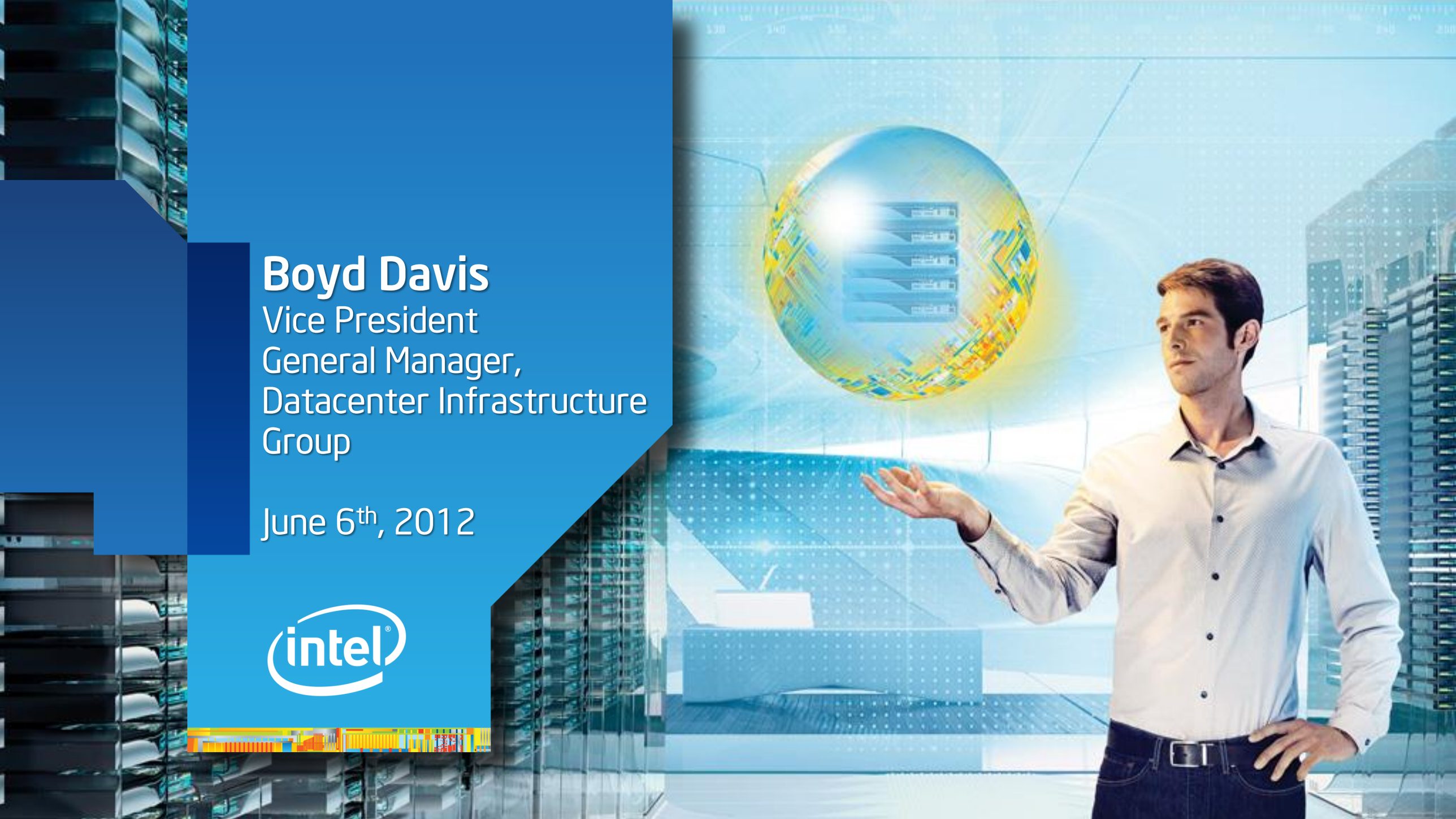
An Evolving Datacenter for an Evolving World

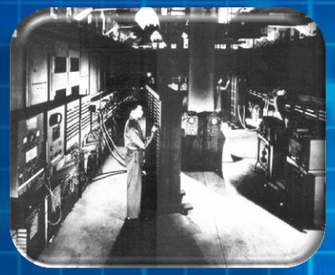


Boyd Davis

Vice President
General Manager,
Datacenter Infrastructure
Group

June 6th, 2012

Use of Technology Constantly Evolving



Mainframe

Minicomputer

Client Server

Internet

Cloud

1960's 1970's 1980's 1990's 2000's Today

Creating More Opportunities

Several Challenges to Achieving Scale in IT

Scaling Performance / TCO

Energy Efficiency

Delivering New Workloads

Securing the Environment

Pressure on IT to Scale

BMW IT Support:

~100K
Employees
Historically

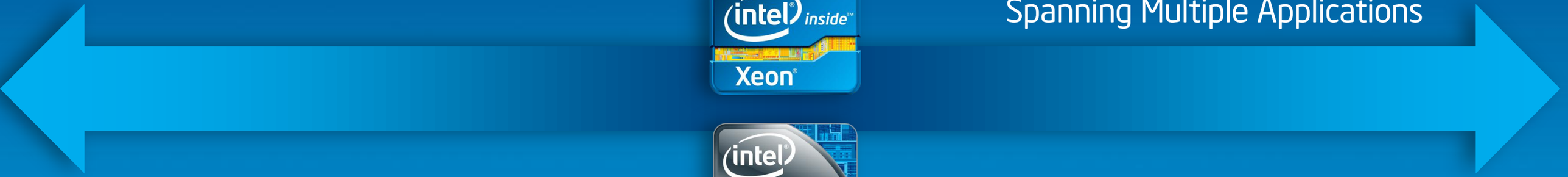
~1 Million
Cars
In 2012

~10 Million
Cars
In 2018

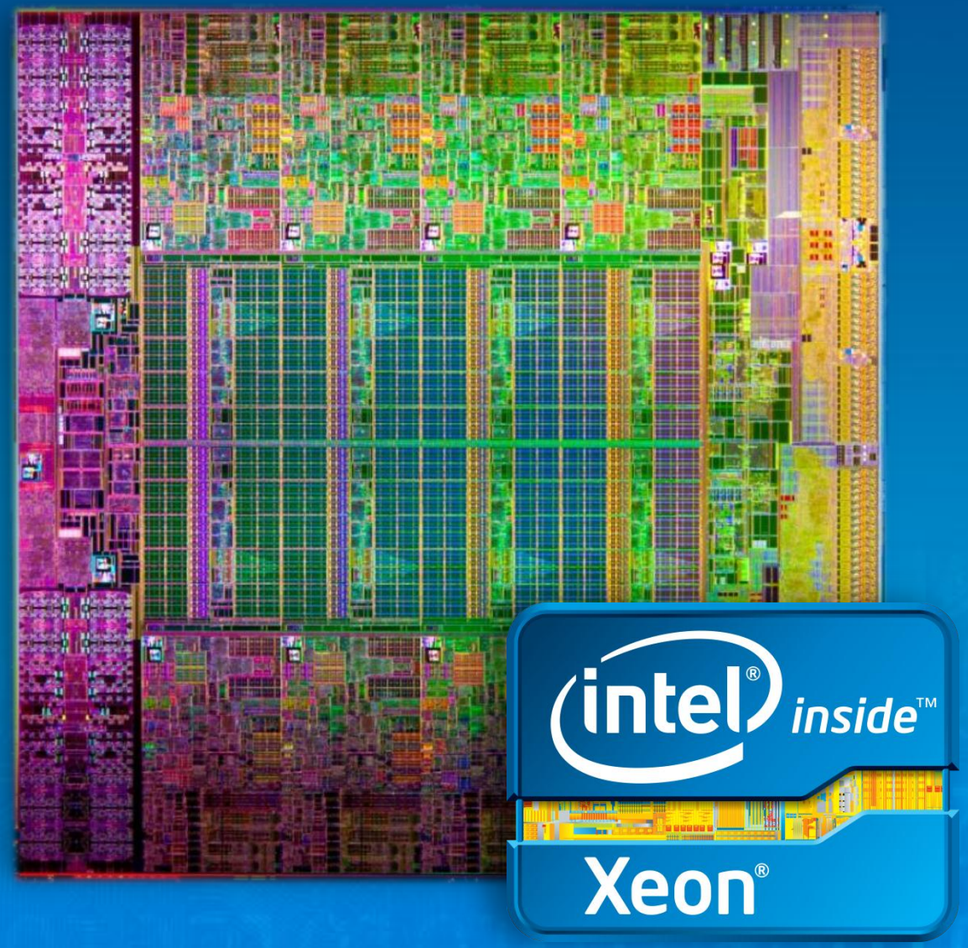
Range of Design Approaches

Workload Specific Infrastructure:
Improve TCO with Improved Performance
On Specific Application

Versatile Infrastructure:
Minimize Complexity
with Common Building Blocks
Spanning Multiple Applications



The Intel® Xeon® Processor E5 Family



80% Performance Gain[1]

Breakthrough I/O Innovation

Trusted Security

Exceptional Performance per Watt[2]

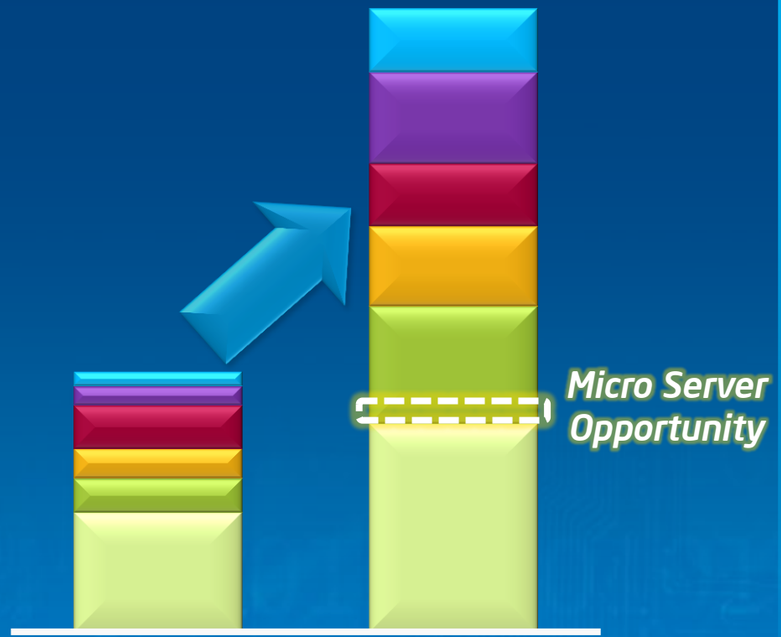
Now Available in Dual and Quad Socket Server Configurations!

Demonstration

The Intel® Xeon® Processor E5 Family

Two Leadership Micro Server Products

Datacenter Processor Growth



2012

Intel® Xeon® Processor E3-1200 v2 Product Family

45 Watt

17 Watt

Available Now

"Centerton"

Based on Intel® Atom™ Microarchitecture

6 Watt

On track for 2H'12

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Please Welcome

Mike Yang

Vice President & General Manager
Cloud Computing Business Unit
Quanta Computer Inc.

Quanta
Optimize Your Datacenter

intel

Quanta Microserver S910-X31B

- Intel® Xeon® processor E3-1200 v2 product family
- Dramatic efficiency of power, cooling, space, and cost savings without compromise of performance

9 sleds in 3U

TDP: 95 W, supporting ALL
E3-1200 & E3-1200 v2 SKUs

12 sleds in 3U

TDP: 69 W, supporting ALL
E3-1200 v2 SKUs

- Integrated Ethernet switch
- Integrated management solution

www.QuantaQCT.com

Big Data

What is Big Data?

	Traditional Data	Big Data
Volume	Gigabytes to Terabytes	Petabytes and beyond
Velocity	Occasional Batch – Complex Event Processing	Real-Time Data Analytics
Variety	Centralized, Structured i.e. Database	Distributed, Unstructured Multi-format

Why is Big Data Important?

Smart City Project:
Improve Public Safety,
Boost Economic Growth

Up to 50% Decrease in
Product Development
and Assembly Costs[1]

淘宝网
Taobao.com

Generate Revenue from
Data Analytics of B2B
Sales

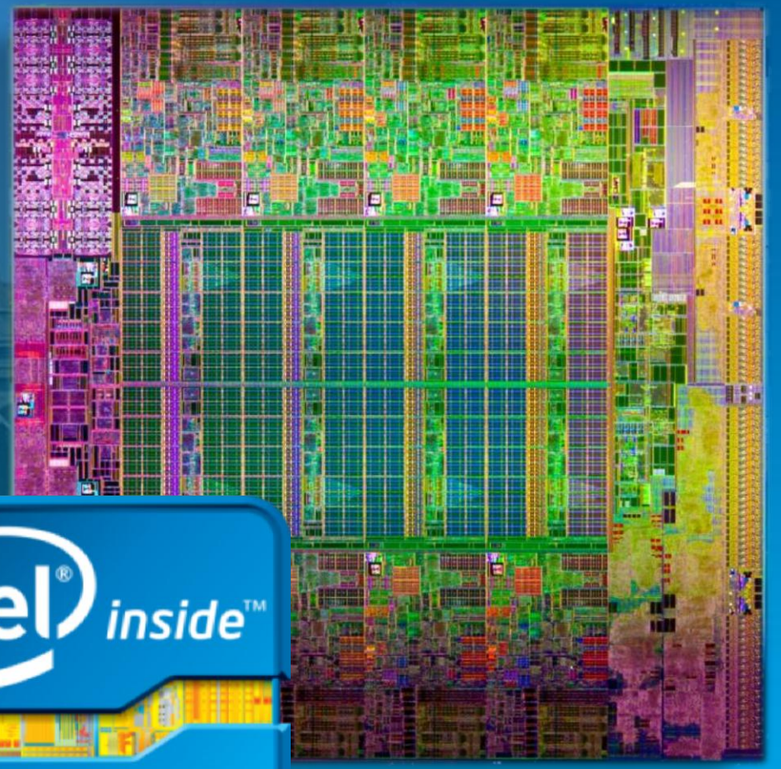
Online Retailer Generated
30% of Sales Due to
Analytics Driven
Recomendations[1]

Data is the Raw Material of the Information Age

1::McKinsey Global Institute Analysis

Modeling Rome in a Day

The Intel® Xeon® Processor E5 Family

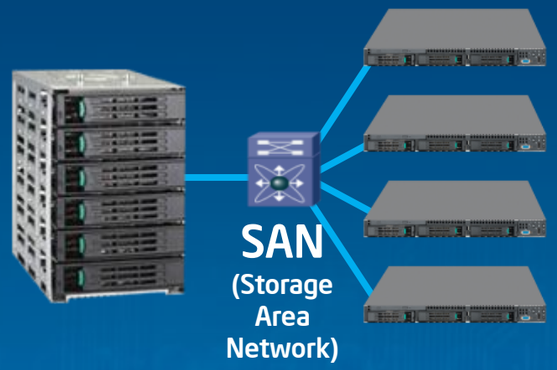


intel® inside™
Xeon®

intel®

Big Data Solutions: Volume

Traditional Storage



Distributed Storage Architecture

AMPLIDATA

Ten 9's Durability & 50% Lower TCO

lustre®

1000s of Nodes & >200GB's/sec Performance

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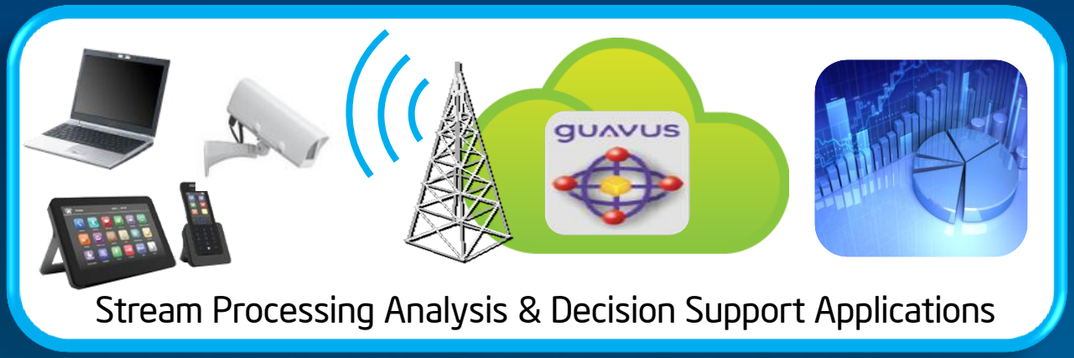
Big Data Solutions: Velocity

In Memory Analytics

SAP HANA

Search and Analysis of 53 Million Customer Records:
From 2-3 Hours to 2-3 *Seconds!*[1]

Network Edge Analytics



guavus

Analyze Data as its Collected to Make Near Real-time Decisions

1: Hilti Corporation case study

Big Data Solutions: Variety

Unstructured Multi-format Data

0100101010
1010100101
1001010101

Distributed File System & Map Reduce Tools

10100
1
1
0
1
0
111010
0
0
1
0
1
0
01001

Data Analytics Tools

Structured Data

0100101010
1010100101
1001010101

Database

Please Welcome

Mr. Y.F. Juan,
Deputy Director

ITRI
Industrial Technology
Research Institute

雲端 Cloud Computing Center for Mobile Applications

ITRI Open Snake Eye

Video Analytics on the Cloud

Y.F. Juan 阮耀飛

Industrial Technology Research Institute
Cloud Computing & Mobile Applications

工研院 雲端中心

Urban Life + Surveillance for Public Safety

However…

WHY?

More cameras

≠

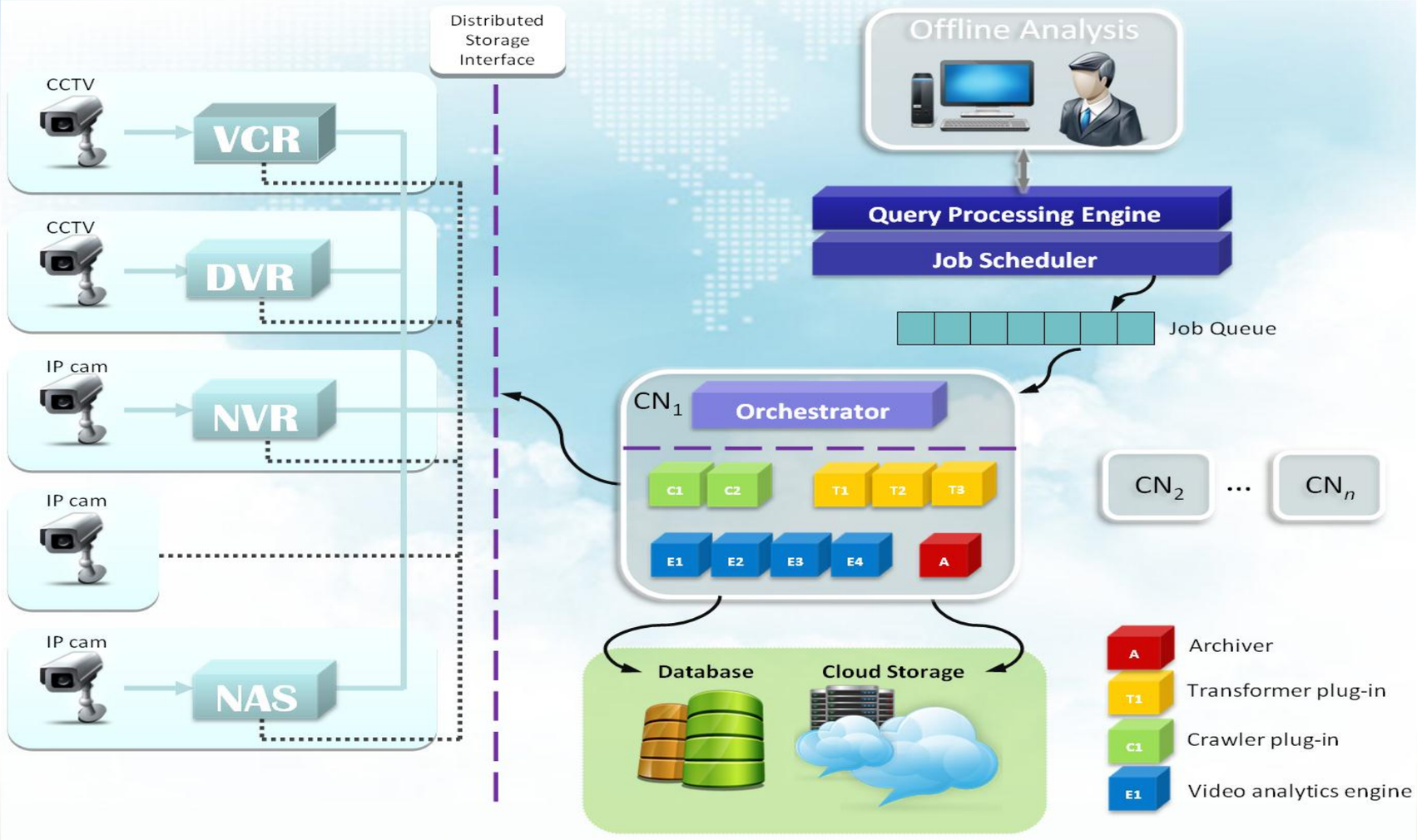
Less crime reported

Human Inspection

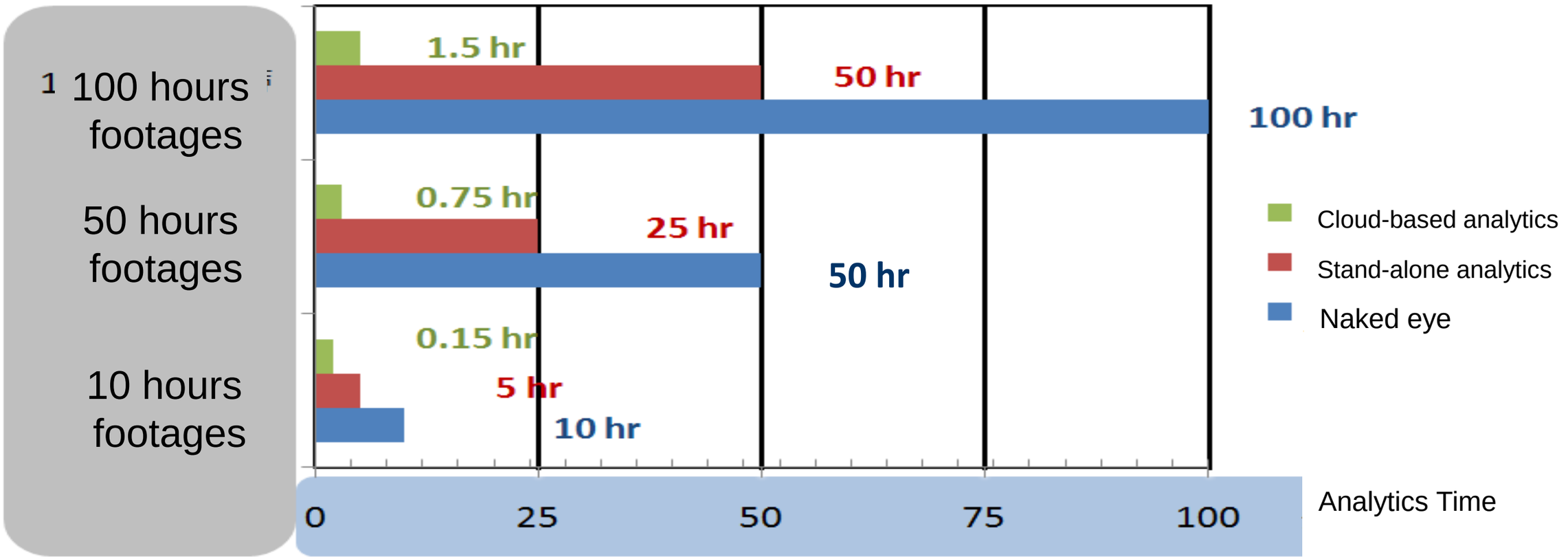
Looking for a needle in a hay stack

Computerized Video Analytics

Video Analytics on the Cloud



Rapid Results through Cloud Computing



Thank You

Video

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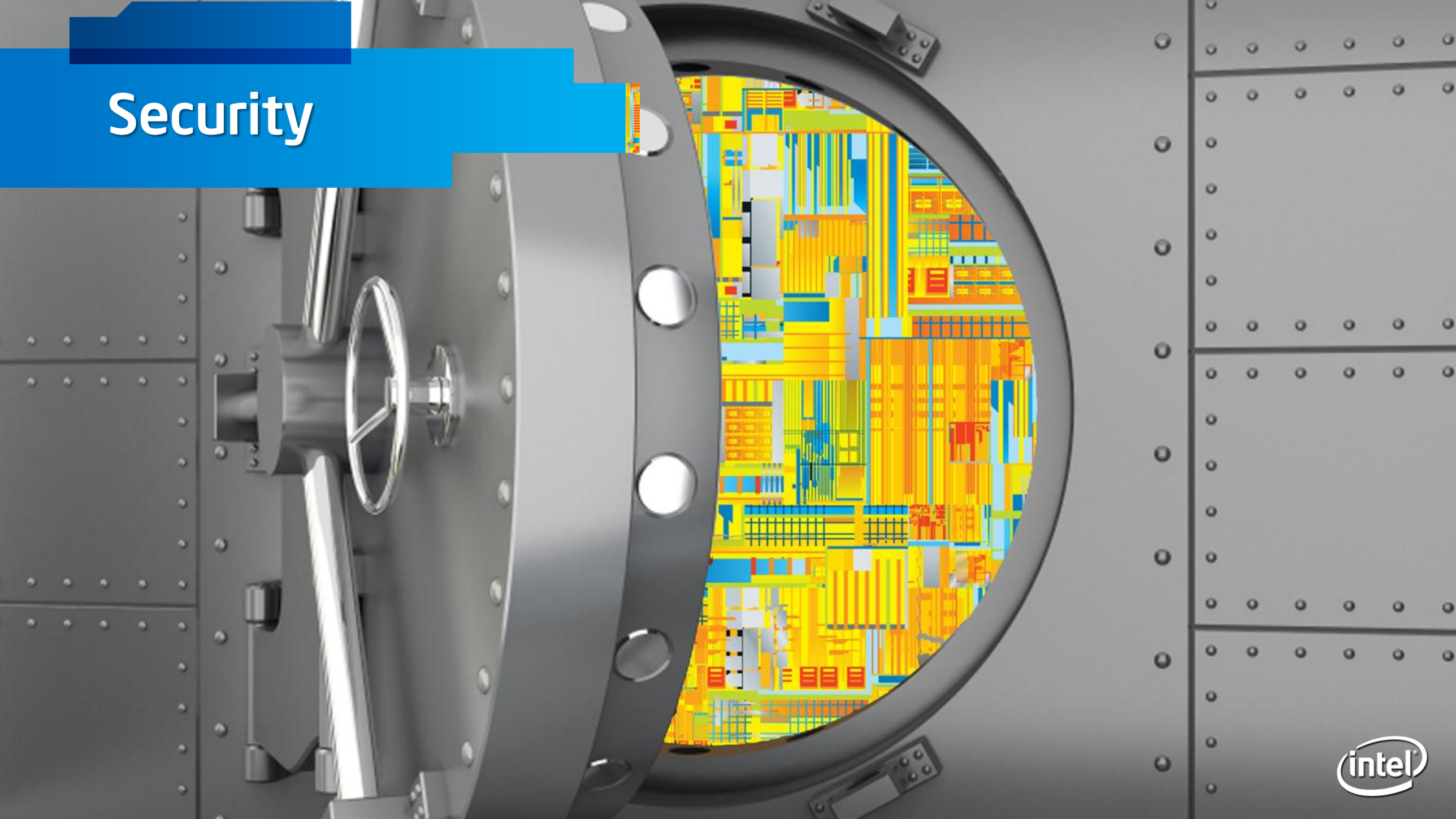
Security



Transition to Cloud Increases Security Concerns

Traditional Data Center

Reduced Physical Control

Increased Multi-tenancy

Reduced Effectiveness of Existing Security Tools

Public & Private Cloud Data Center

IT Pro Survey of Key Concerns:

61%
Lack of visibility inhibiting *private* cloud adoption[1]

55%
Lack of control over data key concern for *public* cloud adoption[1]

57%
Avoid putting workloads with compliance mandates in cloud[1]

1 source: McCann "what's holding the cloud back?" cloud security global IT survey, sponsored by Intel, May 2012

The Need for End-to-End Security Solutions

Secure Cloud Datacenters

Secure Connections

Secure Devices

Interoperable, Open Industry Standards

Intel & McAfee: Securing the Cloud

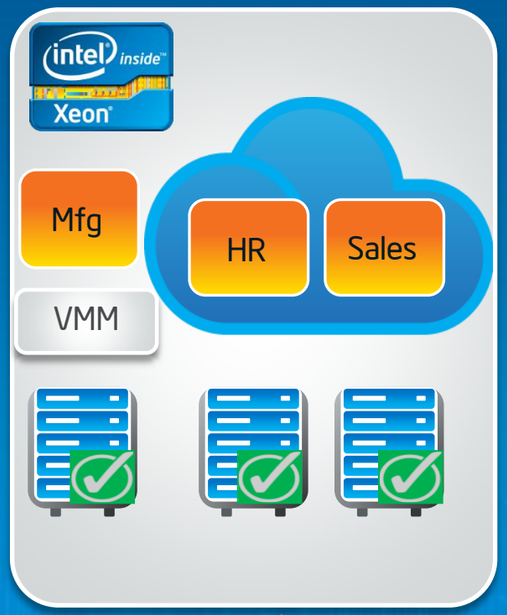
Cloud Security Mission: Worry-Free Cloud Computing
In next 5 years, make cloud security equal to or better than traditional best in class enterprise security

	Available Today	Future Developments
Secure Cloud Datacenters	**Protect infrastructure + policy enforcement & monitoring** *Intel VT & TXT, McAfee MOVE AV, McAfee ePO[1]*	**Broaden & strengthen security enforcement and auditability across cloud infrastructures**
Secure Connections	**Secure data & traffic between enterprises & clouds** *McAfee Cloud Security Platform*	**Increased integrity assessments between devices and cloud infrastructure**
Secure Devices	**Identity & Data Protection** *Intel Identity Protection Tech., McAfee Cloud Identity Manager, McAfee Deep Defender*	**Enhanced protections against new forms of malware and identity theft**
Industry Collaboration	**Accelerate broad adoption of security standards for cloud & enable broad range of open, interoperable security solutions**	

1 Integrating McAfee ePolicy Orchestrator (ePO) with Intel TXT requires custom integration work

Collaborative Security for a Virtual Cloud World

Virtualized and Private Cloud Data Center



Intel Trusted Execution Technology is run: Server "known good"

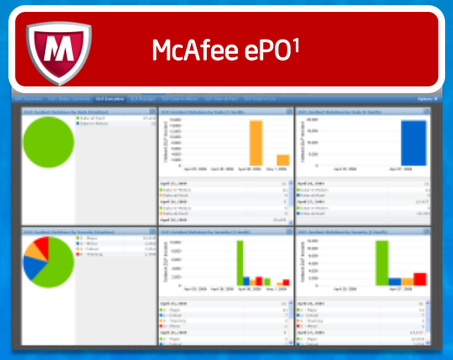
Extended Security Policy

Isolate, Protect, Control Vms
*Intel Virtualization Tech., Intel Trusted Execution Tech., McAfee MOVE AV**

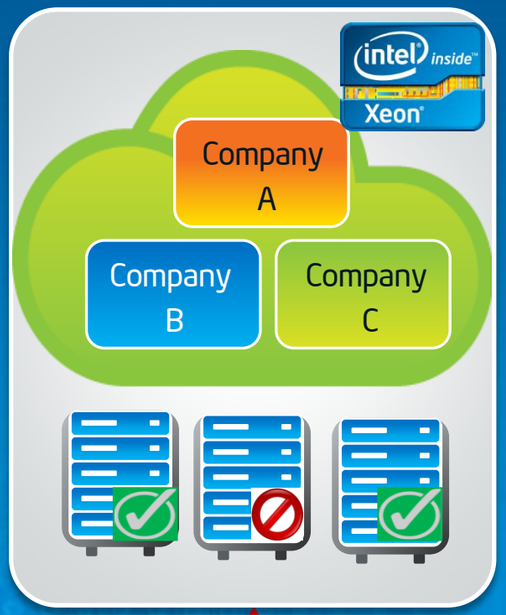
Provide Visibility & Reporting

Apply Security Policy At Multiple Control Points

Monitor Workloads Across Cloud Infrastructures
McAfee EPO, Intel TXT



Public Cloud Data Center



Intel Trusted Execution Technology is run: "Do not migrate to unknown server

1 Integrating McAfee ePolicy Orchestrator (ePO) with Intel TXT requires custom integration work
*McAfee MOVE AV = McAfee Management of Optimized Virtualized Environments Anti-Virus

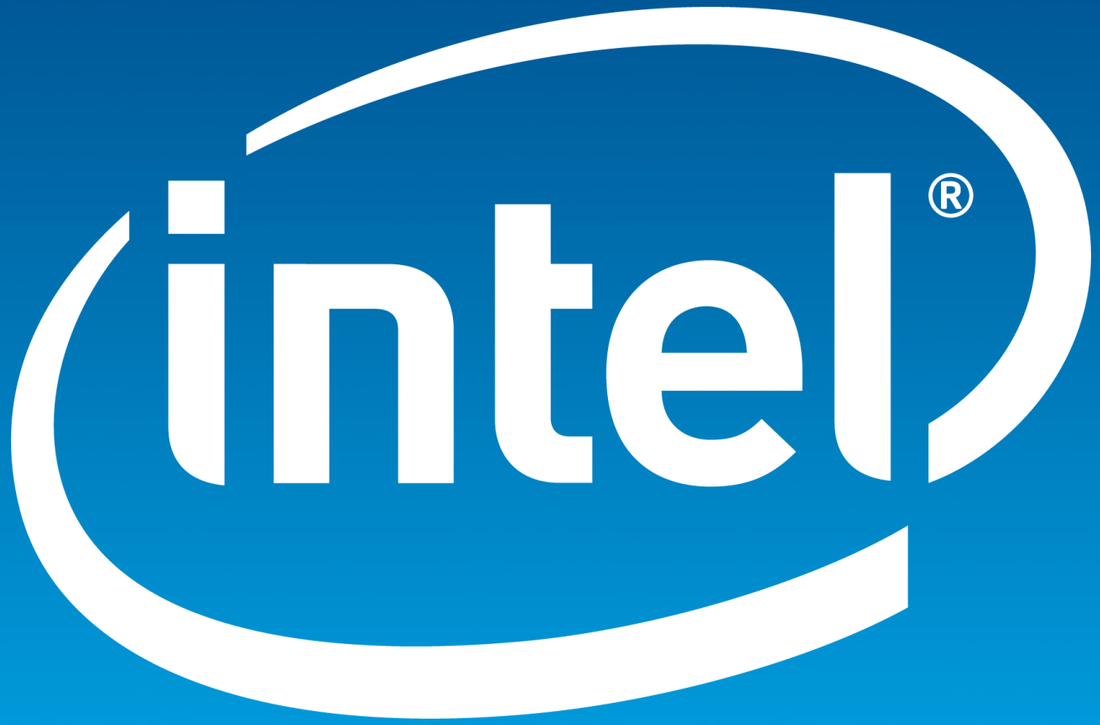
Evolving to Meet the Needs of a Changing World

Accelerating Growth with IT Infrastructure that Scales

Collaborating with Industry on Innovative Solutions

Optimizing Products & Services with Big Data Analytics

Embedding Security into Datacenter Infrastructure


intel

Back up

Other Big Data Quotes

IP Traffic Growth
33%
Through 2015

"Only 10-15% of businesses by 2015 will fully take advantage of big data, and they'll outperform their unprepared competitors by 20% in financial metrics"
- Gartner, 2012

"Through 2015, more than 90% of business leaders contend information is a strategic asset, yet fewer than 10% will quantify its economic value."
"Through 2015, 85% of Fortune 500 organizations will be unable to exploit big data for competitive advantage."
"Through 2015, more than 85% of Fortune 500 organizations will fail to effectively exploit big data for competitive advantage.
"Through 2015, business analytics needs will drive 70% of investments in the expansion and modernization of information infrastructure."
"By 2015, those companies who have adopted Big Data and extreme information management will begin to outperform their unprepared competitors by 20% in every available financial metric."
"Organizations which have introduced the full spectrum of extreme information management issues to their information management strategies by 2015, will
begin to outperform their unprepared competitors within their industry sectors by 20% in every available financial metric.

Other Gartner quotes – provided by Bryce Olson

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80% performance: Source: Performance comparison using best submitted/published 2-socket server results on the SPECfp*_rate_base2006 benchmark as of 6 March 2012. Baseline score of 271 published by Itautec on the Servidor Itautec MX203* and Servidor Itautec MX223* platforms based on the prior generation Intel® Xeon® processor X5690. New score of 492 submitted for publication by Dell on the PowerEdge T620 platform and Fujitsu on the PRIMERGY RX300 S7* platform based on the Intel® Xeon® processor E5-2690. For additional details, please visit http://www.spec.org. Intel does not control or audit the design or implementation of third party benchmark data or Web sites referenced in this document. Intel encourages all of its customers to visit the referenced Web sites or others where similar performance benchmark data are reported and confirm whether the referenced benchmark data are accurate and reflect performance of systems available for purchase.

(Energy Efficient Performance) Source: Performance comparison using best submitted/published 2-socket single-node server results on the SPECpower_ssj*2008 benchmark as of 6 March 2012. Baseline score of 3,329 ssj*_ops/watt published by Hewlett-Packard on the ProLiant DL360 G7* platform based on the prior generation Intel® Xeon® processor X5675. Score of 5,093 ssj*_ops/watt submitted for publication by Fujitsu on the PRIMERGY RX300 S7* platform based on the Intel® Xeon® processor E5-2660. For additional details, please visit http://www.spec.org. Intel does not control or audit the design or implementation of third party benchmark data or Web sites referenced in this document. Intel encourages all of its customers to visit the referenced Web sites or others where similar performance benchmark data are reported and confirm whether the referenced benchmark data are accurate and reflect performance of systems available for purchase.