#### New to PI SDK and AF SDK 2010

**Presented By:** 

Jay Lakumb and Charlie Henze, OSIsoft





Where PI geeks meet...

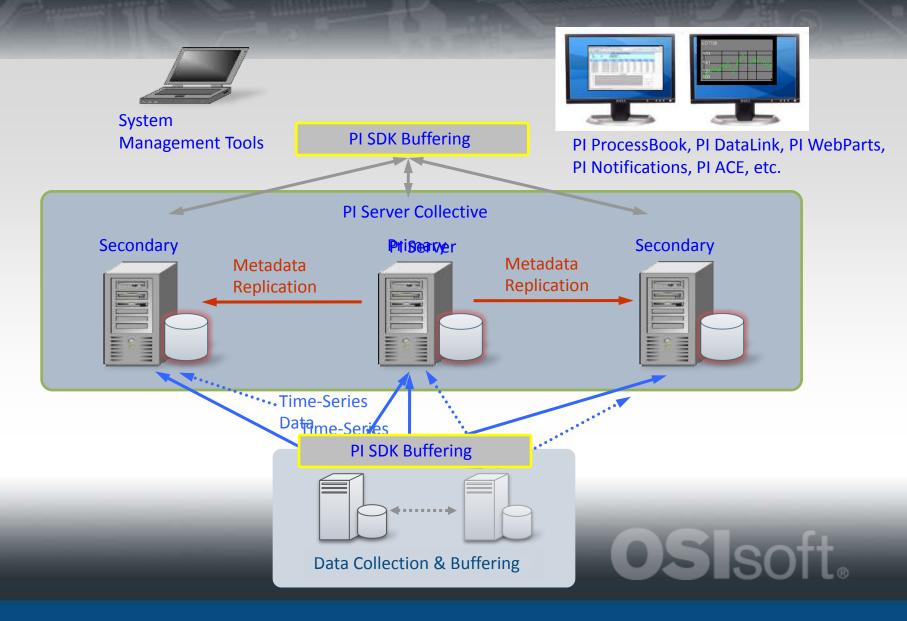
9/23/2010

# **PI SDK Buffering**

- Use Cases
- Functionality
- Demo
- New PI SDK Utility
- Next Steps



# **High Availability**



#### **Use Cases**

- Writing to HA PI Collective (fanning)
- Disconnected writes (buffering)
- Support PI Interfaces, Clients, Analytics, and Data Access
- Support Custom SDK applications



# **Buffering Behavior**

- PI SDK 1.4 installs PI Buffering Subsystem
- Opt-in to enable SDK Buffering at install
- Fanning to all PI Collective members
- Buffering both PI SDK and PI API
- Supports Windows XP and above

#### **PIbufss Service Configuration**

- PIbufss authenticates as PIIdentity or PITrust
- Local System (default) requires machine mapping
- Recommend domain user and automatic startup
- PI Server 2010 requires timeout parameter

Where PI geeks meet.

PI Buffer Subsystem Pre	operties (Local Computer)		×
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Confirm password:	•••••		
Help me configure user	account log on options.		
©20	10 OSIsoft, LLC. All Rights Reserved		

# **Plbufss Configuration Utility**

- Choose buffering of PI SDK and/or API
- Choose one PI Server or PI Collective

🌍 PISDK Bufferin	ig Setup		
Tools			
PI Buffer S	ubsystem Configurat	tion	
Buffering Setting:	Buffer PI-SDK and PI-API Data	•	
Buffered Server/Co	Buffer PI-SDK and PI-API Data Buffer PI-API Data Only Disabled		
Server	Member Type	Enabled	
KODIAK	Primary	<b>v</b>	
Vahvero	Secondary		
	Save	Close	91

Where PI geeks meet...

# **Developing Buffered SDK Apps**

- PIData.UpdateValue and UpdateValues
  - Insert, Reject duplicates modes only
  - Asynchronous mode is supported
  - MemberOpen behavior
  - New error for writing to collective if data is not buffered (edit, delete calls)

#### Message Detail

Successful login ID: 34. Address: fd00::225. Name: pibufss(2696):remote. Identity List: piadmins | PlWorld. Environment Username : R2STD1\PI-InterfaceNode1. Method: Windows Login (SSPI,NTLM)

# **Buffering Demo**

- PI SDK Buffering configuration
- Manual input, Interface stream
- Fanning data to a PI collective
- Buffering data while disconnected



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# **Buffering Limitations**

- One PI Collective or PI Server 3.4.375+
- No support for edits of existing data
  - ReplaceValue, RemoveValues, RemoveSpecifiedValues
- No adding annotations to existing data
- No PI Point, Batch, MDB configuration
- No support for client impersonation
  - Uses Pibufss process identity (not client user account), similar to API BufServ
- Pibufss and BufServ cannot run side-by-side

# **New PI SDK Utility**

- Health and Support utilities
- Configuration and Maintenance
- Replacement for About PI SDK
- Both 32 and 64-bit installations



# **PI SDK Utility Status**

Administrator: PISDK Utility		
<u>File Tools Options</u>	<u>H</u> elp	
<u>File Tools Option</u> PI-SDK About PISDK Connections Current Values Tools Message Log Support Data Error Lookup Fracing Setup KST Cleanup	PISDK Version:	C:\Program Files (x86)\PIPC\pisdk
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	PINS servi	vice process 'pilogsrv;pibufss' is no
	Pre-release versi	ion PIServer Node(x64) (C:\PI)

# **PI SDK Node Information**

Administrator: PISDK Utility		
<u>File Tools Options</u>	<u>H</u> elp	
<ul> <li>PI-SDK</li> <li>About PISDK</li> <li>Connections</li> <li>Current Values</li> </ul>	Use this page to g	Support Information Collector enerate desired PI system support information (files) on selected target directory. ect Individual Items
<ul> <li>Tools</li> <li>Message Log</li> <li>Support Data</li> <li>Error Lookup</li> <li>Tracing Setup</li> <li>KST Cleanup</li> </ul>	Available Categorie Installation Issu Cocal System I Interface Issue Server/Connec Time Range Start time: End time:	ues Issues es ctivity Issues
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#### **PI SDK Current Values**

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#### **Next Steps**

- SDK Buffering datasheet at Product Expo
- PI SDK 1.4.0 CTP will be available on vCampus later this month
- Check your SDK code to determine if any changes are required
- Test with PI Client/Data Access products and your Custom applications
- Send feedback to <a href="mailto:pisdkbeta@osisoft.com">pisdkbeta@osisoft.com</a>

# What's New in AF SDK 2010 (AF 2.2)

**Presented By:** 

#### **Chris Manhard**





Where PI geeks meet...

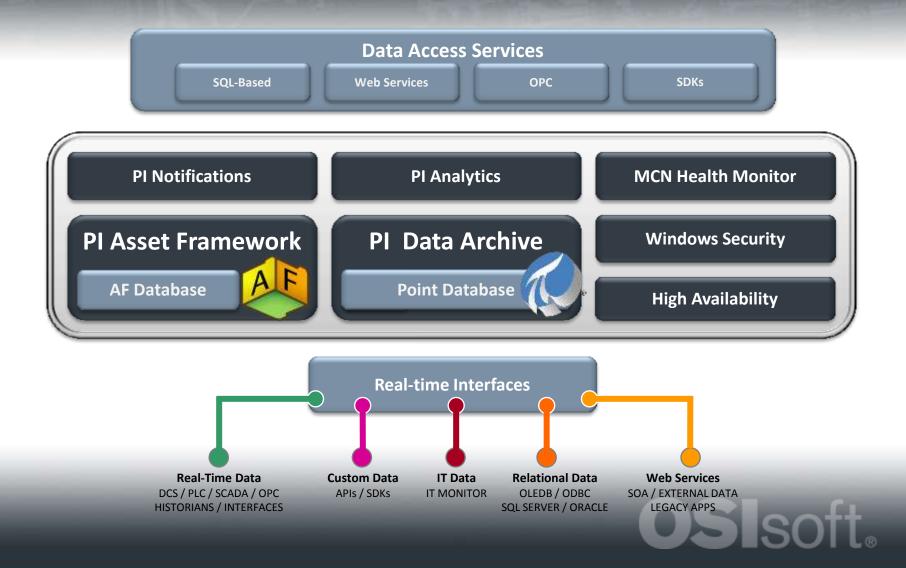
9/23/2010

#### Agenda

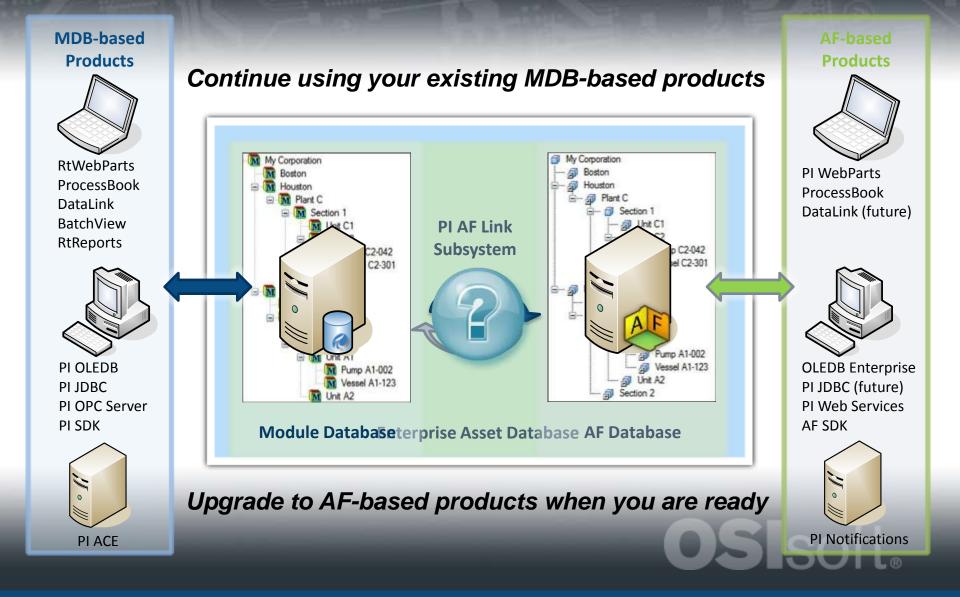
- PI Server 2010 MDB and AF Link
- PI AF Performance and Scalability Enhancements
- PI OLEDB Enterprise / PI Web Services
- Roadmap



#### PI Server 2010



# **Migrating from MDB to AF**



#### **PIAF and MDB**

- PI AF is now the system-of-record for MDB
- PI AF 2010 Enhanced to support demands of two-way multi-threaded synchronization with MDB
- You should develop new asset-based applications using PLAF (AF SDK, PLOLEDB Enterprise, PLWeb Services)
- OSIsoft will maintain support for MDB applications
   PLACE
  - PI Batch
  - Your Applications



#### **Translate MDB paths to PI AF**

 Use OSIsoft.PB.MDB2AFPath Assembly Installed into the GAC with PI ProcessBook 3.2 and PI WebParts 2010.

MDB Path Format:

\\piserver\module
\\piserver\module|alias
\\piserver\module||property

AF Path Format: \\afserver\database\element \\afserver\database\element|attribute

Uses AF Element established by the PI 2010 AF Link sub-system

See "Migrating your application from MDB to AF" at http://vcampus.osisoft.com/Library/library.aspx

#### Add PI AF capabilities to your Applications

- Find / Search
- Bulk Operations
- Notifications
- Templates
- Relational Data

- Units of Measure
- GUI Components
- Relationships and Modeling
- Import / Export
- Custom data sources

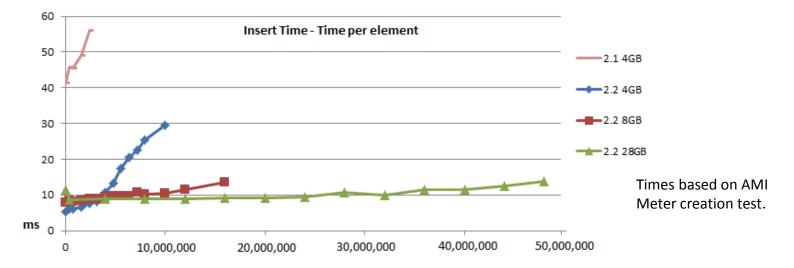
See the Builders' Café Webinar: "Transitioning from ModuleDB to AF".



#### **PIAF Performance & Scalability**

#### Element Creation

- 10x increase in element creation performance
- 10x improvement in element scalability



- Support for roughly 10 million\* templated elements

(\* can vary significantly based on element structure and use)

#### **Large Collections**

Paging of Collections

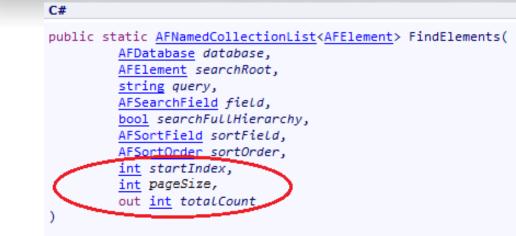
 Support for large element collections

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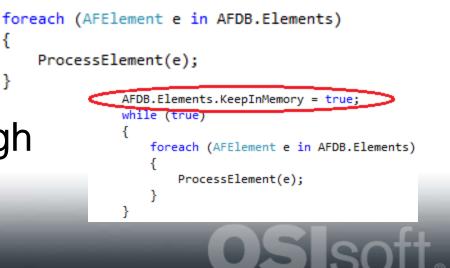
 Improved behavior for applications in which multiple processes/threads add to the same element collection.

# Paging in the PI AF SDK

 All Element Find methods accept parameters for paging.



PI AF SDK will {
 automatically page }
 when iterating through
 large collections.

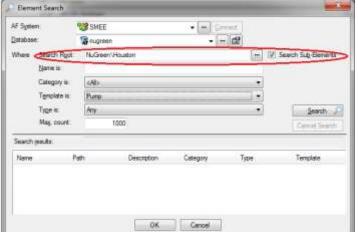


#### **PIAF Search Performance**

#### Search Performance

- Significant improvements in hierarchy searches.

C#
<pre>public static AFNamedCollectionList<afelement> FindElements(</afelement></pre>
AFDatabase database,
AFElement searchRoot.
string nameFilter,
AFCategory elemCategory,
AFElementTemplate elemTemplate,
AFElementType elemType,
<pre>bool searchFullHierarchy, &gt;</pre>
AFSortField sortField,
AFSortOrder sortOrder,
int maxCount
)



- However, it is still significantly faster to search the entire database when possible.

#### **More Performance Enhancements**

- Faster trending of Formula and other "Calculation Data References"
- Attribute.SetValue
- Updating objects
- Deleting Elements
- Finding Parents
- Loading Elements in Bulk
- Multi-threaded operations



# **Paged Collection Demonstration**

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#### **PI OLEDB Enterprise in PowerPivot**

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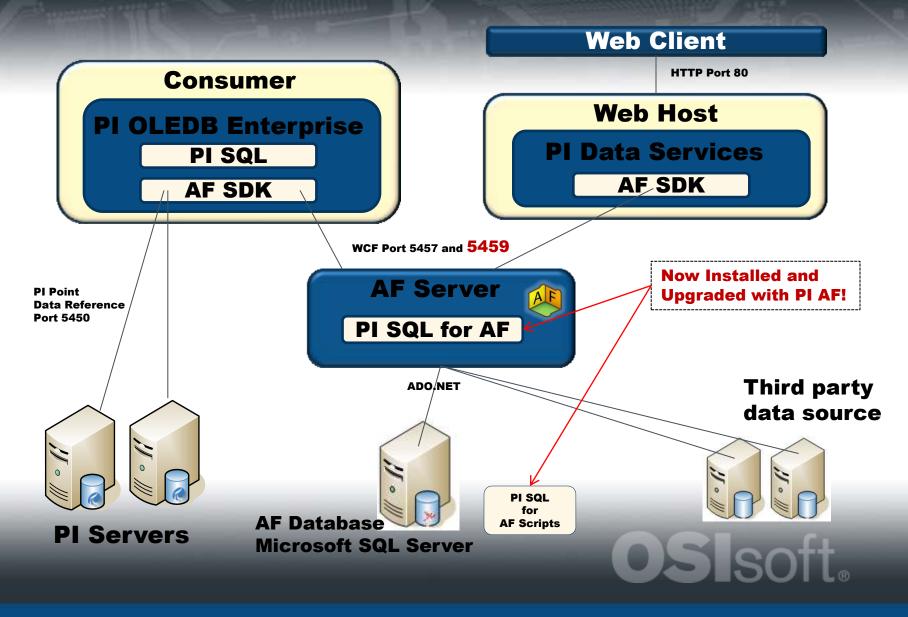
See the Builders' Café Webinar: "Personal BI with PI DataLink and Office 2010".

#### PI OLEDB Enterprise in SQL Server Reporting Services

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B-235	NuGreen	Boiler	3/10/2010 1:65:52 AM	81.8242492675781	2475.15	
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See the Builders' Café Webinar: "PI OLEDB Enterprise 2010".

#### **PIAF / PIOLEDB Architecture**



# **AF SDK Roadmap**

• Upcoming PI AF features in PI AF 2010 R2: AF Builder 1.0 – Excel Add-In for Configuration

- Upcoming PI AF features in PI AF 2011
  - Event Frames
  - Configured Analytics
  - PE functions as a Data Reference



#### **AF Builder Excel Add-In Demo**

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# More AF 2010 Enhancements



# **AF SPN Connection**

- Default WCF mechanism for connecting to AF Server has changed to use an SPN connection
  - You no longer need to specify the server's account in the client when running the AF Server under a domain account (although you can)
  - Can configure Kerberos constrained delegation for connection to AF Server (Double-Hop Issue)

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#### **Other Enhancements**

- Automatic setting of Attribute
   Type based on Point Type
- Change of default Attribute Type in PI System Explorer from String to Double
- PI System Admin now has unrestricted access
- Error Recovery during Import

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Description:					
Configuration Item:					
<u>Categories:</u>					
UOM:	<none></none>				
Value Type:	Single 🔹				
Value:	29.1196289				
Data <u>R</u> eference:	PI Point				
	<u>S</u> ettings				
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