

**TeraGo Networks**

# USING TECHNOLOGY TO CUT CONNECTIVITY COSTS: WHERE TO SPEND AND WHERE TO SAVE



**Broadband. Only for Business.**

Internet | Data Networking | Voice | Redundancy

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# BUSINESS NEEDS DRIVE CONNECTIVITY REQUIREMENTS

It's hard to remember a time when business could function without Internet connectivity. As email and online ordering replace typewritten letters and in-person shopping, the pace of business has accelerated, and dependence upon connectivity has increased. While establishing a dependable and functional connectivity has a cost, it also delivers value.

The goal for savvy businesses today is to understand their requirements now and in the near future and measure the value of connectivity against their bandwidth requirements. Conducting this process will allow them to find the sweet spot of best performance at the right price. The first step in this process is for companies to determine the value of connectivity. This includes measuring both operating requirements and opportunity costs.

Operating requirements include the business functions that must be supported by connectivity. For most businesses, their baseline activity is communication: email will suffice for some small companies; others need high-bandwidth applications such as voice calling via the Internet and video conferencing. Organizations that use, manage, and store large volumes of data require appropriate connectivity; those that transmit large volumes of data to external sources have another layer of dependence.

One way to measure opportunity costs is to calculate the cost of downtime: what will a business lose if its connectivity is disrupted? These costs vary depending on the function of the business and the markets served, including penalties and fees for missing service-level agreements. For companies that offer online commerce, lost connectivity not only means lost revenue, it can mean lost customers.

A widely quoted statistic from Dunn & Bradstreet is that 59% of Fortune 500 companies experience a minimum of 1.6 hours of downtime per week; on average, large businesses lose between \$84,000 and \$108,000 (US) for every hour of IT system downtime.<sup>1</sup>

*Understanding the impact of connectivity on the business is the first step toward determining a cost-efficient networking strategy*

<sup>1</sup><http://www.businesscomputingworld.co.uk/assessing-the-financial-impact-of-downtime/>

## BUSINESS NEEDS DRIVE CONNECTIVITY REQUIREMENTS – CONTINUED

While the inability to communicate or generate orders can cost money, lack of connectivity in the healthcare sector can cost lives. Today's healthcare providers are rapidly adopting telemedicine strategies that enable them to work with geographically dispersed patients, to improve efficiency in monitoring chronic conditions, and drive costs out of the healthcare equation. One Canadian healthcare network has saved the Ontario government \$60 million in travel costs within the past year by migrating to telemedicine.<sup>2</sup>

Healthcare professionals increasingly rely upon applications that monitor blood pressure, heart function, blood sugar levels, and many other bodily systems, and transmit that information to doctors. Lack of timely alerting can mean the difference between life and death – the highest opportunity cost of all.

Understanding the impact of connectivity on the business is the first step toward determining a cost-efficient networking strategy. Assigning a value of low/medium/high to the question, "How critical is connectivity?" can determine where cutting costs can help rather than hurt the business.

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<sup>2</sup>"Telemedicine Offers Hope for Patients and Challenges for IT", IT World Canada, January 2014.  
<http://www.itworldcanada.com/article/telemedicine-offers-hope-for-patients-and-challenges-for-it/88804>

# MEASURE NETWORK UTILIZATION TO PROTECT BASELINE NEEDS

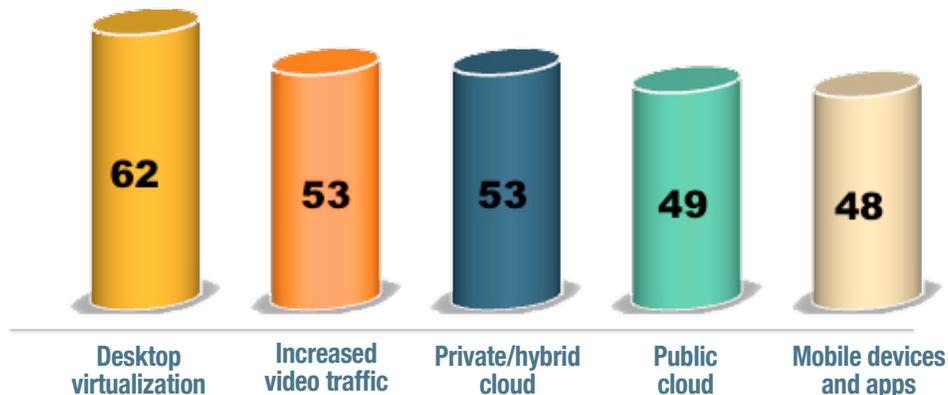
After calculating the business value of connectivity, the next step is to determine where dollars are being spent. By measuring network utilization, businesses can get a handle on current traffic and better predict future needs. They also can identify low-usage sites that can get by with lower-bandwidth options, as well as critical zones that need the most attention.

Network traffic reports outline traffic volume and patterns, and are available from business-oriented Internet service providers. “At TeraGo, we use advanced network tools to monitor our customers’ network utilization,” says Jose Robles, Network Technology Specialist, TeraGo. “We provide reports that outline how much bandwidth they use.”

Multi-site businesses need statics not only for usage at each site, but also traffic between sites. Sites that rely on high-bandwidth applications such as videoconferencing will require more investment. Those whose business-critical applications reside in the cloud also will need the security of uninterrupted connectivity. Sites that manage high-volume data transfers and/or data backups will require not only the appropriate amount of bandwidth, but also the assurance of symmetrical connectivity, which offers the same speeds to upload as well as download data. Sites that rely on connectivity only for routine, text-based email communications require less bandwidth, and are good candidates for cost-savings measures.

## TECHNOLOGY IMPACTS BUSINESS

What percent of companies predict the following emerging technologies will impact their business? According to Aberdeen’s Changing Face of Network Performance report, the move to desktop and application virtualization will drive massive bandwidth usage on company networks.



## MEASURE NETWORK UTILIZATION TO PROTECT BASELINE NEEDS - CONTINUED

In addition to current usage, companies need to evaluate future needs when establishing connectivity requirements. A report from research firm Aberdeen Group finds that 50% of organizations have seen a greater than 25% increase in network traffic. Among the biggest drivers are the use of public and private cloud services, desktop virtualization, and increased video traffic.<sup>3</sup> The company found that the top two pressures affecting network administrators are rising user demand for services, and increased high-bandwidth traffic.<sup>4</sup>

Establishing current and actual traffic statistics enable companies to determine where they can cut costs, and where they need to maintain, or even strengthen their investments to avoid outages or poor quality of service from overloaded connections. Assigning a value of low/medium/high to the question, “How much bandwidth do we use?” can determine networking options.

### TOP NETWORKING PRESSURES



**Rising user demand for services**



**Increased high-bandwidth traffic**

Source: Aberdeen Group report, Graduate from Old-School Networking, October 2013

<sup>3</sup> Aberdeen Group, “The Changing Face of Network Performance” by Jim Rapoza, October 2012. <http://aberdeen.com/Aberdeen-Library/8218/RB-application-network-performance.aspx>

<sup>4</sup> Aberdeen Group, “Graduate from Old-School Networking,” by Jim Rapoza, October 2013. <http://aberdeen.com/Aberdeen-Library/8639/RB-ethernet-fiber-network.aspx>

## EVALUATING NETWORK OPTIONS

Businesses with multiple sites can achieve a better cost-value balance by aligning their network approach to match each site's needs. Some sites are well serviced with a simple Internet connection; others need a dedicated Wide Area Network (WAN) solution to accommodate high-volume traffic and critical usage. Some options include:

**Private or Dedicated WAN.** WANs connect other types of networks together, including local area networks (LANs), to provide connectivity and communications between users and computers in multiple locations. WANs can be designed using a hub-and-spoke approach, where all traffic goes through a centralized site before reaching its final destination, or a mesh design that enables direct connectivity between sites.

"At TeraGo, our sales engineers help customers determine the best solution based on their topology," says Robles. "Costs vary depending on the volume of traffic and the distance between sites."

**Virtual private networks (VPNs)** can save money by combining private and public network solutions. VPNs use the Internet or other shared public infrastructure to establish a virtual point-to-point connection through the use of dedicated connections, encryption, or a combination of the two.

"In some cases, moving from a WAN to a VPN is more cost effective," says Robles. "A remote office might not need a dedicated WAN."

**Public Internet:** This solution is the most widely available option, and the least expensive. Companies with limited network traffic can often choose this option for one or more sites, particularly if they don't rely upon high-quality connectivity for business operations.

"Using the public Internet can cut costs for businesses that just need web browsing or limited file sharing," says Robles. "But remember, it's a public resource, so it can be a free-for-all. It's important to choose an ISP that has many protections in place to deliver a high-quality service."

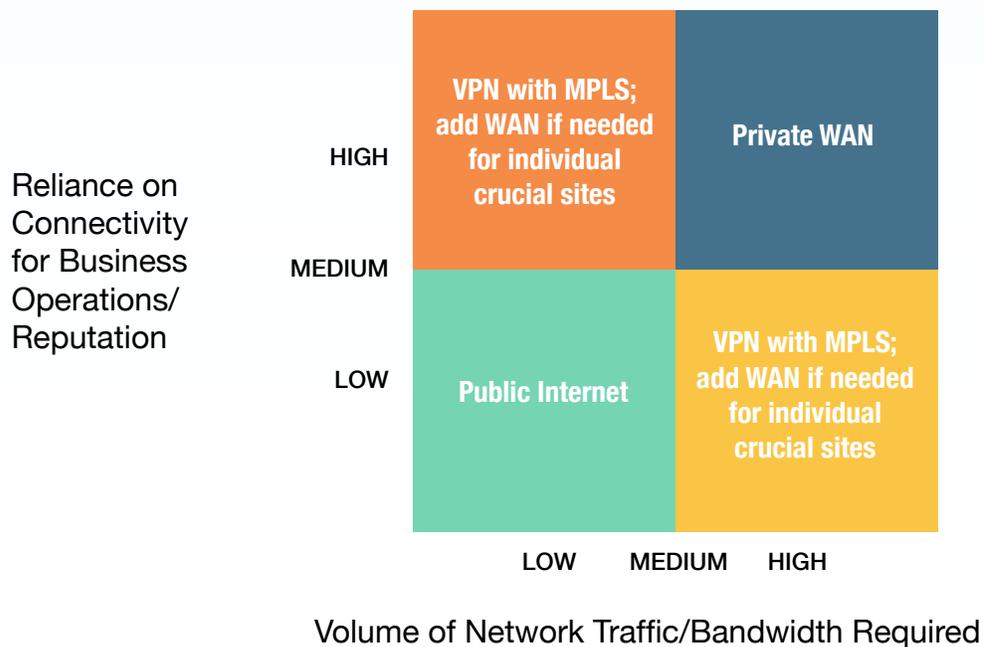
**Fixed Wireless via RF Transmission vs. Cable/Fiber:** Fixed wireless broadband networks transmit traffic through the air rather than via cables or fiber. These types of installations can be significantly faster to install: businesses just need a connection from an RF transmitter on the roof of their building into their offices, rather than waiting for a utility to dig a trench to the building.

"Typical providers can take months to install cable or fiber – TeraGo's RF-based service takes weeks or less," says Robles.

Another benefit of RF transmissions is that they are often more reliable during severe weather events, making RF a natural choice to supplement traditional wireline installations for redundancy.

# CHOOSING THE RIGHT CONNECTIVITY STRATEGY

A simple matrix that plots business reliance on connectivity as well as network traffic/bandwidth requirements makes it easy for businesses to choose the right solution - or combination - from these options.



To choose the most cost-effective connectivity strategy, businesses need to evaluate a combination of factors: their reliance on connectivity for business operations, and the volume of network traffic. This enables companies to make wise choices that will not harm the business, and find the right places to cut costs.

# CHOOSING NETWORK SERVICES

**No matter what network option is best for a company, certain services are key for maintaining business connectivity.**

**Multiprotocol Label Switching (MPLS)** is a technology that directs data from one network node to the next to create a high-performance connectivity solution. MPLS works with VPNs to create an efficient and effective private virtual network.

“TeraGo uses an MPLS-enabled network to transport traffic to improve performance and uptime,” says Robles. “With MPLS, if any connection breaks, our network will automatically reroute traffic and maintain connectivity.”

**Scalability – choosing dedicated vs. burstable bandwidth:** Companies can save money by choosing burstable bandwidth, which enables them to commit to a minimum volume with the option to expand, or “burst” as needed when traffic increases. The downside to this approach is that charges for extra bandwidth can rack up. Dedicated bandwidth is more costly, but ensures access without competing with other clients for the use of a limited amount of capacity.

**Symmetrical connectivity:** Most consumer-based Internet connectivity providers use asymmetric connectivity, which prioritizes

speed for downloads, or transmitting data from a central server to the user’s computer. For business users, upload speed cannot be overlooked – cloud-based applications rely on two-way data transmission, and high-speed uploads are crucial for backing up files to a data centre. Many businesses are migrating to providers that offer symmetrical connectivity, which provides the same speed for uploads and downloads.

**Redundancy:** For companies that have low reliance on connectivity, redundancy is not a concern, but for all others, it’s vital to ensure always-on service. Using multiple vendors is one strategy; using a variety of services – including cable/fibre plus wireless RF transmission – is even safer.

**Business vs. residential services:** Business-only service providers offer a wealth of important options that make them a better choice than consumer service providers, including sales engineers that can help evaluate choices, dedicated WAN solutions, and MPLS-enabled networks that reroute traffic to avoid network downtime.

# FINDING CONNECTIVITY VALUE WITH TERAGO

**TeraGo Delivers WAN Solutions:** Whether it's labeled Data Networking, Wide Area Networking (WAN), or Ethernet, TeraGo delivers the private and secure networking solutions that enable companies to share data and applications by connecting office locations within a single city or multiple cities across Canada. TeraGo's Data and Wide Area Networking services allow businesses to connect their dispersed local area networks under one large network, improving networking efficiencies by centralizing servers and IT support under one roof.

**TeraGo Delivers Speedy Connectivity:** Whether you transfer small or large amounts of data between offices or stores, TeraGo offers dedicated and burstable bandwidth speeds ranging from 3 Mbps to blistering speeds of over 100 Mbps. TeraGo offers an alternative to traditional wireline options such as fibre optic, cable, and copper. Its wireless solutions deliver similar speeds, security, and privacy as wireline – but with more value.

**TeraGo Puts Business First:** Unlike other consumer- or home-user oriented providers, TeraGo specializes exclusively in delivering broadband services to businesses in Canada. TeraGo serves more than 6,500 customer locations across all industries within Canada, making TeraGo the natural choice for any type or size of business that requires broadband services.

**TeraGo Delivers Redundancy:** TeraGo's carrier-grade broadband, data, and voice communication services are delivered using fixed wireless and fibre-optic methods. TeraGo owns and operates the network, so it is completely independent from all other wireline or wireless networks. It is

built using state-of-the-art technology, and is engineered to 99.999% availability. It is monitored 24/7 by qualified technicians, making TeraGo a solid choice for a primary connection, or to complement existing primary connections. Choosing TeraGo as a secondary connection offers uptime for business – when primary Internet connections experience a disruption, TeraGo's technology will automatically reroute traffic to a TeraGo redundant secondary connection.

**TeraGo Offers Symmetrical Connectivity:** TeraGo's high-capacity symmetrical bandwidth speeds ranging from 1.5 Mbps to blistering speeds of more than 100 Mbps, allowing extremely fast uploads and downloads.