

HITACHI introduces THOR™

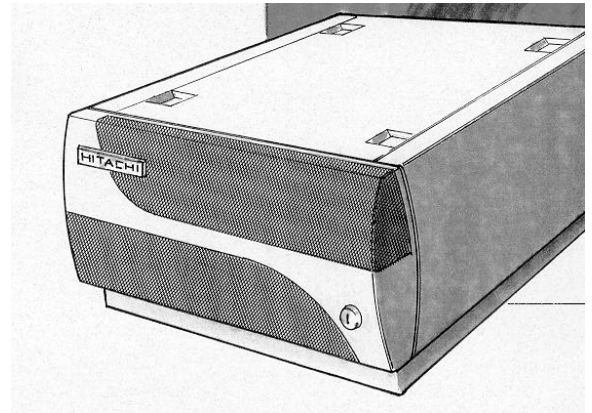
The Hitachi Object Relational Database System

Unparalleled parallel technology for all of your data warehousing needs

The **THOR Database System** is a scaleable, open, parallel-processing, object relational database management system (ORDBMS) for the client-server environment..

THOR is a complete system, comprising the **THOR SQL objectManager™ software** – an SQL implementation designed to run on parallel shared-nothing hardware – and the **THOR MPP Data Server™ hardware** – simple, off-the-shelf hardware optimized to provide a cost-effective platform for the SQL objectManager software. SQL objectManager is the only advanced scaleable open parallel object/relational DBMS optimized to run on the parallel hardware architecture.

The SQL objectManager software supports the Sybase Open Server and the Open Database Connectivity (ODBC) standard. SQL objectManager emulates TRANSACT-SQL, the Sybase dialect of SQL, making it compatible with numerous existing applications and application generators.



Key Benefits

<ul style="list-style-type: none">• Unsurpassed price/performance and function, easily scales from gigabytes to terabytes	<ul style="list-style-type: none">• Native parallel object support and advanced query optimization	<ul style="list-style-type: none">• Parallel-everything architecture – LOAD, DUMP, SORT, JOIN, INSERT, UPDATE, etc.
<ul style="list-style-type: none">• SYBASE-compatible - all interfaces and tools can run without disruption	<ul style="list-style-type: none">• Open system integration, ODBC- and SQL-compatible	<ul style="list-style-type: none">• Hitachi quality, service and outstanding customer support

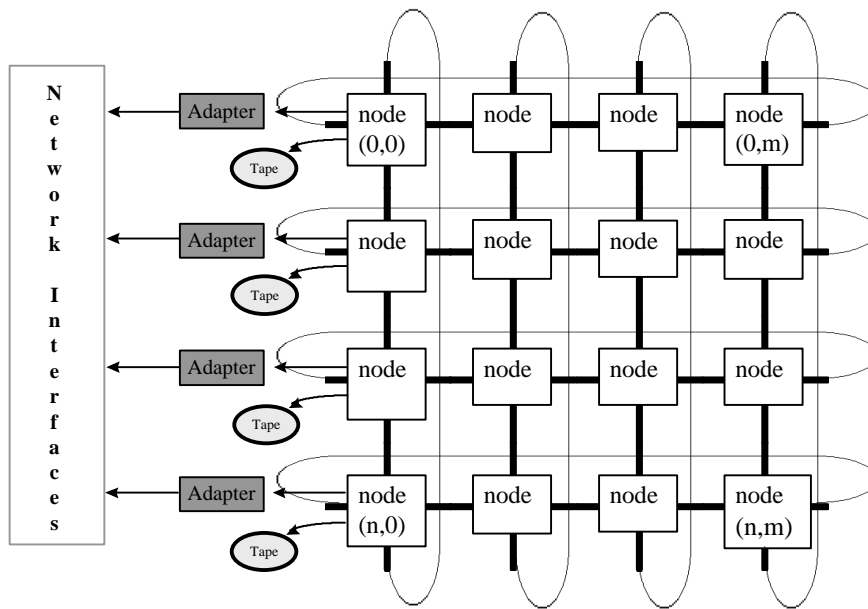
THOR SQL objectManager – Integrated RDBMS Software

SQL Supported	Standard SQL and SYBASE TRANSACT-SQL – Supports stored procedures and triggers – Full set of system administration tools
Database integrity	Row-level concurrency control – Supports ACID principles
Data types	Supports all SYBASE SQL Server data types, large objects support
Security control	Login and password – GRANT/REVOKE privileges – Views
Backup/recovery	Full transaction logging (logical-mirrored) – Transaction roll-back and two-phase commit – Backups (DUMP) on databases – Automatic recovery – RAID level 1
Networks supported	All networks supported by SYBASE Open Server – Ethernet (TCP/IP) – Novell NetWare LAN Workplace – Microsoft LANManager – IBM LAN Server
SYBASE Open Server Interface	Supports SYBASE Data Workbench, APT Workbench, Report Workbench – Supports SYBASE and Microsoft SQL Server-compatible 4GLs, gateways, and utilities
Network Gateway Requirements	UNIX – SCSI-II Adapter

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THOR Database System Data Sheet

How it works



The THOR MPP Data Server is tuned for VLDB uses. It uses leading edge PowerPC technology with Ultra-SCSI disk drives. The modular packaging lets you easily scale your implementation to meet your present and future VLDB data processing requirements.

The THOR MPP Data Server hardware comprises a matrix of data processing *nodes*. Each node has its own dedicated processor, memory and disks. The nodes are linked together in a toroidal mesh, so the machine is capable of achieving a high degree of parallelism in searching, sorting and updating large amounts of data with extremely low latency.

A THOR *module* contains four nodes; a *tower* contains six modules, or 24 nodes. In THOR's initial release, up to 12 towers or 288 nodes can be connected. The system shown above displays four modules, or 16 nodes, while also illustrating the hardware's scalability.

Specifications

HW Specifications	Module (four nodes)	Tower (24 nodes)
Model Number	HI64	HI512
Memory	256 MB - 2 GB, ECC protected	1.5-12 GB, ECC protected
Total disk space	67.2 GB	403.2 GB
Network gateway connections	up to 4 Fast-Wide SCSI-II	up to 24 Fast Wide SCSI-II
Processors	4 of each of the following: <ul style="list-style-type: none"> Power PC 604 RISC Processor PowerPC bus w/ 1MB Synchronous Cache RAM (SRAM) 32-bit PCI Bus Dual Ultra-Wide SCSI Buses up to 512MB 60ns EDO DRAM w/ECC protection Dedicated Communications Processor 	24 of each of the following:
I/O	Node to Node communications: <ul style="list-style-type: none"> Toroidal interconnect topology Peak bandwidth of 100 Megabytes/second per node <ul style="list-style-type: none"> ◇ Per module: 400 Megabytes/second total peak bandwidth ◇ Per tower: 2.4 Gigabytes/second total peak bandwidth External Peripherals: <ul style="list-style-type: none"> Fast-Wide SCSI II port per node Internal Peripherals: <ul style="list-style-type: none"> Fast-Wide SCSI II channel per node Diagnostic Ports: <ul style="list-style-type: none"> RS-232 Serial Port per node Ethernet 10BaseT per node 	