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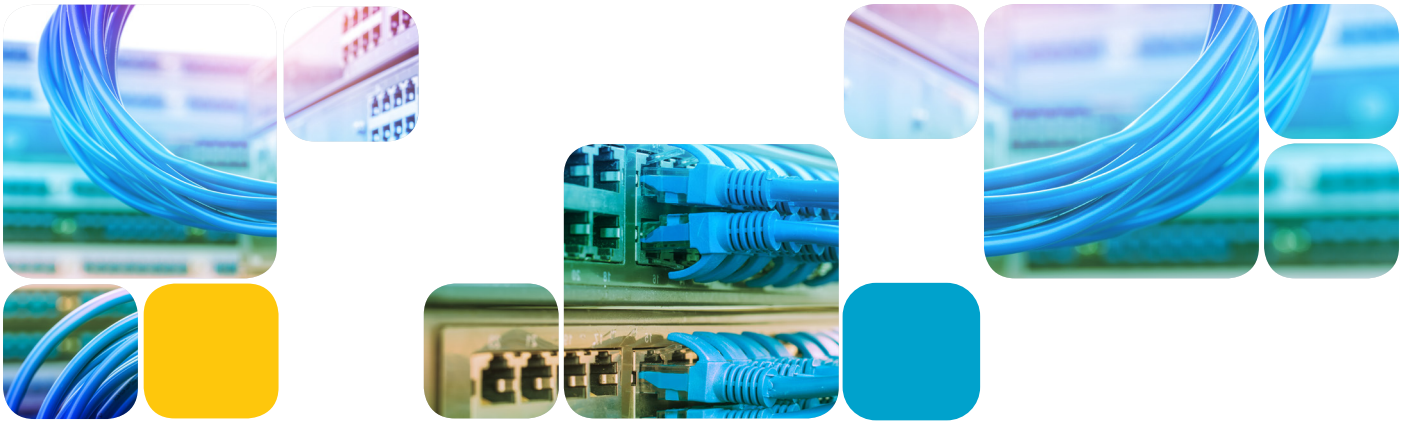
Retooling Your Data Center Strategy for the Digital Economy

Carrier-neutral Providers Herald An Era of Seamless Global Data Platform

In this issue



The Next Phase In Data Center Evolution

Internal data centers are not going away any time soon. However, if you want to shift your business towards a more data-centric, value-creation model that embraces the booming digital economy, then you need a data center strategy that includes enhanced colocation services, multi-cloud environments, and edge data centers.

In a recent report by Gartner titled 'Infrastructure is Everywhere: The Evolution of Data Centers', the analyst firm states that "I&O leaders responsible for data center infrastructure should: ...Grow a distributed infrastructure by building an ecosystem of partners".[1] In this article, we look at how that will happen.

Trends To Watch

As many of us are already aware, digital transformation is happening rapidly across the globe, but there is still likely to be another decade of data center, cloud, and Edge growth to come. And according to Gartner, "...the worldwide public cloud services market is forecast to grow 17% in 2020 to total $266.4 billion, up from $227.8 billion in 2019".[2] We believe that this unprecedented growth is being driven by a number of new trends.

One key trend identified by Gartner is distributed cloud, which is among their Top 10 Strategic Technology Trends for 2020.[3] This refers to the distribution of public cloud services to locations outside a cloud provider's physical data centers, but which are still controlled by that provider. What this means for businesses is that data centers can be located anywhere, which will increase corresponding colocation services, solving technical issues like latency and regulatory challenges such as sovereignty. Distributed cloud offers the benefits of a public cloud service alongside those of a private, local cloud.

Another emerging area that business leaders should pay attention to is empowered edge, which looks at how connected devices, such as those for the IoT, are expanding to form the foundations for smart spaces. Empowered edge also moves key applications and services closer to the people who use them and the devices that rely on them.

[1] Gartner Inc., Infrastructure Is Everywhere: The Evolution of Data Centers, 18 July 2019, G00384194
[2] Gartner Inc., Gartner Press Release, https://www.gartner.com/en/newsroom/press-releases/2019-11-13-gartner-forecasts-worldwide-public-cloud-revenue-to-grow-17-percent-in-2020, 13 November, 2019
[3] Gartner Inc., Gartner Press Release, https://www.gartner.com/en/newsroom/press-releases/2019-10-21-gartner-identifies-the-top-10-strategic-technology-trends-for-2020, 21 October, 2019

By 2023, there could be more than 20 times as many smart devices at the edge of the network as in conventional IT roles. The challenge for companies is to ensure they have adequate colocation services in their key markets for customers and partners to run distributed IT workloads close to the edge of the network.

Choose An Enabler Of Global Reach

While colocation and cloud partner ecosystems are essential to the success of future infrastructures, there is a striking disparity in the availability of options: geographic coverage, scalability, guaranteed uptime, tier rating, security levels, compliance expertise, interconnectivity and supporting services all vary.

In fact, as the Gartner report points out, "The primary role of I&O in this fast-paced, cloud-dominated world is to provide the infrastructure services that enable and support the agility application developers offer to the business, as quickly and seamlessly as possible, wherever that customer base resides".[4] This also means that colocation service providers must have local and global expertise.

China Telecom Global (CTG), is a perfect example of how a leading integrated telecommunication services provider can fit this evolving demand.

The company has a presence in 42 countries and regions around the world, either in the form of branches or subsidiaries. Across Asia Pacific, Europe, the Middle East and the Americas, it has established 200 PoPs and 20 carrier-neutral internet data centers (IDCs). These facilities are fully compatible with all major overseas cloud platforms, including AWS, Azure and Aliyun.

Closer to home, CTG recently galvanized its position as a leading information hub in Asia Pacific by opening two market-leading, carrier-neutral data centers with Global Switch and Daily-Tech; one in Tseung Kwan O, Hong Kong, and another at Woodlands, Singapore. Both are Tier III+. In Europe, the Frankfurt North Data Center in Germany is the latest milestone in the partnership between these three global industry leaders. CTG will also launch data center services in San Jose, the U.S., in 2020 to cater to customer demand for global coverage.

In China alone, China Telecom owns more than 550 IDCs, which helps the domestic clients speed up their plans for global expansion and realize revenue opportunities. And thanks to its global partnership system, alongside aforementioned quality service providers, the integrated telecommunication services provider is now able to offer its services on the global stage.

The Gartner report also stresses, "Rather than data centers, we are moving toward centers of data, placed and optimized to provide the most business value" and "Global reach is enabled today, but deciding how that global reach is attained (for example, via MPLS, private networks or public internet) will be a critical component in both near- and long-term plans".[5] In fact, in a distributed infrastructure, IDCs aren't standalone facilities. They

[4,5] Gartner Inc., Infrastructure Is Everywhere: The Evolution of Data Centers, 18 July 2019, G00384194

must be interconnected by a resilient, enterprise-grade data network. This enables enterprises of all sizes to explore new opportunities in other locations.

For China Telecom, this has resulted in key investments: 41 submarine cables that provide more than 55 terabits of international connectivity, plus interconnections with hundreds of leading internet operators. The company leverages its software-defined wide area network for quicker delivery, minimal configuration and centralized control, but it also offers a plethora of network connectivity options to cater to the needs of businesses. These include low-latency private lines, OTN, MPLS-VPN, and high-speed internet access.

The Gartner report shows, "When we combine cross-connects on-premises (for example, between partners) and interconnections outbound to other service providers, the results are a more agile, dynamic infrastructure that can be adapted to rapidly as business requirements change".[6] We believe that this is a benefit that CTG can bring to clients with its investments, network resources and services.

Choose A Proven Partner For Your Evolving Infrastructure

CTG has long taken a global view when it comes to meeting market demand. The company serves multinational corporations, including 40% of Fortune Global 500-listed firms, plus leaders across high-growth industries like finance, internet and media, retail, manufacturing, logistics, energy, and resourcing. As such, the company is committed to maintaining excellence through achieving ISO certifications, including ISO 27001:2013 Information Security Management System, ISO 20000:2011 IT Service Management System and ISO 9001:2015 Quality Management System.

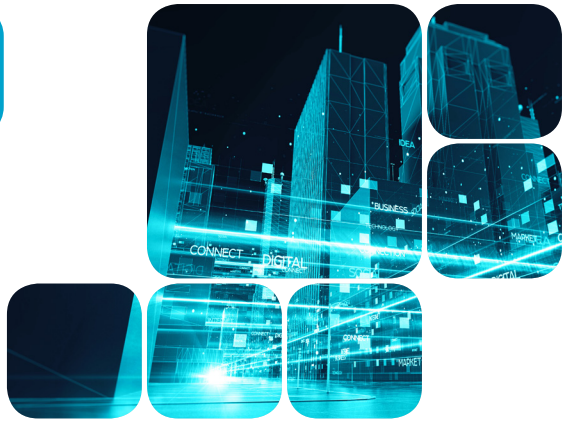
It also adopts robust security measures that adhere to the industry's best practices, including disaster recovery and a Business Continuity Plan (BCP), so that its customers' data assets are safe and highly secure. In Hong Kong, all CTG's IDCs are Payment Card Industry Data Security Standard (PCI DSS) certified.

The integrated telecommunication services provider also strives to achieve energy efficiency through the establishment of green operational policies and guidelines to minimize the environmental impact of its data center operations.

Robust IDC Ecosystem You Need

For businesses looking to enhance their data center strategies, CTG could be the answer. It collaborates closely with various parties to provide customers with a world-class, one-stop global network, as well as data centers and cloud computing

[6] Gartner Inc., Infrastructure Is Everywhere: The Evolution of Data Centers, 18 July 2019, G00384194



services that can fully support the speedy development of the digital economy. Furthermore, the company's elite partner ecosystem, which includes its valuable partnership with Global Switch and Daily·Tech, will continue to empower clients with customized solutions and professional services.

The high level of compatibility and easy integration of network and public cloud services gives clients the flexibility to choose the right cloud platform for their workloads, where and when they need it. At the same time, by integrating worldwide resources to enhance seamless connectivity between China and the rest of the world, CTG is able to contribute to the Belt and Road Initiative and accomplish its strategic vision.

The company will continue strengthening close partnerships with leaders in various industries, helping its client deliver value over the world and embrace the connected economy for a better tomorrow.

A Global Future For Digital

By integrating world-class IDCs with a suite of network connectivity, cloud, and ICT services, CTG is a one-stop shop for diversified, unparalleled communication services that help businesses thrive in China and the global market.

Businesses everywhere can finally look forward to a truly global future in the digital space.

Source: China Telecom Global

Research from Gartner:

Infrastructure Is Everywhere: The Evolution of Data Centers

The role of I&O in the future will be to manage the global infrastructure and its associated services, moving away from only hardware and software. The end result will be an environment focused on enabling the rapid deployment of business services and deploying workloads to the right locations.

Key Findings

- Due to integration and connectivity, colocation and/or cloud partner ecosystems will be critical for future infrastructures.
- All workloads are not equal, and proper placement is key to unlocking their true potential to the business.
- Infrastructures are dynamic and must be able to change quickly, as markets and providers change.
- Edge and IoT deployments are stretching infrastructures, shifting priorities and adding complexity.

Recommendations

I&O leaders responsible for data center infrastructure should:

- Plan infrastructure delivery at the application level by doing a top-down analysis of the business requirements of given workloads.
- Grow a distributed infrastructure by building an ecosystem of partners.
- Develop a hybrid skill set by creating a broker role within I&O.

Strategic Planning Assumption

By 2022, 60% of enterprise IT infrastructures will focus on centers of data, rather than traditional data centers.

Analysis

The IT we have known is changing forever. Infrastructures of the future will not be architected based on existing topologies, rather they will be deployed on a global scale, driven by business requirements and unspecific IT vendors. The end result will be an environment that is focused on enabling the rapid deployment of business services (by the business) and deploying workloads to the right locations, for the right reasons, at the right price. The drivers of this change will not be technology in many cases, but business, markets and customer requirements.

Data center and IT planners are struggling with conflicting priorities — keeping the systems running to support the business, while embracing emerging trends to enable the business and provide a faster, more

agile set of services. Often, the most confusing aspect of this situation is understanding what the "trend" is and which of the myriad variations are appropriate for an enterprise or business unit (BU) to adopt. In some cases, consolidation makes sense, while in others public cloud may be appropriate, and in some edge computing might be the perfect solution.

In a perfect world, at least from the perspective of many business leaders, the function of IT would essentially be a very agile provider of service outcomes, rather than the owner of the physical infrastructure. In this world, "infrastructure" as we know it becomes relevant only as a support vehicle, rather than the control point for what services get delivered. In essence, we need to create an environment where the role of IT is to deliver the right service, at the right pace, from the right provider, at the right price. IT becomes a broker and manager of services. The data center, as the hub of all things critical, becomes just another, albeit capital-intense, delivery vehicle for some services.

Deciding to embrace this digital model is easy, but implementation is not, especially given the entrenched levels of technology ownership many IT practitioners have today. Expectations from the business are changing dramatically where the function of I&O is no longer just as a support organization, but also as an enabler of change. New infrastructures must be designed to allow the business to do what it needs to do, when it needs to do it, anywhere in the world. This brings into play customer experience and low-latency delivery, compliance and regulatory issues, the GDPR and data residency issues, as well as operational resiliency and efficiency.

There are no compromises here — moving toward an enabling digital future does not negate IT's traditional role of protecting the business, rather it changes the focus away from maintaining the old to embracing the new. The data center as you know it is dead, but IT Infrastructure will be everywhere. And here is how it's evolving.

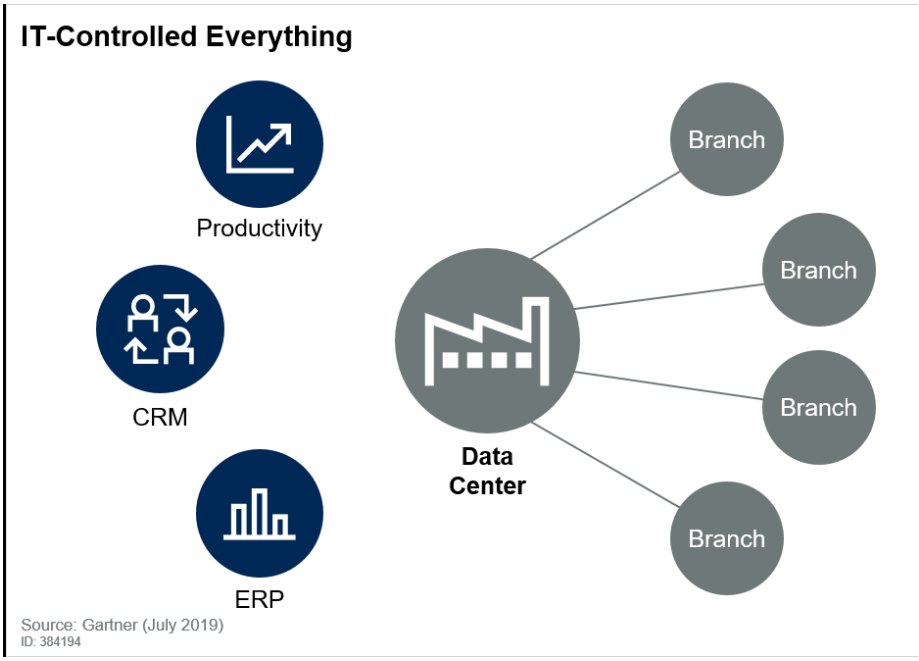
How Did We Get Here?

When IT first became the great business problem solver, it was like a secret society. Business units wanted more of it, but implementation was done in the background by technicians. Because of that, organizations used to control everything (see Figure 1) and deployed IT functionality based on architectural principles and using what they perceived as a controlled, logical process. "Protect the business" was the primary rule, and changes that might impact business operations were strictly controlled and timed. Over time, this level of control (and change management) became the Achilles heel of many IT organizations, as businesses started to demand much faster access to new technologies and services.

Hence, IT requirements have evolved, and IT leaders are dealing with competing objectives:

- To keep the lights on, running mission-critical applications while protecting the business from outages, and

Figure 1. IT-Controlled Everything



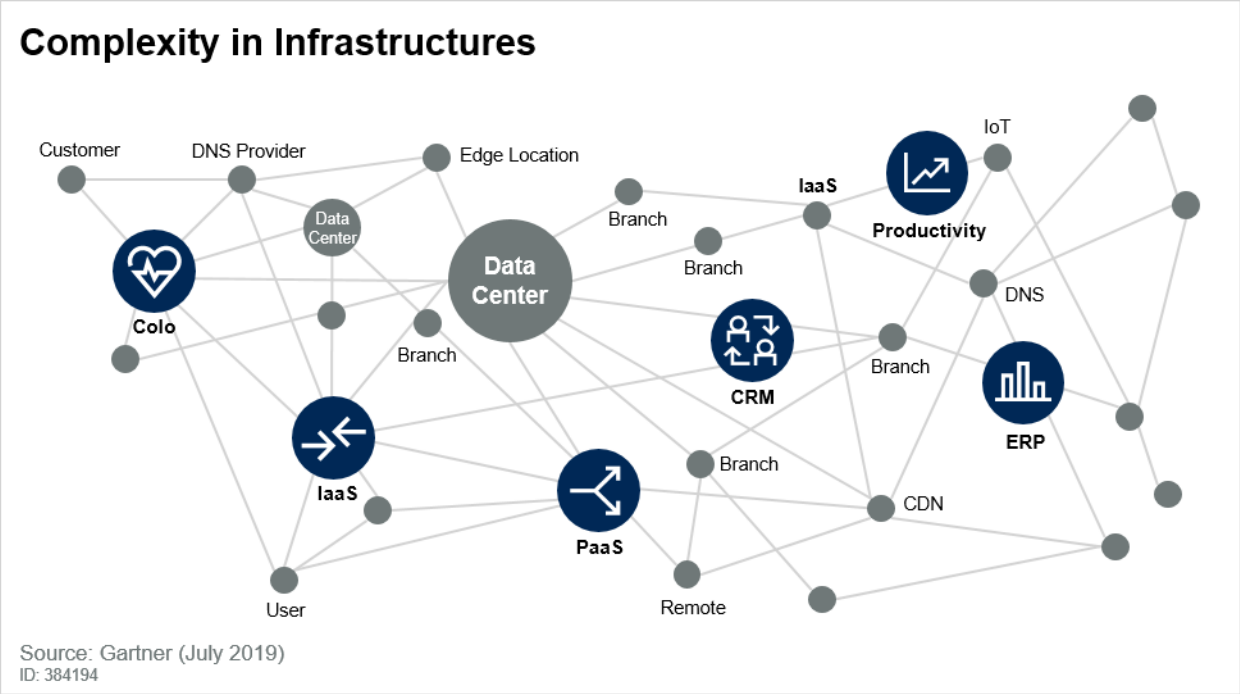
- To enable the business to react to market changes quickly and adopt new technologies or services when they need them (not necessarily when IT is ready).

The "protect the business" or "do no harm" model is a baseline for most I&O objectives. While "enable the business" was always the goal, having the time to deal with new initiatives, technologies, vendors and processes was not always paramount from IT's point of view.

For business customers, waiting for internal organizations to accept a project, investigate solutions, valuate options and then deploy something was not seen as an enabler, but as a detriment. What happened is that oftentimes the business units would go around IT and find other means to get what they needed more quickly. Maybe it wasn't the perfect solution, but it was the optimal solution for the time, from the business unit's point of view. Figure 2 is an example of the evolution of today's infrastructure — a conglomeration of services, both on-premises and off, some controlled by IT, some deployed by BUs, but all having impact on the enterprise's operations, mobile users and enterprise partners.

What many IT leaders are discovering is that while this newer world may appear more agile to the business, it is in fact more complex and difficult to manage and to change than traditional infrastructures. And as IT and the business continue to add more external services, that network and service complexity will become the greatest inhibitor to success. In a "do no harm" operating model, the greater the complexity the greater the potential for impact if something goes wrong, which equates to longer and longer change cycles. Agility is the first thing to suffer.

Figure 2. Complexity in Infrastructures



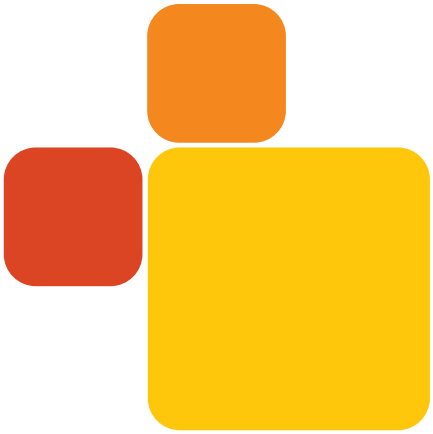
But that's not acceptable to the business. We can't put the genie back in the bottle. Businesses need agility, but they need IT to provide some guidance, governance, security and the ability to reuse. If not, every business service becomes a self-serving one-off implementation, and operating costs and complexity will skyrocket.

What Can I&O Do?

A good deal of the complexity that many IT organizations are dealing with has emerged from the agility trend. In attempting to react faster to business requirements by abdicating or giving authority to business units for deploying external (e.g., cloud) services, projects became stand-alone events where the solution was specific to the project and not necessarily synergistic to an overall infrastructure strategy. What resulted were numerous one-off solutions that worked independently but did not take advantage of economies of scale or standardization. As multiple projects evolved, often via different providers and run by different BUs, the level of network and provider complexity was exacerbated.

This often resulted in an unwieldy environment that became difficult to manage and more difficult to change.

Imposing order on this chaos means recognizing the causes and symptoms of BUs directly contracting external service providers and making attempts to bring value and order to a governance and control problem. Enterprises must determine why these groups have bypassed IT, what they are looking to solve and how IT can establish itself as a credible broker and provider of such services. This starts with building a comprehensive but adaptable cloud strategy and bringing these many one-off projects into a portfolio of critical business applications. At this point, manual processes, automation and partnerships with externally provided and managed networking and security



services can begin to stitch these disparate pieces into a manageable whole.

For those that are using or considering colocation, exploiting the interconnection services the provider has available, or is developing, might be a viable option. Data center interconnection is a model in which discrete assets within a multitenant data center are connected to each other directly (usually over fiber) and in a peer-to-peer fashion. These connections may be as simple as fiber-optic cross-connects but allow data-center-based assets to horizontally connect to multiple carriers, cloud providers, peers and service providers. When we combine cross-connects on-premises (for example, between partners) and interconnections outbound to other service providers, the results are a more agile, dynamic infrastructure that can be adapted to rapidly as business requirements change.

The bottom line is that these infrastructures can provide agility, potentially save money and drive efficiency. The primary role of I&O in this fast-paced, cloud-dominated world is to provide the infrastructure services that enable and support the agility application developers offer to the business, as quickly and seamlessly as possible, wherever that customer base resides. Essentially, I&O needs to develop a toolbox of choices that enable the rapid development and deployment of services, but at the same time set the guiderails for the infrastructure delivery model.

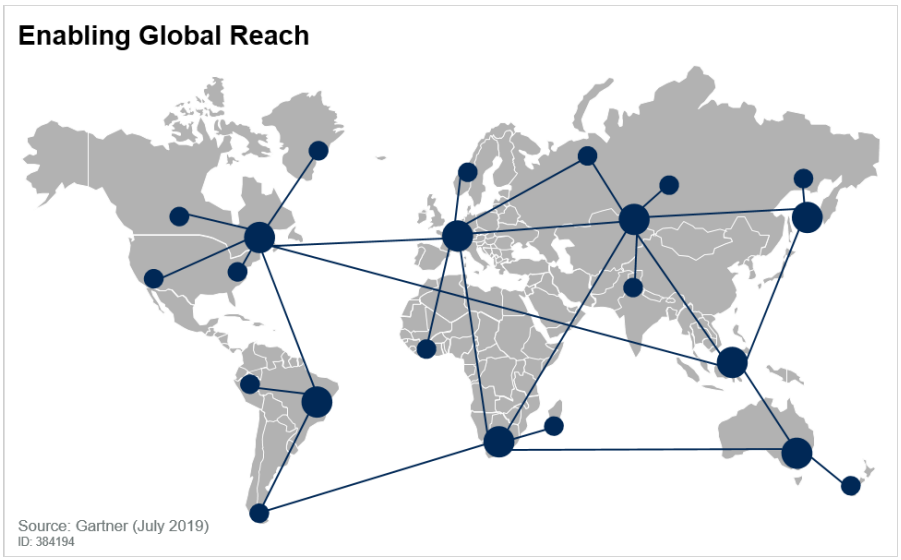
Enabling Global Reach

Over the past few years there has been a shift in focus, from an infrastructure design point of view. Historically, IT focused on the consolidation of services as much as possible to reduce operational costs and complexity. The focus was primarily on infrastructure hardware and software and delivering the greatest ROI from that infrastructure. What has changed now is a renewed look at the value that IT brings to the business (see Figure 3).

Rather than looking at IT infrastructure as something that needs to be optimized to reduce operating costs, IT architects, CTOs and CIOs are reversing their viewpoints and looking at infrastructure as the vehicle to solve business problems. Issues like customer experience management, data sovereignty, evolving partner ecosystems, geographic or site-specific workloads, the IoT, and edge computing can all be addressed through a comprehensive infrastructure delivery strategy. This puts workloads and data where they make the most sense for the business. Rather than data centers, we are moving toward centers of data, placed and optimized to provide the most business value. This also expands the role and responsibilities of central IT to one of a business enabler, rather than a purveyor of equipment and software.

Global reach is enabled today, but deciding how that global reach is attained (for example, via MPLS, private networks or public internet) will be a critical

Figure 3. Enabling Global Reach



component in both near- and long-term plans. Those who choose to do it themselves need to focus on network overlays, orchestration, automation and monitoring as the key enablers to their success. The result is a much more distributed and externalized world than we are used to. We must ensure that the underlay (transport) layer is properly designed for these new traffic flows. When the underlay is in place, the overlay can enable a much more agile and secure policy-based application control. As we externalize these network functions, security must become embedded in the design thinking.

Gartner Research Note G00384194, David Cappuccio, 18 July 2019

About China Telecom Global Limited

China Telecommunications Corporation (“China Telecom”), one of the world’s largest providers of integrated telecommunication services, continuously strives to enhance its capabilities in managing global operation to keep pace with changing times.

In 2000, China Telecom established its first overseas office as it sought to grow its international business. Since then, China Telecom has expanded its international footprint rapidly with the establishment of branches and representative offices in Asia Pacific, Europe, Africa and Middle East. In order to better serve the demands of integrated international telecommunication services, whilst enhancing its global service quality and accelerating overseas business expansion, China Telecom integrated its international business and human resources to establish China Telecom Global Limited (“CTG”) in 2012, which is headquartered in Hong Kong.

Today, China Telecom has branches and affiliates in 42 countries and regions, as well as 200 overseas PoPs, and more than 55.4T in international connectivity bandwidth and intercontinental capacity. By tapping into its network resources of 41 submarine cables (China Telecom was involved in the construction of more than 10 of those cables) and leveraging direct connection to more than 10 neighbouring countries and regions via terrestrial cables, China Telecom has forged its global service with vast network capacity.

With abundant resources in mainland China, CTG connects the Asia Pacific region and the world, and has fast become a world-class integrated information service provider. Supporting international carriers, multinational corporations and overseas Chinese clients, CTG provides customised and cost-effective integrated communication solutions and diversified telecom services to cater to their global business needs. Its services include internet direct access, internet transit, data services, broadband, unified communications, internet data centre, cloud computing, ICT services, fixed and mobile voice and value-added services, professional services, industry solutions, telecom operation consultancy and service outsourcing.

Please contact your CTG sales representative for more details.
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