InfoWorld
February 26, 2007 ■ Issue 9
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EqualLogic iSCSI SAN Hits High Notes

PS3800XV is simple to configure, blazing fast, and manages dissimilar arrays with ease

IT SEEMS THAT EVERY TIME I configure an EqualLogic iSCSI SAN array in the company of folks who've never seen the process, they ask the same question: "Really? You're already done?" The answer, always, is Yes.

The simplicity of EqualLogic's management platform extends from the CLI to the GUI interface, and is also exhibited physically with the simple chassis and controller design. Form certainly follows function, but the PS3800XV isn't lacking in either. Suffice it to say, I really like this array.

Scalability and Performance

There are many ways to build and scale an iSCSI SAN, but the general rule is that as you add capacity, you also add bandwidth. With EqualLogic, this is part and parcel of the overall solution: You can't add capacity without adding bandwidth.

The PS3800XV sports 3Gb NICs per controller, for a total of six interfaces. The controllers function as active/passive partners, with three of these NICs waiting in the wings to take over and the other three as independent entities, each with a unique IP and MAC (media access control) address that's shared with its passive counterpart. There's no EtherChannel, bonding, or other port aggregation methods in use, since load balancing is handled with native iSCSI referral commands.

This setup performed perfectly in the lab with a selection of iSCSI software initiators. Theoretical throughput is in the 300MBps range; in practice, I was able to get close to 300MBps with three clients, each pushing 100MBps reads from the array. Even more interesting is the fact that I was able consistently to reach 100MBps throughput on CIFS filesharing tests using an HP DL360 as a fileserver with an iSCSI LUN (logical unit number) mounted via the Microsoft iSCSI software initiator, and 12 simulated clients running from nbench. That's better performance than many native CIFS filers are able to produce. In fact, it's better than most fileservers writing to local disk.

Part of the reason for the PS3800XV's high performance is its SAS (serial attached SCSI) drives. My evaluation unit came with 16 147GB Maxtor 15K RPM SAS drives, providing a raw capacity of 2.3TB (usable capacity is 1.53TB with RAID50). The rest of the high performance comes from the enormous 2GB battery-backed cache integrated into each system.

These batteries are designed to provide power to the cache for more than 72 hours with a full charge, so worries about lost writes are minimal. Also, with RAM caching of this size, it's nearly impossible to eclipse the cache space during normal operations. The end result is screaming throughput.

EqualLogic PS3800XV

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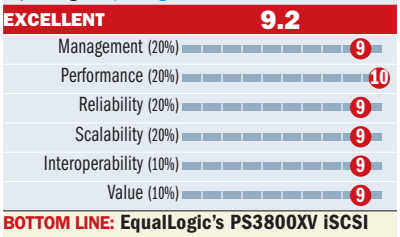
EXCELLENT 9.2



BOTTOM LINE: EqualLogic's PS3800XV iSCSI array represents the highly evolved state of iSCSI SAN arrays with panache. Fully featured and blazingly fast, this SAS-based array will easily find a home in infrastructures of any size, although the cost will keep it out of smaller shops. For virtualization implementations, you can't do better than a PS3800XV.

I ran a slew of performance tests on this array, including the aforementioned nbench tests. I also ran my not-really-patented four-day stress test, which involves creating a 1TB LUN (logical unit number), mounting that LUN on a Linux server and writing 1TB in 2GB files from /dev/zero, deleting all files, then starting again. Rinse and repeat for four days, and see what breaks. In this case, nothing broke, and the average write speed was 95MBps across all iterations, with total data transfers well over 10TB.

Everyone Into the (Storage) Pool

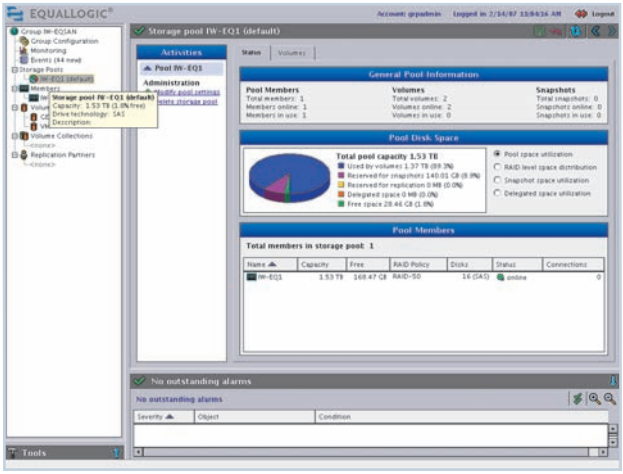
As I mentioned, configuring the PS3800XV is a blindingly simple task. For the initial setup, EqualLogic ships

a universal plug-and-play configuration client with the unit. When a bare unit is powered up, this utility finds it and runs the ground-up configuration, stepping the user through all necessary options. It's essentially the same as plugging into the serial console on one of the controllers and running through the initial configuration there, but without all the hassles of finding the right serial cable only to discover that your brand-new laptop doesn't have a serial port.

EqualLogic's architecture is based around array grouping, collecting one or more arrays into a management group that can be administered collectively from the same console. You also add capacity and manage tiered storage with this method. All of this is done through the PS3800XV's UI, which is the same Java application found on other EqualLogic arrays.

This GUI can manage any EqualLogic SAN array, and all existing array models can be combined into one storage pool. Storage tiering allows admins to leverage dissimilar arrays — for example, cheaper, slower SATA arrays such as the PS300E and the faster SAS-based PS3800XV— in the same pool. Configuration rules then dictate which volumes will exist on which array to ensure that high I/O apps get the speed they need and that space is available on slower arrays for long-term storage of less-utilized data.

I had no problems running the GUI within Firefox on Linux or Windows, Safari on Mac OS X, or Internet Explorer on Windows. The application also can be started as a Java Web Start app and run outside the browser on all those operating systems. Looking ahead, EqualLogic is preparing a software update for their arrays to provide thin provisioning later this year.



EqualLogic's Java-based admin console is an exercise in simplicity, yet offers plenty of information on the status of one or many arrays, as well as the ability to manage them from a single point.

Spend for Speed

The EqualLogic PS3800XV certainly isn't the cheapest iSCSI array out there — in fact, it's closer to the other end of the scale — but it represents the top end of the market with blazing performance, solid management tools, and more enterprise features than I have space to detail.

The density isn't extreme, as it's limited by the relatively small size of SAS drives, but the capability of mixing and matching larger SATA arrays with speedier SAS arrays makes for the best of both worlds. For infrastructures that don't need 2Gb or 4Gb Fibre Channel (which is the majority of the market) iSCSI is the way to go, and EqualLogic is showing us all how it's done.

— Paul Venezia