

Bostonlabs: HEPSPec Analysis across modern HPC architectures

HEPIX



Presenter: [David Power](#)
[Head of HPC at Boston Ltd.](#)



About us

- Founded in 1992 – 22 years of innovation
- Supermicro's longest established & largest global partner – for 20 years
- Technology focused, trade-only global distributor & solution manufacturer
- Global HQ in London with branch offices in London, Munich, Mumbai, Bangalore and New York. Further global expansion is planned.
- Experts in solutions and HPC system design using premium equipment for Supermicro and leading component partners
- Worldwide stockholding
- Route to market via authorised resellers and partners
- Awarded Supermicro 'Fastest Growing Partner' 2012/2013

Our Locations



New York, USA
San Jose, USA
Chicago, USA

London UK
Munich, Germany
Mumbai, India

Bangalore, India
New Delhi, India
Taipei, Taiwan



HEPSPEC

Enough chit chat – show me the numbers

HEPSPEC: Test Environment

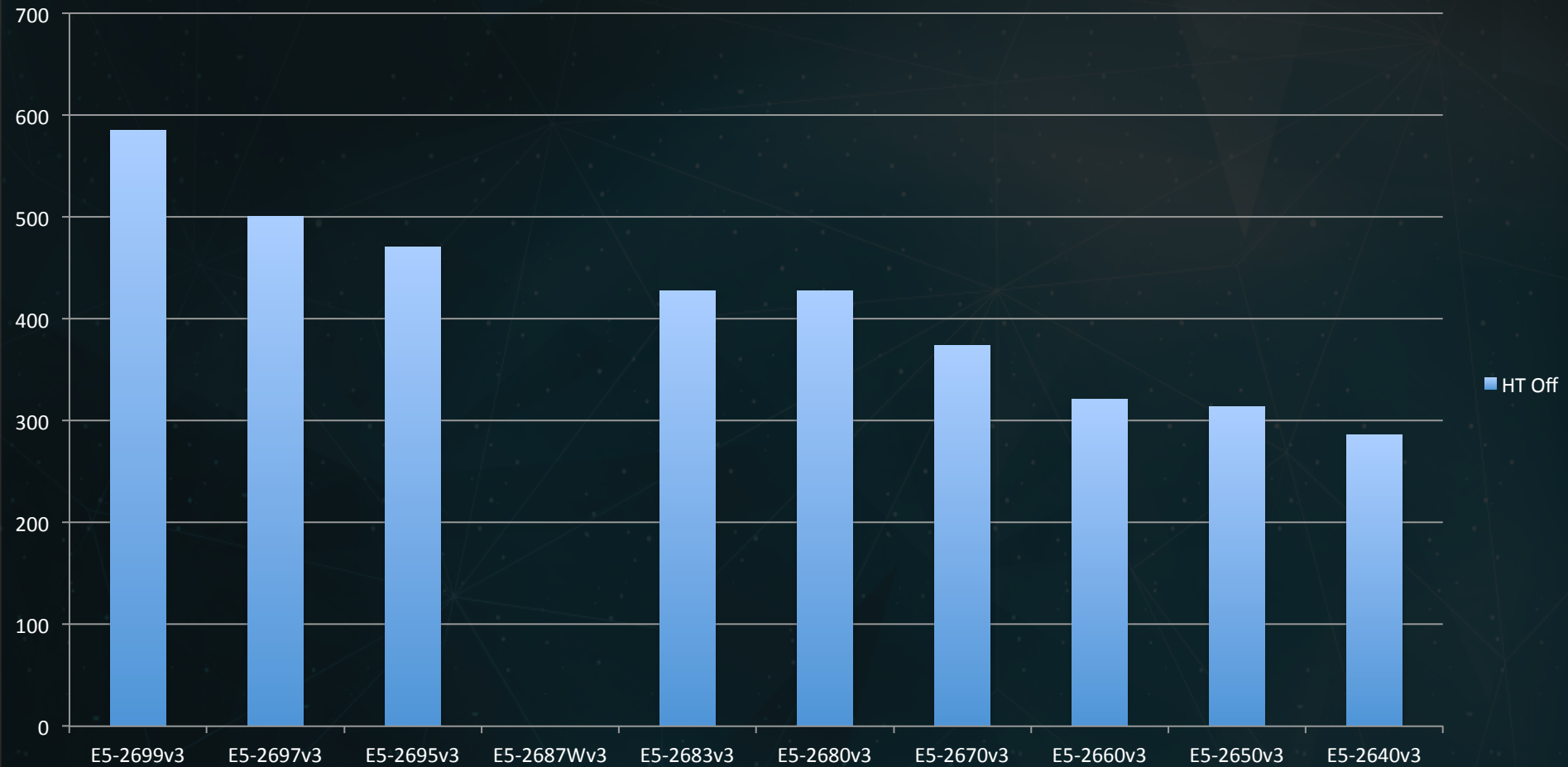
Results have been gathered over the last few months as and when CPUs became available

Followed the tender requirements for HS06

- SLC6 based tests
- Results averaged over a number of runs
- Tests run in a lab environment with temp: <22C
- Memory >64GB per server
- Single HDD
- No fast 10GB/IB cards
- Power figures not reported just yet – stay tuned for a follow up

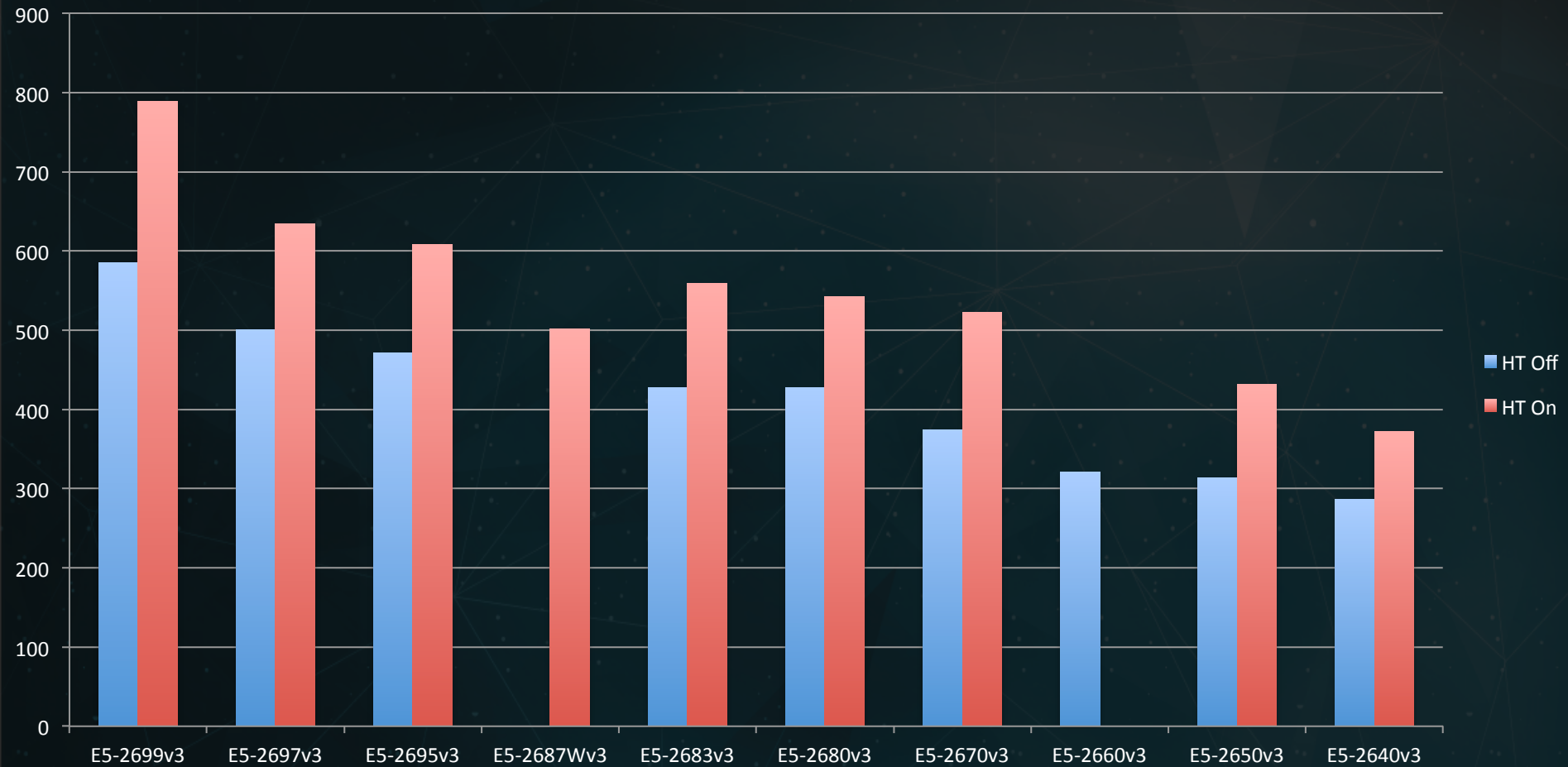
HEPSPEC: E5-2600v3 (HT Off)

HEPSPEC Scores from Bostonlabs



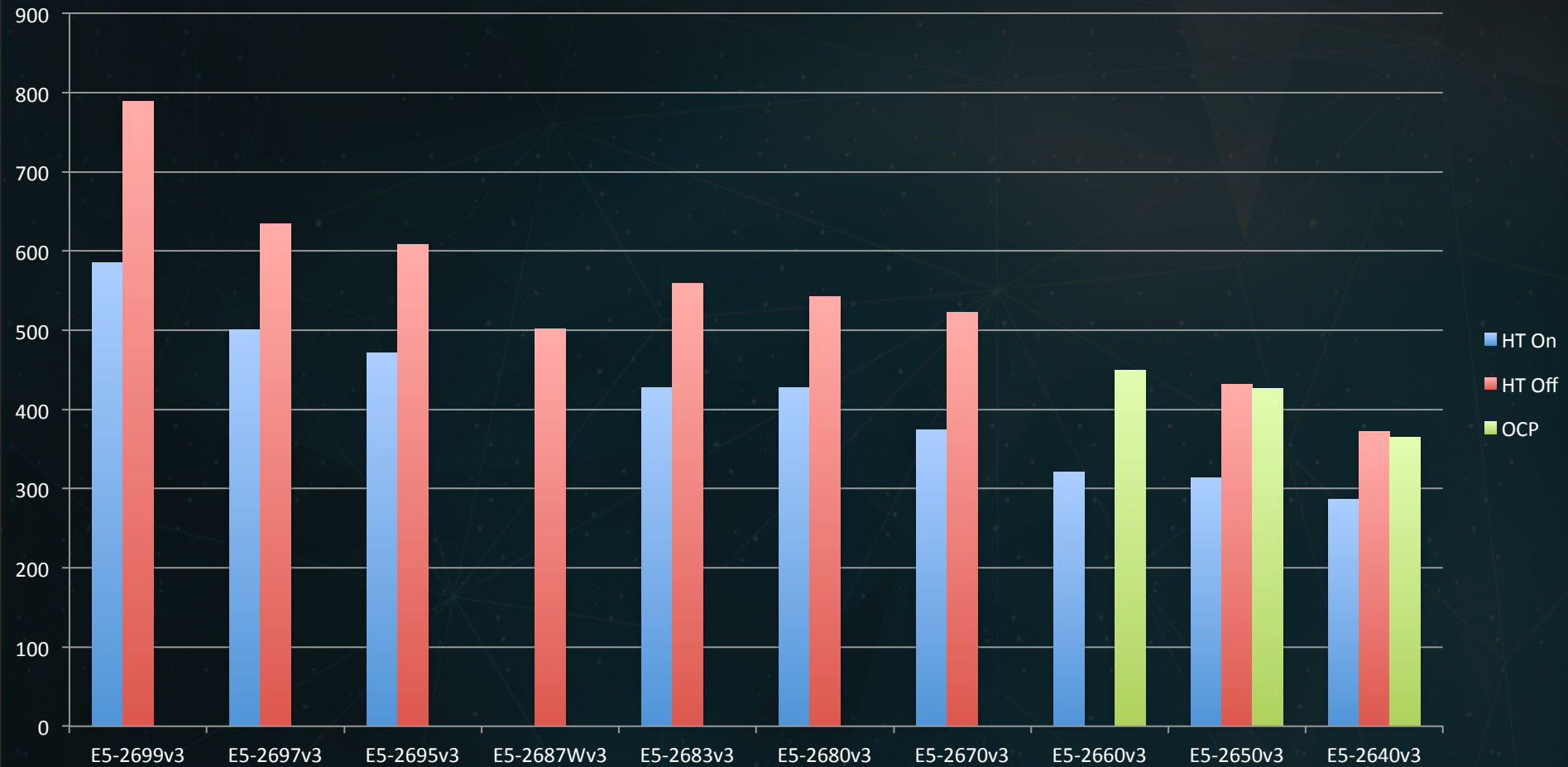
HEPSPEC: E5-2600v3 (HT On)

HEPSPEC Scores from Bostonlabs



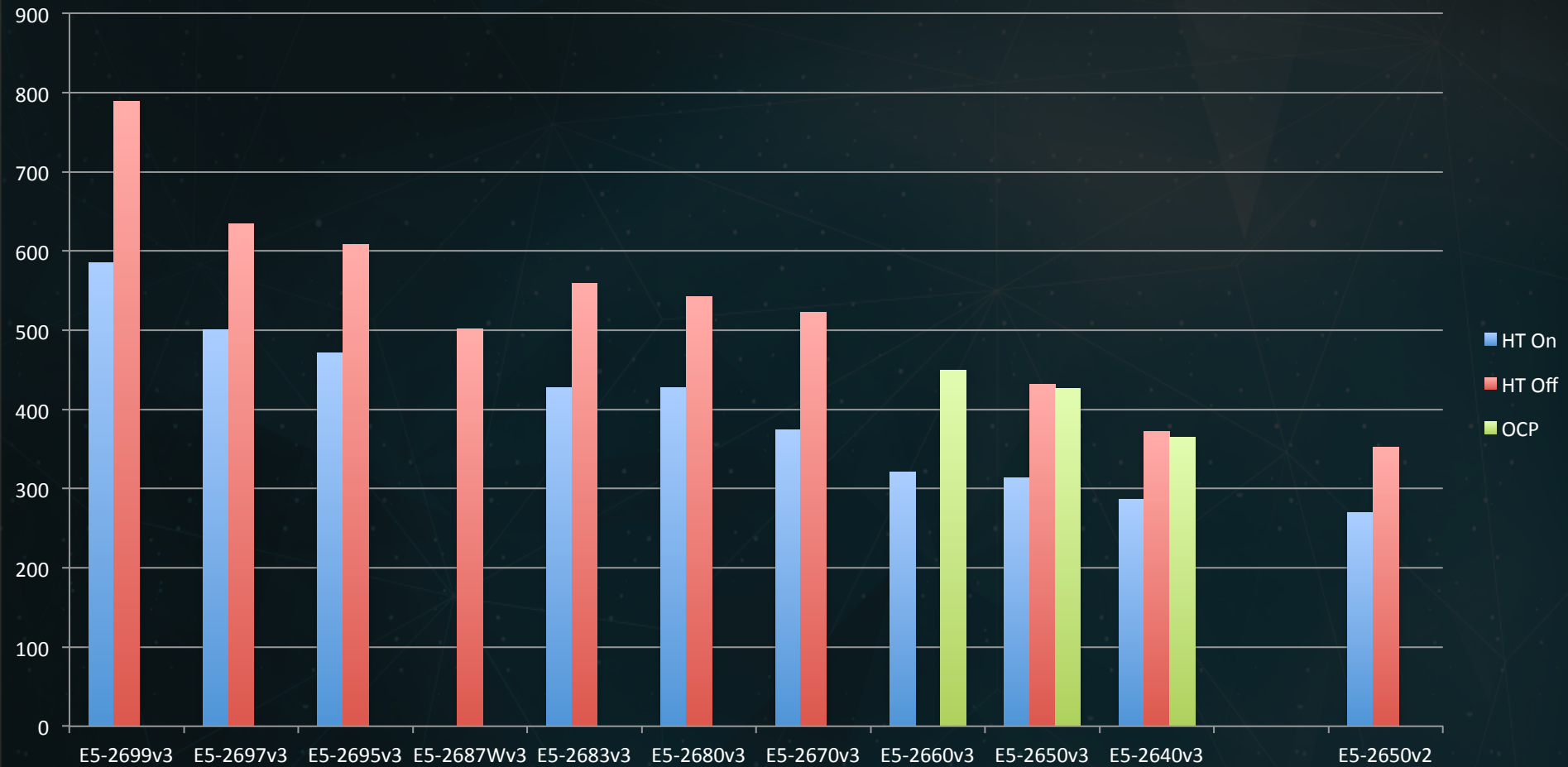
HEPSPEC: E5-2600v3 (OCP)

HEPSPEC Scores from Bostonlabs



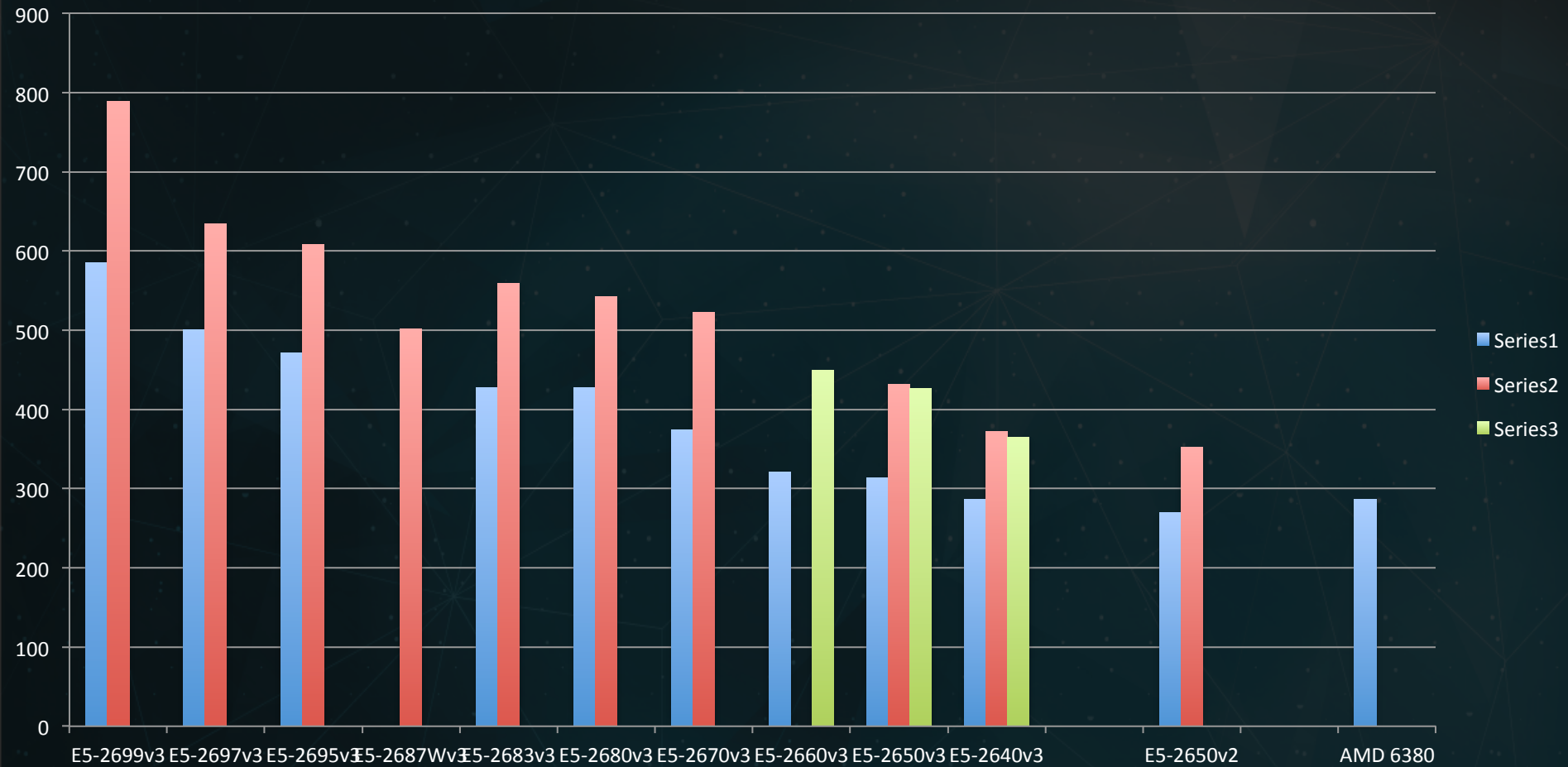
HEPSPEC: E5-2600v2 (Ivy Bridge)

HEPSPEC Scores from Bostonlabs



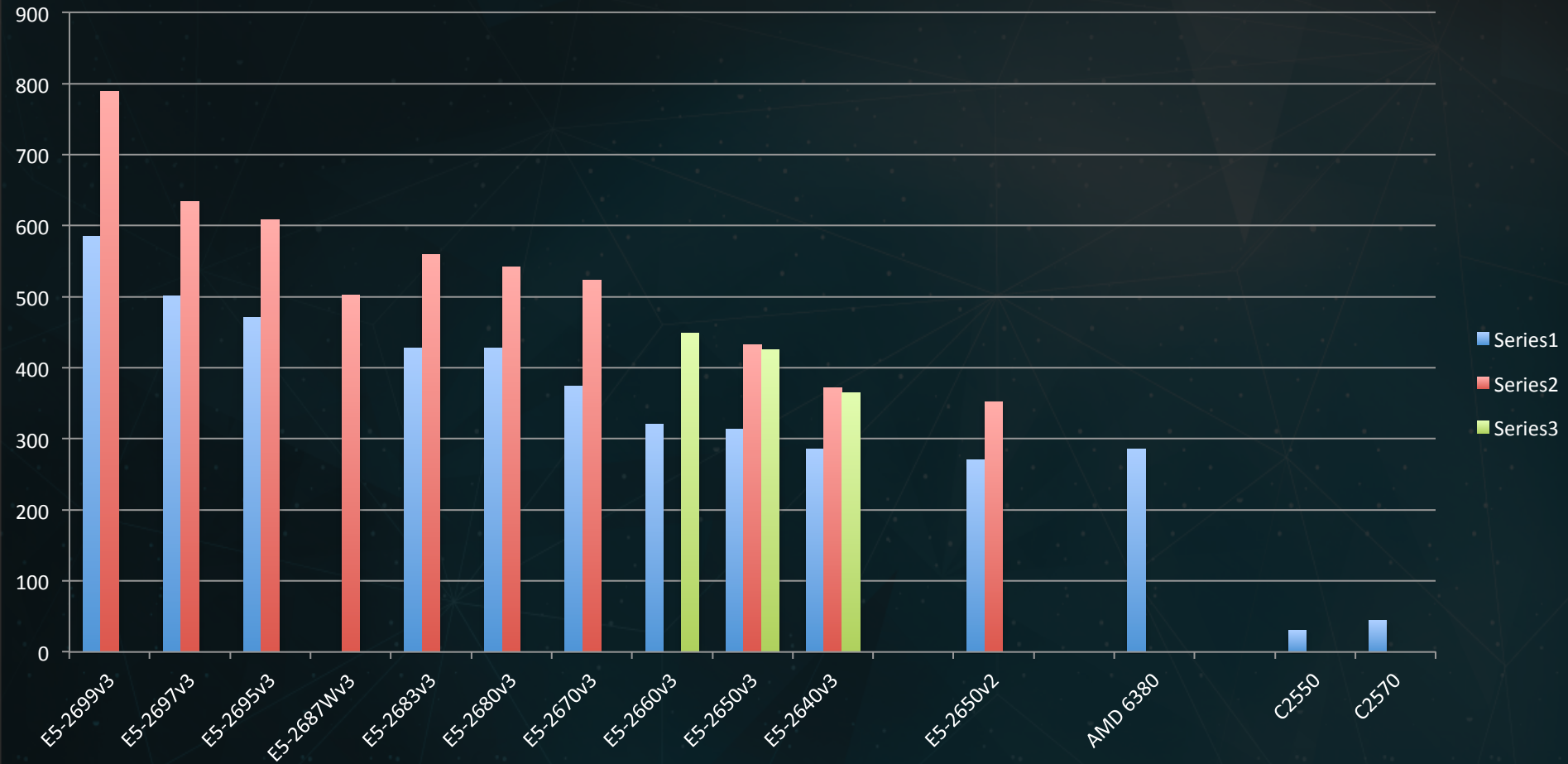
HEPSPEC: AMD

HEPSPEC Scores from Bostonlabs



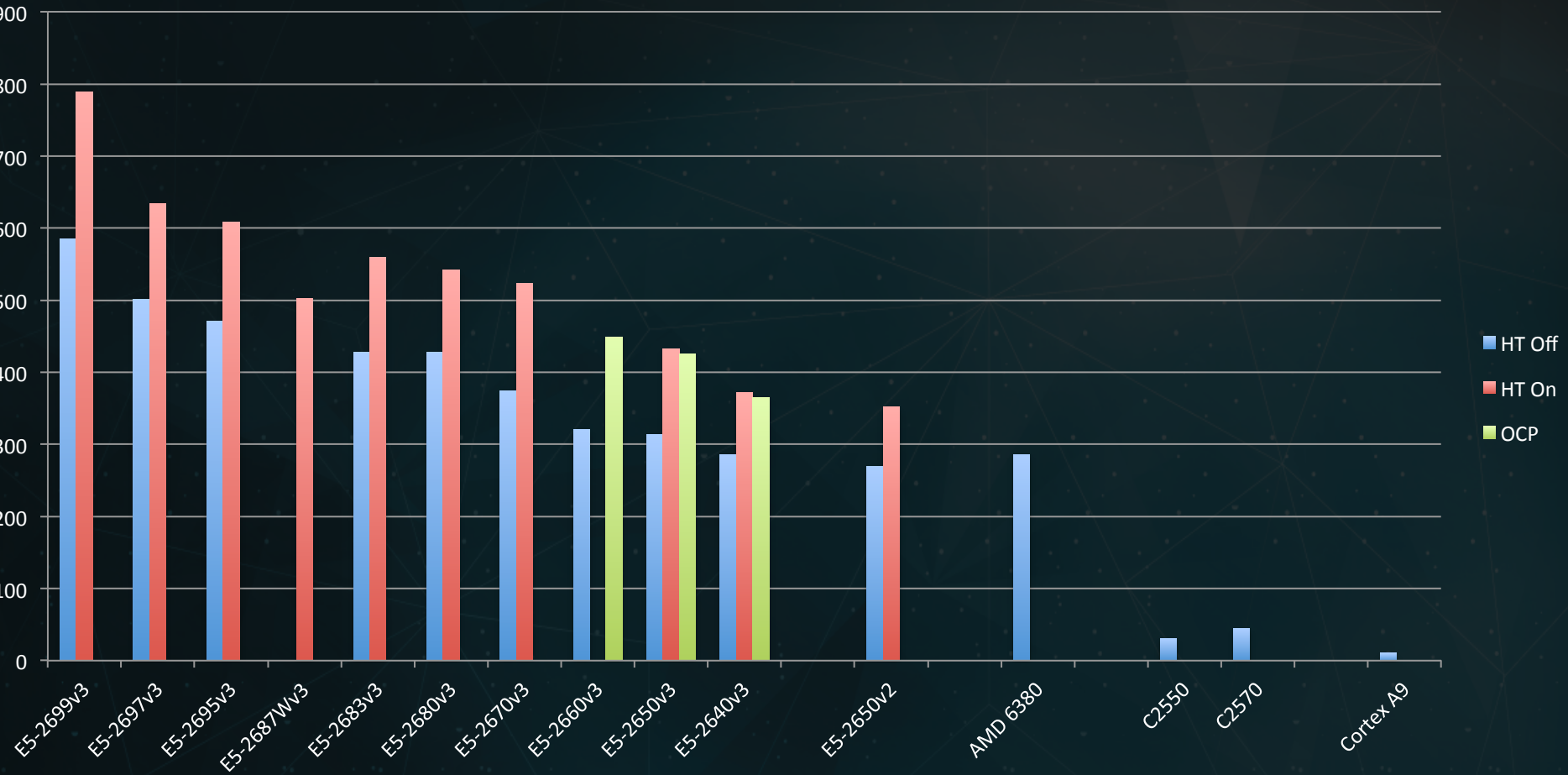
HEPSPEC: Atom

HEPSPEC Scores from Bostonlabs



HEPSPEC: ARM?

HEPSPEC Scores from Bostonlabs



HEPSPEC: ARM?

HEPSPEC Scores from Bostonlabs



Check: <http://www.bostonlabs.co.uk> for future results



New shiny stuff in the lab

It was the only way to categorise the next few slides

Atom Microblade

Powerful and flexible extreme-density
6U all-in-one total system that features
28 hot-swappable MicroBlade Modules

Atom Microblade:

- 4 servers per blade
- 1x C2750 (8 cores, 2.4Ghz)
- Or 1x C2550 (4 cores, 14w)
- 2x SODIMM slots (32GB)
- 1x 2.5" SATA3
- 1x SATADOM
- 2x 2.5Gbps eth ports
- Best performance per watt
- 112x Atom C2000 nodes in 6U
- Intel Virtualization Technology
- 4x GbP switches (40G/10G uplinks)

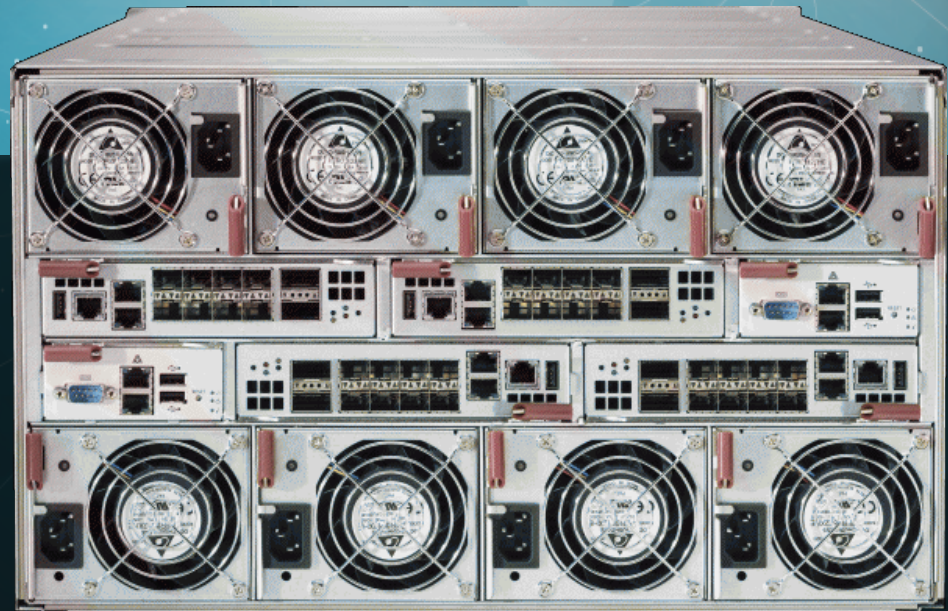


Xeon DP Microblade

Powerful and flexible extreme-density
6U all-in-one total system that features
28 hot-swappable MicroBlade Modules

Intel E5-2600v3 Microblade:

- 1 server per blade
- 2x Intel E5-2600 v3 (up to 120w)
- 2x 3.5" 6Gb/s SATA3
- Onboard 2x 1 GbE NIC
- Or Onboard 2x 10 GbE NIC
- Onboard BMC for IPMI 2.0
- 196x Intel E5 DP nodes in 42U
- Industry leading density for DP!
- 8x VLP DDR4 RDIMM (up to 2133 MT/s)



Open Compute Platforms (OCP)



Rack

- Full rack level solutions
- Centralised power shelf
- Open rack design
- Rack Management Controller (RMC)

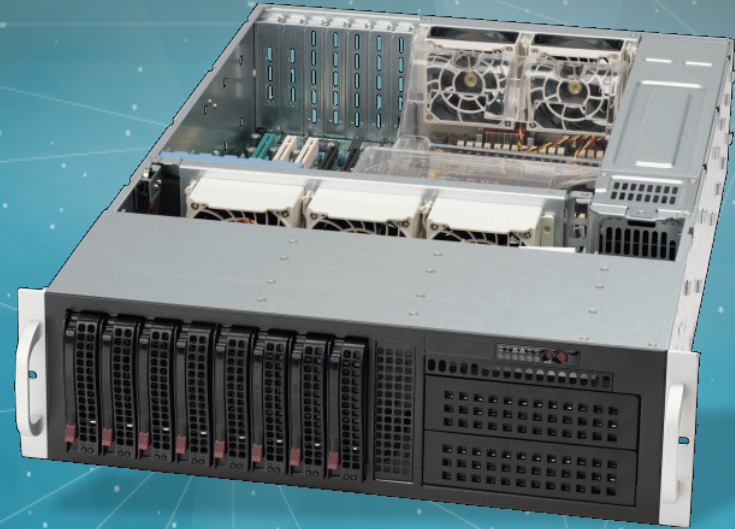
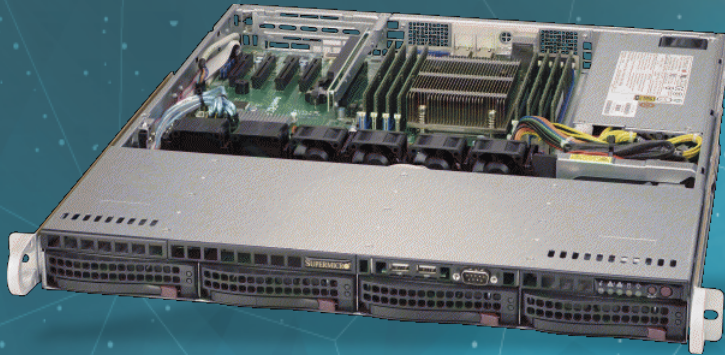
Compute

- 2U 3 Node Intel E5-2600v3
- Hot Pluggable Nodes
- 16 DIMM slots (512GB)
- IPMI Remote Management

Storage

- 2U 30 Bay Storage
- Redundant Paths
- Hot Pluggable Drives
- Tool-less design

Viridis 64 – ARMv8



Viridis - So Far...

Worlds first ARM enterprise server in 2012

Now updated to 64bit

Over 50 POC customers

Now 64bit Ready

Mature Software Stack

8 Core at 2.4Ghz

Up to 8 DIMMs / 256GB

Dual 10GB SFP+ OB

IPMI Management

HPC Technologies

Dual GPU Option

Mellanox IB Drivers Ported

Compute / GPU Optimised Platforms

Cavium Thunder coming soon!

Supermicro Server Manager (SSM)

To simplify server management and improve server availability

Deploy

Operating System

Mass-Deployment

Update

BIOS

BIOS Settings

IPMI FW

IPMI Settings

Monitor & Control

HW Health Monitoring

RESTful API (Q1 2015)

System Performance

Power Consumption

Remote Desktop

Power Mgmt.

Inventory Information

Issue Alerts

Bostonlabs: Test Cluster

Remote access to all our current and future technologies.

Notes from HEPIX:

- Remote Evaluations – No problem, contact david.power@boston.co.uk
- New Benchmark (HS06v2) – happy to work with the community in providing access range of systems to evaluate any new benchmarks on

CEPH Optimised Platforms

CEPH: The future of storage



- Partnership signed with Inktank/Redhat to provide commercial support on CEPH
- Validated CEPH Reference Architecture
- Mon Node: SYS-5017R-MTRF
- OSD Node(s): 12 Bay, 36 Bay and 72 Bay
- Huge increase in interest for this technology around Openstack deployments
- Validated on ARM/Viridis



Case Study: CERN

Boston have delivered over 25PB of storage to CERN for the LHC project based on Supermicro Storage solutions.

In addition to this Boston have provided a significant amount of storage to the UK contributing groups for this project such as T1 site STFC with over 10PB of storage over the last number of years



Thank-you