



Cisco-EMC Microsoft SQL Server Fast Track Warehouse 3.0 Enterprise Reference Configurations

Data Sheet

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Data Center of the Future

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Introduction

The Microsoft SQL Server Fast Track Data Warehouse 3.0 reference configurations presented in this document are designed and tested by Cisco, EMC and Microsoft to provide:

- Architectural guidance for customers, partners and reseller who are evaluating, planning, or deploying Microsoft SQL Server based data warehouse solutions
- Performance and capacity guidance for selecting server, storage and connectivity solutions where out-of-the box performance and ability for rapid deployments are important

These reference configurations use Cisco UCS C-Series rack-mount servers and EMC VNX5300™ storage systems connected through Cisco Nexus 5500 series switch using Fibre Channel over Ethernet (FCoE) protocol.

Reference Configurations

Two reference configurations are introduced – the medium enterprise configuration and large enterprise configuration are designed to meet a broad range of data warehouse requirements, scaling from 8 up to 40 terabytes using compression capabilities in SQL Server 2008 R2 Enterprise.

The medium enterprise configuration consists of Cisco UCS C250 M2 Extended-Memory Rack-Mount Server equipped with two Intel® Xeon® Processors X5680 (3.33 GHz, 12MB L3 Cache, 130W), 96 GB of memory and two Cisco UCS P81E Virtual Interface Cards. The storage system consists of an EMC VNX5300 connected through a Cisco Nexus 5548 switch. See **Table 1** for the configuration details, **Table 2** for the benchmark results, and **Table 3** for Bill of Materials.

The large enterprise configuration consists of a Cisco UCS C460 M1 High-Performance Rack-Mount Server equipped with four Intel® Xeon® X7560 Processors (2.26GHz, 24MB cache, 130W), 256 GB of memory and eight QLogic QLE8152 Dual Port 10 Gb Converged Network Adapters. The storage consists of two EMC VNX5300 storage systems connected through a Cisco Nexus 5548 switch. See **Table 4** for the configuration details, **Table 5** for the benchmark results, and **Table 6** for Bill of Materials.

Table 1: Medium Enterprise Configuration

Server	Cisco UCS C250 M2 Extended-Memory Rack-Mount Server	Processor	Intel® Xeon® Processor X5680 (3.33 GHz, 12MB L3 Cache, 130W)
		Memory	96 GB (12 x 8GB DDR3-1333MHz RDIMM). Up to 384 GB supported
		Internal disk drives	2 x Small Form Factor 300-GB 10K-RPM SAS disk drives
		Converged Network Adapter	2 x Cisco UCS P81E Virtual Interface Cards
Storage	EMC VNX5300	Disk drives	75 x Small Form Factor 300-GB 10K-RPM SAS disk drives
		Data Protection	RAID5 for data and tempdb, RAID10 for log
Connectivity	Switch	Cisco Nexus 5548P Switch	
	Protocol	Fiber Channel over Ethernet (FCoE)	

Table 2: Medium Enterprise Benchmark Results

Maximum User Data Capacity	33 TB
Recommended User Data Capacity	20 TB
Benchmark Scan Rate Logical	2728 MB/s
Benchmark Scan Rate Physical	1985 MB/s
Average SQL Server data processing rate	2356 MB/s
Maximum SQL Server data processing rate	3600 MB/s

Table 3: Medium Enterprise Bill of Materials

Server	Part Number	Quantity
UCS C250 M2 Server w/1PSU	R250-2480805W	1
850W Power Supply Unit for C-Series 250 M2	R250-PSU2-850W	1
3.33GHz Xeon X5680 130W CPU/12MB cache	A01-X0200	2
16GB DDR3-1333MHz RDIMM/PC3-10600/2x8GB 2R Kit	A02-M316GD5-2	6
LSI 6G MegaRAID 9261-8i card	R2XX-PL003	1
300GB 6Gb SAS 10K RPM SFF HDD	A03-D300GA2	2
Cisco UCS P81E Virtual Interface Card 2-port 10Gbps	N2XX-ACPCI01	2
Switch		
Nexus 5548 UP Chassis, 32 10GbE Ports, 2 PS, 2 Fans	N5K-C5548UP-FA	1
10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M	8
Storage		
VNX5300	VNX53D253010F ¹	1
Two-Port 10 GbE FCoE Module	VSPMXGFCOOPAS	2
25x2.5" drive Disk Array Enclosure	V2-DAE-R-25-A	2
300-GB 2.5" 10K drive	VX-2S10-300	67
UNISPHERE BLOCK & VNX OE VNX5300	UNIB-V53	1
2ND OPTIONAL SPS FOR VNX5300	VNXSPSAS	1

¹ Includes 8 disk drives

Table 4: Large Enterprise Configuration

Server	Cisco UCS C460 M1 High-Performance Rack-Mount Server	Processor	Intel® Xeon® X7560 Processor (2.26GHz, 24MB cache, 130W)
		Memory	256 GB (32 x 8GB DDR3-1333MHz RDIMM). Up to 1024 GB supported
		Internal disk drives	2 x Small Form Factor 300-GB 10K-RPM SAS disk drives
		Converged Network Adapter	8 x QLogic QLE8152 Dual Port 10 Gb Converged Network Adapter
Storage	2 x EMC VNX5300	Disk drives	150 x Small Form Factor 300-GB 10K-RPM SAS disk drives
		Data Protection	RAID5 for data and tempdb, RAID10 for log
Connectivity	Switch	Cisco Nexus 5548P Switch	
	Protocol	Fiber Channel over Ethernet (FCoE)	

Table 5: Large Enterprise Benchmark Results

Maximum User Data Capacity	66 TB
Recommended User Data Capacity	40 TB
Benchmark Logical Scan Rate	5577 MB/s
Benchmark Physical Scan Rate	3419 MB/s
Average SQL Server data processing rate	4498 MB/s
Maximum SQL Server data processing rate	6619 MB/s

Table 6: Large Enterprise Bill of Materials

Server	Part Number	Quantity
UCS C460 M1 Rack SVR	R460-4640810	1
850W Power Supply Unit for C-Series C460	RC460-PSU2-850W	4
2.26GHz Xeon X7560 130W CPU/24MB cache	A01-X0200	4
MEMORY RISER BOARD FOR C460 M1	RC460-MRB	4
16GB DDR3-1333MHz RDIMM/PC3-10600/2x8GB 2R Kit	A02-M316GD5-2	16
LSI CONTROLLER 9260-8i	RC460-PL001	1
300GB 6Gb SAS 10K RPM SFF HDD	A03-D300GA2	2
QLogic QLE8152 Dual Port 10 Gb Converged Network Adapter	N2XX-AQPCI03	8
Switch		
Nexus 5548 UP Chassis, 32 10GbE Ports, 2 PS, 2 Fans	N5K-C5548UP-FA	1
10GBASE-CU SFP+ Cable 3 Meter	SFP-H10GB-CU3M	16
Storage		
VNX5300	VNX53D253010F	2
Two-Port 10 GbE FCoE Module	VSPMXGFCOOPAS	4
25x2.5" drive Disk Array Enclosure	V2-DAE-R-25-A	4
300-GB 2.5" 10K drive	VX-2S10-300	134
UNISPHERE BLOCK & VNX OE VNX5300	UNIB-V53	2
2ND OPTIONAL SPS FOR VNX5300	VNXSPSAS	2



For More Information

To learn more about the SQL Server Fast Track Data Warehouse solution, visit www.cisco.com/go/microsoft.



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