EQUINIX

WHERE OPPORTUNITY CONNECTS

EXPANDING GLOBAL REACH

A NEW PARADIGM FOR CONNECTING LOCATIONS WITHIN THE ENTERPRISE

EQUINIX WHITE PAPER

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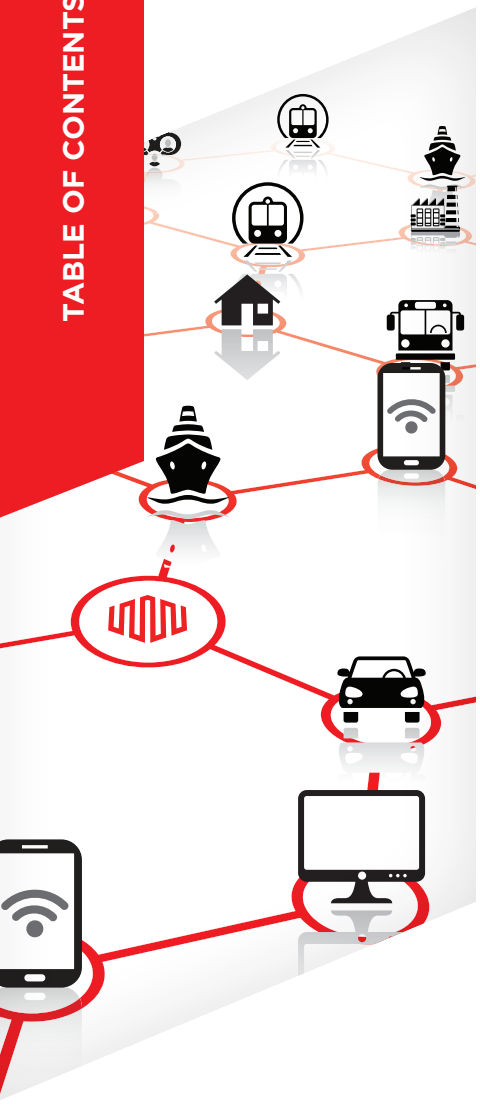


EXECUTIVE SUMMARY

Altimeter's "2014 State of Digital Transformation" report found that 88% of organizations surveyed were undergoing a digital transformation.[1] Such a transformation is not solely about electronic Web, mobile and social media interactions. It's about a consistent customer, partner and employee experience across all interactions, whether in a physical retail environment, in a branch office or digitally on any device, anywhere in the world, via any engagement model.

Providing such a consistent "omnichannel" experience in a global business environment will require enterprises to converge independent silos of business, technology and physical facilities into a single platform focused on the roaming user. To overcome latency issues, it will also require a new interconnection-oriented paradigm that moves key applications, data and services strategically to the enterprise edge, geographically close to users. In order to do so, enterprises will need to establish a digital presence quickly and strategically in multiple global business locations. Those that cannot do so successfully will find themselves losing out on competitive position and new opportunities for growth.

A number of trends drive this need for global digital presence:

- The convergence of mobile digital and physical interactions among ecosystems of partners, suppliers and customers
- An increased focus on emerging economies as the key to business growth
- The growing number of international mergers and acquisitions
- An expanding dependence on multi-cloud services to deliver applications and information to globally dispersed locations and users
- A growing need for real-time information exchange and data analytics spanning global systems and organizations
- Corporate initiatives to reduce branch office IT to simplify adds, moves and changes and to lower costs

Unfortunately, today's enterprise connectivity paradigm – where multiple individual long-distance interconnections emanate from the enterprise data center – doesn't meet the edge connectivity demands of the emerging converged enterprise. Fast collaboration, application performance and transactions require not only bandwidth and interconnection reliability, but also network provider choice, secure connectivity and low latency. Low latency demands proximate connections to business ecosystems and users, as all the bandwidth in the world cannot reduce the time it takes for packets to get from point A to point B over a long-distance connection.

In an age of high-profile data breaches, effective security also demands direct, private connections and security services deployed at the edge – near digital consumers – rather than across all the traffic that has been backhauled to the data center.

These demands can best be met by an Interconnection Oriented Architecture™ that delivers a transformative approach to interconnecting people, locations, clouds and data and that integrates physical and virtual worlds where they meet. It harnesses strategically distributed interconnection access centers at the edge, close to users, with direct, proximate, high-speed connections among colocated network and cloud services providers and business partners, to provide the speed and agility enterprises need to compete. Not only does such an architecture rein in the exploding cost and management burden of interconnecting remotely dispersed locations and users, but it also empowers enterprises to participate in today's global digital business environment and positions them to adapt to whatever landscape lies ahead.

1 "The 2014 State of Digital Transformation," Altimeter, 2014.

WHY GLOBAL DIGITAL PRESENCE MATTERS

As more and more enterprises undergo digital transformation, providing a converged, high-quality user experience across both physical and virtual interactions has become critical. These interactions may occur at a physical location, such as a retail store, branch office or manufacturing plant, or completely electronically via connected PCs, partner systems, roaming mobile devices, social media or some other emerging engagement channel.

Providing a consistent "omnichannel" experience requires converging independent silos of business and technology to offer a single, integrated platform focused on the users, wherever they are. It also requires overcoming system, bandwidth and – increasingly, in an age of voice, video and social media – latency constraints on performance and quality of service.

Slashing latency can occur only by placing systems and data in close proximity to users. The 2010 Google study "More Bandwidth Doesn't Matter (Much)"[2] highlighted this issue, and the premise still holds true today. The study concludes, "If users double their bandwidth without reducing their RTT [round trip time] significantly, the effect on web browsing will be a minimal improvement. However, reducing RTT, regardless of current bandwidth, always helps make web browsing faster."

That's why global enterprises must establish a digital presence at the enterprise edge, in key global locations where dense ecosystems of partners, customers and employees interact. Typically, these locations may be in or near traditional global business centers, such as New York, London and Tokyo. They may also be near emerging megacity centers of global economic activity, such as Karachi and Dhaka, that are key to future growth for many global enterprises.

Slashing latency can occur only by placing systems and data in close proximity to users.

While enabling fast transactions and interactions among partners, employees and customers is a top priority, enterprises also need to establish global digital points of presence (PoPs) to get fast, effective access to regional networks and cloud services and to integrate increasingly complex global supply chains. This is because any single product or application consumed in the U.S. or globally may depend on a supply chain of hundreds or thousands of global links and systems that must connect and interact quickly and easily to get products or applications to market.

Enterprises must also digitally equip and connect with dispersed physical business locations, such as branch offices and retail outlets, and must integrate mergers and acquisitions efficiently enough to avoid hampering the general pace of business and customer service.

For most organizations, the escalating number of digital enterprise interactions has spiked global traffic, severely challenging the current data center-centric MPLS and Internet virtual private network (VPN) interconnection architecture they have relied on for years.

2 "More Bandwidth Doesn't Matter (Much)," Google, April 2010.

WELCOME TO THE INTERCONNECTED ENTERPRISE

In the interconnected enterprise, global digital PoPs can be established strategically and quickly at the enterprise edge without a risky, high upfront investment in data center real estate, power and cooling. Multiple strategically placed PoPs interconnect at ultra-high speed to enable the real-time collaboration, transactions, information exchange and analytics that companies need to foster innovation and quickly adjust to rapidly changing market conditions.

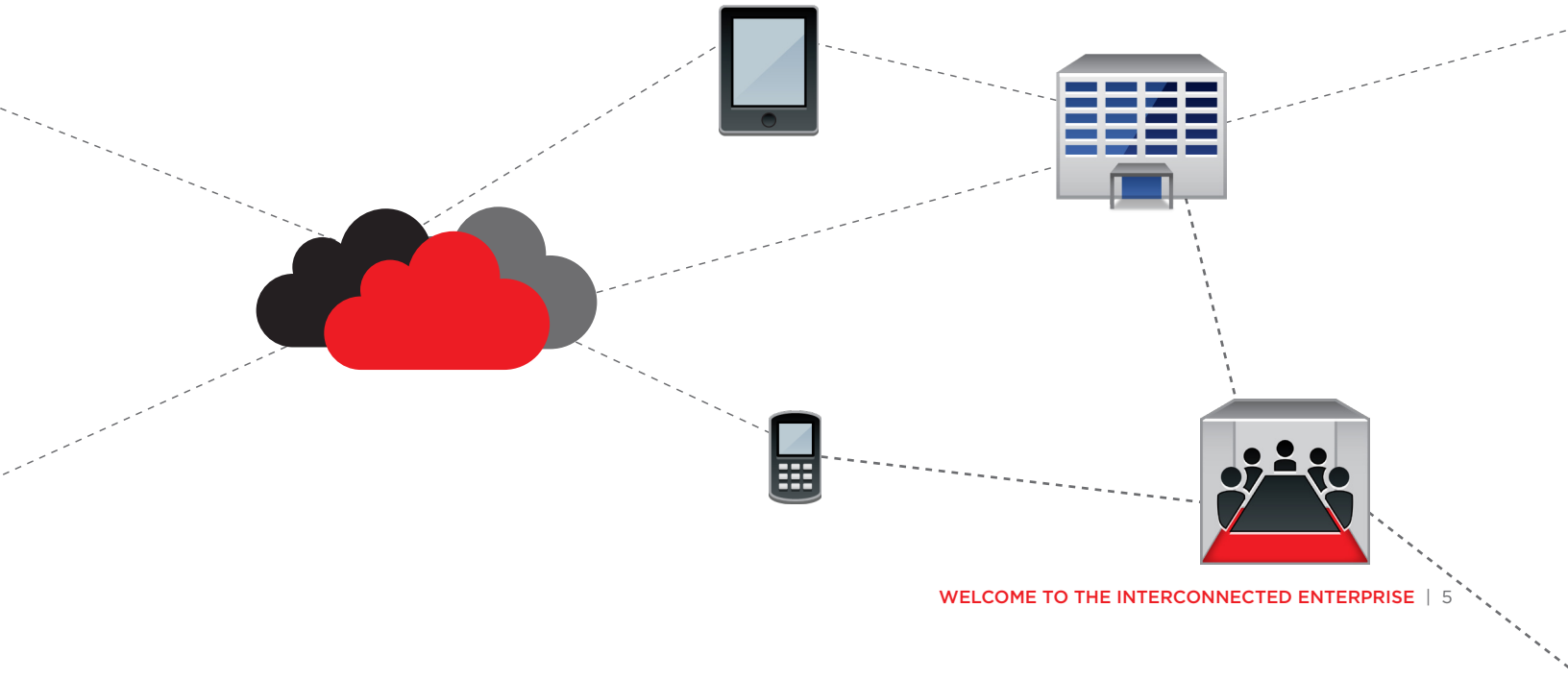
Doing this requires a fast, agile, scalable and secure distributed network topology that offers network provider choice and fast, proximate access to digital ecosystems, high-speed network backbone peering points and low-latency networks. Organizations that know how to establish and harness this kind of Interconnection Oriented Architecture are better positioned than their competitors to react in real time, adapt swiftly to changing customer needs, and quickly generate new products, services, sales channels, value and growth.

The Challenges of Interconnecting Locations

Unfortunately, today's legacy fixed, enterprise data center-centric interconnection paradigm cannot fulfill these global presence and interconnection requirements effectively. More often than not, today's long-distance MPLS or Internet VPN connections – with their multiple hops, increased congestion and points of failure – yield slow performance, high latency and a poor user experience.

Enterprises often try to ramp up performance by adding more and more connections and bandwidth, but this strategy becomes increasingly expensive and complex, with little performance improvement. Building data centers in multiple global locations is a slow, risky, expensive undertaking at a time when business requirements, local conditions and data regulations may change suddenly. Building, connecting and moving branch offices and other business locations also disrupts the pace of business. And the common practice of backhauling most or all traffic through corporate data centers is simply no longer sustainable in the face of exploding requirements for interconnections and low latency.

Lastly, organizations operating in this environment are struggling to meet today's ever-expanding security and compliance demands for fast, safe access to data. By nature, the Internet is a shared, best-effort interconnection platform where performance varies according to congestion and routing conditions, and Internet security is increasingly tenuous in an age of frequent, highly damaging data breaches. The modern-day challenges of transporting sensitive transactions and information to a centralized data center demand a new distributed approach and an architecture with secure, direct interconnections.



LOCATION ACHES AND PAINS

If your enterprise is typical of today's organizations, you might find these challenges of establishing and interconnecting digital points of presence familiar:

Challenges Running the Global Presence Race

Is the global market simply moving too fast for you to build the digital PoPs and gain the access you need to the global business ecosystems to establish your competitive advantage in emerging markets? Is it too slow and disruptive for you to connect, equip and move branch offices and other locations? Is your lack of global presence inhibiting your organization's business growth and competitiveness while a poor global user experience damages your brand?

Slow Business Pace

Is poor interconnection performance and visibility slowing down collaboration, transactions and supply chain performance? Are users complaining about intolerable application performance when they work away from the headquarters? Are low productivity and slow decision-making and time to market causing your organization to lose customers to the competition?

Exploding Cost and Complexity

Are the challenges of interconnecting dispersed business locations, partners, suppliers and cloud services leading to overwhelming complexity and untenable time and resource requirements just to keep things running? Are you throwing more and more cash at bandwidth and new wide area network (WAN) connectivity without any measurable result? Is network complexity making it increasingly impossible to ensure application and information security and compliance?

Execution Fails

Are slow connections making it increasingly impossible for your organization to innovate and execute on business plans? Are you unable to bring emerging technologies online and new products and services to market fast enough to compete in an increasingly demanding market? Is slow connectivity making it impossible to mine valuable information in real time so you can adjust to changing market conditions and customer needs? Are your business units increasingly bypassing IT to set up their own shadow IT?

More and more businesses struggle with these kinds of interconnection challenges, with no workable solution in sight. The good news is, there is a transformative interconnection strategy that can help you address all of these issues quickly and at a much lower cost than your current architecture permits.

BE GLOBALLY PRESENT: A NEW INTERCONNECTION-ORIENTED PARADIGM

Enterprises with access to globally ubiquitous, on-demand interconnectivity are better positioned to compete and win in today's digital economy. Getting there means embracing a new Interconnection Oriented Architecture that shifts the paradigm from a siloed and IT data center-centric model to a strategically distributed, colocated and closely interconnected model.

In this new model, the corporate data center becomes another edge node, along with all the other global enterprise PoPs. Rather than building its own data center interconnections, the enterprise leverages strategically located, globally distributed interconnection centers with ecosystems of colocated network providers, backbone network peering points, cloud providers, and business and supply chain partners to build new interconnections.

All these interconnection centers are connected with each other at very high speed. Within each local ecosystem, business partners, suppliers, cloud services and other entities interconnect proximately at very high speed, often via direct Ethernet connections at up to 100 gigabits per second (Gbps). This new interconnection-oriented paradigm helps enterprises achieve exceptional performance and agility through the following attributes:

Global Footprint

Organizations can quickly establish a presence close to their regional customers, employees, partners and cloud services by tapping into dense network and cloud service provider interconnection centers in or near major cities and emerging economic megacities worldwide. There's no longer any need to build a data center in each location.

Vendor Neutrality

Enterprises are no longer locked in to one or two network and cloud providers. Thanks to ecosystems of multiple colocated network and cloud providers, they can connect directly and securely to networks and cloud services to achieve the best performance for each individual global point of presence.

Proximate Access

As an edge node, enterprise data centers can simply extend their IT infrastructure, via high-speed Ethernet connections, to the nearest interconnection center for ultra-high-speed access. Once extended, proximate access to network provider peering points means fewer hops and lower latency. Close, fast and direct Ethernet connections among ecosystem partners and cloud providers speed up collaboration, transactions and information exchange dramatically.

Flexible Interconnectivity

Enterprises can respond more quickly to global market changes and developments via plentiful, high-performing interconnections. Instead of building global PoP strategies that are hindered by budgets and dated interconnection capabilities, they can gear their strategies to adapt to changing business requirements in an instant.

Secure by Design

Instead of relying on the best efforts of public Internet VPNs with debatable security, interconnected enterprises connect directly and securely to global PoPs and their regional partners, suppliers and customers. They can also place security services at the edge, close to partners and suppliers where they are more effective, rather than across all the traffic volume that is backhauling to the enterprise data center.

Simplified Connectivity

Extending the enterprise to a readily available supply of networks and cloud providers simplifies the ramp-up, management and teardown of interconnections.

THE GLOBAL BUSINESS ADVANTAGES OF THE INTERCONNECTED ENTERPRISE

The business advantages of creating an interconnected enterprise to connect multiple locations are considerable and include the following:

An Omnichannel User Experience

Once key systems, business intelligence and information are dispersed to strategic locations at the enterprise edge, the organization can deliver the consistent, high-quality, omnichannel experience across all user interactions required for the new global digital economy.

Global Business Agility

Once they are interconnected, businesses can react almost instantly to changing, emerging global market conditions. Multiple network and cloud providers allow businesses to ramp up new applications and services quickly in multiple locations. Redundant networks give them enhanced business continuity and disaster recovery. Network and cloud provider choice also means lower cost.

Faster Time to Market

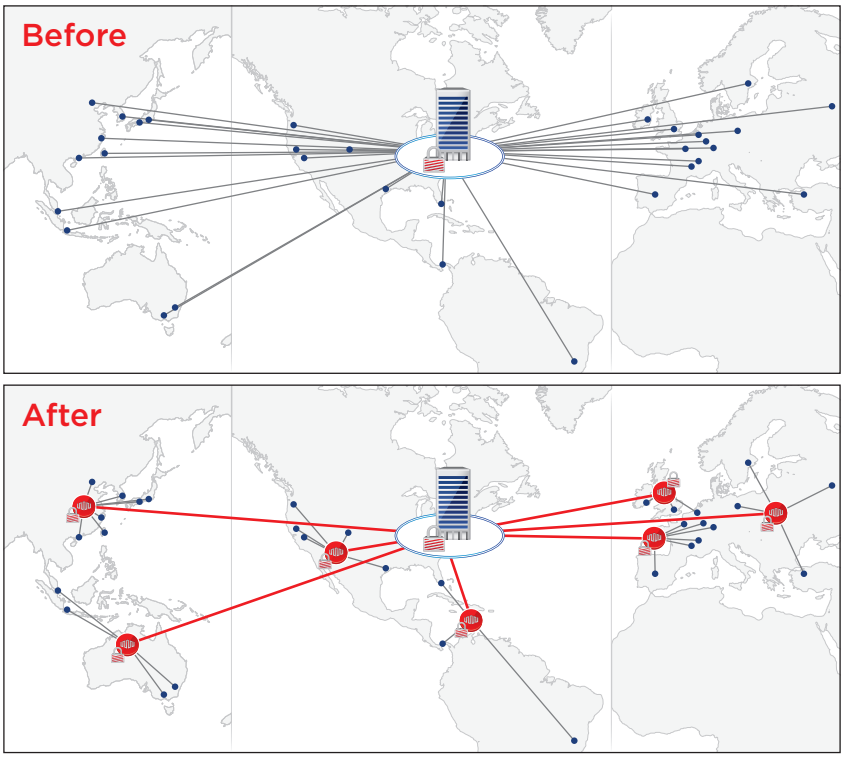
For interconnected enterprises, faster transactions, collaboration and decision-making among globally dispersed enterprise employees, partners, suppliers and customers translates into the ability to bring products and services to market more rapidly and efficiently than ever before.

Easy Branch Office Connections, Moves, Adds and Changes

Distributed edge interconnectivity allows enterprises to establish, shift and change branch office locations in a fast-moving business environment without major business disruption. Instead of having to tear down, move or construct a new infrastructure or data center, interconnected enterprises can simply extend the new location's network to the nearest interconnection/data center and continue doing business where they left off.

More Resources for Strategic Initiatives

With fast, easy deployment and teardown of readily available interconnections reducing complexity and improving visibility, IT leaders within the interconnected enterprise can solve problems faster and devote more time to strategic initiatives that foster growth and enhance competitive position.



WHAT TO LOOK FOR IN AN INTERCONNECTION PARTNER

If you are looking for an interconnection provider that can help you expand your global footprint rapidly and ensure that your worldwide users can securely access other users, applications, data and clouds from any device and delivery channel, look for the following capabilities:

Breadth in Locality

Find a partner with globally dispersed, interconnected colocation data centers in or close to the major business centers where you need to establish your digital presence. Look also for multi-tenant data centers in emerging megacities.

Carrier Choice

Look for an interconnection partner that offers you the ability to connect with as many major network providers as possible, so you can mix and match interconnection solutions to fit your needs. Seek out regional provider partnerships and colocated network peering points where the major provider networks exchange traffic at very high speed.

Colocated Partners and Cloud Services

Leverage proximity by colocating and directly connecting with the partners, cloud providers and customers your business needs. Look for a hefty ecosystem of relevant colocated enterprises and services in your industry sector. To quickly gain a regional cloud presence, look for a good supply of colocated cloud providers, including major players such as Amazon Web Services, Microsoft Azure and Salesforce.com, as well as smaller, specialized providers.

Affordable Ultra-High-Speed Connections

To ensure quality of service and maximum performance, seek out fast, proximate connections with partners and cloud services. Some providers offer a choice of proximate Ethernet cross connects as high as 100 Gbps.

Enterprise-Level Reliability and Security

Any enterprise that considers security, business continuity and compliance critical should ensure that its interconnection provider has industrial-strength security at all its locations. Pay attention to the provider's uptime track record: look for six nines performance. Check to see that other organizations with the same stringent compliance, security and uptime requirements as yours are customers of the interconnection provider. Lastly, make sure local compliance requirements are met at each distributed location.

GLOBAL PRESENCE SUCCESS STORIES

Leading organizations across the globe have already begun harnessing this new Interconnection Oriented Architecture to speed the pace of business.

Interconnection Speeds Global Cloud Collaboration

A global consulting engineering and operations firm harnesses a new Interconnection Oriented Architecture to provide fast collaboration and access to applications and cloud services for its more than 100 globally dispersed field offices. The firm has established a digital presence in nine key interconnection centers throughout the Americas, EMEA and Asia-Pacific for interacting with nearby field offices.

This architecture brings applications and information closer to the engineering firm's field offices and the offices of its global partners, enabling faster collaboration and application performance and lower latency for VoIP and Office 365 applications. This is especially important as this organization seeks to establish a "follow the sun" work strategy, in which employees and partners in different global locations can continue working on a project 24 hours a day.

Direct, proximate connections to colocated cloud services, such as Microsoft Azure, speed up performance even more. The firm has reported much faster time to market and greater bandwidth in all its offices, down to the last mile. Establishing new field offices is a much quicker, less disruptive process than it used to be, since the office can just extend its network to a nearby interconnection center.

Interconnection Improves Healthcare Worldwide

Quick access to medical records and imaging during a medical emergency can be a matter of life and death. A leading electronic medical records (EMR) firm uses a distributed, colocated Interconnection Oriented Architecture to bring its EMR services within close proximity to its globally distributed hospitals so it can deliver fast EMR access at all times. By extending its central data center to a nearby interconnection colocation center and then connecting via a fiber ring to nationally distributed interconnection centers near major health facility locations, the EMR leader is able to deliver top performance to its healthcare provider customers. All it has to do is extend a high-speed circuit from the local interconnection center to each facility.

The organization has begun expanding globally and is using a similar architecture. But instead of hosting applications in its own data center, it will be hosting applications and associated record storage in globally distributed colocation and interconnection centers close to its worldwide customers.

Interconnection Accelerates Organizational Performance

A Fortune 500 financial services firm is using dispersed nationwide interconnection centers to bring applications and information closer to its 200 locations and customers, speeding performance and reducing latency by as much as 45%. In addition, a broader choice of colocated network and cloud providers has allowed the company to achieve up to a 45% reduction in Internet access costs and a 30% reduction in MPLS bandwidth cost.

The firm can now provision interconnections for new branch offices in days rather than months, even for temporary deployments. Up to 60% of its Internet-destined traffic, including Software-as-a-Service and Infrastructure-as-a-Service traffic, no longer goes through the corporate data center. The result: fewer outages and increased customer satisfaction.

SUMMARY

Enterprises need the agility to establish strategic digital points of presence globally so they can collaborate effectively with branch offices, partners and suppliers, expand their worldwide customer base and enter emerging markets at the pace of digital business. Legacy interconnection approaches that rely on fixed connections from a few providers, all emanating from one or two corporate data centers, cannot support this new enterprise imperative.

A new distributed, colocated, Interconnection Oriented Architecture can help organizations establish global interconnections quickly and easily, leveraging dense ecosystems of fast, proximate, direct connections to speed applications, ease information exchange and stay ahead of customer needs. For IT leaders, it tears down complexity, leaving more time and resources to drive innovation and fuel the growth of strategic business initiatives.

References:

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About Equinix

Equinix, Inc. (Nasdaq: EQIX) connects the world's leading businesses to their customers, employees and partners inside the most interconnected data centers. In 33 markets across five continents, Equinix is where companies come together to realize new opportunities and accelerate their business, IT and cloud strategies.

In a digital economy where enterprise business models are increasingly interdependent, interconnection is essential to success. Equinix operates the only global interconnection platform, sparking new opportunities that are only possible when companies come together.

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