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DATA CENTER TREND BOOK

2023

Contents

DATA CENTER
GLOBAL MARKET INSIGHTS

Data Center
Global Market Insights

Market Growth

10.9%

CAGR (2022-2030)

Market Size

263.34 Billion (USD) **2022**

602.76 Billion (USD) **2030**

Growth Drivers

Exponential increase in data

Rising need for social, mobile, analytics, and cloud services around the world

Market Share

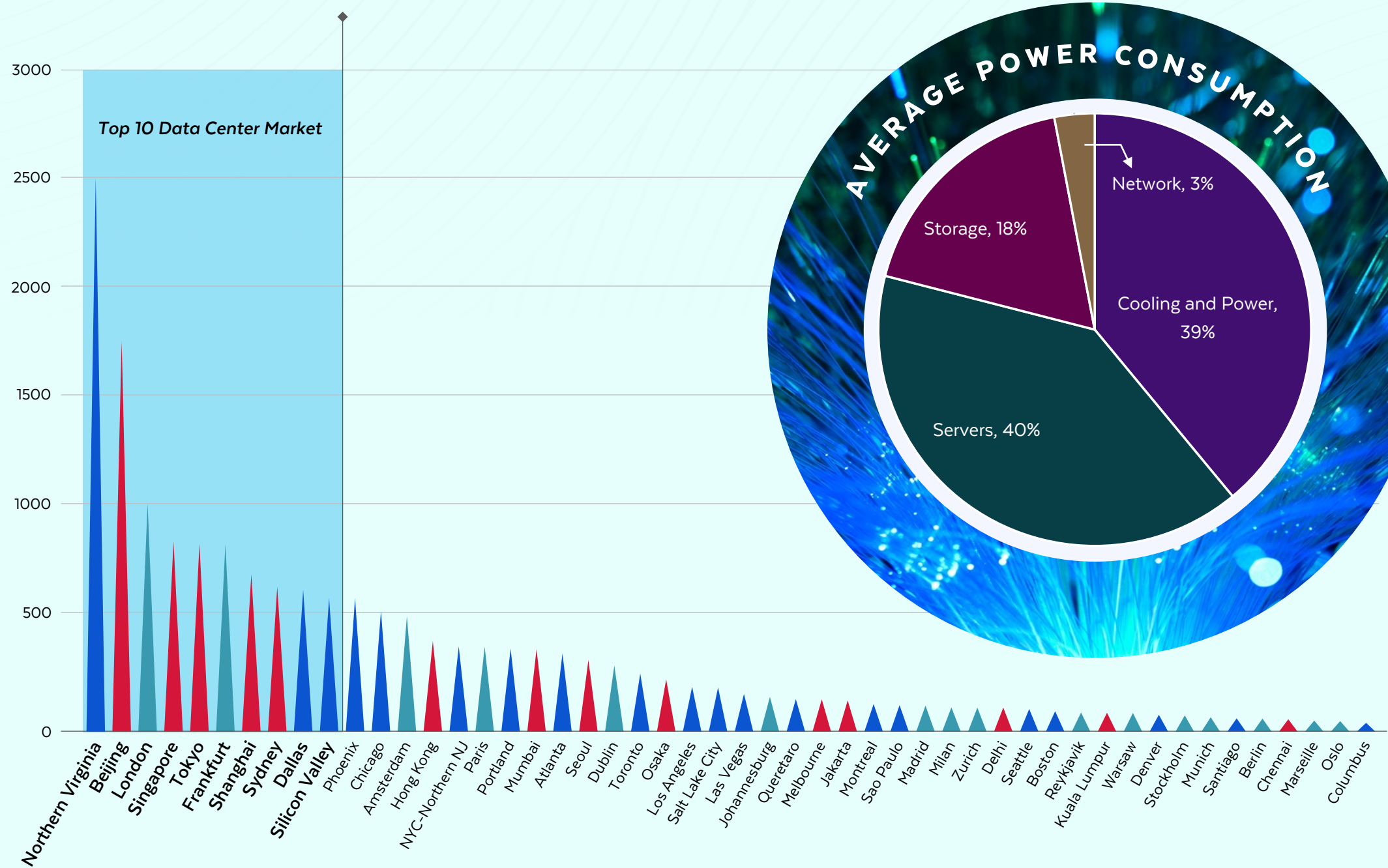North America held the largest Market share of

> 38%

Source: www.psmarketresearch.com/market-analysis/data-center-market

Power Consumption
Largest Data Center Markets

Total Power (MW)

Top 10 Data Center Market

Chart axis values: 3000, 2500, 2000, 1500, 1000, 500, 0

Cities (left to right): Northern Virginia, Beijing, London, Singapore, Tokyo, Frankfurt, Shanghai, Sydney, Dallas, Silicon Valley, Phoenix, Chicago, Amsterdam, Hong Kong, NYC-Northern NJ, Paris, Portland, Mumbai, Atlanta, Seoul, Dublin, Toronto, Osaka, Los Angeles, Salt Lake City, Las Vegas, Johannesburg, Queretaro, Melbourne, Jakarta, Montreal, Sao Paulo, Madrid, Milan, Zurich, Delhi, Seattle, Boston, Reykjavik, Kuala Lumpur, Warsaw, Denver, Stockholm, Munich, Santiago, Berlin, Chennai, Marseille, Oslo, Columbus

AVERAGE POWER CONSUMPTION

- Network, 3%
- Storage, 18%
- Cooling and Power, 39%
- Servers, 40%

Legend:
- ● AMERICAS
- ● APAC
- ● EMEA

Source: 2023 Global Data Center Market Comparison by Cushman & Wakefield

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FIBER CONNECTIVITY,

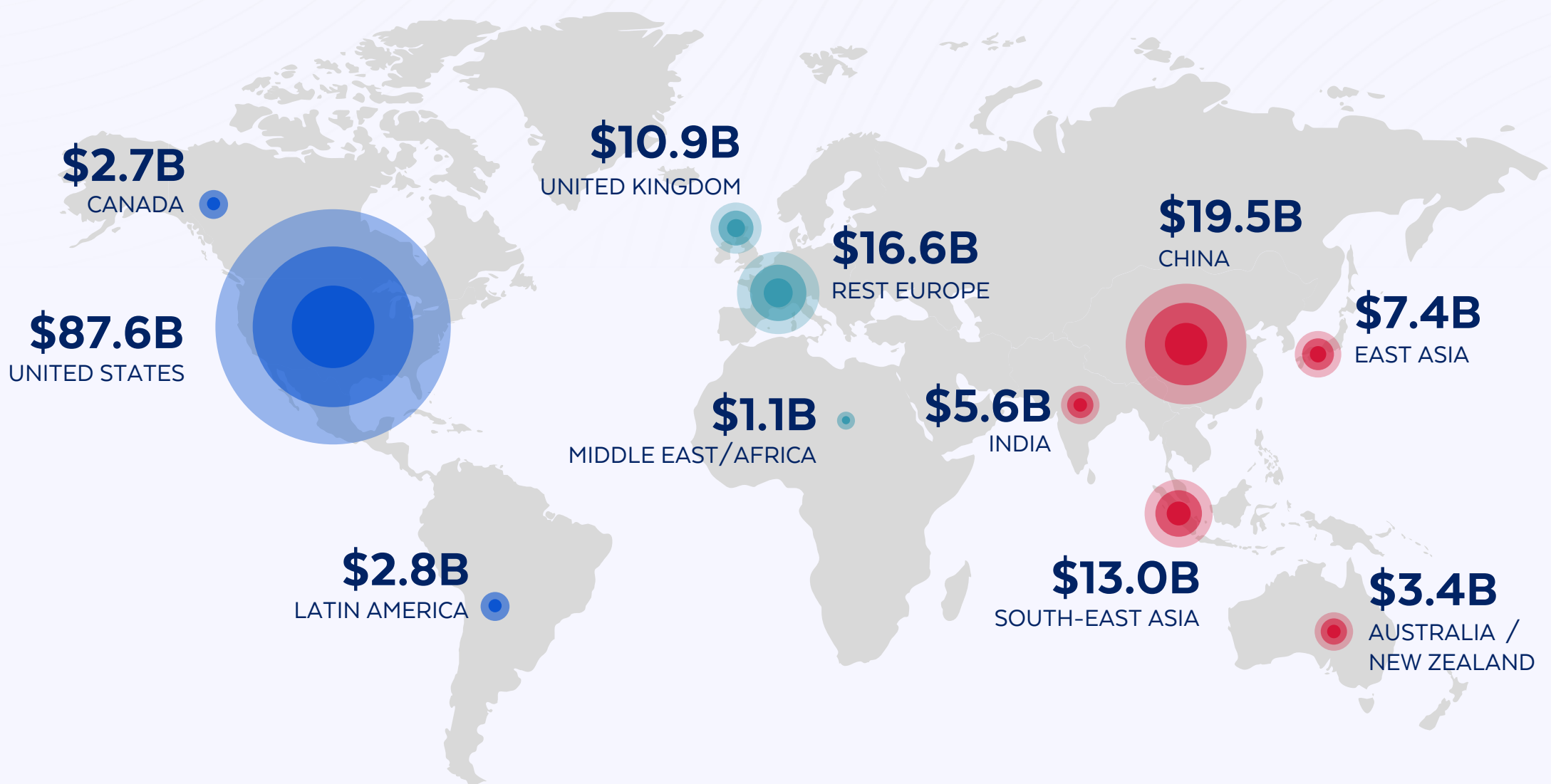Santiago, Chile has surpassed Singapore for the top spot globally.

CLOUD AVAILABILITY

More than 50% markets are now either home to availability zones or edge locations for all three major cloud services (AWS, MS Azure, GCP)
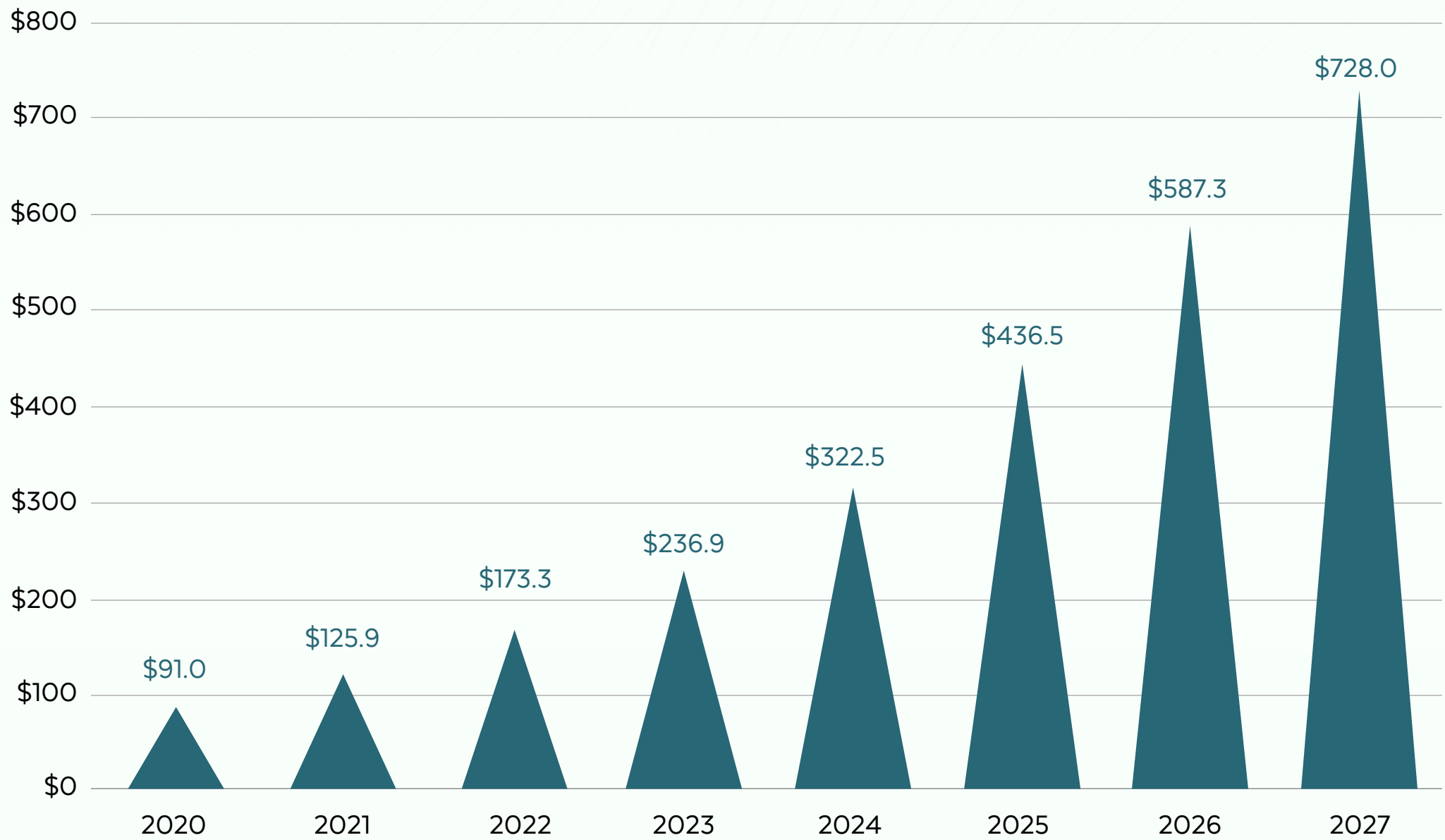
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Source: 2023 Global Data Center Market Comparison by Cushman & Wakefield

Hyperscale Cloud Revenue by Region ($B)

$2.7B
CANADA

$87.6B
UNITED STATES

$10.9B
UNITED KINGDOM

$16.6B
REST EUROPE

$1.1B
MIDDLE EAST/AFRICA

$19.5B
CHINA

$7.4B
EAST ASIA

$5.6B
INDIA

$2.8B
LATIN AMERICA

$13.0B
SOUTH-EAST ASIA

$3.4B
AUSTRALIA /
NEW ZEALAND

Source: 2023 Global Data Center Market Comparison by Cushman & Wakefield

Hyperscale Cloud Revenue ($B Forecast)

Chart data:
- 2020: $91.0
- 2021: $125.9
- 2022: $173.3
- 2023: $236.9
- 2024: $322.5
- 2025: $436.5
- 2026: $587.3
- 2027: $728.0

Source: 2023 Global Data Center Market Comparison by Cushman & Wakefield

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DATA CENTER
TRENDS 2023

Data Center Trends – 2023

1 Advancement or expansion of data center infrastructure

Cloud computing is driving the data center industry with its ability to use resources over the Internet without physical hardware investment. Gartner predicts a 20% growth in worldwide spending on public cloud services in 2023, despite inflation and economic challenges. Cloud computing is a dominant trend that is here to stay.

2 Continuous evolution of hybrid cloud model

A hybrid cloud combines public and private clouds to leverage their respective benefits while mitigating weaknesses. It allows organizations to store sensitive data on a private cloud while utilizing the cost savings and flexibility of a public cloud for other workloads. Workload flexibility and access to multiple cloud providers make the hybrid cloud ideal for organizations with complex or specialized requirements.

Data Center Trends – 2023

3 **Prevalent use and influence of hyper-scale data centers**

Hyperscale data centers are large, complex facilities designed for rapid deployment of servers. Dominated by companies like Amazon, Microsoft, Alphabet, Alibaba, and Facebook, these data centers support the processing of massive amounts of data. Despite market fluctuations, the hyperscale data center market is projected to grow at a CAGR of around 3.38% from 2021 to 2026.

4 **Integration of artificial intelligence and machine learning technologies into data centers**

Artificial intelligence and machine learning are used in data centers to automatically place workloads on suitable servers, predict and prevent failures, and optimize energy usage. Through analysis of data from sensors, logs, and other sources, these algorithms can identify patterns and trends, taking proactive action to prevent failures and reduce energy consumption.

Data Center Trends - 2023

5 **Combination or harmonization of 5G networks and edge computing**

The introduction of 5G networks will have a significant impact on the data center industry, enabling data-hungry technologies like virtual reality, augmented reality, self-driving cars, remote healthcare, precision farming, and digitized logistics. These technologies require specialized infrastructure and software due to their data-intensive nature.

6 **Increasing prevalence or emergence of automation**

Automation is on the rise in data centers, with technology and software being used to automate tasks and processes. This includes monitoring the health and performance of data center components, detecting and responding to potential issues, performing routine maintenance tasks, and reducing the reliance on manual labor.

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BEST PRACTICES TO MANAGE DATA CENTER

Best Practices

1. Document all data center assets

It's crucial to have a complete and accurate inventory of all data center assets. Instead, invest in a robust asset management system that can efficiently track and manage all data center assets.
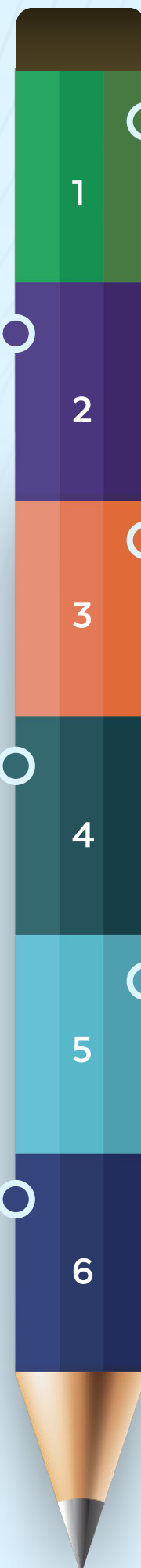
2. Consider partnering with an expert

Monitoring and managing data center infrastructure is a time-consuming and complex process that requires expertise. Consider partnering with an experienced provider to execute a physical and logical audit.

3. Maintain a single system of record

Ensure everyone involved in managing data center assets uses the same system of record. All changes to the infrastructure must be reflected in the system of record, including physical records, such as pictures of racks.

4. Implement ongoing monitoring

Unplanned changes are bound to happen, and it's vital to detect and address them before they result in outages. Ongoing monitoring can help identify changes and facilitate the necessary corrective actions.

5. Understand your goals

Understand the organization's goals and requirements for the data center infrastructure. Avoid over-engineering or overspending on unnecessary features or redundancies that don't align with the organization's objectives.

6. Keep servers patched

Keeping servers updated with the latest patches and security updates is critical for maintaining the data center's security and stability.

Key Steps to Data Center design and deployment

1 — Planning & Design

- Quality driven planning & design
- Equipment audit, discovery and documentation
- ITIL / best practice based recommendations
- End-to-end project management

2 — Deployment & Integration

- OnPrem, hybrid and cloud expertise
- Multi-vendor integration (Cisco, Juniper, Fortinet, AWS, Azure, GCP, …)
- Data security focus
- Fast and seamless deployments

3 — Comprehensive Testing & Validation

- Proof-of-concept, validation & requirement testing
- Full test plan definitions and reports
- Performance analysis and optimization

4 — 24x7 NOC/ SOC Support

- Global availability on-site, remote and on-call 24x7x365
- Direct access to dedicated engineers and backup resources
- Proactive monitoring and management
- KPI driven

LEARNING RESOURCES

Learn with Astreya

Managing and operating complex networks or global data centers involves many integrated activities, including maintaining equipment and systems, training, and capacity management for power and cooling. These diverse activities have one thing in common; they need experienced, right-skilled personnel. And that is precisely where Astreya comes in. Click on the thumbnails to access the learning resources.

Achieving Key Success Factors in the Data Center Market with Managed Service Providers

Developing your efficiency playbook for deploying a global network

2023 Guide to the Rising Data-Center Economy: Astreya's Perspective

The power of one; reducing the complexity of global network management

The modern Data Center; Hyper-efficiency vs. efficiency hype
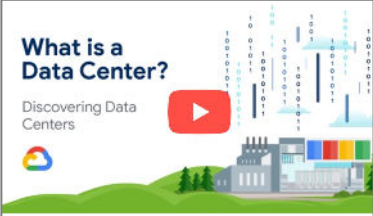
The key to finding a great MSP

Learn with Google

"The Data Center Series" by Google is an educational and visually captivating animated video series that provides insights into the cutting-edge technologies and sustainable practices powering Google's data centers. It offers a behind-the-scenes look at the innovation and sustainability that make Google's data centers among the most advanced in the industry. Whether you're a technology enthusiast, a student interested in data center operations, or curious about how Google's data centers work, this series provides an informative learning experience. Click on the thumbnail to access the videos.

Season 1

What is a Data Center?
Discovering Data Centers

EPISODE 1
What is a data center?
In our first episode, we cover what a data center is, how it has changed, and how it's now built for the cloud.

Designing a Data Center
Discovering Data Centers

EPISODE 2
How does Google design its data centers?
From computing to cooling, we walk you through the different layers of a data center's infrastructure and how they work together.

Core principles of running a data center
Discovering Data Centers

EPISODE 3
What are the core principles behind Google data centers?
In this episode, we demonstrate how performance, availability, and security are implemented in Google's data center infrastructure.

How do we secure our data centers?
Discovering Data Centers

EPISODE 4
How does Google secure its data centers?
From fences to biometric scanners and testing attempts, we show you how security is in our DNA when it comes to protecting sensitive data.

How does Google select a data center location?
Discovering Data Centers

EPISODE 5
How does Google select a data center location?
From securing to designing, learn what criteria make a location viable for a Google data center.

Season 2

How does Google's data center storage work?
Discovering Data Centers

EPISODE 1
How does storage work across Google data centers?
Learn how data is stored at Google data centers, and how we make storage accessible and scalable across our global fleet of machines.
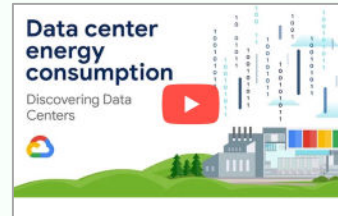
How does encryption work?
Discovering Data Centers

EPISODE 2
How does encryption work at Google's data centers?
Learn how Google encrypts your data in the cloud, and about the public encryption standards we use to protect you.

Network infrastructure at a data center
Discovering Data Centers

EPISODE 3
How does networking work across Google's data centers?
Discover how Google builds its vast network infrastructure to manage the world's web traffic at scale with minimal disruptions.

Data center energy consumption
Discovering Data Centers

EPISODE 4
How are data centers powered sustainably?
Explore how Google's data centers are powered sustainably, especially in a world confronting the threat of climate change.

About Astreya

Based in Silicon Valley with global delivery & deployment capabilities, we empower top fortune-listed clients with our comprehensive suite of IT managed services and NextGen digital engineering services for modernized technology ecosystem impacting billions of digital users globally. To learn more, visit www.astreya.com or follow us on LinkedIn.

34%
Y-O-Y Growth

95%
Repeat Business

15
Fortune 500 clients

8
New clients added in 2022

7+
Years average for
Top 5 customers

2000+
Global Employees

50%
Workforce
outside of USA

38
Countries with local
support coverage

Contacts

Gunjan Sharma
Customer Success Manager

gsharma@astreya.com

Manish Tandon
VP-Marketing and Presales

mtandon@astreya.com

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