Dell EMEA Solutions Tour 2014

What's going on : Third Industrial Revolution

1.0

Steam and coal

Railways

Factories

Printing press – mass education

1760's…….

2.0

Electrification, comms, oil, combustion engine

New materials

Highways, automobiles

Mass production

1860's…….

3.0 *

Internet, molecular biology, renewable energy sources

Super information highways

Smart "everything"

Late 1990's…….
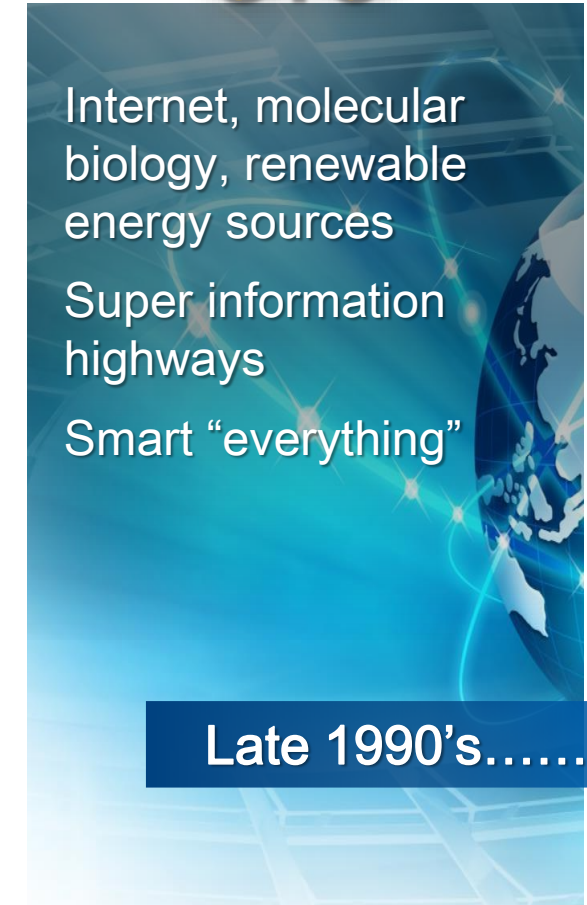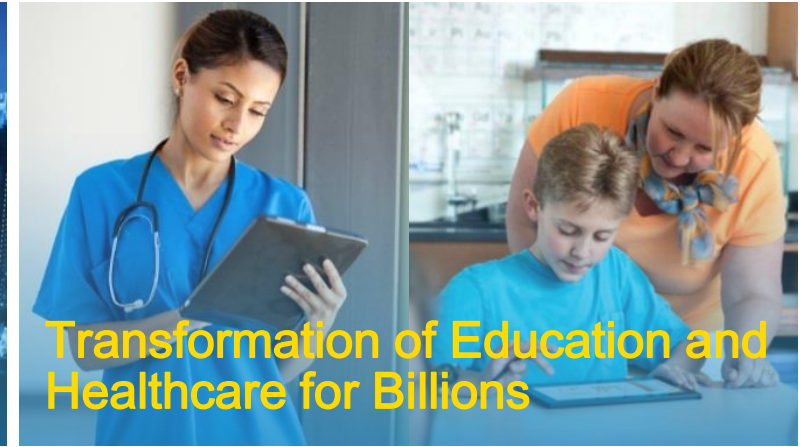
We are still at the dawning of the third era…
...A new economic narrative is being written.

A look Ahead: Confident Predictions

New generations:
Born connected

Rise of mega cities

Transformation of Education and
Healthcare for Billions

A new middle class
is emerging

10Bn people by 2050, 1 Planet
Pressure on resources

Relentless
Cyber Threats & Privacy
Concerns

(intel)

Workplace Transformation:
New Styles of Work Are Emerging

- *Agile Approaches*

- *De-Routinization*

- *Hyperconnected & Distributed*

- *Work Space vs Work Place*

- *Working with the Collective*

- *Crowd sourcing*

Users are migrating to multiple screens choosing the best device for a given task.

New form factors and new product categories, new experiences and new security concerns are emerging.

IT purchase decisions are made not only by ITDM but also by BDM who use different decision criteria.

(intel)

The Right Device for the Right Job

Mobile Point of Care

General Office Worker

Sales Process and Workflow

Education

Executive Road Warrior

Dell has the right products to win in the multiscreen world

Tablet
Display Size: ≤10.1"
Thinnest, Lightest, Longest Battery
Excellent Tablet Experience

2 in 1 Detachable
Display Size: 10"–13.3"
Thin, Cool, Quiet (including fanless)

2 in 1 Convertible
Display Size: 11"–15.6"
Very Thin

Notebook with Touch
Display Size: 11"–15.6"
Very Thin

High End Notebook
Display Size: 15.6"-17.3"
Feature Rich & Highest Performance

Tablet Experience ←   → **PC Experience**

2in1 Tablet when you want it. PC when you need it.

Real Productivity & Security
Performance to run traditional apps locally
Hardware-enhanced security to protect data & network

Complete Windows 8* Compatibility
Desktop mode with Touch & portability in one device

Big Screen for Serious Work
Choose from multiple form factors for individual needs and style

Total Cost of Ownership

Save with a 2 in 1 Ultrabook™ with Intel® vPro™ technology vs. separate laptop plus tablet

Manageability
Manage one device per user, not two

Security
Rely on Intel® vPro™ technology HW-assisted security in both modes

Software
Run single instances of software per user

Flexibility
Give workers the convenience of two devices in one

A SINGLE DEVICE THAT PERFORMS AS BOTH A TABLET AND A LAPTOP

WAS LESS EXPENSIVE FOR ORGANIZATIONS VS. LAPTOP-PLUS-TABLET SOLUTIONS*

Save $1,485 or Save $1,614

Three-year savings per user with a 2 in 1 device compared to a laptop and Apple iPad Air or ARM-based tablet

Microsoft Windows 8.1 and Intel for Business

Tablets powered by Intel fit right into the enterprise.

Business-proven productivity, business-ready compatibility

Experience the ease of integration. Intel architecture-based tablets running Windows 8 fit seamlessly into most enterprise environments and work with the apps your users already know.

Built for portability, engineered for security

Intel architecture-based tablets running the Windows 8 operating system meet the mobility needs of users and the security requirements of Intel IT.

High-powered performance meets lower costs

Discover savings without sacrifice. Intel architecture-based tablets deliver the compatibility, security, and productivity
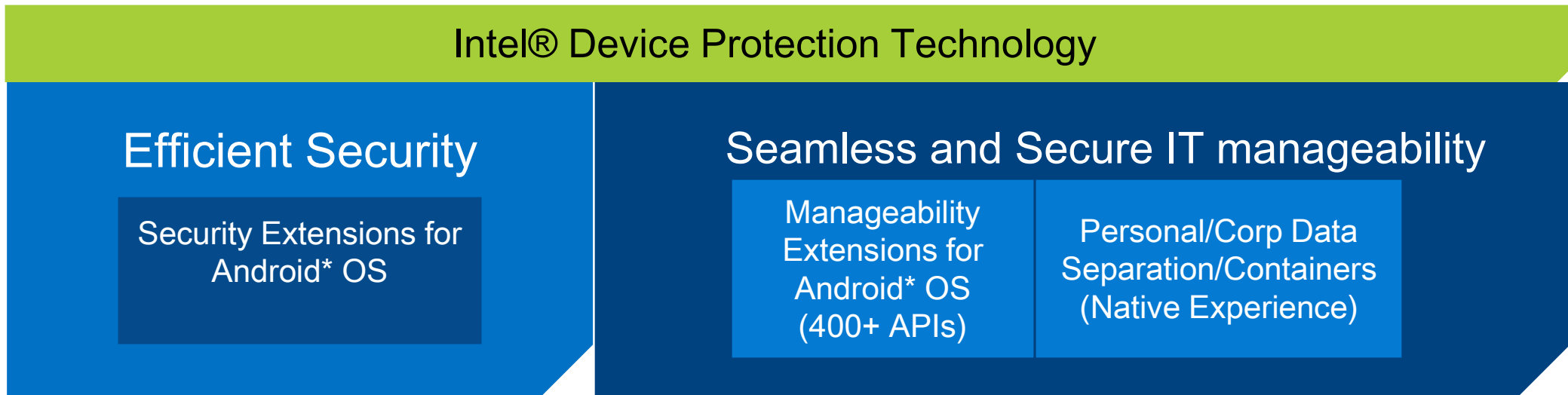to help reduce total cost of ownership.

Google Android and Intel for Business

Tablets powered by Intel are a good answer to common IT Management challenges.

Mobile devices running with Intel Device Protection Technology will offer users new security capabilities to help proactively block and secure the devices from malware delivered through malicious applications and websites.

Intel® Device Protection Technology

Efficient Security

Security Extensions for Android* OS

Seamless and Secure IT manageability

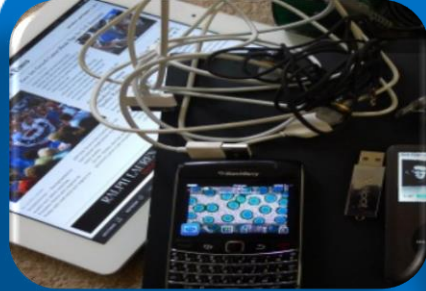| Manageability Extensions for Android* OS (400+ APIs) | Personal/Corp Data Separation/Containers (Native Experience) |

Works well on IA – with Android

Built into Android by Intel

2014-2015 Converged UX Framework & Priorities

Free Me

Technology that frees me from the burdens & annoyances of computing

- No Wires
- No Passwords
- My device (BYOD)

Immerse Me

Technology that immerses me into real & imaginary worlds

- 3D Capture & Share
- Gaming & Learning
- Collaboration
- New User Interface

Know Me

Technology that knows where I am, what I like, what I want/need & gives me control

- Voice Assistance
- Contextual Assistance
- Health & Wellness
- *Data Bank*

Express Me

Technology that expresses my personal side to the world

- *Digital Storytelling*
- *Social Broadcasting*

2014-2015 Broad Scale Efforts

Limited Pilots/Industry Advocacy/Vision

What Makes A Great Workstation
from basic design through advanced simulation

Concurrent interactive
design & visualization

Dell Precision T7610/5610
Intel® Xeon® Processor
E5-2600v2 Product Family

+More complex modeling,
interactive design
and visualization

Dell Precision T3610
Intel® Xeon® Processor
E5-1600v2 Product Family

Trusted, Reliable
Performance,
Manageability

Precision T1700
Intel® Xeon® Processor
E3-1200 v3 Product Family

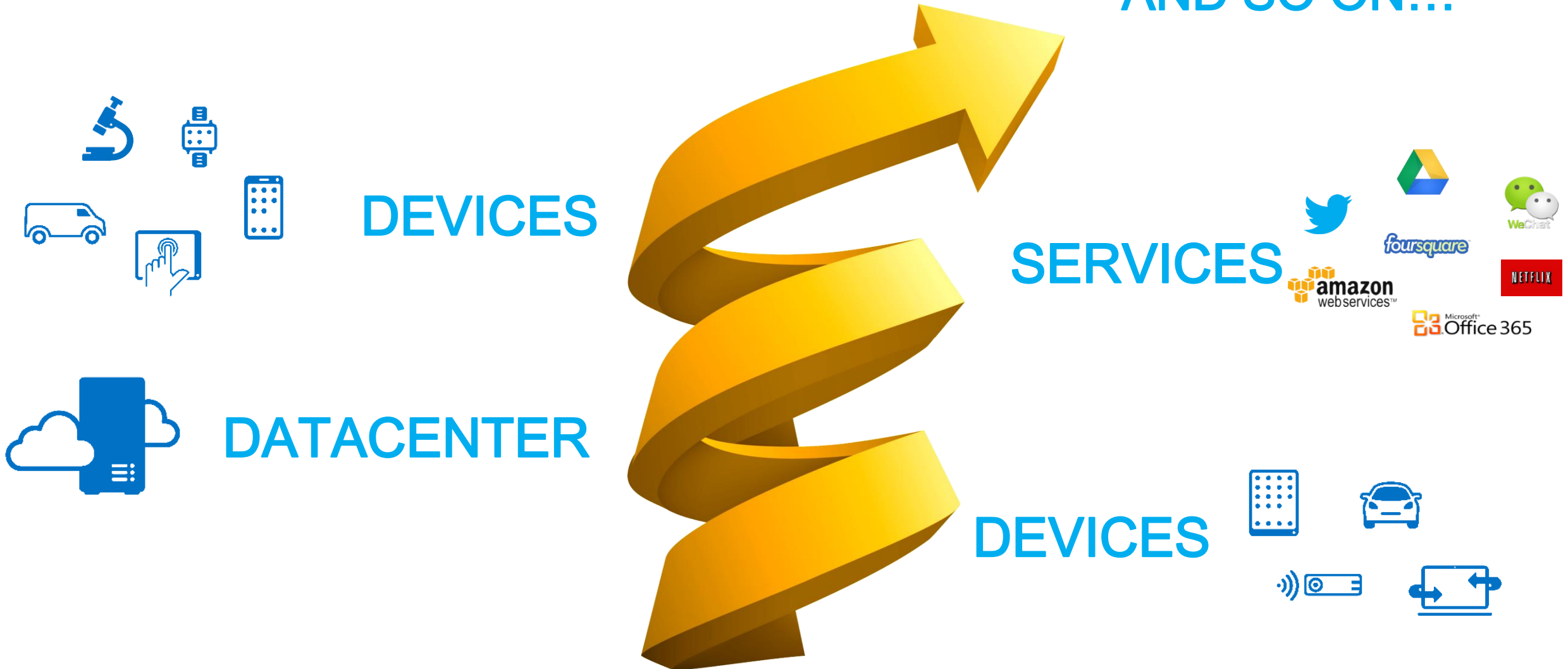Thin and light with
professional power

Precision M3800
Intel® Core® Processor
i7 Product Family

Video

The Virtuous Cycle of Computing

AND SO ON…

DEVICES

SERVICES

DATACENTER

DEVICES

Major Opportunities for Leading Organizations

Windows Server Install base

Accelerate new services delivery

Speed applications devel-opment and deployment of new capabilities

Engage Customers Anytime, Anywhere

Deliver information and services to all platforms – mobile or fixed

Turn Information to Intelligence

Utilize Big Data and Analytics to deliver new insights

Microsoft 2003 EOLing

Estimated there are **>12 Million Servers** running on Windows Server* 2003. Extended support ends in 2015
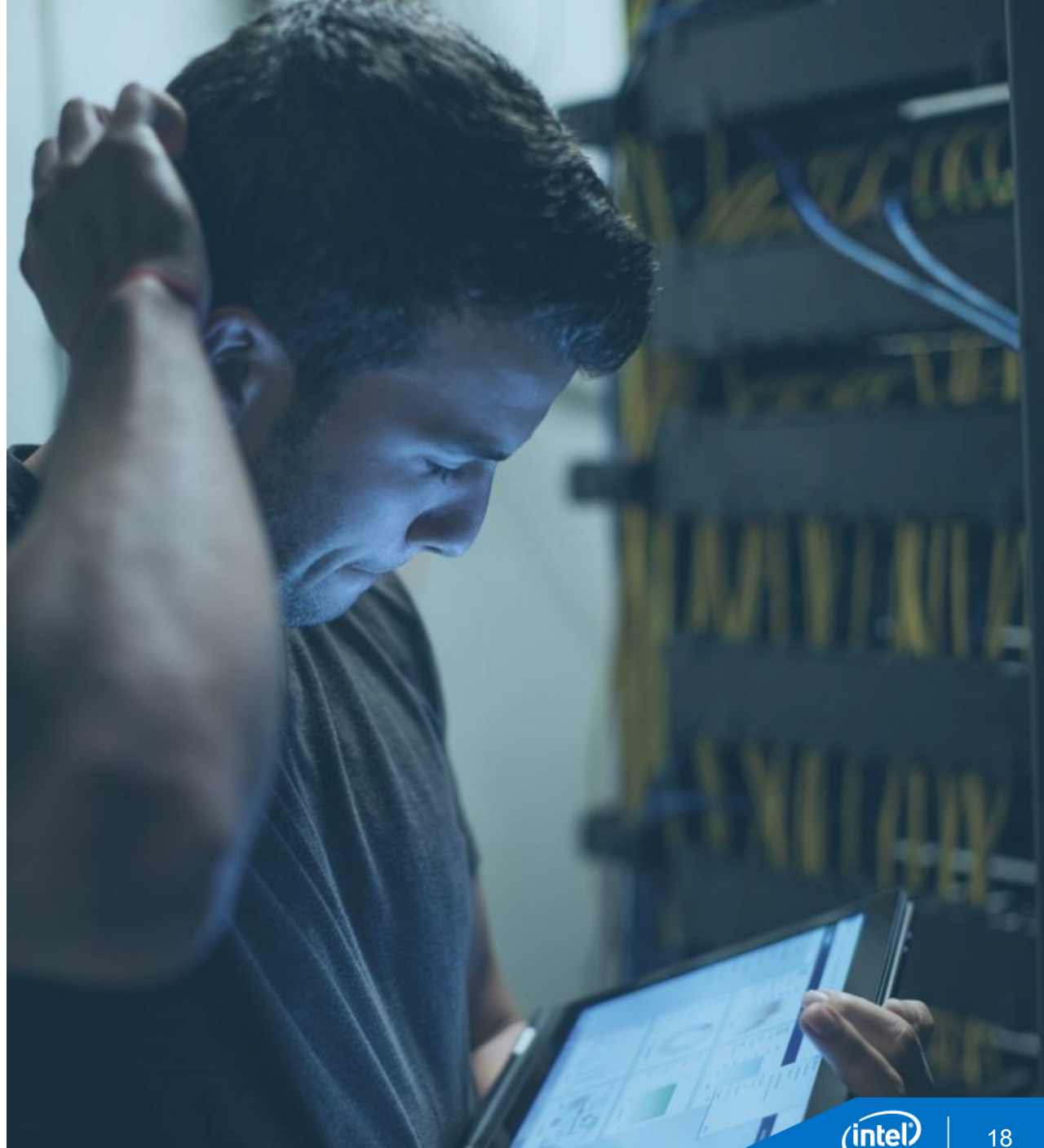
(intel)

So, what's needed?

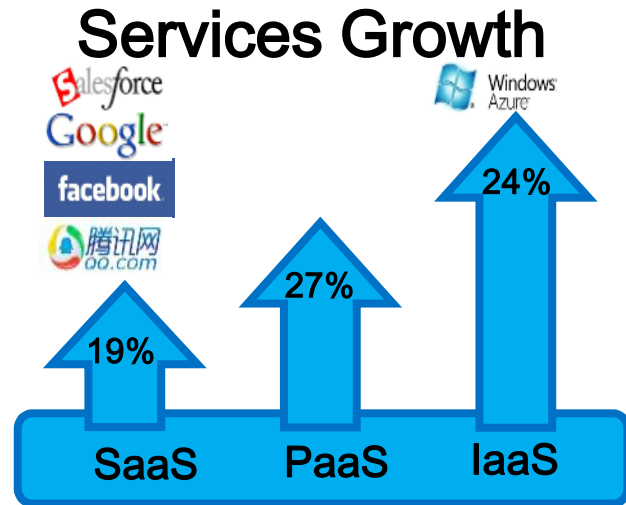# An Agile Infrastructure - Born in the Cloud

Adapt quickly to changing requirements

Cope with diverse workloads and data streams

Drive efficiencies through automation

Cloud Driving Tremendous Opportunity
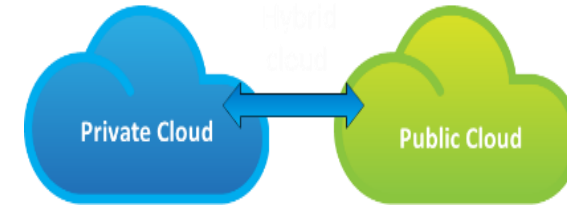
Services Growth

19% SaaS
27% PaaS
24% IaaS

Hybrid Cloud

Private Cloud ↔ Public Cloud

Security is #1 Concern

New Usages

Server Graphics

Perceptual Computing

Cold Storage

Software Defined Infrastructure

Orchestration + Rack architecture + SDN

Drivers of a $3.7B Business by 2016

Source: Gartner Forecast Overview: Public Cloud Services, Worldwide, 2011-2016, 4Q12 Update

What's Inside Matters to End-Users & Businesses

Powered by

intel Cloud Technology

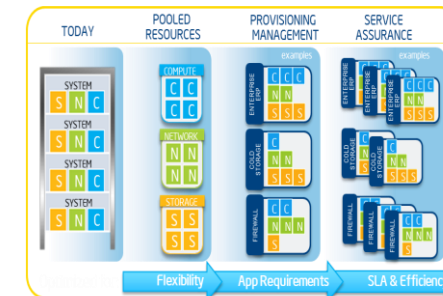70% ITDMs are specifying HW in public cloud

Top Reasons:

PERFORMANCE

SECURITY

WORKLOAD OPTIMIZE

Small performance changes can impact use on ecommerce sites

33% of users will abandon page & go elsewhere when response times reach 6 secs [1]

Page load acceleration drove 7-12% increased revenue [2]

shopzilla

NOVARTIS [3]
INSTITUTES FOR BIOMEDICAL RESEARCH

Up to 65% cost savings

Premium   Lower Performing
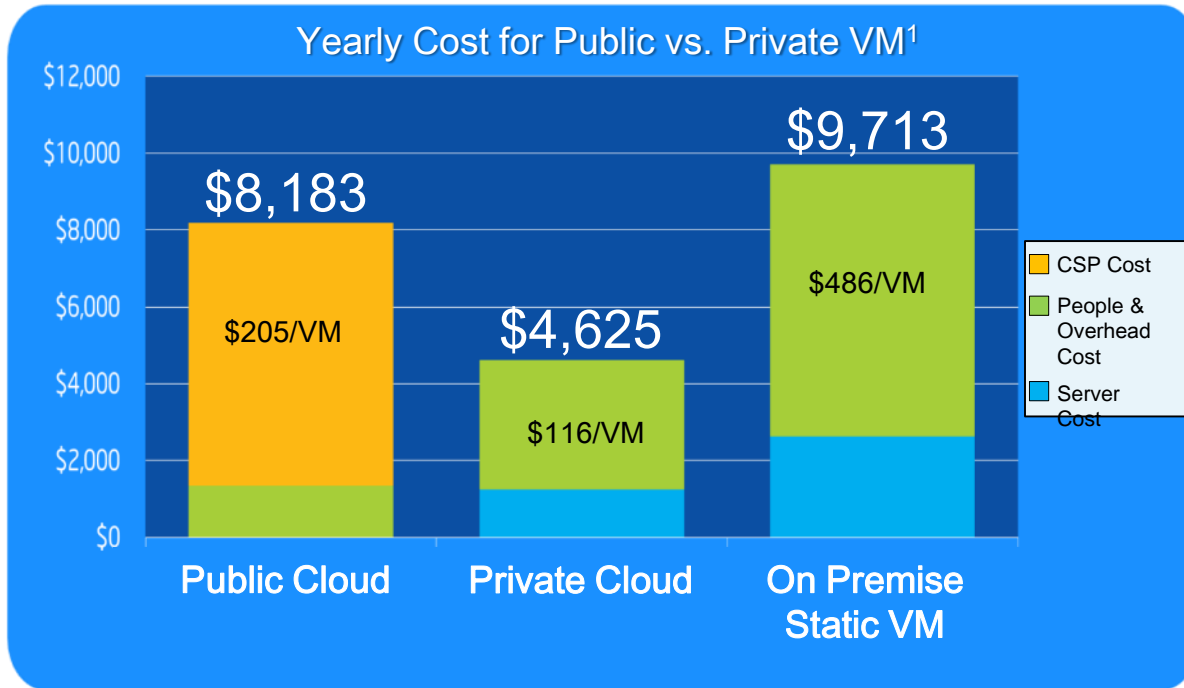
■ Avg Run time   — Avg Price/1K Jobs

Security remains #1 barrier to public cloud adoption

"One security challenge is protecting the integrity and confidentiality of data when the classic network perimeters are no longer available or entirely reliable." *VP Security, NasdaqOMX*

1.Base: Total using Public Cloud
2. US n=207; PRC n=241, Germany n=90, Brazil n=81
3. Q. What percent of these applications have you specified the hardware and/or other components to be used by the Cloud service provider as opposed to only specifying the level of service you expect?
1. http://www.digitalservicecloud.com/resources/blog/good-customer-service.html
2. Cisco 2012 White Paper "CloudHarmony Performance Benchmark: Select High-Performing Public Cloud to Increase Economic Benefit"
3. NIBR, of Novartis Pharmaceuticals ran Next Gen Sequencing, Imaging & Modeling & Sim techniques (specifically Virtual Screening w/CPU bound, low mem, low IO, network, embarrissingly parallel Benchmarking SW ran same job many times (workload avg 32 secs on AWS cc2.8xlarge vs 1min 7 sec on AWS m1.large) revealed that best ROI was with cc2vspot instances

Public vs. Private Cloud Economics

Yearly Cost for Public vs. Private VM[1]

Chart values:
- Public Cloud: $8,183 ($205/VM)
- Private Cloud: $4,625 ($116/VM)
- On Premise Static VM: $9,713 ($486/VM)

Legend:
- CSP Cost
- People & Overhead Cost
- Server Cost

Y-axis: $0, $2,000, $4,000, $6,000, $8,000, $10,000, $12,000

Public cloud:
New apps, unpredictable demand

Private cloud:
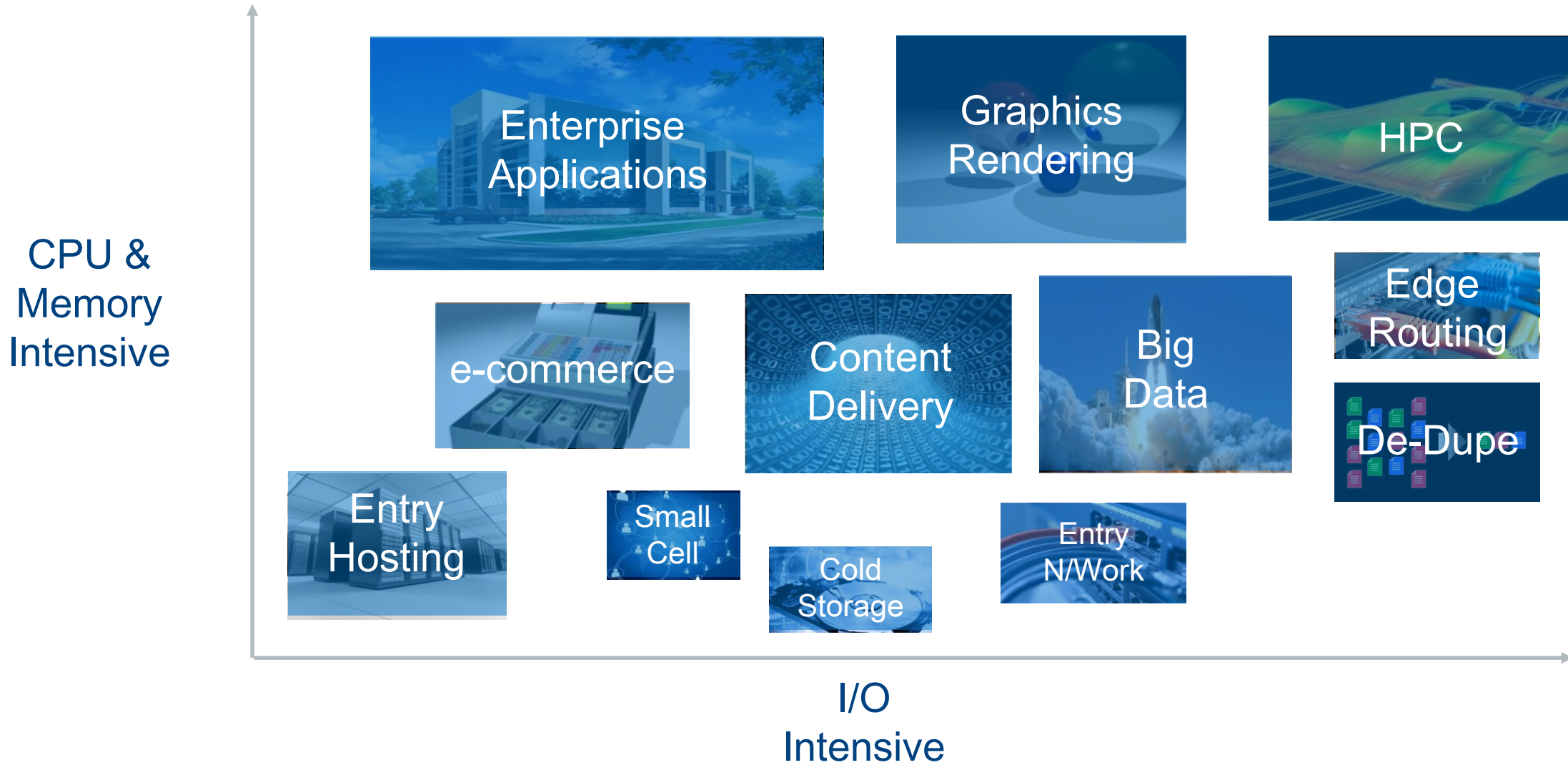Stable, established apps for efficiency

Opportunity:
4X improvement in $/VM for IT with OpenStack and virtualization density improvement

Case by Case analysis needed!
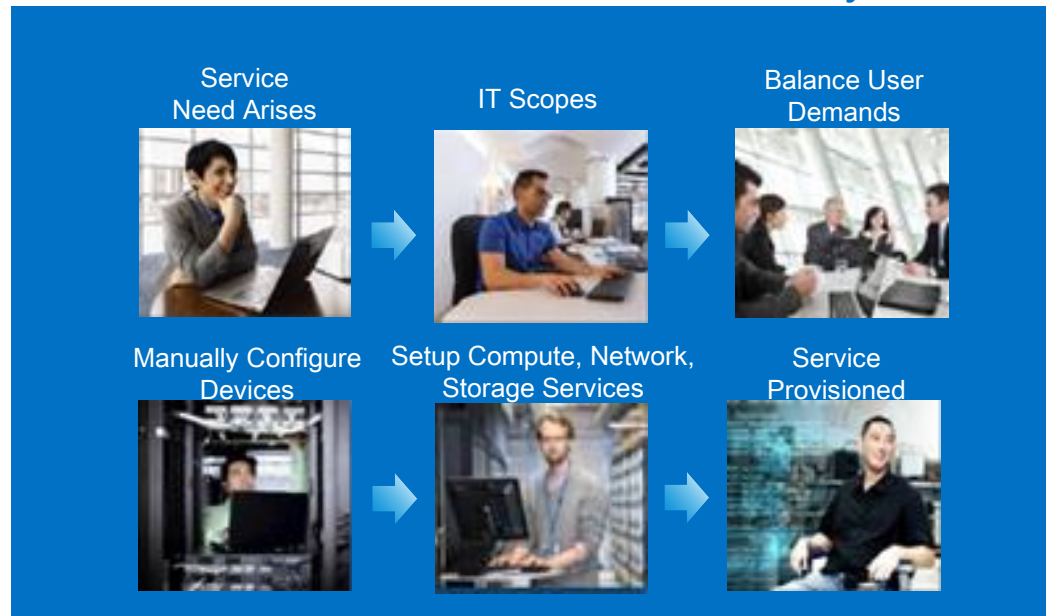
1. Internal analysis Oct'13
2. Source: IDC – published in Intel Market Research Cloud Synthesis Update, Oct 2013

Workload Variety

CPU &
Memory
Intensive

I/O
Intensive

Enterprise Applications

Graphics Rendering

HPC

e-commerce

Content Delivery

Big Data

Edge Routing

De-Dupe

Entry Hosting

Small Cell

Cold Storage

Entry N/Work

Evolution to Simplicity and Efficiency

Traditional IT Datacenter Today

Service Need Arises → **IT Scopes** → **Balance User Demands**

Manually Configure Devices → **Setup Compute, Network, Storage Services** → **Service Provisioned**

Time to Provision New Service: **Months** [1]

Enterprise Private Cloud

Service Need Arises → Self-service, orchestrated secure provisioning → **Service Provisioned**
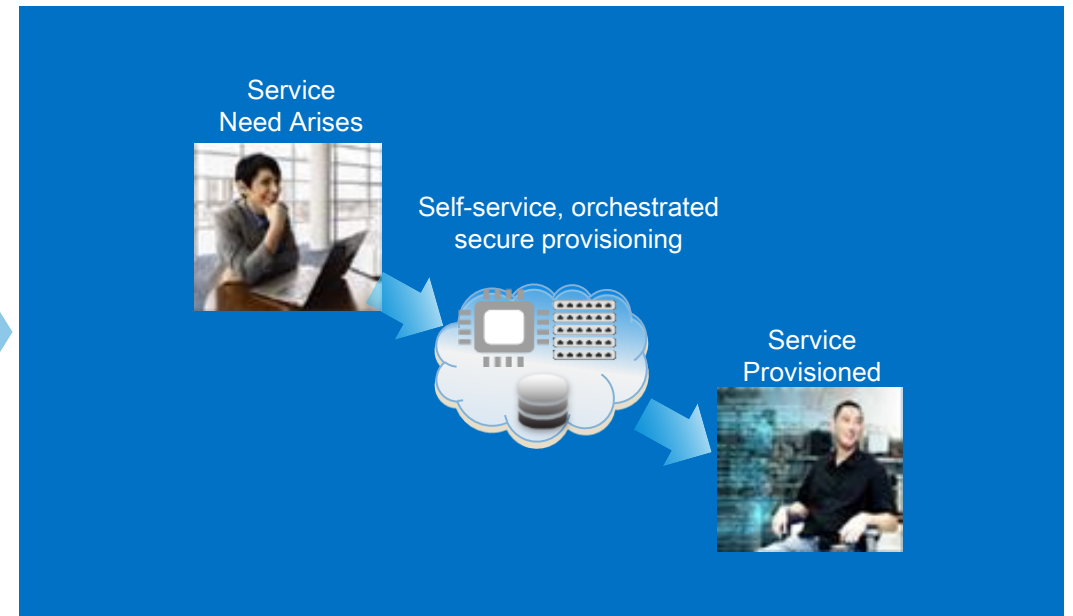
Time to Provision New Service:[1] **Minutes**

Gain REAL Optimization
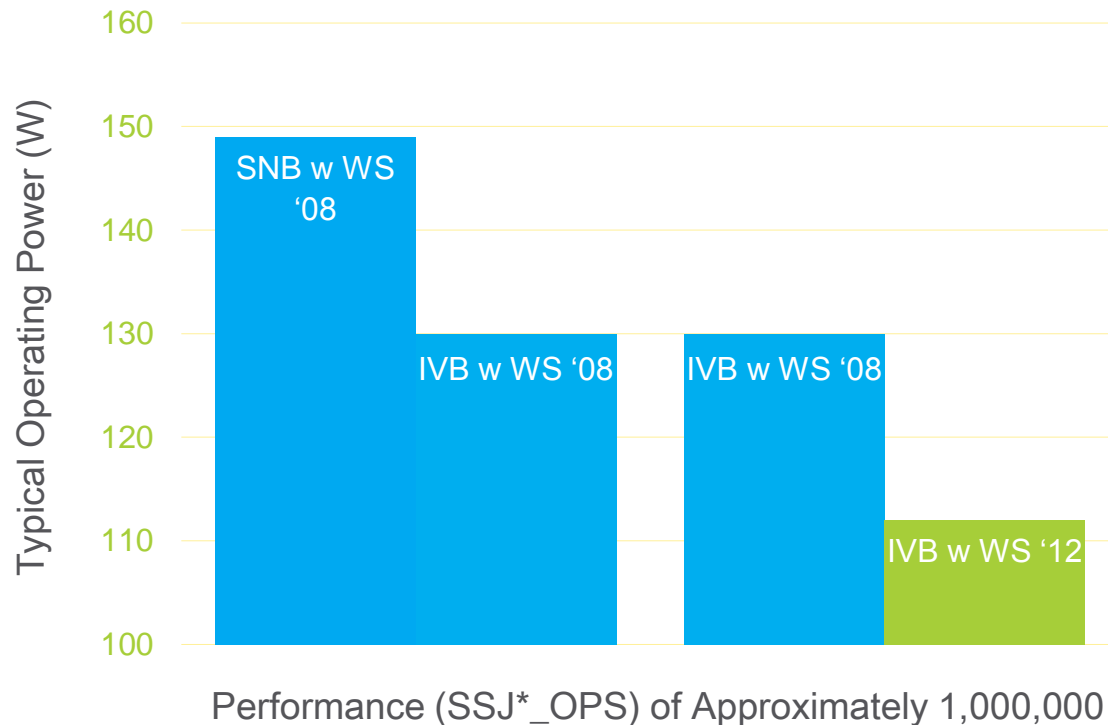
Deliver up to 15%[1] power reduction by upgrading to WS2012 from WS2008

Hyper-V offers uncompromised live migration with IO virtualization improvements

HW enhanced security with fast, low overhead encryption (AES-NI) and the addition of high quality keys.

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

Big Data & Data Intensive Computing

Video

Untapped Value of Big Data

MEDICAL SCANS

SOCIAL MEDIA

SATELLITE IMAGERY

E-COMMERCE

TRAFFIC PATTERNS

CORRELATE

ANALYZE & PREDICT

INSIGHT

Epidemic migration paths

Business Intelligence

Customer Purchase Habits

Extreme Weather Prediction

Falls prevention for the elderly
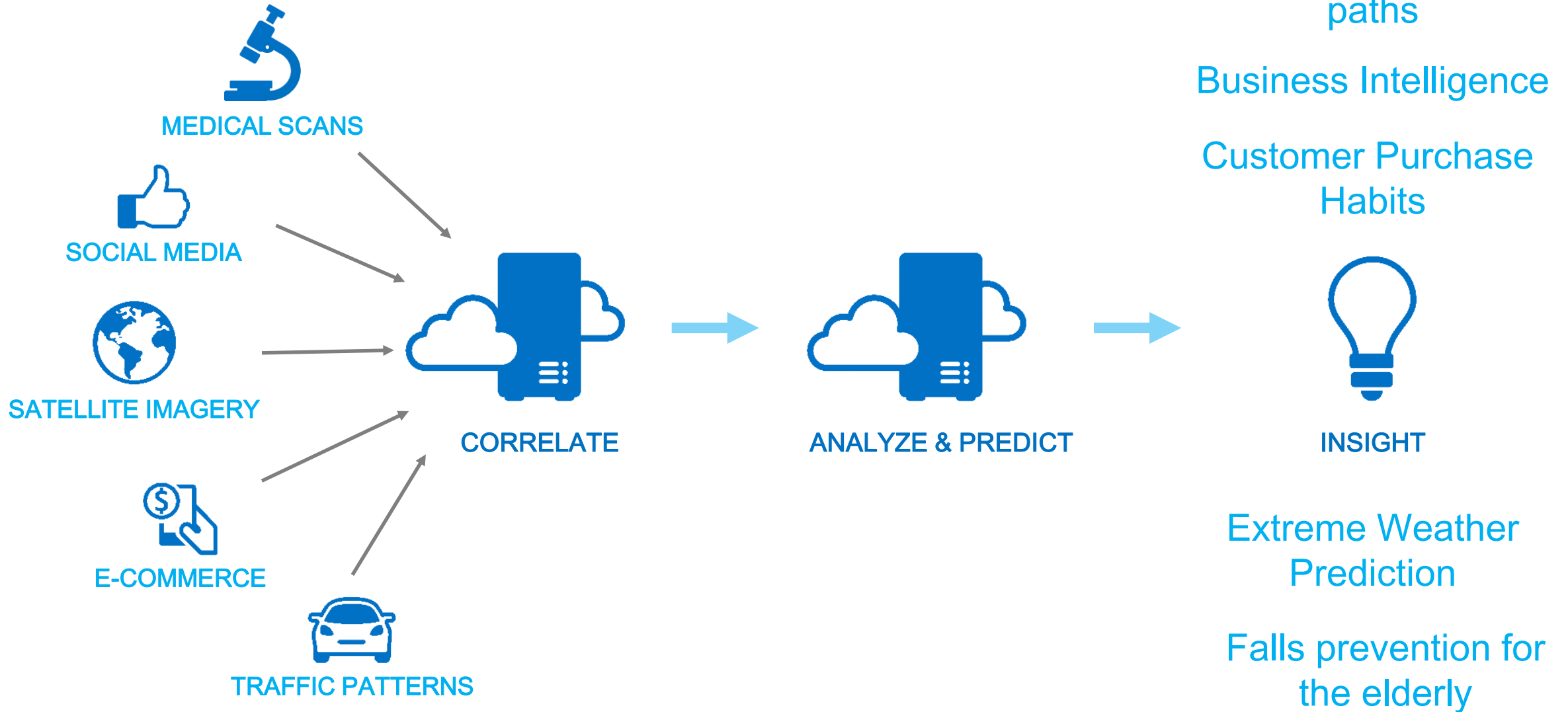
The Power of a Portfolio…

Getting to Insight. Faster.

4 HOURS

Baseline: Intel Xeon Processor 5600 Series, HDD, 1GbE

Upgrade to Intel Xeon Processor E5-2600v2

2 HOURS

Upgrade to Intel Solid State Drive

24 MINUTES

Upgrade to Intel 10GbE Adapters

12 MINUTES

Upgrade to optimized Hadoop distribution

~7 MINUTES
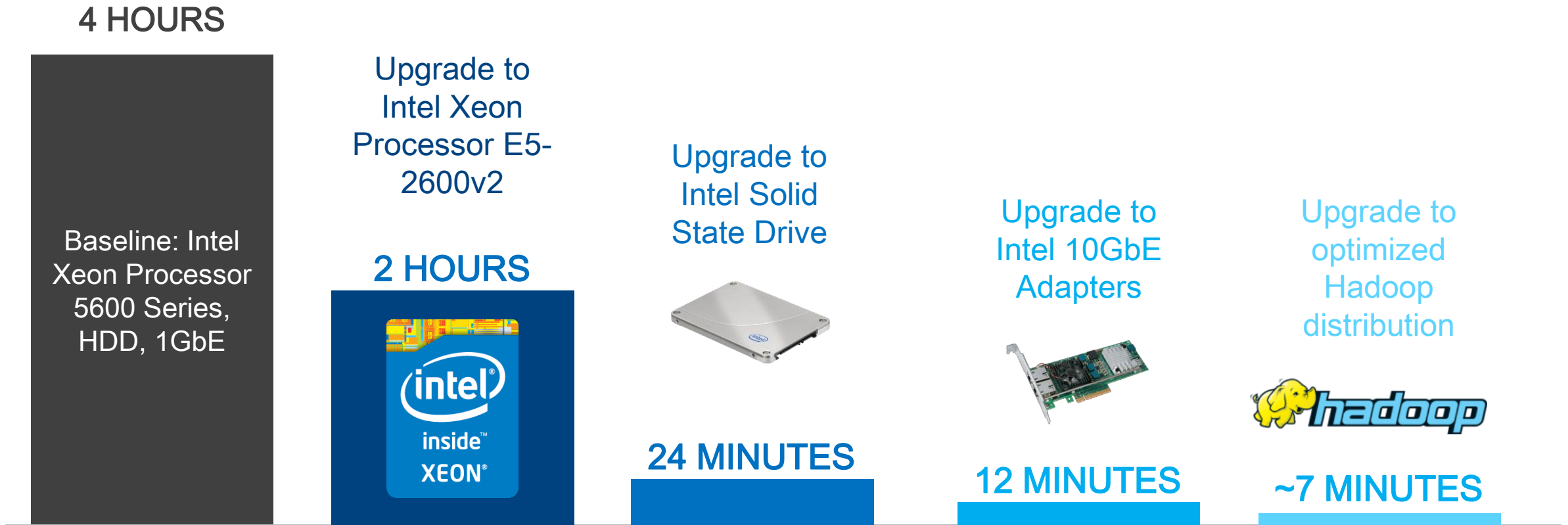
Time taken for 1TB TeraSort

Dell Intel Server Portfolio:
Proven Solutions for Every Workload

BUSINESS PROCESSING
DB, ERP, CRM, SCM…

VIRTUALIZATION
VMWare, Microsoft, Citrix…

BIG DATA
SAP/HANA, Hadoop, Ceph…

CSPs
Web Services…

HPC
Simulation, Modelling, Pharma…

BRANCH OFFICE

R920
High end 4-socket
Xeon E7v2

New

R820v2
Better
Performance 4-socket
Xeon E5-4600v2

VRTXv1.3
Better
Datacenter in a box
Xeon E5v2

R220
New
Dense, powerful 1-socket
Xeon E3v3

Better

R/M420, 520, 620 v2
T320, 420 v2
R720, 720XD v2
Blades, RMS, Tower
Xeon E5v2

New
Intel Xeon
Processor E7v2
Family

New
Intel Xeon
Processor E5v2
Family

New
Intel Xeon
Processor E3v3
Family

Intel Xeon Phi
Co-Processor
Family

The Next Industrial Revolution

CLIENT CONTINUUM

INTERNET OF THINGS

BIG DATA

CLOUD

SECURITY

The Pace of Change is Accelerating…
…People's Expectations are Growing
Need to get Time, Cost, Labour out of the Data Center…
…and into Business Transformation & Innovation

What's your Plan?

Key Messages

Intel & Dell are Reinventing the PC
- New Form Factors – 2in1
- OS Choice
- New User Experiences

Our ability to create content and demand to view it anywhere at any time on numerous devices is driving server demand

Intel & Dell:
- Have a portfolio for various workloads
- Allow you to get to insights faster from big data

Evaluate public vs. private cloud options

Intel & Dell have the products to help you succeed now & in the future

Backup

Disclaimer

Intel® Platform/Device Protection Technology
(includes the following features: Bios guard; Boot Guard; Platform Trust Technology {PTT}; OS Guard; Anti-Theft Technology {AT}; Trusted Execution Technology {TXT}; and Execute Disable Bit)

No computer system can provide absolute security. Requires an enabled Intel® processor, enabled chipset, firmware, software and may require a subscription with a capable service provider (may not be available in all countries). Intel assumes no liability for lost or stolen data and/or systems or any other damages resulting thereof. Consult your system or service provider for availability and functionality

The Virtuous Cycle of Computing
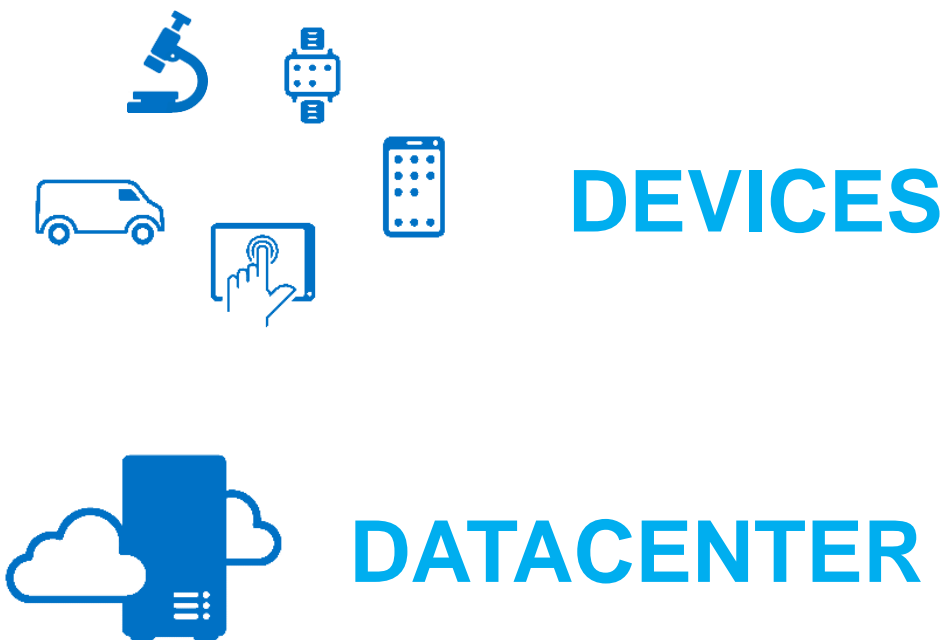
AND SO ON…

DEVICES

SERVICES

DATACENTER

DEVICES

Major Opportunities for Leading Organizations

Windows Server 2008, 35%

Other Windows Server, 8%

Windows Server 2003, 57%

Microsoft 2003 EOLing

Estimated there are **>12 Million Servers** running on Windows Server* 2003. Extended support ends in 2015

Turn Information to Intelligence

Utilize Big Data and Analytics to deliver new insights

Engage Customers Anytime, Anywhere

Deliver information and services to all platforms – mobile or fixed

Accelerate new services delivery

Speed applications devel-opment and deployment of new capabilities

(intel)

Data Center Group

Defining and leading an open data center, cloud computing, and connected systems infrastructure that will connect and enrich the lives of every person on earth through seamless and pervasive computing.

intel inside™ XEON® **intel inside™ XEON PHI™** **intel inside™ CORE™** **intel inside™ ATOM™**

Servers

Network

Storage

Software

Enterprise IT

Cloud Service Providers

Communication Service Providers

Technical Computing
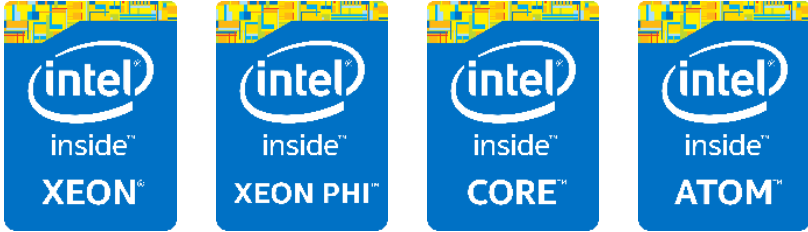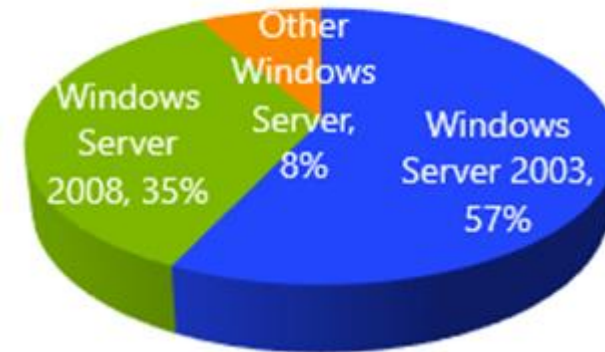
Windows* Server 2003 Upgrade Opportunity

Estimated there are **>12 Million Servers** still running on Windows Server* 2003[1]

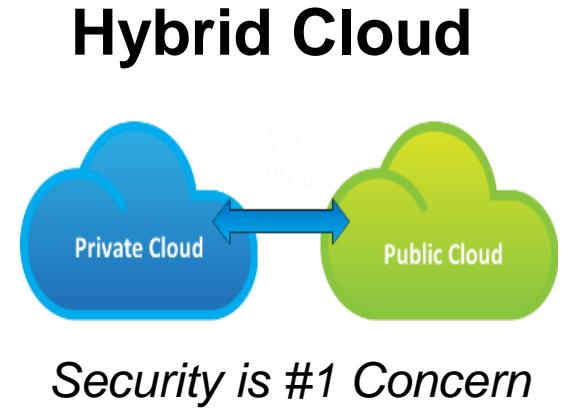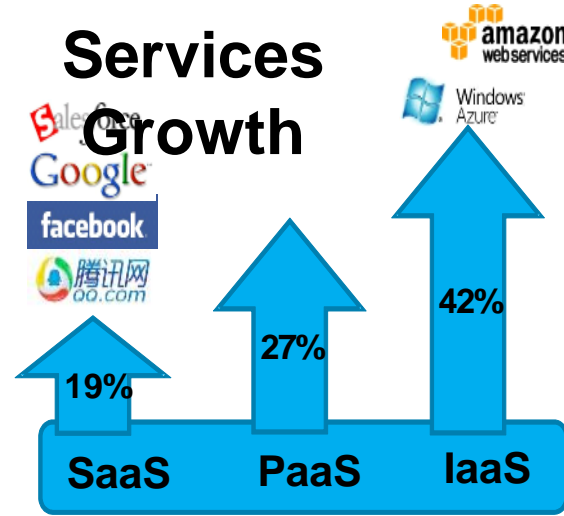- >50% of the Windows Server installed base

Microsoft Mainstream support for Windows Server 2003 ended in 2010; **Extended Support ending in 2015**

Several new innovations of Intel® Xeon® Processors unleashed with Windows Server 2012*

Windows Server Install base

- Other Windows Server, 8%
- Windows Server 2008, 35%
- Windows Server 2003, 57%

Cloud Driving Tremendous Opportunity

Services Growth

amazon web services

Windows Azure

salesforce
Google
facebook
腾讯网 QQ.com

42%

27%

19%

SaaS   PaaS   IaaS

Hybrid Cloud

Private Cloud ⟷ Public Cloud

Security is #1 Concern

New Usages

Server Graphics   Perceptual Computing   Cold Storage

Software Defined Infrastructure

Orchestration + Rack architecture + SDN
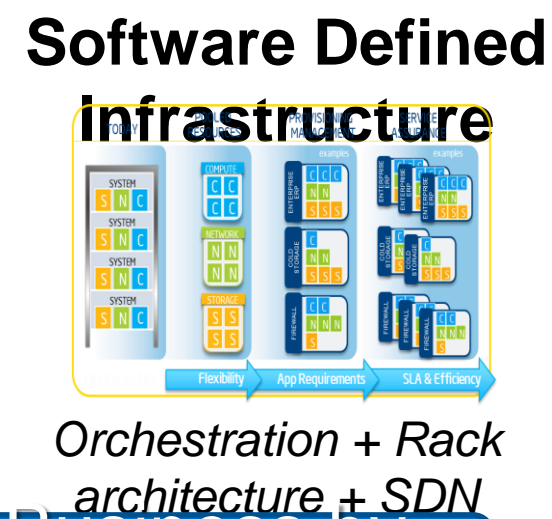
Drivers of a $3.7B Business by 2016

An Agile Infrastructure – Born in the cloud

Adapt quickly to changing requirements

Cope with diverse workloads and data streams

Drive efficiencies through automation

Public vs. private cloud economics
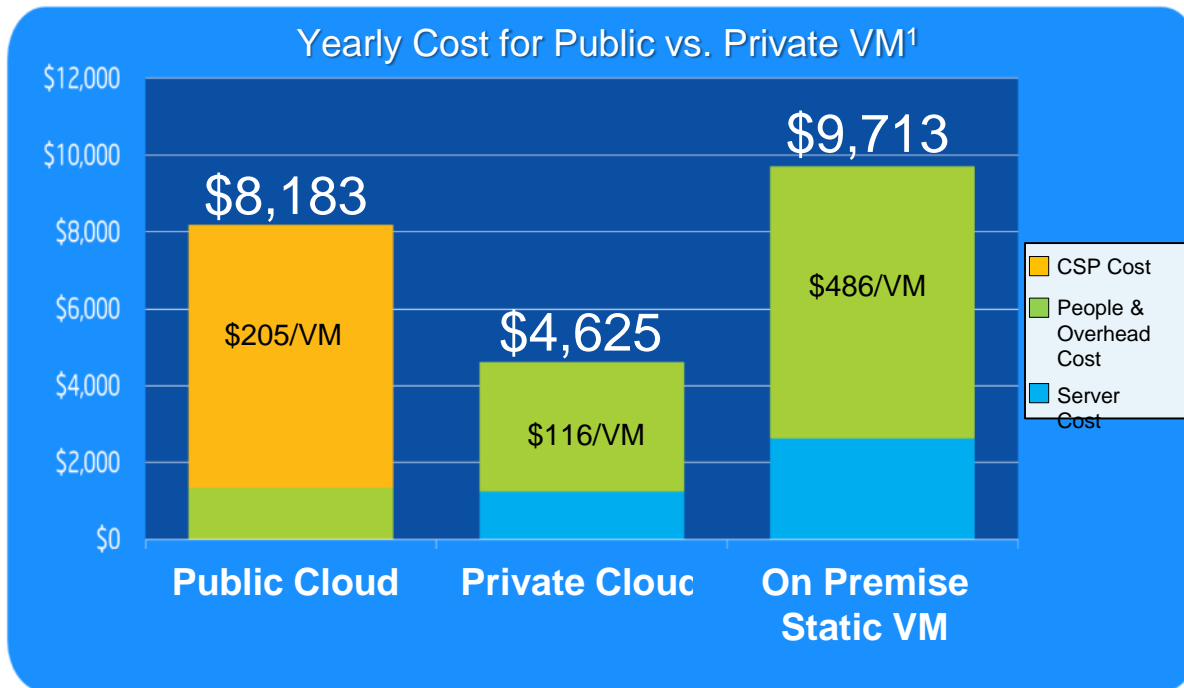
Yearly Cost for Public vs. Private VM[1]

Public Cloud — $8,183 ($205/VM)
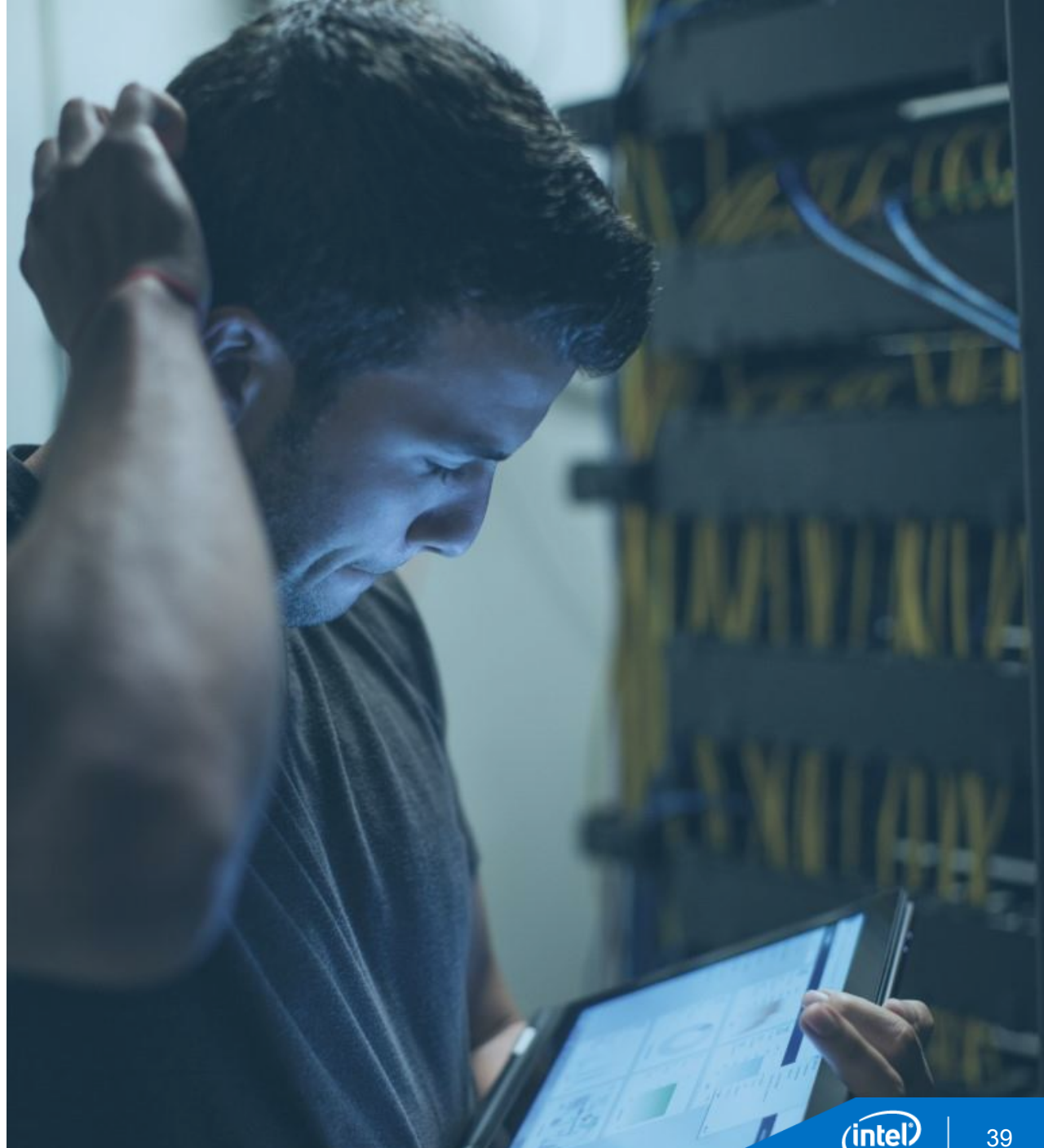**Private Cloud** — $4,625 ($116/VM)
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Legend:
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Public cloud:
New apps, unpredictable demand

Private cloud:
Stable, established apps for efficiency

Opportunity:
4X improvement in $/VM for IT with OpenStack and virtualization density

Case by Case analysis needed!

1. Internal analysis Oct'13
2. Source: IDC – published in Intel Market Research Cloud Synthesis Update, Oct 2013

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SOCIAL MEDIA

SATELLITE IMAGERY

E-COMMERCE

TRAFFIC PATTERNS

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CSPs
Web Services…

HPC
Simulation, Modelling, Pharma…

BRANCH OFFICE

R920
High end 4-socket
Xeon E7v2
New

VRTXv1.3
Better
Datacenter in a box
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Dense, powerful 1-socket
Xeon E3v3

R/M420, 520, 620 v2
T320, 420 v2
R720, 720XD v2
Better
Blades, RMS, Tower
Xeon E5v2

New Intel Xeon Processor E7v2 Family

New Intel Xeon Processor E5v2 Family

New Intel Xeon Processor E3v3 Family

Intel Xeon Phi Co-Processor Family

The Next Industrial Revolution

| CLIENT CONTINUUM | INTERNET OF THINGS | BIG DATA | CLOUD | SECURITY |

The Pace of Change is Accelerating
Need to get Time, Cost, Labour out of the Data Center…
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What's your Plan?

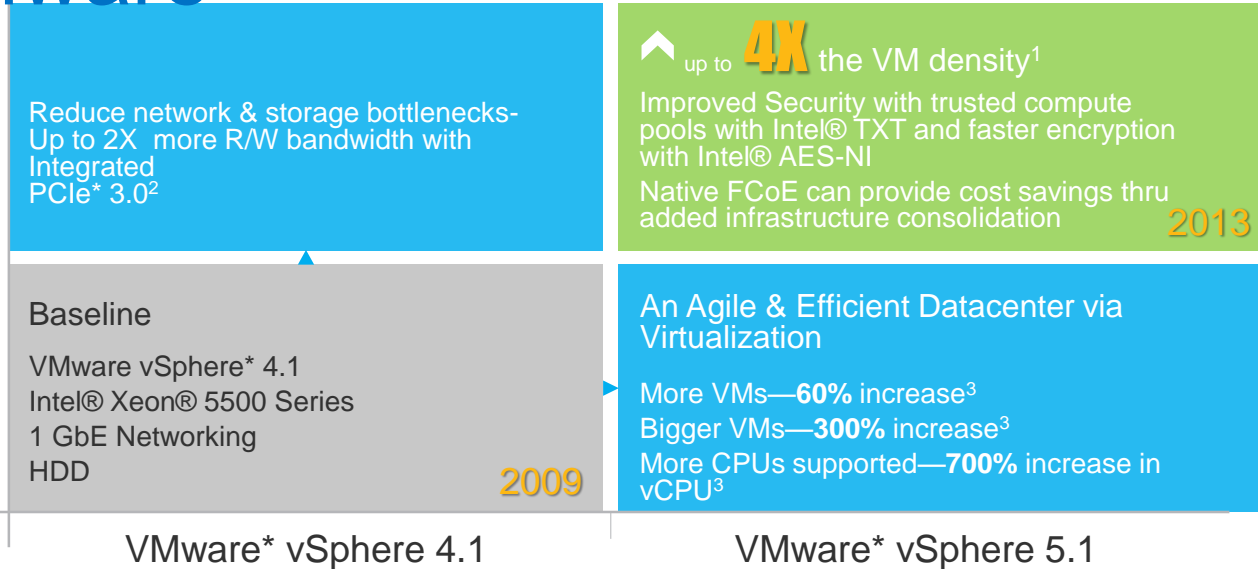# Better Together: Increasing Private Cloud ROI with VMware

VMWare vSphere * 5.1 and Intel Data Center Building Blocks

Intel® Xeon® E5-2600 v2 Product Family

+

Intel SSD
10GbE

Intel Xeon® 5500 + Series

HDD
1 GbE

Reduce network & storage bottlenecks- Up to 2X more R/W bandwidth with Integrated PCIe* 3.0[2]

up to **4X** the VM density[1]

Improved Security with trusted compute pools with Intel® TXT and faster encryption with Intel® AES-NI

Native FCoE can provide cost savings thru added infrastructure consolidation

2013

Baseline

VMware vSphere* 4.1
Intel® Xeon® 5500 Series
1 GbE Networking
HDD

2009

An Agile & Efficient Datacenter via Virtualization

More VMs—**60%** increase[3]
Bigger VMs—**300%** increase[3]
More CPUs supported—**700%** increase in vCPU[3]

VMware* vSphere 4.1   VMware* vSphere 5.1

[1] Source: Intel estimation as of September 2013 . See following page for configuration data and assumptions. 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.

[2] Intel estimates of maximum achievable I/O R/W bandwidth (512B transactions, 50% reads, 50% writes) comparing Intel® Xeon® processor E5-2680 based platform with 64 lanes of PCIe* 3.0 (66 GB/s) vs. Intel® Xeon® processor X5670 based platform with 32 lanes of PCIe* 2.0 (18 GB/s). Baseline Configuration: Platform with two Intel® Xeon® processor X5670 (2.93 GHz, 6C), 24GB memory @ 1333, 4 x8 Intel internal PCIe* 2.0 test cards. New Configuration: Platform with two Intel® Xeon processor E5-2680 (2.7GHz, 8C), 64GB memory @1600 MHz, 2 x16 Intel internal PCIe* 3.0 test cards on each node (all traffic sent to local nodes).

[3] Source: VMWare vSphere * 5.1 feature set (8 vCPUs/VM, 512 VMs/host, 1TB memory) over VMWare vSphere * 4.1 (64 vCPUs/VM, 320 VMs/host, 255GB memory/VM).

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

backup