



PI SERVER 2012

Do. More. Faster. Now!

Presented by **Hoa Tram**

VOYAGE2007



**Millions of Data Points
at your Service**


What's New with the PI Server

Chuck Muraski
Rulik Perla
Denis Vacher

OSIsoft.

VALUE NOW, VALUE ON

AUGUST 7, 2007



PI Server Verrazano

Sprint 1 Review

April 14, 2010

OSIsoft

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APRIL 14, 2010

OSIsoft.

USERS 2012

CONFERENCE

The Power of Data



APRIL 24, 2012

PI SERVER 2010 PERFORMANCE



2010 R3

■	Max Point Count	2M+ tags
■	Max Data In Rate	<100K ev/sec
■	Max Data Out Rate	<5M ev/sec
■	Online Archives	2-5K files
■	Real-time Updates	200K signups
■	Point Changes	<10 pt/sec
■	Startup Time	>20 minutes



Dell PowerEdge R710

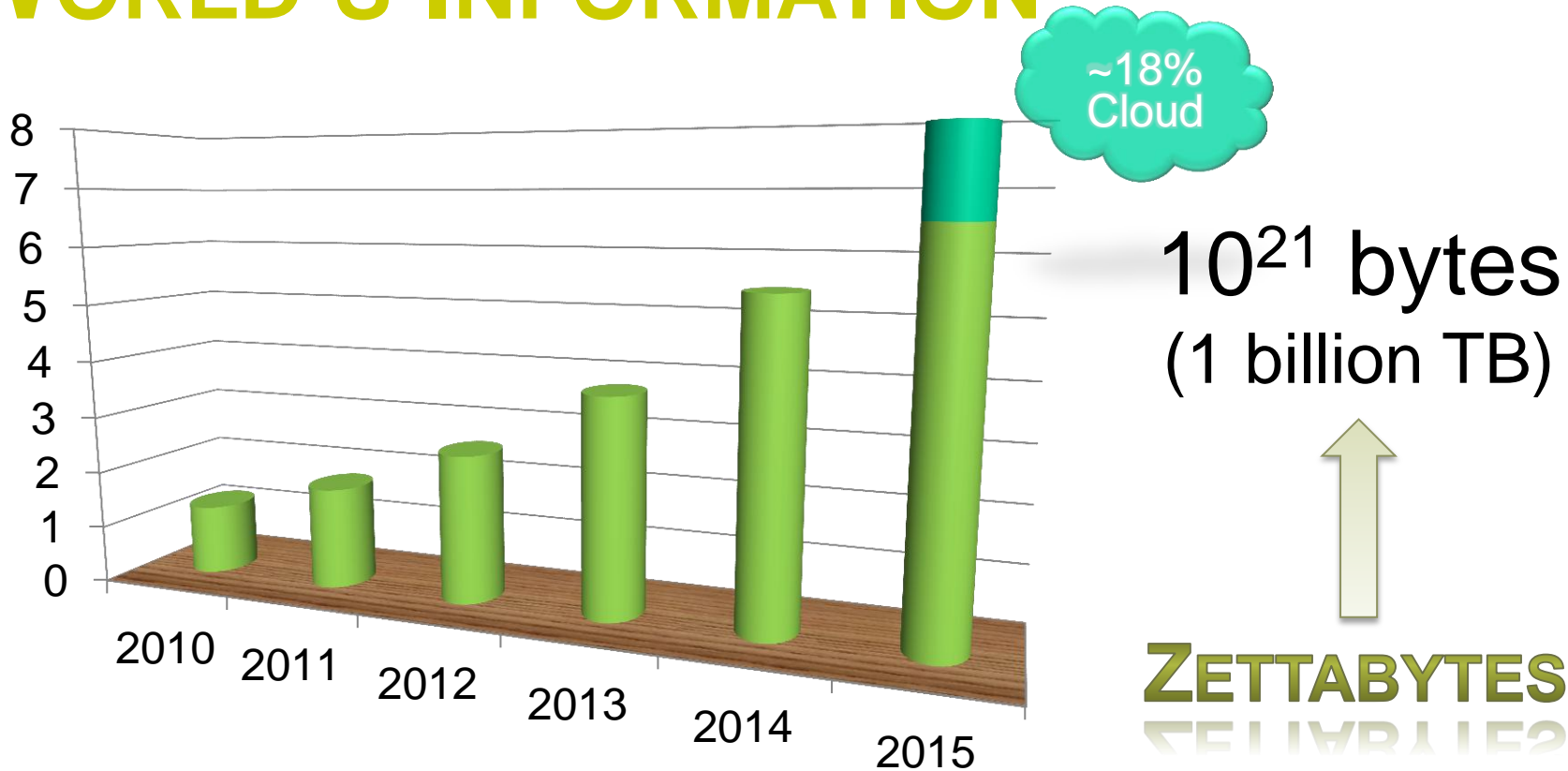
- 2U Dual-Socket Intel
- 12-Core Xeon X5650
- 96GB RAM
- 1.2TB 15K SAS HDDs
- 2 SSDs

MSRP ~\$12,000



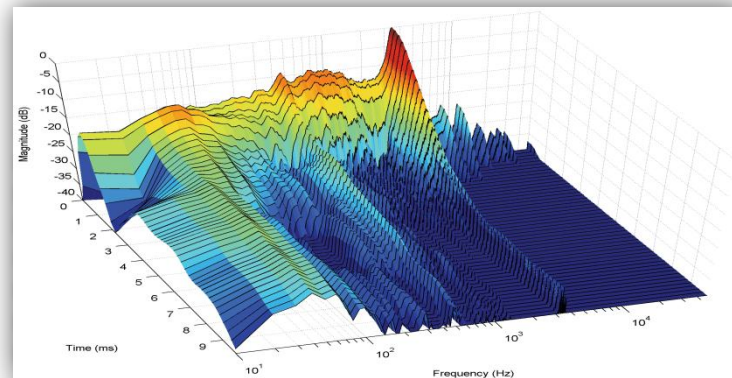


WORLD'S INFORMATION



Source: <http://www.emc.com/leadership/programs/digital-universe.htm>

TODAY



Syncro Phasors

4.8K data streams, 120Hz

3 years online

Unique Events: 55 Trillion

Estimated Data: 430TB



430TB

TODAY



Data Center

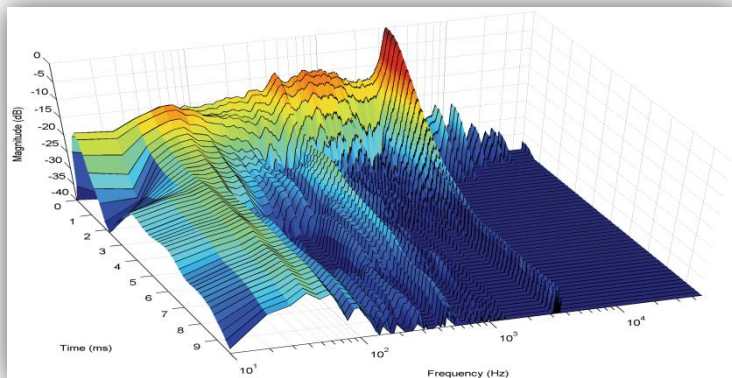
100K cells, 2M breakers

10 years online

Unique Events: 105 Trillion

Estimated Data: 840TB





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4.8K data streams, 120Hz

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Automated Metering

20M meters, 5-min reads

7 years online

Unique Events: 177 Trillion

Estimated Data: 1,410TB





Automated Metering

1,410
TB

20M meters, 5-min reads

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Fleet Monitoring

50,460
TB

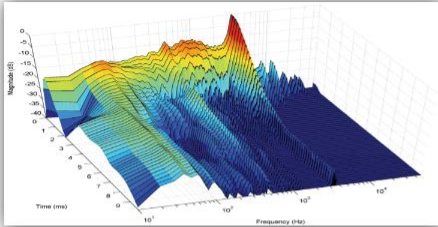
1K assets, 1M points

10 years online

Unique Events: 6,307 Tr

Estimated Data: 50,460TB

PI SERVER 2012



Synchro Phasors

4.8K data streams, 120Hz
3 years online
Unique Events: 55 Trillion
Estimated Data: 430TB

430TB



Data Center

100K cells, 2M breakers
10 years online
Unique Events: 105 Trillion
Estimated Data: 840TB

840TB



Automated Metering

20M meters, 5-min reads
7 years online
Unique Events: 177 Trillion
Estimated Data: 1,410TB

1,410
TB



Fleet Monitoring

1K assets, 1M points
10 years online
Unique Events: 6,307 Tr
Estimated Data: 50,460TB

50,460
TB



INFRASTRUCTURE
Highway for your data



SCALABILITY
More lanes for your data



PERFORMANCE
Move your data faster



RELIABILITY
Most stable system for your data



MANAGEABILITY
Bring all your data online



SECURITY
Better protection for your data

PI SERVER 2012 PERFORMANCE



2012

■	Max Point Count	5M tags
■	Max Data In Rate	500K ev/sec
■	Max Data Out Rate	5M ev/sec
■	Online Archives	>10K files
■	Real-time Updates	>3M signups
■	Point Changes	>500 pt/sec
■	Startup Time	<2 minutes



Dell PowerEdge R710

- 2U Dual-Socket Intel
- 6-Core Xeon E5645
- 96GB RAM
- 1.2TB 15K SAS HDDs
- 2 SSDs

MSRP ~\$12,000

OVERVIEW OF THE OSIsoft NOC

- Monitors health of EA customers' PI Systems worldwide
 - Number of PI Servers Monitored: 871
 - Number of Interface Nodes Monitored: 2387
- Managed PI Production servers – HA Collective
 - 1+ million tags, 118 archives (3 GB each)
 - 350,000 points added last year
- Asset Based (Topology) Structure – PI AF 2010
 - Elements and Attributes created automatically
 - Integrated with OSIsoft's business systems
- Custom Analysis Engine
 - 1000's of health calculations every 5 seconds for every managed endpoint
 - ***Heavy event update load on the PI Servers***

NOC INFRASTRUCTURE

Data Acquisition Tier



Web Services



mPI Interfaces

Data Tier



PI Server Collective

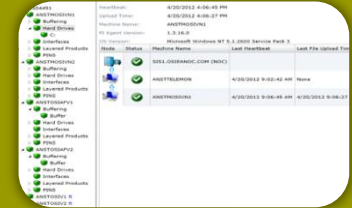


PI Asset Framework

Analysis & Visualization Tier



NOC Analysis Engine



NOC User Interface

PI SERVER 2012 IN THE NOC

- PI Server 2012 eliminated need to scale out data tier across additional nodes
 - Prevented potential increase in maintenance
 - Increased scalability
 - Increased reliability
- Upgraded from PI Server 2010 R3 in minutes
 - Rolling HA upgrade, with **Zero Downtime**
- Running PI Server 2012
 - staging for 2+ months
 - **production for 1+ month**
- Reviewing performance and operation with PI Server group on a weekly basis

DATA BACKFILLING



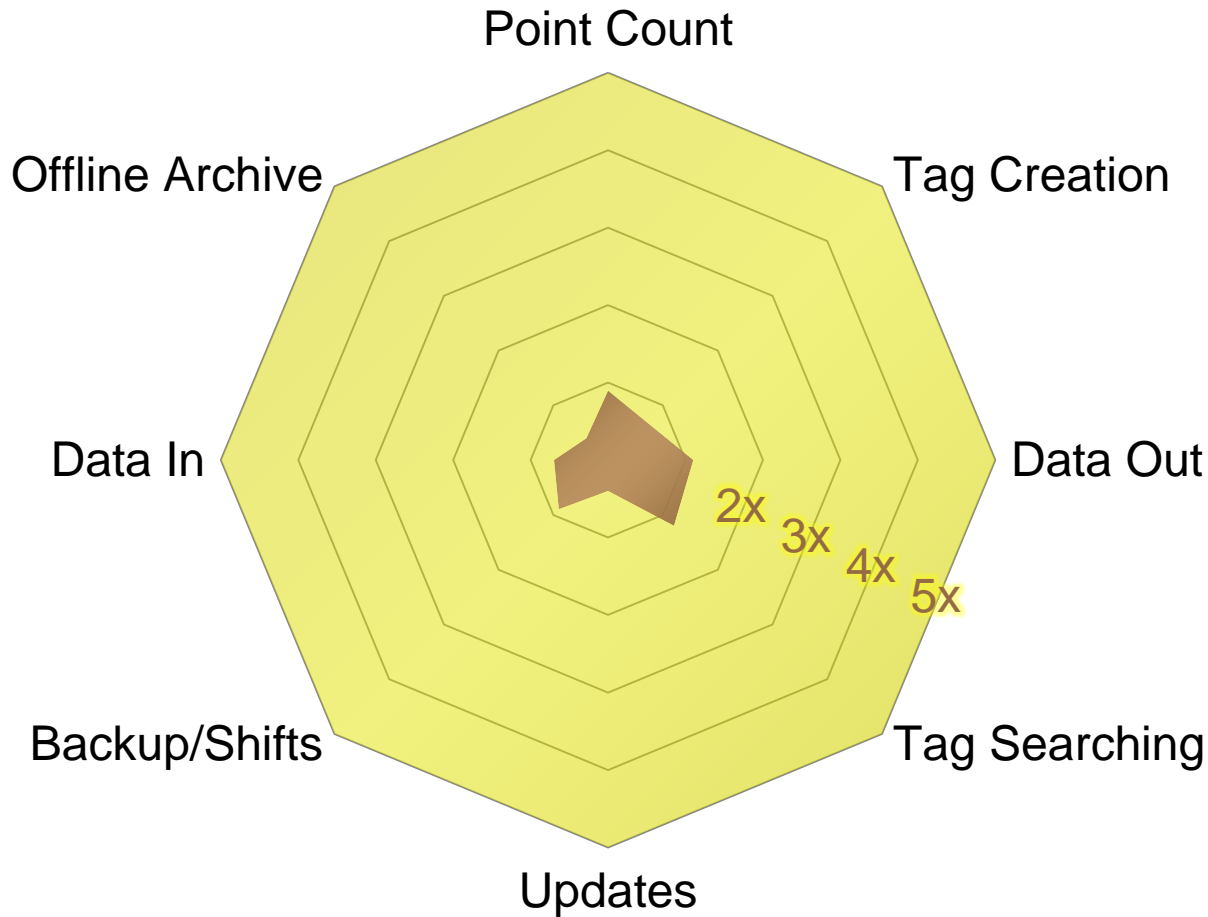
2010 R3

- | | |
|----------------------|------------|
| 1 Create PI Points | Minutes |
| 2 Delete Pt. Created | Minutes |
| 3 Check Disk Space | Minutes |
| 4 Reprocess Archives | Days/Weeks |
| 5 Create Archives | Minutes |
| 6 Backfill Data | Hours/Days |



2012

- | | |
|---------------------------------|------------------|
| 1 Create PI Points | 5x Faster |
| 2 Delete Pt. Created | Zero |
| 3 Check Disk Space | Minutes |
| 4 Reprocess Archives | Zero |
| 5 Create Archives | Minutes |
| 6 Backfill Data | 5x Faster |



5x

- PI Server 2012
- PI Server 2010



PI SERVER 2012 PERFORMANCE



2012

■	Max Point Count	20M+ tags
■	Max Data In Rate	1M ev/sec
■	Max Data Out Rate	20M ev/sec
■	Online Archives	>50K files
■	Real-time Updates	10M+ signups
■	Point Changes	2,000 pt/sec
■	Startup Time	<10 minutes



Dell PowerEdge R910

- 4U Quad-Socket Intel
- 8-Core Xeon E7-4830
- 256GB RAM
- 4.2TB 15K SAS HDDs
- 2 SSDs

MSRP ~\$38,000



2010 R3

■	Max Point Count	2M+ tags
■	Max Data In Rate	<100K ev/sec
■	Max Data Out Rate	<1M ev/sec
■	Online Archives	<10K files
■	Real-time Updates	200K signups
■	Point Changes	<10 pt/sec
■	Startup Time	>20 minutes



2012

■	Max Point Count	20M+ tags
■	Max Data In Rate	1M ev/sec
■	Max Data Out Rate	>10M ev/sec
■	Online Archives	>50K files
■	Real-time Updates	10M+ signups
■	Point Changes	2,000 pt/sec
■	Startup Time	<10 minutes



PI SERVER 2012 PERFORMANCE



2012

■	Max Point Count	10K+ tags
■	Max Data In Rate	>40K ev/sec
■	Max Data Out Rate	>100K ev/sec
■	Online Archives	>1K files
■	Real-time Updates	>5K signups
■	Point Changes	>50 pt/sec
■	Startup Time	<1 minutes



Dell OptiPlex
SX-260

- 32-bit Architecture
- Pentium 4 3GHz
(1 CPU Core)
- 1GB 266MHz DDR RAM
- 40GB 5.4K IDE HDD

eBay ~ \$30

PLATFORM SCALE?



2012

Max Point Count	20M+ tags
Max Data In Rate	1M ev/sec
Max Data Out Rate	>10M ev/sec
Online Archives	>50K files
Real-time Updates	10M+ signups
Point Changes	2,000 pt/sec
Startup Time	<10 minutes



2012

Max Point Count	5M tags
Max Data In Rate	500K ev/sec
Max Data Out Rate	5M ev/sec
Online Archives	>10K files
Real-time Updates	>3M signups
Point Changes	>500 pt/sec
Startup Time	<2 minutes



2012

Points	10K+ tags
Data In	>40K ev/sec
Data Out	>100K ev/sec
Online	>1K files
Updates	>5K signups
Points	>50 pt/sec
Startup	<1 minutes





SCALABILITY



PERFORMANCE

PI Server 2012

Realize the Power of **Your** Data



RELIABILITY



SECURITY

WHO'S USING PI SERVER 2012?

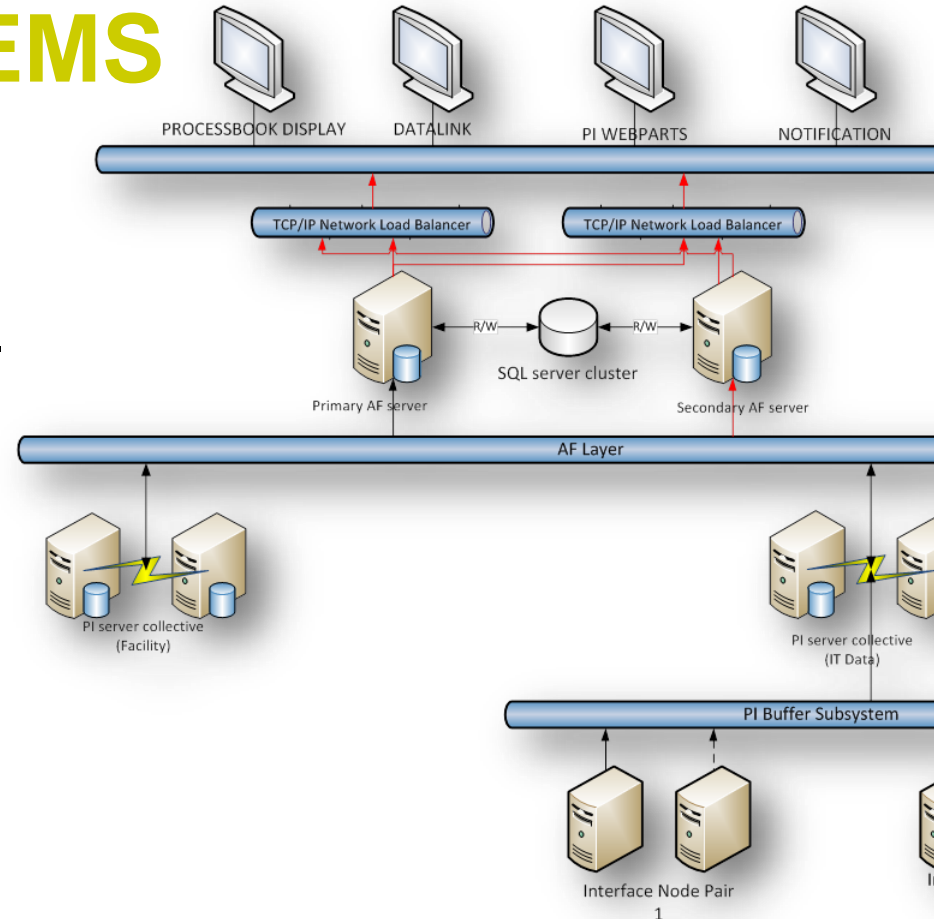


OSISOFT NOC



OSISOFT IT SYSTEMS

- ✓ 20 OSISOFT Office Locations
- ✓ Servers
 - CPU, Memory, Disk Space, etc.
- ✓ Network
 - Ping Time, Bandwidth, Errors
- ✓ Facilities
 - Building Power Usage
 - Rack Load
 - UPC Battery Status
 - Cooling (HVAC, temperature)
- ✓ More...



TECHNOLOGY ADOPTION PROGRAM

8 Customers

9 Partners





<http://techsupport.osisoft.com>

RC0 AVAILABLE TODAY.

Send us your feedback:
BetaPIServer@osisoft.com



THANK YOU

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The **Power** of **Data**