

AHEAD
OF THE CURVE
STRAIGHT TO THE FUTURE
IDF2012
INTEL DEVELOPER FORUM



Sponsors of Tomorrow.



IDF2012

INTEL DEVELOPER FORUM

Diane Bryant

Vice President & General Manager
Datacenter and Connected Systems
Group



Sponsors of Tomorrow.™



IDF2012

INTEL DEVELOPER FORUM

INTEL DATA CENTER TECHNOLOGIES:
**Powering the world of
connected devices**



Sponsors of Tomorrow.





GROWTH IN CONNECTIVITY AND MOBILITY OF DEVICES



Increases Pressure on Data Centers

Innovation Is
MANDATORY

~1.5
Zetabytes of
IP Traffic

2011

~4.8
Zetabytes
of IP Traffic

2015

Intel Leadership Across Spectrum of Segments and Products



**CONNECTED
SYSTEMS**

**SMALL
BUSINESS**

**COMMUNICATIONS
INFRASTRUCTURE**

**ENTERPRISE
INFRASTRUCTURE**

**MISSION
CRITICAL**

**CLOUD SERVICE
PROVIDER**

**TECHNICAL
COMPUTING**



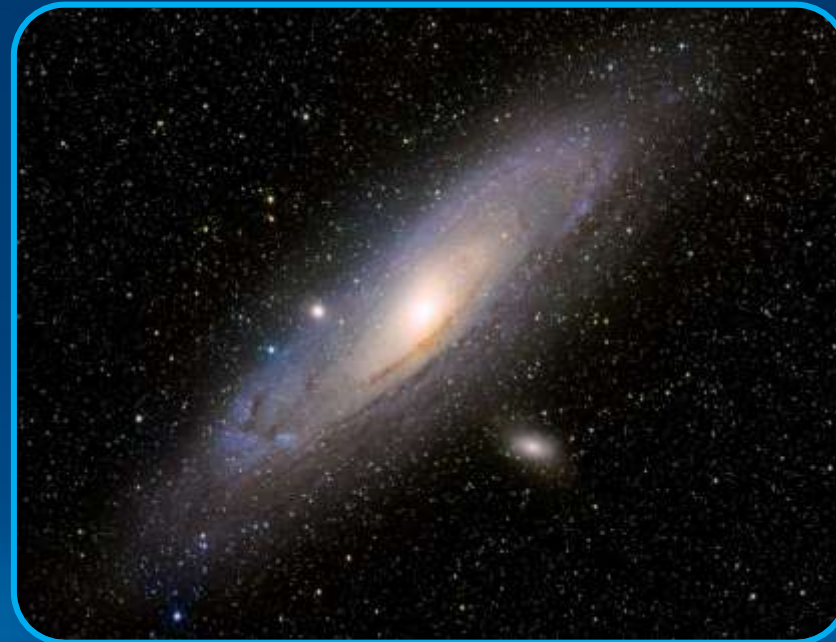
Intel is Creating the Next Generation Data Center

Clouds



Technology Innovation
& Solutions

HPC




The Drive to
Parallelism

Big Data



Analytic
Solutions and
Successes

A photograph of a server room with rows of server racks on the left side, receding into the distance. The room is dimly lit with a blue tint. The right side of the image is a solid blue gradient. Overlaid on this gradient is the text 'CLOUD COMPUTING' in large, white, bold, sans-serif capital letters with a black outline.

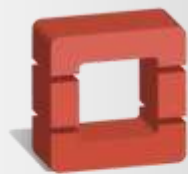
CLOUD COMPUTING

Intel Cloud Strategy

IT REQUIREMENTS AND OPEN STANDARDS



OPEN
Compute Project



openstack
CLOUD SOFTWARE

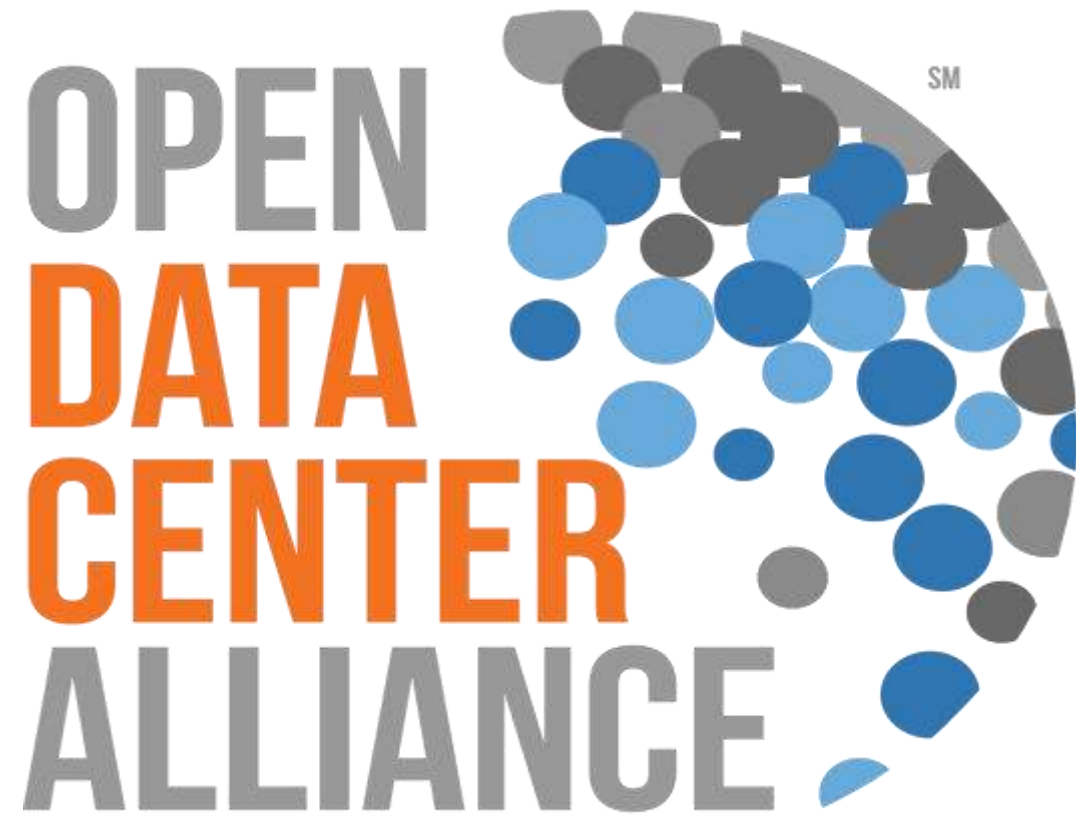


OPTIMIZED PLATFORMS



Intel® Cloud Builders Program

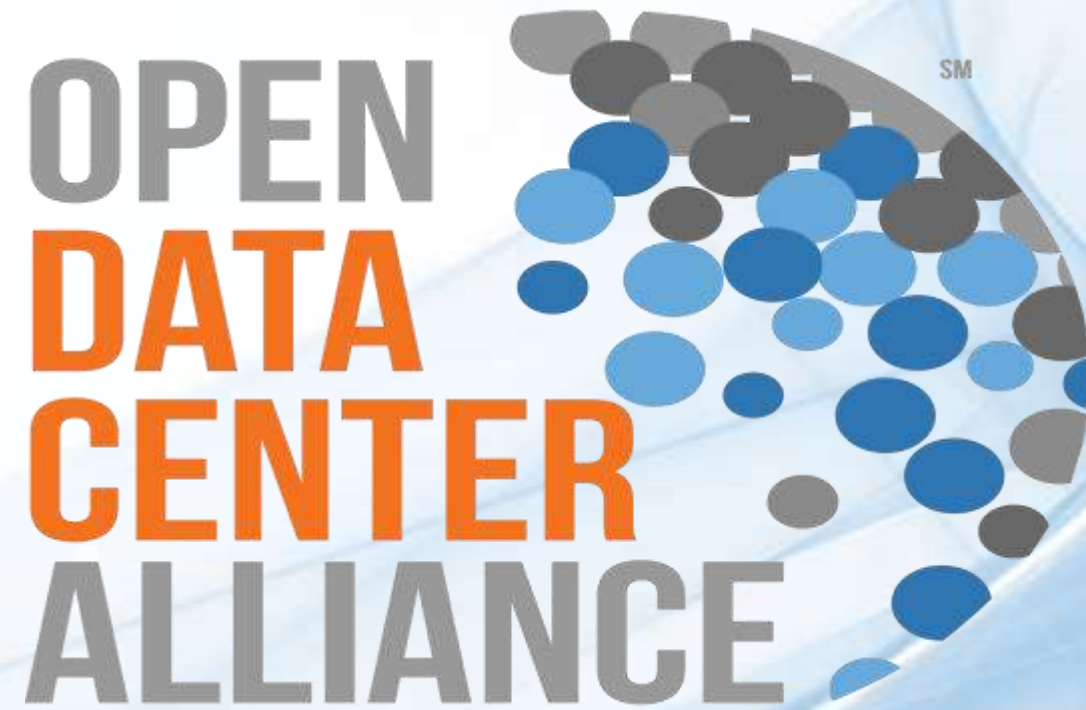




Mario Mueller

VP of IT Infrastructure Group
BMW Group
Chair, Open Data Center Alliance

The Open Data Center Alliance



Drive new levels of IT agility through delivery of unified customer requirements for cloud computing enabling **secure federation** of cloud services, **automation** of IT infrastructure, **common management and policy** for data center resources, and **transparency** in cloud service capability and metrics.

Create & Deliver

Unified Customer Requirements
Through
Usage Models

Collaborate

With Standards Organizations and
Industry to Accelerate Deployment

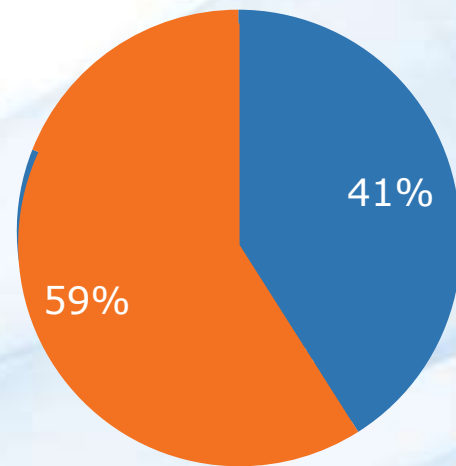
Commit

Roadmap to Guide
Internal IT Deployments

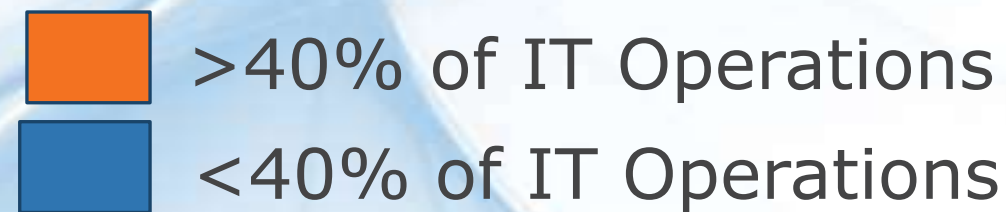
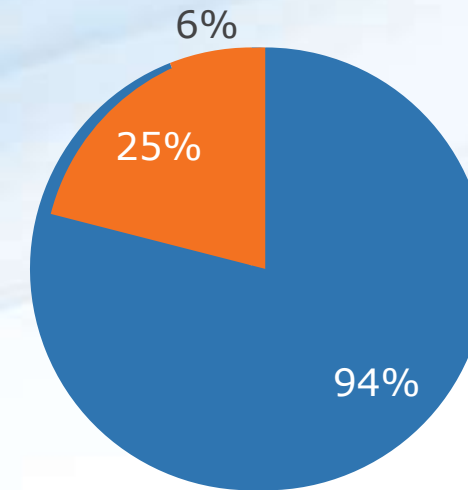


ODCA Members Rapidly Ramping Cloud Use through 2015

Members using Private Cloud Today



Members using Public Cloud Today



Member cloud adoption up 15% compared to 1 year ago

ODCA member adoption at leading edge of >\$90B* cloud market



All data sourced to 2012 ODCA member survey, September, 2012. Growth rate comparison is based on baseline data provided by 2011 ODCA member survey.

* Source: IDC, 2011

Alliance Requirements Shaping Member Adoption

2/3 of members are planning to integrate requirements into purchases

13% have already purchased based on ODCA requirements



All data sourced to 2012 ODCA member survey, September, 2012.



Announcing Today

Today: Announcing Intel® Cloud Finder

Matchmaking Enterprises with Cloud Infrastructure Service Providers

Match Users and Cloud Service Providers Across Six Dimensions

- ✓ Security
- ✓ Usability
- ✓ Quality
- ✓ Availability
- ✓ Technology
- ✓ Business



www.intelcloudfinder.com

Solutions for Clouds of All Types

Public Cloud Service Providers



Private Clouds



PERFORMANCE: On Demand, Self-Service

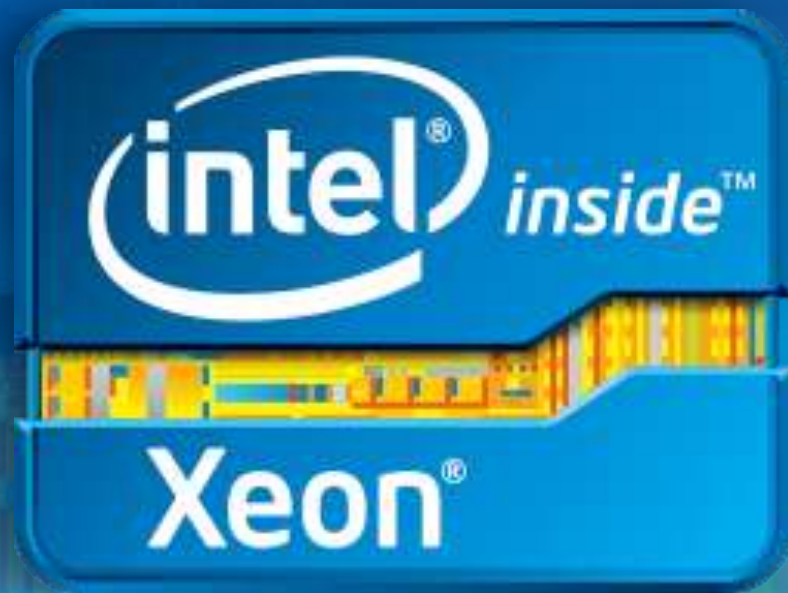
EFFICIENCY: Shared, Elastic Resources

SECURITY: Privacy, Regulator, & IP Protection

**Announcing
Today**

Continuing Processor Advancement

Next Generation Intel® Xeon® Processor E7 & E5 Families



**22nm Processors
Expected To Offer:**

- Best-in-class performance
- Exceptional energy efficiency
- Robust hardware enhanced security
- Improved virtualization with APICv
- New advanced reliability features for the Intel Xeon® processor E7 Family
- In Production: 2013

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 intel.com/performance

Providing Leadership in Micro Servers

2012

2013

Available Now



Low Power Xeon® E3

45 Watt
17 Watt

Haswell
22nm


On track for Q4'12



Atom™ SOC's

S-Series
"Centerton"
6 Watt

Avoton
22nm

 "Our customers have benefited from three generations of Dell micro servers based on Intel and are excited about the low power Xeon and Atom roadmaps."
-Sally Stevens, vice president of Dell PowerEdge platform marketing

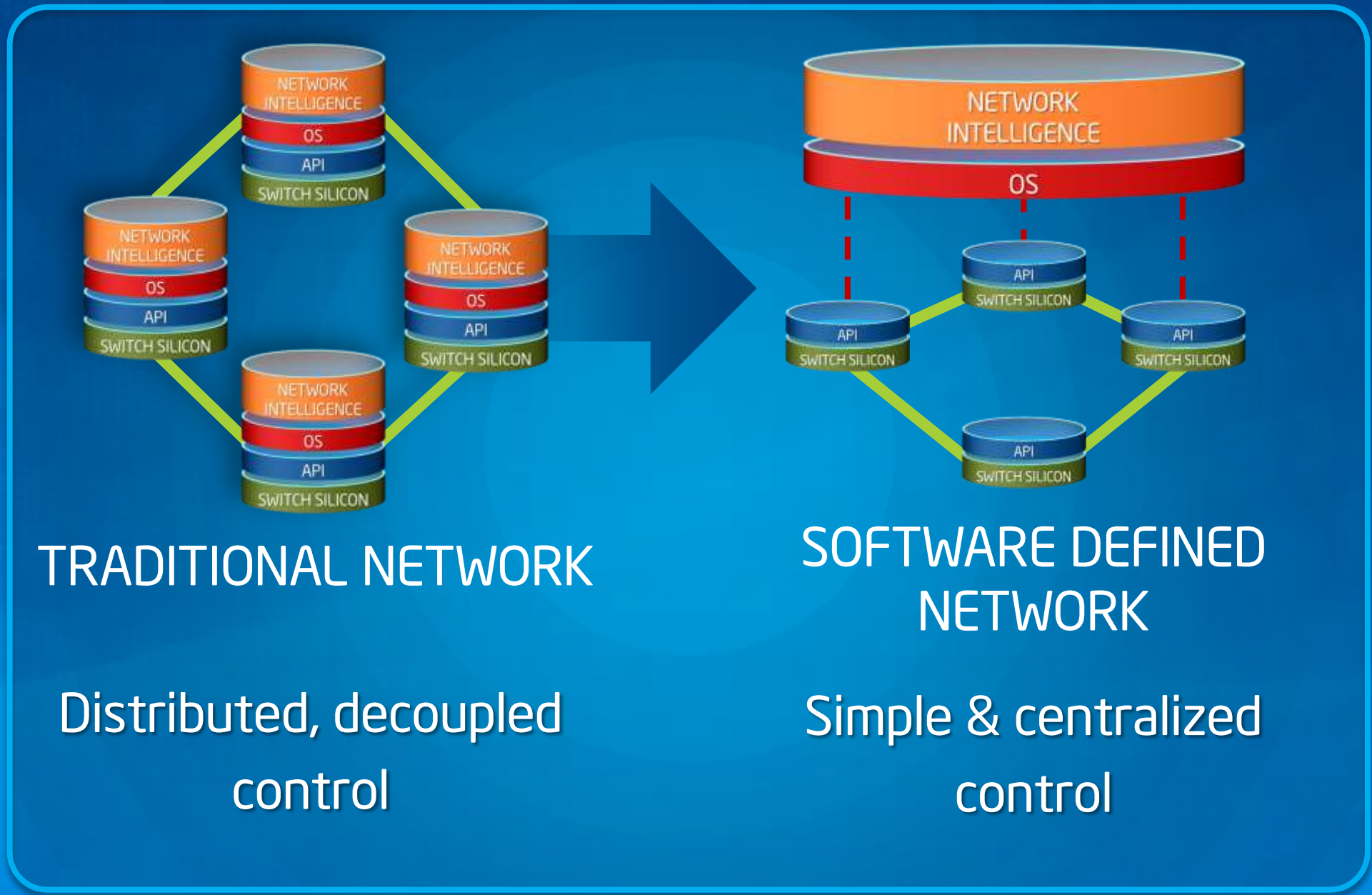


Common Architecture, Software & Developer Community

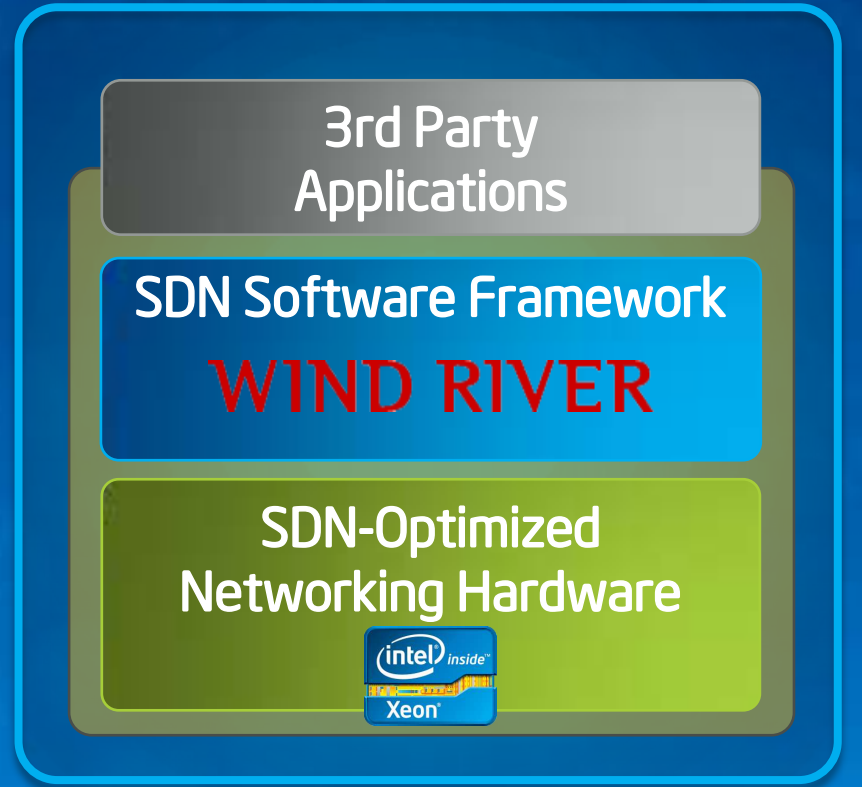
Other brands and names are the property of their respective owners

Announcing Today

Open, Simplified Networking



Intel® SDN Reference Platform



Addressing #1 Cloud Adoption Barrier: Security

IT Pro Survey of Key Concerns¹

57%

Avoid putting workloads with compliance mandates in cloud¹

55%

Lack of control over public cloud¹

McAfee DeepSAFE

Announcing Today

Applications

McAfee Deep Defender

Operating System

McAfee DeepSAFE Technology



Demonstration on Xeon planned for McAfee Focus 2012

Data Center Group



McAfee
An Intel Company

**Cloud Security Mission:
Worry-Free
Cloud Computing**

Cloud Adoption Barrier: Security

Intel® Trusted Execution Technology

Growing Intel® TXT Ecosystem

Intel TXT Demo in Showcase:



Customer Demand for Intel® TXT



“Hardware-enhanced security provided by Intel TXT is critical to protect our sensitive data and was key in our selection of Virtustream for cloud services.”

John F. Hill

*CIO, Veyance Technologies
(Goodyear Engineered Products)*



A photograph of a server room with rows of server racks. The racks are filled with server units. The image has a blue gradient overlay on the right side. The text "High Performance Computing" is written in white, bold, sans-serif font with a black outline, positioned on the right side of the image.

High Performance Computing

With 1000x More Compute: What More Could be Done?



More Realistic
Digital Content



Advance the Limits
of Human Knowledge



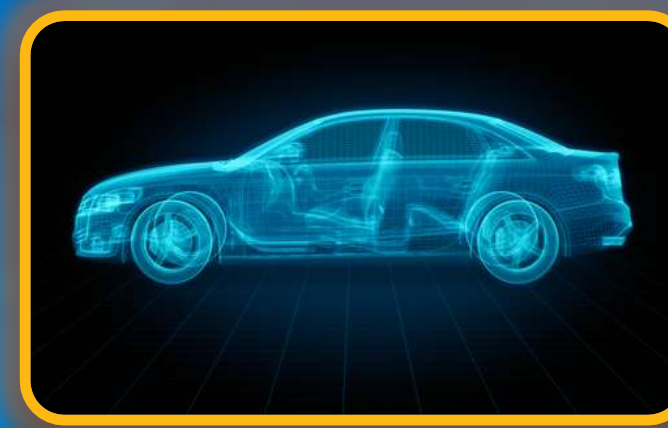
Better Medical Treatments
Fast Drug Discovery



More Accurate Economic Modeling



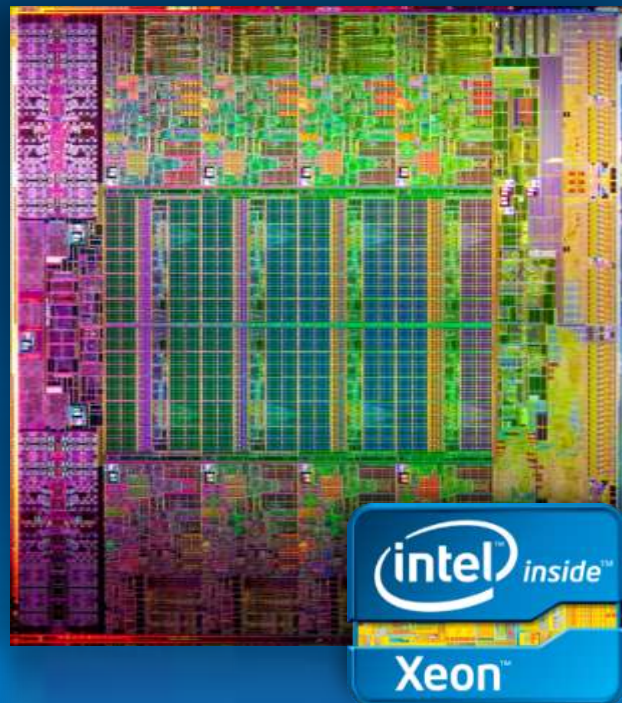
Architectural
Advancement



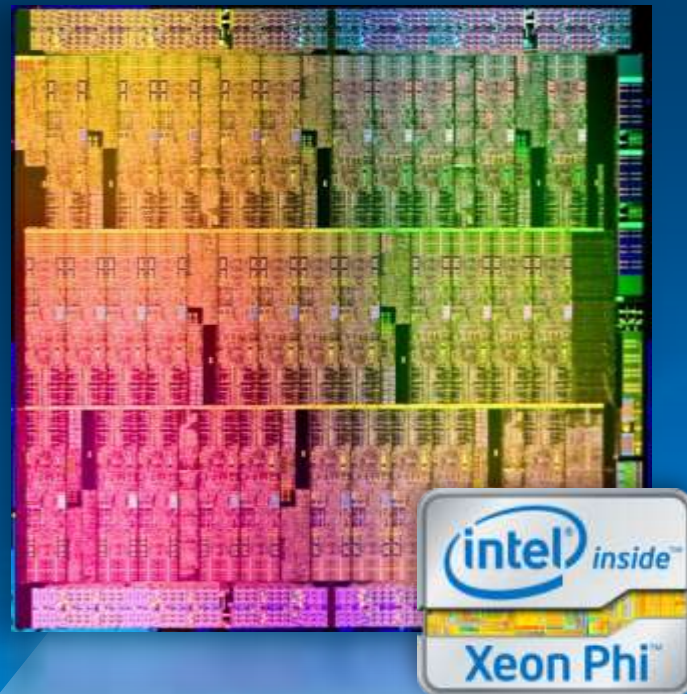
More Profitable Products
through Manufacturing Simulation

Intel's Unmatched Assets for HPC

Processors



Co-Processor



Fabrics

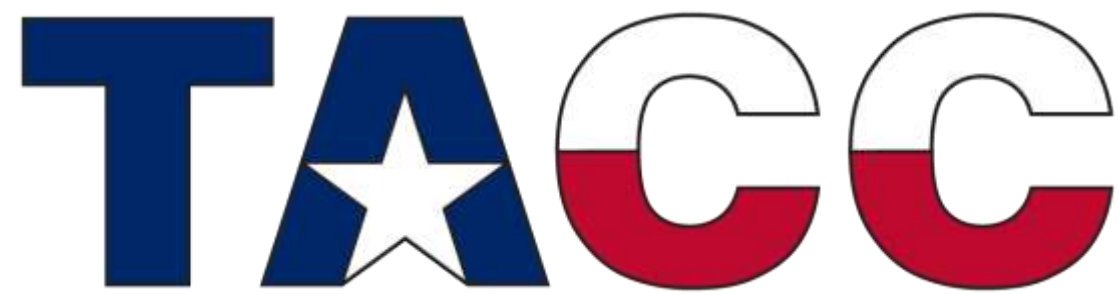
IP and ENGINEERING
TEAMS FROM:



Software



#150 ON TOP 500
before product launch
#2 architecture on Green 500



Texas Advanced Computing Center

Jay Boisseau
Director, TACC

Stampede: Petascale Supercomputing for Open Science with Xeon E5 and Xeon Phi

Jay Boisseau
Director, TACC

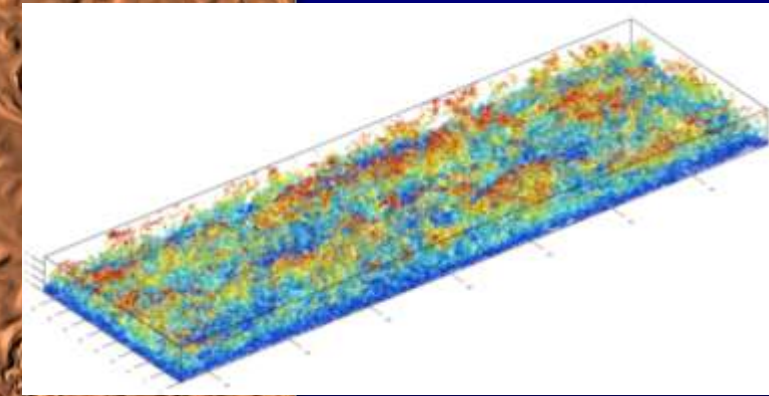
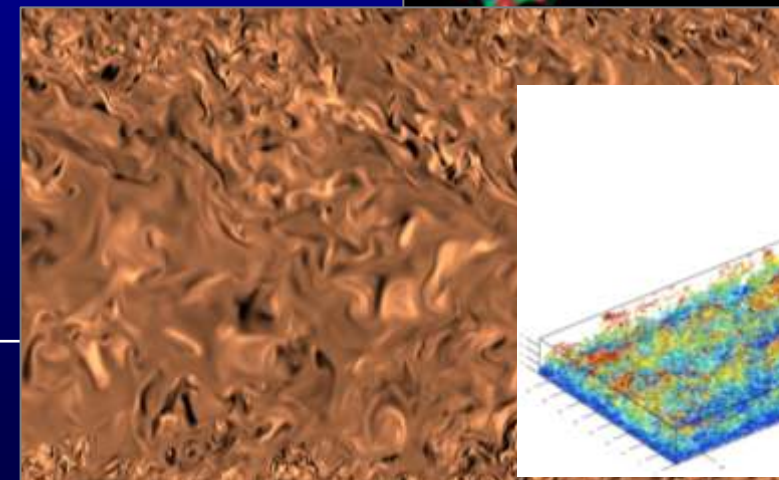
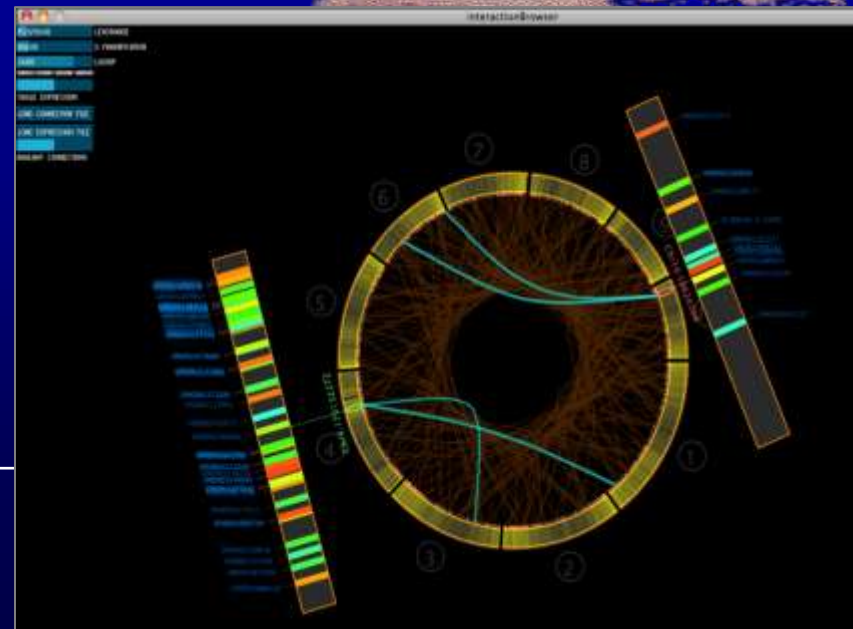
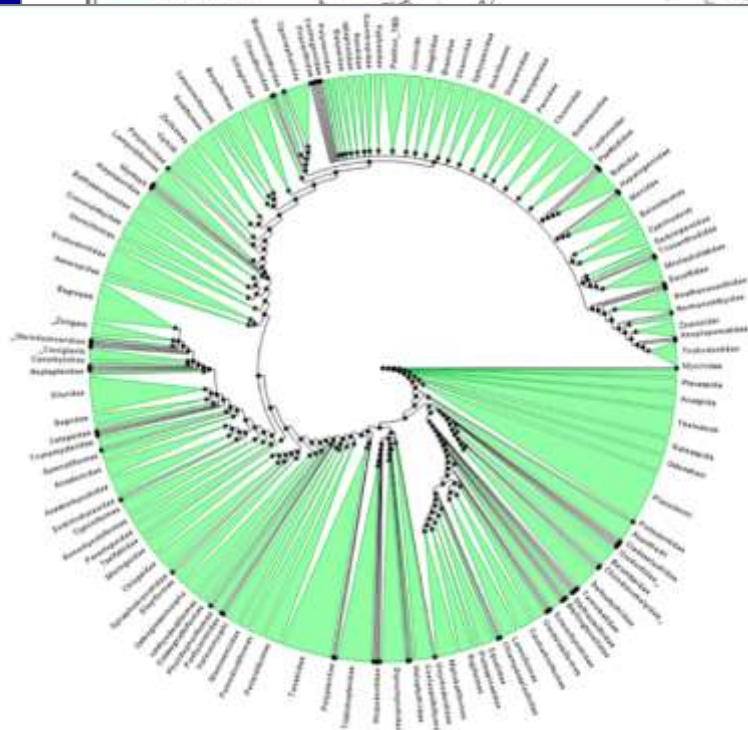
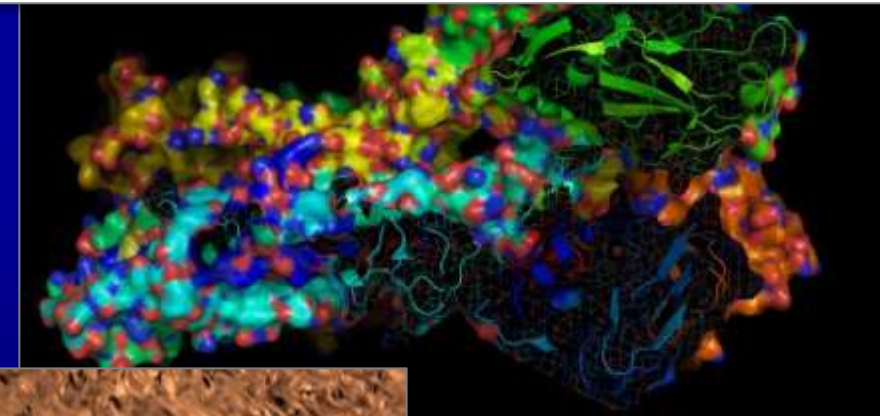
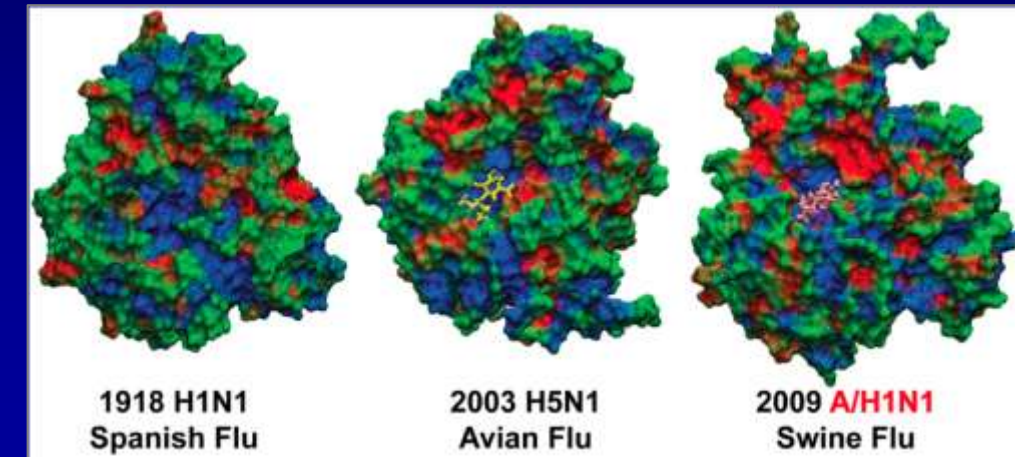
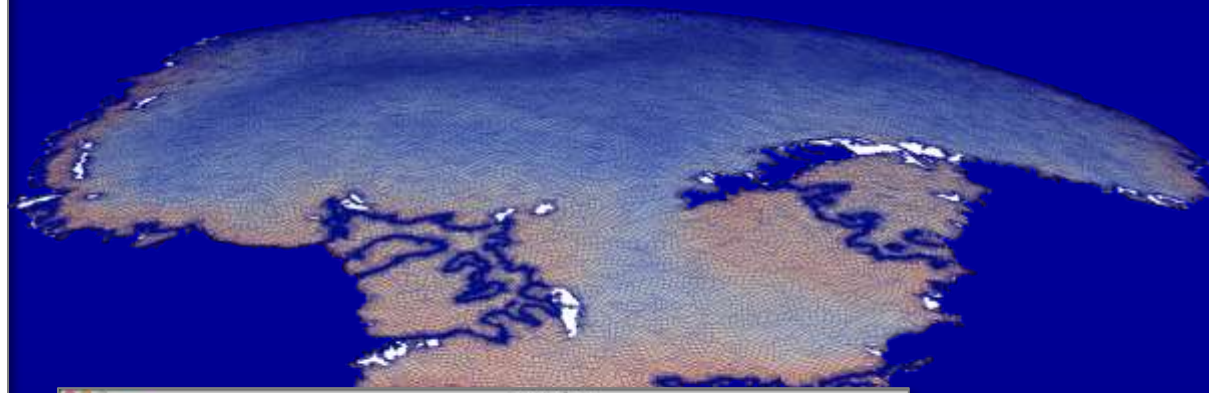
Stampede: The Big Picture

- **Stampede** is a new supercomputer, funded by the NSF, built by TACC in partnership with Dell and Intel, launching in January
- Stampede will have 10 *petaflops* of computing power (Xeon E5, Xeon Phi), plus massive memory, disk, and remote viz
- Stampede will be the 1st Xeon Phi-based supercomputer, and will add next-gen MICs



Stampede Will Enable New Scientific Discoveries Across Domains

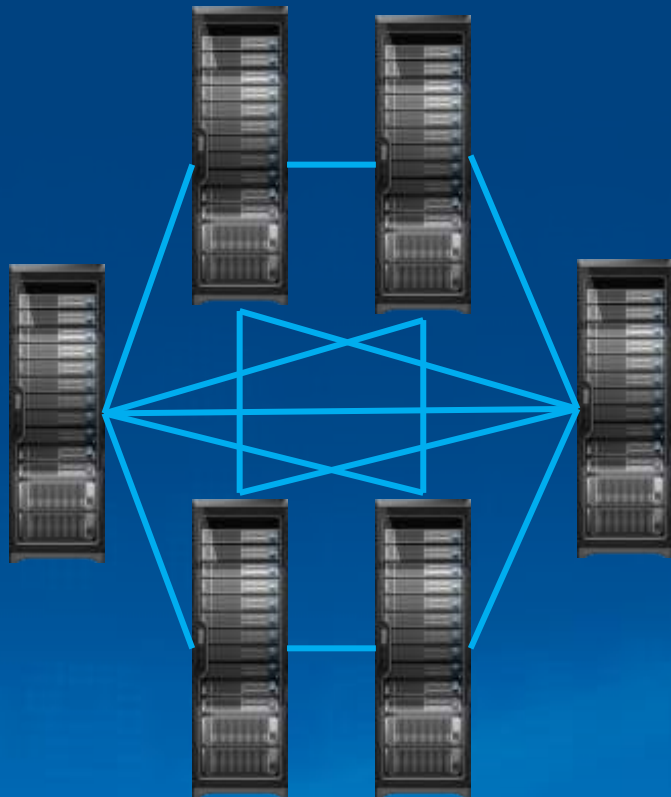
Hundreds of projects, by *thousands* of researchers



Stampede: Powered by Intel Xeon E5 and Xeon Phi

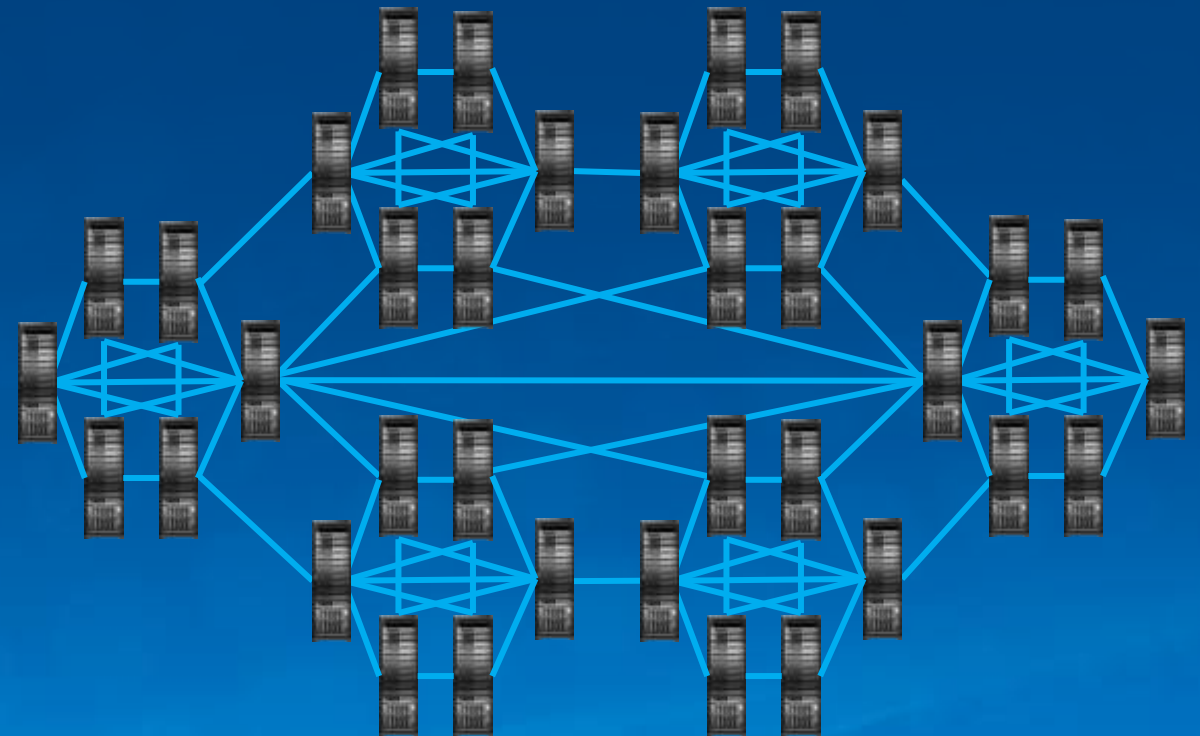
- ✓ TACC & Intel have provided open science clusters since 2001
- ✓ x86 architecture has become dominant ISA in supercomputing
- ✓ Stampede needed to enable discoveries that require petaflops
- ✓ Xeon E5 enables more far performance for general applications
- ✓ Xeon Phi enables tremendous potential performance for highly parallel applications, with much easier porting than GPUs
- ✓ Thus, Stampede will preserve (and reward!) many years of x86 experience and expertise in scientific codes, while offering world-class performance

High Performance Cluster Fabrics



Low Latency
High MPI Rate
High Bandwidth

Drive to Exascale Requires Interconnect Innovation



100x cores/node
1000x total cores

Next Frontier of System Innovation: Fabrics

*HPC Expertise
Intellectual Property
World-class Interconnects*



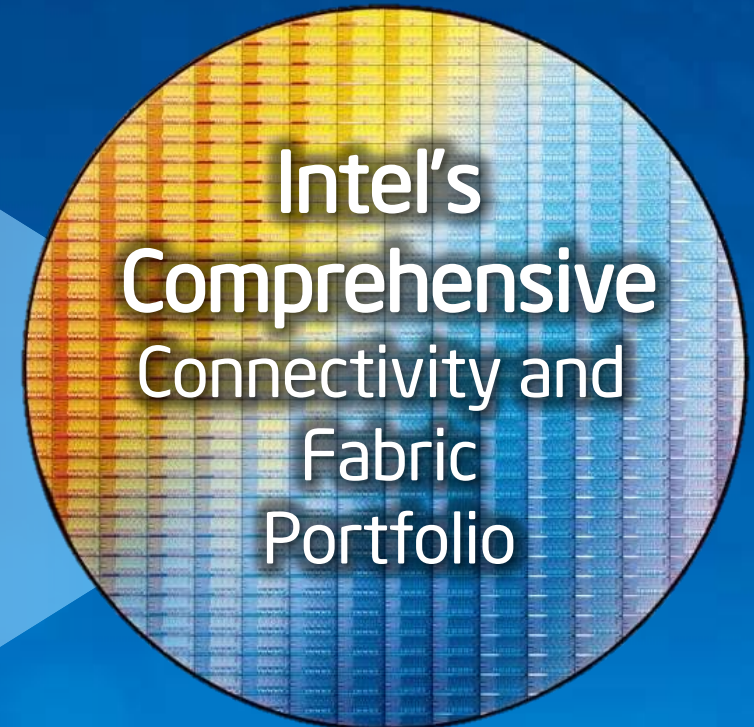
*HPC Expertise
Fabric Management & Software
Highest Performance, Scalable IB Products*



*Low-latency Ethernet Switching
Data Center Ethernet Expertise
High Radix & Low Radix Switch Products*



*Market Leading Processor & Ethernet Products
Platform Expertise*



Uniquely Positioned to Integrate Fabric



Big Data

BIG DATA

Machine Generated Data

Logistics



Industrial Automation



Human Generated Data

Security Cameras



EMAIL



SOCIAL



Agriculture Sensors



Smart Thermostats

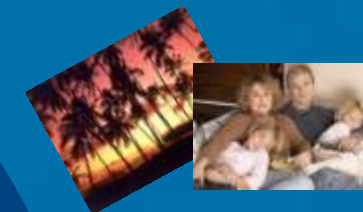


VIDEO



Business Generated Data

PHOTOS



RFID



ORACLE



Ariel Kelman
Head of WW Marketing

Utility Supercomputing

Ariel Kelman, Head of WW Marketing
Amazon Web Services



Powering the Most Popular Internet Businesses

Instagram

playfish

Flipboard

foursquare

GILT GROUPE

Zoopla!

SmugMug

urbanspoon

peixaurbano
exploring the city

Pinterest

airbnb

NETFLIX

Dropbox

acqua

ANIMOTO

Engine Yard

uSwitch.com

yelp

What's Up INTERACTIVE

heroku

o.o.y.a.l.a

tumblr

elephantdrive

ftopia

Sonico

Etsy

Jungle Disk

onoko

gravityjack

talkbox

Gumi

encoding.com

WeBuzz

Trusted by Enterprises and Government Agencies



The New York Times



ticketmaster



Schneider Electric



PBS

ERICSSON



STANDARD & POOR'S

OUTBACK STEAKHOUSE



NASDAQ

LIONSGATE

Adobe

ELSEVIER

STANDARD & POOR'S

OUTBACK STEAKHOUSE

Newsweek

USDA

COLDWELL BANKER

bankinter

HAVEN POWER

SAP

LAFARGE

GOL Linhas aéreas inteligentes

Autodesk

SPIEGEL.TV



SAP

LAFARGE

Capgemini CONSULTING. TECHNOLOGY. OUTSOURCING

KENNETH COLE

HITACHI

SEGA

UniCredit

IBM

theguardian

razorfish

amazon.com



+





Amazon EC2

Virtual Servers in the AWS Cloud

Micro Instances

Small Instances

Medium Instances

Large Instances

High Memory Instances

High CPU Instances

High I/O Instances

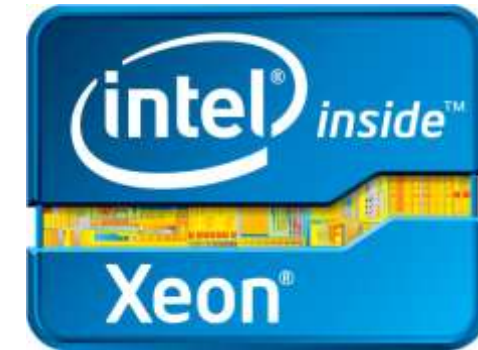
Cluster Compute Instances

Reinventing Supercomputing as a Utility



Amazon EC2

Virtual Servers in the AWS Cloud



Cluster Compute Instances

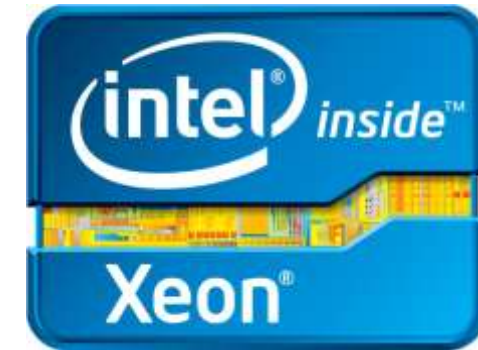
Perfect for Today's Big Data Problems

Reinventing Supercomputing as a Utility



Amazon EC2

#42 / 500
1,064 instances
17,024 cores



Cluster Compute Instances

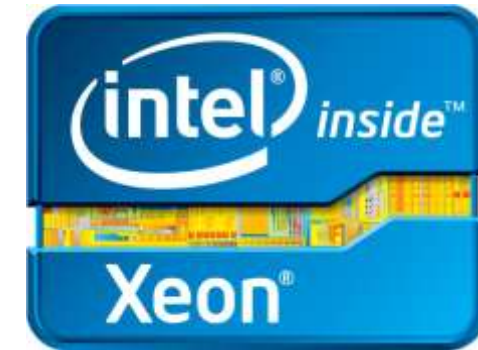


Reinventing Supercomputing as a Utility



Amazon EC2

Make the list today with
290 instances
\$73/hour

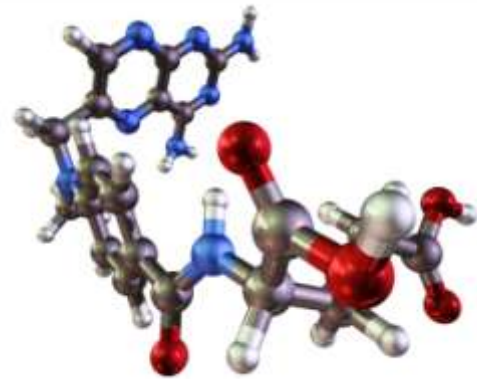


Cluster Compute Instances



Big Data Problems are Everywhere

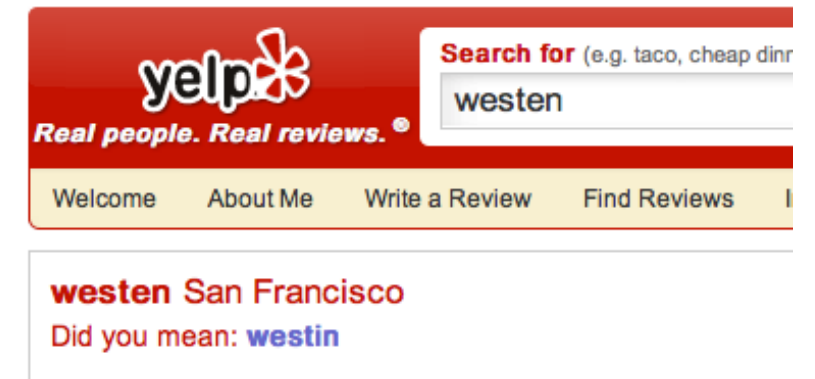
SCHRÖDINGER.



Cancer drug research
Computational chemistry



Mars rover telemetry
Robotic articulation calculations
Climate research



Recommendations
Click through analytics
Search optimization



Search for (e.g. taco, cheap dinner, Max's)

Near (Address, Neighborhood, City, State or Zip)

Search

Welcome

About Me

Write a Review

Find Reviews

Find Friends

Messaging

Talk

Events

Member Search

El Farolito

★★★★★ 2191 reviews [Rating Details](#)

Category: Mexican [\[Edit\]](#)

2779 Mission St
(between 23rd St & 24th St)
San Francisco, CA 94110
Neighborhood: Mission

(415) 824-7877
<http://www.elfarolitoinc.com/>

Menu

Hours:
Mon-Thu, Sun 10 am - 2:30 am
Fri-Sat 10 am - 3:30 am
Good for Kids: Yes
Accepts Credit Cards: No
Parking: Street
Attire: Casual
Good for Groups: Yes

Price Range: \$
Takes Reservations: No
Delivery: No
Take-out: Yes
Walter Service: No
Outdoor Seating: No
Wi-Fi: No
Good For: Late Night, Lunch, Dinner

Alcohol: Beer & Wine Only
Noise Level: Loud
Ambience: Divey, Casual
Has TV: No
Caters: No
Wheelchair Accessible: Yes



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[View Larger Map/Directions](#)

Browse Nearby:

[Restaurants](#) | [Nightlife](#) | [Shopping](#) | [Movies](#) | [All](#)

Deals Nearby

[More »](#)



\$20 for \$40 Deal
Arabian Nights
San Francisco, CA



\$20 for \$40 Worth of Food and Drink
Curbside Cafe
San Francisco, CA

[Edit Business Info](#) [Work Here? Unlock This Business Page](#)

[First to Review](#) Nish N.

[Send to Friend](#)

[Bookmark](#)

[Send to Phone](#)

[Write a Review](#)

Restaurant menus

Looking For Restaurant menus Find It By Location With Local.com!
Local.com

Holiday Inn Hotels

Best Price Guarantee at Official Site - Book Today & Save!
www.HolidayInn.com

Ads by Google

2193 reviews for El Farolito

Reviews Matching:

[Search Reviews](#)

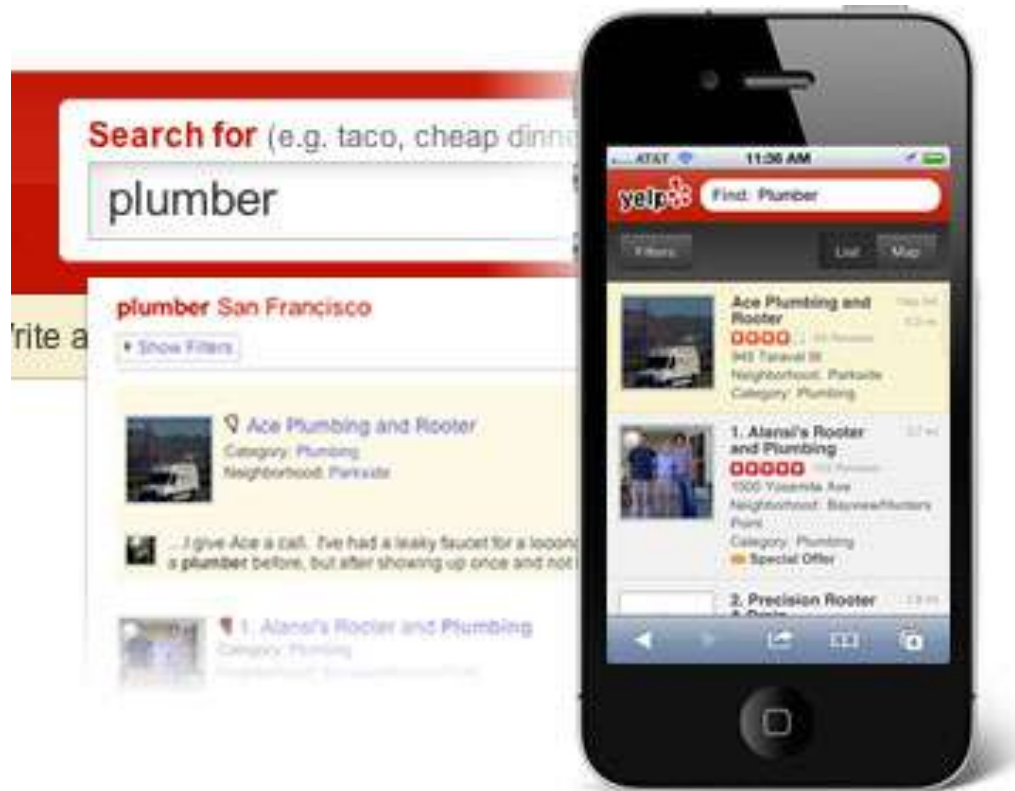
People Who Viewed This Also Viewed...



El Farolito
★★★★★ 489 reviews

Optimizing ad placements through clickstream analytics

Yelp Ads



We'll need:

Months of user history



Logs for:

Ads displayed

Ads clicked

Page views

Ad positioning

Yelp web site log data goes into Amazon S3



Amazon S3



Months of user click-through data

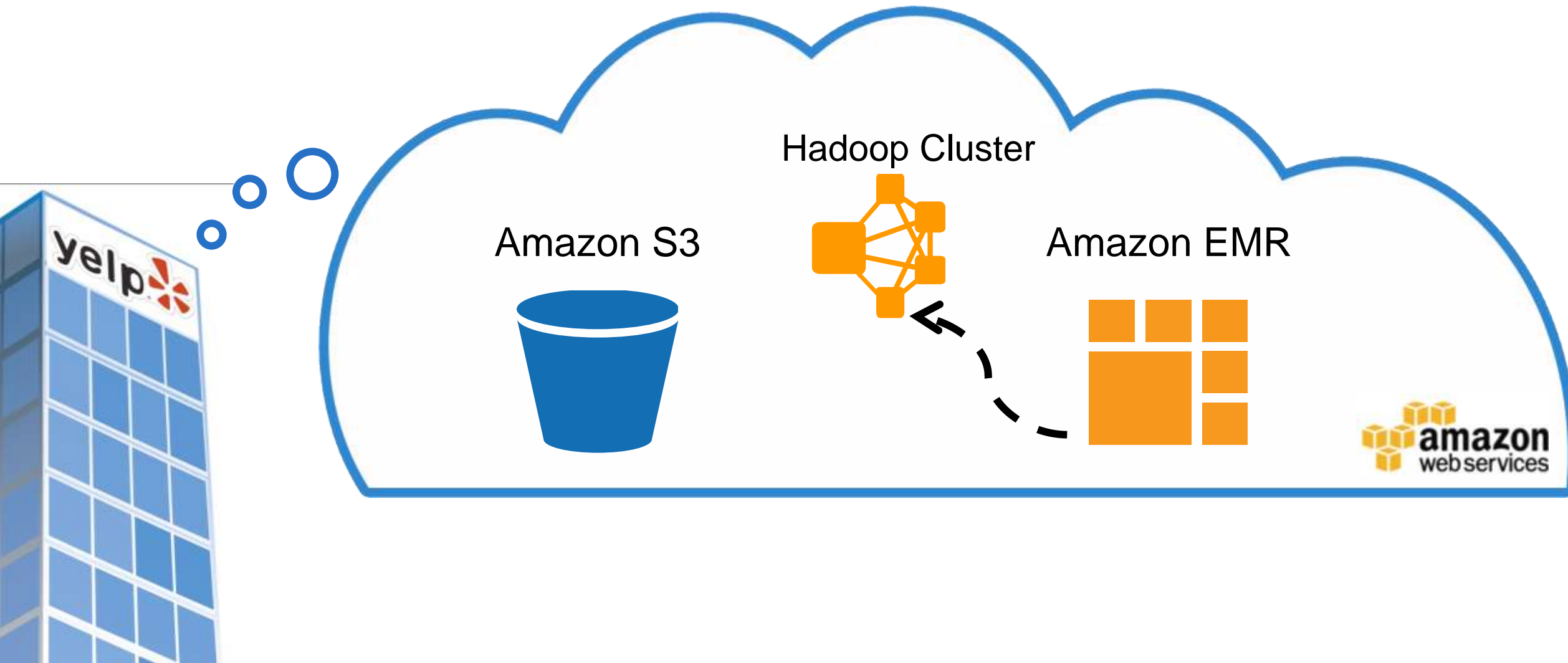
Search terms

Ads displayed

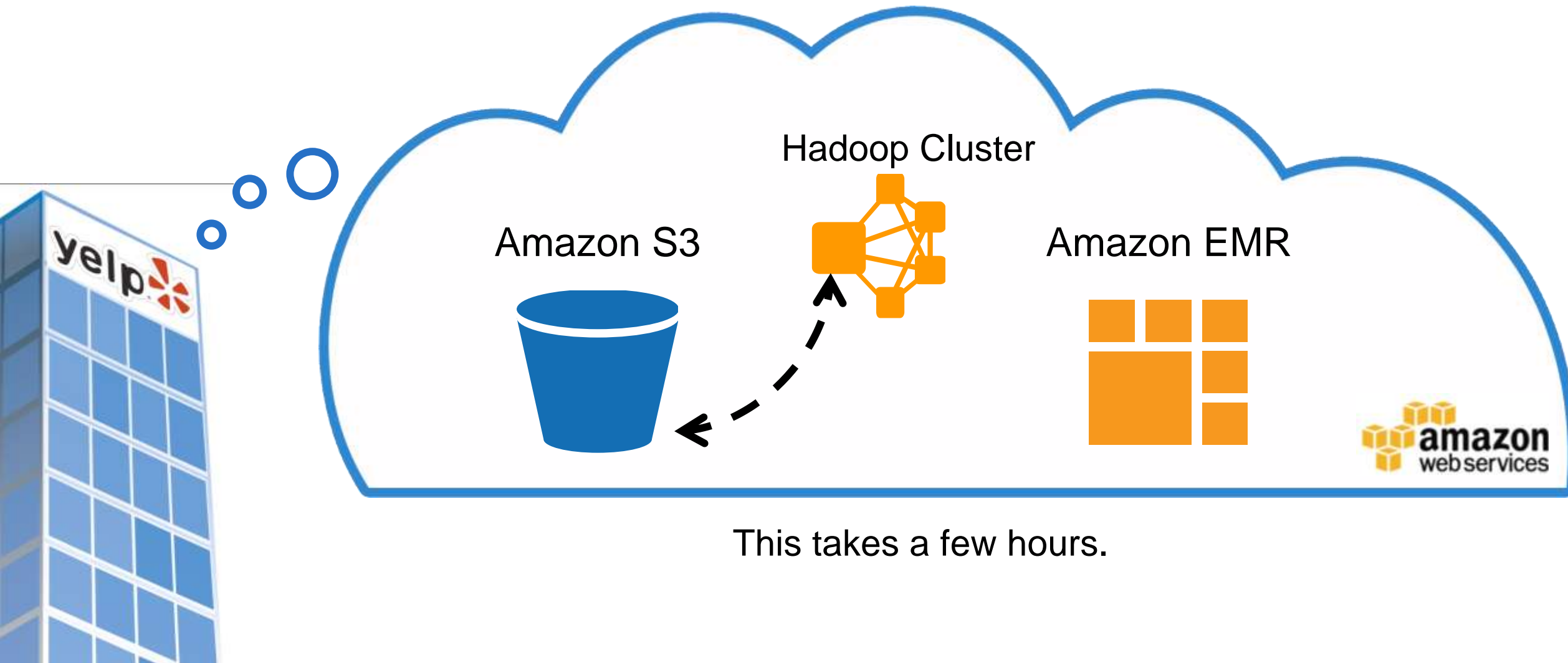
Premium listing inventory



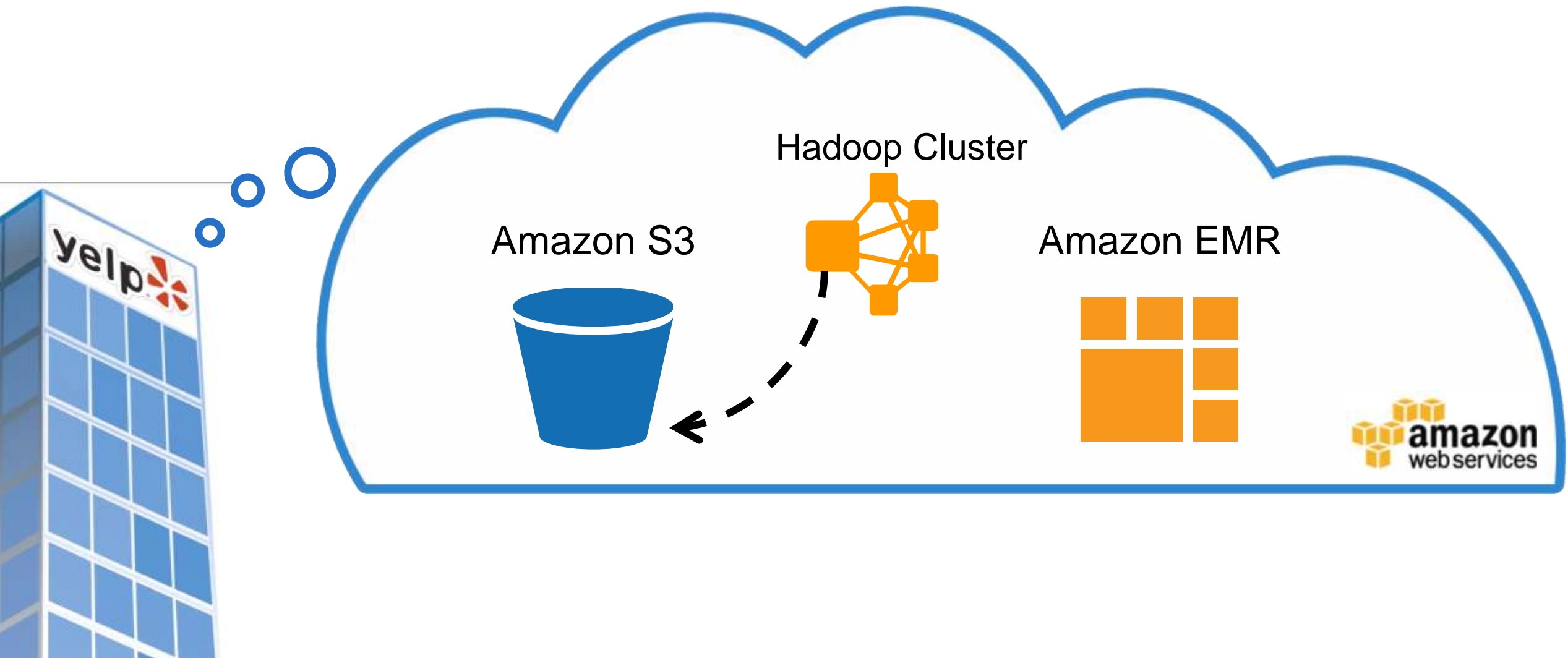
Amazon Elastic MapReduce spins up a 200 node cluster of virtual servers.



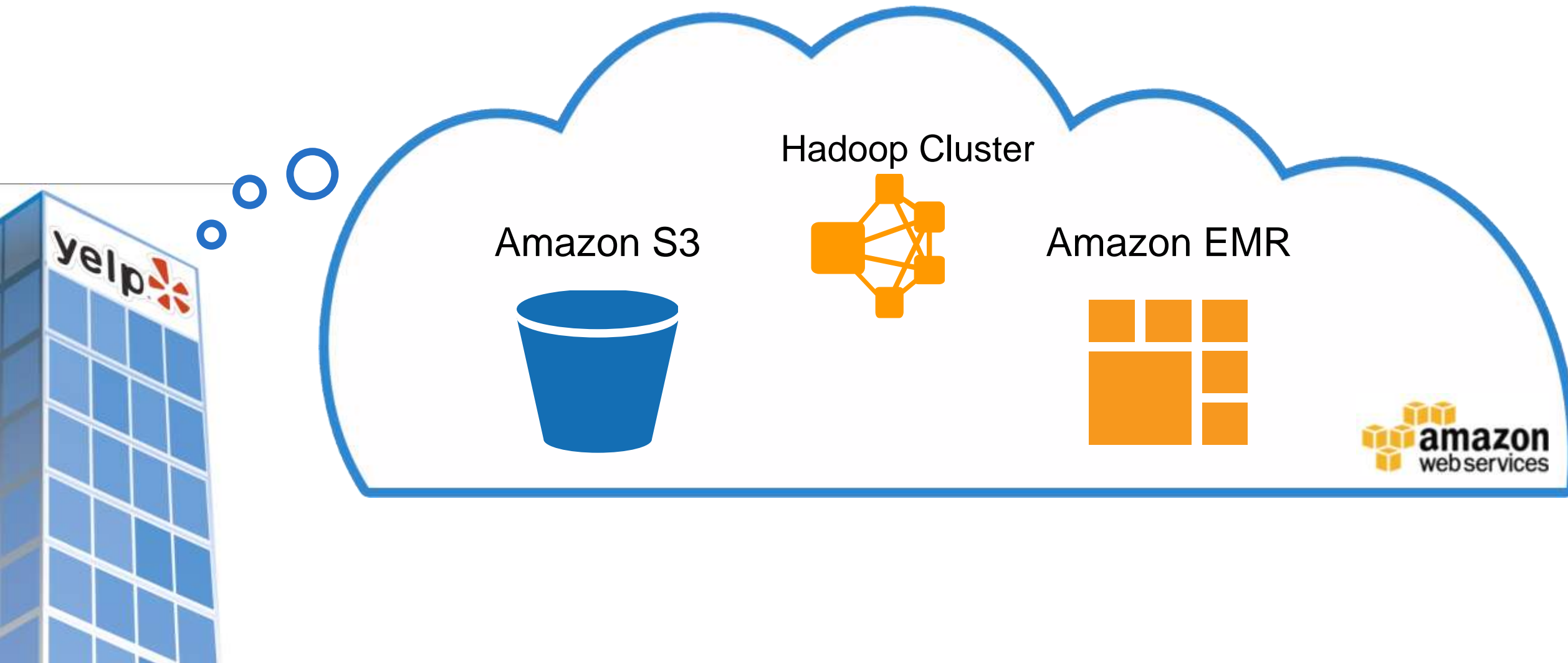
All 200 nodes of the cluster simultaneously analyze the data set to find patterns



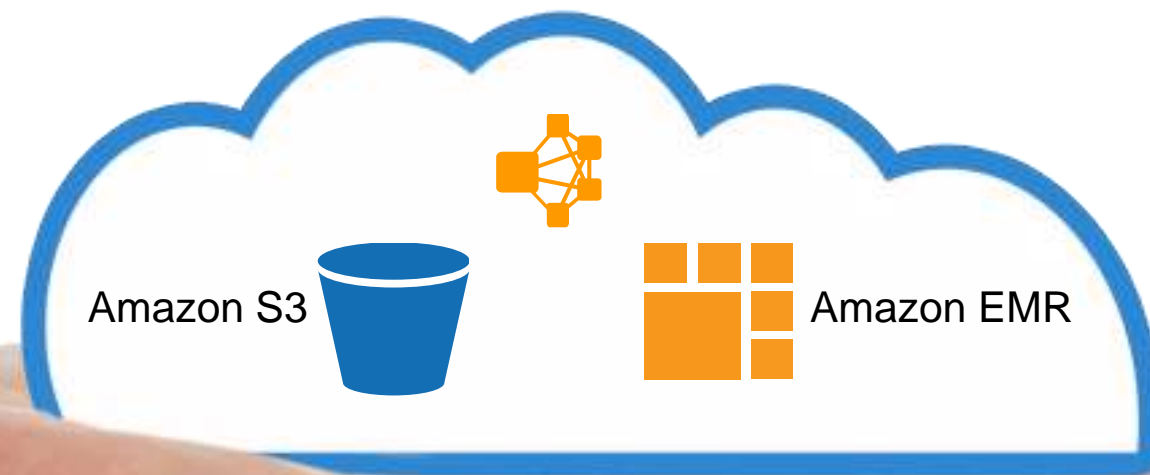
The analytics results of best performing ads and placement algorithms are stored on Amazon S3.



Then the cluster is shut down.
Yelp only paid for the time they used.



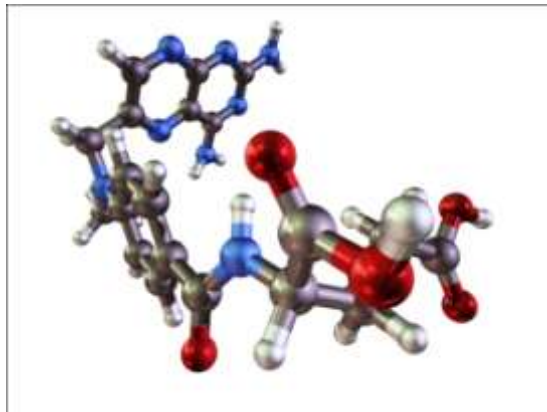
Every one of Yelp's engineers can do this whenever they need to evaluate, iterate or innovate with their data.



yelp.
spins up 250
clusters per
week.

Even at Massive Scale, This Approach is Still Incredibly Low Cost

SCHRÖDINGER.
CYCLECOMPUTING



Run 21 million potential drug compounds against a target cancer protein

The old way



\$20+ million in hardware



50,000 Intel Xeon E5 cores

12.55 compute years in 3 hours

\$4,828.85 / hour

Thank You!



Ariel Kelman
Head of WW Marketing
Amazon Web Services

Optimizing for Real Time Analytics

New Software Approaches

Distributed File Systems



In-Memory
Analytics



Advanced Hardware Capabilities

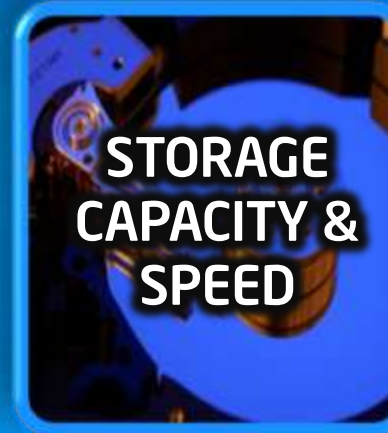
NETWORK
BANDWIDTH



COMPUTE
PERFORMANCE



STORAGE
CAPACITY &
SPEED



PROGRAMMING
MODELS &
TOOLS



New Uses for Non Volatile Memory in Big Data:

BREAKTHROUGH STORAGE PRODUCTS



Analyze More Data and Improve Application Performance

LEADING SOFTWARE SOLUTIONS



CacheWorks

Software to Optimize Big Data Performance

INDUSTRY STANDARDS COLLABORATION



Advancing storage & information technology

Server and Storage Programming Standards for NVM Technology

Intel® Intelligent Systems Framework: Simplifying the Internet of Things

DRIVING SECURE INTEROPERABILITY



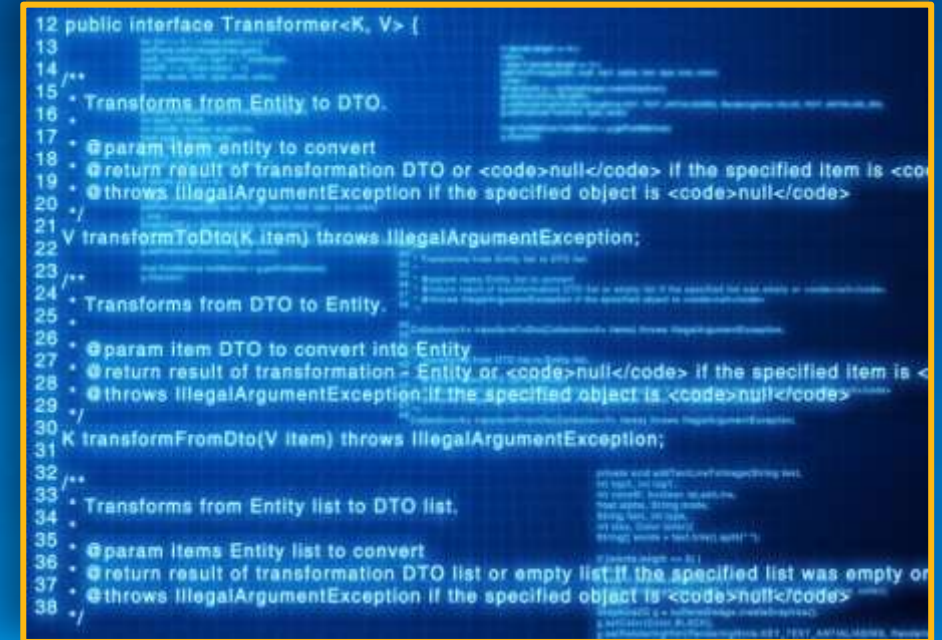
Billions of devices that need to share data with each other and the cloud

UNLOCKING EDGE DATA



Edge systems need to react to streaming data in real time

FILTERING DATA



Data volume outpacing network and storage efficiency

**Announcing
Today**

Intelligent Systems Framework 1.0



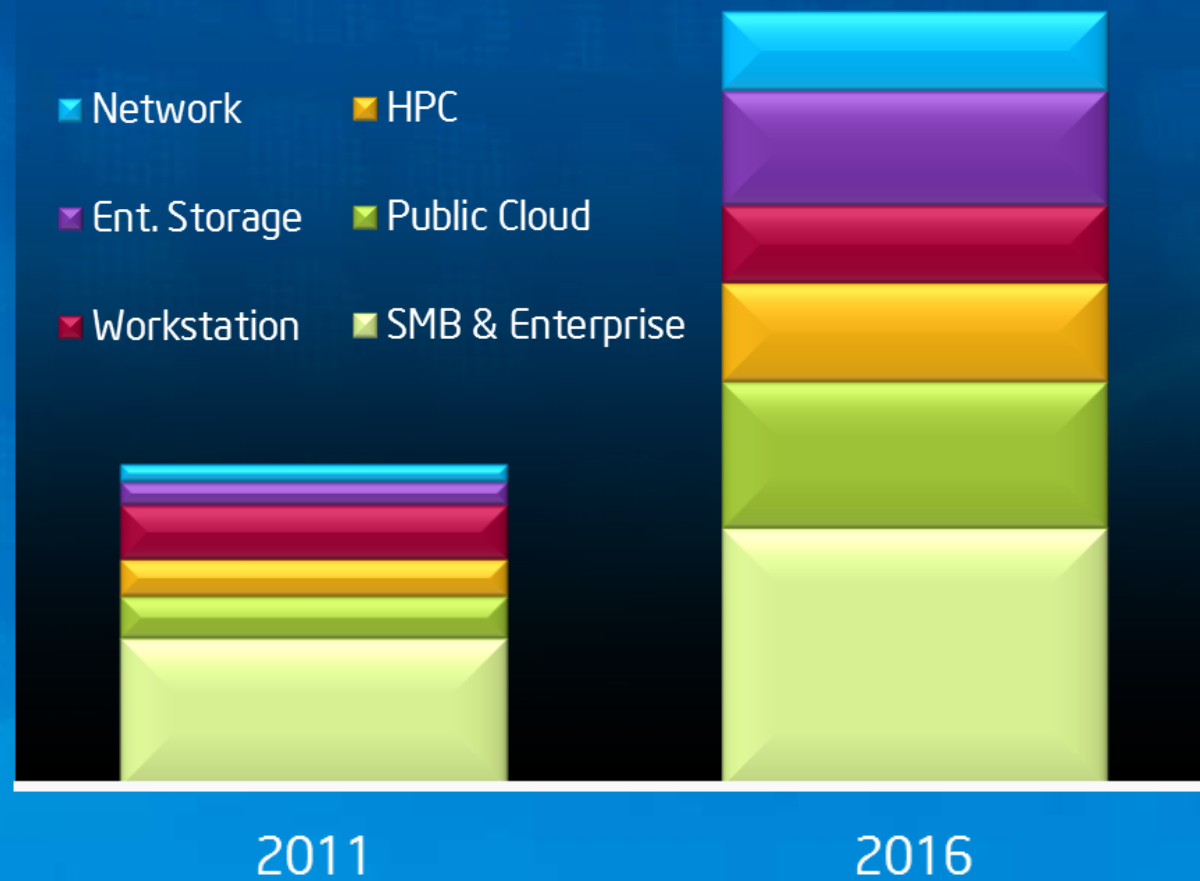
*Sample of Ecosystem Partners, not completely inclusive

Intelligent Systems Framework 1.0

- A technology specification for intelligent systems that defines foundational capabilities for communications, security and manageability
- Consistent, scalable, reuseable
- Reduces time to market
- Reduces fragmentation to simplify Internet of Things deployment

Intel is Creating the Next Generation Data Center

Doubling the Business*



Open Standards
Accelerates Innovation

Intel Providing Foundation
Across the Data Center

Enables the Delivery of More
Services and Business Value

AHEAD OF THE CURVE STRAIGHT TO THE FUTURE IDF2012 INTEL DEVELOPER FORUM



Sponsors of Tomorrow.™



Questions & Answers



AHEAD OF THE CURVE STRAIGHT TO THE FUTURE IDF2012 INTEL DEVELOPER FORUM



Sponsors of Tomorrow.



Legal Information

Today's presentations contain forward-looking statements. All statements made that are not historical facts are subject to a number of risks and uncertainties, and actual results may differ materially. Please refer to our most recent Earnings Release and our most recent Form 10-Q or 10-K filing for more information on the risk factors that could cause actual results to differ.

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