



2005

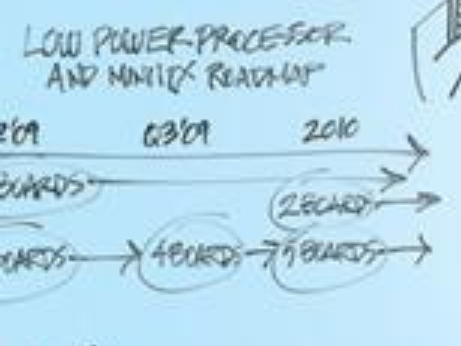
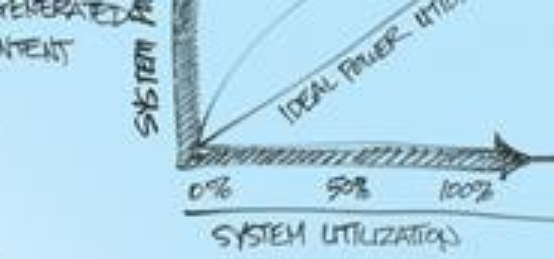
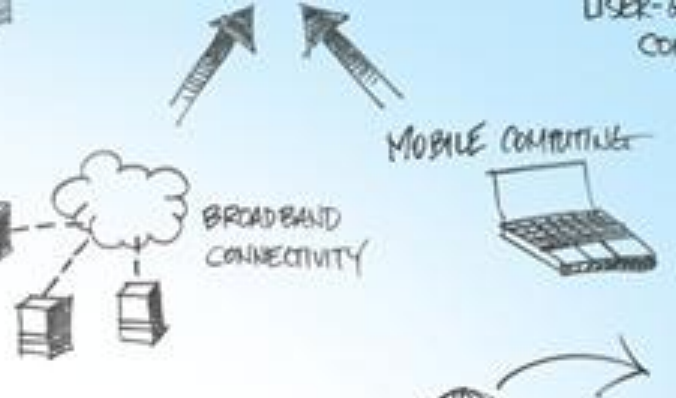
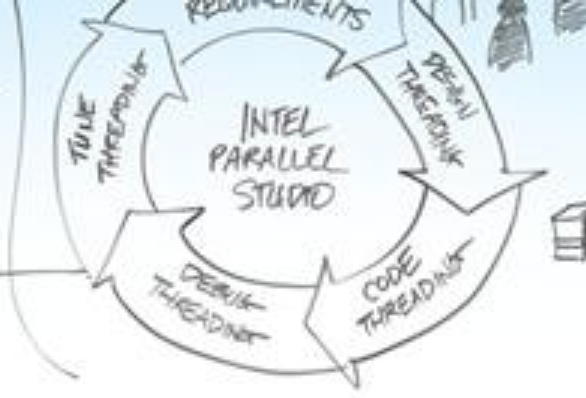
- 5.1M BOPS
- 8 RACKS
- 126 SERVERS
- 240 SQ FT
- 48 KW

2009

- 5.1M BOPS
- 1 RACK
- 17 SERVERS
- 40 SQ FT
- 6 KW

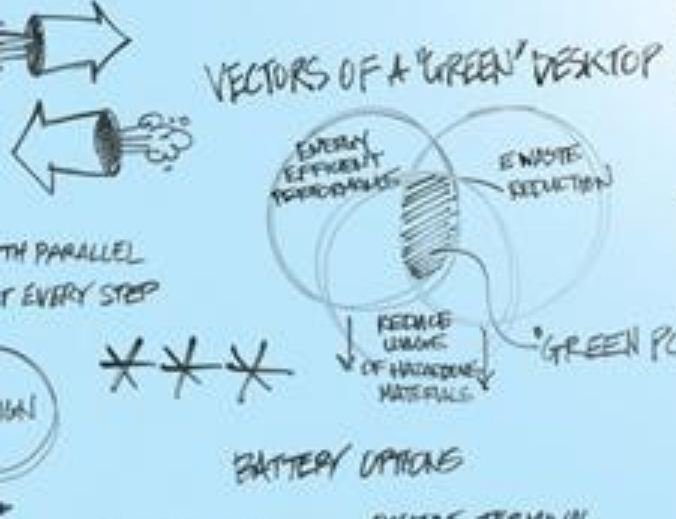
THE BOTTOM LINE

- FLOOR SPACE 83%
- ENERGY COSTS 87%
- ENERGY SAVINGS \$5K



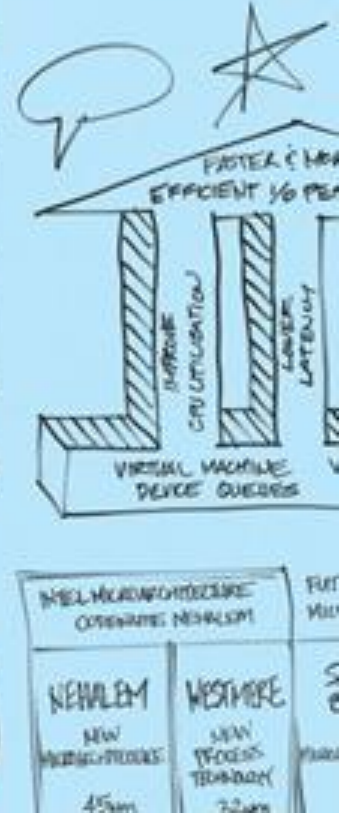
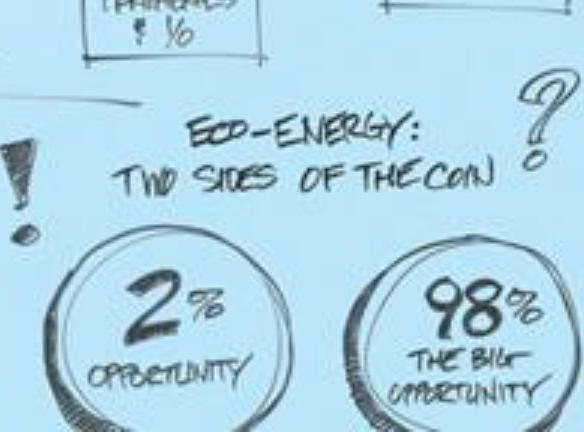
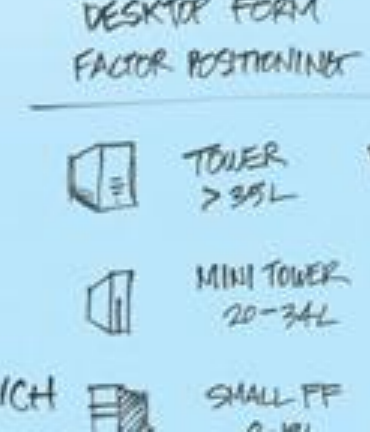
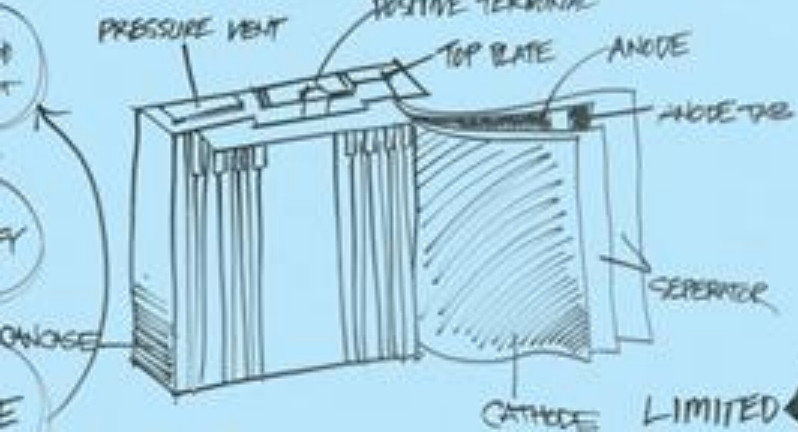
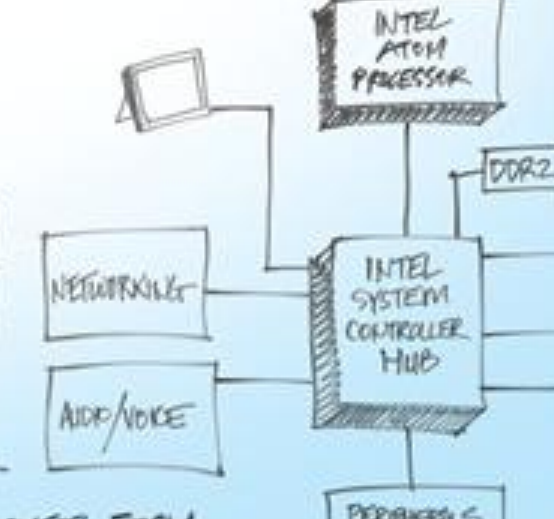
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INTEL DEVELOPER FORUM



STORAGE: HARD DISK DRIVE OPTIONS

2.5" HDD		1.8" HDD
110-250GB	CAPACITY	60-120GB
7.95mm	THICKNESS	5mm
DUAL	PLATTER	SINGLE
1x	COST	2x+ SAME CAPACITY



Innovate. Integrate. Innovate. Integrate.

Tick

Tock

Tick

Tock

Tick

Tock

Tick

Tock

65nm



Intel® Core™
Microarchitecture

45nm



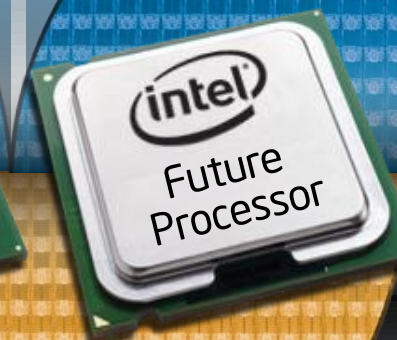
Nehalem
Microarchitecture

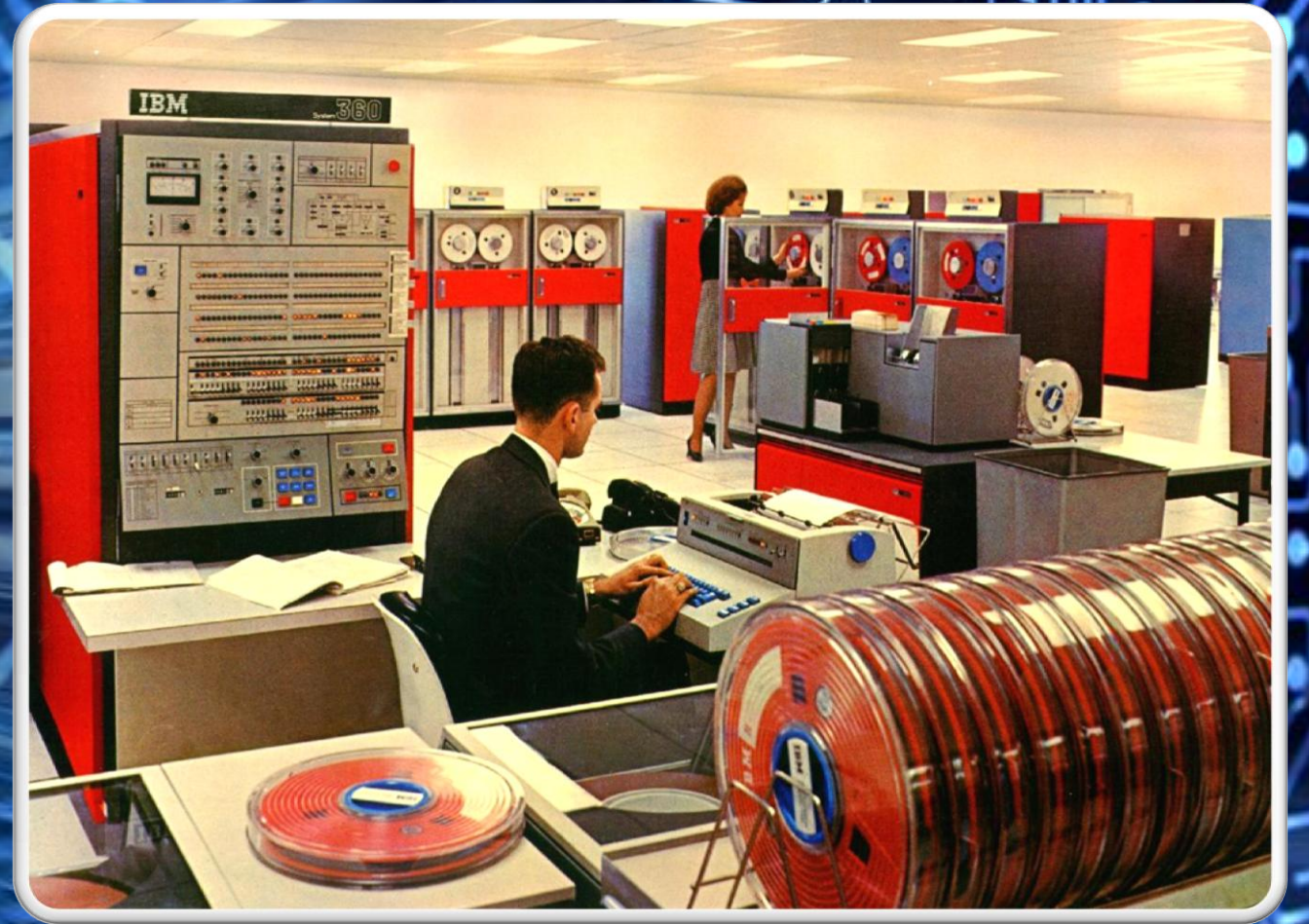
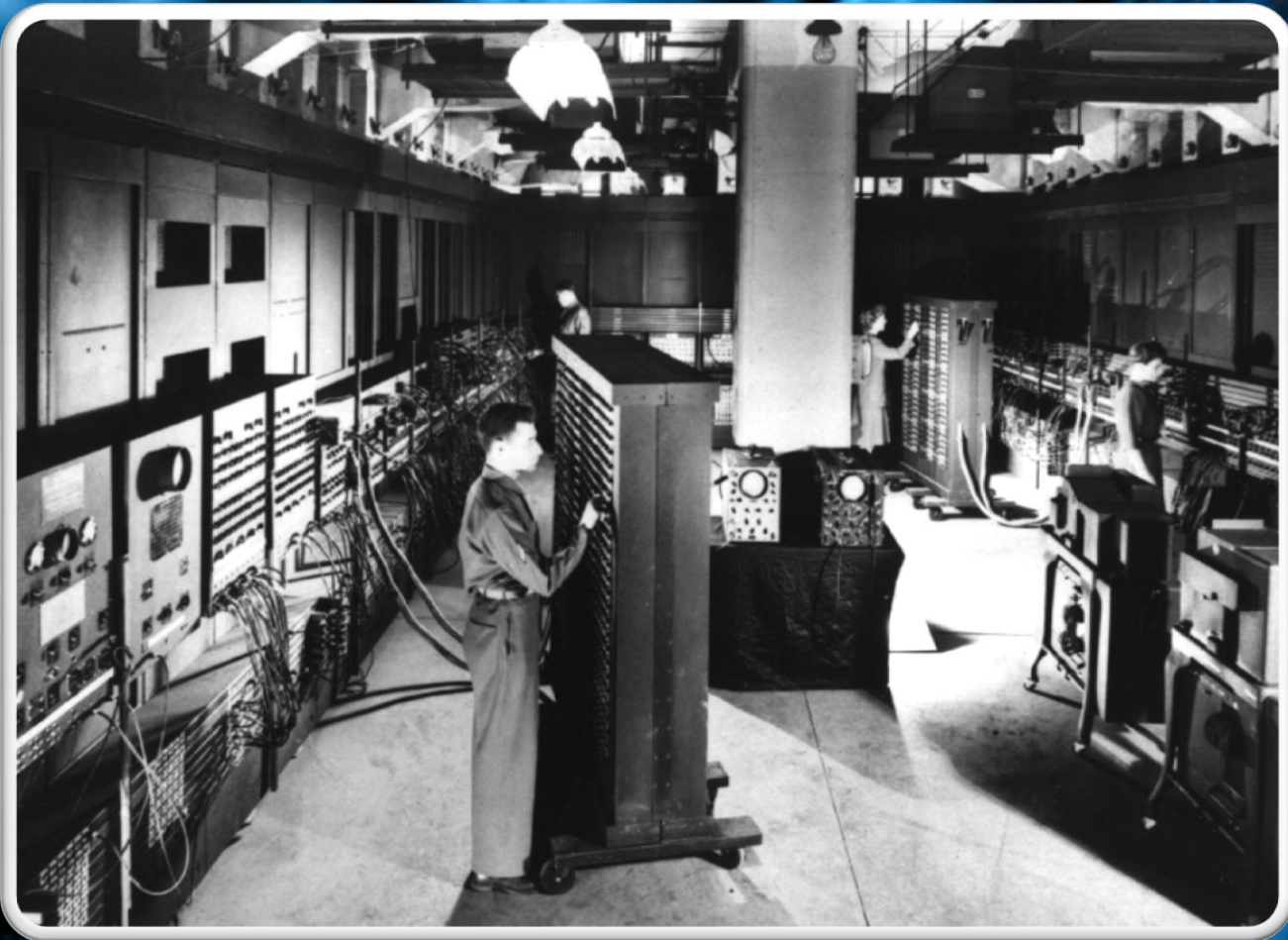
32nm



Sandy Bridge
Microarchitecture

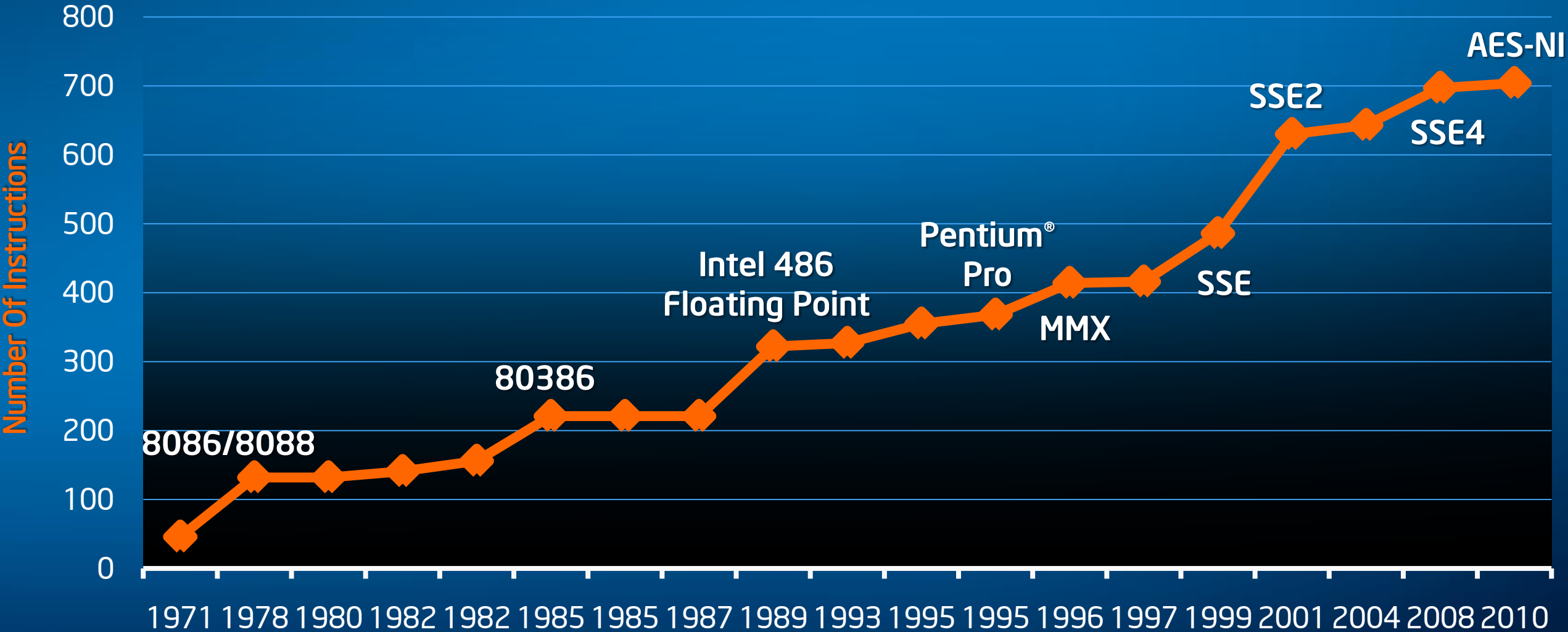
Silicon Process
Technology





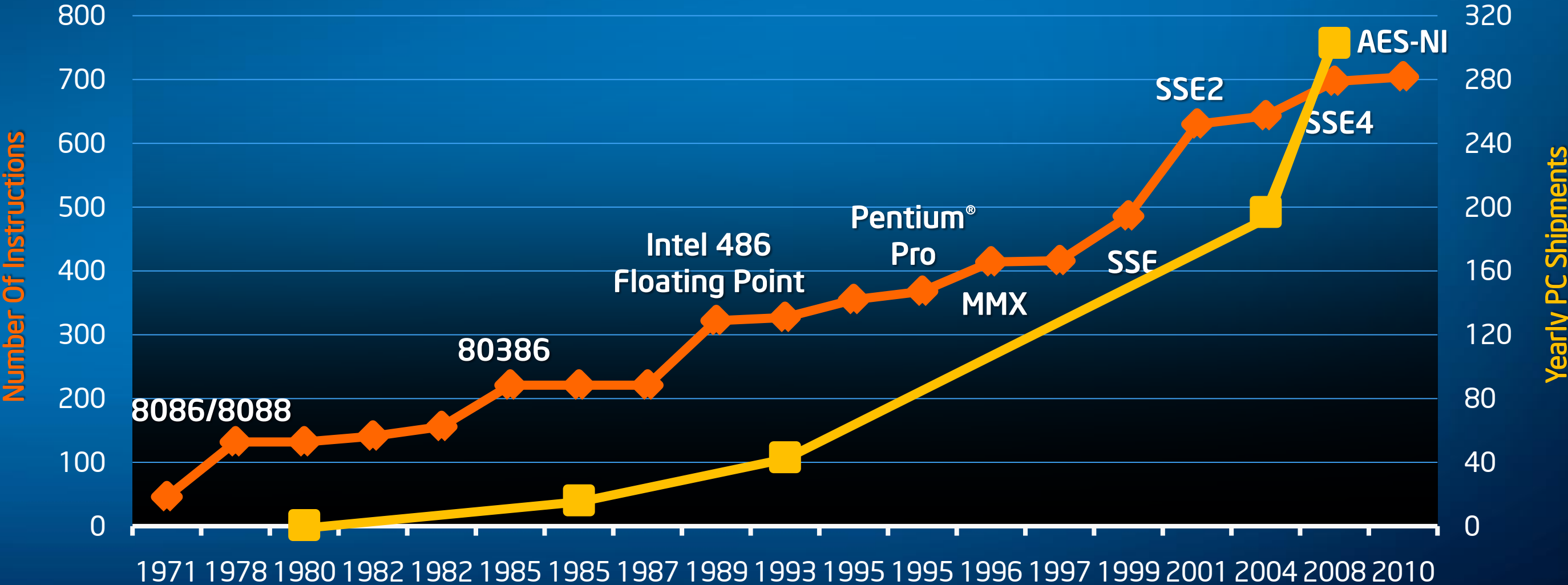
Intel Architecture Instruction Set Over Time

Intel Architecture Instruction Set Over Time



Intel Architecture Instruction Set Over Time

Intel Architecture Instruction Set Over Time



Innovate and Integrate

Server

Client



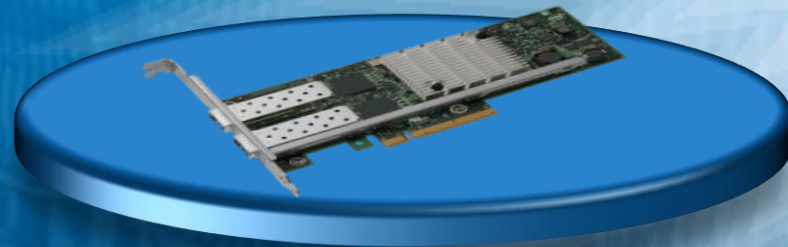
Data Center Integration



Compute



Network



Storage



Data Center Redefined

Small Business /
Remote Office



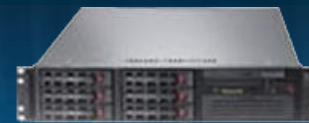
Comms



Internet/
Cloud



Infrastructure



HPC



Mission Critical



*Diverse, But Common Requirements:
Performance, Energy Efficiency, Virtualization*

Innovation and Integration: What's Next?

Extending Nehalem Microarchitecture

Security and I/O

Power and Density

Embedded and Storage

Intel® Platform Choice and Flexibility for Mission Critical Servers

Tukwila



Itanium® 9100



Nehalem-EX

Xeon® 7400

Common Ingredients:

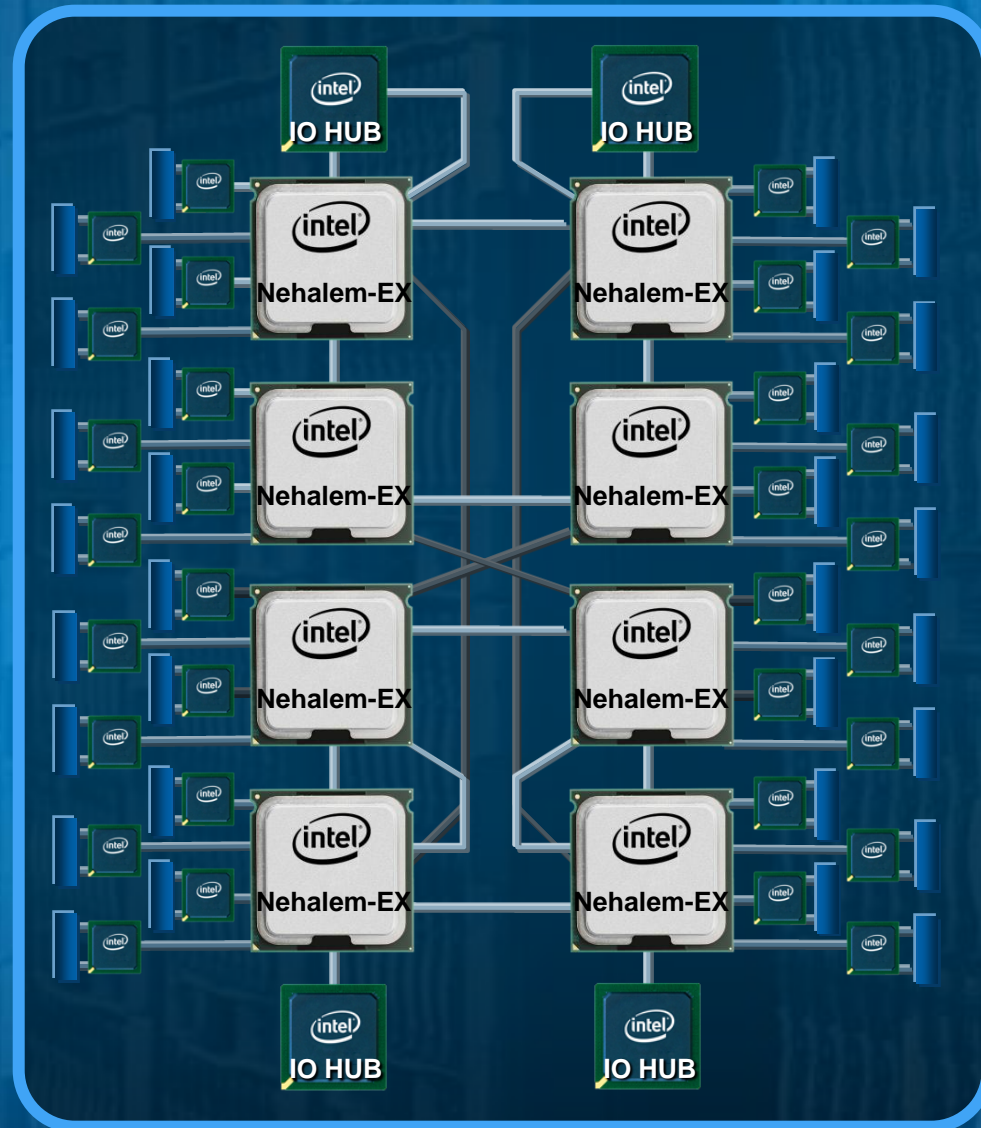
Intel® Quick Path Interconnect

Intel® Memory Hub & DDR3

Intel® I/O Hub

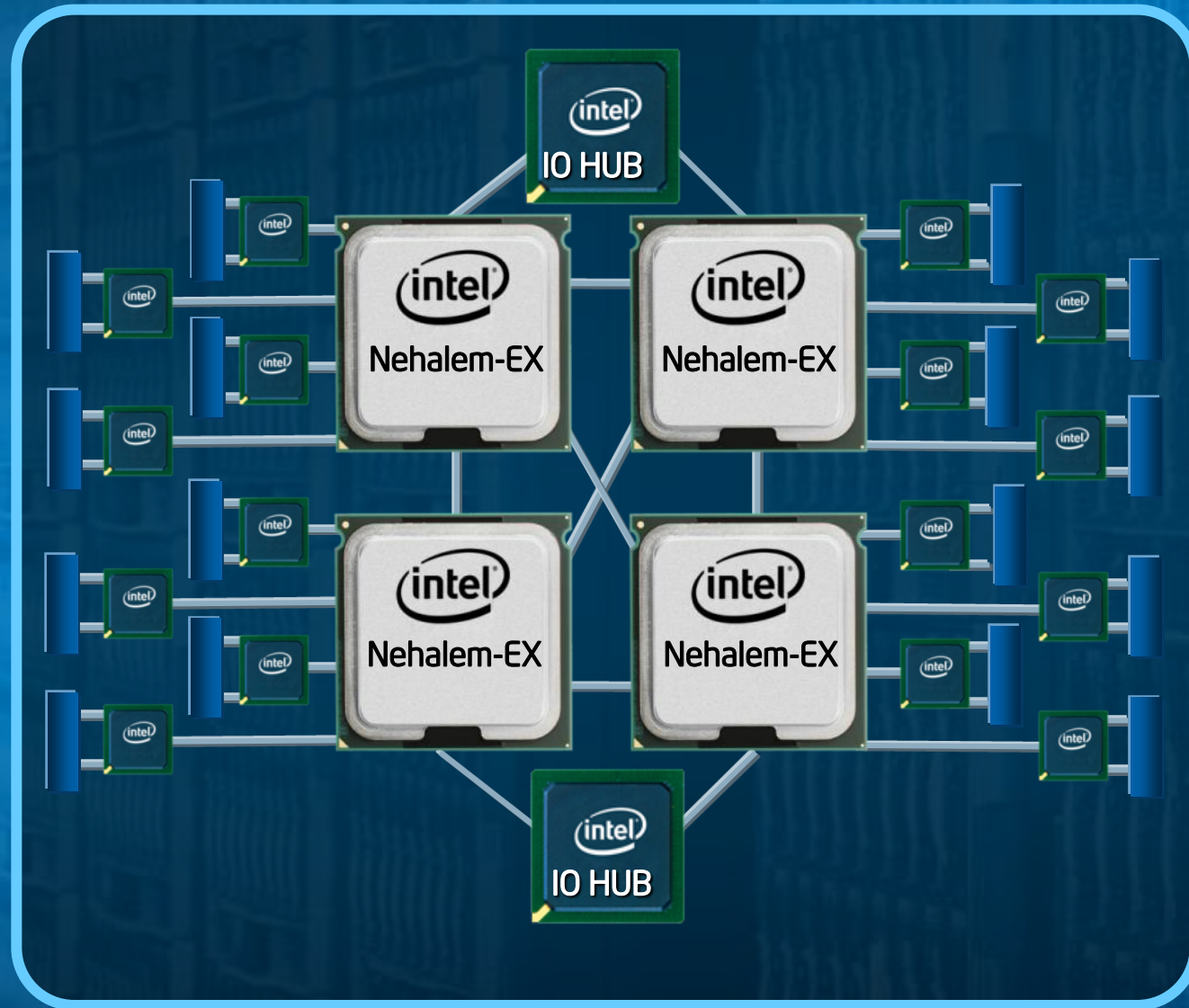
Increased RAS Capabilities

Nehalem-EX: Addressing The Most Demanding Workloads



- Broad range of server designs and form factors
 - Over 15 8S+ Designs from 8+ OEMs
 - Scalable blade & rack optimized designs
 - New HPC optimized solutions
- Broad support for scalability and advanced RAS
 - Microsoft, RedHat, Novell, Solaris, VMware

Nehalem-EX: A Giant Leap Forward



- Up to 3x database performance*
- Up to 1 TB memory support (4S)
- 128 threads (8S)
- Scalable to 8+ sockets
- Suite of ~20 new RAS capabilities

Nehalem-EX: Expanded EX Focus into HPC!



"We want to focus on the science we need to solve for our National Security Mission and not the computer science. Nehalem EX represents a new SMP on a chip super-node that can help us improve our predictive science and simulation capabilities without having to invest in a vast rewrite of our applications."

Mark Seager

LLNL Assistant Department Head
For Advanced Technologies

Innovation and Integration: What's Next?

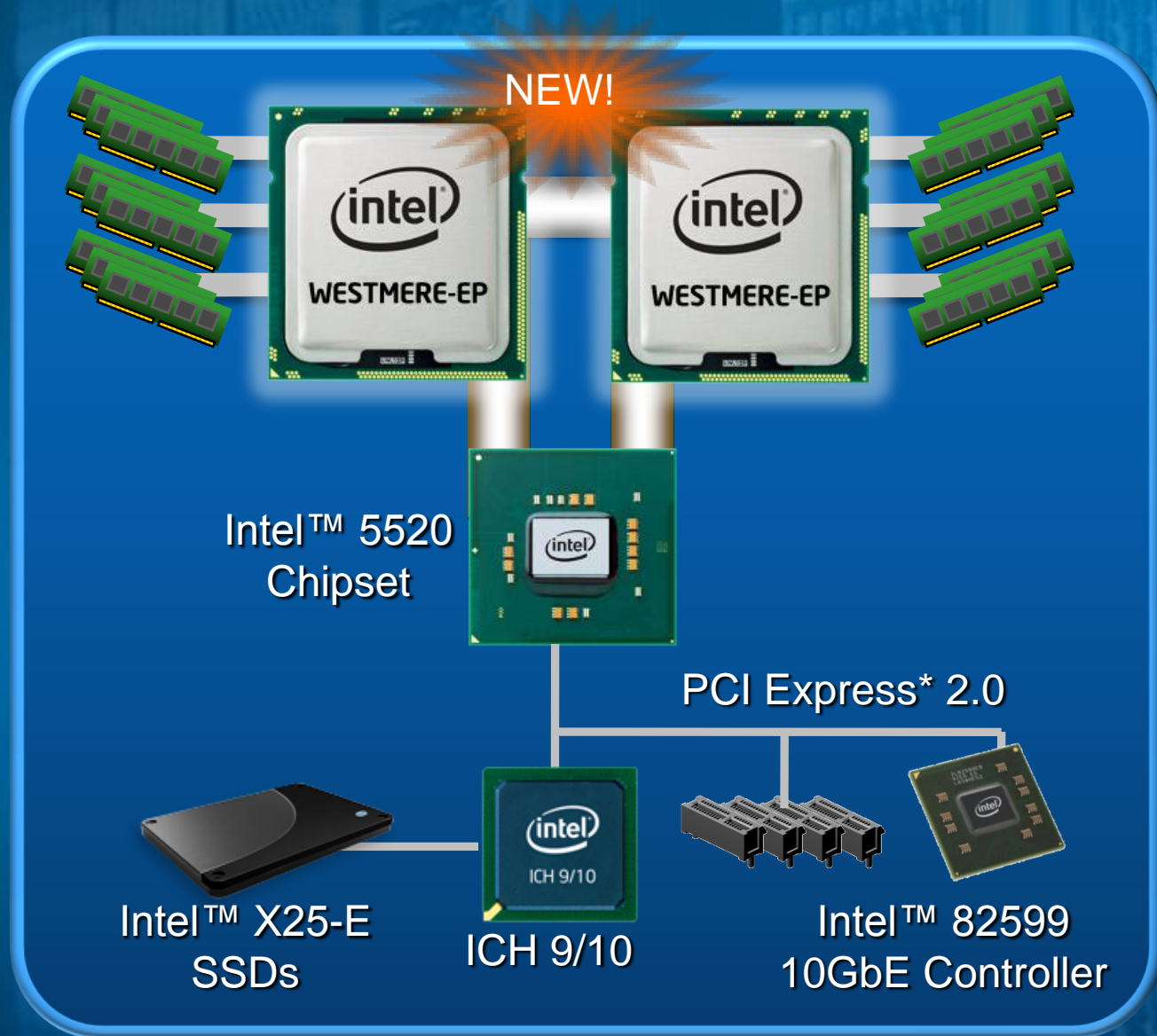
Extending Nehalem Microarchitecture

Security and I/O

Power and Density

Embedded and Storage

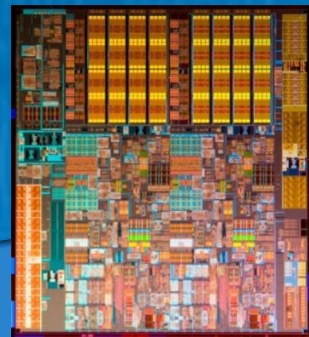
What's Next: Westmere-EP Platform



- Second generation High-k metal gate (32nm)
- Higher performance
- Improved energy efficiency
- Intel 10GbE
- Enhanced security

Improved Security Through Hardware Support

Data Protection



AES
New Instructions

Trusted Infrastructure



Intel® Trusted
Execution Technology

Broad Set of Server Capabilities

Innovation and Integration: What's Next?

Extending Nehalem Microarchitecture

Security and I/O

Power and Density

Embedded and Storage

World Class Power Management Solutions

Broad Industry Support and Growing Adoption For Intel Node Manager

End Users



OEM, ODM & Console Providers



Broadest Range of Optimized Systems

Containers



Optimized Racks



Dense 1S/2S Servers



Micro Servers



*Defining the New Micro Server Segment
Introducing Two New Intel® Xeon 3400 SKUs*

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Other brands and names are the property of their respective owners.



Andy Bechtolsheim

Founder

Chief Development Officer and Chairman

Arista Networks

ARISTA

IDF2009
INTEL DEVELOPER FORUM

Innovation and Integration: What's Next?

Extending Nehalem Microarchitecture

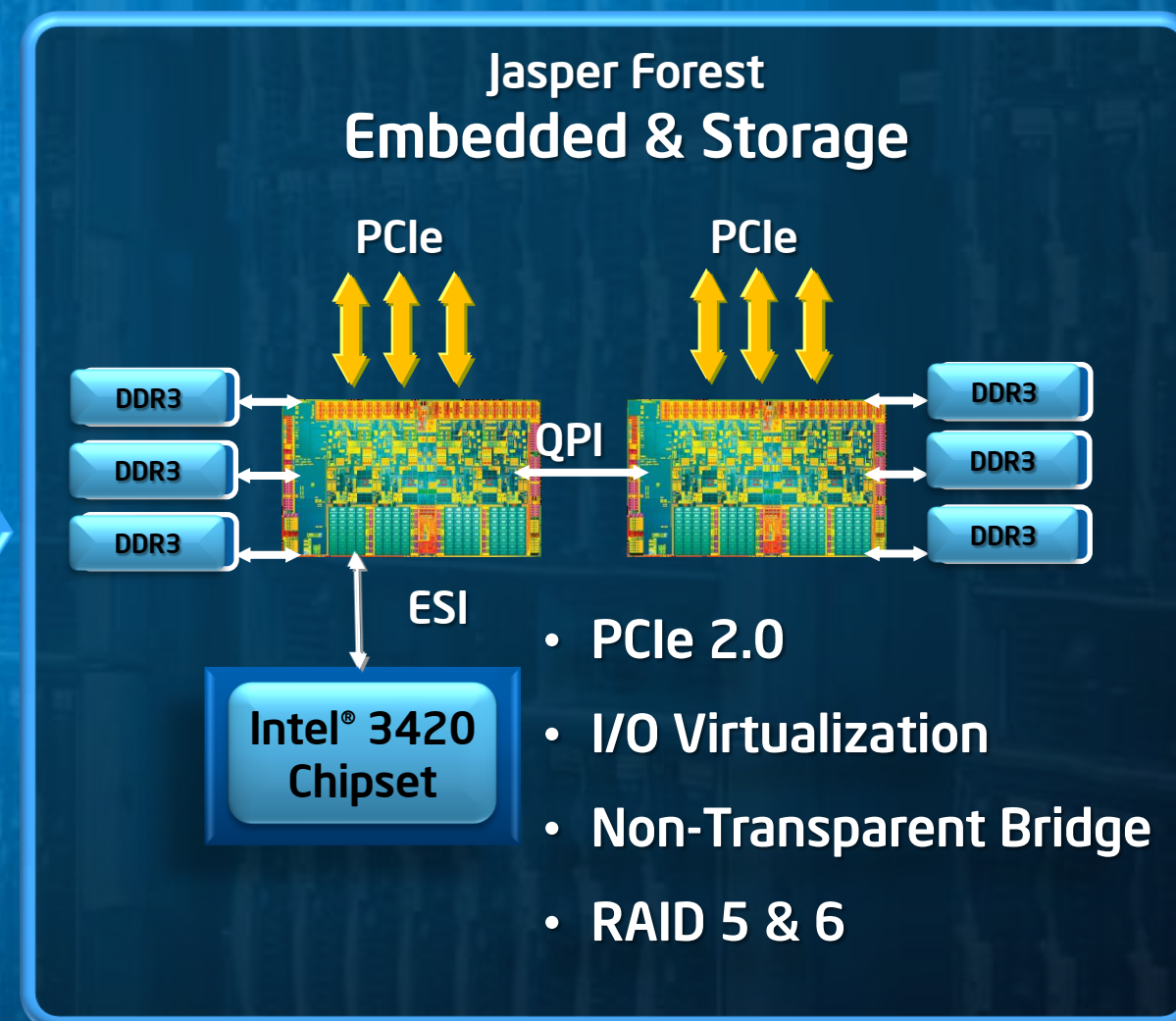
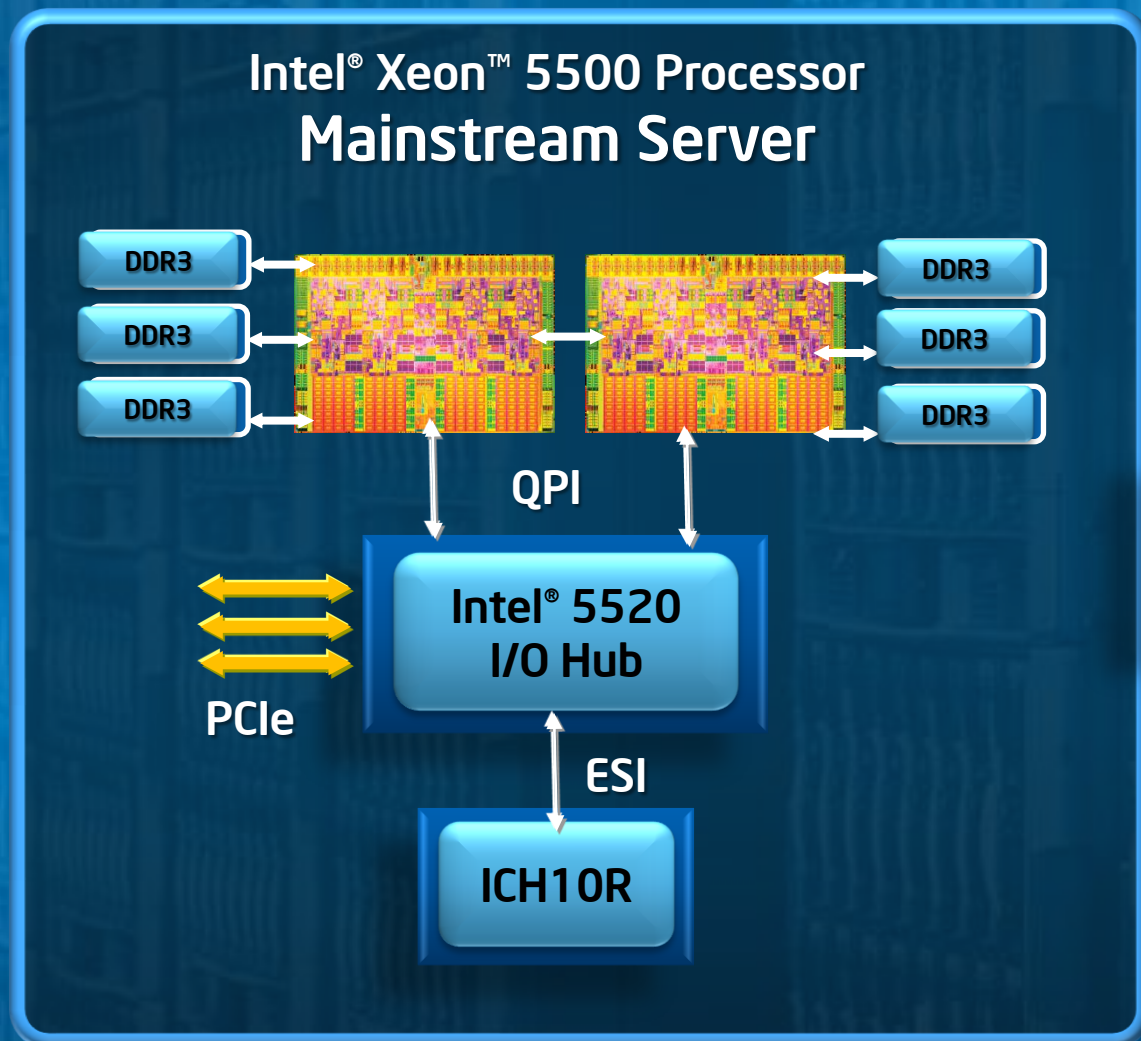
Security and I/O

Power and Density

Embedded and Storage

Jasper Forest

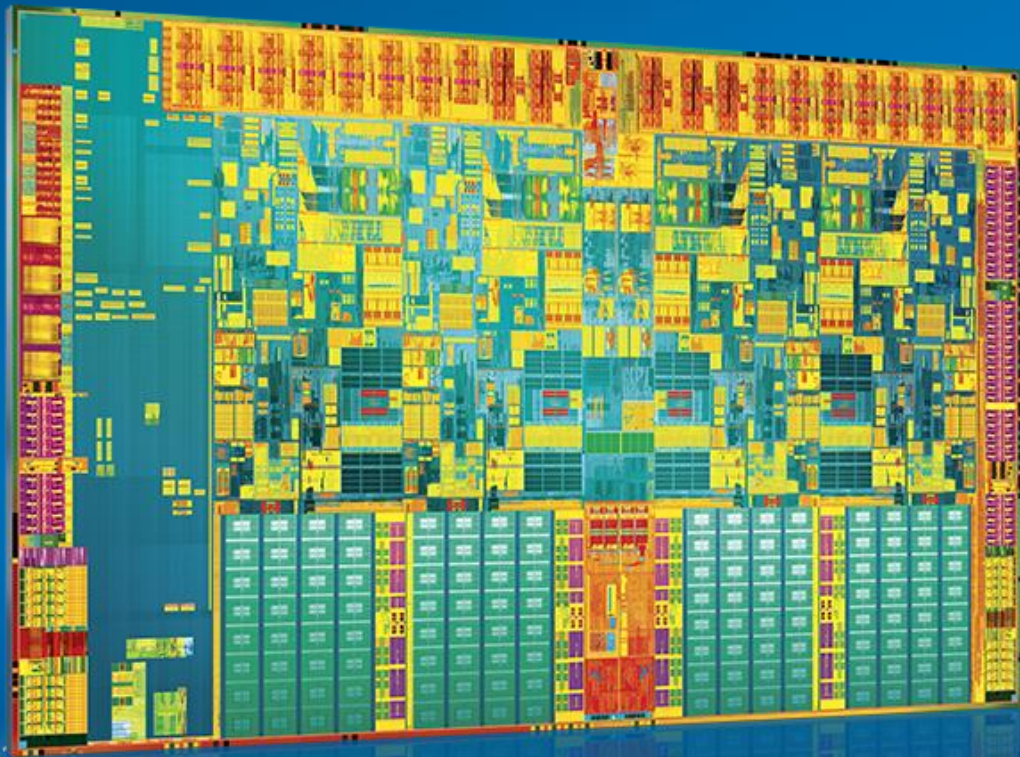
Increased CPU Integration for Reduced Power and Footprint



Highest Perf/Watt/In² and Up to 20% Lower Footprint In <200W Embedded and Storage Blades

Jasper Forest

Leadership in Ultra Dense Computing for Embedded & Storage



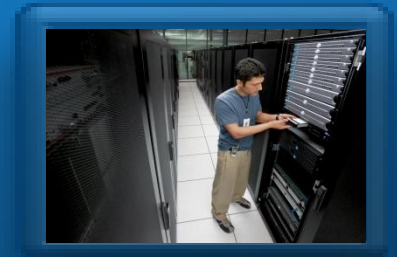
Launch Q1 2010



Communications



Military/Aerospace



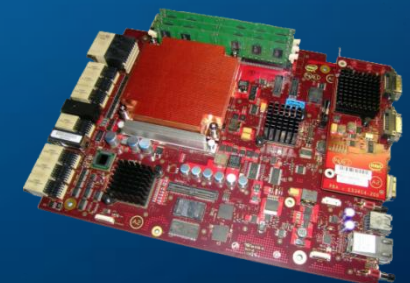
Storage



ATCA
200W Blades



Compact PCI
50-100W Blades



Storage Bridge Bay
60W-200W

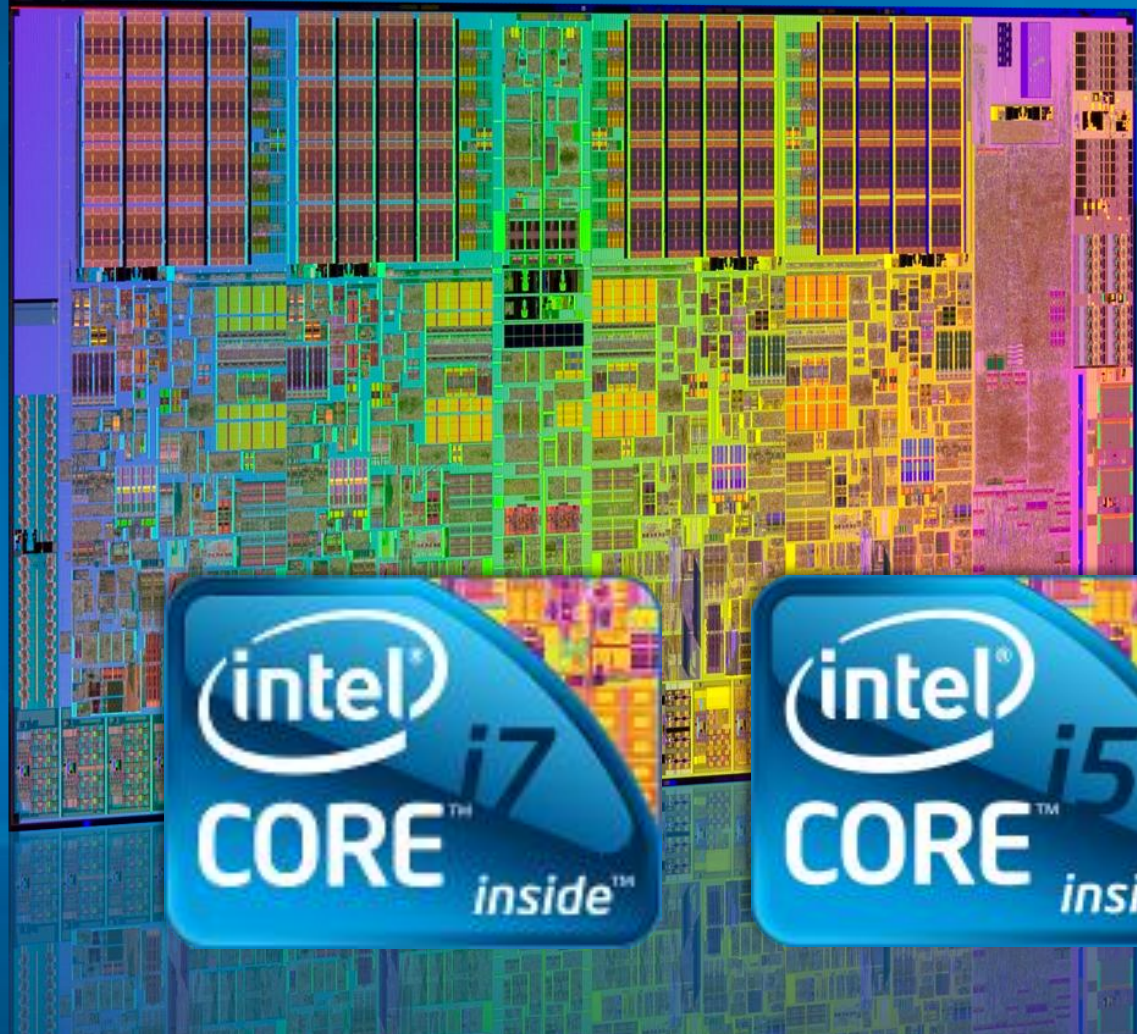
Innovate and Integrate

Server

Client



New Intel® Core™ i7 and Core i5 Processors



"The performance these processors deliver at these price points is superb ...Intel has a real winner on its hands."
ExtremeTech, September '09

"It seems that everyone will have something to love about these new Lynnfield CPUs - I would find it hard pressed to recommend anything else today."
PC Perspective, September 2009

"Lynnfield is amazing, and in many ways, I consider this launch to be much more important than Nehalem's last fall..."
Techgag, September 2009

Driving Nehalem Micro-architecture Innovation To Mainstream

Windows* 7 Optimization

Performance

Power Management

Stop / Start and Resume Speed

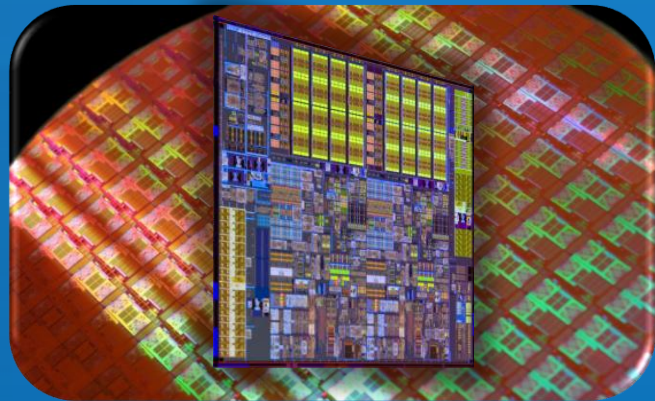
Graphics and Multi-Media

Security / Manageability



Next Generation Intel® vPro™ Platforms

Integration of Security and Manageability



**Smarter, Energy-efficient
Performance**

32nm
Westmere



Expanded Manageability

Intel® Active
Management Technology



Enhanced Security

Intel® Anti-Theft
Technology

*Integrating Better Manageability
Introducing Keyboard-Video-Mouse Remote Control*



Ebrahim Keshavarz
Vice President, Product Marketing
AT&T Business Development



Integration Beyond PCs

Broad Traction of Intel® vPro™ Technology In Embedded



Intel® vPro™ Technology



Gaming Machines



Point of Sale

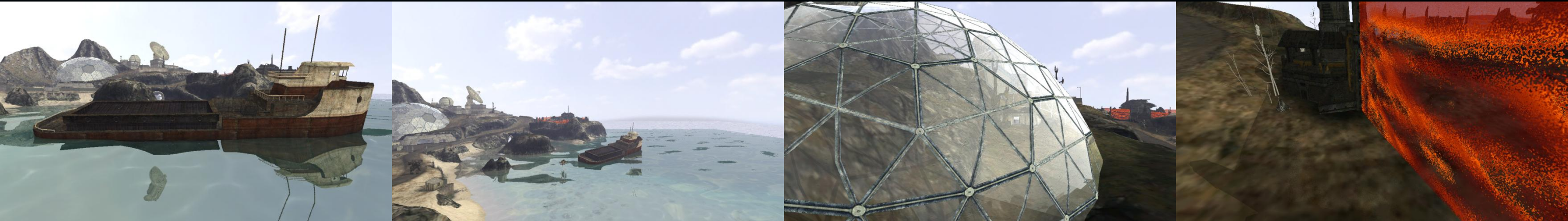


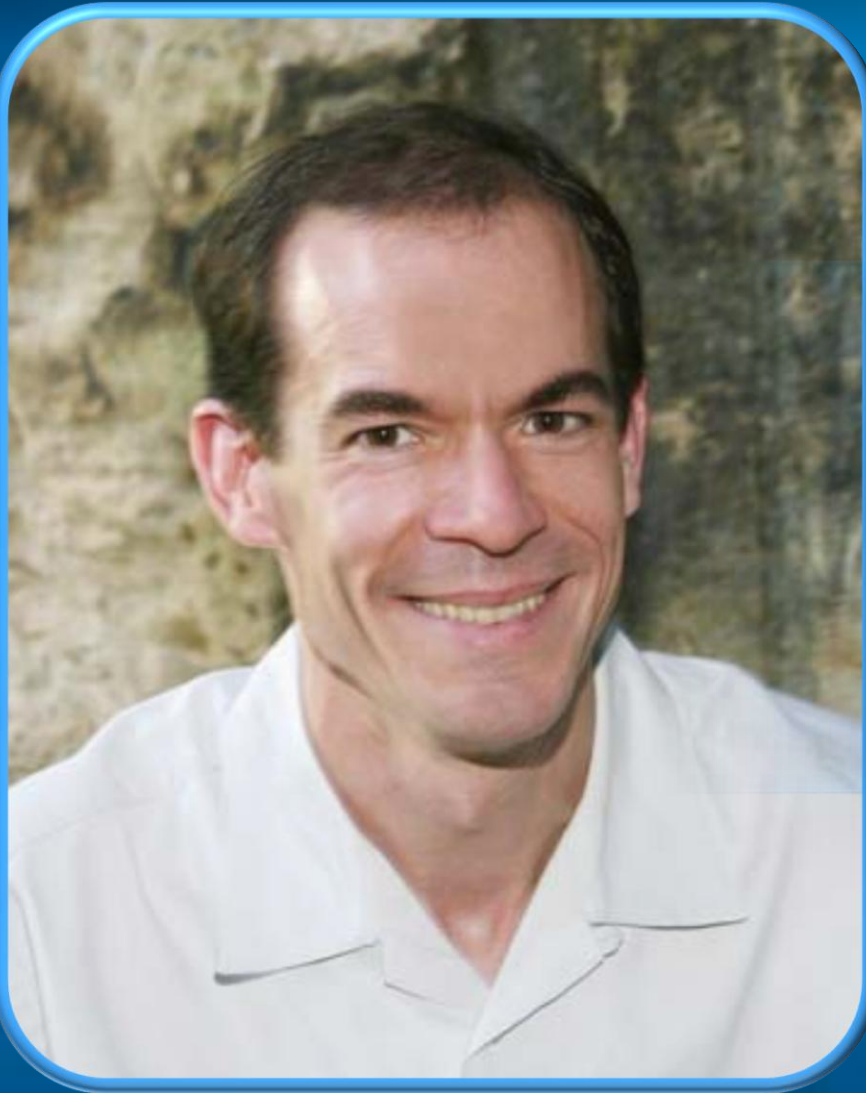
Digital Signage

Larrabee Execution Update



- Fully programmable rendering
- Many-core Intel Architecture
- First products: discrete performance graphics
- Software development systems shipping now





Bill Mark

Senior Research Scientist
Intel Labs Advanced Graphics Research
Intel Corporation

Extending Performance Leadership for Enthusiasts

High
End
Desktop

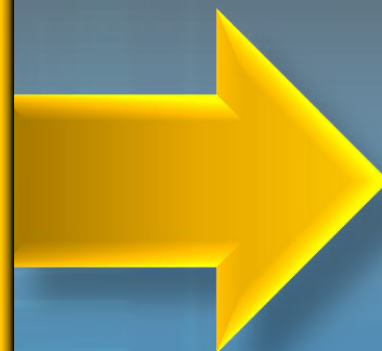
2008



4 Cores
8 Threads

Revolutionary
Microarchitecture

45nm High-K



2010



6 Cores
12 Threads

Compatible with Intel®
X58 Express Chipset

32nm High-K

6-Core Gulftown Coming in 2010

32nm Westmere Processor — Clarkdale

Previous
Generation

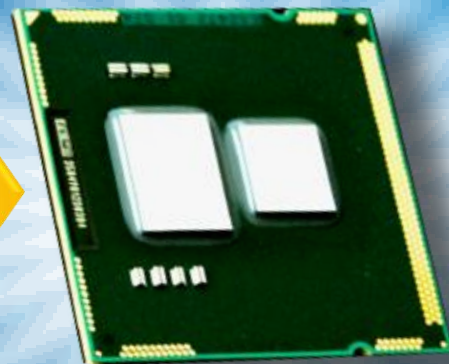


CPU



GMCH

Clarkdale



- 32nm Processor
- AES-NI acceleration
- Intel® Turbo Boost Technology
- Intel® Hyper-Threading Technology
- 45nm Graphics



Turbo and Hyper Threading Will Transform Industry in 2010

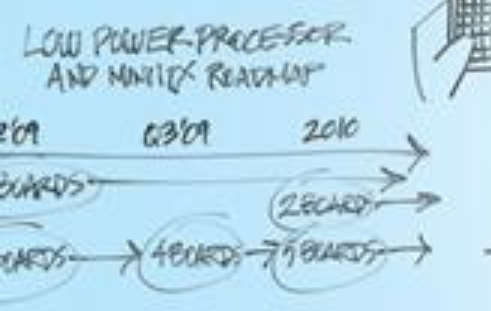
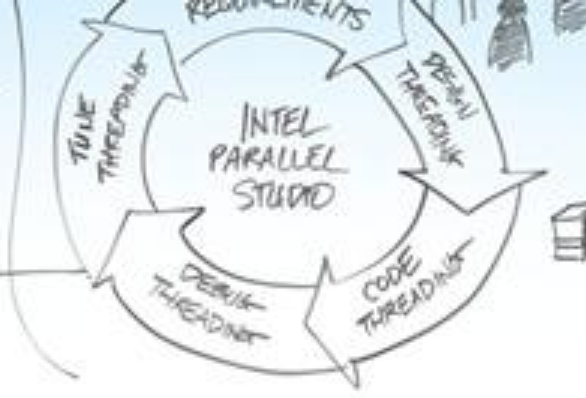


2005

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- 8 RACKS
- 126 SERVERS
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- 48 KW

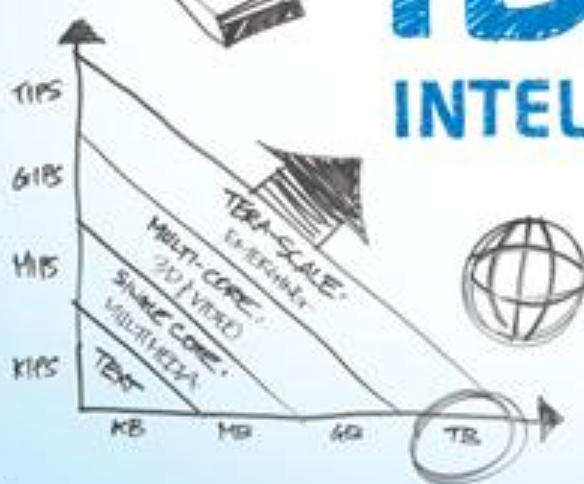
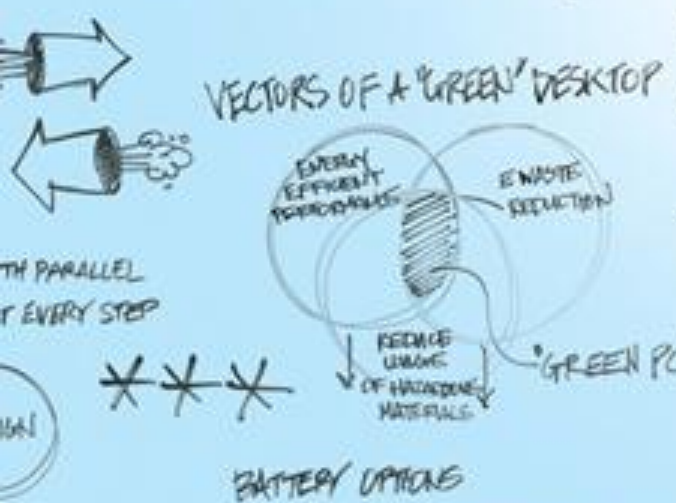
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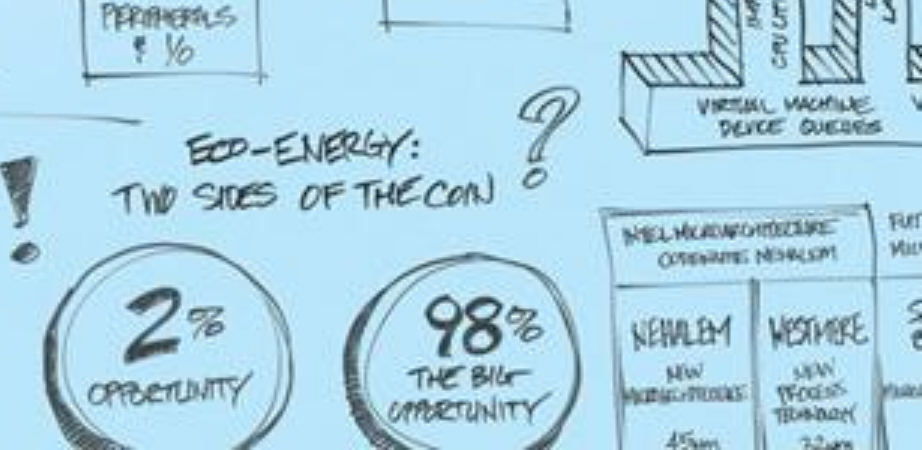
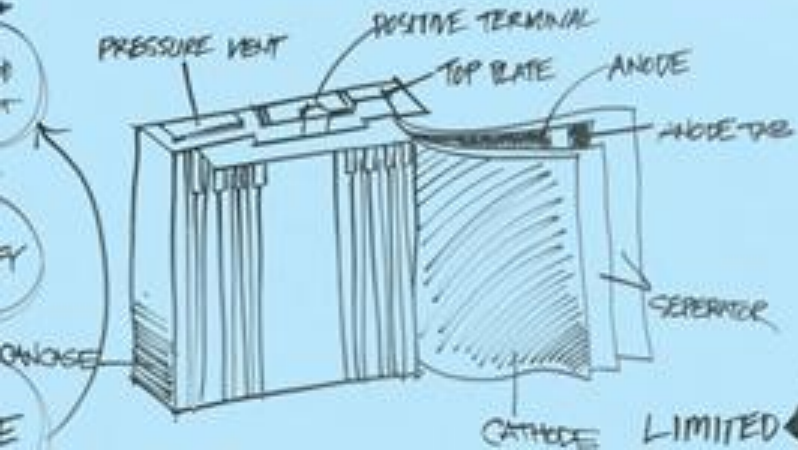
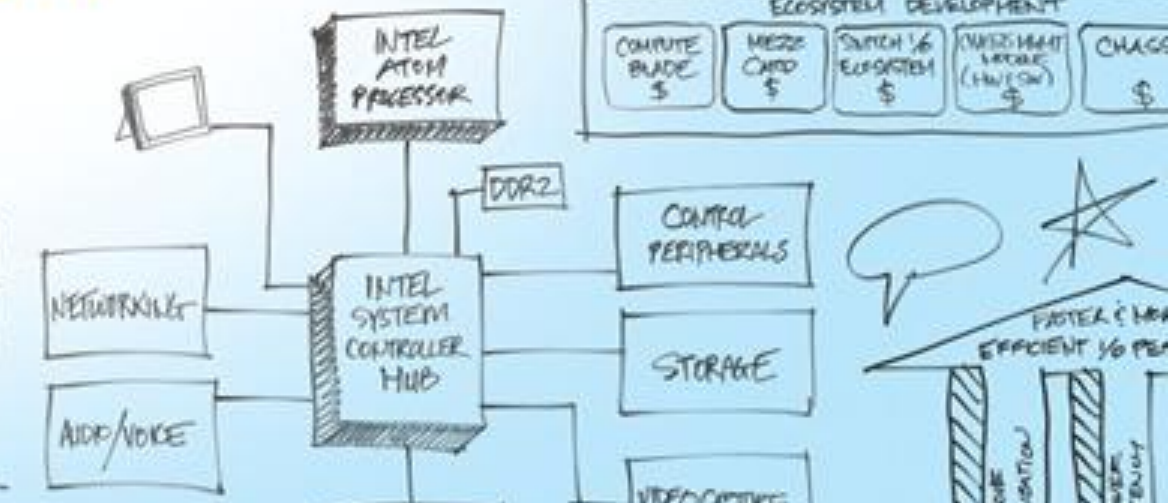
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INTEL DEVELOPER FORUM



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2.5" HDD		1.8" HDD
10-250 GB	CAPACITY	60-120 GB
7.95 mm	THICKNESS	5 mm
DUAL	PLATTER	SINGLE
1x	COST	2x+ SAME CAPACITY



INTEL MICROPROCESSOR	OPERATING FREQUENCY	TRANSISTORS	PROCESSOR TECHNOLOGY
NEHALEM	3.06 GHz	731M	45nm
WESTMERE	3.06 GHz	731M	32nm