DCIG

The Oracle ZFS Storage ZS4-4 Appliance Breaks through the *"One Size Fits All"* Approach of the EMC DD9500 to Accelerate and Optimize Oracle Database Backups

By Jerome Wendt, DCIG Lead Analyst

Treating all data in the same manner is the approach deduplicating backup appliances, such as the EMC DD9500, take. However that technique breaks down when backing up and storing Oracle Database data. The Oracle ZFS Storage ZS4-4 breaks through this *"one size fits all"* approach as it leverages a unique in-memory architecture and high-speed network connectivity to accelerate Oracle Database backup and restores. Through its unique co-engineering with Oracle Database it more effectively reduces Oracle Database backup storage capacity requirements well beyond what the best deduplication algorithms can achieve.

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INDUSTRY

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Oracle ZFS Storage ZS4-4

DIFFERENTIATORS

- Achieves up to 42TB/hour backup and 55TB/hour restore speeds

- Co-engineering with native Oracle Database 12c to leverage its HCC and OISP features

- Efficiencies in storage capacity with up to 50x compression making it more effective for reducing Oracle Database backup stores than deduplication

- Multi-function system freeing Oracle Database backups to be used for testing, development or business analytics without encumbering the primary Oracle Database system

- Optional dual controller for high availability

- Scales to 3.5 PBs of raw storage capacity

- Supports multiple high throughput storage networking protocols to include 10GbE, 16Gb FC and 40Gb Infiniband

Enterprises tend to assume a *"one size fits all"* approach works well when selecting a deduplicating backup appliance as an option to store their backup data. However, not all application data deduplicates equally well. Using this *"one size fits all"* technique, such as the EMC Data Domain DD9500 does, falls short when backing up Oracle Database data as every header and nearly every data block associated within Oracle Database are unique. The Oracle ZFS Storage ZS4-4 addresses this shortcoming by giving enterprises the features they need to efficiently and effectively backup Oracle Database. Consider:

- *Higher backup and restore throughput.* Oracle ZS4-4's in-memory architecture delivers high-performance with support for 16Gb FC, 40Gb Infiniband and 10GbE connectivity options. Using Infiniband, enterprises can achieve native backup throughput speeds of up to 42TB/hour and restore to 55TB/hour to meet their backup/restore windows. The EMC DD9500 only achieves a maximum published native backup throughput rate of 27.7TB/hour with no published restore rates available.[1]

- *Ample capacity to store enterprise Oracle Database backups.* Oracle's ZS4-4 scales up to 3.5PB which is ample capacity to store enterprise Oracle Database backups on a single appliance. EMC DD9500 only scales to a maximum of 864TB of usable storage.

- *Higher data reduction rates than deduplication can achieve.* Oracle Database has its own internal compression engine known as Hybrid Columnar Compression (HCC). The ZS4-4 supports HCC so it can store column data together to achieve compression rates of up to 50x and overall storage capacity reduction rates of up to 40%. HCC is not an option for non-Oracle storage solutions so the EMC DD9500 cannot deliver these high Oracle Database data reduction rates.

- *Accelerates backup and recovery throughput.* Oracle Database 12c and newer can use Oracle Intelligent Storage Protocol (OISP) to open up a direct line of communication with the ZS4-4. Over this link Oracle Database communicates critical metadata to the ZS4-4 which then dynamically tunes itself for the arrival of incoming backup data. This option reduces manual tuning, expedites backups and is not available with the EMC DD9500.

> *"By using Oracle's ZS4-4, enterprises for the first time have access to a highly available, highly scalable solution that is specifically co-engineered with Oracle Database to accelerate backups while minimizing storage costs and capacity."*
>
> — **Jerome Wendt , DCIG Senior Analyst**

- *Higher availability.* Oracle's ZS4-4 is available in an optional dual-controller configuration for high availability. The EMC DD9500 is only available in a single controller configuration.

- *More flexible.* Oracle's ZS4-4 is a multi-function system as opposed to a single purpose deduplicating backup appliance. This frees it to snap and clone backups for development, test, quality assurance or business analytics without encumbering the production Oracle Database system. In contrast, the EMC DD9500 is used primarily as a backup target.

The Oracle ZFS Storage ZS4-4 provides enterprises the flexibility they need to quickly and efficiently protect their Oracle databases. Shipping in a highly available configuration, scaling up to 3.5PBs and providing multiple storage networking protocols with high throughput rates, it combines these features with Oracle Database's native HCC and OISP features to provide enterprises with a solution that is not dependent upon a *"one size fits all,"* single-function appliance such as the EMC DD9500. Rather, enterprises for the first time have access to a multi-function solution that is co-engineered with Oracle Database to accelerate Oracle Database backups and restores while simultaneously minimizing storage costs and capacity. ■

1. EMC Data Domain Deduplication Storage Systems Specification Sheet. Web. May 18, 2015.

Oracle's ZS4-4 Key Competitive Advantages

FEATURE		Oracle ZS4-4	EMC DD9500
Storage Capacity (Max)		3,500+ TB (Raw)	864 TB (Usable)
Drive Types		SAS-2	SAS, SATA
Ingest Rate	*Native Backup Throughput (Max)*	42TB/hour [1]	27.7TB/hour [2]
	Native Restore Throughput (Max)	55TB/hour [1]	Not Available
High Availability (2+ Controllers)		✓	✗
Oracle Database Integration	*Oracle Hybrid Columnar Compression (HCC)*	✓	✗
	Oracle Intelligent Storage Protocol (OISP)	✓	✗
	RMAN Integration	✓	✗
Storage Networking Connectivity	*10Gb Ethernet (10GbE)*	✓	✓
	16Gb Fibre Channel (FC)	✓	✓
	40Gb Infiniband	✓	✗

1. Throughput rate achieved using Infiniband.
2. EMC Data Domain Deduplication Storage Systems Specification Sheet. Web. May 18, 2015.

About DCIG

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