



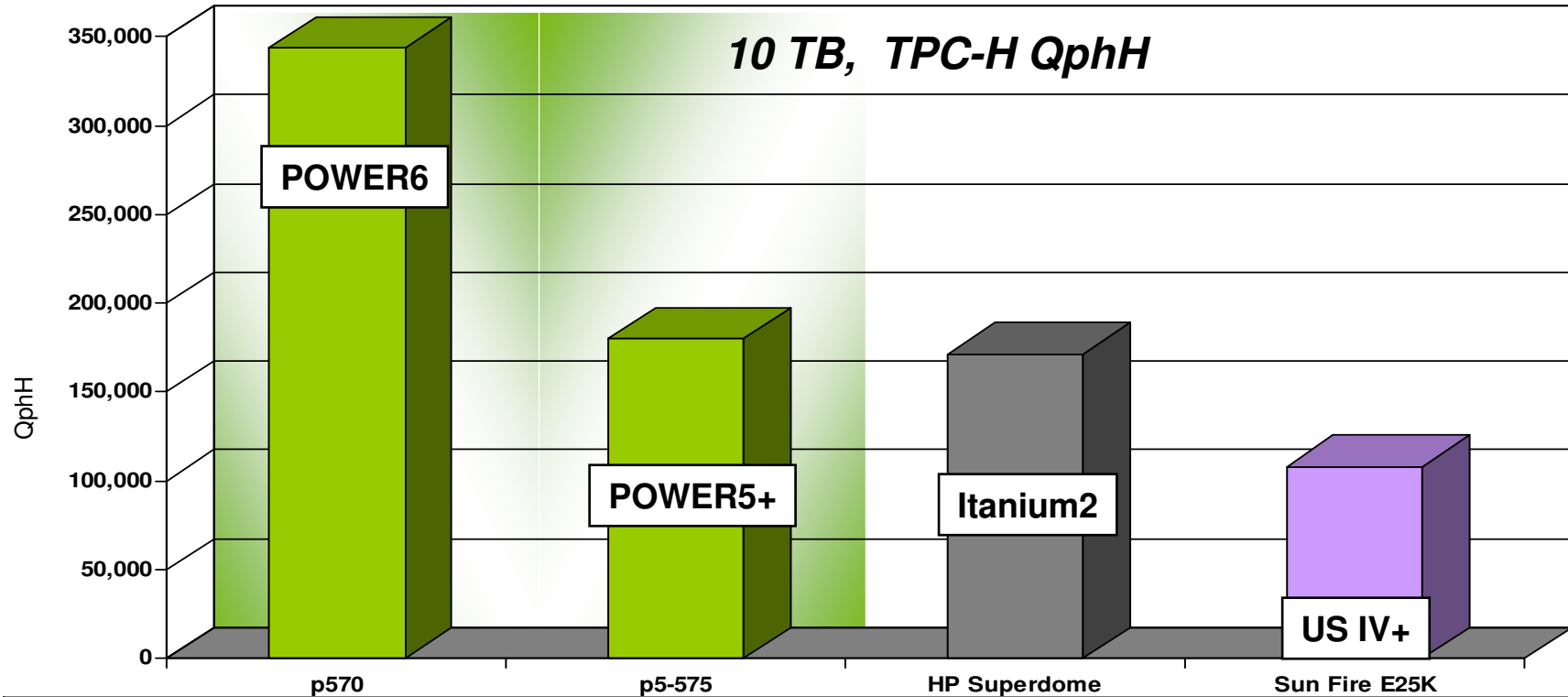
Systems & Technology Group

# IBM POWER6 Performance Update

Piyush Chaudhary  
[piyushc@us.ibm.com](mailto:piyushc@us.ibm.com)

# POWER6 p570 leap-frogs POWER5 again

*2X the performance of HP Itanium in Decision Support performance*

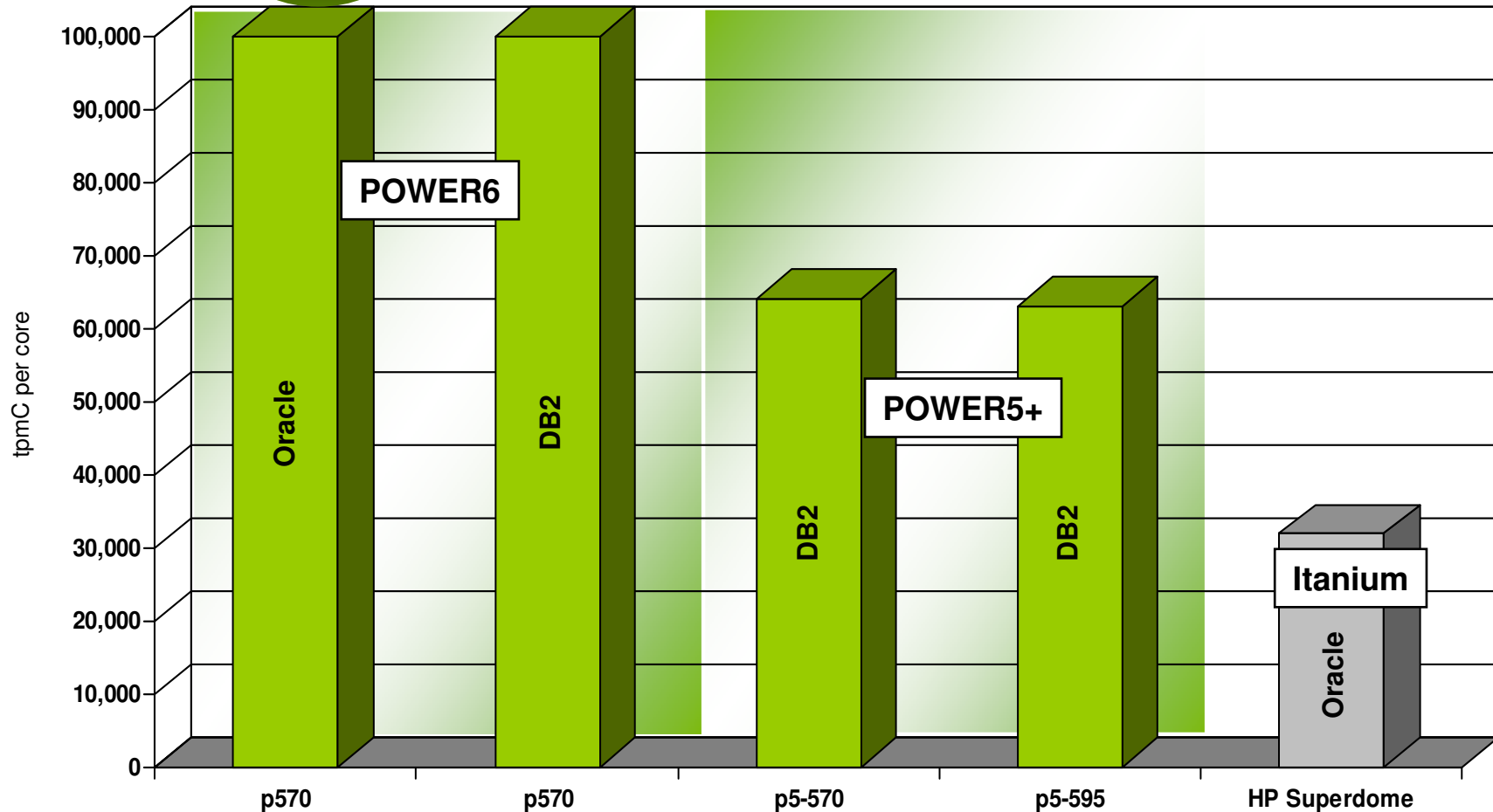


System	Scale Factor	Chips/cores/threads	Avail.	\$/QphH	Database	OS	QphH
IBM p570 (4.7 GHz POWER6)	10 TB	64/128/256	04/15/08	\$32.89	IBM DB2 9.5	AIX 5L V5.3	343,551
IBM p5-575 (2.2 GHz POWER5+)	10 TB	128/128/256	08/30/06	\$47.00	IBM DB2 8.2	AIX 5L V5.3	180,108
HP Integrity Superdome-DC (1.6 GHz Itanium2)	10 TB	64/128/128	04/01/07	\$32.91	Oracle 10g	HP-UX 11i v3	171,380
Sun Fire E25K (1.5 GHz US IV+)	10 TB	72/144/144	01/23/06	\$53.80	Oracle 10g	Solaris 10	108,099

# POWER6 p570 scores big on tpmC per core

## Transaction Performance - Single System tpmC per core

**New!** New Oracle Benchmark demonstrates linear scaling and performance



Best results listed for single systems capable of being configured with at least 16 cores for IBM POWER6, IBM POWER5+, and HP Integrity.

Source: <http://www.tpc.org> as of 10/22/07. Not all results listed. Next chart is always required and shows specific results with processor chip/core/thread.

## POWER6 p570 scores big on tpmC per core

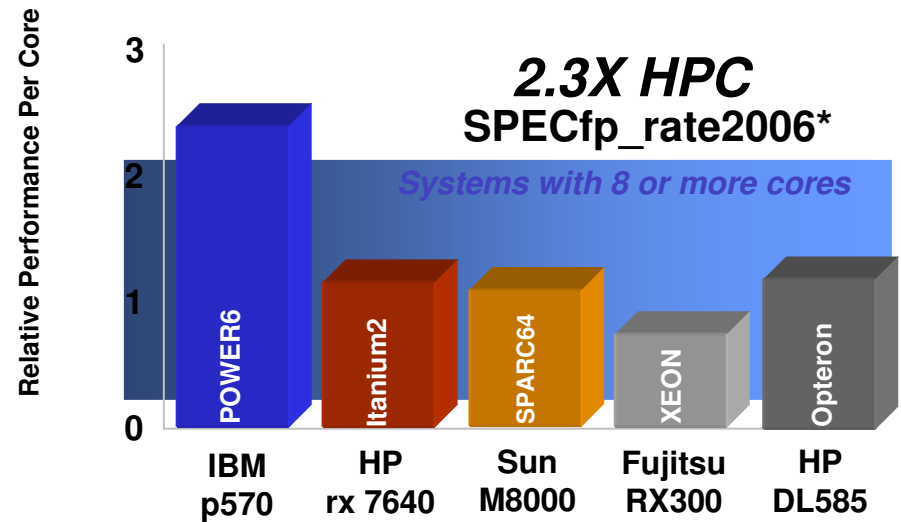
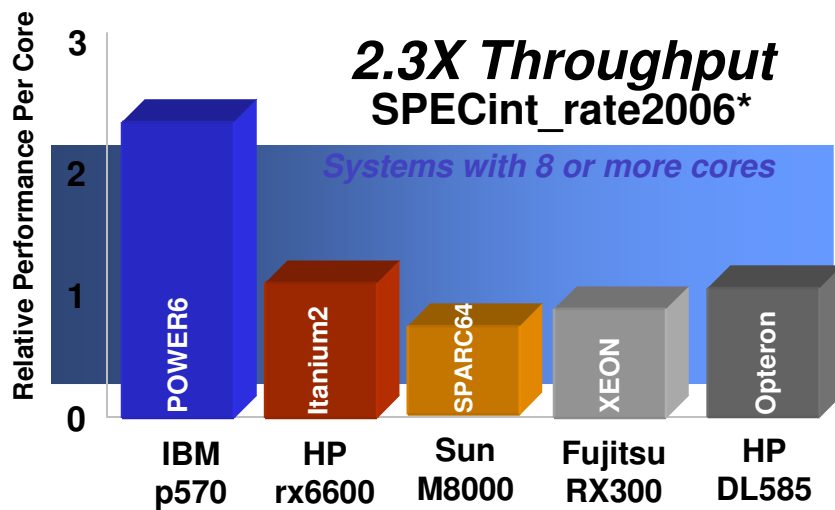
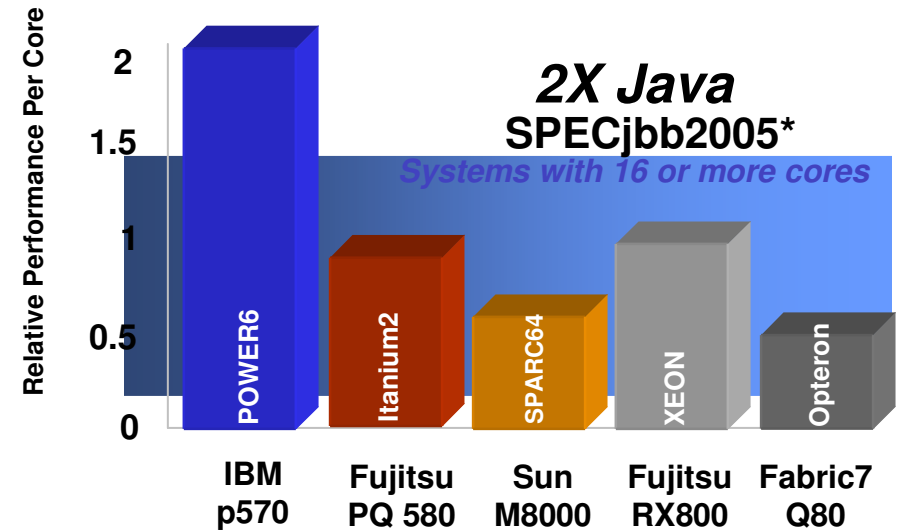
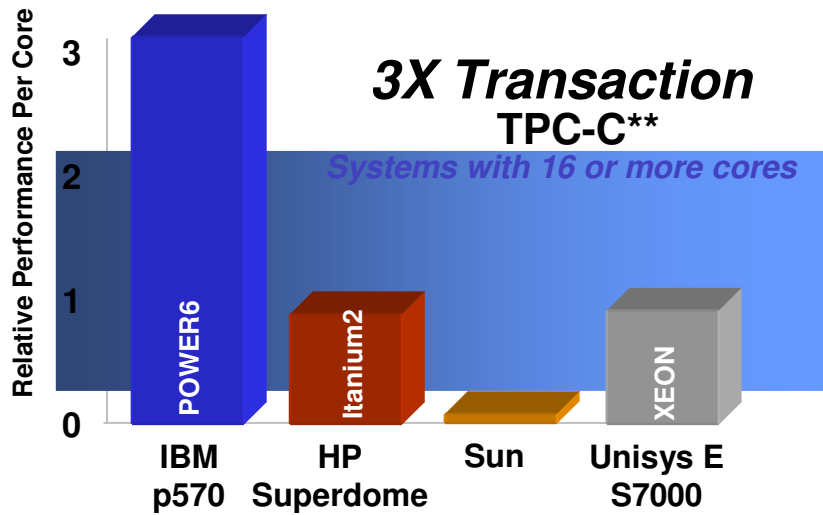
### *Transaction Performance - Single System tpmC per core*

System	Chip/Core/Thread	Avail.	\$/tpmC	Database	OS	tpmC	tpmC/Core
IBM p570 (4.7 GHz POWER6)	2/4/8	11/26/07	\$3.50	Oracle 10g	AIX 5L V5.3	404,462	101,115
IBM p570 (4.7 GHz POWER6)	8/16/32	11/21/07	\$3.54	IBM DB2 9	AIX 5L V5.3	1,616,162	101,010
IBM p5-570 (2.2 GHz POWER5+)	8/16/32	05/31/06	\$4.42	IBM DB2 v8.2	AIX 5L V5.3	1,025,169	64,073
IBM p5-595 (2.3 GHz POWER5+)	32/64/128	01/22/07	\$2.97	IBM DB2 9	AIX 5L V5.3	4,033,378	63,021
HP Superdome (1.6 GHz Itanium 2)	64/128/256	08/06/07	\$2.93	Oracle 10g	HP-UX 11i v3	4,092,799	31,974
HP Integrity rx8620 (1.6 GHz Itanium 2)	16/16/16	07/15/05	\$4.48	MS SQL EE	MS Win EE	332,266	20,766

Best results listed for single systems capable of being configured with at least 16 cores for IBM POWER6, IBM POWER5+, and HP Integrity.

Source: <http://www.tpc.org> as of 10/22/07. Not all results listed. Results listed with processor chip/core/thread.

# The IBM POWER6 “Grand Slam” for major workloads



\* Source: <http://www.spec.org/> IBM p570 POWER6 results as of 5/21/07; All other results as of 04/27/07;  
 \*\* Source: [www.tpc.org/](http://www.tpc.org/) IBM p570 POWER6 results as of 5/21/07; All other results as of 04/27/07  
 See next page for full detail

# HPC Performance White Paper

- Will come out shortly



Systems & Technology Group

# IBM POWER6 Performance Debugging

Piyush Chaudhary  
[piyushc@us.ibm.com](mailto:piyushc@us.ibm.com)

# Break it Down

- Host
  - CPU
  - Memory
- Interconnect
  - Bad links
  - Slow links
- GPFS
  - Slow disks
  - “Bad” I/O Controllers
  - “Bad” network

# CPU

- Start with the entire cluster (all the compute nodes). Compute intensive benchmark (DGEMM).
- If you find “bad” performance. Divide the cluster into 2 halves and run on each half. Divide and conquer. Iterate.
- Take a 1 minute trace on all the nodes and look for the slowest ones. Check for outliers and see what may be causing the slowdown.
- Typical issues: de-configured CPUs or “bad” cores.

# Memory

- Run STREAM or MEMRATE tests to test the memory bandwidth
- Typical issues: de-configured L3 cache, memory DIMMS

## Interconnect

- Run pair-wise bandwidth tests to find outliers.
- Compared to Federation it is easier to do this debug on IB as there are no switch to switch links (at least currently).
- Use the vendor IB tools to find bad links and get performance data.
- Will also provide host tools to get HCA counters.