Oracle introduces new capabilities for the cloud infrastructure market
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Ovum view

Summary

The market for cloud infrastructure has separated into different marketing categories, including converged infrastructure, hyper-converged infrastructure, and engineered systems. However, the needs and requirements of customers appear to have been forgotten. Ovum believes that organizations should look beyond the marketing label and consider what it is they expect and require the infrastructure to provide. Once the organization has a clear understanding of its expectations of what the infrastructure can deliver, the different categories can be evaluated against how they meet these needs.

Any cloud infrastructure requires a core underlying set of capabilities: simplicity, performance, rapid time to value, scalability, and flexibility. All three marketing labels claim to deliver against these capabilities, but the question to ask is whether they meet the organization’s operational requirements, because each use case will have different pressure points and value certain attributes more highly than others.

Oracle is a leading player in the cloud infrastructure market and has made three recent announcements that broaden its capabilities: a new family of SPARC systems designed for both on-premise and public cloud deployments, based on its SPARC S7 processor design; a new generation of the Oracle Exadata engineered system (Oracle Exadata X6); and an Oracle Database Exadata Cloud Service bringing the benefits of these systems for the first time to a database cloud service.

Oracle delivers hybrid cloud at an infrastructure level

The new SPARC S7 series of products has been designed to provide increased efficiency and security in a single solution. Oracle not only provides solutions for enterprises and cloud providers, but also produces both SPARC and x86 based systems. An example of this is the Oracle Compute Cloud Service (OCCS) Dedicated Compute SPARC Model 300 solution, where it offers SPARC compute capacity at the same price as its x86 service. Ovum believes that this represents a significant choice for organizations as both of these approaches (SPARC and x86) have use cases where an organization might find one better suited than the other, and they can now select the most appropriate option for a particular task.

To complement the Oracle cloud services, a new engineered system designed for on-premise deployment has also been announced. The Oracle MiniCluster S7-2 is designed for both database and application workloads, where the key proposition is its simplicity of operation, having been developed to reduce the level of effort IT operations need to invest in managing the infrastructure.

Ovum believes that three design features make the MiniCluster S7-2 particularly interesting to CIOs and data center managers.

First is the ability to perform patching of the system while it is running, meaning zero downtime for any patch updates. For a system designed to be compact and used in remote offices and small-to-midsize organizations, the ability to patch with zero downtime is a significant benefit. In these scenarios there is typically no contingency, so if the system is down for a patch update, users have to revert to alternative manual systems to continue business operations.
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Second, inbuilt virtual assistant technology makes operating the MiniCluster S7-2 something that an IT generalist can perform without the need for specialist training. The virtual assistant provides help with activities such as performance health checks, and can automate performance tuning. Having these mundane but important activities performed by an IT administrator with general IT skills means that the IT operations team can be more flexible in work allocation and can accommodate sickness and holidays without expensive specialist cover. To a branch office or SME, this degree of flexibility with its IT resources is an important aspect that should not be overlooked.

Finally, the MiniCluster S7-2 has been designed with security at its core, with the ability to perform verification that all VMs are compliant with corporate governance policies. Ovum believes that compliance testing, either automated or initiated on-demand, enables system administrators to quickly and easily verify that IT systems are secure and compliant with mandated standards and best practices.

Machine learning gets a boost from advances in memory technology

The advances made by Oracle in software in silicon technology improves its efficiency, and now the SPARC S7 provides similar performance when running analytics and OLTP workloads to Oracle's SPARC M7. Optimizing processor cores for key enterprise workloads, and creating balanced designs with the most memory bandwidth available per core, has enabled Oracle to achieve a 60% to 70% performance improvement per core when compared to x86 processors for database and Java workloads.

The S7 design includes Oracle’s Data Analytics Acceleration (DAX) technology, where co-processors deliver support a specialized set of instructions to scan, extract, select, and translate, and can decompress at memory speeds as high as 120 Gbps data stored by in-memory applications, thereby increasing memory capacity. Oracle opened this technology to a wider ecosystem when it released its Open DAX API that enables some of the smaller machine learning technologies to benefit from faster processing. Ovum believes that Oracle has been very smart in opening DAX to a wider ecosystem, because the machine learning, or artificial intelligence, sector is a small but rapidly growing market.

The S7’s software in silicon technology also provides a secure memory access validation capability in hardware, which reduces the impact of latency and makes access more secure. Oracle claims that security in silicon is designed to prevent security bugs such as Heartbleed, by monitoring a software process’s memory requests in real time. However, Ovum believes that it is the ability to prevent any malicious code from creating buffer overruns and then exploiting a vulnerability that provides an even wider benefit to organizations in terms of security.

All of the software in silicon technology in the SPARC M7 processor is also available in the S7, including providing one cryptographic instruction accelerator per core. The advantage of this is that the SPARC S7 can deliver wire-speed encryption for all data center operations without a performance penalty. Another software in silicon capability of the SPARC S7 is in-memory query acceleration where data is streamed directly from memory and processed through the DAX engine. The final technological advance of software in silicon is the ability of the SPARC S7 to perform in-line decompression. This enables complete compressed databases to be stored in memory, where they can be accessed and manipulated with very little latency.
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Oracle remains synonymous with databases and database appliances and the Exadata X6 and Oracle Database Exadata Cloud Service continues that tradition

The market in databases and database management is very mature, with only about 2% of organizations having no capability. While the market is mature, a recent Ovum survey indicated that 45% of the respondents were planning to replace or completely renew their solutions in the database space.

Oracle has announced two significant offerings for this market, which Ovum believes are well-placed to meet the challenges organizations are facing when it comes to database performance, scalability, and economics.

First, Oracle Database Exadata Cloud Service is an addition to the existing Database as a Service and Database Schema as a Service that Oracle already runs in its cloud offering. Oracle Database Exadata Cloud Service enables organizations to run fully featured Oracle Databases (11.2.0.4 or 12.1.0.2) on Exadata and provides all the key database options, including real application clusters, partitioning, database in-memory, active data guard, advanced compression, enterprise manager packs, and Exadata performance optimization on an opex model. The cloud offering is also fully compatible with any on-premise Oracle Database, delivering a location-agnostic capability for organizations. The ability to run the same database in an Oracle cloud or on-premise provides organizations with flexibility to meet the demands of the customer as well as the demands of any regulatory environment. Ovum particularly welcomes the fact that Oracle protects the data by default through encryption at the tablespace level. One other benefit worthy of note is the flexibility in terms of backup and recovery, which can be to Exadata storage or the Oracle Database Backup Service. This again demonstrates the flexibility and choice organizations have about where databases are stored.

Second, the Exadata X6 appliance has been designed for the needs of organizations where database IO performance is an area of concern. Oracle introduced in the Exadata X5 its Exadata Extreme Flash (EF) Storage Server, which offered a fully optimized all flash Exadata appliance. With the Exadata X6-2, Oracle has doubled the flash capacity so that each EF Storage Server contains eight 3.2 TB Flash Accelerator F320 PCI flash drives. This means that each EF Storage Server offers 25.6TB raw flash capacity, using state-of-the-art 3D V-NAND flash technology for improved speed and power efficiency.

Appendix

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Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum’s consulting team may be able to help you. For more information about Ovum’s consulting capabilities, please contact us directly at consulting@ovum.com.
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