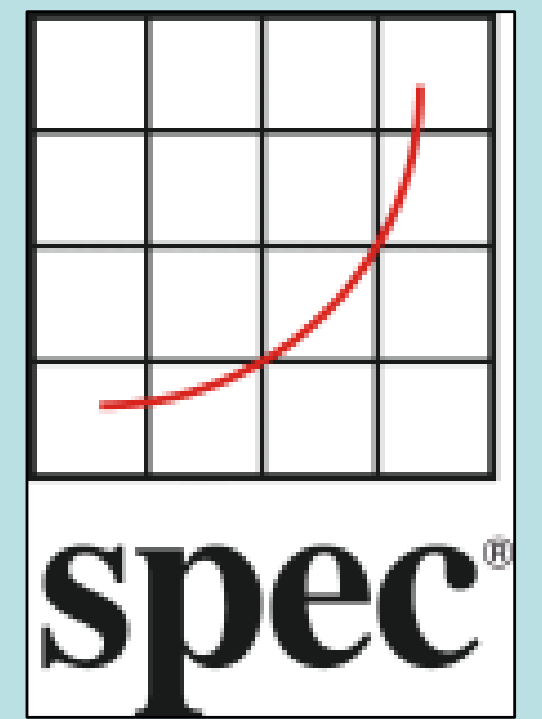


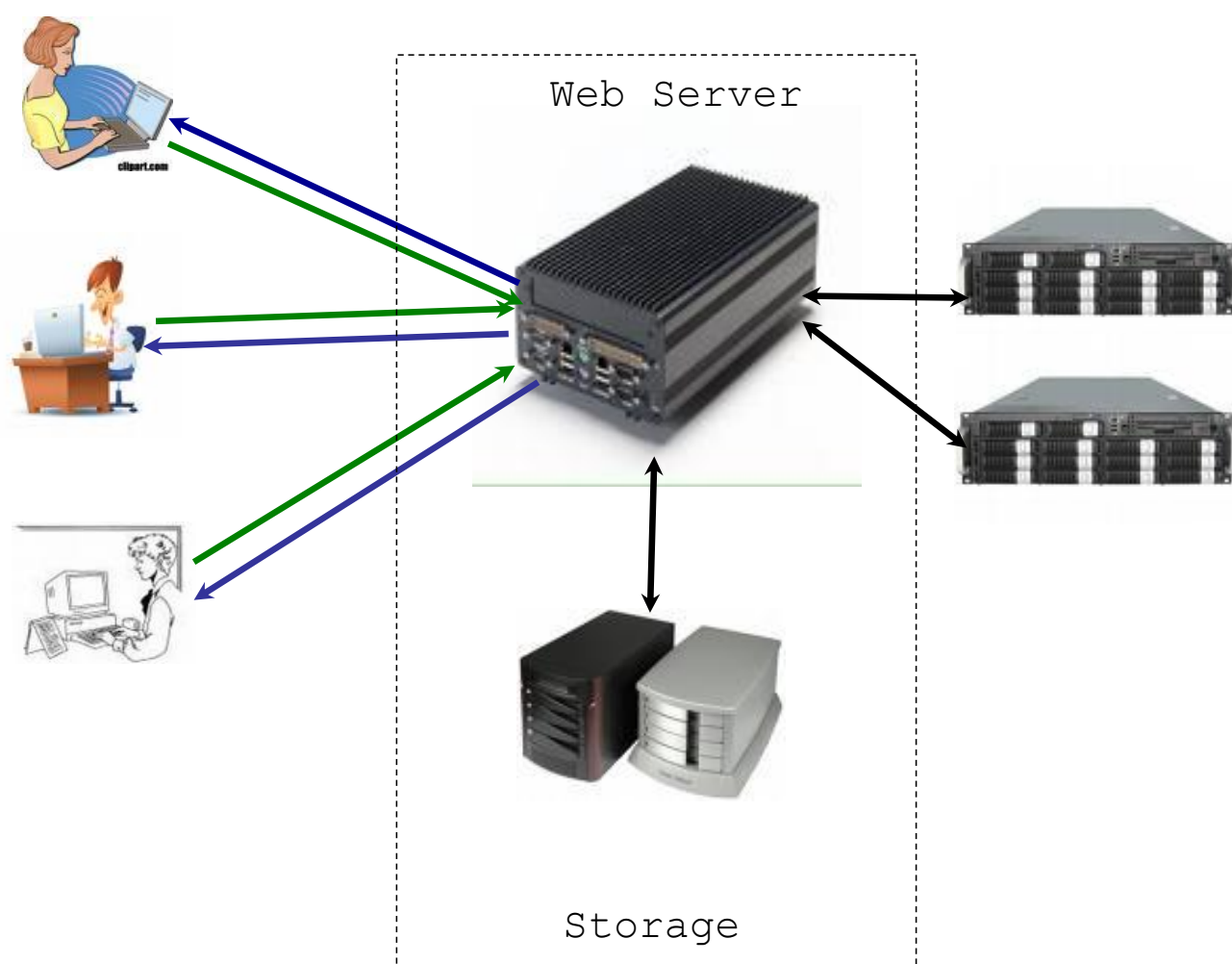
SPECweb2009

Power Efficiency of Web servers at varying loads

Developed by the OSG Web subcommittee
 Webpage: <http://www.spec.org/web2009>



Workload Design



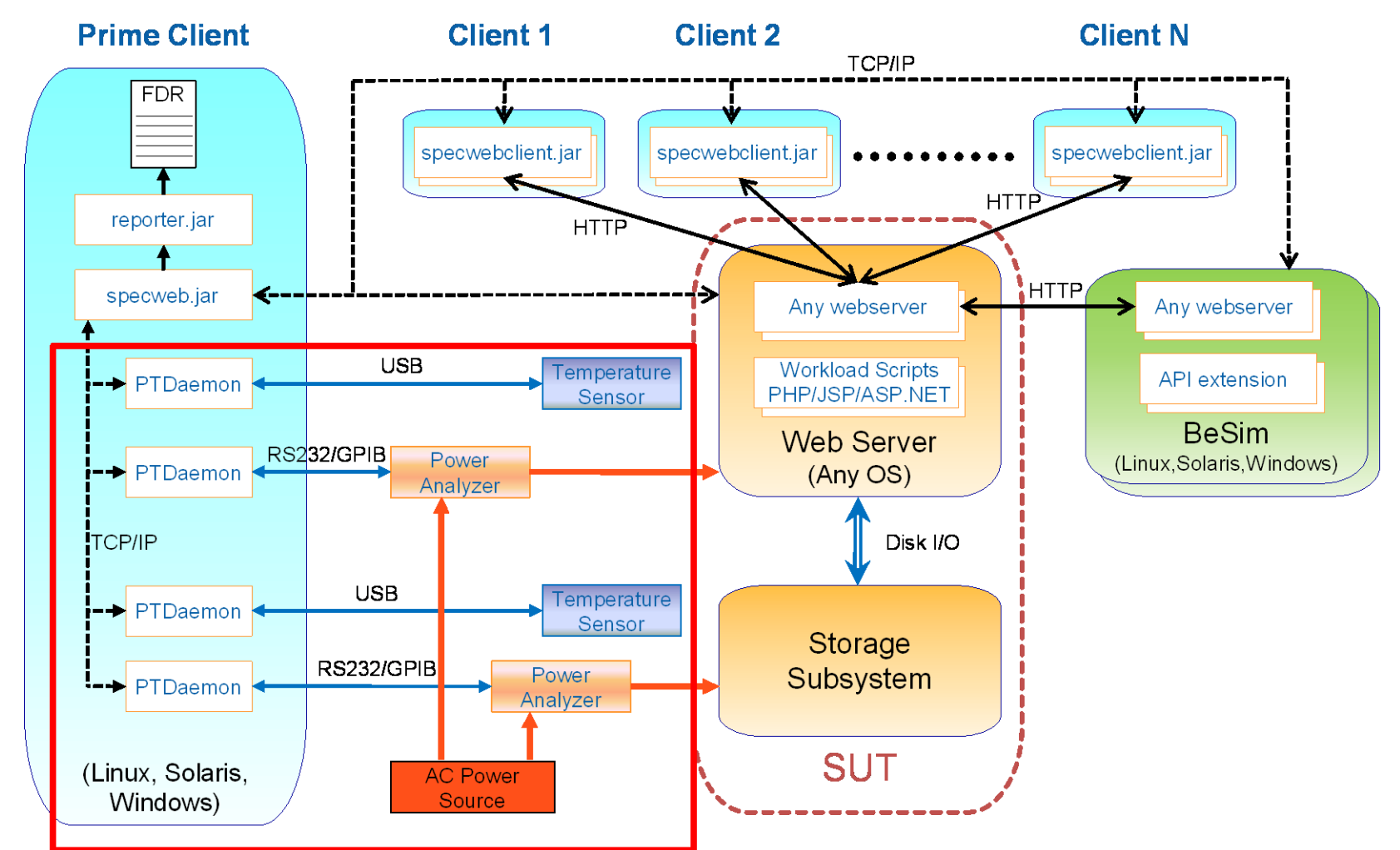
Traffic Type per workload

- Banking: 100% SSL (HTTPS)
- Ecommerce: Mixed SSL & HTTP
- Support: 100% HTTP
- Power: Ecommerce workload at 100%, 80%, 60%, 40%, 20%, Active Idle while measuring power consumption

Scripting Languages

- JSP: Java Script Pages
- PHP: PHP Hypertext Preprocessor
- ASPX: Active Server Pages

Benchmark Layout



New to SPECweb2009

Workload Analysis:

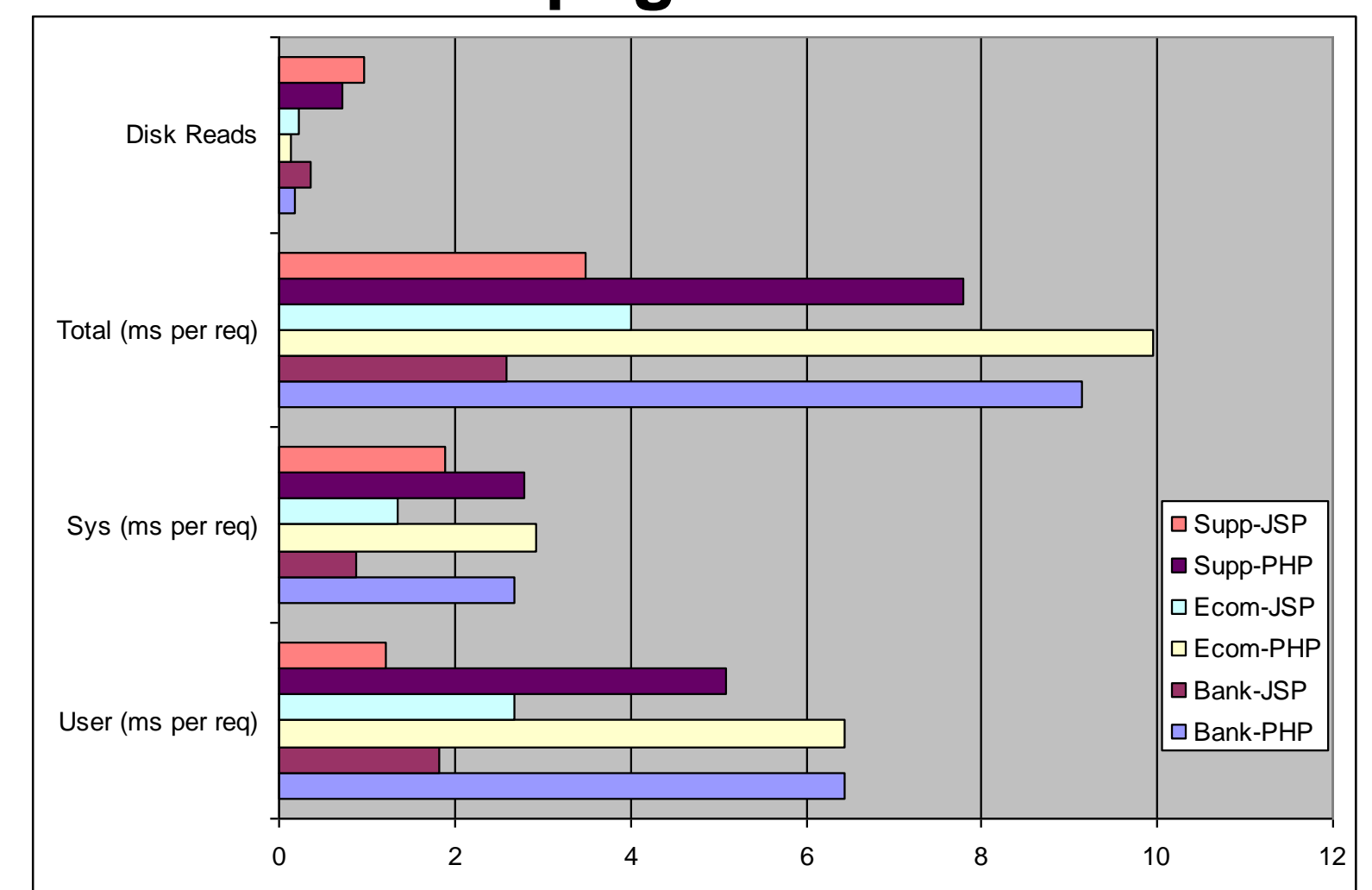
characteristics per 1000 users

Characteristic	Banking	Ecommerce	Support
Page req/s	149	93	97
HTTP reqs/s	1788	1580	2044
SSL full handshakes/s	32	17	None
Resumed handshakes/s	32	17	None
TCP Accepts/s	65	35	13
SUT to Client Mb/s	36 Mb/s	104 Mb/s	464 Mb/s
Client to SUT Mb/s	4 Mb/s	3.7 Mb/s	10 Mb/s
Dynamic request percentage	9%	6%	5%

Workload QOS Criteria:

- Time Good:** Percentage of page requests that meet a response requirement of 2 sec. Need Time_Good >= 95%
- Time Tolerable:** Percentage of page requests that meet a response requirement of 4 sec. Need Time_Tolerable >= 99%
- Throughput:** Used in support to measure large file download speed. very

Characteristic resource usage for PHP and JSP on a per page basis



SPECweb2009 Usage Example:

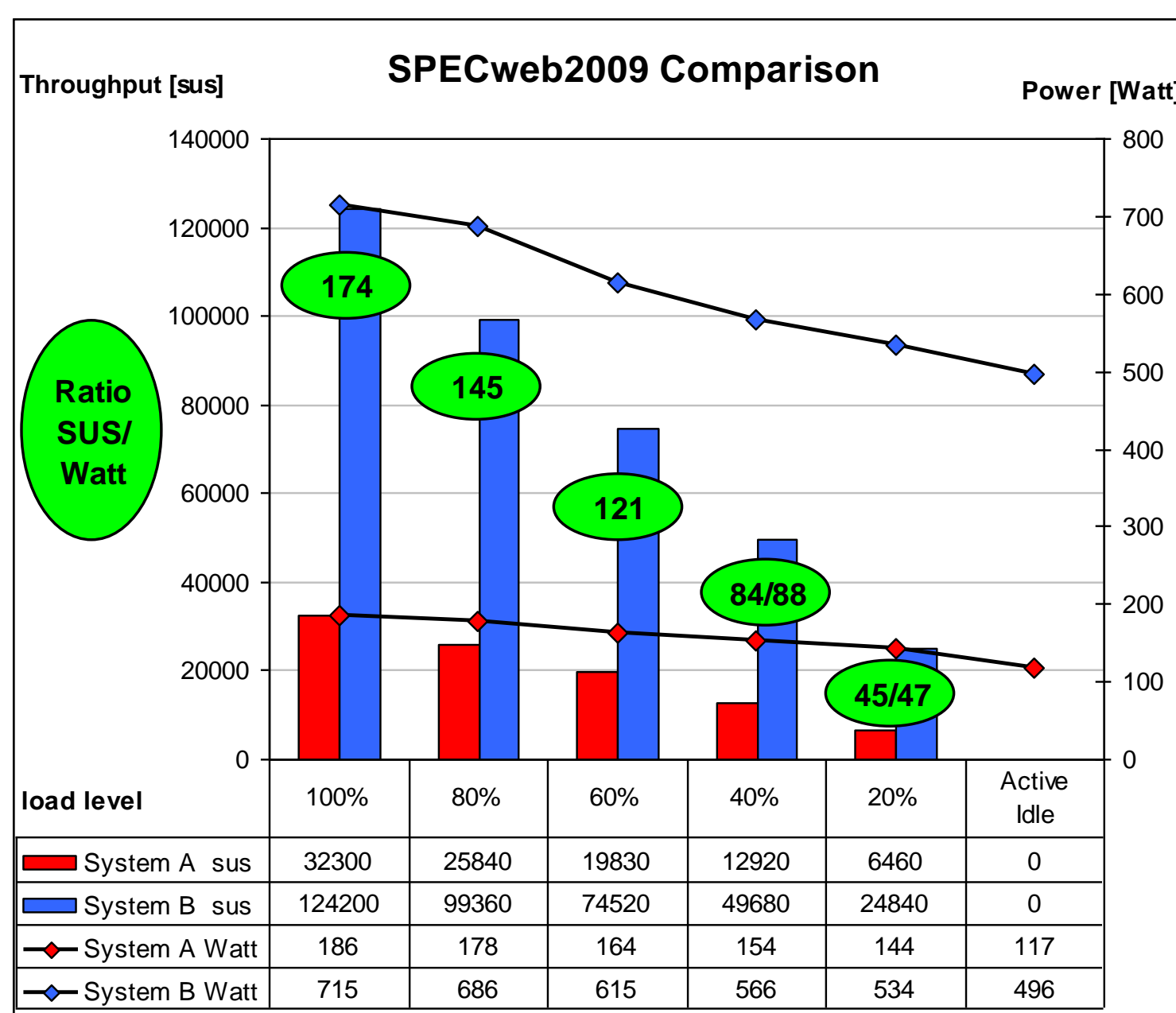
The overall power/performance metric for System A and System B are equal.

System A was configured for efficiency.

SPECweb2009_JSP_Peak = 23,167 sus @ 183 W
SPECweb2009_JSP_Banking = 27,300 sus @ 188 W
SPECweb2009_JSP_Ecommerce = 32,300 sus @ 185 W
SPECweb2009_JSP_Support = 14,100 sus @ 176 W
SPECweb2009_JSP_Power = 103 asus/watt

System B was configured for performance.

SPECweb2009_JSP_Peak = 95,634 sus @ 725 W
SPECweb2009_JSP_Banking = 100,032 sus @ 736 W
SPECweb2009_JSP_Ecommerce = 124,200 sus @ 716 W
SPECweb2009_JSP_Support = 70,400 sus @ 722 W
SPECweb2009_JSP_Power = 103 asus/watt



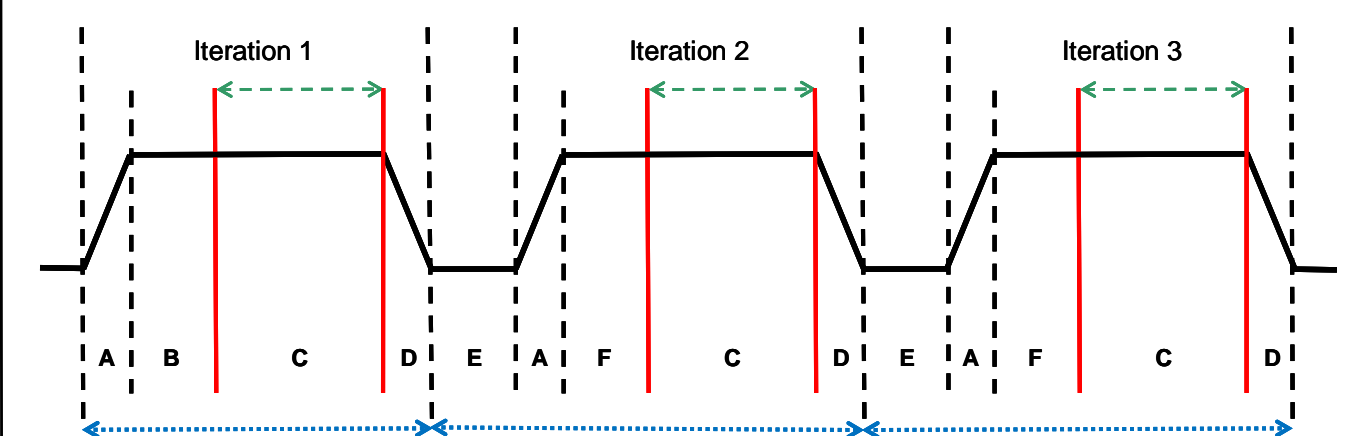
Provides key information useful for:

- Power Performance at various load conditions.
- Selection of hardware and software platforms.
- Future technologies

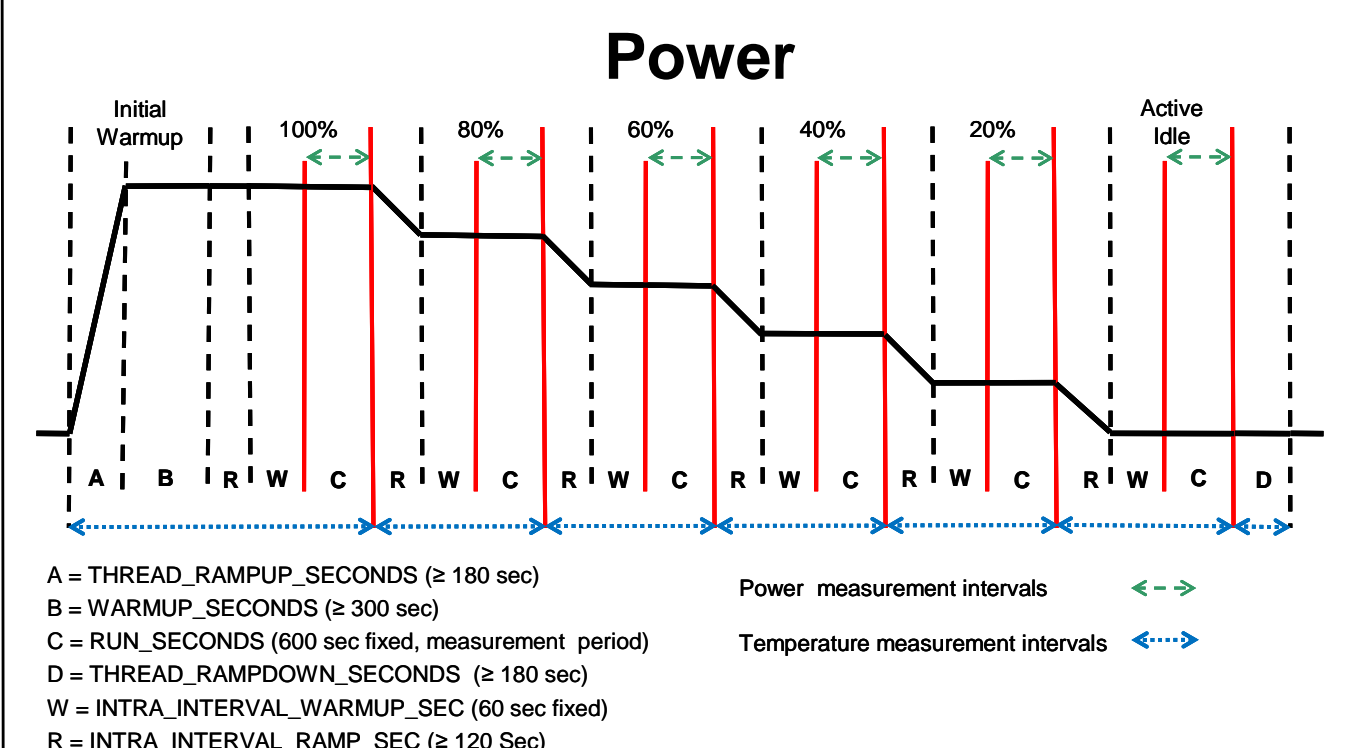
The ONLY web benchmark measuring power efficiency on various workloads.

Benchmark Run Phases

Banking, Ecommerce, Support



- A = THREAD_RAMPUP_SECONDS (≥ 180 sec)
- B = WARMUP_SECONDS (≥ 300 sec)
- C = RUN_SECONDS (1800 sec fixed, measurement period)
- D = THREAD_RAMPDOWN_SECONDS (≥ 180 sec)
- E = RAMPDOWN_SECONDS (300 sec fixed)
- F = RAMPUP_SECONDS (300 sec fixed)



- A = THREAD_RAMPUP_SECONDS (≥ 180 sec)
- B = WARMUP_SECONDS (≥ 300 sec)
- C = RUN_SECONDS (600 sec fixed, measurement period)
- D = THREAD_RAMPDOWN_SECONDS (≥ 180 sec)
- W = INTRA_INTERVAL_WARMUP_SEC (60 sec fixed)
- R = INTRA_INTERVAL_RAMP_SEC (≥ 120 Sec)

The SPECweb subcommittee is looking at new web technologies for SPECweb_NEXT, including Web2.0, AJAX, cloud related technologies.

Participation is encouraged from academic and research for the ongoing development of SPECweb.

Current participation in the development of SPECweb are: AMD, Fujitsu, HP, IBM, Intel and Sun.