Teradata Active Enterprise Data Warehouse 6690

Active Data Warehousing™ Platform for Teradata Solutions

In today's fast-paced, ever-changing competitive environment, your data warehouse must provide higher performance, availability, and scalability to support your business's increased real-time and decision-support workloads. Teradata offers a broad family of platforms that spans a company's business and analytical data warehouse needs. The Teradata® Active Enterprise Data Warehouse (EDW) 6690 with hybrid storage meets the widest range of operational and strategic intelligence needs as the highest performing, most dependable, massively parallel processing (MPP) platform ever released for a Teradata solution.

The Teradata Active EDW 6690 and the Teradata Database offer a totally integrated solution optimized to provide the complete platform for an EDW and its operational expansion as an active data warehouse. The result? You can focus on your business and not on managing technology, enabling you to make smarter decisions faster and maximize ROI.

To support all your data warehousing initiatives, the Teradata Active EDW 6690 platform is purpose built to run the Teradata Database to its fullest capabilities including Teradata Virtual Storage™ and Teradata Active System Management. The MPP architecture of the platform fully enables the parallel, shared nothing architecture of the Teradata Database.

By leveraging Teradata Virtual Storage™ and solid state drives, this Teradata Active EDW platform can deliver real-time intelligence by enabling Active Data Warehousing™ technology in your enterprise. This key capability places vital data into the hands of front-line decision makers, while extending traditional data warehouse functionality into the realm of tactical decision making. With the Teradata Active EDW, you can combine both these strategic and operational workloads in a single data warehouse. The key attributes of the Teradata Active EDW platform are:

High-performance Technology

With modular design and architecture, the Teradata Active EDW platform is implemented with discrete system elements that are independently evolved without impact to the rest of the system. An example of this evolution is Teradata Database's ability to leverage the most current industry-leading Intel® CPU technology to achieve high-performance processing nodes. The Active EDW 6690 features the Westmere

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Six Core Intel® Xeon® Processor with the Intel Hyper-Threading feature. The Teradata Active EDW's parallel architecture leverages both of these processor technologies to gain maximum processor and system performance.

The key technology evolution delivered with the Active EDW 6690 is the use of hybrid storage that combines Solid State Drive (SSD) and Hard Disk Drive (HDD) technologies for your data. With Teradata's hybrid storage, the frequently used hot data are stored on very high-performance SSD devices while the less frequently used
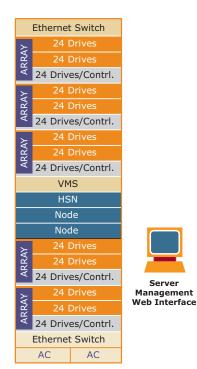

Figure 1. Teradata Active EDW 6690 Platform Cabinet Components.

cold data are placed on the traditional performance HDD devices. Unique to Teradata data warehouses, the placement and migration of data based on data temperature is fully automatic with the Teradata Virtual Storage™ feature.

The basic Teradata parallel architecture can take full advantage of the speed of SSD storage. In fact, an SSD device is 16 to 22 times faster than enterprise HDD devices for Teradata workloads. While SSD offers a basic performance enhancement to a Teradata system, SSD's real magic is that it enables the full data warehouse power of a Teradata node to be balanced with far fewer storage devices than with HDD only.

This means that the full performance capability is applied to a much smaller amount of data resulting in a significant boost in performance per capacity for Teradata systems.

The bottom line is that the higher query throughput along with faster, more consistent query response times provide business value by allowing more real-time users, faster response to events, deeper and more complex analytics, and broader application of your active data warehouse.

Scalability

Unmatched in its scalability, a Teradata system based on the Teradata Active EDW platform accommodates future business growth by expanding incrementally from one to 4,096 nodes. It also accommodates user data space from six terabytes to

60 petabytes of uncompressed user data. Featuring MPP architecture, the platform supports scalable growth in all dimensions.

The Teradata BYNET® system interconnect for high-speed, fault tolerant warehouse-optimized messaging between nodes is another key scalability ingredient.

Availability

The Teradata Active EDW platform achieves availability through Teradata's unique clique architecture in which one or more nodes and a Hot Standby node are connected to common storage. This clique approach allows Teradata Database to seamlessly failover workloads between a clique's active and Hot Standby nodes if a node does fail. Minimizing the impact of component or module failures, the platform also contains redundant hardware components, so if a failure does occur, it won't affect Teradata Database operation or the end-user experience. Many of the hardware components are hot-swappable, allowing service repair without affecting system availability.

Manageability and Ease of Use

The platform features simplified platform administration, control, and monitoring through the single operational view on the Teradata Server Management and Web-based Administration Workstation portal.

The industry-leading, integrated systems management infrastructure monitors and controls the system, performs routine events, such as orderly start up and shut down, and prevents harm from a disruptive

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failure, such as a power outage or extreme heat. Combined with Teradata Viewpoint, which provides an intuitive and easy to use interface for managing and monitoring one or more Teradata systems, the platform enables users to quickly achieve business results.

Growth with Investment Protection

The Teradata Active EDW platform and the Teradata Database have the capability called coexistence that supports multiple platform generations within a single system while gaining full performance from each generation. By enabling expansion through coexistence, you can expand your system to include the latest platform, while reaping a return on your initial technology investment and leveraging the price/performance curve as it evolves.

The Active EDW 6690 coexists with the previous generation of hybrid storage platform (the Active EDW 6680) and will coexist with future generations of the Active EDW platform with hybrid storage.

Flexible Platform Options

The Teradata Active EDW supports a variety of processing and storage elements integrated into the system cabinets for the flexibility to meet customer needs. These include:

Teradata node – the basic processing element for the Teradata Database.

Hot standby node – a redundant Teradata node added to a clique to provide full performance continuity during node failure.

Data storage arrays – Multiple storage arrays that provide both the RAID controller and data storage drives. The storage drives can be either SSD or HDD drive types.

A separate utility cabinet provides full integration of other key functional elements including:

Teradata BYNET® Switches – Supports the high performance BYNET system interconnect with high availability, fault tolerant, dual networks that ensure highly scalable, error-free MPP communication.

Channel node – a dedicated Teradata node that supports Teradata Database's unique capability for mainframe connectivity. Also, the Extended Channel Server enables connection to a remotely located mainframe.

Teradata Managed Server – applies enterprise-level Teradata system management capabilities to a commodity server for applications that support Teradata Database. A base model of the server can be configured to meet your needs and supports the Linux® operating system. Preconfigured models are available for specific

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The Teradata Active EDW Platform

The Teradata Active EDW 6690 is available in four basic configurations. To meet your needs, choose the amount of frequently used hot data needed for each node, as determined by the amount of SSD storage, and the amount of less frequently used warm/cold data as determined by the number and capacity of HDD storage.

Teradata Active EDW 6690 Available Configurations

	#1		#2		#3		#4	
Purpose	High Performance per TB		High Performance per TB		Standard Performance per TB		Standard Performance per TB	
SSD#	15		20		15		15	
SSD CDS TB	1.6		2.2		1.6		1.6	
HDD#	60		80		120		160	
HDD GB	300	600	300	600	300	600	300	600
HDD CDS TB	4.9	9.8	6.5	13	9.8	19.6	13	26
% CDS in SSD	25%	14%	25%	14%	14%	8%	11%	6%

CDS = Customer Data Space   *TPerf rating = 130*   **Figure 2.**

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applications, such as Teradata Unity, Data Mover, Multi-System Manager and data loading. Multiple Teradata Managed Servers can be supported in the cabinet.

Virtual Management Server (VMS) – based on the Teradata Managed Servers and virtualization technology, this server virtualizes multiple key system functions into a single physical server. These functions include the Teradata Viewpoint Appliance, the cabinet management functions, and the Teradata Customer Services portal for remote access to the system. The VMS saves valuable cabinet rack space by eliminating the need for separate physical servers for each of these functions.

Platform Sustainability

The Teradata Active EDW platform's performance and scalability enable you to save significant energy and floor space while achieving the same data warehouse work as done by previous systems. The small form factor storage drives of the Active EDW 6690 provide up to 3.3X more data space in a system cabinet thereby dramatically reducing floor space and energy for the same data space. Also, the Teradata platform's unique coexistence capability lengthens the useful life of Teradata systems resulting in less carbon and electronic waste.

Purpose-Built Platform Excellence

The Teradata Active EDW platform can adapt and grow along with your business.

Backed by award-winning professional services, support, and Teradata Corporation's demonstrated data warehousing expertise, the Teradata Active EDW is the solid foundation you need to protect your data and your investment.

Each platform is integrated according to your configuration and pre-tested, so it's ready to run right after delivery. You can begin loading data and running queries shortly after initial delivery – and quickly begin getting business value.

The Teradata platform provides unmatched performance, eliminates the unexpected, reduces risk, and allows you to focus on driving the highest return on your data warehousing investments – today and in the future.

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Teradata Active Enterprise Data Warehouse 6690

Teradata Active Enterprise Data Warehouse 6690 Description

Teradata Nodes

Processors

- Dual Six Core Intel Xeon 5600 Series 3.06GHz processors
- 12MB Level 2 Cache per processor
- Intel Hyper-Threading Technology with up to 2 threads per Core
- Quick Path Technology at 6.4 Giga-transactions per second for I/O

Memory

- 96GB using DDR3 fully-buffered 1333 DIMM with ECC
- Memory controller built into each processor

Node Internal Storage Devices

- Integrated RAID controller with SAS backplane
- Six media bays per node
  - Up to four hot-swappable 300GB or 450GB SAS hard drives (three standard)
  - One CD/DVD-ROM drive

Connectivity per Node

- Five PCI slots
  - Three full profile PCIe Gen 2
  - Two half profile PCIe Gen 2
- Storage Connectivity
  - 6Gb Quad SAS Adapter
- Customer Ethernet Network Connectivity
  - Six on-board 1Gbit Ethernet connections (two for Server Management)
  - 1Gb Copper – Quad Port Adapter
  - 1Gb Fiber (Optical) – Dual Port Adapter
  - 10Gb Copper and Fiber – Dual Port Adapters

Operating System

- Novell SUSE® Linux 64-bit

Teradata BYNET V4 MPP Interconnect

- Enabling linear scalability up to 4,096 nodes – 1,024 standard
- Fault tolerant interconnect via dual networks
- Self configuring, fully fault diagnosable
- 960MB per second per node bandwidth on dual redundant networks
- Up to 100M link cable length for data center flexibility
- BYNET adapters on 64-bit PCIe Gen 2 for optimal interconnect MPP performance

Data Storage

- Teradata Storage Arrays
  - 400GB SSD, SAS Enterprise Flash drives
  - 300GB and 600GB HDD, SAS, 10K RPM, enterprise class drives
  - Up to 72 drives per array
  - High availability with RAID 1 controller,
  - HDD and SSD data availability protection with T10 DIF standard for end-to-end data integrity
  - SSD ECC data protection with robust, five years write wear out protection

Teradata Database

- Integrated and certified with Teradata Database – Version 13.10.02 or higher
- Requires Teradata Virtual Storage™ feature to provide automatic temperature-based data migration and management in hybrid storage (SSD and HDD)

System Cabinet

- One to two Teradata nodes plus Hot Standby node
- Maximum five storage arrays per cabinet each with SSD and/or HDD devices
- Cabinet management server and Ethernet network switches
- Dual AC distribution, cooling fans
- Patented enhanced airflow door design

Utility Cabinet

- Teradata BYNET switches for up to 16 nodes
- Teradata Managed Servers for related applications
- Virtual Managed Server combines Teradata Viewpoint, cabinet management, and services workstation functions
- Teradata Channel Nodes for Mainframe Connectivity
  - IBM ESCON
  - IBM FICON
- Teradata Backup Archive Restore servers as required

High Availability Hardware Features

- Dual AC inputs enable power sourcing from two grids for maximum uptime.
- Hot pluggable components include power supplies and disks.
- Fault resilient fan modules, redundant power supplies, fault tolerant BYNET Interconnect.

External Backup and Recovery

- Teradata integrated backup and recovery products and solutions
  - Oracle/Sun Tape libraries
  - EMC Data Domain Disk Backup
  - Storage management with Symantec NetBackup (BakBone NetVault or IBM Tivoli are alternatives)

Operating Specifications

- Height: 77 in. (195.6 cm)
- Width: 24 in. (61.4 cm)
- Depth: 48 in. (121.9 cm) with doors
- Weight: 1,650 lbs. (750 kg) fully loaded
- Operating Temperature: 50°F to 104°F (10°C to 40°C)
- Voltage Range: 208/220/230/240VAC
- Frequency: 50-60Hz
- Current: 30 Amp
- Power: 6000 Watts Max
- Dual AC: Configurable
- Compliant with U.S. Safety and Emissions Standards
- RoHS and WEEE compliant

Support Services

Global Support

- Experienced data warehousing service personnel
- 24-hour x 365 days availability

Warranty Support

- One-year remote and on-site hardware support, operating system problem resolution
- 24-hour incident reporting

Availability Management Services

- Proactive, holistic approach for protecting a system from risk events that can reduce or degrade availability.

Enterprise System Support

- Delivers quality, one-source support and single point of delivery with each service level.
- Two flexible support solution levels designed to grow: Premier Support and Critical System Management.
- Integrated, proactive tools, such as Teradata Vital Infrastructure and VPN secure remote connectivity.

Teradata Vital Infrastructure

- Built-in support software available on each Teradata Active EDW platform.
- Regularly collects system asset data.
- Fault event data are recorded; automatic incident reports are created.
- Alert notifications are sent and tracked (Call Home capability).

Implementation Services

- Staging Services
- Installation Services

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