Transaction Processing Performance Council: (TPC)

State of the Council 2010

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**TPCTC 2010
Singapore**

Agenda

- Mission
- What is TPC
- Membership
- Activities
- Benchmarks
- New Benchmarks- TPC-Energy
- Benchmarks under Development
- Looking Forward

Mission

- **The TPC is a non-profit, vendor-neutral organization that was founded to define server transaction processing and database benchmarks, and to disseminate objective and verifiable performance data**

What is TPC ?

- **Vendor-neutral organization that disseminates objective verifiable data.**

- **Founded in Aug 88 in response to a growing trend in "benchmarketing".**

- **Headquarters:**
  - **Street Address:**
    Presidio of San Francisco
    Building 572B (surface)
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- **TPC specs, info, results are on the web page:**
  http://www.tpc.org

TPC Technology Conference 2010
VLDB Singapore 2010

Membership

21 member companies

AMD
Fusion-io
intel
PAR)ACCEL
vmware

Bull
invent hp
Microsoft
SYBASE
NEC
syncsort

Cisco
HITACHI
IBM
NETEZZA
Teradata
a division of NCR

DELL
INGRES
FUJITSU
ORACLE
UNISYS

Major Activities of the TPC

- **Refinement of existing benchmarks**

- **Development of new benchmarks**

- **Publication of benchmark results**

- **Promotion of the TPC model and results**

- **Resolution of disputes and challenges**

Benefits of TPC Benchmark results

- Objective performance, price/performance and energy/performance comparisons.
- Direct comparison of different vendor architectures on an apples-to-apples basis
- Backed by an independent auditing process.
- Technology drivers. TPC benchmarks encourage both hardware and software improvements
- A credible means of evaluating complete systems, subsystems and/or processors

TPC Benchmarks

Active Benchmarks
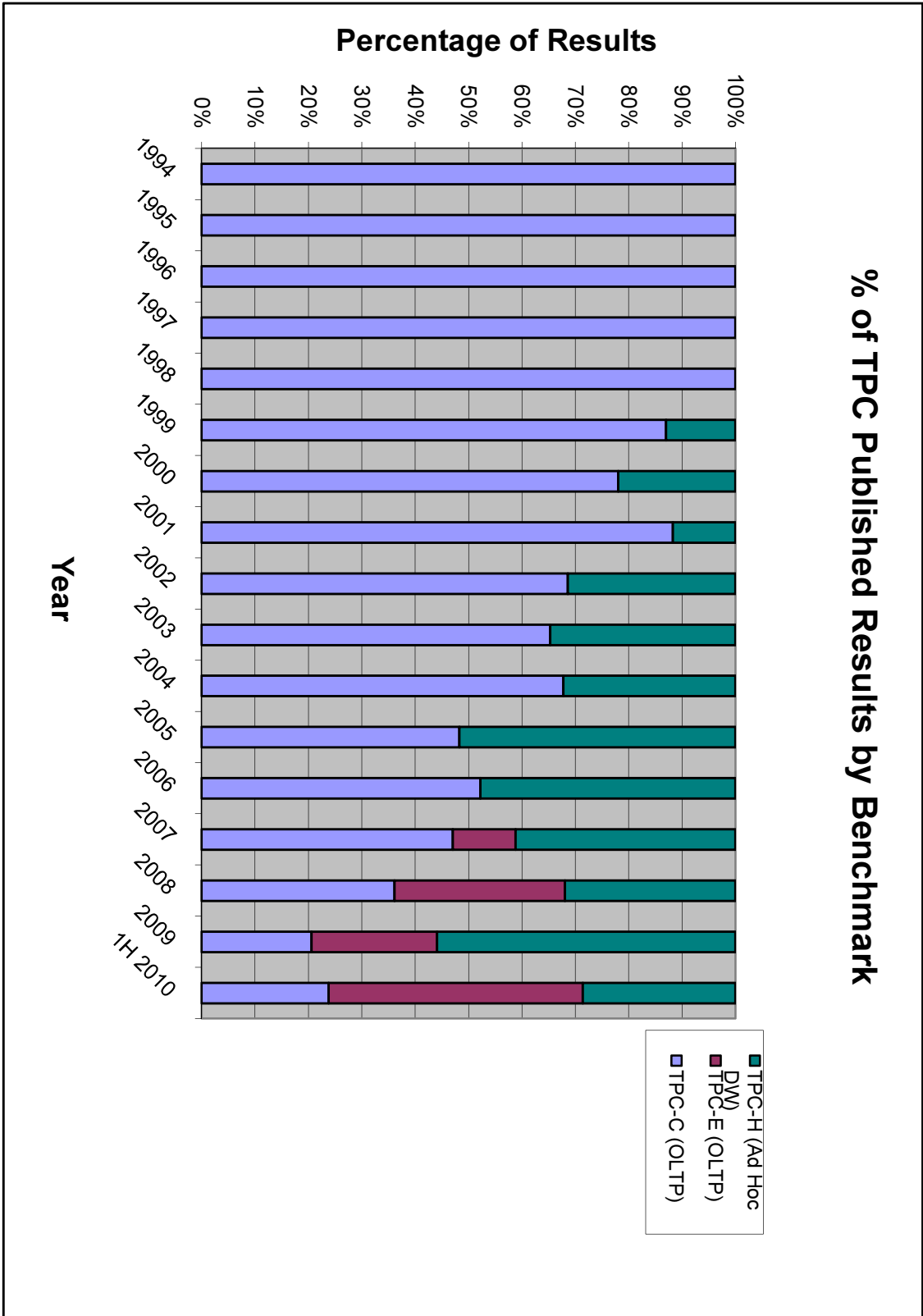
- TPC-E
- TPC-C
- TPC-H

Specifications

- TPC Energy
- Pricing

Development

- TPC Virtualization
- TPC ETL

TPC Technology Conference 2010
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Percentage of Results

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Year

1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
1H 2010

% of TPC Published Results by Benchmark

TPC-H (Ad Hoc DW)
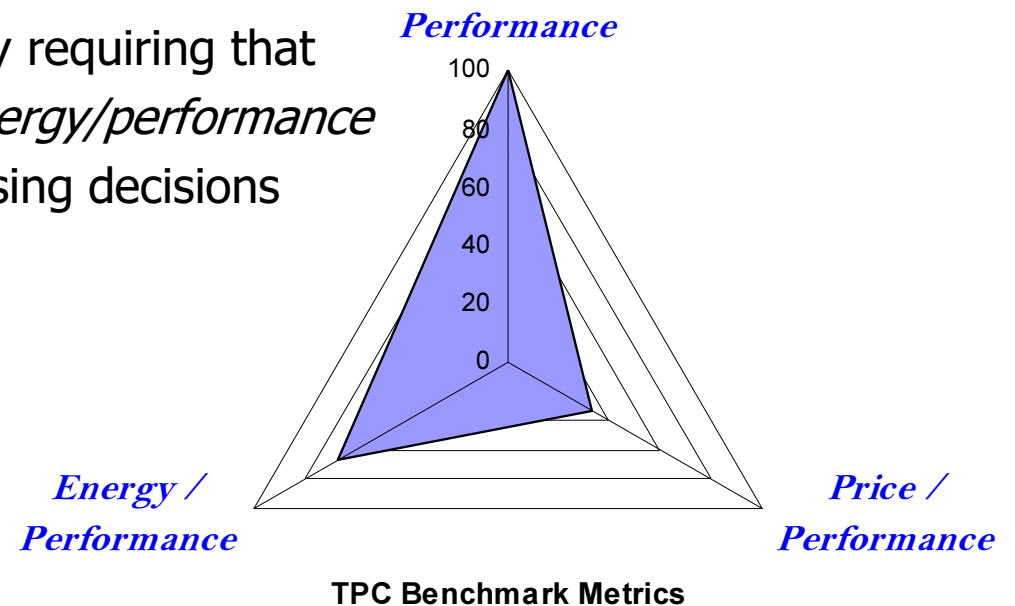TPC-E (OLTP)
TPC-C (OLTP)

New Specification : TPC-Energy

- The TPC-Energy specification was approved in November 2009.
- The Specification augments the existing TPC benchmarks with energy metrics and methodology, and requirements for including and reporting them.
- TPC-Energy primary metric - "Watts per performance"
    - Performance units are particular to each TPC benchmark (Watts per ktpmC for a TPC-C result).
- TPC-Energy metrics are secondary, optional TPC Metrics.
- The TPC provides a software suite, the Energy Measurement System (EMS) to provide services such as power instrumentation interfacing, power and temperature logging and report generation.
- Competitive environment to lead in best Watts / Performance is expected to stimulate innovation

Need for another Metric

- The three most important criteria in IT purchases include:
  - Performance
  - Price
  - Energy consumption
- Today's complex IT environment demands that price and energy be put in perspective of the performance
- Customers are increasingly requiring that *price/performance* and *energy/performance* be provided for IT purchasing decisions

TPC Benchmark Metrics

TPC-Energy Subsystem reporting

- Three results published by HP included measurements on the Subsystems
- Subsystems energy consumption will vary by configuration and vendor.
- Communicates where efficiencies are most beneficial
- "Ready" Idle measurements are also included.

	Secondary Metrics	Additional Numerical Quanties				
	Watts / tpsE	Full Load Avg Watts	Full Load % of REC	Full Load Watt Secs	Idle Avg. Watts	Idle % of REC
Database Server	0.70	977.16	10.4%	7,035,581	790.73	9.7%
Storage	5.38	7,532.00	80.1%	54,230,426	6,502.56	79.9%
Application Server	0.54	763.04	8.1%	5,493,900	715.53	8.8%
Miscellaneous	0.09	131.23	1.4%	944,891	131.57	1.6%
Total REC	6.72	9403	100%	67,704,798	8140	100%
			Total SUT Work	10,081,008		
Reported tpsE	1400.14		MI Seconds	7200		

Benchmarks Under Development: TPC-Virtualization

- TPC–Virtualization development committee was formed in June 2010 as a response to the growth in Virtualization technology.

- Formation partly inspired by papers presented at the First TPC Technology Conference which was collocated with VLDB 2009.

- The TPC-Virtualization Development Committee is currently defining a benchmark with the following design goals in mind:
  - Incorporates a database-centric workload
  - Features a resource-intensive workload that stresses the virtualization layer
  - Emphasizes storage and networking I/O in a virtualized environment
  - Has a timely development cycle

- The committee has attracted wide participation engaging major software and hardware vendors.

Benchmarks Under Development: TPC-ETL

- Formed in 2008 to compare the performance, price/performance and energy efficiency of ETL systems based on industry-relevant scenarios.

- The TPC-ETL benchmark is expected address the strong industry demand for a well designed ETL benchmark and is expected to benefit customers evaluating ETL systems, tools and vendors.

- It is expected that a common basis for comparing ETL systems will stimulate innovation.

- The ETL committee has completed a draft specification and has started work on data generation.

Looking Forward

- Work on the new benchmarks TPC-ETL and TPC-Virtualization will continue to be TPC's main focus.

- TPC will continue working with the Industry and Academia to identify new benchmarks.

- TPC TC 2011 has already been approved.