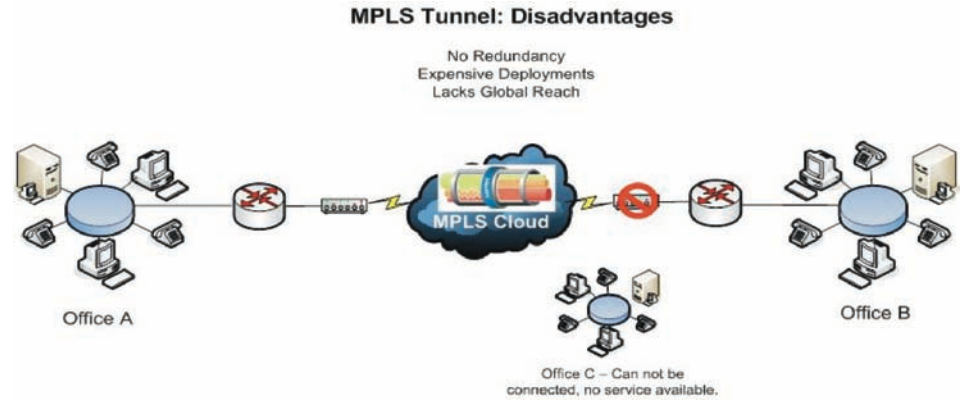

XROADS NETWORKS – WHITE PAPER

Mesh VPN Link Sharing (MVLS) Solutions



Problem

How does one incorporate a **universal solution**, with built-in **automated redundancy**, that is **inexpensive to deploy**, and provides added **security above and beyond standard IPSec** deployments?

Solution

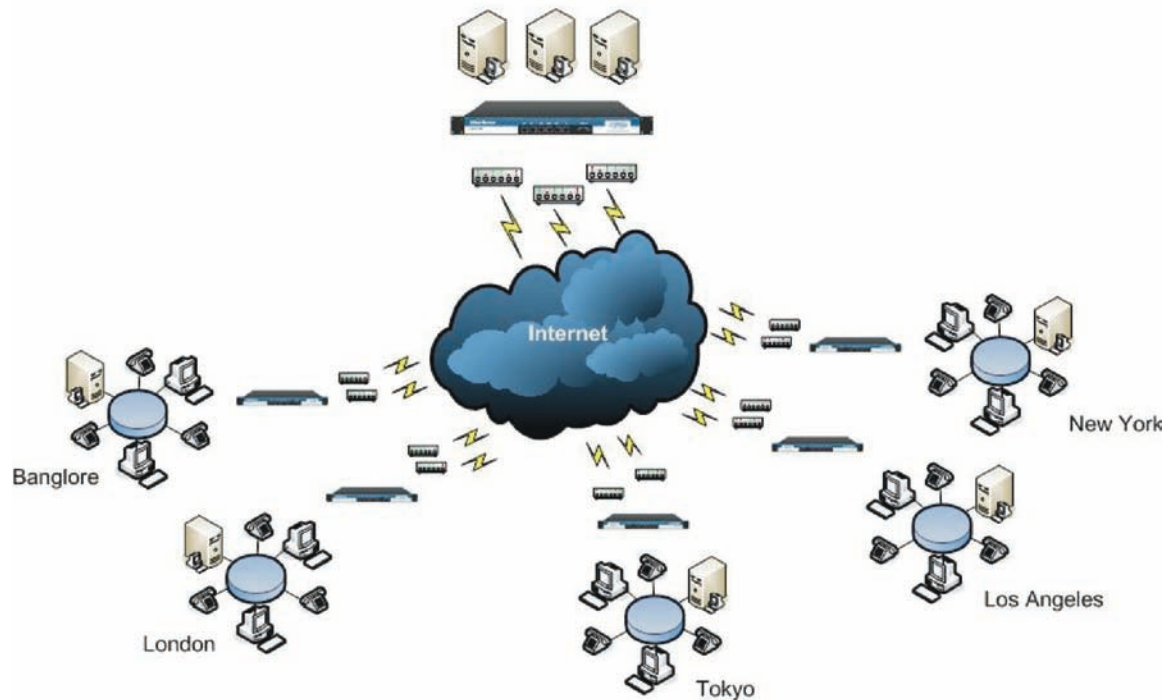
XRoads Networks' MVLS or Meshed VPN Link Sharing technology provides the solution. Our Site2Site VPN tunnels are inexpensive to deploy, include built-in redundancy capabilities which can failover automatically in the event of a network outage, can be deployed around the world using any type of broadband connection, provide end-to-end QoS and traffic shaping, and provide up to five times the security of standard IPSec deployments.

MVLS Delivers:

- 1 A single global deployment vehicle.
- 2 A fully meshed and fully redundant remote office connectivity solution.
- 3 A highly secure solution, similar to MPLS and private lease line solutions.
- 4 A scalable solution with built-in end-to-end QoS and traffic shaping.
- 5 A solution that can provide improved performance through BPR tunnel routing.

Our MVLS solutions provide a global reach that can not be achieve by any other solution which incorporates same the level of QoS, redundancy, and scalability.

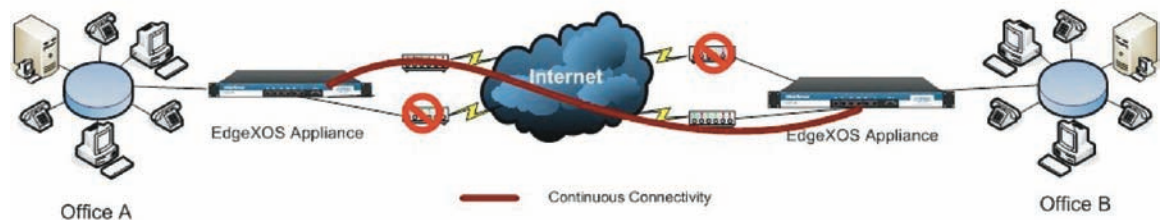
MVLS Global Network



Site-to-Site Fully Meshed Redundancy: With our Site2Site tunnels a network administrator can configure a completely redundant and fully meshed remote office solution. Full meshing means that even in the event that two simultaneous network outages occur at both ends of the tunnels, that the remote sites stay up and running.

Mesh VPN Link Sharing: Advantages

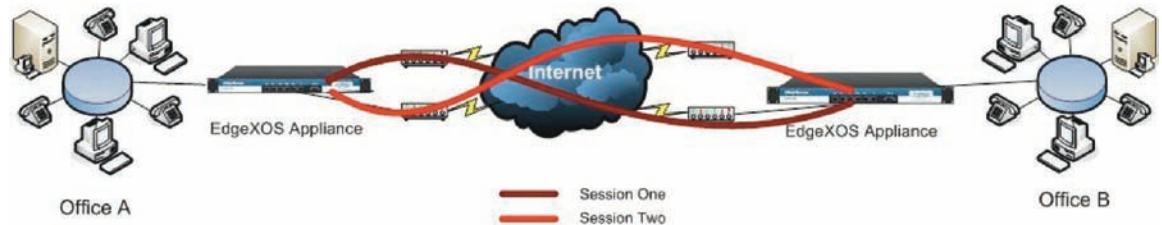
Even in the event of two concurrent connection failures the site-to-site connectivity remains.



Site-to-Site Security: Because our Site2Site tunnels utilize multiple WAN links for passing traffic, link balancing improves security as no single link can be sniffed in order to obtain multi-session information. The balancing of session traffic by nature improves security across the tunnels.

Mesh VPN Link Sharing: Advantages

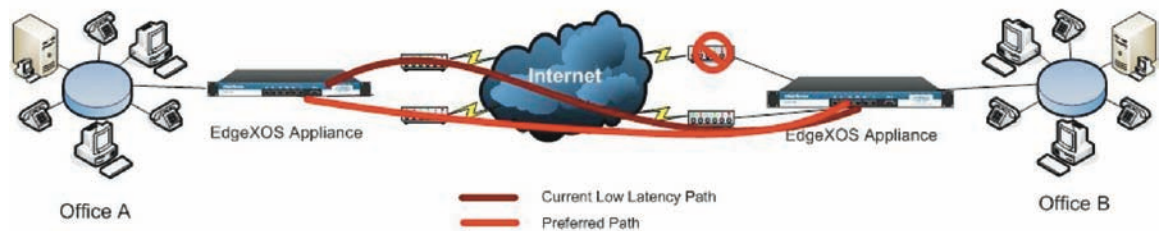
Improved security through session balancing. Minimizes the ability to sniff multi-session traffic and thus brake current encryption sets.



Site-to-Site Best Path Routing: Built-in to the routing mechanism for our Site2Site tunnels is our Best Path Routing technology. Best Path Routing uses network thresholds to determine which tunnel path is the best one to use for sending each new session. This ability ensure that even when a link begin to perform badly that the Site2Site tunnels are always leveraging the best possible connectivity provided via the available WAN links.

Mesh VPN Link Sharing: Advantages

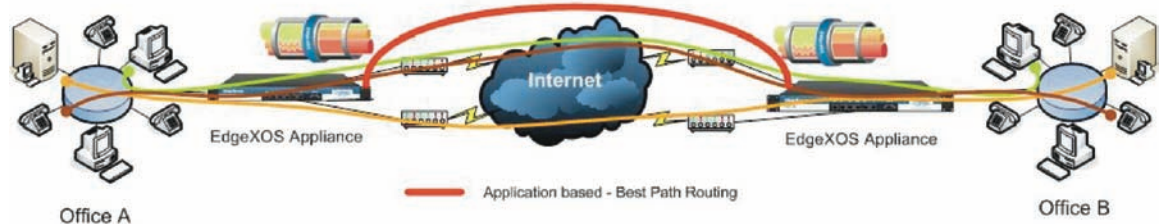
Best Path Routing Thresholds: Enable dynamic path selection, which automatically determines the best path to route the tunnel traffic.



Site-to-Site QoS: As packets traverse the Site2Site tunnels, packet labeling is performed (as in MPLS networks) with the label state remaining constant from end-to-end. This ToS/Diffserv labeling can be used to classify packets based on application type in order to prioritize critical applications. In addition, the EdgeXOS platform incorporate full rate-shaping and bandwidth partitioning at each end of the tunnel thus guaranteeing critical application priority between sites.

Mesh VPN Link Sharing: Advantages

End-to-End QoS is delivered through stateful Tos/Differv settings and shaping policies which can be applied at both ends of the tunnel.



Problems w/Packet Splitting: Even though our MVLS solutions will support packet splitting capabilities in 2008, it is not typically recommended. Packet splitting is only useful when traversing high quality non-degradating links. This is due to the nature of network connectivity and how the TCP/IP protocols work.

What is packet splitting: Packet splitting (also known as tunnel aggregation) increases speeds for single sessions by splitting the session's packets across two or more WAN links. While this method can dramatically improve network throughput, it does not always improve network responsiveness.

For example, if packets are being split across two or more links and one of the links begin to perform badly, i.e. the link begins dropping packets or the latency gets so high that the remote tunnel device is unable to adequately re-assemble the packets in a timely basis.

Under either of these conditions the overall performance of the site-to-site connection is actually reduced, even though the throughput may be increased. The net results are very slow response times for real-time applications, and slower than expected download speeds for large file transfers.

At XRoads Networks' we realize that there are times that packet splitting can be used effectively to improve site-to-site performance for large file transfers. However for most network usage, i.e. VoIP, CRM, web applications, database access, and other short-term real-time applications, our session balancing option with Best Path Routing is the best possible approach. When combined with our fully meshed redundancy, built-in end-to-end QoS, and traffic shaping there simply is no better option for remote office connectivity.

Summary

The EdgeXOS platform delivers a unique and complete remote office connectivity solution that ensures that the overall experience for remote end-users is positive and without interruption. Our MVLS technology provides a **more reliable, more responsive, and more cost effective** remote office connectivity solution than any other available on the market today.