Frequently Asked Questions
Oracle ZFS Storage Appliance

Overview

Oracle ZFS Storage Appliance, which includes the Oracle ZFS Storage ZS3 series, delivers enterprise-class data services, file and block level support, scale, and performance. These systems have the industry's most comprehensive analytics environment provided by the DTrace Analytics feature of Oracle ZFS Storage Appliance, which includes innovative new tools to help isolate and resolve issues to minimize impact to your business. These systems are built on an innovative Hybrid Storage Pool architecture, another feature of Oracle ZFS Storage Appliance, which automatically optimizes performance by managing tiering among DRAM, flash, and disk, consolidating systems and lowering your power and cooling requirements.

Two controller models are available in the Oracle ZFS Storage ZS3 series:

- Oracle ZFS Storage ZS3-2: the midrange enterprise multiprotocol storage system ideal for use in performance-intensive workloads at an attractive price point

- Oracle ZFS Storage ZS3-4: the higher-end midrange multiprotocol storage system for workloads demanding extreme performance and scalability at an attractive price point

Both models use the same intelligent storage OS and enterprise SAS disk enclosures, but feature different storage controllers to meet the appropriate level of performance required for particular environments.

Refer to the NAS Storage page on Oracle.com for more information (http://www.oracle.com/zfsstorage).

Customer Benefits

Optimized for Oracle applications

Oracle's premier application engineered storage for multiprotocol environments delivers extreme performance, superior efficiency, and deep Oracle integration. Oracle ZFS Storage Appliance is designed to run applications faster and more efficiently, increase business and IT productivity, save valuable resources and reduce risk—lowering total cost of ownership. Furthermore, co-development with Oracle Database maximizes your return on Oracle software investments.

Easy to deploy, analyze, and optimize

Provisioning and management are dramatically simplified in Oracle ZFS Storage Appliance with an easy-to-use management interface that requires no additional training and takes the guesswork out of system installation, configuration, and tuning. DTrace Analytics an intuitive analytical environment that provides storage administrators with the tools to optimize the configuration of their storage system and maximize performance to address their application requirements.

Rapidly diagnose, troubleshoot, and resolve issues

DTrace Analytics provides real-time analysis of Oracle ZFS Storage Appliance and of the enterprise network, from the storage system to the clients accessing the data. This unprecedented capability permits administrators to quickly find and troubleshoot issues affecting the system performance, minimizing impact to business productivity. The data can be saved for further analysis to better understand the network, application, and system behavior.

Frequently Asked Questions

Q: I currently own Oracle's Sun ZFS Storage 7120 system. What is the most similar product in the new Oracle ZFS Storage ZS3 Series?

A: An unclustered Oracle ZFS Storage ZS3-2 with a single disk tray is most similar. Oracle ZFS Storage ZS3-2 has a higher initial cost, but it is far more expandable than Sun ZFS Storage 7120, and unlike Sun ZFS Storage 7120 can be clustered later for higher availability.

Q: I currently own a Sun ZFS Storage 7320 system. What is the most similar product in the new Oracle ZFS Storage ZS3 Series?

A: Oracle ZFS Storage ZS3-2. Oracle ZFS Storage ZS3-2 has a slightly higher initial cost, but it is far more flexible and expandable than Sun ZFS Storage 7320—scaling to four I/O slots per controller and 16 drive enclosures per system.

Q: I currently own a Sun ZFS Storage 7420 system with four 8-core processors and less that 512 GB DRAM. What is the most similar product in the new Oracle ZFS Storage ZS3 Series?

A: Oracle ZFS Storage ZS3-2. Oracle ZFS Storage ZS3-2 has a lower initial cost and similar memory and expansion capabilities—scaling to four I/O slots per controller and 16 drive enclosures per system.

Q: I currently own a Sun ZFS Storage 7420 system with more than 512 GB DRAM. What is the most similar product in the new Oracle ZFS Storage ZS3 Series?

A: Oracle ZFS Storage ZS3-4 has 1 TB DRAM per controller and expands to 36 disk enclosures. It is ideally suited for both performance and capacity-intensive workloads.

Q: My current systems use 500 GB read flash drives. Can I install the newly released 1.6 TB read flash drives in the system?

A: No. The Oracle ZFS Storage ZS3 systems use a SAS internal bus. Sun ZFS Storage 7420 and 7320 use SATA technology. The two cannot be intermixed. The transition to upgraded read flash drives is because of a transition in market technology rather than an improvement in the actual drives. Using 500 GB read flash drives will allow you to see performance improvements simply by upgrading to OS8.

Q: What is the reason for the Sun ZFS Storage 7420 system upgrade to SAS internals?

A: The primary driver for the timing of this release is manufacturer's end of life of the SATA read flash and 500 GB SATA boot drives used in the current Sun ZFS Storage 7420 configurations. This is an interim product that will be helpful if you require more time to transition to the new Oracle ZFS Storage ZS3-4 and OS8 platform. The last order date of the current Sun ZFS Storage 7420 configurations is September 30, 2013, because availability of existing SATA parts is limited. These systems will run 2011.1.x firmware, but like all 7x20 systems, they can be upgraded to OS8 later.

Note: as of May 31, 2014, Sun ZFS Storage 7420 is EOL'd. The replacement products are Oracle ZFS Storage ZS3-2 and Oracle ZFS Storage ZS3-4.

Q: Is there any advantage to Oracle ZFS Storage ZS3 systems over the Sun ZFS Storage 7420 with SAS internals?

A: Yes. Oracle ZFS Storage ZS3-4 has faster and denser SAS expander cards. If you require time to test OS8 in your environments, you should consider Sun ZFS Storage 7420. Everyone else will be better off with Oracle ZFS Storage ZS3 systems running OS8.

Q: Are there any enhancements to Oracle ZFS Storage ZS3-2?

A: Yes, three enhancements have been made to Oracle ZFS Storage ZS3-2, effective June 3, 2014:

1. Oracle ZFS Storage ZS3-2 can support 16 trays (up to 384 drives) maximum. A second SAS HBA card and cables will need to be added to the system to expand beyond 8 trays.
2. Oracle ZFS Storage ZS3-2 can support the 32 GB DIMM, in addition to the current 16 GB DIMM. This increases the maximum amount of memory per controller to 512 GB.
3. Oracle ZFS Storage ZS3-2 can have up to four network adapters of the same type, up from two network adapters supported previously.

Q: What is the hardware warranty?

A: The hardware warranty is one year with second business day hardware service response. For complete terms, visit:

http://www.oracle.com/support/collateral/oracle-hardware-warranty.pdf

Q: What's different about the Oracle ZFS Storage Appliance deduplication compared to other storage systems offering deduplication?

A: Unlike other unified storage systems, deduplication occurs inline on Oracle ZFS Storage Appliance. This means data is deduplicated as its being created. On other systems, the deduplication process is run as a daily scheduled process, at night for example, to limit system performance degradation. Oracle ZFS Storage Appliance can run deduplication inline because it has far more processors available in the system and an efficient multithreading operating system (Oracle Solaris) that can take advantage of them. In addition, ZFS's large, 256-bit checksum, compared to 16-bit checksums on other systems, allows a much more efficient deduplication. Oracle ZFS Storage

Appliance also can deduplicate across much larger pools compared with competitive systems—meaning more data can be deduplicated.

Q: How does the snapshot capability work within Oracle ZFS Storage Appliance?

A: A snapshot is a read-only copy of a file system or volume. Snapshots can be created almost instantly, and initially consume no additional disk space within the pool. However, as data within the active dataset changes, the snapshot consumes disk space by continuing to reference the old data and so prevents the space from being freed.

ZFS snapshots include the following features:

- Persist across system reboots.
- The theoretical maximum number of snapshots is 2^64.
- Use no separate backing store.
- Snapshots consume disk space directly from the same storage pool as the file system from which they were created.
- Recursive snapshots are created quickly as one atomic operation. The snapshots are created together (all at once) or not created at all. The benefit of atomic snapshots operations is that the snapshot data is always taken at one consistent time, even across descendent file systems.
- Snapshots of volumes cannot be accessed directly, but they can be cloned, backed up, rolled back to, and so on.

Q: What RAID levels are supported on Oracle ZFS Storage Appliance?

A: See the latest information on the appliance data sheet at:

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

Q: Is there any limit to the size of a storage pool?

A: There is no limit to the size of a pool, other than the disk capacity in the system.

Q: Does adding additional disk arrays require downtime?

A: No downtime is required to add a disk array to an existing SAS HBA in the controller.

Q: How fast is Oracle ZFS Storage Appliance?

For SPC-1 official benchmark results, see:

http://www.storageperformance.org/benchmark_results_files/SPC-1/Oracle/A00108_Oracle-Sun-ZFS-

7420c/a00108_Oracle-Sun_ZFS-7420c__SPC1_full-disclosure.pdf

For SPC-2 and SPC-2E results, see:

http://www.storageperformance.org/results/benchmark_results_spc2#BE00002

Q: What are the key features and benefits of Oracle ZFS Storage Appliance?

A: The Oracle ZFS Storage Appliance systems provide several key storage technologies that set them apart from other appliances in the market. The main differentiators are listed below. For additional details, please refer to the product web page at the following link, under NAS Storage.

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

Q: Do the software features for Oracle ZFS Storage Appliance need to be ordered separately?

A: With the exception of Replication and Cloning, all other features are included with the price of the appliance.

Q: What are the specifications, including environmental, for this appliance?

A: Please refer to the data sheet:

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

Q: What are the network connectivity options and supported protocols?

A: Please refer to the data sheet:

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

Q: Where can I find the official end-user documentation for Oracle ZFS Storage Appliance?

A: You can find it at the following link:

http://www.oracle.com/technetwork/documentation/oracle-unified-ss-193371.html

Q: Is there a licensing requirement to store data compressed by Oracle Hybrid Columnar Compression in Oracle ZFS Storage Appliance?

A: You must be running Oracle Database 11.2.0.3 Enterprise Edition in order to use the Oracle Hybrid Columnar Compression feature of Oracle ZFS Storage Appliance. There is no need to license the Advanced Compression

option, nor is there anything extra to license on Oracle ZFS Storage Appliance.

Q: Is there a way to estimate the storage savings for Oracle Hybrid Columnar Compression?

A: Yes, the Oracle Advanced Compression Advisor that is included in Oracle Database 11g Release 2 can be used to estimate Oracle Hybrid Columnar Compression storage savings. Note that the version of the Oracle Advanced Compression Advisor that is available for download from Oracle Technology Network (OTN) is NOT able to estimate Oracle Hybrid Columnar Compression storage savings; it can be used only to estimate storage savings for OLTP table compression and BASIC table compression.

Q: Is there a specific Oracle ZFS Storage Appliance software version to support Oracle Hybrid Columnar Compression?

A: No, but it is recommended to install the latest offering.

Q: Is the Cloning license an unlimited license (number of copies of clones)?

A: Yes, no limit on number of clones.

A: How can users download the Oracle ZFS Storage Appliance software and the available plug-ins (including VMware)?

See instructions in this link:

http://www.oracle.com/technetwork/server-storage/sun-unified-storage/downloads/index.html

Q: Can Oracle Enterprise Manager be used to monitor Oracle ZFS Storage Appliance?

A: Yes, there is a plug-in that connects Oracle ZFS Storage Appliance with Oracle Enterprise Manager to allow for n-way views of all appliances in the infrastructure.

Q: Do we also need the Oracle Enterprise Manager Ops Center to monitor the ZFS Storage Appliance?

A: No. While there is support for the ZFSSA in Oracle Enterprise Manager Ops Center, it is an optional management software available for streamlining multi-system management.

Q: How does Enterprise Manager enable self-service storage?

A: The plug-in now provides the ability to provision file systems and LUNs on the ZFS Storage Appliance through Enterprise Manager. The storage administrator can also allow users to access this capability with their own login to provision a project they have permissions to edit.

Therefore, the storage administrator can create a project, assign a user and role to have limited rights to the project, and share these permissions with users that will allow them to self-administer their allocated storage through Enterprise Manager.

Q: Where can I find documentation on Oracle ZFS Storage Appliance plug-in for Oracle Enterprise Manager?

A: Documentation can be found online:

http://download.oracle.com/otn/java/oem/Oracle_GC_Plugin_InstallGuide.pdf

Q: Does the plug-in work with all types of storage?

A: No. This plug-in is for Oracle ZFS Storage Appliance only. Other storage devices will need their own plug-in to integrate with Oracle Enterprise Manager.

Q: What is the cost for the Oracle ZFS Storage Appliance plug-in for Oracle Enterprise Manager?

A: There is no additional cost for the Oracle ZFS Storage Appliance plug-in. The software is available to download for any registered oracle.com user:

http://www.oracle.com/technetwork/oem/grid-control/downloads/zfs-storage-plugin-487867.html

Q: Does ZFS Storage have a programming API?

A: Yes. With the OS8.2 release, ZFS Storage supports a fully featured RESTful management API, which is ideal for public and private cloud orchestration.

Q: Does ZFS Storage support OpenStack?

A: Yes. OpenStack Cinder today. OpenStack Swift is under investigation for later integration.

Q: Does ZFS Storage support VMware storage APIs?

A: Yes. We are developing an entire suite of integrations. Today, we have a Site Recovery Adapter, a vSphere API plug-in, and the full clone function for VAAI.

Q: When should I select 10,000 RPM drive configurations versus 7,200 RPM configurations?

A: Oracle ZFS Storage Appliance uses Hybrid Storage Pool to manage storage across DRAM, flash, and disk media in order to optimize performance. This means that systems with 7,200 RPM drive configurations can perform extremely fast. 7,200 RPM drives use less power, cost less on a per-GB basis, and consume less floor space on a per-GB basis. Thus, 7,200 RPM drives are recommended for the majority of situations. However, 10,000 RPM drives are

also available if you require the absolute maximum I/O performance in certain use cases involving rapid I/O of random, uncached data such as virtualization, mixed environments, OLTP, and email storage.

Q: You used to offer 15,000 RPM drives. Won't the slower 10,000 RPM drives reduce performance by one-third?

A: No. The high amount of flash and DRAM, combined with Hybrid Storage Pool technology, makes the performance impact of "slower" HDDs indiscernible in most environments.

Q: Can I configure Oracle ZFS Storage Appliance with both high-speed and high-capacity drives?

A: Yes, as long as the high-speed drives and high-capacity drives are in separate disk shelves and separate storage pools, a given Oracle ZFS Storage Appliance controller can manage both types of drives. It is also recommended, if possible, to put drives of different speeds into separate SAS fabrics.

Q: What is the maximum number of snapshots and clones that can be taken of a share or LUN?

A: There is no limitation aside from available storage space.

Q: Can a LUN or share be restored to a previous point in time state?

A: Yes, you can restore a share or LUN to any previous snapshot. Snapshots can be taken manually or scheduled to occur on an ongoing basis.

Q: Is user quota management possible on an appliance?

A: Yes, you can assign quotas to individual users or to groups. This can be accomplished via the BUI, the CLI, or via workflows.

Q: Can shares or LUNs be expanded after initial creation?

A: Yes, you can add new disks to an existing pool, and then the existing shares and LUNs in that pool are able to use the additional capacity.

Q: What is the maximum number of LUNs, targets, and initiators supported?

	iSCSI	FC	InfiniBand
Targets	255	1 per HBA port	1 per HBA port 255 (iSER)
LUN/Target	16,384	16,384	16,384
Initiators	64,000	64,000 (appliance) 2,048 (HBA port)	64,000

Q: Are both VLANs and link aggregation supported?

A: Yes, VLANs (IEEE 802.1Q) and LACP (IEEE 802.3ad) are supported.

Q: What is the maximum file size and maximum file / directory / share count?

A: The theoretical maximum file size is 264 bytes. (This is equal to the maximum volume size, also.) The theoretical maximum number of files/directories that can exist on a single share (via NFS, CIFS, etc.) is 248. Additionally, 248 shares can exist per pool. That means a total of 296 objects per share.

Q: How many concurrent users can access a share?

A: The number of maximum users who can access a share (either CIFS or NFS) is theoretically unlimited. However, practical limitations such as network or other infrastructure exist in any environment.

Q: Is snapshot integration with Microsoft products possible to create logical backups?

A: Yes, a Volume Shadow Copy Service for Oracle ZFS Storage Appliance is available for Microsoft products that use this technology.

Q: Are there any planned scalability enhancements?

A: Yes, Oracle ZFS Storage ZS3-2 currently supports 8 trays (up to 192 drives) maximum. Oracle plans to double this to 16 trays (up to 384 drives) in the future. A second SAS HBA card will need to be added to the system to expand beyond 8 trays.

Q: What is the hardware warranty?

A: The hardware warranty is one year with second business day hardware service response. For complete terms, visit:

http://www.oracle.com/support/collateral/oracle-hardware-warranty.pdf

As with all product warranties, this warranty is designed to offer consumers basic recourse should a product defect be discovered. For more complete support, you should purchase the recommended support coverage at point-of-product-purchase to gain access to the services and resources you need and avoid potential reinstatement fees down the road.

Q: What is the recommended support for Oracle ZFS Storage Appliance systems?

A: For all storage systems being used in critical production and test environments, Oracle recommends Oracle Premier Support for Systems. This service provides the support, firmware updates, and proactive support tools you need to work more efficiently to minimize business risk and get the most from your investment. Features include access to 24/7 support and online resources as well as 24/7 hardware service coverage with rapid onsite response. For more information on Oracle Premier Support for Systems, visit:

http://www.oracle.com/us/support/systems/premier/061681.pdf

Q: Where can I learn more about use cases involving Oracle ZFS Storage Appliance?

A: Use the below link and scroll down to the Solutions section.

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

Q: How do I purchase this product?

A: Contact your Oracle sales representative or Oracle's authorized partner.

Q: Is there a trade-in program for my existing storage system if I wish to buy an Oracle ZFS Storage Appliance system?

A: An upgrade allowance program (UAP) is in place for trade-ins on Oracle's Sun Storage 7000 Unified Storage Systems. Not only Sun qualified products, but also competitive unified storage products, can be traded in. See the following link for more information:

http://www.oracle.com/us/products/servers-storage/upgrade-advantage-program/index.html

Q: Are there data migration services and tools available to assist my move to Oracle ZFS Storage Appliance?

A: Yes, there are two options. You can migrate your own data using the Shadow Migration feature included with Oracle ZFS Storage Appliance from any NFS system (EMC, NetApp, Oracle's Sun StorageTek 5320, etc.). Alternatively, Oracle is able to assist you with custom migration. Call 1-800-Oracle1 or contact your Oracle sales representative for more information.

Q: Are there any customer training courses available?

A: Yes, training is available through Oracle University. Contact your Oracle sales representative directly or call 1-800-Oracle1 for information.

Q: Is there a way to try out the Oracle ZFS Storage Appliance features without having to buy a system?

A: Yes, you can get a feel for the appliance features and BUI by downloading the simulator at:

http://www.oracle.com/webapps/dialogue/ns/dlgwelcome.jsp?p_ext=Y&p_dlg_id=10521841&src=7299332&Act=45

Q: Where can I find more information about Oracle ZFS Storage Appliance?

You can contact your Oracle sales representative directly or call 1-800-Oracle1. For more information about Oracle ZFS Storage Appliance, visit the following URL on the web:

http://www.oracle.com/us/products/servers-storage/storage/nas/overview/index.html

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