RE-IMAGINING
THE DATACENTER
Diane Bryant
Senior Vice President & General Manager
Datacenter & Connected Systems Group

IT: Period of Transformation

Computer-Centric

Focused on
Productivity
through automation

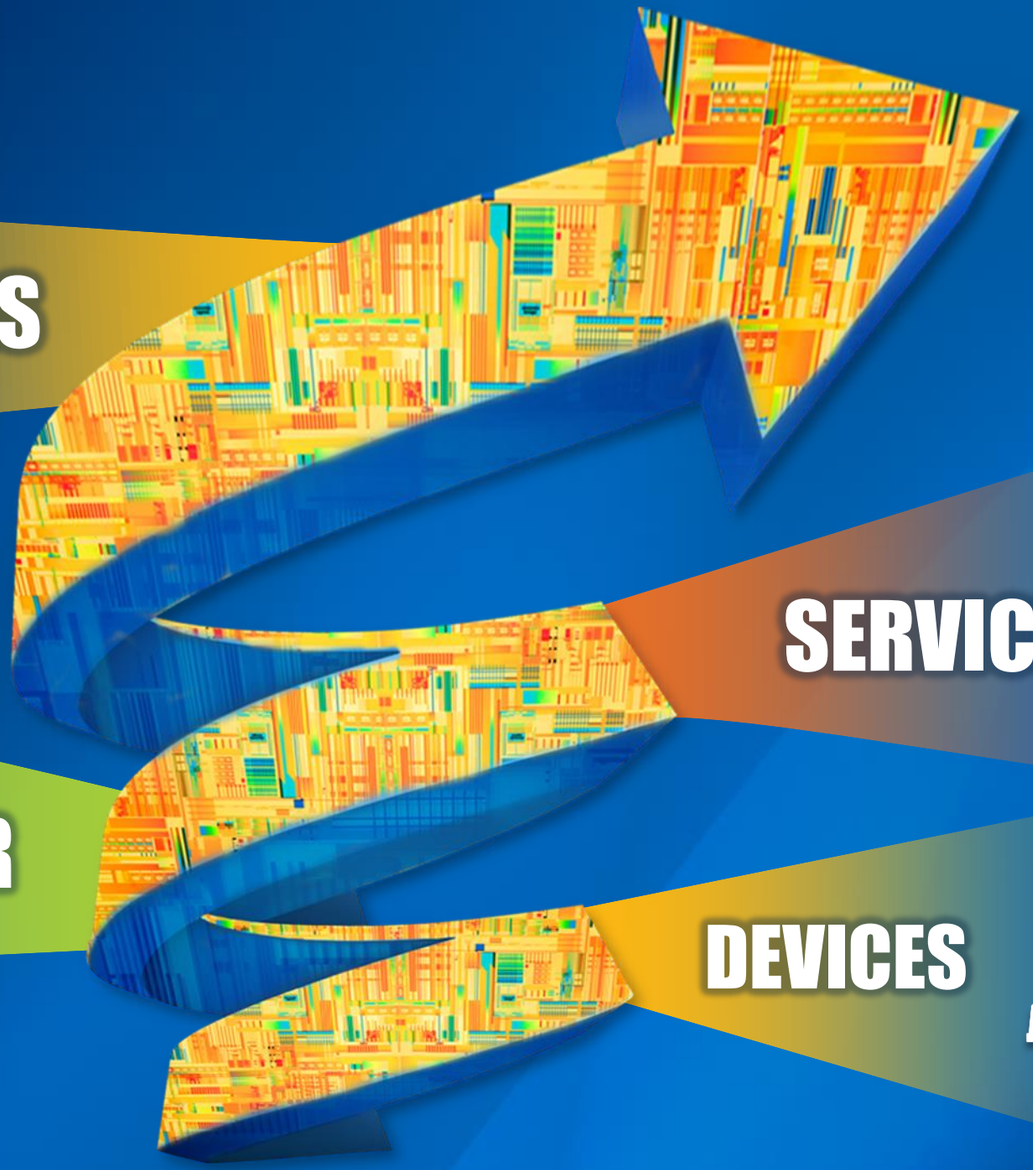
Network-Centric

Focused on
Cost Reduction
through connectivity

Human-Centric

Focused on
Rapid Service Delivery
through cloud & devices

Virtuous Cycle of Computing



DEVICES

DATACENTER

SERVICES

DEVICES

... and so on

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

New Services in Action

MyMagic+

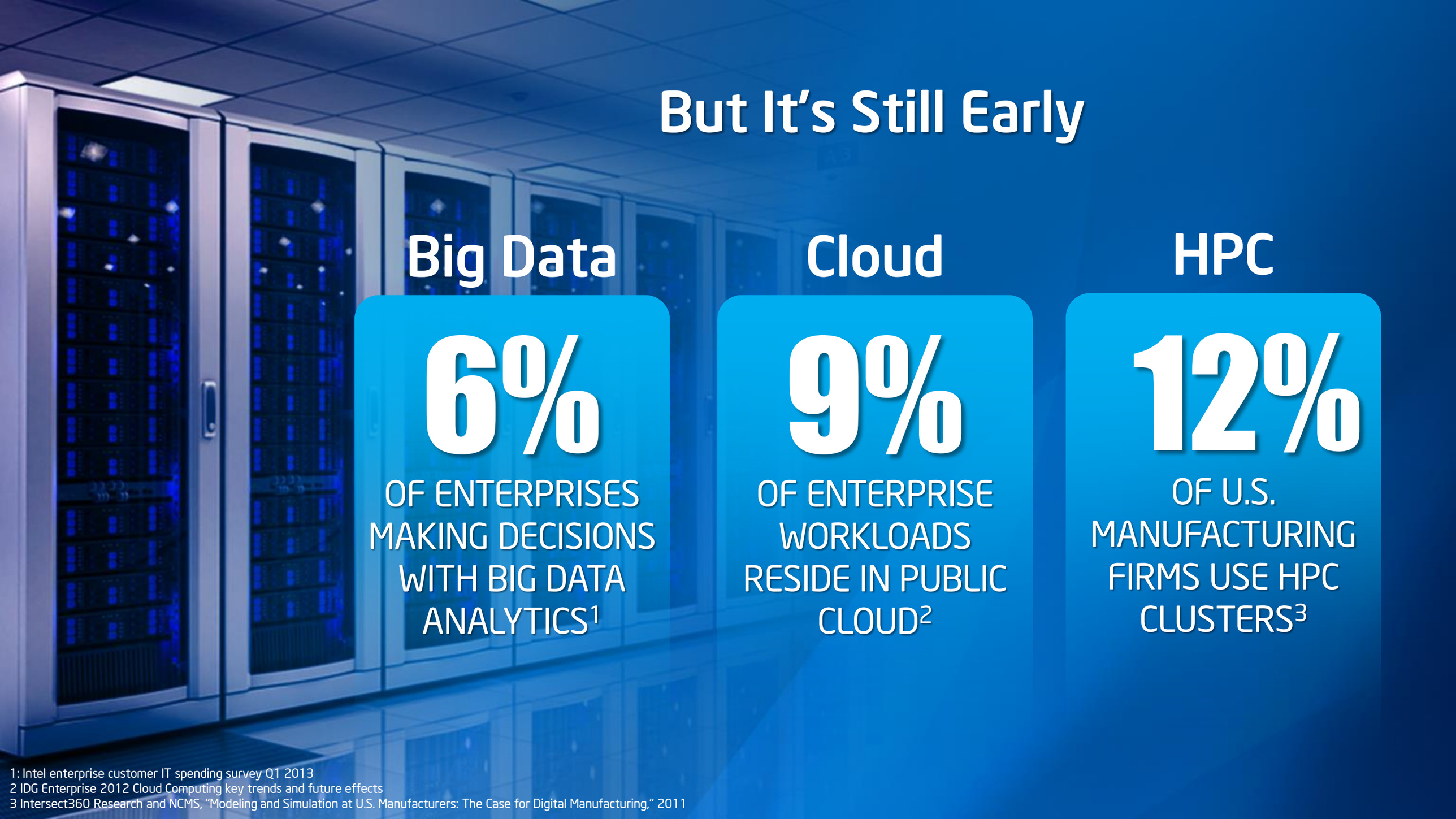
Visitor experience transformed through connected wristbands linked to analytics

Smart Traffic

Safety improved through ability to locate car in city of >10M in ~300ms[1]

1. Source: Bocom

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



But It's Still Early

Big Data

6%

OF ENTERPRISES MAKING DECISIONS WITH BIG DATA ANALYTICS[1]

Cloud

9%

OF ENTERPRISE WORKLOADS RESIDE IN PUBLIC CLOUD[2]

HPC

12%

OF U.S. MANUFACTURING FIRMS USE HPC CLUSTERS[3]

1: Intel enterprise customer IT spending survey Q1 2013
2 IDG Enterprise 2012 Cloud Computing key trends and future effects
3 Intersect360 Research and NCMS, "Modeling and Simulation at U.S. Manufacturers: The Case for Digital Manufacturing," 2011

DATACENTER

Demands a New Level of

SCALE

Efficient, On-demand, Resilient

Yet Today's Infrastructure is Strained

Network

2-3 weeks to provision new services[1]

66% CAGR in mobile data traffic[2]

Storage

40% data growth CAGR, 90% unstructured[3]

Server

Average utilization <50% despite virtualization[4]

1: Source: Intel IT internal estimate

2: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017

3: IDC's Digital Universe Study, sponsored by EMC, December 2012

4: IDC Server Virtualization and The Cloud 2012

Intel's Strategy:
RE-ARCHITECTING THE
DATACENTER

Intel's Strength:
Transformation from Proprietary to Standards

Supercomputing Example

Top 500*
(1997 - 2012)

1500X
Performance

4X
Power Increase

100X
Reduction in cost per FLOP

Top 500 MSS

2013
80%

1997
3%

Driven by Moore's Law & Architecture Innovation

Source: Intel Analysis / Top500

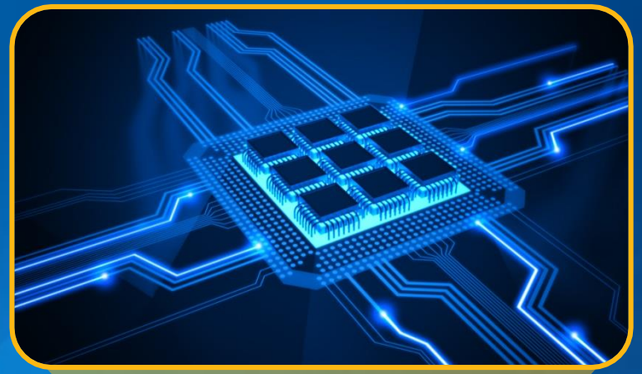
Software Defined Infrastructure

Changes the Game

Network

Storage

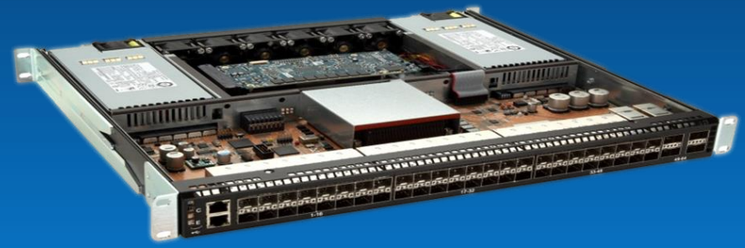
Server



From Static to Dynamic. From Manual to Automated.

Re-architect the Network
Software Defined Network (SDN)

MANUAL	AUTOMATED
FIXED	FLEXIBLE
HARDWARE DEFINED	SOFTWARE DEFINED



intel inside XEON

intel INTEL DATA PLANE DEVELOPMENT KIT

Standardize. Virtualize. Automate.

Re-architect the Network

Traditional Network

Idea for service

IT scopes

Balance user demands

Manually configure devices

Set up network services

Service running

Time to Provision New Service:

2-3 Weeks[1]

With SDN

Idea for service

Self service configuration

Service running

Time to Provision New Service:

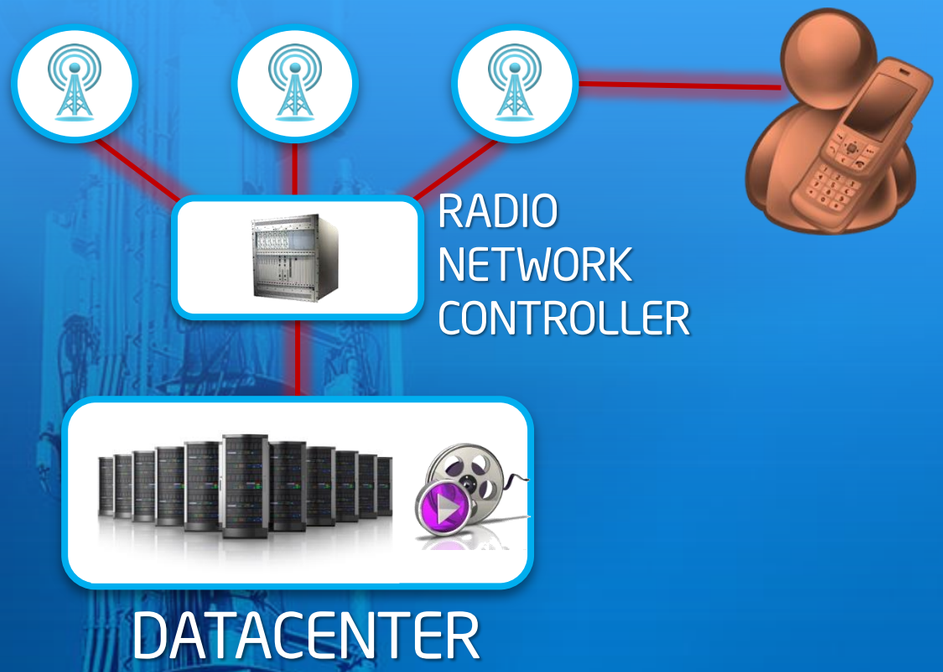
Minutes[1]

1: Source: Intel IT internal estimate

New Services at the **Edge of the Network**

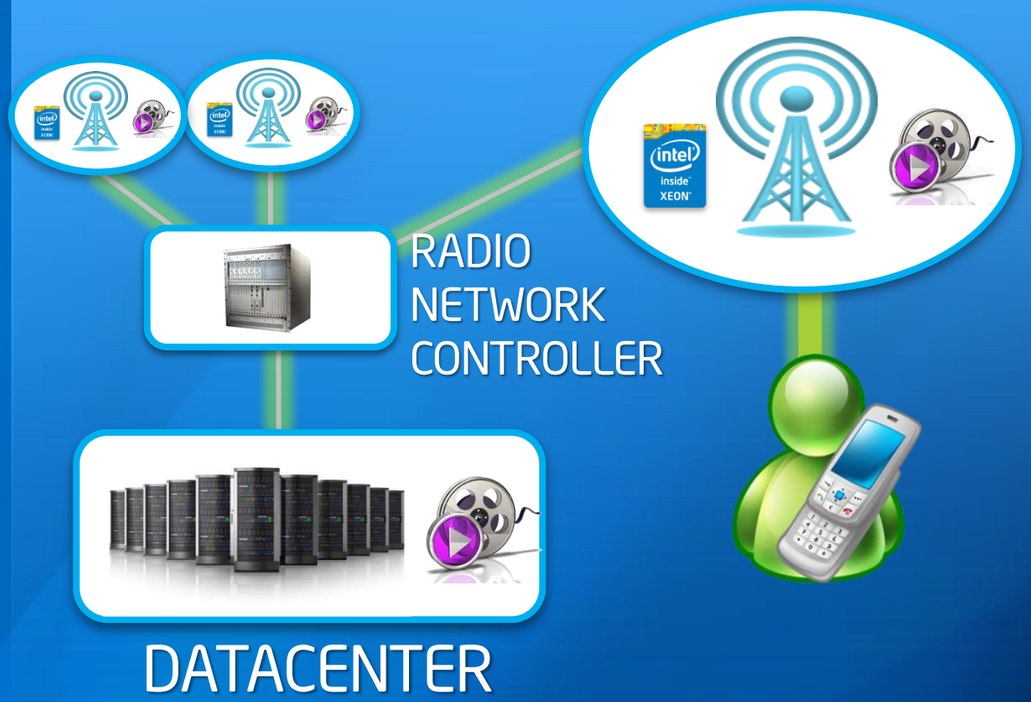
Today's Base Stations

Limited programmability.
Latency constrained.



Tomorrow's Base Stations

Intelligence at the edge.
Faster, personalized services.



Re-architect Storage
Software Defined Storage

Traditional Storage

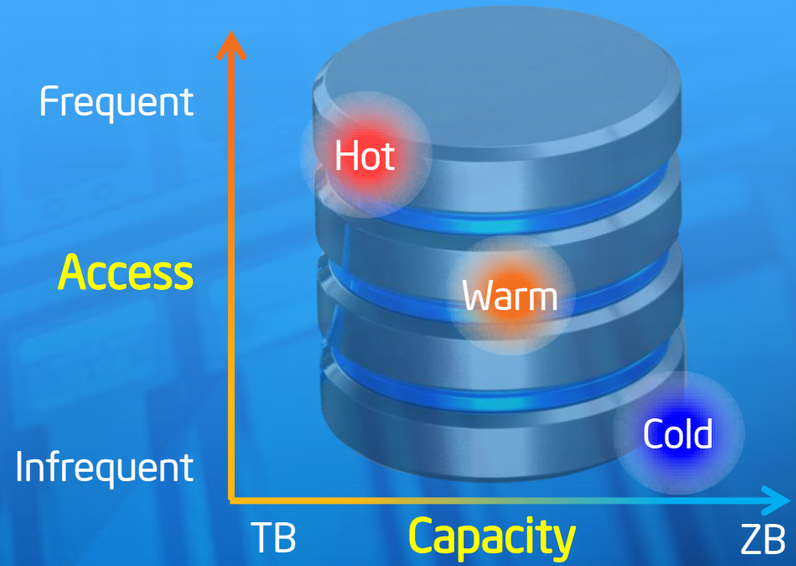
Shared Capacity

High performance

High data protection

Tomorrow's Storage

Storage as a Service



Wide range of optimized solutions

Application driven

Greater efficiency

Re-architect Storage
Software Defined Storage

Next Gen NVM

intel inside™ ATOM™

Accelerators

intel inside™ XEON®

Storage SoCs

Storage Software

Cache Acceleration Software

intel Enterprise Edition for Lustre

Intelligence for Efficiency and Resiliency

Tiered for Capacity and Availability

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

The Power of Solutions: Big Data Example

Sort 1 TB of Data:

>4 Hours

Sort 1 TB of Data:

7 MINUTES

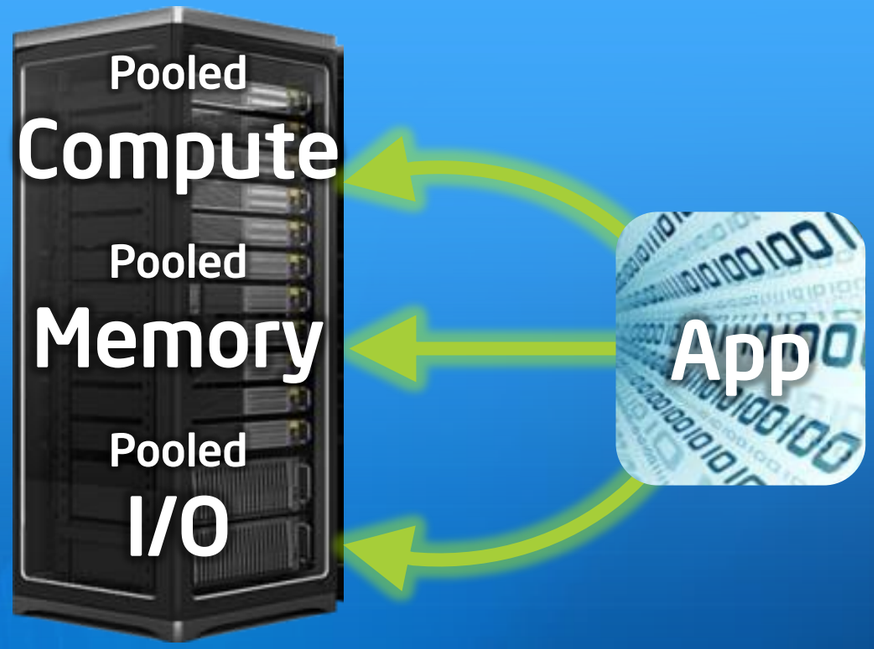
Other names and brands may be claimed as the property of others

Re-architecting the Server at the Rack Level

Today

Applications constrained to resources “in the box”

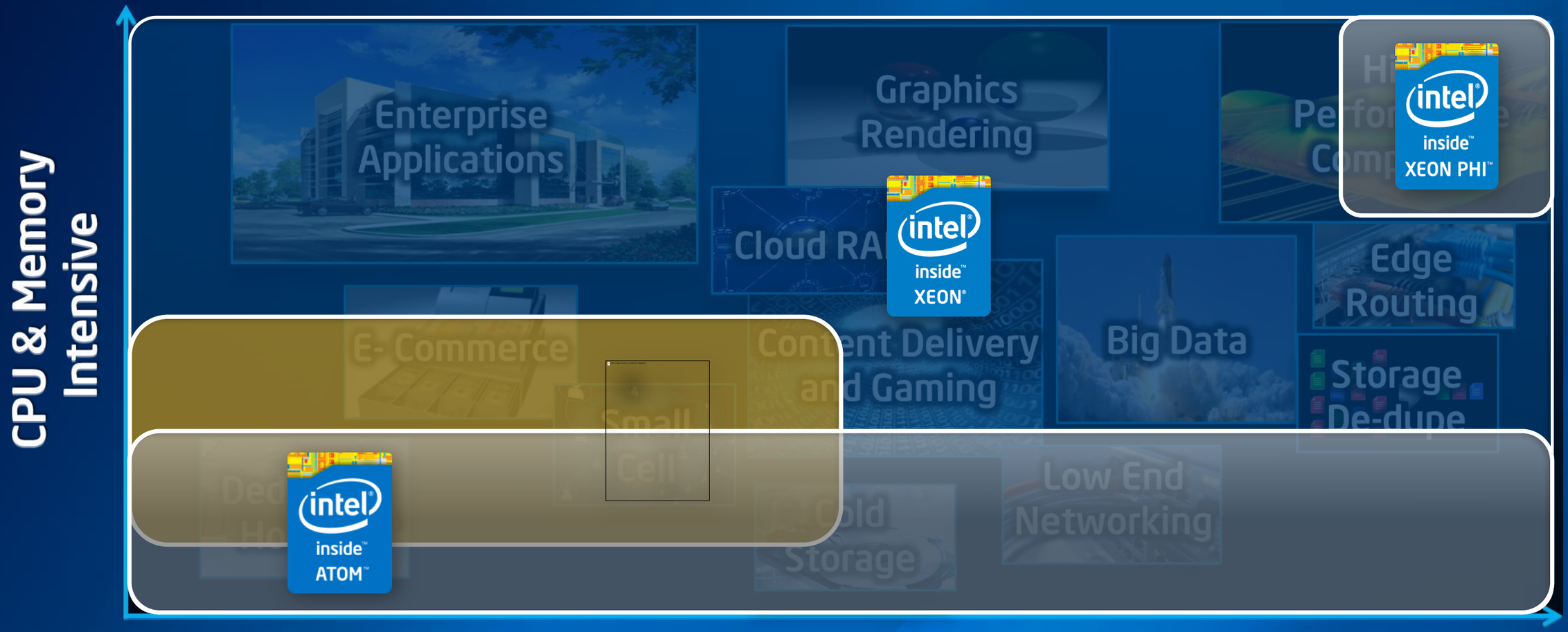
Tomorrow: Composable Resources



Application-driven allocation of resources for greater efficiency

Diversity of Datacenter Workloads

Intel Covering the Full Solution Space



Greater Efficiency through App Optimization & Arch Consistency

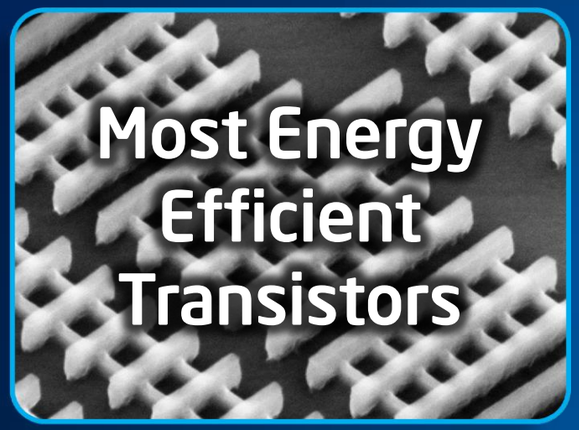
Low Power Product Direction

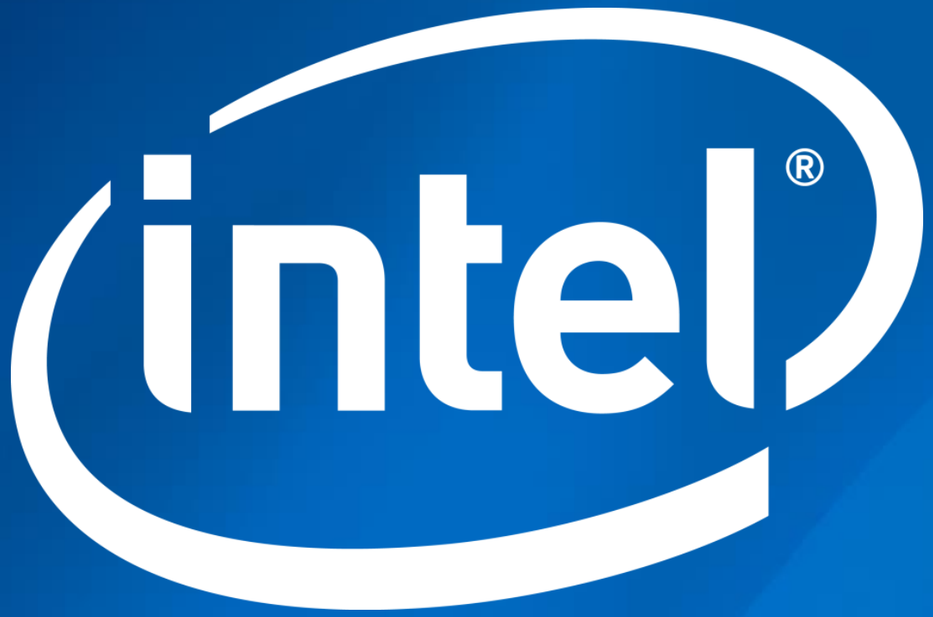
ANNOUNCING TODAY

	2011	2012	2013	2014+
intel inside XEON	**Xeon E3 Sandy Bridge 32nm** *As low as 20W*	**Xeon E3 Ivy Bridge 22nm** *As low as 17W*	**Xeon E3 Haswell 22nm** *As low as 13W*	**14nm "Broadwell"** **14nm "Broadwell" SoC**
intel inside ATOM		**Centerton 32nm** *As low as 6W*	**Avoton Rangeley 22nm**	**14nm "Denverton"**

All products, computer systems, dates, and figures specified are preliminary based on current expectations, and are subject to change without notice.

Intel's Unmatched Assets




intel

Legal Disclaimers

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. Go to: http://www.intel.com/products/processor_number

Intel, processors, chipsets, and desktop boards may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM). Functionality, performance or other benefits will vary depending on hardware and software configurations. Software applications may not be compatible with all operating systems. Consult your PC manufacturer. For more information, visit http://www.intel.com/go/virtualization

No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer system with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit http://www.intel.com/technology/security

Intel, Intel Xeon, Intel Atom, Intel Xeon Phi, Intel Itanium, the Intel Itanium logo, the Intel Xeon Phi logo, the Intel Xeon logo and the Intel logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

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

Copyright © 2013, Intel Corporation. All rights reserved.