Purge Barriers for Competitive Global Businesses

Network as a Services (Naas)
The business Network

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As corporations both large and small focus on global opportunities to expand and maintain their competitive edge, they must first address a complex array of challenges to succeed with minimal risk yet reap optimal results. Beyond coordinating product, human resources and sales, one of the chief strategic obstacles is linking their worldwide remote and regional offices into one cohesive communications network that streamlines rather than complicates their global initiatives.

Traditional methods of providing network infrastructure and support to a worldwide enterprise is fraught with challenges—cost overruns, escalating capital investment, complex international carrier negotiations and coordination as well as delivering the right application performance, compliance, and support that must span great distances through multiple locations without hampering employee productivity.

Tata Communications, using a disruptive and powerful service-based approach, removes these obstacles and allows international businesses to focus on strategy, markets and opportunities rather than technology and continual IT investment and its complexities.
Business Challenges in Deploying a Global Communications Infrastructure
## Initial Equipment, Support and One-Year Maintenance

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Costs</th>
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<tr>
<td>10 GB network Framework (hardware and software) purchases</td>
<td>$7,000.00&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>IT personnel costs for WAN set up and maintenance</td>
<td>$25,000.00&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Network monitoring hardware and software</td>
<td>$4,400.00&lt;sup&gt;3&lt;/sup&gt;</td>
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<tr>
<td>One year, fixed-term 10 GB Ethernet VPN Service contract</td>
<td>$100,000&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>Firewall</td>
<td>$3,000.00&lt;sup&gt;5&lt;/sup&gt;</td>
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<tr>
<td>Vendor support contracts and annual software licensing for above</td>
<td>$4,500.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$43,900.00</strong></td>
</tr>
</tbody>
</table>

Table 1. One-year costs for opening small remote location.

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<sup>1</sup> 48-port CPE 10 GB WAN switch, US dollars, based on average industry MSRP pricing

<sup>2</sup> Based on part-time maintenance and monitoring of system as percentage of all staff hours spent on IT at facility

<sup>3</sup> Cisco Network Monitoring Module and software MSRP

<sup>4</sup> Based on fixed-term, fixed bandwidth contract, estimated industry cost

<sup>5</sup> Estimated market price, Cisco 5510 Adaptive Security Appliance
In recent years, markets and economies have shifted dramatically. As a result, businesses are justifiably wary when faced with investing in new markets or upgrading their existing infrastructures. Now more than ever, facing increasing economic uncertainty, they must carefully evaluate the return on investment for every dollar spent on IT and communications. Even though corporations have seen tremendous productivity and efficiencies through their IT investments, the future looks increasingly risky for further IT development. Therefore, they must now evaluate future IT strategies that give them the most flexibility and agility when pursuing global opportunities. Corporations in today's global market are considering the following:

- Companies have come to realize their business survival rests on global growth through better-targeted markets, products, and services. This approach calls for a cost-effective yet agile infrastructure to quickly address these new opportunities, yet the current buy, build, and maintenance infrastructure model is cumbersome, time-consuming and burdened with costly capital and operating expenses. They lack the agility to capitalize on opportunities quickly in emerging markets and risk losing business to more aggressive competitors. Time-to-market is essential and depends on increasingly sophisticated yet rapidly deployed communication technology.

- On the other side of the equation, corporations with a greater global presence find it difficult to exit markets that may suddenly turn unprofitable. They face the choice of continued losses in not only business revenue in these declining markets, but also the prospect of wasting the IT investments they've made in these unproductive remote locations, branch offices, or production facilities. Either choice—remaining in declining markets hoping for an upturn, or closing facilities presents no cost-saving alternatives.

- Even fast-paced market visionaries find the complexities of international regulations, legal and government compliance and selection of the appropriate network resources for new locations across multiple worldwide locations is not fast enough to accommodate their aggressive strategies. Coordination and seamless integration of their entire worldwide organization becomes too complex as they struggle to set up reliable and cost-effective communications for new locations rapidly. In a rush to new markets, they may over or under invest in their network infrastructure, maintenance and IT management. Cost containment and accountability becomes increasingly difficult to manage or predict.

In summary, for corporations to remain globally competitive they must address the following:

- Enter new markets more quickly while adhering to compliance and regulatory constraints
- Reduce the cost and risk of downsizing new or unproductive facilities and locations
- Integrate their entire global network more cost-effectively with greater visibility, control and accountability
- Improve the ends-user experience and create greater productivity through greater performance
Technology barriers to reaching a wider market

The root enabler of agile, cost-effective global communications for competitive growth is technology. Specifically, it is the manner in which IT vendors and service providers deliver technology today that can create a competitive edge. The network industry has taken great strides in engineering faster, more reliable and higher capacity equipment and applications, yet the way in which businesses must deploy those advances has not changed significantly. As a result, while the latest communications technology does provide a multiplier effect in terms of greater business benefits, the traditional delivery mechanism of that technology poses an almost invisible burden on corporate agility, cost-control and growth. In particular, globally competitive businesses face the following technology barriers when building out and maintaining their communication infrastructure:

Multiple locations, service, and bandwidth requirements

As businesses expand their operations globally, or even into neighboring regions, they must make multiple IT decisions for any new location. How much bandwidth does the facility really need? Bandwidth prices vary significantly from country to country. Because of the prohibitive cost, many companies limit bandwidth in higher-priced localities, reducing employee productivity. What services does the new location require? What premises equipment and which service provider are most cost-effective and reliable?

Depending on the size and location, the business may rely on a local integrator to perform these tasks, or hire in-house IT expertise to get the new facility up and running and deliver continuing support and maintenance. The later solution—hiring on-site personnel—is expensive. For this reason, some businesses fly in corporate IT experts to get new facilities up to standards and then relinquish management to a small staff of on-location employees or a local managed service provider. While in-facility IT for remote locations alleviates many of these problems, it is simply impractical for smaller branch offices. Hiring local managed service providers introduces its own problems, including less accountability and day-to-day control.

Typical start-up costs for small remote office

Provided a company wants to bear the burden of setting up its own WAN connections to remote offices, has the trained personnel to do so and has the expertise to negotiate the appropriate WAN services for the remote site, the startup costs for even a very small office are significant. The estimated initial cost for a 30 to 40 person remote office, for example, excluding WAN bandwidth or VPN service from the service provider is nearly $44,000 US dollars.
Multiple vendor agreements and integration

When building a global network, companies must negotiate multiple service contracts from multiple vendors. Finding the right set of services across multiple locations results in extra integration and widely varying contracts, all of which corporate must manage to contain costs and ensure reliability and consistency across the entire network. Billing from multiple providers and integrators in various currencies adds another layer of management cost and complexity.

Who oversees and verifies charges and payment?

How much effort and time must corporate devote to reconciling multiple billing practices and contracts?

Among the other technical, financial and regulatory issues companies must consider are:

- What services are available in my new target-market region?
- What taxes and regulations are there?
- How do I pay these taxes and ensure our service meets local requirements and regulations?

Coordinated technology upgrades across global locations

Similarly, upgrades to equipment, applications, and services become increasingly complex without investment in on-site personnel to oversee the upgrade operations.

What recourse do companies have if local providers cannot adequately maintain corporate requirements and standards?

What are the costs of swapping out premises equipment as new technology and or new services are required, such as adding voice, video, or higher bandwidth to accommodate a growing remote location?

Inconsistent SLAs and reliability

Multiple vendors require negotiation and management of multiple service level agreements and monitoring of reliability to ensure the company is getting true value from its provider.

How does corporate monitor remote performance to make certain the service provider is delivering on its SLA?

Regardless, not all providers maintain the same, consistent reliability or services and SLAs across multiple countries and/or regions. End users must have the same, consistent service levels to perform their jobs effectively. Only a uniform set of application SLAs can assure companies that the entire system is working up to its needs and expectations.
Inflexible contracts and termination penalties

Most service providers require term contracts that corporate must track and adhere to and are subject to early termination fees if a business downsizes, closes, or substitutes another provider. Moves, adds, and changes are priced at a premium, and the vendor may require new contract extensions and additional fees for every change, reducing a company's ability to respond quickly and cost-effectively to real-time market demands. Particularly for companies with fluctuating seasonal requirements, they must over-provision and over-pay for the bandwidth and services they need to accommodate peak network utilization rather than the actual bandwidth they use.

What are the costs associated with this management, negotiation and above all, the coordination and tracking of all these disparate agreements?

Pitfalls with most single-vendor solutions

To alleviate the management and coordination issues just discussed, may companies rely on a single vendor for premises equipment, installation and service. However, most times this convenience comes at a steep cost in terms of long-term contracts, non-competitive pricing and no guarantee that the provider will deploy service tailored to the specific needs of each location. This one-size-fits-all model is expensive, especially as companies upgrade or add new technology or they close facilities on term contracts.
Hidden costs for remote locations using global providers

Global providers are increasingly aware of the need to become more responsive to their customers by offering packages and plans that address some of the pain points previously discussed. However, even these latest bundled service offerings retain many costly fees, inflexible service and terms, and capital outlays for premises equipment and upgrades. Adding or changing location even through many of these established global providers could be complex and add layers of hidden or unnecessary costs, including the following:

- Fixed WAN connections and service, regardless of real usage, with premiums charged for moves, adds and changes to the network
- No way to quickly and easily expand service when needed expensive up-front equipment investment, whether by lease or outright purchase
- Additional charges for equipment upgrades
- Few network management or monitoring tools for customer visibility into application and network performance
- No uniform, application SLAs
- Long-term contracts locking companies into inflexible service and equipment
- Little or no coordination of local regulatory or compliance requirement
- Sparse or non-existent coverage in key emerging markets

Adding a typical remote office through many global providers could incur the following expenses:

- Contracts for fixed bandwidth and fixed service to each location
- Upfront premises equipment purchase or long-term leasing, with upcharges for new CPE
- Fixed VPN pricing, regardless of location or bandwidth used
- Limited, premium-cost service choices in emerging markets

In many ways, these offerings vary little from previous technology delivery, and still do not provide the agility, reliability and cost-savings that companies require in uncertain economic conditions or in easily opening new, emerging markets with little TCO risk.
Tata Communications, with its extensive global footprint of highly reliable and leading-edge communications technology, believes there is a better way for businesses to realize true cost-savings and far fewer complexities as they expand into new locations. Tata Communications Network-as-a-Service (NaaS) offering is a disruptive and powerful means to shift corporate global communications operations from a technology focus to a business-demand focus. This frees companies to concentrate their assets and energies on what truly counts—developing a consistent, business-driven global business model.

NaaS offers companies a unified service model with the greatest agility, simplicity, and accountability in the market today. This shift from technology delivery to a comprehensive business service offering provides the following high-level customer benefits:

- Single vendor across entire worldwide operations with no long-term contracts
- Greater flexibility in location, bandwidth, services and regulatory coordination
- On-demand scalability and services changes at no additional charge
- Completely transparent and technology upgrades as part of service
- Customer visibility and performance monitoring of their entire communication network
- Consolidated billing and uniform SLAs across the entire network
- Charges for only bandwidth used
Multiple, global locations using NaaS

From local to global, Tata Communications NaaS serves all major worldwide business centres and is a leader in deploying the latest equipment and service to emerging and potentially highly profitable markets in Asia, the Middle East, Africa and South America. Tata Communications offers service in over 90 countries, with major data centres in virtually all regions of the world. Its extensive undersea cabling, high-speed MPLS backbone and industry-leading technology provide 99.95% network uptime. A recent re-engineering of its core network relies on Provider Backbone Bridging (PBB), the next generation in Ethernet technology that delivers even greater reliability and capacity to customers. Among the benefits of a single-vendor service orientation are the following:

**Coordinated and maintained network service across the globe**

Tata Communications can deploy, coordinate and maintain a corporation's entire global infrastructure, simplifying integration and allowing it to move quickly into new markets when opportunities arise. With its extensive local-market experience, NaaS can ensure regulatory and compliance across multiple regions, consolidate billing and taxes into one currency and deliver 24X7 support expertise regardless of location.

A recent re-engineering of its core network relies on Provider Backbone Bridging (PBB), the next generation in Ethernet technology that delivers even greater reliability and capacity to customers.
Flexibility

With no capital investment in equipment and one-stop NaaS service, companies now have the agility to open, close, or change network service to any global location almost instantaneously. In fact, using analytical tools specifically designed to measure site location requirements, Tata Communications NaaS can tailor its service down to the individual user at any location. NaaS service teams, using performance testing and deployed, on-site monitors and modeling tools, individually design and optimise each site for the greatest performance at the lowest cost. (See Figure 1.)

In keeping with its comprehensive service model, Tata Communications NaaS charges customers only on a per-user, per-bandwidth basis. As conditions change at any facility, customers can add, move, or change service with one call to Tata Communications. In fact, businesses can easily drop service entirely to any location with no penalty, making relocation or downsizing more affordable and taking much of the capital risk out of opening locations in new, untested markets.

Scalability

Regardless of size, service, or bandwidth requirements, Tata Communications can provide each location the appropriate network service. As locations grow, or wish to add voice, video, or multimedia applications, Tata Communications NaaS can easily scale the location appropriately. Again, NaaS charges customers only for the bandwidth they use, so companies that have intermittent or seasonal surges in network traffic do not need to commit to costly over-provisioning on long-term contracts.
Future-proof global network technology
Tata Communications is continually improving, carefully upgrading and adding new PoPs to its worldwide, Tier 1 network. That is never a cost factor for NaaS customers, as they automatically reap the benefits of the aggressive yet reliable improvements Tata Communications is committed to providing. NaaS customers continue to pay on a per-user, per-bandwidth basis, regardless of the underlying equipment and network enhancements. This model takes the uncertainty out of network equipment leasing and/or purchasing, thereby entirely removing continual infrastructure capital investments as technology advances or facilities grow. Best of all, in closing facilities, no costly network infrastructure equipment is wasted.

Visibility, Accountability and Reliability
With its exclusive, Tata Communications web-based tools, customers can monitor their entire global network and application performance characteristics from any location. These tools give businesses a better understanding of their network usage, greater accountability and oversight of SLA commitments. The tools also give corporate IT insight into where and when they need to increase or decrease network CoS or bandwidth.

With detailed yet consolidated billing combined with network monitoring, businesses can more accurately provide charge-back and budgeting authorizations and govern spending limits to every location. These tools vastly simplify corporate accounting and asset allocation, as well as aid in budget forecasts and planning.

Under the NaaS model, customers have a one-stop, single call benefit for addressing service and support issues for any location. With Tata Communication's 24X7 NOC operations worldwide, technicians and automated systems proactively monitor and mitigate potential threats or network instability issues before they negatively affect the customer's network operations. With industry-leading service level agreements and a 99.95% network uptime, Tata Communications delivers uniform, reliable service to NaaS customer's unified, global communications.

With no capital investment in equipment and one-stop NaaS service, companies now have the agility to open, close, or change network service to any global location almost instantaneously.
Recently, an internationally known accounting firm decided to consolidate its networking services under one vendor while opening new facilities. Consolidation seemed appropriate in light of the expense of expanding its global presence. Under NaaS, they can realize the following benefits:

- Unify its network across existing and new locations
- Easily open new facilities in the Far East, Australia and emerging Middle East markets with low CAPEX/OPEX risk

Under a NaaS model, the corporation also cost-effectively outsources the following functions:

**Service Management** — Relieves corporate IT from reconciling and coordinating multiple, global providers, locations and services, including SLAs, bandwidth, and compliance.

**Application Performance Service** — NaaS can monitor the performance of individual applications at all locations to ensure optimal service levels, and it identifies and rectifies bottlenecks and inefficiencies quickly and easily. The corporation can use web-based tools to monitor application performance itself from any location.

**Infrastructure and Connectivity** — Under NaaS, the corporation no longer must support, maintain, or deploy network infrastructure and negotiate and monitor connectivity contracts and regulatory compliance.

**Optimisation Services** — When network segments or locations need additional or fewer resources, the NaaS model accommodates changes adaptively, with no penalties or change fees. Initial new site deployments are efficiently sized and optimised using Tata Communications Naas.

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**Use Case Summary**

Whitepaper NaaS-The Business Network
A Global Service Comparison

Single-provider, global solutions are only now becoming a reality, yet not all vendor solutions are equal. Many do not fully embrace the Network-as-a-Service model and retain many of the cost, complexity and inflexible plans of the past. The following is a brief comparative summary of some of the offerings currently on the market:

<table>
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<tr>
<th>Service Features</th>
<th>AT&amp;T</th>
<th>BT</th>
<th>Verizon</th>
<th>C&amp;W</th>
<th>Tata Communications</th>
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<tbody>
<tr>
<td>Global presence *</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Emerging market coverage</td>
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<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
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<td>Fixed-rate bandwidth/port charges *</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Term contracts *</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>No</td>
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<tr>
<td>Charge only for bandwidth used *</td>
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<td>No</td>
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<tr>
<td>Charge for any move/add/change</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Flexible, Application performance SLAs</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Pay or lease of CPE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>
Tata Communications NaaS is a disruptive yet powerful new model within the WAN industry that provides companies greater flexibility, reach and agility in an uncertain and quickly changing global economy. In particular, the NaaS model delivers the following features and benefits to global corporations:

- Move IT from technology to a business service focus
- Receive service, support and regulatory compliance across all markets from single source
- Expand/downsize at any time
- Pay for service per-user and per-bandwidth
- Benefit from the latest technology at all times with no disruption or extra cost
- Enable customer monitoring of application and network performance
- Tailor SLAs for entire network
- Enable flexibility and agility in new and existing markets with little CAPEX/OPEX risk
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About Tata Communications

Tata Communications is a leading global provider of a new world of communications. With a leadership position in emerging markets, Tata Communications leverages its advanced solutions capabilities and domain expertise across its global and pan-India network to deliver managed solutions to multi-national enterprises, service providers and Indian consumers.

The Tata Global Network includes one of the most advanced and largest submarine cable networks, a Tier-1 IP network, with connectivity to more than 200 countries across 400 PoPs, and nearly 1 million square feet of data center and collocation space worldwide.

Tata Communications’ depth and breadth of reach in emerging markets includes leadership in Indian enterprise data services, leadership in global international voice, and strategic investments in operators in South Africa (Neotel), Sri Lanka (Tata Communications Lanka Limited) and Nepal (United Telecom Limited).

Tata Communications Limited is listed on the Bombay Stock Exchange and the National Stock Exchange of India and its ADRs are listed on the New York Stock Exchange. (NYSE: TCL)