

Oracle ZFS Storage Appliance for Backup



KEY FEATURES

- Efficient high-throughput architecture
- Fully tested, assembled, and integrated backup appliance
- Coengineered with Oracle Database and Oracle engineered systems
- Efficient, economical storage including services such as compression, cloning, encryption, and replication
- Advanced, intuitive management and granular analytics tools
- Granular two-tier AES encryption at the drive or share level
- Dual-controller architecture with built-in security features such as checksumming and mirroring

Oracle ZFS Storage Appliance for Backup is an integrated high-performance data protection solution that is ideal for backup and recovery of all workloads. Its unique coengineered capabilities with Oracle Database and Oracle engineered systems reduce backup and recovery time by more than half and increase TCO by up to 4x compared to competitive products. And, unlike traditional Purpose-Built Backup Appliance (PBBA), Oracle ZFS Storage Appliance for Backup extends your ROI with its ability to also be used for test, development, reporting, consolidation, and more.

High-Performance Backup and Recovery

Ever-growing amounts of data present system and database administrators with a number of challenges, including the difficult task of providing fast and efficient backup and recovery within ever-more-constrained backup windows. In addition to growing in size, today's databases often manage the bulk of an enterprise's mission-critical data and must, therefore, meet stringent data protection requirements—a task made more challenging by the significant failure rate of backup and recovery. According to industry reports, one out of every seven backups and one out of every six recoveries fail. Without reliable data protection and processes, mission-critical data is at risk.

Oracle ZFS Storage Appliance for Backup has a parallel, dynamic caching, high-throughput architecture ideal for cost-effective mixed workload backup and recovery. It delivers extremely fast backup and restore throughput when compared to competitive products, ensuring that backup windows and recovery time objectives (RTOs) are met.

Additionally, Oracle is leading the way with native high-bandwidth interconnects to accelerate IT operations. As a result, the QDR InfiniBand fabric provides a direct high bandwidth connection between the Oracle engineered systems' InfiniBand backplane and Oracle ZFS Storage Appliance for Backup. Backup and restore operations can be automatically parallelized across all database nodes, storage cells, Oracle Storage Appliance for Backup channels, and controllers. This significantly reduces backup and recovery times compared to traditional NAS storage systems and backup appliances.

Due to its high-bandwidth interconnects and superior processing power, Oracle ZFS Backup Appliance testing shows Oracle Exadata backup performance at a data rate of up to 60 TB/hour and a restore rate of up to 62 TB/hour. Additionally, Oracle ZFS Backup Appliance is a scalable architecture, it can support up to 7.3 PB of capacity while maintaining balanced system performance.



KEY BENEFITS

- Delivers superior performance—up to 60 TB/hour backup and up to 62 TB/hour restore throughputs
- Speeds deployment
- Optimizes data protection for mission-critical parts of the business
- Provides cost effectiveness—lower TCO than comparable NAS storage systems and backup products
- Offers easy-to-use, simplified management
- Allows you to protect data at rest when and where you need it through granular encryption
- Provides high availability (HA) and advanced protection

Cost-Effective Data Protection

Due to its architectural efficiencies, Oracle ZFS Storage Appliance for Backup provides low TCO while you gain superior price/performance over the competition. Furthermore, the appliance is not simply a single-use backup target; it also can be used for other use cases such as test, development, reporting, consolidation, and more.

From an administrative perspective, with monitoring and provisioning available from Oracle Enterprise Manager and highly granular drill-down analytics, your IT staffing resources will be optimized as well. Overall, with Oracle ZFS Storage Appliance for Backup, each dollar spent on backup delivers a greater ROI over alternative solutions.

Optimizes the Most Important Parts of Your Business

Because databases support many of your revenue-generating applications, specialized support of Oracle Database backup and recovery is a critical advantage of Oracle ZFS Storage Appliance for Backup.

In fact, it is the only network-attached storage system coengineered with Oracle software to deliver unmatched advantages in Oracle software environments. One such advantage is the automated storage management enabled by Oracle Intelligent Storage Protocol (OISP), a joint feature of Oracle ZFS Storage Appliance and Oracle Database 12c which enables a direct line of communication between them. Through OISP, Oracle Database informs the appliance about the specifics of the IOs it is issuing and the appliance can dynamically respond—tuning itself for the exact incoming database data. Therefore, when Oracle Recovery Manager (Oracle RMAN) blocks enter the system, it auto-configures for higher throughput.

Furthermore, when the appliance is deployed in Oracle engineered systems environments, you gain additional advantages including a rapid-start configuration utility to eliminate guesswork during the installation process. And, Oracle Platinum Services is included to ensure maximum uptime and rapid resolution with 24/7 remote fault monitoring, industry-leading response times, and patch deployment services.

Superior Data Integrity and Security

Oracle ZFS Storage Appliance for Backup has numerous built-in data integrity and security features to help make sure your backups are correct and available when you need them. For instance, it includes including advanced checksumming, triple mirroring, and self-healing capabilities so your data does not degrade once it is stored on the system. Furthermore, it supports and maintains all Oracle Database security best practices including the use of the Transparent Data Encryption feature of Oracle Database, and it offers highly granular data-at-rest encryption. This allows you to protect your data throughout its lifecycle in the manner best suited to your demands, without incurring waste or risk.

Accelerates Implementation Success

Oracle ZFS Storage Appliance for Backup expedites the ROI on its numerous advantages by speeding deployment and removing implementation guesswork. By receiving a racked and configured system, you leverage the best practices from Oracle

engineering and support teams to ensure that a fully optimized system arrives at your door, ready to turn on. And, you receive the highest performance while maintaining the highest level of data availability. Ultimately, Oracle ZFS Storage Appliance for Backup is designed to run backups faster and more efficiently, providing a ready-to-deploy optimal storage architecture for data protection.

Hardware Architecture and Configuration

Oracle ZFS Storage Appliance for Backup is based upon three primary components:

- **Software.** In addition to the unique, intelligent multithreaded symmetric multiprocessing (SMP) storage OS and the Hybrid Storage Pool feature of Oracle ZFS Storage Appliance for dynamic caching and high performance, Oracle ZFS Backup Appliance also includes analytics, replication, cloning, and encryption software in the base system.
- **High-availability controllers.** Each Oracle ZFS Backup Appliance contains two Oracle ZFS Storage ZS5 controllers that provide a high-end enterprise multiprotocol storage system—at a price point that rivals competitive high-end systems—for workloads demanding HA with rapid failover, extreme performance, and scalability.
- **Storage.** Enterprise-grade disk enclosures contain SAS hard disk drives (HDDs) and write flash accelerators for high-performance, high-availability persistent storage. There is a minimum of two high-capacity disk enclosures and a maximum of eight high-capacity disk enclosures per single rack.

HARDWARE SPECIFICATIONS

Oracle ZFS Backup Appliance	
Architecture	Dual-controller HA cluster with disk storage enclosures
Processors	<ul style="list-style-type: none"> Oracle ZFS Backup Appliance ZS5-4: 8x 18-core 2.6 GHz processors Oracle ZFS Backup Appliance ZS5-2: 4x 18-core 2.3 GHz processors
DRAM cache	<ul style="list-style-type: none"> Oracle ZFS Backup Appliance ZS5-4: 3 TB Oracle ZFS Backup Appliance ZS5-2: 1.5 TB
Read flash cache	<ul style="list-style-type: none"> Oracle ZFS Backup Appliance ZS5-4: up to 486 TB Oracle ZFS Backup Appliance ZS5-2: up to 204 TB
Storage Configurations	
Configuration options	<ul style="list-style-type: none"> Oracle ZFS Backup Appliance ZS5-4: 322 TB to 7.3 PB scalability Oracle ZFS Backup Appliance ZS5-2: 322 TB to 3 PB scalability Choice of 20 or 24 HDD disk shelf types With 20 HDDs per disk shelf, choice of two or four read or write SSD accelerators per disk shelf Oracle ZFS Backup Appliance ZS5-4: 2–38 disk shelves can be attached for storage Oracle ZFS Backup Appliance ZS5-2: 2–16 disk shelves can be attached for storage
Disk shelf/HDD options	Oracle Storage Drive Enclosure DE3-24C: 8 TB, SAS-2, 3.5-inch 7,200 RPM HDDs
Standard and Optional Interfaces	
Integrated network	8x 10 GbE Base-T Ethernet ports
Optional network connectivity	10 GbE, QDR InfiniBand HCA, 16 Gb FC HBA, 40 GbE
Optional tape backup HBA	Dual-channel 16 Gb FC HBA
Maximum Ports per System	
10 GbE Base-T/10 GbE optical/InfiniBand/16 Gb FC	<ul style="list-style-type: none"> Oracle ZFS Backup Appliance ZS5-4: 48/24/16/16 Oracle ZFS Backup Appliance ZS5-2: 16/8/8/8
Environmental	
Nonoperating temperature/humidity (standalone, nonrack system)	-40°C to 70°C (-40°F to 158°F), up to 93% relative humidity, noncondensing
Altitude (operating)	Up to 3,000 m; temperature is derated by 1°C per 300 m of elevation above 900 m
Regulations (meets or exceeds the following requirements)	
Safety	IEC 60950, UL/CSA 60950, EN60950, CB Scheme with all country differences
RFI/EMI	FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300-386
Immunity	EN55024:1998+A1:2001:+A2:2003

POWER AND THERMAL

Item Description		Typical	Maximum
Oracle ZFS Backup Appliance	Power (W)	5,090 W	6,820 W
Physical Specifications			
Oracle ZFS Backup Appliance	Height	1,998 mm (78.66 in.) 42R (rack units)	
	Width	600 mm (23.62 in.)	
	Depth	1,200 mm (47.24 in.)	
	Weight	535 kg (1,180 lb.)	
	Height	175 mm (6.89 in.) 4R (rack units)	

Oracle Storage Drive Enclosure DE3-24C (fully loaded with drives)	Width	483 mm (19 in.)
	Depth	630 mm (24.8 in.)
	Weight	46 kg (101.41 lb.)

ORACLE ZFS STORAGE APPLIANCE FOR BACKUP SOFTWARE

Included Features	Details
Oracle Intelligent Storage Protocol, a feature of Oracle ZFS Storage Appliance	Oracle Database 12c sends metadata to Oracle ZFS Backup Appliance about each I/O operation, enabling the appliance to dynamically tune itself for optimal performance. This provides visibility at the database and per-pluggable-database level for actionable insight.
File system	Oracle Solaris ZFS (128-bit addressability)
File-level protocol	NFS v2/v3/v4, SMB1/2/2.1, HTTP, WebDAV, FTP/SFTP/FTPS
Block-level protocol	ISCSI, Fibre Channel, iSER, SRP, IP over InfiniBand, RDMA over InfiniBand
Data compression	Four distinct compression options to balance data reduction with performance for specific workloads
Hybrid Columnar Compression, a feature of Oracle Database	3x to 5x reduction in storage footprint with existing instances of Oracle Database for OLTP, data warehousing, or mixed workloads
Data deduplication	Inline, block-level deduplication
Monitoring/real-time analytics	DTrace Analytics (a feature of Oracle ZFS Storage Appliance) for system tuning and debugging, and dashboard monitoring for key system performance metrics; plugin available for Oracle Enterprise Manager
Automated serviceability	"Phone home" capability with automatic case creation and configurable alerts
RAID	Striping, mirroring, triple mirroring, single-parity RAID, double-parity RAID, triple-parity RAID, wide stripes
Remote management	HTTPS, SSH, SNMP v1/v2c, IPMI, RESTful API, OpenStack Cinder, OpenStack Manila
Snapshots	Read-only, restore, Microsoft Volume Shadow Copy Service support
Directory services	NIS, AD, LDAP
Data security	Checksum data and metadata; antivirus quarantine
Network services	NTP, DHCP, SMTP
Backup	NDMP v3/v4, ZFS NDMP
Local replication	Replication within same Oracle ZFS Backup Appliance configuration
Clones	Writable snapshots
Remote replication	<ul style="list-style-type: none"> Replication from one Oracle ZFS Backup Appliance to another 1:N, N:1, manual, scheduled, or continuous
Encryption	Highly secure, easy-to-implement two-level AES 256/192/128-bit granular data encryption at project/share/LUN level and key management flexibility for data breach protection and security

Oracle Support

Oracle Premier Support services provide the complete system support you need to proactively manage your Oracle storage systems, with swift resolution and rapid-response hardware service when problems do arise, keeping your business information available 24/7.

Oracle Platinum Services provide an enhanced level of service for supported configurations of Oracle ZFS Storage Appliance Racked System. Oracle Platinum Services is available for Oracle ZFS Storage Appliance Racked System ZS5-4 and Oracle ZFS Storage Appliance Racked System ZS5-2 when they are used as a backup solution for Oracle Exadata, Oracle SuperCluster, or Oracle Exalogic.

With Oracle Advanced Customer Support, you get mission-critical support with a focused support team, proactive guidance to tailor storage systems for optimal performance and increased competitiveness, and preventative monitoring to help you achieve high availability and optimized system performance.

For more information about Oracle Premier Support and Oracle Advanced Customer Support, please speak with your Oracle representative or Oracle authorized partner, or visit oracle.com/support or oracle.com/acs



CONTACT US

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