



Oracle ZFS Storage Appliance Accelerates Chip Design and Time to Market

Chip companies are under continuing pressure to pack more transistors for increased speed and functionality into ever-shrinking dies to satisfy insatiable consumer demand for cool products. To innovate and meet time-to-market requirements, chip designers need not only the latest electronic design automation (EDA) tools but also powerful IT systems to take chips from concept to design, verification, testing, packaging, tape out and manufacturing. Oracle ZFS Storage Appliance has demonstrated tremendous success at major chip design and manufacturing companies due to its compelling performance and price-performance advantages over competitive products.

Innovation and Time-to-market are Key to Success

For chip designers and manufacturers, getting to market ahead of the competition with an innovative product and getting the design win is the key to success. To succeed, they need not only advanced EDA tools provided by companies such as Cadence Design Systems and Synopsys, but also powerful servers and storage systems that can handle the IO-intensive, high-throughput, low latency workloads that EDA applications generate. Indeed, underperforming storage systems are often a bottleneck that inhibits a company's ability to tape out in a timely fashion, reduces engineering productivity, and, most of all, negatively impacts revenue and profitability. Oracle ZFS Storage Appliance, Oracle's enterprise-class family of NAS offerings, is built for high performance and offers unparalleled storage cost efficiencies, delivering 7X the performance at 1/3 the cost of a competitive NAS filer in a chip design environment.

Superior Performance for Chip Design Workloads

To accelerate chip design and time to market, storage systems have to support 1000+ engineers submitting batch jobs while delivering consistently high performance with low latency. Oracle ZFS Storage Appliance more than meets these needs. It is designed with a unique Hybrid Storage Pool architecture that combines a massive dynamic random access memory (DRAM)-centric configuration with specialized, write-optimized SSDs, exceptional compute power (120 CPU cores in Oracle ZFS Storage ZS4-4), and a symmetric multiprocessing operating system for parallelism to deliver superior performance and dramatically low-latency read/write operations (70%-90% of IOs are processed in DRAM).

ORACLE®
**ZFS STORAGE
APPLIANCE**

ORACLE ZFS STORAGE APPLIANCE

A growing number of chip designers and manufacturers are adopting Oracle ZFS Storage Appliance for their design flows due to its high-performance, efficiency, and cost-effectiveness.



ORACLE®

Hardware and Software, Engineered to Work Together

Copyright © 2015, Oracle and/or its affiliates. All rights reserved. Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners. 1214



Million-Dollar Performance at a Fraction of the Price

Oracle ZFS Storage Appliance makes productive use of DRAM, flash cache, and hard disk drives to move data across different tiers, based on their usage level, making sure that hot data is always delivered from the fastest media available while simultaneously maximizing value with low-cost disk. The performance and cost effectiveness of Oracle ZFS Storage Appliance is demonstrated in its SPC-2 benchmark results. It holds three of the top five performance results¹ in the SPC-2 benchmark and does so at a fraction of the cost of the other systems. For example, Oracle ZFS Storage ZS4-4 crossed the 30,000 SPC-2 MBPS™ mark at the lowest \$/SPC-2 MBPS™ — that's million-dollar performance at a fraction of the price, while the Oracle ZFS Storage Appliance ZS3-2 holds the record for SPC-2 Price-Performance™ at \$12.08.

Real Life Use Cases

Large-scale Designer of Chips for Mobile Devices

This company leverages 50+ Oracle ZFS Storage ZS3-4 systems in its Cadence Design Systems and Synopsys development and test environment. With ~20,000 sustained IOPS, no bottlenecks, and only 13% of writes going to disk, the ZS3-4 supports 1000+ engineers delivering performance that's 7X the incumbent NAS filer at 1/3 the cost. The company can now more easily meet its time to market requirements.

Leading Graphics Chips Designer and Manufacturer

This company integrated Oracle ZFS Storage ZS3-4 systems into their chip design environment which consists of thousands of compute nodes running EDA applications from Cadence Design Systems and Synopsys, generating millions of 4KB to 8KB files. With its DRAM-centric architecture, the ZS3-4 delivered a 10% increase in performance, which enables the EDA applications to run faster and decreases the time to market for new chip designs.

Conclusion

Oracle ZFS Storage Appliance offers compelling performance, cost efficiency, and management advantages that make it uniquely and ideally suited for chip design workloads and business requirements. With Oracle ZFS Storage Appliance, chip designers can innovate and make time-to-market commitments to deliver more powerful chips that will create rich experiences for the new generation of consumer products. Join successful organizations around the world that use Oracle ZFS Storage Appliance to bring faster results to the business. Only from Oracle.

For More Information

Visit oracle.com/zfsstorage. To learn more about the Hybrid Storage Pool architecture, please read [Architectural Overview of the Oracle ZFS Storage Appliance](#) white paper and "[Realizing the Superior Value of the Oracle ZFS Storage Appliance](#)" for the business value of Oracle ZFS Storage Appliance.

THE BEST IN CLASS

Oracle ZFS Storage Appliance offers technical advantages that deliver high performance and high efficiency for chip design workloads.

- **Hybrid Storage Pool.** Automatic placement of data on DRAM, read-and-write optimized flash-based SSDs, and SAS disk to deliver peak performance.
- **Adjustable record size.** 8 KB to 1 MB record size for efficient handling of media workloads.
- **Symmetric multiprocessing OS.** Enterprise-class OS that leverages all available CPU cores in parallel for extreme performance.
- **Data Integrity and Security.** End to end checksums, Snapshot, Cloning, Replication and integration with LDAP and Active Directory.
- **Storage Analytics.** Most comprehensive and intuitive analytics for easy storage management and rapid identification and resolution of performance bottlenecks.



¹ See a summary of these results on the "Top Ten" SPC-2 Results web page at www.storageperformance.org/results/benchmark_results_spc2_top-ten. SPC-2, SPC-2/E, SPC-2 MBPS, SPC-2 Price-Performance, and SPC-2 TSC are trademarks of Storage Performance Council (SPC). Results as of March 17, 2015; for more information see www.storageperformance.org.

Oracle ZFS Storage ZS4-4 31,486.22 SPC-2 MBS \$538,050 TSC - [B00072](#), Oracle ZFS Storage ZS3-2 16,212.66 SPC-2 MBS \$195,915 TSC - [BE00002](#), Oracle ZFS Storage ZS3-4 17,244.22 SPC-2 MBS \$388,472 TSC - [B00067](#), Fujitsu ETERNUS DX8870 S2 16,038.74 SPC-2 MBS \$1,275,163 TSC - [B00063](#), HP StorageWorks P9500 XP Storage Array 13,147.87 SPC-2 MBS \$1,161,504 TSC - [B00056](#), HP XP7 Storage 43,012.52 SPC-2 MBS \$1,217,462 TSC - [B00070](#), Hitachi Virtual Storage Platform (VSP) 13,147.87 SPC-2 MBS \$1,254,093 TSC - [B00060](#), Kaminario K2 SSD 33,477.03 SPC-2 MBS \$997,348 TSC - [B00068](#), IBM System Storage DS8870 S2 15,423.66 SPC-2 MBS \$2,023,742 TSC - [B00062](#), IBM SAN VC v6.4 14,581.03 SPC-2 MBS \$1,883,037 TSC - [B00061](#).

CONNECT WITH US

-  blogs.oracle.com/oracle
-  facebook.com/oracle
-  twitter.com/oracle
-  oracle.com

FOR MORE INFORMATION

Contact: 1.800.ORACLE1

ORACLE

Hardware and Software, Engineered to Work Together

Copyright © 2015, Oracle and/or its affiliates. All rights reserved. Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners. 1214