Accelerating Business Transformation: 
Introducing the Intel® Xeon® Processor E5 2600/1600 v3 Product Families

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Digital Services
Transforming Markets
Digital Service Economy: *Data Center Demands*

- Rapid service provisioning
- Efficient, low cost operations
- Consistent user experiences
Software Defined Infrastructure

SOFTWARE DEFINED COMPUTE
SOFTWARE DEFINED STORAGE
SOFTWARE DEFINED NETWORK

ORCHESTRATION LAYER
Data Center Demands for Software Defined Infrastructure

- Efficient, High Performance Building Blocks
- Common Architecture for Server, Storage and Network
- System Visibility for Monitoring and Control
Intel® Xeon® E5-2600 v3 Platform Overview

Processor
- Intel® Xeon® Processor E5-2600 v3, 22nm process with New Instructions
- DDR4 Memory Support

Intel® C612 Chipset
- Enhanced SATA support
- Enterprise SMbus and MCTP support
- Intel® SPS 3.0 Firmware with BMC-assist modules

Intel® Xeon Phi™ coprocessor
- Co-processor for highly parallel workloads

Intel® SSD Data Center Family for PCIe
- Family of PCIe storage cards with up to 2TB capacity

Intel® Ethernet XL710 family
- Driving the industry transition to 40GbE networking
  - Network virtualization
  - Intel® Flow Director

Intel® QuickAssist Server Adapter
- Hardware-based crypto acceleration and compression

Extended Ingredients
- Suite of ingredients that deliver value across segments
### Intel® Xeon® E5-2600 v3 Platform Summary

**CPU**
- From 4 to **18 cores**
- TDP: 55 W to 145 W (SVR); 160 W (WS)

**Socket**
- Socket-R3

**Scalability**
- 2S capability

**Memory**
- 4xDDR4 channels
- 1333, 1600, 1866 (2 DPC), **2133 (1 DPC)**
- RDIMM, LRDIMM

**QPI**
- 2xQPI 1.1 channels
- 6.4, 8.0, **9.6 GT/s**

**PCIe**
- PCIe* 3.0 (2.5, 5, 8 GT/s)
- PCIe Extensions: Dual Cast, Atomics
- 40xPCIe* 3.0

**Intel® C612 Chipset**
- DMI2 – 4 lanes; Up to 6xUSB3, 8x USB2 ports, 10xSATA3 ports; GbE MAC (+ External PHY)

**LAN**
- 40GbE - 1GbE

**Firmware**
- Servers: Intel® Server Platform Services (SPS)
- Workstations: ME 9.x

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**EP = Efficient Performance**

*Excellent balance of performance and power efficiency*
Product Family Features

**Compute**
- Advanced Vector Extensions (AVX) 2.0
- PCPS (Per Core P-States)
- DDR4 Memory
- Virtual Machine Control Structure (VMCS) Shadowing

**Storage**
- Data Deduplication
- Intelligent Tiering
- Thin Provisioning
- Data Encryption
- SSDs

**Network**
- 10/40 Gb Ethernet Controller
- Network virtualization offloads
- Flow Director
- Network Functions Virtualizations
**Intel® Advanced Vector Extensions (AVX) 2**

- Floating point Fused Multiply Add (FMA) improves high performance computing, professional imaging, feature detection
- 256-bit integer vector instructions benefits math, codec, image processing and DSP software.

Source as of June 2014: Intel internal measurements on platform with two E5-2697 v2, HT disabled, Turbo enabled, 8x8GB DDR3-1866, RHEL6.3, MKL 11.0.5, score: 528 GFLOPs. Platform with two E5-2699 v3, HT disabled, Turbo enabled, NUMA & COD mode, 8x16GB DDR4-2133, RHEL 6.4, IC14.0-AVX2, MKL 11.1.1, score: 1012 GFLOPs. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to [http://www.intel.com/performance](http://www.intel.com/performance).
Power Efficiency Improvements:
Per Core P-States (PCPS) greatly increases power efficiency by optimizing workload processing

Source as of June 2014: Intel internal measurements on Mayan City CRB with one E5-26xx v3 (14C, 2.3GHz, 145W), 8x4GB DDR4-1600, RHEL kernel 3.10.18, PCPS on 110W, PCPS off 70W on an internal web workload. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to http://www.intel.com/performance *Other names and brands may be claimed as the property of others.
The DDR4 Difference

1Source as of August 2014 TR#3044 on STREAM (triad): Intel® Server Board S2600CP with two Intel® Xeon® Processor E5-2697 v2, 24x16GB DDR3-1866 @1066MHz DR-RDIMM, score: 58.9 GB/sec. New Configuration: Intel® Server System R2208WTTYS with two Intel® Xeon® Processor E5-2699 v3, 24x16GB DDR4-2133 @ 1600MHz DR-RDIMM, score: 85.2 GB/sec.

2Results have been estimated based on internal Intel analysis and are provided for informational purposes. Any difference in system hardware or software design or configuration may affect actual performance. Source as of July 2014: Intel internal estimates on DIMM level power savings of 3 DIMM per channel 4GB DRx4 DDR3L RDIMM vs. 4GB DRx4 DDR4 RDIMM configurations. Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to http://www.intel.com/performance. *Other names and brands may be claimed as the property of others.
Intel® Node Manager 3.0

Provides data on:
- Platform Power
- Inlet Temperature
- Airflow
- Outlet Temperature
- CPU Utilization
- Memory Utilization
- I/O Utilization
- Compute Utilization per Second

Intel® Node Manager 3.0: Analytics for Utilization, Power and Thermal Data
Cache Monitor (Cache QoS) is designed to improve Service Quality and Utilization.

**E5 v2:**
No Cache Monitoring

**E5 v3: Cache Monitoring**

First come, first served

Cache QoS provides information on individual VMs in Cache.

Enables IT automation to make better utilization decisions
Fortville Differentiation

• Next Gen 10 / 40GbE – Architected for next generation virtualized cloud environments
• SW Defined Infrastructure - Network Virtualization Offload, Intel® Ethernet Flow director for traffic steering
• Network Functions Virtualization – Excellent small packet performance, Intel® DPDK

Proven
Platform validation
Intel Drivers
30 years – Just Works

Performance
Virtualization: VMDq, SR-IOV, Flow Director
DPDK Optimized

Flexible
Converged: LAN / SAN
Broad Interfaces: 2x40, 1x40, 4x10, 2x10

Designed for Software Defined Infrastructure
Designed to work together

**Compute**
- Application-driven allocation of resources that can be orchestrated

**Storage**
- Data management and media management
- Automated tiers and management
- Massively scalable

**Network**
- Orchestrated connectivity
- Automated provisioning
- Automated network management

Compute, Storage and Network as one solution is the answer
Accelerating Business Transformation

The heart of agile, efficient data centers

Up to 3x improvement in processor performance

Improved tools for software orchestration

Benefits for server, storage and networks

The Foundation for Software Defined Infrastructure

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