



# IBM Connected 2013

Her Deneyim Bir Kazanım

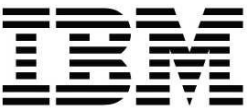
#connected





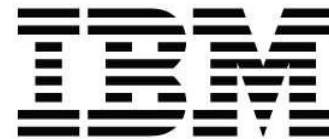
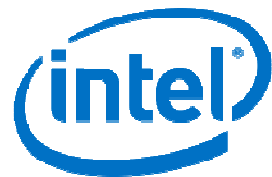
# Intel Data Centre Vision

Burak Unuvar  
Data Center Account Manager



# Agenda

- A. Intel Product Roadmaps**
- B. Data Center Market Dynamics & Intel Approach**
- C. IBM & Intel Joint Activities**





*Predictable Silicon Track Record*

*Executing to*

# MOORE'S LAW

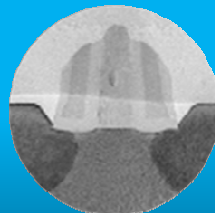
*Enabling new devices with higher functionality and complexity while controlling power, cost, and size*



180 nm  
1999



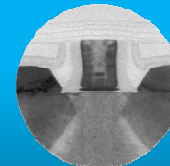
130 nm  
2001



90 nm  
2003



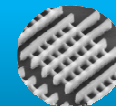
65 nm  
2005



45 nm  
2007



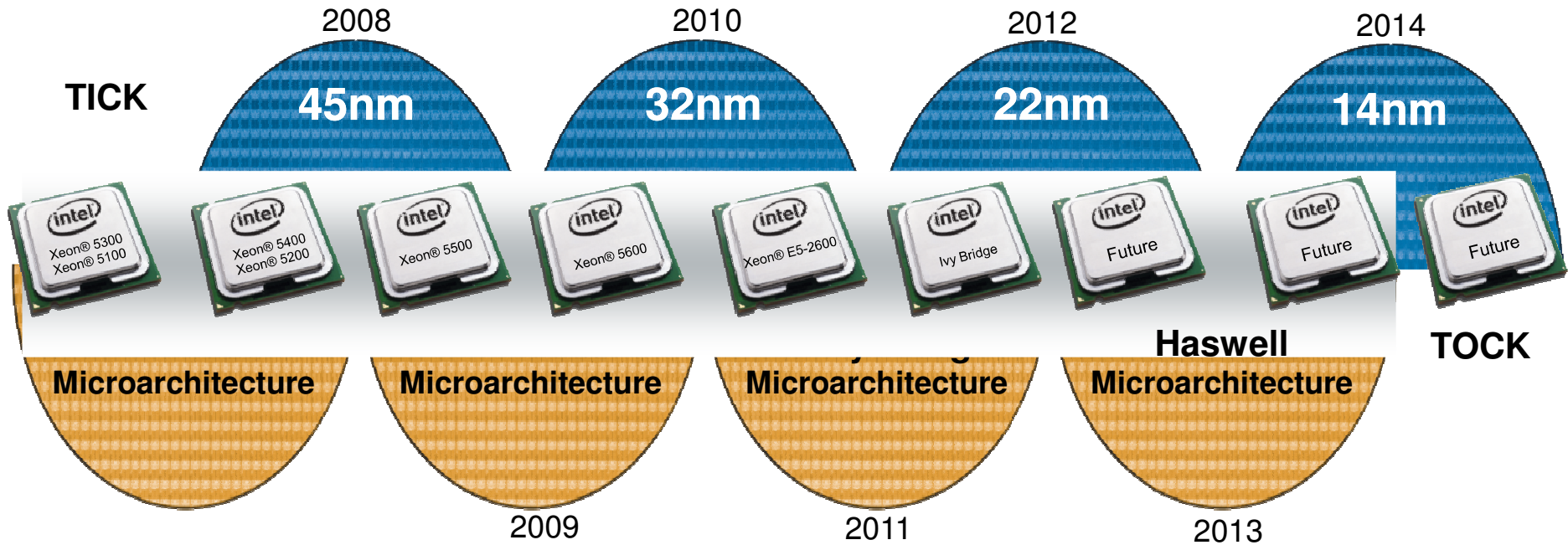
32 nm  
2009



22 nm  
2011



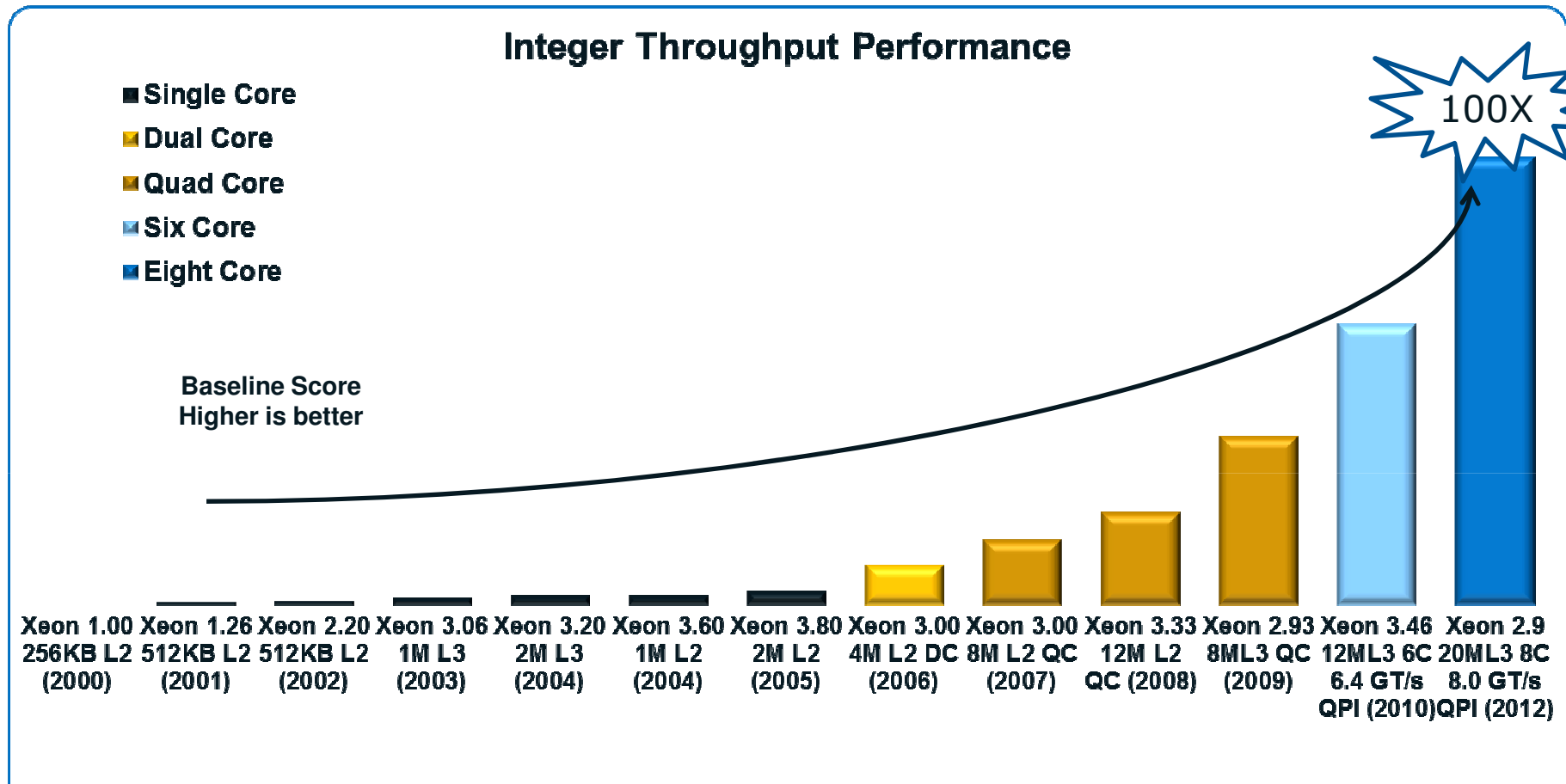
# Tick Tock Development Continues: Innovate. Integrate. Innovate. Integrate.



*Predictable dependable cadence driving exponential growth in compute power and new business possibilities*

# Intel® Xeon® Processor E5-2600 Product Family

## Historical 2S Integer Throughput Performance



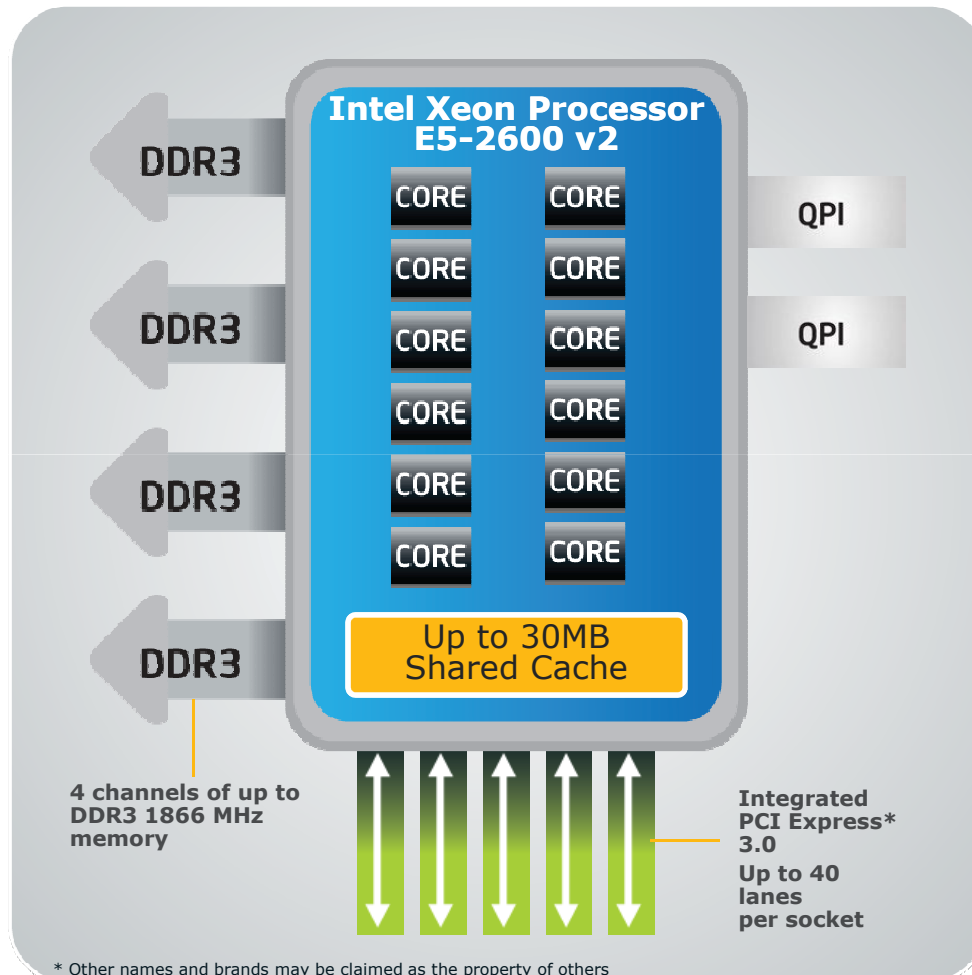
**Intel® Xeon® Delivers 100X Boost in 2S Integer Throughput Performance since 2000**  
 Exponential growth in compute performance creates new possibilities

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. Source: Intel Internal Assessment and Estimates.

For more information go to <http://www.intel.com/performance>



# Intel® Xeon® processor E5-2600 v2 Product Family



Socket compatible replacement for Intel® Xeon® processor E5-2600 product family

Up to 12 cores and 30MB cache expected to deliver up to **~40%<sup>1</sup>** more performance in same power envelope

Improved security with Intel® Secure Key & Intel® OS Guard for additional HW embedded security

\* Other names and brands may be claimed as the property of others

<sup>1</sup> Results have been simulated and are provided for informational purposes only. Results were derived using simulations run on an architecture simulator or model. Any difference in system hardware or software design or configuration may affect actual performance. Intel product plans in this presentation do not constitute Intel plan of record product roadmaps. Please contact your Intel representative to obtain Intel's current plan of record product roadmaps. 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.



# Intel® Xeon® processor E5-2600 v2 Product Family

Feature	Xeon E5-2600	Xeon E5-2600 v2
Cores/Threads	Up to 8 cores /16 Threads	<b>Up to 12 Cores/24 Threads</b>
Last-level Cache	Up to 20 MB	<b>Up to 30 MB</b>
Max Memory Speed (Mhz)	Up to 1600	<b>Up to 1866</b>
Idle Power Targets	15W or higher	<b>Est. 10.5W or higher</b>
Max DIMM Capacity	12 Slots/Processor	
PCIe* Lanes / Controllers/Speed	40 / 10 (PCIe* 3.0 at 8 GT/s)	
TDP (W)	150 (Workstation only), 130, 115, 95, 80, 70, 60	

## Additional Feature Improvements:

- Intel® Secure Key ( faster and more secure encryption )
- Intel® OS Guard (Improved protection against malware )
- Advanced Programmable Interrupt Controller virtualization (APICv Improves virtualization performance )



# Intel® Xeon® Processor E5-2600 v2 Product Family Processor Transition Guidance

Intel® Xeon® Processor E5-2600

Intel® Xeon® Processor E5-2600 v2

Segment Optimized	Intel® Xeon® Processor E5-2600	Performance Change	Intel® Xeon® Processor E5-2600 v2
Advanced	E5-2690 8C 2.9 base/ 3.8 Turbo 135W \$2057	+33% <sup>1</sup>	E5-2697 v2 12C 2.7 base/3.5 Turbo 130W \$2614
	E5-2680 8C 2.7 base/ 3.5 Turbo 130W \$1723	+26% <sup>1</sup>	E5-2695 v2 12C 2.4 base/3.2 Turbo 115W \$2336
	E5-2670 8C 2.6 base/ 3.3 Turbo 115W \$1552	+22% <sup>1</sup>	E5-2690 v2 10C 3.0 base/3.6 Turbo 130W \$2057
	E5-2665 8C 2.4 base/ 3.1 Turbo 115W \$1440	+24% <sup>1</sup>	E5-2680 v2 10C 2.8 base/3.6 Turbo 115W \$1723
	E5-2660 8C 2.2 base/ 3.0 Turbo 95W \$1329	+19% <sup>1</sup>	E5-2670 v2 10C 2.5 base/3.3 Turbo 115W \$1552
	E5-2650 8C 2.0 base/ 2.8 Turbo 95W \$1107	+25% <sup>1</sup>	E5-2660 v2 10C 2.2 base/3.0 Turbo 95W \$1389
Standard	E5-2640 6C 2.5 base/3.0 Turbo 95W \$885	+21% <sup>1</sup>	E5-2650 v2 8C 2.6 base/3.4 Turbo 95W \$1166
	E5-2630 6C 2.3 base/ 2.8 Turbo 95W \$612	+11% <sup>1</sup>	E5-2640 v2 8C 2.0 base/2.5 Turbo 95W \$885
	E5-2620 6C 2.0 base/ 2.5 Turbo 95W \$406	+12% <sup>1</sup>	E5-2630 v2 6C 2.6 base/3.1 Turbo 95W \$612
Basic	E5-2609 4C 2.4 base 80W \$294	+4% <sup>1</sup>	E5-2620 v2 6C 2.1 base/2.6 Turbo 95W \$406
	E5-2603 4C 1.8 base 80W \$198	+10% <sup>1</sup>	E5-2609 v2 4C 2.5 base 80W \$294
		+2% <sup>1</sup>	E5-2603 v2 4C 1.8 base 80W \$202

Higher gen-to-gen performance in Advanced

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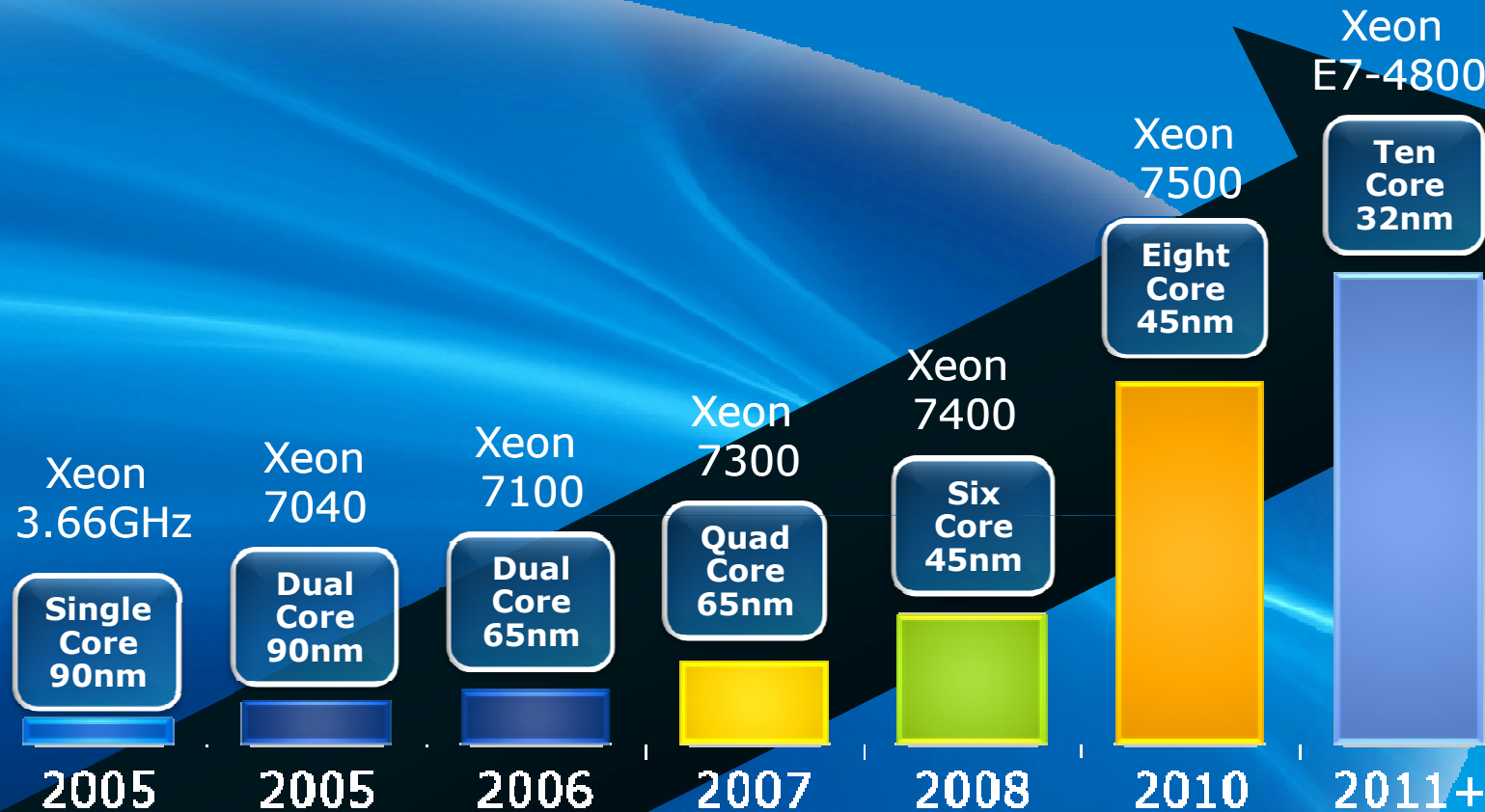


1. Performance increase based on SPECint\_rate\_base2006 Estimates. Configuration details in back up  
For more information go to <http://www.intel.com/performance>

Note: Frequencies quotes as GHz, Turbo is max 1C frequency  
**INTEL CONFIDENTIAL**



# Intel® Xeon® Processor Historical Performance



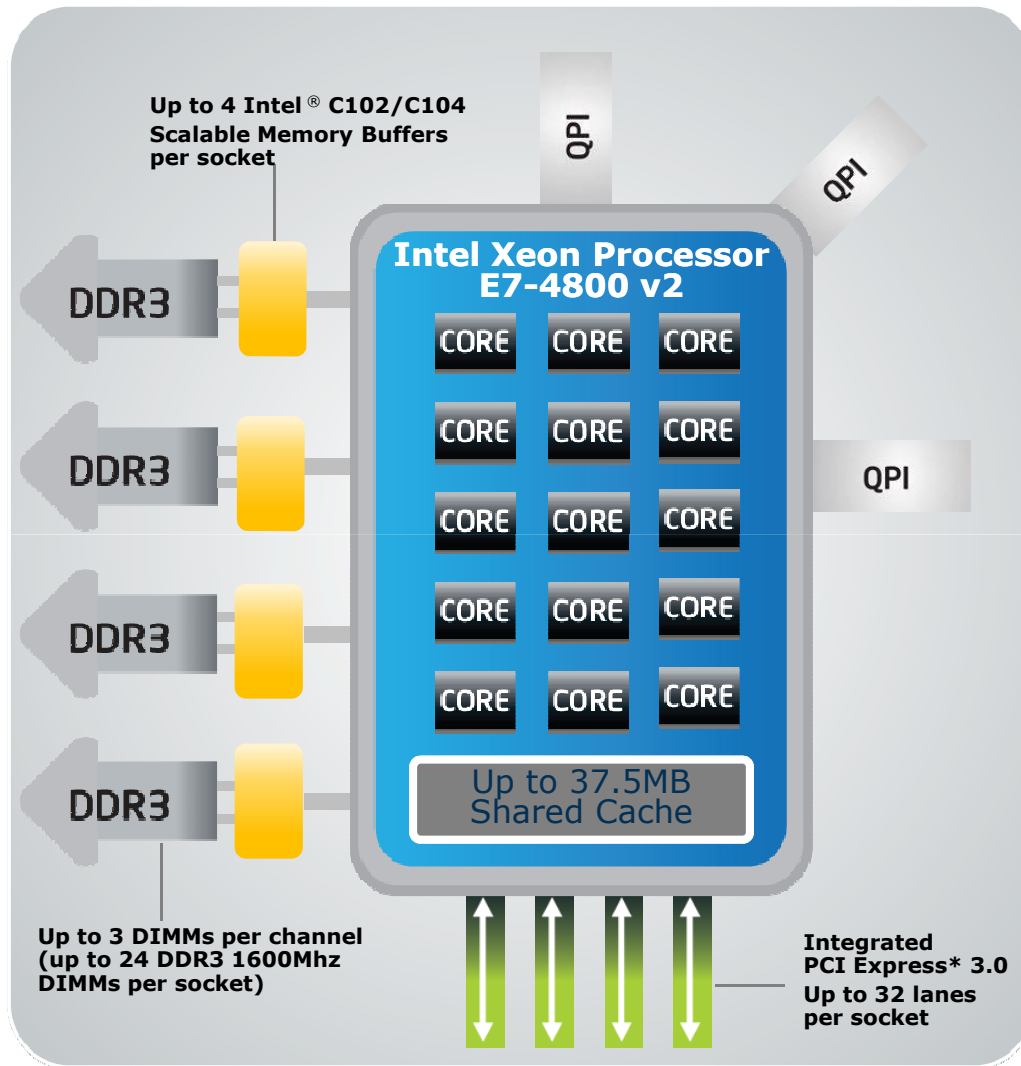
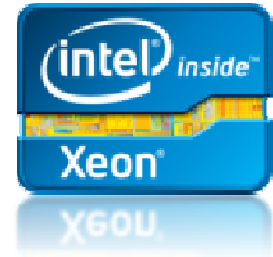
## 20x Increase in Database Performance since 2005

Source: Intel internal OLTP database workload performance estimates as of 8 May 2012. Results have been estimated based on internal Intel analysis and are provided for informational purposes only. Any difference in system hardware or software design or configuration may affect actual performance.

- 2005 Xeon 3.66GHz = 64-bit Intel® Xeon® Processor 3.66 GHz, 1M Cache, 667 MHz FSB
- 2005 Xeon 7041 = Intel® Xeon® Processor 7040 (4M Cache, 3.00 GHz, 667 MHz FSB)
- 2006 Xeon 7100 = Intel® Xeon® Processor 7140M (16M Cache, 3.40 GHz, 800 MHz FSB)
- 2007 Xeon 7300 = Intel® Xeon® Processor X7350 (8M Cache, 2.93 GHz, 1066 MHz FSB)
- 2008 Xeon 7400 = Intel® Xeon® Processor X7460 (16M Cache, 2.66 GHz, 1066 MHz FSB)
- 2010 Xeon 7500 = Intel® Xeon® Processor X7560 (24M Cache, 2.26 GHz, 6.40 GT/s Intel® QPI)
- 2011 Xeon E7-4800 = Intel® Xeon® Processor E7-4870 (30M Cache, 2.40 GHz, 6.40 GT/s Intel® QPI)

4-socket / MP processor-based servers  
Relative transactions per given time  
Higher is better

# Intel® Xeon® processor E7-8800/4800/2800 v2 Product Families



50% more cores and 25% more cache for increased performance

New Advanced Reliability features for improved system uptime and data integrity

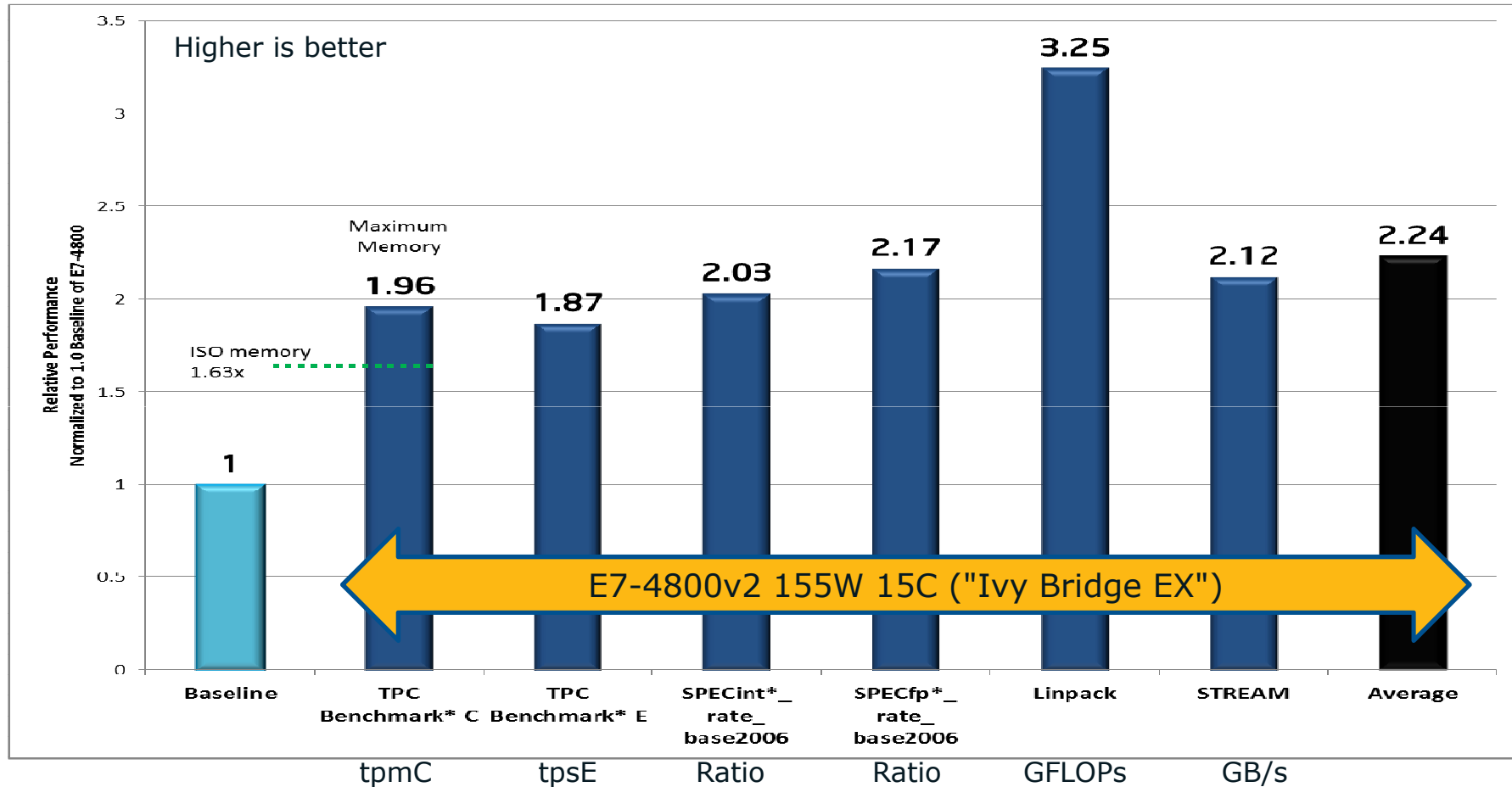
Highest memory capacity for data-demanding, transaction-intensive workloads

Improved security with Intel® Secure Key & Intel® OS Guard for additional HW embedded security

\* Other names and brands may be claimed as the property of others  
 All products, computer systems, dates and figures specified are preliminary based on current expectations, and are subject to change without notice. Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.. Optimized Intel® HD Graphics P3000 only available on select models of the Intel® Xeon® processor E3 family. To learn more about Intel Xeon processors for workstation visit [www.intel.com/go/workstation](http://www.intel.com/go/workstation).



# Top-Bin Relative Performance Projections Intel® Xeon® Processor E7-4800 v2 Product Family



Relative performance improvements compared to 4-socket server using Intel® Xeon® processor E7-4870. Source: Intel SPP JET projections Q2'13 (TPC C/E) and PVE early measurements as of 28 Mar 2013.

Projected: Results have been simulated and are provided for informational purposes only. Results were derived using simulations run on an architecture simulator or model. Any difference in system hardware or software design or configuration may affect actual performance. 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. See backup for configurations.

# What if Moore Law is applied to Automotive Industry ?

1971 – **130 KMH**  
2012 – **518,000 KMH**

Velocity

1971 – **11 KM/Litre**  
2012 – **55,000 KM/Litre**

Energy Efficiency

1971 – **\$2,500.00**  
2013 – **\$0.05**

Cost



Intel Confidential



# Intel® Xeon® Processor Family Positioning Maps

	Product	Lead Headline	Lead Message	Positioning
<p><b>Scalable Enterprise</b> Mission Critical Computing Cloud Computing HPC</p>	Intel® Xeon® Processor E7 Family	Top-of-the-line processors for your most critical business needs	Top-of-the-line Intel® Xeon® processor E7 family is designed for your most critical business needs.	High performance servers with the most advanced reliability features that power IT's most demanding mission critical applications.
<p><b>Mainstream Enterprise</b> Cloud Computing HPC Workstation</p>	Intel® Xeon® Processor E5 Family	Versatile processors at the heart of your flexible, efficient data center..	The Intel® Xeon® processor E5 family is at the heart of a flexible and efficient data center that meets your diverse needs.	The best combination of performance, built-in capabilities, and cost-effectiveness for IT's diverse needs.
<p><b>Small Business</b> Entry Level Workstation</p>	Intel® Xeon® Processor E3 Family	A smart investment for managing your small business	Intel® Xeon® processor E3-based servers are a smart investment to help you manage your small business better.	Dependable, intelligent performance that provides small businesses with built-in headroom for growth in a server designed to operate 24/7

Increasing capability

*Mission critical DB, biz analytics, ERP*

### **E7-2/4/8800 Product Family**

IBM System x3850 X5 and x3950 X5  
Top-of-the-line performance, scalability,  
and reliability

### **E5-4600 Product Family**

IBM System x3750 M4  
Density and Cost-optimized  
4-socket Platforms

*Virtualization, Cloud, HPC*

### **E5-2600 Product Family**

IBM System x3650 M4  
Best combination of performance,  
power efficiency, and cost

*IT infrastructure, Web, Email*

### **E3-1200 Product Family**

IBM System x3250 M4  
Economical and more dependable  
vs. desktop

*Low cost for multi-purpose for SMBs  
Low-end web hosting, simple content delivery*

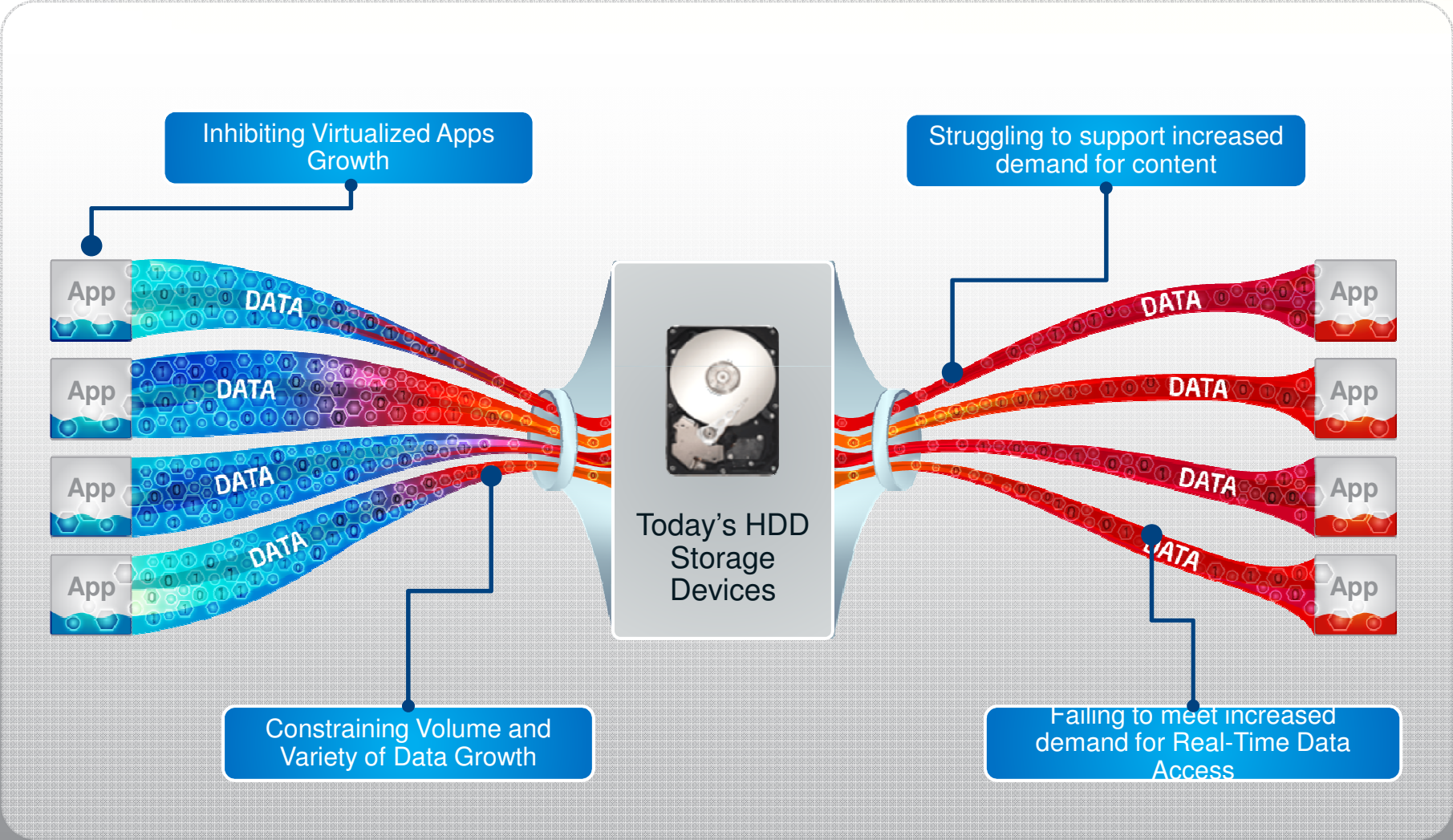
### **E5-2400 Product Family**

IBM System x3630 M4  
Density and Cost-optimized  
2-socket Platforms

# Today's Performance Bottleneck

High Latencies, Slow I/O Create a Bottleneck

Industry factors

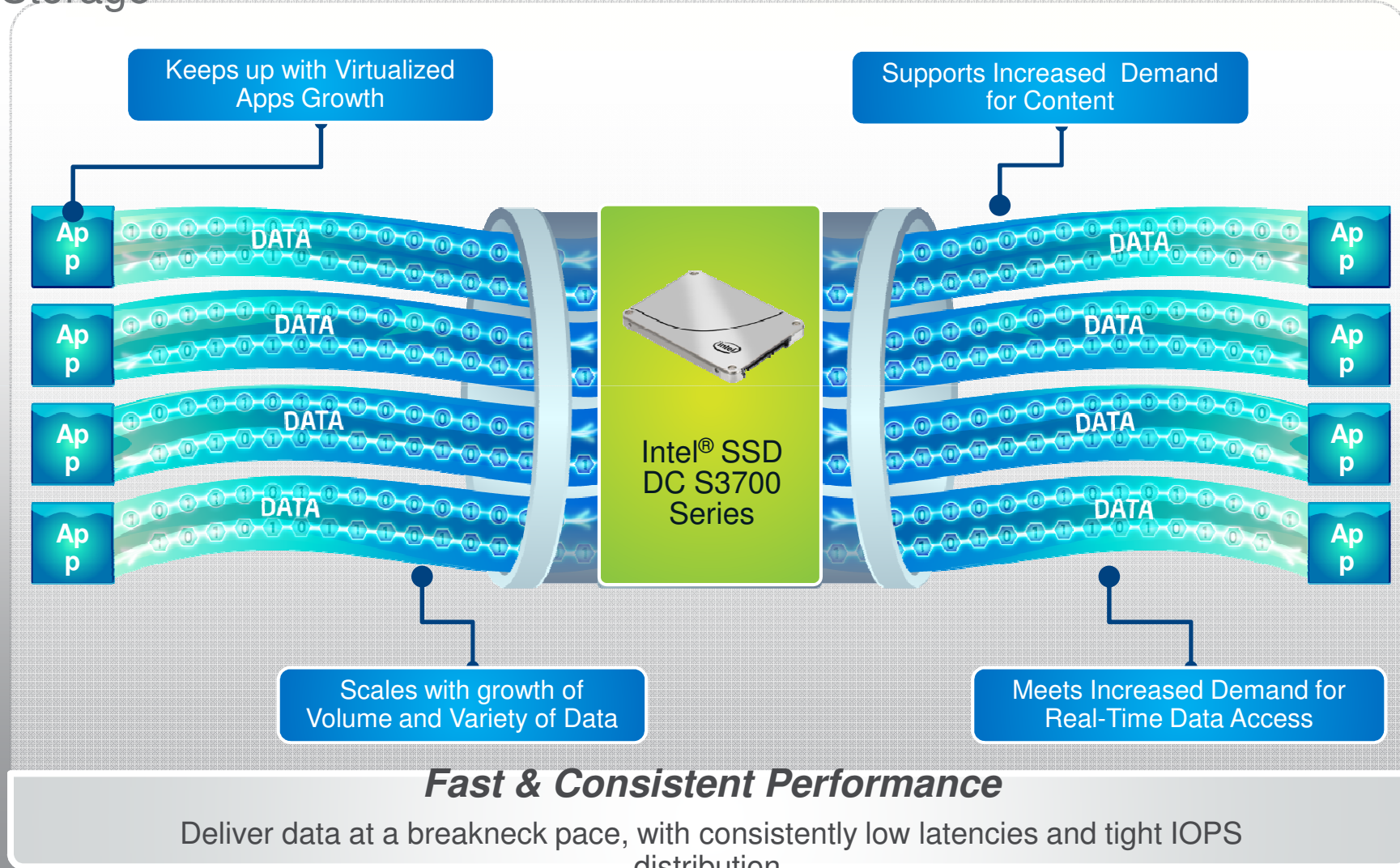




# Remove Your Storage Bottlenecks

Industry factors

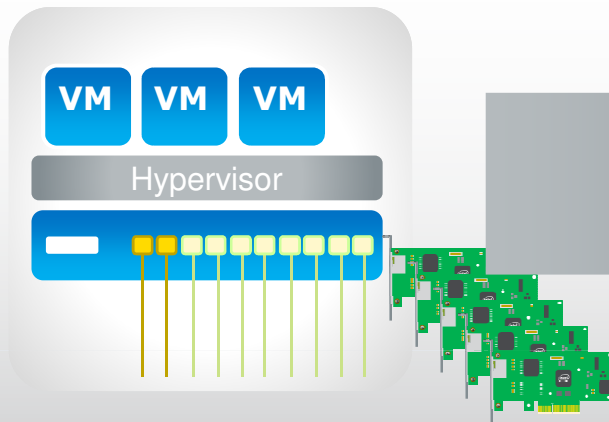
## Intel® SSD DC S3700 Series Gives Applications Full Access to Your Storage



# Intel® Ethernet Converged Network Adapters

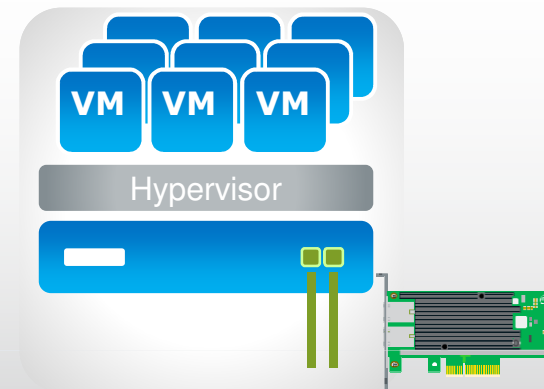
*Simplify the transition from 1GbE to 10GbE*

## 1GbE Network Connections



10 Ports 1GbE

## Unified 10GbE Network Connections



2 Ports 10GbE



**Reduction**  
in Cables & Switch ports



**Reduction**  
in Infrastructure Costs



**Improved**  
Bandwidth per Server

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>

1. Intel 10GbE ROI Calculator. <http://www.event-management-online.de/LAD/calculator.aspx>

# Applying “Tick-Tock” and Intel Technologies to Hadoop

Shown to improve 1 Terabyte sort from 4 hours to 7 minutes

>4 hours

Intel® Xeon  
5690  
7200 HDD  
1GbE Adapter

Intel®  
Xeon®  
E5-2690  
processor

~50%  
improved

Intel® SSD  
520 Series

~80%  
improved

Intel®  
10GbE  
Adapters

~50%  
improved

Intel® Distribution for  
Apache Hadoop\*  
software

~40%  
improved

~7 minutes

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Source: Intel Internal testing  
For more information go to [intel.com/performance](http://intel.com/performance)

Other brands and names are the property of their respective owners



# Key Industry Trends

*Increasing requirements meet fixed budget realities*

## Escalating Demands

By 2015...

**More Users**



>1 billion more netizens<sup>1</sup>

**More Devices**



15 billion connected devices<sup>2</sup>

**More Data**



>1,000 exabytes Internet traffic<sup>3</sup>

## Compounding Challenges

**Security**

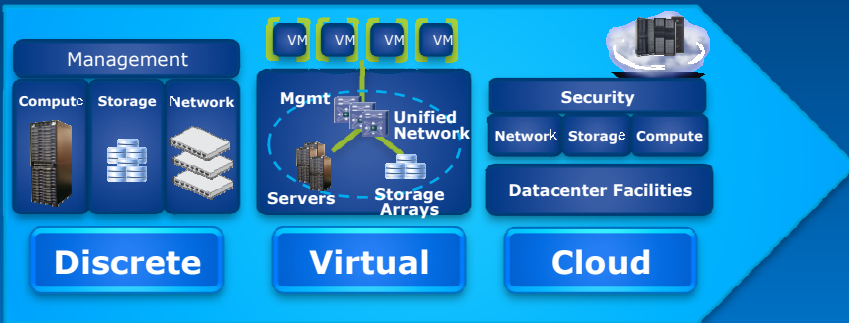
**Storage**

**Mission Critical Availability**

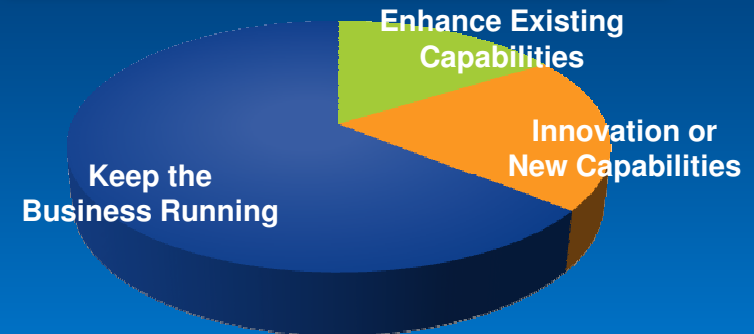
**Networking**

**Power & Space Limitations**

## Diverse Environments



## IT Spending Pressures<sup>4</sup>



**IT Industry is at a Great Inflection Point**

1. IDC "Server Workloads Forecast" 2009. 2.IDC "The Internet Reaches Late Adolescence" Dec 2009, extrapolation by Intel for 2015  
 2. ECG "Worldwide Device Estimates Year 2020 - Intel One Smart Network Work" forecast  
 3. Source: [http://www.cisco.com/assets/cdc\\_content\\_elements/networking\\_solutions/service\\_provider/visual\\_networking\\_ip\\_traffic\\_chart.html](http://www.cisco.com/assets/cdc_content_elements/networking_solutions/service_provider/visual_networking_ip_traffic_chart.html) extrapolated to 2015  
 4. Source: Gartner IT Key Metrics Data 2010



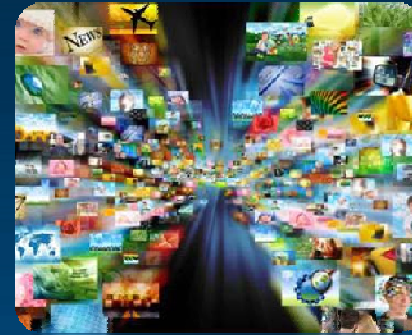
# Intel in the Next Generation Data Center

## CLOUD



Technology Innovation  
& Solutions

## BIG DATA



Analytic Solutions  
and Successes

## SECURITY



Reliable & Available

## HPC

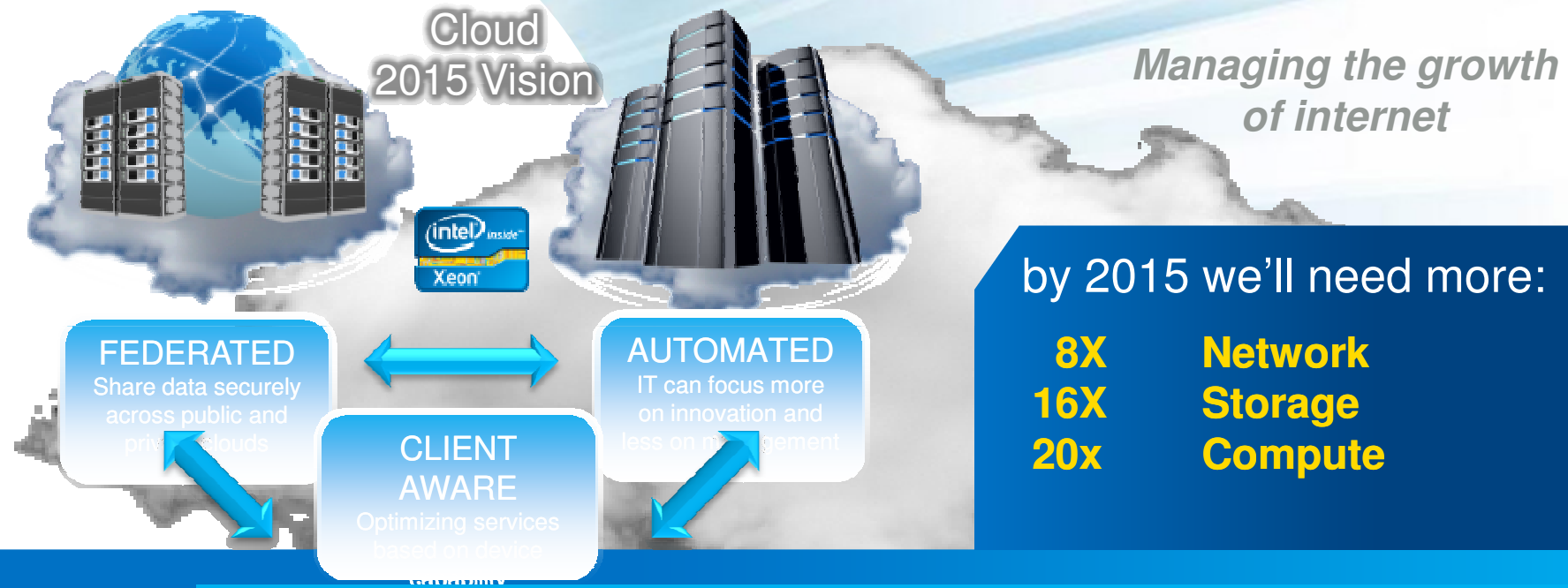


Parallelism



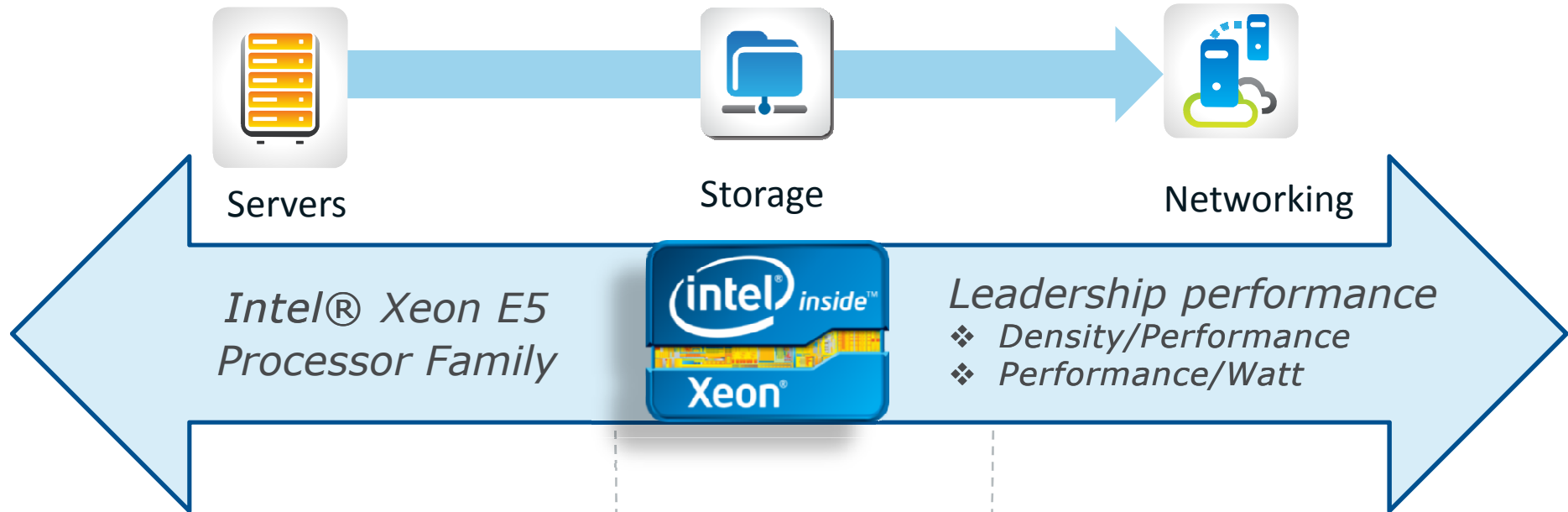
# Cloud Computing

providing service to billions of connected devices through  
Private , Public , Hybrid Cloud



# Intel's Versatile Building Blocks for the Open Cloud

## Scalable Resource Pools



### Key Xeon Value Added Features:

- ✓ Embedded Security:
  - TXT, AES-NI
- ✓ Efficient Data Center:
  - Node Manager / DCM

### Intel® SSD Series

- ✓ Highest write perf & endurance
- ✓ Server & storage apps

### Intel® Ethernet X540

- ✓ 1st Integrated 10GBASE-T
- ✓ Advanced I/O Virtualization & Unified Networking

# Big Data : Volume, Velocity, Variety, Value

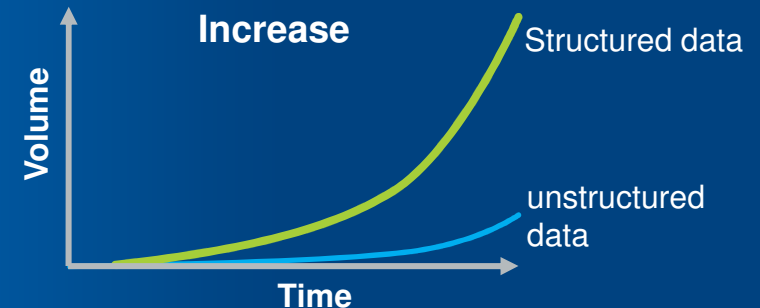
Big Corporate Data + Big Web Data + Big Sensor Data  
=  
Potential gold mine of value currently “locked”

**20 PB** = HDD capacity in **1995**

**39,000 PB** = Structured data in **2011**

**226,000 PB** = Unstructured data in **2015**

**Corporations  
will have to deal  
with 50x more  
data by 2020**

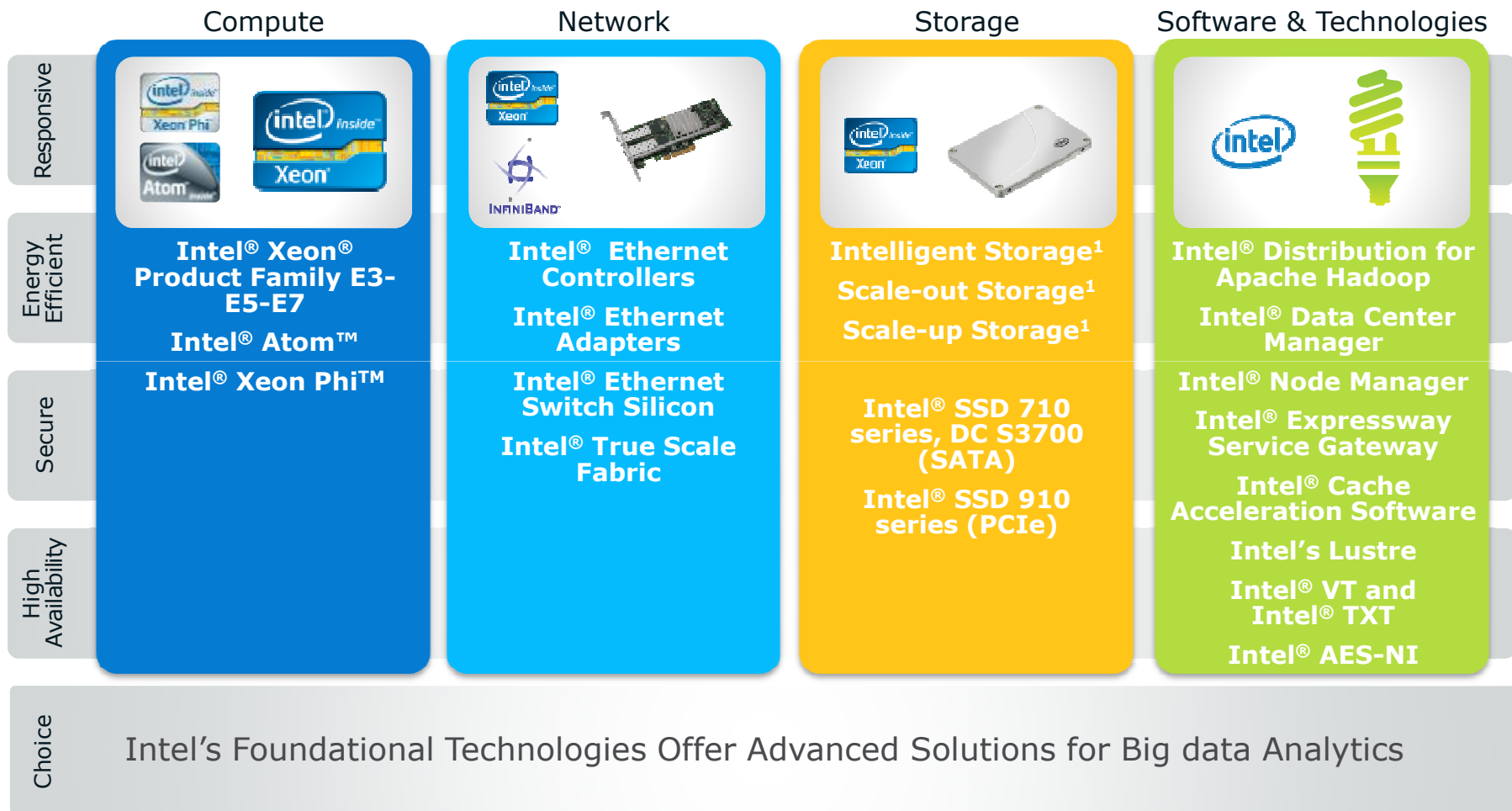


Business Analytics will be a  
**COMPETITIVE DIFFERENTIATOR**



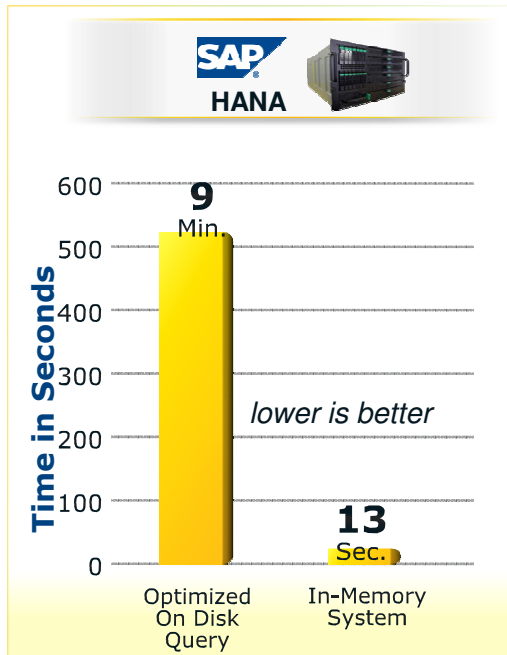
# Big Data – A Foundation For Delivering Big Value

## Big Data Building Blocks



Xeon-based storage systems are available in a wide range of configuration options from the industry's leading storage vendors

# HANA Revolutionizes SAP Decision Making



## SAP HANA

- Appliance offered on Intel® Xeon® processor 7500 from key OEM's\*
- Instant response times to real-time events

*"Intel and SAP, through joint engineering, have optimized SAP HANA...enabling greater business agility and innovative usage models that let customers respond to changing conditions in real time."*

## - Press Announcement, December 2010

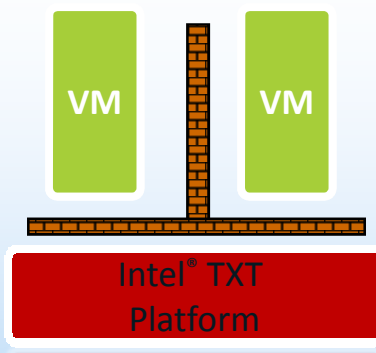
Source: SAP HANA Benchmark Study

- SAP In-Memory Appliance (SAP HANA™) delivers SAP In-Memory Computing technology through an on going engineering collaboration between SAP and Intel.
- Optimized performance and reliability on Intel® Xeon® Processor E7 Family.
- Instant access to huge volumes of data
- Lets you model your business in a rapidly changing, competitive environment
- Certified on IBM x3850 & x3950

\*Note: E7 family 1.37x faster

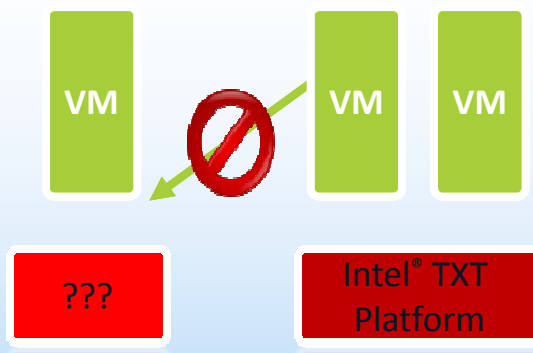


# Security



## Isolate

Intel® VT & Intel® TXT **protects VM** isolation and provides a more secure platform launch



## Enforce

Intel® TXT establishes "trusted" status, foundation to **control migration** based on security policy



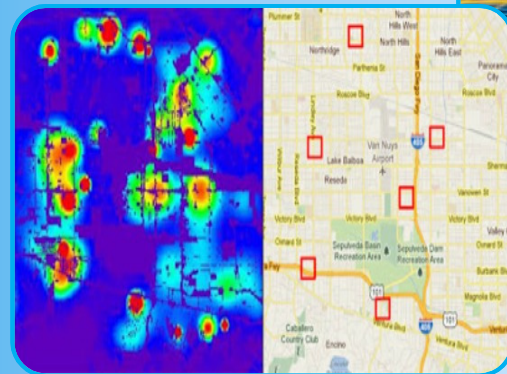
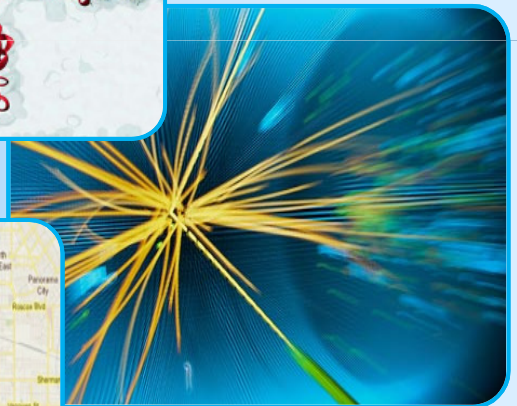
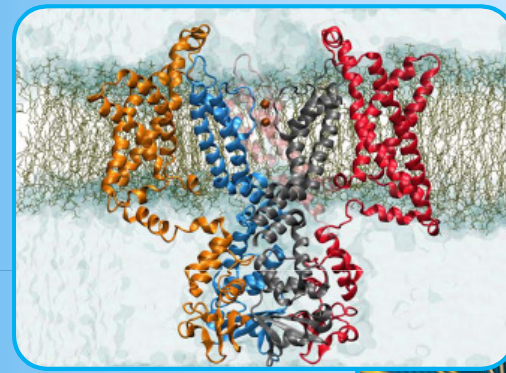
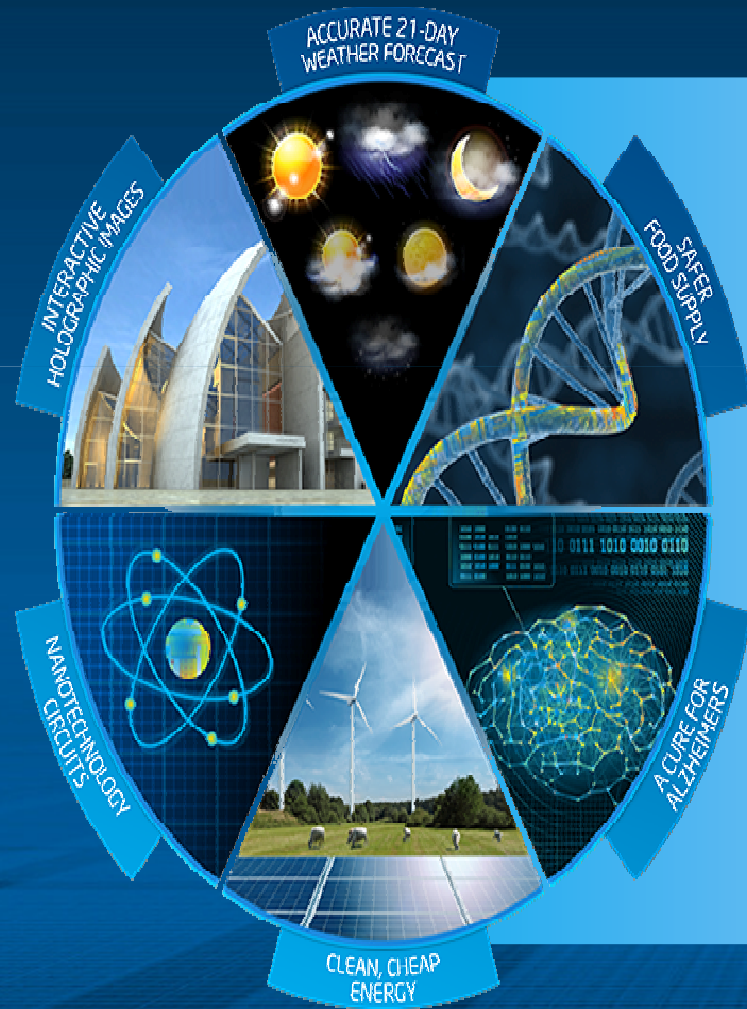
## Encrypt

Intel® AES-NI delivers built-in encryption acceleration for **better data protection**



# High Performance Computing

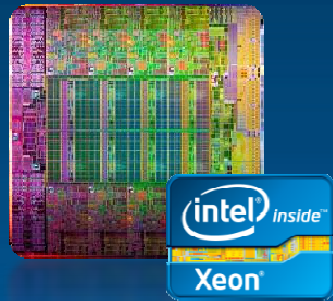
Uncharted Territory on Path to Discovery  
In Science and Engineering



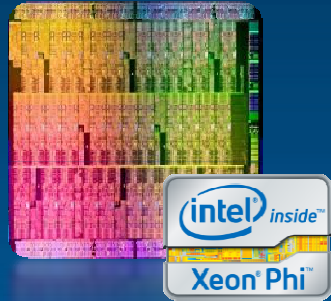
# Intel's Assets for HPC

## Processors

Intel® Xeon® Processor Intel® Many Integrated Core



## Co-Processor



## Intel Fabrics



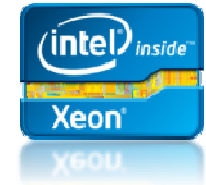
## Software & Services



## Intel Storage



## Intel & IBM Systems are optimized by design



### Jointly developed and optimized hardware and software:

- Jointly developed all x86 servers for Intel Xeon Processor's
- Jointly developed Integrated v7000 storage for Intel Xeon Processor's
- Jointly developed FSM for Intel Xeon Processor's
- x86 hypervisor's have been tuned for Intel Xeon Processor's
- IBM WebSphere has been jointly optimized for Intel Xeon Processor's for the last 15 years
- DB2 has been jointly optimized for Intel Xeon Processor's for the last 15 years


# Joint Sales & Marketing Programs



**Example: online advertising**

**IBM Express Servers and Storage for midsize Businesses**

Introducing the new IBM System x3650 M4 Express server

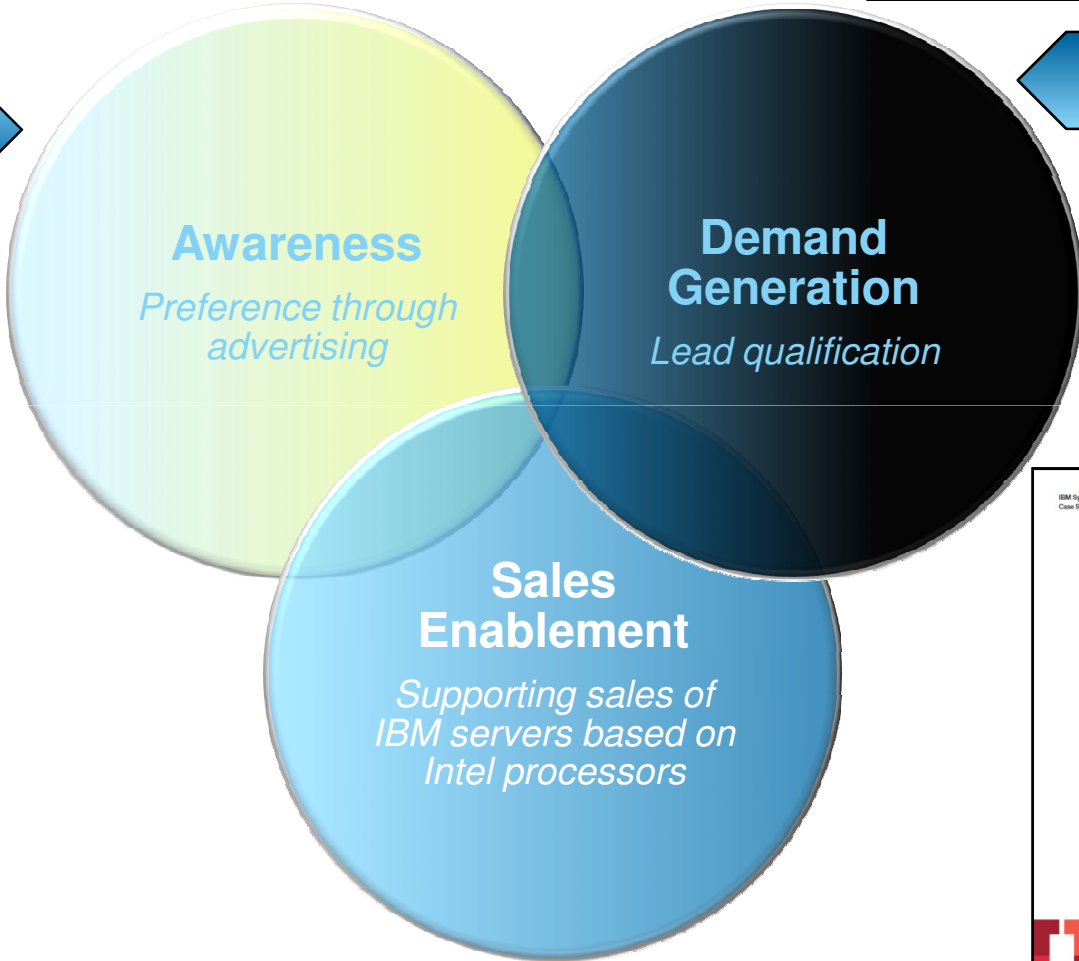


The new IBM System x3650 M4 Express server with the latest Intel® Xeon® processor E5-2600 series has higher performance and capabilities to support your business-critical solutions.

The x3650 M4 can offer:

- Industry-leading reliability<sup>1</sup>
- Up to 80% higher processing power<sup>2</sup>, 4 times more memory<sup>3</sup> and higher networking bandwidth<sup>4</sup>
- Integrated management with remote access capabilities and security
- IBM Business Partner support to help you address increasing IT infrastructure demands

The new IBM System x servers enable solutions to help you achieve a better future, faster. [Learn more](#)



**Example: event sponsorship**

IBM Systems and Technology Case Study Education

**Cardinal Research Cluster takes flight at University of Louisville**

*With a high-performance IBM System x iDataPlex solution*

**Overview**

**The need**  
The University of Louisville needed to expand its existing, centralized, high-performance computing cluster to help faculty and students conduct a wider variety of computationally demanding research.


**The solution**  
The school implemented 200 IBM System x iDataPlex 3650 class servers with Intel® Xeon® processors, IBM System x networking switches, IBM Storwize and IBM IBM System Storage DS3500 storage devices.

**The benefits**  
The IBM solution doubles the capacity of the school's supercomputing cluster, delivers peak speeds of 40 teraflops, and provides a flexible platform to drive advanced research and future innovation.

**Not having a supercomputing resource meant academic departments had to build or find their own computing nodes, explains Mike Dyer, director of research computing at the University of Louisville.**

**"A researcher who didn't have funding basically had nothing but a desktop PC, so perhaps something in the department to use for doing research," says Dyer. "We had a very success implementation in the research, and that's why we established a centralized computer that's fairly large and accessible to everyone."**

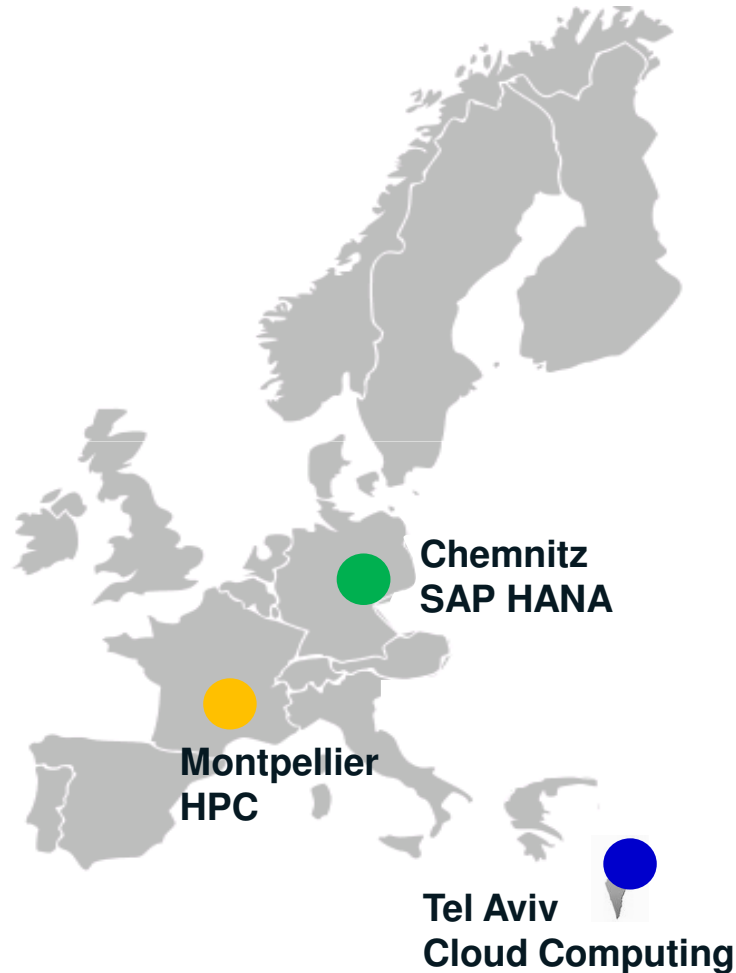
**A supercomputer built on IBM solutions, in two phases**  
The university initially tapped federal grants to implement the school's first centralized and secure high-performance computing center in 2005, says Hancock. Incorporating 312 IBM System x iDataPlex 3650 nodes,



**Example: Case studies**

## IBM & Intel Joint Centre's of Excellence

### *Accelerating our Growth Initiates*



#### ● **Cloud Computing**

- Accelerate cloud computing adoption across EMEA by demonstrating and then proving out our joint capabilities
- Develop co-branded IBM & Intel case studies
- F2F or remote access for client events or ISV application enablement and optimization

#### ● **High Performance Computing**

- Benchmark and optimize HPC applications to enable us to win mid sized to top 500 opportunities across EMEA
- Support IBM, Platform Computing and the HPC Top Partner Program by hosting marketing events, training and technology demonstrations remotely or in the briefing center

#### ● **Analytics – SAP HANA**

- Shorten the time to deployment for SAP HANA across EMEA by demonstrating and then proving customer USE CASE's in a briefing centre hosted at SAP Walldorf
- Develop co-branded IBM & Intel case studies
- Option to team with Global Services for Integration
- Remote Access or Local POC options





# IBM Connected 2013

Her Deneyim Bir Kazanım

Thank you very much



Q&A

#connected

