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Oracle Engineered Systems

Software-Led, Workload-Optimized Systems

- Extreme Performance
- Lower TCO
- More Reliable
- Pre-Integrated
- Less Management
- One-Stop Support

Exadata Database Machine
Exalogic Elastic Cloud
Big Data Appliance
Database Appliance
Virtual Compute Appliance
Exalytics In-Memory Machine
SuperCluster T5-8
SuperCluster M6-32 Big Memory Machine
Recovery Appliance
Exadata Momentum: 1000s of Mission Critical Deployments

Half are Warehouses, Half are OLTP or Mixed Workloads

- Petabyte Warehouses
- Business Applications
  - SAP, Oracle, etc.
- Online Financial Trading
- E-Commerce Sites
- Consolidation of 100s of Databases
- Leading SaaS Providers
  - Oracle Fusion, Salesforce, etc.
Exadata X4 is the Fifth Generation DB Machine

DATA WAREHOUSING OLTP
DATABASE AS A SERVICE
DATABASE IN-MEMORY
Exadata Unique Software

- **Database offload in storage**
  - Data intensive query operations offloaded to storage CPUs
  - 100 GB/sec SQL data throughput / rack

- **Database optimized PCI Flash**
  - Smart caching of database data
  - 2.66 Million Database IOs/sec per rack

- **Database optimized compression**
  - Hybrid Columnar Compression: 10x DB size reduction and faster analytics

- **Database optimized messaging**
  - SQL optimized InfiniBand protocol for high throughput and low latency SQL

- **Database optimized QoS**
  - I/O, CPU, and Network prioritization from application to DB and storage

- **Database optimized availability**
  - Fastest recovery of failed database, server, storage or switch
  - Fault-tolerant Database In-Memory
NEW: Exadata X4-8: Extreme In-Memory Processing

Ideal for In-Memory Database and Database as a Service

- X4-8 uses two 8-socket compute servers
  - Fastest and largest core count Xeons - 120 Cores/Server
  - Large memory – up to 12 TB
- With Database In-Memory compression holds up to 100 TB of data in memory
- Extreme Exadata I/O and networking Performance
Oracle SPARC M6 Big Memory Machine

32 TB DRAM
32 SPARC Sockets
3 Terabyte/sec Bandwidth

- Scale-Up Database In-Memory on large SMPs
- Algorithms NUMA optimized
- SMP scaling removes overhead of distributing queries across servers
- Memory interconnect far faster than any network
SuperCluster T5-8 and M6-32
Secure Database and Application Consolidation & Cloud

- Enterprise-class SPARC high performance servers
- Exadata Storage Grid technology
- Zero-overhead virtualization
- InfiniBand I/O Backplane
- Integrated ZS3 storage
Unique Exadata Benefits are Continuously Increasing

Application Benefits

- Faster Processors
- Faster, Cheaper Flash
- Larger Disk Drives
- Faster Network Interconnect

Hardware Improvements

- Smart Scan
- InfiniBand Scale-Out

Unique Exadata Software Improvements

- Network Resource Management
- Multitenant Aware Resource Mgmt
- Compressed Flash Cache
- IO Priorities
- Data Mining Offload
- Database Aware PCI Flash
- Storage Indexes
- Columnar Compression

Generic Hardware Platforms and Exadata

- Faster Processors
- Faster, Cheaper Flash
- Larger Disk Drives
- Faster Network Interconnect

Time

2008

2014
NEW: Zero Data Loss Recovery Appliance (ZDLRA)

Zero Data Loss
Real-time redo shipping provides instant protection of new transactions

Minimal Impact Backups
Production databases only send changes. All backup and tape processing offloaded

Database Level Recoverability
End-to-end reliability, visibility, and control of databases, not disjoint files

Cloud-Scale Protection
Easily protect all databases using cloud-scale centralized service
Exalogic: Specialized Software to Optimize MW, Apps
3x to 10x Better Response Times & Throughput, No Code Changes

- Optimized Java Virtual Machine
  - Optimized object management, copies, garbage collection and heap

- Optimized Application Server
  - Exabus InfiniBand communication

- Optimized In-memory Data Grid
  - Exabus InfiniBand communication
  - Elastic Data with flash optimized writes

- Optimized SOA
  - In-memory Data Grid for faster data retrieval

- Built-in Exabus Load Balancing
  - Built-in Exabus Traffic Routing and Shaping

- Performance-tuned Virtualization
  - Near-physical performance and throughput
Exalytics X4-4 and T5-8
In-Memory Business Analytics

- 20x Faster Analytic Response
  - Adaptive cache now built on Database In-Memory Option

- Offloads Analytics from Database
  - Variety of data sources
  - Rich interactive GUIs and experience

- 6X Faster Financial Planning, 6X Users
  - Processor, memory and flash optimizations with Essbase

- Superfast Financial Consolidation
  - Faster financial close with Hyperion Financial management

- Superfast Unstructured Search & Discovery
  - Memory optimized Endeca engine
NEW: Big Data SQL on Big Data Appliance (Hadoop)

Automatically Combines Oracle and Hadoop Data

Single SQL joins Customer data in Oracle DB to web logs in Hadoop

1. CUSTOMERS → Oracle Database
2. Sub-query runs on BDA nodes
3. Only columns and rows needed to answer query are returned
4. Oracle Database → Hadoop Cluster

Big Data SQL

Hadoop Cluster
Engineered Systems Customer Examples

- **Starwood Hotels and Resorts**
  - Loyalty Program, Guest Personalization, Dynamic Pricing, Marketing and Revenue Analytics
  - 14x faster reports; 5x faster loading

- **Telefónica**
  - Call Center platform serving 15K users, 8M txns per hour
  - Hardware reduced by 7x, $2M Opex reduction, 6x faster

- **T-Mobile**
  - 3-4X faster financial data processing, 8X faster Essbase builds
  - Business users can perform complex analytics during office hours

- **Energy Transfer**
  - Shared services platform deploying SAP and Oracle Database Apps
  - 40X faster OLTP, 40X better compression, 40X faster reports

- **P&G**
  - Need deeper insights into customer experience and sentiment
  - 20% better productivity, >50% reduction in decision cycle time
The Ultimate Software Optimizations: Hardware

- **Performance**
  - DB In-Memory Acceleration Engines

- **Reliability**
  - Application Data Integrity

- **Capacity**
  - Database Decompression Engines

**Coming in 2015**