

# CA IT Process Automation Manager™

## CA eHealth® Connector Guide

r1



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# Chapter 1: Overview

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The CA eHealth® Connector is a module that allows the integration of CA eHealth with CA IT Process Automation Manager™ (CA IT PAM) for the purpose of monitoring large enterprises.

The CA eHealth Connector implements the following functionalities:

- Get view name based on element
- Query element table
- Query catalog table
- Query element association table
- Query specific view
- View MetaData for specific view
- Run discovery
- Run report
- Perform administrative functions with alarms
- Run CA eHealth command script
- Query CA eHealth database

The CA eHealth Connector supports CA eHealth® r6.1.

This section contains the following topics:

[Intended Audiences](#) (see page 6)

[Terminology](#) (see page 6)

## Intended Audiences

The *CA eHealth Connector Guide* is intended for these primary audiences:

- Administrators who install or maintain the CA eHealth Connector or a CA IT Process Automation Manager (CA IT PAM) instance.
- Administrators, Developers, and Designers of CA IT PAM Processes who want their Processes to interact with CA eHealth.

If you are a CA IT PAM Administrator or a CA eHealth Administrator, this guide assumes that you have read and understand the content described in the *CA IT Process Automation Manager Administration Guide* and your CA eHealth documentation.

If you are a CA IT PAM Process Developer, Designer, or Administrator, this guide assumes that you have read and understand these concepts and associated procedures:

- How to create and run CA IT PAM Processes (as described in the *CA IT Process Automation Manager User Guide*).
- How to create Process and Named Datasets (as described in the *CA IT Process Automation Manager User Guide*).
- How to use the SOAP Client Call and XML Extraction Operators of the SOAP Module (as described in *CA IT Process Automation Manager Reference Guide*).

## Terminology

### **Connector**

A module that interfaces with software external to CA IT PAM.

### **Module**

A set of functionally related operators sharing a common configuration.

### **Operator**

A software element which implements an action, and is one of the building blocks of a CA IT PAM Process.

# Chapter 2: Installing and Configuring the CA eHealth Module

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This section contains the following topics:

[Prerequisites](#) (see page 7)

[Installation](#) (see page 7)

[Environmental Restrictions and Configuration Details](#) (see page 9)

[Default Module Properties Settings](#) (see page 10)

## Prerequisites

Before using CA eHealth Operators, verify that the CA eHealth views have been created properly. For more information, see the chapter Create Views Using the DB API Utility in the *CA eHealth Administration Guide*.

## Installation

The CA eHealth Connector software has a standalone installer. There are two versions of the installer provided:

- IT\_PAM\_connector\_installer\_CA\_eHealth\_1\_0.exe for installing on a Primary Domain Orchestrator running on Windows.
- IT\_PAM\_connector\_installer\_CA\_eHealth\_1\_0.sh for installing on a Primary Domain Orchestrator running on Linux and UNIX.

Before installing the CA eHealth Connector software, you must first shut down the Primary Domain Orchestrator.

- In a cluster configuration, the first Orchestrator installed is the Primary Orchestrator; you can confirm this by verifying that `oasis.server.isPrimary=true` is set in the `OasisConfig.properties` file found in `<itpam_root_directory>\server\c2o\.config`, where `<itpam_root_directory>` is the directory where CA IT PAM was installed.
- In a non-clustered configuration, the sole Domain Orchestrator is the Primary Domain Orchestrator.

### Install the Connector

1. Log onto the machine and account used to install the CA IT PAM Primary Domain Orchestrator.
2. Run the appropriate version of the installer for your operating system. For Linux and UNIX systems, run the installer as follows to ensure that it is run under the Bourne shell, and to avoid the need to use chmod to set this file as an executable.

```
sh IT_PAM_connector_installer_CA_eHealth_1_0.sh
```

3. When the Welcome screen displays, click Next to proceed or click Cancel to exit the installation.

The Licensing terms for this Connector display.

4. If you choose to accept the licensing terms, select "I accept the agreement", and click Next to proceed; otherwise click Cancel to terminate the installation.
5. Specify the directory where the CA IT PAM Primary Domain Orchestrator was installed (if it differs from the default value) by entering the complete path to the directory, or by clicking Browse and locating the directory.
6. Click Next.

The installer will verify that the Primary Domain Orchestrator is down. It will deploy the components of the new module to the Primary Domain Orchestrator (this may take a few minutes).

7. Click Finish to complete the installation.
8. Restart the Primary Domain Orchestrator.

The installation.log file is located here: `<itpam_root_directory>\server\c2o\` where `<itpam_root_directory>` is the folder specified in Step 5.

The newly installed module will not be available immediately on any secondary Orchestrators, but all components will be mirrored within the time specified by the mirroring interval for the secondary Orchestrator.

9. After all components have been mirrored, you must stop and restart each Orchestrator and Agent to make the new module available for use.

**Important!** If you installed the Connector software in an existing CA IT PAM r2.1 environment, you must use the Configuration Browser to enable the newly installed module in each environment, on each Orchestrator, and on each Agent where the new module and its Operators will be used.



## Environmental Restrictions and Configuration Details

For the CA eHealth Connector to be fully functional, verify that the Touchpoint running the Process flows with Operators from this module must run on the same host as the CA eHealth instance that the user wants to talk to.

The PATH environment variable at the OS level must be set to point to the bin directory of the CA eHealth instance. If you are running CA IT PAM as the CA eHealth administrative user the NH\_HOME environment variable must point to the CA eHealth base install directory. The PATH environment variable needs to have NH\_HOME/bin in it.

If CA IT PAM is not running as the CA eHealth administrative user, contact your CA eHealth administrator to find out where the CA eHealth base directory is (will refer to that as NH\_HOME in the following description) and modify the PATH according to the following platform-specific guidelines.

### Unix:

Unix systems should be Shell dependent.

1. Set PATH using bash.

```
% PATH=$NH_HOME/bin:$PATH
% export PATH
```

2. Set PATH using csh.

```
setenv PATH $NH_HOME/bin:$PATH
```

### Windows:

1. Click Start->Settings->Control Panel->System.

In the system dialog box, go to the Advanced tab.

2. Click Environment Variables.

Under System Variables, find PATH and edit it by adding NH\_HOME/bin.

3. Click OK.

**Note:** For additional information, consult your operating system documentation.

## Default Module Properties Settings

You can set the following default properties for the CA eHealth Module in the CA IT PAM Configuration Browser.

### **Default EHealth Server**

Specifies the hostname of the machine running the CA eHealth server.

### **Default User**

Specifies the default user name to connect to the Oracle database.

### **Default Password**

Specifies the default user password.

### **Default Database**

Specifies the CA eHealth instance of the Oracle database.

### **Default Port**

Specifies the port used to connect to the default Oracle database.

### **DataLimit**

Specifies the maximum number of rows returned by the database query operators.

# Chapter 3: Using the CA eHealth Module

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This section contains the following topics:

[Reporting Operators](#) (see page 11)

[Alarm Operators](#) (see page 14)

[Admin Operators](#) (see page 16)

[All Purpose Operators](#) (see page 16)

[DBAPI Operators](#) (see page 19)

## Reporting Operators

### Run a Report Operator

The Run a Report Operator runs a specific report on the CA eHealth server.



#### Operator Input Parameters

**Report Type**

Specifies the report type (required).

**Report Name**

Specifies the name of the report (required).

**Subject Type**

Specifies the type of object to run the report on.

**Element Type**

Specifies the type of element. An element is a device, for example a memory card, a machine or a disk.

**Subject Name**

Specifies the object to run the report on (required).

**UI Types Name**

Specifies whether to use the subject names or aliases in the report output.

**Protocols**

Specifies the "Applications" to report on (for response elements).

**Names Types**

Specifies whether to use subject names or aliases in the report output.

**Chart Type**

Specifies the chart type (required).

**Chart Opts**

Specifies the chart options.

**Granularity**

Specifies the sample size.

**Output Directory**

Specifies the report generated by the directory that should be written to an ASCII file in CSV format.

**Note:** For the following set of parameters you must specify a date range or select from a preset range using the AutoRange options.

**From Date**

Specifies the start date for the report data.

**To Date**

Specifies the end date for the report data.

**From Time**

Specifies the start time for the report data.

**To Time**

Specifies the stop time for the report data.

**AutoRange**

Specifies a preset date range, for example, last 24 hours.

**ASCII Filename**

Specifies the ASCII filename to write the report in CVS format.

**Client Access**

For Response path elements it allows the user to specify whether to report on "Locally connected" paths, "Remotely connect" paths, or "Both".

**PDF filename**

Specifies the filename to write the report in PDF format.

**Day Baseline**

Specifies the number of weeks in the daily Health report baseline.

**Week Baseline**

Specifies the number of weeks in the weekly Health report baseline.

**Month Baseline**

Specifies the number of months in the monthly Health report baseline.

**Printer**

Specifies the printer to write the report to.

**Timezone**

Specifies a timezone for the report.

**Postscript filename**

Specifies the filename to write the report in postscript format.

**Sort Order**

Specifies the sort order for the report.

**Variables**

Specifies the additional variables for the report.

**Webuser**

Specifies the web user to run the report.

**Operator Outputs**

**ReportLocation**

Indicates the location of the generated report.

**Operator Ports**

**Success**

Indicates that the Operator executed successfully.

**Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Alarm Operators

### Alarm Admin Operator

The Alarm Admin Operator performs administrative tasks such as acknowledge, unacknowledge and clear an alarm.



#### Operator Input Parameters

##### **AlarmId**

Specifies the ID to identify the alarm (required).

##### **Action**

Specifies one of the following actions (required):

- Acknowledged
- Unacknowledged
- Clear

##### **User**

Specifies the user name to associate with an acknowledged alarm.

#### Operator Outputs

##### **Update status**

Indicates whether the update was successful.

#### Operator Ports

##### **Success**

Indicates that the Operator executed successfully.

##### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Update an Alarm Operator

The Update an Alarm Operator updates an CA eHealth alarm with the data entered by the user to define the alarm.



### Operator Input Parameters

**AlarmId**

Specifies the ID to identify the alarm (required).

**Ticket #**

Specifies a ticket number assigned to this alarm.

**Assignee**

Specifies the user responsible for acting on this alarm.

**Status**

Specifies a status update related to progress rectifying the alarm.

**Notes**

Specifies notes about the alarm.

### Operator Outputs

**Update status**

Indicates whether the update was successful or not.

### Operator Ports

**Success**

Indicates that the Operator executed successfully.

**Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Admin Operators

### Run Discovery Operator

The Run Discovery Operator runs CA eHealth Discovery to identify the available elements on the network.



#### Operator Input Parameters

##### **DiscoverIP**

Specifies the IP address used to discover elements (required).

##### **Discovery Policy**

Specifies the policy to use during the discovery process (required).

#### Operator Outputs

##### **eHealthDiscovery**

Lists all discovered elements.

#### Operator Ports

##### **Success**

Indicates that the Operator executed successfully.

##### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## All Purpose Operators

### Run eHealth Command Line Script Operator

The Run eHealth Command Line Script Operator runs any CA eHealth command line script.





### Operator Input Parameters

#### **CommandString**

Specifies the command to run including parameters (required).

### Operator Outputs

#### **eHealthCommandResults**

Specifies the results of the command that was run.

**Note:** Results may include error messages.

### Operator Ports

#### **Success**

Indicates that the Operator executed successfully.

#### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Query eHealth Database Operator

The Query eHealth Database Operator sends an SQL Select query to the CA eHealth database.



## Operator Input Parameters

### SqlStatement

Specifies the Select query to use for viewing data from the CA eHealth database (required).

**Note:** Only Select statements are supported because the CA eHealth database is read-only from a CA ITPAM user perspective.

### User name

Specifies the CA eHealth Oracle user name.

### Password

Specifies the password for the CA eHealth Oracle user name.

### Server

Specifies the host running the CA eHealth Instance.

### Port

Specifies the port number that the CA eHealth Oracle database is running on.

### Database

Specifies the CA eHealth Oracle database name.

## Operator Outputs

Each column in the select statement has an output variable associated with it that contains its data.

### For example:

For SqlStatement = "select ELEMENT\_ID from NHV\_104102\_S"

There is an Operator output named 'ELEMENT\_ID' which is an array of values in the ELEMENT\_ID column returned by the query.

## Operator Ports

### Success

Indicates that the Operator executed successfully.

### Failure

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## DBAPI Operators

### Query Element Operator

The Query Element Operator queries the nh\_element table.



#### Operator Input Parameters

**Field List**

Specifies the list of fields desired from the table (required).

**DataLimit**

Specifies the maximum number of rows returned by the database query operators.

**User name**

Specifies the CA eHealth Oracle user name.

**Password**

Specifies the password for the CA eHealth Oracle user name.

**Server**

Specifies the host running the CA eHealth Instance.

**Port**

Specifies the port number that the CA eHealth Oracle database is running on.

**Database**

Specifies the CA eHealth Oracle database name.

#### Operator Outputs

Each field requested will be returned as an array of data from the table.

## Operator Ports

### **Success**

Indicates that the Operator executed successfully.

### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Query View Operator

The Query View Operator queries a specific view.



## Operator Input Parameters

### **View Name**

Specifies the name of a specific view (required).

### **Field List**

Specifies the list of fields desired from the table (required).

### **DataLimit**

Specifies the maximum number of rows returned by the database query operators.

### **User name**

Specifies the CA eHealth Oracle user name.

### **Password**

Specifies the password for the CA eHealth Oracle user name.

### **Server**

Specifies the host running the CA eHealth Instance.

### **Port**

Specifies the port number that the CA eHealth Oracle database is running on.

### **Database**

Specifies the CA eHealth Oracle database name.

## Operator Outputs

Each field requested will be returned as an array of data from the table.

## Operator Ports

### **Success**

Indicates that the Operator executed successfully.

### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Query Meta Data Operator

The Query Meta Data Operator retrieves the column names of a view.



## Operator Input Parameters

### **View name**

Specifies the name of the view table to query (required).

### **User name**

Specifies the CA eHealth Oracle user name.

### **Password**

Specifies the password for the CA eHealth Oracle user name.

### **Server**

Specifies the host running the CA eHealth Instance.

### **Port**

Specifies the port number that the CA eHealth Oracle database is running on.

### **Database**

Specifies the CA eHealth Oracle database name.

## Operator Outputs

The Column names in the view table specified.

## Operator Ports

### **Success**

Indicates that the Operator executed successfully.

### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Query Catalog Operator

The Query Catalog Operator queries the nh\_dbapi\_catalog table.



## Operator Input Parameters

### **Field List**

Specifies the list of fields desired from the table (required).

### **DataLimit**

Specifies the maximum number of rows returned by the database query operators.

### **User name**

Specifies the CA eHealth Oracle user name.

### **Password**

Specifies the password for the CA eHealth Oracle user name.

### **Server**

Specifies the host running the CA eHealth Instance.

### **Port**

Specifies the port number that the CA eHealth Oracle database is running on.

### **Database**

Specifies the CA eHealth Oracle database name.

## Operator Outputs

Each field requested will be returned as an array of data from the table.

## Operator Ports

### Success

Indicates that the Operator executed successfully.

### Failure

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Query Element Association Operator

The Query Element Association Operator queries nh\_elem\_assoc table.



## Operator Input Parameters

### Field List

Specifies the list of fields desired from the table (required).

### DataLimit

Specifies the maximum number of rows returned by the database query operators.

### User name

Specifies the CA eHealth Oracle user name.

### Password

Specifies the password for the CA eHealth Oracle user name.

### Server

Specifies the host running the CA eHealth Instance.

### Port

Specifies the port number that the CA eHealth Oracle database is running on.

### Database

Specifies the CA eHealth Oracle database name.

## Operator Outputs

Each field requested will be returned as an array of data from the table.

## Operator Ports

### **Success**

Indicates that the Operator executed successfully.

### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.

## Get View Name for Query Operator

The Get View Name for Query Operator finds the name of the view associated with a specified element name.



## Operator Input Parameters

### **Element name**

Specifies the name of the element used to derive the view name (required).

### **User name**

Specifies the CA eHealth Oracle user name.

### **Password**

Specifies the password for the CA eHealth Oracle user name.

### **Server**

Specifies the host running the CA eHealth Instance.

### **Port**

Specifies the port number that the CA eHealth Oracle database is running on.

### **Database**

Specifies the CA eHealth Oracle database name.

## Operator Outputs

Name of the view associated with the element name specified.



## Operator Ports

### **Success**

Indicates that the Operator executed successfully.

### **Failure**

Indicates that the Operator execution failed.

Details can be found on the Operator Results page for the Operator Dataset, or in the CA IT PAM Agent/Orchestrator log.



# Chapter 4: Troubleshooting

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This section contains the following topics:

[A CA eHealth Operator Fails During the Execution of a Process](#) (see page 27)

## A CA eHealth Operator Fails During the Execution of a Process

**Symptom:**

A CA eHealth Operator fails during the execution of a Process.

**Solution:**

1. Verify that the CA IT PAM Server service is running.

**Windows:**

- Open the Start menu > Programs > Administrative Tools > Services.
- Verify that the CA IT PAM Server service is running. If the service is stopped, you must restart it.

**Note:** After rebooting your machine, restart this service.

**Unix:**

- Go to the CA IT PAM installation location, look at the file c2osvr.pid, and use ps to see if that process is running.

2. Verify that the CA IT PAM user has the correct privileges to access automation objects and run Processes.

See the *CA IT PAM Installation and Configuration Guide* for more information about authentication.

3. Verify that the user logged in the system has the correct privileges to run the CA IT PAM Orchestrator and Agents.

See the *CA IT PAM Installation and Configuration Guide* for more information about Windows service accounts prerequisites.

4. Verify that the CA IT PAM database system is running properly.

For SQLServer users:

- Open the Command Prompt window.
- Run sqlcmd with the following parameters:

```
sqlcmd -S lupmo01xp -U <itpamuser> -P <itpampwd> -d itpam
```

where

<itpamuser> and <itpampwd> are the CA IT PAM database user and password.

After you successfully connect to the CA IT PAM database, you must run an SQL query, for example:

- a. Select \* from SOAPClientCall.
- b. Enter go.

If you are able to connect to the CA IT PAM database and the SQL query is executing successfully, then the database system is running properly; otherwise, check your database login user and password and try again.

5. Get more information about the error by decreasing the logging level for the Orchestrators and Agents to WARNING or INFO.

The Orchestrator issues are debugged using `c2o.log` and `boot.log` located in `<server_install_path>/server/c2o/log`:

- `boot.log` – contains all the messages logged by the core components (JBoss, etc) before CA IT PAM starts execution.
- `c2o.log` – contains all the messages logged by all the components after CA IT PAM has started execution.

The Agent issues are debugged using the main log file (`c2o.log`) containing messages from all components. It is located in: `<agent_install_path>/log`.

To get more logging information, you must decrease the default logging level as follows:

For an Agent, `log4j.xml` keeps the logging level; this file is located here:

`<agent_install_path>/ .c2orepository/.c2oagentresources/properties`.

FILE and CONSOLE are the logging categories; they are set by default to level ERROR.

To see more information for a category, you must do the following:

- Change the "threshold" parameter for the category you are interested in and decrease the level from ERROR to WARN or INFO
- Change the "root" category to include the categories you are interested in (such as CONSOLE or FILE) and set the log level to the lowest level specified in any category
- For an Orchestrator, `log4j.xml` keeps the logging levels. This file is located here:

`<orchestrator_install_path>/server/c2o/conf`.

Similar to changing the Agent logging server, you can change the C2OFILE and CONSOLE logging categories to obtain additional logging information.

6. Validate the CA eHealth Operator parameters.

The parameters could be incorrectly set, causing the failure of the Operator.

- a. Check the Operator parameters for the correct server/username/password/port/database.
- b. Check the Execution Settings.

A valid Touchpoint must be specified in the Target section. If it is specified as an expression, verify that the expression evaluates to a valid Touchpoint.

- c. Validate the Operator's custom parameters.

For the Run Command, verify that the pathname of the program to run is correct.

7. Verify that the CA eHealth instance is running properly.

In a Windows system there are three services that must be running properly:

- eHealth httpd
- eHealth tomcat
- eHealth

**To check the status of these services:**

1. From the Windows desktop, Open the Start menu, and select Programs, Administrative Tools, Services.
2. Verify that these services listed in step 7 are running.

If any of these services is not running properly, restart it. If you are unable to restart a service, contact your CA eHealth administrator.

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