference

The world needs software to work perfectly. So, Dynatrace® combines observability, AIOps, and application security in one unified platform to give teams the precise answers and intelligent automation they need to deliver exceptional digital experiences at scale. Our comprehensive approach to observability — which we call Cloud done right — empowers organizations across the globe to simplify cloud complexity, speed innovation, and do more with less in the modern cloud.

# Methodology

This report is based on a global survey of 1,303 CIOs and senior IT practitioners involved in cloud and IT operations management in large enterprises with more than 1,000 employees, conducted by Coleman Parkes and commissioned by Dynatrace.

The sample included 200 respondents in the U.S., 100 in Latin America, 603 in Europe, 150 in the Middle East, and 250 in Asia Pacific. For a detailed breakdown of findings by region, refer to the global data summary appendix.

# Global data summary: U.S. and Latin America

Sample includes 200 respondents from the U.S. and 50 respondents from each of Brazil and Mexico.

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are currently using:**

	U.S.	Brazil	Mexico
Microservices and containers	59%	60%	58%
Multicloud	61%	88%	86%
Kubernetes	58%	52%	68%
Hybrid cloud	55%	84%	96%
Serverless	60%	64%	56%

The cloud-native technologies and platforms that organizations **are already using, or will have adopted in the next 12 months:**

	U.S.	Brazil	Mexico
Microservices and containers	86%	92%	94%
Multicloud	94%	100%	96%
Kubernetes	83%	86%	92%
Hybrid cloud	94%	100%	100%
Serverless	90%	94%	92%

The cloud-native technologies and platforms that organizations **are increasing their use of, or adopting, during the next 12 months:**

	U.S.	Brazil	Mexico
Microservices and containers	58%	54%	46%
Multicloud	49%	26%	22%
Kubernetes	41%	42%	42%
Hybrid cloud	43%	44%	42%
Serverless	38%	42%	50%

# Global data summary: U.S. and Latin America

## Chapter 1: The drive to be cloud-native increases complexity

	U.S.	Brazil	Mexico
The average number of platforms and systems that current enterprise stacks are built on	6	8	7
The average number of different technologies a single application transaction crosses from beginning to end	38	47	46
CIOs that say their organization's IT environment changes at least once per second	28%	18%	26%
CIOs that say their organization's IT environment changes every minute or less	84%	92%	100%

# Global data summary: U.S. and Latin America

## Chapter 2: Complexity has grown beyond human capacity

	U.S.	Brazil	Mexico
CIOs that say that the explosion of data produced by cloud-native technology stacks is now beyond human ability to manage	58%	24%	42%
The average proportion of their time that DevOps teams spend dealing with digital performance problems	30%	30%	30%
CIOs that say that it has become harder to attract and retain enough skilled IT ops and DevOps professionals to manage and maintain their cloud-native stack	58%	36%	26%
CIOs that say if they don't identify a more automated approach to IT operations, their teams could soon become overloaded by the increasing complexity of their technology stack	72%	88%	96%

# Global data summary: U.S. and Latin America

## Chapter 3: Distributed architectures have created silos

	U.S.	Brazil	Mexico
The average number of monitoring tools that organizations use across their technology stacks	11	12	14
The average proportion of the technology stack into which organizations have end-to-end observability	8%	8%	9%
CIOs that say that there are barriers to extending observability and security across their cloud-native and multicloud environments	96%	100%	94%



# Global data summary: U.S. and Latin America

## Chapter 3: Distributed architectures have created silos

The barriers to extending observability and security across cloud-native and multicloud environments:

	U.S.	Brazil	Mexico
The number of tools needed to monitor the end-to-end technology stack makes it difficult to operate efficiently	53%	48%	46%
Some areas of our technology stack are difficult to instrument or can't be monitored with our solutions	35%	26%	30%
Our data storage layer is unable to scale efficiently to keep up with the volume of metrics and logs we would need to capture	40%	54%	58%
Prevalence of manual processes or inability to automate processes	30%	10%	22%
Many monitoring tools can't provide real-time observability, so the insights are of limited use	29%	42%	20%
Lack of skills or resources	26%	18%	12%

# Global data summary: U.S. and Latin America

## Chapter 4: Log analytics is becoming less effective

	U.S.	Brazil	Mexico
CIOs that say their current observability data ingestion and storage approaches won't support their future needs	37%	26%	28%
The average proportion of observability data that is captured for querying and analytics	10%	10%	9%
CIOs say the costs and delays caused by reindexing and rehydration make it challenging to unlock value from increasing the amount of data they capture	48%	12%	4%

# Global data summary: U.S. and Latin America

## Chapter 4: Log analytics is becoming less effective

The challenges to unlocking greater value and insight from observability data:

	U.S.	Brazil	Mexico
Observability data is unavailable for analytics on demand	48%	60%	50%
It's too costly to increase the volume of logs, metrics, and traces in analytics solutions, so it's only possible to keep what is deemed most critical	46%	34%	48%
Data spans multiple platforms, so it's difficult and time-consuming to centralize log management and other use cases to drive insights	40%	40%	22%
There is too much observability data (logs, metrics, and traces) to keep all of it, so most of it is either scrubbed or discarded	28%	18%	14%
Analysis is manual, labor-intensive, and complex	23%	8%	24%

# Global data summary: U.S. and Latin America

## Chapter 5: Automation at limitless scale is essential

	U.S.	Brazil	Mexico
CIOs say AIOps and automation are increasingly key to alleviating the shortage of skilled IT, development and security professionals to reduce the risk of burnout due to modern cloud complexity	92%	92%	92%
The average percentage of their teams' time spent "keeping the lights on" that CIOs estimate could be saved through automation	39%	39%	38%

# Global data summary: U.S. and Latin America

## Chapter 5: Automation at limitless scale is essential

The most valuable solutions to helping teams overcome the complexity of cloud-native technology stacks:

	U.S.	Brazil	Mexico
Ability to automatically discover new components in the tech stack and build an always-updated topology map to reveal dependencies in real time	56%	48%	54%
Having a dynamic storage layer that scales to any volume of observability data and removes the need for indexing and rehydration	51%	58%	50%
Using AIOps to turn observability data into actionable answers and automation	46%	48%	46%
Having an end-to-end observability platform that can monitor the entire stack	36%	24%	28%
Hiring more IT operations, DevOps, and SRE professionals	26%	22%	22%

# Global data summary: U.S. and Latin America

## Chapter 5: Automation at limitless scale is essential

The biggest advantages to consolidating log management and analytics:

	U.S.	Brazil	Mexico
Better performance of applications	61%	80%	88%
Provide wider scope of answers for full-stack observability	63%	68%	82%
Improved application security	37%	6%	14%
Greater IT efficiency/reduced cost	28%	26%	8%
Improved insight to accelerate software development	22%	20%	10%
Better alignment of technology to revenue and business requirements	18%	6%	2%

# Global data summary: Europe

Sample includes 603 respondents, including 100 from each of the U.K., France, Germany, Spain, and Italy, 28 from Denmark, and 25 from each of Finland, Norway, and Sweden.

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are currently using**:

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Microservices and containers	62%	94%	91%	91%	93%	92%	97%	92%	100%
Multicloud	78%	39%	32%	46%	37%	92%	65%	48%	48%
Kubernetes	70%	96%	94%	85%	91%	92%	93%	88%	96%
Hybrid cloud	62%	28%	25%	41%	33%	64%	32%	40%	32%
Serverless	46%	84%	81%	75%	75%	60%	68%	64%	88%

# Global data summary: Europe

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are already using, or will have adopted in the next 12 months:**

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Microservices and containers	87%	100%	100%	99%	100%	100%	100%	100%	100%
Multicloud	94%	99%	90%	99%	88%	100%	100%	100%	100%
Kubernetes	88%	100%	100%	96%	98%	100%	100%	100%	100%
Hybrid cloud	94%	100%	100%	100%	100%	100%	96%	96%	100%
Serverless	81%	99%	100%	96%	97%	92%	96%	100%	100%



# Global data summary: Europe

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are increasing their use of, or adopting, during the next 12 months:**

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Microservices and containers	65%	77%	64%	62%	57%	40%	72%	72%	56%
Multicloud	38%	68%	71%	68%	64%	56%	72%	72%	80%
Kubernetes	35%	34%	40%	37%	36%	40%	43%	36%	48%
Hybrid cloud	58%	79%	78%	68%	71%	40%	85%	60%	80%
Serverless	39%	22%	25%	25%	27%	52%	33%	44%	28%

# Global data summary: Europe

## Chapter 1: The drive to be cloud-native increases complexity

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
The average number of platforms and systems that current enterprise stacks are built on	6	6	6	6	6	7	7	4	8
The average number of different technologies a single application transaction crosses from beginning to end	40	33	31	32	31	34	37	24	33
CIOs that say their organization's IT environment changes at least once per second	35%	42%	30%	23%	33%	28%	29%	0%	16%
CIOs that say their organization's IT environment changes every minute or less	93%	64%	65%	60%	68%	68%	79%	40%	76%

# Global data summary: Europe

## Chapter 2: Complexity has grown beyond human capacity

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
CIOs that say that the explosion of data produced by cloud-native technology stacks is now beyond human ability to manage	61%	88%	90%	83%	86%	72%	86%	84%	84%
The average proportion of their time that DevOps teams spend dealing with digital performance problems	30%	31%	31%	31.5%	30%	31%	31%	31%	31%
CIOs that say that it has become harder to attract and retain enough skilled IT ops and DevOps professionals to manage and maintain their cloud-native stack	54%	72%	72%	76%	82%	76%	68%	68%	64%
CIOs that say if they don't identify a more automated approach to IT operations, their teams could soon become overloaded by the increasing complexity of their technology stack	68%	23%	25%	35%	25%	28%	21%	20%	24%

# Global data summary: Europe

## Chapter 3: Distributed architectures have created silos

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
The average number of monitoring tools that organizations use across their technology stacks	9	8	8	9	8	7	7	7	8
The average proportion of the technology stack that organizations have end-to-end observability into	9%	12%	12%	11%	10%	10%	11%	10%	9%
CIOs that say that there are barriers to extending observability and security across their cloud-native and multicloud environments	96%	95%	96%	95%	98%	96%	86%	100%	96%

# Global data summary: Europe

## Chapter 3: Distributed architectures have created silos

The barriers to extending observability and security across cloud-native and multicloud environments:

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
The number of tools needed to monitor the end-to-end technology stack makes it difficult to operate efficiently	42%	43%	41%	51%	36%	40%	32%	56%	64%
Some areas of our technology stack are difficult to instrument or can't be monitored with our solutions	40%	29%	35%	30%	39%	48%	43%	48%	28%
Our data storage layer is unable to scale efficiently to keep up with the volume of metrics and logs we would need to capture	32%	42%	42%	42%	43%	24%	39%	44%	32%
Prevalence of manual processes or inability to automate processes	41%	35%	30%	30%	35%	40%	36%	52%	32%
Many monitoring tools can't provide real-time observability, so the insights are of limited use	36%	28%	33%	23%	31%	40%	21%	12%	36%
Lack of skills or resources	30%	10%	15%	13%	13%	28%	18%	36%	24%

# Global data summary: Europe

## Chapter 4: Log analytics is becoming less effective

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
CIOs that say their current observability data ingestion and storage approaches won't support their future needs	40%	44%	43%	53%	54%	0%	43%	8%	40%
The average proportion of observability data that is captured for querying and analytics	9%	13%	11%	11%	10%	17%	12%	12%	12%
CIOs say the costs and delays caused by reindexing and rehydration make it challenging to unlock value from increasing the amount of data they capture	58%	78%	77%	63%	76%	80%	86%	84%	84

# Global data summary: Europe

## Chapter 4: Log analytics is becoming less effective

The challenges to unlocking greater value and insight from observability data:

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Observability data is unavailable for analytics on demand	47%	52%	61%	63%	65%	56%	61%	48%	64%
It's too costly to increase the volume of logs, metrics, and traces in analytics solutions, so it's only possible to keep what is deemed most critical	39%	40%	43%	41%	45%	40%	54%	32%	48%
Data spans multiple platforms, so it's difficult and time-consuming to centralize log management and other use cases to drive insights	39%	44%	48%	38%	43%	36%	36%	68%	32%
There is too much observability data (logs, metrics, and traces) to keep all of it, so most of it is either scrubbed or discarded	26%	24%	16%	17%	15%	28%	29%	32%	12%
Analysis is manual, labor-intensive, and complex	27%	7%	3%	10%	3%	24%	4%	20%	12%

# Global data summary: Europe

## Chapter 5: Automation at limitless scale is essential

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
CIOs say AIOps and automation are increasingly key to alleviating the shortage of skilled IT, development and security professionals to reduce the risk of burnout due to modern cloud complexity	95%	91%	95%	97%	95%	100%	96%	100%	96%
The average percentage of their teams' time spent "keeping the lights on" that CIOs estimate could be saved through automation	40%	38%	36.5%	37%	35%	39%	38%	35%	37%



# Global data summary: Europe

## Chapter 5: Automation at limitless scale is essential

The most valuable solutions to helping teams overcome the complexity of cloud-native technology stacks:

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Ability to automatically discover new components in the tech stack and build an always-updated topology map to reveal dependencies in real time	50%	63%	56%	58%	43%	24%	46%	68%	40%
Having a dynamic storage layer that scales to any volume of observability data and removes the need for indexing and rehydration	52%	38%	47%	41%	38%	60%	50%	32%	36%
Using AIOps to turn observability data into actionable answers and automation	42%	41%	46%	43%	49%	48%	32%	44%	60%
Having an end-to-end observability platform that can monitor the entire stack	37%	40%	32%	34%	44%	28%	64%	40%	24%
Hiring more IT operations, DevOps, and SRE professionals	38%	31%	43%	41%	49%	48%	29%	40%	56%

# Global data summary: Europe

## Chapter 5: Automation at limitless scale is essential

The biggest advantages to consolidating log management and analytics:

	U.K.	France	Germany	Italy	Spain	Sweden	Denmark	Finland	Norway
Better performance of applications	76%	59%	60%	61%	52%	68%	86%	44%	68%
Provide wider scope of answers for full-stack observability	64%	41%	46%	54%	57%	20%	39%	36%	40%
Improved application security	40%	43%	38%	37%	41%	48%	50%	24%	48%
Greater IT efficiency/reduced cost	18%	30%	35%	32%	34%	60%	25%	64%	36%
Improved insight to accelerate software development	25%	39%	25%	30%	29%	28%	14%	28%	24%
Better alignment of technology to revenue and business requirements	16%	23%	24%	16%	14%	20%	18%	36%	32%

# Global data summary: Middle East

Sample contains 151 respondents, including 30 from UAE, 20 from Egypt, 31 from Qatar, 25 from Kuwait, 30 from Saudi Arabia and 15 from Bahrain.

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are currently using**:

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
Microservices and containers	34%	30%	51%	64%	50%	40%
Multicloud	77%	85%	84%	84%	60%	93%
Kubernetes	50%	55%	55%	36%	64%	40%
Hybrid cloud	50%	65%	84%	64%	60%	73%
Serverless	40%	35%	45%	48%	30%	40%

# Global data summary: Middle East

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are already using, or will have adopted in the next 12 months:**

	<b>UAE</b>	<b>Egypt</b>	<b>Qatar</b>	<b>Kuwait</b>	<b>Saudi Arabia</b>	<b>Bahrain</b>
Microservices and containers	77%	85%	81%	92%	70%	73%
Multicloud	97%	95%	97%	100%	90%	93%
Kubernetes	77%	70%	87%	76%	100%	47%
Hybrid cloud	77%	90%	94%	92%	93%	87%
Serverless	63%	75%	84%	68%	77%	80%

# Global data summary: Middle East

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations **are increasing their use of, or adopting, during the next 12 months:**

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
Microservices and containers	60%	70%	64%	64%	53%	60%
Multicloud	70%	45%	39%	28%	43%	60%
Kubernetes	60%	30%	45%	48%	54%	27%
Hybrid cloud	60%	60%	49%	56%	60%	53%
Serverless	26%	45%	39%	32%	57%	47%

# Global data summary: Middle East

## Chapter 1: The drive to be cloud-native increases complexity

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
The average number of platforms and systems that current enterprise stacks are built on	6	8	8	7	6	8
The average number of different technologies a single application transaction crosses from beginning to end	33	38	41	41	29	39
CIOs that say their organization's IT environment changes at least once per second	53%	30%	48%	16%	40%	13%
CIOs that say their organization's IT environment changes every minute or less	86%	75%	96%	72%	70%	93%

# Global data summary: Middle East

## Chapter 2: Complexity has grown beyond human capacity

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
CIOs that say that the explosion of data produced by cloud-native technology stacks is now beyond human ability to manage	93%	45%	35%	32%	60%	27%
The average proportion of their time that DevOps teams spend dealing with digital performance problems	32%	32%	31%	33%	32%	33%
CIOs that say that it has become harder to attract and retain enough skilled IT ops and DevOps professionals to manage and maintain their cloud-native stack	77%	55%	35%	44%	57%	40%
CIOs that say if they don't identify a more automated approach to IT operations, their teams could soon become overloaded by the increasing complexity of their technology stack	83%	100%	90%	80%	70%	100%

# Global data summary: Middle East

## Chapter 3: Distributed architectures have created silos

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
The average number of monitoring tools that organizations use across their technology stacks	10.5	12	12	12	13	12
The average proportion of the technology stack that organizations have end-to-end observability into	8%	8%	10%	9%	7%	6%
CIOs that say that there are barriers to extending observability and security across their cloud-native and multicloud environments	100%	100%	100%	100%	97%	100%



# Global data summary: Middle East

## Chapter 3: Distributed architectures have created silos

The barriers to extending observability and security across cloud-native and multicloud environments:

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
The number of tools needed to monitor the end-to-end technology stack makes it difficult to operate efficiently	43%	55%	52%	64%	57%	60%
Some areas of our technology stack are difficult to instrument or can't be monitored with our solutions	47%	50%	42%	28%	43%	47%
Our data storage layer is unable to scale efficiently to keep up with the volume of metrics and logs we would need to capture	60%	50%	39%	48%	37%	53%
Prevalence of manual processes or inability to automate processes	23%	10%	19%	24%	37%	33%
Many monitoring tools can't provide real-time observability, so the insights are of limited use	40%	35%	35%	32%	23%	33%
Lack of skills or resources	50%	40%	23%	20%	43%	40%

# Global data summary: Middle East

## Chapter 4: Log analytics is becoming less effective

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
CIOs that say their current observability data ingestion and storage approaches won't support their future needs	77%	45%	32%	32%	20%	33%
The average proportion of observability data that is captured for querying and analytics	9%	9%	8%	9%	10%	9%
CIOs say the costs and delays caused by reindexing and rehydration make it challenging to unlock value from increasing the amount of data they capture	83%	45%	29%	32%	80%	67%

# Global data summary: Middle East

## Chapter 4: Log analytics is becoming less effective

The challenges to unlocking greater value and insight from observability data:

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
Observability data is unavailable for analytics on demand	87%	60%	55%	48%	53%	33%
It's too costly to increase the volume of logs, metrics, and traces in analytics solutions, so it's only possible to keep what is deemed most critical	57%	55%	58%	44%	37%	60%
Data spans multiple platforms, so it's difficult and time-consuming to centralize log management and other use cases to drive insights	33%	50%	32%	44%	50%	60%
There is too much observability data (logs, metrics, and traces) to keep all of it, so most of it is either scrubbed or discarded	23%	25%	26%	28%	30%	40%
Analysis is manual, labor-intensive, and complex	33%	15%	19%	12%	23%	33%

# Global data summary: Middle East

## Chapter 5: Automation at limitless scale is essential

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
CIOs say AIOps and automation are increasingly key to alleviating the shortage of skilled IT, development and security professionals to reduce the risk of burnout due to modern cloud complexity	93%	95%	94%	92%	90%	93%
The average percentage of their teams' time spent "keeping the lights on" that CIOs estimate could be saved through automation	46%	42%	38%	41%	40%	44%

# Global data summary: Middle East

## Chapter 5: Automation at limitless scale is essential

The most valuable solutions to helping teams overcome the complexity of cloud-native technology stacks:

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
Ability to automatically discover new components in the tech stack and build an always-updated topology map to reveal dependencies in real time	43%	70%	58%	60%	50%	80%
Having a dynamic storage layer that scales to any volume of observability data and removes the need for indexing and rehydration	50%	60%	45%	32%	60%	73%
Using AIOps to turn observability data into actionable answers and automation	73%	35%	45%	32%	30%	33%
Having an end-to-end observability platform that can monitor the entire stack	43%	25%	29%	48%	47%	40%
Hiring more IT operations, DevOps, and SRE professionals	33%	50%	35%	36%	30%	33%

# Global data summary: Middle East

## Chapter 5: Automation at limitless scale is essential

The biggest advantages to consolidating log management and analytics:

	UAE	Egypt	Qatar	Kuwait	Saudi Arabia	Bahrain
Better performance of applications	70%	90%	71%	84%	57%	87%
Provide wider scope of answers for full-stack observability	47%	70%	68%	76%	47%	73%
Improved application security	73%	40%	26%	24%	27%	20%
Greater IT efficiency/reduced cost	17%	10%	23%	16%	33%	27%
Improved insight to accelerate software development	30%	10%	16%	8%	43%	27%
Better alignment of technology to revenue and business requirements	13%	25%	6%	8%	27%	13%

# Global data summary: APAC

Sample consists of 250 respondents, including 100 from Australia, 50 from Singapore, 50 from India and 50 from Malaysia.

## Chapter 1: The drive to be cloud-native increases complexity

The cloud-native technologies and platforms that organizations are currently using:

	Australia	Singapore	India	Malaysia
Microservices and containers	52%	46%	60%	50%
Multicloud	69%	56%	66%	68%
Kubernetes	60%	56%	54%	62%
Hybrid cloud	52%	36%	56%	70%
Serverless	51%	46%	36%	32%

The cloud-native technologies and platforms that organizations are already using, or will have adopted in the next 12 months:

	Australia	Singapore	India	Malaysia
Microservices and containers	85%	80%	88%	78%
Multicloud	91%	90%	96%	90%
Kubernetes	91%	80%	72%	86%
Hybrid cloud	84%	84%	88%	92%
Serverless	81%	82%	70%	76%

The cloud-native technologies and platforms that organizations are increasing their use of, or adopting, during the next 12 months:

	Australia	Singapore	India	Malaysia
Microservices and containers	58%	60%	56%	40%
Multicloud	66%	68%	66%	68%
Kubernetes	53%	46%	40%	44%
Hybrid cloud	52%	66%	60%	70%
Serverless	37%	46%	40%	46%

# Global data summary: APAC

## Chapter 1: The drive to be cloud-native increases complexity

	Australia	Singapore	India	Malaysia
The average number of platforms and systems that current enterprise stacks are built on	6	6	8	6
The average number of different technologies a single application transaction crosses from beginning to end	33	30	43	33
CIOs that say their organization's IT environment changes at least once per second	28%	28%	20%	36%
CIOs that say their organization's IT environment changes every minute or less	80%	78%	80%	86%



# Global data summary: APAC

## Chapter 2: Complexity has grown beyond human capacity

	Australia	Singapore	India	Malaysia
CIOs that say that the explosion of data produced by cloud-native technology stacks is now beyond human ability to manage	78%	90%	74%	80%
The average proportion of their time that DevOps teams spend dealing with digital performance problems	32%	31%	34%	34%
CIOs that say that it has become harder to attract and retain enough skilled IT ops and DevOps professionals to manage and maintain their cloud-native stack	71%	78%	68%	84%
CIOs that say if they don't identify a more automated approach to IT operations, their teams could soon become overloaded by the increasing complexity of their technology stack	77%	74%	80%	86%

# Global data summary: APAC

## Chapter 3: Distributed architectures have created silos

	Australia	Singapore	India	Malaysia
The average number of monitoring tools that organizations use across their technology stacks	11	10	12	10
The average proportion of the technology stack that organizations have end-to-end observability into	9%	8%	9%	7%
CIOs that say that there are barriers to extending observability and security across their cloud-native and multicloud environments	99%	100%	96%	100%

# Global data summary: APAC

## Chapter 3: Distributed architectures have created silos

The barriers to extending observability and security across cloud-native and multicloud environments:

	Australia	Singapore	India	Malaysia
The number of tools needed to monitor the end-to-end technology stack makes it difficult to operate efficiently	52%	54%	54%	40%
Some areas of our technology stack are difficult to instrument or can't be monitored with our solutions	46%	34%	46%	46%
Our data storage layer is unable to scale efficiently to keep up with the volume of metrics and logs we would need to capture	43%	48%	44%	52%
Prevalence of manual processes or inability to automate processes	38%	46%	38%	48%
Many monitoring tools can't provide real-time observability, so the insights are of limited use	43%	32%	38%	32%
Lack of skills or resources	33%	44%	40%	54%

# Global data summary: APAC

## Chapter 4: Log analytics is becoming less effective

	Australia	Singapore	India	Malaysia
CIOs that say their current observability data ingestion and storage approaches won't support their future needs	63%	54%	52%	52%
The average proportion of observability data that is captured for querying and analytics	10%	10%	10%	8%
CIOs say the costs and delays caused by reindexing and rehydration make it challenging to unlock value from increasing the amount of data they capture	77%	84%	80%	80%

# Global data summary: APAC

## Chapter 4: Log analytics is becoming less effective

The challenges to unlocking greater value and insight from observability data:

	Australia	Singapore	India	Malaysia
Observability data is unavailable for analytics on demand	59%	56%	60%	66%
It's too costly to increase the volume of logs, metrics, and traces in analytics solutions, so it's only possible to keep what is deemed most critical	51%	46%	26%	62%
Data spans multiple platforms, so it's difficult and time-consuming to centralize log management and other use cases to drive insights	41%	46%	60%	46%
There is too much observability data (logs, metrics, and traces) to keep all of it, so most of it is either scrubbed or discarded	30%	36%	48%	12%
Analysis is manual, labor-intensive, and complex	43%	48%	32%	46%

# Global data summary: APAC

## Chapter 5: Automation at limitless scale is essential

	Australia	Singapore	India	Malaysia
CIOs say AIOps and automation are increasingly key to alleviating the shortage of skilled IT, development and security professionals to reduce the risk of burnout due to modern cloud complexity	91%	92%	86%	94%
The average percentage of their teams' time spent "keeping the lights on" that CIOs estimate could be saved through automation	43%	42%	47%	45%

# Global data summary: APAC

## Chapter 5: Automation at limitless scale is essential

The most valuable solutions to helping teams overcome the complexity of cloud-native technology stacks:

	Australia	Singapore	India	Malaysia
Ability to automatically discover new components in the tech stack and build an always-updated topology map to reveal dependencies in real time	53%	56%	68%	50%
Having a dynamic storage layer that scales to any volume of observability data and removes the need for indexing and rehydration	50%	48%	40%	54%
Using AIOps to turn observability data into actionable answers and automation	56%	58%	38%	60%
Having an end-to-end observability platform that can monitor the entire stack	36%	56%	54%	44%
Hiring more IT operations, DevOps, and SRE professionals	34%	30%	46%	42%

# Global data summary: APAC

## Chapter 5: Automation at limitless scale is essential

The biggest advantages to consolidating log management and analytics:

	Australia	Singapore	India	Malaysia
Better performance of applications	73%	56%	64%	66%
Provide wider scope of answers for full-stack observability	60%	60%	52%	66%
Improved application security	42%	56%	58%	62%
Greater IT efficiency/reduced cost	25%	30%	28%	28%
Improved insight to accelerate software development	24%	34%	36%	18%
Better alignment of technology to revenue and business requirements	22%	24%	26%	24%



# Automatic and intelligent observability for hybrid multiclouds

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