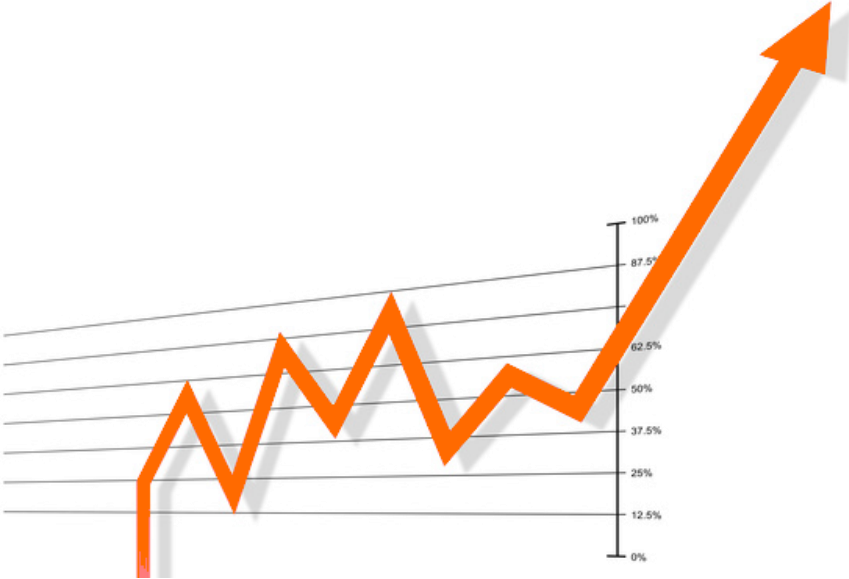


Building a Strong Telecom Strategy while Reducing Costs



Build **Smarter** Networks



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1. Executive Summary

Regardless of the economic context, organizations are constantly looking to enhance their overall productivity, competitiveness and performance while controlling costs, if not reducing them. The field of telecommunications can prove to be a costly avenue unless revisited, as many organizations are reviewing their strategies and finding new methods of improving their networks while reducing costs.

The goal of this document is to provide ideas, concepts and alternatives to classical methods for complementing implemented business telecommunications strategies employed by organizations in any region in any business sector of any size.

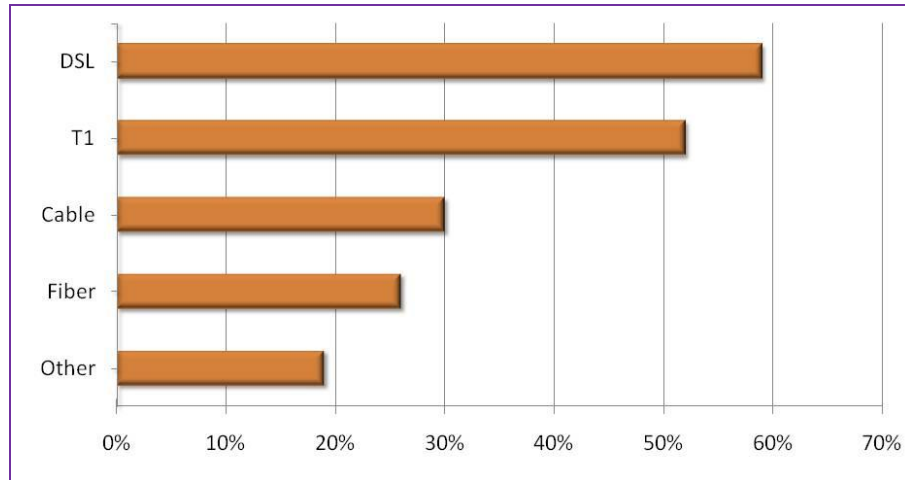
2. Overview of the Problem

The telecom marketplace for IP carrier services is a very conservative one, where the motto “if it works don’t fix it” is very often applied by both organizations and service providers. Considering that Internet access for IP services such as email, Web-based applications and voice over IP are critical resources, it is very common to see organizations maintain the status quo for their telecom services.

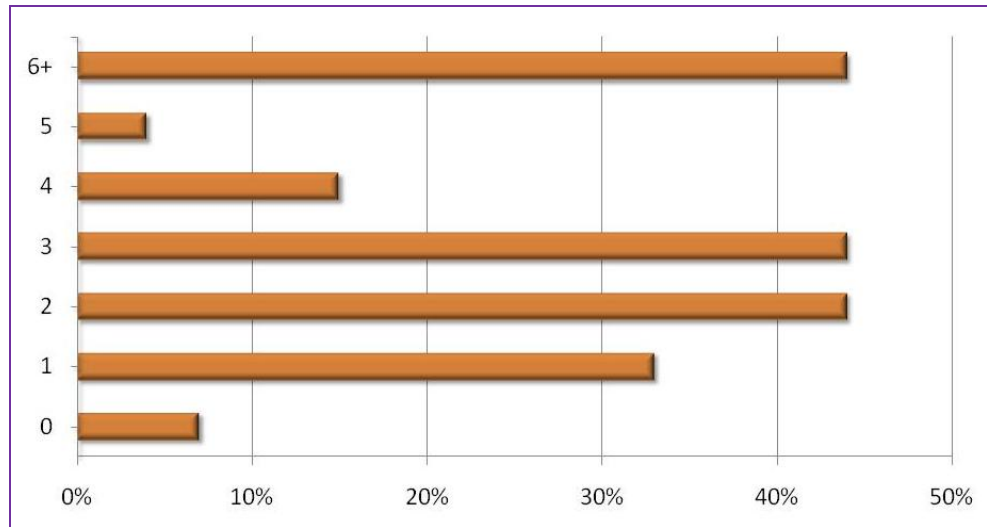
In this context, organizations are missing out on opportunities to improve almost all aspects of this part of their infrastructure, which also leads to points of failure. Most organizations will utilize one ISP link from one business-class carrier, with a multi-year contract to serve their IP traffic. The common drawbacks of such a strategy include:

- **Cost escalations:** When the organization requires more bandwidth, the carrier’s options are quite often limited to building on the existing circuit, which is usually a fiber link, a burstable fiber link, an E1 or T1 line. These links can be combined into a larger link since the limitations are logical, so the carrier has to revise the terms of the agreement to deliver more bandwidth. These scenarios do not provide economies of scale since the price for the circuit increases proportionally with the incremental bandwidth. If an organization doubles its T1 circuit, the price will commonly simply double.
- **Reliability:** The single-carrier approach has its limitations on delivering consistent results as research has shown:

- **Elfiq Networks customer survey: technology failure rate experienced within 12 months (2009):**



- **Elfiq Networks customer survey: number of carrier failures within 12 months (2009):**



- **Infonetics Research monthly downtime expectations (2006):¹**

Average hard downtime per month	1.7 outages
Average duration per hard downtime	67 minutes
Average hard downtime per year	23 hours
Average percentage of employees affected	28%

3. Looking for Options: ISP Carriers

Elfiq Networks' link balancer appliances have been designed to deliver bandwidth management capabilities for organizations of almost any size. The product's core design makes it possible to manage multiple concurrent ISP circuits of any type, thus opening up new opportunities to improve an organization's bandwidth capabilities. The key to a successful bandwidth strategy is the combination of the tool and the providers.

Many ISP carrier services come in many types and bandwidth sizes depending on the region, and this ecosystem can be turned into a significant cost-cutting option as well as a competitive advantage. Moving away from the usual players in a region, when possible, will provide new options, which can significantly reduce costs. Following is a summary of carrier links which may be available in your region and which can lower bandwidth costs:

- **xDSL:** These carrier links are found almost everywhere, and due to their asymmetrical nature (excluding SDSL and variants), they are very affordable and can relieve the stress of the usual T1/E1 installed for download-intense applications such as Web surfing. Shifting this type of traffic onto a xDSL link, will make the existing link less saturated, so this approach is much less costly than upgrading the existing link.
- **Cable modems:** This is similar to a xDSL type of service and is commonly available at higher speeds than are provided by many services but remains asymmetrical (download and upload throughputs are not the same). Cable ISP links are interesting because they have low monthly charges and can be deployed like DSLs, but most cable carriers have their own parallel network so they offer an additional layer of carrier redundancy.
- **Utility-based carriers:** These emerging players use their own networks (electrical grid, natural gas pipes, etc.) to deliver business-class services and often offer very competitive pricing, which makes them worth investigating.
- **Fixed wireless carriers:** Like utility-based carriers, they offer competitive services on an alternative physical network, therefore increasing resilience at the customer site for Internet access.
- **WiMAX:** An emerging wireless technology, WiMAX can be deployed quickly and offer a worthwhile alternative, while keeping costs under control; however, any emerging technology is usually aggressively priced.

Locating carriers may be difficult in some regions. To assist with this process, here is a sample list of ISP directories to facilitate the task (links are clickable):

- North America : <http://www.thelist.com/>
- USA: <http://www.dslreports.com>

- Canada : <http://www.canadianisp.ca/> and <http://www.cata.ca/Communities/caip/CAIPMembershipList.html>
- UK: <http://www.ispreview.co.uk/>
- Europe: <http://www.euroispa.org/?pid=27>
- Australia : <http://www.iaa.net.au/index.php/membership/members.html>
- South Africa: <http://www.ispa.org.za/membership/list-of-members/>
- All regions: http://www.topology.org/net/isp_int.html

In most regions, consulting firms offer a “bandwidth brokerage” service to locate which carriers are offering services, along with their rates, as with traditional telephone circuits and mobile telephony. Since these organizations have built up expertise in this field over the years, organizations are encouraged to leverage them to facilitate the acquisition of new bandwidth as well as locate suitable additional vendors.

4. Making Everything Work Together

The challenge when implementing such a strategy is making the project a success by using the right providers and tools. Following is a short list which should help in planning such a project, especially for organizations without the in-house resources and/or expertise.

- 1- Needs assessment: Before proceeding with any changes, measuring existing bandwidth uses and expected requirements will be critical. To measure actual traffic use over a period of time, some free tools available on the Internet may provide the right data, such as Cymphonix’s Revealer (<http://www.cymphonix.com/Revealer.html>).
- 2- Bandwidth selection: This is done either through specific Web sites or by using consultants as described in the previous section. Bandwidth should be planned to exceed expected demand because users are accessing new services with media-rich content almost daily.
- 3- ISP management equipment: The easiest way to use multiple concurrent ISPs is to use a link balancer. These devices sit between the firewall and the routers/modems used and balance inbound/outbound traffic. A few items to consider when choosing a link balancer:
 - **Ease of deployment** should be at the top of the shortlist as some vendors’ approaches require reconfiguring existing assets such as firewalls, thus raising the costs and risks associated with the project.
 - The selected model needs “**fail to wire**” capability when deploying a single unit in order to prevent the link balancer from becoming a critical point of failure when not installed in high availability mode.
 - The selected model **should not be used as a firewall**:

- i. This would be a critical point of failure, bringing down Internet access and security at the same time. If only the link balancer fails, the network can still operate should it fail to wire.
 - ii. No link balancer on the market at the time of writing has received any IT security certification from Common Criteria (EAL), ICSALabs or West Coast Labs Checkmark for their firewall or intrusion detection/prevention modules. This would mean introducing a device without credentials to deliver a key security service.
- 4- IT service provider: Should the organization decide not to conduct the project itself, a regional IT solution provider should be engaged. Link balancers are great tools, and having a **partner with experience** should accelerate the project.

5. Measuring Return on Investment (ROI)

Measuring return on investment is a key activity in determining the profitability of making the proposed changes to the infrastructure through augmented bandwidth management. Key metrics before and after the changes will include:

1- Telecom factors:

- a. Total number of days of downtime, annually;
- b. Total number of hours of downtime, monthly;
- c. Number of hours with current bandwidth at 85% or greater saturation on a daily basis.

2- Business factors:

- a. Lost sales and revenue associated with downtime;
- b. Lost productivity per hour of downtime;
- c. Loss of image, reputation or relationships.

Elfiq Networks provides a free tool for measuring ROI online at www.elfiq.com/roi to help organizations measure the effectiveness and gains of such projects.

6. Conclusion

Bandwidth is a key business asset, and organizations have the opportunity to maximize costs while improving the overall effectiveness of services deployed. Beyond the ability to maintain continuity during outages, organizations can diversify their bandwidth providers to effectively distribute risks and savings by combining various technologies and services. Using such an approach has saved many organizations significant amounts of money and raised their level of competitiveness in their respective marketplaces.

Produced by Elfiq Networks

Elfiq Networks is a technology leader and innovator in the field of WAN link management and balancing. With successful installations in over 60 countries, Elfiq's Link Balancer products help organizations of any type and size perform more competitively every day with the ability to use multiple Internet and private links easily and securely.

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Reference:

1: *The Costs of Downtime: North American Medium Businesses 2006*, Infonetics Research, March 2006.

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