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UC2010

**Real Time Information** — Currency of the New Decade

Hilton San Francisco Union Square | San Francisco, CA

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# EA Technologies – Managing your PI System in Real Time

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# Why monitor?



Picture yourself on a beach...



1000 miles away, your OPC Interface goes down, and you are losing data...





Don't Panic Yet...

Because you have

Managed PI



# We will identify the issue:

The screenshot displays the BMC Support Center interface. The top navigation bar includes 'Support Center BMC Morrow' and 'Assets'. On the right, there are links for 'Cases', 'Assets', 'Reports', 'Admin', and 'About'. A 'System Search' field is located on the left. The left sidebar shows a tree view of assets, with 'Interfaces' expanded and 'opcint40' selected. The main content area shows details for the selected interface, including a 'Call Number' field, a 'Priority Override' slider set to 'None', and a critical alert: 'The interface 'opcint40' may not be sending data to PI'. Below this, system details are listed: System ID: 2503060 (enXco, Inc.), Machine: ishilo2, Assignments: maintenance, and Escalation Level: 0. On the right side of the details, timestamps are provided: Start Time: 05-Apr-2010 10:25:22 (GMT-7), Last Update: 08-Apr-2010 12:33:37 (GMT-7), and Customer Time: 11:36 (GMT-08:00) Pacific Time (US & Canada). A detailed description of the issue follows, stating that the problem was detected on 05-Apr-2010 at 10:25:22 AM (GMT-7) and was determined to have a severity of Critical. The problem was described as 'The interface 'opcint40' may not be sending data to PI'. We can say this because 'The heartbeat uniint health tag '2503060\_sy.st.ishilo2.opcint40.heartbeat' has not received a value in over an hour. The last value was '9' at '17-Feb-2010 11:20:58 AM (GMT-8)'.

Support Center BMC Morrow

Assets

Cases Assets Reports Admin About

System Search:

2503060

- ishilo1
- ishilo2
  - Buffering
  - Hard Drives
  - Interfaces
    - opcint1
    - opcint10
    - opcint11
    - opcint12
    - opcint14
    - opcint16
    - opcint17
    - opcint18
    - opcint19
    - opcint2
    - opcint20
    - opcint21
    - opcint22
    - opcint3
    - opcint4
    - opcint40**
    - opcint5
    - opcint6
    - opcint7
    - opcint8
    - opcint9
  - Layered Products
  - Managed PI Interfaces
  - PINS
  - Product Updates

Call Number:

Priority Override:  None

**!!!** The interface 'opcint40' may not be sending data to PI

System ID: 2503060 (enXco, Inc.) Start Time: 05-Apr-2010 10:25:22 (GMT-7)

Machine: ishilo2 Last Update: 08-Apr-2010 12:33:37 (GMT-7)

Assignments: maintenance Customer Time: 11:36 (GMT-08:00) Pacific Time (US & Canada)

Escalation Level: 0

An issue was detected with the PI System 2503060 on the machine ishilo2. The problem was detected by the Interface Health rule.

The problem was detected on 05-Apr-2010 at 10:25:22 AM (GMT-7) and was determined to have a severity of Critical.

The problem was described as The interface 'opcint40' may not be sending data to PI. We can say this because The heartbeat uniint health tag '2503060\_sy.st.ishilo2.opcint40.heartbeat' has not received a value in over an hour. The last value was '9' at '17-Feb-2010 11:20:58 AM (GMT-8)'.

(1)

(2)

(2)

# Access your system remotely...

The screenshot displays a remote desktop connection to a system named 'TEST-PI-INT1'. The desktop environment includes a Start menu, taskbar, and several icons. A command prompt window is open, showing a series of commands and their outputs related to the 'Unilnt failover' process. The 'PI Interface Configuration Utility - opcint1' is also open, showing various configuration options for the 'TEST-PI' interface, including 'General', 'Scan Classes', and 'PI Host Information'.

**Command Prompt Output:**

```
08-Apr-10 14:38:50
RDBMSPI 1> Unilnt failover: Interface in the "Primary" state
and actively sending data to PI. Backup interface not available.

08-Apr-10 14:41:42
RDBMSPI 1> Unilnt failover: Interface in the "Backup" state.

08-Apr-10 14:43:32
RDBMSPI 1> Unilnt failover: The
for 2 intervals

08-Apr-10 14:43:42
RDBMSPI 1> Unilnt failover: Inter
the "Primary" state.

08-Apr-10 14:43:52
RDBMSPI 1> Unilnt failover: Inter
and actively sending data

08-Apr-10 14:46:03
RDBMSPI 1> Unilnt failover: Inter
and actively sending data
```

**PI Interface Configuration Utility - opcint1**

Interface: **opcint1 -> TEST-PI** | Type: **opcint** | Description: **opcint** | Versions: **opcint.exe version 2.3.11.0** | **Unilnt version 4.4.5.2**

**General**

Point Source: **OPC** | Interface ID: **1**

**Scan Classes**

Scan Frequency	S...
✓ 00:00:01	1
✓ 00:00:05:00:00:00	2
✓ 00:00:05:00:00:00:5	3
✓ 00:00:05:00:00:01	4
✓ 00:00:05:00:00:01:5	5
✓ 00:00:05:00:00:02	6
✓ 00:00:05:00:00:02:5	7

**PI Host Information**

Server/Collective: **TEST-PI** | SDK Member: **TEST-PI** | API Hostname: **TEST-PI** | User: **piadmin | piadmins | PIWorld** | Type: **Non-replicated - PI3** | Version: **PI 3.4.380.36** | Port: **5450** | Description:

Interface Installation Path: **D:\Program Files\PIPC\Interfaces\OPCInt\**

Close | Apply

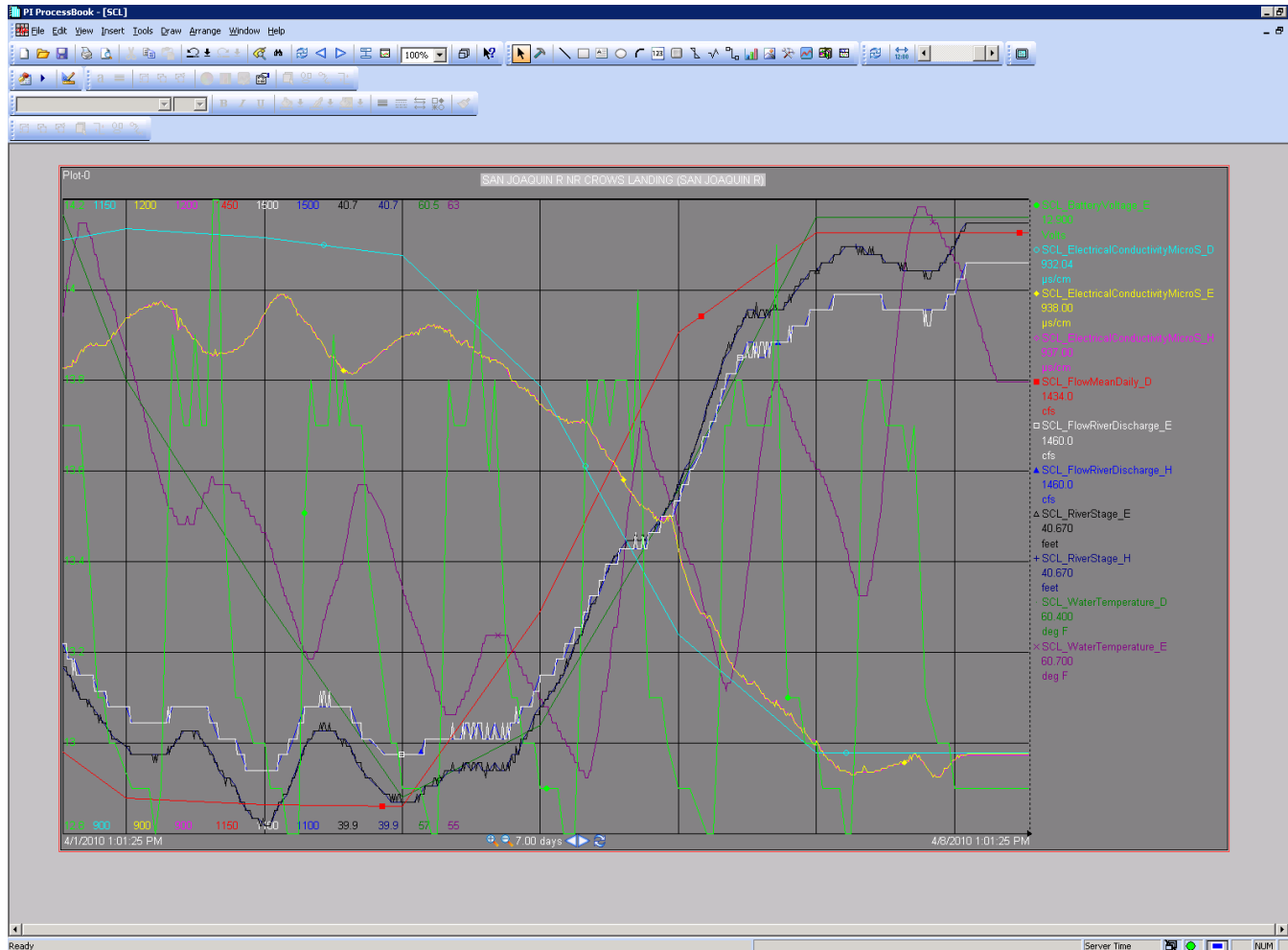
Ready | Running | opcint1 - Installed

**Session Information**

Time in this qu... 0:01:18  
Time in the syst... 0:01:18  
IP Address: 38.98.131.120  
Customer Name: (Pushed) TEST-PI-INT1  
Computer Name: TEST-PI-INT1  
Platform: Windows Server 2003 Enterprise Edition Service Pac...  
Public Site: Default  
External Key:



# And get your data flowing again...



So you can worry about more  
important things...



# Why Remote Monitoring?

- We can support you wherever you are
- We can support your PI System wherever it is







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# Who Supports You

# NOC Support

**The Network Operating Center (NOC) is an extension of our existing Support team:**

- Global 24x7 follow-the-sun coverage
- Support Centers in:
  - North America, Asia-Pacific, Europe & Middle East
- Up to 5 Dedicated NOC Support Engineers 24 hours a day, 7 days a week

# Follow-the-Sun Support Centers





# Who We Are

- Highly-Trained OSIsoft Tech Support Engineers
- *Depend on our Support Engineers to supplement many PI Admin functions for problem resolution and troubleshooting*
- 1 advanced level of support. 1 degree of separation between support and development (*no outsourcing...you get an OSIsoft employee*)
- 65+ Support Engineers located in 8 global offices
- Mult-lingual Support Staff
  - *English, Spanish, Portuguese, French, Mandarin, German, Czech, Slovak, Polish, Russian, Arabic...to name a few*



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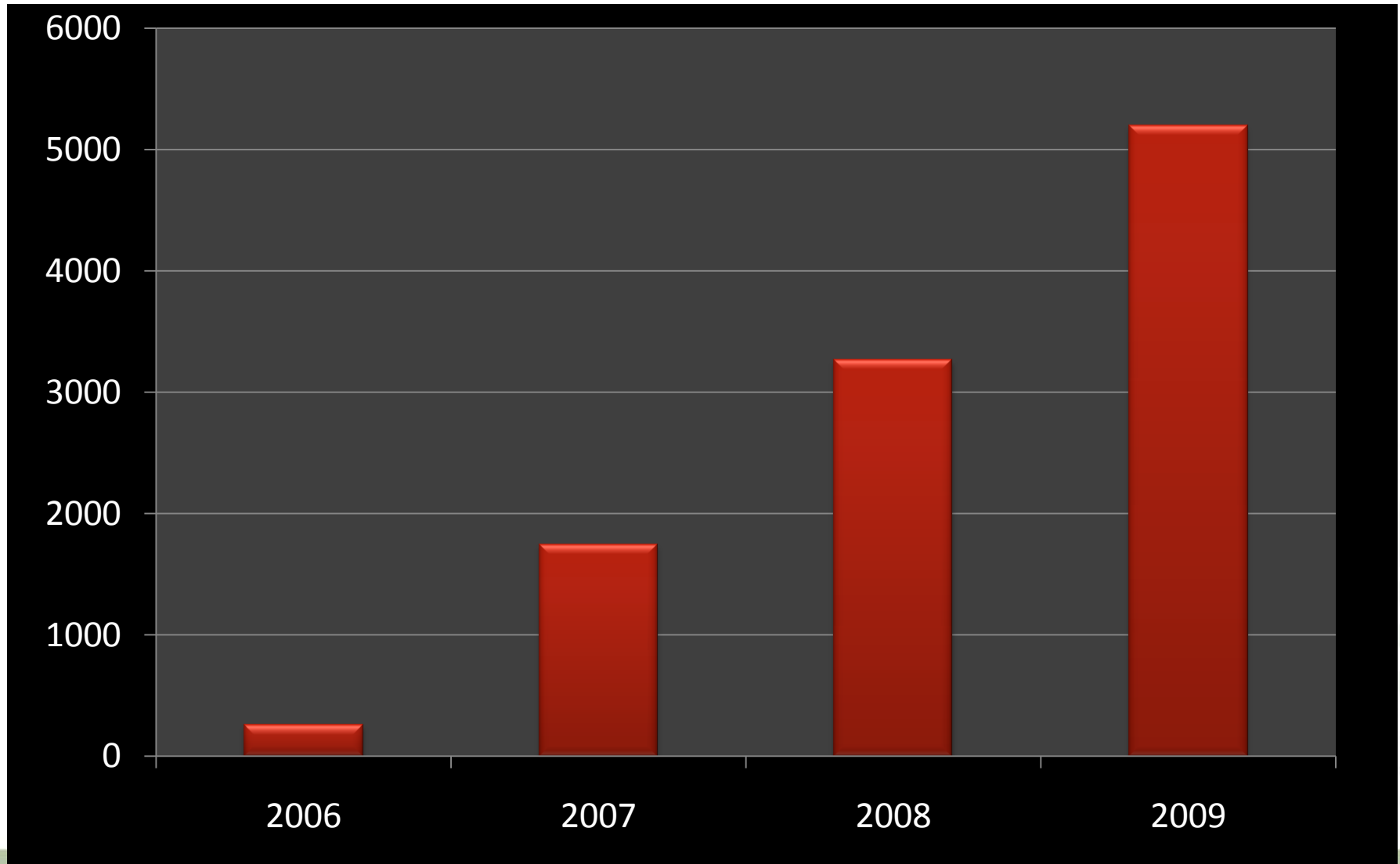
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# Scalability

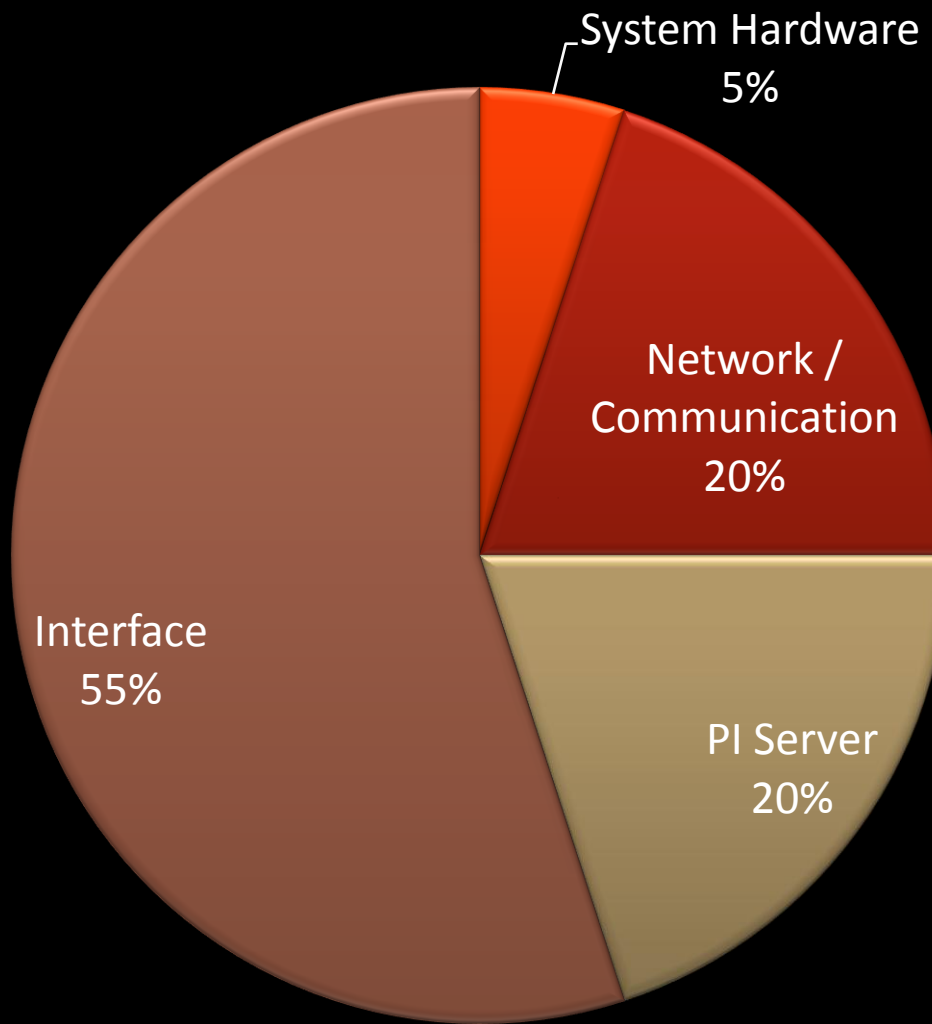
- 50+ Enterprise Customers with Active Monitoring
- 400+ Monitored PI Systems
- 1500+ Monitored Machines
- 8500+ Monitored Interface Instances
- 15+% of OSIsoft Support Cases Daily
  - Over 5,000 Cases Handled in 2009



# Issues Detected by Managed PI



# Breakdown of Issues Detected



# 2010: Streamlining the Process

- Standardization of NOC Support Procedures for all customers
- System-Generated Email Templates to provide a consistent message from all support centers
- Sending notifications to distribution lists preferred
- Consistent, reliable support experience





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# Remote Access

# Remote Access Options

## Tier 1 Attended

- Customer initiates and participates in the session

## Tier 2 Unattended

- NOC initiates the session
- Customer may or may not participate



# OSIsoft Remote Access Solution

- Authorization and Authentication
  - OSIsoft provides detailed information on who accessed systems
  - Customers always maintain and manage authentication via Windows permissions
- Transparency and Auditing
  - On demand Online reports
  - Every Session is recorded without exception
  - Exportable
- Viruses and Malware
  - Proxy Solution
- Configuration
  - No configuration simple self managing software client
- Response Time
  - Qualified Engineers can respond to PI related issues quickly
  - Ability to gather more detailed information or to take action

We can support you wherever you are







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# Managed PI Monitoring Technology

# What is mPI monitoring?

- Service only offered to Enterprise Agreement (EA) Customers
- Provide a mechanism to identify PI System performance or component outages
  - Via installed tools on PI System
  - Monitoring by OSIsoft's Network Operations Center (NOC)
- Capture performance statistics to determine long-term health trends of the PI System

# What Does mPI Monitor?

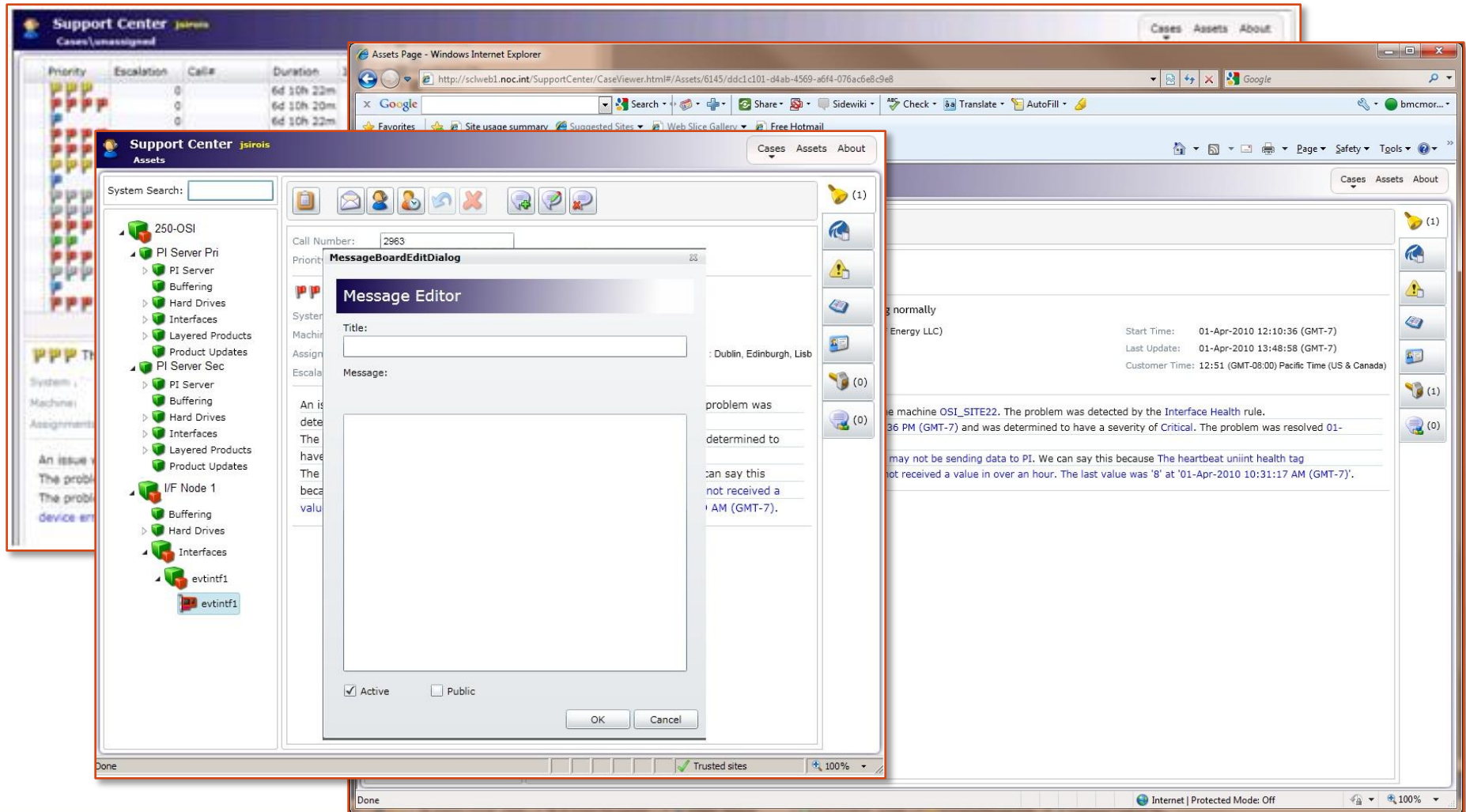
- **PI System Availability**
  - Successful communication between a PI System and OSIsoft NOC
- **PI Server Health**
  - Overall PI Server Health State
  - Overall Health of each individual PI Server Subsystem
  - Operating System CPU Utilization
  - Disk Space Conditions
  - Run-away memory usage
  - Synchronization Status of a PI HA Collective
  - Communication Status among members of a PI Collective
- **Layered Products**
  - Availability of the layered product
- **Interfaces on PI Servers**
  - Sending data to the PI Server
  - PI Interfaces are running properly
- **Interface Server Availability**
  - Successful communication between PINS node and the PI Server
- **Interface Health**
  - Sending data to the PI Server
  - PI Interfaces are running properly

# mPI Features

- Several functional components comprise Managed PI 2.2
  - PI Diagnostics Service (PDS)
    - The Diagnostics Service collects information from individual managed nodes
  - PI Diagnostics Manager (PDM)
    - The PI Diagnostics Manager aggregates this information and sends it to the NOC
  - PI Diagnostics Client (PDC)
    - Configures both the PI Diagnostics Service and the PI Diagnostics Manager
- No longer requires storing performance data in PI points
- Supports sending performance data to the NOC via PI Agent
- PDM function does not need to be installed on a PI Server



# A Change in Methodology



# What's New in mPI 2.2

- The PI Diagnostics Service has been enhanced to collect additional performance metrics

## System Performance Report 3/1/2010 to 3/31/2010

### Notes

(i) This is the amount of free disk space on PI Installation Disk.

Machine Name	PI Server		Connections			Processor					Free Memory					Free Disk Space see note (i)	Snapshot Read/s	Archive		Snapshot Events sent	Compress. Ratio	% Events Archived	Event Latency
	% Uptime	Starts	Avg	Max	Std.Dev	Avg	Max	Std.Dev	Time over Range	Magnitude over Range	Avg	Min	Std.Dev	Time under Range	Magnitude under Range			Read/s	% Cache Hits				
Site: Tracy Peaker Plant (PI License #: 2500616 )																							
osi_site23	100.0		50	54	0.6	6	97	10	0.00	22	842	520	24	0.00	0	93935	23.0	52.8	73	123.6	35	43	0.0
Site: Site03 - Pittsburgh (PI License #: 2323 )																							
OSI_SITE3	100.0		60	71	1.4	4	53	6	0.00	0	1082	766	35	0.00	0	24821	18.7	1665.3	90	92.3	21	19	0.1
Site: Site01 - Pittsburgh (PI License #: 2098 )																							
OSI_SITE1	100.0		73	84	1.4	3	35	1	0.00	0	1074	728	36	0.00	0	24619	6.4	2432.9	48	13.9	37	5	0.0
Site: Pittsburgh Office - (PI License #: 2140 )																							
FS_OSI	99.7	1	645	762	11.1	7	100	4	0.02	2,069	731	126	45	0.00	0	176090	2.3	58.7	90	124.1	23	29	0.0
Site: Site04 - Pittsburgh (PI License #: 2324 )																							
OSI_SITE4	87.1	3	46	63	1.5	1	58	1	0.00	0	1020		19	0.00	0	248	4.8	2401.1	N/A	8.9	N/A	3	0.0
Site: Site05 - Pittsburgh (PI License #: 2325 )																							
OSI_SITE5	100.0		71	81	1.4	5	40	6	0.00	0	1007	713	37	0.00	0	23636	19.5	2116.2	98	98.3	21	20	0.1
Site: Site22 - Henrietta P (PI License #: 6145 )																							
OSI_SITE22	100.0		30	49	0.7	1	33	1	0.00	0	1242	13	26	0.00	70	25050	7.4	0.8	90	12.6	22	3	0.0
Site: Site02 - Pittsburgh (PI License #: 2099 )																							
OSI_SITE2	100.0		764	799	1.5	1	28	1	0.00	0	1124	766	24	0.00	0	25242	6.1	829.9	99	15.2	21	3	0.0
Site: Site08 - Hanford (PI License #: 2100 )																							
OSI_SITE21	100.0		34	38	0.1		28	1	0.00	0	1208	730	10	0.00	0	27027	13.2	1735.4	100	29.0	23	7	0.0
OSI_SITE8	100.0		81	93	1.8	1	30	1	0.00	0	1110	745	16	0.00	0	25544	14.6	1950.8	96	32.5	22	7	0.0

# What's New in mPI 2.2

- The PI Diagnostics Service has been enhanced to collect better inventory

## OSIsoft Product Inventory Report

Machine Name	Managed PI Version	OS Version	Product Name	Instance Name	PI Version	Category	Is 64 bit?
Site Name: Site01 - Pittsburgh ( System ID: 2098 )							
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PI SDK x86	PI SDK x86	1.3.6	Product	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pialarm	PI Alarm Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piarchss	PI Archive Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pibackup	PI Backup Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pibases	PI Base Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pibatch	PI Batch Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pilicmgr	PI License Manager	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pimsgss	PI Message Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pinetmgr	PI Network Manager	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pirecalc	PI Recalculator Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pisnapss	PI Snapshot Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piqlss	PI SQL Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	pitotal	PI Totalizer Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piupdmgr	PI Update Subsystem	3.4.375.99	PISubsystem	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PI Server	Standalone	3.4.375.99	PIServer	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	bufserv	PI-Buffer Server	1.6.1.10	Product	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PI Batch Generator Interface	PI Batch Generator Interface	2.0.3.0	Product	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piintstatus	PI-piintstatus	1.6.3.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piperfmon	PI Performance Monitor (Full) Interface	1.4.1.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piperfmon	PI Enterprise System Monitor Perfmon (PIEntMonFS_O	1.4.1.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piperfmon	PI Enterprise System Monitor Perfmon (PIEntMon) In	1.4.1.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	piperfmon	PI Enterprise System Monitor Perfmon (PISrvChk) In	1.4.1.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PI PE Scheduler	PI Performance Equation Scheduler	3.4.375.99	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PIPing	PI Ping (Full) Interface	1.6.2.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PISNMP	PI SNMP (Full) Interface	1.4.1.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	TCPResponse	PI TCPResponse Interface	1.1.6.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	TCPResponse	PI Enterprise System Monitor TCPResp (PIEntMon) In	1.1.6.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PitoPI	PitoPI-Site01	3.8.3.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PitoPI	PitoPI-ACE01	3.8.3.0	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	random	PI Random Simulator (random) Interface	3.4.375.38	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	rmp_sk	PI Ramp Soak Simulator (rmp_sk) Interface	3.4.375.38	Interface	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PIACENetScheduler	PI-ACE 2.x Scheduler	2.1.12.0	Product	No
OSI_SITE1	2.1.0.0	Microsoft Windows NT 5.2.3790 Service Pack 2	PIACEScheduler	PI-ACE 1.x Scheduler	1.2.30.0	Product	No



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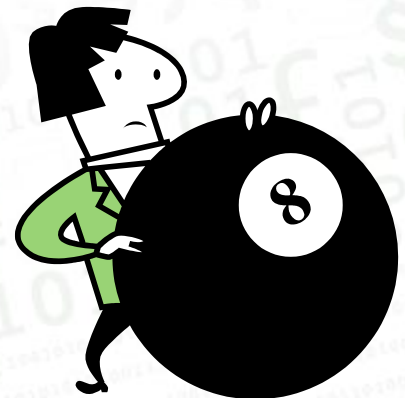
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# mPI Communication Technology



# Common Customer mPI Deployment Problems

- Dependence on corporate email system
- Data encryption requirements
- Little time for managing software updates
- Difficulty in implementing new technology due to environment complexity
- Difficulty in configuring software



# What is the PI Agent?

The PI Agent is a dedicated management and communication channel, for PI Systems, for the purpose of maintaining the PI System and providing performance data to OSIsoft.

# PI Agent Features & Benefits



- PI Agents communicate data securely over the web
  - Dedicated mPI Communications
  - Encrypted Payloads
  - Cross-link Architecture
- PI Agents are self maintaining
- PI Agents enable future self managing technologies



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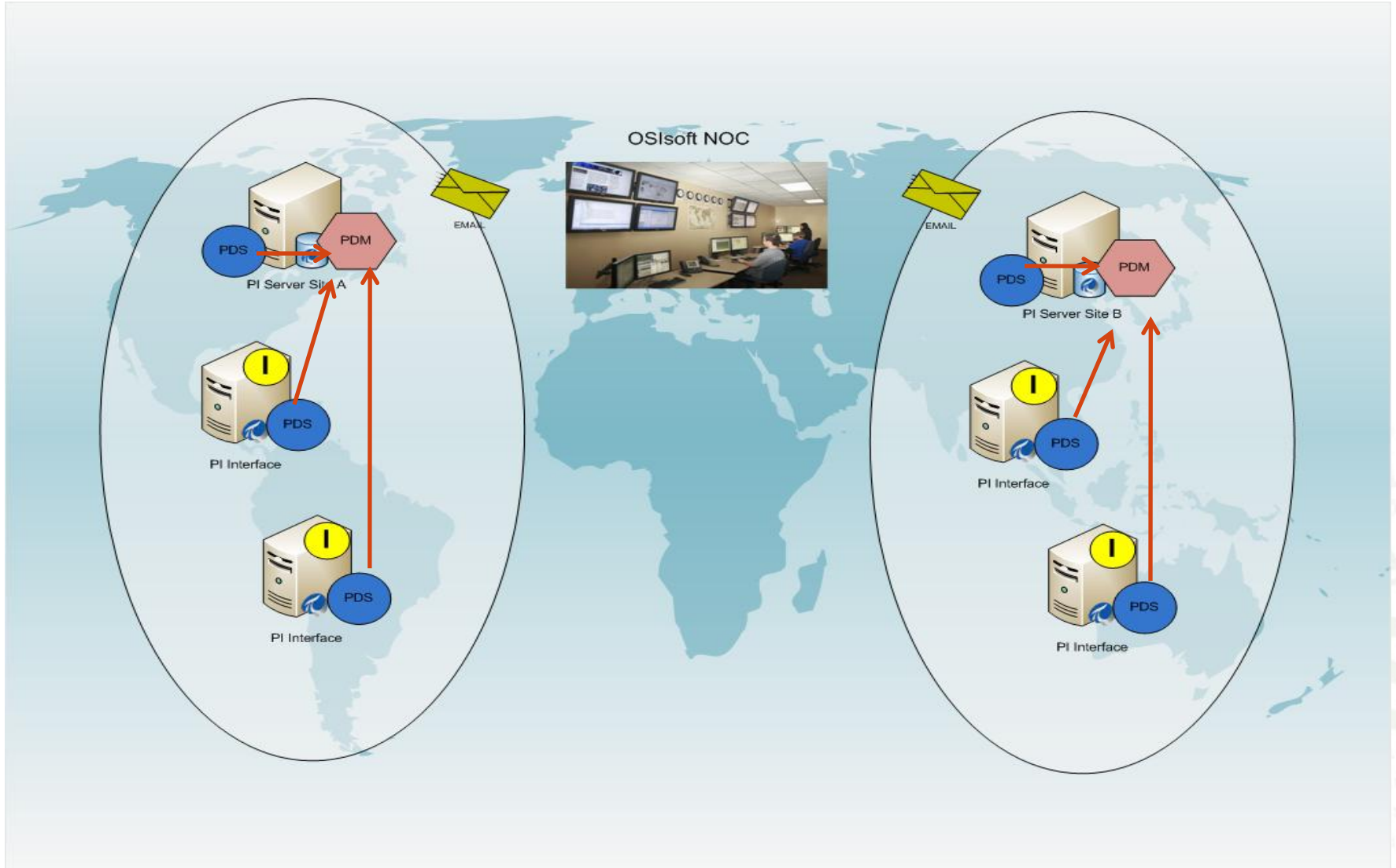
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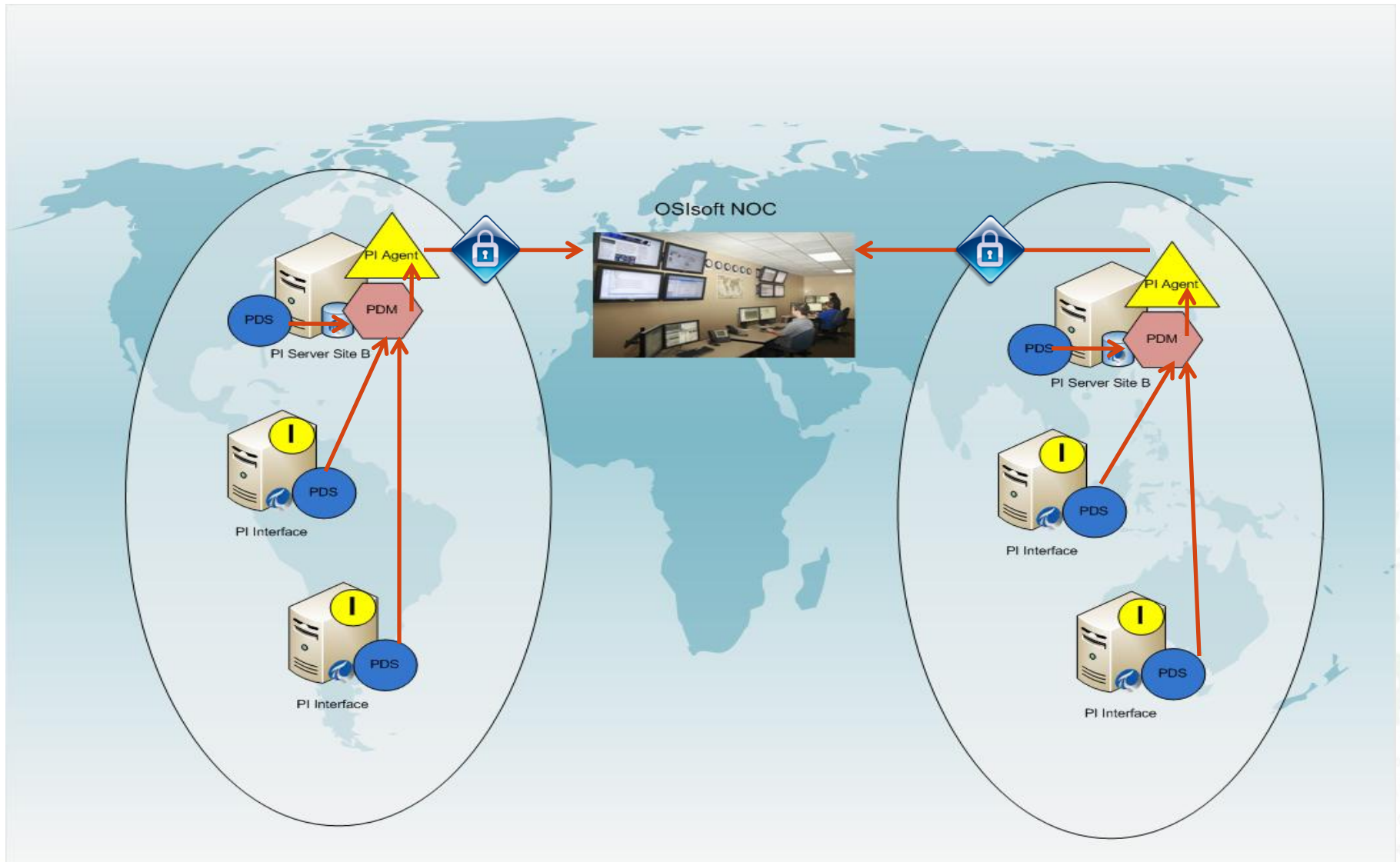
# PI Agent Deployment Scenarios



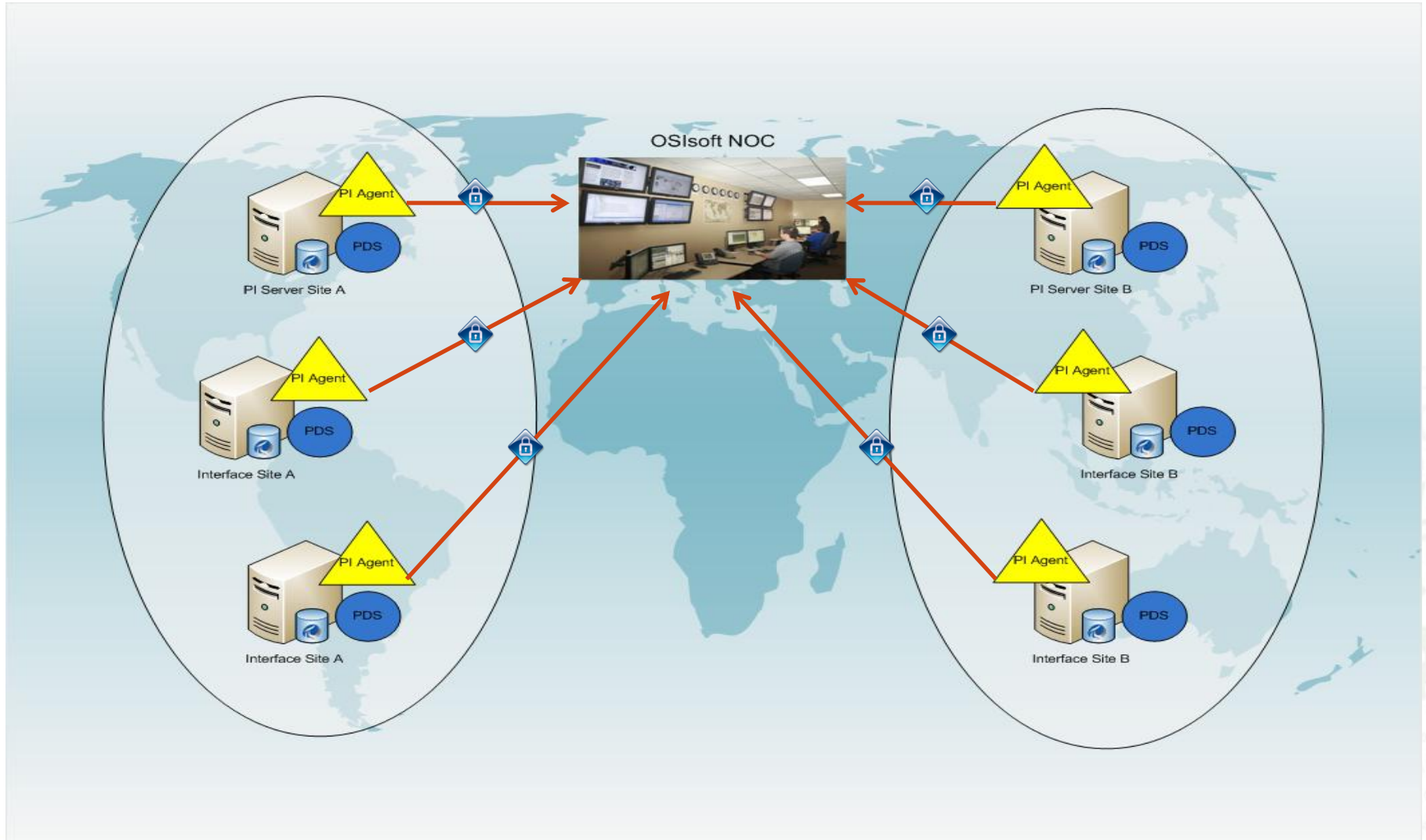
# Managed PI Communication - Legacy



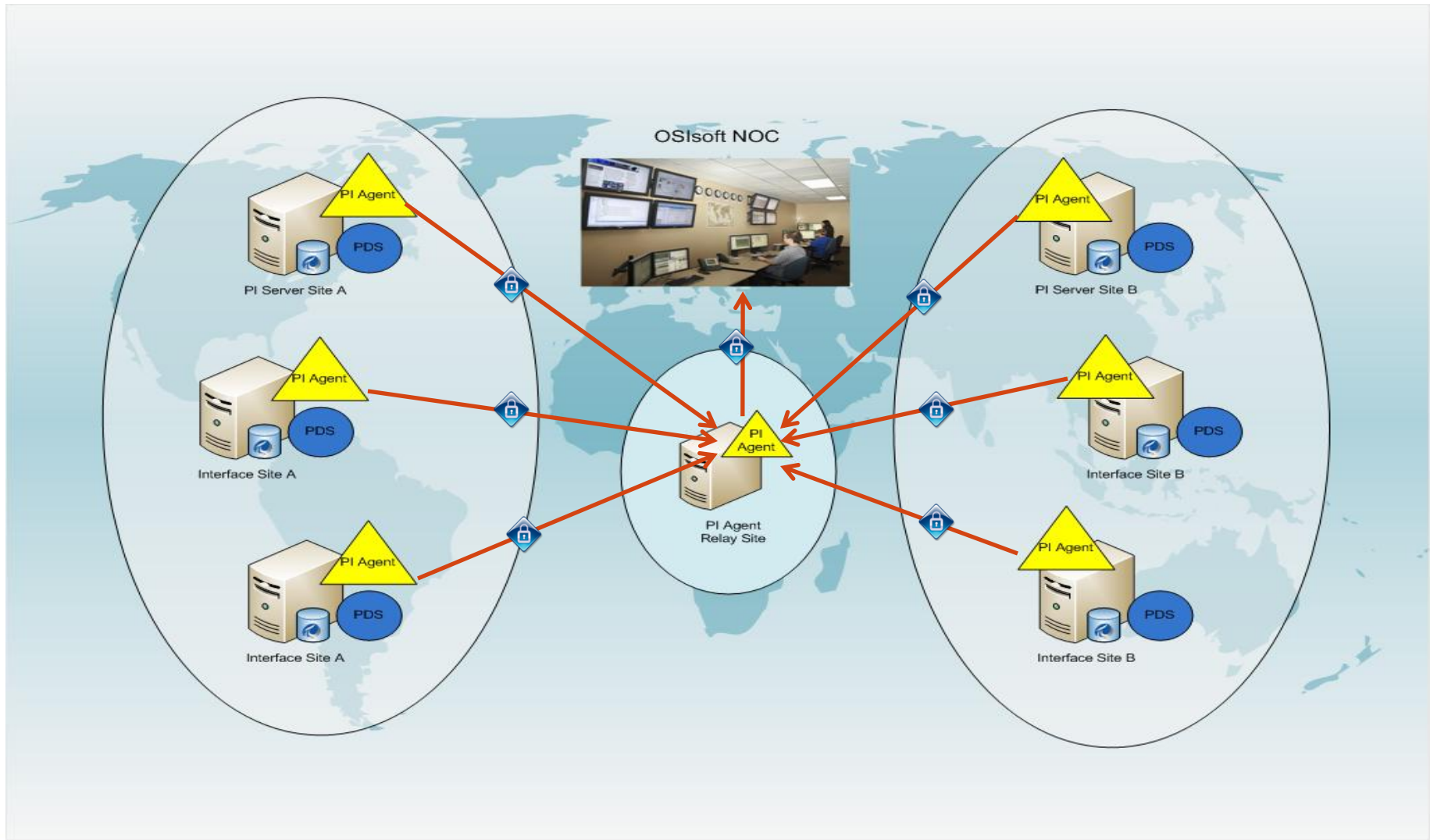
# Managed PI Communication - Secured



# Managed PI 2.2 – PI Agent Direct



# Managed PI with PI Agent Crosslink







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# Deployment Best Practices

# PI Agent Deployment Best Practices



- Use the PI Agent for mPI Communication
- All sites should have a connection to OSIsoft
- No more than 5 PI Agents should connect to any one PI Agent
- Keep the layers flat
- Create multiple data paths if possible



# Questions



# To Learn More About the EA

Room: Imperial B

- Imperial B – Tuesday 3:30 – 4:30
  - Managing your PI System in Real Time
- Imperial B – Tuesday 5:00 – 6:00
  - The EA Extranet 2010 – Customer Communications Software
- Imperial B – Tuesday 6:00 – 7:00
  - The Value of Managed Services and Managed Software
- Imperial B – Wednesday 8:00 – 8:50
  - Extending Customer Support Via Enterprise Services
- Imperial B – Wednesday 9:10 – 10:00
  - Gaining More Value from Your Enterprise Agreement





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Thank you

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