Shaping the Landscape of Industry Standard Benchmarks: Contributions of the Transaction Processing Performance Council (TPC)

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Agenda

- Mission
- What is TPC
- Membership
- Activities
- Benchmarks
- Contribution of the TPC
- Level Playing Field
- 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**
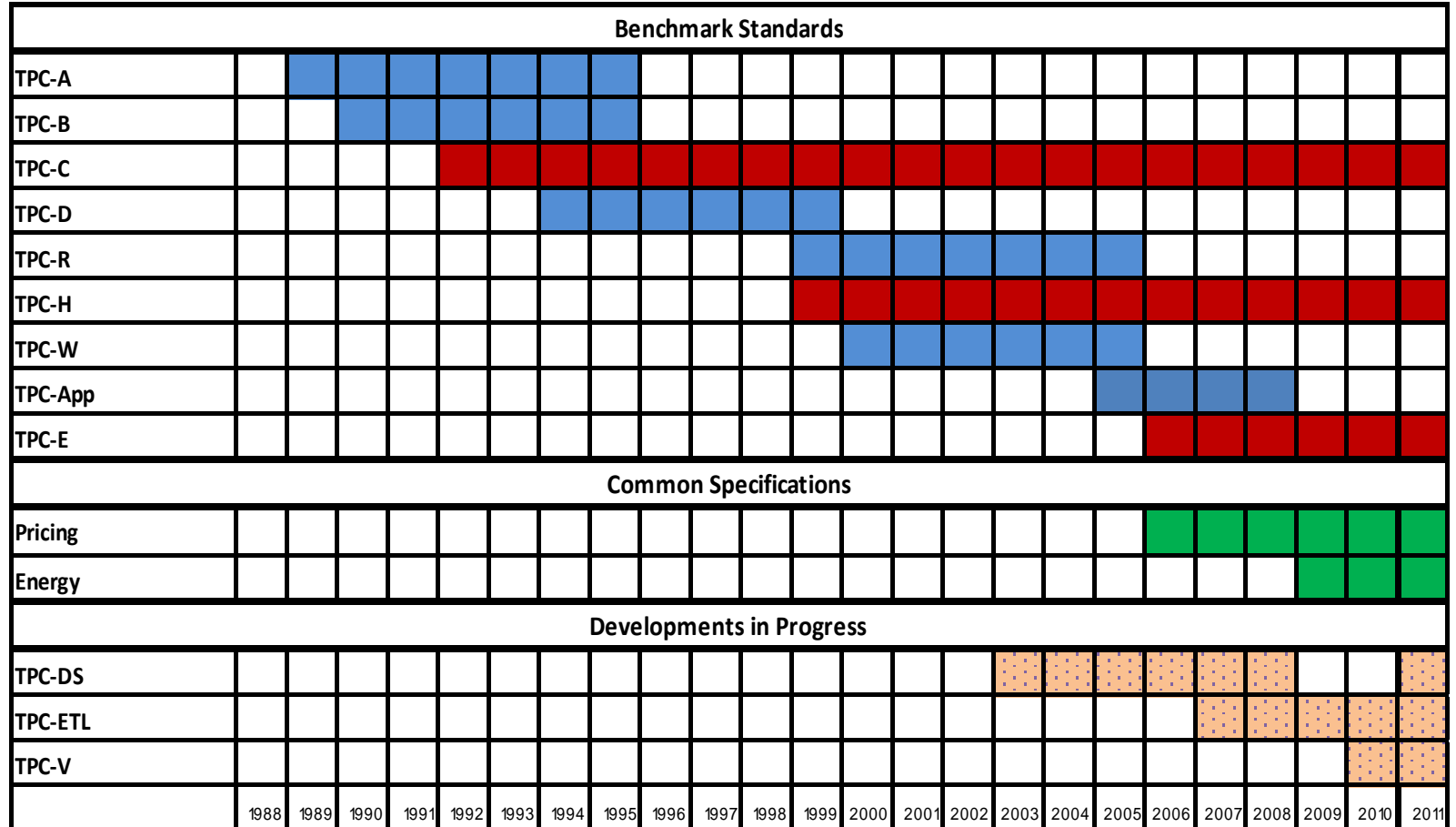
What is TPC ?

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

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

- **Headquarters:**
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    Presidio of San Francisco
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- **TPC specs, info, results are on the web page:**
  http://www.tpc.org

Membership

20 member companies

TPC Benchmarks

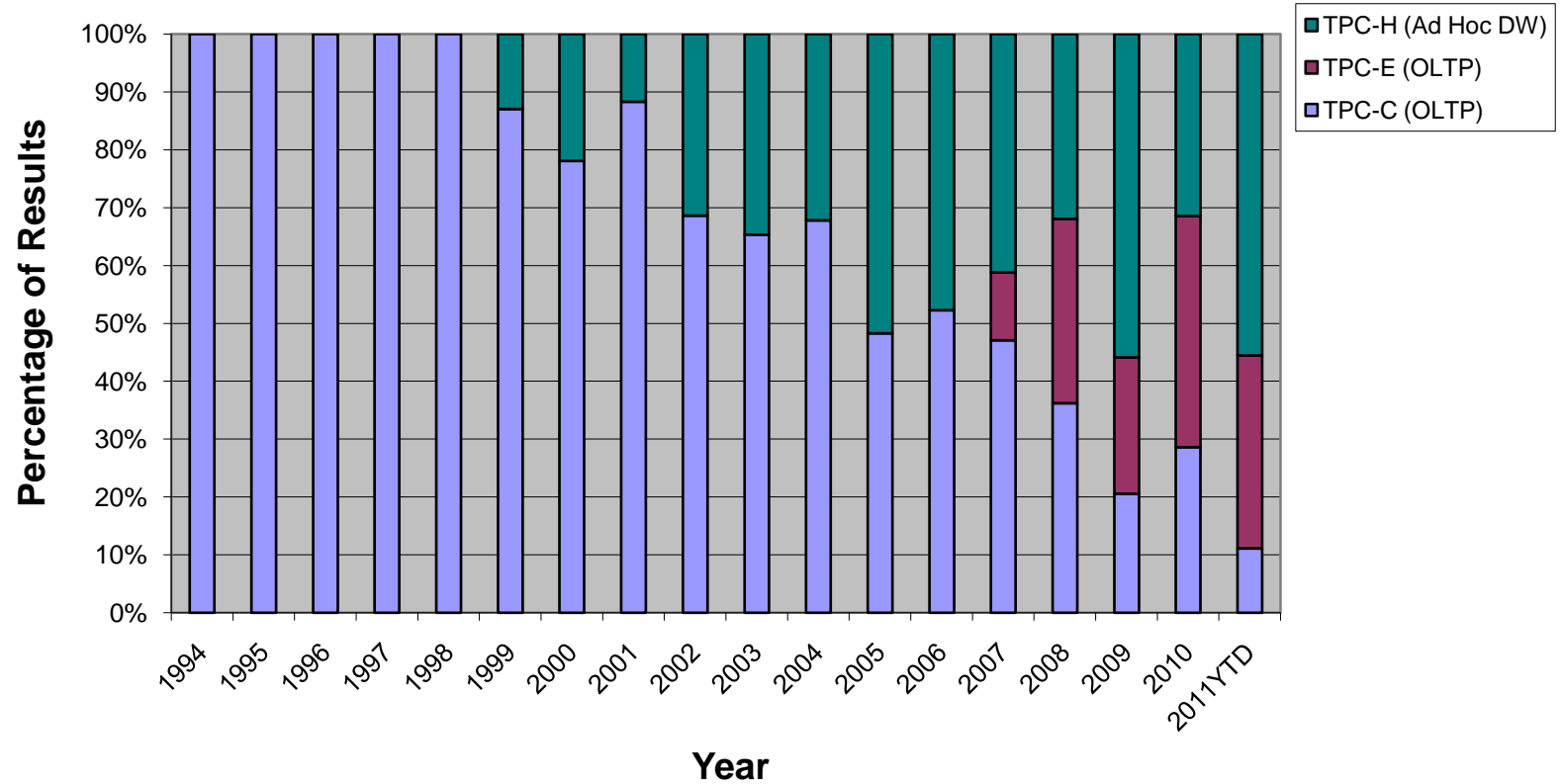|	Benchmark Standards																							
TPC-A		■	■	■	■	■	■	■																
TPC-B			■	■	■	■	■	■																
TPC-C					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
TPC-D							■	■	■	■	■	■												
TPC-R												■	■	■	■	■	■	■						
TPC-H												■	■	■	■	■	■	■	■	■	■	■	■	■
TPC-W													■	■	■	■	■	■						
TPC-App																		■	■	■	■			
TPC-E																			■	■	■	■	■	■
	Common Specifications																							
Pricing																			■	■	■	■	■	■
Energy																						■	■	■
	Developments in Progress																							
TPC-DS																■	■	■	■	■	■			■
TPC-ETL																				■		■	■	
TPC-V																							■	■
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011

% of TPC Published Results by Benchmark

Contribution of the TPC

- Performance Standards. Developed specifications that are used in Industry-standard benchmark testing. Result sponsors have the flexibility to choose the operating environment.

- Database-centric workloads. Workloads have been developed that are used to compare diverse operating environments.

- Direct comparison of different vendor architectures on an apples-to-apples basis.

- A credible means of evaluating the performance of complete systems, solutions.

- Performance Metrics.
  - Cross-platform performance comparisons
  - Popularized the price/performance metric
  - An objective means of comparing cost of ownership
  - An objective means of comparing energy efficiency

Contribution of the TPC

- Backed by an independent auditing process.

- Peer Review and Challenge

- The ability to verify vendor marketing claims, has helped to minimize "benchmarketing". Use of TPC results is strictly regulated.

- Technology drivers. TPC benchmarks have encouraged both hardware and software improvements

- TPC Technology Conference

Level Playing Field : Audit Process

- Benchmark results have to be checked and certified for compliance by an Independent auditor before publication
  - Verify all components in a SUT. Software/Hardware configurations, pricing and maintenance
  - Verify the methodology used to implement the benchmark test.
  - Verify the compliance of benchmark execution
  - Verify result documentation, FDR, ES.
  - Test sponsor has to attest to the veracity of all information provided to the auditor and published in the FDR and ES.

- 60-day Peer Review period after publication

- Audit process differs from that of other Performance consortia

Level Playing Field : Pricing

- Defines what is acceptable pricing practice for publication of a TPC benchmark
- Methodology must reflect the purchase price of the benchmark SUT, software licensing and the contracts for maintenance.
- Provides for an availability metric
- Pricing model must adhere to TPC disclosure requirements
  - Pricing model must be what is used for existing customers
  - Published price must be what any customer would pay for the priced configuration
  - Pricing methodology used must generate a similar price for a similar configuration for any customer

Benchmarks Under Development: TPC-Virtualization

- TPC–Virtualization development committee was formed 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 the 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, TPC-Virtualization, TPC-DS will continue to be TPC's main focus.

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

- TPC TC 2012 has already been approved.