Avoid Network Outages Within SaaS and Cloud Computing Environments

ECESSA

www.ecessa.com

Avoid Network Outages Within SaaS
# and Cloud Computing Environments

Overview

A primary element with SaaS and Cloud computing is the virtual datacenter or Virtual Platform Infrastructure (VPI). VPI refers to virtual machines and virtual platforms which rely on many additional physical and virtual infrastructure elements. Over the past few years, new infrastructure platforms such as virtual machines, virtual management, virtual switching/routing, virtual storage, and virtual system management have been coming together to help drive this technology.

Virtual machine platforms such as VMware ESX and Microsoft Hyper-V are indeed alluring technologies that have the promise of bringing cost-savings, infrastructure consolidation, dynamic provisioning and other total cost of ownership benefits to enterprises of all sizes. Although these products provide the tools for building virtual datacenters, there is another critical factor that cannot be overlooked. The successful implementation of VPI technologies requires a virtual network infrastructure to reliably deliver the virtual datacenter applications.

Virtual WAN Networking

Virtual WAN Networking is the bundling of multiple IP networks from different service providers, and or multiple IP connections from a single service provider, and automatically managing the connections to ensure optimum performance and uptime among connections. The ease and flexibility of network connection provisioning, and the automation of the connection health checking and failover of the virtual WAN network is the key to successful virtual WAN networking. Virtual WAN networking is a proven technology that delivers on the same cost-savings, infrastructure consolidation, and dynamic provisioning as virtual machine platforms.

With IP networks taking on many new challenges from VoIP, rich multimedia and other high-bandwidth consuming and high-priority mission-critical applications, as an enterprise customer, you better be sure the network connectivity between you and your SaaS or Cloud computing provider is protected with built-in reliability and controls for optimizing the delivery of traffic among the network connections.
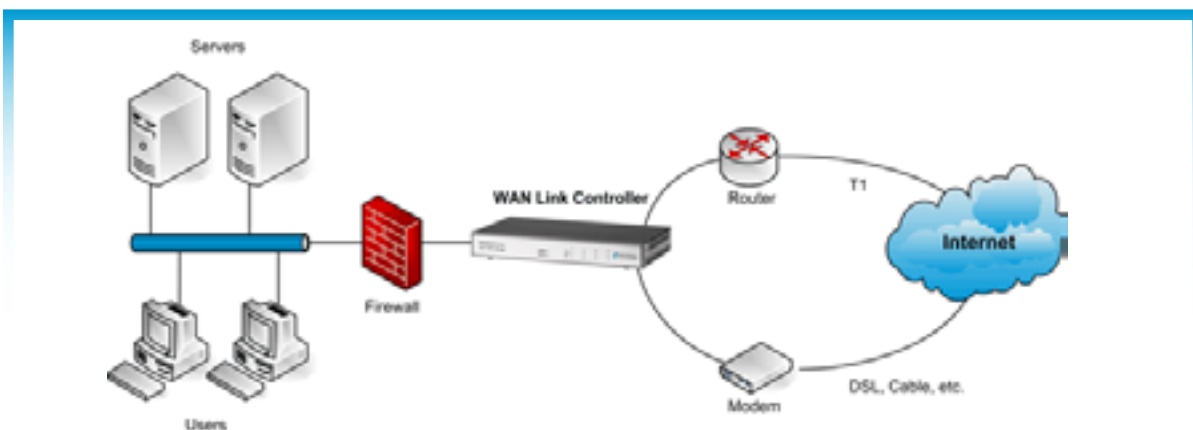
This diagram shows a WAN optimization micro-appliance automatically managing two separate WAN connections to ensure uptime and optimize performance.

Cost-savings

WAN Optimization Services can deliver easy and affordable WAN and/or ISP network connection aggregation, inbound and outbound load-balancing and failover, and WAN Virtualization. WAN Optimization Services help ensure Internet uptime – even if one of the ISPs has an outage. You may use two, three or however many Internet connections and ISPs you need. Leverage low-cost connections, eliminate connection congestion

and bottlenecks, and use the WAN Optimization Service to manage traffic with traffic shaping and application prioritization to ensure bandwidth levels for specific applications.

WAN Optimization Services allow you choose the Internet connection performance/cost ratio that best fits your business needs; provides you with complete service provider independence; and eliminates the complexity of network protocols such as border gateway protocol (BGP). Bandwidth aggregation combines Internet connection load balancing to route sessions from congested links, to links with more available bandwidth. It also provides automatic failover of Internet sessions from failed links to functional links to eliminate a point-of-failure. 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) if you require SLAs. However, this may be significantly more bandwidth than you require, and will be a significant increase in monthly costs.

With WAN Optimization Services, this same scenario can be accomplished with two 768 Kbps DSL connections 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 connections such as cable, fiber, 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 connections.

Network infrastructure consolidation

Device consolidation is one solution to the problem of WAN infrastructure over-provisioning and complexity. By combining the functionality of several stand-alone, single capability devices into one micro-appliance supported by services, an IT department can address multiple issues related to network complexity, over-provisioning, and cost. Device consolidation is not a new idea. It has been implemented within many areas of IT.

A good example of this is the bringing together of a network firewall, VPN gateway, NAT proxy and SIP proxy within the micro-appliance. Until recently, firewalls and WAN link failover appliances were separate devices, yet they were increasingly being deployed next to each other. They both provided necessary functionality to a WAN infrastructure, with the WAN link failover appliance providing Internet connection load balancing and failover for reliability and performance - directing traffic among multiple and diverse WAN and ISP connections, and the firewall providing the network security - protecting the data and applications going over the WAN.

Today, WAN Optimization Services are bundling firewall capabilities into their micro-appliances. This significantly eases the deployment of both micro-appliance and the firewall, as there is only one system to configure, and managing and securing WAN traffic is much easier through a single interface. This device combination, along with supporting WAN Optimization Services, dramatically reduces equipment, management and ongoing support costs.

Device consolidation continues to expand as technology integration becomes more efficient, and solutions become commoditized. VPN gateways, which once enjoyed a rapid popularity within the headquarters, are rapidly becoming bundled within other network devices. While they are useful as stand-alone solutions, the benefits don't always make up for the cost and complexity of their deployment.

WAN Optimization Services also help to consolidate multiple, diverse WAN and ISP links. For example, an organization may have two DSL connections (768 Kbps) that can be combined for a total aggregated bandwidth equivalent to a T1 (1.5Mbps) - at a fraction of the cost. WAN Optimization Services provide a major benefit of automating the management of multiple connections. This relieves IT personnel from having to manually scramble to address a service provider outage.

Today, the industry is seeing a continued interest in VPN security, but, not necessarily as stand-alone devices. For example, VPN security is now integrated within some WAN Optimization Services. By adding VPN security as a WAN Optimization Service, the cost associated with VPN security is significantly reduced, while added value is brought to the service.

WAN link load balancing and failover, traffic shaping and application prioritization, firewall, VPN security, NAT

Proxy, VoIP Failover and Monitoring, and other capabilities are becoming integrated within WAN Optimization Services. By having a single managed micro-appliance, many of the equipment issues that enterprises of all sizes deal with are solved. From a complexity standpoint, it is easier to manage traffic flows and redundancy with a single device, than several independent devices.

WAN Infrastructure Device Consolidation

VPN Security	Intelligent WAN Link Load Balancing	WAN Link Failover
Firewall Security	WAN Optimization Controller	Site Failover and Failback
Multi-site Support	Point-to-Point Channel Bonding	QoS Traffic Shaping

This diagram shows some of the technology consolidation that WAN link controllers are providing

Dynamic provisioning

Micro-appliances supported by WAN Optimization Services provide the ability to easily provision multiple, diverse Internet connections and ISPs/telcos. By having the flexibility to pick and choose service providers at your will, and mix and match Internet connections based upon cost, size and type, IT personnel have greater control over their network infrastructure. If one service provider becomes too expensive, or is not performing to your expectations, you can easily replace them with another service provider. If you need to increase your bandwidth capacity because you are rolling out a new VoIP application outside of your LAN, simply add another Internet connection to the WAN Optimization Service. You can even enhance the bandwidth management of that application by using traffic shaping and application prioritization policies. The WAN Optimization Services will automatically load balance and handle the connection failover for you.

WAN Optimization Services deliver greater control over your network

WAN Optimization Services allow enterprises to easily automate the process of managing multiple (virtual) IP connections by intelligently transferring over from one connection to another if a network outage occurs, and load balancing traffic between multiple connections based upon each connections performance at any point in time. They provide IT personnel with greater control, and enable them to easily adapt to network changes by providing a resource optimization layer within their WAN. WAN Optimization Services do not require ISP or carrier coordination or peering relationships. In fact, they are completely independent from the service provider. This eliminates the peering disputes among service providers that have been known to cause serious connectivity problems for their customers, resulting in loss of productivity and revenue.

WAN Optimization Services can be deployed at the enterprise to aggregate multiple disparate connections, or, they can be used to "virtualize" multiple connections among two of more sites to create a single virtual connection that combines multiple network connections from multiple service providers. This allows the enterprise to have complete service provider independence and flexibility. This flexibility not only pertains to the choice of service providers, but also gives the enterprise greater options for the type, size and cost of each

network connection they choose to deploy. This allows them to take advantage of the most cost-effective ISP rates, while ensuring appropriate levels of bandwidth are available for specific applications. WAN Virtualization combines multiple network connections such as T1, T3, DSL, Cable, Fiber, Wireless, and others into a single virtual wide-pipe with aggregated bandwidth, while providing WAN redundancy and automated ISP failover and load balancing.

Whether you use an outside SaaS or Cloud provider, a hybrid Cloud solution, or you have an internal Cloud computing environment, WAN Optimization Services fit in to provide the virtual network you need to ensure reliable network connectivity and controlled performance.

Disaster recovery and business continuity

Disaster recovery and business continuity help businesses remain up and running in the event of a disaster. Incidents may include local events such as building fires and unplugged network cables, regional events such as earthquakes and hurricanes. From a network technology standpoint, business continuity can be affected by network outage, or a WAN link being congested or bottlenecked, which may limit business functions. WAN Optimization Services are designed to protect enterprises from these hazardous events. A WAN Optimization Service can also direct Internet traffic to a disaster recovery site should a catastrophe disrupt a main site. They can help reduce the costs associated with ensuring that site failover and failback occur automatically, making this functionality practical and affordable even for the smallest of enterprises.

WAN Optimization Services...

- Provide high-availability within the WAN

- Direct traffic only to "available" WAN links and sites

- Enable WAN link redundancy, ISP failover and Internet high-availability among multiple network connections

- Support WAN link aggregation (both inbound and outbound)

- Enable WAN Virtualization among multiple locations, providing uninterrupted Internet access for reliable performance of applications such as VPN, VoIP, etc

- Provide traffic shaping and application prioritization for bandwidth management that guarantee your most critical applications get the bandwidth required for smooth and consistent performance

- Easily add and manage multiple service provider connections

- Use any type of IP connectivity (VPNs, private and public links) to support your increasing bandwidth needs

- Enable flexible link deployment and management to help avoid network bottlenecks and service provider outages

- Use multiple ISP and/or WAN links simultaneously, leveraging the total available bandwidth via load-balancing, to maximize connectivity costs, while avoiding unnecessary link costs from underutilized back-up links

- Provide an open solution that avoids hassles such as dealing with BGP and other elements that require service provider cooperation

Summary

In today's competitive and economically challenging business environment, enterprises of all sizes are looking for ways to lower costs, reduce network infrastructure complexity and ease network provisioning. Virtual WAN networking has proven to deliver in each of these areas. Virtualization is a hot topic, and a promising technology area for both datacenter and network provisioning. WAN Optimization Services are at the front-end of virtual WAN networking, and they are the technology devices delivering on the promise of improved total cost of ownership benefits for network infrastructure, while providing the network connectivity to ensure that mission-critical applications get delivered fast, reliably and securely.