

PI Interface for SIMCA-online

Version 3.0.1.x

OSIsoft, LLC

777 Davis St., Suite 250
San Leandro, CA 94577 USA

Tel: (01) 510-297-5800

Fax: (01) 510-357-8136

Web: <http://www.osisoft.com>

OSIsoft Australia • Perth, Australia

OSIsoft Europe GmbH • Altenstadt, Germany

OSIsoft Asia Pte Ltd. • Singapore

OSIsoft Canada ULC • Montreal & Calgary, Canada

OSIsoft, LLC Representative Office • Shanghai, People's Republic of China

OSIsoft Japan KK • Tokyo, Japan

OSIsoft Mexico S. De R.L. De C.V. • Mexico City, Mexico

OSIsoft do Brasil Sistemas Ltda. • Sao Paulo, Brazil

OSIsoft France EURL • Paris, France

Copyright: © 2001-2014 OSIsoft, LLC. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, mechanical, photocopying, recording, or otherwise, without the prior written permission of OSIsoft, LLC.

OSIsoft, the OSIsoft logo and logotype, PI Analytics, PI ProcessBook, PI DataLink, ProcessPoint, PI Asset Framework (PI AF), IT Monitor, MCN Health Monitor, PI System, PI ActiveView, PI ACE, PI AlarmView, PI BatchView, PI Coresight, PI Data Services, PI Event Frames, PI Manual Logger, PI ProfileView, PI WebParts, ProTRAQ, RLINK, RtAnalytics, RtBaseline, RtPortal, RtPM, RtReports and RtWebParts are all trademarks of OSIsoft, LLC. All other trademarks or trade names used herein are the property of their respective owners.

U.S. GOVERNMENT RIGHTS

Use, duplication or disclosure by the U.S. Government is subject to restrictions set forth in the OSIsoft, LLC license agreement and as provided in DFARS 227.7202, DFARS 252.227-7013, FAR 12.212, FAR 52.227, as applicable. OSIsoft, LLC.

Published: 1/2014

Table of Contents

Chapter 1.	Introduction	1
Chapter 2.	Installing and Configuring the Interface.....	3
	Installing the Interface.....	3
	Configuring the Interface	4
	Installation Directories	6
	Configuring Multiple PI Data Archives	6
	Error and Informational Logging	7
	Tags for SIMCA-online Phases	7
	SIMCA-online Nodes	8
	Configuring Batch Database Settings.....	9
	Configuring Event Frame Settings.....	11
	How SIMCA-online Reads PI Point Data.....	12
	Loss of Connectivity to PI System	12
Appendix A.	Sample Template File	13
Appendix B.	Technical Support and Resources	15

Chapter 1. Introduction

The PI Interface for SIMCA-online enables Umetrics SIMCA-online and SIMCA to read data from the PI System. The interface installer includes both PI SDK and AF SDK versions. The AF SDK version uses Event Frames and the PI SDK uses PIBatches for SIMCA to analyze. The interface provides compatibility with simapi 2.0 for SIMCA-online connectivity.

Chapter 2. Installing and Configuring the Interface

Installing the Interface

To install the interface, download the setup kit for your platform from the OSISoft downloads web page, and run the kit. By default, the interface is installed in %PIHOME%\Interfaces\SimBatchOL\. This interface is implemented as a DLL that is loaded by the SIMCA and SIMCA-online client applications at run time. The interface runs on the following platforms:

- Windows Vista
- Windows 2008 Server
- Windows 2008 R2 Server
- Windows 7
- Windows 8
- Windows 2012 Server

Note: This interface does not require (or support) any PI System buffering mechanisms.

The interface requires PI Data Archive 3.3.0 or higher. The interface requires read/write access to the PI Data Archive. For pre-3.4.380 PI Data Archives, you must define trusts. For version 3.4.380 and higher data archives, you can use Windows integrated security to configure settings. For details about configuring security, refer to the *PI Server System Management* manual.

The part number for this product PI-IN-SIM-BO-NT.

Note: The interface is compatible with PIBaGen, PIEFGen and PI batch framework interfaces. It is not compatible with EVT file-based batch data, because it cannot create SIMCA or SIMCA-online Phase tags.

Configuring the Interface

The PI System provides two technologies for storing batch data: the Batch Database and the more-recently-developed event frame technology, which requires PI AF (asset framework). If you use the Batch Database, PI units and PI Batches are created in the Module Database. If you use event frames, batch data and the equipment assets are generated in PI AF.

Both a 32- and a 64-bit build of the interface are provided. Use the build that corresponds to your SIMCA/SIMCA-online platform. (You cannot use the 32-bit interface with 64-bit SIMCA/SIMCA-online, or vice versa.) In SIMCA-online Server Options or SIMCA Database Import, you must configure the DLL that corresponds to the approach you use, as follows:

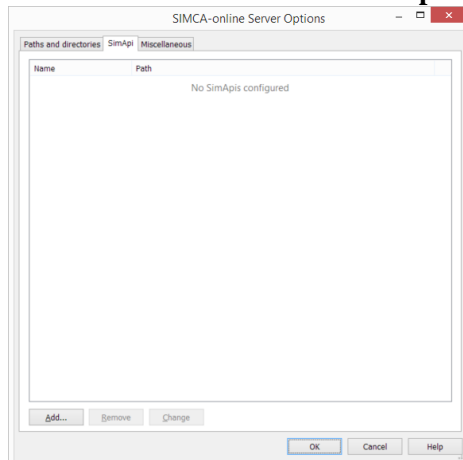
Batch data in PI stored as...	DLL to configure in SIMCA-online Server
Batch database	PISimBatchOL.DLL
Event frames	PISimBatchOLAF.DLL

To determine the platform of an interface DLL using Windows Explorer, right-click the DLL file and choose **Properties**.

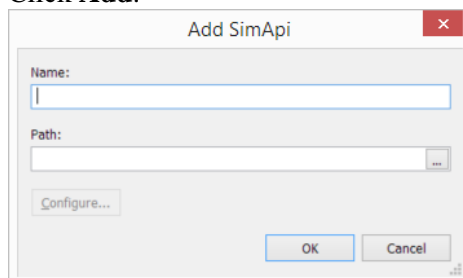
SIMCA-online Configuration

To configure the interface using the SIMCA-online configuration tool, perform the following steps:

1. Start the **SIMCA-online Server Options** program and click the **SimApi** tab.



2. Click **Add**.

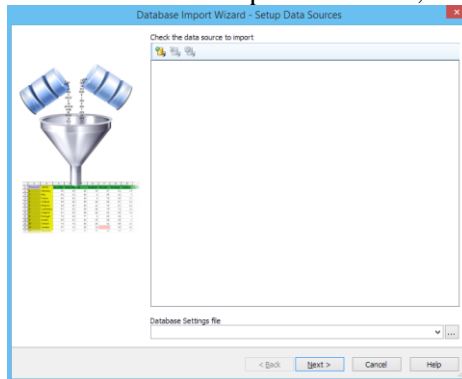



3. When prompted, enter the following settings:
 - o **Name:** Descriptive name. Must be unique and must be a single word (no spaces).
 - o **Path:** Location of the DLL that corresponds to your SIMCA-online platform and the method you use to store batch data, as described above.
4. To set up the interface, click **Configure**. Depending on your platform, the installer launches Notepad for the batch database or a configuration tool for the event frame database where you can specify required settings. For specific information on configuration, see **Configure Batch Database Settings** or **Configure Event Frame Settings**.
5. To save your settings, click **OK**.

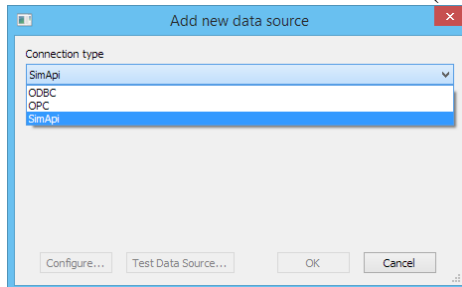
SIMCA configuration

To configure the interface using the SIMCA **Database Import** tool, perform the following steps:

1. In SIMCA, to open the SIMCA Import module click **File, New Regular** (or Batch) **Project**. If a file **Open** dialog appears, close it.
2. Choose Database Import from **File, New Spreadsheet, From Database**.



3. Click on the add data source button () and choose SimApi.



4. Browse to or enter the location of the DLL that corresponds to your SIMCA platform and the method you intend to use to store batch data, as described above.
5. To set up the interface, click **Configure**. Depending on your platform, the installer launches Notepad for the batch database or a configuration tool for the event frame database where you can specify required settings. For specific information on configuration, see **Configure Batch Database Settings** or **Configure Event Frame Settings**.
6. To save your settings, click **OK**.

Installation Directories

Batch Interface

The interface and the documentation are installed in the following location:

C:\Program files\PIPC\Interfaces\SIMCA	For 64 bit Version
C:\Program Files (x86)\PIPC\Interfaces\SIMCA	For 32bit Version

To configure multiple PI Data Archives create a directory for each PI Data Archive, containing a copy of the DLL and the INI file containing the settings for the target PI Data Archive.

Event Frames

Log and configuration files are installed in C:\ProgramData\OSISoft\Interfaces\SIMCA. The directory is created with admin rights. To run with least privileges, the administrator must grant read and write privileges to the user for the directory and the files in it. If the interface fails to start, check the user privileges assigned to the directory, log file and configuration file.

Configuring Multiple PI Data Archives

Batch Database

To configure multiple PI Data Archives:

1. Create a directory for each data archive and copy PISimBatchOL.DLL into it.
2. In the **SIMCA-online Server Options** dialog, configure an entry for each PI Data Archive.
3. Edit PISBOL.INI and create an entry for each PI Data Archive.

Event Frames

To configure multiple PI Data Archives, create a unique entry for each data archive using the **SIMCA-online Server Options** dialog, and then configure each entry with the settings for the target PI Data Archive. For event frame configurations, the log and configuration files reside in C:\ProgramData\OSISOFT\Interfaces\SIMCA.

Error and Informational Logging

Batch Interface

Messages are sent to the local PI Message log.

Event Frames

For SIMCA-online messages are logged in a text file named LOGFILE<*configuration name*>.TXT in C:\ProgramData\OSIsoft\Interfaces\SIMCA.

For SIMCA, messages are logged in a text file named LOGFILE.TXT in C:\ProgramData\OSIsoft\Interfaces\SIMCA.

Tags for SIMCA-online Phases

Note that the Umetrics term “phase” does not have the same meaning as the S88 term. In SIMCA and SIMCA-online, “phase” refers to any level of a batch, whereas in S88, “phase” refers specifically to the level below “operation.”

For this interface, SIMCA-online detects phases (Umetrics terminology, not S88 phases) using data from PI tags. To configure the PI EMDVB interface (or another event-file-driven PI batch interface) to generate the required tags, you must configure a tag template. For example, to configure the interface to create or update a tag when a unit performs an operation in a procedure, specify the template as follows:

```
// Create a Unit Procedure Tag
Tag[23].Name=BESName:[UNIT].PIEvent.UnitBatch.Procedure
Tag[23].Value=[UNITPROCEDURE]
Tag[23].UnitAlias=PIEvent.UnitBatch.Procedure
Tag[23].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=UNITBATCH]
[PVAL,value=START]
// Clear a Unit Procedure Tag
Tag[24].Name=BESName:[UNIT].PIEvent.UnitBatch.Procedure
Tag[24].Value=NULL
Tag[24].UnitAlias=PIEvent.UnitBatch.Procedure
Tag[24].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=UNITBATCH]
[PVAL,value=END]
```

For a more complete template example, refer to [Appendix A](#). For details about composing batch interface templates, refer to the user guide for your PI batch interface.

SIMCA-online Nodes

In SIMCA-online, *nodes* contain data from a data source, in this case, the PI System. *Filter nodes* enable you to access specific sets of batches or event frames. For both the batch database and event frames, *data archive nodes* contain the tags defined in the data archive, and can be searched for PI Batches in a specified time frame. The following table describes how the other types of nodes are populated by the interface, according to the type of batch data you are using.

Batch Interface

Node Type	Description
Data Archive Node	Contain the tags defined in the data archive. Can be searched for PI Batches in a specified time frame.
PI Unit Nodes	Represent a PIUnit. These nodes do not have any tags associated with them
PIBatchFilter Nodes	A configurable node that can defined in the Filter.INI file. Contains PI Batches filtered using the Product or Recipe fields.
PIUnitBatchFilter Nodes	A configurable node that can defined in the Filter.INI file. Contains PI Unit Batches that are filtered using the Product or Recipe fields.

Event Frames

Node Type	Description
Data Archive Node	Contain the tags defined in the data archive. Can be searched for PI Batches in a specified time frame.
Element Nodes	Represents an AF Element and includes a list of tags defined by the data reference attributes.
Element Filter Nodes	A configurable node that contains event frames filtered by reference elements, event frame categories, or event frame template.
System Filter Nodes	A configurable node that contains event frames filtered for one or more reference elements and up to four attributes. For example, to locate event frames for aspirin that was manufactured in San Diego, you can filter on product and location.

Configuring Batch Database Settings

To configure batch database settings, edit the `PISBOL.ini` file, which is a text file that must reside in the interface installation directory. Specify settings as `keyword=value`, ensuring that there are no spaces between the keyword, equals sign, and value. The following settings are supported:

Key	Value
<code>filterfilename=filename</code>	(Optional) Specify the name of the file containing query filters.
<code>server=host</code>	(Required) Specify the name of the PI Data Archive to which the interface connects
<code>debug=0 1</code>	(Optional) To enable logging of debug output, set to "1". By default, debug information is not logged.
<code>trim=0 1</code>	(Optional) To trim white space from event values, set to "1". By default, strings are not trimmed.
<code>batchtimeoffset=#</code>	(Optional) The number of seconds to subtract from the time hint for the batch search time. By default, 1 second is subtracted.
<code>ModulePathList=pathlist</code>	<p>(Optional) To reduce search time and speed up interface initialization, use this setting to specify the location of PIUnits of interest.</p> <p>By default, the interface searches the entire Module Database for PI Units. Most PIUnits of interest to the SIMCA program reside in a small section of the module database. If you configure this setting, only the specified paths are searched.</p> <p>To specify several module paths, use a comma-separated list of paths; for example:</p> <pre>\My Path,\My PiUnitArea\Philly,\AspirinPlant\Area2</pre>
<code>usetrueendutc=true false</code>	<p>(Optional) By default, the SIMCA interface reports the end time of PIUnitBatches using TrueEndTimeUTC. To use the PIUnitBatch end time to report the end time of the PIUnitBatches, set this setting to FALSE.</p> <p>The PI System does not support PIUnitBatches that overlap (in other words, one unit batch begins before its predecessor has ended). To overcome this limitation, the PI EMBDVB batch interface supports the TrueEndTimeUTC setting, which configures it to parse the end time from the text in the Product field, where it is specified using the syntax <code>TrueEndTimeUTC= <end time></code>.</p>

Specifying Filters

To configure the nodes, system nodes, and the data to be associated with them, you create a text file containing *filters*. To define system nodes, you create PIBatchFilter entries. For ordinary nodes, you define PIUnitBatchFilter entries. The filters enable you to select batch events based on data associated with the event. Enter the name of the filter file in the PISBOL.ini file, as described in the preceding section, and configure filter settings as described below.

PIBatch Filters

To define a PIBatch filter, use the following syntax:

```
PiBatchFilter=NodeName BatchIDFilter ProductFilter RecipeFilter
```

Parameters for PIBatchFilter entries are as follows. Note that you can use the * and ? wildcards to specify filters.

Parameter	Description
<i>NodeName</i>	Unique name for SIMCA-online system node.
<i>BatchIDFilter</i>	The batch IDs to be associated with the system node.
<i>ProductFilter</i>	The products to be associated with the system node.
<i>RecipeFilter</i>	The recipes to be associated with the system node

For example, the following filter creates a system node named “MyRecipe” that contains all batches of aspirin.

```
PiBatchFilter=MyNode * MyProduct ASPIRIN
```

PIUnitBatch Filters

To define a PIUnitBatch filter, use the following syntax:

```
PiUnitBatchFilter=NodeName UnitFilter UnitBatchIDFilter  
ProductFilter ProcedureFilter SubBatchFilter
```

Parameters for PiUnitBatchFilter entries are as follows. Again, you can use the * and ? wildcards to specify filters.

Parameter	Description
<i>NodeName</i>	Unique name for SIMCA-online node.
<i>UnitFilter</i>	The PI Units to be associated with the node.
<i>UnitBatchIDFilter</i>	The unit batch IDs to be associated with the node.
<i>ProductFilter</i>	The product IDs to be associated with the node.
<i>ProcedureFilter</i>	The procedure IDs to be associated with the node.
<i>SubBatchFilter</i>	The PI subbatches to be associated with the node.

Configuring Event Frame Settings

To configure SIMCA/SIMCA-online to read batch data from PI event frames, launch the PISimBOLAF configuration tool, which is installed with the interface, and configure settings as described in the following sections.

Main Tab

Enter settings as follows.

Field	Description
Current Configuration	User-assigned name for the configuration.
AFServer	Name of the PI AF server where batch-related elements and event frames reside.
AFDatabase	Name of AF database from which event frames and elements are to be read. An AF Server can contain multiple databases.
PIServer	Name of the PI Data Archive.
Element Category	AF category assigned to the AF elements of interest, enabling the interface to filter them into the corresponding SIMCA node.
Logging	Level of logging verbosity.

Element Filter Nodes Tab

Element filter nodes are named nodes that are used to filter event frames using reference elements, event frame categories, or templates. These nodes have no tags associated with them. On the **Element Filter Nodes** tab, you configure nodes that contain unit batches from the PI System. For each node that you want to view in SIMCA/SIMCA-online, click **Add** and enter settings. To edit an existing node, click the node, enter your changes and click **Apply**.

Field	Description
Node Name	The name of the node to be displayed in SIMCA-online
Name Filter	Name of the PI AF elements of interest. You can use the * and ? wildcards to specify this setting.
Category Name	The AF category that is assigned to event frames of interest. You can use the * and ? wildcards to specify this setting.
Element Template Name	The AF template on which the element is based.
Reference Element Filter	PI AF element to be used to filter event frames. You can use the * and ? wildcards to specify this setting.

SystemFilterNode Tab

System nodes contain batches from the PI System. *System filter nodes* are named nodes that filter event frames using one or more reference elements and up to four attributes. For example, to find event frames for aspirin manufactured in San Diego, filter on attributes for product and location. System filter nodes have no tags associated with them.

To configure a system node on the **SystemFilterNode** tab, click **Add** and enter settings. To edit an existing node, click the node in the list of nodes, enter your changes and click **Apply**.

For each system node, you can configure a set of searches, enabling the interface to aggregate multiple PI batches under a single SIMCA-online system node.

Field	Description
Node Name	The name of the node to be displayed in SIMCA-online .
Name Filter	Name of the PI AF elements of interest. You can use the * and ? wildcards to specify this setting.
Reference Element Filter	PI AF element to be used to filter event frames. You can use the * and ? wildcards to specify this setting.
Element Template Name	The template on which the PI AF element is based.
Search Attributes	
Name	User-assigned name for the search.
Element Template	The template on which event frames of interest are based.
Attribute Path	The event frame attribute that contains the product for the batch.
Operator	The type of comparison to be performed.
Compare Value	The value to which the value in the product attribute is compared for filtering

How SIMCA-online Reads PI Point Data

The PI System provides several ways for an interface to read point data. SIMCA-online uses the following approaches, according to the type of data you are plotting:

- **Current data:** SIMCA-online reads the *snapshot* value of tags, which is the value AFTER interface exception processing and BEFORE PI Data Archive data compression.
- **Historical data:** When plotting data for a time interval, the data read by SIMCA/SIMCA-online includes *interpolated* values, which are calculated values that are provided to ensure a smooth plot line.

If you are checking SIMCA-online data against PI System data using the PI DataLink Excel plug-in, be advised that DataLink reports actual archived values, which means you might see discrepancies with interpolated values read by SIMCA-online.

Loss of Connectivity to PI System

If SIMCA-online for some reason loses its connection with the PI System, it attempts to reconnect. All SIMCA-online configurations that depend on data from the PI Data Archive stop their execution, and you must restart execution manually when the PI System is again accessible.

Appendix A. Sample Template File

To detect the start and end of the phases that compose a batch, you can configure SIMCA-online to read PI points created and updated by PI batch interfaces using templates. Templates define how a PI batch interface creates and updates PI tags based on incoming data from the BES data source, specifying how the tag is named, what BES events trigger an update, and what data is written to the tag when an update is triggered.

The following template illustrates how to configure the PI batch interface to create points containing the batch-related events required by SIMCA-online. For each phase, the template contains two entries, one for the start event and one for the end event. For detailed information about templates, consult the user guide for your PI batch interface.

```
// Create a BatchID Tag

Tag[11].Name=BatchID:[PROCEDURE]
Tag[11].Value=[BATCHID]
Tag[11].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=BATCH]
[PVAL,value=START]

Tag[12].Name=BatchID:[PROCEDURE]
Tag[12].Value=NULL
Tag[12].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=BATCH]
[PVAL,value=END]

// Create a Unit Active Tag
Tag[21].Name=BESName:[UNIT].PIEvent.UnitBatch.Active
Tag[21].Value=1
Tag[21].Type=integer
Tag[21].UnitAlias=PIEvent.UnitBatch.Active
Tag[21].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=UNITBATCH]
[PVAL,value=START]

Tag[22].Name=BESName:[UNIT].PIEvent.UnitBatch.Active
Tag[22].Value=0
Tag[22].Type=integer
Tag[22].UnitAlias=PIEvent.UnitBatch.Active
Tag[22].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=UNITBATCH]
[PVAL,value=END]

// Create a Unit Procedure Tag
Tag[23].Name=BESName:[UNIT].PIEvent.UnitBatch.Procedure
Tag[23].Value=[UNITPROCEDURE]
Tag[23].UnitAlias=PIEvent.UnitBatch.Procedure
Tag[23].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=UNITBATCH]
[PVAL,value=START]
```

```
// Create a Operation Active Tag
Tag[31].Name=BESName:[UNIT].PIEvent.Operation.[OPERATION].Active
Tag[31].Value=1
Tag[31].Type=integer
Tag[31].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=OPERATION]
[PVAL,value=START]

Tag[32].Name=BESName:[UNIT].PIEvent.Operation.[OPERATION].Active
Tag[32].Value=0
Tag[32].Type=integer
Tag[32].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=OPERATION]
[PVAL,value=END]

// Create a Phase Active Tag
Tag[41].Name=BESName:[UNIT].PIEvent.[OPERATION].Phase.[PHASE].Active
Tag[41].Value=1
Tag[41].Type=integer
Tag[41].UnitAlias=PIEvent.Phase.Active
Tag[41].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=PHASE]
[PVAL,value=START]

Tag[42].Name=BESName:[UNIT].PIEvent.[OPERATION].Phase.[PHASE].Active
Tag[42].Value=0
Tag[42].Type=integer
Tag[42].UnitAlias=PIEvent.Phase.Active
Tag[42].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=PHASE]
[PVAL,value=END]

// Create a Phase ID Tag
Tag[51].Name=BESName:[UNIT].PIEvent.[OPERATION].Phase.[PHASE].ID
Tag[51].Value=[PHASE]
Tag[51].UnitAlias=PIEvent.Phase.ID
Tag[51].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=PHASE]
[PVAL,value=START]

Tag[52].Name=BESName:[UNIT].PIEvent.[OPERATION].Phase.[PHASE].ID
Tag[52].Value=NULL
Tag[52].UnitAlias=PIEvent.Phase.ID
Tag[52].Trigger=[EVENT,value=PIEVENT] [DESCRIPT,value=PHASE]
[PVAL,value=END]
```

Appendix B. Technical Support and Resources

The [OSIsoft Technical Support](#) website offers additional contact options for customers outside of the United States.

When you contact OSIsoft Technical Support, be prepared to provide this information:

- Product name, version, and build numbers
- Computer platform (CPU type, operating system, and version number)
- Time that the difficulty started
- Log files at that time
- Details of any environment changes prior to the start of the issue
- Summary of the issue, including any relevant log files during the time the issue occurred

The [OSIsoft Virtual Campus \(vCampus\)](#) website has subscription-based resources to help you with the programming and integration of OSIsoft products.

