Teradata Active Enterprise Data Warehouse 6650

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 the business and analytical data warehouse needs throughout a company. Only the Teradata® Active Enterprise Data Warehouse (EDW) 6650 meets the widest range of operational and strategic intelligence needs as the most dependable, highest performing, massively parallel processing (MPP) platform ever released in a Teradata solution.

The Teradata Active EDW 6650 and the Teradata Database offer a totally integrated solution optimized to provide the complete platform solution for an enterprise data warehouse 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 platform is purpose built to run the Teradata Database to its fullest capabilities. The MPP architecture of the platform fully enables the parallel, shared nothing architecture of the Teradata Database.

The 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 five 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 functions that are independently evolved without impact to the rest of the system. A prime example of this evolution is Teradata Databases's ability to leverage the most current industry-leading Intel® CPU technology to achieve high-performance processing nodes. The Active EDW 6650 features the Westmere Six Core Intel Xeon® Processor with Intel Hyper-Threading feature. The Teradata Active EDW's parallel architecture leverages these processor technologies to gain maximum processor and system performance.

To ensure optimum node performance, the NetApp® E-Series industry leading modular storage is integrated with each node and provides flexible, high-speed hard disk drive (HDD)-based storage. In addition, the Active EDW 6650 is designed for field upgrades to hybrid storage that includes solid state drives (SSD) and Teradata Virtual Storage software. Teradata Database's shared nothing architecture achieves the most

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effective performance from the breakthrough SSD technology. The key benefit of upgrading to hybrid storage is a significant boost in the system's already robust performance per capacity that can be leveraged by users to increase throughput, decrease response times, and meet tighter query response time needs.

Scalability

Unmatched in its scalability, a Teradata system based on the Teradata Active EDW 6650 platform accommodates future business growth by expanding incrementally from one to 4,096 nodes. It also accommodates user data space from four terabytes to more than 92 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.

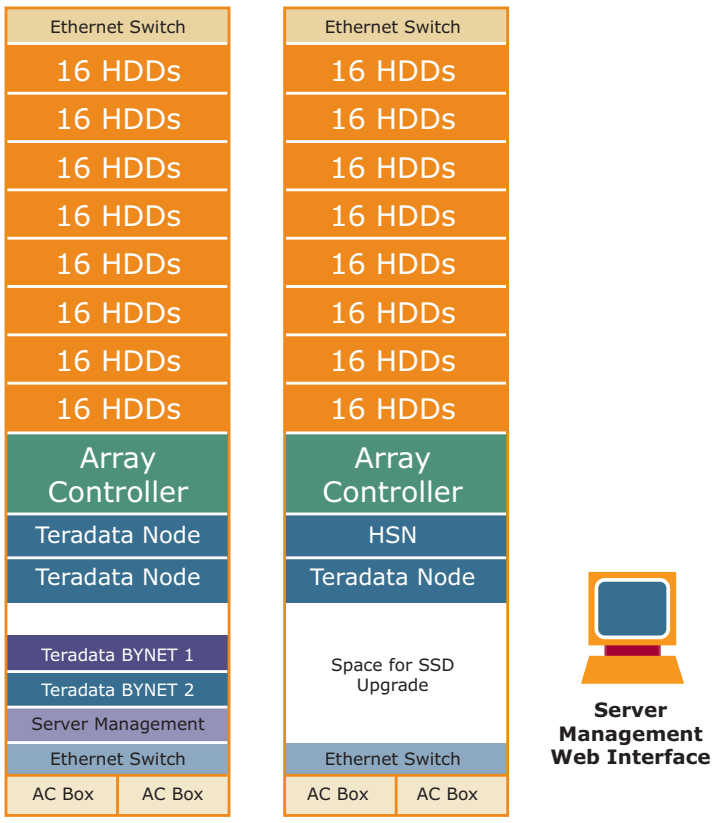

Figure 1. Teradata Active EDW 6650 Platform Cabinet Components.

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 the active nodes and Hot Standby Nodes of the clique 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. All critical 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 failure, such as a power outage or extreme heat. Combined with Teradata Database's powerful workload management capabilities, 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 to support 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

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technology investment and leveraging the price/performance curve as it evolves. The Active EDW 6650 supports six generations within a single system that spans a five-year sequence of platform releases for unprecedented investment protection.

Flexible Platform Options

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

Teradata node – the basic server 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 – RAID-based storage array for high data reliability and supporting high-performance, enterprise-class HDDs. SSD-based storage arrays are available for field upgrade to hybrid storage within the same cabinet.

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

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. A variety of pre-configured models are available for specific applications, such as Teradata Viewpoint, client loading, Teradata Data Mover, and Teradata Unity.

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. Also, the Teradata platform's unique coexistence capability lengthens the useful life of Teradata systems resulting in less carbon and electronic waste.

The Teradata Active EDW Platform

Two models of the Teradata Active EDW 6650 are available. To meet your needs, you can choose the level of processing power in each node, as determined by the number of Intel® Xeon® processors and the scalability of system data with number of drives per node.

> 6650H is the model that provides the highest performance and scalability. This model leverages the full breakthrough in processing power that a Six Core Intel® Xeon® Processor in a two-way configuration can deliver to meet your enterprise's demands for active data warehousing performance and growth.

> 6650C delivers the processing power that achieves coexistence with five previous Teradata platform generations and offers a fully scalable entry-level solution with a node based on a single six core processor.

Model	6650H	6650C
Application	High Performance	Coexistence and scalable entry level
Cores per Node	12	6
System Interconnect	BYNET V4	BYNET V4
Scalability	1 to 4,096 Nodes	1 to 4,096 Nodes
HDD Drives per Node	84 to 232	42 to 124
SSD Drives per Node	Up to 28	N/A
User Data Space/Clique (450GB Drive)	Up to 29.6TB	Up to 22.8TB

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 6650 Description

Teradata Nodes

Processors

- Up to two Six Core Intel® Xeon® 5600 Series 2.93GHz 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 (48GB for 6650C) using DDR3 fully-buffered 1333 DIMM with ECC
- Memory controller built into each processor

Internal Storage Devices

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

Connectivity per Node

- Five PCIe Gen 2 slots: three full profile and two half profile
- Storage Connectivity
  - 8Gb Quad Fibre Channel Adapters (for hard disk drives)
  - 6Gb Quad SAS Adapters (with SSD field upgrade)
- Customer Ethernet Network Connectivity
  - Six on-board 1Gb Ethernet connections (two for Server Management)
  - 1Gb Copper – Quad Port Adapter
  - 1Gb Fiber (Optical) – Dual Port Adapter
  - 10Gb Copper and Fiber – Dual Port Adapters
- Mainframe Connectivity (requires Channel Node or Extended Channel Server)
  - IBM ESCON
  - IBM FICON

Operating System

- Novell SUSE Linux 64-bit

MPP Interconnect Teradata BYNET V4

- Enabling linear scalability up to 4,096 nodes – 1,024 standard
- Fault tolerant interconnect via dual networks on independent BYNET adapters
- 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

Data Storage – HDD

- Teradata Enterprise Storage 6844 based on NetApp E7900 Storage System
- 300GB, 450GB, and 600GB Fibre Channel, 15K RPM, enterprise class disk drives
- Up to 124 data drives and two hot spare drives per array, one array per cabinet
- Data reliability with RAID 1 array and data availability protection (DAP) for end-to-end data integrity

Data Storage – SSD field upgrade

- Based on modular NetApp E2600 Storage System
- Up to 28 400GB SAS, enterprise-class SSD per node

Teradata Database

- Integrated and certified with Teradata Database – Versions 12, 13, 13.10, and 14.

Cabinet

- One to two Teradata nodes plus Hot Standby Node
- One Enterprise Storage Array with up to 126 disk drives
- In field upgrade to SSD storage and arrays
- Teradata BYNET switches (base models) for up to 16 nodes
- Server management and Ethernet network switches
- AC distribution, cooling fans with patented enhanced airflow

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/SunTape libraries
  - EMC Data Domain Disk
  - Storage management with Symantec NetBackup (IBM Tivoli is alternative)

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: 5640 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

Premier Warehouse Support

- Industry-leading hardware and software maintenance
- World-class software support services
- Priority service option for faster response
- Integrated tools, such as Teradata Vital Infrastructure and Teradata Service-Connect™, for comprehensive support delivery

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

- System installation
- Software implementation

Operational Services

- Critical system management services

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