

HP Integrity Superdome achieves single-system TPC-H 1TB world record



Server takes #1 single system 1 TB performance, #1 Oracle result, better 1 TB core per performance and price/performance than Sun



HP Leadership



The HP Integrity Superdome is the top-of-the-line enterprise computing solution that provides balanced high performance and outstanding consolidation opportunities along with expansive capacity, flexibility, security, and manageability.

With support for multiple operating environments, the Integrity Superdome can be configured for exceptional performance across all business-critical workloads, whether they are transaction-based, query-driven, or batch processing.

Customer Value

What are the customer benefits of using the HP Integrity Superdome with TPC-H?

Because the TPC-H benchmark illustrates decision support systems that examine large volumes of data, execute queries with a high degree of complexity, and give answers to critical business questions, many businesses find this type of benchmark useful in determining what servers to utilize.

With the HP Integrity Superdome's wide range of enterprise solutions and its leading TPC-H benchmarks in performance and price/performance, customers are reassured that the server will enable them to accelerate business growth, lower costs, and mitigate risk while delivering outstanding investment protection, making it the **BEST PLATFORM** for their business applications.

TPC-Disclosure: A full disclosure report describing these benchmark results has been filed with the Transaction Processing Performance Council (TPC) and is available upon request. This report describes the benchmark HW and SW configuration in detail, provides costs, and lists the code actually used to perform the test. Similar reports from other vendors are the source of the price/performance comparisons provided above. Summaries of all tests are published each month by the TPC and on the Internet on the TPC's World Wide Web Server. With these benchmarks, customers can objectively compare the performance of different vendors' servers in specific areas.

Technology for better business outcomes

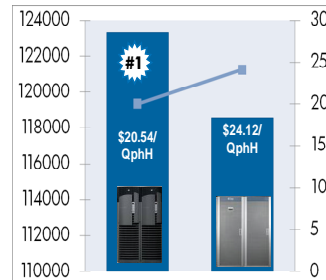
Key Points

- With a superior performance result of 123,323 QphH, the HP Integrity Superdome is the #1, 1TB TPC-H single system result across all operating systems and database environments in this scale factor.
- The HP Integrity Superdome's excellent price/performance of \$20.54/QphH is 17% better than the Sun SPARC Enterprise M9000 result.
- The HP Integrity Superdome also outperformed Sun's M9000 server by 4% with a better per core performance.
- Combined with the processor-enhancing capabilities of HP's Super-Scalable Processor Chipset sx2000, the HP Integrity Superdome single system server with HP-UX 11i v3 and Oracle 11g delivers outstanding performance, scalability, and simplified management at an exceptional value with 1.8x better performance and greater than 1/3 the cost per transaction compared to its previous single system 1TB TPC-H Superdome 64c result that utilized the HP-UX 11i v2 and Oracle 10g applications.
- The HP Integrity Superdome result also showcased its leadership amongst non-memory database results as the #1 single system Oracle result.
- The HP Integrity Superdome holds three of the TOP 5 TPC-H single system 1 TB performance results.

Figure 1. Best Single System 1Terabyte (TB) TPC-H Results for HP and Sun

HP Delivers #1 Single-system 1TB TPC-H result

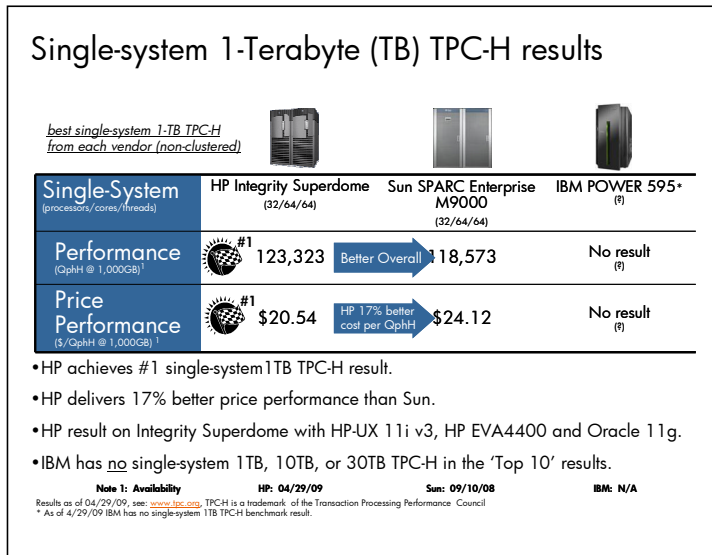
- **#1** Single-system 1TB TPC-H Benchmark result with the HP Integrity Superdome, HP EVA4400, HP-UX 11i v3, and Oracle 11g.
- **#1** Oracle result.
- 17% better price/performance than Sun M9000.
- Greater overall performance and performance/core than M9000.
- 1.81x better performance at ~1/3 the cost per transaction of HP's previous 64c Superdome result running HP-UX 11i v2 and Oracle 10g.



Vendor/ System	HP Integrity Superdome	Sun SPARC Enterprise M9000
Processors/Cores/Threads	32/64/64	32/64/64
Performance (QphH)	123,323	118,573
Price/Performance (Price/QphH)	\$20.54	\$24.12
Availability	04/29/09	09/10/08

TPC-H results valid as of 4-29-09. Complete results can be found at <http://www.tpc.org>. TPC-H is a trademark of the Transaction Processing Council.

Figure 2. HP Integrity Superdome performs better than Sun SPARC Enterprise M9000 on the TPC-H 1TB benchmark.



The HP Integrity Superdome shows improved performance when compared to the Sun SPARC M9000 processor at a 17% better price/performance on the single system 1 TB TPC-H result.

IBM has no single-system 1 TB, 10 TB, or 30 TB TPC –H in the Top 10 results.

This benchmark result proves Superdome’s scaling and reliability combined with features in HP-UX 11i v3 make it a repeated winning choice for customers for the business critical enterprise workloads.

Table 1. TPC-H configuration for system results.

System Configuration	Performance	Price/performance	OS/Database	Availability
HP Integrity Superdome Intel Itanium 9140N 1.6GHz; 32 processors/64 cores/ 64 threads	123,323	\$20.54	Oracle Database 11g Enterprise Edition HP-UX 11iv3	04-29-09
Sun SPARC Enterprise M9000 SPARC64 VI 2400MHz; 32 processors/64 cores/ 64 threads	118,573	\$24.12	Oracle Database 11g Enterprise Edition Sun Solaris 10	9-10-08

All results as of 4-29-09

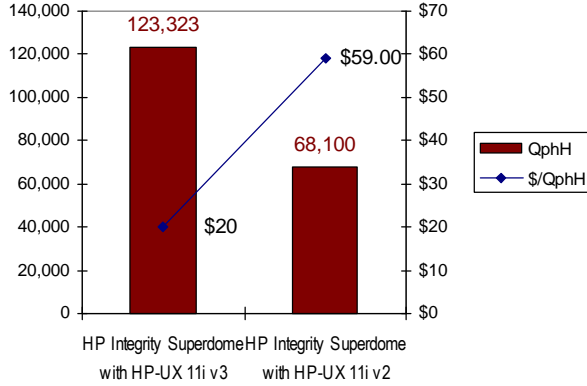
HP Integrity Superdome configuration

The HP Integrity Superdome server was configured with 16 x 1600 MHz Dual-Core Intel Itanium 9140N processors (128 cores/ 16 chips/ 2 cores per chip), with 18 MB L3 cache, and 256Gb (128 x 2 GB DIMMs) + 16Gb (8 x 2GB DIMMs) main memory. The server was running HP-UX 11i v3 release with Oracle Database 11g Enterprise Edition.

HP performance scalability increases with next generation technology

In addition to achieving the #1 performance and leading price/performance result on the 1 TB TPC-H single system benchmark, the Integrity Superdome showed outstanding performance and price/performance scalability results with the progression from the HP-UX 11i software technology.






Figure 3. Comparison of performance scalability from software generation progression.



The Integrity Superdome showed an **1.8x increase in performance with greater than 1/3 cost per transaction** when it achieved 123,323QphH @ \$20.00/QphH for its 1TB single system TPC-H result with the HP-UX 11i v3 result from its previous single system result of 61,000QphH @\$59.00/QphH with the HP-UX 11i v2 application.

HP Integrity Superdome takes three of Top 5

Table 2. HP Integrity Superdome holds three of the TOP 5 1TB single system TPC-H Performance results

1,000 GB Results								
Rank	Company	System	QphH	Price/QphH	System Availability	Database	Operating System	Date Submitted
1		HP Integrity Superdome	123,323	20.54 USD	04/29/09	Oracle Database 11g Enterprise Edition	HP-UX 11i v3	04/29/09
2		Sun SPARC Enterprise M9000 server	118,573	24.12 USD	09/10/08	Oracle Database 11g Enterprise Edition	Sun Solaris 10	05/02/08
3		HP Integrity Superdome	69,999	28.69 USD	06/18/07	Microsoft SQL Server 2005 Enterprise Edition Itanium SP2	Microsoft Windows Server 2003 Datacenter Ed.(64-bit)SP1	06/18/07
4		HP Integrity Superdome Itanium2/1.6 GHz-64p/64c	68,100	59.00 USD	01/18/06	Oracle Database 10g R2 Enterprise Edition w/Partitioning	HP UX 11.i v2 64 bit	08/08/05
5		NovaScale 6320	34,987	38.41 USD	02/02/06	Oracle Database 10g release2 Enterprise Edition	SUSE LINUX SLES9 SP2 for IPF	02/02/06

See www.tpc.org for more details

About the TPC-H benchmark

The TPC Benchmark™H (TPC-H) is a decision support benchmark. It consists of a suite of business oriented ad-hoc queries and concurrent data modifications. The queries and the data populating the database have been chosen to have broad industry-wide relevance. This benchmark illustrates decision support systems that examine large volumes of data, execute queries with a high degree of complexity, and give answers to critical business questions.

The performance metric reported by TPC-H is called the TPC-H Composite Query-per-Hour Performance Metric (QphH@Size), and reflects multiple aspects of the capability of the system to process queries. These aspects include the selected database size against which the queries are executed, the query processing power when queries are submitted by a single stream, and the query throughput when queries are submitted by multiple concurrent users. The TPC-H Price/Performance metric is expressed as \$/QphH@Size.

The Integrity Advantage

HP Integrity Superdome

As with all HP Integrity servers, the Integrity Superdome always delivers the highest levels of [virtualization](#), scalability, and availability, further enhancing customers' [adaptive infrastructure](#). The Integrity Superdome can scale to 64 processors and 128 cores with 2 TB of memory and 192 I/O slots in a single server. Customers can also grow their solutions with their business by building a cost-effective clustered environment to thousands of processors. Designed with forward-looking technologies that prepare customers for the future, the Integrity Superdome enables them to accelerate business growth, lower costs, and mitigate risk while delivering outstanding investment protection.

HP proven performance

HP has posted hundreds of leading results on the most commonly referenced benchmarks on hundreds of HP servers and blades, helping customer to be confident in HP.

For more information

HP Integrity Superdome: www.hp.com/go/superdome

TPC-H details: www.tpc.org

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