

Data Center And Colocation Market Trends, 2021

by Abhijit Sunil
January 20, 2021



Why Read This Report

The colocation and data center industry has been undergoing rapid shifts in both the vendor landscape and the ways that customers consume services. This report identifies five major themes we'll see in the colocation market in 2021 and beyond and helps infrastructure and operations (I&O) professionals understand what they mean for customers and vendors.

Key Takeaways

Colocation Providers Have Become Far More Than Infrastructure Providers

Colocation providers have moved on turnkey hosting services. Leading players position themselves as partners in digital transformation and differentiate through services, offering neutral service marketplaces and aiding consumers in exploiting cost benefits.

Sustainability, Edge Computing, And Interconnection Drive New Trends

Sustainability and green energy procurement efforts are taking center stage in the data center space. Edge computing and low-latency communication needs create additional dimensions in favor of the colocation model.

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Table Of Contents

- 2 **The Pure Plays Are Shaping Data Center Market Trends**
 - Data Gravity Heavily Impacts Decision-Making
 - Power-Saving Initiatives Are On The Frontlines Of Sustainability
 - Specialized Workloads And Services Are Increasing
 - Data Center Interconnection Is Central To Colocation Benefits
 - M&A Activities Are Consolidating The Market

Recommendations

- 7 **Macro Colocation Trends Highlight Clues For Your Digital Strategy**
-
- 9 **Supplemental Material**

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[The Forrester Technology Sustainability Framework](#)

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The Pure Plays Are Shaping Data Center Market Trends

North America and Europe remain the largest markets for most global colocation providers, driven by factors that include the shift in cloud adoption models, the rising demand for digital services, the use of data centers as carrier hotels, and the benefits of a colocation model for many customers when it comes to specific applications and sustainability. In a market that may be teetering on the brink of oversupply, the key players try to stand out by addressing key customer needs and trends in many different ways. These trends indicate shifts in the business models of colocation players and will affect how I&O leaders make decisions.

Data Gravity Heavily Impacts Decision-Making

Data gravity has introduced a chicken-or-egg problem in data center market expansion.¹ The concept states that as data grows at a specific location, it's inevitable that additional services and applications will be attracted to the data due to latency and throughput requirements. This, in effect, grows the mass of data at the original location. Data gravity is more important than ever because:

- **We're creating unimaginable amounts of new data.** The World Economic Forum estimates that globally, by 2025, 463 exabytes of data will be created each day.² With the surge in the internet of things (IoT) and edge computing, more data will be produced in a decentralized manner. Data gravity is central to most decisions made by IT leaders when it comes to the geographic alignment of a data center. This is also critical to how colocation vendors define markets.
- **We keep inventing new ways to produce and consume piles of data.** While the data gravity hypothesis was written 10 years ago in relation to application data, new data sources and the use cases to support this theory are on the horizon. This includes IoT, AI and machine learning (AI/ML) workloads, and massive amounts of data generated by edge use cases.

Power-Saving Initiatives Are On The Frontlines Of Sustainability

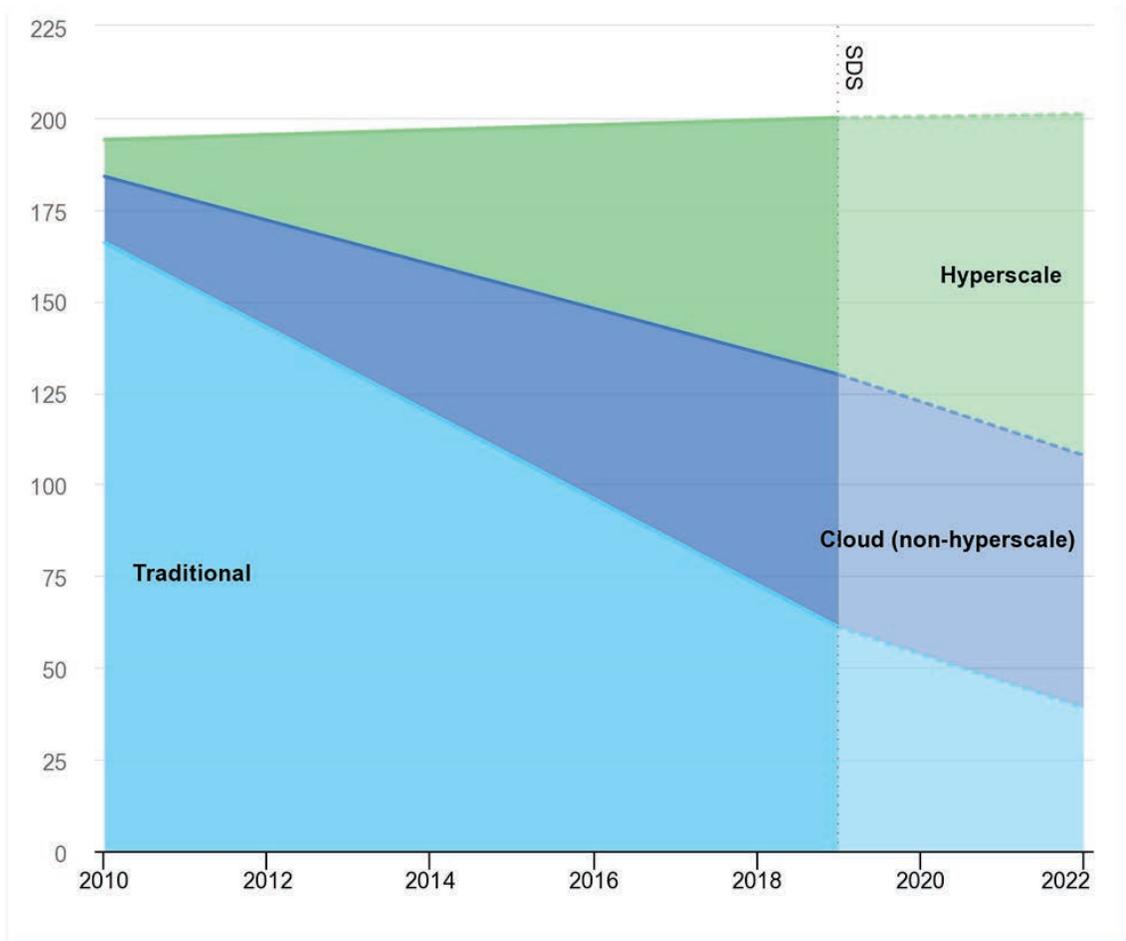
Scrutiny of the environmental impact of data centers is concurrent with their growth in the world's major economic hubs. The 2020 COVID-19 pandemic boosted remote work models, surging global internet traffic by 40% between February 1 and mid-April 2020.³ More traffic consumes more power. Some key point to consider about data centers and sustainability:

- **Data centers themselves are becoming highly efficient.** This efficiency offsets increasing energy demands. According to the International Energy Agency (IEA), global data center electricity demand in 2019 was about 200 TWh, or around 0.8% of total global electricity demand (see Figure 1).⁴
- **Cloud vendors and hyperscalers are consuming much of this energy.** Cloud vendors' and hyperscalers' numbers have exploded over the past decade, making them top energy consumers.⁵ Traditional data centers are far less efficient, but the proportion of traditional on-premises data

center workloads is in steep decline, yielding a smaller overall energy profile. The real testament to efficiency is that overall data center workloads increased by 650% between 2010 and 2019 but overall energy use remained flat (see Figure 2).

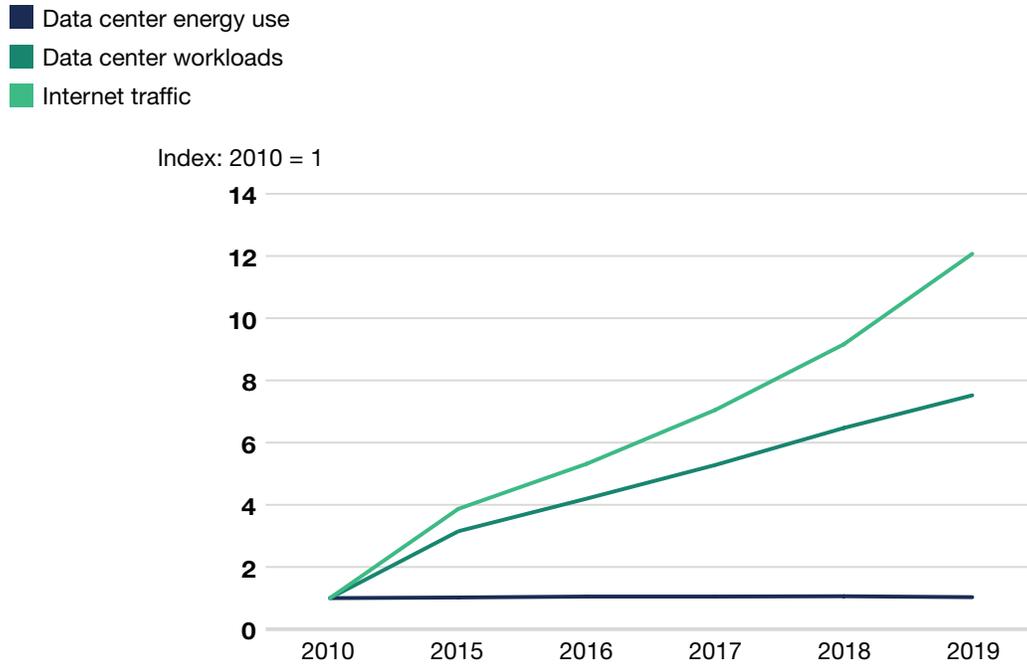
- **Colocation providers are among the top users of green energy.** According to 2019 US Environmental Protection Agency data, colocation providers are partnering with green energy producers as well as developing their own green energy-generation infrastructure (see Figure 3).

FIGURE 1 Rises In Efficiency And Hyperscale Are Balancing Data Center Energy Demands



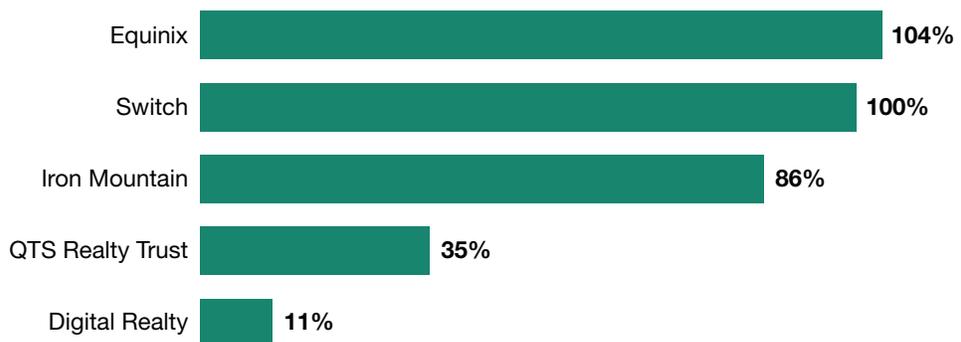
Source: IEA

FIGURE 2 Global Trends In Internet Traffic, Data Center Workloads, And Data Center Energy Use



Source: “Global trends in internet traffic, data centre workloads and data centre energy use, 2010-2019,” IEA, December 1, 2020

FIGURE 3 Green Power As A Percentage Of Total Energy Use For Top US Colocation Green Energy Consumers



Note: Figures reflect the amount of green power as a percentage of total electricity use. Organizations may choose to purchase green power in an amount exceeding 100% of their US organizationwide electricity use.

Source: US Environmental Protection Agency, 2019

Specialized Workloads And Services Are Increasing

Data analytics is on the rise in every industry, leading to unique workload environment demands by IT customers. The financial dynamics wrought by the COVID-19 pandemic don't appear to have affected high-performance computing (HPC) services on public cloud. In 2019 and 2020, 32% of global infrastructure decision-makers whose firms have implemented public cloud or plan to do so said they run HPC in their public cloud platform or plan to do so.⁶ Running HPC on-premises often requires high upfront capex and heavy opex requirements to cater to the power requirements. HPC use cases are on the rise and include AI workloads and petrochemical applications such as seismic processing, depth imaging, financial analysis, and healthcare data mining. Services to support special needs are likewise rising.

Data Center Interconnection Is Central To Colocation Benefits

Data center interconnection — reliable, redundant network connectivity between sites — is among the primary advantages of the carrier neutral colocation model. All the major colocation players have robust interconnection roadmaps.

- **Telco partnership is now telco co-competition.** Leading colocation players started their interconnection strategies as neutral locations to exchange network traffic — being the connectivity option between tier-one communication service providers. This model remains prominent, but the colocation providers themselves now also compete with their telco partners.
- **Interconnection appeal varies across a diverse base.** A cross-section of a typical customer segmentation in a colocation facility exhibits the use cases and interconnection needs of various workloads (see Figure 4).
- **Networking enables new edge computing demands.** As we explain in our research “[Predictions 2021: Edge Computing](#),” edge vendors — including colocation players — will siphon some growth from cloud.⁷ CDNs and data center colocation vendors extend the reach of edge services, enabling customer-centric and contextual business systems. Interconnection capabilities are at the heart of making this possible.
- **Remote work has altered geographic distribution.** Massive fiber build-outs got an impetus by growing remote work applications in tier-two and rural markets. This can also add to enterprise customers' edge and cloud transformation strategies. For a variety of customers in a colocation facility, interconnection can address different strategic needs.

FIGURE 4 Colocation Customer Segmentation Illustrates Use Cases For Interconnection Services

Customer segmentation	Sample workloads	Networking needs
Enterprise operations	Backups; storage; HPC	Scale; networking
Hyperscale cloud	AI; machine learning; aaS	Expansion; edge locations
Secure workloads	Backups; storage; mission-critical	Security; redundancy
Networking	Content delivery networks; software-defined networking	Communication redundancy; low latency
Cloud-born SaaS	Production; analytics; aaS	Expansion; edge locations

M&A Activities Are Consolidating The Market

The data center industry has been moving toward larger facilities that optimize scale, sustainability goals, price guarantees, larger digital ecosystems, and most importantly, interconnection. Vendor consolidation yields this scale. Mergers and acquisitions have been a constant in the colocation market, where fortune has favored the brave. While a few of the larger players have followed an organic growth approach, many others have actively pursued acquiring data centers, especially to boost their edge capabilities. Pure-play colocation players will often enter newer markets inorganically (see Figure 5). With interconnection and digital ecosystems taking center stage, smaller regional players find it difficult to cater to the geographic needs of customers. Colocation players with an existing multisite footprint have become especially attractive for such acquisitions.

FIGURE 5 The Past Four Years Have Seen A Number Of Colocation Mergers

Acquiring entity	Asset	Key facts
Digital Realty	DuPont Fabros; Interxion	The Interxion acquisition brings significant footprint for Digital Realty in Ireland, Germany, and Europe. The deal also boosts interconnection across European markets.
Equinix	Bell Data Centers; GPX India; Metronode; Telecity; Verizon	Telecity Group’s 40-plus data centers more than double Equinix’s capacity in Europe. Through GPX India, Equinix has expanded its presence in India.
Iron Mountain	EvoSwitch; IO Data Centers	EvoSwitch has a significant presence in the Netherlands.
Ensono	Wipro	Ensono expanded its operations in India and nearly doubled in size with this acquisition.
ST Telemedia Global Data Centres (STT GDC)	Tata Communications	STT GDC has bought a majority stake in 14 data centers in India and three Singapore facilities.

Recommendations

Macro Colocation Trends Highlight Clues For Your Digital Strategy

These trends highlight the most important messages that customers will hear from the major colocation players throughout 2021. They’ll also be the major differentiators that leading colocation players will highlight. Data center and cloud migrations can be expensive. In a crowded landscape with many choices, keeping an eye on some of these larger trends will help ensure business resilience and continuity through the next few years. To benefit from these developments, I&O leaders should:

- **Design their architecture to consider data gravity.** For colocation vendors, data gravity introduces strategic decision points on expansion plans based on where data will be in the future. Careless enterprises can create data silos and make migrations, network access, and contracts costly. The data gravity problem has boosted a hybrid model, where critical applications are housed in the colocation data center and can have direct access to the cloud through gateways in the same data center. Most large data center providers have direct access to Amazon Web Services (AWS) and Azure onsite. Thus, strategic planning of your data architecture is critical. Public cloud prices are rising, along with the cost of migration.⁸ This has led to some advantages for global colocation players that address these issues with robust interconnection networks.

- **Treat the sustainability roadmap of vendors as a pillar for business resilience.** The sustainability initiatives of your colocation provider can no longer be an afterthought. Use Forrester's Sustainability Framework to compare the sustainability strategies and roadmaps of your providers.⁹ Green energy procurement is often an easy starting point for colocation providers. Top providers, including Equinix, Digital Realty, QTS, and Switch, are among the organizations with long-term green power contracts in the US. This leads to price certainty and cost benefits that they can pass on to customers.¹⁰
- **Consider colocation for high-performance computing.** Almost all major vendors now offer HPC infrastructure capabilities in varying degrees. HPC workloads impose intensive physical requirements that include purpose-built, high-density data centers that vendors provide directly or through partnerships with cloud companies.¹¹ Many major players, including Cyxtera, Digital Realty, and Equinix, offer NVIDIA DGX-Ready Data Centers for supporting AI-based deep learning applications.¹²
- **Include managed services and interconnection in their colocation priorities.** Specialized services like remote hands and other add-on managed services are key differentiators. Most players offer a robust portfolio of such services. However, keep an eye on the costs-versus-benefits analysis. By being aggregators of ISPs on-premises and providing cross-connection between sites, colocation players are rising challengers to the traditional telecom vendors that have served the enterprise market. It's important to understand the advantages and value of colocation players' interconnection services to your data architecture.

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Supplemental Material

Companies Interviewed For This Report

We'd like to thank the individuals from the following companies who generously gave their time during the research for this report.

Cyxtera

NTT

Digital Realty

QTS Realty Trust

Endnotes

¹ Data gravity is a metaphor coined by software engineer Dave McCrory in a 2010 blog post. Source: Dave McCrory, "Data Gravity – in the Clouds," Data Gravititas, December 7, 2010 (<https://datagravititas.com/2010/12/07/data-gravity-in-the-clouds/>).

- ² Source: Jeff Desjardins, “How Much Data Is Generated Each Day?” World Economic Forum, April 17, 2019 (https://www.weforum.org/agenda/2019/04/how-much-data-is-generated-each-day-cf4bddf29f/?TB_iframe=true&width=370.8&height=658.8).
- ³ Source: “The Global Internet Phenomena Report COVID-19 Spotlight,” Sandvine, May 2020 (https://www.sandvine.com/hubfs/Sandvine_Redesign_2019/Downloads/2020/Phenomena/COVID%20Internet%20Phenomena%20Report%2020200507.pdf).
- ⁴ Source: George Kamiya, “Data Centres and Data Transmission Networks,” IEA, June 2020 (<https://www.iea.org/reports/data-centres-and-data-transmission-networks>).
- ⁵ See the Forrester report “[The Public Cloud Market Outlook, 2019 To 2022.](#)”
- ⁶ Source: Forrester Analytics Global Business Technographics® Infrastructure Survey, 2019 and Forrester Analytics Business Technographics Infrastructure Survey, 2020.
- ⁷ Make no mistake; public cloud usage continues to expand rapidly. Without the surge in edge computing, however, cloud growth would even be a few percentage points higher than we projected. Source: Dave Bartoletti, “Predictions 2021: Cloud Computing Powers Pandemic Recovery,” Forrester Blogs, October 19, 2020 (<https://go.forrester.com/blogs/predictions-2021-cloud-computing-powers-pandemic-recovery/>) and “Predictions 2021: Cloud Computing,” Forrester (<https://www.forrester.com/fn/51A83KxURjmofUAEV7bCKR>).
- ⁸ Source: Anthony Spadafora, “Apple is Spending Millions Each Month On AWS,” TechRadar, April 23, 2019 (<https://www.techradar.com/news/apple-is-spending-millions-each-month-on-aws>).
- ⁹ See the Forrester report “[The Forrester Technology Sustainability Framework.](#)”
- ¹⁰ Source: “Green Power Partnership Long-term Contracts,” US EPA (<https://www.epa.gov/greenpower/green-power-partnership-long-term-contracts>).
- ¹¹ Source: Doug Black, “XTREME-D Launches New HPC Infrastructure Services With Digital Realty,” insideHPC, February 12, 2020 (<https://insidehpc.com/2020/02/xtreme-d-launches-new-hpc-infrastructure-services-with-digital-realty/>).
- ¹² Source: “NVIDIA + Digital Realty: Partnership,” Digital Realty (<https://www.digitalrealty.com/nvidia-digital-realty-partnership>) and Bill Ellis and Mark Polimus, “High Performance Computing in the Age of AI,” The Equinix Blog, February 26, 2020 (<https://blog.equinix.com/blog/2020/02/26/high-performance-computing-in-the-age-of-ai/>).
- See the Forrester report “[Now Tech: Colocation And Data Centers, Q2 2020 \[159076\]](#).”

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