

# Intel Corp. TIGPR2 Carrier Grade Server versus Sun Microsystems, Inc. Netra 20 Server Competitive Performance Evaluation using Solid Information Technology FlowEngine Application

## Test Summary

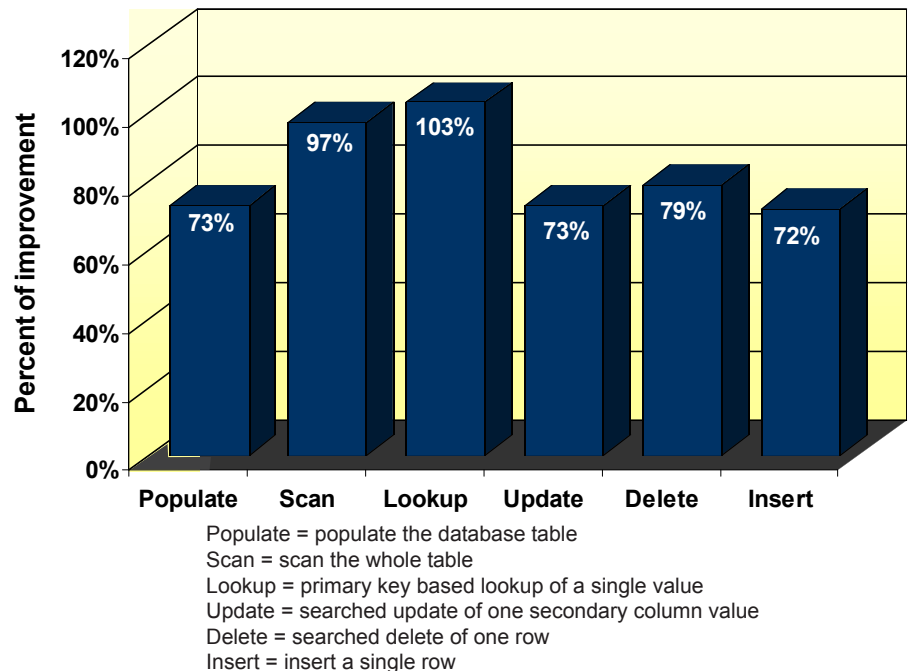
*Premise: Network managers and architects implementing carrier-grade servers need to be certain that the servers they deploy are capable of performing at levels that meet the strenuous demands of the networks in which they are deployed. While carrier-grade solutions may have been limited in the past, new server solutions based on industry standards can offer higher performance than previously available choices.*

Intel Corporation commissioned The Tolly Group to evaluate its TIGPR2 Carrier Grade Server with two 2.4-GHz Xeon processors. The Intel TIGPR2 Carrier Grade Server (CGS) is a rack-mountable, high-performance server intended for use in telecommunications networks. Intel also requested that The Tolly Group test the performance of the Sun Microsystems, Inc. Netra 20 Server with two 900-MHz processors in a series of tests designed to gauge the capability of each server while performing a variety of common in-memory database transactions that included populate, scan, lookup, update, delete and insert. The Tolly Group conducted database transaction rate tests on both servers using the Solid Information Technology Corp.'s FlowEngine data management application. The Solid FlowEngine is

### Test Highlights

- Outperforms the Sun Netra 20 by 72% to 103% for all scenarios tested
- Performs at a maximum rate of 57,809 rows per second in table scanning tests
- Executes at a maximum of 10,111 rows per second in primary key-based look up tests
- Provides higher performance in a form factor 50% smaller than the Sun Netra 20

### Intel TIGPR2 CGS Performance Improvement compared to Sun Netra 20 as reported by Solid FlowEngine



Source: The Tolly Group, November 2002

Figure 1

a data management and advanced synchronization software product that is designed for large-scale distributed network infrastructures. Testing was performed in November 2002.

Test results show that the Intel TIGPR2 demonstrated superior performance to the Sun Netra 20 in all scenarios tested.

**RESULTS**

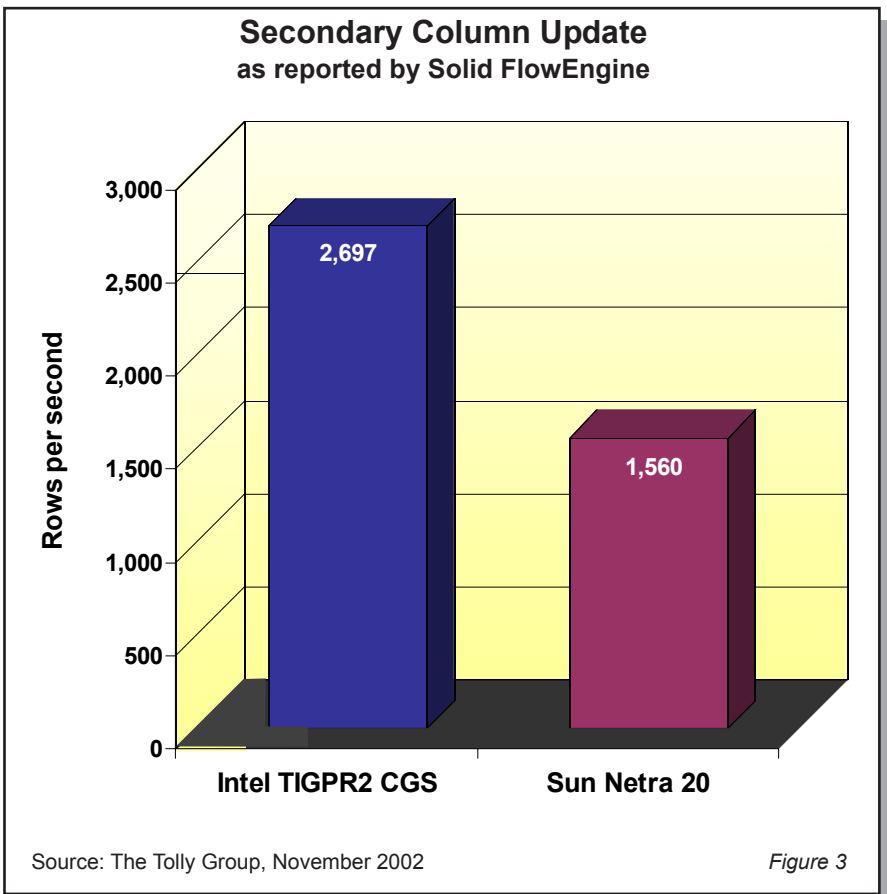
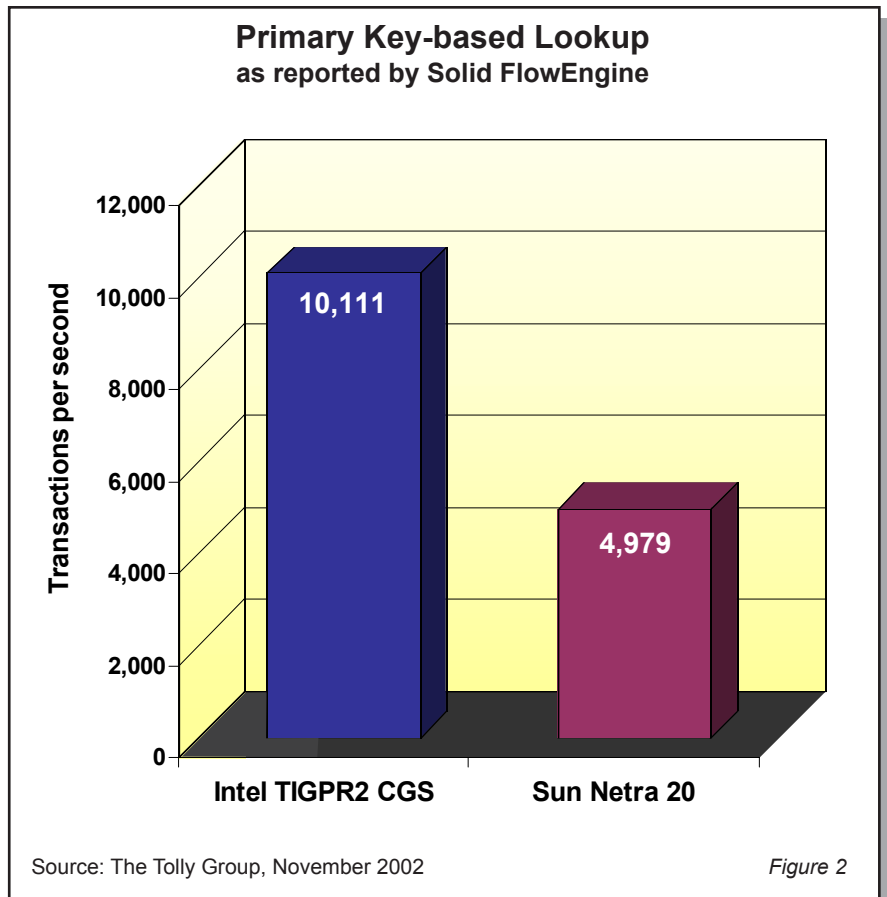
**TRANSACTION RATE**

Tolly Group engineers tested the transaction per second (tps) rate of the Intel TIGPR2 and the Sun Netra 20 while each system was performing the following in-memory database functions: populating the database table, scanning the entire database table, primary key-based lookup of a single value, a searched update of one secondary column value, a searched delete of one row and insert of a single row.

When populating a database table of 50K rows, test results demonstrate that the Intel TIGPR2 outperformed the Sun Netra 20 by 73%, with the Intel TIGPR2 populating an average of 3,298 rows per second compared to the Sun Netra 20 at 1,904 rows per second.

When scanning an entire database table of 1M rows, test results show that the Intel TIGPR2 outperformed the Sun Netra 20 by 97%, scanning 57,809 rows per second compared to the Sun Netra 20 at 29,368 rows per second.

When performing a primary-key-based lookup of a single value from 3M rows, the Intel TIGPR2 outperformed the Sun Netra 20 by 103%, with the Intel TIGPR2



looking up 10,111 rows per second compared to the Sun Netra 20 at 4,979 rows per second. (See Figures 1 and 2.)

When performing updates of one secondary column value in 600K rows, the Intel TIGPR2 outperformed the Sun Netra 20 by 73%, with the Intel TIGPR2 updating 2,697 rows per second compared to the Sun Netra 20 at 1,560 rows per second. (See Figures 1 and 3.)

When deleting a single row from 100K rows, the Intel TIGPR2 outperformed the Sun Netra 20 by 79%, with the Intel TIGPR2 deleting 5,590 rows per second compared to the Sun Netra 20 at 3,115 rows per second.

When inserting a single row of 50K, the Intel TIGPR2 outperformed the Sun Netra 20 by 72%, with the Intel TIGPR2 inserting 3,484 rows per second compared to the Sun Netra 20 at 2,030 rows per second. (See Figures 1 and 4.)

## ANALYSIS

Processing power is a chief consideration for network architects looking to deploy servers in carrier-grade networks. This series of tests specifically examined the performance of each server while performing common in-memory database transactions.

Test results demonstrate that the Intel TIGPR2 significantly outperformed the Sun Netra 20 by at least 72% and up to 103%. These results indicate that the Intel TIGPR2 is capable of performing well in carrier-class networks under taxing transaction rates.

Conserving space is another important factor in carrier networks. The Intel TIGPR2 provides two 10/100/1000 Ethernet ports while the Sun Netra 20 offers only one 10/100 Ethernet port. Moreover, the Intel TIGPR2 has six extension slots while the Sun Netra 20 has only four. The Intel TIGPR2 server form factor at 2U is half that of the Sun Netra 20 at 4U, thereby offering more than double the processing power for the available space.

## TEST CONFIGURATION AND METHODOLOGY

The Tolly Group tested an Intel Corp. Carrier Grade Server Platform, version TIGPR2, equipped with dual Xeon 2.4-GHz processors and 256 Mbytes RAM running Red Hat Advanced Server 2.1 version 2.4.9-e.3 smp and a Sun Microsystems, Inc. Netra 20 Server equipped with dual 900-MHz UltraSparc III CuProcessors and two Gbytes RAM running Solaris 8 version SunOS 5.8.

Each device under test had the Solid Information Technology Corp. FlowEngine benchmark software, version 3.70.0007 installed. For system benchmarking, the performance benchmark was executed on six separate database operation scenarios: populate, scan, lookup, update, delete, and insert. Engineers performed seven iterations of each operation and results were averaged. No external connections were required to run this benchmark, since it runs as a stand-alone benchmark in the server under test.

**Intel Corp.**

**TIGPR2  
Carrier Grade  
Server**

**Competitive  
Evaluation**



### Intel Corp. Intel TIGPR2 Carrier Grade Server Product Specifications\*

#### Features

- 2 Xeon® processors - 2.4 GHz with 512K cache
- 533 FSB processor support
- 6 GB DDR-266 registered ECC SDRAM
- Integrated dual channel SCSI: 2xUltra320
- Integrated graphics with 8 MB
- Integrated dual 10/100/1000 Mbps Ethernet
- Intel server management 5.1 or higher
- Supports IPMI 1.5, ACPI
- NEBS-3 Certified (DC only) 2U x 500mm (20") Telecom chassis
- 3 low profile PCI-X slots (100-MHz)
- 3 full size PCI-X (100-MHz) or 3 5V FS 64/33 PCI slots
- Telecom server management 1.x
- Telecom alarms support
- Dual AC or Dual Telco (-75V to -38V) DC power supply
- CDROM
- Two 1" front-service, hot-swap disks

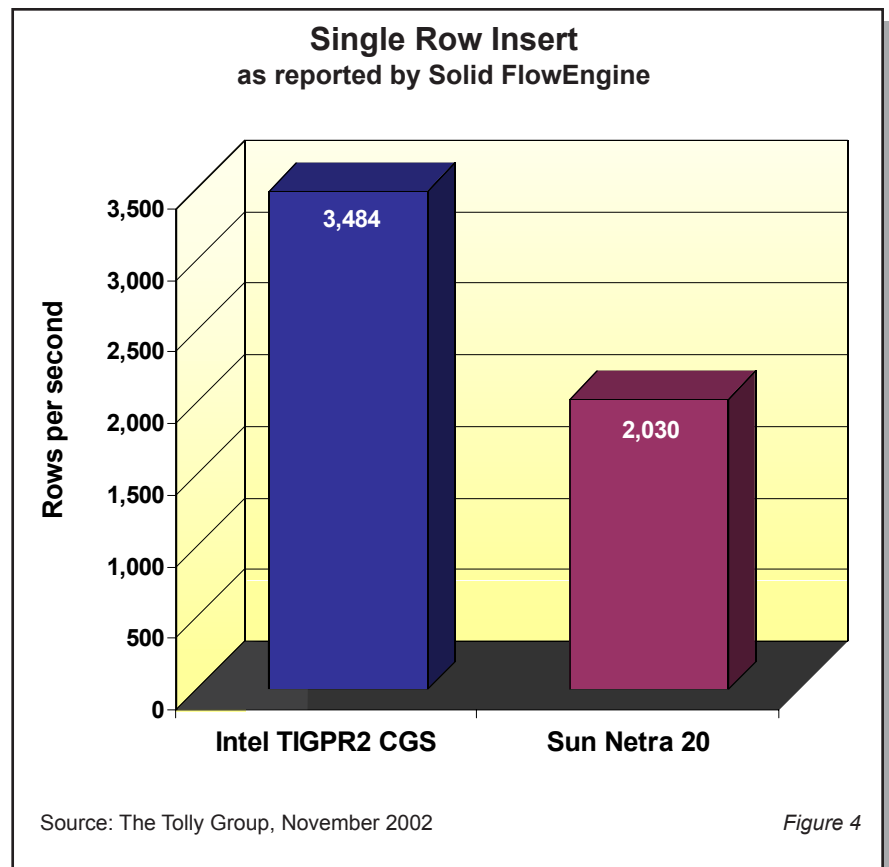
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<http://developer.intel.com/design/cgservers/>

*\*Vendor-supplied information not verified  
by The Tolly Group*

## EQUIPMENT ACQUISITION AND SUPPORT

The Sun Netra 20 Server was acquired through normal product distribution channels. The Tolly Group contacted executives at Sun Microsystems, Inc. and invited them to provide a higher level of support than available through normal channels. Sun did not respond to several invitations. The Tolly Group verified product release levels and shared test configurations with Sun executives in order to give them an opportunity to optimize their device. Upon completion of testing, in accordance with The Tolly Group Fair Testing Charter, results were shared with Sun executive who neither acknowledged nor disputed tests results.



## TOLLY GROUP SERVICES

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For info on the Fair Testing Charter, visit: [www.tolly.com/About/ftc.asp](http://www.tolly.com/About/ftc.asp)

## PROJECT PROFILE

**Sponsor:** Intel Corp.

**Document number:** 202161

**Product Class:** Carrier-class server

**Products under test:**

- Intel Corp. Carrier Grade Server, TIGPR2
- Sun Microsystems, Inc. Netra 20

**Testing window:** November 2002

**Software status:**

- Generally available

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*The Tolly Group doc. 202161 rev. kco 16 Jan 02*