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Experion PKS

Experion Cluster Communication for ACE Interface Reference

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Release 431

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Document	Release	Issue	Date
EPDOC-XX13-en-431A	431	0	February 2015

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Contents

1 About This Document

This document provides information for using an Inter Cluster Gateway for communication between two Experion clusters.

Revision history

Revision	Date	Description
A	February 2015	Initial release of the document.

Related topics

"Release Information" on page 6

1.1 Release Information

Document Name	Document ID	Release Number	Publication Date
Experion Cluster Communication for ACE Interface	EPDOC-XX13-en-431A	431	February 2015

2 Functional Overview

Related topics

“Inter Cluster Communication” on page 8

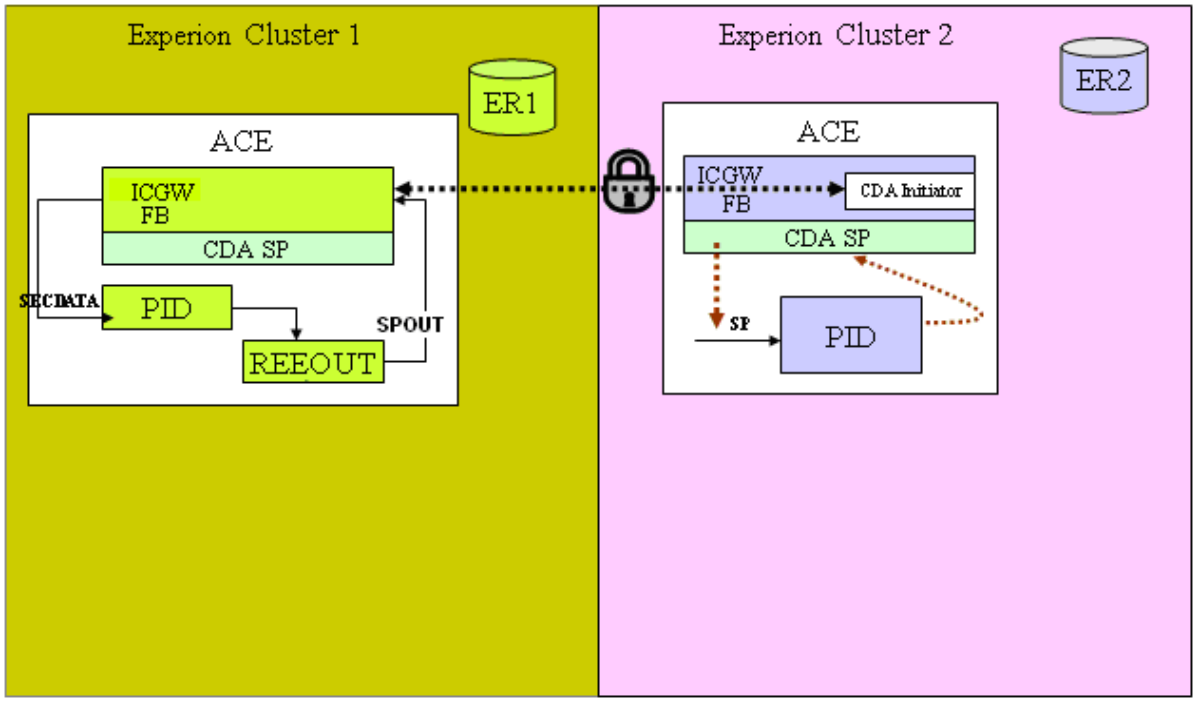
2.1 Inter Cluster Communication

The Inter Cluster Gateway lets you establish communications between Experion clusters using the following function blocks and control strategy configuration modification.

This solution consists of the following components and configuration changes:

- The Inter Cluster Gateway block
- The “The REEOUT Function Block” on page 31 Function Block
- SP push to the configuration of existing function blocks

The relationship of these elements is illustrated below



3 Definitions

Related topics

“Inter Cluster Gateway Terms and Abbreviations” on page 10

3.1 Inter Cluster Gateway Terms and Abbreviations

ACE	Abbreviation for Application Control Environment supervisory controller.
Experion Cluster	An Experion cluster is a group of Experion nodes associated with the same server. For example., Level 1 nodes such as controllers and Level 2 nodes such as the server and operator stations
ERDB	Engineering Repository Database
I-C Client	Inter Cluster Gateway client component. This block provides access to external data. The I-C Client can only be connected to an I-C Server.
I-C Server	Inter Cluster Gateway server component. This block makes CDA data in one Experion cluster available to ICG (I-C client) as well as existing OPCG blocks, if applicable.
Inter Cluster Gateway	Inter Cluster Gateway, consists of client component (I-C client) and a server component (I-C Server)
ICG	Abbreviation for Inter Cluster Gateway
OPC Gateway	A block which can be connected to an OPC Server to retrieve data. The OPC Gateway block can also be connected to an ICG (I-C Server) by using the '*Hci.OPCGateway*' progID. The ICG to OPCG configuration is intended primarily to accommodate existing clusters that already include a licensed OPC Gateway function.
OPCG	Abbreviation for OPC Gateway.
REEOUT	Remote EEOUT function block, a block used to support ACE-to-ACE regulatory control cascades between Experion clusters.

4 Using the Inter Cluster Gateway for Communication between Experion Clusters

The Inter Cluster Gateway (ICG) serves as a communication bridge between the Application Control Environment (ACE) (or Simulation-Application Control Environment (SIM-ACE)) supervisory controllers in two separate Experion clusters.

The ICG supports dual roles, server and client. Every ICG block acts as an I-C Server that can be connected to an ICG block acting as an OPC client (I-C Client) or by an OPCG block, if applicable.

Related topics

4.1 Getting Started

This section identifies the tasks that you need to complete to prepare the ICG for operation. The following table lists the tasks in the order that they are to be completed and includes a link to reference data, where applicable.

Task	Link or Reference
Install the Experion R300 or greater software on the Experion Server	See the *Software Installation User's Guide.*
Install the Application Control Environment (ACE) software version R300 or greater on the computer to be designated as the ACE node. The ICG executable is installed with the ACE software.	See the *Software Installation User's Guide.*
Review ICG Configuration Guidelines	“Inter Cluster Gateway Configuration Guidelines” on page 13
Review ICG usage guidelines	“When to use Inter Cluster Gateway” on page 14
Execute appropriate build, load and activation instructions	“Using the Inter Cluster Gateway for Communication between Experion Clusters” on page 11

4.2 Inter Cluster Gateway Configuration Guidelines

- An ICG is required for each Experion cluster, which contains blocks that are secondary to another Experion cluster.
- The primary Experion cluster requires an I-C Client configured to talk to the I-C Server. The primary Experion cluster can be used as an I-C Server, if there is a need for bi-directional control cascade or data transfer.
- There can only be one ICG per ACE.
- The ACE node hosting the ICG may also host OPC Gateways. Up to15 gateways of either type can be hosted by the ACE.

4.3 When to use Inter Cluster Gateway

The Inter Cluster Gateway shares common infrastructure with the OPC Gateway. The following section describes when each block should be used.

The ACE interconnections possible using the OPCG, ICG, and the “The REEOUT Function Block” on page 31, UCNOUT, and HIWAYOUT function blocks are summarized in the following table.

	ACE-UCN	ACE-ACE (different Experion cluster)	ACE-DataHiway (different Experion cluster)
Connect to	TPN Server	Inter Cluster Gateway	Inter Cluster Gateway
Whole arrays	Yes	Yes	Yes
Control cascade	UCNOUT	“The REEOUT Function Block” on page 31	HIWAYOUT

When communicating between Experion clusters, it is required that the Inter Cluster Gateway block is configured and loaded in the secondary Experion cluster. The primary Experion cluster only uses the I-C Client. The primary Experion cluster could also use the I-C Server component, if there is a need for bi-directional control cascade or data transfer.

In the primary Experion cluster, the ICG block needs to be activated to enable communication. The secondary Experion cluster's ICG block makes data available as soon as it is loaded. It only needs to be activated if it is also being used as a client.

Without the use of Inter Cluster Gateway, the OPC Gateway block can be connected to the Experion OPC server in another Experion cluster to access data. The following table displays when an ICG might be needed.

	Experion OPC Server	Inter Cluster Gateway
Connect to	HwHsc.OPCServer	Hci.OPCGateway
Simple data	Yes	Yes
Whole arrays	No	Yes
Control cascade	No	Yes
Access Level (Continuous Control)	No	Yes

4.4 Reviewing Inter Cluster Gateway Functional Characteristics

The IC Gateway operates as a bridge/translator between the Control Data Access (CDA) communications protocol between two Experion systems.

Both Experion clusters can contain an ICG if there is a need for bi-directional control cascade or data transfer, as illustrated in the following figure.

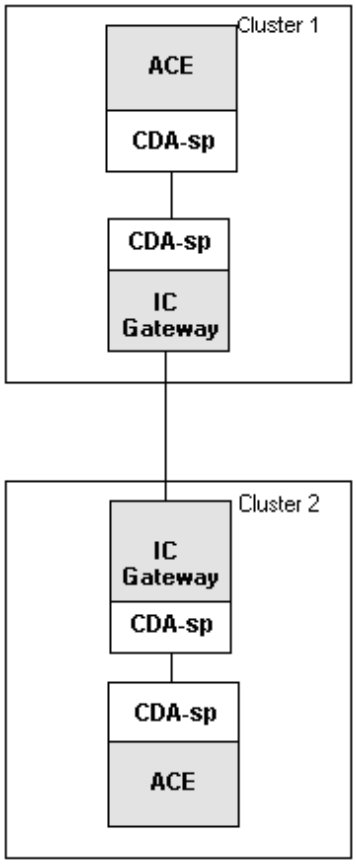


Figure 1: IC Gateway Functional Architecture

4.4.1 Status monitoring and reporting

The IC Gateway can monitor and report its own status, the status of the communications with the target OPC server, and various other communications related statistics, such as CDA peer/display statistics, that other supervisory controllers provide. It can issue alarms and notifications through the following common system venues.

- Color changes in block icons on the **Monitoring** tab
- Alarm Summary display in Station
- Event Summary display in Station
- Error messages
- Error handling log files
- Applicable tabs on the block's Parameters form in the Monitoring mode.

4.5 Creating Inter Cluster Gateway Block

Use the following procedure to create an ICG block in the **Project** tab of Control Bulider This block represents the ICG software installed on an ACE node.

- You have used Control Builder before to create function blocks in the **Project** tab.
- You know what the Internet Protocol (IP) addresses are for the computers hosting the ICG and the I-C server.
- You can use the names for the computers hosting the ICG and the I-C server and let the system resolve the names into IP addresses. However, using the IP address results in a more robust configuration and minimizes the possibility of many error conditions occurring.

Prerequisites

You have installed R300 software or greater on your Experion Server.

You have logged on with sufficient privileges required to configure a control strategy in Control Builder.

You have configured assets through the Enterprise Model Builder.

You have launched Control Builder through Configuration Studio.

To create an ICG block

1 On the **File** menu, click **New** > **External Servers** > **ICG - Inter Cluster Gateway**

2 In the **Tag Name** field, type a unique name for the block or accept the default name. Press the **Tab** key.

3 In the **Item Name** field, type the name of the Entity that this node will be associated with in the Enterprise Model Builder hierarchy

4 In the Inter Cluster Gateway Location **Host IP Address** field, type the IP address for the computer hosting the ICG function. Press the **Tab** Key.

5 In the Inter Cluster Gateway Location **Host Name** field, check that the name of the computer is correct for the entered IP Address. The name should be entered automatically, if the Server is connected to the ACE node containing the ICG. If not, type the name of the host computer. Press the **Tab** key.

6 In the **Inter Cluster Location > Server Host IP Address** field, type the IP address for the computer hosting the I-C Server that is communicating through this ICG. Press the **Tab** Key.

7 In the **Inter Cluster Location > Server Host Name** field, check that the name of the computer is correct for the entered IP Address. The name should be entered automatically, if the Server is connected to the ACE node containing the OPC Gateway that is connected to the OPC server. If not, type the name of the host computer. Press the **Tab** key.

> **Tip**
> The PROGID field is not configurable for the ICG , when using an OPC Gateway block to connect to an ICG, use 'Hci.OPCGateway'

8 Click the **Alarming Enabled** check box to select (enable) the option. Or, clear the check box to disable the option.

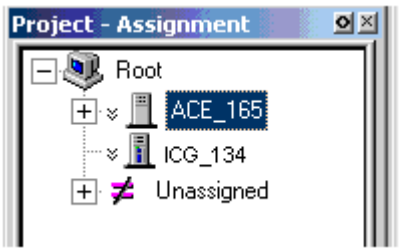
9 Click the **Alarming JOURNAL ONLY** check box to select (enable) the option. Or, clear the check box to disable the option

10 Click the Convert Time Values to UTC check box to select (enable) the option. Or, clear the check box to disable the option.

11 Click the remaining tabs in succession and click the **Help** button for more information about a parameter entry field on a given tab.

12 Click the **OK** button to close the **Inter Cluster Gateway Block Parameters** form and save your configuration entries.

13 Check that the icon for the ICG block now appears in the **Project** tab. For example:



14 This completes the procedure.

4.6 Loading Inter Cluster Gateway Block

Use the following procedure to load an ICG block to its host computer.

- You can right-click the ICG block icon and select **Load** from the shortcut menu or just click the **Load** button in the toolbar with the block selected, as alternate methods to open the **Load Dialog**.
- The ICG must be loaded on an ACE; only one ICG can be loaded to a given ACE.
- Control Builder does not validate the addresses for the hosting computers when the ICG block is configured. If you configure an invalid address for the ICG host computer, the ICG block will fail to load and Control Builder will generate the appropriate error message during load. If you configure an invalid address for the I-C server host computer, the ICG block will load but it will report a communications error when trying to establish connections to the I-C server.
- If any load error is detected, it is best to resolve the error before continuing with the load.
- The ICG has a fixed 2-second execution cycle after it is loaded. The execution cycle is just for calculating statistics and polling for incoming requests from CDA. It does not have any implications for determinism within the ICG. Communications between the ICG and the I-C server are not bound by an execution cycle.
- The following procedure assumes that this is the initial load of an ICG block. The procedure for a re-load is similar but the loaded ICG must be in its **Idle** state and the data fields on the **Load** dialog will reflect current operation status.

Prerequisites

- You have created an ICG block as outlined in the previous section.
- ICG is configured to load on an ACE.
- You have made the network medium connections.

To load an ICG block

1. On the **Controller** menu, click **Load**.
2. **On the Load Dialog, be sure the check box in the Load column is selected, the name of the ICG block appears in the Load List column, Not Loaded appears in the Current State column for initial block load, N/A appears in the State to Load column, and N/A appears in the Post Load State column**
3. Click the **OK** button.
4. Monitor load progress through the **Load** dialog. Any detected load errors will appear in the **Errors** list box on the dialog.
5. Once the load completes, click the **Monitoring** tab to view the loaded OPC Gateway block icon.
6. This completes the procedure.

4.7 Using Color Coded Icon to determine Inter Cluster Gateway status

The following table defines the state of the ICG based on the color of its block icon in the **Monitoring** tab.

If Icon Appears Like This. . .	Then, State Name Is. . .	And, It Means This. . .
	Unable To Determine State	Control Builder is unable to get state information for the ICG from CDA Server. This is typical of a CDA Server failure.
	Idle	The ICG is loaded and ready to be put into the active state. The I-C Server part of the ICG is operational. The connection with the I-C Server is not open. Store requests received in this state will be marked as StoreFailed and fetch requests will be marked with a bad status and set to failsafe values.
	Loaded But Not Available	The ICG has been loaded but the executable (opcgateway.exe) is not running. This is typical if the execution program fails but CDA-sp remains active.
	No Communication	The ICG node is not communicating with the CDA Server. This is typical if CDA-sp (and possibly the ICG execution program as well) has failed or stopped running.
	Active	The ICG is active and processing data. The I-C Server part of the ICG is operational.
	OPC Communications Error	Need to alert the operator that some I-C communications error has occurred at the ICG. The I-C Server part of the ICG is operational.

4.8 Changing State of Inter Cluster Gateway

The following table summarizes how to change the state of the ICG through the loaded ICG block in the **Monitoring** tab of Control Builder. You can also make the same changes though the Detail Display for the ICG in Station.

If Current State Is. . .	And You Want to Change State to. . .	Then, Do This. . .
Idle 	Active 	Click ICG icon in **Monitoring** tab. On the **Runtime** menu, Click **Activate** > **Selected Item(s)**.
Active 	Idle 	Click ICG icon in **Monitoring** tab. On the **Runtime** menu, Click **Inactivate** > **Selected Item(s)**.

4.9 Monitoring Inter Cluster Gateway Status through Control Builder

The Parameters form for the ICG block includes various tabs that provide access to parameters for configuration through the **Project** tab and for monitoring through the **Monitoring** tab. Use the following procedure to access the Parameters form for a loaded ICG block in the **Monitoring** tab. This procedure assumes that you have logged on to Control Builder and have loaded your control strategy to the controller.

- You can only view ICG blocks in **Monitoring** tab set for the **Assignment** view. The **Assignment** view displays the relationship among all blocks while the **Containment** view only displays templates that contain other templates or Control Modules (CM), Sequential Control Modules, (SCM) and basic blocks. To toggle the view, right-click in an open area of the tab window and select **Assignment View** or **Containment View** from the shortcut menu, as applicable.
- You can right-click the ICG block icon and select **Module Properties** from the shortcut menu or on the **Edit** menu, click **Module Properties** with the block selected, as alternate methods to open the **Parameters** form.

Prerequisites

- You have launched Control Builder through Configuration Studio.
- You have loaded the ICG block to the ACE node.

To monitor ICG block

1. In Control Builder, click the **Monitoring** tab.
2. Double-click the ICG block icon.
3. On the **Inter Cluster Block Parameters** form, click the tab you want to view. The **Main** tab opens by default.
4. Repeat Step 3 to view other tabs, as desired.
5. When finished viewing, click the **OK** button.
6. This completes the procedure.
   Refer to the *Control Builder Parameter Reference* for more details on a given parameter.

4.9.1 Viewing Main tab

The following table summarizes the parameter data you can monitor on the **Main** tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG block Parameters** form **Main** tab through the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Tag Name	NAME	Project Only	System assigned or user configured unique name. Consisting of up to 16 characters and at lease one character must be a letter (A-Z).
Item Name	Item Name	Project Only	The name of the item that this object will be associated with in the Enterprise Model Builder hierarchy. The name can be up to 40 characters long and at least one character must be a letter (A-Z).
Description	DESC	Yes	Descriptive text appears on detail and group displays to uniquely describe this particular function block.

Plain Text	Parameter Name	User Configurable	Notes
Host IP Address	GWHOSTIPPRI	Project Only	Inter Cluster Gateway Host IP Address - Identifies the machine that hosts the Inter Cluster Gateway. Using an IP address instead of host name will result in the most robust and least error-prone network configuration for the communications.
Host Name	GWHOSTNAMEPRI	Project Only	Inter Cluster Gateway Host Name - Identifies the machine that hosts the Inter Cluster Gateway. Using an IP address instead of host name will result in the most robust and least error-prone network configuration for the communications.
Server Host IP Address	HOSTIPPRI	Project Only	Host IP Address - Identifies the machine that the Inter Cluster Gateway will communicate with as a client. This field should be filled in with the same value as GWHOSTIPPRI when using the Inter Cluster Gateway in conjunction with an OPC Gateway block, or it should be filled in with the name of the other Experion cluster's Inter Cluster Gateway when using two Inter Cluster Gateway blocks.
Server Host Name	HOSTNAMEPRI	Project Only	Host Name - Identifies the machine that the Inter Cluster Gateway will communicate with as a client. This field should be filled in with the same value as GWHOSTNAMEPRI when using the Inter Cluster Gateway in conjunction with an OPC Gateway block, or it should be filled in with the name of the other Experion cluster's Inter Cluster Gateway when using two Inter Cluster Gateway blocks.
Gateway Command	GWCOMMAND	Monitoring Only	Lets user issue applicable command to the OPC Gateway executable.
Gateway State	GWOPCGSTATE	No	The current state of the OPC Gateway (Idle, Active, etc.)
In-Alarm Flag	INALM	No	Displays current status of in-alarm flag.
Alarming Enabled	ALMENBSTATE	Project Only	Lets user enable or disable alarming option for block.
Alarming JOURNAL ONLY	JOURNALONLY	Project Only	Lets you specify if alarms are to be sent to the Journal only.
Convert Time Values to UTC	GWUTCCONVERT	Yes	Lets you specify if OPC Gateway is to convert all VT_DATE variable types to UTC time.
Server State	GWOPCSRVSTATE	No	Displays current state of the OPC server.
HCI Capability	GWHCIFLAG	No	Displays whether HCI is On or Off.

Plain Text	Parameter Name	User Configurable	Notes
OPC Version in Use	GWOPCVERSION	No	Identifies version of OPC being used by server.
Connection Status	GWOPCCONNSTATUS	No	Displays current connection status.
Connection Status String	GWOPCCONNSTR	No	Displays applicable connection status string.

4.9.2 Viewing Statistics tab

The following table summarizes the parameter data you can monitor on the **Statistics** tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG block Parameters** form **Statistics** tab through the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Statistics Reset Flag	GWSTATSRESET	No	Lets user reset the statistics values.
Responding to ACEs	NUMACEOUTCON	No	Defines number of originator Application Control Environments.
OPC Server Status			
Active Parameters	GWOPCPARAMCNT	No	View Only
Data Change Rate	GWOPCDCPS	No	View Only
Store Rate	GWOPCSTOREPS	No	View Only
Read Errors	GWOPCGETERR	No	View Only
Store Errors	GWOPCSTOREERR	No	View Only
CDA Statistics			
Total Responder Rate	NUMPARRSPAVG	No	View Only
Peer Responder Rate	CPEERAVGPPS	No	View Only
Display Responder Rate	CDISPAVGPPS	No	View Only
Push/Store Response Rate	NUMACCRQUAVG	No	View Only
Notifications Rate	NUMNTFRQUAVG	No	View Only
Max Total Responder Rate	NUMPARRSPMAX	No	View Only
Max Peer Responder Rate	CPEERMAXPPS	No	View Only
Max Display Responder Rate	CDISPMAXPPS	No	View Only
Max Push/Store Rate	NUMACCRQUMAX	No	View Only
Max Notifications Rate	NUMNTFRQUMAX	No	View Only

4.9.3 Viewing QVCS tab

The **QVCS** tab is common to all **Parameters** forms for tagged blocks in Control Builder. If you have a Qualification and Version Control System (QVCS) license, this tab displays current QVCS information for the selected ICG block. Please refer to the online help and the Qualification and Version Control System User's Guide for more information about the data on this tab. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG block Parameters** form **QVCS** tab through the **Monitoring** tab.

4.9.4 Viewing Server History tab

The **Server History** tab is common to all **Parameters** forms for tagged blocks in Control Builder. The following table summarizes the parameter data you can monitor on this tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG block Parameters** form **Server History** tab in the **Monitoring** tab.

Attention

The configuration settings you make for Server Load Options on the **System Preferences** dialog determines whether or not the data entered on the **Server History** tab is loaded to the Experion server. See the *Control Building Guide* for information about setting system preferences.

Plain Text	Parameter Name	User Configurable	Notes
Access Levels			
Control Level	SCANCTRLLVL	Yes	Indicates Server control level to be associated with this function.
History Configuration			
Number of History Parameters	HIST.NUMPARAMS	Yes	Defines number of history parameters to be included in History Configuration table.
Parameter	HIST.PARAM	Yes	Valid parameter name for a parameter associated with the given point that is to be collected and stored as historical data at predetermined intervals.
Description		No	Provides a brief description of the entered parameter.
FAST	HIST.FAST	Yes	Select the Fast type of history collection.
STD	HIST.STD	Yes	Select the Standard type of history collection
EXTD	HIST.EXTD	Yes	Select the Extended type of history collection.
EXC	HIST.EXC	Yes (**Station** only)	Select the Exception type of history collection.
Gating Parameter	HIST.GATEPARAM	Yes	Optional gating parameter to define conditions under which data for this parameter should be collected.
Gate State	HIST.GATEVALUE	Yes	Defines gate state for configured gating parameter.
Create New or Edit Existing Server Scripts (Button)		N/A	Launch the Server scripting configuration utility.

4.9.5 Viewing Server Displays tab

The **Server Displays** tab is common to all **Parameters** forms for tagged blocks in Control Builder. The following table summarizes the parameter data you can monitor on this tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG Block Parameters** form **Server Displays** tab in the **Monitoring** tab.

Attention

The configuration settings you make for Server Load Options on the **System Preferences** dialog determines whether or not the data entered on the **Server Displays** tab is loaded to the Experion server. See the *Control Building Guide for* information about setting system preferences.

Plain Text	Parameter Name	User Configurable	Notes
Point Detail Display	SCANPNTDTL	Yes	By default, a Display template is already entered into Point Detail Display box (for example, sysDtlOPCA.dsp). This template can be used for creating your own display or it can be used as is, provided that your function block name matches name built into detail display that is supplied as a template.
Group Detail Display	SCANGRPDTL	Yes	By default, a Display template is already entered into the Group Detail Display box (for example, sysGrpOPCA.dsp). This template can be used for creating your own display or it can be used as is, provided that your function block name matches name built into detail display that is supplied as a template.
Associated Display	SCANASSOCDSP	Yes	Name of the Server display to be associated with this function block.
Trends			
Number of Trends	TREND.NUMPARAMS	Yes	Defines the number of trend parameters to be included in the Trends Configuration table.
Trend #		Yes	Defines Trend number to be associated with this trend parameter.
Pen		Yes	Defines color of pen that will be used to trace assigned parameter on Station Trend display.
Trend Parameter		Yes	Valid parameter name for a parameter associated with given point that is configured for history collection.
Description		No	Provides a brief description of the entered parameter.
Groups			
Number of Groups	GROUP.NUMPARAMS	Yes	Defines the number of group parameters to be included in Groups Configuration table.
Group #		Yes	Defines Group number to be associated with this group parameter.
Pos #		Yes	Defines number of position configured parameter will occupy in the Station Group display.
Group Parameter		Yes	Valid parameter name for a parameter associated with the given point that is configured in the system.

Plain Text	Parameter Name	User Configurable	Notes
Description		No	Provides a brief description of the entered parameter.

4.9.6 Viewing Control Confirmation tab

The **Control Confirmation** tab is common to all **Parameters** forms for tagged blocks in Control Builder. If you have an optional Electronic Signature license, you can configure electronic signature information for the tagged block through this tab on the block's **Parameters** form in Control Builder. Please refer to the online help and the Server and Client Configuration Guide for information about the data on this tab.

The Electronic Signature function aligns with the identical Electronic Signatures function that is initiated through Quick Builder and Station for Server points. When this block is loaded to a controller, its control confirmation configuration (electronic signatures) is also loaded to the Server. This means you can view the control confirmation configuration for this tagged object in Station and also make changes to it. If you make changes through Station, you must initiate an **Upload** or **Upload with Contents** function through the **Load/ Upload** menu in Control Builder for the object in the **Monitoring** tab to synchronize changes in the Engineering Repository Database (ERDB).

4.9.7 Viewing Identification tab

The **Identification** tab is common to all **Parameters** forms for tagged blocks in Control Builder. The following table summarizes the parameter data you can monitor on this tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG Block Parameters** form **Identification** tab in the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Name	NAME	Yes	Unique block name consisting of up to 16 characters to identify the block. At least one character in the name must be a letter (A-Z).
Description	DESC	Yes	Descriptive text appears on detail and group displays to uniquely describe this particular function block
Block Comment 1	BLCKCOMMENT1	Yes	Comment to be associated with this block consisting of up to 40 characters.
Block Comment 2	BLCKCOMMENT2	Yes	Comment to be associated with this block consisting of up to 40 characters.
Block Comment 3	BLCKCOMMENT3	Yes	Comment to be associated with this block consisting of up to 40 characters.
Block Comment 4	BLCKCOMMENT4	Yes	Comment to be associated with this block consisting of up to 40 characters.
Library		No	Identifies Control Builder Library that is source of template.
System Template		No	Identifies System Template that is source for this block.
Base Template		No	Identifies Base Template that is used for this block.

Plain Text	Parameter Name	User Configurable	Notes
Created By	CREATEDBY	No	Identifies user who created block, if operator security is implemented. Otherwise, may just display Default login.
Date Created	DATECREATED	No	Displays date and time template was created. If this block is in Version Control System, displays date and time initial version of template was created.
Last Modified By	MODIFIEDBY	No	Identifies user who made last modifications to block, if operator security is implemented. Otherwise, may just display default login. If this block is in Version Control System, modifications apply to last version of block.
Date Last Modified	VERSIONDATE	No	Displays date and time last modification was made to block's configuration. If this block is in Version Control System, modification date and time applies to last version of block.

4.9.8 Viewing Diagnostics tab

The **Diagnostics** tab on the **Parameters** forms for ICG blocks in Control Builder lets you choose the parameters you want to monitor. You just type the name of the desired parameter in a row in the **Parameter Name** column in the **Parameter Status** grid on the tab. The ICG Block reports the parameter status as well as any error conditions. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG Block Parameters** form **Diagnostics** tab in the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Parameter Name	GWOPCPMONNAME	Monitoring Only	Specify name of parameter to be checked.
Status Code	GWOPCPMONERR	No	Identify current status.
Error String	GWOPCPMONSTR	No	Display applicable error data.
OPC Quality	GWOPCPMONQUAL	No	Relative quality of OPC data.

4.9.9 Viewing EEGateway tab

The following table summarizes the parameter data you can monitor on the **EEGateway** tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the **ICG block Parameters** form **EEGateway** tab through the **Monitoring** tab. The tab displays statistics on the data being supplied by the I-C Server.

Plain Text	Parameter Name	User Configurable	Notes
EEGateway Status			
EEGateway State	EEGSTATE	No	Check current Gateway state.
Total number of reads	TOTALNUMPOINTSREADS	No	View Only
Number of successful reads	NUMPOINTSREADS	No	View Only

Plain Text	Parameter Name	User Configurable	Notes
Number of successful writes	NUMPOINTSWRITES	No	View Only
GetItemDefinition Total	TOTALNUMGETITEM	No	View Only
Failed GetItem Definition	NUMFAILEDGETITEM	No	View Only
Number of active items	NUMACTIVEPOINTS	No	View Only
Connected clients	NUMCLIENTCONN	No	View Only
Initiating Statistics			
Initiating to CPMs	NUMCPMINCON	No	View Only
Initiating to FIMs	NUMFIMINCON	No	View Only
Initiating to IOLIMs	NUMIOLMINCON	No	View Only
Initiating to ACEs	NUMACEINCON	No	View Only
Initiating to SCEs	NUMSCEINCON	No	View Only
Initiating to SIMIOLMs	NUMSIOLMINCN	No	View Only

4.9.10 Viewing Peer Communications Tab

The following table summarizes the parameter data you can monitor on the **Peer Communications** tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the ICG Block **Parameters** form **Peer Communications** tab through the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Initiator Connections			
Target Name	IPEERNAME	No	View Only
Target Path	IPEERPATH	No	View Only
Connection Status	IPEERCONNSTS	No	View Only
Connection Error Code	IPEERCONNERRCODE	No	View Only
Extended Error Info	IPEERCONNERRINFO	No	View Only
Responder Connections			
Originator Name	RPEERNAME	No	View Only
Average Get Rate	CPEERAVGPPSCONN	No	View Only
Maximum Get Rate	CPEERMAXPPSCONN	No	View Only
Average Store Rate	CPEERAVGSPSCONN	No	View Only
Maximum Store Rate	CPEERMAXSPSCONN	No	View Only
Degraded Messages	RPEERDEGIMRCONN	No	View Only

4.9.11 Viewing Display Communications Tab

The following table summarizes the parameter data you can monitor on the **Display Communications** tab of the **Parameters** form for the selected ICG block. See “Monitoring Inter Cluster Gateway Status through Control Builder” on page 21 for details on accessing the ICG Block **Parameters** form **Display Communications** tab through the **Monitoring** tab.

Plain Text	Parameter Name	User Configurable	Notes
Responder Connections			

Plain Text	Parameter Name	User Configurable	Notes
Average Get Rate	CDISPAVGPPSCONN	No	View Only
Maximum Get Rate	CDISPMAXPPSCONN	No	View Only
Average Store Rate	CDISPAVGSPSCONN	No	View Only
Maximum Store Rate	CDISPMAXSPSCONN	No	View Only
Degraded Messages	RDISPDEGIMRCONN	No	View Only

4.10 Upgrading Inter Cluster Gateway Software to New Release

Use the following procedure to update an operating ICG to a new software release.

- The following procedure assumes that the ICG block requires no configuration changes.
- It may be a good idea to initiate a Checkpoint save of the ICG before installing the new software.

Prerequisites

- You have received the new ICG software release installation media and instructions.
- Prepare the process involving the ICG to be taken offline.
- You have logged onto Control Builder with sufficient privileges to load a Control Strategy.

To upgrade ICG software

1. On the **Monitoring** tab, click the icon for the ICG block that represents the ICG that is being updated to a new software release.
2. On the **Controller** menu, click **Inactivate** > **Selected Item(s)**.
3. Wait for the ICG icon to turn blue.
4. On the **Edit** menu, click **Delete**.
5. Install the new ICG software on its hosting node following the instructions provided with the software. .
6. Click the **Project** tab.
7. Click the icon for the ICG block that was deleted in Step 3. On the **Controller** menu, click **Load**. See *Loading Inter Cluster Gateway Block* for more information.
8. Once the block load is completed, click the **Monitoring** tab.
9. Check that the loaded ICG is in its **Idle** state (icon is blue).
10. On the **Controller** menu, click **Activate** > **Selected Item(s)**to return the ICG to operation.
11. Re-load any Control Modules or Sequential Control Modules that were affected by the update.
12. This completes the procedure.

4.11 The REEOUT Function Block

The Remote EEOut (REEOUT) function block is used to support ACE to ACE regulatory cascades between two Experion clusters. For a full description of this block and its configuration, refer to the Control Builder Components Reference and Control Builder Components Theory documents.

In order to serve as the secondary of the REEOUT block, a Regulatory Control block must be configured to allow its SP to be stored. A restricted set of blocks are capable of being the secondary of REEOUT:

- PID
- PID-PL
- PIDER
- PIDFF
- ENHREGCALC
- RATIOCTL

4.12 Identifying and Fixing Common Problems

This section lists some possible problems you may encounter in using the OPC Gateway along with some possible solutions for fixing them.

If Problem Is . . .	Then, Possible Cause is . . .	And, Possible Solution Is . . .
The ICG icon turns Red, *Loss of Communications with Controller* event is triggered, and Control strategies dependent on ICG for supervisory control shed to their configured backup modes.	The node hosting the ICG has lost power.	1. Restore power to the node hosting the ICG. 2. Re-start the hosting computer. 3. Logon and launch Control Builder. 4. On **Monitoring** tab, select OPC Gateway block. 5. On **Controller** menu, click **Restore from Checkpoint**. 6. On **Controller** menu, click **Activate** > **Selected Item(s)**, if ICG mode is **IDLE**. 7. Restore any control strategies that are dependent on the ICG.
REEOUT fails to form cascade	SP push not enabled on connected FB	Rebuild cascade after enabling SP push on FB connected to REEOUT.
The ICG icon turns Red, *Connection Timeout* or *Loss of Communications with Controller* event is triggered, and Control strategies dependent on ICG for supervisory control are set to their failsafe values marked with BAD status.	Failure of the CDA-sp service.	1. Re-start the hosting computer. 2. Logon and launch Control Builder. 3. On **Monitoring** tab, select ICG block. 4. On **Controller** menu, click **Restore from Checkpoint**. 5. On **Controller** menu, click **Activate** > **Selected Item(s)**, if OPC Gateway mode is **IDLE**. 6. Restore any control strategies that are dependent on the ICG.
The ICG icon turns Yellow, *Connection Timeout*event is triggered, and Control strategies dependent on ICG for supervisory control are set to their failsafe values.	ICG process crashes.	1. On **Monitoring** tab, select ICG block. 2. On **Controller** menu, click **Restore from Checkpoint**. 3. On **Controller** menu, click **Activate** > **Selected Item(s)**, if ICG mode is **IDLE**.
Check the Windows Event Log for any related critical error listings and take appropriate action.		

If Problem Is . . .	Then, Possible Cause is . . .	And, Possible Solution Is . . .
The active ICG icon is **not** Green, *Connection to I-C Server Failed* event is triggered, and Control strategies dependent on ICG for supervisory control are set to their failsafe values marked with BAD status.	• Failed communications media connection including pulled cables, damaged cables, or hub/switch failures. • Failure of I-C server component. • ICG process crashes.	• Check health of communication cables and secure connections. Repair as required. • Be sure the PROGID of the server that the OPCGateway is trying to connect to is available. (Either the PROGID needs to be in the local registry or the OPCGateway must be able to read the registry of the node it is trying to connect to.) • Check I-C server per manufacturer's instructions. • See row above for details. • Check Event Handling logs for logged ICG related messages.
Whole array data not being transferred	Could be problem with point name syntax.	Ensure the whole array tag includes '[]' at the end (without spaces). For example: ICG1.CM1.NUMERICARRAYA.PV[]

5 Notices

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5.1 Documentation feedback

You can find the most up-to-date documents on the Honeywell Process Solutions support website at:

http://www.honeywellprocess.com/support

If you have comments about Honeywell Process Solutions documentation, send your feedback to:

hpsdocs@honeywell.com

Use this email address to provide feedback, or to report errors and omissions in the documentation. For immediate help with a technical problem, contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the “Support and other contacts” section of this document.

5.2 How to report a security vulnerability

For the purpose of submission, a security vulnerability is defined as a software defect or weakness that can be exploited to reduce the operational or security capabilities of the software.

Honeywell investigates all reports of security vulnerabilities affecting Honeywell products and services.

To report a potential security vulnerability against any Honeywell product, please follow the instructions at:

https://honeywell.com/pages/vulnerabilityreporting.aspx

Submit the requested information to Honeywell using one of the following methods:

- Send an email to security@honeywell.com.

  or

- Contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the “Support and other contacts” section of this document.

5.3 Support

For support, contact your local Honeywell Process Solutions Customer Contact Center (CCC). To find your local CCC visit the website, https://www.honeywellprocess.com/en-US/contact-us/customer-support-contacts/Pages/default.aspx.

5.4 Training classes

Honeywell holds technical training classes on Experion PKS. These classes are taught by experts in the field of process control systems. For more information about these classes, contact your Honeywell representative, or see http://www.automationcollege.com.