

# xLswitch Application Notes

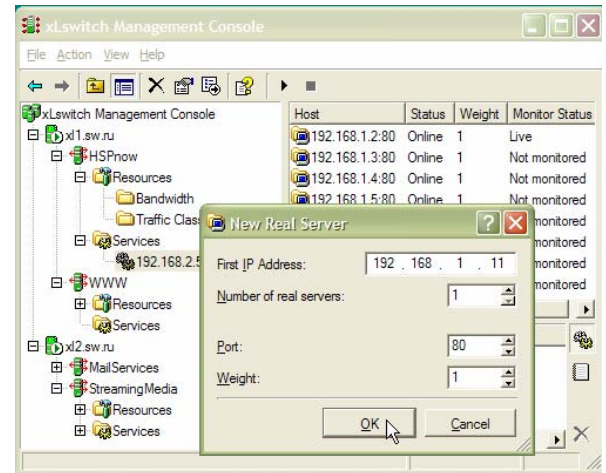
## Good news:

- Load Balancing maximizes Web site performance while protecting the value of prior investments
- Bandwidth Management optimizes network for better information flow
- Active-Active configuration ensures High Availability and allows all hardware to work for you
- Level-7 Switching intelligently directs site traffic to optimize resources

## Load balancing for scalability

Creating a new Web site is simple these days and just about anybody could do it. Keeping it up and running 24x7 and managing the growth, however, is a much more difficult task.

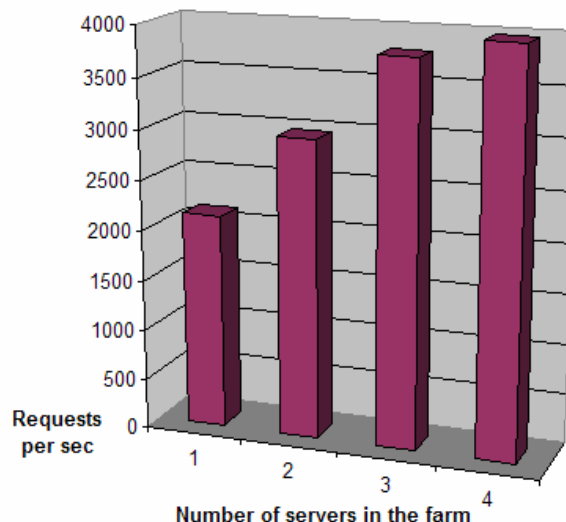
Good news –xLswitch allows you to easily extending the capacity of your site. Using the xLswitch Management Console is pretty simple and requires just a few mouse clicks - see the screenshot on the right side.



*Increasing Site Capacity by adding a new Real Server*

***Load Balancing maximizes the site performance while protecting the value of prior investments***

**Web Site Scalability with xLswitch**

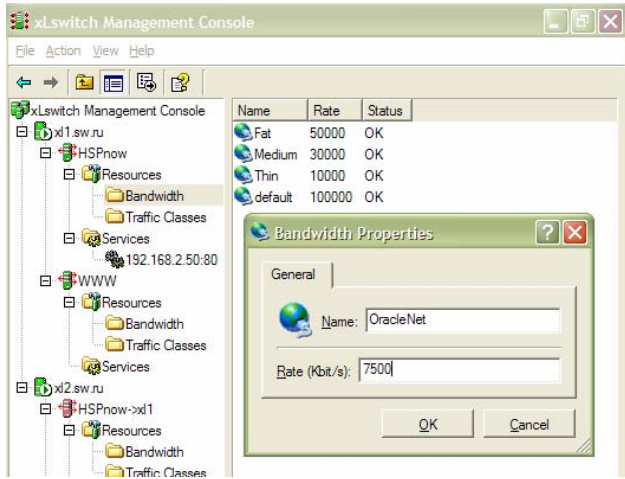


When the load gets your Web site down, you have two choices – either to buy new and more powerful (and expensive) replacement hardware for server, or add a second server and balance the load between them.

Clearly, balancing the load is better – you are not discarding the old hardware, and you will have a straight upgrade path in the future.

The chart on the left demonstrates an almost linear raise in site performance when adding more servers to the farm.

# Bandwidth Management for service differentiation



Bandwidth Allocation in GUI

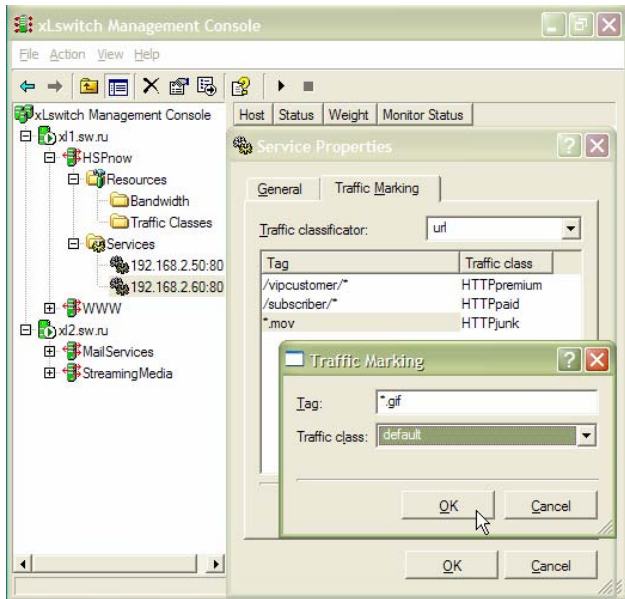
Bandwidth management is a fundamental requirement for business traffic. Agile Enterprises builds networks that mix high-bandwidth streaming media or videoconferencing applications with relatively low bandwidth, but high priority interactive applications (like stock quote systems).

Quality of service in the xLswitch model is defined by allocated bandwidth,

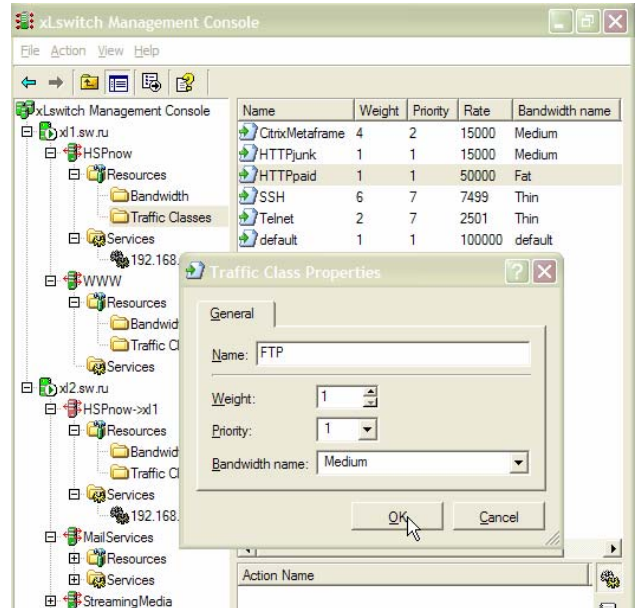
priority and weight. Bandwidth sub-allocation is also defined for each director – see diagram on the left.

Priority (defining which packets will leave the interface first) and weight is defined during the definition of Traffic Classes. When you assign the same bandwidth for more than one traffic class, the relative weight will define the proportions in which they will share it.

**Sales tools could be given absolute priority and guaranteed bandwidth, ensuring that your sales force never has to wait for a price quote**



Traffic marking – define what traffic class will be chosen for what session



Defining Traffic Classes

Any service has a “Default Traffic Class” parameter. By setting it to any class other than default, you can control QoS for that service. However, the real power is available with L7-aware service types – you

can fine-tune traffic marking for such services, and assign QoS dynamically per session. See the example to the left, where QoS is changed depending on the URL.

## Active-Active xLswitch configuration

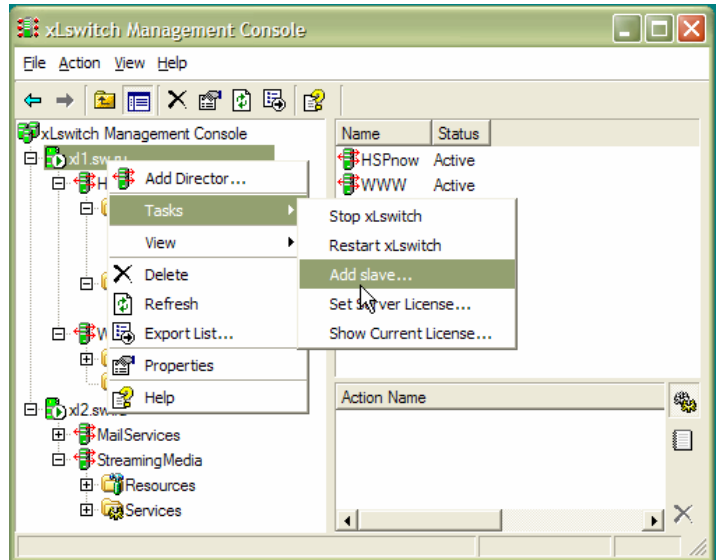
Placed between the client and real servers, xLswitch becomes a single point of failure. While your software was tested extensively, and is not supposed to fail during day-to-day operations, anything can happen and a single hardware glitch could disable all access to your site. Fortunately, xLswitch has support for stand-by (slave) xLswitch.

To add a slave server to xLswitch site, you need to make sure the site is prepared accordingly to "xLswitch Administrator's Guide", High Availability

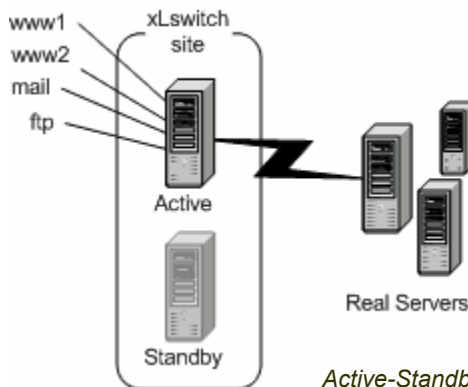
Configuration Prerequisites" section.

After completing the check-up list, use the xLswitch management console to connect with both servers (if you are connected to only one server, the "Add Slave" menu item will be inactive.)

Now, right-click on the master server name (x1 in our example), and choose "Tasks -> Add Slave" from popup menu. Select the slave server name (x2 here), and press "OK."



*Adding a Slave to xLswitch*



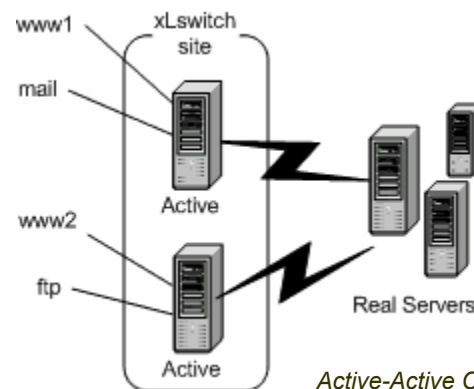
*Active-Standby Configuration*

However, our slave server is not doing anything and sits there, waiting for master failure. All clients are coming through the master xLswitch. The logical choice in our situation is to set some services up on x12, as well, and configure x1 as a slave server for x12. This symmetrical configuration

(each master is a slave for its own slave) is also called Active-Active configuration.

Now, both servers are taking part in the load and, in case of server failure, its share of load will be beared by another.

**Active-Active xLswitch configuration ensures High Availability and maximizes the hardware potential of Real Servers**



*Active-Active Configuration*

## L7 switching for optimization

**Optimize one of your Web servers for serving graphics, another for database access, then use xLswitch to combine them into a high-performance cluster**

There are many ways in which L7 switching could help you to optimize performance. Let's consider a pretty standard contemporary site running Apache with a backend, accessing the database, which is written in perl.

The major problem of this setup is that it requires a large amount of memory for each Apache process (one such process is

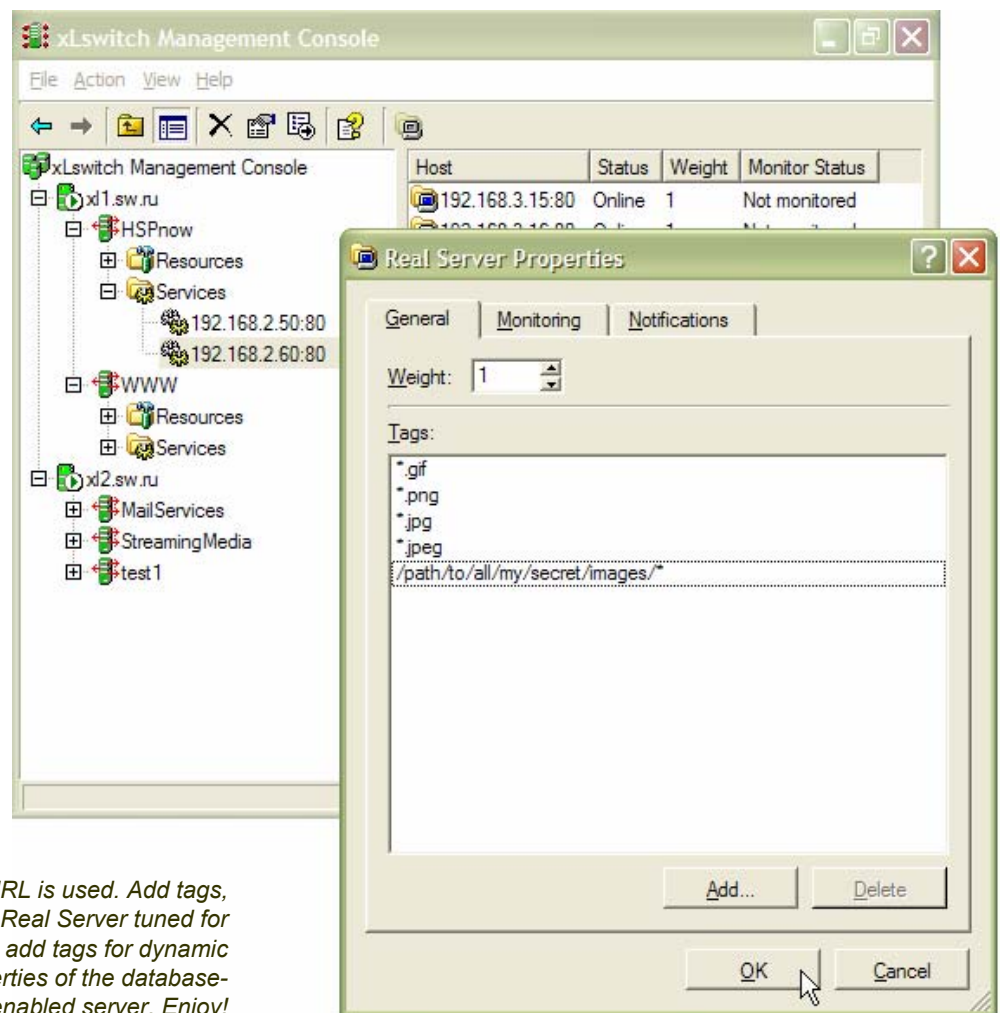
started for each client request). It could easily be 5, 10, or even 20 MB of RAM per client.

Unfortunately, even if you are not going to access the database, and just request an image file, the same amount of RAM will be used.

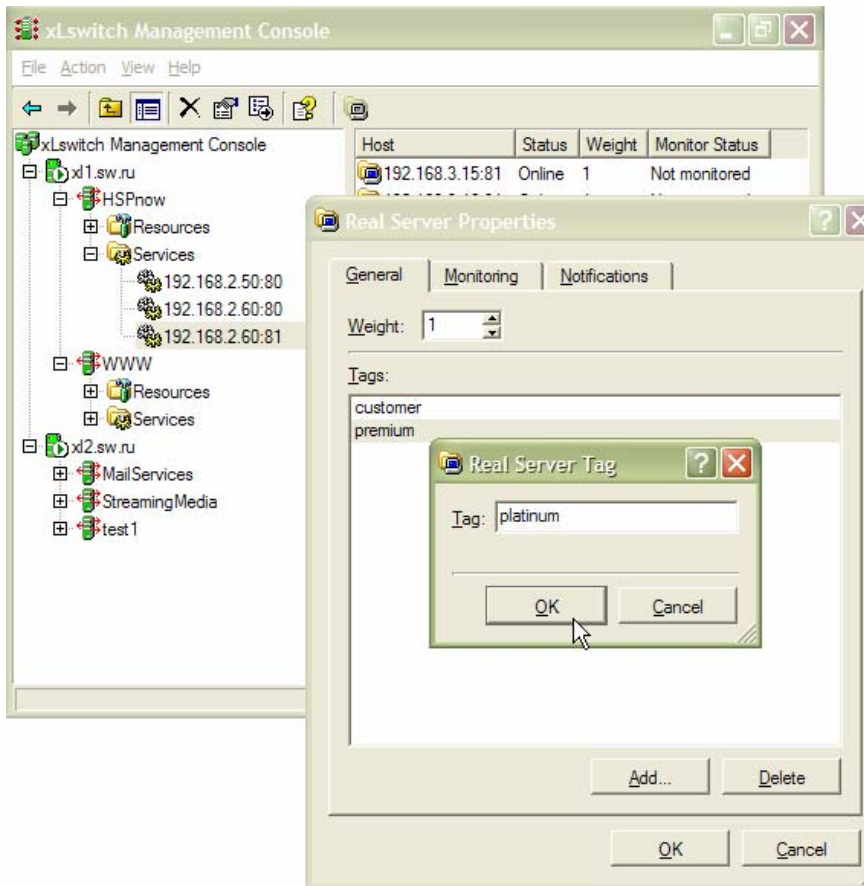
xLswitch provides an easy way out – add a second Web server without that memory-consuming

database backend, and direct all requests for images to it. As typical Web page contains at least 5-10 images, the memory consumption on a database server will be much lower.

You can even run the second Apache instance on a different port or address on the same machine.



*Service of type HTTP-by-URL is used. Add tags, matching images to the Real Server tuned for serving static files, then add tags for dynamic contents to the properties of the database-enabled server. Enjoy!*



You could also use cookies as a differentiator, for example, to introduce classes of service for your customers – e.g. “serve all paid or premium customers from separate, less loaded server” (may be with different content as well). All you need is to indicate parameters, defining the client status in the cookies.

Now, create HTTP-by-Cookie service, set the cookie name, and add appropriate cookie values as tags to the servers in the farm. On the screenshot, users with cookies “customer”, “premium” and “platinum” will be directed to the dedicated server. It’s that easy.

## Customer Quotes

- FashionLook.com, one of Europe’s largest fashion Web sites, experienced substantial decreases in downtime and better site performance when engineers integrated a customized xLswitch solution. “Our site is highly graphical and has a lot of dynamic content. These things usually don’t mix well,” said Anatole Orehovsky, IT Manager, FashionLook.com. “We noticed significant increases in site performance and reduced server load with the implementation of the xLswitch software.”*
- HSPstreet, the leading portal for hosting service providers and IDCs, was able to implement personalized service delivery based on xLswitch to optimize user experiences for premier subscription accounts. “We appreciate the flexibility and ease of use of GUI tools,” said Ivan Boiko, HSPstreet.com project manager. “And we need the extra performance that xLswitch provides every morning when thousands of readers open our site for fresh industry news.”*



395 Oyster Point  
Blvd, Ste 213  
So. San Francisco  
CA 94080

PHONE:  
(650) 875-7185

FAX:  
(650) 875-7148

E-MAIL:  
sales@sw-soft.com

See us at:

[www.sw-soft.com](http://www.sw-soft.com)

## SWsoft profile

SWsoft is an advanced server and networking software technology company that develops highly-scalable operating environments for standard Intel-compatible servers that rival those found on mainframes. SWsoft provides end-to-end solutions and services for hosting service providers

such as internet data centers, application service providers, managed hosting providers and hosting providers. SWsoft products deliver comprehensive solutions that help data centers automate management and accelerate operations to the speed of network.

Since it was founded in 1997, SWsoft employs more than 60 people at its headquarters in San Francisco and its Research and Development offices in San Francisco, Singapore and Moscow.

### Lead Developer

- Dr. Alexey Kuznetsov
- Chief Software Engineer
- PhD from MSU

Featured in Wired Magazine - "Keepers of the Kernel – Linux's Inner Circle" (Wired October 2001)

Maintains Linux kernel networking core (TCP/IP and IPv6), IP routing, traffic control and miscellaneous utilities



Virtuozzo™ is the world's most advanced and robust virtualization and high-availability solution, bringing mainframe capabilities to standard Intel-compatible servers.

Virtuozzo™ delivers multi-tenancy, clustering and advanced resource management. With Virtuozzo™ IT departments and solution providers can deliver

mission-critical services coupled with true fault isolation, performance isolation, address and security isolation, functional isolation and application heterogeneity.



HSPcomplete is a unified solution for service providers based on the market-leading Virtuozzo™ technology. Using HSPcomplete

service providers can easily automate resource and network management, automate service provisioning and billing, increase service

options, and increase revenues by automating the direct and reseller sales.



xLswitch is a sophisticated traffic, bandwidth and content management software designed to give service providers fine-tuned control over bandwidth utilization, providing a flexible traffic and content switching

platform. xLswitch enables multiple servers on the LAN to act as a unified high-performance, highly available system. Combined with HSPcomplete and Virtuozzo™, xLswitch enables enterprises to

provide scalable, highly available hosting services. The xLswitch-HSPcomplete solution provides fail-over and load balancing services of your customer VEs, reseller VEs and your hosting management operations.