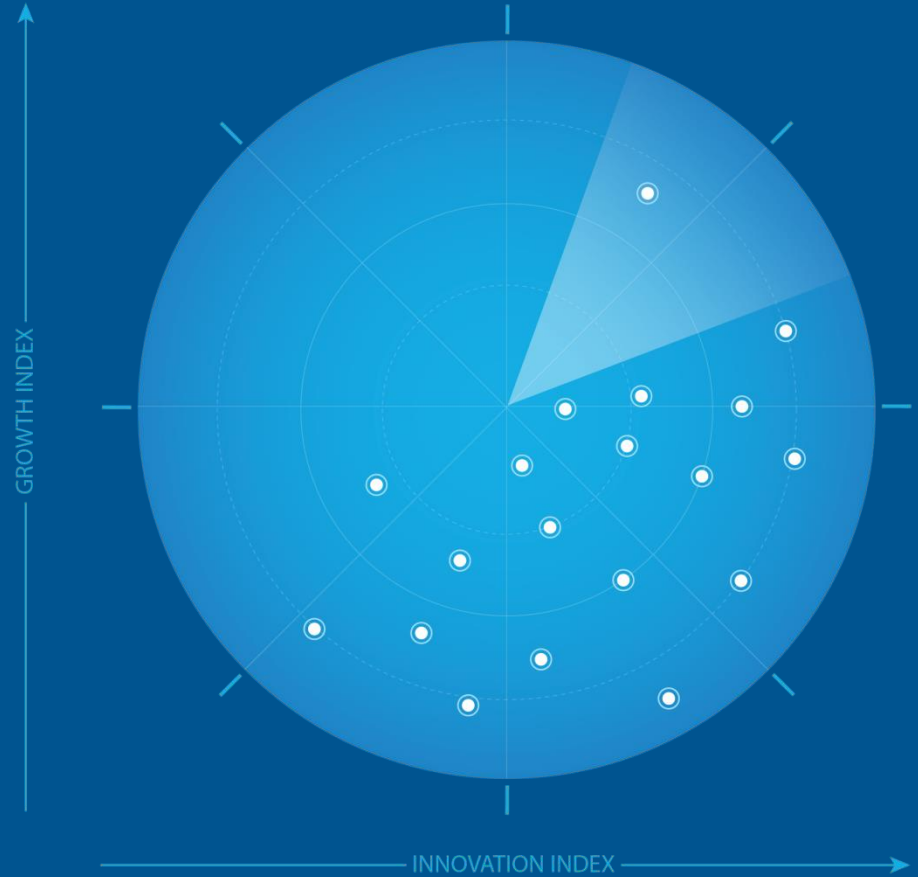


Frost Radar™: Data Center Colocation Services in North America, 2023

A Benchmarking System to Spark Companies to Action - Innovation that Fuels New Deal Flow and Growth Pipelines

Global Information & Communications Technologies Research Team at Frost & Sullivan



Strategic Imperative and Growth Environment

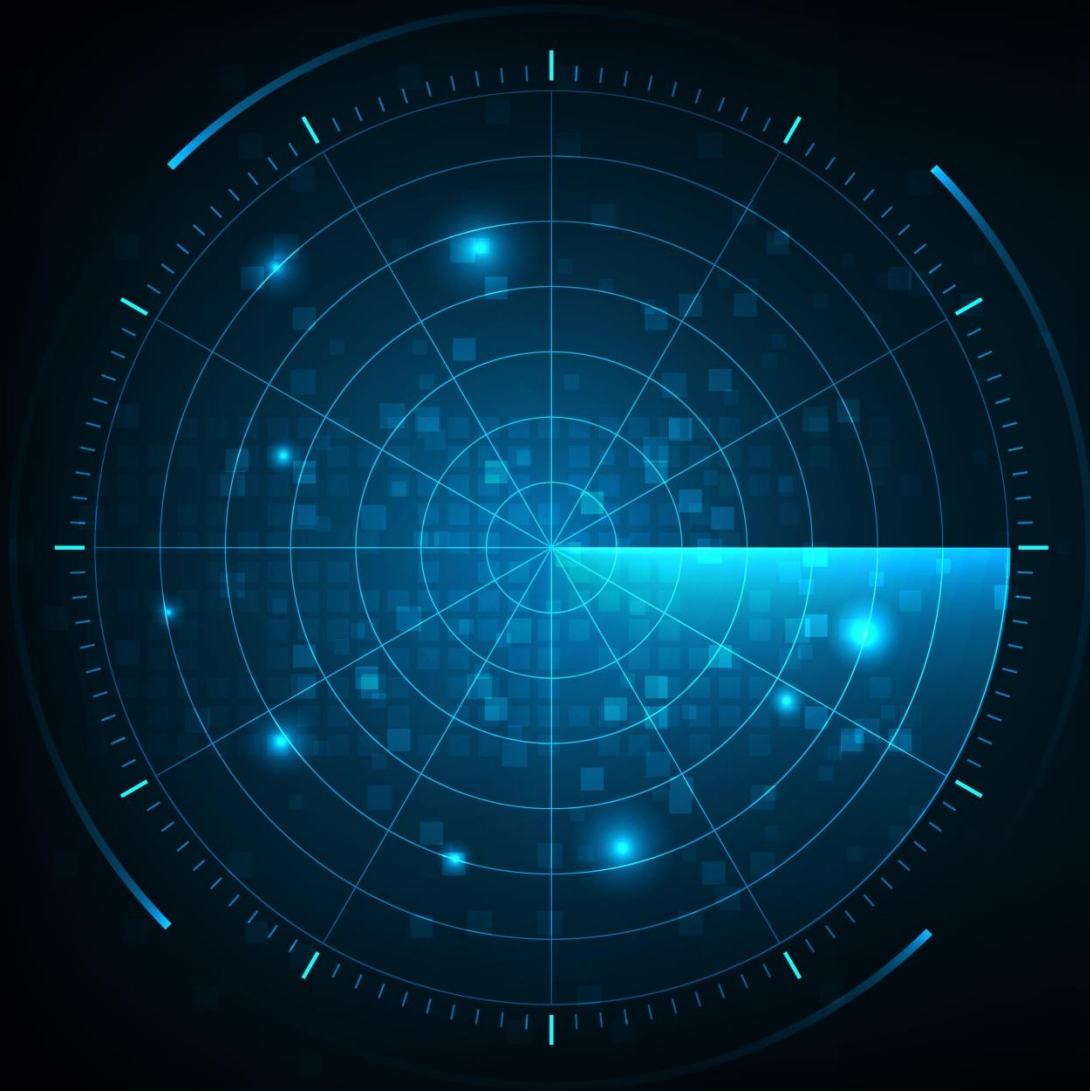


Strategic Imperative

- Digital transformation has become a priority for enterprises. Data centers are the backbone of a digital economy and an integral part of a digital business's strategy.
- Digital acceleration; investments in artificial intelligence (AI), machine learning, big data, cloud, and the Internet of Things (IoT); and more over-the-top (OTT) streaming and gaming content are driving the need for greater compute and storage capacity and the demand for colocation services.
- The data center colocation services industry is witnessing higher competitive intensity, compelling service providers to build scalable facilities with best-in-class design and to focus on industry best practices, third-party certifications, and sustainability initiatives to create competitive differentiation. Despite supply chain challenges negatively affecting construction timelines and a rise in energy prices resulting in higher construction and operating costs, continued demand has resulted in a significant expansion in data center capacity.
- Carrier-neutral service providers have an advantage because they operate independently, giving customers flexibility and choice in terms of network providers. This also creates the potential to offer customers greater redundancy and choice through a diverse network infrastructure provider ecosystem.

Growth Environment

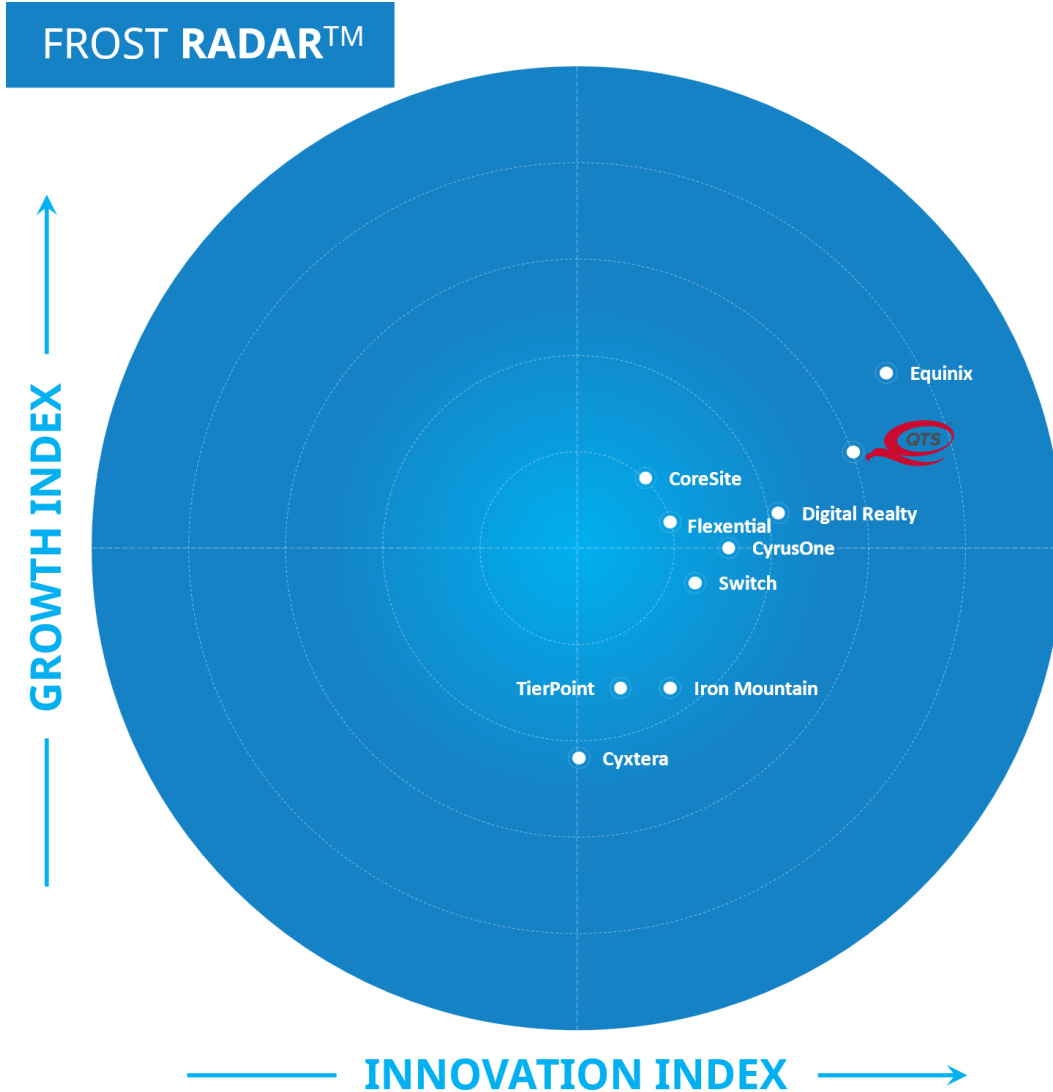
- North America is the largest data center colocation market in the world, with revenue exceeding \$20 billion in 2022. Demand is being driven by hyperscale public cloud services, content and digital media, and financial services.
- Northern Virginia, Dallas, Chicago, and Los Angeles remain the primary data center locations, but the high cost and limited availability of real estate in these places coupled with the demand for edge data centers, availability of renewable energy sources, and need to optimize capital expenditure are shifting the focus to new locations such as Phoenix; Salt Lake City; Portland, OR; and Columbus, OH.
- The leading data center service providers have a geographically distributed footprint. While some continue to focus on expansion in North America, others are growing their global presence to maximize local colocation opportunities and create value for global enterprise accounts.
- Service providers are aligning data center designs and services to build their value propositions around environmental sustainability and the use of renewable energy, which are becoming important factors in a colocation strategy. They are developing energy-efficient, green facilities to lower their carbon footprint and optimize operational costs.



Frost Radar™

**Data Center
Colocation Services
in North America**

Frost Radar™: Data Center CoLocation Services in North America



Source: Frost & Sullivan

Frost Radar™: Competitive Environment

- From more than 150 participants in North America, Frost & Sullivan for this Frost Radar™ analysis independently selected the top 10 data center colocation service providers based on estimated revenue and revenue growth.
- The top 10 are all carrier-neutral. Most only have a presence in the United States, but those with a wider presence aim to gain a strategic advantage in attracting global enterprise customers.
- The Frost Radar™ benchmarks service providers on parameters for growth (estimated revenue, revenue growth rate, capacity increase, market expansion, and strategic partnerships) and innovation (industry best practices and certifications, design, product portfolio, sustainability, and edge computing).
- The industry has gained considerable interest from private equity firms looking to capitalize on continued demand. Attractive returns on investment and long-term growth expectations drew capital, enabling new infrastructure development and triggering mergers and acquisitions that included Kohlberg Kravis Roberts & Co. (KKR) and Global Infrastructure Partners acquiring CyrusOne in March 2022, American Tower acquiring CoreSite in December 2021, Blackstone acquiring QTS in August 2021, and Cyxtera merging with Starboard Value Acquisition Corp. in July 2021.

Source: Frost & Sullivan

Frost Radar™: Competitive Environment (continued)

- QTS has achieved significant revenue growth and is building facilities and adding more capacity in Phoenix, Atlanta, Dallas, Denver, San Antonio, Richmond, Manassas, and New Albany. QTS has demonstrated a focus on innovation with its Service Delivery Platform (SDP), which includes 3D Mapper and a Sustainability Dashboard enabling enhance customer value.

Companies to Action

**Companies to Be Considered First for
Investment, Partnerships, or Benchmarking**

Significance of Being on the Frost Radar™

Companies plotted on the Frost Radar™ are the leaders in the industry for growth, innovation, or both. They are instrumental in advancing the industry into the future.

GROWTH POTENTIAL

Your organization has significant future growth potential, which makes it a Company to Action.

BEST PRACTICES

Your organization is well positioned to shape Growth Pipeline™ best practices in your industry.

COMPETITIVE INTENSITY

Your organization is one of the key drivers of competitive intensity in the growth environment.

CUSTOMER VALUE

Your organization has demonstrated the ability to significantly enhance its customer value proposition.

PARTNER POTENTIAL

Your organization is top of mind for customers, investors, value chain partners, and future talent as a significant value provider.

Source: Frost & Sullivan

INNOVATION

- QTS's SDP is a fully digitized, API-driven colocation orchestration platform that enables customers to access and manage their data center environments more efficiently and in real-time.
- QTS's new FREEdom standard build design features efficient cooling equipment paired with advanced technology and off-site solar or wind energy to create a true zero-water data center.
- By partnering with American Forests, World Vision, and the Dream Academy, QTS has shown an increased focus on environmental sustainability. It uses only renewable energy to power its greenfield data center campus in Hillsboro, OR.
- QTS has designed a comprehensive security program that unifies physical and cyber security under a centralized security umbrella to achieve a more holistic view of the risk landscape.

GROWTH

- QTS data centers are strategically placed in the United States and the Northern Netherlands. QTS offers secure, dependable, enterprise-grade colocation services.
- QTS delivered 221MW of leasing capacity in 2021 and 416MW by 2022. QTS plans to deliver nearly triple the amount of delivery activity in 2023.
- QTS partnered with Amazon Web Services to support interconnect in its Atlanta capabilities.
- QTS is developing a wide range of connectivity solutions and ecosystem partnership agreements with AWS, Akamai, DECIX, Open-IX, LINX, and others.
- With more than 1,100 customers, QTS has achieved 100% SDP adoption and delivers best-in-class customer satisfaction, reflected by a Net Promoter Score of 90 in 2021 and 2022.

FROST PERSPECTIVE

- While QTS has achieved significant growth and market share, it will be imperative for the service provider to maintain revenue growth to gain a greater share and compete with the leading service provider in the region. It will need to leverage timely operationalization of its new builds across Ashburn, Atlanta, Chicago, Dallas, Piscataway, Hillsboro, Manassas, and San Antonio to demonstrate its footprint across these strategic locations and the FREEdom building design specification to communicate its unique value for customers.
- In a longer-term perspective, QTS needs to demonstrate its global vision and expansion through strategic partnerships in other countries to attract a broader customer base.

Source: Frost & Sullivan

Strategic Insights



Strategic Insights

1

Data-centric enterprises need best-in-class digital infrastructure to maintain their competitive advantage. Colocation service providers must prioritize capital investments in their data center facilities to keep pace with demand.

2

Customers have become more conscious of their environmental footprint, and government initiatives are supporting sustainable practices. Data center designs that include the use of renewable energy are part of an industry strategy to become carbon neutral in the next decade.

3

To ensure competitiveness and profitable growth, service providers must leverage AI and machine learning in their core digital architecture to improve energy efficiency, enhance server performance and security, and develop an effective predictive maintenance strategy.

Frost Radar™ Analytics



Frost Radar™: Benchmarking Future Growth Potential

2 Major Indices, 10 Analytical Ingredients, 1 Platform

VERTICAL AXIS

Growth Index (GI) is a measure of a company's growth performance and track record, along with its ability to develop and execute a fully aligned growth strategy and vision; a robust growth pipeline™ system; and effective market, competitor, and end-user focused sales and marketing strategies.

GROWTH INDEX ELEMENTS

- **GI1: MARKET SHARE (PREVIOUS 3 YEARS)**
This is a comparison of a company's market share relative to its competitors in a given market space for the previous 3 years.
- **GI2: REVENUE GROWTH (PREVIOUS 3 YEARS)**
This is a look at a company's revenue growth rate for the previous 3 years in the market/industry/category that forms the context for the given Frost Radar™.
- **GI3: GROWTH PIPELINE™**
This is an evaluation of the strength and leverage of a company's growth pipeline™ system to continuously capture, analyze, and prioritize its universe of growth opportunities.
- **GI4: VISION AND STRATEGY**
This is an assessment of how well a company's growth strategy is aligned with its vision. Are the investments that a company is making in new products and markets consistent with the stated vision?
- **GI5: SALES AND MARKETING**
This is a measure of the effectiveness of a company's sales and marketing efforts in helping it drive demand and achieve its growth objectives.

Frost Radar™: Benchmarking Future Growth Potential

2 Major Indices, 10 Analytical Ingredients, 1 Platform

HORIZONTAL AXIS

Innovation Index (II) is a measure of a company's ability to develop products/services/solutions (with a clear understanding of disruptive Mega Trends) that are globally applicable, are able to evolve and expand to serve multiple markets, and are aligned to customers' changing needs.

INNOVATION INDEX ELEMENTS

- **II1: INNOVATION SCALABILITY**

This determines whether an organization's innovations are globally scalable and applicable in both developing and mature markets, and also in adjacent and non-adjacent industry verticals.

- **II2: RESEARCH AND DEVELOPMENT**

This is a measure of the efficacy of a company's R&D strategy, as determined by the size of its R&D investment and how it feeds the innovation pipeline.

- **II3: PRODUCT PORTFOLIO**

This is a measure of a company's product portfolio, focusing on the relative contribution of new products to its annual revenue.

- **II4: MEGA TRENDS LEVERAGE**

This is an assessment of a company's proactive leverage of evolving, long-term opportunities and new business models, as the foundation of its innovation pipeline. An explanation of Mega Trends can be found [here](#).

- **II5: CUSTOMER ALIGNMENT**

This evaluates the applicability of a company's products/services/solutions to current and potential customers, as well as how its innovation strategy is influenced by evolving customer needs.

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