Multicloud Data Management Strategy
that Fuels Digital Transformation
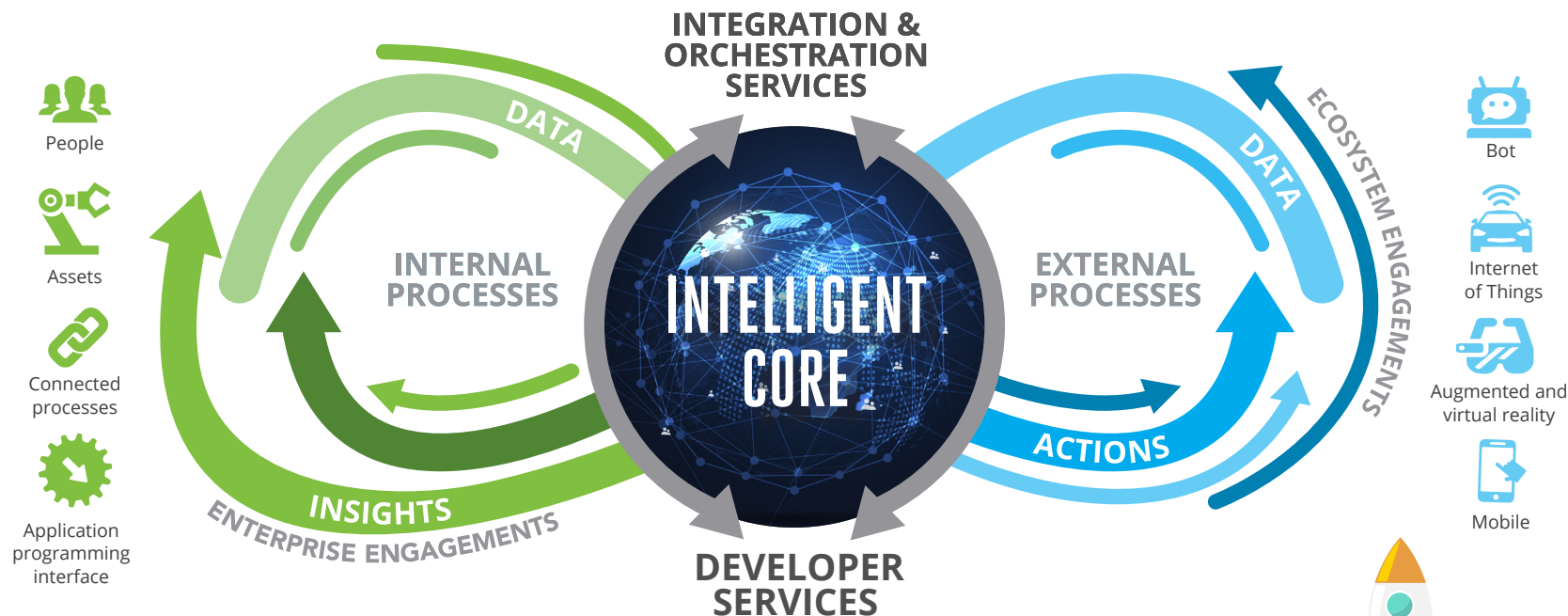
IDC | ANALYZE THE FUTURE

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Data underpins digital transformation

Digital transformation business objectives are balanced between tactical and strategic objectives, and range from improving operational efficiencies and customer satisfaction, to increasing existing product revenue and profit margins, to launching new digital revenue streams.

Intelligent applications based on artificial intelligence (AI), machine learning (ML), and continual deep learning are the next wave of technological advancement, transforming how consumers and enterprises work, learn, and play. While data is at the core of the new digital economy, it is about how you **sense** the environment, manage and **protect** the data from edge to core to cloud, **analyze** data in near real time, **learn** from it, and then **act** on it to affect outcomes.


People

Assets

Connected processes

Application programming interface

INTEGRATION & ORCHESTRATION SERVICES

DATA

INTERNAL PROCESSES

INSIGHTS

ENTERPRISE ENGAGEMENTS

INTELLIGENT CORE

EXTERNAL PROCESSES

DATA

ECOSYSTEM ENGAGEMENTS

ACTIONS

DEVELOPER SERVICES

Bot

Internet of Things

Augmented and virtual reality

Mobile

Source: IDC

Digital transformation is a set of practices and disciplines used to leverage new business, technology, and operating models to disrupt businesses, customers, and markets in the pursuit of business performance and growth.

Digital transformation and the importance of data

Digital Transformation has been accelerating across the world. In Asia/Pacific excluding Japan (APEJ), 56% of businesses are already in the mature* stages of their digital transformation journey. In the US, 58% of businesses are in the same stages while in Europe, 52% of businesses are in the more mature stages of digital transformation.

US 58%

Europe 52%

APEJ 56%
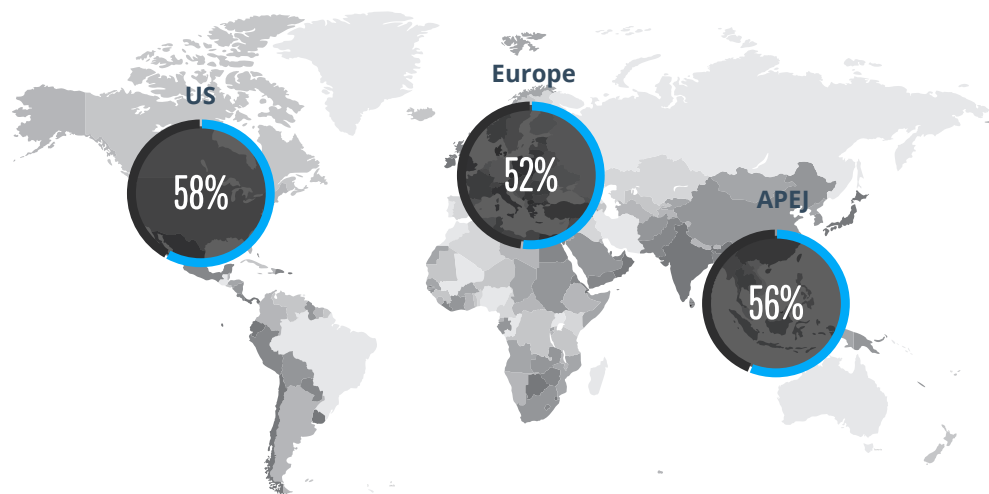
Source: "IDC Worldwide Future Enterprise MaturityScape Survey 2019

Enterprises around the world have been experiencing tectonic shifts and many are well along the journey of digital transformation to enable their businesses to adapt to the changing landscape. Organizations are looking at ways to efficiently **protect data, enable workload mobility and have a unified view of their enterprise-wide information**, both on and off premises.

As organizations undergo digital transformation, maintaining **high levels of data availability** is becoming more important. Digital transformation creates an even stronger impetus to **data protection** as organizations find ways to monetize data. This move from indirect support to directly creating revenue streams increases the value and, correspondingly, the potential impact should the data be leaked or otherwise abused.

Why
- Data drives the productivity of the organization.
- Data drives competitive advantages for most organizations.
- Related parties often have vested interests in the data so regulatory compliance is important.
- Legal liability issues arise quickly from data breaches.

What
- Protect the confidentiality, integrity, and availability of data.
- Protect PII, financial information, intellectual property, and so forth.
- Evaluate the control over data in motion, data at rest, and data in use.
- Assess both structured and unstructured data types.

IDC PLANSCAPE

How
- Provide data discovery, classification, governance, and monitoring capabilities for all sensitive data.
- Apply access control, encryption, and obfuscation technologies where appropriate.
- Review key management, backup, and data destruction alternatives for use.

Who
- Data owners, custodians, senior management, and employees within the organization.
- Relying parties such as partners and customers outside of the organization.
- Regulators and auditors protecting the interests of others.

*IDC's five stages of digital maturity, with Stage 5 being the most advanced. The figure denotes businesses that are in Stage 3 (Repeatable), Stage 4 (Managed), and Stage 5 (Optimized).

Source: IDC PlanScape: Data Security Principles and Practices for Digital Transformation

Customer insights drive analytics
Data growth is inevitable and necessary

IDC predicts that between 2018 - 2023

Global DataSphere will grow at a compounded annual growth rate (CAGR) of **25.8%**.

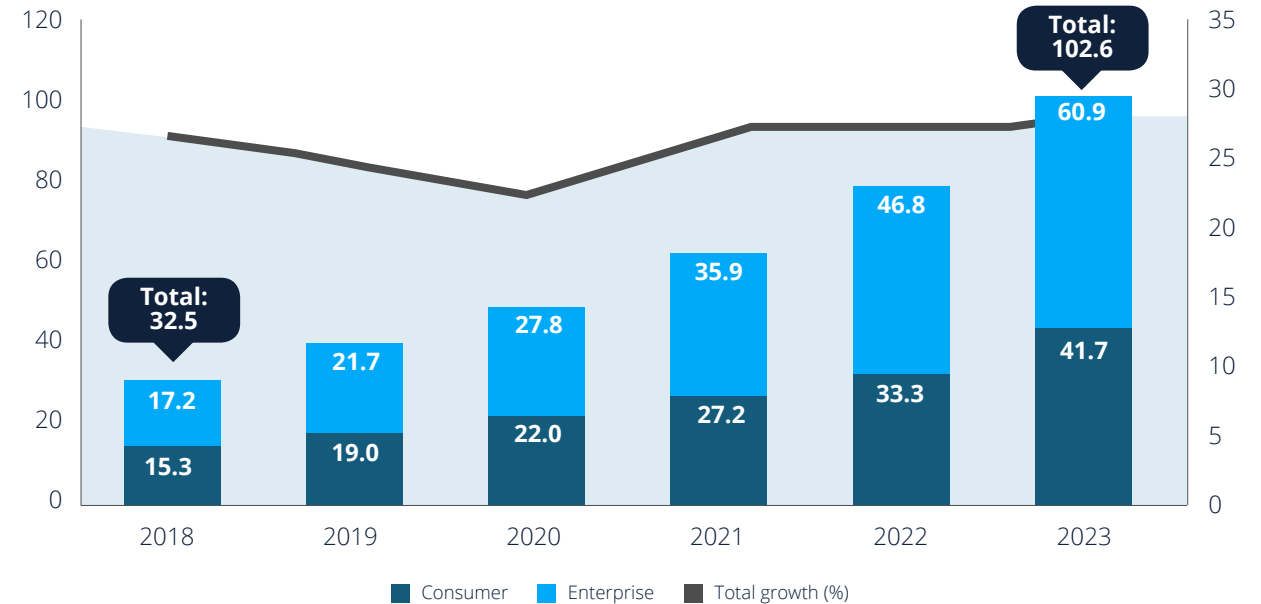102.6ZB of new data in 2023 – **3 times** the size in 2018 at 32.6ZB.

49 billion devices in 2023 will be connected to a network churning out data.

IDC forecasts that by then, organizations worldwide will be increasingly adopting a multicloud/hybrid cloud strategy, with data spread across multiple sites. Data will be widely considered the new oil with enterprises focused on mining the data within the organization, and using it to drive innovation and grow the business.

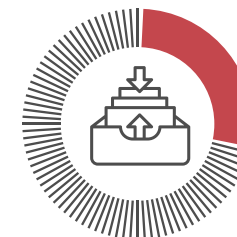**Over 60% of the new data created in 2023 will require some level of protection, but only half of it will be protected.**

2018 - 2023 Worldwide DataSphere (ZB) with growth (%)

(ZB)

Year	Consumer	Enterprise	Total
2018	15.3	17.2	32.5
2019	19.0	21.7	
2020	22.0	27.8	
2021	27.2	35.9	
2022	33.3	46.8	
2023	41.7	60.9	102.6

- Consumer
- Enterprise
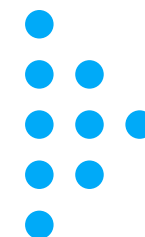- Total growth (%)

Selected segment growth rate

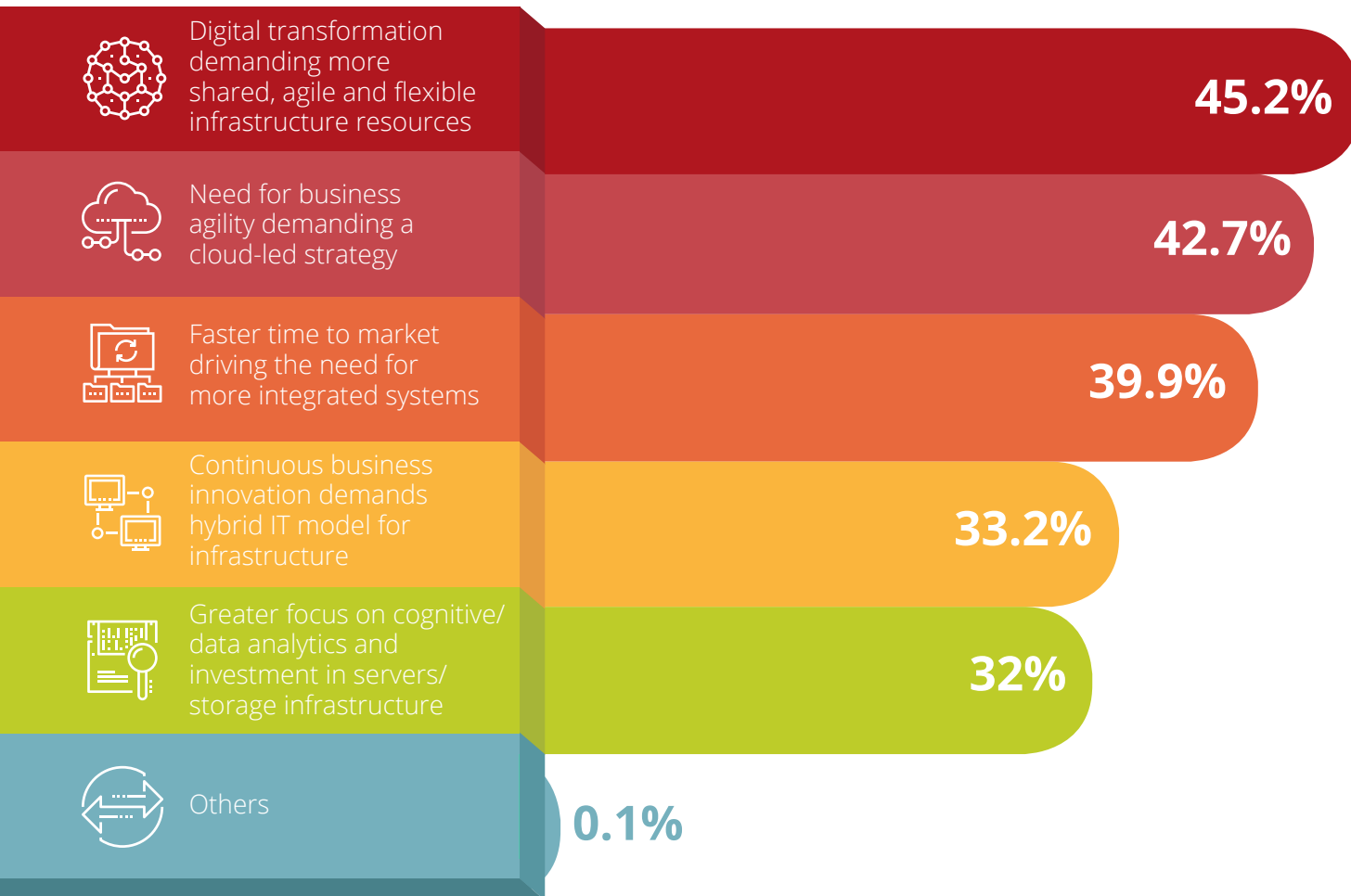Consumer DataSphere CAGR 22.1%

Enterprise DataSphere CAGR 28.8%

Total market CAGR

25.8%

Infrastructure requirements need to keep up

What are the business expectations that are driving infrastructure transformation in the company?

Category	%
Digital transformation demanding more shared, agile and flexible infrastructure resources	**45.2%**
Need for business agility demanding a cloud-led strategy	**42.7%**
Faster time to market driving the need for more integrated systems	**39.9%**
Continuous business innovation demands hybrid IT model for infrastructure	**33.2%**
Greater focus on cognitive/data analytics and investment in servers/storage infrastructure	**32%**
Others	**0.1%**

Business requires

- Agility and flexibility
- Integrated systems to achieve speed to market
- Cycle of innovation supported by hybrid cloud

Digital transformation expands cloud use

Digital transformation can be summed up as the shift from IT supporting business operations to IT driving the business

Growing cloud infrastructure use cases

Enterprise IT (broad adoption), SaaS expansion, AI/ML, broad, as well as specialized digital transformation initiatives

Webtech apps, analytics, high performance computing, enterprise IT (early adopters)

Backup, disaster recovery (DR), archiving, dev/test

Developer and startup apps

Core cloud IaaS use cases continue to grow
- Backup, archive and disaster recovery
- Development and staging of new applications
- Production enterprise IT applications

Emerging use cases add to cloud IaaS usage
- Large footprint scale out applications (next generation AI/ML and big data analysis)
- Core to edge applications integrated through cloud ecosystem

Time

Digital transformation — the continuous process by which enterprises adapt to or drive disruptive changes in their operations, customers, and markets — is now being driven by multiplied innovation. Competition is powered by platforms and ecosystems where network effects and innovation feed off themselves.

But the changes and innovations are not accidental; they are driven by data, analytics, and learning, which feed and multiply more innovation.

Data drives intelligence that yields insights and knowledge that enable action and create value. Automation and ML revolutionize operations, stimulating growth in productivity and efficiency.

Source: IDC Market Analysis Perspective: Worldwide Enterprise Storage Systems, 2019

The role of cloud in digital transformation

Data — its generation, delivery, concentration, and exploration — is at the heart of virtually all digital transformation efforts. Data collected, delivered, analyzed, and acted upon at the edge is at the heart of this major shift in how organizations connect with customers in new ways, develop new revenue sources, and improve operational efficiency.
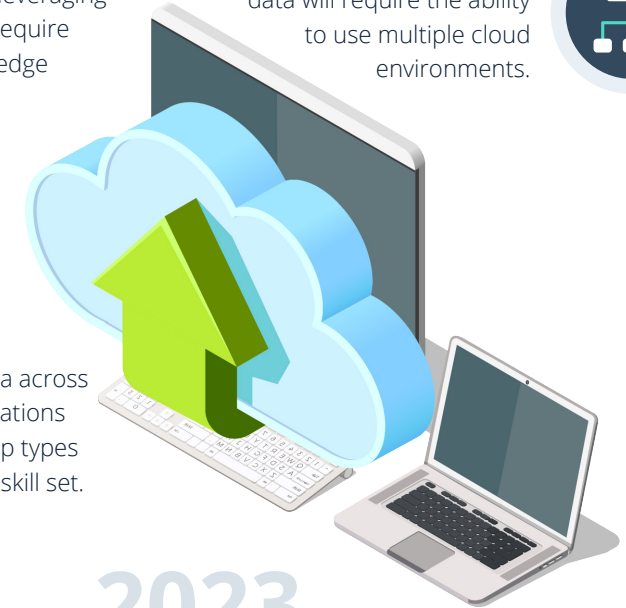
Investment in gathering, analyzing, protecting, leveraging and moving data will require investment in secure edge datacenters.

Volume and location of data will require the ability to use multiple cloud environments.

Managing data across platforms, locations and ownership types will be a core skill set.

2023

The demands of gathering, protecting, and leveraging a deluge of data whether in central cloud environments, or at edge locations, will be a leading challenge for all IT organizations across all industries. Those who effectively control the use and flow of data across all their edge locations through the adoption of a cloud data management platform, will gain the upper hand.

Data stored
32%
59%
9%

Data created
27%
17%
56%

■ Core ■ Edge ■ Endpoint

It's a multicloud universe

As the number of organizations with multicloud environments grows, there is an increasing trend for clouds to interoperate.

Over the next two years, how would you describe your organization's use of different on-premises and off-premises cloud environments?

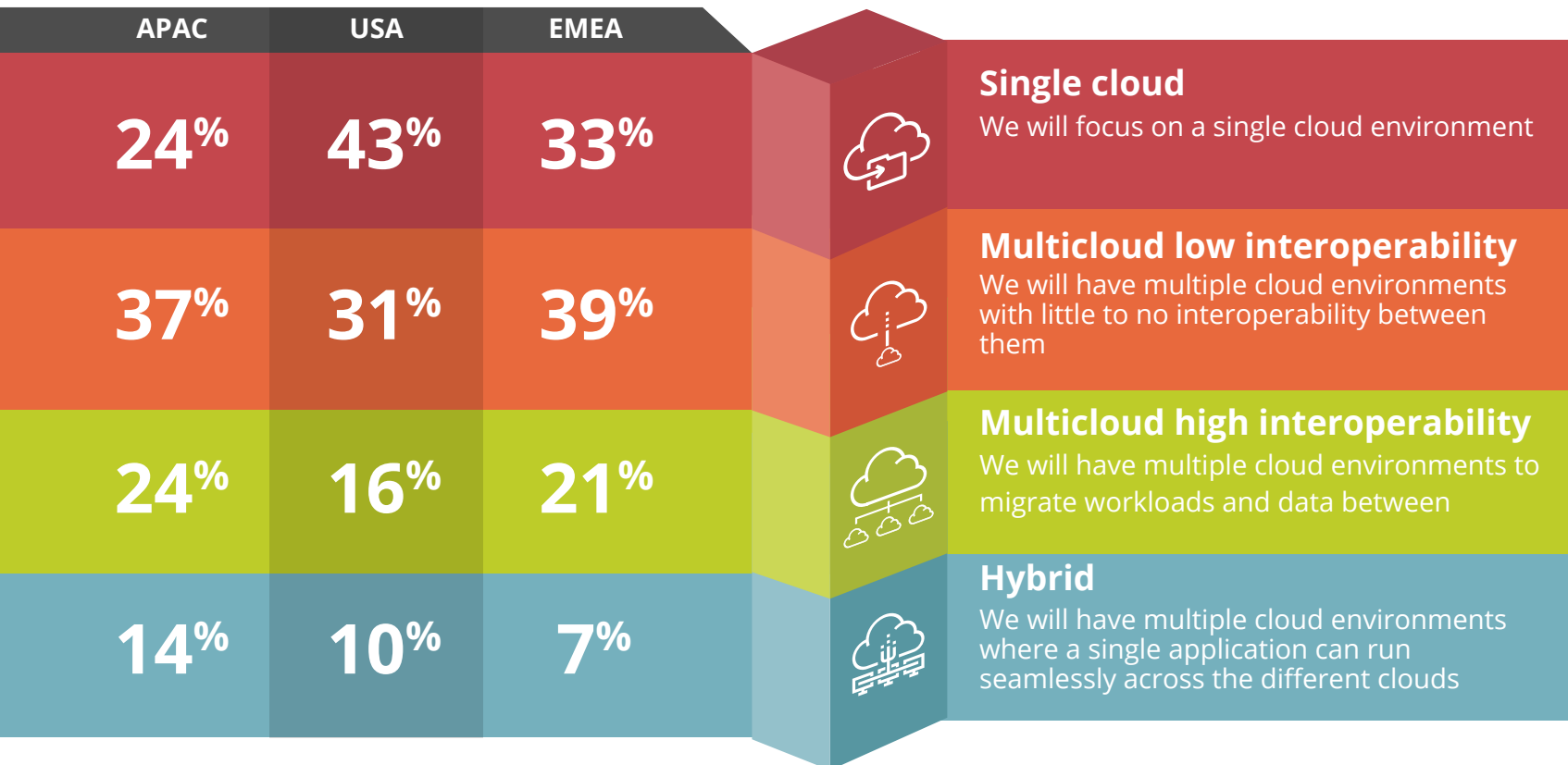| APAC	USA	EMEA		
24%	43%	33%		**Single cloud** We will focus on a single cloud environment
37%	31%	39%		**Multicloud low interoperability** We will have multiple cloud environments with little to no interoperability between them
24%	16%	21%		**Multicloud high interoperability** We will have multiple cloud environments to migrate workloads and data between
14%	10%	7%		**Hybrid** We will have multiple cloud environments where a single application can run seamlessly across the different clouds

Leading multicloud management challenges:

Security and governance policies implementation

Cost transparency and cloud consumption optimization
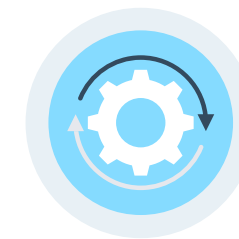
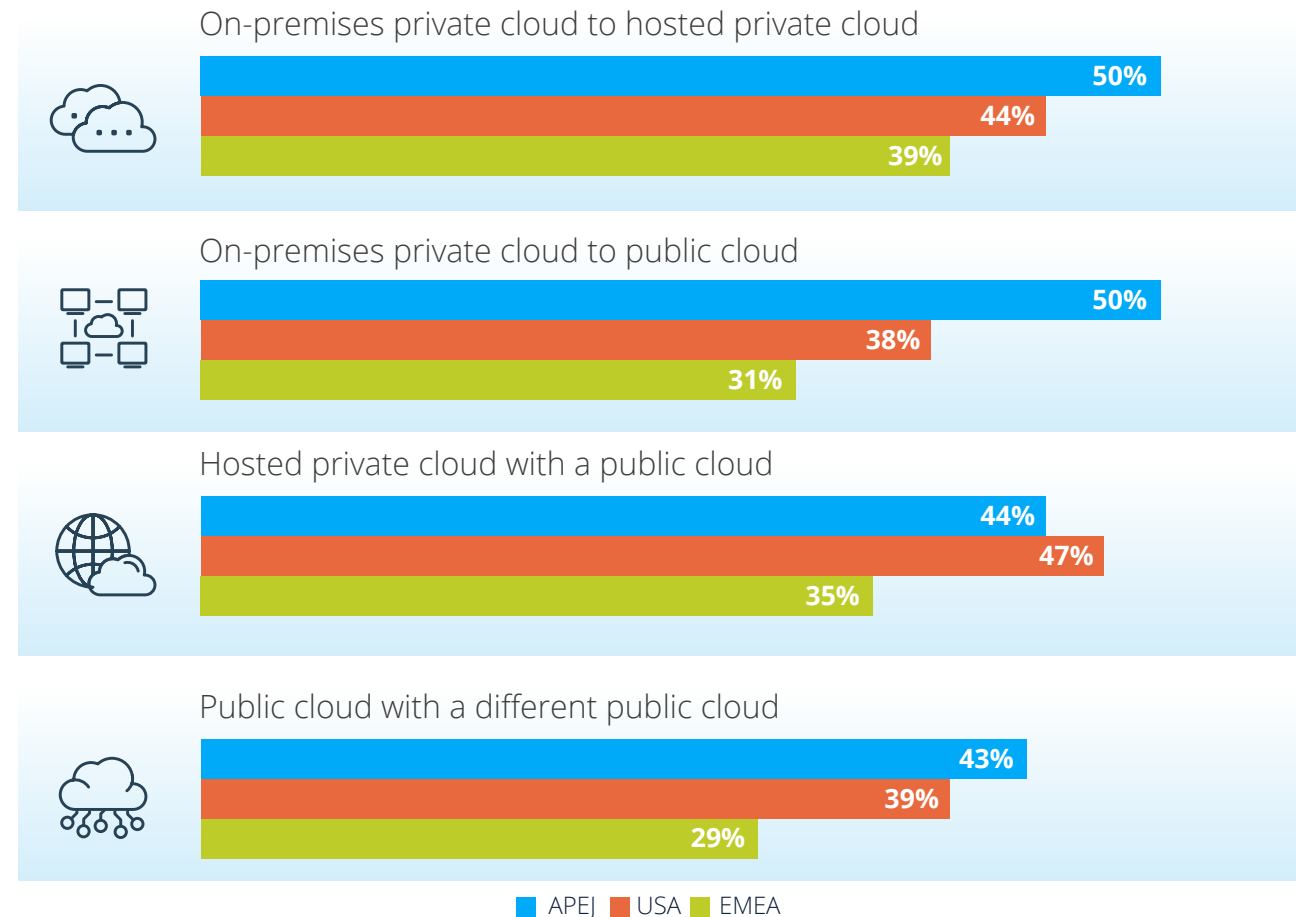**Automation**, skills, culture, and expertise

Performance management and integration of business and application processes

Interoperability stretches across, within and without

Interoperability in the cloud is most often built between on-premises private cloud and public cloud, and between on-premises private cloud to hosted private cloud.

Multicloud connection points

Has your organization enabled any of the following clouds to interoperate?

On-premises private cloud to hosted private cloud

- APEJ: 50%
- USA: 44%
- EMEA: 39%

On-premises private cloud to public cloud

- APEJ: 50%
- USA: 38%
- EMEA: 31%

Hosted private cloud with a public cloud

- APEJ: 44%
- USA: 47%
- EMEA: 35%

Public cloud with a different public cloud

- APEJ: 43%
- USA: 39%
- EMEA: 29%

Legend: ■ APEJ ■ USA ■ EMEA

Interoperability requirement leads to multiple challenges in the data-to-insight journey
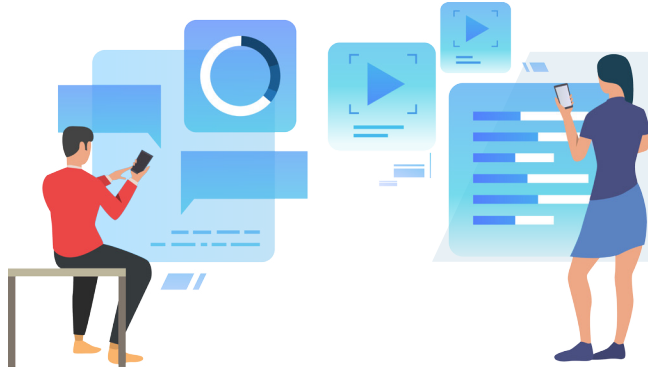
Across industries, organizations find it challenging to deliver insights – among the top reasons is the **lack of tools or resources** to federate data, and cleaning and curating it.

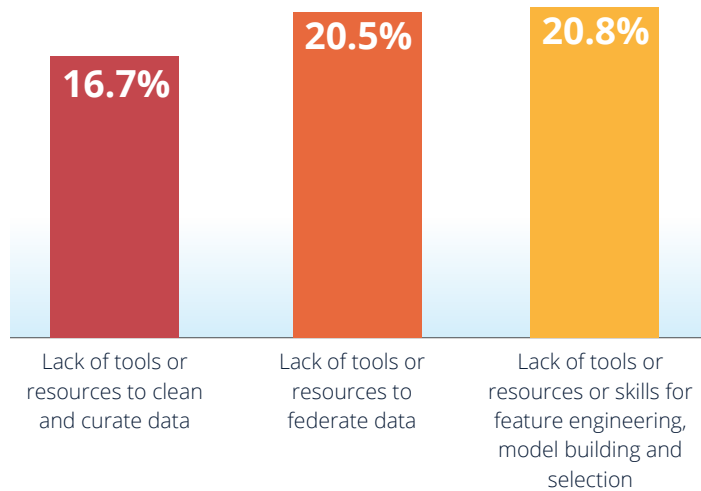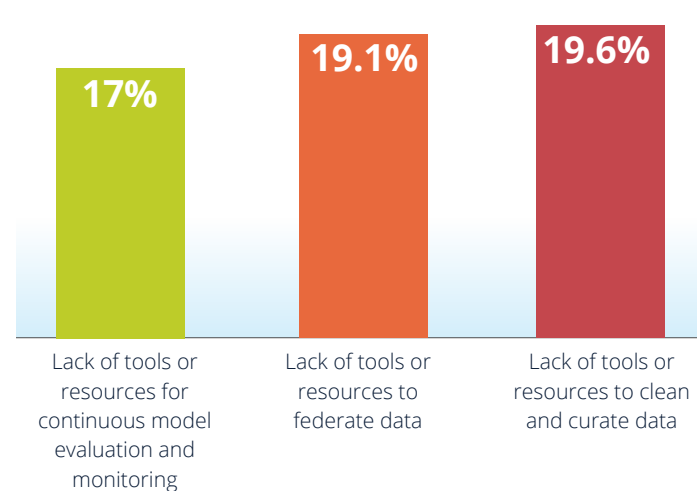Storage is integral to an organization's data strategy as it is an active contributor to the process of storing and analyzing information. The challenge is to **build storage systems that can handle such large volumes of data but keep costs low** without compromising on performance.

Financial services

16.7%	**20.5%**	**20.8%**
Lack of tools or resources to clean and curate data	Lack of tools or resources to federate data	Lack of tools or resources or skills for feature engineering, model building and selection

Public sector

17%	**19.1%**	**19.6%**
Lack of tools or resources for continuous model evaluation and monitoring	Lack of tools or resources to federate data	Lack of tools or resources to clean and curate data

Communication/media/transport

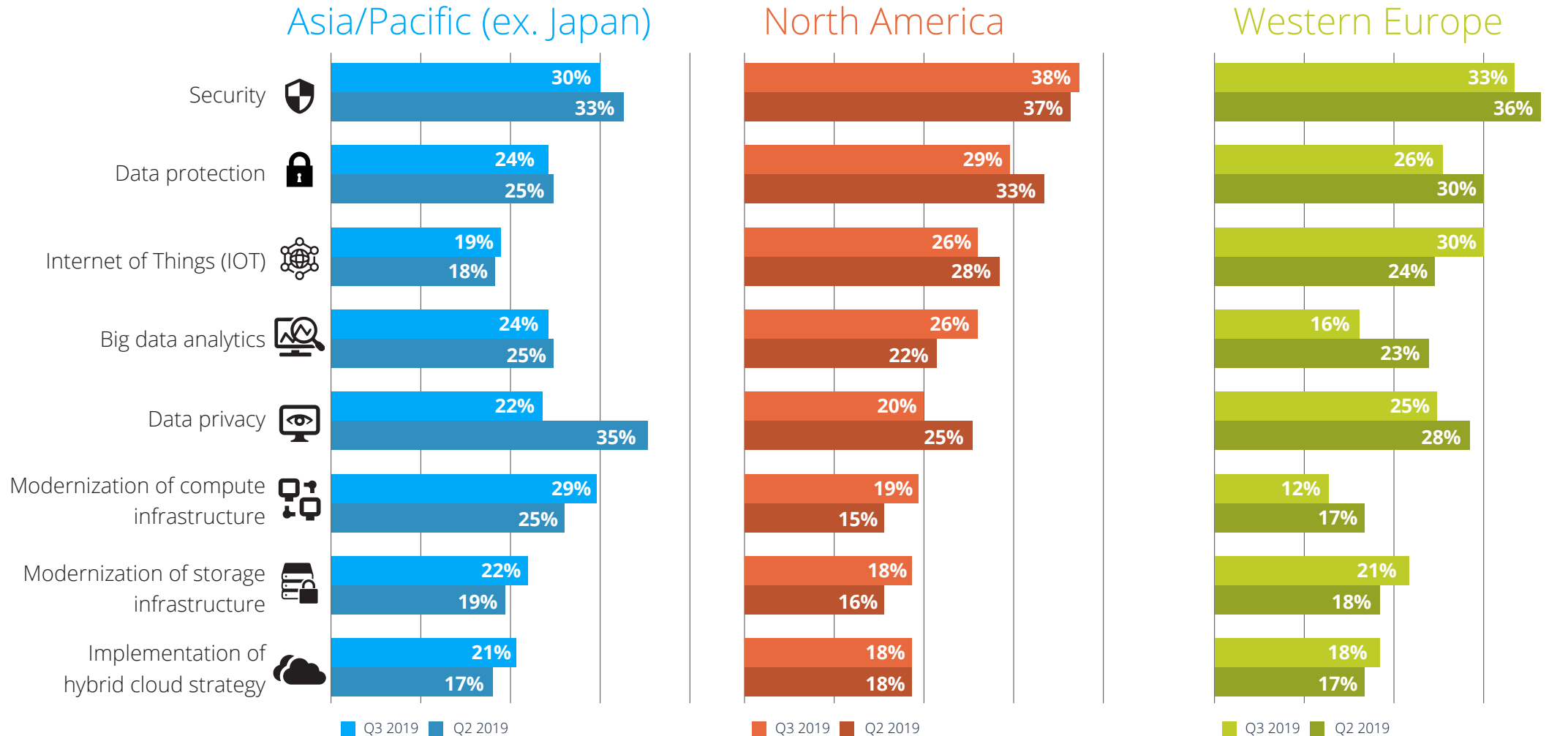|		
15.1%	**15.4%**	**21.3%**
Lack of tools or resources to federate data	We do not have enough data for model training	Lack of tools or resources to clean and curate data
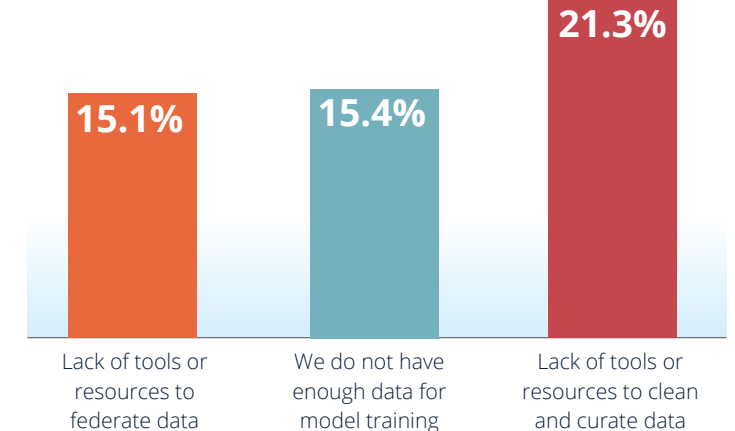
Security is the top project driving IT infrastructure spending across each surveyed region

What are the TOP projects driving IT infrastructure spending at your company this year? (Multiple responses.)

Asia/Pacific (ex. Japan)

Project	Q3 2019	Q2 2019
Security	30%	33%
Data protection	24%	25%
Internet of Things (IOT)	19%	18%
Big data analytics	24%	25%
Data privacy	22%	35%
Modernization of compute infrastructure	29%	25%
Modernization of storage infrastructure	22%	19%
Implementation of hybrid cloud strategy	21%	17%

North America

Project	Q3 2019	Q2 2019
Security	38%	37%
Data protection	29%	33%
Internet of Things (IOT)	26%	28%
Big data analytics	26%	22%
Data privacy	20%	25%
Modernization of compute infrastructure	19%	15%
Modernization of storage infrastructure	18%	16%
Implementation of hybrid cloud strategy	18%	18%

Western Europe

Project	Q3 2019	Q2 2019
Security	33%	36%
Data protection	26%	30%
Internet of Things (IOT)	30%	24%
Big data analytics	16%	23%
Data privacy	25%	28%
Modernization of compute infrastructure	12%	17%
Modernization of storage infrastructure	21%	18%
Implementation of hybrid cloud strategy	18%	17%

Note: Multiple dichotomous table - total will not sum to 100%.

Source: IDC Enterprise Infrastructure Market Pulse, n = APeJ: 280 (Q2), 281 (Q3); North America: 495 (Q2), 495 (Q3); Western Europe: 225 (Q2), 228 (Q3)

Data protection and recovery (DP&R) – core to application availability

Data growth compounds DP&R

Petabyte-scale deployments are becoming commonplace. Existing infrastructure and traditional backup methodologies sized for today's data volumes gradually become insufficient to cope.
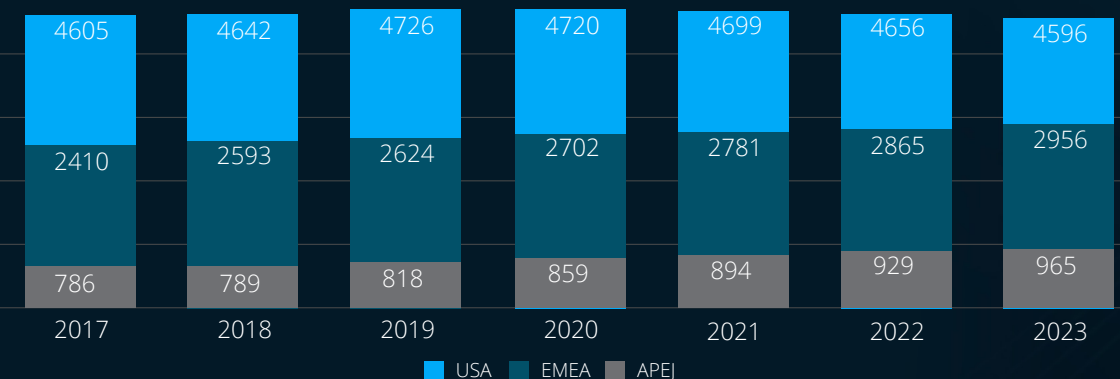
New data types, protocols and containerization, and changing data protection requirements make traditional DP&R solutions inadequate

Newer databases often have built-in analytics, are able to access more dynamically changing data sets, are stateless, and are designed using newer data stores such as NoSQL databases, and data management platforms like Hadoop. They largely eschew standard datacenter storage protocols like NFS, SMB, and iSCSI, and utilize RESTful protocols instead. Moreover, containers may include not only data but application logic as well. Such applications are delivered via microservices. The confluence of all these factors will result in ongoing innovation in the DP&R space to meet changing datacenter requirements.

3rd Platform makes DR affordable

As organizations deploy applications in widely distributed environments – multiple clouds, varied operating platforms, numerous data types and file systems, and different geographic locations – IT managers must find ways to protect the data. With the rise of the 3rd Platform, converged systems, cloud computing, and digital transformation, two key events have taken place — application and data availability are significantly improved, and cloud economics have made DR affordable for Tier 2 and even Tier 3 applications.

Data replication and protection market growth forecast, 2017 - 2023 (US$M)

Year	USA	EMEA	APEJ
2017	4605	2410	786
2018	4642	2593	789
2019	4726	2624	818
2020	4720	2702	859
2021	4699	2781	894
2022	4656	2865	929
2023	4596	2956	965

Legend: USA, EMEA, APEJ

Source: IDC's Worldwide Semiannual Software Tracker

Essential guidance

Build an intelligent core

In the near future, a majority of enterprises will create data management or monetization capabilities, thus enhancing enterprise functions, strengthening competitiveness, and creating new sources of revenue. An intelligent core based on data management, cognitive/artificial intelligence, and ML will be a key part of it.

Protect data

Data-related challenges – protection, security and compliance, migration, integration, and orchestration – have risen in complexity as organizations increasingly adopt hybrid cloud and multicloud environments. This growing fragmentation of data across multiple infrastructures requires organizations to develop a comprehensive data protection and management posture, and to deploy capabilities to address the full spectrum of requirements.

Make data repatriation an integral part of workload repatriation

Workload repatriation is a capability that will help organizations leverage the value of multicloud and hybrid cloud environments. Data repatriation is a key component of efficient workload repatriation and must be included as an integral part of the process.

Adopt a unified approach

To become true data stewards, organizations should adopt a unified management approach for their multicloud and hybrid cloud environments to address complexity and to overcome end-to-end data challenges of protection, integrity, security, quality, visibility, and availability.

Reassess the data life cycle

Becoming a data-driven organization requires a new generation of infrastructure, data management, and analytics technologies, as well as a change in processes, skills, and attitude towards data. Organizations that reassess the complete data life cycle —collection, storage, management, information governance, and analytics — in the hybrid cloud context will be the ones that will effectively monetize data.

Realizing the Power of Enterprise Data

Organizations estimate that they lose over US$2 million per year as they struggle with data management challenges, according to a study conducted by Veritas.

Surveying 1,500 IT decision makers across 15 countries, the study revealed that data management challenges were having a severe impact on employee efficiency, productivity and the profitability of businesses. Thirty-six percent of IT leaders say employees are less efficient due to siloed data management processes, while 38% say strategic decision-making in their organizations is slowed down because of ineffective data management processes.

From knowing where data is located, to understanding its true age, to the degree of importance and whether or not it is permissible to site in the cloud, there is more to data management than there has ever been before.

This study specifically explores:

- The challenges of modern data management in the enterprise

- The costs of ineffective data management

- Key factors for driving success and capturing the benefits of enterprise data management

Read the full report **here.**

IT DECISION MAKERS WASTE
2 HOURS DAILY
LOOKING FOR RELEVANT DATA

ORGANIZATIONS LOSE OVER
$2 MILLION US DOLLARS
PER YEAR AS THEY STRUGGLE WITH DATA MANAGEMENT CHALLENGES

VERITAS