Research Note

BY RICHARD WINTER

ORACLE EXADATA X9M

ORACLE HAS ANNOUNCED a new version of its Exadata Database Platform, named Oracle Exadata X9M, which delivers an extraordinary advance in performance without a price increase, as well as significant innovations in data storage, security and automation. *Oracle Exadata X9M* is available immediately on prem and as *Oracle Exadata Cloud@Customer*. Oracle continues as the only major provider to deliver a full-stack, cloud-based and on prem solution that exploits hardware and system software designed to optimize database performance. As the owner of the database and the infrastructure, Oracle's purpose-built database platforms deliver large advantages in throughput, latency, scalability and efficiency compared to the database solutions offered by other cloud providers as well as to the on-premises vendors delivering software-only solutions. In addition, Oracle now provides more automation around its Data Guard (continuous data availability) and GoldenGate (data replication and synchronization) with capabilities also not matched by other cloud providers.

IN THE EXCITEMENT AND WIDESPREAD ADOPTION OF PUBLIC CLOUD, it seems to have been forgotten that many database needs are often best satisfied with a solution that is purpose engineered from top to bottom for the database. Oracle stands alone among major providers by not only continuing with its Exadata Database Platform in the public cloud and on-prem — but for continuing to innovate to enlarge the advantages it brings. The Oracle *Exadata X9M*, announced this month, is the latest offering in this line.

By virtue of its database-focused engineering, the *Exadata Cloud@Customer* (ExaC@C) X9M delivers an 87% gain in the rate of database reads per second and a 47% lower cost per database input/output operation (IOPS), when compared to the previous version introduced less than two years ago. Even in our world of always improving computer technology, these are remarkably large gains. Below I discuss a few highlights of this announcement.

Exadata Cloud@Customer (ExaC@C)

The *Exadata X9M* is now available for delivery to customers on-prem and as a *Cloud@Customer* (C@C) deployment option. *Cloud@Customer* is the distinctive offering whereby the system is deployed on the customer's premises but functions as if it was part of the Oracle Cloud, with the same Oracle Cloud Infrastructure (OCI) control plane. This gives the customer the benefit of cloud economics and Oracle-managed cloud-based operations,

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Methodology

Purpose and Methodology for this Report

This *WinterCorp Research Note* covers the recent announcement of *Oracle Exadata X9M* and its implications for database customers. In developing this report, WinterCorp drew on its own independent research and experience, interviewed Oracle employees, attended Oracle events and analyzed Oracle documentation and literature. Oracle was provided an opportunity to comment on the paper with respect to facts, in its capacity as the sponsor of this research. WinterCorp has final editorial control over the content of this publication and is solely responsible for any opinions expressed.

while allowing the customer to maintain physical control and sovereignty over the data, to comply with various national and international regulations. While other major cloud providers offer similar sounding options (e.g., AWS Outposts), only Oracle delivers full database and cloud functionality for their leading databases in this setting. *Exadata Cloud@Customer* is clearly very strategic for Oracle, offering database capabilities identical to those in the Oracle public cloud, while AWS Outposts doesn't offer Redshift or Aurora on-premises.

Cloud@Customer has been adopted by thousands of Oracle customers, enabling them to comply with stringent regulations while still experiencing cloud benefits. Interestingly, *Cloud@Customer* has been adopted for both small and very large deployments by customers both in the US and overseas. It appears that *Cloud@Customer* has overcome the resistance to cloud migration for a significant number of customers with large, mission-critical requirements, which is not the case for most other cloud database offerings.

A recent feature increases customer control over Oracle access to the *ExaC@C* installation. Named Operator Access Control, it empowers the customer to approve every access by Oracle personnel to any resource in the installation. For many regulated customers, this feature eliminates the last barrier to full compliance, enabling them to move their systems from traditional hands-on, manual operations to *ExaC@C* Oracle-managed operations. This reduces the customer's requirements for administering the systems and opens up the ability to use dynamic scaling of database licensing to reduce costs.

Elastic Storage Expansion

Previous versions of *ExaC@C* have been offered with fixed limits of data storage per rack, where the ratio of compute to storage servers was 2-to-3. If a customer started with the minimum quarter-rack system of 2 compute servers and 3 storage servers, the smallest available upgrade required doubling the configuration. With elastic storage expansion, *ExaC@C X9M* customers can now start with the quarter-rack system and add as many storage servers as they want — up to the current limit of 12 for a single system. So, customers with a large volume of data and a relatively lower compute workload now have much more flexibility and can operate yet more cost efficiently.

Storage Performance

ExaC@C X9M storage is high capacity — as much as 769 TB of usable disk per rack — but also remarkably high performance as the disk is fronted by up to 18 TB of Intel Optane persistent memory (PMem) and up to 307 TB of flash memory. This, along with smart software, results in the 19 microsecond latency and the 540 GB/sec throughput that Oracle quotes for *ExaC@C X9M* (and the even higher throughput delivered with traditional on-prem deployment since they have slightly different configurations). The listed performance is 50 times better for latency, and 19 times higher for total throughput, than comparable figures quoted

About WinterCorp

WinterCorp is an independent consulting firm expert in the strategy, architecture and scalability of the modern analytic data ecosystem.

Since our founding in 1992, we have architected and engineered solutions to some of the toughest and most demanding analytic data challenges, worldwide.

We help customers define their data-related business interests; develop their data strategies and architectures; select their data platforms; and, engineer their solutions to optimize business value.

When needed, we create and conduct benchmarks, proofs-of-concept, pilot programs and system engineering studies that help our clients manage profound technical risks, control costs and reach business goals.

With our in-depth knowledge and experience, we deliver unmatched insight into the issues that impede scalability and into the technologies and practices that enable business success.

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by other major cloud providers for their on-premises cloud platforms. Other cloud providers' on-premises cloud platforms don't offer comparable functionality, on prem compatibility or performance.

Recommendation

CUSTOMERS LOOKING for higher service levels, lower cost or tighter security from their database operations — whether on-prem or in the cloud — should take a close look at *Oracle Exadata X9M*. This newly enhanced database platform, on which Oracle delivers its full range of on-prem and cloud database services, is unique in the industry and is now substantially higher performing than before — much faster than competitive offerings on-prem or in the cloud. Further, advances in security and customer control eliminate the last barrier for many regulated customers who want to move database operations to the cloud, but can't go to a public cloud. ●