Oracle Database Exadata Cloud Service
Exadata Performance, Cloud Simplicity

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DATABASE CLOUD SERVICE

Oracle Database Exadata Cloud Service delivers the world's most advanced database cloud by combining the world's #1 database technology and Exadata, the most powerful database platform, with the simplicity, agility and elasticity of a cloud-based deployment.

Customers can now run Oracle databases in the cloud with the same extreme performance and availability experienced by thousands of organizations deploying Exadata on-premises. Oracle databases deployed in the cloud as part of this service have access to all Oracle Database options. They are 100% compatible with those deployed on-premises, ensuring a smooth transition to the cloud, and an efficient hybrid cloud strategy. With pay-as you-grow dedicated Exadata configurations, and infrastructure managed by Oracle experts, Exadata Service enables business agility and operational flexibility with zero CapEx.
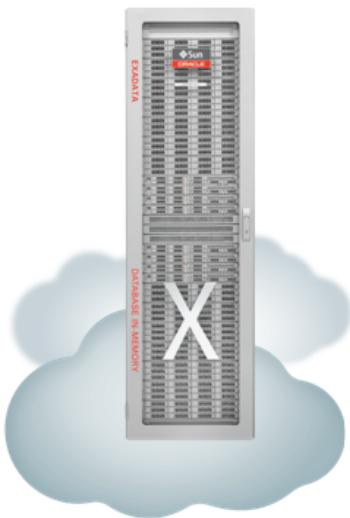
The Best Database on the Best Cloud Platform

Oracle Database Exadata Cloud Service can consolidate all database workloads including Online Transaction Processing (OLTP), Data Warehousing (DW), In-Memory Analytics, and Mixed/Hybrid Workloads into a single Exadata platform and deliver extreme performance, mission critical availability, and highest security.

Best Database Technology

Oracle Database is the most popular and most versatile database technology for both OLTP and Analytics. With decades of technology innovation, it has been proven at hundreds of thousands of mission-critical deployments around the world. Exadata Cloud Service makes this enterprise-proven, robust database technology available in a cloud-based consumption model hosted in the most advanced and robust cloud infrastructure.

Most Powerful Database Platform

The platform that delivers Exadata Cloud is Oracle Exadata, which has been established as the highest performing, most cost effective and highest available platform for running Oracle Database. Exadata was designed from the beginning as a cloud architecture featuring scale-out database servers and scale-out intelligent storage servers connected by an ultra-fast InfiniBand network. Exadata includes state-of-the-art PCI NVMe flash storage to deliver the highest throughput and best response

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times along with high capacity disks and database-optimized compression to provide cost effective capacity for the largest databases.

Unique software algorithms in Exadata bring database intelligence to storage, PCI flash, and InfiniBand networking for higher performance and capacity at lower costs than other platforms. Deployed at thousands of sites around the world, Exadata delivers extreme performance for all types of database workloads including Online Transaction Processing (OLTP), Data Warehousing (DW), In-Memory Analytics and mixed workloads.

For additional information on Exadata, please visit http://www.oracle.com/exadata.

Best Cloud Offering for an Enterprise Database

On top of the rock-solid Oracle Database and Exadata platform, Exadata Cloud Service adds the ease, simplicity, and flexibility of Oracle Public Cloud. Organizations can now access Oracle Database on Oracle Exadata without capital investments for IT infrastructure such as data center space, power, cooling, compute servers, storage and networks. Oracle experts manage all backend infrastructure on behalf of customers, which means human resources and IT administration costs are significantly reduced, and IT can focus on improving business results. Full Oracle Database functionality with Exadata Service ensures that any existing application can be quickly migrated to the cloud without changes. Provisioning and expanding the Exadata Service is driven through simple web interfaces, providing customers rapid elasticity to meet changing business demands. An Exadata Service instance provisioned for one customer is completely isolated from other tenants, providing assured performance and security for business critical workloads.

Customer Benefits

Exadata Service is 100% compatible with on-premises Oracle databases and all existing applications. With Exadata Service, organizations can easily adopt a pure cloud or hybrid cloud strategy that spans on-premises databases as well as databases in the Cloud.

Exadata Service offers immediate business benefits for a broad range of customers:

- Exadata Service enables existing on-premises Exadata customers to easily embark on a journey to the cloud – without compromising the database performance and availability levels they enjoy with their on-premises Exadata deployments.

- Existing Oracle Database customers who have not yet experienced Exadata can easily start enjoying the performance, availability and scalability benefits of the world's best database platform – without losing any of the database functionality they rely on.

- Organizations that have been forced to settle for public cloud databases with limited functionality, partial security and compromised data consistency can now benefit from the most sophisticated database functionality on the most powerful cloud database platform.

Use Cases

Exadata Cloud Service fits a wide variety of business use cases that are governed primarily by two principles – the enterprise-proven reliability and functionality of Oracle databases, and the agility of Cloud to quickly meet business requirements. Business

users don't have to wait for long IT budgetary approval and procurement cycles to deliver time-sensitive applications.

Exadata Cloud Service is an ideal fit for:

- Running business-critical production OLTP or analytic databases at almost any scale without incurring the capital expenditure and complexity of maintaining the underlying IT infrastructure. Oracle Database 12c In-Memory enables ultra-high-performance analytics to be run on dedicated analytic databases or directly on OLTP databases.

- Consolidating a variety of workloads using multiple Oracle databases or Oracle Multitenant.

- Maintaining synchronized Oracle standby or replica databases for disaster recovery and/or query offloading using Oracle Active Data Guard or Oracle GoldenGate.

- Quickly provisioning high-performance Oracle databases for ad-hoc business reasons such as feature development, functionality testing, application certification, proof-of-concept, and try-before-buy activities.

- Executing time-sensitive large-scale applications such as launching a web-based marketing campaign, running loyalty programs, or rolling out new business initiatives.

Exadata: The Best Database Platform

Exadata Hardware

Exadata Cloud Service comes in different infrastructure shapes to support workloads of different sizes. The Exadata Cloud Service Quarter Rack shape provides a cost-effective Exadata entry point, while traditional quarter, half, and full rack shapes can meet nearly arbitrary CPU processing and database storage requirements. Online dynamic scaling of OCPU resources is available in every Exadata Cloud Service shape so that customers can pay only for the OCPUs that they use, dramatically reducing costs compared to a traditionally purchased platforms.

All of the Exadata Cloud Service shapes are built on powerful database servers, scale-out intelligent storage servers, PCI NVMe flash, and high capacity disk drives. Internal connectivity between database and storage servers is enabled by a low-latency InfiniBand fabric. External connectivity to the Exadata Cloud Service system is provided using standard 25 Gigabit Ethernet.

The database-optimized data tiering between RAM, flash and disk implemented in Exadata provides lower latency, higher capacity, and faster performance than other flash-based solutions. Flash-only storage arrays cannot match the throughput of Exadata's integrated and optimized architecture with full InfiniBand based scale-out, fast PCI NVMe flash, offload of data intensive operations to storage, and algorithms that are specifically optimized for databases.

Exadata Software

The technology that enables Exadata's unparalleled performance without any of the bottlenecks of traditional storage arrays is Exadata System software. This software powers the Exadata Storage Servers, providing an extremely efficient database-optimized storage infrastructure.

One of the many unique features of Exadata System software is *Smart Scan* technology, which offloads data intensive SQL operations from the database servers

- Most powerful Oracle Database with all options, features, and Enterprise Manager Database Packs
- All Exadata capabilities, ensuring extremely high levels of performance, availability and security
- Easy and rapid Exadata and database provisioning in a few clicks
- Cloud automation software reduces administration
- Subscribe to only the compute cores needed by the application
- Online Elastic CPU Scaling allows dynamic expansion during business peaks
- 100% compatibility with on-premises databases
- Comprehensive database management through Oracle Enterprise Manager, as well as Cloud-based self-service
- Backup, Recover and update your database with a single click with the administration UI
- All infrastructure management and monitoring by Oracle Cloud Operations

directly into the storage servers. By pushing SQL processing to the storage servers, data filtering and processing occur immediately and in parallel across all storage servers, as data is read from disk and flash. Only the rows and columns that are directly relevant to a query are sent to the database servers. This greatly accelerates analytic queries, eliminates bottlenecks, and significantly reduces the CPU usage of the database servers.

Exadata includes a vast array of software capabilities that enables its unparalleled scalability, performance and availability. Some of these Exadata software features are:

- *Storage Indexes* avoid unnecessary I/O operations by replacing them with a few in-memory lookups.
- *Exafusion Direct-to-Wire Protocol* allows database processes to read and send Oracle RAC messages directly over the InfiniBand network, which considerably improves OLTP response time and scalability in Exadata.
- *Smart Fusion Block Transfer* improves OLTP performance further by eliminating the impact of redo log write latency when moving blocks between nodes.
- *Smart Flash Logging* accelerates OLTP by using the flash memory in Exadata storage combined with the high speed RAM memory in the Exadata disk controllers to reduce the average latency of database commits.
- *Hybrid Columnar Compression* utilizes a combination of row and columnar methods to greatly compress data, enabling tremendous cost-savings and performance improvements due to reduced storage capacity and reduced I/O, especially for analytic workloads.
- *In-Memory* columnar formats in Flash Cache extend the Exadata Columnar Flash Cache by automatically transforming data into In-Memory columnar formats as it's loaded into flash cache. Smart Scans then leverage ultra-fast Single Instruction Multiple Data (SIMD) Vector instructions, thus processing multiple column values with a single instruction

Exadata is engineered to provide the highest levels of availability. Each Exadata system has completely redundant hardware components. In addition, Exadata Cloud Service comes pre-integrated with Oracle Maximum Availability Architecture (MAA) best practices for Database High Availability (HA) technologies such as RAC, ASM, RMAN, Flashback and Data Guard. Further, Exadata-specific HA capabilities such as *Instant Detection of Compute and Storage Server Failures* and *Exadata I/O Latency Capping*, significantly enhance the availability of Exadata.

One single rack powering Exadata Cloud Service can be used to deploy a large number of databases, enabling high database consolidation. To ensure consistent performance in a highly consolidated environment, Exadata provides unique end-to-end prioritization and resource management capabilities spanning database servers, network and storage. Space-efficient database snapshots can be quickly created for test and development purposes directly on Exadata. Exadata database snapshots are integrated with Oracle Multitenant to provide an extremely simple interface for creating new pluggable database snapshots.

Oracle Cloud Infrastructure: Providing the Best Infrastructure

Exadata Cloud Service is available in Oracle's latest generation data center; Oracle Cloud infrastructure (OCI). Built on the foundation of the most modern datacenter,

- Oracle Database 18c, 12.2.0.1, 12.1.0.2, or 11.2.0.4
- All Oracle Database Options:
  - Active Data Guard
  - Advanced Analytics
  - Advanced Compression
  - Advanced Security
  - Database In-Memory
  - Database Vault
  - Label Security
  - Multitenant
  - On-Line Analytical Processing
  - Partitioning
  - RAC One Node
  - Real Application Clusters
  - Real Application Testing
  - Spatial and Graph
  - TimesTen Application-Tier Database Cache
- All Oracle Database Enterprise Manager Packs
  - Cloud Management Pack for Oracle Database
  - Data Masking and Subsetting Pack
  - Database Lifecycle Management Pack for Oracle Database
  - Diagnostics Pack
  - Tuning Pack

network and server technology, Oracle Cloud Infrastructure Services are architected from the ground up with a fundamentally differentiated approach to Cloud platform deployment. The following OCI capabilities provide a set of unique values for Exadata Cloud Service around availability, performance and ease of cloud integration: Regions and Availability Domains, a modern network infrastructure, Virtual Cloud Network and high-performance compute infrastructure.

- Oracle Cloud Infrastructure Services are deployed in Regions and Availability Domains. A region is a localized geographic area, and an Availability Domain is one or more data centers located within a region. Availability Domains are isolated from each other, fault tolerant, and very unlikely to fail simultaneously. All the Availability Domains in a region are connected to each other by a low latency, high bandwidth network. This makes it possible to deploy a production Exadata Cloud Service instance in one Availability Domain, along with a synchronized Exadata Cloud Service instance in another Availability Domain, providing zero-data-loss disaster recovery enabled by Oracle Active Data Guard. Active Data Guard can also be used to enable an efficient WAN-based Disaster Recovery configuration by setting up synchronized Exadata Cloud Service instances between Regions.

- Oracle Cloud Infrastructure Services network infrastructure is comprised of a high performance, non-oversubscribed, flat physical network which limits latency between Availability Domains to sub-milliseconds. Latency is even less between compute instances within an Availability Domain. In addition, Oracle Cloud Infrastructure Services enable a secure, private software-defined Virtual Cloud Network (VCN) that allows customers to treat Oracle Cloud Infrastructure Services as a secure and elastic extension of their on-premises network. Customers can configure their Exadata Cloud Service instance in their preferred VCN with complete flexibility that includes assigning their own private IP address space, creating subnets, creating route tables and configuring stateful firewalls. Customers can configure the VCN with an optional Internet Gateway to handle public traffic, and an optional IPSec VPN connection to securely extend their on-premises network.

- Oracle Cloud Infrastructure Services also offer fully dedicated bare metal compute infrastructure instances with powerful processors, high memory, and latest generation NVMe SSDs, which provides unrivaled raw performance ideal to run CPU intensive and I/O intensive applications. These applications connect to the databases deployed on Exadata Cloud Service instances over a secure, high speed network connection, delivering unparalleled performance for any enterprise-scale application deployment.

For more information on Oracle Cloud Infrastructure, please refer to https://cloud.oracle.com/cloud-infrastructure.

Exadata Cloud Service Overview

Exadata Cloud Service enables full-featured Oracle databases to run on the Exadata platform in the Oracle Public Cloud. Exadata Cloud Service instances come pre-configured according to best-practices that have been proven at thousands of mission critical Exadata sites around the world.

Subscription Overview

Exadata Cloud Service is available through two flexible subscription offerings:

- License Included

- Exadata Cloud Service Bring Your Own License (BYOL)

- Any combination or mix of OLTP, Data Warehousing, Reporting, OLAP, In-Memory Analytics, Spatial, Graph, JSON, XML, Objects, Large Objects
- Consolidate many physical databases or pluggable databases
- Disaster Recovery in Cloud with query offload
- Full ACID compliance (Atomicity, Consistency, Isolation, Durability) greatly simplifies application development and ensures data correctness

License Included

This subscription model includes all of the features of Oracle Database Enterprise Edition, plus all of the Oracle Database Enterprise Manager Packs and all Database Enterprise Edition Options. These industry-leading capabilities include Database In-Memory, Real Application Clusters (RAC), Active Data Guard, Automatic Storage Management (ASM), Partitioning, Advanced Compression, Advanced Security, Database Vault, Real Application Testing, OLAP, Advanced Analytics and Spatial and Graph. Also included in an Exadata Cloud Service PaaS subscription is Oracle Multitenant, enabling high consolidation density, rapid provisioning and cloning, efficient patching and upgrades, and significantly simplified database management. This subscription model is ideal for customers without existing Oracle database licenses, or customers seeking to use Oracle database features beyond what they currently have licenses for.
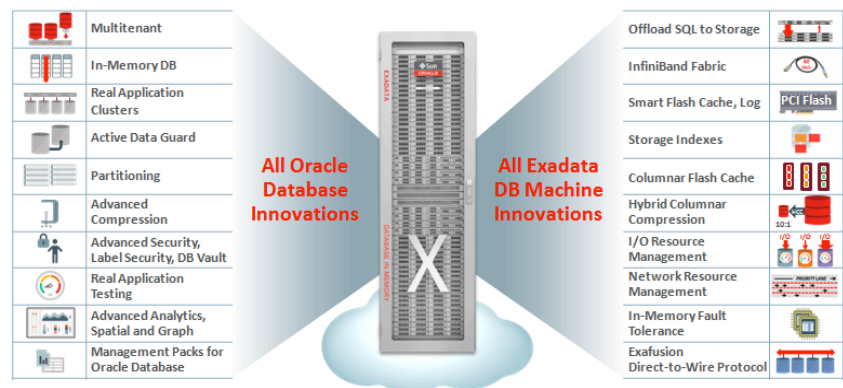
Figure 1: Exadata Cloud Service PaaS with all Database and Exadata features

Exadata Cloud Service Bring Your Own License (BYOL)

Exadata Cloud Service Bring Your Own License (BYOL) is designed to minimize costs when migrating to the cloud. In a BYOL model, customers can deploy their existing Oracle Enterprise Edition and Database Option licenses on Exadata Cloud Service. Standard Edition is not supported on any Exadata Cloud Service.

When a customer brings a Database Enterprise Edition license entitlement to Oracle Exadata Cloud Service, they are granted the rights to use Oracle Transparent Data Encryption (TDE), Diagnostics Pack, Tuning Pack, Data Masking and Subsetting Pack, and Real Application Testing without having on-premises license entitlements for those Database Options. The Exadata System software is also included in a BYOL subscription, so BYOL customers do not have to bring a license entitlement for the Exadata System Software.

Service Overview

Customers can choose to deploy Oracle Database 11g Release 2 (11.2.0.4), Oracle Database 12c Release 1 (12.1.0.2), Oracle Database 12c Release 2 (12.2.0.1), Oracle Database 18c, or a combination of these. Customers connect to databases from their

applications using standard Oracle Net Services clients such as JDBC and OCI. As shown in Fig. 1, Exadata Cloud Service also includes all capabilities of the underlying Exadata platform.

Customers choose an Exadata configuration starting with a quarter rack shape which has 2 database servers and 3 storage servers. The database servers have a physical maximum number of compute cores (OCPUs) that can be enabled for the chosen configuration, and customers can specify their desired number of compute cores within these limits. Pricing is based on the number of enabled compute cores, and as business grows, customers can enable additional compute cores, thus paying only for the processing power that they require. A unique advantage to the Exadata Cloud Service is all the disk/flash storage, IOPs and memory for the configuration chosen is included in the subscription price.

Customers with additional resource requirements may choose larger Exadata configurations, such as the Quarter, Half and Full Racks, enabling higher compute, network and storage capacity. Detailed specifications for each Exadata Cloud Service configuration are provided in Table 1 and 2.

Online Elastic Compute Scaling

Exadata Cloud Service features infrastructure that is dedicated to each customer, to ensure that response times and throughput are predictable for critical business processes. In addition, Exadata Cloud Service also allows Elastic CPU Scaling, enabling customers to grow, and later shrink, their database server CPU capacity to meet their peak or seasonal demands. Adjustments can be made completely online as frequently as the customer wants.

Customers who purchase universal credits pay the same low rate for additional CPUs when they elastically scale their service. This provides them with the best of both worlds. Low prices based on Oracle's universal credit pricing model, with the flexibility to rapidly adjust capacity as business conditions change. This avoids the costly practice of sizing for the highest possible peak workload, which is often required for on-premises systems and reserved cloud capacity on other cloud providers.

Administration

Customers have complete access to all Oracle Database and OS features to ensure smooth and simple migration from on-premises Oracle deployments to Exadata Cloud Service. Each Exadata Cloud Service instance is as a Virtual Machine (VM), called DomU, which is owned by the customer, in each database server of the Exadata system. Customers have root privileges for the Exadata database server DomU and DBA privileges on the Oracle databases. Customers can configure the system as they like, and load additional agent software on the Exadata database servers to conform to business standards or security monitoring requirements.

Customers perform familiar database administration and OS administration tasks aided by cloud automation for backup, patching, and upgrades. All supporting infrastructure for Exadata Service is deployed, maintained and managed by Oracle, including datacenter networking, private Exadata InfiniBand networks, physical Exadata compute and storage servers, firmware, and Exadata System software. This allows customers to focus on their business needs and application requirements, and not on database infrastructure monitoring and management.

Access and Security

Exadata Cloud Service provides secure high-performance access from both on-premises systems and from otherOracle Cloud Infrastructure services. To ensure consistent high-performance and isolation, multiple separate physical networks are provided on each Exadata server.

- The Client and Backup Networks provide 25 Gb/sec connectivity for high-bandwidth use cases such as application connectivity, backup, data loading, and disaster protection using Data Guard
- InfiniBand is used internally for ultra-high-speed compute-to-compute and compute-to-storage networking.
- A secure, separate and isolated Cloud Management network is used by Oracle Exadata Cloud Operations to manage the servers, storage and switches.

User defined cloud networking (VCN) provides security and isolation.

An additional layer of at-rest data protection is provided by ensuring that all databases created on the Exadata Cloud Service are encrypted with Tablespace Encryption, using the Transparent Data Encryption (TDE) capability of the Oracle Database.

Provisioning

Exadata Cloud Service includes a simple easy-to-use web-based provisioning wizard through which customers can quickly provision their chosen Exadata system and subsequently their database instances.

Customers create their databases in a very simple manner through a simple web-based wizard; choosing options such as the database version, database administration security credentials, and backup & recovery parameters.

This automated streamlined process of deploying a dedicated Exadata system for the customer along with RAC databases ready for application access, significantly cuts down the labor-intensive procurement-to-deployment cycle that typically takes weeks to months in an enterprise IT setting. This forms the essence of the business agility and rapid time to market capabilities of Oracle Public Cloud.

Backup & Recovery

Exadata Cloud Service provides automatic built-in database backup facilities, with weekly full backups and daily incremental backups. At the time of service provisioning, through the self-service portal, customers can choose backups to be stored on local disk backups on the Fast Recovery Area (FRA) provisioned directly on the Exadata system, on the Oracle Cloud Storage service or both.

Backups to cloud storage leverage Oracle Database Backup Cloud Service, which is an RMAN-integrated solution that sends Oracle Database backups directly to Oracle Storage Cloud. This presents the most affordable and elastic option to store backups for Exadata Service.

Customers also have the option to back up to local Exadata storage in conjunction with cloud backups, which delivers the fastest backup and recovery solution.

Recovery and Backups are easy with Exadata Cloud Service with a single click from the cloud UI. Choose when and where to backup from the UI with a single button. Recovery from a backup in the UI is again a single click of the mouse.

Updating an Exadata Cloud Service

Updating an Exadata Cloud Service can be performed by customers with a single mouse click. To update a database, view the details of the database deployment in the cloud UI. Now, with a single click, the service is updated one node at a time ensuring no downtime to the database or application users accessing the database. The service can also be updated via a REST service or from the compute node with a single command.

Conclusion: Transform IT, Unleash Business Potential

Oracle Database Exadata Cloud Service features the most versatile and functional database technology – Oracle Database, on the most powerful platform – Exadata, with the simplicity and cost effectiveness of Oracle Cloud software deployed in Oracle Cloud Data Centers.

Enterprise-proven database capabilities are now instantly available to maximize productivity, lower risk and accelerate time-to-value. To embrace the Cloud, customers no longer have to compromise their SQL functionality, performance, availability, data models, or transactional integrity. No changes to on-premises applications are required either, enabling rapid and easy migration to the cloud, or deployment of a hybrid cloud strategy. Finally, with Exadata Cloud Service, organizations no longer need to dedicate limited IT talent to managing and maintaining infrastructure. Instead they can focus on business logic and leverage the cloud innovation benefits much more expeditiously.

With a database platform uniquely engineered for extreme performance, along with fast deployment, simplified management, low operating costs and reduced risks, Exadata Cloud Service is the best public cloud database platform available today.

Table 1. EXADATA CLOUD SERVICE X7-2: Technical Specifications

	Quarter Rack	Half Rack	Full Rack
Number of Database Servers	2	4	8
Maximum Number of OCPUs	92	184	368
Total Memory (GB)	1,440	2,880	5,760
Number of Storage Servers	3	6	12
Total Flash Capacity (TB)	76.8	153.6	307.2
Total Usable Disk Capacity[1] (TB)	106.9	213.8	427.6
Max DB Size - Local backup (TB)	42.8	85.5	171.1
Max DB Size - No Local Backup (TB)	85.5	171.1	342.1
Max SQL Flash Bandwidth[2] (GB/s)	50	100	200
Max SQL Flash Read IOPS[3]	1,167,750	2,335,500	4,671,000
Max SQL Flash Write IOPS[4]	1,033,000	2,066,000	4,132,000
Max SQL Disk Bandwidth[2] (GB/s)	5.4	10.8	21.5
Max SQL Disk IOPS[3]	7,800	15,600	31,000
Max Data Load Rate[5] (TB/hr)	7.5	15	30

1. Usable capacity is measured using normal powers of 2 space terminology with 1 TB = 1024 * 1024 * 1024 * 1024 bytes. It is the actual space available to create a database after taking into account space needed for ASM high redundancy and recovering from a drive failure, but before database compression
2. Bandwidth is peak physical scan bandwidth achieved running SQL, assuming no database compression. Effective user data bandwidth is higher when database compression is used.
3. Based on 8K I/O requests running SQL.
4. Based on 8K I/O requests running SQL. Flash write I/Os measured at the storage servers after ASM mirroring, which issues multiple storage I/Os to maintain redundancy.
Load rates are typically limited by database server CPU, not I/O. Rates vary based on load method, indexes, data types, compression and partitioning.

Table 2. EXADATA CLOUD SERVICE X6-2: Technical Specifications

	Quarter Rack	Half Rack	Full Rack
Number of Database Servers	2	4	8
Number of OCPUs	22 – 84	44 – 168	88 – 336
Total Memory	1,440 GB	2,880 GB	5,760 GB
Number of Storage Servers	3	6	12
Total Flash Capacity	38.4 TB	76.8 TB	153.6 TB
Total Usable Disk Capacity[1]	85.4 TB	170.9 TB	341.7 TB
Max DB Size Supported (local backup)	34.2 TB	68.4 TB	136.7 TB
Max DB Size Supported (no local backup)	68.3 TB	136.7 TB	273.4 TB
Max SQL Flash Bandwidth[2]	48 GB/sec	96 GB/sec	192 GB/sec
Max SQL Flash Read IOPs[3]	900 K	1.8 M	3.6 M
Max SQL Flash Write IOPs[4]	800 K	1.6 M	3.2 M
Max SQL Disk Bandwidth[2]	5.4 GB/sec	11 GB/sec	21.5 GB/sec
Max SQL Disk IOPs[3]	7,800	16,000	31,000
Max Data Load Rate[5]	5.0 TB/hr	10.0 TB/hr	20.0 TB/hr

1. After high-redundancy mirroring, but before database compression.
2. Bandwidth is peak physical scan bandwidth achieved running SQL, assuming no database compression. Effective user data bandwidth is higher when database compression is used.
3. Based on 8K I/O requests running SQL.
4. Based on 8K I/O requests running SQL. Flash write I/Os measured at the storage servers after ASM mirroring, which issues multiple storage I/Os to maintain redundancy.
5. Load rates are typically limited by database server CPU, not I/O. Rates vary based on load method, indexes, data types, compression and partitioning.

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Integrated Cloud Applications & Platform Services

Oracle is committed to developing practices and products that help protect the environment