ECESSA

White Paper

Optimize Your Network on a Limited IT Budget

Costs associated with deploying, maintaining and supporting WAN infrastructure for reliable application delivery can be dramatically reduced. Specialized WAN Optimization Controllers with link aggregation, load balancing and failover are here to help.

Today, applications delivered over the Internet are commonplace even among small-to-medium sized enterprises (SME). While deploying applications over the Internet is becoming easier, there are still many concerns about ensuring reliability, performance and security when applications go across the wide area network (WAN). In many respects, today's WAN networks are similar to the "Wild-west" in the United States in the 1800's - mail delivery was slow at best, not very secure, and there were risks around every corner. One of the main challenges with applications traveling across the WAN is trying to keep up with the exponential increase of users accessing these applications remotely. Not only does this introduce security concerns, but remote users still demand the same level of reliability and performance as they experience when connecting to applications within their LAN.

The days of a single Internet connection are over. Many organizations are quickly recognizing that redundant link access at a reasonable price is something they need.

For the IT personnel responsible for deploying, maintaining and supporting these networked applications, there is an increasing requirement to get the highest performance out of network equipment, while simplifying the complexity that causes excess overhead and unnecessary costs.

Poorly performing and failing network links cause organizations to pay dearly each year. Without the proper controls, these issues will continue to lead to loss of business/revenue and declining customer satisfaction. The resulting consequences are unacceptable when you consider it costs ten times more to acquire a new customer than it does to keep a current one. However, there is hope. WAN Optimization Controllers that offer WAN link aggregation, load balancing and failover provide a fast, easy and affordable solution to these challenges.

Managing WAN infrastructure

The maintenance of continuous and economical network infrastructure is a challenge for any organization. The delivery of critical business applications over the Internet (WAN) faces many obstacles, including ISP outages, traffic spikes, bandwidth-intensive applications, large data file requests and hackers trying to attack critical data, applications and network infrastructure. When outages occur, the losses and business flow disruption can be staggering.

Maintaining reliability and high-performance within a remote environment requires specialized WAN optimization capabilities. Today's challenge is to cost-effectively address all these problems, while ensuring reliable and fast delivery of business-critical applications from the headquarters (or datacenter) - over the WAN - to remote locations.

WAN optimization controllers bring network cost savings

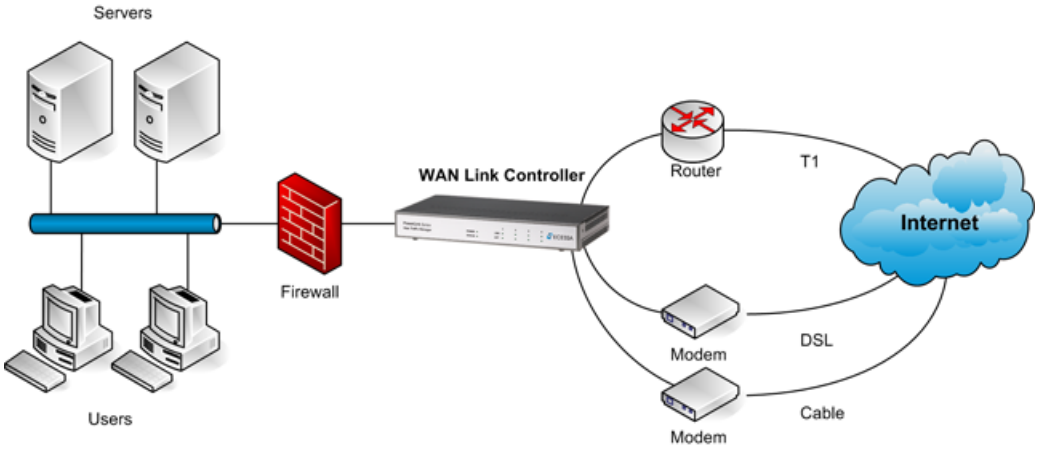
Specialized WAN Optimization controllers (WOC) that provide WAN and ISP link aggregation, load balancing and failover provide link reliability, economize network bandwidth, provide flexible scalability and offer additional layers of network security - while streamlining network IT costs.

These devices simplify the management of multiple, diverse links. As mentioned earlier, among other things, traffic spikes, bandwidth-intensive applications and service provider issues adversely affect network delivery. According to a recent Infonetics survey, service providers accounted for more than 30 percent of network downtime costs. Clearly, it raises the question as to why any organization would risk having their sites connected by a single ISP, particularly with solutions available for small and medium sized enterprises (SMEs) to protect their critical data against unplanned business interruptions for a fraction of what it previously cost.

The days of a single Internet connection are over. Many organizations are quickly recognizing that redundant link access at a reasonable price is something they need. Just do a simple calculation of what it would cost for an 8 hour outage at peak business hours. (8 hours per year is the average outage time for a T1 connection within the US). Once you've come up with a number that you feel comfortable with, looking at affordable link aggregation solutions becomes a relatively simple ROI decision. Additionally, WAN link aggregation and load balancing can make under-utilized WAN links highly optimized, bringing added efficiencies to your WAN network infrastructure.

WAN Optimization Controllers can deliver affordable WAN/ISP link aggregation, inbound and

outbound load-balancing, failover and point-to-point channel bonding. You can use two, three or however many WAN links and ISPs you need. Leverage low-cost links, eliminate link congestion and bottlenecks, and use quality of service traffic management features to guarantee minimum bandwidth to specific applications.



Bundling (aggregating) multiple, diverse Internet links from one or more ISPs reduces the need to purchase multiple and expensive high-speed links. This can enable you to increase bandwidth by using cost-effective links without compromising up-time. WAN link load balancing allows you to choose the WAN link performance/cost ratio that best fits your business needs. For example, if you have a T1 line (1.5 Mbps), and need additional bandwidth, you would typically have to upgrade to a T3 line (45 Mbps). However, this may be significantly more bandwidth than you require, and will be a significant increase in cost. It enables complete service provider independence, while eliminating the complexity of network protocols such as Border Gateway Protocol (BGP). Inbound and outbound bandwidth aggregation capabilities combine two or more Internet connections and provide applications with access to the total available combined bandwidth. Bandwidth aggregation supports link load balancing to route Internet sessions from congested links, to links with more available bandwidth. It also provides automatic failover of Internet sessions from failed links to functional connections to eliminate a single-point-of-failure.

With WAN link load balancing and failover this same scenario can be accomplished with two 768 Kbps DSL links that can be combined for a total aggregated bandwidth equivalent to a T1 - at a fraction of the cost. You can also add additional lower speed links such as xDSL, cable, wireless, and others, with a relatively small increase in cost that can more closely match your needs. In addition to receiving more cost-effective bandwidth, you are dramatically increasing the reliability of your WAN network due to the new levels of redundancy through the aggregation of multiple Internet links.

WAN link load balancing is fully compatible with xDSL, cable, wireless, T1, E1, T3, E3, satellite, fiber channel, frame relay, etc. This flexibility allows you to mix and match connectivity to best fit your needs.

Multi-homing with WAN link load balancers versus BGP

Multi-homed networks are becoming increasingly popular by providing networks with greater reliability and higher performance. This is accomplished by having multiple connections to the Internet via multiple ISPs to deliver reliable and high-throughput service. Border Gateway Protocol (BGP) is an often used approach for multi-homing. However, the implementation challenges of BGP are daunting, make deploying a second connection successfully, nearly impossible. Adjustments can be made, but doing so takes a lot of time, and ample skilled labor.

BGP is a protocol that bases its routing decisions on finding the shortest path. Approximately 50% of routing decisions made by BGP are sub-optimal, and multi-homing with BGP introduces several complexity issues. In addition to various quality, efficiency, and deployment shortcomings, there are several cost issues involved with BGP. Managing a BGP-based multi-homed network requires an in-depth knowledge of BGP. This can be achieved by hiring a BGP expert. The salary difference

between an administrator with BGP expertise and an administrator without BGP expertise can exceed $40,000 annually.

Most companies prefer to contract an ISP or consulting company to support the BGP services. These services vary, but a typical cost to outsource BGP management is approximately $10,000 to implement, plus $60,000 for annual maintenance. Additional costs incurred when multi-homing with BGP are the investment in BGP-compatible routers, with pricing around $20,000 to $100,000 per router. BGP also requires the establishment and control over an Autonomous System (AS), which costs approximately $500 to setup, plus an annual charge of $30. The total implementation costs for a simple multi-homing solution with BGP in the first year include an administration and implementation cost of $70,000; an equipment upgrade cost of at least $40,000, and AS fees of $500, for a total of $110,500.

Fortunately, all of the network quality, efficiency, ease-of-deployment and cost issues can be addressed with WAN link load balancing and failover products. An investment in a high-availability pair of WAN link controllers can be as low as $6,000. Assuming all other line costs are equal, multi-homing with an affordable WAN link controller, as opposed to a BGP solution can achieve a savings of $104,500 for the first year alone. The savings in the following years is even greater as administration costs are minimal when compared to BGP.

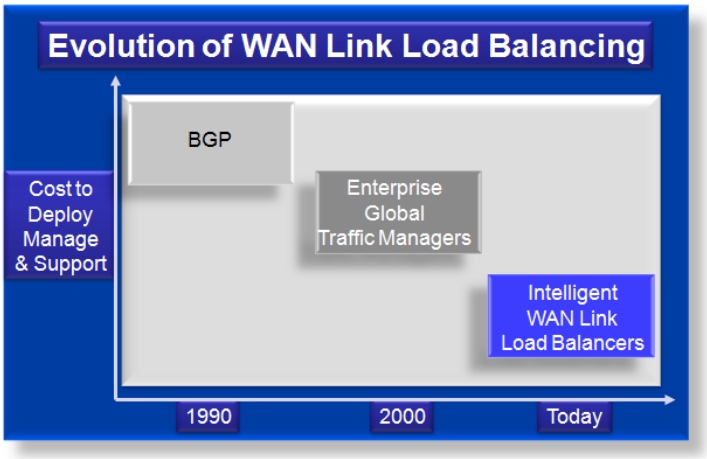
Improving WAN Operations

The following are examples of how specialized WAN link controller can help reduce WAN costs and optimize network operations:

- Maximize bandwidth utilization
- Optimize investments in existing WAN links
- Improve performance by directing traffic loads among multiple, diverse WAN links
- Optimize bandwidth resources by efficiently allocating traffic across WAN links based on application types
- Increase WAN performance by directing traffic based on link bandwidth resources
- Cost-effectively scale WAN link capacity to keep up with growing traffic demands
- Reduce single-points-of-failure

The evolution of WAN link aggregation in WAN optimization controllers

Until recently, even basic WAN link aggregation was cost prohibitive for small-to-medium sized enterprises. Today, advanced WAN link controllers are not only affordable, but the consolidation of link aggregation, load balancing and failover, firewall and VPN capabilities provides SMEs with affordable and easy-to-deploy infrastructure.



Costs associated with deploying, maintaining and supporting WAN infrastructure can be reduced with advanced, yet affordable WAN Link controllers

Integrated capabilities improve reliability and performance - while lowering costs.

Network IT managers know that reliable WAN infrastructure is crucial to providing customers, partners and employees with fast and reliable access to information and transactions. WAN link aggregation incorporates six key functions of WAN management:

1. **High-availability** – high-availability is enabled by automatically detecting the failure of a WAN link or site and redirecting traffic to working links – to provide users with continuous service. WAN link controllers can also be configured in a high-availability mode with one WAN link controller acting as the primary, and a second WAN link controller as a hot standby.
2. **Cost-Efficiency** – By bundling (aggregating) multiple, diverse Internet links from one or more ISPs, a WAN link controller reduces the need to purchase multiple and expensive high-speed links. This enables you to increase bandwidth by using cost-effective links without compromising up-time. In addition to managing scalability and redundancy, you can cost-effectively utilize all available WAN bandwidth through intelligent link load balancing. WAN link controllers provide controls for how bandwidth is used to support applications and connectivity. This allows you to take advantage of the most cost-effective ISP rates, while ensuring appropriate levels of bandwidth are available for specific applications.
3. **High-performance bandwidth** – the performance of applications over the WAN directly affects response time. This includes not just total average transaction time, but assures that users located at performance-challenged sites (such as overseas branch offices) receive an acceptable level of performance. Performance is an important criterion for all networking equipment, but it is critical for a device such as a WAN link controller, as datacenters are central points of aggregation. As such, the WAN link controller needs to support high volumes of traffic delivered between sites. A simple definition of performance is how many bits-per-second the device can support. While this is extremely important, in the case of WAN link controllers, other key measures of performance such as how many WAN links can be supported simultaneously.
4. **Network security** - network access and secure delivery of applications over the WAN is vital. Network security addresses key elements specific to applications going over the network, such as required levels of encryption, authentication, and maximum reasonable usage. Encrypted traffic tunnels behave differently on the network than clear text.
5. **Flexible scalability** – scaling of applications delivered over the WAN is a critical consideration. It is important to understand how many users can use available network resources without having to spend large amounts of money to upgrade the network. It also affects how the network performs when a new version of software is deployed, etc. Performance requirements for accessing datacenter applications and data resources are usually characterized in terms of both the aggregate throughput of the WAN link controller, and the number of simultaneous sessions that can be supported.
6. **Ease of management** – WAN link controllers should have an easy-to-use and initiative web interface for managing themselves and the WAN infrastructure they affect.

Make sure you have the right product to fit your company

For enterprise organizations, utilizing "big brand" network equipment is commonplace. However, for SMEs, big brand equipment with enterprise-specific features typically means buying expensive products. Rather, SMEs are more interested in deploying products that are purpose-built, with the explicit features, performance, reliability and scalability created specifically for the SME market.

In general, businesses of all sizes would like to be in a position to afford "big brand" products. However, smaller "value" vendors that offer products within the same category can deliver the performance, features and reliability that SMEs require, with the same benefits - at a more affordable price.

Ecessa's WAN Link Controllers

Ecessa is a leader in affordable WAN Link Controllers for inbound and outbound WAN and ISP link aggregation, automated load balancing, failover and network security tailored to meet the needs of small-to-medium sized enterprises (SME) that rely on the Internet for e-commerce and business-critical applications. Ecessa helps SMEs rapidly grow their business with 24/7 network high-availability, optimized WAN performance, flexible scalability and secure access - while streamlining IT costs.

Ecessa's products enable SMEs to reliably run their network-based applications and distribute traffic among multiple, diverse WAN links to ensure business continuity by removing bottlenecks, and eliminating network downtime. These capabilities improve user access to applications within datacenters and remote sites, aid in lowering operational costs, and make it easier to provision, maintain and support business-critical networks, and the applications that run over these networks. At one-third the cost of other competing products, Ecessa's PowerLink and ShieldLink products deliver industry leading price/performance value.

PowerLink™ optimizes WAN traffic for organizations of all types who wish to improve network and application performance and eliminate downtime for business-critical, time-sensitive applications. PowerLink bundles multiple WAN lines (T1, T3, xDSL, Cable, ISDN, Wireless, Satellite, etc.), to ensure WAN redundancy and automated ISP failover, load balancing, site failover and fallback and VPN redundancy and failover.

Ecessa uses multi-homing to connect a single LAN or WAN to multiple ISPs or WAN links; enables quality-of-service (QoS) to prioritize network traffic to ensure the best possible bandwidth is always available to applications, especially during periods of congestion; and uses link load balancing and automatic failover to direct traffic to WAN links with the optimum bandwidth and cost-efficiencies.

ShieldLink is Ecessa's family of advanced, yet highly affordable secure WAN Optimization Controllers that incorporate all of the capabilities of PowerLink, while bringing network security to the next level by incorporating built-in firewall and VPN technology.

Ecessa's family of products:

PowerLink 50, 100 and 250

These PowerLink products enable organizations with a single location to have an affordable solution for automatic link failover between WAN link connections, including mission critical applications such as VoIP failover with traffic shaping to ensure availability and high-performance.

PowerLink 55, 200 and 250EHQ

These PowerLink products enable organizations with multiple locations to have an affordable solution for automatic link failover between WAN link connections, including mission critical applications such as VoIP failover with traffic shaping to ensure availability and high-performance.

ShieldLink 100 and 250 Secure WAN Optimization Controllers

The ShieldLink 100 and 250 enable organizations with a single location to have an affordable solution for automatic link failover between WAN link connections, with built-in firewall and VPN technology – ensuring WAN availability and high-performance.

ShieldLink 55, 200 and 250EHQ Secure WAN Optimization Controllers

These ShieldLink products provide organizations that have multiple locations with an affordable solution for automatic ISP link load balancing and failover, with built-in firewall and VPN technology to ensure WAN availability and high-performance.

PowerLink products …

- Ensure each user gets the best network experience possible over the WAN
- Provide application high-availability over the WAN
- Direct traffic to only "available" WAN links and sites
- Enable administrators to optimize WAN traffic according to throughput capacity

- Help thwart network security threats
- Support WAN link aggregation (both inbound and outbound) with throughput of up to 500 Mbps
- Enable point-to-point channel bonding among as many as 40 locations, providing uninterrupted Internet access for reliable performance of applications such as VPN, VoIP, etc
- Provide redundant hardware failover to eliminate potential single points of WAN failure
- Provide QoS capabilities for bandwidth management that guarantee critical applications get the bandwidth required for smooth performance
- Quicker, easier deployments with easy provisioning
- Have an easily quantifiable ROI. Customers can see payback on their investment from many different perspectives:
  - Reduced capital expenditures on bandwidth infrastructure
  - Ease management of complex multiple and diverse WAN links
  - Reduce or even eliminate downtime
- Offer the best service and support in the industry, with 90 days of free service and support from U.S.-based factory technicians, a 30-day money-back guarantee, and a three-year depot warranty

Summary

From a business standpoint, SMEs, VARs, network integrators and managed hosting providers are under continuous pressure to reduce operational expenses and to improve profitability. Significant areas that can benefit from efficiency gains include administration, management, provisioning and ensuring maximum performance and reliability of WAN infrastructure.

Organizations today depend upon their WAN to perform reliably in order to efficiently conduct business and optimize user productivity. However, this will not be accomplished through more complexity or more single capability solutions. The solution is found at the critical juncture between the end-user at a remote site, and the datacenter – where reliability, scalability, performance and security are enabled to ensure the delivery of critical applications over the Internet (WAN).

Ecessa's PowerLink and ShieldLink WAN Link Controllers enable small-to-medium sized enterprises and managed hosting providers to cost-effectively run their networks. Ecessa's products help lower operational costs, while making it easier to manage and support WAN infrastructure.

Customers can count on applications that are delivered reliably over the WAN, network IT personnel gain a significant improvement in quickly resolving WAN connectivity problems, and organizations reduce their overall WAN infrastructure costs.

ECESSA
2950 Xenium Lane North, Minneapolis, MN 55441-3632
Phone: 763.694.9949 Toll free: 800.669.6242 Fax: 763.551.0664
sales@ecessa.com www.ecessa.com