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Oracle Releases New Flagship ZS4-4 Appliance
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Oracle continues to aggressively pursue the buildout of its storage portfolio, which has largely been the result of several acquisitions over the years (the chief storage acquisitions being Sun Microsystems and Pillar Data Systems as well as, most recently, Front Porch Digital and GreenBytes). It presently has four principal storage platform portfolios. The ZS series, which is based on the Oracle ZFS file system, and the FS series, which is the successor to the Pillar Axiom lineup, are its flagship NAS and SAN platforms, respectively. Oracle also has an engineered systems product portfolio (which IDC calls integrated infrastructure platforms), which is growing very well, and a legacy tape and virtual tape portfolio, which continues to grow, albeit slowly. Oracle also has a storage software portfolio, which spans storage management, automated tiering, data reduction, data protection, content storage management, and security/encryption technologies.

Oracle ZS series storage arrays are perhaps well known because of their ZFS foundation, which Oracle continues to invest in aggressively. The result is a versatile file system that can be tuned to form the data organization platform for both performance-optimized and capacity-optimized systems. A key differentiating strategy for Oracle has been to make its databases and applications perform the best on its own storage systems — with features that are enabled only when implemented as "Oracle on Oracle."

With the December 2, 2014, announcement of ZS4-4, Oracle has now upped the ante on this differentiation. ZS4-4 is Oracle's flagship NAS appliance that it claims is "unbeatable" for high-throughput NAS workloads. Key differentiators of the ZS4-4 are:

- **Oracle 12c container-level visibility and analytics:** The ZS4-4 has built-in analytics capabilities that work across thousands of pluggable databases. It can natively detect database-related storage issues in real time that can reduce the amount of operational overhead (up to 67% fewer steps according to Oracle).
- **More DRAM:** Oracle is gravitating toward DRAM as a way to boost performance for its NAS systems, and the ZS4-4 can perform twice as fast as previous-generation ZS arrays. This makes the ZS4-4 an excellent platform for workloads that require in-memory-like data speeds for their workloads.
- **Improved hardware specifications:** The ZS4-4 features a 50% DRAM boost, 50% more CPU cores, and 180% more write flash over its predecessor. Version 8.3 of the ZOS extends multithreading to take advantage of all 120 cores in parallel. The ZS4-4 expands Oracle's in-memory computing portfolio.
- **Newer encryption capabilities:** The ZS4-4 features 256-bit encryption that can be applied at a project, share, or LUN level, making it superior over older encryption techniques requiring entire drive or system-level encryption

A key hallmark of Oracle's approach with the ZS4-4 is how it fits like a glove in Oracle database environments. Oracle's database container technology, which is basically a way to provide multitenancy for Oracle database environments, is essentially for enterprises as they transform for next-generation workloads. The problem, however, is that most storage platforms are not yet Oracle container aware. They treat all containers as a single database instance. This results in a lot more human involvement (i.e., manual labor-intensive tasks to guess where the issue may lie and then constantly tuning storage as a reaction to complaints, issues, slowdowns, and troubleshooting). The ZS4-4 can leverage Oracle's Intelligent Storage Protocol v1.1 (OISP) to basically get full visibility and insight into pluggable databases

(i.e., containerized databases). Essentially, it makes the storage layer an extension of the Oracle database, automatically tuning storage. Due to these engineering enhancements, organizations implementing Oracle databases, particularly 11gR2 and 12c, should consider the ZS4-4, particularly considering the additional business benefits and tangible competitive advantages available for customers in such deployments.

IDC believes that the Oracle 12c pluggable database–level visibility and analytics are important steps ahead for Oracle's "#1 in Oracle on Oracle" strategy. The ZS4-4, for example, provides visibility into thousands of containers across the enterprise and presents built-in analytics to simplify and accelerate storage performance tuning and troubleshooting in multitenant database environments. As enterprises migrate to 12c, they are no doubt going to leverage containers, in-memory capabilities, and analytics and it is critical that the infrastructure stack keep up with these capabilities. This is a similar generational shift that occurred with server virtualization and is now being put into action by Oracle for database and application virtualization. By way of this capability, Oracle is also showcasing co-engineering capabilities between its own business units — which are all a result of inorganic growth — and promises to deliver more of it across its entire infrastructure and software portfolio.

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