



Open Storage Software
for Oracle RAC and Oracle ASM Clusters

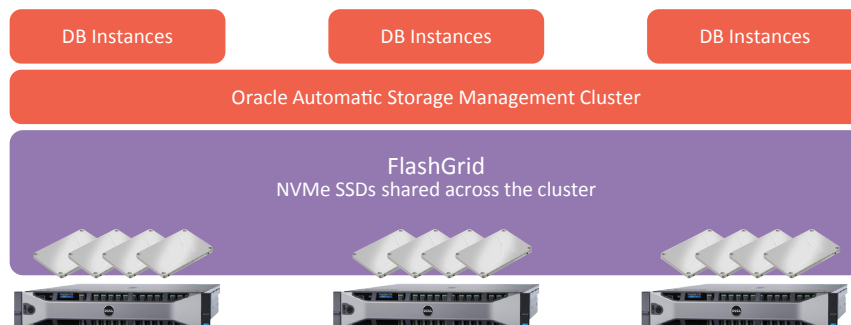


Free your Oracle databases from the SAN storage problems

SAN storage arrays limit the database performance and expose the databases to “noisy neighbors”. Even the all-flash arrays do not fully solve the storage I/O performance problem because of the bottlenecks in the storage network and in the storage controllers. Waiting for storage I/O is equivalent to wasting a substantial part of the Oracle database licenses.

Proven dedicated flash storage for each database cluster

- Share SSDs inside database servers between all nodes in the cluster
- 0.4 to 153 TB per node; 2 to 100 nodes
- Leverage proven Oracle ASM for high availability and data mirroring
- Maximize database performance with FlashGrid Read-Local™ Technology



12x performance at **1/6** of the cost of a flash array

Dedicated and DBA-Friendly

The FlashGrid storage is dedicated for a particular cluster and guarantees consistently high performance and no interference from other clusters or applications. FlashGrid leverages proven Oracle ASM capabilities for volume management, data mirroring, and high availability. With FlashGrid managing storage is an easy task for DBAs.

Reduce Database Licensing Costs

Accomplish more with less CPU cores. FlashGrid Read-Local™ Technology reduces CPU consumption and the unproductive I/O wait time by accessing flash storage through the highly optimized NVMe driver stack. The Remote Direct Memory Access technology eliminates the CPU overhead of the network stack and further reduces the I/O latency.

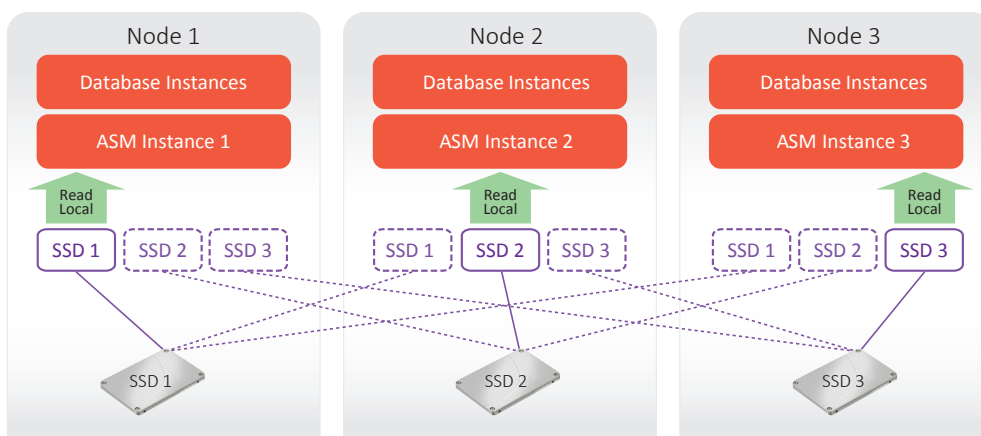
Standardize High Bandwidth and Low Latencies with NVMe PCIe SSDs

NVMe, the industry standard for PCIe SSDs, delivers outstanding performance of up to 3 GB/s and up to 750,000 random IOPS per SSD. Performance of a single NVMe SSD is similar to the performance of a typical all-flash array. Each server can have multiple NVMe SSDs, up to 48 SSDs in some server models.

How fast will your queries run on a **60 GB/s** dedicated storage?

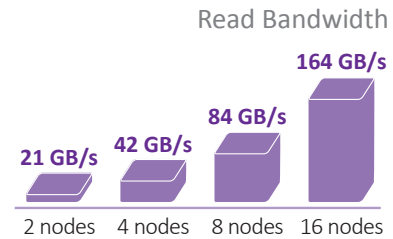
Prevent Network Congestion with FlashGrid Read-Local™ Technology

A congested storage network can limit the performance advantages of using flash storage. The FlashGrid Read-Local™ Technology reduces network traffic by up to 90% or more by serving read requests from local SSDs instead of moving data over the network. Unlike caching, the FlashGrid Read-Local™ Technology accelerates even large table scans and backup operations.



Scale Large Clusters with 100 Gb/s InfiniBand Fabric

InfiniBand fabric provides 20 GB/s of network bandwidth per server. The storage bandwidth scales linearly as more nodes are added. The RDMA technology minimizes CPU cycles consumed for I/O by directly moving data between the nodes without using CPU.



Maximize Database Up-Time

FlashGrid leverages proven Oracle ASM for managing data and for achieving exceptionally high availability without sacrificing performance. FlashGrid has fully distributed architecture with no single point of failure. Each block of user data is mirrored by Oracle ASM across two or three nodes.

Minimize Costs with Standard Hardware of Your Choice

Reduce storage costs by up to 90% compared to proprietary storage hardware. Pay only for the flash capacity that you actually need for a particular cluster, even if required capacity is as small as 1TB. Fully eliminate or cut the amount of the high-cost Fibre Channel infrastructure.

FlashGrid v16.7 Compatibility

Oracle Database	11.2, 12.1
Oracle Grid Infrastructure	12.1
Operating Systems	Oracle Linux 7 RHEL 7
Hypervisors (optional)	Oracle VM 3.3.x, 3.4.x VMware 5.5.x, 6.x
Ethernet NICs	10/40/100 Gigabit
InfiniBand Adapters (optional)	Mellanox ConnectX-3 VPI Mellanox ConnectX-4 VPI
SSD Types	NVMe SSD (2.5" hot-plug or add-in card) SAS SSD