ORACLE DATA SHEET

Oracle Solaris ZFS: Scalable Data Management

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Oracle Solaris ZFS is a general purpose file system that is designed from the ground up to provide simplified, secure, and scalable data management—from the desktop to the data center.

KEY FEATURES

Oracle Solaris ZFS is a better, safer way to manage your data:

- Simplified data management with no separate volume manager
- Ensured data integrity with 256-bit checksums
- Reduced storage, power, and cooling with ZFS compression
- Integrated data services: encryption, compression, deduplication, snapshots and cloning
- Flexible data sharing protocols, including FC, NFS, SMB, iSCSI
- OpenStack CINDER (block) and Swift (object) support
- Seamlessly integrated with Oracle Solaris virtualization features

KEY BENEFITS

- Decrease storage complexity by using ZFS redundancy
- Reduce storage footprints by **3X** with ZFS compression
- ZFS encryption on SPARC hardware is faster than the competition

The Future-Proof File System

Oracle Solaris ZFS is a dramatic advancement in simplified data administration with a welcome integration of file system and volume management capabilities and an innovative approach to data integrity.

Oracle Solaris ZFS uses a pool storage model where storage devices are aggregated into a storage pool. File systems within the storage pool use all the storage in the pool. Physical storage devices can be added to storage pools dynamically without interrupting services, providing new levels of flexibility, availability, and performance.

ZFS has no practical limits on the number of files, directories, and file systems, or the amount of physical storage that can be addressed.

- Scale up file system performance by putting application data on faster SSDs
- Provide a greener and faster solution with 3X less power, cooling, and maintenance

Simplified Administration

ZFS administration is extremely easy because the elegant design eliminates the need for traditional volumes and the associated problems of partitioning, provisioning and stranding storage by enabling file systems to draw from a common storage pool, using only as much space as it actually needs.

ZFS is the default file system in Oracle Solaris 11 and as such, underpins installation, virtualization, security, and system cloning and recovery. For example:

- ZFS boot environments can be preserved and also rolled back in the case of an update failure
- Cloud application environments can also be replicated in development, test, and production environments
- A replicated cloud development or test environment can easily be deployed to the production environment and rolled back, if necessary

ZFS is also the foundation of the Oracle ZFS Storage Appliance, which means you get simplicity and reliability across your Oracle Solaris servers and storage.

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ZFS Data Security

- Secure critical business or client data by using ZFS encryption at peak performance.
- Lock down multitenant data by using ZFS read-only file systems.
- You can delegate reduced permissions to cloud tenants for ZFS snapshot and cloning, making it easy for application owners to deploy and configure Oracle Solaris ZFS file systems in a cloud environment quickly, while still protecting overall multitenant security and integrity.

Reduced Cost and Complexity

Oracle Solaris ZFS reduces costs in multiple ways:

- Efficiently reduces storage capacity with integrated compression.
- Eliminates licensing costs for no longer needed additional software such as volume managers.
- All administration tasks are performed online, resulting in significantly reduced administration.
- ZFS does not require a separate maintenance contract, which greatly simplifies support issues. There is a single point of contact and one maintenance contract for all software layers between the application and storage resources.
- ZFS redundancy features reduce costs by providing data redundancy without expensive hardware RAID arrays or building efficient cloud storage without whitebox sprawl.

RELATED PRODUCTS

Oracle recommends using the following products with Oracle Solaris ZFS:

- SPARC and x86 hardware
- Oracle database products
- Oracle middleware solutions

RELATED SERVICES

Oracle offers the following support options for Oracle Solaris:

- Oracle Premier Support for Systems
- Oracle Premier Support for Operating Systems
- Oracle Solaris Premier Subscription for Non-Oracle Hardware

Rock-Solid Data Integrity

Oracle Solaris ZFS combines copy-on-write technology with end-to-end checksums. Data is always written to a new block on disk before changing the pointers to the data and committing the write. Copy-on-write also enables you to take consistent backups or roll data back to a known point in time.

Oracle Solaris ZFS constantly reads and checks data to help ensure that it is correct, and if it detects an error in a mirrored pool, ZFS can automatically repair the corrupt data. This relentless vigilance on behalf of availability protects against costly and time-consuming data loss (even undetectable silent data corruption).

Integrated Data Services

Oracle Solaris ZFS provides data encryption, deduplication, compression, snapshot and cloning of file systems. This means that you can easily determine the characteristics of your data based on your needs without any additional costs. ZFS provides flexible data sharing services such as FC, NFS, iSCSI, and SMB in Oracle Solaris 11.

Enterprise OpenStack Integration

Oracle Solaris 11.2 integrates a full OpenStack distribution, the popular open source project that provides cloud infrastructure management. You can use OpenStack's CINDER (block storage) or SWIFT (object storage) interfaces to build your cloud storage on ZFS, taking advantage of its great features for cloud storage simplicity, security, and scalability.

With no compromise virtualization, lifecycle management, and security in addition to integrated ZFS features, updating the cloud is a single click all the way down to the firmware including all virtualized environments, with full failsafe rollback, if necessary.

Scalable Performance

The architecture of ZFS optimizes and simplifies code paths from the application to the hardware, producing sustained throughput at exceptional speeds. New block allocation algorithms accelerate write operations, consolidating what would traditionally be many small random writes into a single, more efficient sequential operation.

Compatibility

Applications do not need to be changed or modified to take advantage of the industry-changing capabilities of Oracle Solaris ZFS. It employs familiar POSIX interfaces, and the existing storage infrastructure—device drivers, storage fabric, and devices—works without requiring changes. For applications that prefer to operate directly on block devices, Oracle Solaris ZFS provides a volume emulator, which delivers all of the benefits of transactional integrity and checksums.

Oracle Solaris ZFS is supported on both Solaris 10 and Solaris 11 releases and the feature set is almost identical.

- Consolidate your business infrastructure on all ZFS file systems in the control and logical domains or in Oracle Solaris global and non-global zones.
- You can easily migrate UFS and other legacy file system data to Oracle Solaris ZFS with shadow migration.

Conclusion

By offering simple administration, data security and integrity, and integrated data services, Oracle Solaris ZFS simplifies storage and data management for demanding applications and cloud infrastructure today—and well into the future.

More Information

For more information about Oracle Solaris 11.3, visit oracle.com/solaris

CONTACT US

For more information about Oracle Solaris ZFS, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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