Cyxtera

Interconnection and the Enterprise

How Colocation and Direct Cloud Connectivity Can Fortify Hybrid IT

A REPORT EXCERPT FROM 451 Research®

Connectivity is mission-critical to hybrid IT

Hybrid IT is more distributed, diverse and dependent on connectivity than ever. As enterprises rely on hybrid IT to quickly expand public and private cloud resources, access availability zones, spin up dev/test labs or deploy VDI, they soon realize their network is under pressure. The result is unprecedented demand for mission-critical, secure, direct access to cloud and SaaS platforms.

The interconnection point between enterprises, business partners, network, cloud and service providers is the colocation data center. Colocation not only gives enterprises the ability to rapidly connect mission critical infrastructure to cloud providers; it provides the dedicated, always-on connectivity needed to support a multi-cloud strategy.

The interconnection disconnect: time to provision

Colocation data centers have not historically operated in a cloud-like point, click, and provision model. Traditional carrier networks can take weeks or months to provision. Even cross connects in a data center typically take 24 to 48 hours to be installed. Yet public cloud and SaaS platforms have reset expectations so that lead times of 60 to 90 days or more to provision IT infrastructure are no longer acceptable.

IT professionals need cloud connectivity and data center networking fabrics that work like the cloud to deliver on-demand consumption and near real-time configure and deployment.

Cyxtera Interconnection Services: colocation and cloud connectivity for hybrid IT

Cyxtera offers colocation customers diverse, scalable interconnection and access to a marketplace of valuable providers. Our rich ecosystem includes 100+ network service providers and direct connections to leading public and private clouds. In addition, enterprises can quickly and easily engage with a broad range of business partners, content providers, healthcare and financial exchanges.

The Cyxtera Marketplace enables enterprises to quickly connect with and easily stand up new services including secure, direct paths between platforms to increase performance and reduce latency.

> "With end customers and employees ever more dispersed geographically, the use of mobile devices growing, and large amounts of data coming in from internet-connected devices, the network is under even more pressure."
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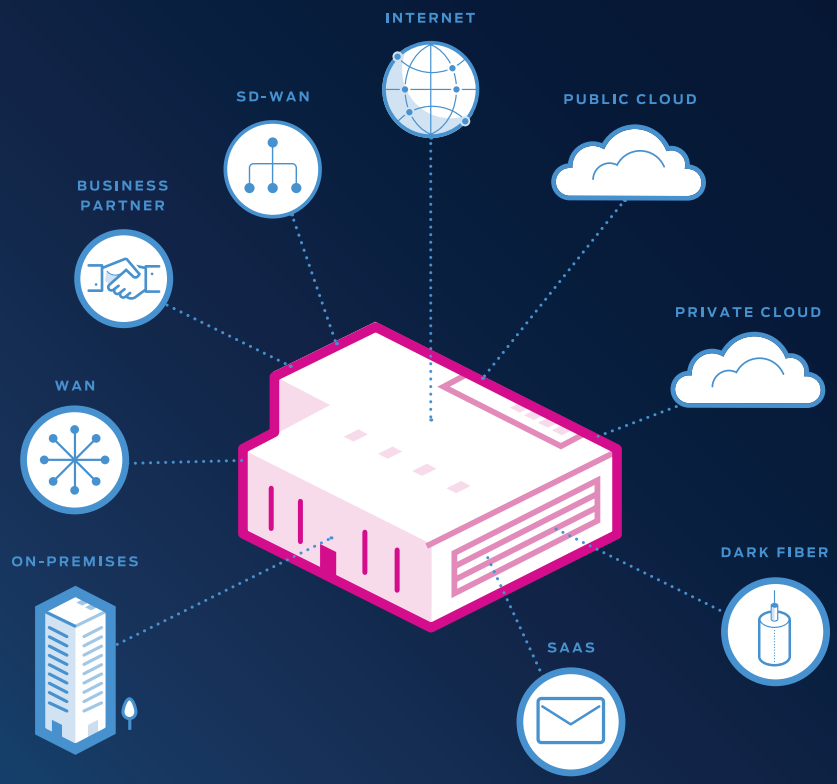

[1]451 Research, Market Forecast: Interconnection and the Enterprise, How Colocation and Direct Cloud Connectivity Can Fortify Hybrid IT

REPORT EXCERPT

The following is an excerpt from an independently published 451 Research report, "Interconnection and the Enterprise" released in January 2019.

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MARKET FORECAST

JAN 2019

Interconnection and the Enterprise

How Colocation and Direct Cloud Connectivity Can Fortify Hybrid IT

Craig Matsumoto, Senior Analyst, Datacenter Networking

Interconnection is becoming increasingly important in a hybrid and multi-cloud world, yet it is changing rapidly, and many enterprises are not aware of all their cloud connectivity options. This report provides a state of the interconnect industry to help enterprises and investors understand how interconnection is evolving, particularly when it comes to providing direct, private connectivity to clouds and SaaS providers.

About the Author

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Senior Analyst, Datacenter Networking

Craig Matsumoto is a 451 Senior Analyst focusing on the confluence of CDNs, interconnect fabrics and cloud access. Craig has covered service-provider and enterprise networking since the dot-com bubble of 1999, including more than 10 years at Light Reading, where he covered broad topics including optical networking, routing and the then-new beat of software-defined networking. He also spent four years at SDxCentral, delving further into SDN, NFV and container technologies.

Before joining 451, Craig spent one year back at Light Reading as editor-in-chief. He holds a bachelor of science degree in engineering mathematics from UC Berkeley.

Key Findings

- Cloud connectivity is becoming mission-critical for many enterprises, leading some to explore options for private, direct connections into the cloud.
- Multi-tenant datacenters can connect the enterprise to many clouds, SaaS providers and service providers. As the enterprise's connectivity needs increase in complexity, this service becomes more valuable.
- A 'direct' connection to the cloud sometimes needs multiple stops along the way and can involve a combination of network providers and datacenter owners. The trick is to shield the enterprise from this complexity.
- Software-defined networking can simplify the interconnection story by letting enterprises order new connections themselves, while masking the geographic complexity underneath.
- Telcos and service providers have a role to play here as well, building off existing enterprise relationships and taking advantage of the infrastructure built out by datacenter owners.

Executive Summary

The 451 Take

Enterprise IT has become distributed, with formerly internal functions now running in clouds (public or private) and in the datacenters of SaaS providers. The enterprise network needs to likewise become distributed, as the WAN that used to simply lead to the in-house datacenter has the potential to become a sprawling beast reaching out to – and potentially creating connections between – other people's datacenters. The cloud can certainly be reached via the internet or software-defined WAN (SD-WAN), but some enterprises need stronger guarantees of security and performance. That has created a demand for direct cloud connectivity, with the cloud on-ramp becoming a key component of the new enterprise network.

The multi-tenant datacenters (MTDCs) see an opportunity here, with their colocation facilities acting as a Grand Central Station for connecting enterprises with clouds and SaaS services, and also with each other. The advent of software-defined networking (SDN) means these connections can even be self-service, with the cloud behaving as if it were one hop away. Even for enterprises that don't need direct cloud connectivity, MTDCs believe they can help simplify the newly distributed network.

Service providers can fill those needs as well, and of course some enterprises will find that broadband and SD-WAN connectivity suffices. What makes the MTDC scenario interesting is that it opens a different way to think about enterprise networking; it also happens to present a relatively new avenue of business for the datacenters. This report drills down into the roles that MTDCs hope interconnection can play within the enterprise-cloud relationship.

Methodology

This report is based on information received from vendor briefings, industry conferences and quantitative analysis from 451 Research services, including Voice of the Enterprise (VotE) and Market Monitor.

Reports such as this one represent a holistic perspective on key emerging markets in the enterprise IT space. These markets evolve quickly, though, so 451 Research offers additional services that provide critical marketplace updates. These updated reports and perspectives are presented on a daily basis via the company's core intelligence service, 451 Research Market Insight. Forward-looking M&A analysis and perspectives on strategic acquisitions and the liquidity environment for technology companies are also updated regularly via Market Insight, which is backed by the industry-leading 451 Research M&A KnowledgeBase.

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Beyond that, 451 Research has a robust set of quantitative insights covered in products such as VotE, Voice of the Connected User Landscape, Voice of the Service Provider, Cloud Price Index, Market Monitor, the M&A KnowledgeBase and the Datacenter KnowledgeBase.

All of these 451 Research services, which are accessible via the web, provide critical and timely analysis specifically focused on the business of enterprise IT innovation.

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Why Enterprises Want Direct Cloud Connections

Enterprises are focusing more on connectivity due to security and performance issues. The scale and frequency of distributed-denial-of-service (DDOS) attacks that are publicly disclosed is yet another reason for companies to be worried about protecting the systems that are core to their operation. Meanwhile, performance of applications that run over IP networks can't be improved simply by buying more bandwidth over an MPLS connection. With end customers and employees ever more dispersed geographically, the use of mobile devices growing, and large amounts of data coming in from internet-connected devices, the network is under even more pressure.

An increasing number of enterprises seek to connect more directly to the cloud using services such as AWS Direct Connect or Azure ExpressRoute. Enterprises can already connect to cloud via the internet, of course, But there are advantages to be gained by having a direct connection to a specific public cloud.

- **Predictable performance.** Even for non-real time applications, the unpredictability of internet performance can prompt a change in IT strategy. 451 Research's VotE recently found performance, not cost, to be the top reason why enterprises moved workloads out of the public cloud. A more deterministic connection for mission-critical applications would be useful, or at least comforting.

- **Assured connectivity.** Hand-in-hand with predictability, there's the risk that an internet-based connection will occasionally fail to deliver traffic. That risk can be unacceptable in cases such as consumer retail, where the customer is fickle and will blame website problems on the underlying brand.

- **Security**. A direct connection is private and doesn't cross the internet. In security terms, it shrinks the attack surface and provides more control (or at least the impression of more control). Additionally, services backed by a third party's datacenters and fiber network can provide a barrier against DDOS attacks.

- **Latency**. For a few applications, the speed of light matters. Think live-streamed video, virtual reality or high-frequency trading. CDNs and edge computing can certainly help, but some use cases might call for a direct pipe into the cloud.

- **Price**. The public clouds charge fees for moving data out of the cloud and onto someone else's network, including the internet. (Putting data **into** the cloud is free.) A direct connection isn't free but can be cheaper. This was an original motivation for AWS Direct Connect; it was intended for high-volume users whose egress fees were mounting rapidly and unpredictably.

- **Simplicity**. Colocating in an MTDC can give the enterprise one place to connect to many clouds. Some datacenter operators want to take that a step further by offering platforms that simplify connections to multiple clouds. The complexity of an enterprise's cloud network capacity could be shrunk down into one package, and management tasks could even be handed off to the datacenter operator.

- **Cloud interworking**. The use case of moving workloads or even data between clouds is real and could grow in popularity. For all the reasons listed here, the enterprise might prefer to keep this work on private connections.

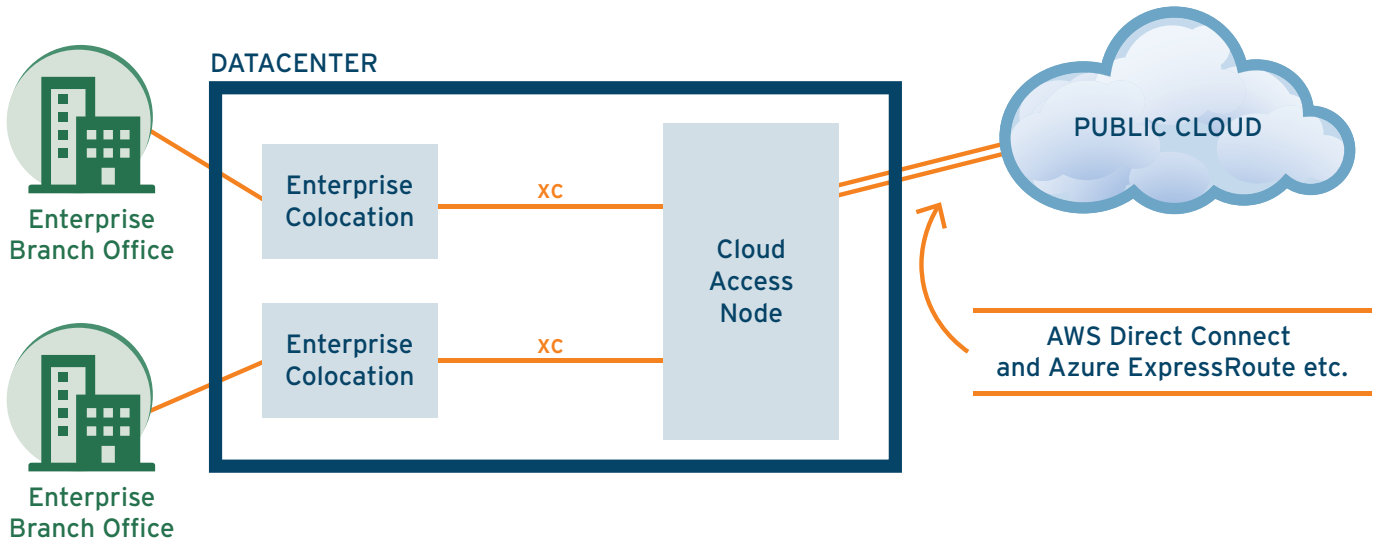
Cloud Connection Options

When an enterprise buys a 'direct connection' to the cloud, it's really purchasing a connection to a cloud on-ramp – the rack of equipment and software that a cloud provider places inside an MTDC. The number of on-ramp sites is relatively limited, so the resulting path can be rather indirect, hopping through multiple datacenters; the latencies incurred are negligible for most use cases. What's important is that the connection *feels* direct and is running along a controlled path. Moreover, operators' user portals can allow these connections to be created quickly, using SDN or network virtualization in the background to provision or alter services on the fly.

1. ENTERPRISE COLOCATION

The simplest use case has the enterprise establishing a presence in the same MTDC that houses a cloud on-ramp. (See Appendix C.) This could be a single rack of gear or a complete datacenter hosted inside the MTDC's walls. A cross-connect (XC) can then link the enterprise to the cloud on-ramp, as in Figure 2.

Figure 2: Cloud On-Ramp and a Simple Cross-Connection



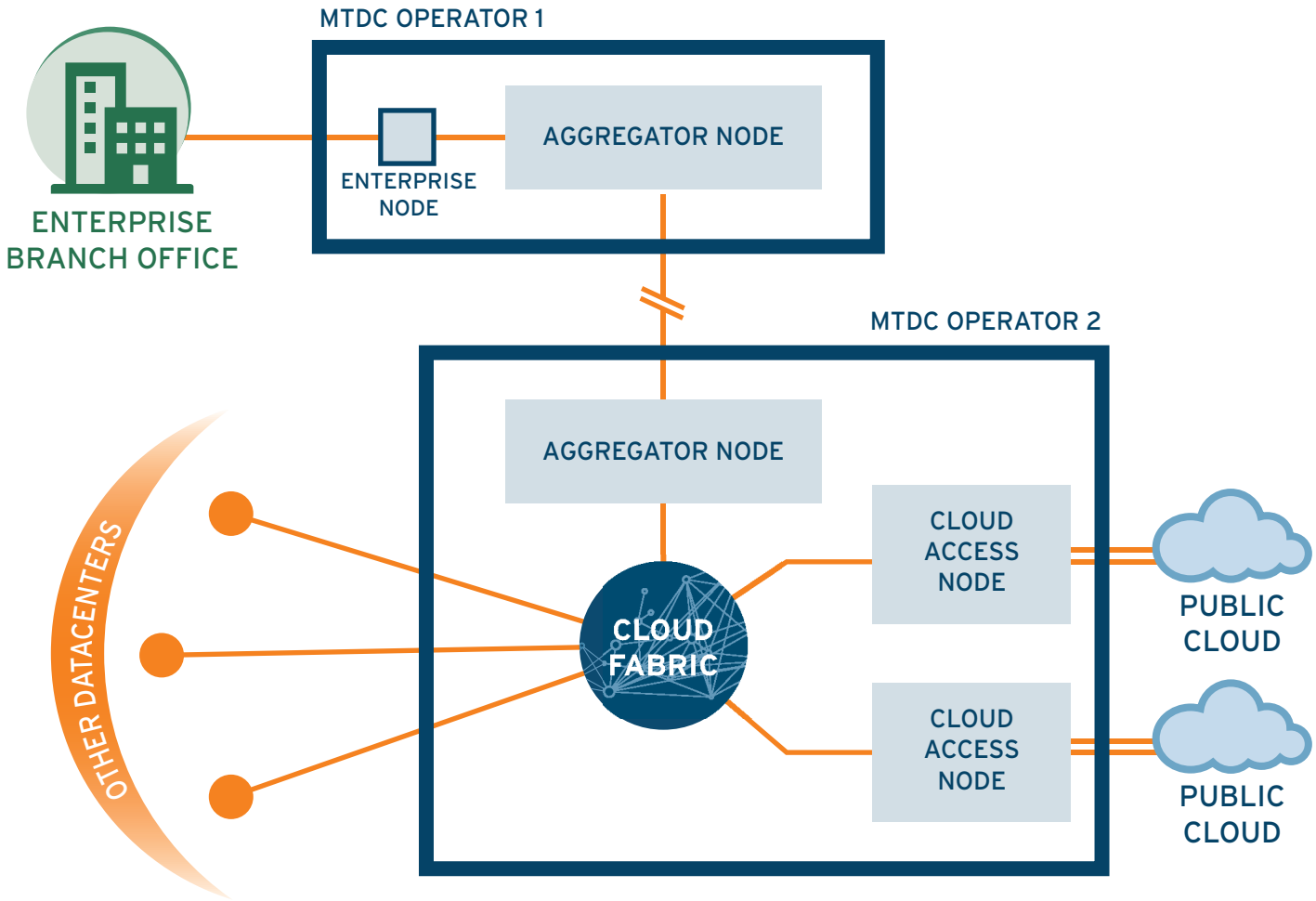
Source: 451 Research, 2019

A private line such as an MPLS connection could connect the enterprise's branch offices and headquarters to the MTDC. The enterprise could also use internet access to reach the MTDC, but this would defeat the goal of keeping traffic off the internet.

4. THROUGH A PARTNER COLOCATION PROVIDER

Figure 5: Tethering to a Cloud Fabric Via Another Datacenter Provider

Source: 451 Research, 2019



Providers such as Megaport, Epsilon and PacketFabric offer another route to the cloud: Much like the telco in Figure 3, they can act as a conduit to a provider that hosts a cloud on-ramp. This option is useful for remote offices that aren't within reach of an on-ramp, especially if the office does not need connectivity to a multitude of clouds. For example, Megaport could place a node inside the Equinix facility – paying Equinix accordingly – and would then offer the enterprise a connection all the way into the cloud. With SDN, these connections can be provisioned quickly, on a self-service basis.

Those are the 'mainstream' examples. We offer a few more possibilities that might be applicable in extraordinary cases or might appeal to specialized enterprises.

Questions an Enterprise Should Ask

Networking tends to be one of the last decisions an enterprise makes when it comes to any IT project. Anecdotally, that trend is playing out in cloud and multi-cloud deployments, where an enterprise can end up with many ad hoc projects that could stand to be consolidated. Here, we list some of the interconnection questions facing enterprises as they build a multi-cloud ecosystem.

- **Is there a strong internal IT team to drive this?** If not, a large enterprise can turn to an IT giant such as IBM or Accenture. But mid-sized and smaller enterprises might find it more difficult to find help, because the multi-cloud will be a custom job every time. Vendors could fill the gap, but for a mid-sized enterprise, a systems integrator may be more appropriate. Another alternative is to stick with a trusted telco or network service provider. If the enterprise is already paying a provider for MPLS, for instance, it could make sense for that provider to take the lead with the enterprise's cloud connectivity.

- **Is the internet good enough for cloud access?** While public clouds are happy to enlist new direct-connection customers, they also don't want to limit access. The internet is important to them, the same way that foot traffic is important to retail stores, and for many enterprise use cases, plain internet access or an SD-WAN setup is good enough.

- **Is access to multiple public clouds really needed?** If an enterprise doesn't need many cloud connections, the closest and most economical colocation provider seems like an appropriate choice, maybe combined with a network aggregator if necessary. Larger deployments involving multiple public clouds or a private cloud (colocated or not) are where the more complex interconnection scenarios arise.

- **How many outside parties are expected to be connected to?** This is where an MTDC could be a serious consideration, because these datacenters try to attract clouds and SaaS providers. A well-populated facility could serve as the hub for an enterprise's connectivity needs.

- **How much bandwidth is really needed?** If a dedicated 10Gbps connection into the cloud is called for, then it's probably best to get the cloud provider or a telco involved. If bandwidth is going to be sporadic and unpredictable (but not in the gigabits per second), it's important to find a dynamic, pay-as-you-go pricing model.

- **How complex are networking requirements?** Some enterprises pack a lot of Layer 2 or even Layer 3 expertise and will want to build an architecture more complex than hub-and-spoke. The MTDC players are game to tackle this, but service providers also have a lot of expertise for creating more mesh-shaped networks.

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Hybrid connectivity, when, where and how you need it

Cyxtera's interconnection services are designed to link enterprise IT environments within the data center, across town, and around the world. Whether it is a cross connect to a service provider within the facility, a metro area link to another data center, or Internet bandwidth, Cyxtera has the connectivity solutions enterprises depend on to keep their data flowing.

There has never been a better time to rely on Cyxtera data centers to host your critical workloads.

Explore how Cyxtera's "speed of cloud" power and provisioning can help make colocation the innovation hub of your hybrid IT strategy by visiting www.cyxtera.com/CXD.

On-demand interconnection

Cyxtera's interconnection products are designed to be efficient and allow connections to be deployed quickly and securely. With CXD, Cyxtera's On-demand Colocation platform, enterprises can procure, configure and deploy data center interconnection and dedicated infrastructure in minutes, not weeks or months. The combination of CXD's software-programmable network fabric and on-demand provisioning makes connectivity within and across data centers faster than ever possible with traditional colocation. Patch cords and cable crimpers are replaced with APIs and the CXD Command Center web console. Administrators, IT management tools, and even applications themselves, can use CXD to dynamically configure network connectivity and bandwidth.

There has never been a better time to fortify your hybrid IT with Cyxtera on-demand colocation and interconnection services. Learn more at www.cyxtera.com/data-center-services/Interconnection.

Cyxtera Benefits

MORE DIVERSITY
Freedom to choose the path you want to the cloud you need

LESS COMPLEXITY
Point, click, provision on-demand connections

GREATER FLEXIBILITY
No long-term commitment, pay-as-you-go terms

About Cyxtera

Cyxtera Technologies combines a worldwide footprint of 50+ best-in-class data centers with a portfolio of modern, cloud- and hybrid-ready security and analytics offerings – providing more than 3,500 enterprises, government agencies and service providers an integrated, secure and cyber-resilient infrastructure platform for critical applications and systems. For more information about Cyxtera visit www.cyxtera.com

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