Data Gravity Index

Report measuring the intensity of Data Gravity and its effect on the Global 2000 Enterprises
Contents

3 ABOUT
4 FOREWORD
5 INTRODUCTION
  Index Formula
  Index Score
  Data Creation Lifecycle
  Macro Trends
  G2000 Enterprises
  Highlights
11 FORECASTS
35 IMPLICATIONS
38 METHODOLOGY
About the Data Gravity Index™

As the largest global provider of multi-tenant datacenter capacity, Digital Realty has a unique vantage point on how technology infrastructure is built, deployed and operated. Our customers continue to solve the most complex infrastructure, connectivity and workload use cases on our platform globally. This includes use cases across network peering, hyperscale, low-latency, high-performance computing, big data and artificial intelligence.

Recently, we have witnessed the emergence of a new megatrend occurring on our platform: the explosion of enterprise data growth globally. This drove us to understand more. We conducted research between August 2019 and August 2020 and drew upon more than a dozen third-party data sources, ranging from the World Economic Forum and United Nations to global consulting and market research firms. We also developed a patent-pending formula to measure, quantify and determine the implications of the explosion of enterprise growth. The methodology is based on the analysis of thousands of attributes of Global 2000 Enterprise companies’ presences in each metro, along with variables for each metro, including GDP, population, number of employees, technographics, IT spend, average bandwidth and latency, as well as flows of data.

The Data Gravity Index DGx™ is an annual report designed to facilitate industry dialogue and assist both our Enterprise and Service Provider customers as they shift their infrastructure strategy to address this emerging megatrend. Version 15 expands to a total of 53 metros and 23 industries with new insights and forecasts on data creation, intensity and gravitational force of enterprise data growth.

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 45+ metros across 20+ countries on 6 continents.

To learn more about Digital Realty, please visit digitalrealty.com or follow us on LinkedIn and Twitter.
Foreword

Data Gravity measured and quantified for the Global 2000¹ Enterprises

The Digital Economy
The digital economy is remaking both private and public enterprises across all industries, transforming how they create and deliver value.

Requires a New Business Architecture
To succeed, enterprises need to operate ubiquitously and on-demand, augmented by real-time intelligence to best serve customers, partners and employees across channels, business functions, and multiple points of business presence.

Data Gravity is the Obstacle
Data Gravity inhibits enterprise workflow performance, raises security concerns, and increases costs, all complicated by regulatory requirements and other artificial constraints. With Data Gravity, the laws of physics and IT intersect to provide a proxy for a new age of business architectures that Enterprises will be driven to adopt and Service Providers will be pressed to support.

Forces a Shift to Data-Centric Architecture
Data Gravity forces a new architecture, one that inverts traffic flow and brings users, networks and clouds to privately hosted enterprise data. With this new architecture, Data Gravity barriers are removed and new capabilities are unlocked.

Elevates the Role of a Multi-Tenant Datacenter
To implement this data-centric architecture, Enterprises and Service Providers need a secure, neutral meeting place to host their infrastructure in proximity to, yet separate from each other. A multi-tenant datacenter platform enables such a deployment paradigm.

¹ Defined by Forbes’ annual ranking of the world’s 2000 largest public companies.
Data Gravity Index Formula

A methodology to measure the creation, aggregation, and private exchange of enterprise data globally.

\[
\left( \frac{DM \times DA \times BW}{L^2} \right)
\]

- **Bandwidth** is a multiplier to Data Gravity. Higher Bandwidth represents more potential.
- **Latency** is an inhibitor to Data Gravity. Higher Latency represents less potential.

Calculating Data Gravity

**Data Mass**
Data that is accumulated (Stored or Held)

**Data Activity**
Data that is in motion (Creation, Interactions)

**Bandwidth**
The Total Aggregate Bandwidth available to this location

**Latency**
The Average Latency between this location and ALL other locations

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1. Dave McCrory, Data Gravity in the Clouds, Dec. 2010
2. Digital Realty Market Intelligence & Analytics, Sept. 2020
Data Gravity Index Score Reflects Intensity

The Data Gravity Index Score measures the intensity and gravitational force of enterprise data growth for Global 2000 Enterprises across 53 metros and 23 industries globally. The score, as measured in gigabytes per second, provides a relative proxy for measuring data creation, aggregation and processing.

Data Gravity scores, as measured in gigabytes per second, illustrative of actual results

Figs. 1, 2 and 3. Data Gravity Index, Dec. 2020

The Data Gravity Score considers 1,000+ attributes from 13 authoritative sources on G2000 Enterprises including:

**Firmographic Data**
- Industry segment(s)
- Employee data
- Revenue data
- Location data
- Corporate entity

**Technographic Data**
- IT spend
- Preferred vendors
- Network traffic distribution
- Network PoPs
- DC PoPs
- Cloud PoPs

**Industry Benchmarks**
- Data creation/transfer rates
- Latency by access method, user type, location, application type
- Growth rates
- Cloud usage
- Networking services
- Distributed services
- Data technologies
- End points, user devices
- Application use cases

Data Gravity Index Score

Data Gravity Score

Data Gravity Score

LONDON 167.05![](TOKYO 80.32)

NEW YORK 79.61

Data Gravity Score

AMERICAS

EMEA

APAC
Continuous Data Creation Lifecycle Underpins Data Gravity

Enterprises serve an increasing number of users and endpoints that are creating and exchanging data. By 2022, more than 50% of enterprise data will be created outside the data center or cloud. Files and messages invoke concurrent interactions and transactions between users and machines. By 2024, G2000 Enterprises in these 53 metros will be required to add nearly 30 more petaFLOPs (pFLOPS) to process new digital workflows. Enterprise Data has to be gathered and formatted for presentation, exchange and compliant storage. By 2024, across these 53 metros, G2000 Enterprises will be adding storage at a combined rate of 622 terabytes per second for aggregation & exchange. Analytics, Machine Learning and AI enable enterprises to embed workflow intelligence. By 2022, 65% of CIOs will incorporate AI into their ERP strategies to gain competitive advantage.

1. Gartner, Infrastructure is Everywhere, ID #G00384194
2. Digital Realty Market Intelligence & Analytics, Dec. 2020
3. Digital Realty Market Intelligence & Analytics, Dec. 2020
4. Gartner, 100 Data and Analytics Predictions Through 2024, ID #G00721868
Macro Trends Amplifying Data Gravity

**WHAT**
- **Enterprise Data Stewardship**
  The enterprise is fast becoming the world’s data steward

**WHY**
- By 2025, 80% of data worldwide will reside in enterprises

**HOW**
- Increases the volume of data that needs to be aggregated and stored
  Source: 1IDC #US44413318, Data Age 2025, The Digitalization of the World From Edge to Core, November 2018

**WHAT**
- **Mergers & Acquisitions**
  Globalization is driving corporate M&A to achieve scale

**WHY**
- M&A Volumes are expected to return to pre-Covid levels in 2021

**HOW**
- Increases # of data sources participating in data exchange
  Source: 1Goldman Sachs, BRIEFINGS Newsletter June 16, 2020

**WHAT**
- **Digitally-Enabled Interactions**
  Increasing digitization of enterprise workflows

**WHY**
- Digitally-enabled interactions rank 2x greater importance vs. physical interactions

**HOW**
- Increases enterprise data exchange volumes globally

**WHAT**
- **Data Localization**
  Expanding legal and regulatory policies requiring local data storage

**WHY**
- By 2022, 87% of IT Leaders will maintain local copies of customer and transaction data for compliance

**HOW**
- Increases # of enterprise locations of data aggregation
  Source: 4451 Research, Infrastructure Imperative – IT Leader Survey, November 2019

**WHAT**
- **Cyber—Physical Integration**
  Of physical and digital security systems to improve enterprise cybersecurity

**WHY**
- By 2023, 70% of security products will integrate IT-OT-IoT systems

**HOW**
- Increases types and volumes of data creation & exchange
  Source: 5Gartner, Emerging Technology Analysis- Cyber-Physical Security. ID: G00726994
Why Data Gravity Impedes G2000 Enterprises

As a cohort, Global 2000 Enterprises have the greatest propensity to need to address Data Gravity. This segment spends $2.6T annually on IT Infrastructure & Networking, operating the most complex systems and serving millions of users and endpoints, with coverage across many points of presence globally.


Figs. 5, 6 and 7. Data Gravity Index, Dec. 2020
**Highlights**

1. **Accelerating growth across all regions and metros.** Data Gravity Intensity, as measured in gigabytes per second, is expected to grow by a compound annual growth rate of 139% globally through 2024 as data stewardship drives global enterprises to increase their digital infrastructure capacity to aggregate, store and manage the majority of the world's data.

2. **Permeating across all industry segments.** No industry is immune to the effects of Data Gravity. Data Gravity Intensity* is expected to grow by a compound annual growth rate of 144% through 2024 across nearly three quarters of the 23 industry segments analyzed. Global Mergers & Acquisitions activity is expected to return to pre-Covid levels and drive accelerated growth of global enterprises1, including increasing the number of enterprise data sources participating in data exchange.

3. **Pairs of metros share unique attraction rate.** Specific metro pairs were identified as having flows between each other, directly increasing their Data Gravity Intensity both within their metro and their high attraction between metros. This shift in importance towards digitally-enabled interactions across global enterprises will increase data exchange volumes exponentially.

4. **Approaching quantum computing levels of data creation, processing & storage.** By 2024, it is estimated G2000 Enterprises across 53 metros will create data at a rate of 1.4 million gigabytes per second and will require nearly 20,000 petabytes of additional data storage annually. Data location matters to global enterprises as they look to meet compliance requirements by maintaining local copies of critical data.

5. **Requires data-centric enterprise architecture & connected community approach to address.** Current backhaul architecture cannot address enterprise Data Gravity needs, including data exchange across multiple internal/external platforms, local data copies and ability to run performant analytics across each global point of presence. Data Gravity requires a connected community approach between enterprises, connectivity, cloud and content providers integrating core, cloud and edge at centers of data exchange, implementing a secure, hybrid IT and data-centric architecture globally at points of business presence.

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*Defined as meeting a threshold of 1 gigabyte of data per second or greater

1. Goldman Sachs, BRIEFS Newsletter June 16, 2020
Forecasts

Global Data Gravity Intensity forecasts through 2024 by region, metro, metro-to-metro exchange, industry, and forecasts for data creation, processing and storage
Global Forecast

Accelerating growth around the world. Data Gravity Intensity, as measured in gigabytes per second, is expected to grow across 53 metros by a compound annual growth rate of 139% globally through 2024 as data stewardship drives global enterprises to increase their digital infrastructure capacity to aggregate, store and manage the majority of the world’s data.

Fig. 8. Data Gravity Index, Dec. 2020

1. Data Gravity Intensity is calculated by the Data Gravity Index Formula: (DM x DA x BW) / L²
2. Data Gravity Intensity is defined by the Data Gravity Index Score. See Methodology for scoring and data.
Regional Forecast

Accelerating growth across all regions. Data Gravity Intensity, as measured in gigabytes per second, is expected to grow by a compound annual growth rate of 133% or higher in each region through 2024.

Forecast Highlights¹

- By 2024, EMEA is expected to remain the home to the greatest intensity of Data Gravity.
- EMEA and APAC Data Gravity Intensity are increasing at faster rates than North America.
- EMEA region Data Gravity Intensity will exit 2024 at almost double the rate of North America.

Fig. 9. Data Gravity Index, Dec. 2020

¹ Data Gravity Intensity Regional Forecast is calculated across 53 metros for Global 2000 Enterprises

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1. Data Gravity Intensity is calculated across 53 metros using the Data Gravity Index Formula: (DM x DA x BW) / L²

2. Data Gravity Intensity is defined by the Data Gravity Index Score. See Methodology for scoring and data.
Metro Forecast Highlights

From 2020 to 2024, the overall top 6 metros with the highest CAGR* (in descending order) are:

Jakarta | Singapore | Rome | Hong Kong | Melbourne | Atlanta

Jakarta is developing as a connectivity center, is a major banking and financial hub, and represents a significant portion of trade and services for Indonesia.

Singapore is a critical business and data hub for global enterprises with presence in the APAC region given its pro-business policies and diverse connectivity options.

Rome is host to many industries, and with very low latency and an observed increase in available bandwidth in the region, is forecasted to experience high growth in data gravity intensity.

Hong Kong is an international financial and trade hub and connectivity gateway between APAC and the rest of the world for global enterprises.

Melbourne drives large amounts of data creation as a leading financial center and headquarters for many of the world's largest financial services and natural resources firms.

Atlanta is home to major global enterprises participating in the cloud ecosystem and is a carrier-dense connectivity metro.

*CAGR calculation based on Global 2000 Enterprises across 53 metros.
Global Metro Forecast 2020-2024

1. Data Gravity Intensity is calculated by the Data Gravity Index Formula: (DM x DA x BW) / L^2
2. Data Gravity Intensity is defined by the Data Gravity Index Score. See Methodology for scoring and data.
Inter-Metro Forecast

Global Metro to Metro Gravity*

Pairs of metros share unique attraction rate. Specific metro pairs were identified as having flows between each other, directly increasing their Data Gravity Intensity both within their metro and with their high attraction between metros. This shift in importance towards digitally-enabled interactions across global enterprises will increase data exchange volumes exponentially. Proximity matters as a driving factor for pairs of metros that share a high attraction rate.

1. London and Amsterdam are at the top in both 2020 and 2024. London is a leading financial center for international enterprises, and Amsterdam is headquarters to some of the world’s largest companies and a leading financial hub for Europe. Data is exchanged for finance and trade purposes, among other reasons, creating a very high level of attraction.

2. Paris and London have the second-highest attraction in both 2020 and 2024. Paris and London are both financial centers with large populations. With diverse G2000 Enterprise presence, their combined data being shared and generated makes their attraction very high.

3. Hong Kong to Tokyo is projected to be one of the top 10 attraction between metros by 2024. Hong Kong is a large financial center with high volumes of trade and is considered a gateway to China. Tokyo is Japan’s industrial capital and, in addition to being a financial center, drives large amounts of data creation. While the attraction is predicted to increase between 2020 and 2024, this attraction is expected to stay in the top 10 for a long time.

Global Industry Forecast

No industry is immune to the effects of Data Gravity. Through 2024, Data Gravity Intensity* is expected to have grown by a compound annual growth rate of 144% for G2000 Enterprises across almost three quarters of the 23 industry segments** analyzed. Global Mergers & Acquisitions activity is expected to return to pre-Covid levels and drive accelerated growth of global enterprises¹, including increasing the number of enterprise data sources participating in data exchange. While Data Gravity is permeating across all industry segments, this report focuses on seven distinct G2000 industries with the greatest need to address Data Gravity, including Banking and Financial Services, Insurance, Manufacturing, Mining & Natural Resources, Pharmaceuticals and Chemicals, Professional Services and Retail.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater
**Industry segments analyzed for the G2000 Enterprises include Agriculture, Banking and Financial Services, Computer and Electronic Products, Construction and Real Estate, Educational Services, Health Care and Social Assistance, Industry Associations, Insurance, Manufacturing, Media and Entertainment, Mining and Natural Resources, Pharmaceuticals and Chemicals Manufacturing, Professional, Scientific and Technical Services, Public Administration, Retail Trade, Service Industry, Telecommunication, Transportation and Warehousing, Travel and Tourism, Utilities, Wholesale Trade and Holding Companies.

¹ Goldman Sachs, BRIEFINGS Newsletter June 16, 2020
Global Data Gravity Intensity Forecast: Banking & Financial Services

In a 2020 McKinsey survey, financial executives reported a jump in digital acceleration nearly twice as large as those reported in consumer packaged goods companies. Through 2024, Banking and Financial Services firms across G2000 Enterprises are expected to increase their Data Gravity Intensity* by a projected compound annual growth rate of 146%. Metros forecasted to see the highest Data Gravity, in descending order, include London, New York, Tokyo, Paris, Hong Kong, Amsterdam, Beijing, Silicon Valley, Frankfurt, Toronto, Singapore, Washington, D.C., Charlotte, Sydney, Milan and Seoul.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

1. McKinsey, How COVID-19 has pushed companies over the technology tipping point, Oct. 2020
2024 Global Data Gravity Intensity Forecast:
Banking and Financial Services

Fig. 14. Data Gravity Index, Dec. 2020

Very High: > 10 gigabytes/second
Moderate*: 1 megabyte - 1 gigabyte/second
High: 1 - 10 gigabytes/second

*Moderate is limited to the top 10 of this category for readability

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Global Data Gravity Intensity Forecast: Insurance

Through 2024, it is estimated G2000 Enterprises in the Insurance industry will face an acceleration of Data Gravity Intensity*, as measured in gigabytes per second, which is expected to have grown by a compound annual growth rate of 143% globally. As digitally-enabled interactions continue to increase in importance¹, so will the growth of enterprise data exchange volumes, specifically in the metro areas for London, New York, Tokyo, Paris, Hong Kong, Los Angeles, Minneapolis, Zurich, Beijing, Toronto and Munich.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

2024 Global Data Gravity Intensity Forecast: Insurance

2024 Forecasted Data Gravity Intensity

Very High: > 10 gigabytes/second
High: 1 - 10 gigabytes/second
Moderate*: 1 megabyte - 1 gigabyte/second

*Moderate is limited to the top 10 of this category for readability

Fig. 16. Data Gravity Index, Dec. 2020

Data Gravity Index™ | digitalrealty.com
Global Data Gravity Intensity Forecast: Manufacturing

In response to increased in-home consumption, large manufacturers will participate in emerging ecosystems and seek acquisitions in data and analytics, thus increasing the number of data sources participating in data exchange. Through 2024, G2000 manufacturers will face an acceleration of Data Gravity Intensity*, as measured in gigabytes per second, which is expected to increase by a compound annual growth rate of 144% globally. Metros forecasted to see the highest impact, in descending order, include Tokyo, Paris, London, New York, Amsterdam, Hong Kong, Singapore, Chicago and Beijing.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

2024 Global Data Gravity Intensity Forecast: Manufacturing

2024 Forecasted Data Gravity Intensity

Very High: > 10 gigabytes/second
High: 1 - 10 gigabytes/second
Moderate*: 1 megabyte - 1 gigabyte/second

*Moderate is limited to the top 10 of this category for readability

Fig. 18. Data Gravity Index, Dec. 2020

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Global Data Gravity Intensity Forecast: Mining & Natural Resources

Mining & Natural Resources firms rely on digital acceleration to automate tasks and workflows, improve productivity and boost output recovery. Data generated by IoT sensors and telemetry for predictive analytics used to improve mining and extraction recovery and throughput will drive an increase in enterprise data exchange volumes globally. Through 2024, Data Gravity Intensity* for G2000 Mining & Natural Resources firms is expected to increase at a compound annual growth rate of 130% for the metro areas of London, Beijing and Paris (in descending order).

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

Fig. 19. Data Gravity Index, Dec. 2020
2024 Global Data Gravity Intensity Forecast:

Data Gravity Index™

to DigitalReality.com

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Global Data Gravity Intensity Forecast: Pharmaceuticals and Chemicals

A 2020 McKinsey survey found that pharmaceuticals executives reported a jump nearly twice as large in digital acceleration as those reported in consumer packaged goods companies. Pharmaceuticals and Chemicals firms across G2000 Enterprises are expected to see an increase in Data Gravity Intensity*, with a projected compound annual growth rate of 142% through 2024. Metros that will have the highest forecast, in descending order, include Tokyo, New York, London, Paris and Dallas.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

1. McKinsey, How COVID-19 has pushed companies over the technology tipping point, Oct. 2020

Fig. 21. Data Gravity Index, Dec. 2020
2024 Global Data Gravity Intensity Forecast:
Pharmaceuticals and Chemicals

2024 Forecasted Data Gravity Intensity

- Very High: > 10 gigabytes/second
- High: 1 - 10 gigabytes/second
- Moderate*: 1 megabyte - 1 gigabyte/second

*Moderate is limited to the top 10 of this category for readability

Fig. 22. Data Gravity Index, Dec. 2020
Global Data Gravity Intensity Forecast: Professional Services

Cited by a 2020 McKinsey survey, Professional Services executives reported a jump in digital acceleration nearly twice as large as those reported in consumer packaged goods companies. Through 2024, Professional Services firms across G2000 Enterprises are expected to increase their Data Gravity Intensity* by a projected compound annual growth rate of 139%. Metros forecasted to have the highest Data Gravity Intensity, in descending order, include Silicon Valley, London, Paris, New York, Tokyo, Amsterdam and Washington, D.C.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater

Fig. 23. Data Gravity Index, Dec. 2020

1. McKinsey, How COVID-19 has pushed companies over the technology tipping point, Oct. 2020
2024 Global Data Gravity Intensity Forecast:

Professional Services

2024 Forecasted Data Gravity Intensity

Very High: > 10 gigabytes/second
High: 1 - 10 gigabytes/second
Moderate*: 1 megabyte - 1 gigabyte/second

*Moderate is limited to the top 10 of this category for readability

Fig. 24. Data Gravity Index, Dec. 2020
Global Data Gravity Intensity Forecast: Retail

The fundamental enabler of digitization for retail companies will be data and analytics capabilities—the transparency, governance and accuracy of which have never been more important. G2000 firms in the retail sector are expected to realize a 137% compound annual growth rate through 2024 for Data Gravity Intensity*, thus increasing enterprise data exchange volumes globally. Metros forecasted to see the highest intensity, in descending order, include London, Seattle, Paris, Amsterdam, Tokyo and New York.

*Defined as meeting a threshold of 1 gigabyte of data per second or greater


Fig. 25. Data Gravity Index, Dec. 2020
2024 Global Data Gravity Intensity Forecast:

Retail

2024 Forecasted Data Gravity Intensity

Very High: > 10 gigabytes/second
High: 1 - 10 gigabytes/second
Moderate*: 1 megabyte - 1 gigabyte/second

*Moderate is limited to the top 10 of this category for readability

Fig. 26. Data Gravity Index, Dec. 2020

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Data Gravity
Intensity Quantified –
Enterprise Data Creation

By 2024, it is estimated G2000 Enterprises across the 53 metros will create 1.4 million gigabytes of data per second.

1. Data creation was calculated by combining data created by both G2000 Enterprise employees and end points.
2. See Methodology for scoring and data.

Fig. 27. Data Gravity Index, Dec. 2020
Enterprise Data Processing

By 2024, G2000 Enterprises across 53 metros will require an increase of over 40% in compute processing to accommodate the increased new digital workflows.
Data Gravity
Intensity Quantified –
Enterprise Data Storage

By 2024, it is estimated G2000 Enterprises across the 53 metros will require nearly 20,000 petabytes of additional data storage annually.

1. Data Storage was calculated by taking the storage capacity, growth and annual rate of deployment of Enterprise storage (HDD, SSD, and Tape) and analyzing across 53 metros.
2. See Methodology for scoring and data.
Implications
Implication #1 – A Data-Centric Architecture is Mandatory

Current backhaul architecture cannot address enterprise Data Gravity needs, including data exchange across multiple internal/external platforms, local data copies and the capabilities to run performant analytics across each global point of presence. IT architecture needs to be inverted to a data-centric architecture deployed at points of presence in neutral, multi-tenant datacenters to integrate private and public data sources.

CURRENT BACKHAUL ARCHITECTURE DOES NOT ADDRESS GLOBAL ENTERPRISES’ DATA GRAVITY NEEDS TO:
- Exchange data across multiple internal/external platforms
- Maintain local data copies for data compliance
- Run concurrent multi-data set analytics in a performant manner at global points of presence

A DATA-CENTRIC ARCHITECTURE IS REQUIRED TO ADDRESS DATA GRAVITY BARRIERS. THIS INCLUDES:
- Putting data at the center of the architecture
- Inverting traffic flow, leveraging interconnection and bringing clouds and users to the data
- Removes speed of light & Data Gravity performance constraints at global points of presence

IMPLEMENTING A DATA-CENTRIC ARCHITECTURE IN MULTI-TENANT DATACENTERS ADDRESSES DATA GRAVITY AT GLOBAL POINTS OF PRESENCE TO:
- Reduce Risk – with secure data exchange
- Lower Costs – reduction in bandwidth and duplicated infrastructure
- Grow Revenue – through unbounded data analytic performance
Implication #2 – Requires a Connected Community Approach

Solving for Data Gravity requires a connected community approach between enterprises, connectivity, cloud and content providers. This approach allows for integration between core, cloud and edge at centers of data exchange, implementing a secure, data-centric hybrid IT architecture at Global Enterprise points of business presence deployed in multi-tenant datacenters.
Methodology

The system for measuring Data Gravity for the Global 2000 Enterprises

Data Gravity Index DGx™ implements a patent-pending formula which quantifies and predicts the continuous creation of data across 53 metros and 23 industries globally.

Analyzing Thousands of Attributes

The Data Gravity Index methodology is based upon the analysis of thousands of attributes of Global 2000 Enterprise companies’ presences in each metro, along with variables for each metro, including GDP, population, number of employees, technographics, IT spend, average bandwidth and latency, as well as 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 figure and a Data Activity figure. The result was then multiplied by the average Bandwidth and divided by the average Latency squared.

Calculating Data Gravity Between Metros

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

Calculating the Enterprise Data Creation Lifecycle

Data Creation was calculated by combining data created by both G2000 Enterprise employees and end points.

Data Processing was calculated by analyzing 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 analyzing across 53 metros.

Learn More
Unlock New Capabilities to Manage the Effects of Data Gravity

Explore this new megatrend, and see how the explosion of data growth globally forces a shift to a new data-centric hybrid IT architecture. If you have any questions or want to learn more about this industry-first report, email datagravity@us.digitalrealty.com

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 45+ metros across 20+ countries on 6 continents. To learn more about Digital Realty, please visit digitalrealty.com or follow us on LinkedIn and Twitter.

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