



T E C H N O L O G Y S P O T L I G H T

Bridge the Gap Before You Take a Global Leap: Fitting Local Connectivity in Your End-to-End Network

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Despite the economic woes of the last two years, globalization is continuing at a rapid rate and multinational corporations (MNCs) are seeking to expand into developing nations to secure their long-term business futures. As a result, the ability for a business to extend its information and communication technology (ICT) systems into these countries becomes a crucial enabler to its business success. This places an emphasis on the ICT partnering strategies of organizations and, in particular, their service provider's partnering strategies to offer seamless communications across the entire organization. This paper examines the importance of network-to-network interface (NNI) as a means of extending service provider core network capabilities, while maintaining the highest service levels to expanding businesses through conscientious partner selection, sharp inter-networking processes and complementary technical capabilities.

Centralized ICT Architectures – The Importance of the Network

Recent advances in server and high-bandwidth carriage technologies such as virtualization and application-based networking have re-enabled the centrally distributed ICT service delivery model. A centralized ICT delivery model is an architecture where applications reside in a central location (i.e. datacenter) and are accessed by end users over the wide area network (WAN). Initially adopted by large multinational organizations with replicated IT infrastructure in each region to provide core business applications such as customer relationship management (CRM) or enterprise resource planning (ERP), centralized architectures are now being adopted by the wider enterprise market. This approach has proven to be highly beneficial in terms of the ability to scale, decrease management complexity and, most importantly, present a cost-effective delivery model.

Because businesses are so heavily dependent on their IT systems, application performance is crucial to ensuring productivity and customer satisfaction. When a business is seeking to centralize their application infrastructure, there are implications across the global network, especially in relation to the type of WAN technology, switching and routing capabilities and scalability of the local access services.

As a result, ICT centralization has driven a new level of appreciation for the WAN beyond basic connectivity and acceptable ping times. To ensure end user satisfaction, CIOs and network managers need visibility of how each application is performing in real time and understand how much bandwidth each application consumes over time. This not only allows management to make informed decisions on traffic prioritization but to also make decisions on end user policy. For example, if HTTP traffic experiences significant user load during particular times of the day, which in turn affects the performance of more critical business applications, management can then decide how best to deal with the situation. It is for this reason that multi protocol label switching (MPLS) networks, has

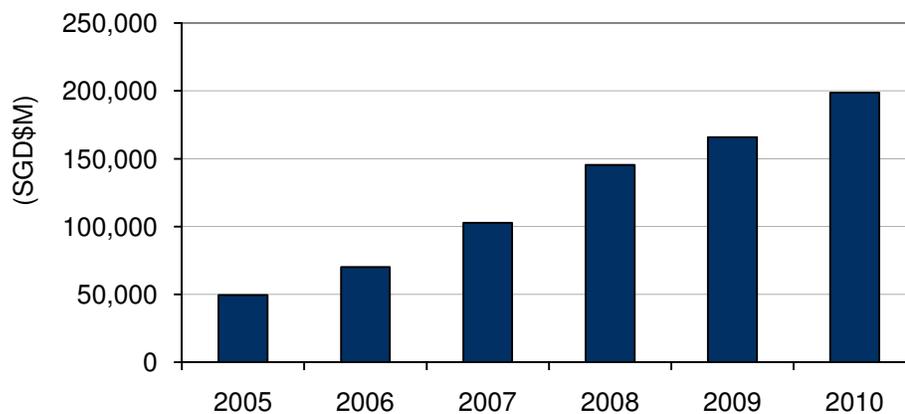


arguably become the preferred networking technology of choice when implementing a centralized ICT architecture.

Figure 1 illustrates the growth of international MPLS IP VPN service revenue in the Asia/Pacific region (excluding Japan) over the last five years, which is indicative of the importance of IP-based WAN solutions. IDC forecasts a compounded annual growth rate (CAGR) of 15% over the next five years as centralized ICT architectures continue to evolve.

FIGURE 1

Asia Pacific (excluding Japan) International IP VPN Revenue



Source: IDC, 2H2009 AP (exJ) Fixed Line Tracker

Optimizing Local Reach and Presence

For as long as international data networks have existed, there have been NNI agreements between service providers in order to provide the local component of an international service. This has been a crucial part of a global service offering as it provided enterprises with local coverage assurance, lower latency for domestic traffic being routed to other in-country sites and of course, convenience without having to source and provision local provider services.

The occurrence of de-regulation in the global telecommunications market and the rise of IP-based networking via multiple access technologies have spurred the growth of many service providers setting up low-cost points of presence (POPs), seeking to cash in on the international data market. Some of which include smaller “tier 3” telecoms providers whose service quality is not up to standard to meet the requirements of today’s centrally driven ICT architectures.

Knowing that the needs and expectations of CIOs are increasing as a result of centralized ICT architectures, there is a renewed push by major service providers to offer their customers a higher level of service across multiple service provider infrastructures, as they strive to assimilate the networks of local telecoms providers as an extension of their own core network. This requires a much higher level of integration capability and not just a simple mapping of IP addresses to send data one way or another based on least-cost routing. Seamless partnership and operation becomes very important as it will dictate the type of service quality for true end-to-end service performance.

This is particularly the case when catering to MNCs that want to expand their businesses into developing countries like Bangladesh and Vietnam, where there are significant regulatory inhibitors for organizations seeking international access.

Considering SingTel's Seamless Local Inter-Network (SLIN) Initiative

SingTel, a service provider within the Asia/Pacific region, has in recent years expanded its MNC service offerings beyond connectivity to include professional and managed services across the ICT landscape. The provider understands that in order to deliver on the needs of expanding MNCs, quality connectivity within the region remains of utmost importance, as reach into rapidly developing nations becomes increasingly in demand. To meet this market demand, SingTel has taken the typical NNI to the next level with their SLIN initiative.

SingTel's SLIN is as much about the process as it is about the result. The provider understands that end-to-end networks can be implemented through inter-connecting with local telecoms providers, but a true end-to-end network experience can only be achieved by tuning processes and being meticulous from the start. This includes forming commercial partnerships with selected strategic partners, aligning technical lexicon, designing collaborative literature and following stringent testing.

SingTel has strict selection criteria for SLIN partners and works only with tier 1 and tier 2 service providers willing to commit to investing sufficient capital and human resource. For example, SingTel SLIN partners must be able to support all relative interfaces and networking protocols, possess technical compatibilities such as class of service (CoS), adhere to latency parameters, provide Ethernet access and are committed to ongoing connectivity testing.

Part of the SingTel SLIN partnership includes the implementation of SingTel Global Delivery Platform (GDP). The GDP was initiated by SingTel as a deliberate collaboration with its SLIN partners, to establish a framework to enhance the overall MPLS IP VPN solution by enabling network performance parameters and even visibility across networks. Examples of such parameters are latency, jitter, and packet delivery ratio.

Via SingTel's GDP, WAN connectivity is no longer a black box. End-to-end network monitoring allows customers to proactively track the health of their global network right down to the domestic cities, even in regulated countries such as China. The service is offered free to SingTel customers as a value-add to their IP VPN experience.

To enhance end-to-end network experience for customers, SingTel has also invested in Web-based reporting tools which customers use for end-to-end monitoring of their WAN. Customers are presented with granular monitoring details from the CE (customer edge) router interface, the local loop, the PE (provider edge) router interface and into SingTel's core network infrastructure. This provides a transparent view of each leg of the network which accords customers a high level of visibility to quickly identify and resolve traffic bottlenecks and service faults.

Customers can choose to configure and set traffic thresholds. When incidents occur that are in violation of these thresholds, an alarm is automatically triggered for immediate resolution by the SingTel network support team. The team is also able to perform proactive checks of network parameters such as connection states (e.g. bit error rate, CRC errors, packet drops and utilization per CoS). Within this are elements of proactive monitoring to ensure the network repairs itself without the need for customer intervention.

Market Challenges

Much of the SingTel SLIN implementation revolves around selecting the right telecoms providers as partners. These must be partners that complement the service provider's infrastructure and connectivity strategies. Equally important is ensuring that these partners stay true to the commitment

over time. This will be especially so for developing nations such as Vietnam and Pakistan as well as tightly regulated markets.

Despite SingTel's SLIN initiative, a key challenge that IDC believes service providers will face is in educating the market on the value or importance of NNIs. This partner chain and the effort to deliver seamless global network solutions require tier 1 or tier 2 partnering in order to be effective, coupled with ongoing financial and human resource investments. Hence, the service will arguably not be the cheapest available (although important). Businesses looking to expand beyond its home country will need to give serious thought to NNIs, and this is where SingTel's SLIN initiative will value add. There will be a strong need to educate the market so as to prove its value.

Expanding Globally and Remaining Well Connected Locally

As centrally distributed ICT architectures drive network importance, enterprises seeking global connectivity will need to start addressing local connectivity in a similar manner to how they address inter-continent connectivity today. CIOs and network engineers will need to obtain a far greater understanding of the local connectivity and the NNI relationships of their service provider as part of the decision-making process.

SingTel's Seamless Local Inter-Network initiative represents a significant step forward in the delivery of global WAN offerings. It accords the same level of detail, planning and attention to the local stretch of a global network, which plays an equally important role in seamless uninterrupted end-to-end networks.

For many years, the lack of granular service visibility across networks has been the bane of many CIOs and network engineers as they struggle to narrow and identify issues in problematic service links. SingTel's SLIN is a welcomed solution, particularly as an enabler of true end-to-end networks – the essence of centrally distributed ICT architectures.

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