

A network graphic with a light blue background and a complex web of thin blue lines connecting various portrait photos of people. The photos are of diverse individuals, mostly of Asian descent, in various professional and casual settings. The central text is in a bold, blue, sans-serif font.

IDF2011

INTEL DEVELOPER FORUM



Kirk B. Skaugen

Vice President, Intel Architecture Group
General Manager, Data Center Group
INTEL CORPORATION

Delivering the COMPUTE CONTINUUM



Desktops



Laptops



Netbooks



Tablets



Smartphones



Smart TVs



Embedded



英特尔
酷睿 i7 博锐™



英特尔 酷睿 i5



英特尔 酷睿 i3



英特尔 凌动™



The
**COMPUTING
EXPLOSION**
and the Need for Open Data Centers

A world map with a dark blue background, overlaid with a glowing network of data points and lines representing internet traffic. The map is centered on the Atlantic Ocean, with North and South America on the left and Europe and Africa on the right. The text is overlaid on the map.

Total Data Crossing the Internet ...

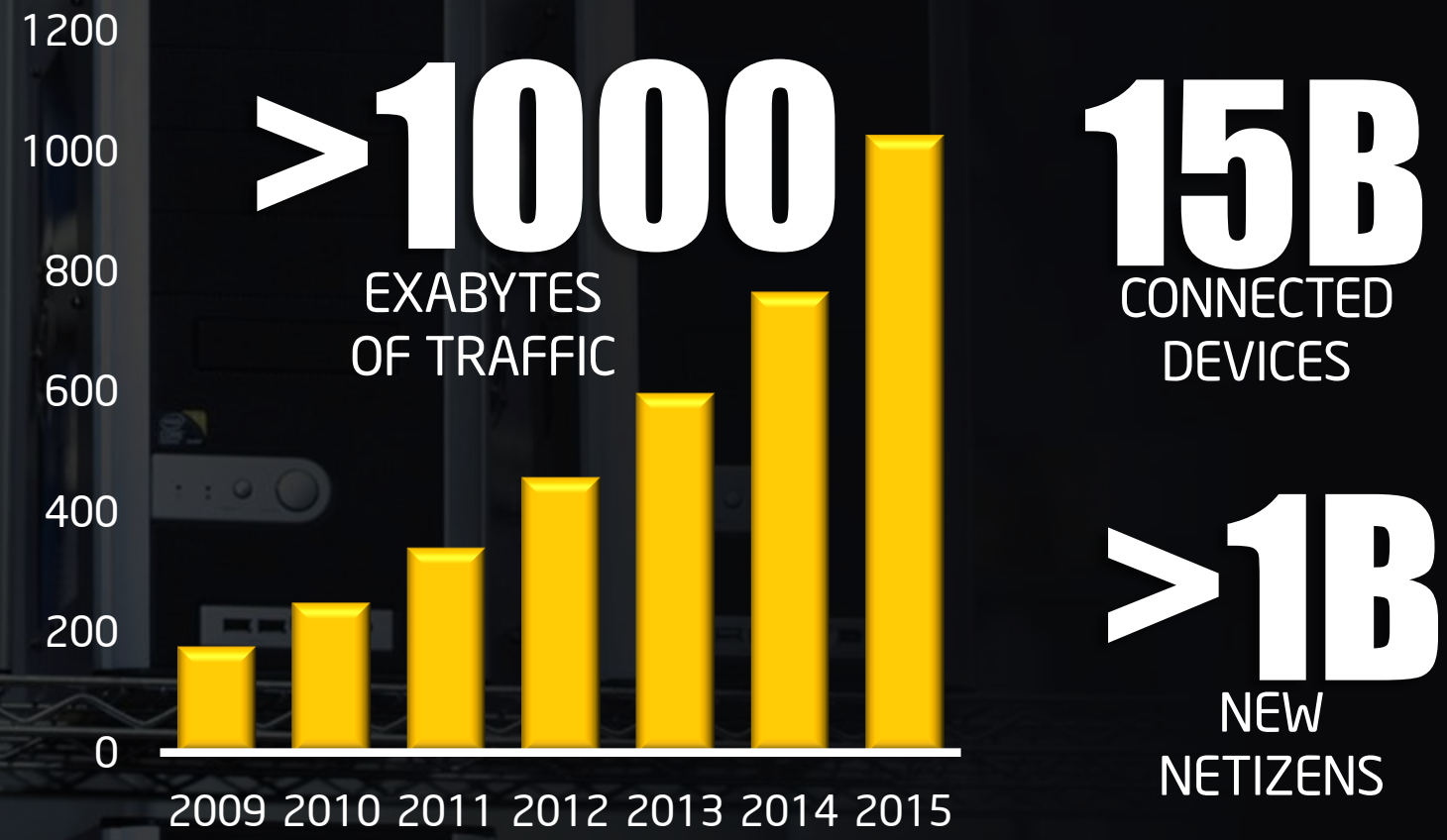
150 EXABYTES Through 2009

245 EXABYTES In 2010 Alone



2015

More users, more devices, more **traffic** ...



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 extrapolated to 2015



Is the Infrastructure Ready?

In The Last 5 Years Alone:

20x Performance/Watt

1/2 Platform Idle Power

15:1 Consolidation

We Have Made Tremendous Progress...

Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit [Intel Performance Benchmark Limitations](#)

5000x faster & 100,000x cheaper from Intel's 4004 introduced in 1971 compared to the 32nm Westmere where chip speed has gone up by 5000x and transistors have become 100,000x cheaper adjusted for inflation (Intel TMG Sept 2010). See back up foils for performance and power comparison .

CLOUD COMPUTING

Transforming the Economics
of Computing and Services



\$25B

Savings in IT Spending
In 2015



45

Gigawatts Savings
In 2015



\$100B

In Industry Services
Through 2015



Intel's Cloud 2015 Vision



FEDERATED
Share data securely
across public and
private clouds



英特尔 至强™

AUTOMATED
IT can focus more on
innovation and less on
management

CLIENT AWARE
Optimizing services based
on device capability



Desktops



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英特尔 酷睿 i7 博锐™



英特尔 酷睿 i5

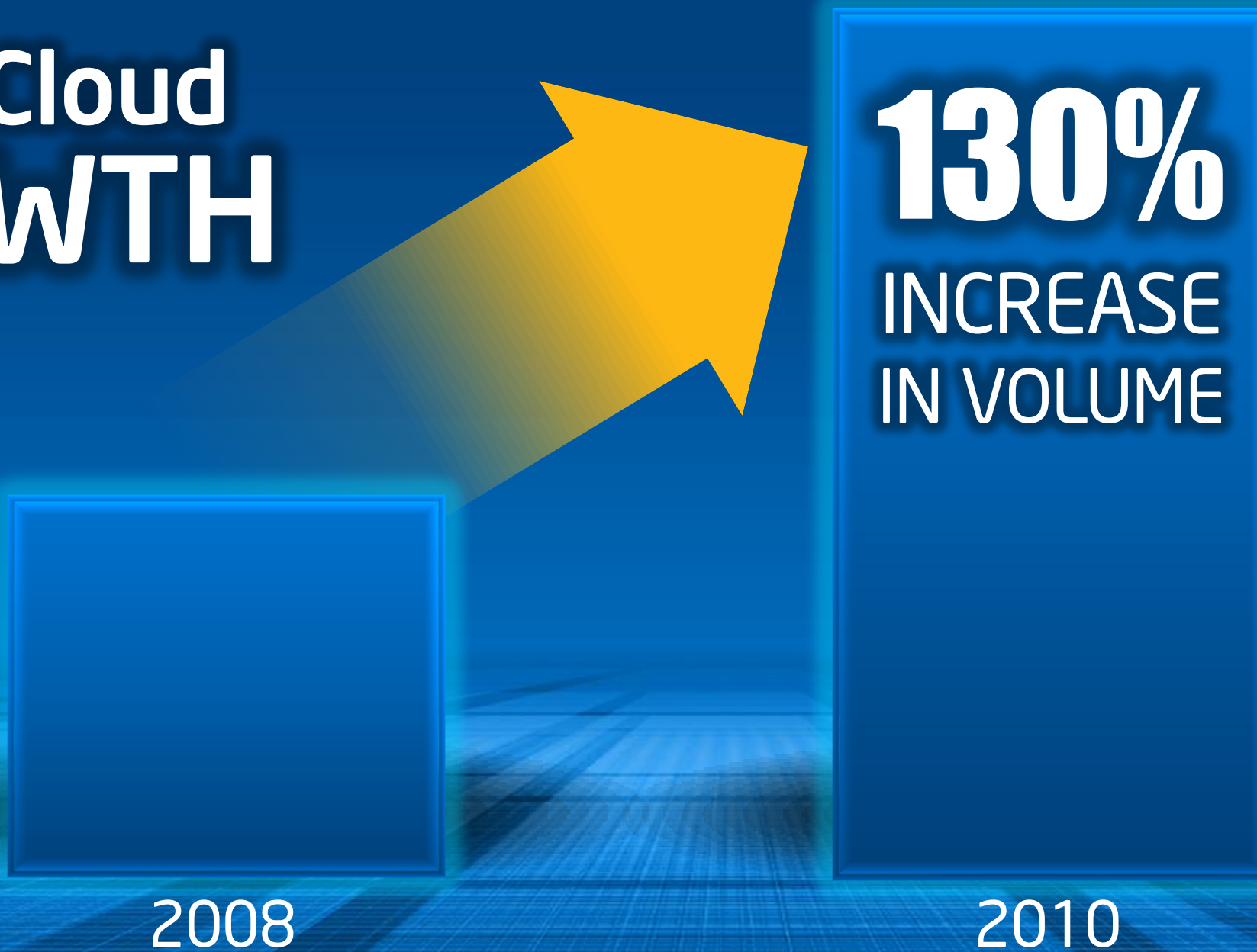


英特尔 酷睿 i3



英特尔 凌动™

Intel Cloud GROWTH



2008

2010

Source: Intel Shipments

Catalyst for CHANGE

1990

TODAY



Open & Interoperable Solutions Essential

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



Boliang Liu
General Manager of IT
China Unicom



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The Role of the Open Data Center Alliance



Enable delivery of cloud and data center solutions that meet the challenges facing data centers today and tomorrow, support solution development in an **open**, **industry-standard** and **multi-vendor** fashion, and aid in deploying solutions through **member usage** of the **Alliance Roadmap**.

Create

Unified voice for data center requirements

Deliver

Requirements Roadmap to and with industry

Commit

Roadmap to guide internal IT deployments

>150 Global IT Leaders and Growing

Steering Committee



Contributing Members



Adopter Members



Intel Serves as Technical Advisor to the Alliance

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Today's Announcement

OPEN DATA CENTER ALLIANCE

New Solution Provider Membership Category Launches

- Enabling Solution Providers to comment on the Alliance's Usage Model Roadmap during the development phase

China Workgroup Established

- Aimed at addressing the unique challenges facing data center innovation in China today
- Led by China Life and China Unicom Group

Intel® Cloud Builders

Solutions Available Today To Make It Easier To Build And Optimize Cloud Infrastructure

Build A Cloud:

HP ProLiant SL* & Enomaly Elastic Computing Platform
Huawei SingleCLOUD*
IBM* CloudBurst
Joyent SmartDataCenter
Microsoft System Center VM Manager Self-Service Portal 2.0*
Nimbula* Cloud Operating System & Nimbula Director*
Novell* Cloud Manager
Parallels* Elastic IT Solution Developer Cloud
Powerleader Power Rack Server* with Microsoft*
Red Hat* Cloud Foundations
Ubuntu Enterprise Cloud
Univa UD*
VMware VCloud* Director

Enhance A Cloud:

Balanced Compute Model with NetSuite & Gproxly Design
Cisco* Virtualized Multi-Tenant Data Center
Cloud Gateway Security on Intel Platforms
Cloud On-Boarding with Citrix OpenCloud*
Dell & VMware* Policy Based Power Management
EMC* Atmos* Scale-out Storage Usage Models
NetApp* Unified Storage and Networking
Parallels* Trusted Compute Pools for Cloud Computing
VMware Enhanced Server Platform Security

*Proven, Open, Interoperable Solutions
Optimized For IA Capabilities*

CANONICAL



CITRIX®

inspur 浪潮



EMC²
where information lives

enomaly
elastic computing

Eucalyptus
Systems



IBM

Joyent

Microsoft®

NetApp®

NETSUITE

nimbula

Novell.

Parallels®

宝德
PowerLeader



vmware®



lenovo

Neusoft®

*Easing Cloud Deployments via Proven,
Interoperable Solutions for IT*
www.intel.com/cloudbuilders

MICRO SERVERS

A New Density Option



Rack Server



Tower Server



Blade Server

Density Optimized

2 x Half Width Rack Server – 2 x Half Height Blade Server

Many small, 1-socket servers sharing a chassis, fans, and switching to achieve higher efficiency and density

DENSITY:

> 4X the servers per rack*

EFFICIENCY :

Fewer fans, power supplies*

FLEXIBILITY:

Full range Intel 1S processors



* Versus 1U rack servers in 40U rack, based on Intel estimates using front-access SSI standard modules

Innovation for the Cloud



>4500 CORES Delivered in 6 WEEKS





Intel's Cloud 2015 Vision



FEDERATED
Share data securely
across public and
private clouds



英特尔 至强™

AUTOMATED
IT can focus more on
innovation and less on
management

CLIENT AWARE
Optimizing services based
on device capability



Desktops



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Tablets



Smartphones



Smart TVs



Embedded



英特尔 酷睿 i7 博锐™



英特尔 酷睿 i5



英特尔 酷睿 i3



英特尔 凌动™

BEST EXPERIENCE

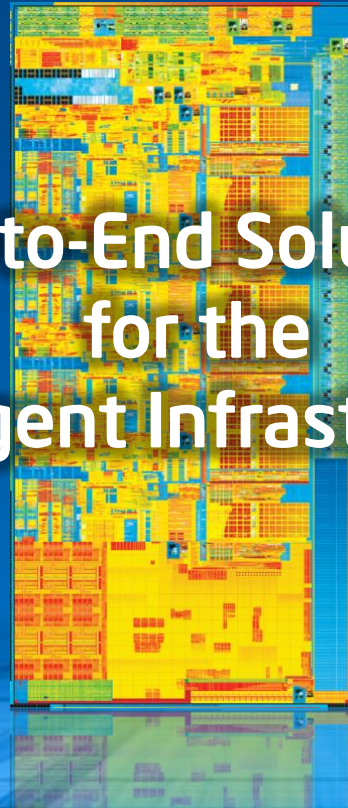
for the
Client-Aware Cloud



Intel Powers the INTELLIGENT INFRASTRUCTURE



End-to-End Solutions
for the
Intelligent Infrastructure



Hardware-Based Platform Enhancements for Energy
Efficient Performance, Security and Manageability

Workload Diversity Drives Need for **FLEXIBLE, INTELLIGENT CLIENTS**

Consume, Create and Collaborate

Consume and Communicate

"On the Go" Access and Communications



英特尔™
酷睿™ i7 博锐™

**Computing
Attributes**

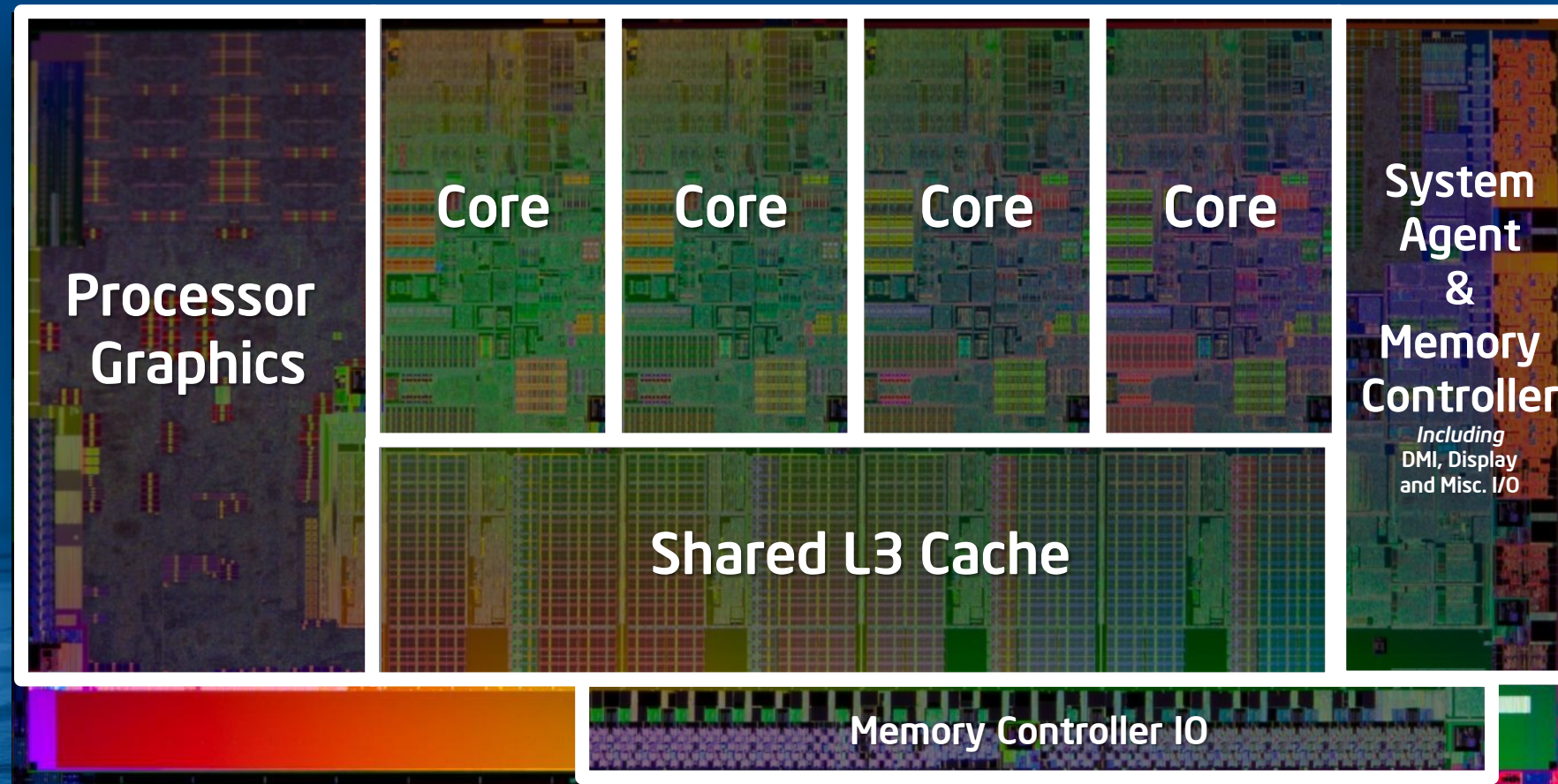


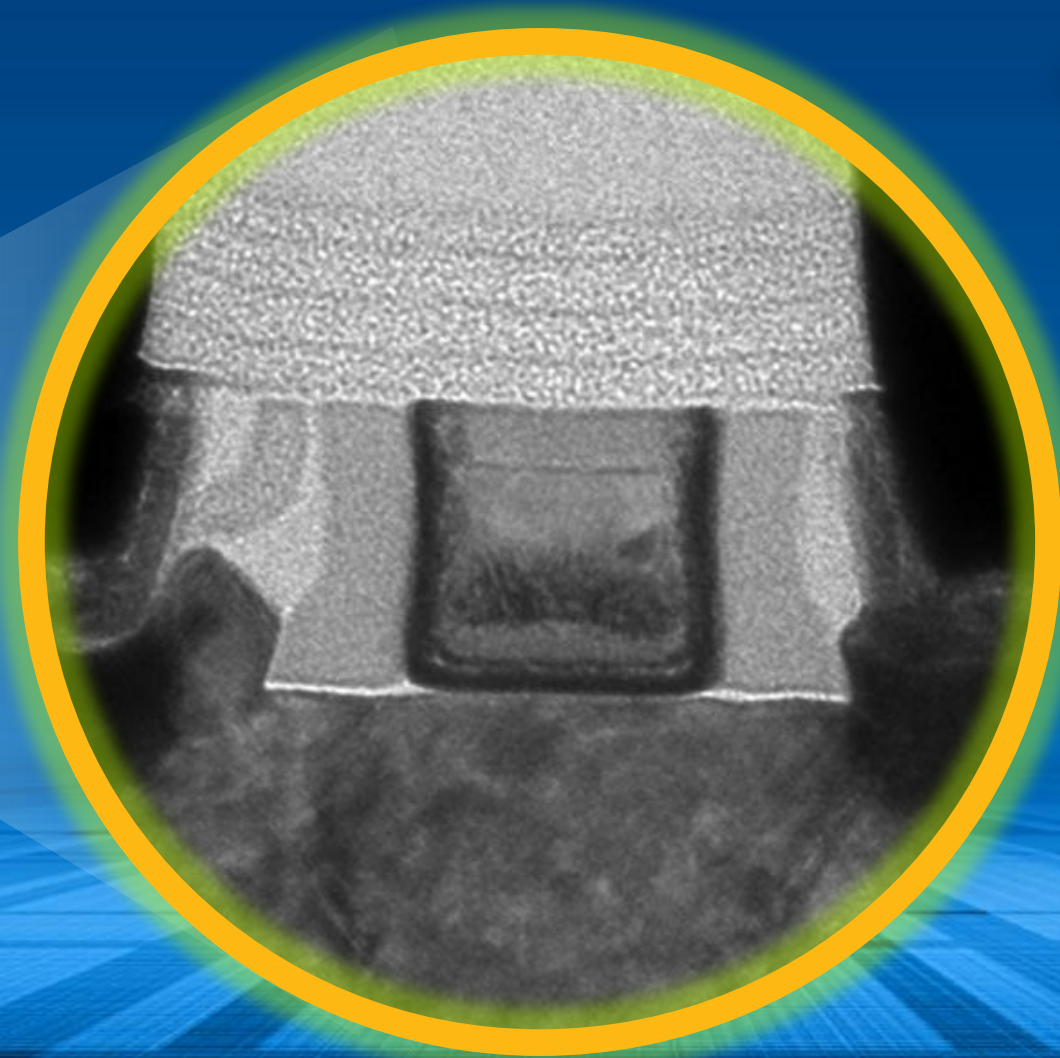
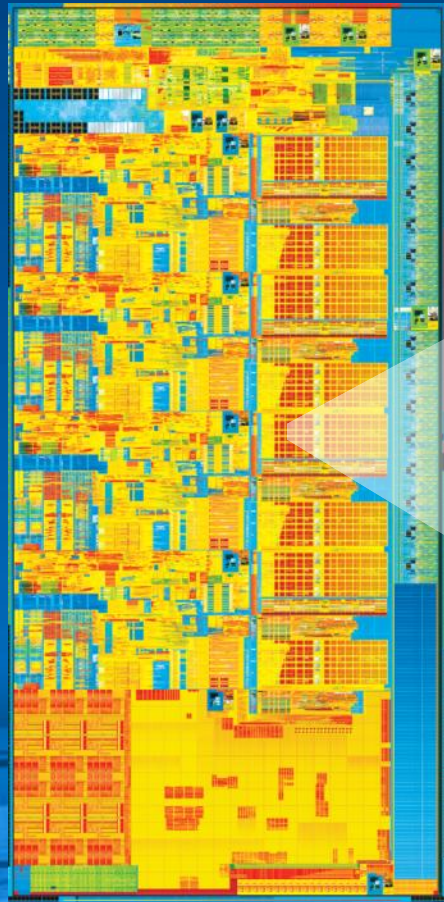
Context, Compute, Capabilities ... Using the Right Tools for the Job

Delivering a
**SECURE CLIENT AWARE
CLOUD SERVICE**
via the Intelligent Infrastructure



2nd Generation Intel® Core™ Processor MICROARCHITECTURE



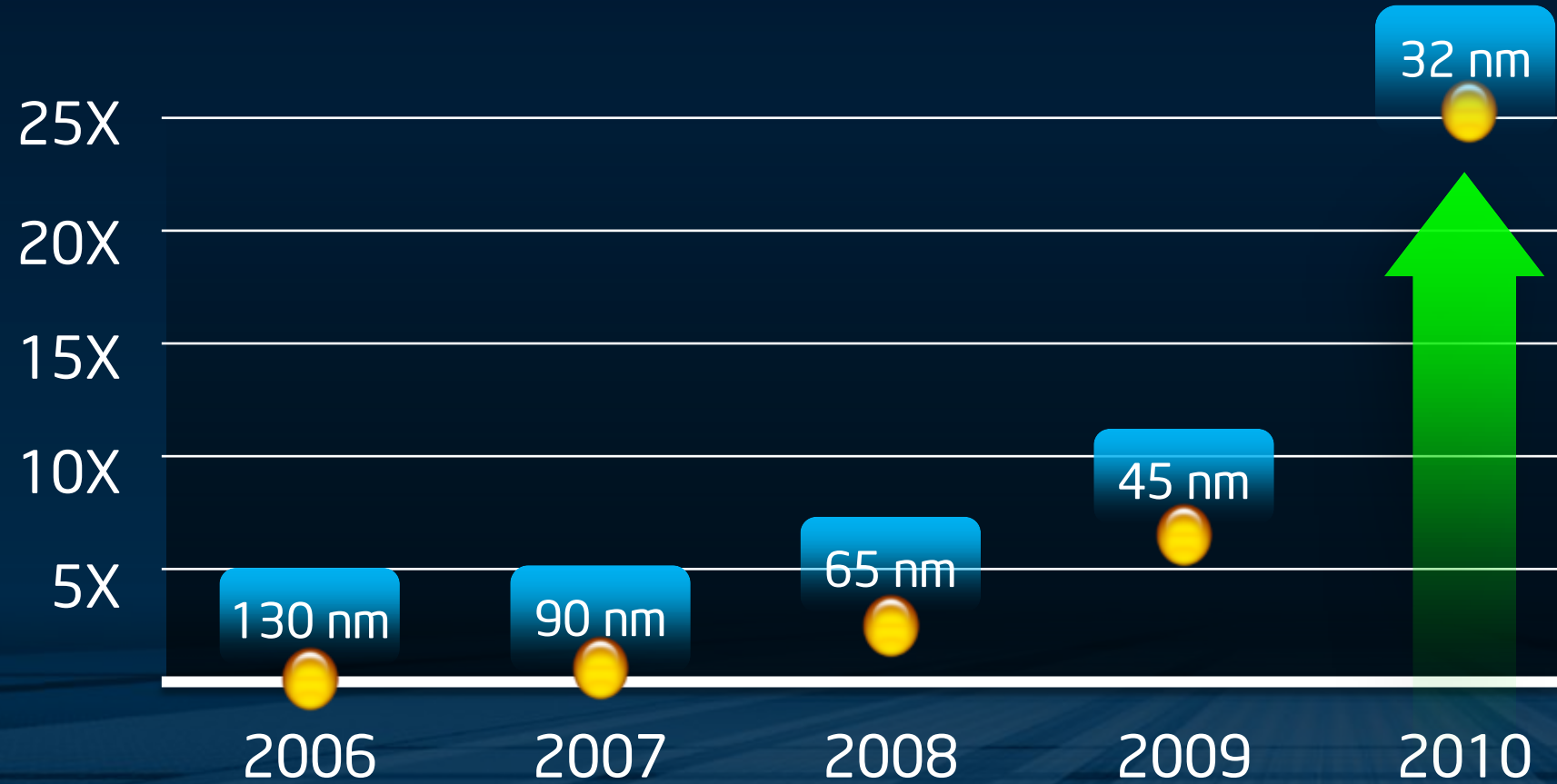


**1.16 Billion
TRANSISTORS**

**32nm
TRANSISTOR**

Processor Graphics **LEADERSHIP**

25X



Enhancing the User Experience with **BUILT-IN VISUALS**

Intel® Quick
Sync Video



Intel®
Insider



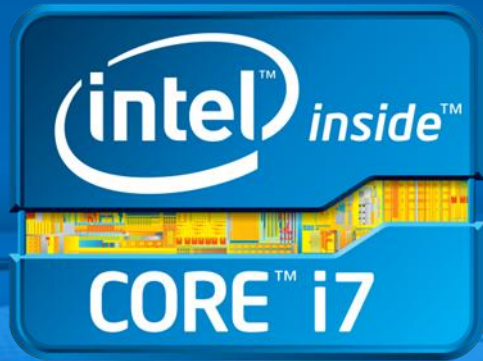
Intel®
WiDi



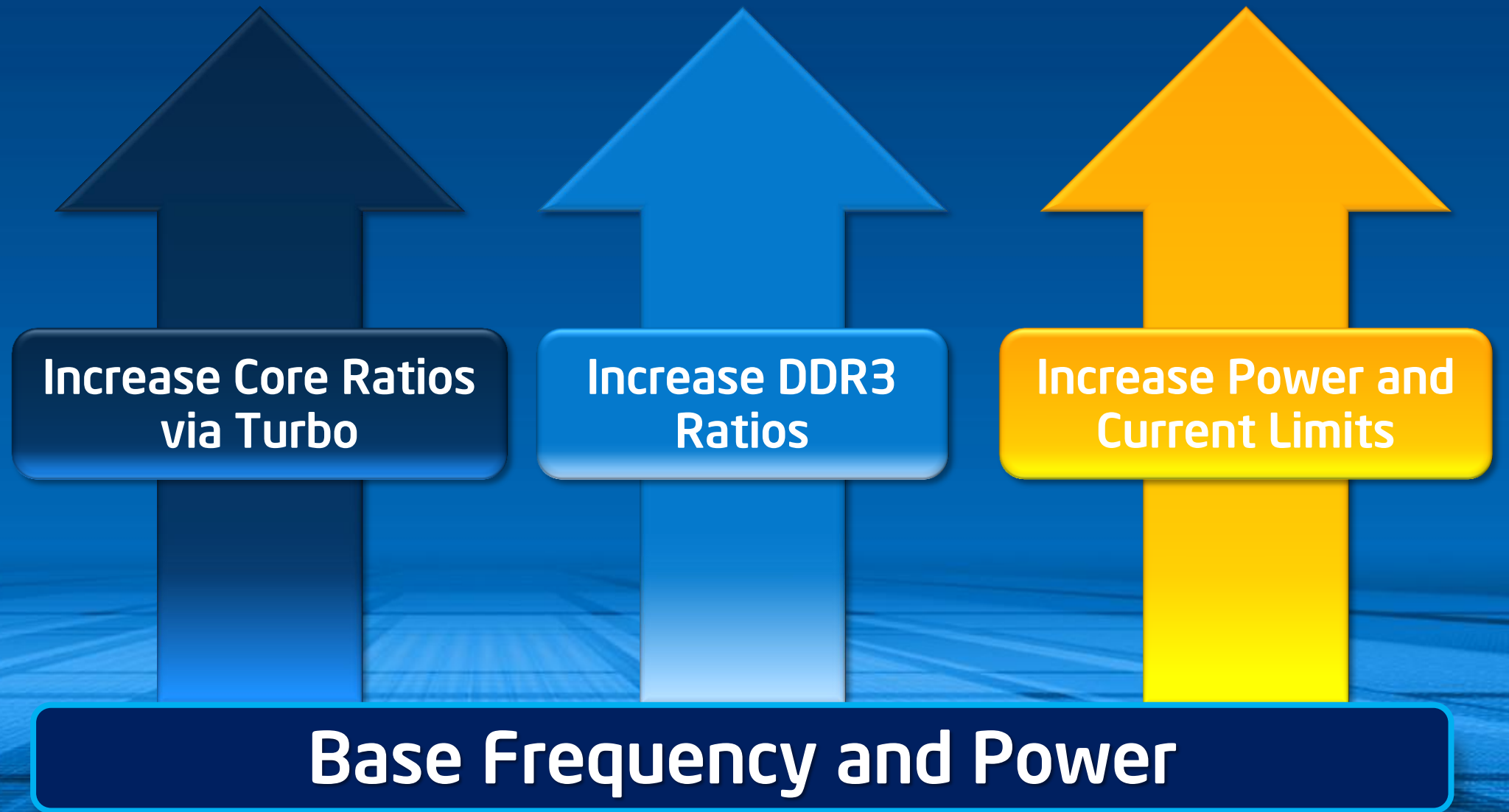
Processor GRAPHICS



UNLOCKED
processors deliver
the most
FLEXIBLE
overclocking experience!



英特尔™ 酷睿™ i7

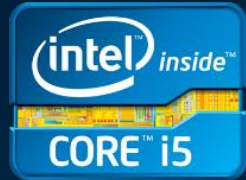


Optimizing Your BUSINESS

*Smart Performance
Brilliant Visuals*



英特尔™
酷睿™ i7 博锐™



英特尔™ 酷睿™ i5



英特尔™ 酷睿™ i3

*Workload-Optimized
Innovation Platforms*



英特尔™ 至强™

Intel® Xeon® Processor E3 1200 Family

Delivering a New
Professional 3D Graphics Capability



What a Leading 3D CAD ISV Has To Say ...



"The new Intel® Xeon® processor E3 1200 family with Intel® HD Graphics P3000 is the first time a processor with integrated graphics has ever passed our Real View certification. The solution will provide a richer 3D experience to more people both inside and outside the design departments."

Paul Chastell, Vice President of Engineering
Dassault Systèmes, SolidWorks Corp.





Performance ...
Simplicity ...
Flexibility.



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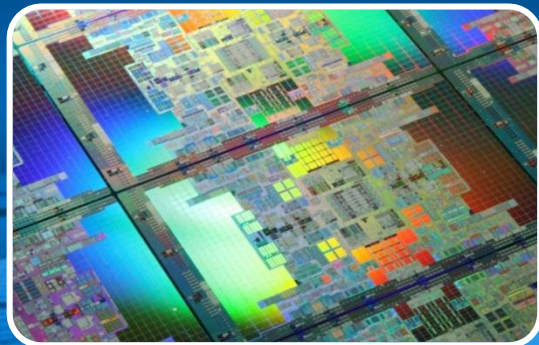
Insatiable Need For
COMPUTING
Will Continue to Drive
GROWTH
ACROSS THE
CONTINUUM



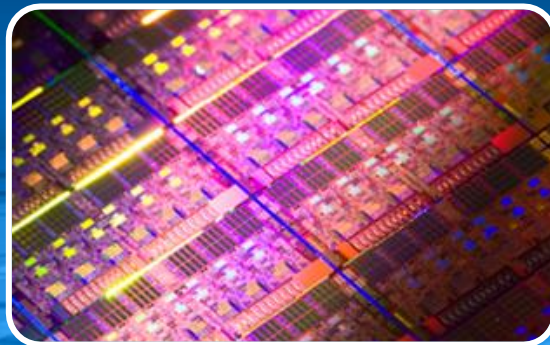
Complete Data Center PRODUCT REFRESH

Spanning a Diverse Set of Workloads

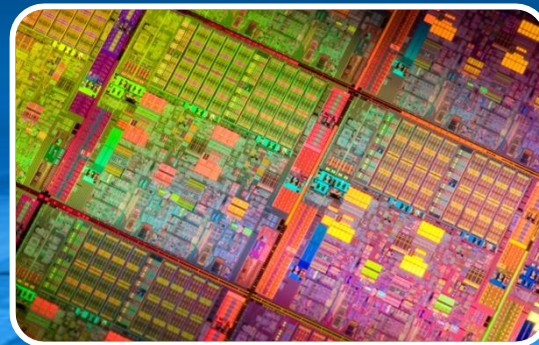
Xeon E3
(Bromolow)



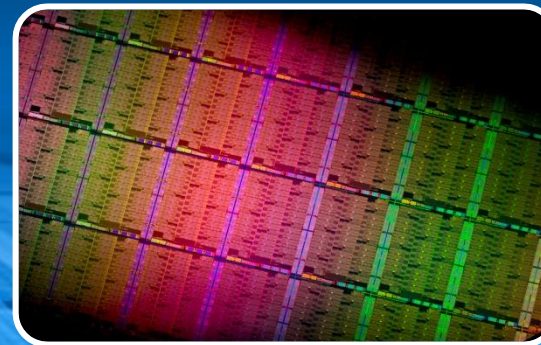
Xeon 5600
(Westmere EP refresh)



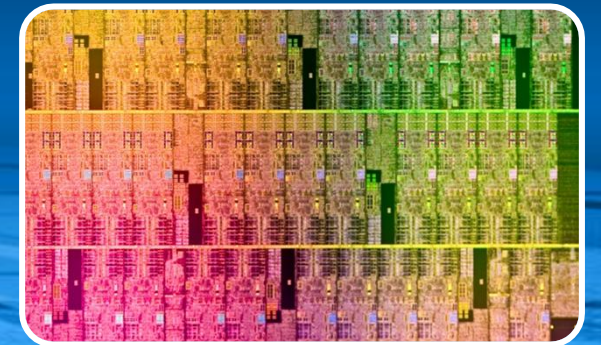
Xeon E7
(Westmere-EX)



Xeon E5
(Sandy Bridge-EP)

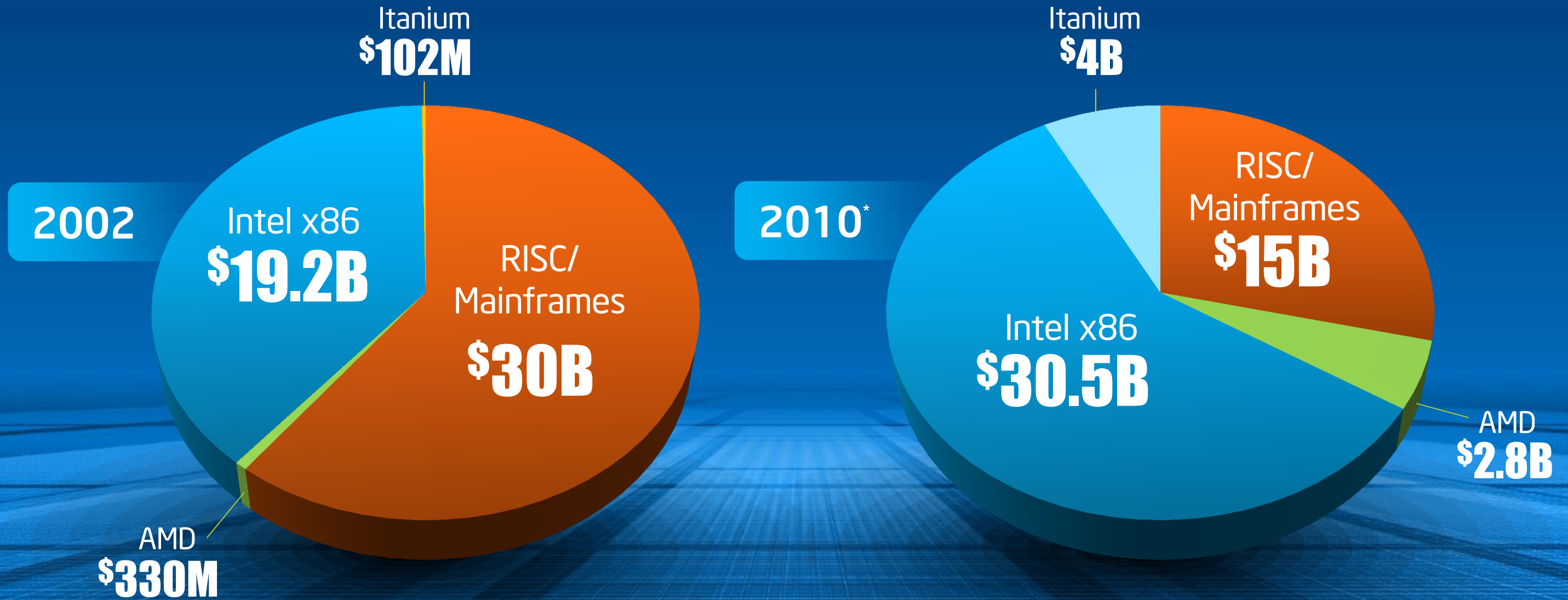


Knights Ferry
(MIC platform)



RISC MIGRATION

Transition to Standards-Based Computing



Source: IDC World Wide Server Tracker Q4'10

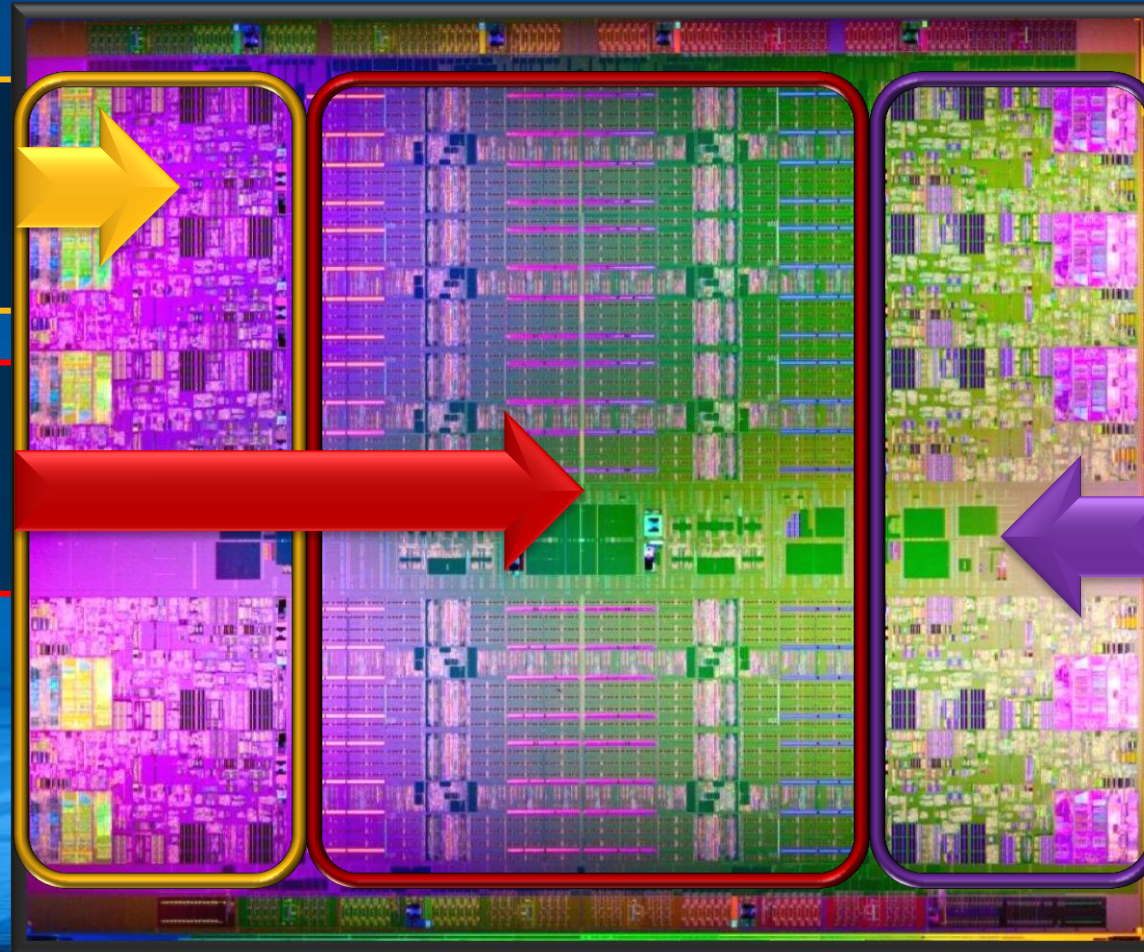
The Intel® Xeon® Processor E7 Family

Accelerating Mission-Critical Transformation

Up to 10 Cores and
20 Threads

30MB of Last
Level Cache

Up to 4 Terabytes of
DDR3 Memory¹ and Low
Voltage DIMM Support

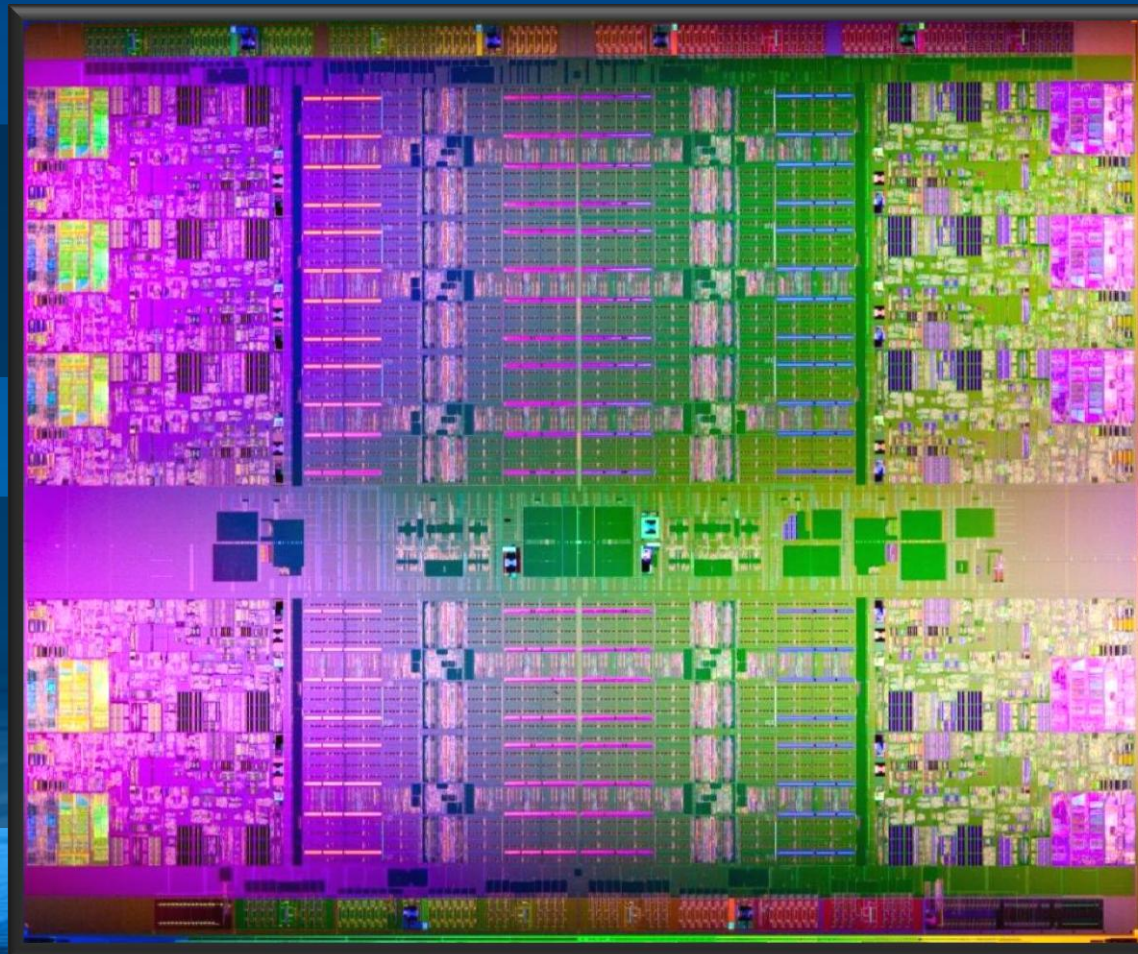


The Intel® Xeon® Processor E7 Family

Accelerating Mission-Critical Transformation

Broadest Mission
Critical Vendor Base

Advanced
Data Protection
and Reliability



16 New World Records
and Up to 40% Increase
vs. Xeon® 7500¹

World-Class
Economics

1 SPECint*_rate_base2006 benchmark comparing next generation Intel® Xeon® processor E7-4870 (30M cache, 2.40GHz, 6.40GT/s Intel® QPI) scoring 1,010 (includes Intel Compiler XE2011 improvements accounting for about 11% of the performance boost) to X7560 (24M cache, 2.26GHz, 6.40GT/s Intel QPI) scoring 723 (Intel Compiler 11.1). Source: Intel SSG TR#1131.

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.

Broadest Hardware Support

60 Designs on Xeon® E7 with 2S, 4S, 8S; Up to 256S Systems



Mission-Critical Common Platform Strategy



英特尔™ 安腾™



英特尔™ 至强™

Common Ingredients:

Chipset | Interconnects | Buffers | Memory



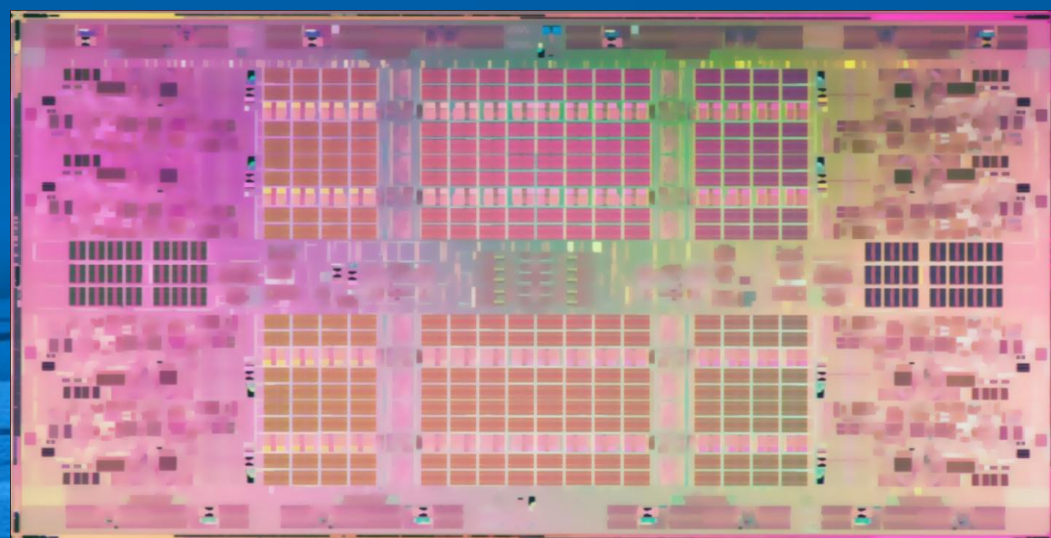
Choice For A New Era In Mission-Critical Computing



英特尔™ 安腾™

Poulson:

Most Significant Itanium®
Processor to Date



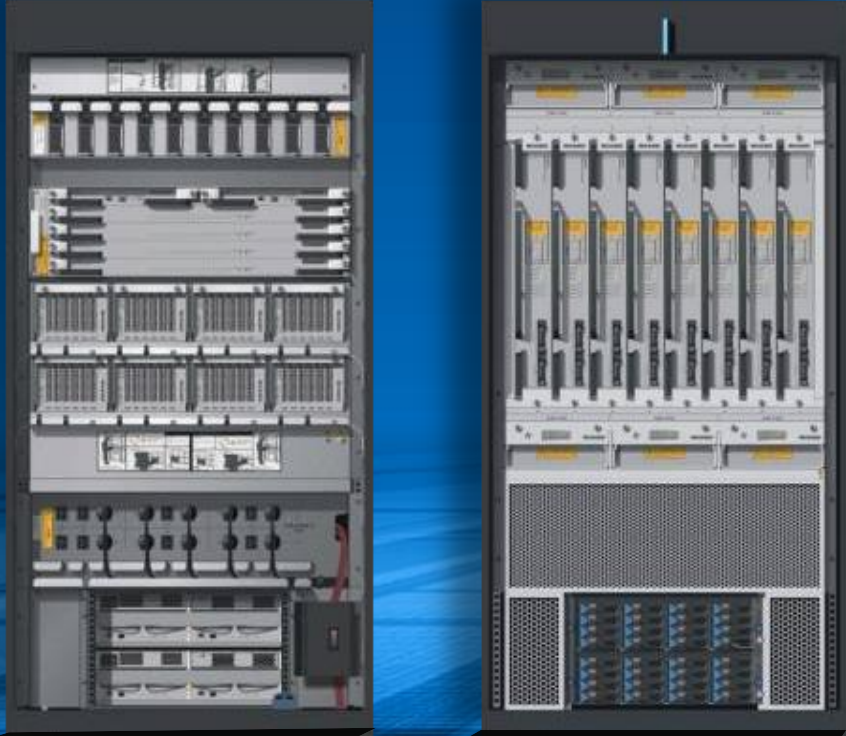
Targeted for 2012!

Highlights:

- New Architecture, 2x the Cores, 2x Instructions Throughput, 33% Higher Bandwidth, >2x Performance
- 3.1 Billion Transistors on 32nm Process
- Mainframe Reliability for Hardened UNIX Operating System Environments
- Leading UNIX Platform in the World
- Next Committed Itanium Follow-on: **Kittson**



32-Way Itanium[®] Fault-Tolerant Server

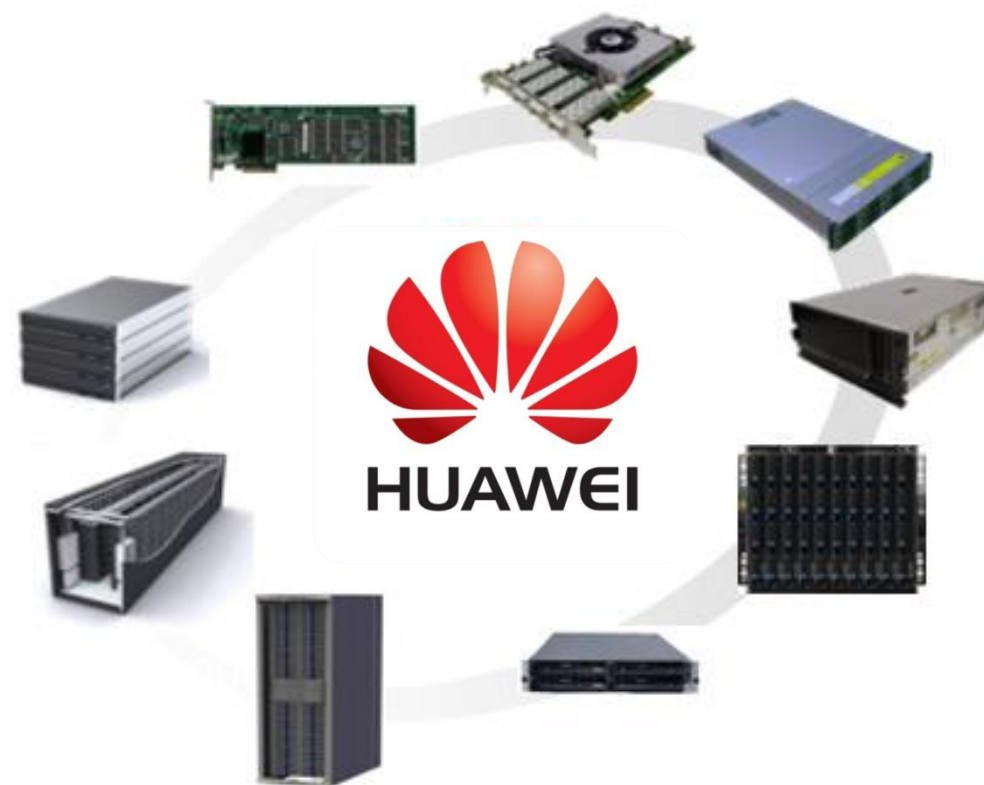


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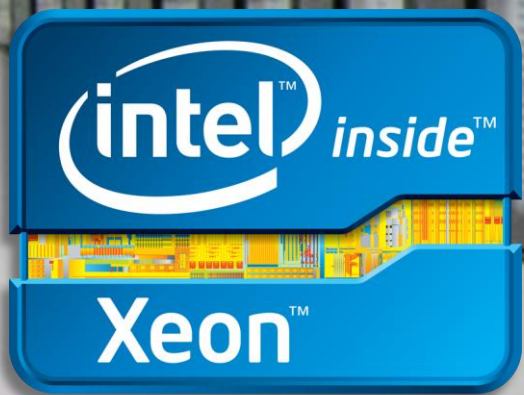


Innovation From
Mission-Critical
Servers To Rack-
Mount Servers

全系列产品 Full Series Products



TIANHE 1 A



英特尔™ 至强™

Powering The World's #1
SUPERCOMPUTER

And 4 of the Top 6

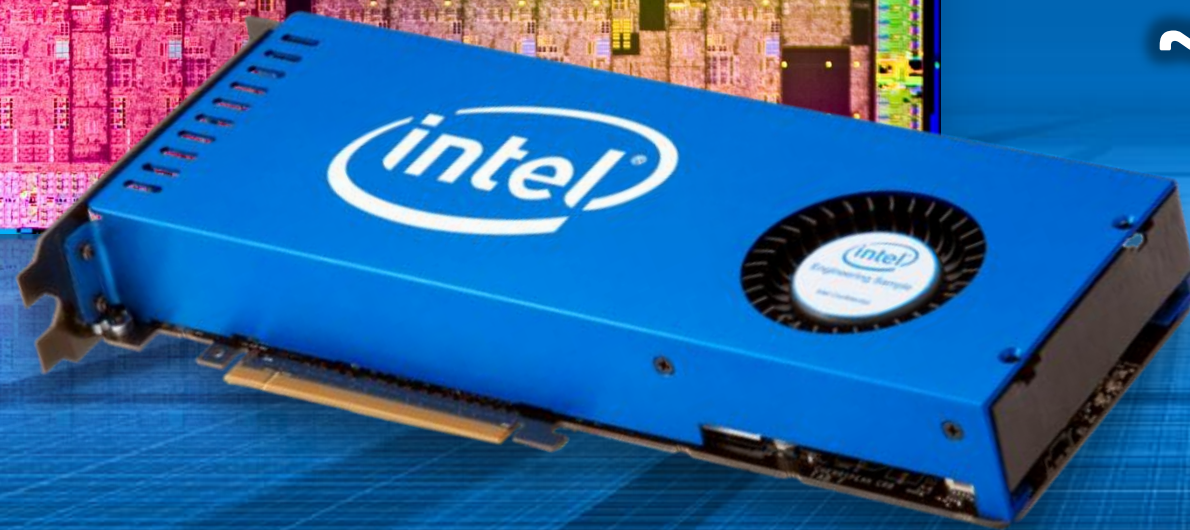


Intel's Many Integrated Core (MIC)

Family of Products

*Providing Technology Leadership for
Highly Parallel Workloads*

~ 100 Users by Year-End



Call to Action

Client:

- Client Aware Clouds: Optimize service cost and the end-user experience
- 2nd Generation Intel® Core™ Processor Graphics: Capitalize on the Opportunity
- USB 3.0 & Thunderbolt: Drive the Next Generation of I/O Capability

Data Center:

- Cloud: Deploy Open Data Centers for Cost-effective and Standards-based Clouds
- Mission Critical: Intel® Xeon® E7 & Intel® Itanium® Deliver Unprecedented Customer Choice
- HPC: Begin Software Development for Intel Many Integrated Core Architecture

A network graphic with a light blue background and a complex web of thin blue lines connecting various portrait photos of people. The photos are of diverse individuals, mostly of Asian descent, in various professional and casual settings. The central text is in a bold, blue, sans-serif font.

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