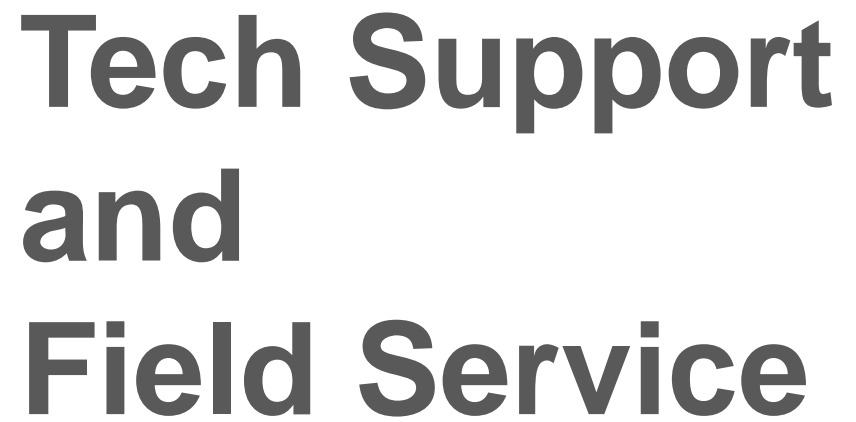




# Tips from the Trenches

Presented by **Tony Yan Jian** and **Karn Udomsangpetch**



## Proactive

- Protect From Viruses
- Windows Integrated Security

## Proactive

- Protect From Viruses
- Windows Integrated Security

## Disciplined

- Licensing
- PI Buffer Subsystem
- Logs

## Proactive

- Protect From Viruses
- Windows Integrated Security

## Disciplined

- Licensing
- PI Buffer Subsystem
- Logs

## Aware

- Architecture Diagrams
- Learning

# Virus Infection at an Electric Utility

"A third-party technician used a USB-drive to upload software updates during a scheduled outage for equipment upgrades. Unknown to the technician, the USB-drive was infected with crimeware. The infection resulted in downtime for the impacted systems and delayed the plant restart by approximately three weeks."

*(Continued on next slide)*

# Virus Infection at an Electric Utility

"A third-party technician used a USB-drive to upload software updates during a scheduled outage for equipment upgrades. Unknown to the technician, the USB-drive was infected with crimeware. The infection resulted in downtime for the impacted systems and delayed the plant restart by approximately three weeks."

*(Continued on next slide)*

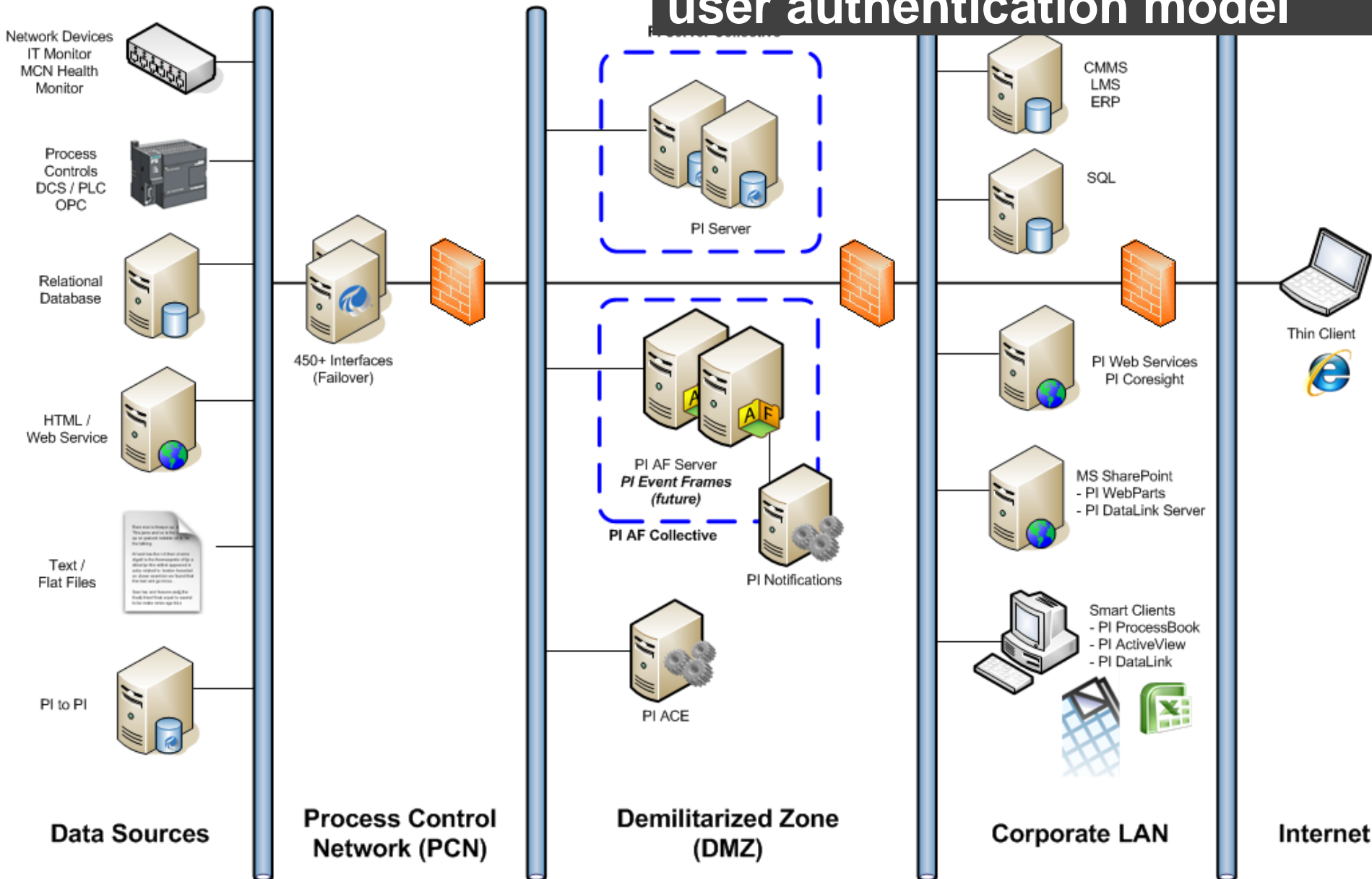
# Scan USB Sticks Regularly

- OS/soft uses endpoint protection
- 3<sup>rd</sup> parties always have the option to scan the device themselves
- Always scan thumb drives





# Small steps to a more secure user authentication model



# Explicit Login and Pladmin

- Do not use explicit login anymore
  - Especially for the piadmin user!
- Security Alert: PI Authentication Weakness
  - October 2009
  - Encryption Algorithm is no longer safe



**Overview**

OSIsoft PI Server provides an insecure authentication mechanism that could allow attackers to read or modify information in databases.

**Description**

PI Server is a core component of the OSIsoft PI System.

According to a report from [C4 Security](#), OSIsoft [release notes](#) (login required) for PI Server 3.4.380.36, and OSIsoft KB article [5120OSI8](#), it appears that changes were made to PI Server to better resist brute force authentication attempts. PI Server 3.4.380.36 deprecates an older authentication mechanism in favor of Microsoft Windows authentication.

Windows authentication provides security features such as: logging failed login attempts, enforcing minimum password lengths, and enforcing password time-outs.

**Impact**

According to reports it appears that the old PI Sever integrated authentication security system method was susceptible to brute force authentication attempts. A successful attempt will allow an attacker to gain access to the PI Server databases.

**Solution**

OSIsoft recommends upgrading to PI Server version 3.4.380.36.

**Public security bulletin**

According to the PI Server 3.4.380.36 release notes the following procedures to mitigate the vulnerability:

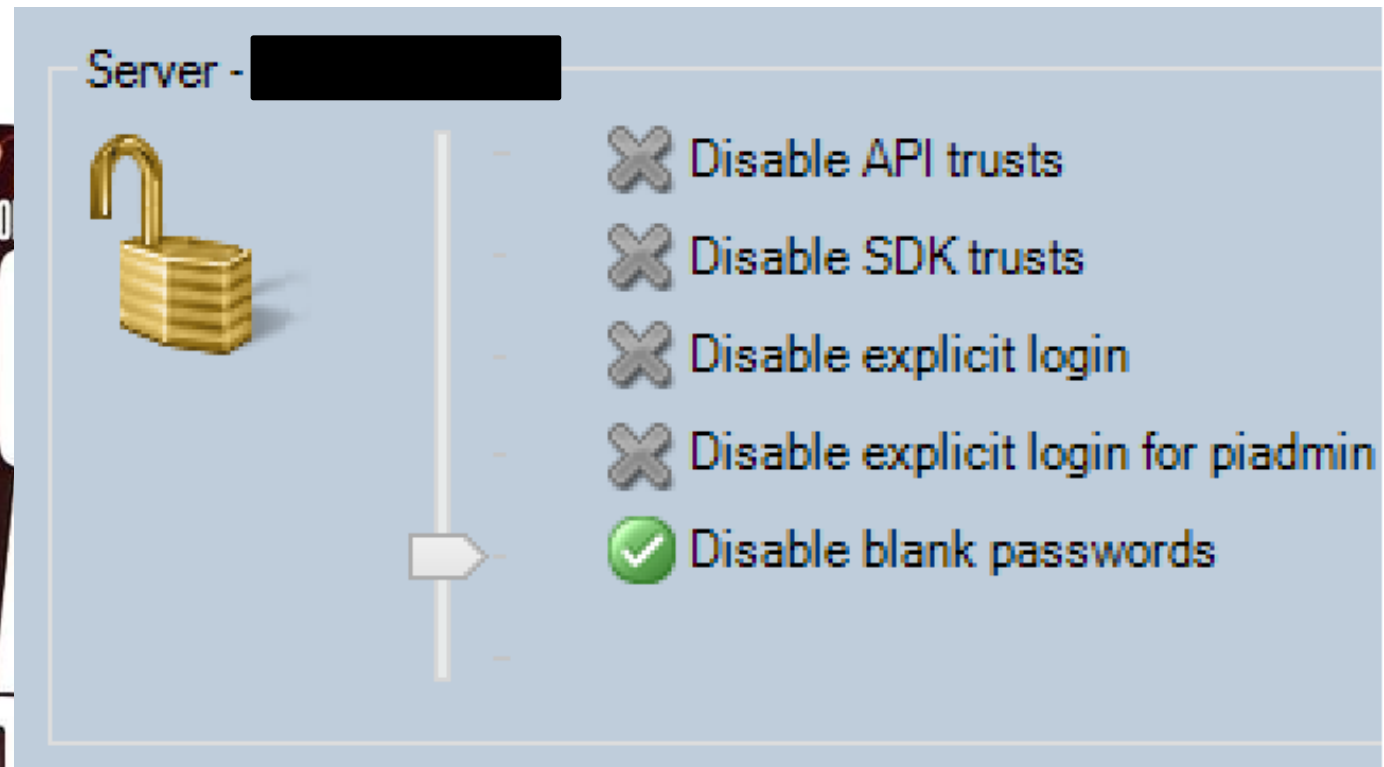
- Enable the PI Server for Windows authentication and configure PI Trust records*
- Use IPSec between the PI Server and the different client computers*

## Solution

OSIsoft recommends upgrading to PI Server version 3.4.380.36.

According to the PI Server 3.4.380.36 release notes the following procedures to mitigate the vulnerability:

*Enable the PI Server for Windows authentication and configure PI Trust records*  
*Use IPsec between the PI Server and the different client computers*



## Explicit Login: How To

# Security Take Home Points

Using long and complex passwords for explicit login protects me?

**False**

Windows Integrated Security will have the same weakness?

**False**



# A Case from the Tech Support Trenches

# My PI Server will not Start!

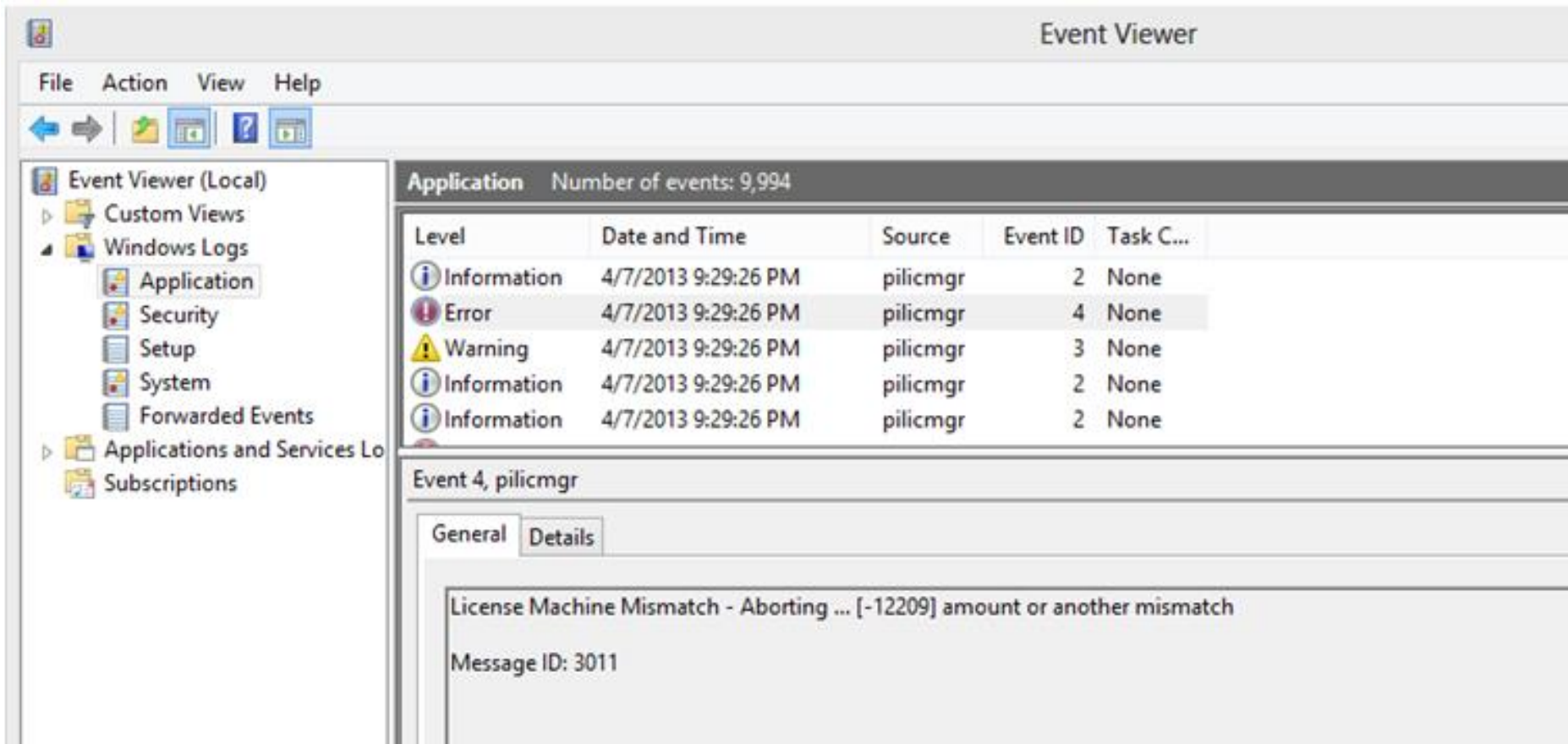
Check the PI Server Message Logs

```
C:\Program Files\PI\adm>pigetmsg -st * -et *-15m  
> No messages
```

Check the Event Viewer Logs

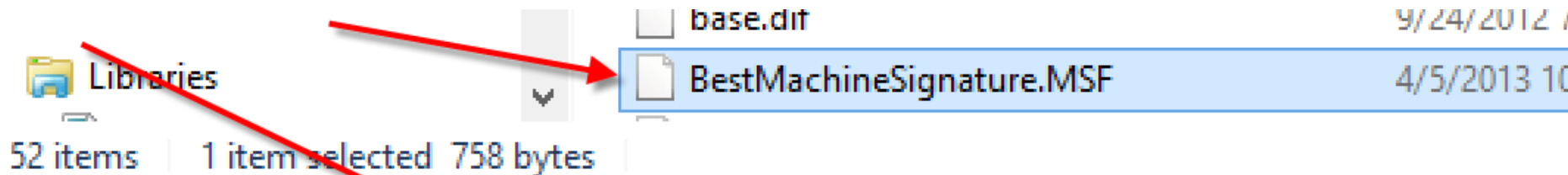
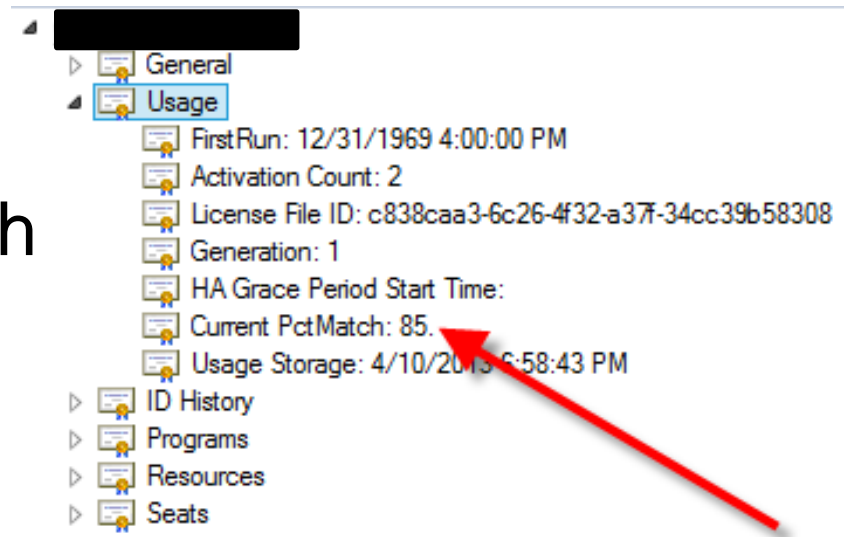


# My PI Server will not Start!



# Licensing

Need highest percent match  
Field Service Standards



```
C:\Program Files\PI\adm>pidiag -host -file BestMachineSignature.MSF
C:\Program Files\PI\adm>
```

# PI Buffer Subsystem Example

- Windows Integrated Security
- Everyone group has read access
- Machines map to the Everyone group

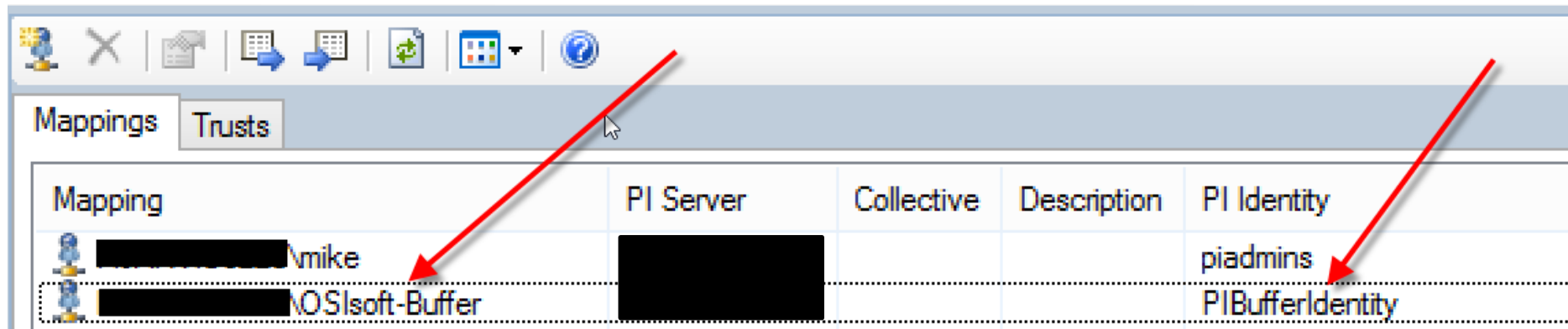
```
D 05-Apr-13 10:30:26 pinetmgr <7082>
>> Successful login ID: 63. Address: . Name: pibufss. Identity List: PEngine
ers ! PIWorld. Environment Username : NT AUTHORITY\SYSTEM. Method: Windows Login
(SSPI,NTLM)
```

- PI Buffer Subsystem may connect as a read-only user

# PI Buffer Subsystem Example

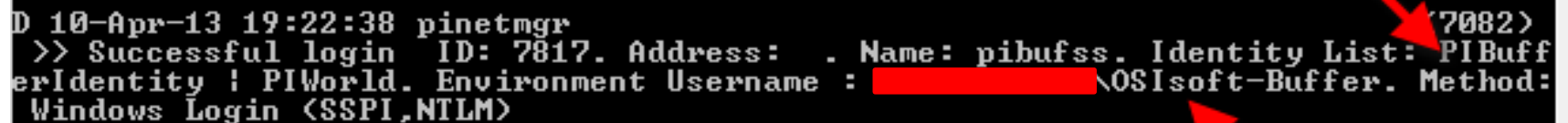
- Use Windows Integrated Security
- Allow the buffer to connect as a PI Identity with write access to the Points which it owns

# PI Buffer Subsystem: How To



The screenshot shows the 'Mappings' tab of a configuration window. A table lists mappings with columns: Mapping, PI Server, Collective, Description, and PI Identity. Two mappings are shown: one for 'mike' and another for 'OSIsoft-Buffer'. Red arrows point from the 'mike' mapping to the 'PI Server' column, and from the 'OSIsoft-Buffer' mapping to the 'PI Identity' column.

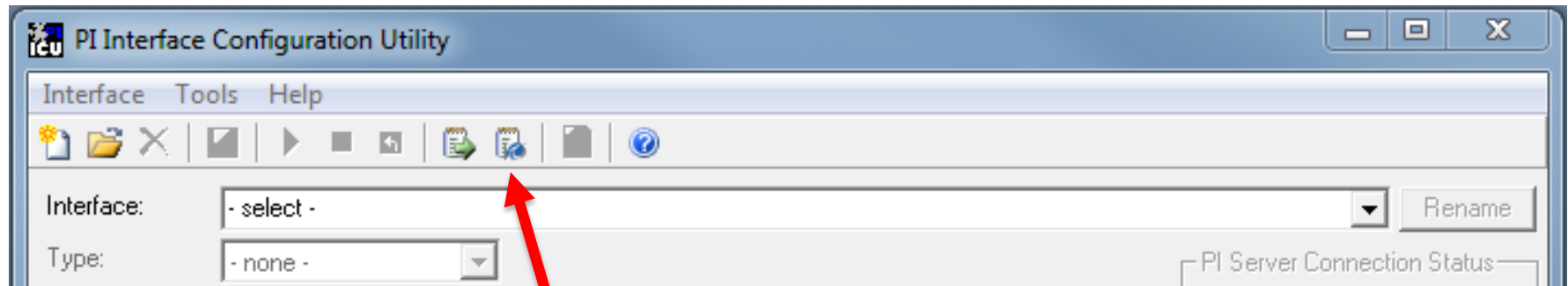
Mapping	PI Server	Collective	Description	PI Identity
[Icon] [Redacted] \mike	[Redacted]			piadmins
[Icon] [Redacted] \OSIsoft-Buffer	[Redacted]			PIBufferIdentity



The screenshot shows a command prompt window with the following text: 'D 10-Apr-13 19:22:38 pinetmgr', '>> Successful login ID: 7817. Address: . Name: pibufss. Identity List: PIBuff', 'erIdentity : PIWorld. Environment Username : [Redacted] \OSIsoft-Buffer. Method:', and 'Windows Login (SSPI,NTLM)'. Red arrows point from the '7082>' prompt, the 'PIBufferIdentity' field in the previous screenshot, and the 'OSIsoft-Buffer' username in the command prompt.

```
D 10-Apr-13 19:22:38 pinetmgr
>> Successful login ID: 7817. Address: . Name: pibufss. Identity List: PIBuff
erIdentity : PIWorld. Environment Username : [Redacted] \OSIsoft-Buffer. Method:
Windows Login (SSPI,NTLM)
```

# Listen to your system: PI Message log

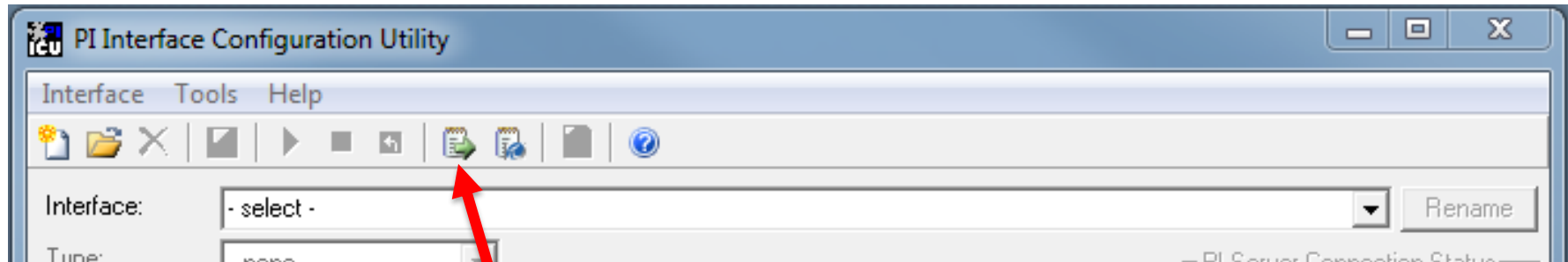


```
I 10-Apr-13 19:16:16 pinetmgr:Connection Information <7080>
>> New Connection ID: 47 ; Process name: Procbook.exe(8772) ; User: piadmins ;
PIWorld ; OS User: OSI\karn ; Hostname: ; IP: ; AppID: 552 ; AppName: Proc
essBook

I 10-Apr-13 19:16:16 Procbook <4>
>> Successfully connected to server karne4300 as piadmins ; PIWorld

I 10-Apr-13 19:16:27 piaflink <17002>
>> Retrieved migration configuration information from PI Base Subsystem.
```

# Listen to your system: PIPC log



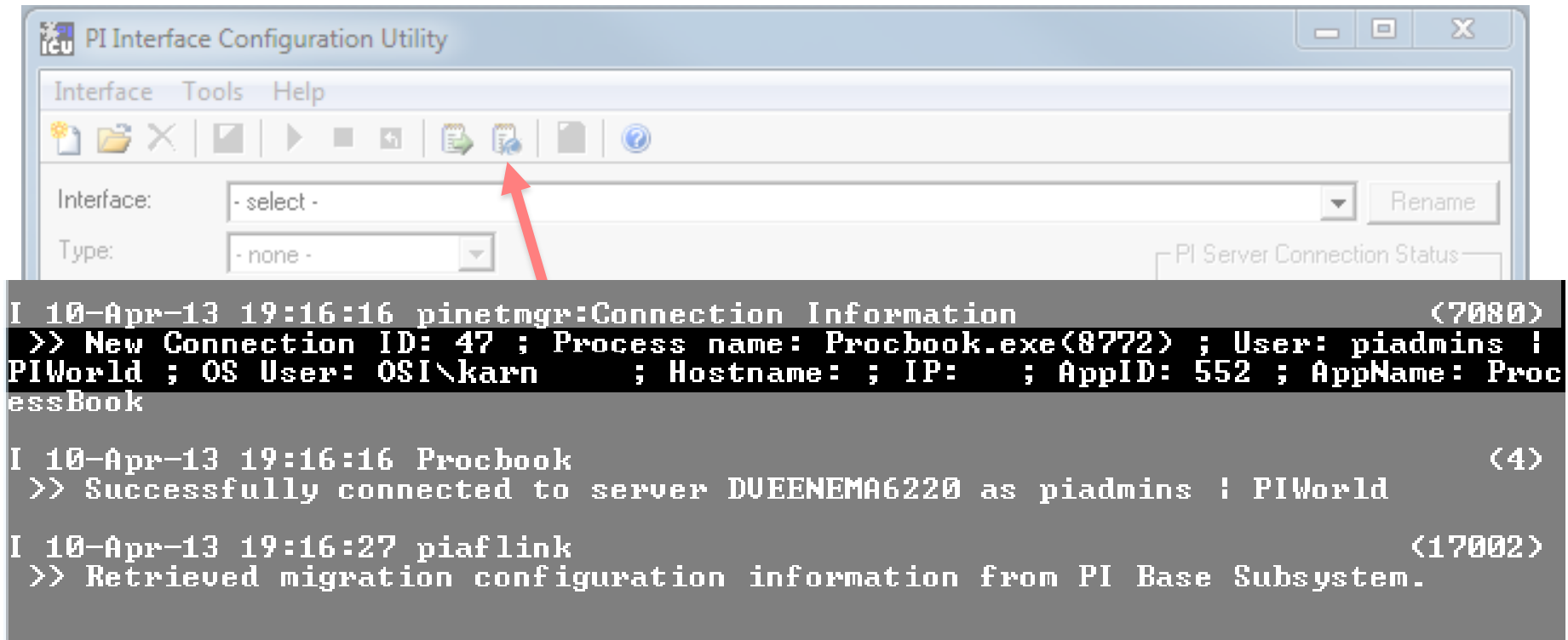
```
10-Apr-13 19:24:04
PI Ping> C:\Program Files (x86)\PIPC\Interfaces\PING\PIPing.exe 1 C:\Program Fil
es (x86)\PIPC\Interfaces\PING\PIPing.exe 1 -PS=PING -ID=1 -host=dveenema6220:545
0 -stopstat=Intf Shut -maxstoptime=120 -perf=8 -f=00:30:00

10-Apr-13 19:24:04
PI Ping 1> Starting PI Ping, version 1.6.3.0 27-Apr-2009

10-Apr-13 19:24:04
PI Ping 1> Unint is running in Extended API Mode with options 0x00000009

10-Apr-13 19:24:04
PI Ping 1> Unint version> 4.4.5.0
```

# Listen to your system: PI Message log





# Listen to your system: PI Message log

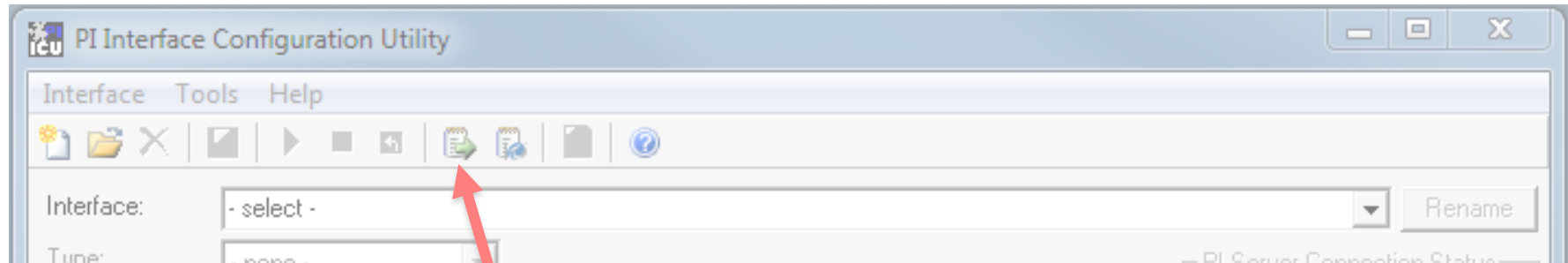


```
I 10-Apr-13 19:16:16 pinetmgr:Connection Information <7080>  
>> New Connection ID: 47 ; Process name: Procbook.exe(8772) ; User: piadmins ;  
PIWorld ; OS User: OSI\karn ; Hostname: ; IP: ; AppID: 552 ; AppName: Proc  
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```

```
I 10-Apr-13 19:16:16 Procbook <4>  
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>> Retrieved migration configuration information from PI Base Subsystem.
```

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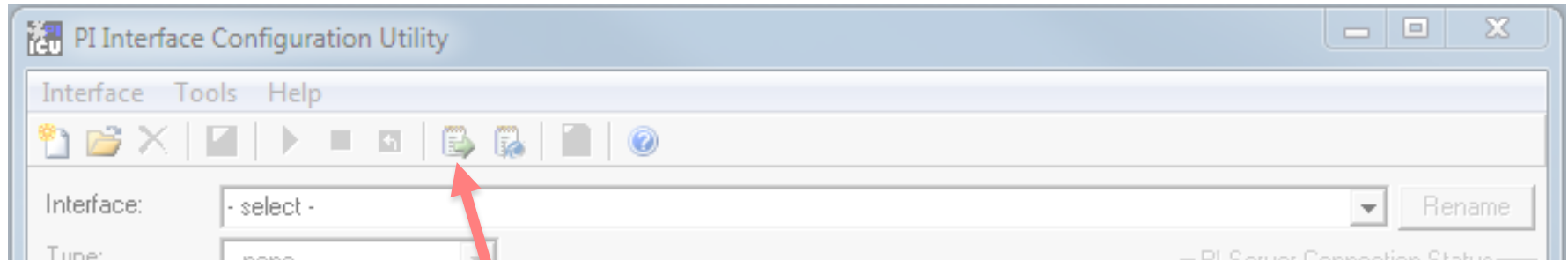
```
10-Apr-13 19:24:04
PI Ping> C:\Program Files (x86)\PIPC\Interfaces\PING\PIPing.exe 1 C:\Program Fil
es (x86)\PIPC\Interfaces\PING\PIPing.exe 1 -PS=PING -ID=1 -host=dveenema6220:545
0 -stopstat=Intf Shut -maxstoptime=120 -perf=8 -f=00:30:00
```

```
10-Apr-13 19:24:04
PI Ping 1> Starting PI Ping, version 1.6.3.0 27-Apr-2009
```

```
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```

```
10-Apr-13 19:24:04
PI Ping 1> Unint version> 4.4.5.0
```

# Listen to your system: PIPC log



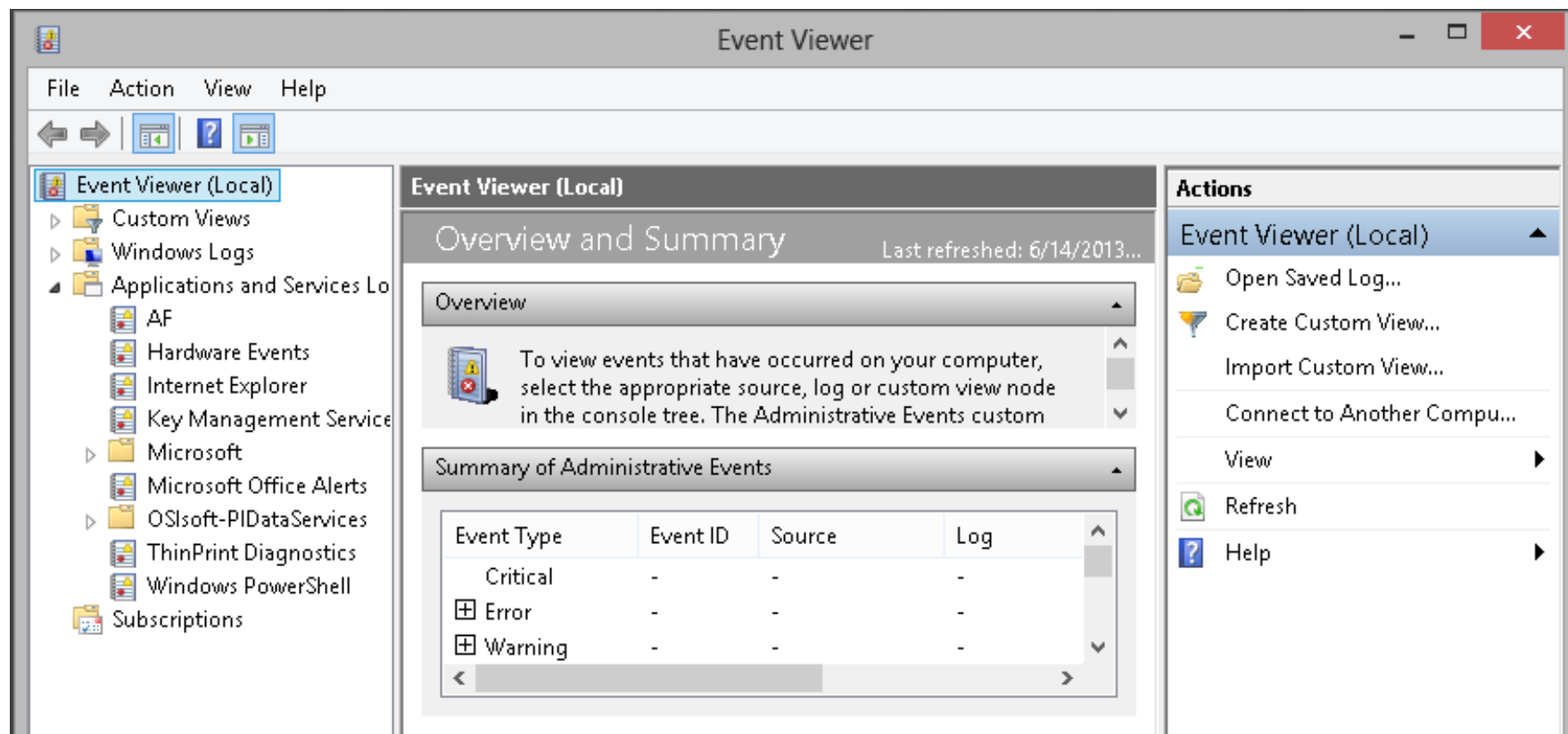
```
10-Apr-13 19:24:04
PI Ping> C:\Program Files (x86)\PIPC\Interfaces\PING\PIPing.exe 1 C:\Program Fil
es (x86)\PIPC\Interfaces\PING\PIPing.exe 1 -PS=PING -ID=1 -host=dveenema6220:545
0 -stopstat=Intf Shut -maxstoptime=120 -perf=8 -f=00:30:00
```

```
10-Apr-13 19:24:04
PI Ping 1> Starting PI Ping, version 1.6.3.0 27-Apr-2009
```

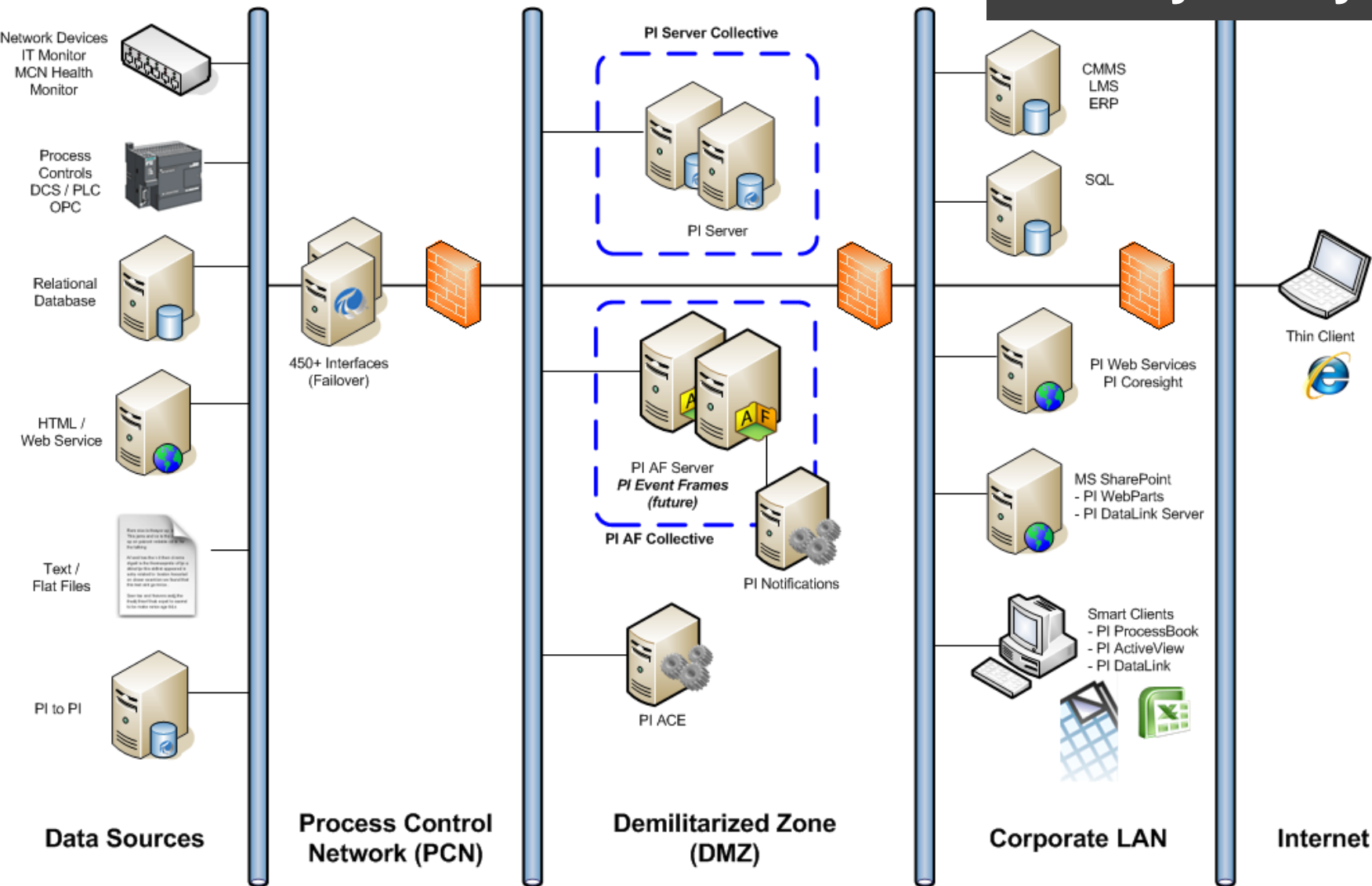
```
10-Apr-13 19:24:04
PI Ping 1> Uniint is running in Extended API Mode with options 0x00000009
```

```
10-Apr-13 19:24:04
PI Ping 1> Uniint version> 4.4.5.0
```

# Listen to your system: eventvwr



# Know your system



# Knowing Your System

```
1  HQ server HQPI1
2
3  PI to PI - on it's own machine
4
5  site server
6  name Mountain View MtnViewPI
7
8
9  data not matching
10
```

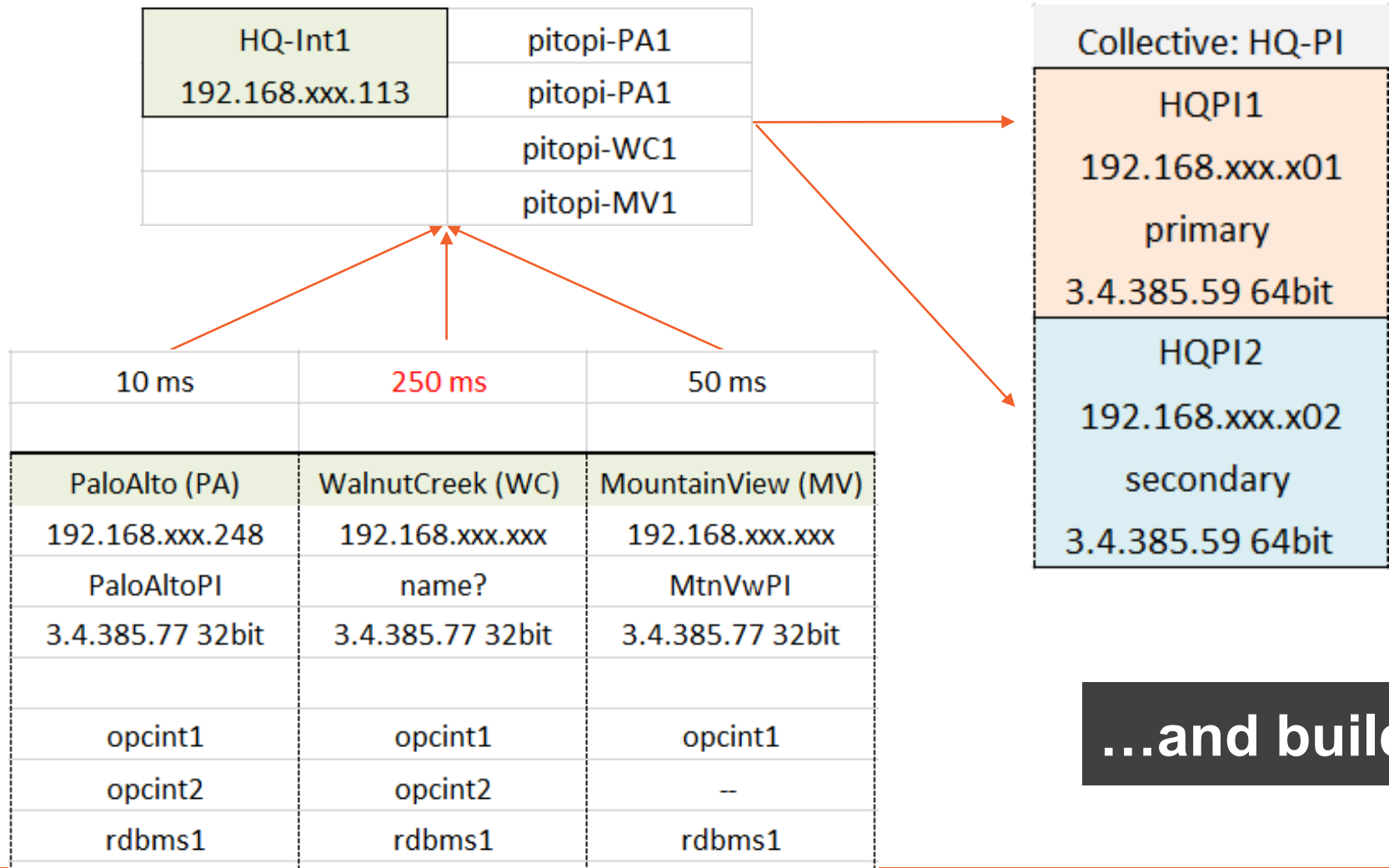
**We start simple ...**

# Knowing Your System

```
1  HQ server
2  HQPI1
3  PI server 2010
4  3.4.385.59 64bit
5
6  PItOPI - get version.
7  HQ-Int1 local to HQPI1
8
9  site server
10 MtnViewPI
11 3.4.385.77 32bit
12
13
14 data not matching
15 looks ok on the source PI server |
16
```

...and we build

# Knowing Your System



...and build



# Knowing Your System

HQ-Int1 192.168.xxx.113	pitopi-PA1
	pitopi-PA1
	pitopi-WC1
	pitopi-MV1

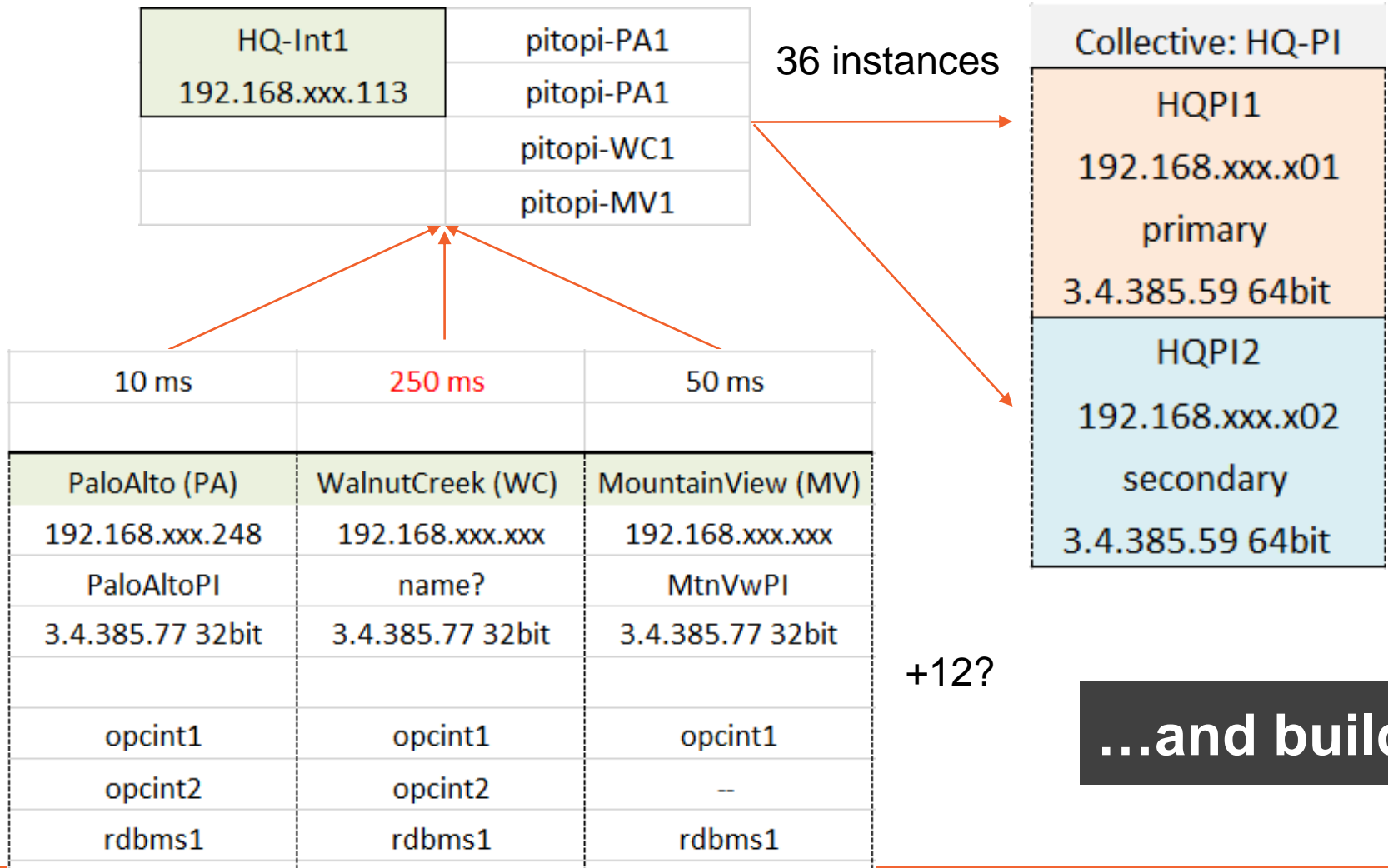
10 ms	250 ms	50 ms
PaloAlto (PA)	WalnutCreek (WC)	MountainView (MV)
192.168.xxx.248	192.168.xxx.xxx	192.168.xxx.xxx
PaloAltoPI	name?	MtnVwPI
3.4.385.77 32bit	3.4.385.77 32bit	3.4.385.77 32bit
opcint1	opcint1	opcint1
opcint2	opcint2	--
rdbms1	rdbms1	rdbms1

Collective: HQ-PI	
HQPI1	192.168.xxx.x01 primary 3.4.385.59 64bit
HQPI2	192.168.xxx.x02 secondary 3.4.385.59 64bit

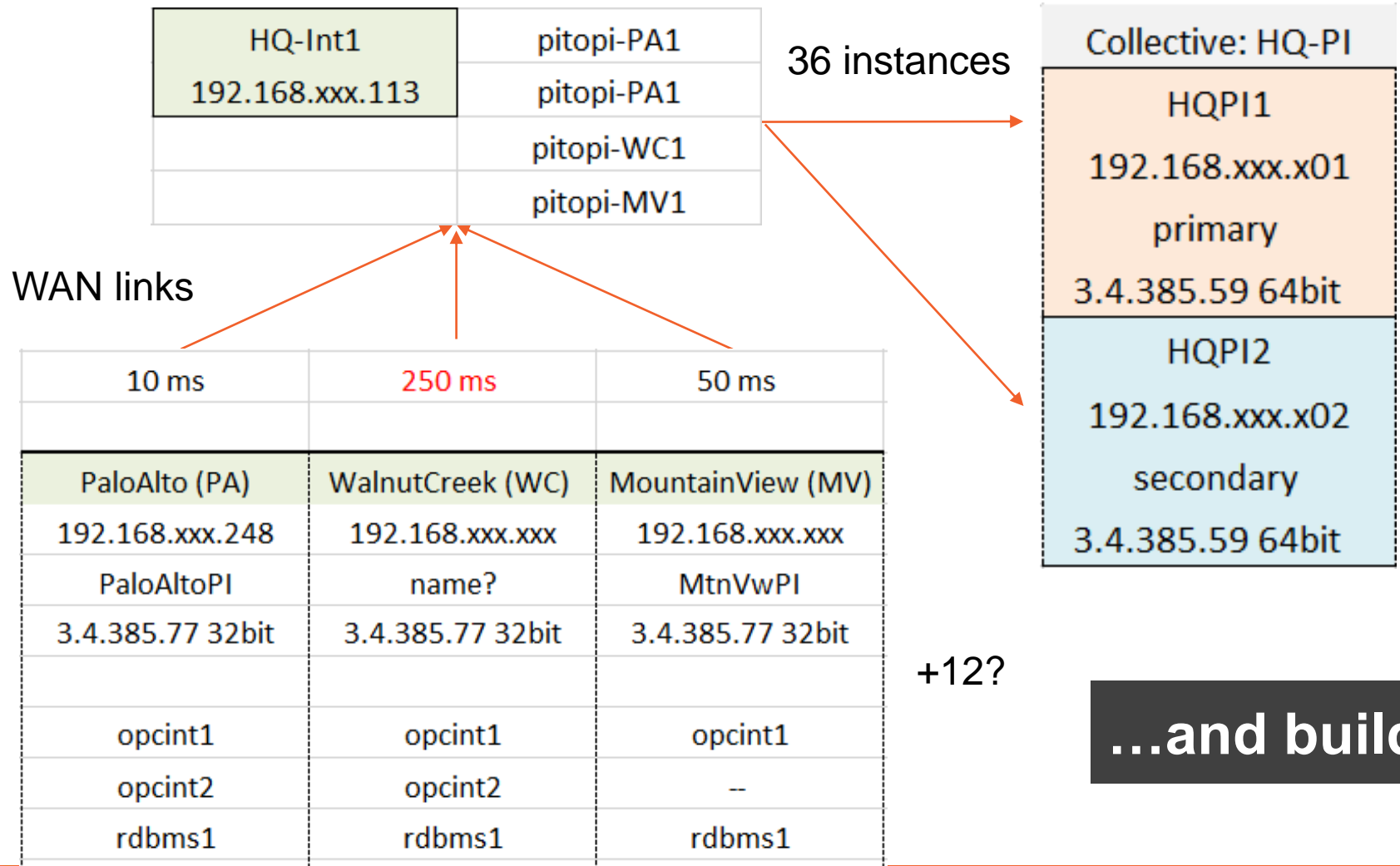
+12?

## ...and build

# Knowing Your System



# Knowing Your System





# Available Resources Online

# Available Resources



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Product Grouping

1-10 of 580 results Your search took 0.22 seconds.

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### ★ [PI Server 2012 is released](#)

... seconds Better recovery from power failures Most secure version ever To get the most out of your upgrade, OSIsoft recommends using: The latest Microsoft technologies including Windows **Server 2012** and SQL **Server 2012**. 64-bit **PI Server 2012** on a Core **installation** of Windows **Server 2008 R2** or Windows **Server 2012**, for maximum security Check out the release notes for more details. **PI Asset Framework (PI AF) PI AF 2012** includes major enhancements to the **PI AF Software** ...  
Date: 11/28/2012 Size: 29KB [Preview...](#)

### i [KB00673 - Platform Requirement Changes for PI Server 2012](#)


... Version Give us Feedback Issue Starting **PI Server 2012** (3.4.390), OSIsoft is dropping support for Windows XP, Windows 2008 Core, as well as support for 32-bit **PI Server installations** on 64-bit Windows 2003. Note: **Installation** of 32 ... **Server 2008 SP2** (or later), 32 and 64 bits Windows **Server 2008 R2 SP1** (or later), including Core **installations** (\*) Windows **Server 2012** (\*) See also KB00649 "**PI Server** support for Windows **Server Core**" **PI Server** ...  
Date: 12/14/2012 Size: 30KB [Preview...](#)

### i [KB00783 - PI Web Services 2012 Standalone Edition fails to install on Windows Server 2003](#)

... When running the installer for **PI Web Services 2012 Standalone Edition** on Windows **Server 2003**, the installer fails abruptly. Turning on detailed logging of the **installation** (msiexec /l\*v) shows a log statement ... find httpcfg.exe on the path The **PI Web Services 2012 Standalone Edition** installer requires ... to httpcfg.exe from the Windows **Server** support tools when run on Windows ...

# Available Resources

Tech Support | Learning | OSISOFT

 PI Live Library - BETA

Contents

Home

▶ [PI Server 2012 Documentation](#)

en

## **PI Server 2012 Quick Links**

### **Installation and Deployment**

[Asset Framework \(AF\) : PI Server \(PI Data Archive\) : High Availability](#)

### **System Management**

[Security : Buffering : Archives : Backups : Tuning : Monitoring](#)

[Points : Collective Management](#)

### **Asset Management**

[Getting Started : Creating Asset Models : AF in Excel : Tutorial](#)

### **Analytics**

[Performance Equations : ACE : Steam Tables : Totalizers](#)

[AF Data References : Notifications](#)

**Livelibrary.osisoft.com**

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KB Article # KB00772

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## Quickstart Series - PI OPC Interface: Advise Tag Example

**Product:** PI OPC DA Interface

**Version(s):** 2.3.x

**Platform:** Windows All

### Question

**How do you set up an Advise Tag on the PI Interface for OPC DA?**

*The Quickstart Series is meant as a tool for those who are familiar with the basics of PI interfaces (configuring trusts, creating services) and wish to see a specific tag configuration example. Those who are newer to interface configuration should consult the complete interface manual for full instructions.*






This example steps through how to configure the PI OPC Interface to write values from an OPC Server to a PI Server.

For purposes of this example, the following configuration is assumed:

- The PI OPC Interface is installed on the same computer as the OPC Server.
- The PI point that we are writing data to is an *Advise* tag. The value of the tag will be updated on the PI Server when the OPC Server notifies the PI Server of a change in the corresponding OPC item.

### Answer

#### Step 1. Configure the Interface

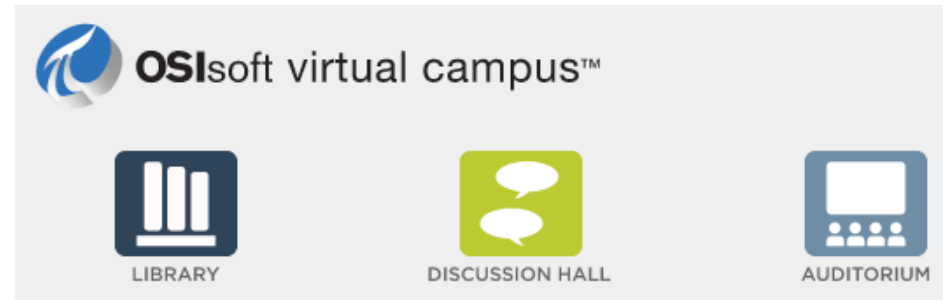
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Quickstart Series

# Available Resources



[community.osisoft.com](https://community.osisoft.com)



[vcampus.osisoft.com](https://vcampus.osisoft.com)



Get hands on knowledge of how  
to use and get value from the PI  
System



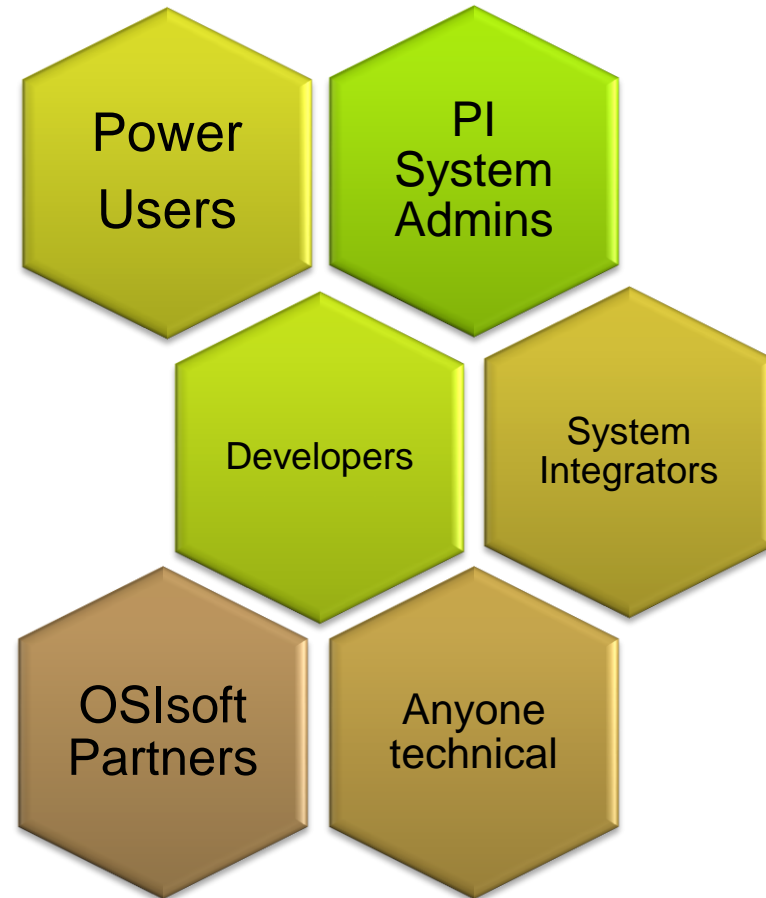
DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

**vCampus Live! 2013**

WHERE PI GEEKS MEET



**SAVE THE DATE**



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**THANK**

**YOU**