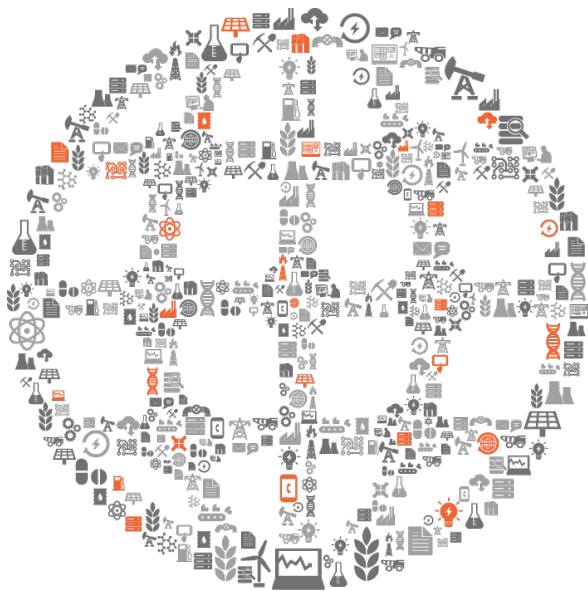




Tips from the Trenches

Presented by **Michael Jarvis** and **Dirk Veenema**



OSIsoft®

USERS CONFERENCE 2013

The Power of Data

THRIVING

IN A

WORLD OF

CHANGE

Tech Support and Field Service



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."

Virus Infection at an Electric Utility

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Scan USB Sticks regularly

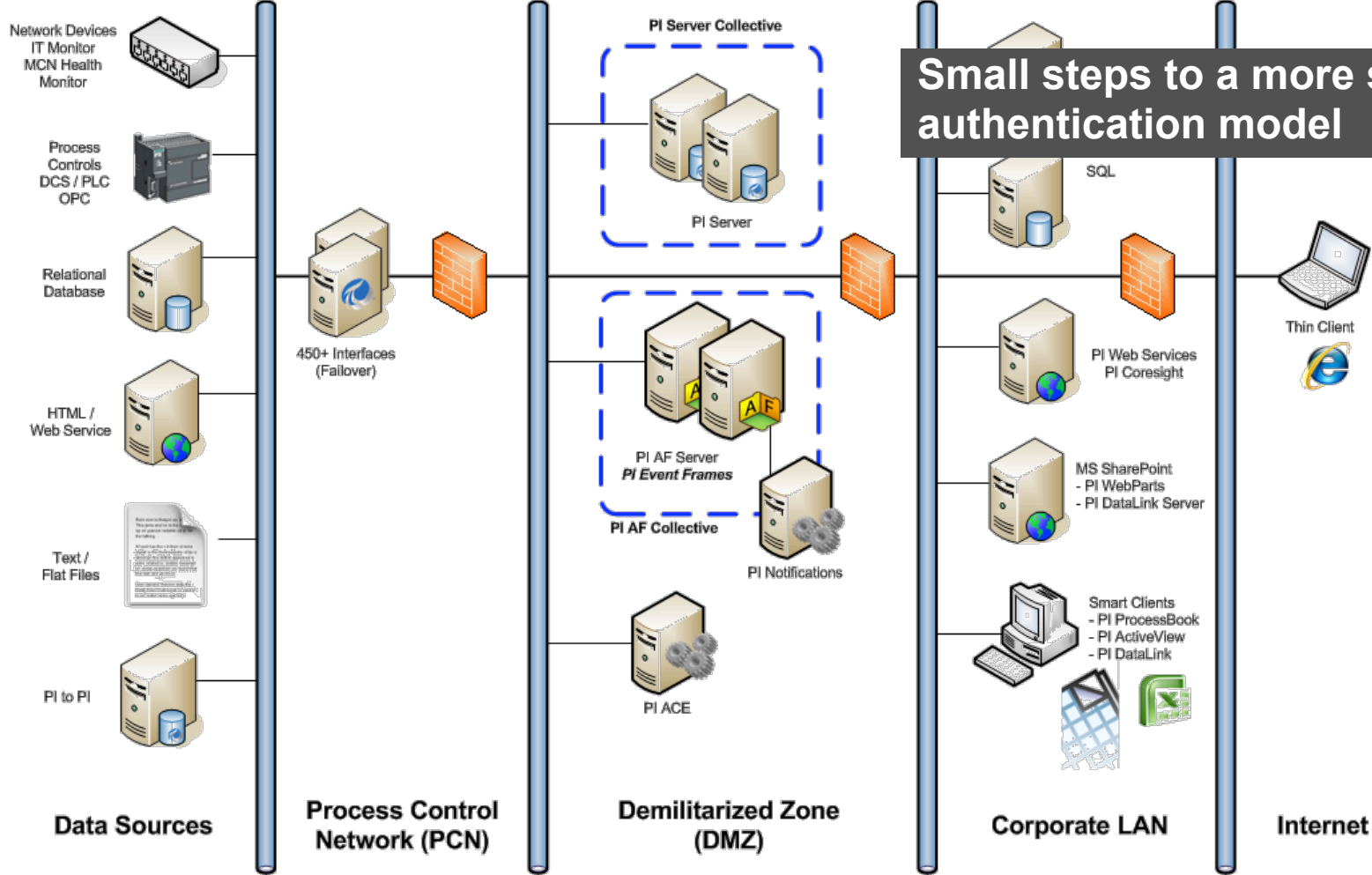
OSIsoft uses endpoint protection

3rd 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 piadmin

Do not use PI Users with passwords stored in the PI Server

Especially for the piadmin user!

Security Alert: PI Authentication Weakness

October 2009

Encryption Algorithm is not 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 Server 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.

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*

Public security bulletin

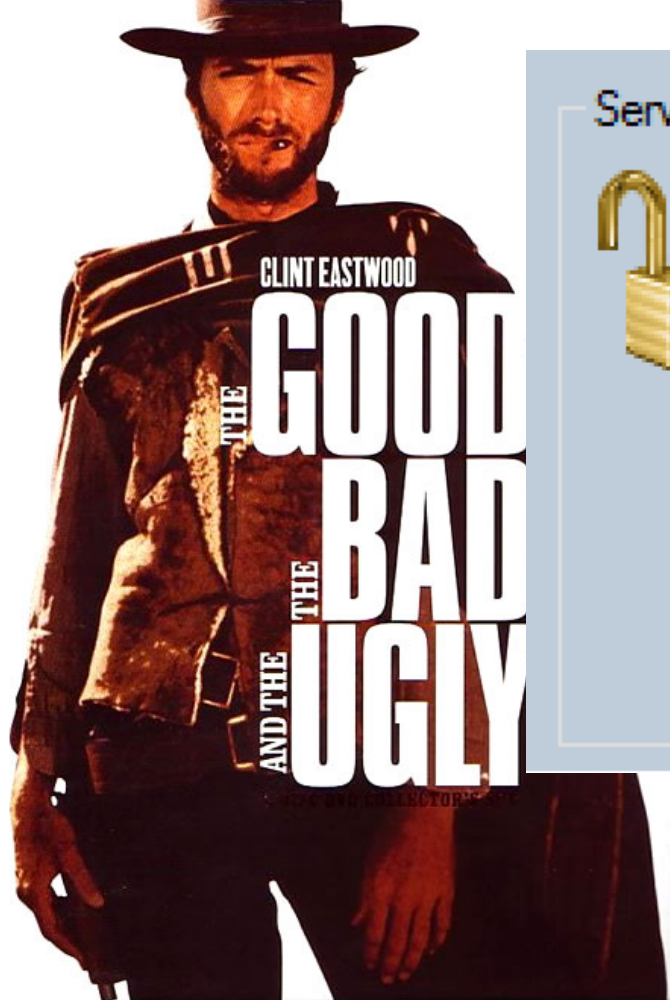
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OSIsoft recommends upgrading to PI Server version 3.4.380.36.




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



Server - [REDACTED] 6220



Disable API trusts

Disable SDK trusts

Disable explicit login

Disable explicit login for piadmin

Disable blank passwords

A vertical slider control is positioned to the left of the list, with a white arrow pointing to the right, indicating that the 'Disable blank passwords' option is selected.

Explicit Login: How To

Security Take Home Points

Do long and complex password for PI Users protect me at all?

NO

Do passwords for Windows Users have the same issue?

NO

A case from the Tech Support trenches



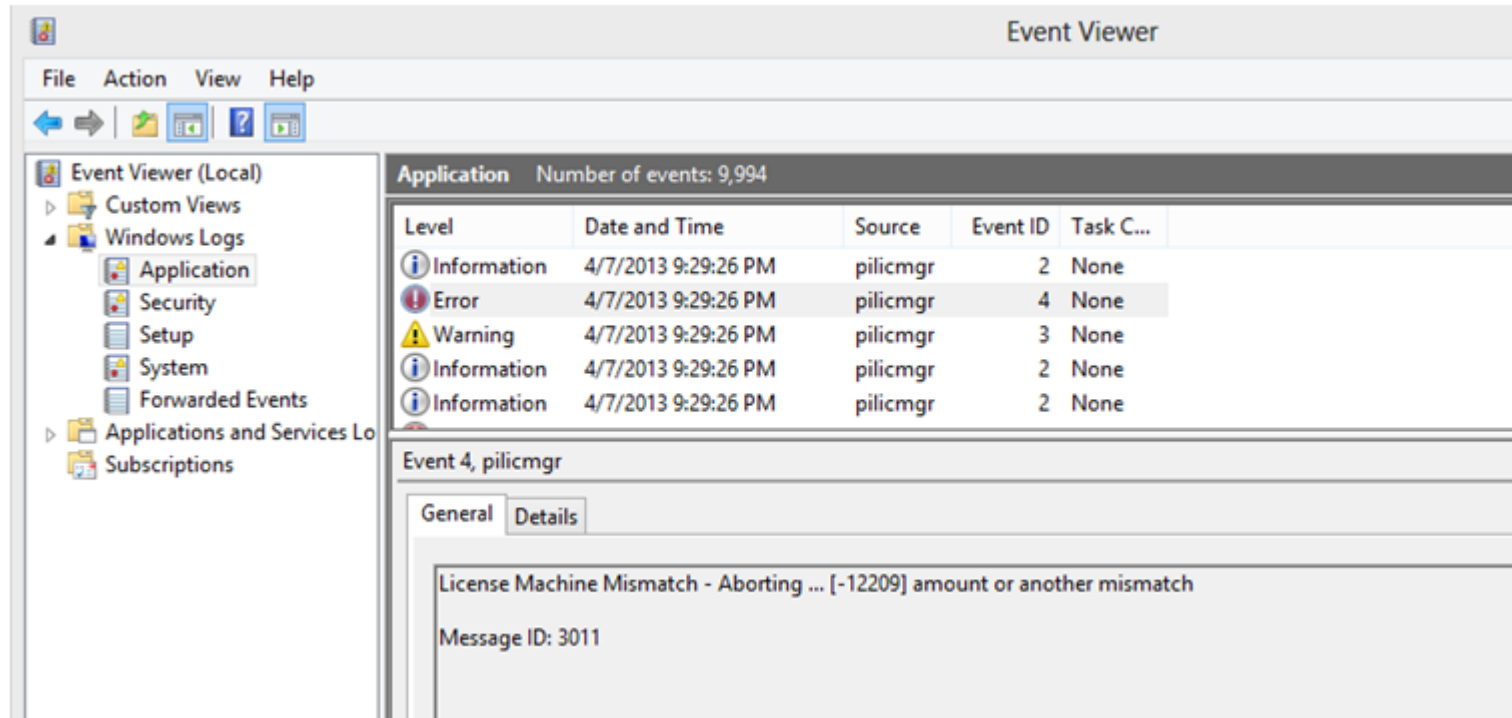
My PI Server will not Start!

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!



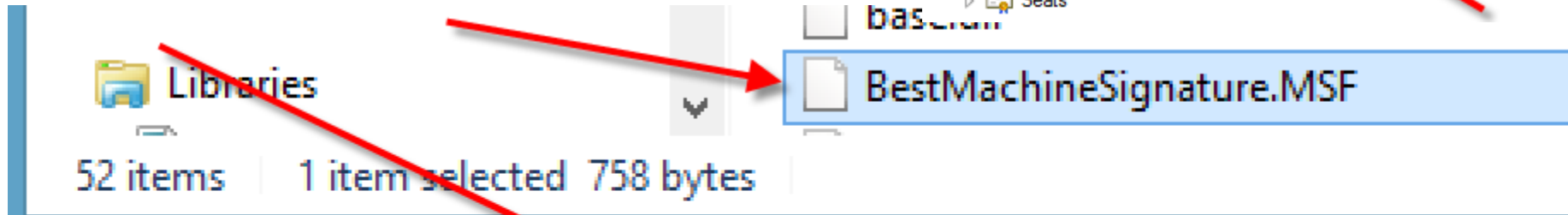
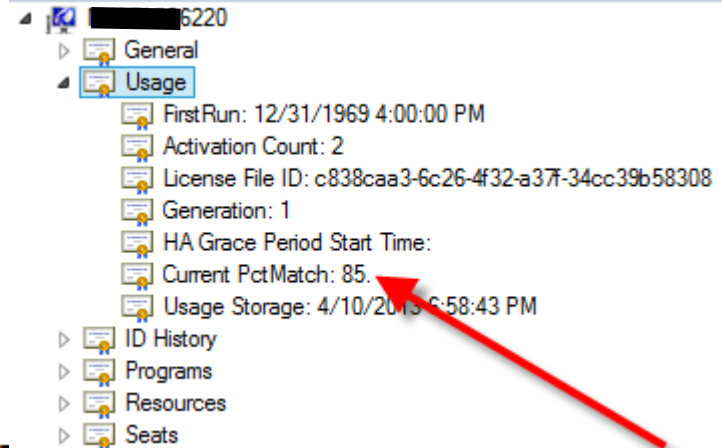
The screenshot shows the Windows Event Viewer application. The left-hand pane displays a tree view of event logs, with 'Windows Logs' expanded and 'Application' selected. The main pane shows a list of events for the 'Application' log, with the following data:

Level	Date and Time	Source	Event ID	Task C...
Information	4/7/2013 9:29:26 PM	pilicmgr	2	None
Error	4/7/2013 9:29:26 PM	pilicmgr	4	None
Warning	4/7/2013 9:29:26 PM	pilicmgr	3	None
Information	4/7/2013 9:29:26 PM	pilicmgr	2	None
Information	4/7/2013 9:29:26 PM	pilicmgr	2	None

The error event (ID 4) is selected, and its details are shown in the bottom pane. The message text is: "License Machine Mismatch - Aborting ... [-12209] amount or another mismatch". The message ID is 3011.

Licensing

Need highest percent match
Field Service Standards



```
C:\Program Files\PI\adm>pidiag -host -file BestMachineSig  
C:\Program Files\PI\adm>
```


Sample Setup PI Buffer Subsystem

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

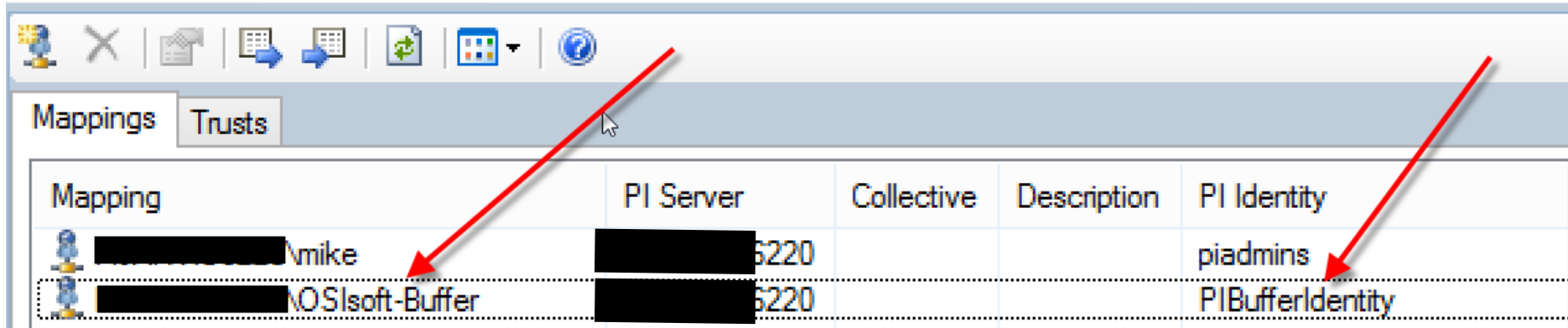
```
D 05-Apr-13 10:30:26 pinetmgr <7082>
>> Successful login ID: 63. Address: . Name: pibufss. Identity List: PEngine
ers | PIWorld. Environment Username : NT AUTHORITY\SYSTEM. Method: Windows Login
<SSPI,KERBEROS>
```

- 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

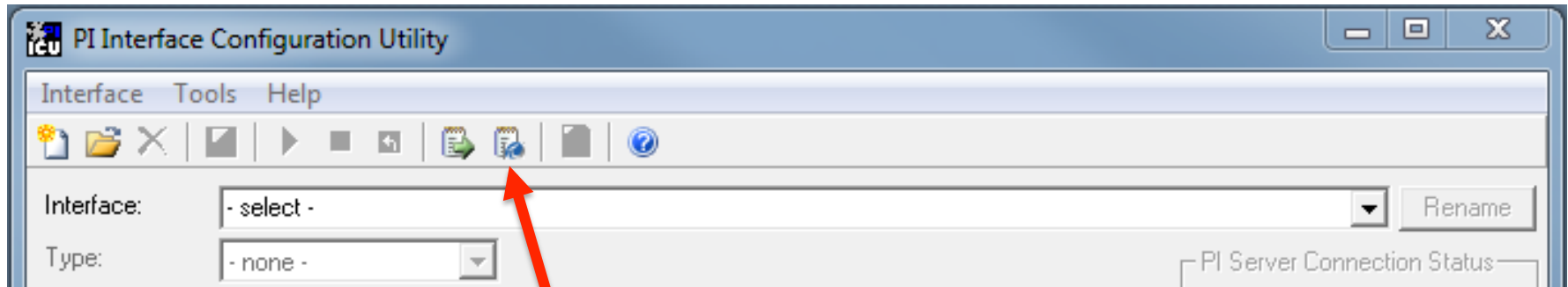
PI Buffer Subsystem: How To



Mapping	PI Server	Collective	Description	PI Identity
[redacted] \mike	[redacted] 6220			piadmins
[redacted] \OSIsoft-Buffer	[redacted] 6220			PIBufferIdentity

```
D 10-Apr-13 19:22:38 pinetmgr (7082)  
>> Successful login ID: 7817. Address: . Name: pibufss. Identity List: PIBuff  
erIdentity ! PIWorld. Environment Username : [redacted] \OSIsoft-Buffer. Method:  
Windows Login <SSPI,KERBEROS>
```


Listen to your system: PI Message log

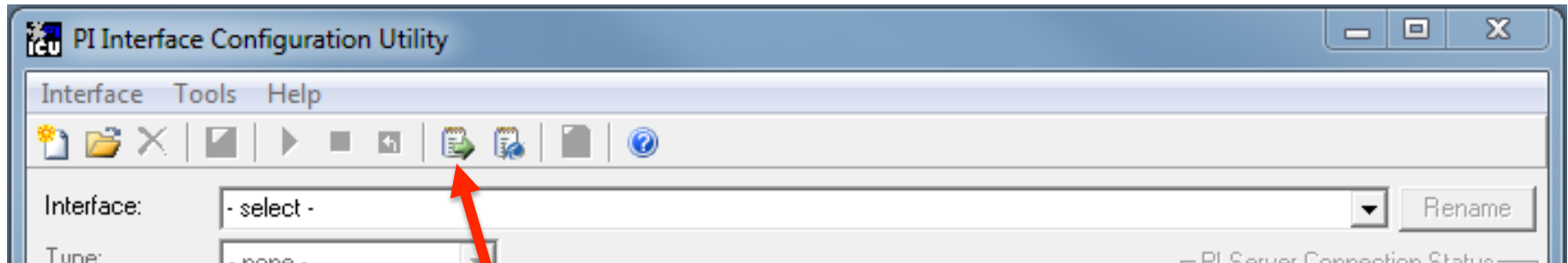


```
I 10-Apr-13 19:16:16 pinetmgr:Connection Information <7080>
>> New Connection ID: 47 ; Process name: Procbook.exe(8772) ; User: piadmins ;
PIWorld ; OS User: OSI\dirkules ; Hostname: ; IP: ; AppID: 552 ; AppName: Proc
essBook

I 10-Apr-13 19:16:16 Procbook <4>
>> Successfully connected to server DIRKULES1234 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=DIRKULES1234:545
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

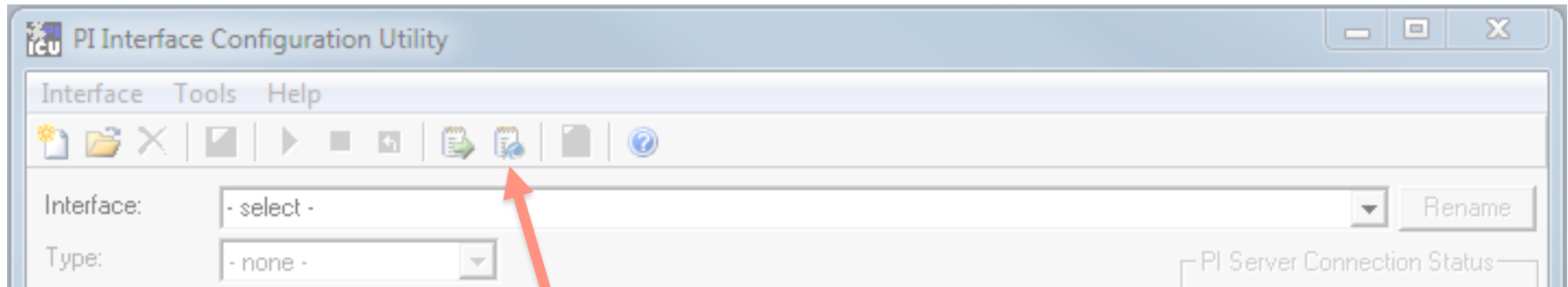
10-Apr-13 19:24:04
PI Ping 1> Uniint version> 4.4.5.0
```

Listen to your system: 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\dirkules ; Hostname: ; IP: ; AppID: 552 ; AppName: Proc
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Listen to your system: PI Message log



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Listen to your system: PIPC log



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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=DIRKULES1234:545
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: PIPC log



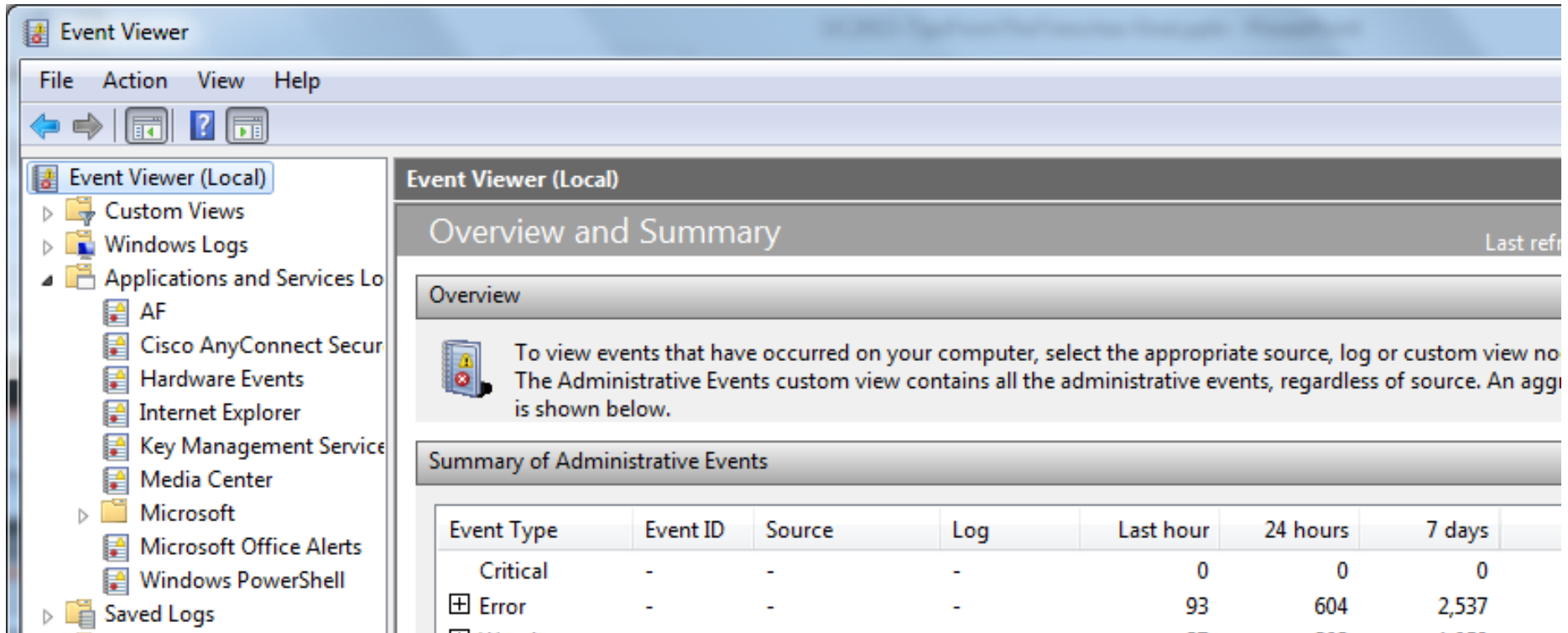
```
10-Apr-13 19:24:04
PI Ping> C:\Program Files (x86)\PIPC\Interfaces\PING\PIPing.exe 1 C:\Program Fil
es (x86)\PIPC\Interfaces\PING\PIPing.exe 1 -PS=PING -ID=1 -host=DIRKULES1234:545
0 -stopstat=Intf Shut -maxstoptime=120 -perf=8 -f=00:30:00
```

```
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
```

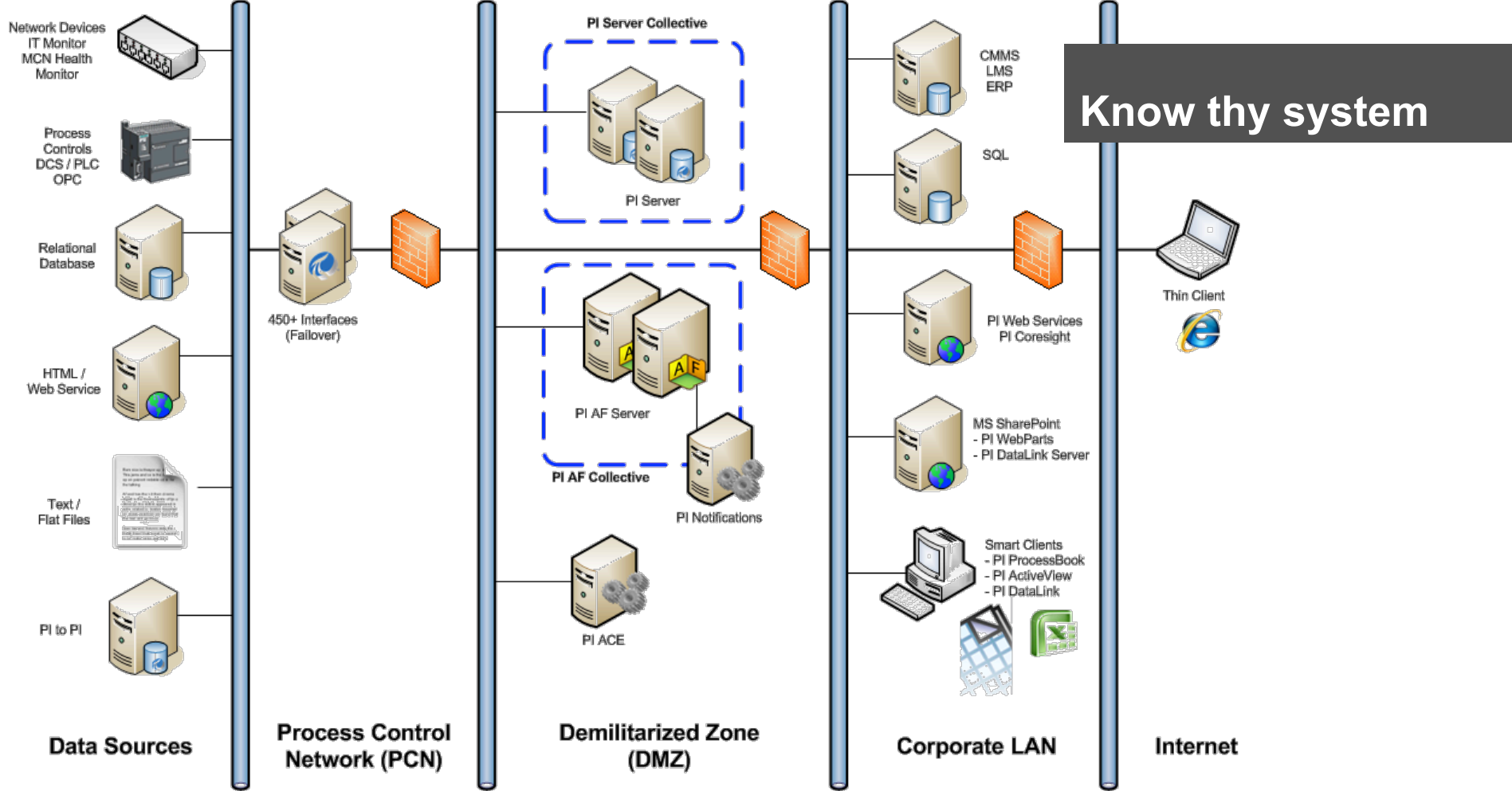
```
10-Apr-13 19:24:04
PI Ping 1> Uniint version> 4.4.5.0
```

Listen to your system: eventvwr



The screenshot shows the Windows Event Viewer application. The left pane displays the tree view with 'Applications and Services Logs' expanded. The right pane shows the 'Overview and Summary' for 'Administrative Events'. A summary table provides a quick overview of event counts across different time periods.

Event Type	Event ID	Source	Log	Last hour	24 hours	7 days
Critical	-	-	-	0	0	0
Error	-	-	-	93	604	2,537
...	-	-	-	--	---	----



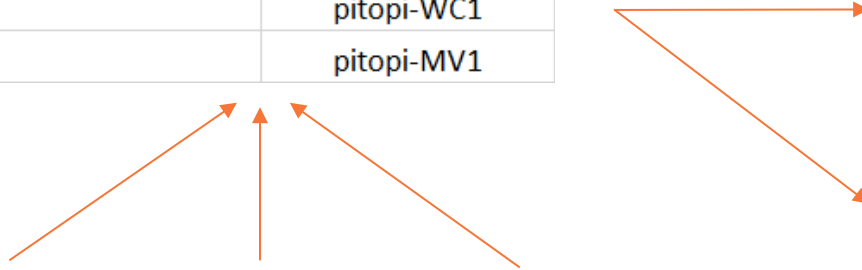
```
1 HQ server HQPI1
2
3 PI to PI - on it's own machine
4
5 site server
6 name Mountain View MtnViewPI
7
8
9 data not matching
0
```

We start simple ...

```
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

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

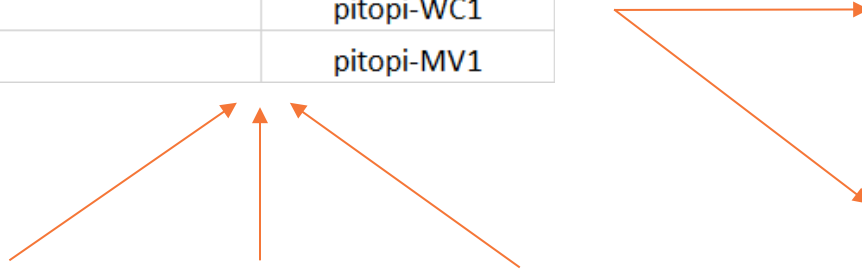


Collective: HQ-PI
HQPI1
192.168.xxx.x01
primary
3.4.385.59 64bit
HQPI2
192.168.xxx.x02
secondary
3.4.385.59 64bit

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

... and build

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



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

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

+12?

... and build

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

36 instances

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

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

+12?

... and build

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

36 instances

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

WAN links

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

+12?

... and build

Search Support

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sql server installation

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1-10 of 709 results Your search took 0.22 seconds.

Sort by: Relevance



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Announcements (9)

Videos (6)

Support Bulletins (5)

Product Grouping

Any Product Grouping

! [Microsoft Security Update KB948109 \(MS08-040\) for SQL Server 2005 SP2 may fail with Error Code](#)

... 2008 Microsoft released a critical security update for **SQL Server** 2005 SP2 on 08-Jul-2008. The update KB948109 (MS08-040) will fail during **installation** with Error Code 0x733F if the **SQL Server** services fail to start. According to the Microsoft support ... [sql.msp.log](#). If you encounter this error during **installation** of the Microsoft update, OSIsoft products using **SQL Server** (for example: Manual Logger 2.x, AF 2.x, etc) will ...
Date: 7/15/2008 Size: 21KB [Preview...](#)

! [Installing RtWebParts v2.0 requires access permissions to SQL Server](#)

Installing RtWebParts v2.0 requires access permissions to **SQL Server** Aug-03-2007 To install RtWebParts v2.0, the logged-in user performing the **installation** must have a domain user account that belongs to the local Administrators group on the SharePoint **server**. Furthermore, if the **SQL Server installation** where SharePoint stores its configuration information is not on the ...
Date: 8/3/2007 Size: 20KB [Preview...](#)

! [SQL Server installation guidelines](#)

Question Answer Does the PI AF **installation** program install **SQL Server**? No. What Microsoft Windows privileges are required ... to manually install the **SQL** objects without help from the **installation** program? Yes. Are **SQL Server** scripts available for review by the DBA prior to running ... specify any paths and database options. Then, either run the **installation** program or run the **SQL Server** scripts manually. See Manually create or upgrade the PI ...
Date: 4/11/2013 Size: 13KB Version: 2012 Platform: Windows [Preview...](#)

Tech Support Search

Search Support

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Refine By: Documentation

Product Grouping

Any Product Grouping

PI Server (166)

PI Interfaces (148)

PI Clients (128)

PI Data Access (65)

Other Products (57)

PI Server Tools and
Utilities (24)PI Interface Tools and
Utilities (15)

PI 2 Server (13)

[SQL Server installation guidelines](#)

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Date: 4/11/2013 Size: 13KB Version: 2012 Platform: Windows [Preview...](#)

[PI 3.4.370 Installation and New Features Guide](#)

... Introduction to PI System Management PI **Server Installation** and Upgrade Guide PI **Server** System Management ... file pisql.ini Initialization settings for the **SQL** subsystem pisql.res Parsing resource for the **SQL** subsystem PISysID.dat **Server** ID data file PISystem.res PI-Performance ... Backup Subsystem Works PI **Server** 3.4.370 **Installation** and New Feature Guide Page 47 Plicmgr The ...
Date: 10/24/2005 Size: 1MB Version: 3.4.370.52 Platform: All Platforms [Preview...](#)

[Install PI AF server when SQL Server has been uninstalled and reinstalled](#)

The PI AF **server installation** is supported on a **SQL Server** computer where **SQL Server** was once removed, then reinstalled. However, this type of **installation** requires special considerations. An error can occur during the **installation** of the PI AF **server** if the **SQL Server** has been uninstalled and reinstalled on a computer where the PIFD database has been created previously. The displayed error ...
Date: 4/11/2013 Size: 10KB Version: 2012 Platform: Windows [Preview...](#)

All Documentation

- System requirements
 - Roles and permissions for use with PI AF
 - Synchronize time settings on PI System computers
- Install or enable OSIssoft prerequisites
 - Download the PI AF setup kit
- ▾ Install Microsoft SQL Server
 - SQL Server requirements
 - SQL Server considerations
 - [SQL Server installation guidelines](#)
- PI Asset Framework installation and upgrade tasks
- Manually create or upgrade the PI AF SQL database
- Install or upgrade PI AF SQL database on a mirrored SQL Server
- Install PI AF Server on Microsoft Cluster Service (MSCS)
- Upgrade PI AF on MSCS
- Create and configure a PI AF collective
- Upgrade a PI AF collective

> [Installation](#) > [PI Asset Framework Installation and Upgrade](#) > [PI AF pre-installation tasks](#) > [Install Microsoft SQL Server](#) > [SQL Server installation guidelines](#)

SQL Server installation guidelines

Question	Answer
Does the PI AF installation program install SQL Server?	No.
What Microsoft Windows privileges are required on the database server for the database installation program?	Optionally, none. The installation of the SQL scripts, as well as verification of the SQL connection,
Is it possible for the DBA to manually install the SQL objects without help from the installation program?	Yes.
Are SQL Server scripts available for review by the DBA prior to running?	Yes. The setup kit installs the SQL scripts to the <code>PTPC\AF\SQL</code> directory and can optionally be installed manually after the installation is complete. Alternately, install on a test system or back up or detach the PIFD database and restore it with the previous installation program.
What SQL Server privileges are required on the database server for the database installation program?	SysAdmin privilege is required if opting for the installation program to create the database. If optional, see Manually create or upgrade the PI AF SQL database .
In a database-only installation, what	None. No files are installed on the database server, other than database files. No registry keys are

PI Live Library

KB Article # KB00772

Quickstart Series - PI OPC Interface: Advise Tag Example

Product: PI OPC DA Interface

Version(s): 2.3.x

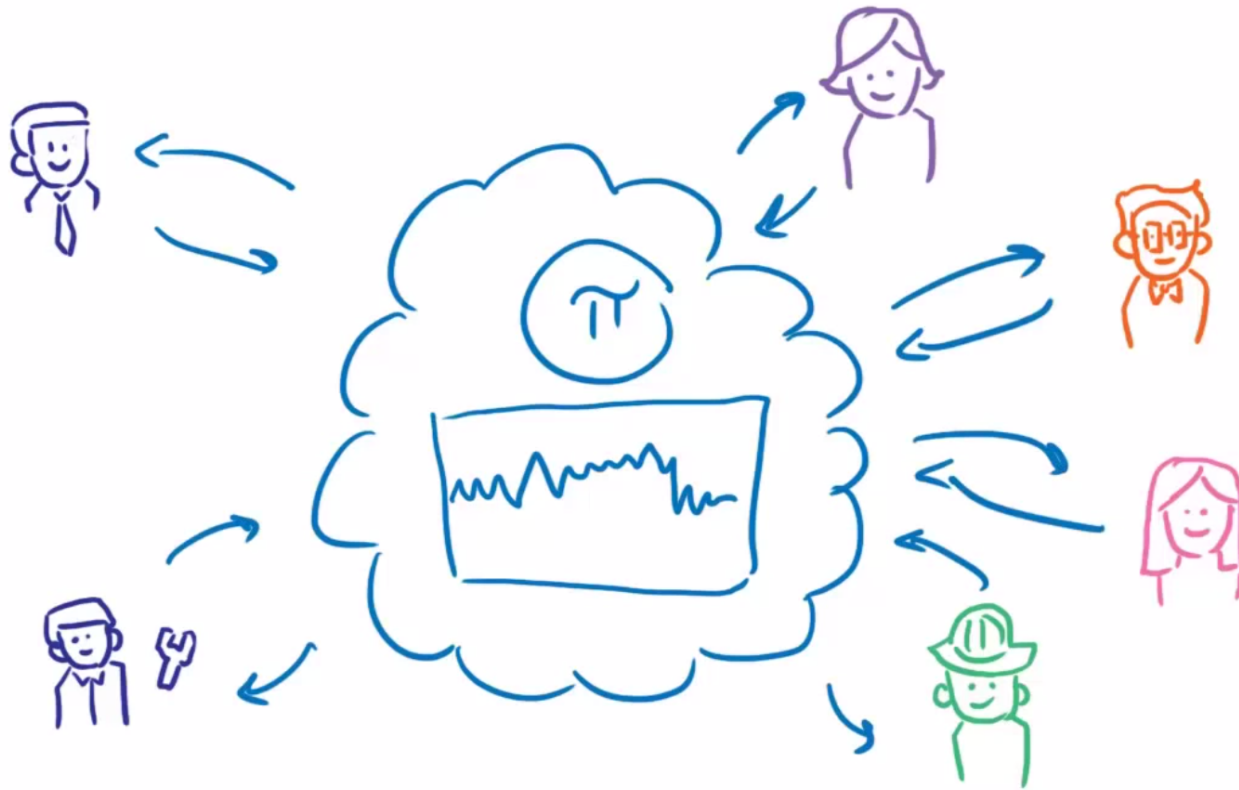
Platform: Windows All

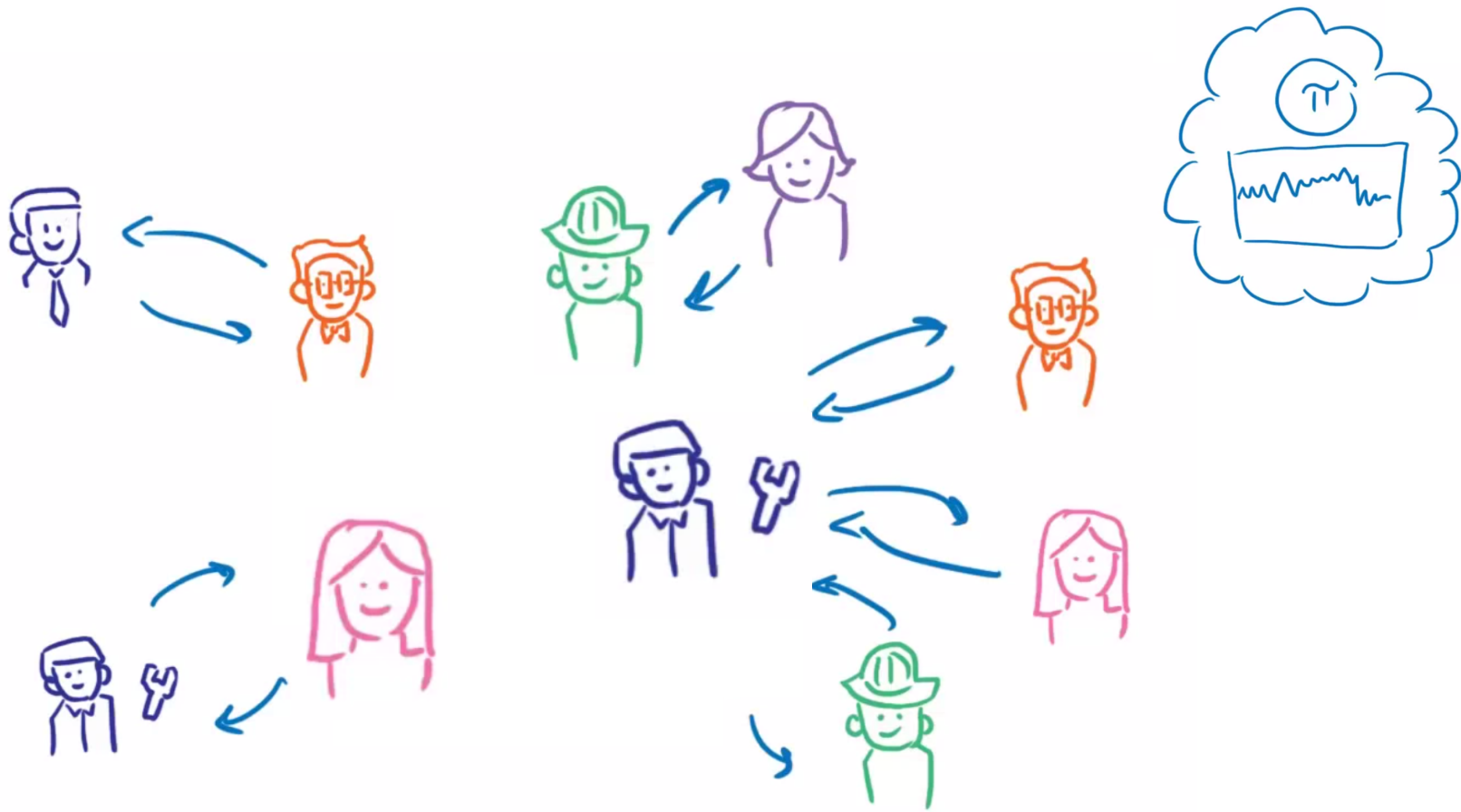
Question

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

Quickstart series

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





community.osisoft.com

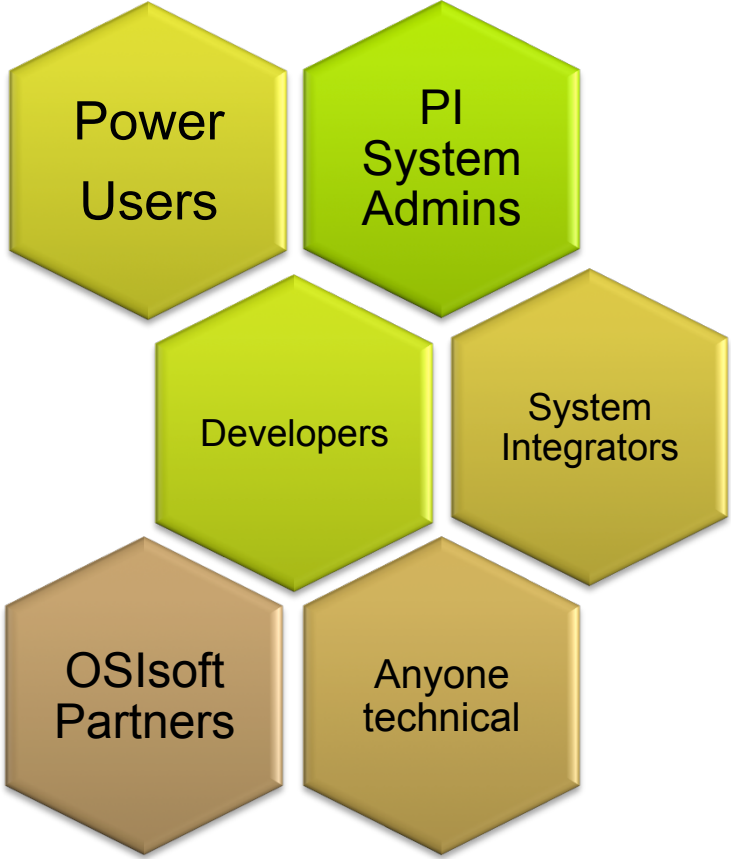
vcampus.osisoft.com

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

 **OSIsoft** DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

vCampus Live! 2013

WHERE PI GEEKS MEET 
SAVE THE DATE



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OSIsoft, LLC

Dirk Veenema

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Team Lead, Technical Support

OSIsoft, LLC



THANK

YOU

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