IndigoVision

OPC Alarms and Events Integration

Administrator's Guide

IndigoVision

a Motorola Solutions Company

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1 ABOUT THIS GUIDE

This guide is provided for system administrators integrating an OPC Alarms and Events Server with the IndigoVision Control Center suite.

Safety notices

This guide uses the following formats for safety notices:

⚠ **Warning**	*Indicates a hazardous situation which, if not avoided, could result in death or serious injury.*

⚠ **Caution**	*Indicates a hazardous situation which, if not avoided, could result in moderate injury, damage the product, or lead to loss of data.*

Notice	*Indicates a hazardous situation which, if not avoided, may seriously impair operations.*

☀	*Additional information relating to the current section.*

References

The following documents are referenced in this document. The paths are to the default locations where the documents can be found.

1. Control Center Help.

   Start >IndigoVision >Control Center >Control Center Help.
   Located on the Control Center server.

2. IndigoVision Control Center Installation Guide.

   Available on the Control Center CD.

3. IndigoVision Portal for Integration software downloads and other IndigoVision partner resources.

   https://partners.indigovision.com

2 OVERVIEW

The OPC Alarms and Events Integration allows alarms and events from an OPC Alarms and Events Server to be integrated into the IndigoVision system. This document explains how to install and configure the OPC Alarms and Events Integration.

Compatibility

Please ensure you have properly installed, configured, and licensed an OPC Alarms and Events Server.

OPC

The OPC Alarms and Events Integration is compatible with OPC Servers that support OPC Alarms and Events 1.10 specification.

System Requirements

See the product datasheet for the currently supported Windows® operating systems.

If a firewall is enabled on your system, ensure that the integration executable, *ivopcaec.exe*, is added to the list of exceptions.

Licensing

The OPC Alarms and Events Integration is a licensed product, which can be installed on a physical or virtual machine.

Install the license key on the same machine as the OPC Alarms and Events Integration.

If you are using a licensed USB dongle from an existing installation, you do not need a software license key for the OPC Alarms and Events Integration.

3 INSTALLATION

If you have an IndigoVision OPC Alarms and Events Integration USB license dongle, ensure that the license dongle is inserted into the machine that the software is to be installed on before the installation.

To install the OPC Alarms and Events Integration:

1. Download the integration from the IndigoVision Portal.
   ► For more information, *see "References" on page 5*

2. Run **setup.exe** and follow the on-screen instructions.

   By default, the OPC Alarms and Events Integration is installed to:

   C:\Program Files (x86)\IndigoVision\Integration\OPC Alarms and Events Integration.

3. Edit the system configuration file (**System.conf**).
   ► For more information, *see "System configuration file (System.conf)" on page 15*

   This file is shown during installation. Edit the system configuration parameters. Save and close the file.

4. Edit the To IV Alarm Server list configuration file (**ToIvAlarmServers.conf**).
   ► For more information, *see "To IndigoVision alarm servers configuration file (ToIvAlarmServers.conf)" on page 16*

   This file is shown during installation. Specify the To IV Alarm Servers and their corresponding ToIv mapping files. Save and close the file.

5. Edit the OPC event configuration file (**ToIv.conf**).
   ► For more information, *see "Alarms to IndigoVision configuration file (ToIv.conf)" on page 16*

   This file is shown during installation. Specify the mappings of the OPC Alarm and Events names to the IndigoVision alarm IDs. Save and close the file.

6. Edit the ToIvAlarmActions configuration file (**ToIvAlarmActions.conf**).
   ► For more information, *see "To IndigoVision alarm action configuration file (ToIvAlarmActions.conf)" on page 16*

   This file is shown during installation. Specify the mapping between Alarm Actions on event sources and Zone Name to action. Save and close the file.

7. Edit the Categories configuration file (**Categories.conf**).
   ► For more information, *see "Categories configuration file (Categories.conf)" on page 16*

   This file is shown during installation. Specify the category event numbers for event types that you are interested in receiving. Save and close the file.

8. Request and install a software license for OPC Alarms and Events Integration using the License Manager tool.
   ► For more information, *see "License the Integration" on page 10*

9. Start the OPC Alarms and Events Integration service from the Windows® services.

Installing with multiple network adapters or multiple IP addresses

When the IndigoVision OPC Alarms and Events Integration is installed on a machine with multiple network adapters or multiple IP addresses, configure the property `IntegrationModuleIP` in the section `System`.

License the Integration

To run the IndigoVision OPC Alarms and Events Integration, you must have a valid license. This can be a hardware license or a software license which allows the OPC Alarms and Events Integration to run on a specific machine.

You can manage the software license using the License Manager tool, which is installed as part of the IndigoVision OPC Alarms and Events Integration standard installation.

1. Create a Client to Vendor file (c2v) that contains a fingerprint of the machine. This is then sent to IndigoVision Order Management.
2. Apply a Vendor to Client file (v2c) provided by IndigoVision.

You can transfer a license from one machine to another using the License Manager tool.

Installing IndigoVision OPC Alarms and Events Integration on a remote machine

If the target OPC server and IndigoVision OPC Alarms and Events Integration are installed on a separate machines, you need to adjust the installation settings to allow the Integration to connect to the OPC server.

DCOM configuration

DCOM permission is required to allow the Integration to communicate with a remote OPC Server. Both the OPC Server and the Integration machines need to be configured to allow DCOM access. Do the following to configure DCOM permission:

Notice *There are security implications with allowing anonymous DCOM communications. IndigoVision recommends that these machines are not allowed to connect to the internet. If WAN control is required, communication must be routed through a VPN.*

---

1. Open the *Start* menu on the PC where the OPC Server is installed and do the following:
   a. Select *Run*.
   b. Enter `mmc comexp.msc /32`
   c. Press *Enter*.
2. Navigate to *Console Root* > *Component Services* > *Computers*.
3. Right-click on *My Computer* and click *Properties*.
4. Select the *COM Security* tab. Under *Access Permissions*, click *Edit Default…*.
5. Click *Add* and add the user `Anonymous Logon`.

6. Ensure that the user has permissions for both Local Access and Remote access, and click **OK**.

7. Add `Everyone` if it is not present. In the **Group** or **User names** areas, ensure that `Everyone` has permission for both Local and Remote access.

8. Close the window.

9. Repeat step 5 through step 8 for each of the following:
    - **COM Security**> **Access Permissions**> **Edit Limits…**
    - **COM Security**> **Launch and Activation Permissions**> **Edit Default…**
    - **COM Security**> **Launch and Activation Permissions**> **Edit Limits…**

10. Open **My computer** > **DCOM Config**.

11. Right-click the OPC server entry and click **Properties**.

-�德-   *The entry is different for all OPC servers. You may need to ask your OPC server provider for assistance.*

---

12. Under **Launch and Activation Permissions**, select the **Security** tab.

13. Click the **Customize** radio button and select **Edit…**.

14. Select `Everyone` and select **Allow for all local and remote permissions**.

15. If `Anonymous Logon` is not present, add it and ensure that the user has full local and remote allow permissions.

16. Repeat step 1 through step 9 for the PC where the IndigoVision OPC Alarms and Events Integrationis installed.

Any firewall in use on either machine must be configured to allow access for port 135.

4   Upgrading from 1.0

If you have an existing OPC Alarms and Events Integration version 1.0 installation, an upgrade is required.

When upgrading from version 1.00, the following files are different and need to be updated:

- *Tolv.conf*
- *System.conf*

Tolv.conf

For version 1.10 or later, the format of the default *Tolv.conf* file is changed to support the Control Center suite.

The *ConfigConverter* tool upgrades the *Tolv.conf* file automatically as part of the installation process and upgrades any Tolv entries found in the old *Tolv.conf* file.

The *configconverter.exe* is located in the Integration installation location. The executable can be run at any time by an administrator to convert any additional *Tolv.conf* files for additional alarm servers. During conversion any errors are listed in a log file. The log file can be found in the ProgramData directory for the integration.

System.conf

For version 1.10, the *System.conf* file has an additional section on Alarm Actions. Also BMOnline and BMOffline entries have been renamed to IMOnline and IMOffline.

The *System.conf* file is not updated during the upgrade process.

To update the *System.conf* file an administrator has to copy the additional section from the sample *System.conf* and add it to the existing *System.conf* file. The sample *System.conf* file can be found in the installation directory.

5 CONFIGURATION

This chapter describes how to configure the OPC Alarms and Events Integration.

Integration

To integrate OPC Alarms and Events Server into IndigoVision Control Center you must configure the following:

1. Edit the system configuration file (**System.conf**).
   - ► For more information, *see "System Configuration File (System.conf)" on page 19*
2. Configure the list of ToIv IndigoVision alarm servers that receive OPC Alarms and Events (**ToIvAlarmServers.conf**).
   - ► For more information, *see "To IndigoVision alarm servers configuration file (ToIvAlarmServers.conf)" on page 22*
3. Configure the events of interest (**ToIv.conf**).
   - ► For more information, *see "Alarms to IndigoVision configuration file (ToIv.conf)" on page 22*
4. Configure the Alarm Actions of interest (**ToIvAlarmActions.conf**).
   - ► For more information, *see "Alarms Actions to IndigoVision configuration file (ToIvAlarmActions.conf)" on page 24*
5. Configure the Categories of interest (**Categories.conf**).
   - ► For more information, *see "Categories configuration file (Categories.conf)" on page 25*
6. Define the OPC Alarms and Events of interest within Control Center.
   - ► For more information, *see "IndigoVision Control Center configuration" on page 16*

Notice   *The Integration service must be manually restarted for configuration file changes to have an effect.*

System configuration file (System.conf)

The system configuration file provides the Integration with system information such as the name and location of the OPC Server, configurable Integration status events and ToIv Alarm Actions.

► For more information , *see "System Configuration File (System.conf)" on page 19*

To IndigoVision alarm servers configuration file (ToIvAlarmServers.conf)

This file contains a list of Alarm Server IP addresses. Each Alarm Server has a mapping to a ToIv configuration file. This can be the default ToIv.conf configuration file. It is possible to map multiple alarm servers to the same ToIv file and to map a single alarm server to multiple ToIv files.

► For more information, *see "To IndigoVision alarm servers configuration file (ToIvAlarmServers.conf)" on page 22*

Alarms to IndigoVision configuration file (ToIv.conf)

This file contains the mapping between the OPC alarms and events and the IndigoVision external system input. It contains the data that maps the event received from the OPC system to the IndigoVision system.

► For more information, *see "Alarms to IndigoVision configuration file (ToIv.conf)" on page 22*

To IndigoVision alarm action configuration file (ToIvAlarmActions.conf)

This file contains the mapping between the OPC alarm action sources and the ZoneName / Alarm Server IP address.

It contains the data that maps an alarm action on the OPC system to the IndigoVision zone that is actioned.

This configuration file is only required when the required alarm action is not represented as an event in the *ToIv.conf* file. This is typically only required when used with the OPC Alarms and Events Integration to provide alarm acknowledgment support for the Gallagher Command Centre.

► For more information, *see "Alarms Actions to IndigoVision configuration file (ToIvAlarmActions.conf)" on page 24*

Categories configuration file (Categories.conf)

This file allows an administrator to specify the category event numbers for event types that you are interested in receiving. This filters the event types that are sent by the OPC system to the Integration.

► For more information, *see "Categories configuration file (Categories.conf)" on page 25*

IndigoVision Control Center configuration

All the OPC Alarms and Events of interest and the IMOnline, IMOffline, 3rdPartyOnline, and 3rdPartyOffline alarm IDs as defined in the system configuration file must be configured in Control Center.

► For more information, *see "References" on page 5*

Create a new external system for Tolv events

Create a new zone and external detector for Tolv events

Add a new zone for each unique alarm that must be reported in Control Center.

Within the zone, create a new external detector for the external system. Specify the Input Number as the Activation Input Number configured for the event in the Tolv file of the Integration.

To set the state of the detector to reflect whether the event in OPC Alarms and Events Server is active or inactive, create the detector with a Deactivation Event of type External, and a Deactivation Input Number configured for the OPC Alarms and Events Server event in the Tolv event configuration file.

► For more information, see "Alarms to IndigoVision configuration file (Tolv.conf)" on page 22

To make sure that there is no confusion in correlating events, choose zone and detector names in Control Center which closely match the OPC Alarms and Events Server event name.

Create external detectors for all types of events

After the Tolv configuration file has been edited with all the supported events, configure an IndigoVision Alarm Server using the IndigoVision Import Alarm Sources tool.

The Import Alarm Sources tool can be downloaded from the IndigoVision Portal.

► For more information, *see "References" on page 5*

Every time an event is added to the Tolv configuration file, run the tool again to update the IndigoVision NVR-AS.

6 SYSTEM CONFIGURATION FILES

This section contains examples of the configuration files required by the OPC Alarms and Events Integration.

System Configuration File (System.conf)

This file lists the configurable system parameters that are independent of alarms and events.

The usage of the parameters listed in the sample configuration file below is explained in their comments:

Figure 1: Example of a System Configuration file

```
[AlarmServer]
#
# The IP address of the Alarm Server (NVR-AS) must be specified
#
#IP=0.0.0.0
[OPCServer]
#
# The IP address or host name of the OPC Server can be specified.
# Leave this commented out if the OPC Integration Module is running on
# the same machine as the OPC Server.
#
#Host=0.0.0.0
#
# The ProgId of the OPC Alarms & Events Server
#
ProgId=
#
# The ClassId of the OPC Alarms & Events Server (if it is not running on the
# local machine). Remove leading '#' to define.
#
# ClassId={00000000-0000-0000-0000-000000000000}
[Filter]
#
# The Filter section properties control which criterion should be included in
# the OPC server notification filter. Use these properties to prevent the OPC
# server sending unwanted alarm/event notifications.
#
#
# Only OPC event notifications with a severity greater than SeverityMin will be
# sent from the OPC Alarms & Events server (if it supports severity filtering).
# Must be in the range of 1-1000. The default value is 1.
#
```

```
SeverityMin=1
#
# Only OPC event notifications with a severity less than SeverityMax will be
# sent from the OPC Alarms & Events server (if it supports severity filtering).
# Must be in the range of 1-1000. The default value is 1.
#
SeverityMax=1000
#
# Only OPC event notifications of the type specified (events/alarms/both) will
# be sent from the OPC Alarms & Events server (if it supports filtering by
event
# type).
# ByType can be 'Events', 'Alarms' or 'Both'. The default value is Both.
#
ByType=Both
#
# If BySource=True, only notifications for the sources explicitly specified
# in the event configuration file will be sent from the OPC Alarms & Events
# server (if it supports source filtering).
# BySource can be 'True' or 'False'. The default value is False.
#
BySource=False
#
# If ByCategory=True, only OPC event notifications from the categories listed
in
# the categories.conf file will be sent from the OPC Alarms & Events server (if
# it supports category filtering).
# ByCategory can be 'True' or 'False'. The default value is False.
#
ByCategory=False
[System]
#
# IntegrationModuleIP is the IP of this machine that should be used to send
# events. It should match the External System which is configured in Control
# Center.
# Note: This must be specified for machines with multiple IP addresses. It may
# be omitted for machines with just a single IP address.
#
# IntegrationModuleIP = 0.0.0.0
[Events]
#
# OPTIONAL: Whether to enable ToIv alarm actions
# Default is "false" which means that ToIv alarm actions are disabled.
#
# EnableAlarmActionsToIv=false
[AlarmActionsToIv]
# List of the OPC Alarms And Events ToIv alarm actions:
# acked: A OPC alarm acknowledged state change from false to true.
# cleared: A OPC alarm state change from active to processed.
#
# OPTIONAL: The Ack parameter is a list of the OPC alarm actions
# separated by a ','that should result in IV zone acknowledgements.
#
# Ack=acked
#
```

```
# OPTIONAL: The Clear parameter is a list of the OPC alarm actions
# separated by a ',' that should result in IV zone clears.
# Default is empty.
#
# Clear=cleared
# Example:
# Ack=acked
# Clear=cleared
[SystemEvents]
#
# SystemEvents are events that may be sent to Control Center to report the
# status of, or problems with, the Integration Module.
#
# The number assigned to a system event is a user-defined event number which
# corresponds to an external system input number of an alarm source in
# Control Center.
#
#
# If IMOffline is defined, an event with this number will be sent
# to the NVR/Alarm Server whenever the Integration Module is about to go
offline.
# Reasons for going offline include a manual service stop request, the host
# pc shutting down, or when the USB license dongle is removed or expires (trial
# dongles only).
#
#IMOffline=1
#
# If IMOnline is defined, an event with this number will be sent
# to the NVR/Alarm Server whenever the Integration Module has successfully
started
# up.
#
#IMOnline=2
#
# If the 3rdPartyOffline property is defined, an event with this
# number will be sent to the NVR/Alarm Server whenever the OPC Alarms
# & Events Server connection is lost.
#
#3rdPartyOffline=3
#
# If the 3rdPartyOnline property is defined, an event with this
# number will be sent to the NVR/Alarm Server whenever the OPC Alarms
# & Events Server connection is established.
#
#3rdPartyOnline=4
[Log]
#
# The log level.
# The default log level is 'info', which will log each alarm sent to the
# NVR/Alarm Server.
#
# Change to 'Err' to minimize the log output to just errors.
# Change to 'Debug' to maximize log output.
#
# Logging level
```

```
# Err (minimize output)
# Info
# Debug (maximize output)
#
#Level=Info
```

To IndigoVision alarm servers configuration file (ToIvAlarmServers.conf)

This file contains a list of IndigoVision ToIv Alarm Server IP addresses that receive OPC alarm and events. Each Alarm Server IP address is associated with an Alarms To IndigoVision configuration file.

All entries should include a valid IP address. Anything written after # is treated as a comment.

Figure 2: Example of a To IV Alarm Servers Configuration file

```
#
# List of each ToIv Alarm Server (NVR-AS)
# and its ToIv file (without .conf extension)
#
# Each mapping entry consists of two (optionally three) comma separated fields
#
# The first field is the IP address of the Alarm Server
#
# The second field is the Alarms ToIV configuration file excluding file
# extension of ".conf". All Alarms ToIV configuration files are located in
# the "ToIv" folder. For example an entry of "ToIv" indicates that the
# Alarms ToIv configuration file is .\ToIv\ToIv.conf
#
# The optional third field can be used to provide a description.
#
# Note that it is possible to set up all Alarm Servers to use the one default
# Alarms To IV configuration file by entering "ToIv" as the second field
# for all entries.
# IP address, ToIv file, Description (optional)
# Example:
#
# 0.0.0.0, ToIv, Default ToIv\ToIv.conf
```

Alarms to IndigoVision configuration file (ToIv.conf)

The installation provides one default alarm to the IndigoVision configuration file located in the ToIv folder. The file is called ***ToIv.conf***.

There is one mapping entry per line in the mapping file. Each entry is a comma-separated pair.

Figure 3: Example of an Alarms to IndigoVision Configuration file

```
# ToIv.conf
#
# This file specifies the mapping between OPC Alarms & Events and user-defined
# IndigoVision event ID numbers (called External System Input Numbers in
# Control Center).
```

```
#
# InputNumber,Event Details,comment
#
# The first element of each entry is a positive integer
# corresponding to an External Detector input in the Alarm Server.

# The second element is a string representing the event sent from the OPC
# Alarms and Events server
#
# The format for the event string is as follows:
# Event Source:Event Category:Alarm State:Message substring
#
# Either the Event Source or Category is the minimum that
# is required.
#
# Example Event Source
#100,Front Door:::
#
# Example Category
#100,:5::
#
# Example Event Source and Category
#100,Front Door:26::
#
# Example Event Source, Category and Event Message
#200,Front Door:26::resecured
#
# Example Event Source, Category and Alarm State
#301,Front Door:29:inactive:
#
# Example Event Source, Category, Alarm State and Event Message
#301,Front Door:29:inactive:Door Closed
#

# The third element is an optional comment field which is used by the Alarm
# Import tool as the detector name.

#100,Front Door:26::,Front door open
#200,Front Door:26::resecured,Front door closed
#300,Front Door:29::,Front door forced
#301,Front Door:29:inactive:,Front door forced ok
#302,Front Door:29:acked:,Front door forced ack
#400,Front Door:::,Front door event
#500,:5::, All category 5 events
#600,Front Door:::Front Door has changed state to Open., Front door has opened.


# The Event Source and Event message cannot contain the characters ',' or
# ':' or '\'. Any leading or trailing whitespace will be stripped.
#
# However, octal escape codes can be added to include these characters.
# Note that as the backslash is used as the escape character then the
# backslash itself requires to be escaped via an octal escape code.
#
# The valid range for octal escape codes is \001 to \177
```

```
#
# Some frequently used escape codes:
# Character ' ': => \040 - for allowing leading or trailing spaces
# Character ':': => \072
# Character ',': => \054
# Character '\': => \134
#
#302,Alarm Zone\0721:29:acked:,Alarm Zone 1 forced ack
```

Alarms Actions to IndigoVision configuration file (TolvAlarmActions.conf)

The installation provides one configuration file to forward OPC alarms actions to the corresponding Control Center Zones. The file is called ***TolvAlarmActions.conf***.

There is one mapping entry per line in the mapping file. Each entry is a comma-separated pair.

Figure 4: Example of an Alarms Actions to IndigoVision Configuration file

```
# ToIvAlarmActions.conf
#
# This file specifies the mapping between OPC Alarm actions and IndigoVision
# Zone actions. It is for mapping OPC alarm actions to IndigoVision Zone
# actions where the source of the original Alarm was triggered from outside
# of the OPC Server, ie. a FromIv alarm.

# The mapping is composed of two mandatory fields and one optional field.
# AlarmServer IP:ZoneName, Alarm Details, Comment( optional )
#
# The Alarm Server IP and ZoneName fields combine to form a unit which
describes
# the Zone that should be actioned when the relevant event is received.
# The Alarm Server IP is the address of the Alarm server the Zone resides on
# and the ZoneName is the name of the Zone which the alarm actions, Acknowledge

# and clear, are applied to.

# The Alarm detail is the source of the alarm action as defined in the OPC
# Server software.

# An optional third field, separated by another comma can be added
# with a description of the event mapping.

# Examples:
# 10.10.0.1:Ground Floor Reception,Ground Floor Reception
# 10.10.0.2:Zone01,OPCEvent01,OPCEvent01 alarm acknowledged or cleared

# The Event Source cannot contain the characters ',' or
# ':' or '\'. Any leading or trailing whitespace will be stripped.
#
# However, octal escape codes can be added to include these characters.
# Note that as the backslash is used as the escape character then the
# backslash itself requires to be escaped via an octal escape code.
#
```

```
# The valid range for octal escape codes is \001 to \177
#
# Some frequently used escape codes:
# Character ' ': => \040 - for allowing leading or trailing spaces
# Character ':': => \072
# Character ',': => \054
# Character '\': => \134
#
# 10.10.0.3:Zone\0721,Zone\0721Triggered, Zone1 alarm acknowledged
```

Categories configuration file (Categories.conf)

The installation provides one categories configuration file. The file is called *Categories.conf*.

There is one entry per line in the file.

Figure 5: Example of a Categories configuration file.

```
# Categories.conf
#
# This file lists the event categories (numbers) to be received from the OPC
# Alarms & Events server. Each category should be listed on a new
# line. A description of each category may be included after the category
# number by preceding the description with a '#' comment character.
#
```

7 EVENT CONFIGURATION

OPC alarms and events can be mapped using a number of the fields of the OPC OnEvent notification method which is documented in the OPC Alarms and Events Specification v1.10.

Mapping is flexible. For example, to map all event notifications for a particular source such as a door, simply specify the source name. Or, where two events share the same source name and category, but only differ by the message string, specify the source, category, and a message substring search phrase.

The following table maps the ToIv configuration field to the OPC OnEvent notification field as defined in the OPC Alarms and Events Specification.

Table 1: Mapping ToIv configuration fields to OPC OnEvent fields

Field No.	Field	Type	OPC OnEvent field	Description
1	Event ID	Int	N/A	The Control Center external system input number (between 1 and 32767).
2	Source	String	szSource	The alarm/event source.
3	Category	Int	dwEventCategory	The alarm/event category.
4	State	String	wNewState	Leave blank to map when the alarm/event becomes active. Use inactive to map when the alarm leaves the active state. Use acked to map when the alarm is acknowledged.
5	Message substring	String	szMessage	A word or phrase in the event notification message.
6	Description	String	N/A	A description of the event (this may be imported into Control Center using the ImportAlarmSources tool).

The rules for mapping OPC event notifications to IndigoVision events are as follows:

1. Duplicate event ID numbers are allowed.

   Two OPC Alarms and Events can map to the same external alarm source in Control Center.

2. System event ID numbers defined in the System configuration file must not be used in this file.

   The Integration will check for conflicts when it starts and logs an error and notifies the user before exiting.

3. Either the source or the category fields must be defined.

When an OPC event notification is received, including alarms with their various state and condition transitions, the Integration searches the mappings from the event configuration file for possible matches.

The integration prefers more specific mappings over general mappings (blank fields). The order in which the integration treats mappings as a match is defined in the following table.

Table 2:   Order of integration match mappings

Order	Source	Category	State	Message substring
1	Match	Match	Match	Match
2	Match	Match	Match	Not specified
3	Match	Not specified	Match	Match
4	Match	Not specified	Match	Not specified
5	Not specified	Match	Match	Match
6	Not specified	Match	Match	Not specified

8 ALARM ACTION CONFIGURATION

The OPC Alarms and Events Integration allows administrators to configure alarm actions sent from an OPC Alarms and Events Server to Control Center. This allows the alarm state of the OPC Server to be represented in Control Center.

There are two types of alarm action that can be sent, acknowledged and cleared. The alarm actions can be configured using one of these files:

- *System.conf*
- *Tolv.conf*
- *TolvAlarmActions.conf*

System.conf

The *System.conf* file has an Events section which enables administrators to configure alarm actions based on the Tolv events configured in the *Tolv.conf* file.

This is made up of an `EnableAlarmActionsToIv` flag which can be set to `true` if alarm actions are to be used. Also Acknowledgement and Clear parameters, which can be set with a resultant action, occur on Acknowledge or Clear.

When an alarm is received from an OPC system, a detector is triggered in Control Center using the rules defined in the *Tolv.conf* file. This detector is attached to a Zone which is put into an alarm state.

When you acknowledge or clear the alarm, the Integration checks the *Tolv.conf* file to determine which detector was triggered by the original event. The integration then sends the alarm action to the zone that contains that detector.

Tolv.conf

Administrators can configure `inactive` and `acknowledged` event notifications using the *Tolv.conf* file.

This allows administrators to explicitly configure which detectors are triggered when an alarm is acknowledged or becomes inactive. Also administrators can configure, in Control Center, the required action to take when the detector is triggered.

TolvAlarmActions.conf

The *TolvAlarmActions.conf* file supports manually mapping the source of alarm actions to the Zones that should be actioned.

This allows administrators to manually map which Zones can be actioned from the OPC Server.

This is useful when the event that triggered the Control Center Zone to the alarm state is not represented by a Tolv event entry. For example, when using the OPC Alarms and Events Integration to send alarms and events from Control Center.

9 TROUBLESHOOTING

Alarms not appearing in Control Center

If alarms are not appearing in Control Center then the following end-to-end check for a single alarm may help to determine the source of the problem.

1. Enable debug level logging.

    Do this by setting `Level=debug` in the `[Log]` section of the system configuration file, then restart the OPC Alarms and Events Integration service. Allows the Integration to log all alarms and events received from the OPC Alarms and Events Server Alarms and Events server, not just those that have been mapped in the Alarms To IV configuration file.

2. Verify that the Integration is sending events to the nominated Alarm Server

    By opening the most recent Integration log file and check for messages stating that the alarm has been sent, for example:

    ```
    2014-04-28 12:19:08 [system] Sending ToIv event 'Input 1:::' to Alarm
    Server '172.16.129.177'...2014-04-28 12:19:08 [system] ToIv stateless
    event 'Input 1:::' sent to Alarm Server '172.16.129.177' with external
    input number '100'.
    ```

    If the alarm is generated as expected go to step 3.

    If step 2 does not identify that an alarm has been sent for the event of interest then look to see if the Integration is receiving the event but has not been configured, for example:

    ```
    2014-04-28 12:15:32 [system] ToIv stateless event 'Indigo Vision Ltd -
    Development:8::Licence Warning - Devices required to maintain your
    licence validity are not responding' is not configured to send to Alarm
    Server '172.16.129.177'.
    ```

    If the event is not seen in the log file then refer to the documentation on how to set up and configure the OPC Alarms and Events Server Alarms and Events software.

    If the event is seen in the log file then the Alarms To IV configuration file (*ToIv.conf*) is not correctly configured to forward this event to the Control Center suite.

3. Verify that the corresponding zones and external detectors have been created and that the zones have been set and the external detectors have been enabled in Control Center.

    a. In the *Site Setup* mode select the relevant *Site* on *Alarms* explorer:

    b. Click on the *External Systems* tab and ensure that an External System with the IP address of the PC running the OPC Alarms and Events Integration has been created.

    c. Click on the *Zones* tab and ensure that a zone has been created containing an external detector with Input Number being the event number identified from step 2 above.

        Also ensure that the external system is correct. The external detector must be enabled and the zone must be set.

    d. Right-click and select *Properties*.

e. On the *Zone* tab ensure that the Alarm Server is the same as that configured in the ToIV Alarm Servers configuration (*TolvAlarmServers.conf*) file for the .

Ensure that the zone belongs to the nominated Alarm Server.

License issues

You should not encounter license issues if the OPC Alarms and Events Integration is installed on a machine that has not had HASP software installed previously.

However, possible issues may occur if the machine to be installed on has previously had HASP software installed on it.

Before installing the OPC Alarms and Events Integration, uninstall IndigoVision software that is licensed with either a hardware or software license.

Check that the Sentinel HASP dongle is active

If the Sentinel dongle is working correctly, then a red LED is illuminated on the dongle.

Check that the device drivers are listed in Device Manager:

1. Navigate to *Control Panel > System*.
2. Select the *Hardware* tab.
3. Select *Device Manager*.
4. Navigate to *Universal Serial Bus Controllers*, then expand the list.
5. Check that the following are listed:
   - SafeNet Inc. Sentinel HL Key
   - SafeNet Inc. HASP Key
   - SafeNet Inc. USB Key