

## DIGITAL REALTY STUDY: ASIA PACIFIC TO BECOME A PROMINENT ENTERPRISE DATA POWERHOUSE WITHIN FOUR YEARS

- APAC is the fastest growing region, well placed to become a key enterprise data superpower by 2024
- Four Asia Pacific (APAC) cities among the top six fastest-growing metros globally, with Singapore ranked first
- Enterprise data slated to reach quantum levels as volume of data created and exchanged continues to rise exponentially

**SINGAPORE, 29<sup>th</sup> September 2020** – APAC is placed to become a prominent enterprise data powerhouse with the highest compounded annual growth rate (CAGR) - 153% by 2024, according to new research released today from Digital Realty (NYSE: DLR). Four cities in the top six for the Data Gravity Intensity Metro forecast are from APAC, with Singapore coming in first place with 200% CAGR through 2024. This is followed by Hong Kong (2nd), Sydney (4th) and Tokyo (6th). North America and the Europe, Middle East and Africa (EMEA) regions are predicted to have 137% and 133% CAGR respectively.

The research comes as the world readies itself for growth brought about by the fourth industrial revolution, or Industry 4.0. According to recent research from McKinsey and the World Economic Forum<sup>1</sup>, Industry 4.0 has the potential to create USD 3.7 trillion in value by 2025. As digital transformation accelerates, Europe's place as one of the world's primary centres of enterprise data puts it in a strong position to capitalise on this growth.

Industry research projects that 80% of data worldwide will reside in enterprises by 2025<sup>2</sup>. In addition, APAC is forecasted to account for close to 30% of the data centre space globally by 2023 due to increasing demand for cloud services and digitalisation from investors and enterprises<sup>3</sup>. This puts the region in a strong position to leverage Industry 4.0's growth.

The Data Gravity Index DGx™ – which measures the creation, aggregation and private exchange of enterprise data across 21 metros – reveals that regions with strong global connectivity and an abundance of data-led industries, such as a thriving technology scene or

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<sup>1</sup> The Next Economic Growth Engine Scaling Fourth Industrial Revolution Technologies in Production," WEF/McKinsey white paper, 2018

<sup>2</sup> IDC #US44413318, Data Age 2025, The Digitization of the World From Edge to Core, November 2018

<sup>3</sup> <https://www.globaldata.com/apac-to-emerge-as-second-largest-data-center-and-hosting-market-by-2023-says-globaldata/>

prominent financial services sector, create so much enterprise data that they produce a 'Data Gravity' effect, exponentially attracting more data to the region.

Measured in gigabytes per second, Data Gravity Intensity is expected to grow by a CAGR of 139% globally. This comes at the back of data stewardship driving global enterprises to increase their digital infrastructure capacity to aggregate, store and manage the majority of the world's data.

Dave McCrory, who coined the term Data Gravity in 2010 and led research on the Data Gravity Index DGx™ explains: "We've seen that Data Gravity not only attracts data but makes both data and services that rely on it exponentially more difficult to move. This gives cities with a particular weight in one industry, like Singapore's robust financial services space or Japan's established manufacturing sector, a huge advantage as they naturally attract more of the same kind of data and services – and with them businesses. This also makes it more challenging to attract opportunities away from them. For businesses, it's less advantageous. Data has become a key strategic resource, but data gravity means too much of it can be difficult to use and impossible to move while constantly creating and attracting more."

### **APAC's data lead**

Countries in APAC with sizeable industrial base kickstarted their Industry 4.0 initiatives rather early compared to other markets. This has allowed them to dive deeper into establishing institutional frameworks to support the scalability of Industry 4.0, rather than cover the surface on creating awareness on new technologies<sup>4</sup>. For example, China's 2016-2020 plan to digitalise 10 of its priority traditional manufacturing sectors<sup>5</sup>.

Mark Smith, Managing Director for Asia Pacific at Digital Realty, commented: "Asia Pacific is home to some of the leading business and data hubs spearheading the adoption of advanced technologies including 5G, Artificial Intelligence and Internet of Things in the world. Singapore's recognition in the Digital Gravity index reaffirms our decision to invest in the country - we are due to open our third co-location facility in Singapore early next year. Likewise, Hong Kong, Sydney and Tokyo which are key markets for us are ranked highly on the index. These cities are proven international financial and business hubs, providing rich gateways for global enterprises to connect to various parts of the world."

The CAGR for the four APAC cities in the top 6 metros are as follows.

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<sup>4</sup> [http://www3.weforum.org/docs/WEF\\_Technology\\_and\\_Innovation\\_The\\_Next\\_Economic\\_Growth\\_Engine.pdf](http://www3.weforum.org/docs/WEF_Technology_and_Innovation_The_Next_Economic_Growth_Engine.pdf)

<sup>5</sup> [http://www3.weforum.org/docs/WEF\\_Technology\\_and\\_Innovation\\_The\\_Next\\_Economic\\_Growth\\_Engine.pdf](http://www3.weforum.org/docs/WEF_Technology_and_Innovation_The_Next_Economic_Growth_Engine.pdf)

- **Singapore:** 200%
- **Hong Kong:** 177%
- **Sydney:** 159%
- **Tokyo:** 155%

However, it's not only the abundance of enterprise data that's giving APAC cities a great advantage but the flow of that data between them. According to the Data Gravity Index DGx™, APAC is home to many of the world's most interconnected city pairings. This can be attributed to the regulatory ease of doing business with one another, as well as the cities' thriving financial and manufacturing centres. These include Tokyo and Hong Kong as well as Beijing and Shanghai.

### **Quantum levels of data**

Despite the vast benefits of having a thriving data economy with strong, open data exchanges with other cities, being in a city with a strong Data Gravity effect is a mixed blessing for businesses. Many businesses are accruing increasing amounts of enterprise data in a bid to transform their businesses through digital transformation, but are overwhelmed by volume, weighing down digital transformation efforts instead of enabling them.

By 2024, as a whole Forbes Global 2000 Enterprises will have accrued enough data to need access to quantum computing to effectively handle it. They will need an additional 325 exaFLOPs – 6 exaFLOPs per business – of compute power and 124 exabytes of private data storage to effectively manage their enterprise data. Comparatively, IBM's next quantum computer will run at just 1.5 exaFLOPs by 2021<sup>6</sup>.

These unmanageable volumes of enterprise data and the gravity they create are already resulting in issues for businesses beyond the IT department, including:

- **Limited innovation:** inability to process enterprise data effectively will hold back technological advances.
- **Poor customer and employee experiences:** too much enterprise data being produced will result in ineffective management of that data, subsequently leading to a negative customer experience.
- **Increased costs:** more enterprise data being produced will mean more capital needs to be invested to capture, manage and process it.

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<sup>6</sup> <https://www.technologyreview.com/2019/05/09/135440/the-new-benchmark-quantum-computers-must-beat-to-achieve-quantum-supremacy/>

- **Compliance issues:** an abundance of enterprise data will result in organisational challenges when it comes to dealing with regulatory and compliance-related issues.
- **Security:** an abundance of data gives bad actors more vantage points.

“Enterprises are fast becoming the world’s data steward and are required to operate on-demand and ubiquitously to succeed. APAC’s major economies such as China and Japan, are expected to experience high growth in the enterprise data management market<sup>7</sup>. Understanding the importance of data gravity helps enterprises better understand what’s required to enhance their business architectures and management of enterprise data. This can lead to better enterprise workflow performance, better security and cost-savings in the long run as data continues to be the digital economy’s currency,” added Mark Smith.

The Data Gravity Index DGx™ can be downloaded [here](#).

### **The trends driving Data Gravity**

The Data Gravity megatrend is the summation of several growing forces in businesses, many of which have accelerated in recent months as COVID-19 has driven more business around the world online:

**Enterprise data stewardship:** the global shift of people from rural to urban areas has meant that by 2030, 43 cities around the globe will have a population of more than ten million, which subsequently increases the number of users creating and exchanging data in the enterprise.

**Mergers and acquisitions:** globalisation is driving a much higher volume of M&As – in fact, M&A volumes are expected to return to pre-COVID levels in 2021, which will subsequently increase the number of data sources participating in these regional exchanges of enterprise data.

**Digital-enabled interactions:** business operations are shifting from physical to digital, with digitally enabled interactions perceived as twice as important as physical interactions. More digital interactions mean more enterprise data being produced.

**Data localisation:** the expansion of legal and regulatory policies is ramping up the requirement for more local data storage. By 2022, 87% of IT leaders will maintain local copies

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<sup>7</sup> [https://www.reportlinker.com/p03954301/Minimally-Invasive-Surgical-Instruments-Market-by-Product-Application-End-Users-Global-Forecast-to.html?utm\\_source=GNW](https://www.reportlinker.com/p03954301/Minimally-Invasive-Surgical-Instruments-Market-by-Product-Application-End-Users-Global-Forecast-to.html?utm_source=GNW)

of customer and transaction data for compliance-related purposes, increasing the number of business locations where data is present.<sup>8</sup>

**Cyber—physical:** businesses are increasingly integrating their physical and digital systems to improve cybersecurity. By 2033, it's expected that 70% of security products will be digitally integrated, which will increase the types and volumes of data being created and exchanged.<sup>9</sup>

### **Supporting quotes**

#### **Tony Bishop, data centre industry pioneer and SVP, Platform, Growth and Marketing at Digital Realty:**

"Data is growing at an increasingly rapid rate due to the growth of IoT, AI and social mobile analytics. There's a good story there. But there's another side to the story too, with growth resulting in the compounding force of data gravity.

"Unchecked, data gravity can result in limited innovation, poor customer and employee experiences, increased costs, information silos, compliance issues, security concerns and slow decision-making for the enterprise. The Data Gravity Index DGx™ gives us unprecedented quantitative insight to help customers understand the dynamics of data gravity and turn it into an opportunity for their business."

#### **Eric Hanselman, Chief Analyst, 451 Research:**

"Data Gravity is the idea that data is an anchor that is often hard to move, especially as data volumes grow. If that growth happens in clouds that aren't easily accessible by the enterprise using it, its full value can't be realised, and they'll be trapped into spending exorbitant sums to free it."

#### **Allen Holmes, VP, Strategic Business Development & Alliances at Yellowbrick Data:**

"Yellowbrick Data makes the world's only modern data warehouse for hybrid cloud, and offers unmatched performance, price/performance, and enterprise features for the most demanding and complex business needs. Our customers face the stresses of increasing data volumes and a growing user base, both of which are creating operational complexity. The Data Gravity Index DGx™ highlights this complexity and provides measures that we can use to overcome the challenges that enterprises face".

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<sup>8</sup> 451 Research, Infrastructure Imperative – IT Leader Survey, November 2019

<sup>9</sup> Gartner, Emerging Technology Analysis- Cyber-Physical Security. ID: G00726994

**Chris Sharp, CTO, Digital Realty:**

“Most enterprises and service providers are just at the beginning stages of understanding data gravity’s potential impact on their innovation, customer experience, and profitability, but they need to be designing for it now. The study is designed to give CIOs, chief architects, and infrastructure leaders insight into the phenomena causing architecture constraints as well as a blueprint for addressing them.”

**Joe Zhu, founder and CEO, Zenlayer:**

"With the Data Gravity Index DGx™, Digital Realty has taken thousands of data points about where data is being stored and processed and boiled them down into one easy-to-understand number. The DGx makes it clearer than ever how important low latency is to emerging markets (e.g. China, India, Brazil) and will serve as an important guide to Zenlayer as we make new deployments around the world."

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## Methodology

Data Gravity Index DGx™ implements a patent-pending formula which quantifies and predicts the continuous creation of data across 21 metros globally.

### Analysing thousands of attributes

The methodology is based on analysing thousands of attributes of Global 2000 Enterprise companies' presences in each metro, along with factors and/or considerations for each metro, including GDP, population, number of employees, technographics, IT spend, average bandwidth and latency, along with flows of data.

### Solving for Data Mass and Data Activity

The size and attraction of data for each metro was created by solving for a Data Mass number and a Data Activity number. The result was then multiplied by the average Bandwidth and divided by the average Latency squared.

$$\left( \underbrace{\text{DM}}_{\text{DATA MASS}} \times \underbrace{\text{DA}}_{\text{DATA ACTIVITY}} \times \underbrace{\text{BW}}_{\text{BANDWIDTH}} \right) / \underbrace{\text{L}^2}_{\text{LATENCY}}$$

### Calculating Data Gravity between metros

The Data Gravity between metros was calculated by adding Data Masses together and adding the Data Activity numbers together, then multiplying their product by Bandwidth and dividing the result by the Latency squared between metros.

### Calculating the Data Creation Lifecycle

Data Creation was calculated by combining data created by both G2000 Enterprise employees and end points. Data Processing was calculated by analysing G2000 Enterprise IT processing needs to handle new data-centric workloads, such as AI & ML, analytics, costs per TFLOPs and other factors. Data Storage was calculated by taking the storage capacity, growth and annual rate of deployment of Enterprise storage (HDD, SSD, and Tape) and analysing across 21 metros.

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## About Digital Realty

Digital Realty supports the world's leading enterprises and service providers by delivering the full spectrum of data center, colocation and interconnection solutions.

PlatformDIGITAL®, the company's global data center platform, provides customers a trusted foundation and proven Pervasive Datacenter Architecture PDx™ solution methodology for scaling digital business and efficiently managing data gravity challenges. Digital Realty's global data center footprint gives customers access to the connected communities that matter to them with 280 facilities in 47 metros across 22 countries on six continents. To learn more about Digital Realty, please visit [digitalrealty.com](https://digitalrealty.com) or follow us on [LinkedIn](#) and [Twitter](#).

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### **Forward-looking Statements**

This press release contains forward-looking statements which are based on current expectations, forecasts and assumptions that involve risks and uncertainties that could cause actual outcomes and results to differ materially, including statements related to the Data Gravity Index DGx™, Intensity Factor, our expectations around data gravity, data growth, expected global trends. For a list and description of risks and uncertainties, see the reports and other filings by the company with the U.S. Securities and Exchange Commission. The company disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.