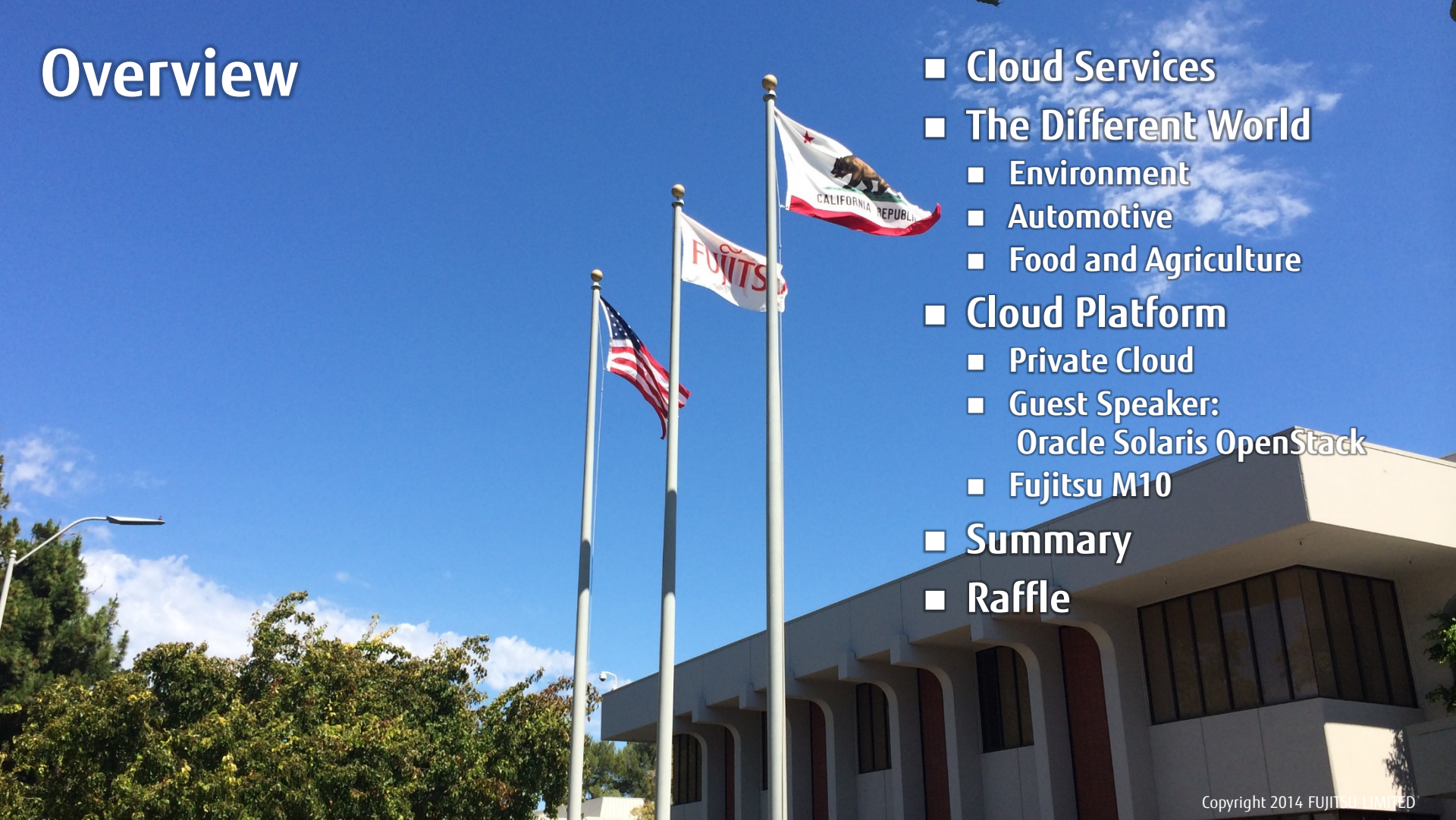

Oracle
OpenWorld
2014
September 28 – October 2
FUJITSU
shaping tomorrow with you
Human Centric
Innovation

The Best Cloud Platform that Supports Oracle Database In-Memory

Goro Watanabe

EVP, R&D Center, Fujitsu Technology and Business of America, Inc.

Overview



- Cloud Services
- The Different World
  - Environment
  - Automotive
  - Food and Agriculture
- Cloud Platform
  - Private Cloud
  - Guest Speaker:
    Oracle Solaris OpenStack
  - Fujitsu M10
- Summary
- Raffle

Fujitsu Focuses on Social Cloud Services

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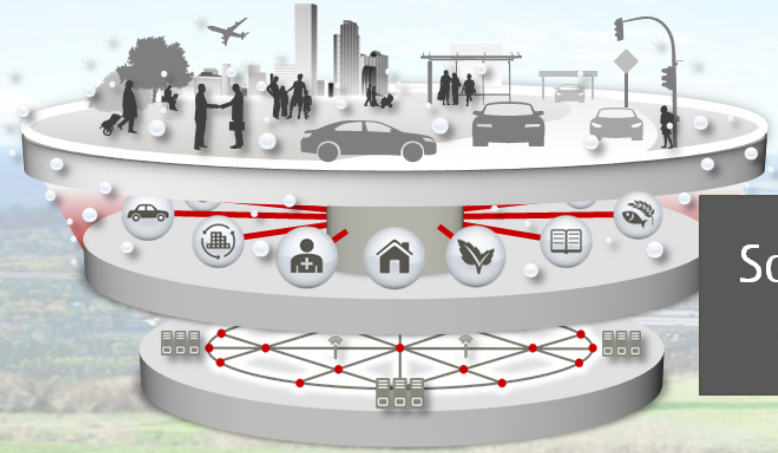
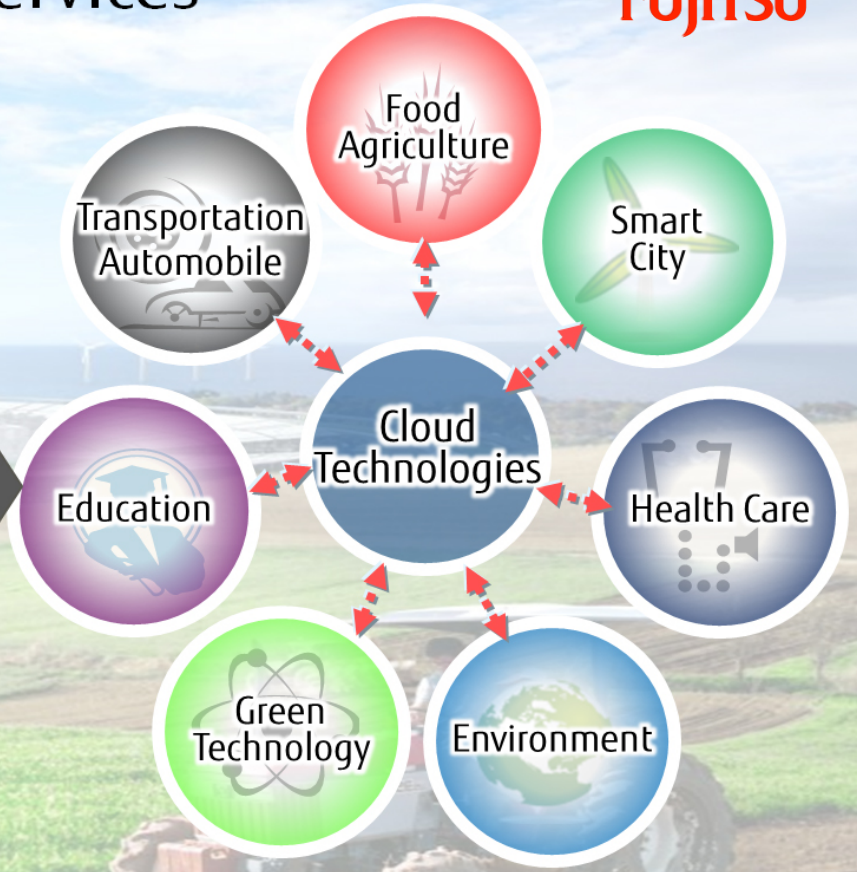


Human Centric
Intelligent Society

Social Cloud Services

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The Different World
Environment
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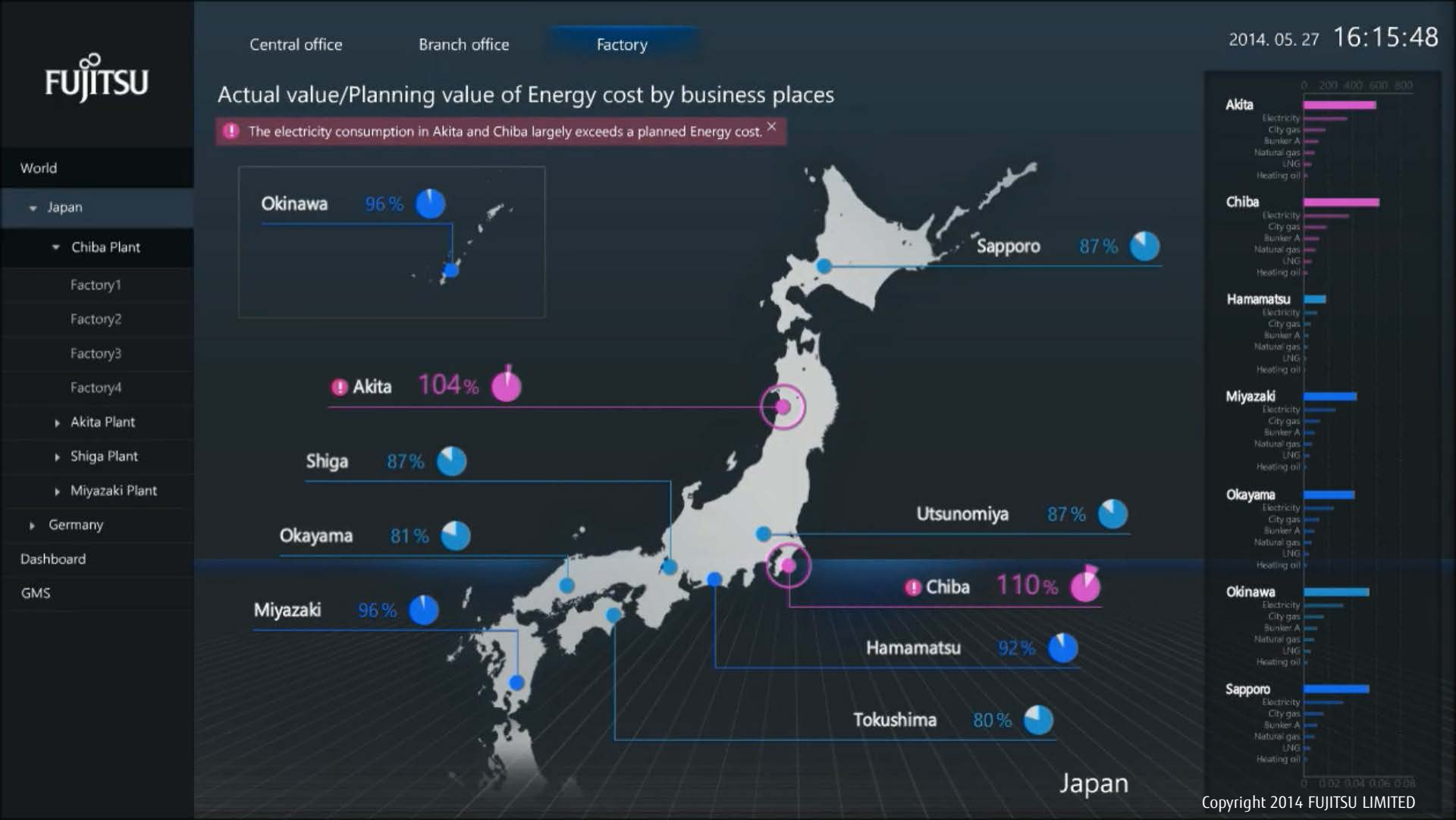
Drastic Changes in Environment

Environmental Dashboard




FUJITSU
The Different World
Automotive

All Electric Cars?

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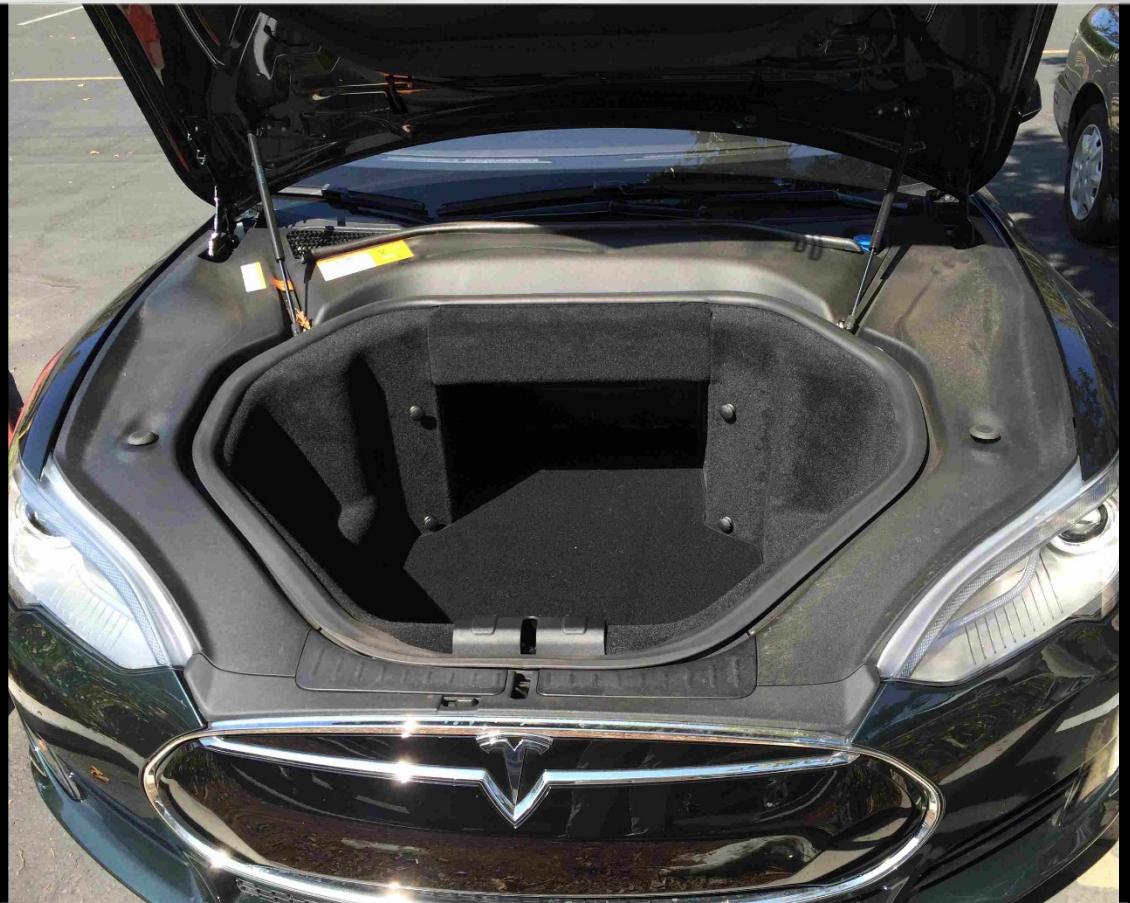
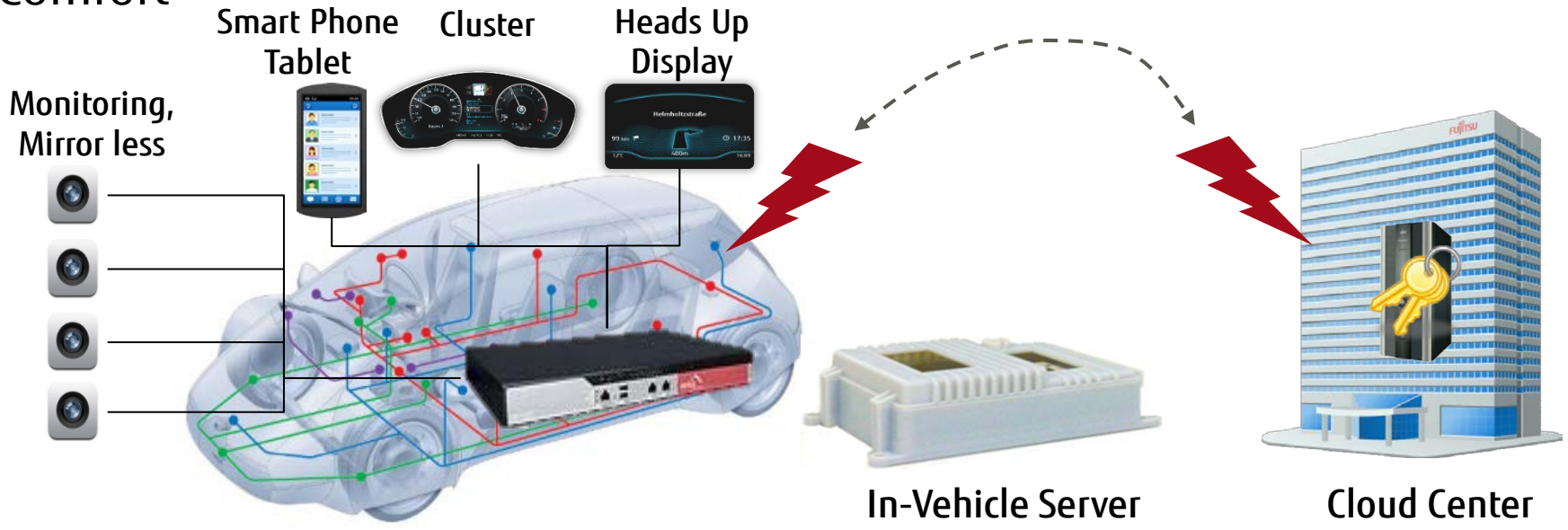


Self-Driving Cars?

More Computers

Vehicle ICT™

- Environment
- Safety
- Comfort



Vehicle Cloud

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1 Best Routing / Fuel Efficiency

2 Risk Prediction

3 Drowsiness Detection

Best Routing / Fuel Efficiency

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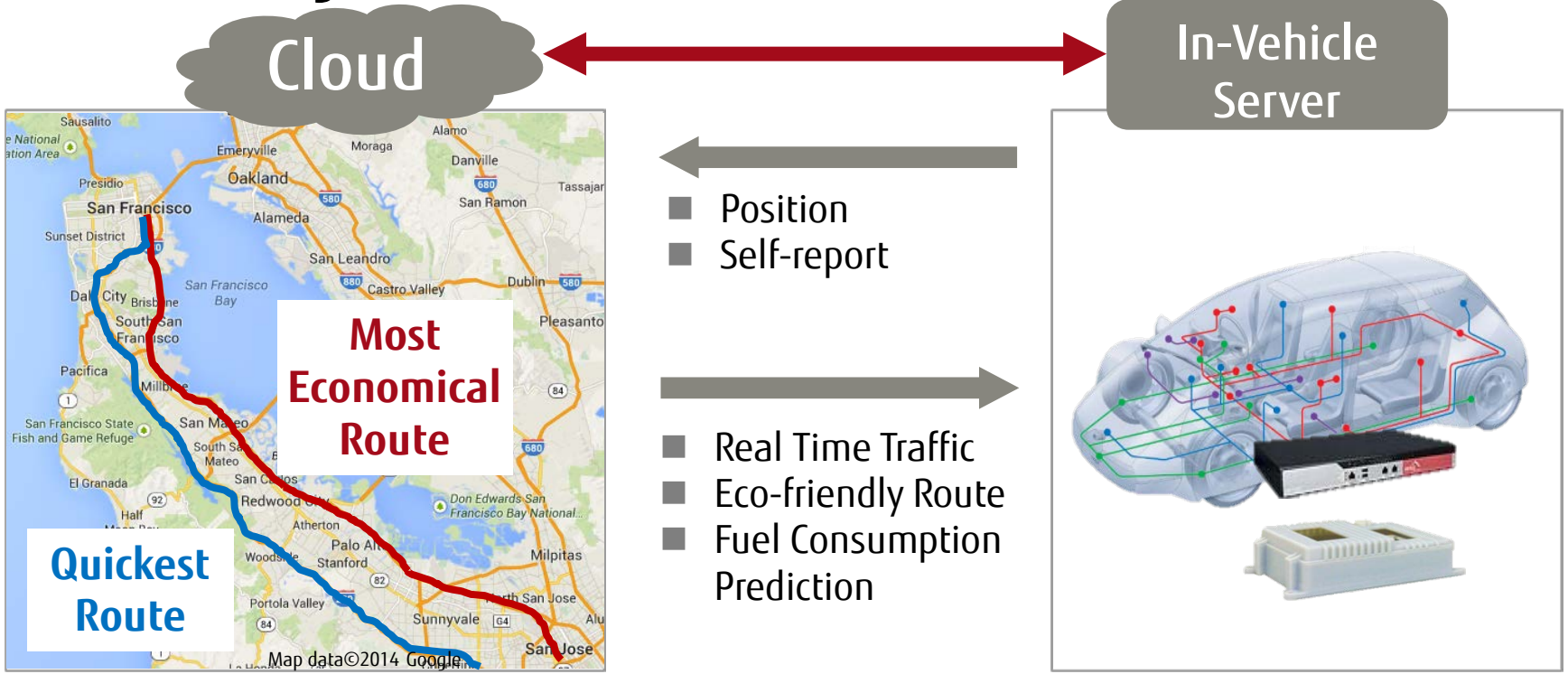
- Various driving data from cars is stored in the Cloud

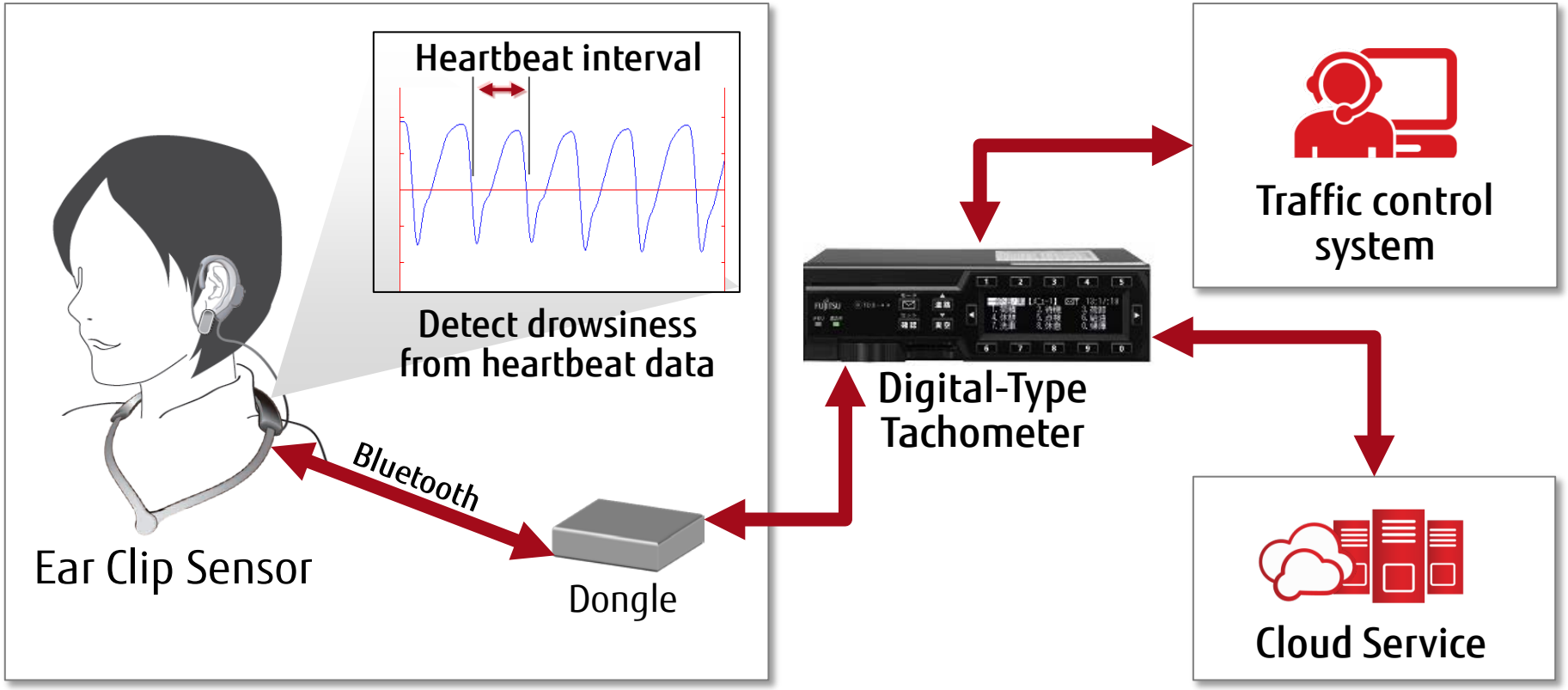


Risk Prediction

Digital Tachometer

All Japan Federation of Transport Workers' Unions
https://www.facebook.com/462053957187756/photos/a.462054187187733.105656.462053957187756/462054213854397/

Drowsiness Detection



The Different World

Food and Agriculture

Food: Environmental Concern

https://www.flickr.com/photos/jamescridland/613445810/in/photostream/

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https://www.flickr.com/photos/70377872@N04/7795934284/in/photostream/

Concern over Future Food and Farming

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Environmental Concern

- More People
- Less Land
- Less Water
- Unstable Weather

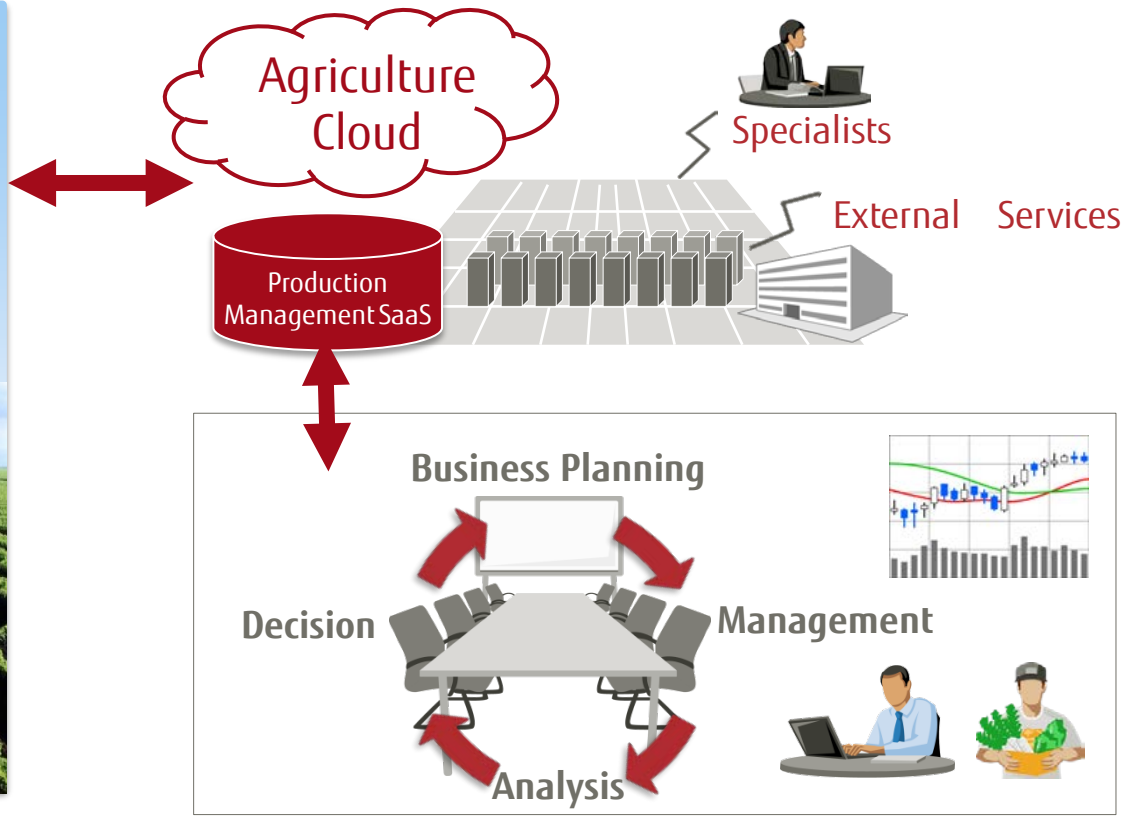
Health Concern

- Genetically Engineered Food
- Chemicals
- Access to Affordable Nutritious Food

Business Concern

- Unpredictable Yield
- Unpredictable Supply
- Unpredictable Cost
- Unpredictable Profit

Agriculture Cloud (Akisai): Farming and SaaS

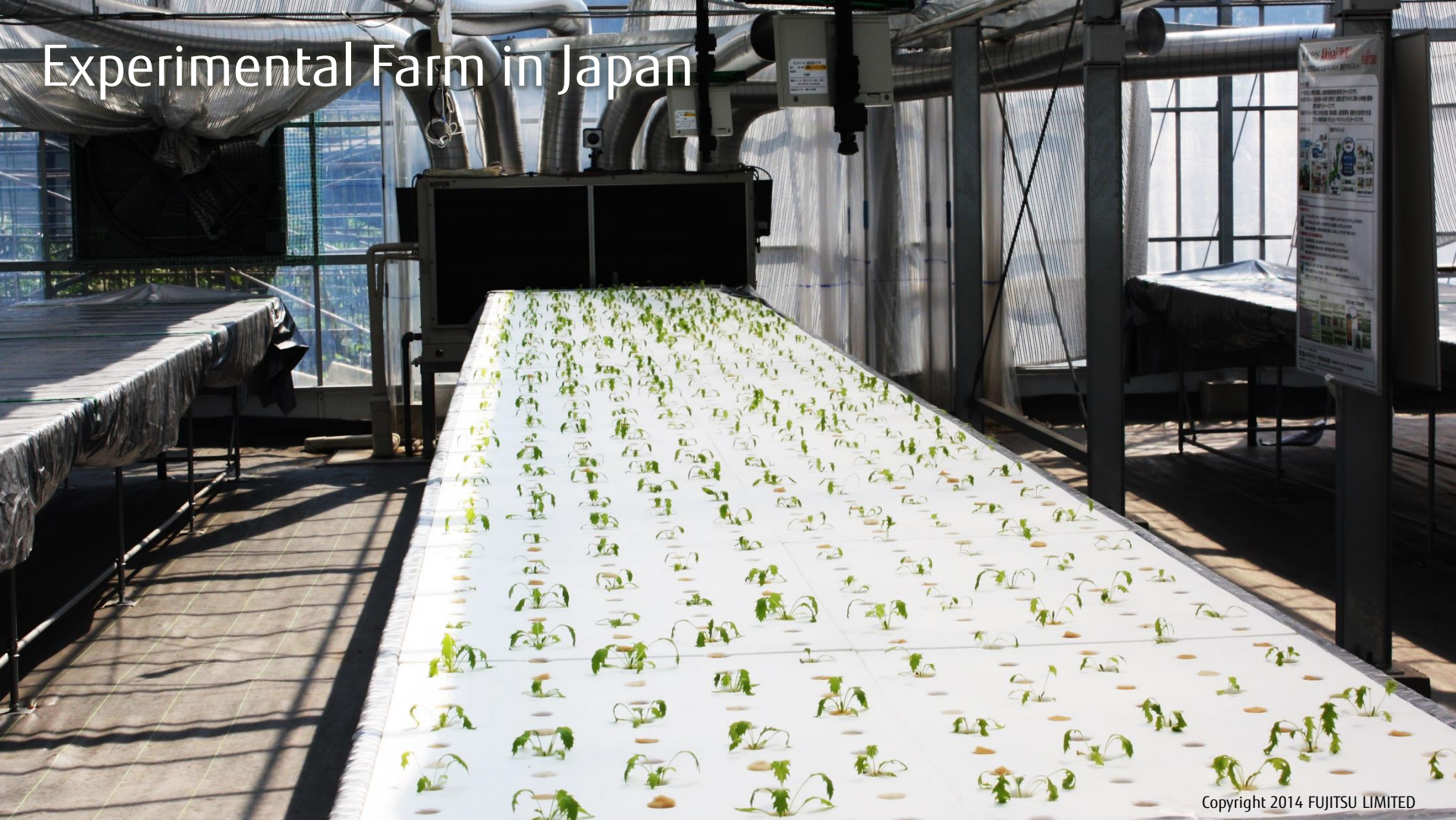


Experimental Farm in Japan

Experimental Farm in Japan

Experimental Farm in Japan

Experimental Farm in Japan



Agriculture Cloud: Environment Control

Fans

Roof Control

Weather Sensor

Environment Control

cloud

Aizu Semiconductor Fabrication Plant (High-Tech Vegetable Farm)

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Aizu High-Tech Vegetable Farm

Aizu High-Tech Vegetable Farm

Aizu High-Tech Vegetable Farm

Myth vs Reality

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Myth:

"Healthy vegetables are from natural soil and natural sun light."

Reality:

"The healthiest vegetables are from a controlled environment."

Fujitsu STYLYSTIC Q584

- Windows 8.1
- High Resolution (2560 x 1600)
- Waterproof
- Dustproof
- Fingerprint Sensor
- USB 3.0 x1, micro USB2.0 x1

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Cloud Services
Cloud Platform

Public Cloud Security Concern

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Do you know where your Data is stored (physically) ?

No? That's normal.

But are you OK with it?

Really, Really OK?

Public Cloud Security Concern

FUJITSU

IBM has filed a patent for a technique that will automatically manage cloud data across geographic regions, claiming it will allow client companies to comply with regulations governing where

data can be stored in different countries and continents.

(By Leon Spencer for ZDNet | August 11, 2014)

Public Cloud Security Concern

FUJITSU

Microsoft ordered to hand over overseas email, throwing EU privacy rights in the fire

Summary:

US law can apply anywhere in the world, so long as a technology company has control over foreign data, a court rules.

(By Zack Whittaker for Between the Lines | July 31, 2014)

Public Cloud Security Concern

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One of the first rules of IT is that

when data leaves the building, you've lost control over it.

(By David Weldon for Fierce Enterprise Communications, September 19, 2013)

Public Cloud Worries

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Security

Response

Reliability

Long Term Deployment

Why Cloud ?

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Why Not Your Own Cloud ?

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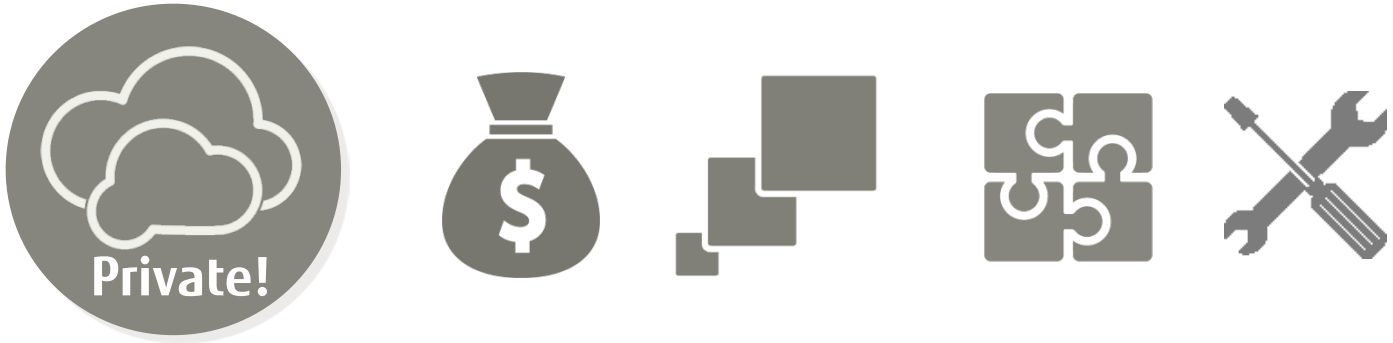
Keep the Right Stuff on the Public Cloud

Subtract Worries from the Public Cloud

= **Private Cloud**

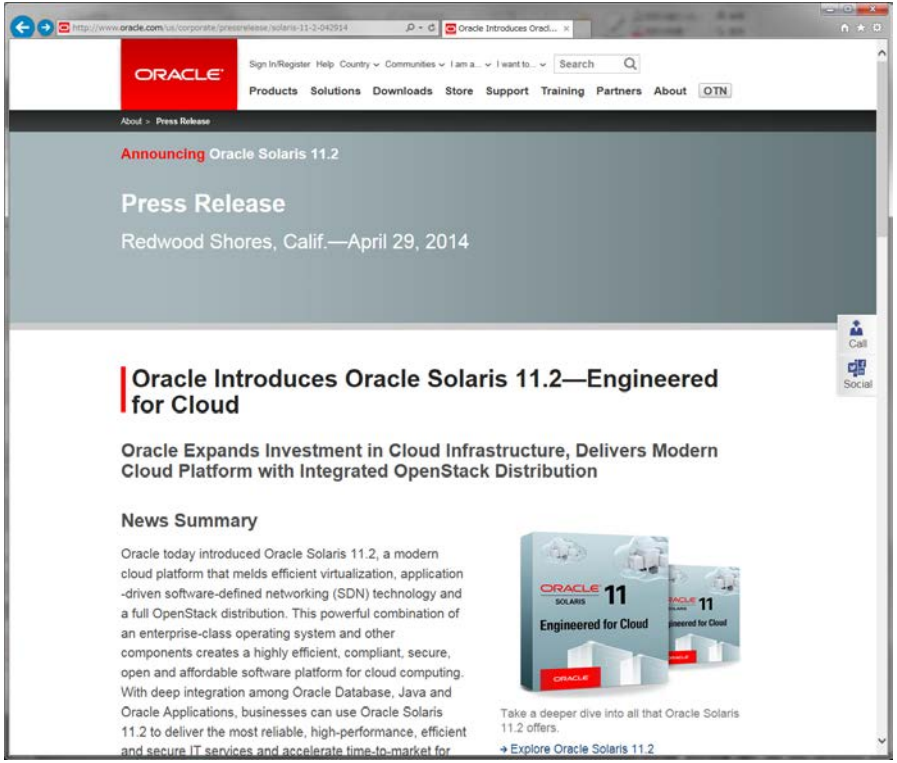


Private Cloud

- You have Control over Your Data
- Open and Standard Interface = OpenStack
- OS and Hardware: Do you Know? Do you care?
- Open and Standard: Platform Independent
- The Best Cloud OS
  = The Best OpenStack Feature

Oracle Solaris 11.2

- Oracle Solaris 11.2
  - Engineered for Cloud -
  - Expanded Investment in Cloud Infrastructure
  - A Modern Cloud Platform
  - **An Integrated OpenStack Distribution**



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Guest Speaker

Bill Nesheim

VP
Solaris Platform Engineering
Oracle Corporation


ORACLE®

Oracle Solaris OpenStack

Engineered for the Enterprise Cloud

Bill Nesheim
VP, Solaris Platform Engineering

www.oracle.com/Solaris

ORACLE

Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.

Oracle Solaris – Best for Enterprise

Co-engineered with the Oracle Software and Hardware Stack

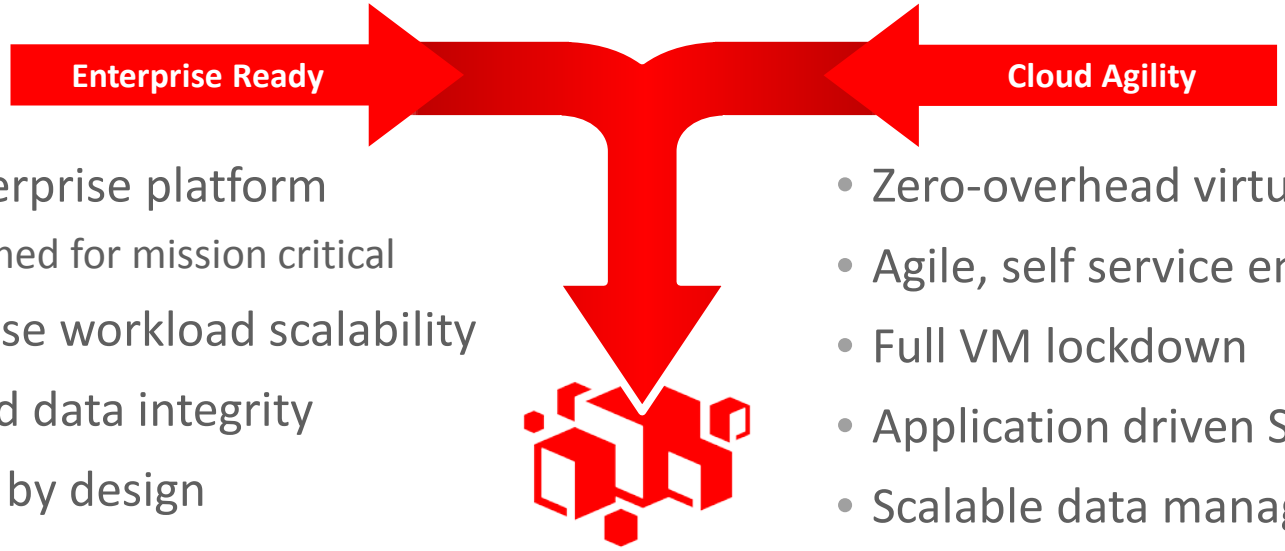
Enterprise Ready

- #1 enterprise platform
  - Designed for mission critical
- Immense workload scalability
- Assured data integrity
- Secure by design
- Production safe observability

ORACLE

Oracle Solaris – Best for Enterprise

Co-engineered with the Oracle Software and Hardware Stack



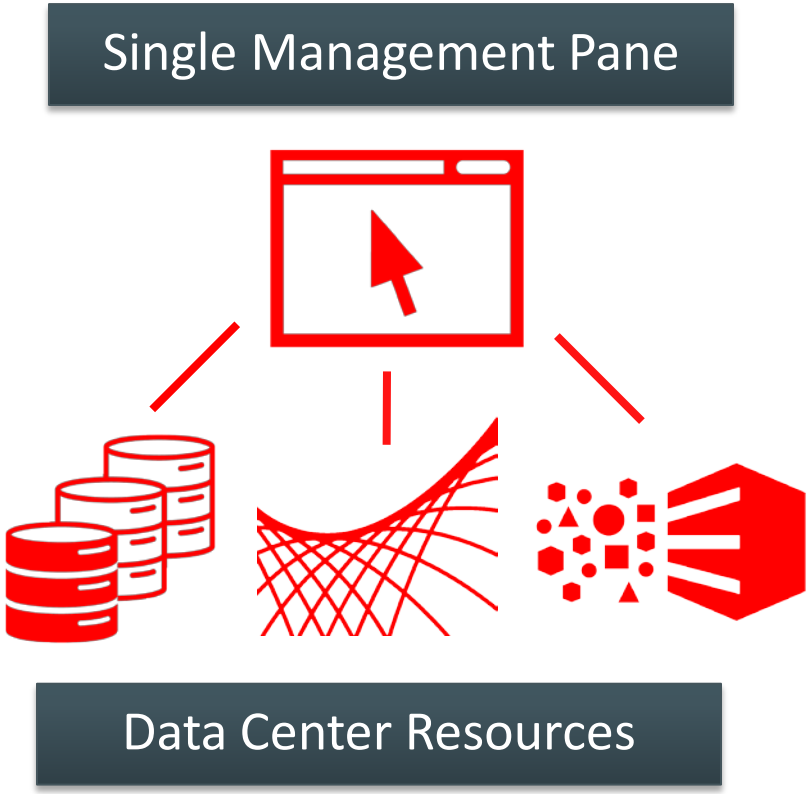
- #1 enterprise platform
  - Designed for mission critical
- Immense workload scalability
- Assured data integrity
- Secure by design
- Production safe observability

- Zero-overhead virtualization
- Agile, self service environments
- Full VM lockdown
- Application driven SDN
- Scalable data management
- Automated compliance monitoring and reporting

OpenStack Overview

What is OpenStack?

- Open Source Cloud Software
  - Foundation for IaaS, PaaS, and SaaS
- Combines compute, network and storage resources
  - Web portal for cloud admins and self-service users
  - Cloud services exposed through APIs

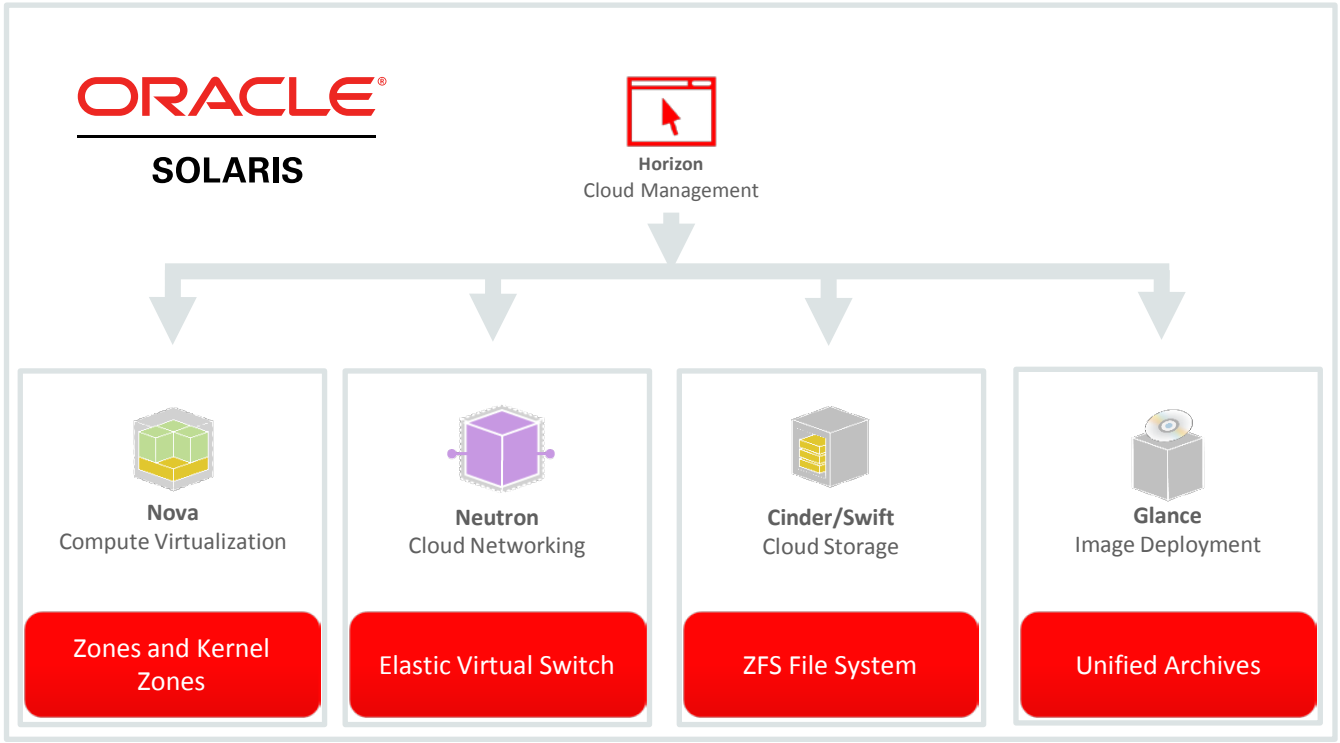


OpenStack in Solaris 11.2

OS. Virtualization. SDN. OpenStack. Complete.

- Complete OpenStack distribution included in Oracle Solaris
  - Nova, Neutron, Cinder, Swift, Glance, Keystone, Horizon **all** integrated into Solaris
- Tightly integrated to take full advantage of Solaris innovation
  - Zones, ZFS, Unified Archives, SDN

Integration with Oracle Solaris



Oracle Solaris and OpenStack at OpenWorld

https://oracleus.activeevents.com/2014/connect/focusOnDoc.do?focusID=18106

List of sessions/demos/HOLs:
bit.ly/OOW14-Solaris

- Solaris General Session:
  - Tuesday September 30, 10:45AM, Intercontinental Grand Ballroom B
- Hands-on-Lab: OpenStack Deployment in 20 Minutes
  - Tuesday September 30, 10:15am, Hotel Nikko – Monterey
- OpenStack and Oracle Solaris
  - Wednesday October 1, 12:45pm, Intercontinental Grand Ballroom A
- Enterprise-Class Platform and Database as a Service with OpenStack
  - Thursday October 2, 9:30am, Intercontinental Grand Ballroom A

ORACLE

ORACLE®

SOLARIS

OS

Virtualization

SDN

OpenStack

COMPLETE.

ORACLE

Hardware and Software
Engineered to Work Together


ORACLE®

Private Cloud

FUJITSU

- You have Control over Your Data
- Open and Standard Interface
- **You have a choice of Platforms**

Fujitsu M10 Servers

- Product lineup that meets any business need

All models support OpenStack
and Oracle Database In-Memory

Fujitsu M10-1

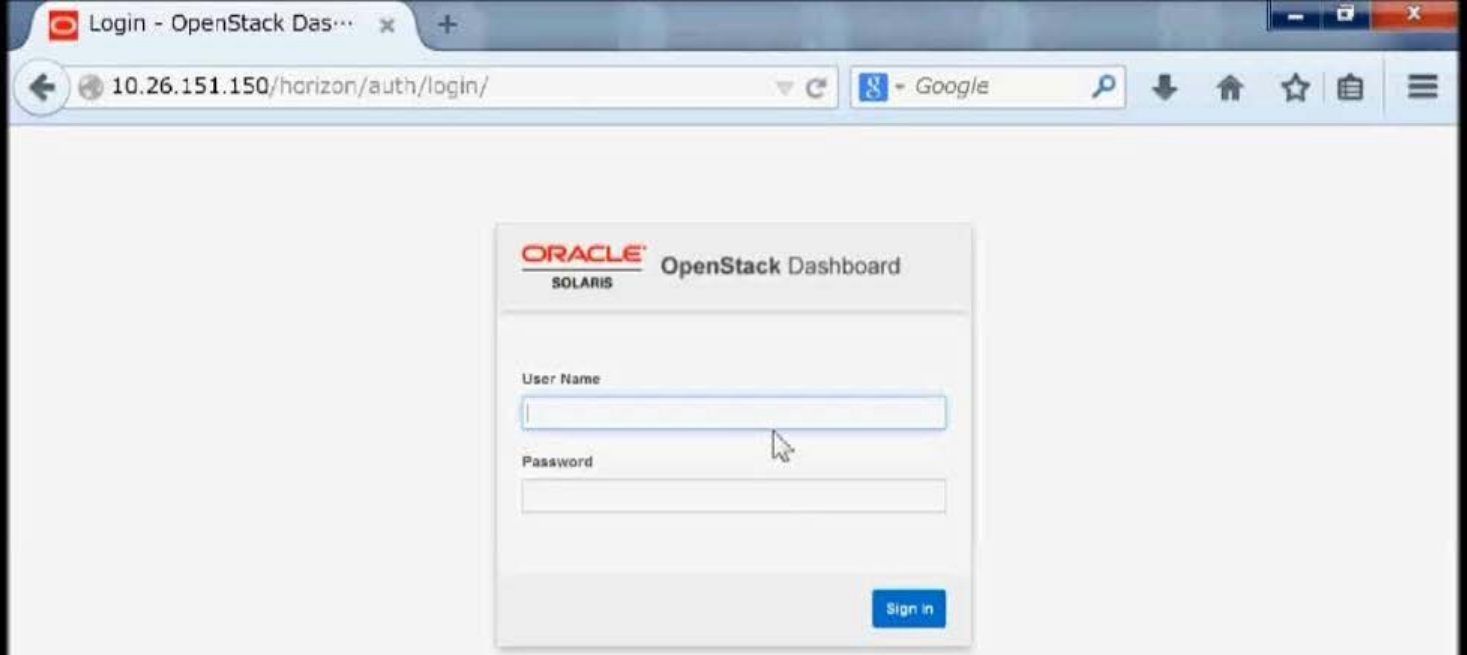
1 socket
(Max:16 cores)

Fujitsu M10-4

4 sockets
(Max:64 cores)

Fujitsu M10-4S

4 sockets Building Block can scale up to 64 sockets
(Max:1,024cores)



OpenStack Dashboard Login

Fujitsu M10: The Best Cloud Platform

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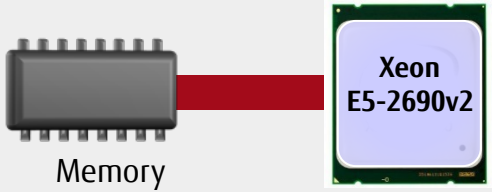
Fujitsu M10

Higher Performance

DEMO:

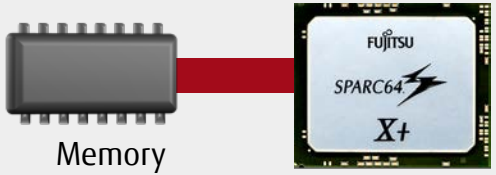
Memory Access Speed Performance

1 socket x86 Server



VS

1 socket Fujitsu M10-1



DEMO: Memory Access Speed Performance

FUJITSU

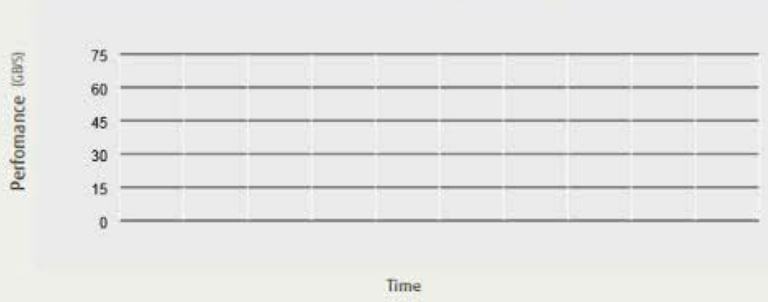
Server 01

x86 Server

CPU: Xeon E5-2690v2
3GHz 10 core
DIMM: 16GB 12 slots

00.00
GB per second
MEMORY ACCESS SPEED
0 100+

Transitions of Memory Access Speed



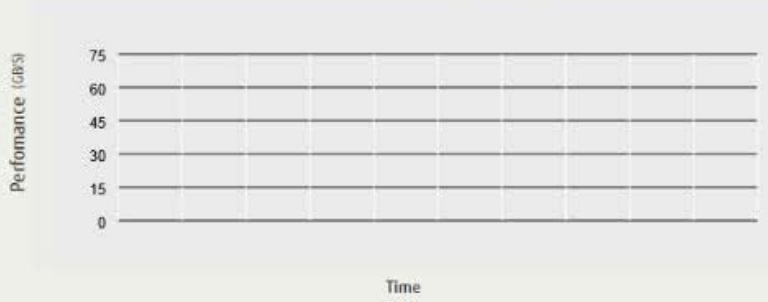
Server 02

Fujitsu M10

CPU: SPARC64TM X+
3.2GHz 10core
DIMM: 16GB 16slots

00.00
GB per second
MEMORY ACCESS SPEED
0 100+

Transitions of Memory Access Speed



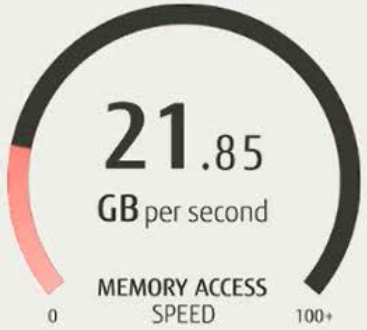
DEMO: Memory Access Speed Performance

FUJITSU

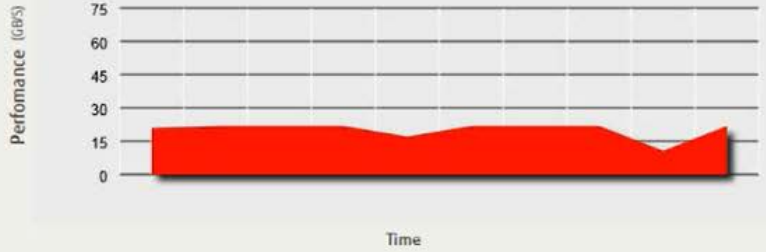
Server 01

x86 Server

CPU: Xeon E5-2690v2
3GHz 10 core
DIMM: 16GB 12 slots



Transitions of Memory Access Speed



Server 02

Fujitsu M10

CPU: SPARC64TM X+
3.2GHz 10core
DIMM: 16GB 16slots

Transitions of Memory Access Speed

Fujitsu M10: The Best Cloud Platform

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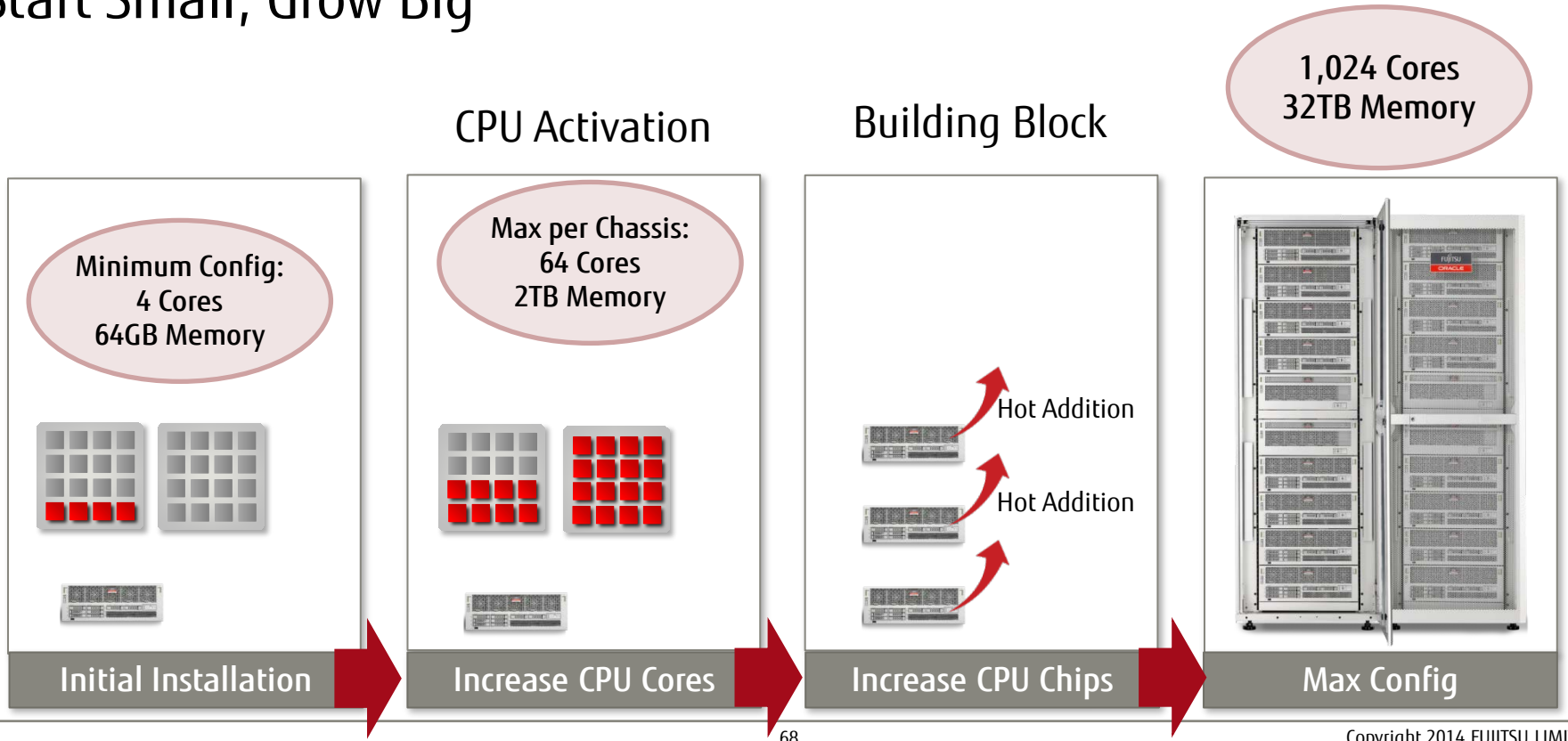
Fujitsu M10

Higher Performance

Dynamic Scaling

Dynamic Scaling

Start Small, Grow Big



Fujitsu M10: The Best Cloud Platform

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Fujitsu M10

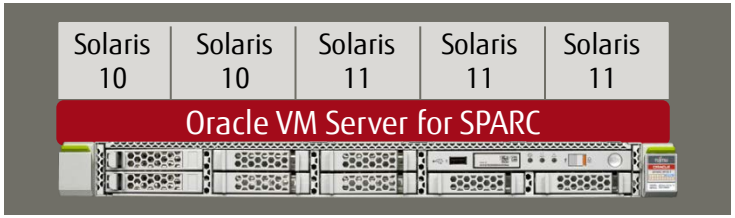
Higher Performance

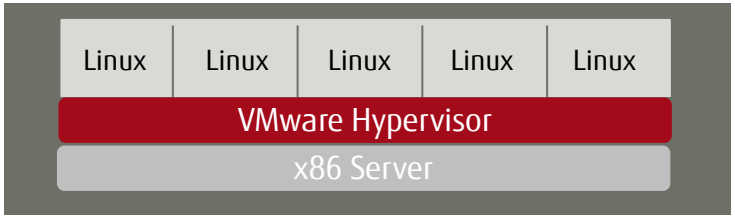
Dynamic Scaling

Low Cost

SPARC Affordability

Fujitsu M10: No OS Licensing Fee, No VM Licensing Fee





Fujitsu M10-1: $32 K

- 1x SPARC64 X, 8 Cores
- 128GB Memory
- 2x 600GB HDD
- Oracle VM Server for SPARC
- Oracle Solaris
- 3 year support

x86 Server: $34 K

- 1x Xeon E5-2667v2, 8 Cores
- 128GB Memory
- 2x 600GB HDD
- VMware vSphere
- Red Hat Enterprise Linux
- 3 year support

* Based on Fujitsu's 1U 2 socket x86 server as of Sep 11th, 2014

Fujitsu M10: The Best Cloud Platform

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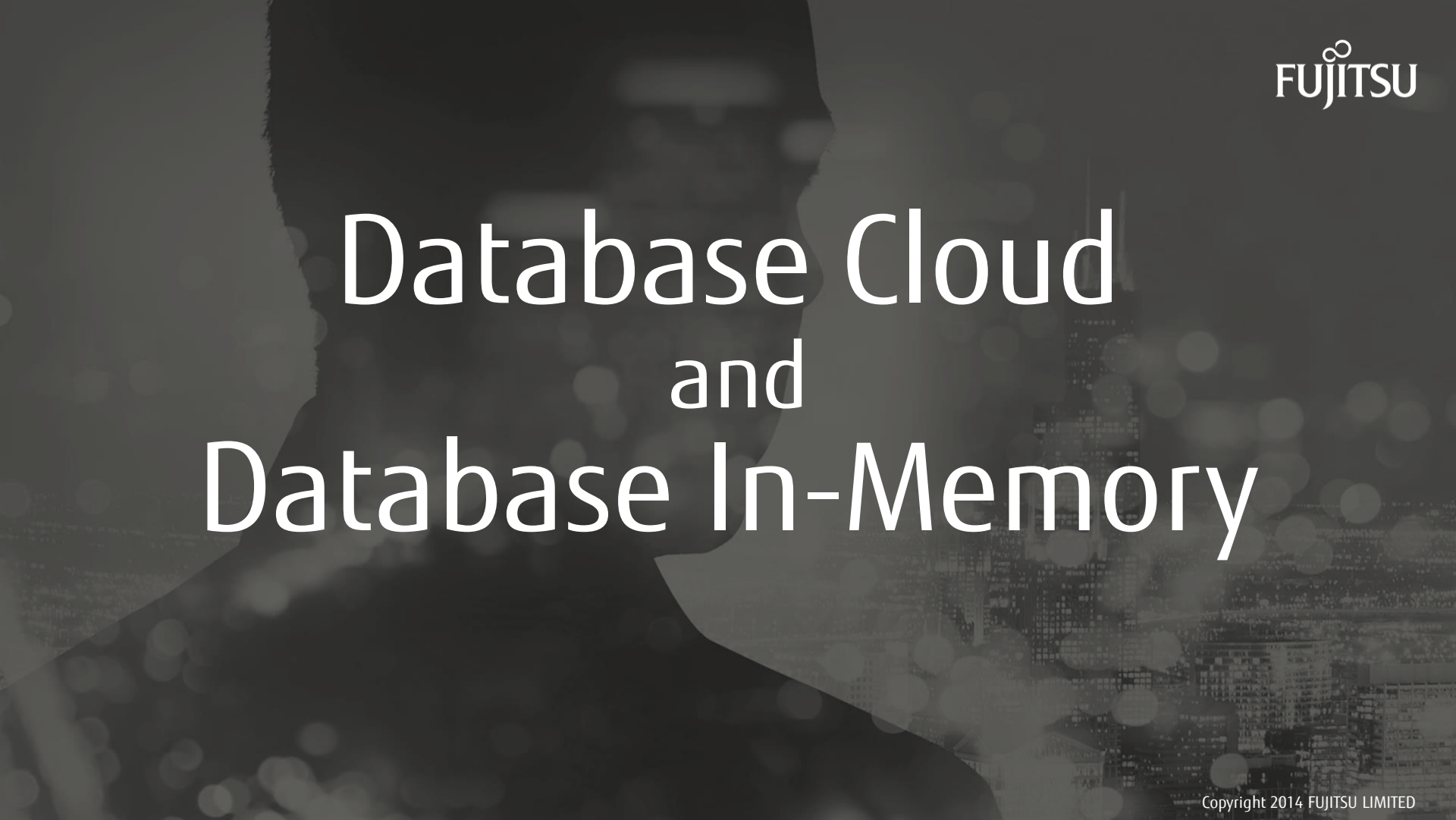
Fujitsu M10

Higher Performance

Dynamic Scaling

Low Cost

Fujitsu M10 Database Cloud!


FUJITSU
Database Cloud
and
Database In-Memory
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Fujitsu M10 Database Cloud

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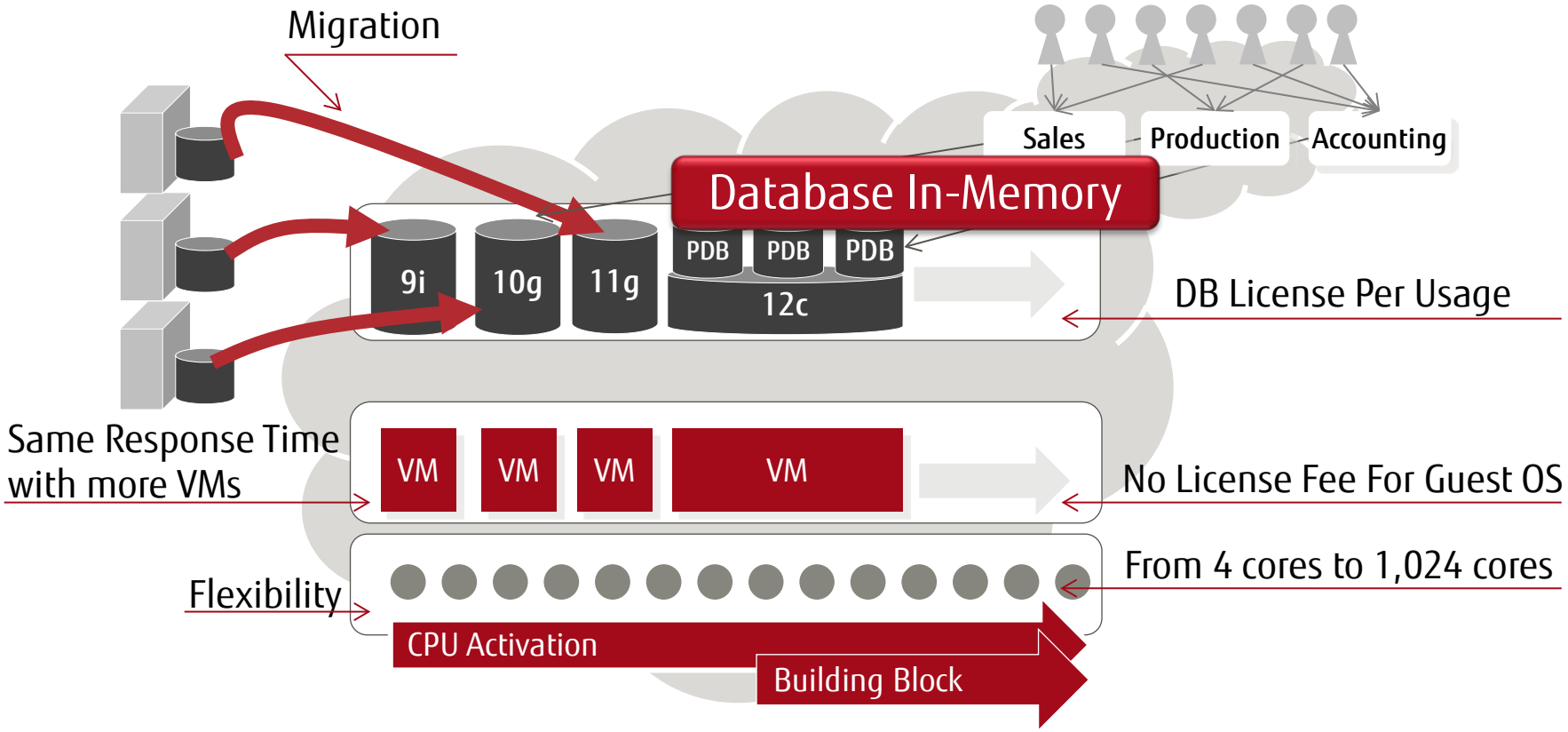
The Best Platform for Database Cloud and Database In-Memory

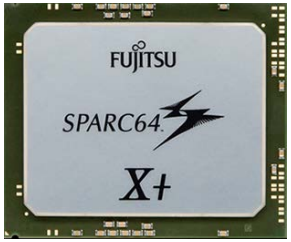
- Reliable On-Premise Cloud Database
- Easy Transition from Traditional Database System
- High Performance
- Flexible Resource Change

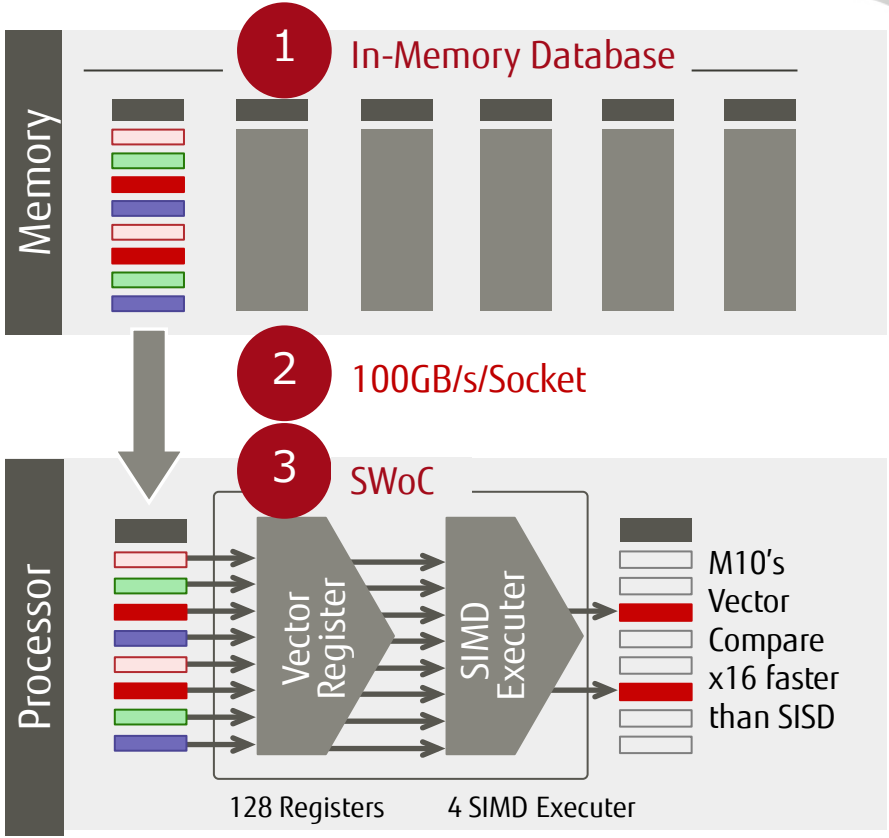
Fujitsu M10 Database Cloud



Advantage of M10 and In-Memory DB

- Scans Billions of Rows per Second
  1. In-Memory Database
  2. High Throughput Memory Bus
  3. CPU Innovation
     (SWoC, Software on Chip)





DEMO: Fujitsu M10: In-Memory & SWoC

Demo Environment

Fujitsu M10
Database Server

Oracle
Database 12c

Company X Sales Order History

- 12 Years of Transactions
- 180 Million Records

Query: Product quantity sold each year

DEMO: Performance advantage with in-mem & SWoC

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▶ ⏸ RESET

A

In-Memory

SWoC

Processing Time

00.00 sec

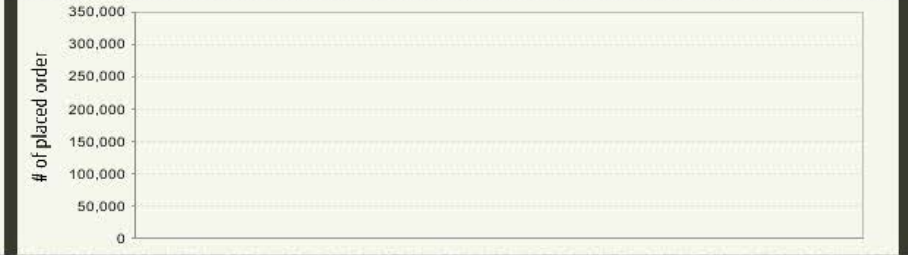
B

In-Memory

SWoC

Processing Time

00.00 sec



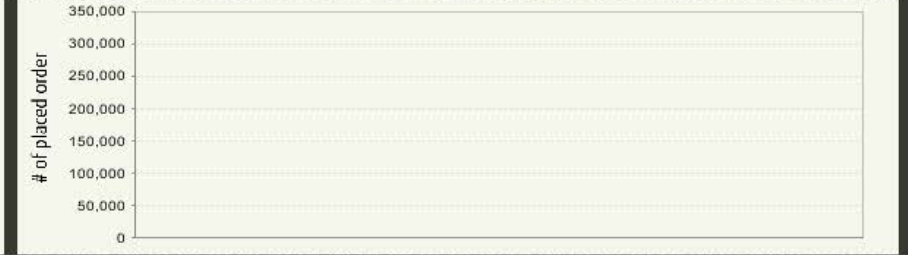
C

In-Memory

SWoC

Processing Time

00.00 sec



DEMO: Performance advantage with in-mem & SWoC

FUJITSU

▶ ⏸ RESET

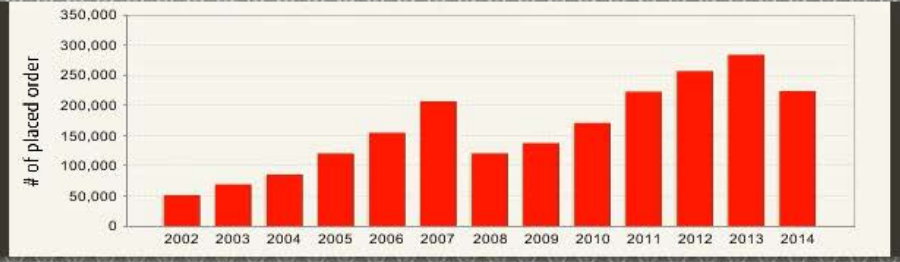
A

In-Memory

SWoC

Processing Time

280.86 sec



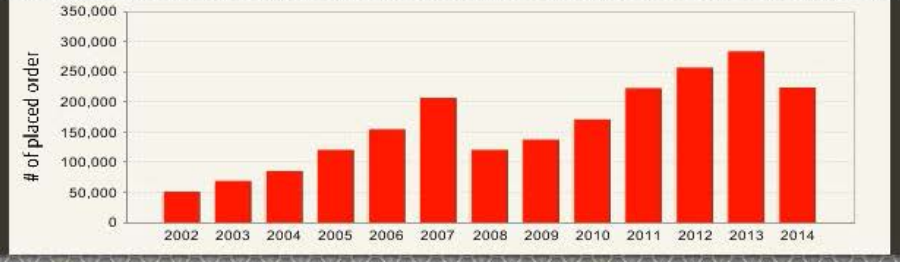
B

In-Memory

SWoC

Processing Time

38.35 sec



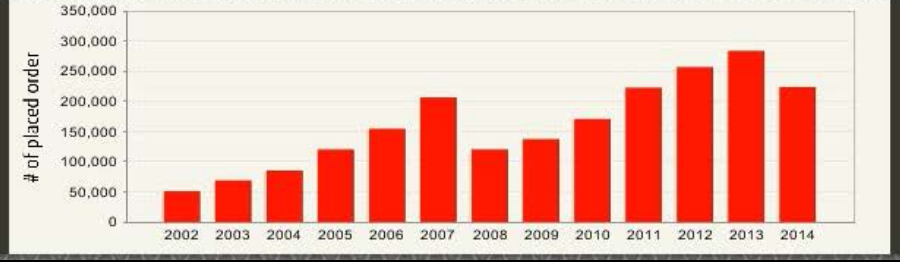
C

In-Memory

SWoC

Processing Time

03.42 sec



Case Study 1:
North Carolina Community Colleges

Background

Country: United States
Established: 1963
About: Institution of higher education
Enrollment: More than 800,000 students
Locations: 58 campuses state-wide
URL: http://www.nccommunitycolleges.edu/

Case Study Highlights

"With the new Fujitsu M10-1 servers, we've seen a notable difference in both size and speed. Our old V890 system took up half the rack, while the new Fujitsu M10-1 is significantly smaller and uses just one small slot. We've also seen a boost in performance, with increased speed in services to students and staff.

We also like the fact that more memory or capacity can be added as our needs grow. The Fujitsu M10 will easily satisfy our needs for the next six to seven years."

- Wayman White, Director of Information Services at College of the Albemarle

Case Study 1:
North Carolina Community Colleges (cont'd)

FUJITSU

Background & Objective

Nation's third largest community college system modernizes campus IT systems to support 800,000+ students.

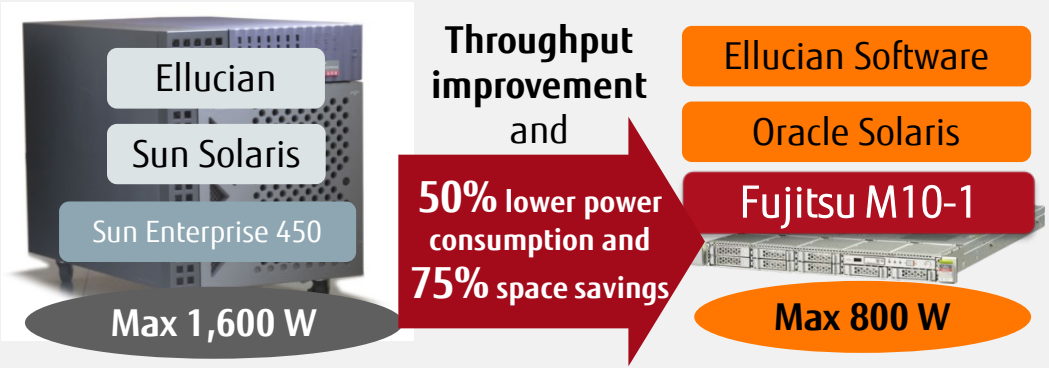
Business Requirements
- Reduce campus operating expenses.
- Improve services to students, staff & faculty.

System Requirements
- Scalability to cope with growth in data & students.
- Ensure 24/7 campus operations during peak times.

Why Fujitsu M10 Server?

- Boost in performance for improved student/staff services.
- Easily increase size of system and throughput capabilities as school needs grow.
- Smaller footprint offers tangible energy savings.
- Reduction in overall operating costs.

Configuration



Case Study 2:
4 Million Member-Strong Healthcare Service Provider

Background

Country: United States
About: Leader in delivering healthcare services, products and information
Members: 4 million

Case Study Highlights

We've had good success with the M Series platform, so we looked at the Fujitsu M10 server as a logical successor. When comparing against other models, the Fujitsu M10 had a lot of nice features such as RAS, memory-mirroring capabilities and the history that we've had with that class of platform having very low hardware failure rates.
"We're pleased with the performance, really the **price/performance** of the M10 is very good."

- Brian P., IT Manager

Case Study 2:
4 Million Member-Strong Healthcare Service Provider

FUJITSU

Background & Objective

State healthcare service provider modernizes IT infrastructure to enhance support of 4 million member network.

Business Requirements

- Reduce IT operating expenses (via energy usage, software licensing costs, real estate, etc.) and boost efficiency.
- Improve services to doctors, hospitals and members.

System Requirements

- Scalability to cope with growth in data & members.
- Ensure uptime; 70% of datacenter is mission critical
- Robust security to comply with HIPAA mandate.

Why Fujitsu M10 Server?

- RAS features (esp. memory mirror)
- Building block model (pay-as-you-grow) proved substantially less expensive than alternatives.
- Solaris scalability & security
- 30:1 consolidation; small footprint offers significant energy savings.
- Reduction in overall operating costs.

Configuration

30 SPARC Enterprise M3000 Servers

Extreme Consolidation 30:1

80% lower power consumption

1/30th footprint

Max 2779W

1 Fujitsu M10-4S

Case Study 3:
Japanese Megabank

FUJITSU

Existing Solaris Server

over **50** servers

1/2 Server

Private Cloud

Fujitsu M10

21 servers

Why Fujitsu M10 Server?

- x20 Performance against competitor in POC
- Easy Expansion
- Reliable Integration Platform

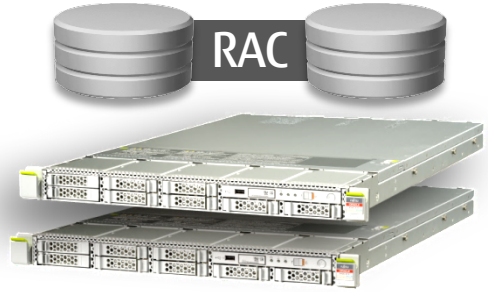
Case Study 4:
Human Resources Development Service of Korea

FUJITSU

Existing AIX Server		Fujitsu M10
1x P570	Improve Availability	2x Fujitsu M10-1

1/2 Space

2x Performance



Why Fujitsu M10 Server?

- Mainframe-Class High-Reliability
- Space-saving (1U) and High Performance
- Optimize initial investment with CPU Activation

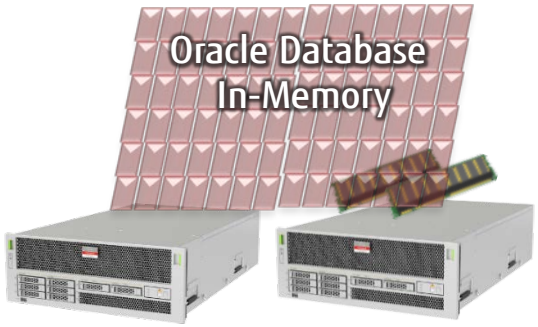
Customer POC Reference:
Japanese Financial Customer

FUJITSU

Fujitsu M10

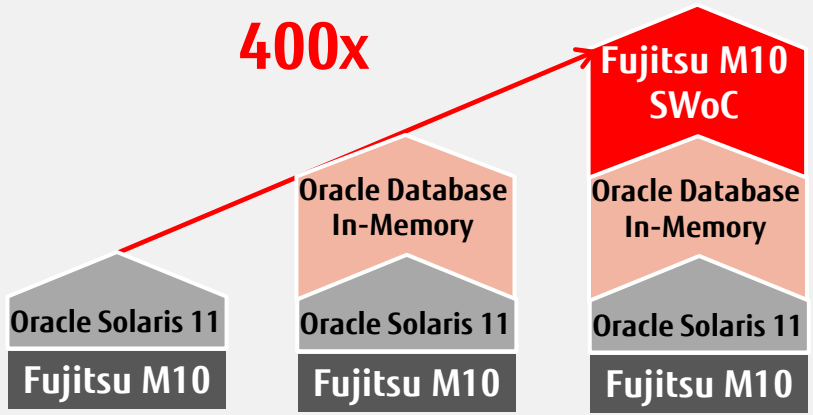
2x Fujitsu M10-4

Oracle Database 12c
In-Memory with RAC



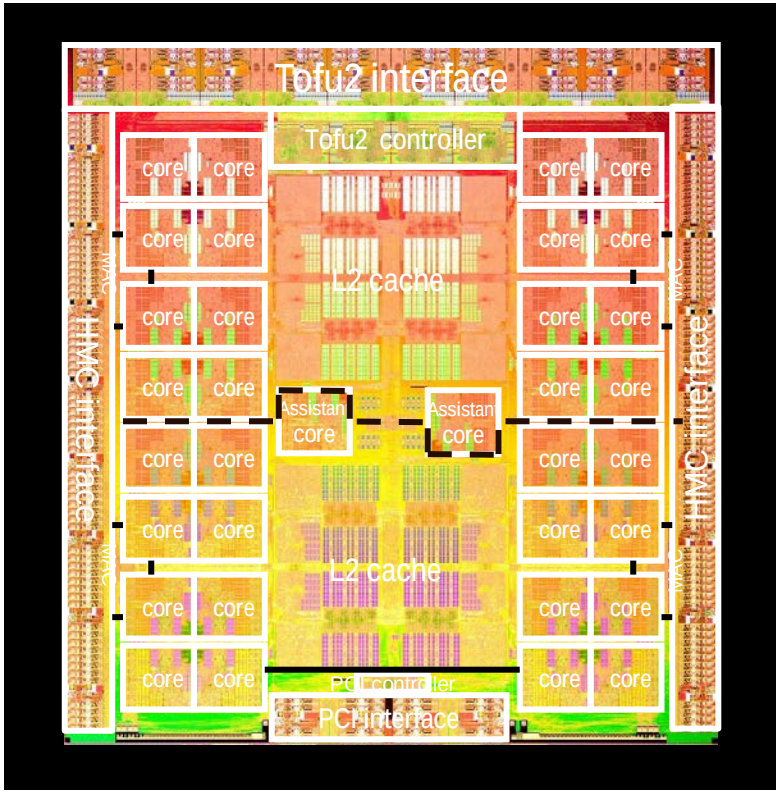
Performance in Customer POC

- 400x Performance boost
  by Oracle Database In-Memory with SWoC



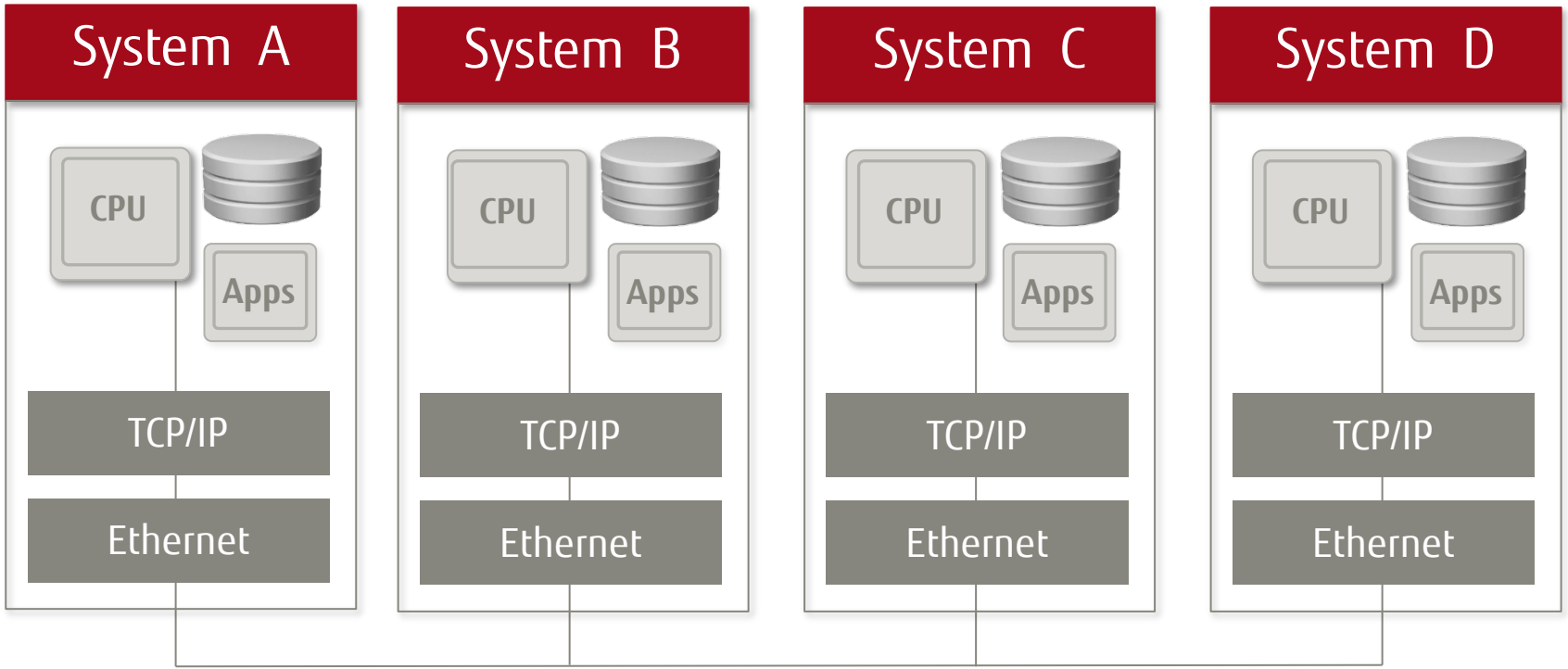
SPARC64™ XIfx: Next Generation Processor for HPC

FUJITSU

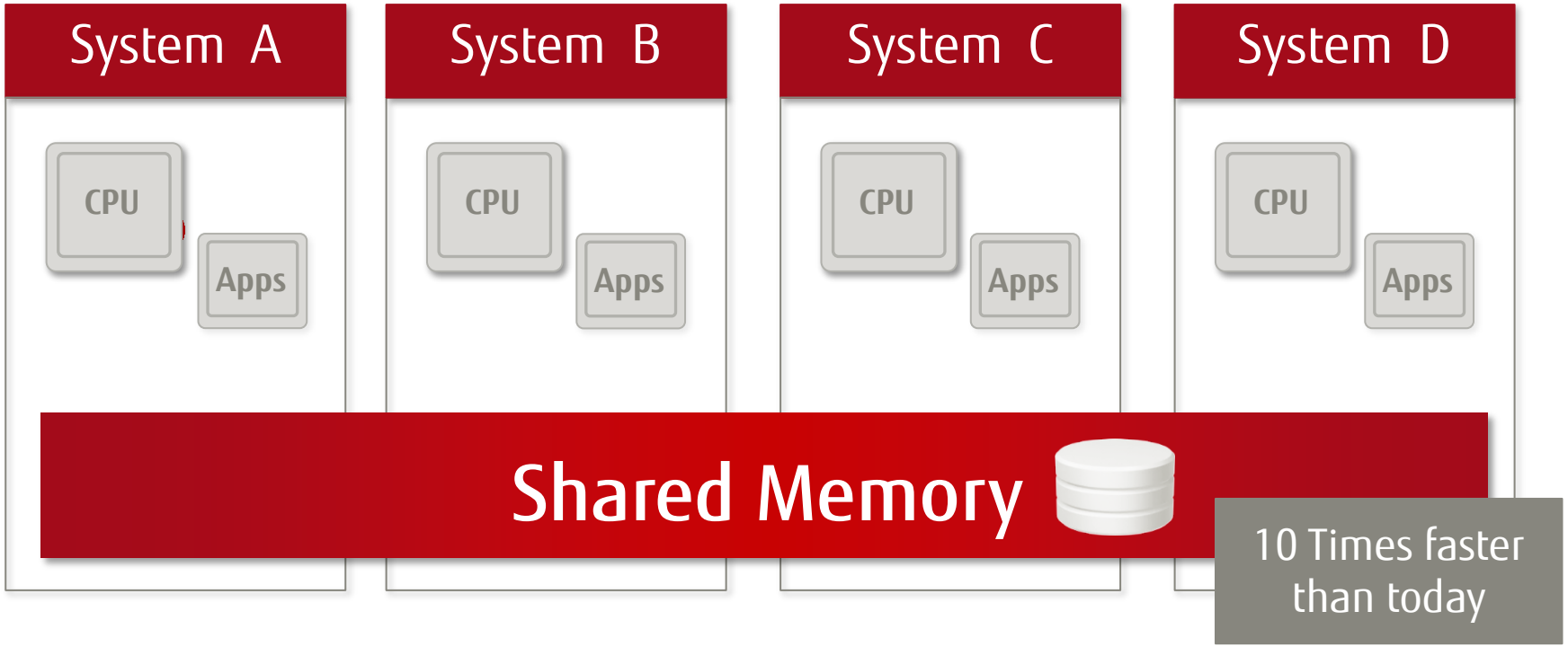


- Architecture Features
  - 32 computing cores + 2 assistant cores
  - HPC-ACE2
  - 24 MB L2 cache
  - HMC, Tofu2 , PCI Gen3
- 20nm CMOS
  - 3,750M transistors
  - 1,001 signal pins
  - 2.2GHz
- Performance (peak)
  - 1.1TFlops
  - HMC 240GB/s x 2(in/out)
  - Tofu2 125GB/s x 2(in/out)

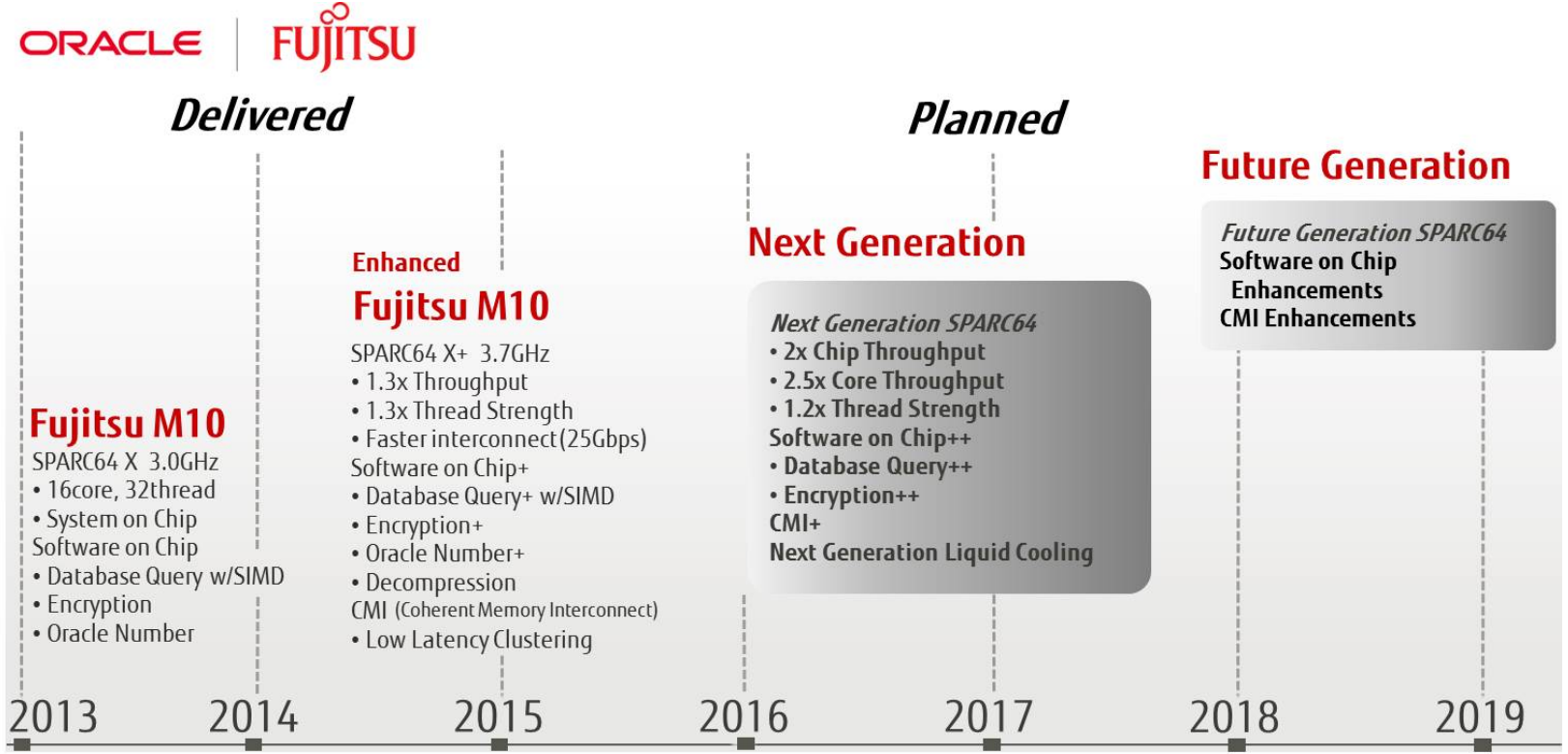
Inter-Node Data Sharing Today



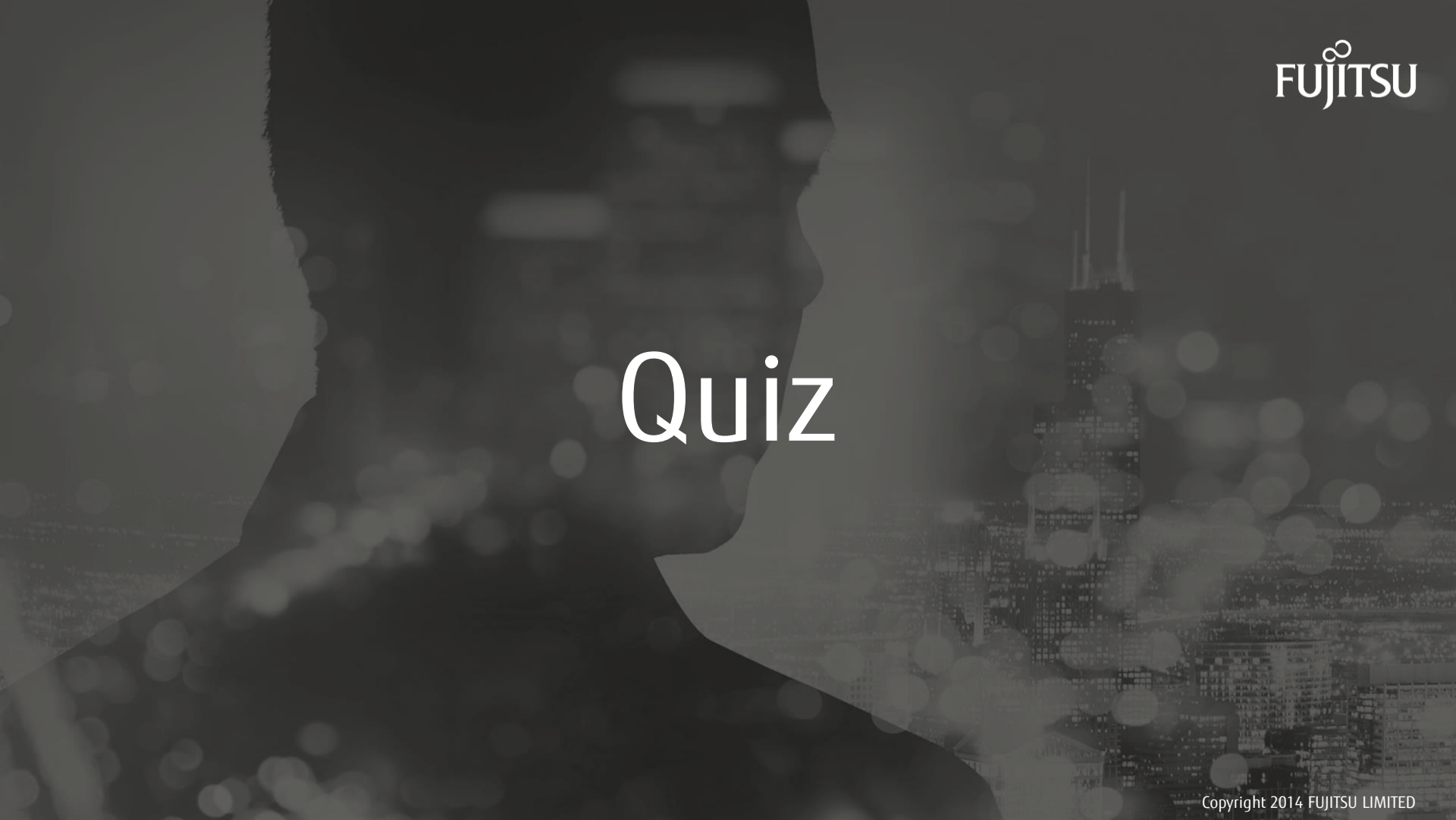
Coherent Memory Inteconnect (CMI)



Fujitsu M10 Roadmap



This roadmap is subject to change without notice



Aizu High-Tech Vegetable Farm

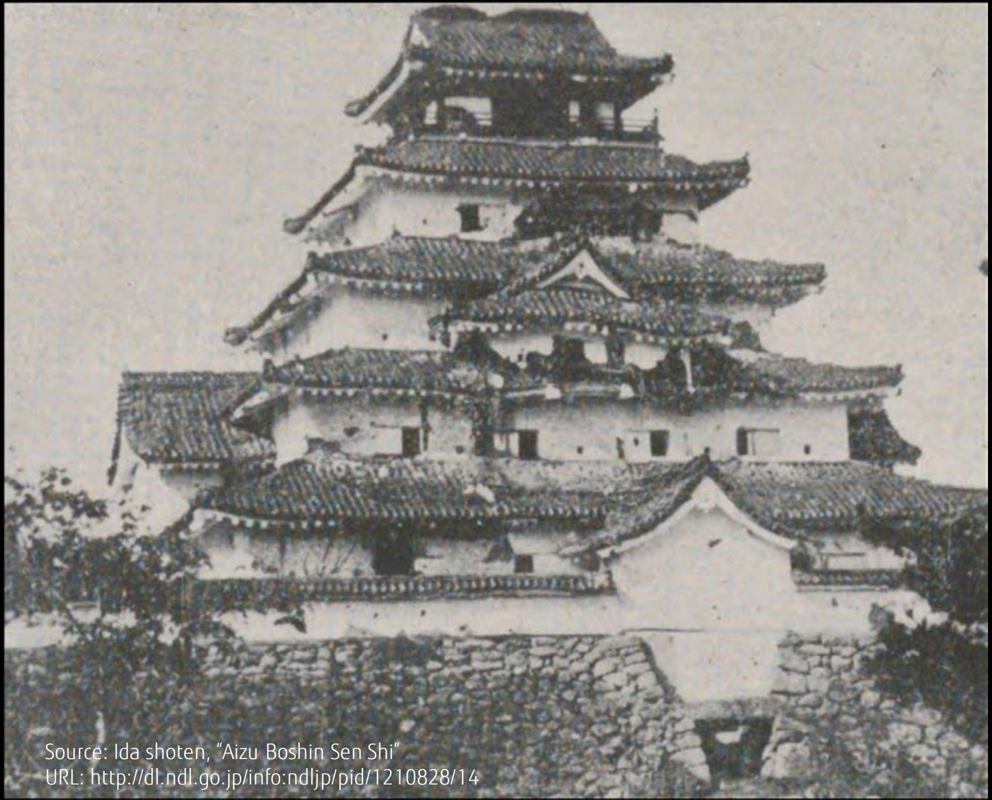
Aizuwakamatsu Location and Scenery

Aizu Fujitsu Semiconductor Plant

Aizu War, 1868

Source: Ida shoten, "Aizu Boshin Sen Shi"
URL: http://dl.ndl.go.jp/info:ndljp/pid/1210828/14

Aizu War and Samurais



Source: Ida shoten, “Aizu Boshin Sen Shi”
URL: http://dl.ndl.go.jp/info:ndljp/pid/1210828/14

Carte-de-visite Studio of C.D. Fredricks& Co., New York Collection of Tom Burnett
URL: http://www.ny.us.emb-apan.go.jp/en/c/2010/japaninfo1007.html

History

1868

1967

2014

When and where was this photo taken?

Carte-de-visite Studio of C.D. Fredricks& Co., New York Collection of Tom Burnett
http://www.ny.us.emb-apan.go.jp/en/c/2010/japaninfo1007.html

1. 1868, Aizu, Japan

2. 1899, Kyoto, Japan

3. 1963, Tokyo, Japan

4. 1860, New York, USA

Summary

FUJITSU

- Private Cloud is a viable option.
- OpenStack = Oracle Solaris
- Fujitsu M10 for Private Cloud and Database Cloud
- The Different World
- Fujitsu can help you in many ways

Japan IT Market Share (2013, IDC)

FUJITSU

Fujitsu is No. 1

Unix Server

X86 Server

Server

Storage

IT Outsourcing

IT Server

Japan IT Customer Satisfaction (by Nikkei Computer, 2014)

FUJITSU

Fujitsu is No. 1

Unix Server

X86 Server

Server

Desktop

Notebook

Database

It's TIME for a RAFFLE!!!

FUJITSU

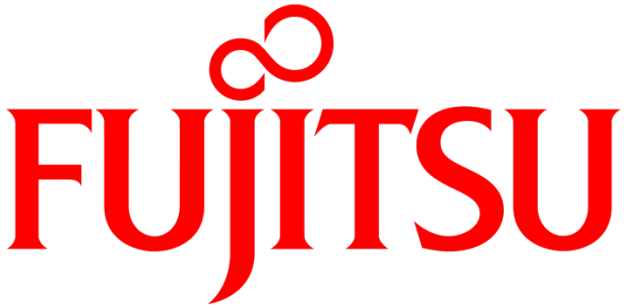
Fujitsu Stylistic Q584

- Windows 8.1
- High Resolution (2560 x 1600)
- Waterproof
- Dustproof
- Fingerprint Sensor
- USB 3.0 x1, micro USB2.0 x1

Visit the Fujitsu Booth!!!

Moscone South #1201

- Fujitsu shows you how technology equates to business value



shaping tomorrow with you