

Exadata Database Machine X4-2 Key Capacity and Performance Metrics								
Metric	Full Rack		Half Rack		Quarter Rack		Eighth Rack	
Maximum SQL flash bandwidth <sup>2</sup>	100 GB/s		50 GB/s		21.5 GB/s		10.7 GB/s	
Maximum SQL flash read IOPS <sup>3</sup>	2,660,000		1,330,000		570,000		285,000	
Maximum SQL flash write IOPS <sup>4</sup>	1,960,000		980,000		420,000		210,000	
Flash data capacity (raw) <sup>5</sup>	44.8 TB		22.4 TB		9.6 TB		4.8 TB	
Effective Flash cache capacity <sup>7</sup>	Up to 448 TB		Up to 224 TB		Up to 96 TB		Up to 48 TB	
	HC <sup>1</sup> Disks	HP <sup>1</sup> Disks						
Maximum SQL disk bandwidth <sup>2</sup>	20 GB/s	24 GB/s	10 GB/s	12 GB/s	4.5 GB/s	5.2 GB/s	2.25 GB/s	2.6 GB/s
Maximum SQL disk IOPS <sup>3</sup>	32,000	50,000	16,000	25,000	7,000	10,800	3,500	5,400
Disk data capacity (raw) <sup>5</sup>	672 TB	200 TB	336 TB	100 TB	144 TB	43.2 TB	72 TB	21.6 TB
Disk data capacity (usable) <sup>6</sup>	300 TB	90 TB	150 TB	45 TB	63 TB	19 TB	30 TB	9 TB
Maximum data load rate <sup>8</sup>	20 TB/hour		10 TB/hour		5 TB/hour		2.5 TB/hour	
Actual system performance varies by application.								
<sup>1</sup> HP = High Performance; HC = High Capacity								
<sup>2</sup> Bandwidth is peak physical scan bandwidth achieved running SQL, assuming no database compression. Effective user data bandwidth is higher when database compression is used.								
<sup>3</sup> Based on 8K IO requests running SQL. Note that the IO size greatly affects Flash IOPS. Others quote IOPS based on smaller IOs and are not relevant for databases.								
<sup>4</sup> Based on 8K IO requests running SQL. Flash write I/Os measured at the storage servers after ASM mirroring, which usually issues multiple storage IOs to maintain redundancy.								
<sup>5</sup> Raw capacity is measured in standard disk drive terminology with 1 GB = 1 billion bytes. Usable capacity is measured using normal powers of 2 space terminology with 1 TB = 1024 * 1024 * 1024 * 1024 bytes.								
<sup>6</sup> Actual space available for a database after mirroring (ASM normal redundancy) while also providing adequate space (one disk on Quarter and Half Racks and two disks on a Full Rack) to reestablish the mirroring protection after a disk failure in the normal redundancy case.								
<sup>7</sup> Effective Flash Capacity is larger than the physical flash capacity and takes into account the high flash hit ratios due to Exadata's intelligent flash caching algorithms, and the size of the underlying disk storage. It is the size of the data files that can often be stored in Exadata and be accessed at the speed of flash memory.								
<sup>8</sup> Load rates are typically limited by database server CPU, not IO. Rates vary based on load method, indexes, data types, compression, and partitioning.								