LEVEL-7 SWITCHING

MANAGING TRAFFIC FLOW

VERSION 0.4

INTRODUCTION

As use of the Internet in business has become commonplace, browser-based computing has similarly increased in complexity. Web Hosting, Online, Content and E-commerce companies – all rely on fast, reliable, error-free Web performance to run their operations. A typical corporate web site includes Web and database servers, routers, firewalls, L2/L3 switches, caches and other heavy components. The speed of a web site depends on how well these devices work together and how well traffic is managed within.

Application Level (L7) Switching is a new approach to server load balancing, specifically designed to address the unique requirements of Web traffic management. L7 Switches are "smart,"that is, armed with sophisticated load balancing capabilities, bandwidth management tools and the highest level of control over incoming traffic. The net result is a consistently positive experience for Web site users.

L7 SWITCHING IN DETAIL

WHAT IT L7?

L7 switches look into the HTTP header in making load-balancing decisions, rather than simply stopping at the TCP port number. By examining the HTTP header, the switches can make decisions on how individual Web pages and images get served from the site. This level of traffic control can be helpful if Web servers are optimized for specific functions, such as image serving, SSL (Secure Sockets Layer) sessions or database transactions. Efficient use of this technology can improve site performance, take better advantage of available resources, and better direct resources to target audiences.

HOW IT WORKS

HTTP is carried on top of TCP sessions to guarantee delivery of all requested Web content. A client usually connects directly to a server using a TCP on Port 80 (the default for Web services) and then sends an HTTP request to the server through the TCP session. xLswitch then intercepts and analyzes the data in the HTTP request and makes intelligent traffic management decisions based on its content. In some instances, the server response can be analyzed, as well.

The information contained with the HTTP request and header that can be extremely useful, the first of which being the exact URL or Web page the client is requesting. xLswitch uses this information to direct all images to an image server or all database queries to a specialized Web server optimized for database operations. Administrators can use L7 switching to improve or enforce levels of services for particular customers based solely on a cookie field within an HTTP header, or a parameter passed to a CGI script- such as user ID or service class. If something shows up in the HTTP request, you can use it to make a decision.

After the decision is made, xLswitch then passes the request to a real server processes it. This could be done by establishing a new connection to the server, or by using one of existent connections from the persistent connections pool. In the latter example, we could considerably decreainge the load on Web server by consolidating clients into fewer sessions, thusmaking the use of the cache more effective.

Next, the client and server connections are "spliced" using SWsoft's patent-pending technology, allowing both server and client xLswitch to appear as a transparent device. Notably, servers will have the real client IP in their logs. xLswitch also does not perform expensive full recalculation of TCP/IP checksums, another distinctive performance advantage of TCP-splicing technology.

PRACTICAL APPLICATIONS OF TRAFFIC MANAGEMENT IN E-BUSINESS

L7 switching technologies can solve many of the new infrastructure problems created by Web hypergrowth. Some examples are be found below:

VIRTUALIZING CONTENT

The good old days of single-machine Web servers are gone. Complex sites have content distributed between different servers, geographical locations and multiple single-task appliances;but theystill need to look like a single site to the world. With xLswitch, the most popular site content can be easily moved onto to another machine without anyone noticing. Usually this is done with redirects, but search engines do not like them and do not often follow them.

INCREASING SITE PERFORMANCE

HTTP1.1 supports persistent connections – many requests from the client are able to come over one TCP/IP connection. L4 load balancers will direct all these requests to a single server, as they cannot distinguish between them. L7 switch could decrease distribution granularity by directing these requests to other real servers.

IMPROVING SERVER EFFICIENCY

Different types of traffic are first able to be sent to the server optimized to deal with this type of traffic.(CHANGE _ THIS DOESN"T MAKE SENSE) Second, even if they are general purpose servers, dealing with similar kind of requests (e.g. user being directed to the specific server) increases the effectiveness of server caches on all levels (file system, app server, etc.)

CONSERVING IP ADDRESS SPACE

Hosting Service Providers are encouraged by Internet registries to employ a name-based system of Web hosting -- a method that enables multiple domains to be hosted by a single IP address. In contrast, an IP-based system requires a distinct IP number for each domain, obviously wasting valuable IP addresses. Widespread use of the name-based system will

significantly reduce the number of addresses needed for Web hosting and will help to conserve the limited supply of available addresses.

xLswitch can be used for directing traffic from one public (real) IP address to many private IP addresses, e.g. depending on the Host: field of HTTP1.1 or user name for FTP.

C O N C L U S I O N S

The xLswitch traffic management solution solves real problems for e-business in a simple, powerful way and allows corporate enterprises to maximize the resources that exist in their systems.
(DOES THIS NEED MORE CONCLUSION?? It would be conclusion if we don't)