CLOUD ON-RAMPS:
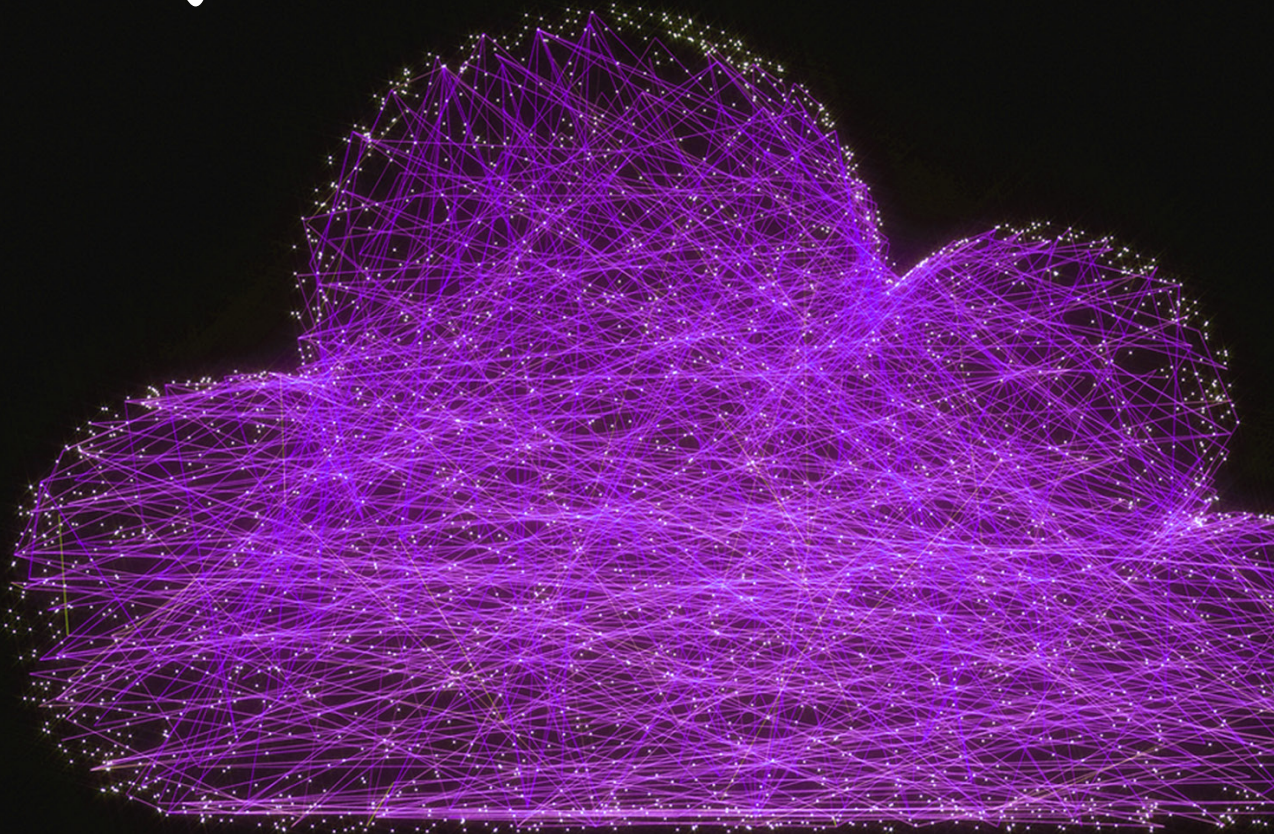# ENDGAME OR QUICK FIX?

THE CLOUD-CENTRIC NETWORK

Already an essential part of enterprise IT, cloud adoption is reaching an inflection point. 95% of large enterprises in North America and Western Europe now use cloud services, and more than 50% describe themselves as "cloud first". 80% of enterprises have adopted a multi-cloud strategy and the average enterprise is already using more than five cloud services. Global enterprises want to connect to major vendors like Amazon Web Services, Microsoft Azure, IBM, Oracle and others, but with always-on availability, globally consistent performance and flexible consumption models.

But building cloud-ready infrastructure is no easy task. One of the most important enablers of any cloud strategy is the underlying network that connects users and offices to their chosen cloud service provider.

Cloud services, by their very nature, are based on a centralized production model - in hyper-scale environments. Therefore, despite ongoing localization, they are very rarely produced where end-users are situated. This means that connectivity to the cloud is extremely business-critical. According to 451 research, network outages, which are responsible for 30% of all incidents, are as common as failures in the cloud and datacenters environments themselves – but easier to prevent.

Also, when factoring in security concerns, cost efficiency and agility, it is no surprise that a recent Gartner survey found more effective WAN architectures to be the top priority for enterprise network managers when addressing the evolving requirements of cloud migration and digitalization.
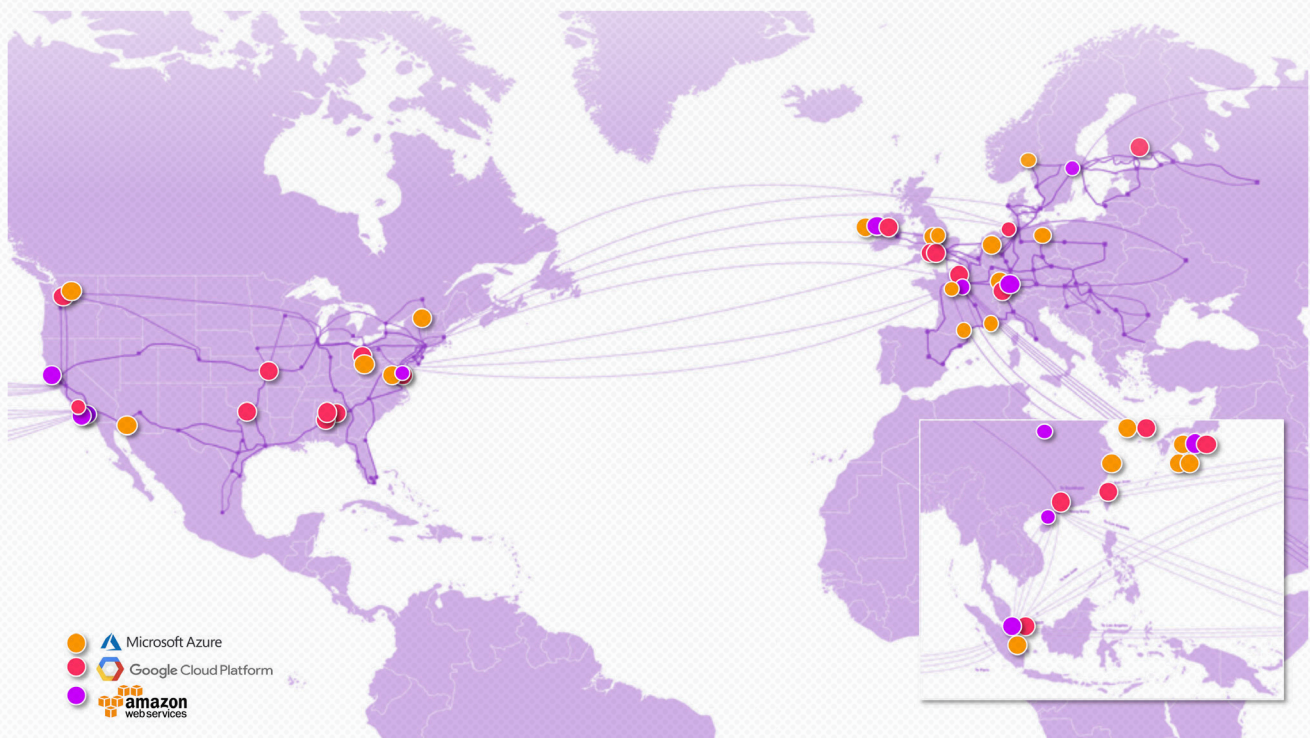

Figure 1. Top 3 cloud provider locations by region.

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CONNECTING TO THE CLOUD

With a wealth of service and supplier options available, in combination with varying levels of quality and resilience between suppliers (across different geographies), many enterprises struggle to decide upon the best way forward.

Is the public Internet the best way to connect? Do they need direct on-ramps? Once this has been established, how should they go about it? Of course, each approach has its own set of advantages and disadvantages.
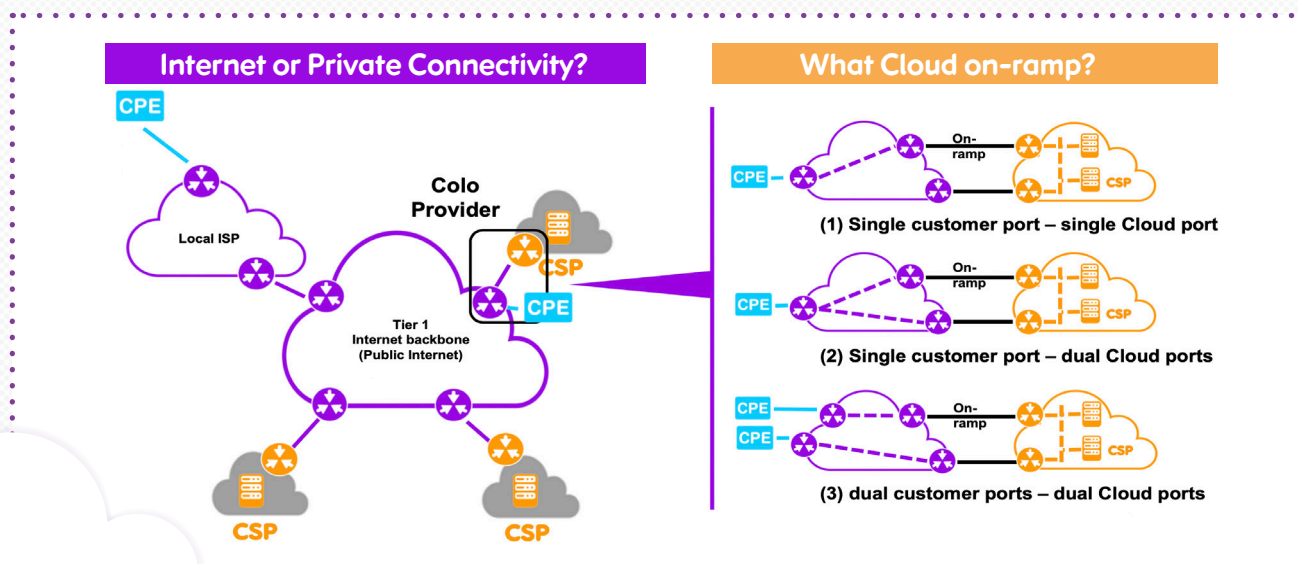

Figure 2. Cloud on-ramps.

OPTIONS FOR NETWORK BUYERS AS THEY REACH INTO THE CLOUD:

1. CONNECTING THROUGH THE PUBLIC INTERNET (WITH OR WITHOUT IPSEC TUNNELLING).

The Internet is an obvious way to connect to most SaaS services and it is also the simplest way to get started with any cloud service. As an option, IPSec tunneling can be used to encrypt traffic. With 80-90% of connections today, the public Internet is by far the most common way to access the cloud. However, this percentage is expected to decrease to around 50% during 2023. The public Internet is, by its very nature, a best-effort service - especially over long distances. This means that reliability, latency and speeds have a natural tendency to vary along the way. End-user experience may also suffer from performance degradation during peak hours. For industries with strong compliance and information security demands, security concerns don't end with encryption; keeping traffic separated from the public Internet may also be a strict requirement. Finally, all traffic leaving the cloud towards the

Internet carries a cost (often many times higher than that of the direct connect solutions described below), with added charges for any VPN virtual gateways used to send encrypted traffic. These costs can grow significantly as cloud usage scales.

2. A DEDICATED CLOUD ON-RAMP.

To address the shortcomings of the public Internet, the Top 5 cloud providers have established direct connectivity programs, also known as Direct Connect (AWS), Express Route (Microsoft), Dedicated Interconnect (Google), Direct Link and Fast Connect. These products allow enterprises to establish private connectivity between their cloud regions of choice and own network infrastructure. In many cases, this can reduce network cost, increase bandwidth throughput, and provide a more consistent network experience than Internet-based connections. Generally, this involves a cross-connect between a router in a colocation facility and the meet-me room of the cloud service provider. Once live, virtual interfaces are swiftly configured via the management console. However, this requires enterprises to be physically present in designated colocation facilities, and these products cater mostly to higher bandwidth use cases (from 1Gbps to 10Gbps).

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3. VIRTUAL CROSS-CONNECTS FROM A COLOCATION PROVIDER.

Similar to the direct approach, this option connects enterprises to cloud providers using a cross-connect, albeit a virtual one. Using a single physical port at a colocation facility, multiple virtual circuits can be provisioned to different cloud providers. Whilst shortening provisioning times, this option requires colocation in specific facilities, which may incur additional, unwanted cost. And for multinational enterprises, this tends to mean managing multiple colocation providers in several regions, adding additional administrative overhead. Importantly, using a service provider whose core business is not transport, telco-grade attention to network design, service assurance and customer support may be insufficient.

4. USING A CONNECTIVITY PARTNER TO LINK A WAN WITH THE CLOUD.

With this option, enterprises connect directly into the cloud with traditional services such as point-to-point Ethernet or any-to-any IP-VPN services. Most enterprises choose to work with a connectivity partner for maximum resiliency, performance, simplicity and cost effizency.

- **They need a connection** from existing offices, or colocation environments where they are present, and support to design a resilient solution for their global end-users

- **They require pay-as-you-grow** solutions (most grow in small increments of 50-100 Mb/s, well below the Gb/s level).

- **They want to avoid incurring** the additional costs of colocation and cross-connect charges - particularly as they make changes to their cloud provider ecosystem.

- **They want to remove** complexity and keep up with their chosen cloud providers as connectivity options and products evolve. Routing and firewall issues in particular, where traditional practices interfere with cloud service provider preferences, are a frequent and growing source of pain.

However, many enterprises are also wary of the global WAN providers of the past and fear high prices, contract lock-in and painstakingly slow responses to any service changes. But there are other options. Some global connectivity partners offer an experience that is much more in line with current expectations. Therefore, enterprises should engage with service providers that can provide them with both flexibility and trust, combining flexible services and commercials - with a robust network and experienced support staff. In working with the right connectivity partner, it is possible to cater for different transport models, but with fewer providers to manage.

Figure 3: Scale, footprint and complexity - evaluating cloud connectivity options.

	Cloud provider direct	Colocation provider	Connectivity partner
Low upfront cost			
Scalability			
Geographic coverage			
Scope of solution			
End-to-end support			
	When at Scale	When aligned (footprint, capabilities)	When simplicity rules

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DEFINING A CLOUD CONNECTIVITY STRATEGY

In short, there is no 'one-size-fits-all' solution for enterprises as they connect to the cloud. For most, it's a combination of high-quality Internet connectivity (especially when it comes to SaaS and workplace applications like Office 365) and dedicated on-ramps from a connectivity partner (when accessing PaaS/IaaS, and handling datacenter-type traffic associated with migrations, bulk data transfers, back-up and so forth). There are however, some general recommendations for deciding upon a strategic approach and selecting connectivity partner(s):

MAP OUT YOUR JOURNEY TO THE CLOUD.

Determine how your cloud strategy impacts your own particular network infrastructure and the workloads running in your current environment. Which cloud services will be used, for what, by whom and where? Analyze the requirements and use cases for each of your desired cloud services and determine your reliability, scalability and security/compliance requirements. Consult a connectivity program expert at each cloud service provider to find out how services differ. Office 365, for example, has a very different set-up to Azure.

LOOK CAREFULLY AT GLOBAL AVAILABILITY AND PERFORMANCE.

Few service providers offer ubiquitous coverage and ecosystem breadth tends to vary significantly, as does service availability and network redundancy. Find out which providers are strongest in your target geographies. Also, consider the need to interconnect your clouds, datacenter and hubs – are there opportunities to use a single provider? Can they to extend the cloud to your own premises?

SECURE ON-DEMAND SCALABILITY AND FLEXIBLE COMMERCIAL TERMS.

The ideal partner will offer multiple connectivity options; Internet, MPLS, VPLS over the same port, or even wavelengths for really high-bandwidth applications - with fast provisioning times. You should also consider a partner who offers a commercial model that matches the flexibility of the cloud itself. This will allow you to add or remove cloud providers and regions, or modify your bandwidth requirements without overcommitting.

SECURE AN EFFORTLESS EXPERIENCE BEYOND THE FIRST CONNECTION.

Beyond fast set-up, self-service and APIs that make the initial connection simple, you also need real experts at hand when the unexpected happens. Enterprise network teams need time to focus on application performance, not connectivity issues. After all, with millions of dollars invested in creating the perfect multi-cloud solution, connectivity should be the least of your worries.

Discover more about Cloud Connect:

https://www.teliacarrier.com

ABOUT TELIA CARRIER

Telia Carrier solves global connectivity challenges for multinational enterprises whose business rely on their digital infrastructure. On top of the worlds #1-ranked IP backbone and a unique ecosystem of cloud and network service providers, we provide an award-winning customer experience to customers in 120 countries world-wide. Our global Internet services connects to 700+ cloud, security and content providers with low latency. For further resiliency, our private Cloud Connect service connects directly to Amazon Web Services, Microsoft Azure, Google Cloud, IBM Cloud and Oracle cloud across North America, Europe and Asia.

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