



Alarms Guide

User Guide

Alarms Guide

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About this Guide

This topic contains important information about the purpose, content, context, and intended audience for this document.

Product Documentation

This document is part of the EC-Net™ technical documentation library. Released versions of EC-Net software include a complete collection of technical information that is provided in both online help and PDF format. The information in this document is written primarily for Systems Integrators. In order to make the most of the information in this book, readers should have some training or previous experience with EC-Net™ 4 or EC-NetAX™ software.

Document Content

This guide explains how to set up, respond to, and manage the alarms that a system generates when a point enters an alarm condition. Sections in this guide include chapters about common alarm tasks, alarm concepts, and reference information. Also included are images and descriptions of the primary software user interface windows involved when working with alarms.

Document change log

Changes to this document are listed in this topic.

April 3, 2024

- Added “alarm-NumericChangeOfStateAlarmExt” to the “Types of alarm extensions” section (as of EC-Net 4.14).

January 29, 2024

- Updated content in “Email Setup” topics.
- Added “Setting Up Gmail Account for using Outgoing Email” topic to “Email Setup” chapter.
- Added new “onCall Overview” chapter.
- Added “HTML5- On Call List Manager” topic to “Plugins” chapter.

January 9, 2023

- Added “Email Authenticator” properties to “IncomingAccount” and “OutgoingAccount” components under “EmailService” (as of EC-Net 4.13).
- Added alarm extension “alarm-FloatLimitAlarmExt” and “alarm-BooleanCommandFailureAlarmExt” to “Types of alarm extensions” section. HTML5- On Call List Manager

August 18, 2022

- Corrected steps in “Setting up a remote Orion alarm database” topic.
- Edited description of properties of “email-IncomingAccount” and “email-OutgoingAccount” topic.

February 28, 2022

Added description to the database property, updated image and minor changes in the “alarmOrion-OrionAlarm-Service” topic.

October 6, 2021

Expanded and edited the “Orion database setup” section in the “Alarm setup” chapter.

June 23, 2021

- Correction in the “alarm-StatusAlarmExt” component topic.
- Added content on the Alarm Archive feature.

April 20, 2020

Minor edit in the “alarm-StatusAlarmExt” component topic.

January 4, 2019

Minor correction in the “alarm-StringChangeOfValueAlarmExt” component topic.

October 17, 2018

Updated document to reflect changes in EC-Net 4 v4.6. Added information about AlarmOrion.

June 14, 2017

In the topic, alarm- AlarmSourceExt, updated the **Alarm Inhibit** property description for fault state.

March 8, 2017

In the topic, **Alarm Database Maintenance** view, updated the Alarm Transition property description for EC-Net 4 v4.3.

August 18, 2015

Initial release document.

Related documents

Following is a list of related guides:

- *Getting Started with EC-Net 4*

Chapter 1 About alarms

Topics covered in this chapter

- ◆ Alarm services
- ◆ Alarm state
- ◆ Alarm instructions
- ◆ Alarm notes
- ◆ Alarm escalation

Alarms notify people that a device point has met a set of predefined conditions.

An alarm can be generated for these reasons:

- **Offnormal:** a value is outside its appropriate or expected range.

For example, the normal operating temperature range of a device may be 70 to 100 degrees Fahrenheit. The point's out-of-range property generates an alarm if the temperature exceeds the upper limit or goes below the lower limit of this range.

- **Alert:** regular equipment maintenance or some other task is due to be performed.

For example, a motor may require lubrication every 400 hours of operation (this is not an out-of-range condition). Using the alarming function, you can configure an extension with a control point that monitors accumulated device run-time and notifies an operator via email at or before the accumulated time reaches 400 hours. This is an alarm that does not have a normal state.

- **Fault:** occasionally, a device may report a value, which is so far out of range that it is obvious a device or system needs immediate attention.

For example, if a device with a normal operating temperature of between 70 to 100 degrees reports a temperature of 0 degrees F or 1000 degrees F, it is probable that there is a device or system fault and that the reported temperature is not the actual temperature at the device. This type of condition requires a separate notification for values judged to be faults as opposed to authentic out-of-range conditions.

You can configure alarms to notify specified recipients and be recorded in the database. Normal conditions for an individual point are properties that may be set and edited, as desired, by a user with proper access and privileges.

Alarm services

Each station may contain a single **AlarmService** that coordinates the routing of alarms within the framework, and maintains the alarm database.

The standard **AlarmService** stores alarms persistently on the station host (controller). The **AlarmService** is available in the **alarm** palette.

If you do not have an **AlarmService** in your active station, drag a copy of it from the **alarm** palette.

The **AlarmService** may contain one or more alarm classes. An alarm class may route alarms to one or more alarm recipients. The routing process involves notifying the recipient of the alarm and receiving back from the recipient an alarm acknowledgement. The default view (wire sheet view) of the **AlarmService** makes it easy to visualize the relationships between the alarm class and the alarm recipient. These relationships are created by linking the alarm class to the alarm recipient. In addition to the wire sheet and property sheet views, the system provides several other **AlarmService** views.

Alarm state

Alarms may be in an alarm state or acknowledged. They may be open or cleared.

Each alarm is a single record in the system database that changes among one of four states.

- Alarm condition exists: the **alarm** state

When an event triggers an alarm, it remains in effect until it is acknowledged.

- Alarm acknowledged: the **acknowledged** state

The alarm has been acknowledged by the recipient. Acknowledged alarms may be normal alarms.

- Alarm status is normal: the **normal** state

Alarm is a normal alarm that has been acknowledged: **acknowledged normal alarm**

- Alarm status is force clear: the **force clear** state

Alarm is cleared from the alarm console. The alarm state must be normal and acknowledged.

In addition to these states, an alarm may be *open* or *cleared* (closed). An alarm is considered open when it is *not*:

- acknowledged and normal
- acknowledged and an alert

Open alarms display in the alarm console. Cleared alarms do not display in the alarm console. The table shows the conditions that result in an alarm being open or cleared.

Alarm state	Acknowledge State	Open or cleared
Offnormal or Fault	Unacknowledged	Open
Offnormal or Fault	Acknowledged	Open
Normal	Unacknowledged	Open
Normal	Acknowledged	Cleared

Alarm instructions

Each alarm can have customized instructions assigned to it so that any time an alarm is generated, the instructions are presented with the alarm notification (in the **Alarm Record** window).

Alarm instructions provide information for the system operator. Usually they concern how to handle the condition that gave rise to the alarm. Instructions are created, assigned, and edited from the **Instructions** view.

Alarm notes

Notes are simple text entries that are associated with a particular alarm. They facilitate communication between operators and may provide historical context for the event that triggered the alarm.

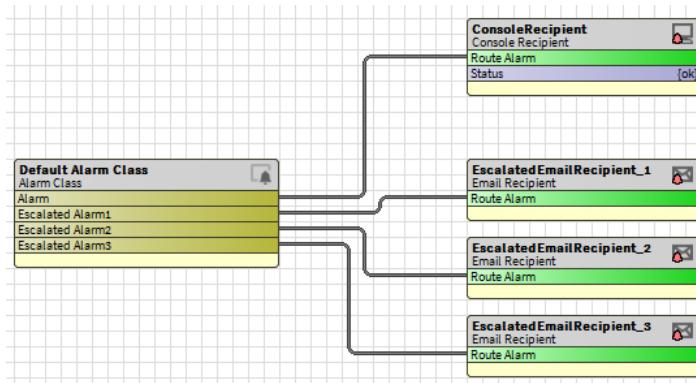
An engineer or operator may add a note to one or more alarms simultaneously. Alarm records that have notes are indicated by a note icon.

Alarm escalation

Alarm escalation is a feature that re-routes unacknowledged alarms if they have not been acknowledged within a specified amount of time.

Three levels of escalation provide up to three opportunities to re-route an alarm notification if the alarm remains unacknowledged:

- Escalation Level 1
- Escalation Level 2
- Escalation Level 3



Each level may be routed to a different alarm recipient. So that if an alarm remains unacknowledged long enough, it may be sent to as many as four different recipients (including the original recipient). If a recipient acknowledges an alarm at any level, the system does not escalate the alarm to the next Level.

In addition to having an **Enable** property, each alarm escalation level has a **Delay** property that allows you to set the amount of time that you want to allow an alarm to remain at any level before it is moved to the next escalation level.

Chapter 2 Alarm setup

Topics covered in this chapter

- ◆ Adding an alarm extension to a point
- ◆ Configuring alarm extensions
- ◆ Alarm routing setup
- ◆ Email setup
- ◆ SMS setup
- ◆ Orion database setup

Configuring a system to process alarms involves adding an alarm extension to each point's property sheet. Alarm extensions are contained in the **alarm** palette.

An alarm extension on a point issues alarms to the `AlarmService`, and updates the alarm record to reflect a state change when the parent point goes back to a normal state. The extension also notifies the point that an acknowledgment has been received.

These basic steps are required to set up the alarming process:

1. Add the proper alarm extension to each component.

Alarm extension types must match their parent component type. For example, an `OutOfRangeAlarmExt` goes with a Numeric point type and a `BooleanChangeOfStateAlarmExt` goes with a Boolean point type.

2. Configure each point's alarm extension properties to define when the point meets an alarm condition (is in an alarmed state).
3. Setting up alarm routing by defining where an alarm record is to be sent. This includes sending the alarm to the alarm console.
4. Configuring capacity and other alarm management properties.
5. Manage the alarm archive using the alarm archive management tools.

Adding an alarm extension to a point

The procedure for adding an alarm extension to a point's property sheet is basically the same for all components.

Prerequisites: The **alarm** palette is open.

- Step 1 To display the point's property sheet view, select the component in the Nav tree and do one of the following:
 - Right-click the component and click the property sheet view.
 - Select the property sheet view from the view selector.
- Step 2 Expand the extensions folder in the palette and find the extension that matches your data type and collection method.
- Step 3 Drag or copy and paste the extension onto the bottom of the properties sheet.
- Step 4 To view extension properties, expand or double-click the extension.
- Step 5 Fill in the property sheet.
- Step 6 Save your sheet.

Configuring alarm extensions

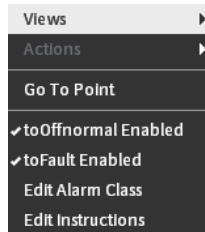
You can change extension properties one at a time or as a group using the alarm extensions manager.

Prerequisites: You are viewing the alarm extensions manager.

Step 1 Select and right-click one or more (for batch editing) alarm extensions.

Step 2 Opens the popup menu and select a change to make to all selected extensions.

For example, the following selection turns on `toOffnormal` for all selected extensions.



In addition to `toOffnormal`, you can enable and disable `toFault`.

Step 3 To change the alarm class assignment of the selected alarm extension(s), click `Edit Alarm Class`.

The system opens another menu.

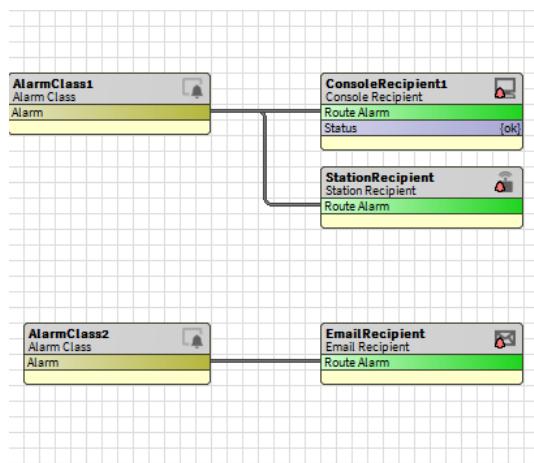
Step 4 Assign the alarm class and click **OK**.

Alarm routing setup

You define who to notify when an alarm event occurs by setting up one or more `AlarmClass` components and `AlarmRecipients`. Station-to-station alarm routing requires setup in both stations. Routing to an email or Sms recipient is configured in the point extension of the source.

How many alarm classes and recipient components to connect depend on your needs. For routing to a remote station, you specify the alarm routing in the Alarms extension under the EC-Net Station that represents the remote EC-BOS.

- To have a variety of alarming and routing options available for selection from the alarm extension properties, you would set up multiple alarm classes. For example, you may set up an alarm class that routes to the `ConsoleRecipient` and `StationRecipient`, while another alarm class routes alarms only to an email recipient.



- To configure alarms in one station (usually a station on a controller) to be received in another station (usually the supervisor station), you would add an `AlarmClass` component and a `StationRecipient` in the `AlarmService` container of the sending (source) station. You then link the `AlarmClass` component to the `StationRecipient`.

It is not necessary to use the same AlarmClass components in the two stations (although that is one approach). In the receiving station, if desired, you can configure all alarms from a remote station to route to a single local AlarmClass. Or, you can also use a “prepend” or “append” scheme to route to different (but associated) AlarmClasses, where all schemes work based on the names of the AlarmClasses.

NOTE: In the receiving station’s AlarmService, if you want the remotely-generated alarms to appear in any alarm consoles, be sure to link associated AlarmClass components to the necessary AlarmConsole components.

Setting up acknowledgment requirements

When an operator acknowledges an alarm, you can provide a set of common explanations to document the acknowledgment.

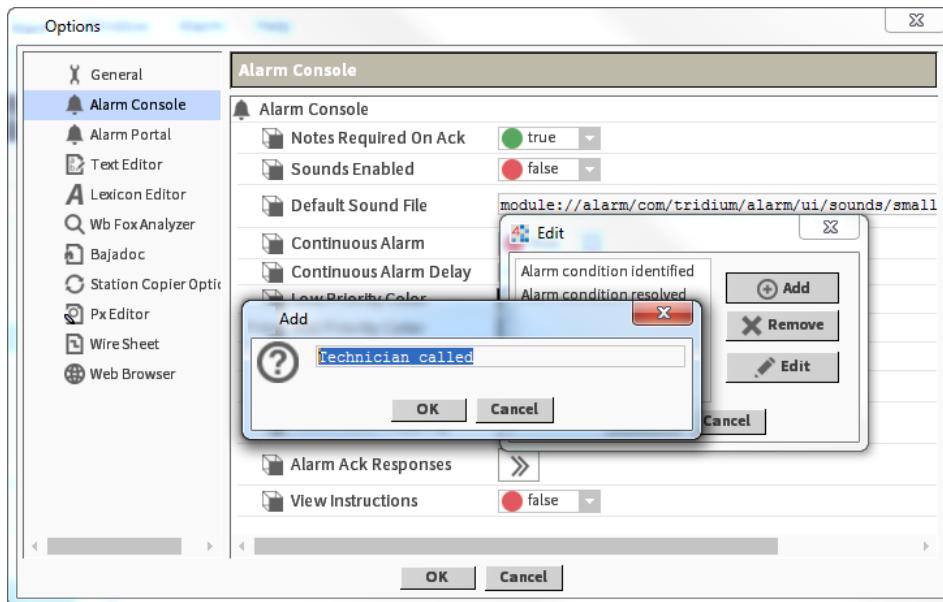
Step 1 Click **Tools**→**Options**→**Alarm Console**.

Step 2 Locate the **Notes Required on Ack** property and set it to `true` and click **OK**.

Step 3 To open the **Edit** window, click the chevron (`>>`) to the right of the **Alarm Ack Responses** property.

Step 4 To create a note, click **Add**.

The system displays the **Add** window.



Step 5 Type a note in the add field. This information will help management track the alarm resolution process. You should provide realistic explanations for an acknowledgment without making the list too cumbersome.

When an operator acknowledges an alarm, the **Notes** window opens. This list provides standard alarm acknowledgment notes for the operator to include in the alarm record when acknowledging the alarm.

Choosing the alarms to view

You use the **Filters** window to select which alarms to view in the alarm console. This view affects only which alarms display in the alarm console. It does not allow you to edit an alarm record or perform any alarm maintenance.

Step 1 Open the **Filters** window.

The **Source**, **Alarm Class**, and **User** properties are text strings that allow you to filter using wildcards.

- The wildcard (%) appears by default. If you are using **Source** with a wildcard, put the percent character (%) both before and after the text string. Otherwise, no records match.
- The drop-down list provides options. **Must Not Equal** and **Must Not be Like** do not support the wildcard.
- **Case Sensitive** defaults to enabled.

Step 2 Configure the filter to suit your needs and click **OK**.

For example, to filter out all Normal alarms, enable **Source State**, click the chevron, select all states except Normal, and click **OK**.

ATTENTION: Filter settings do not reset automatically. To view all alarm records, open the Filters window and remove the check mark for any checked filter properties.

Combining different types of alarms

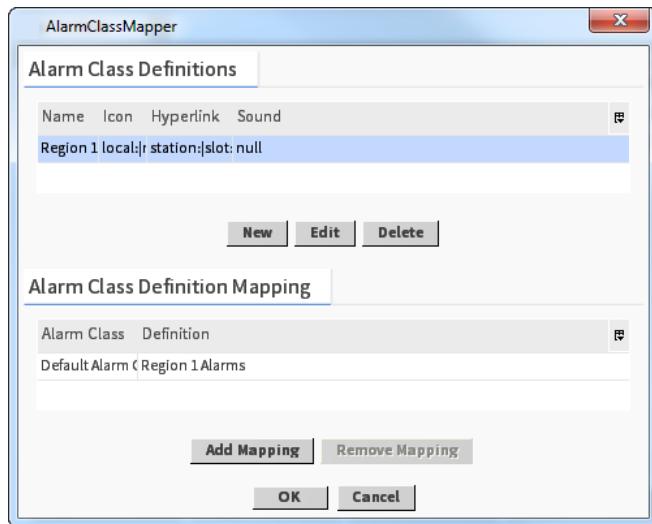
Alarm class mapping allows you to set up the system so that you can import alarms from a variety of alarm classes and have them display, link, and sound in a common manner. You do this by creating alarm class definitions and associating (mapping) existing alarm classes to the definitions.

Prerequisites: You are viewing the alarm console.

Step 1 Click **Alarm**→**AlarmClass Mapping**

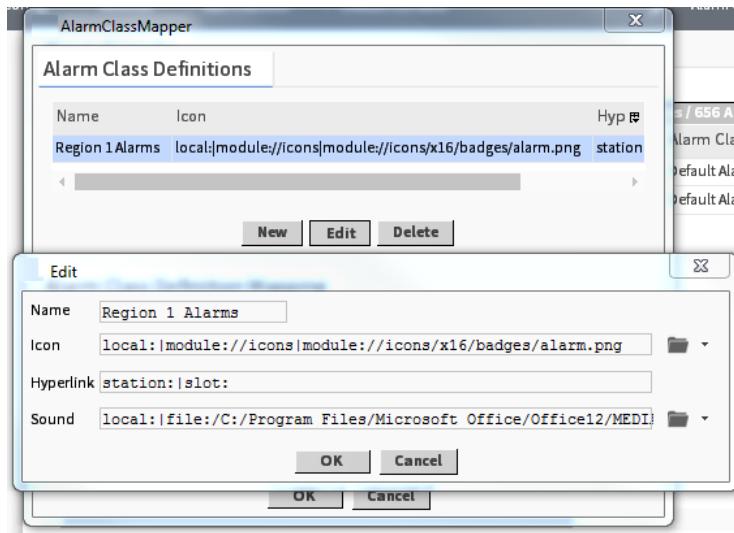
You can also access this window from the **Alarm Console** window inside the **Options** window.

The system displays the **Alarm Class Mapper** window.

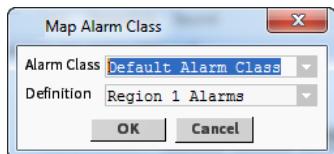


Step 2 To create an alarm mapper definition, click **New** in the upper pane.

The system displays the **New** window.



- Step 3 Fill in the definition properties and click **OK**.
- Step 4 In the upper pane, select a definition.
- Step 5 In the lower pane, select the alarm class to associate with the definition and click **Add Mapping**.
The system displays the **Map Alarm Class** window.



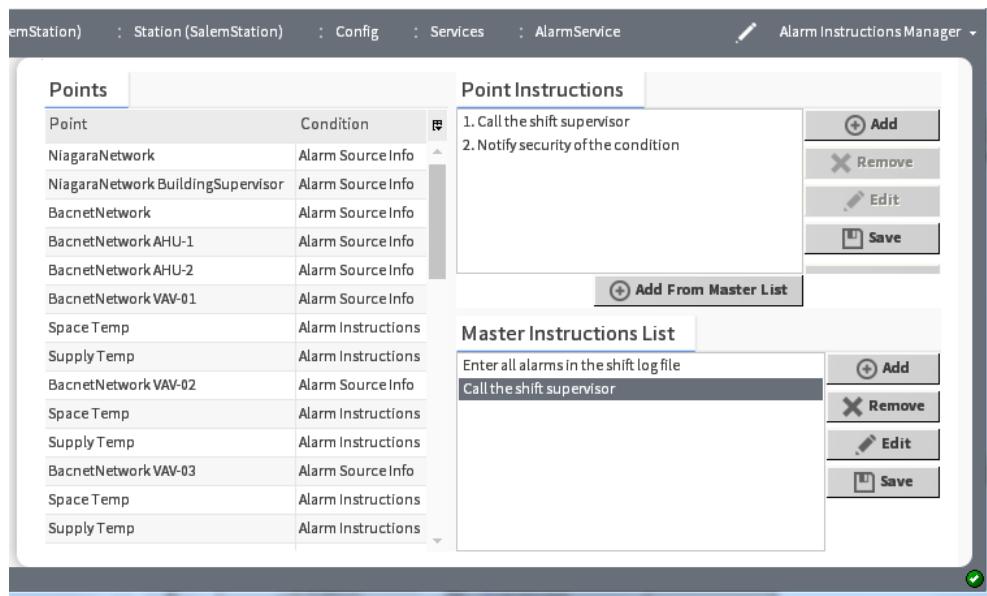
- Step 6 For the selected **Alarm Class**, select the **Definition** and click **OK**.

NOTE: The icons, hyperlinks, and sounds in the alarm mapper definition do not override those that are assigned in the alarm extension itself. If these parameters are assigned in both the alarm extension and in the alarm class mapper definition, the alarm class mapper definition parameters are ignored.

Setting up alarm instructions

Alarm instructions provide immediate assistance to the system operator regarding how to recover from an alarm condition. You add instructions to individual points so that when the point goes into an alarm condition the instruction is available to guide the operator.

- Step 1 Access the **Instructions Manager** view.



The screen capture above shows an example of one point and one master instruction selected.

Step 2 Add or edit point instructions using the control buttons in the **Point Instructions** pane.

Step 3 Add any master instructions in the **Master Instructions List** pane.

The master instructions list allows you to enter instructions that are available to be assigned to any point.

Step 4 Select the points that require instructions.

You may hold the **Shift** and **Ctrl** keys to select multiple points that receive the same instructions.

NOTE: If you are selecting multiple points to edit their assigned instructions, all must have identical instructions for the instructions to appear in the **Point Instructions** pane. If there are differences between instructions for the selected points, nothing appears in the pane.

Step 5 In the **Master Instructions List** pane, select the master instruction(s) to associate with the selected point(s) and click **Add From Master List**.

You may hold the **Shift** and **Ctrl** keys to select multiple instructions to assign.

Step 6 Click **Save**.

ATTENTION: Click **Save** immediately after making any change. If the screen refreshes and you have not saved, you lose any instructions you are in the process of entering.

Once you add the instructions text to an alarm, the instructions appear in the **Alarm Record** window (accessible from the **Open Alarm Sources** window) for any new alarms associated with the point.

Scheduling a periodic email report from a station

Configuring the system to periodically email alarm data from a station to an operator or manager improves the chances that a human being will pay attention to the alarms and do something about them.

Step 1 Open the **report** palette and drag the **ReportService** component to the **Config→Services** container.

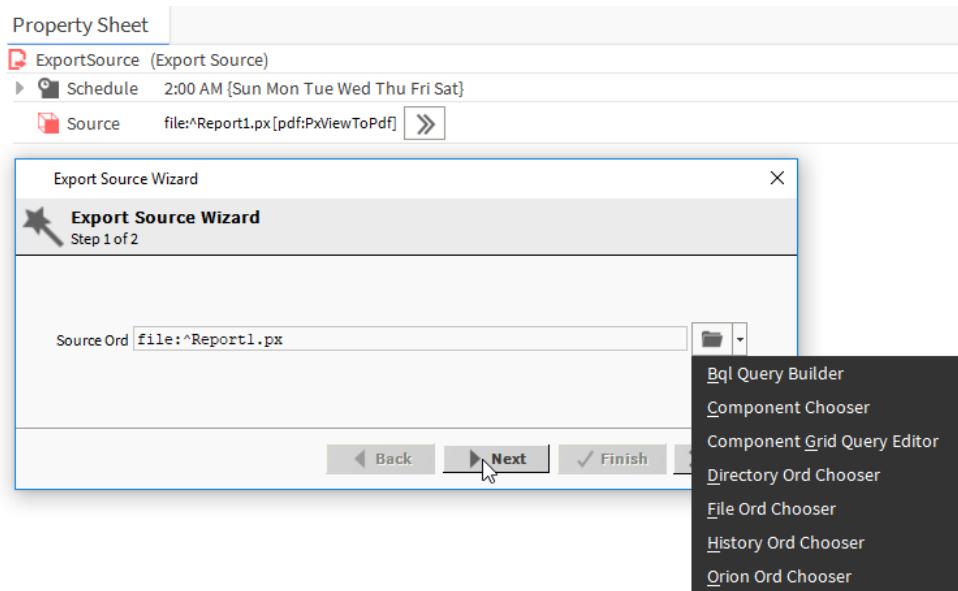
Step 2 Drag the **ExportSource** component from the **report** palette to the **ReportService** component.

Step 3 To open the **ExportSource** property sheet, double-click the **ExportSource** node in the Nav tree.

The **ExportSource** property sheet opens.

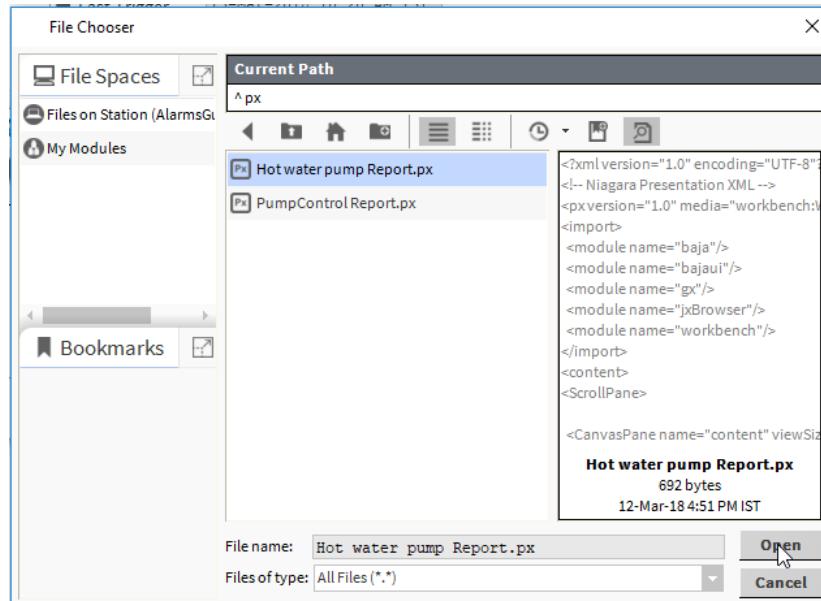
Step 4 In **Source** property, click double chevron.

The **Export Source Wizard** window opens.



Step 5 Click the folder icon and select the **File Ord Chooser** option from the drop-down list.

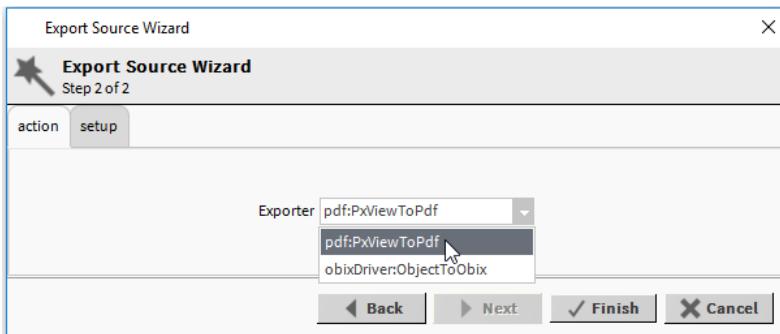
The **File Chooser** window opens.



Step 6 Select the **Report (px file)** and click **Open**.

The **Export Source Wizard** window opens again.

Step 7 Click **Next** and select the type of output from the **Exporter** drop-down list.



Step 8 Click the **Finish** button.

Step 9 Access the view you wish to periodically send from the station to the recipient.

Step 10 Click the Export icon on the toolbar or click **File→Export** from the main menu.

Email setup

Configuring a system to send and receive email involves adding the email-related components to the **Services** container and configuring **EmailRecipient** components.

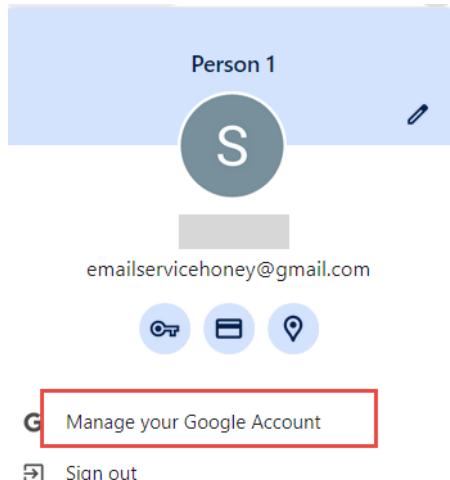
Email components are available in the **email** and **report** palettes.

Setting Up a Gmail Account for using Outgoing Email

You need to set up a gmail account password in order to configure an outgoing email service.

Prerequisites: Gmail account is created

Step 1 Login to the gmail account. Click **Manage your Google Account**



Step 2 To set **2-Step Verification** select **Security**.

The screenshot shows the 'How you sign in to Google' section of the Google Account settings. It lists several security features with status indicators and links to edit them:

- 2-Step Verification: On since Jan 22
- Passkeys: Start using passkeys
- Password: Last changed Jan 22
- Google prompt: 1 device
- 2-Step Verification phones: 096656 14597
- Recovery phone: Add a mobile phone number
- Recovery email: Verify kelkarsweety@gmail.com

Below the list, it says "You can add more sign-in options" and shows buttons for "Security keys", "Authenticator", "Backup 2-Step Verification phones", and "Backup codes".

Step 3 On the **Password** row, click the arrow (>) to open a field where you can enter the password for your Google account.

The screenshot shows the Google sign-in screen with the message "Hi [redacted]". Below it is a dropdown menu showing "emailservicehoney@gmail.com". A message below says "To continue, first verify it's you".

The password entry form has a placeholder "Enter your password" and a "Show password" checkbox. At the bottom, there are "Forgot password?" and "Next" buttons.

Step 4 Enter the password and complete the 2-step verification. 2-Step verification can be done by using a phone number or alternate email ID.

Email Id Is verified.

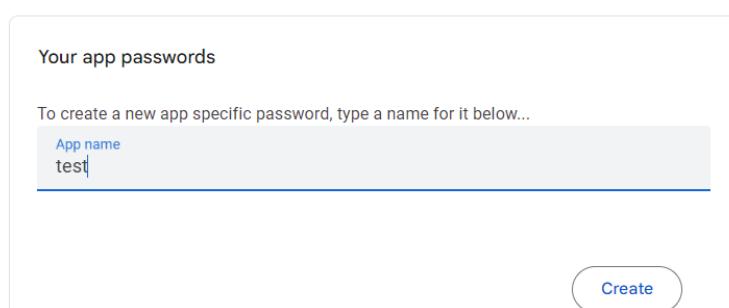
The screenshot shows a confirmation message for 2-step verification via a voice or text message. It displays the phone number "096656 14556" with the word "Verified" next to it. A note below says "Verification codes are sent by text message."

Step 5 To add the third party application navigate to **App password**.

App passwords help you sign into your Google Account on older apps and services that don't support modern security standards.

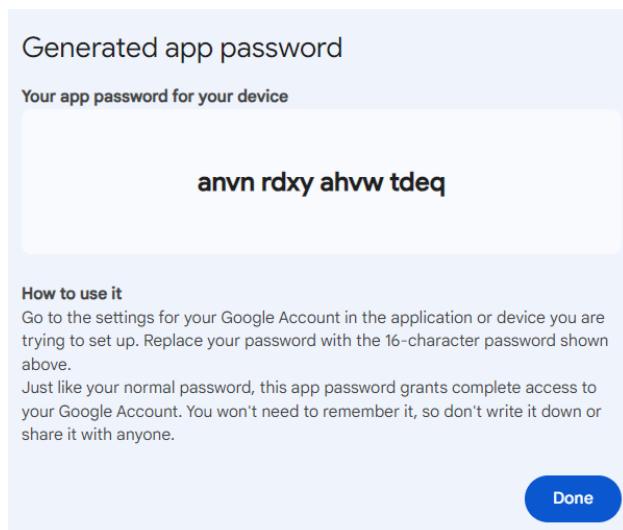
App passwords are less secure than using up-to-date apps and services that use modern security standards. Before you create an app password, you should check to see if your app needs this in order to sign in.

[Learn more](#)



Step 6 Type the App name and click **Create**.

This creates the new App and generates the App password. This App password is used as the password of the email account while configuring outgoing email service..



Setting up email components

Use the incoming and outgoing email components to setup an email account in a EC-Net station.

Prerequisites: Your station is licensed to use the email feature.

You have a Gmail account created.

You are not on a restricted network or VPN where Gmail use is restricted.

Step 1 For email messaging, open the **email** palette and drag the **EmailService** to the **Config→Services** container.

Step 2 From the **email** palette, drag the **IncomingAccount** and **OutgoingAccount** components to the **EmailService**.

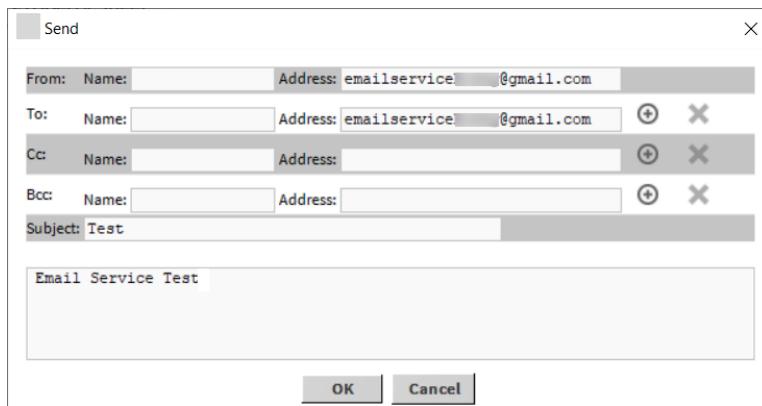
You may have multiple incoming and outgoing accounts, which allows you to set up connections to servers that support secure communication and others that may not.

- Step 3** Double-click the **OutgoingAccount** and configure following properties.
- Hostname** enter the host name as `smtp.gmail.com`.
 - Port** enter port number as `587`.
 - Email Authenticator** select the email authenticator from the drop-down list.
 - Account** enter the gmail account ID.
 - Password** Use the generated App password as password (refer to the “Setting Up a Gmail Account for using Outgoing Email” topic for generating an App password).

Step 4 **Save** the configuration.

Step 5 To send an email from EC-Net 4 Pro, right-click **EmailService**→**OutgoingAccount**→**Actions**→**Send**.

The **Send** window opens.



- Step 6** Enter the email address in **From** and **To** fields, type the subject and email body and click **OK**.
The email is sent to recipient and the number of emails sent are displayed in **Number Sent**.
- Step 7** To prepare to send alarms via email, drag the **EmailRecipient** from the **email** palette to the **EmailService** node in the Nav tree.
- Step 8** To prepare to acknowledge alarms via email, drag the **EmailAlarmAcknowledger** from the **email** palette to the **EmailService** node in the Nav tree.

Configuring the EmailRecipient

Two **EmailRecipient** components send email from the system. One is in the **email** palette. This component manages alarms that are configured to be sent via email. The second is in the **report** palette. It manages the sending of reports to one or more specific email addresses.

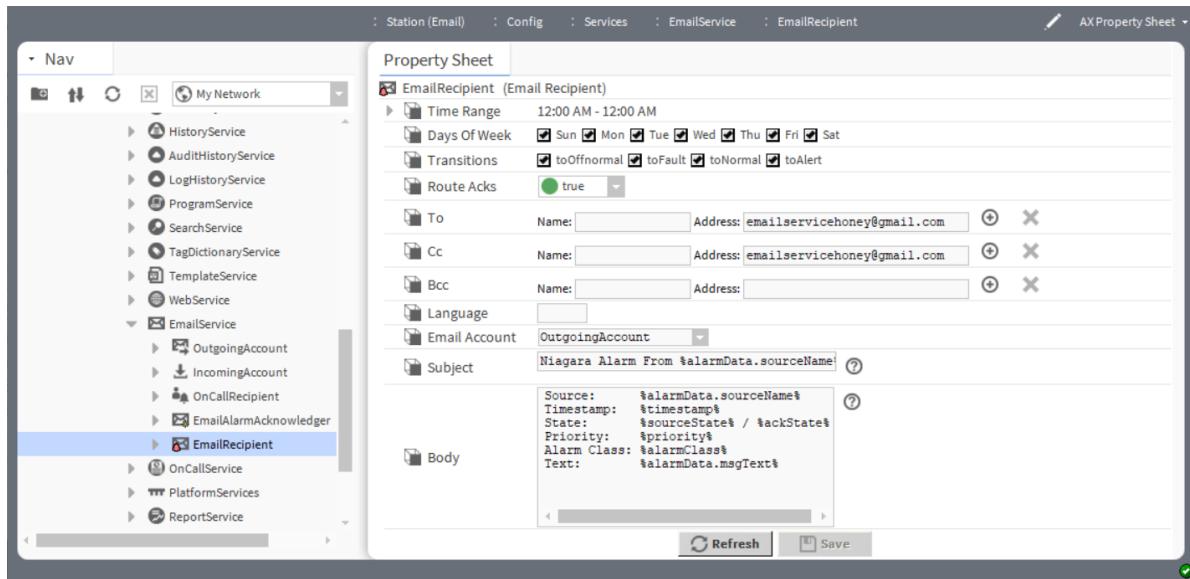
Prerequisites: The **EmailService** and **ReportService** are available in the station’s **Config**→**Services** container.

You have a Gmail account created.

You are not on a network or VPN with restricted access to Gmail.

- Step 1** Right-click the **EmailRecipient** under **ReportServices** or **EmailServices** nodes and click **Views**→**Property Sheet**.

The Property Sheet opens.



- Step 2 Enter the name and email address of recipient(s) configured in outgoing email service.
- Step 3 Select **OutgoingAccount** from the drop-down list for **Email Account** and click **Save**.
- Step 4 To send alarms via email right—click **EmailRecipient**→**Actions** →**Route Alarm**.
This triggers an email to the recipient email Id.
- Step 5 Do the same for the alarm **EmailRecipients**.

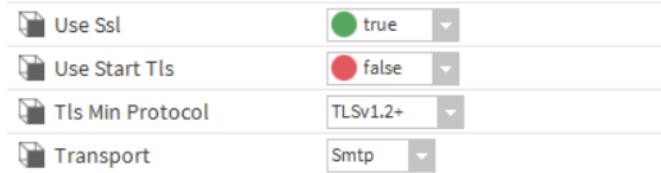
Securing email

EC-Net supports secure outgoing and incoming email using TLS (Transport Layer Security).

Prerequisites: The **EmailService** is in your **Services** container with both **IncomingAccount** and **OutgoingAccount** components. If not, add the **EmailService** component from the **email** palette before you begin. You may have multiple incoming and outgoing accounts, which allow you to set up connections to servers that support secure communication and others that may not.

Follow this procedure for both your incoming and outgoing accounts.

- Step 1 In the station's Nav tree, right-click the **IncomingAccount** or **OutgoingAccount** node under the **EmailService** container and click **Views**→**Property Sheet**. The account **Property Sheet** opens.
- Step 2 As of EC-Net 4.13, for **Email Authenticator**, select the preferred email authentication type (for example, by Microsoft 365/Exchange and Gmail). For more information, see “email-IncomingAccount” and “email-OutgoingAccount” components in the Alarms Guide.
- Step 3 The system provides two secure communication options:



- The default, **Use Ssl**, encrypts the connection before it is ever opened. To do the encryption, it automatically accepts the TLS version that is configured in the **Tls Min Protocol**, using the best TLS level that is supported by both the station and the server.
- Use Start Tls** makes it possible to connect to an unprotected email server. The handshake occurs without encryption, then switches to encrypt the message itself.

Use Ssl and **Use Start Tls** are mutually exclusive. Both may be false.

- For **Tls Min Protocol**, select the minimum acceptable TLS version to use.

Step 4 To provide secure email, set one property to `true`, and the other `false`.

The example shows the configuration when **Transport** is set to `Ssmtp`.

Incoming and outgoing messages use different ports for secure communication as follows:

Table 1 Email ports based on transport type

	Outgoing (SMTP)	Incoming (IMAP)	Incoming (POP3)
Not encrypted	25	143	110
Use Start Tls	587	143	110
Use Ssl	465	993	995

Not all servers follow these rules. You may need to check with your ISP (Internet Service Provider).

NOTE: Do not enable or disable the **Use Ssl** or **Use Start Tls** properties without configuring the **Port**.

Step 5 Change the **Port** to the appropriate port number (defaults are: 25 for outgoing and 110 for incoming email).

The system also provides server identity verification. For most email servers, the root certificate is already in the **System Trust Store**.

Step 6 If no root CA certificate for the email server is in the station's **System Trust Store** (third-party signed certificate) or in the **User Trust Store** (your own certificate if you provide your own secure email server), either:

- Import your own or a third-party signed root CA certificate into the station's **User Trust Store**.
- Or, if you do not have a signed certificate yet, accept the system-generated, self-signed certificate when challenged. This creates an exemption in the **Allowed Hosts** list. Later, import the root CA certificate and delete this temporary exemption.

SMS setup

The **SmsService** sends text messages to mobile (cellular) phones. The SMS driver allows for the retransmitting of alarm information and the sending general text messages.

The term SMS (Simple Message Service) is a technology that is available on GSM (Global System for Mobile Communications) devices. For more details, refer to the *Sms Users Guide*.

Setting up SMS components

The **sms** palette contains the SMS components.

Prerequisites: Your station is licensed to use the SMS feature.

Step 1 Open the **sms** palette and drag the **SmsService** component to the **Config→Services** container.

Step 2 To prepare to acknowledge alarms via sms, drag the **SmsAlarmAcknowledger** from the **sms** palette to the **SmsService** node in the Nav tree.

Configuring an SmsRecipient

Prerequisites: The **SmsService** is available in the station's **Config→Services** container.

Step 1 Right-click the **SmsRecipient** under the **SmsServices** and click **Views→Property Sheet**.

Step 2 Enter the **Name** of the user to receive the Sms.

When properly configured, the **SmsAlarmAcknowledger** checks incoming text messages to see if the sender's phone number matches the phone number of a User that is currently in the local **User-Service** database. No alarm is acknowledged unless it is first determined that a matching user and phone number sent the acknowledgement message. When validated, the user name is assigned to the alarm database as the person who acknowledged the alarm.

Step 3 Enter the **Phone Number** of the recipient(s).

Step 4 Enter a **UUID**.

The system assigns a unique UUID (Universally Unique Identifier) to each alarm. It uses this identifier to keep track of the alarm. For the **SmsRecipient**, the UUID must be in the body of the Sms, so that it is present in the reply to message that acknowledges the alarm. This requires that the cell phone device be configured to reply to sender with original text (or the user may manually enter the UUID).

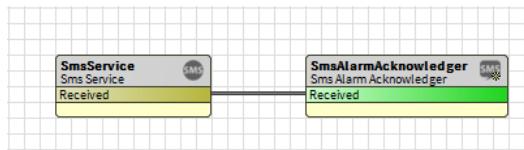
To ensure that the original text contains the required UUID, you must enter the following text in the **SmsRecipient Body** property: `UUID:%uuid%`.

Step 5 Click **Save**

Configuring the **SmsAlarmAcknowledger**

The **SmsAlarmAcknowledger** provides a way to acknowledge alarms by replying to an alarm text message.

Step 1 Double-click the **SmsAlarmAcknowledger**.



Step 2 Link the Received topic on the **SmsService** to the Received slot of the **SmsAlarmAcknowledger**.

Step 3 To view the **SmsAlarmAcknowledger** property sheet, click **View→Property Sheet**

Step 4 Configure how you want to acknowledge all alarms from the same source (one by one or all with a single reply).

Orion database setup

By default, the framework supports a standard file database for storing alarms. Storing open alarms in this local file alarm database and cleared alarms in a remote Orion alarm database provides an effective way to manage alarms.

Open alarms include alarms that have not been acknowledged and not yet transitioned back to normal. Cleared alarms are alarms that have been acknowledged and transitioned back to normal.

This table summarizes the possible alarm database configurations.

Table 2 Configurations table

Description	Local alarm database	Remote alarm database	Comments
Station with the default local file alarm database and no remote database		None	This configuration is for small installations that generate few alarms.
Station is configured with an OrionAlarmDatabase component. All alarms are stored in the remote database	N/A		Disadvantage: connection ups and downs can disrupt open alarm storage and retrieval.
Station with a local file alarm database for open alarms, and a remote Orion alarm database for cleared alarms			<p>This is the best configuration. The local Orion alarm database in the station stores open alarms. The remote, larger Orion alarm database stores cleared alarms.</p> <p>Alarm transitions, acknowledgements, adding notes, etc. update the local alarm database for viewing on an alarm console. Over time these should only be a small percentage of the total alarms and the local file alarm database should be large enough to handle them. Connection ups and downs should not impact these alarms.</p> <p>The station archives cleared alarms to the remote Orion alarm database on a regular schedule.</p>

The first two rows may describe your current alarm database configuration. The tasks in this section explain how to migrate from the first two configurations to the third. Gold platters represent open alarms. Blue platters represent cleared alarms. Larger remote databases can store many more cleared alarms than can be stored locally.

The **alarmOrion** palette provides the components to configure these databases. For more information about relational databases, refer to the *Rdbms Driver Guide*.

Setting up a remote Orion alarm database

Open alarms need to be easily accessible in a station and cleared alarms need to be archived for historical and regulatory purposes. This procedure sets up a remote Orion alarm database for cleared alarms and configures when to back up these alarms from the local file alarm database to the remote Orion alarm database. Use this procedure if you currently have only the default local file alarm database in your station.

Prerequisites: Your station is licensed for the archive alarm feature. You are working in EC-Net 4 Pro and are connected to the station. You have a remote Orion database connected and ready to use for archiving cleared alarms.

Step 1 Open one of the relational database palettes based on your type of database.

The palettes are:

rdbHsqlDb supports the default HSQL database that comes by default with a controller.

rdbMySQL supports a MySQL database.

rdbOracle supports an Oracle database.

rdbSqlServer supports a Microsoft Sql Server.

- Step 2 Add the **RdbmsNetwork** to your station's **Config→Drivers** container.

The framework uses a network and device model to configure an RDBMS.

- Step 3 Add the database component (**HsqliteDatabase**, **MySQLDatabase**, **OracleDatabase** or **SqlServerDatabase**) to the **RdbmsNetwork**.

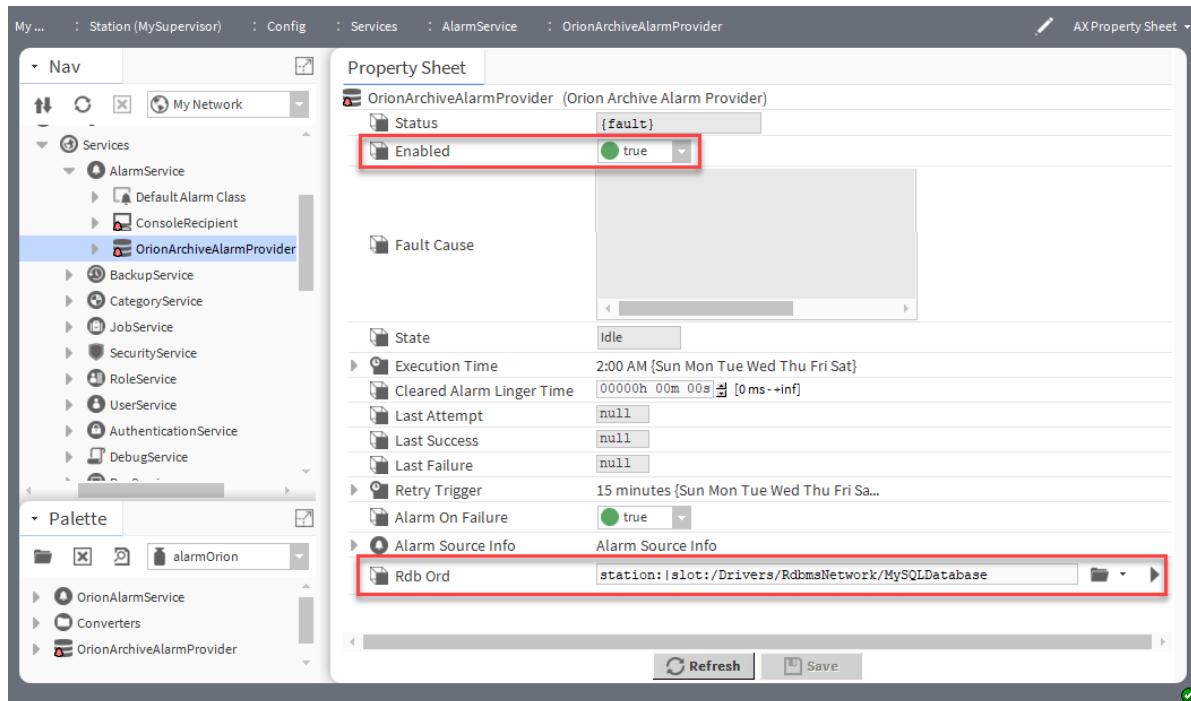
This defines the type of remote Orion alarm database on your network.

- Step 4 Configure the database component (device) to connect to your remote RDBMS server.

- Step 5 Open the **Orion** palette and add an **OrionService** component to the **Config→Services** container.

- Step 6 Open the **AlarmOrion** palette and add the **OrionArchiveAlarmProvider** to the **AlarmService** and double-click the provider.

The **OrionArchiveAlarmProvider Property Sheet** opens.



- Step 7 Set **Enabled** to **true** and configure **Rdb Ord** to point to the RDBMS you configured earlier.

- Step 8 Expand **Execution Time** and configure when to trigger an archive of cleared alarms by setting: **Trigger Mode** (frequency) and **Time Of Day** (time).

- Step 9 Save your changes and restart the station.

This configures the file alarm database in your station to store open alarms and to periodically transfer cleared alarms to the new remote Orion alarm database.

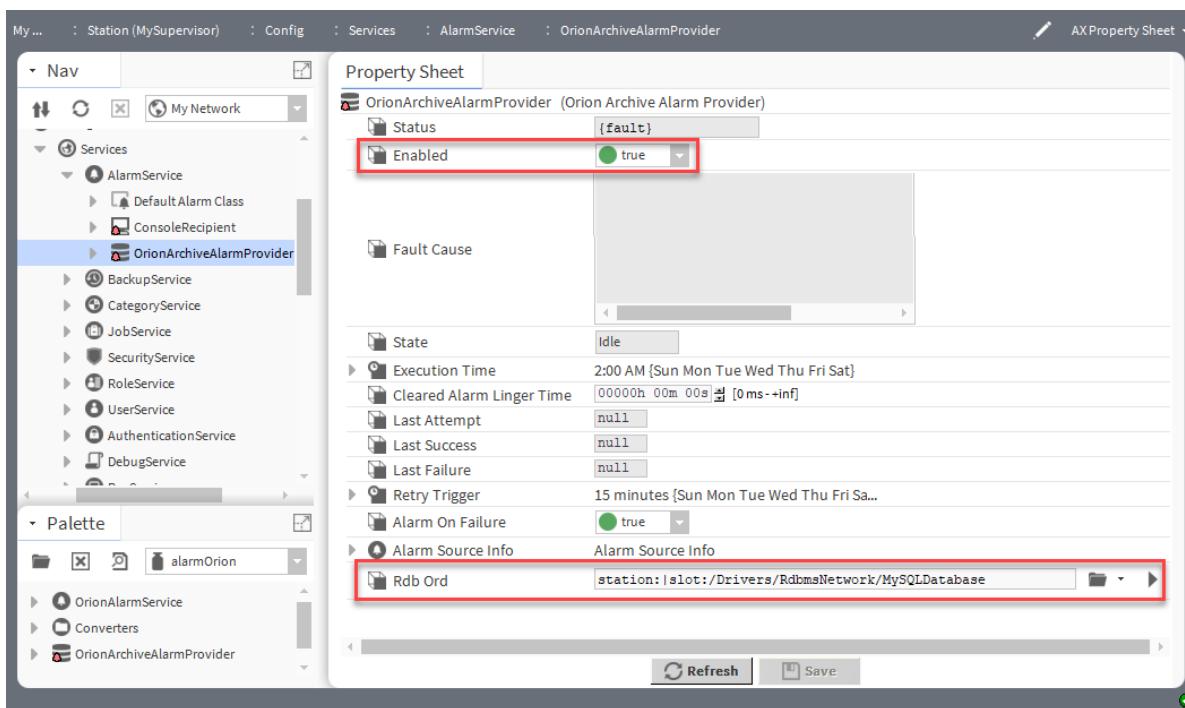
Upgrading from an Orion archive database

If your station is configured to archive all alarms (open and cleared) on a regular basis to a remote Orion archive database, that database more than likely contains open alarms. This procedure migrates a local file alarm database with a remote Orion archive database to a new local file alarm database for open alarms and a

remote Orion alarm database for cleared alarms. Use this procedure if you currently have both a local file alarm database a remote Orion archive database.

Prerequisites: Your station is licensed for the archive alarm feature and configured with the RdbmsNetwork. You have an OrionAlarmService in your station's **Services** container that supports your remote Orion archive database. This database contains open alarms. You are working in EC-Net 4 Pro and are connected to the station.

- Step 1 Open the **alarm** palette and add an **AlarmService** to your **Config→Services** container.
Temporarily you now have two alarm service components in your station.
- Step 2 Copy the alarm classes and recipients from the current **AlarmService** to the new **AlarmService**.
This sets up the new **AlarmService** with alarm priorities and recipients.
- Step 3 Add an **OrionArchiveAlarmProvider** to the newly-added **AlarmService** and double-click the provider.
The **OrionArchiveAlarmProvider Property Sheet** opens.



- Step 4 Set **Enabled** to **true** and configure **Rdb Ord** to point to the remote Orion alarms database used by the **OrionAlarmService**.
- Step 5 Expand **Execution Time** and configure when to trigger an archive of cleared alarms: **Trigger Mode** (frequency) and **Time Of Day** (time).
- Step 6 Remove the original **AlarmService** by right-clicking it and clicking **Delete**.
You are back to having only one **AlarmService** in the station, which is required.
- Step 7 Save your changes and start or restart the station.
The station opens with the new alarms database configuration.
- Step 8 To move the open alarms from the remote Orion alarm database to the new file alarm database, right-click **OrionArchiveAlarmProvider** and click **Actions→Import Open Alarms**.

The new local alarm database now contains all open alarms and the remote Orion alarm database contains only acknowledged alarms and alarms that have transitioned to normal.

Alarm database troubleshooting

If the alarm database encounters problems, this topic may help.

When attempting to connect to the Orion Alarm Database I get this error: “[alarm.database] Database connection misconfigured” where [alarm.database] is the database name.

The **OrionAlarmService** checks the SQL server database prepareSQL property at startup. This check may generate this error.

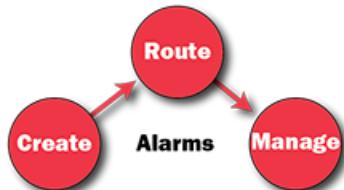
If it is not present, the default value for the database's prepareSQL property (extraConnectionProperties) is 3. Setting this property to 1 may result in increased performance. However, setting this property to 1 when using the jTDS driver may cause this warning. The extraConnectionProperties values are defined here: <http://jtds.sourceforge.net/faq.html>. If you happen to see different results in performance, you can safely ignore the error message.

Chapter 3 Alarm management

Topics covered in this chapter

- ◆ Viewing and acknowledging alarms from the alarm console
- ◆ Acknowledging alarms from the alarm portal
- ◆ Silencing alarms
- ◆ Inhibiting alarms
- ◆ Adding a note to an alarm
- ◆ Creating a PDF of the current view
- ◆ Deleting alarm records
- ◆ Alarm best practices
- ◆ Changing the alarm class assignment
- ◆ Tracking alarms that use the OnCallService
- ◆ Viewing alarms

The alarm process begins with the source of a condition that triggers an alarm. After creating the alarm, the system routes it to a recipient whose job it is to manage each alarm using the alarm console.



This simple process provides highly specific and flexible alarming life cycle management.

1. Alarm creation

Alarms are generated by components using an alarm extension. The alarm extensions create the alarm whenever specified values are outside of normal range. Alarms are then handled by the alarm service.

2. Alarm routing

In addition to allowing you to specify the routing destinations (including archiving destinations, the alarm service provides notification and acknowledgment properties:

- **Notification**

Alarms are routed to one or more recipients based on the class of the alarm. This includes notification by email, at the alarm console, on a lineprinter, or at one or more remote stations.

- **Acknowledgment**

Alarms may require a response from those who are notified. If a required acknowledgment is not received within an optionally-specified time, alarms can be escalated and re-routed to other designated alarm recipients.

3. Alarm management

Typically open alarms, (alarms not yet acknowledged and/or acknowledged but not yet transitioned back to normal) are managed using the alarm console. Open alarms can be stored in records that are managed by the local alarm database management interface, as they are often updated (through alarm transitions, acknowledgement, adding notes, etc.) and viewed (via alarm console).

In EC-Net 4 v4.11 and later, there is added support for the Alarm Archive feature in the Alarm Service. The Orion Archive Alarm Provider added to the Alarm Service provides the mechanism to archive cleared and closed alarms. This is useful for customers who need to store a large number of alarms for historical and regulatory purposes. For more details, see “alarm-OrionArchiveAlarmProvider” in the “Components” section of the Rdbms Driver Guide.

Viewing and acknowledging alarms from the alarm console

Acknowledging an alarm verifies human awareness that a potentially detrimental event has occurred or a condition exists with a device that is outside its normal range of operation. You cannot remove an alarm until you acknowledge it and until the alarm source returns to a normal state (no longer in alarm). This procedure acknowledges alarms from the alarm console.

Prerequisites: A ConsoleRecipient exists in the station.

Step 1 To display the **AX Alarm Console**, right-click the **ConsoleRecipient** node in Nav tree and click **Views→AX Alarm Console**.

The **AX Alarm Console** opens.

Open Alarm Sources						1 Sources / 499 Alarms
Timestamp	Source State	Ack State	Alarm Class	Priority	Message Text	
31-Jan-17 3:39:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:39:00 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:00 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:59 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:35:59 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:35:59 PM IST	Normal	Acknowledged	Default Alarm Class	255		

Each record that appears in the alarm console table represents one alarm source and one or more alarms from that source.

- Step 2 To silence an alarm, select it and click the **Silence** button at the bottom of the view.
- Step 3 To sort the alarms in order of any column, click the column title (once for ascending, twice for descending).
- Step 4 To view all current alarms from a particular point, double-click point's row in the table.
This opens the **Open Alarm Sources** view.
- Step 5 To use sound options, click the sound icon in the toolbar of the **AX Alarm Console** window.
- Step 6 Select one or more alarms to acknowledge. You may select multiple alarms using the **Shift** or **Ctrl** keys.
- Step 7 To view details about the selected alarm, double-click the alarm row in the table or select the alarm and click the **Hyperlink** button at the bottom of the **AX Alarm Console** view.
- Step 8 To acknowledge one or more alarms, do one of the following:
- To acknowledge the latest (most recent) alarm(s), right-click the selected alarm(s) and click **Alarm Acknowledge Most Recent** or click **Alarm→Acknowledge** from the menu.
 - To acknowledge all alarms that are reported from a single source, click **Alarm→Acknowledge All** or click the **Acknowledge All** button at the bottom of the console.

The system acknowledges the latest or all alarms from each selected alarm source.

Acknowledging alarms from the alarm portal

This procedure acknowledges alarms from the alarm portal.

Prerequisites:

The alarm portal must be running and configured to include all desired alarm consoles before it can be used to acknowledge alarms.

Step 1 Click Tools→Alarm Portal.

The **Alarm Portal** view displays in the view pane.

Step 2 If the Alarm Console does not appear in the **Alarm Console Monitor** table (top portion of the **Alarm Portal**), follow these steps:

- Right-click in the **Alarm Console Monitor** area and select **Add Alarm Console**

The **Add Alarm Console** wizard appears.

- Complete the **Add Alarm Console** wizard by entering the following information:

- Host address information, as needed (IP or dialup)
- Credentials information (username and password)
- Choose the desired console, by Ord (if more than one is present at the host address)

- Click the **Finish** button to complete the **Add Alarm Console** wizard.

The alarm console appears in the **Alarm Console Monitor** table (top portion of the **Alarm Portal** view). Any alarms will appear in the **Open Alarm Sources** table (bottom portion of the **Alarm Portal** view).

Step 3 In the **Open Alarm Sources** table, select alarm the sources to acknowledge. To select multiple alarms, use the **Shift** or **Ctrl** keys.

Step 4 Do one of the following:

- To acknowledge the latest (most recent) alarm, click **Alarm→Acknowledge** or click the **Acknowledge** button at the bottom of the console.
- To acknowledge all alarms that are reported from a single source, click **Alarm→Acknowledge All** or click the **Acknowledge All** button at the bottom of the console.

The latest or all alarms from each selected alarm source are acknowledged.

Silencing alarms

This procedure turns off the alarm sound. It should be followed by resolving the alarm condition and acknowledging the alarm.

Prerequisites:

The alarm console is open.

Step 1 Select alarm source(s) to silence. You may select multiple alarms using the **Shift** or **Ctrl** keys.

Step 2 To silence one or more alarms, click the **Alarm Silence** toolbar button or select **Alarm→Silence** from the menu.

Inhibiting alarms

There may be an occasion when you need to temporarily prevent an alarm from sounding. The purpose of the **Alarm Inhibit** property is to prevent unintended alarms, such as in after-hours situations where a piece of equipment is turned off.

Step 1 Display the property sheet for the alarm extension.

Step 2 Set **Alarm Inhibit** to `true` and set the **Inhibit Time**.

Step 3 Set the **Time Delay** that the alarm condition must exist before the alarm generates.

NOTE: Time Delay does not affect alarms generated by a fault. There is no delay when transitioning in or out of a Fault generated alarm.

Time delays apply to properties that transition both *in* and *out* of alarm states. Therefore, an alarm status may continue to display as Offnormal (for example) for a time (equal to the Time Delay) after the value returns to Normal. The Time Delay is the minimum time that a normal condition must exist before the object comes out of alarm.

NOTE: Typically, when both **Alarm Delay** and **Alarm Inhibit** properties are used, **Time Delay** is less (shorter) than **Alarm Inhibit**.

Adding a note to an alarm

Adding a note to an alarm record provides useful information to guide the resolution of the alert or alarm condition. It can be invoked via toolbar or right-click option.

Step 1 Select one or more alarm rows on the alarm console and click **Notes** at the bottom of the alarm console.

The **Notes** window opens. If the selected alarm record represents a source with multiple alarms, the system adds any note you create to all the alarms associated with the source.

If a given alarm row has more than one alarm associated with it, the window displays <Multiple Alarms>.

Step 2 Type the note and click **Add Note**.

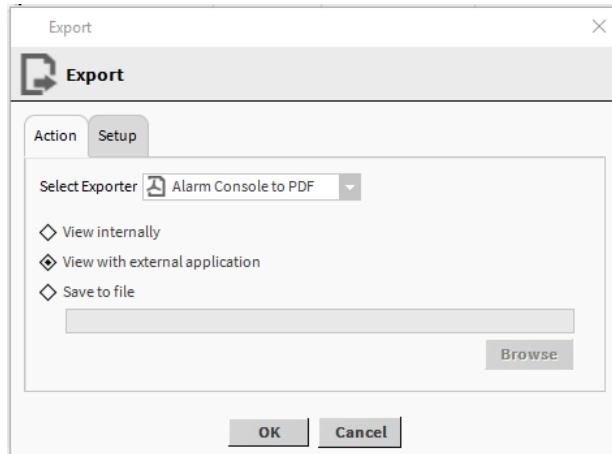
Creating a PDF of the current view

The system provides many lists of information. You can use the export feature to create a PDF for emailing or printing.

Step 1 Access the view you wish to save as a PDF.

Step 2 Click the Export icon on the toolbar or click **File→Export** from the main menu.

Step 3 Select the exporter to use.



Step 4 Select the additional options.

- **View internal**
- **View with external application**
- **Save to file**

Deleting alarm records

Alarms may not be deleted from the alarm database until they have been acknowledged and until the source device is in a normal (not alarm) state.

Prerequisites: The Alarm Data Maintenance view is open.

Step 1 Select one of the following three options:

- **Clear Old Records** clears alarm records before the date and time specified in the **Before** field. This field is not available when you select either of the other options.
- **Clear All Before Selected Record** deletes all records that have a timestamp earlier than the timestamp of the record that you select in the **Alarm History** pane table. The selected record is not deleted.
- **Clear All Records** deletes all records that appear in the **Alarm History** pane table regardless of the date.

Step 2 Click the **Run Maintenance** button to initiate the delete action.

The **Confirm Clear** window displays to clarify that you are about to delete records and that the operation cannot be reversed.

Step 3 If the information in the **Confirm Clear** window confirms that you are deleting the desired alarm records, click the **Yes** button (otherwise click the **No** button).

The alarm records are deleted and removed from the **Alarm History** table in the **Alarm History** pane.

Alarm best practices

Beyond the basic procedures, this topic provides advice for useful alarm practices.

- The **Alarm Database Maintenance** view allows users to clear records from the database. To provide information to an operator who should not be allowed to delete records, use the **Alarm Db** view.
- Set up an alarm class that routes to the console recipient and station recipient. Then use another alarm class to route alarms to an email recipient.

Changing the alarm class assignment

You change the alarm class assignment of the alarm extension through the alarm extension manager.

Step 1 Right-click the **AlarmService** and click **Views→Alarm Ext Manager**.

Step 2 Select one or more alarm extensions.

Step 3 Right-click and click **Edit Alarm Class** on the popup menu.

Step 4 Choose the desired alarm class from the option menu and click **OK**.

Tracking alarms that use the OnCallService

The spy pages can provide helpful information for tracking alarms and debugging on-call processing. Spy page views are available for the **OnCallLists** and the **OnCallRecipients**.

Step 1 To open a spy page, right-click the **OnCallList** or **OnCallRecipient** in the Nav tree and click **View→Spy Local**.

The **OnCallList** spy page opens.

The spy pages provide important information including: the current **On Call Priority** assignment, the current **On Call Contacts**, and the current time **Remaining** until a notification is sent to the next **On Call Contact** if an alarm is not acknowledged.

Step 2 Click the refresh button to update the spy page information.

Viewing alarms

The Alarm Console is where you view open alarms. The **OrionAlarmArchiveProvider** includes views for displaying archived alarms. You can also use a BQL query.

Prerequisites: Your file alarm database contains open alarms. Your remote Orion alarm database contains archived alarms.

Step 1 To view archived alarms, double-click **OrionAlarmService**, click the drop-down list in the upper right corner of the view and select **Alarm Db View**.

The **Alarm History** view opens.

The screenshot shows the 'Alarm History' view in the Orion Alarm Console. The main pane displays a table of 500 alarms with columns: Timestamp, Source State, Ack State, Source, Alarm Class, and Priority. Each row has a small bell icon and a timestamp. A context menu is open on the right, listing columns: Timestamp, Uuid, Source State, Ack State, Ack Required, Source, Alarm Class, Priority, Normal Time, Ack Time, User, Alarm Data, Alarm Transition, Last Update, and Message Text. At the bottom of the menu, there are options to Add Alarm Data Column and Remove Alarm Data Column.

The drop-down list indicates all the information this view can contain.

Step 2 To query the Orion alarm database, use the `openAlarms` or `ackPending` extents.

For example:

- `alarm:archive|bql:select * where source like '%/control/temp/BooleanChangeOfStateAlarmExt'`
- `alarm:archive|bql:select * where (sourceState = 'normal' or sourceState = 'alert') and ackState = 'acked'`
- `"alarm:archive|bql: select * where source = OrdList 'slot:/control/temp'"`

For any query looking for both open and closed alarms, you must run it against both the local database and the archive. Archived records are part of the `openAlarms`. For example, neither of the following queries results in any records from the archive alarm:

```
alarm:|bql:select * from openAlarms
alarm:archive|bql:select * from openAlarms
```

Chapter 4 onCall Overview

Topics covered in this chapter

- ◆ onCall Configuration
- ◆ How onCall Handle Alarms
- ◆ To Rotate OnCallLists

The **onCall** module allows you to configure on-call lists: lists of users who are designated to handle problems at different times of day. It contacts the appropriate user from the current on call list when an alarm condition is raised.

The **onCall** functionality is provided by the following component types:

- **OnCallService** added from the **onCall** palette.
- **OnCallRecipient** added from the **onCall** palette.
- **OnCallList** created using the **OnCallListManager** view on the **OnCallService**.
- **OnCallContact** created using the **OnCallContactManager** view on an **OnCallList**.

onCall Configuration

To configure the **onCall** functionality, you will perform the following steps:

Adding and Configuring OnCall Service to the Station

This topic describes how to add the **OnCall Service** to the station and configure the **OnCallList**. The list contains people designated to be on-call during a particular period. When an alarm is raised in your station, the active people receive a notification about the alarm.

Prerequisites: EC-Net 4 Pro is open and you are connected to the station.

Step 1 To add the **OnCallService** to a station, open the **onCall** palette and drag the **OnCallService** component to the **Config→Services** container.

The **Name** window opens.

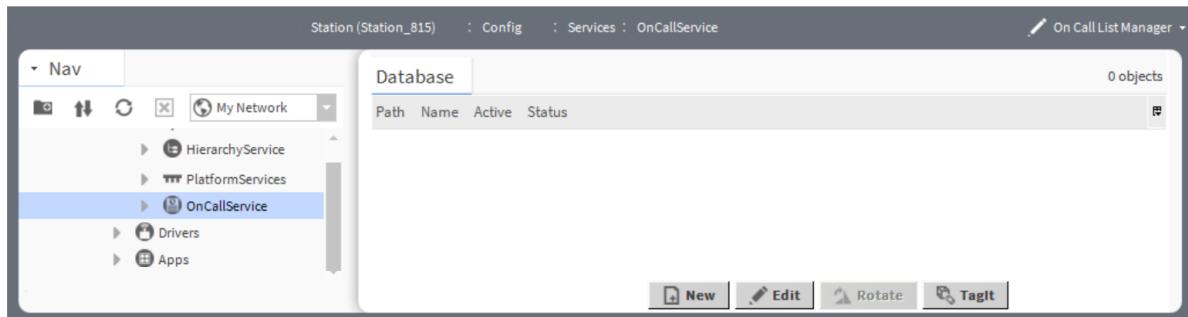


Step 2 Rename the service, or use the default name, and click **OK**.

The added **OnCallService** is available in the **Services** container.

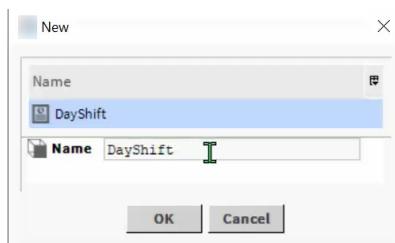
Step 3 Right-click the **OnCallService** in the Nav tree, select **Views→On Call List Manager**

The **On Call List Manager** window opens.



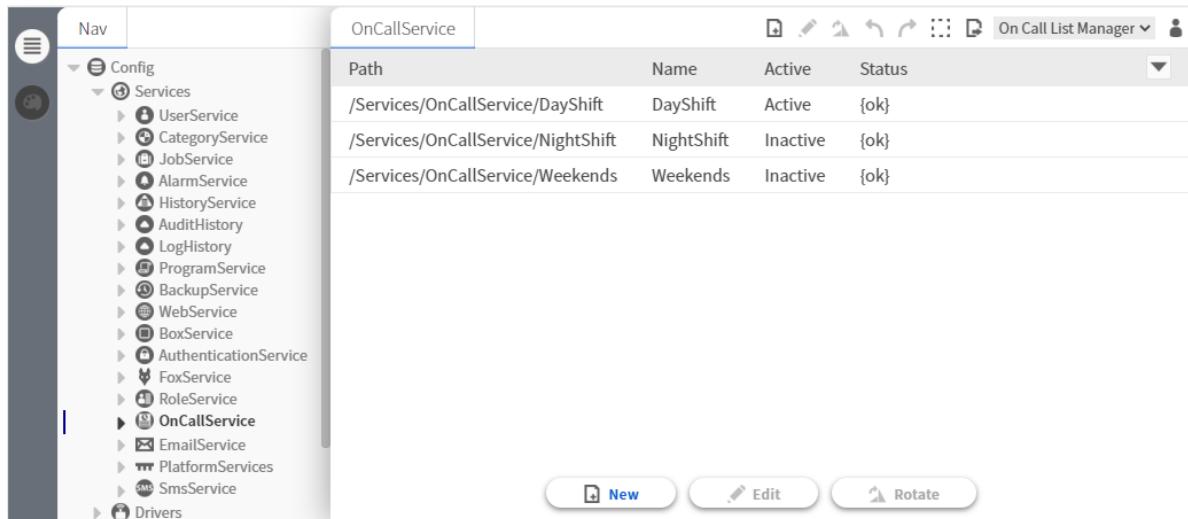
Step 4 To add the new list, click **New**, select **On Call List** and click **OK**.

The **New** window opens



Step 5 In the **New** window, type the new **Name** or use the default name and click **OK**.

You can see the added **On Call List** in the **On Call List Manager** view.



Step 6 To edit the list, select the list from the existing **On Call Lists**, click **Edit**, type the new name and click **OK**.

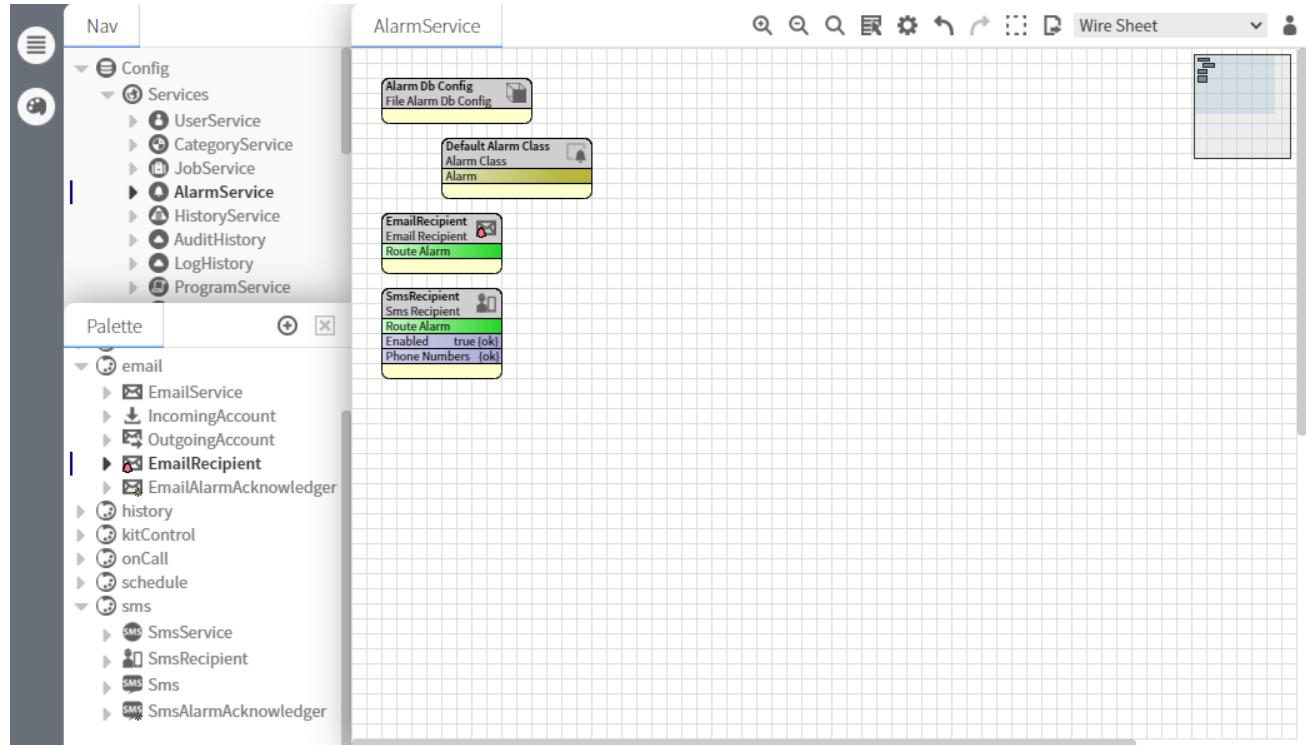
Step 7 Repeat the steps 4, 5 and 6 to add more number of **On Call Lists**.

Configure Contact Methods in AlarmService

The topic explains about how to contact the user when onCall contacts calls the particular on-call user in the scheduled list. The contact methods have been defined in the **AlarmService** to route alarms to users by adding the **AlarmRecipients**.

To configure the **AlarmRecipients** in the **AlarmService**, drag the two recipients in the **AlarmService** folder which are shown in the below examples.

- **EmailRecipient** available in the **email** palette. It sends an email to the user's own email address. Refer to [Configuring the EmailRecipient, page 23](#) for more details.
- **SmsRecipient:** available in the **sms** palette. It sends a text message to the user's own phone number. Refer to [Configuring an SmsRecipient, page 25](#) for more details.



Although these **AlarmRecipients** are configured with their email addresses or phone numbers. When a user receives the onCall notifications, it sends the notification to the contact details configured on the users themselves, not to the contact details configured in the **AlarmRecipient**. Typically, users can configure multiple OnCallContacts for the same **AlarmRecipient**.

NOTE: Unlike other **AlarmRecipients**, it is not necessary to link anything to their route Alarm actions. You may use an existing **AlarmRecipient** that is already receiving alarms routed from an **AlarmClass**, or you may add an unlinked **AlarmRecipient** that is only used by onCall. Both will work.

To Create and Configure the On Call Contacts

This topic explains how to create and configure the OnCallContacts based on priority. It represents a pairing between the user and a contact. The user must adequately configure the contact method. When an alarm is raised in the station based on the configuration, contacts the particular user and the user receives a notification via email or sms.

Prerequisites:

The user must be an existing user configured in the **UserService**.

The **AlarmRecipient** for the desired contact method should be configured in the **AlarmService**.

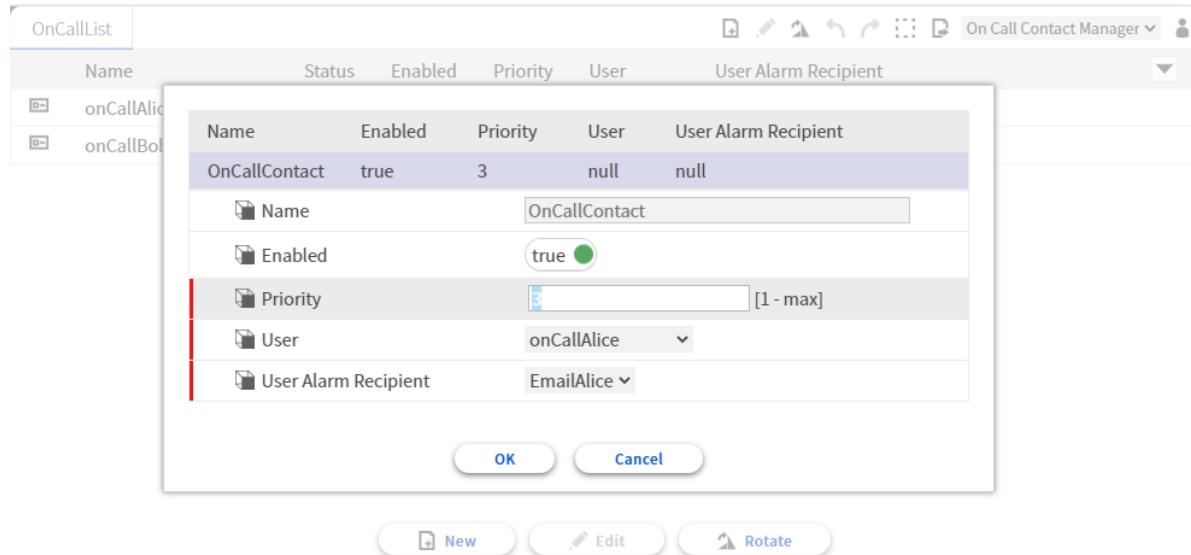
Step 1 To create a new **OnCallContacts**, do one of the following.

- In the Nav tree, expand **OnCallService**, right-click on any one of the OnCallLists and choose **Views→On Call Contact Manager**.
- In the **On Call List Manager** view, double-click any one of the OnCallList.

The **On Call Contact Manager** view opens.

Step 2 To create a new OnCallContact, click **New**.

The **New** window opens.



Step 3 In the **New** window, configure the following parameters and click **OK**.

- Priority** enter the desired priority level.
- User** select the user from the drop-down list that has a configured contact method (email id or sms).
- User Alarm Recipient** select the contact method (**EmailRecipient** or **SMSRecipient**) based on the user configuration.

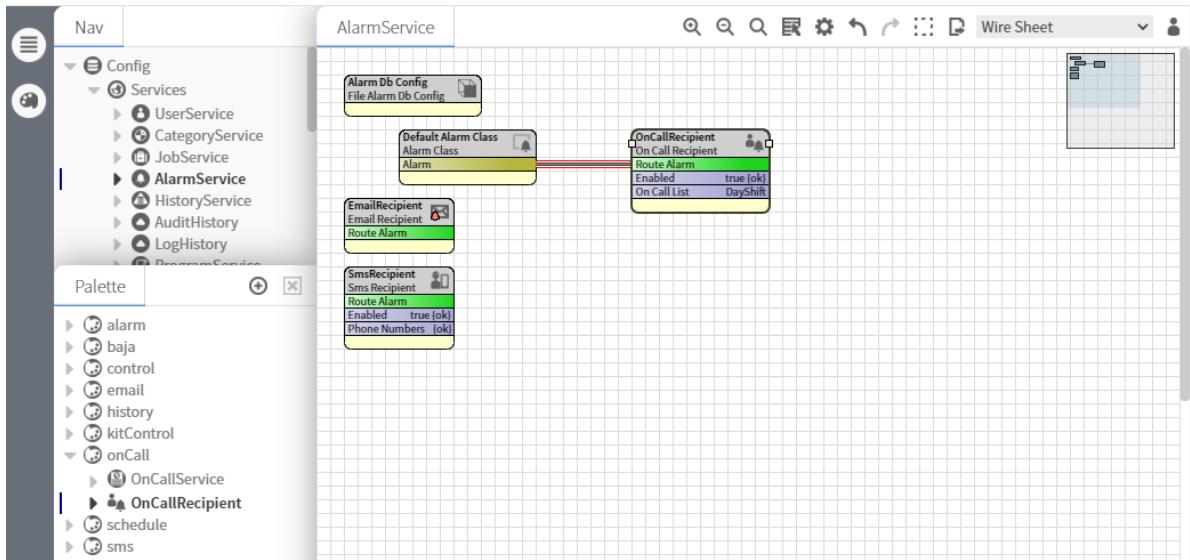
Creates a new **OnCallContact** with the desired contact method in the **On Call Contact Manager** view.

To Configure the OnCall Schedule

This topic explains configuring the On-Call Schedule by using the **Alarm Class** and **On Call Recipient** in the Wiresheet. The **On Call Service** alarms are not handled automatically. You must determine and specify which alarms should be sent to your On-Call Lists and configure them to be routed. The alarms raised from the **Alarm Class** are handled by the On-call Lists. Based on the scheduling, the active user receives a notification when an alarm is raised. You can also verify the configured schedule, for a particular user, for a queried time period.

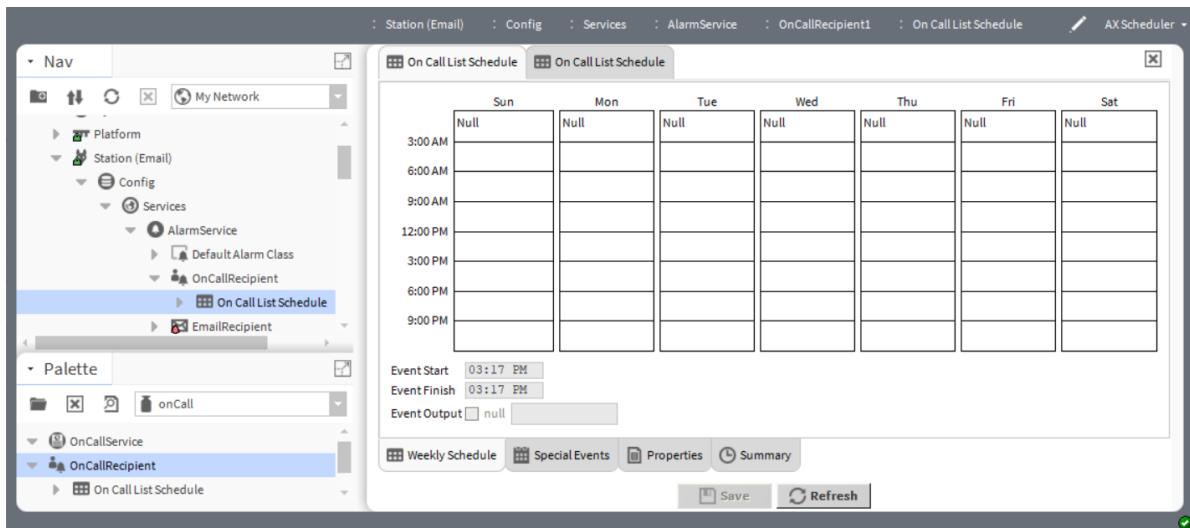
Step 1 Open the **OnCall** palette, drag the **OnCallRecipient** to the **Alarm Service** folder.

Step 2 Switch to the **Wire Sheet** view of the **Alarm Service**, use the relation link from the **Alarm Class** to the **On Call Recipient**.



Step 3 Expand **AlarmService**→**On Call recipient** and double-click **On Call List Schedule**.

The **Scheduler** view opens. This schedule determines which OnCallLists is active and Inactive for the specified time.



Step 4 Configure the schedule for the respective onCallList and click **Save**.

On Call List Schedule

Weekly Schedule **Special Events** **Summary**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
Weekends 12:00 AM - 6:00 PM	Nightshift 12:00 AM - 9:00 AM					
3:00 AM						
6:00 AM						
9:00 AM		DayShift 9:00 AM - 6:00 PM				
12:00 PM						
3:00 PM						
6:00 PM	Nightshift 6:00 PM - 12:00 AM					
9:00 PM						

Event Start AM Event Finish AM Event Output null

NOTE: The scheduler view should not have any empty spaces. If a space is empty, any alarms raised during that empty space not sent to any OnCallList.

Step 5 To verify the schedule for the particular user, double-click on the user.

The **On Call User Report View** opens. It shows the schedule for which user is on call.

onCallBob_SmsRecipient

Start Time | End Time

On Call Recipient	On Call List	Priority	Start	End
OnCallRecipient	DayShift	2	08-May-23 9:00 AM EDT	08-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	09-May-23 9:00 AM EDT	09-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	10-May-23 9:00 AM EDT	10-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	11-May-23 9:00 AM EDT	11-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	12-May-23 9:00 AM EDT	12-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	15-May-23 9:00 AM EDT	15-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	16-May-23 9:00 AM EDT	16-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	17-May-23 9:00 AM EDT	17-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	18-May-23 9:00 AM EDT	18-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	19-May-23 9:00 AM EDT	19-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	22-May-23 9:00 AM EDT	22-May-23 6:00 PM EDT
OnCallRecipient	DayShift	2	23-May-23 9:00 AM EDT	23-May-23 6:00 PM EDT

How onCall Handle Alarms

The topic explains how the **OnCallRecipient** receives an alarm. When an alarm is acknowledged, the On Call user receives a notification based on the priority and configured time.

When an **OnCallRecipient** receives an alarm, it handed to the current **OnCallList**.

The **OnCallList** sends the alarm to the **OnCallContact** with the highest priority. (Here, high priority means a low number for the **OnCallContact** with priority one will receive the alarm before an **OnCallContact** with priority two.) The users are contacted simultaneously if multiple contacts have the same priority number.

When the alarm is sent, a timer starts. The user or users notified for the alarm have a set amount of time acknowledge the alarm. If this time elapses and the alarm is not acknowledged, the subsequent user down the line, in priority order, is notified, and the timer starts again. This process continues until either the alarm is acknowledged, or there are no more users to notify.

To configure how much time users have to acknowledge alarms, change the **Escalation Delay** property in the **OnCallRecipient**. It defaults to 30 minutes, meaning an on-call user has 30 minutes to acknowledge an alarm before contacting the next on-call user.

To Rotate OnCallLists

You can use the **Rotate** button to rotate the **OnCallLists** manually. The list can be rotated based on your choice, but when you rotate the list the priority of the list changes. It indicates that every user in the list drops to the next configured priority level down, the user with the lowest priority is circle back up to the highest priority.

There are two ways to rotate the list. Follow the instructions in the first bullet below to use the **On Call List Manager** view and follow the second bullet to use **On Call Contact Manager** view.

Step 1 Use one of the following methods to rotate the **OnCallList**:

- Navigate to **On Call List Manager** view, double-click any one the existing **OnCallList**. The **On Call Contact Manager** view opens and click **Rotate**.
- Navigate to **On Call Contact Manager** view, select any one of the **OnCallList** from the existing list, and click **Rotate** button.

Name	Status	Enabled	Priority	User	User Alarm Recipient
onCallAlice_EmailAlice	{ok}	true	1	onCallAlice	EmailAlice
onCallBob_EmailBob	{ok}	true	2	onCallBob	EmailBob

You can see the list of the priority changes.

Chapter 5 Components

Topics covered in this chapter

- ◆ alarm-AlarmService
- ◆ alarm-AlarmSourceInfo
- ◆ alarm-AlarmClassFolder
- ◆ onCall-OnCallService
- ◆ alarm-AlarmConsoleOptions
- ◆ alarm-AlarmPortalOptions
- ◆ alarm-TextCustomizer
- ◆ Types of alarm recipients
- ◆ Types of alarm extensions
- ◆ Components in email module
- ◆ Components in the Sms module
- ◆ Components in an alarmOrion module

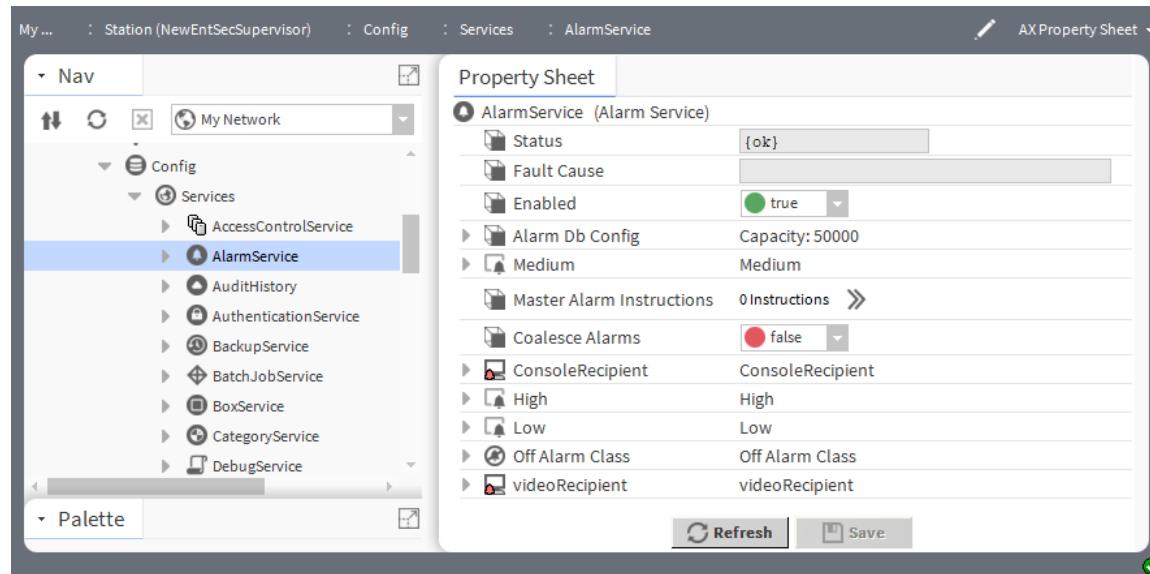
Components include services, folders and other model building blocks associated with a module. You may drag them to a property or wire sheet from a palette.

Descriptions included in the following topics appear as context-sensitive help topics when accessed by:

- Right-clicking on the object and selecting **Views→Guide Help**
- Clicking **Help→Guide On Target**

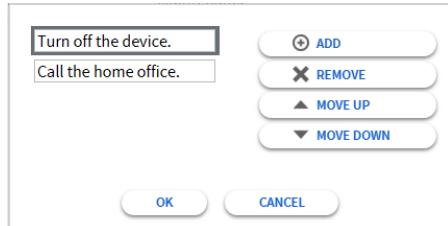
alarm-AlarmService

This component uses **AlarmClasses** to route all alarm messages between **AlarmSources** and **AlarmRecipients**. Each station contains a single **AlarmService**, which is available in the **alarm** palette.



Property	Value	Description
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is not working (in fault). This property is empty unless a fault exists.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Db Config	additional property	Provides access to database configuration properties. Refer to separate topic, <i>alarm-FileAlarmDbConfig</i> .
Medium	additional properties	Defines basic alarm properties, reports alarm counts and establishes escalation levels. Refer to separate topic, <i>alarm-AlarmClass</i> .
Master Alarm Instructions	additional properties	Clicking the edit icon (pencil) to the right opens a window for adding and managing alarm instructions. See Master Alarm Instructions, page 46 .
Console Recipient	console and additional properties	Provides access to console recipient properties. Refer to separate topic, <i>alarm-ConsoleRecipient</i> .

Master Alarm Instructions



- **Add** creates a new instruction.
- **Remove** deletes the selected instruction from the list.
- **Move Up/Down** changes the order of the instructions in the list.

alarm-FileAlarmDbConfig

▶ Alarm Db Config	Capacity: 500
▶ Default Alarm Class	Default Alarm Class
Master Alarm Instructions	0 Instructions
Coalesce Alarms	<input checked="" type="checkbox"/> true

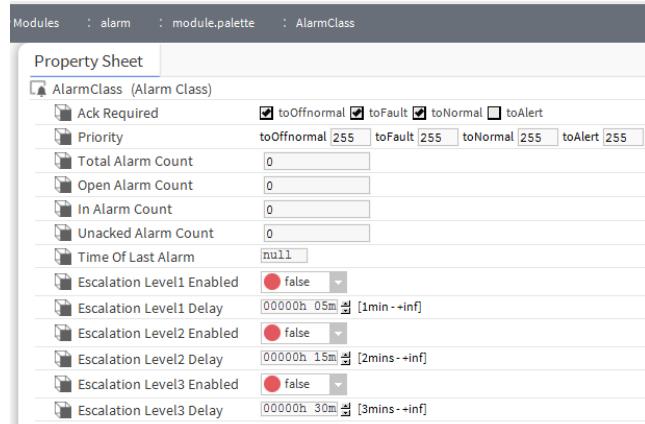
Property	Value	Description
Capacity	1–250,000 records (defaults to 500)	Defines the number of alarm records to store in the histories database. When the capacity is reached, newer alarm records overwrite the oldest records.

alarm-AlarmClass (DefaultAlarmClass)

An `AlarmClass` object is used to group alarms that have the same routing and handling characteristics. The `AlarmClass` is available in the alarm palette.

The alarm class:

- Routes alarms with some similar set of properties along common routes that serve as channels for like data.
- Manages the persistence of the alarms as needed via the alarm archive, but otherwise merely chains alarms from the alarm source via a topic.
- Manages which alarms require acknowledgement.
- Is the basis for visual grouping in the alarm console.



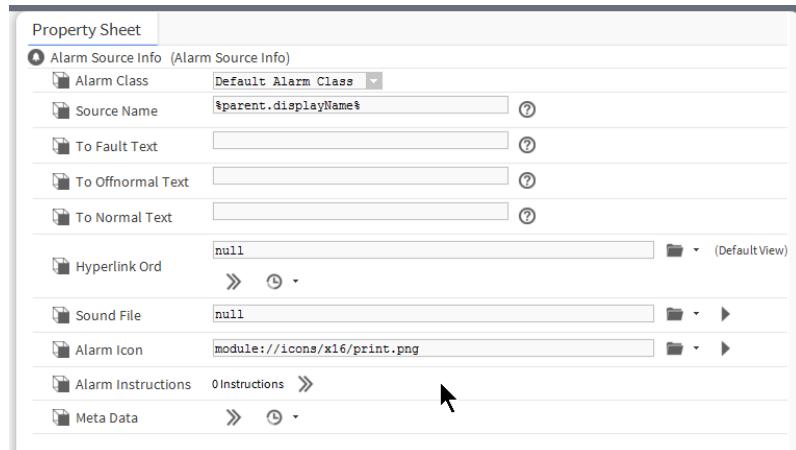
Property	Value	Description
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Priority [on-call contact]	1–255 for each transition, default: 255; %priority% on a report	Specifies the order in which the <code>OnCallService</code> sends alarm notifications to the <code>OnCallContact</code> . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list.

Property	Value	Description
		NOTE: Contacts may share the same Priority number. The On-CallService sends an identical notification to all contacts that have the same priority number
Total Alarm Count	read-only	Displays the total number of alarms assigned to the Alarm Class from all sources.
Open Alarm Count	read-only	Displays the current total number of alarms that are unacknowledged and normal or unacknowledged and an alert.
In Alarm Count	read-only	Displays the total number of alarm conditions.
Unacked Alarm Count	read-only	Displays the total number of unacknowledged alarms.
Time Of Last Alarm	read-only	Displays when the system generated the last alarm assigned to this Alarm Class .
Escalation Level(n) Enable	true (default) or false and check box, where n is 1, 2 or 3	Turns this escalation level on (true) and off (false).
Escalation Level(n) Delay	hours and minutes; one minute is the smallest increment you can set for this property.	Sets the time between alarm generation and escalation. It is not the time between escalation levels. Set a time to allow an unacknowledged alarm to remain unacknowledged before you escalate it to the next level.

alarm-AlarmSourceInfo

This container slot is available on any network component, and each child device component. The slot's properties populate the alarm record when the network or device does not respond to a monitor ping. This ping is configured at the network level.

Each parent and child device object has its own **Alarm Source Info** slot with identical (but independently maintained) properties.



NOTE: For how to format alarm source information on a report, click on the help icon to the right of the field.

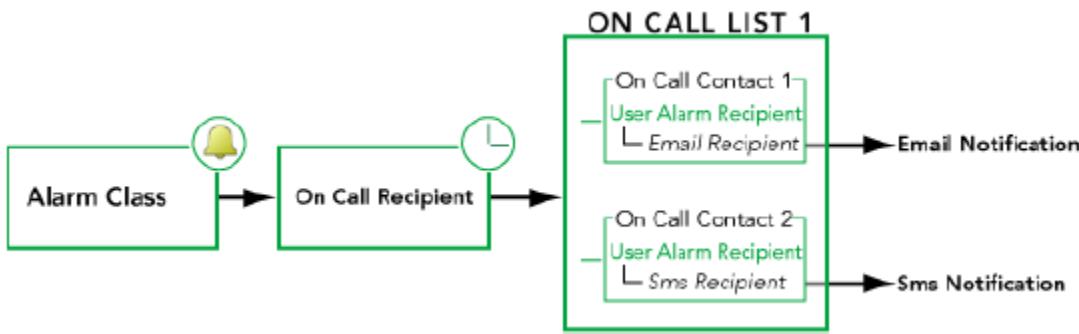
Property	Value	Description
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Source Name	text	Displays the name in an alarm record that identifies the source of the alarm.
To Fault Text	text	Enters the text to display when the component transitions to a Fault status. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
Too Offnormal Text	text	Enters the text to display when the component transitions to an Offnormal (alarm) state. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
To Normal Text	text	Configures what displays when the component transitions to a normal status. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
Hyperlink Ord or Hyperlink	Ord, BQL Query or path	Associates an ORD, BLQ query or path with an alarm state on the component. When an alarm is reported in the console, the Hyperlink button activates. Clicking this button links to the location you specify here.
Sound File	ord	Configures the path to a sound file that plays when the current component is in an alarm state. Use the folder icon to browse to the file. Click the arrow icon to the right of the folder icon to test the path.
Alarm icon	text	Defines the path to a graphic file the system includes in the Timestamp column of the alarm table in the Console Recipient view. Use the folder icon to browse for the file. Use the right-arrow to test the location you entered.
Alarm Instructions	text	Advice that accompanies the alarm notification (Alarm Record window) that provides important information for the operator. Click the right-pointing arrow to view the instructions.
Meta Data [alarms]	text	Defines additional information for the extension.

alarm-AlarmClassFolder

This is a container object provided for organizing groups of alarm class objects. The **AlarmClassFolder** is available in the alarm palette.

onCall-OnCallService

This component is a customization of the AlarmService. It expands the features of standard alarm escalation to notify users based on a priority list (contact list). The **OnCallService** initiates an email (or text message) notification for designated alarms, sending the notification sequentially, as alarms escalate, to users based on their assigned priority. The **OnCallService** allows you to set up a flexible user contact list and schedule that list using the standard scheduler interface.

Figure 1 On call processing

The general process for the **OnCallService** is as follows:

1. A designated alarm class receives an alarm notification and sends the alarm notification to an **OnCallRecipient**.
2. The **OnCallRecipient** sends the alarm notification to the active **OnCallList**.

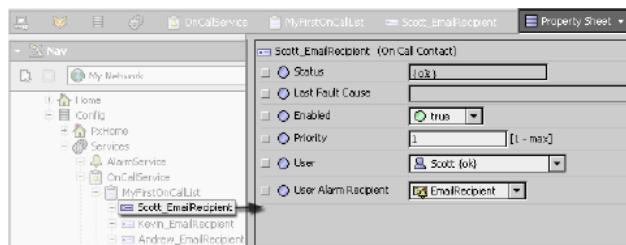
The active **OnCallList** is designated by the **On Call List Schedule**. The **OnCallList** specifies which users (**OnCallContacts**) are notified. The **OnCallContact** properties include a reference to a **User Alarm Recipient** which specifies how the alarm notification is sent. For example, **User Alarm Recipient** types include:

- **EmailRecipient** (sends alarm notification by email)
 - **SmsRecipient** (sends alarm notification by text message)
3. After a specified time, if no recipient acknowledges the alarm, the system escalates the alarm and sends an email or text message to the next specified contact. The system continues to escalate each alarm until a recipient acknowledges it or until it reaches the final escalation level. At any time, any user on the contact list may acknowledge the alarm and halt the escalation process.

To add the **OnCallService** to a station, drag a copy of the **OnCallService** from the **onCall** palette to the **Config→Services** node in the Nav tree.

On-call contact

This item in an on-call contact list represents a single user and provides properties you configure for routing alarm notifications. Only users that exist under the **UserService** may be assigned to an on-call contact list.



Any time an on-call contact property changes, the on-call list initiates a notification cycle. You may edit on-call contact properties using the contact's property sheet or the **Edit** window that is available from the **On Call Contact Manager**.

Property	Value	Description
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Last Fault Cause	read-only	Reports the reason for the failure.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Priority [on-call contact]		Specifies the order in which the OnCallService sends alarm notifications to the OnCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
Unacked Alarm Count	read-only	Displays the total number of unacknowledged alarms.
User Alarm Recipient	text	Specifies the method by which the user receives notification of an alarm: If they have been added under the AlarmService , EmailRecipient or SmsRecipient are the available options. The EmailRecipient component is available in the email palette and the SmsRecipient is available in the Sms palette. You must choose an alarm recipient to designate the way alarm notifications are routed to the selected On Call Contact.

onCall-OnCallList

This component contains a set of one or more people (**OnCallContacts**) to contact when an alarm event occurs. You create, edit, or delete unique on call lists using the **On Call List Manager** view.

When you create a list, it appears under the **OnCallService** node in the Nav tree and is also available as an option on the **Event Output** property of the on-call list schedule's **Scheduler** view from where you may select it as a scheduled event.

Like other scheduled outputs, you may assign more than one on-call list to a single day. The on call list is active only during the scheduled day and time. The on-call list active status is displayed in the on call **List** property sheet view as well as in the **On Call List Manager** view.

NOTE: When assigning **OnCallList** events in the **Scheduler** view, make sure **OnCallList** event times are contiguous.

Property	Value	Description
Active	Active or Inactive	Displays the current state of the list as defined by the On Call List Schedule. Only one On Call List is active at a time.
Last Fault Cause	read-only	Reports the reason for the failure.

onCall-OnCallSchedule

This component sets times for making **On Call Lists** active. It is available in the **onCall** palette.

Actions

Cleanup

alarm-AlarmConsoleOptions

This component configures the alarm console options. You access these options in EC-Net 4 Pro by clicking **Tools**→**Options**→**Alarm Console**.

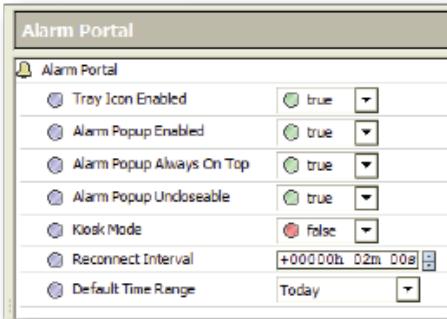
The component is stored under the `/users/{user}/options` directory.

Property	Value	Description
Notes Required On Ack	true (default) or false	Configures the requirement to add a note when the operator acknowledges an alarm. true opens the Notes window when the operator initiates an alarm acknowledgment from the alarm console. false does not require a note.
Sounds Enabled	true or false	true causes a sound to accompany an alarm. You can also set this value under the Alarms menu in the EC-Net 4 Pro main menu when the Alarm Console view is active.
Default Sound File	file path	Sets the path to the default sound file.
Continuous Alarm	true or false	true causes an alarm to repeat continually until it is acknowledged or cleared. This option works together with the Continuous Alarm Delay property. You can also set this value under the Alarms menu in the EC-Net 4 Pro main menu when the Alarm Console view is active.
Continuous Alarm Delay	hours minutes seconds	true interrupts the sound of the alarm for a time equal to the value of this property.
Low Priority Color	color	Defines the color to use for the least important alarms. Alarm priorities are numbered from 1–255. The system assigns colors to alarm priorities that fall between priority levels on a color-scale along a path defined by the three assigned colors.
Mid Priority Color	color	Defines the color to use for an alarm of medium importance. Alarm priorities are numbered from 1–255. The system assigns colors to alarm priorities that fall between priority levels on a color-scale along a path defined by the three assigned colors.
High Priority Color	color	Defines the color to use for the highest priority (priority 1). Alarm priorities are numbered from 1–255. The system assigns colors to alarm priorities that fall between priority levels on a color-scale along a path defined by the three assigned colors.

Property	Value	Description
Time Zone Display	Console Source	Displays the alarm record timestamp in the time zone of the alarm console view (Console) or in the time zone of the alarm source (Source).
Alarm Class Mapping	additional options	Opens the Alarm Class Mapper window, which allows you to add alarm classes and map them.
Alarm Ack Responses		Creates one or more text entries that you can use to populate the Notes window when acknowledging an alarm. When Notes Required on Ack is set to <code>true</code> , the Notes window displays an additional option list containing any entries you create with this property. To add, edit, or remove response options, use the >> button to open the associated Edit window. When Notes Required on Ack is set to <code>false</code> , these Alarm Ack Responses are not visible.
View Instructions	true or false	true causes the alarm Instructions pane to display across the bottom of the Alarm Console. Instructions display in the pane for any single selected alarm that has associated instructions.

alarm-AlarmPortalOptions

Properties in this window allow you to customize both the appearance and behavior of the alarm console. To access this property sheet, click **Tools**→**Options**→**Alarm Portal**



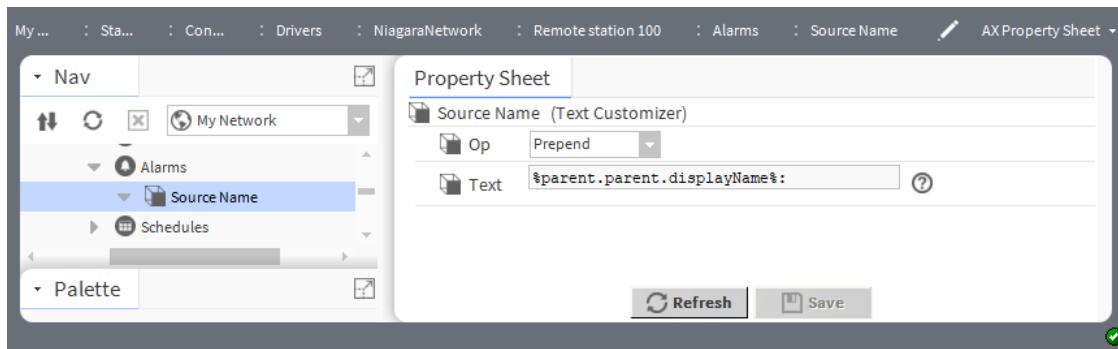
Property	Value	Description
Tray Icon Enabled	true or false	Turns the display of the function icon in the system tray on (true) and off (false).
Alarm Popup Enabled	true or false	When the alarm portal is active, turns on and off the display of an alarm popup window.
Alarm Popup Always on Top	true or false	When the alarm portal is active, enables and disables the position of the alarm popup window.
Alarm Popup Unclosable	true or false	When an alarm is active, prohibits and allows the alarm popup window from being/to be closed. When set to <code>false</code> , an alarm popup window may be closed even when an alarm is active.
Kiosk Mode	true or false	When the alarm portal is active, enables and disables the display of the alarm icon in the system tray.

Property	Value	Description
Reconnect Interval	hours:minutes:seconds	Defines the amount of time between alarm portal checks for disconnected alarm consoles. If a console is disconnected, a re-connect is attempted within this period of time.
Default Time Range	list of options	Selects the most common interval for displaying alarm data.

alarm-TextCustomizer

This component creates a customized alarm source name using a BFormat string that obtains values from objects. This feature is primarily for developers.

Figure 2 Source Name properties



To access these properties, expand **Config**→**Drivers**→**NiagaraNetwork**→**NiagaraStation**→**Alarms** and double-click **Source Name**.

Property	Value	Description
Op	drop-down list	Selects where to apply Text . Use Existing ignores Text . Prepend prefixes the name with Text . Append places Text as a suffix to the name. Replace replaces the name altogether with Text .
Text	BFormat	Defines the format string as normal text with embedded scripts denoted by the percentage symbol (%). The driver maps calls within the script to an object's methods. You can chain using the dot operator (.). To insert a percentage character itself, use two percentage symbols (%%). Several special functions are available: “%time () %” formats the current time as BAbsTime. “%lexicon (mobile:key) %” gets the specified lexicon text.

Examples

“my parent’s name is %parent.displayName%” formats the display name of an object’s parent using calls to the `getParent()` and `getDisplayName()` methods.

“%value% {status.flagsToString()} @ %status.priority%” retrieves the specified lexicon text.

More information is available in the class documentation for BFormat.

Types of alarm recipients

Alarm recipients are linked to an alarm class (from the alarm topic on the alarm class to the route Alarm action on **AlarmRecipient**). Recipients may be configured to receive alarms at certain times of the day, certain days of the week, and to receive alarms of only specified transitions. There are several subclasses of the alarm recipient.

alarm-ConsoleRecipient

This component manages the transfer of alarms between the alarm history and the alarm console. The **ConsoleRecipient** is available in the **alarm** palette. For example, the console recipient gets unacknowledged alarms from the alarm history and updates the history when they are acknowledged. To view this property sheet, right-click the **ConsoleRecipient** component in the Nav tree and click **Views→Property Sheet**.

The default view of the console recipient is the alarm console view.

Console recipient properties are displayed and edited in the console recipient property sheet.

ConsoleRecipient

		Actions & Topics	Slot Details
Display Name	Value	Commands	
Time Range	<input type="text" value="12:00:00 AM"/> <input type="text" value="12:00:00 AM"/>		
Days Of Week	<input checked="" type="checkbox"/> Sun <input checked="" type="checkbox"/> Mon <input checked="" type="checkbox"/> Tue <input checked="" type="checkbox"/> Wed <input checked="" type="checkbox"/> Thu <input checked="" type="checkbox"/> Fri <input checked="" type="checkbox"/> Sat		
Transitions	<input checked="" type="checkbox"/> toOffnormal <input checked="" type="checkbox"/> toFault <input checked="" type="checkbox"/> toAlert		
Route Acks	<input checked="" type="checkbox"/> true		
Status	{ok}		
Fault Cause			
Default Time Range	Time Range <input type="button" value="▼"/> <input type="button" value="⌚"/> <input type="button" value="? to ?"/>		

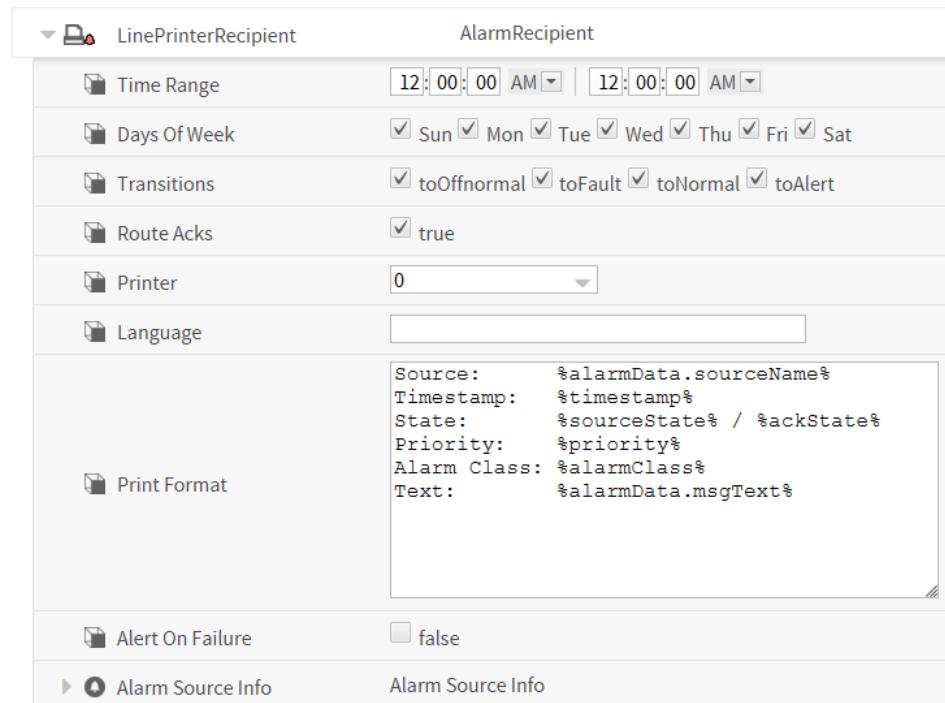
Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check box	Specifies the days of the week to include.
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Route Acks	true or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
Default Time Range	drop-down list of time options	Provides a list of options for controlling how much information to display on the alarm console. If you select Time Range, the system prompts you for a beginning and ending time.

alarm-LinePrinterRecipient

This component prints alarms to a lineprinter that is attached to a station running on a Windows platform, or to a remote (networked) printer known to its Windows OS. To access this property sheet right-click the LinePrinterRecipient component in the Nav tree and click **Views→Property Sheet**.

Alerts may be generated if the printing of an alarm fails, but the line printer recipient does not print alarms that it generates itself. The station must have permission to print on any printer chosen (which is typical).

A **PrinterRecipient** component is also available. It provides more formatting options, applicable to most modern printers.



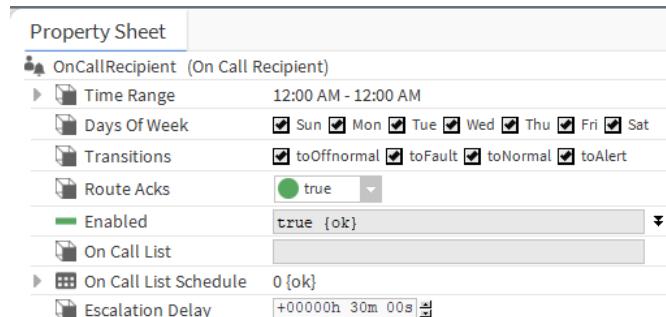
Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check box	Specifies the days of the week to include.
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Route Acks	true or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
Printer	drop-down list	Shows the printers that are available (both locally attached and remotely networked) through the host platform's Windows operating sys on the first line.

Property	Value	Description
		NOTE: For more information about how to format this information, click on the help icon to the right of the field.
Language	two lower-case letters	Defines the ISO 639 language code. For a list of codes, see the following: http://www.loc.gov/standards/iso639-2/langcodes.html .
Print Format	text	<p>Defines the print format. These field definitions determine what prints for each alarm beginning with the Source.</p> <p>Source: <code>%alarmData.sourceName%</code> prints the name of the entity that is responsible for generating the alarm on the first line.</p> <p>For more information about how to format this information, click on the help icon to the right of this property.</p> <p>Timestamp: <code>%timestamp%</code> prints the time the alarm occurred on the second line.</p> <p>State: <code>%sourceState% / %ackState%</code> prints the current alarm state on the third line.</p> <p>Priority: <code>%priority%</code> prints the alarm priority on the fourth line.</p> <p>Alarm Class: <code>%alarmClass%</code> prints the alarm class on the fifth line.</p> <p>Text: <code>%alarmData.msgText%</code> prints any text associated with the alarm on the sixth line.</p>
Alert On Failure	true or false	Enables (true) and disables (false) the generation of an alert if the printer fails to print an alarm.
Alarm Source Info	true or false	Defines the set of properties for configuring and routing alarm source. (For example, Alerts for failed print attempt provided "Alert on Failure" is true).

alarm-StationRecipient

This component manages the transfer of alarms between the **AlarmService** and a remote station. For example, a station may send alarm notifications to a supervisor station – or any other remote station in the system. The **StationRecipient** is available in the **alarm** palette.

The station recipient component provides a place to specify the location and other details about that remote station. The properties on a station recipient include a field for selecting the remote station, as well as alarm collection options.



Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check boxes	Specifies the days of the week to include.
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Status		Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Last Send Time	time	The date and time the system sent the last alarm to the station.
Last Failure Time	time	The date and time of any last failure.
Last Failure Cause	text	The reason for the failure.
Retry Interval	hours and minutes	In the case of a failed alarm transmission, the amount of time the system waits before attempting to send the alarm to the station again.
Queued Alarm Count	number	The number of alarms that are ready to be sent.
Remote Station		Displays a list of eligible remote stations. Valid stations have a valid network connection between the Supervisor and the station. The properties configured in the alarm class in the Alarms component of the remote station's NiagaraNetwork determine which station(s) receive the alarms.

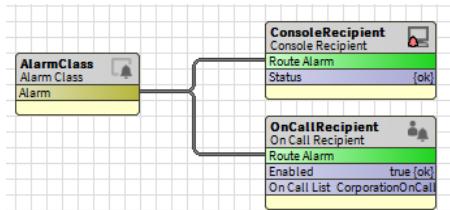
onCall-OnCallRecipient

This component manages the transfer of alarms between the **AlarmService** and on call contacts.

For example, a station sends alarm notifications by email or text message to one or more contacts that are in the on call contact list. You access this component's property sheet by double-clicking the **OnCallRecipient** component.

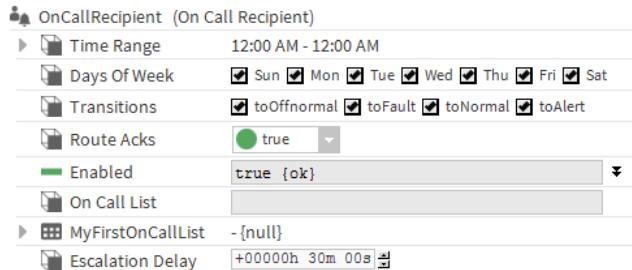
NOTE:

Stations can send email by broadband (EC-Net outgoing account configuration required) and Sms messages using a GPRS modem.



The **OnCallRecipient** component is linked to an alarm class component that provides a place to specify the scheduling details and other routing options.

A special on call scheduling component is in the **OnCallRecipient** component. It provides a standard scheduling view that is like other schedule views.



Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check boxes	Specifies the days of the week to include.
Route Acknowledgements	true (default) or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
On Call List	read-only	Displays the currently-active On Call List and its status.
Escalation Delay	hours: minutes: seconds	Sets the time to wait for an alarm to be acknowledged by an OnCallContact before escalating the alarm to the next contact in the OnCallList .
On Call List Schedule	drop-down list	Determines if alarms are forwarded to the on-call contacts. null forwards no alarms to the on-call list. On Call List forwards all alarms to the on-call contacts as specified in the On Call List.

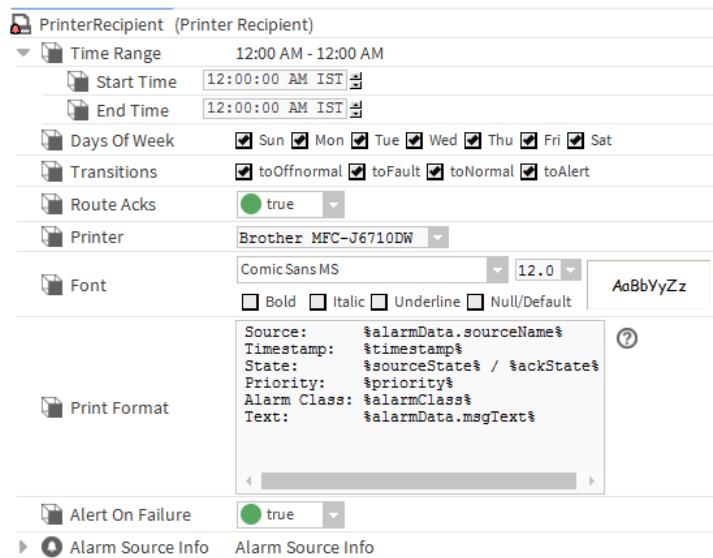
alarm-PrinterRecipient

This component can be used to print alarms to most types of printers (including laser printers) attached to a station running on a Windows platform, or to remote (networked) printers known to its Windows OS. It is available in the **Recipients** folder of the alarm module palette.

PrinterRecipient differs from the older **LinePrinterRecipient** component, originally intended to work only with line printers, where alarms print without a new page feed on each alarm, and the native font of the target printer is always used.

Like the **LinePrinterRecipient**, **PrinterRecipient** applies to Windows hosted stations only. The printer must be known to the host platform's Windows OS and selected from the printer drop down-list. Alerts may be generated if the printing of an alarm fails, but the printer recipient does not print alarms that it generates itself.

The main differences between the **LinePrinterRecipient** and **PrinterRecipient** are additional font property settings, which allow the selection of font type, size, and various style overrides. Combined with multi-line alarm message text properties that are available in various alarm extensions, the **PrinterRecipient** provides flexibility for alarm printing.



Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check boxes	Specifies the days of the week to include.
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Route Acknowledgements	true (default) or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
Printer	drop-down list	Shows the printers that are available (both locally attached and remotely networked) through the host platform's Windows operating sys on the first line. NOTE: For more information about how to format this information, click on the help icon to the right of the field.

Property	Value	Description
Print Format	text	<p>Defines the print format. These field definitions determine what prints for each alarm beginning with the Source.</p> <p>Source: <code>%alarmData.sourceName%</code> prints the name of the entity that is responsible for generating the alarm on the first line.</p> <p>For more information about how to format this information, click on the help icon to the right of this property.</p> <p>Timestamp: <code>%timestamp%</code> prints the time the alarm occurred on the second line.</p> <p>State: <code>%sourceState% / %ackState%</code> prints the current alarm state on the third line.</p> <p>Priority: <code>%priority%</code> prints the alarm priority on the fourth line.</p> <p>Alarm Class: <code>%alarmClass%</code> prints the alarm class on the fifth line.</p> <p>Text: <code>%alarmData.msgText%</code> prints any text associated with the alarm on the sixth line.</p>
Alert On Failure	true (default) or false	Enables (true) and disables (false) the generation of an alert if the printer fails to print an alarm.

Types of alarm extensions

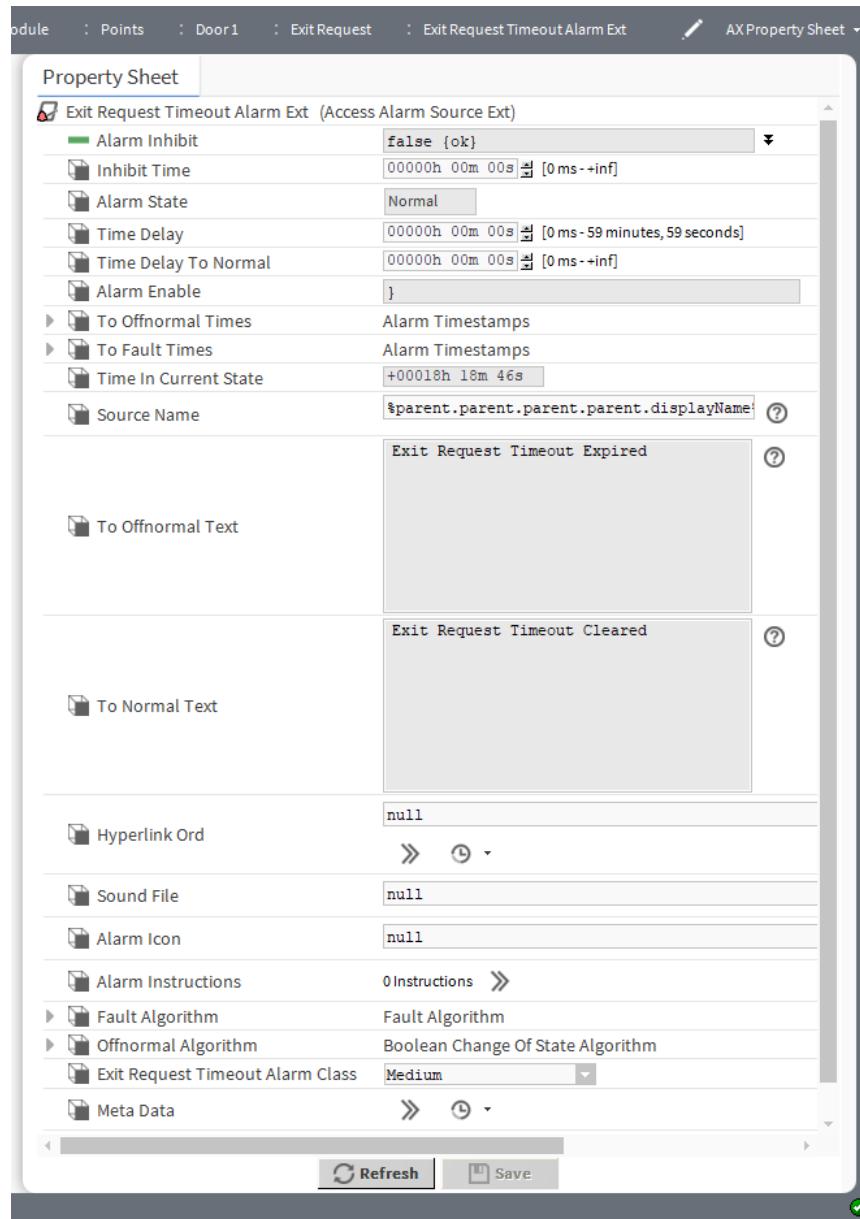
Find the alarm extensions in palettes **alarm: Extensions** and **kitControl:Alarm**. This table lists all alarm extension types and the applicable point parents.

Alarm extension type(palette: Folder)	Applies to point types	General description	
		Read-only	Writable
OutOfRangeAlarmExt (alarm: Extensions)	NumericPoint	NumericWritable	Provides alarming based upon numeric alarm high and low limits. Includes configurable deadband.
	—	Any object with single numeric Out	For example, kitControl:Math object "Add"
FloatLimitAlarmExt (alarm: Extensions)	NumericPoint	NumericWritable	Provides alarming based upon numeric alarm high and low limits relative to a setpoint instead of absolute values. Includes configurable high and low difference limits and a deadband.
StringChangeOfValueAlarmExt (alarm:Extensions)	StringPoint	StringWritable	Provides alarming based upon either inclusion or exclusion of the entered string value (or "regular expression," as needed).
BooleanChangeOfStateAlarmExt(alarm:Extensions)	BooleanPoint	BooleanWritable	Provides alarming based upon one of two possible values (states) as an alarm condition.
	—	Any object with single Boolean Out	For example, kitControl: Logic object "And."
BooleanCommandFailureAlarmExt (alarm:Extensions)	—	BooleanWritable	Provides alarming based upon mismatch between

Alarm extension type(palette: Folder)	Applies to point types		General description
		Read-only	Writable
EnumChangeOfStateAlarmExt (alarm:Extensions)	EnumPoint	EnumWritable	Provides alarming based upon one of multiple possible values (states) as an alarm condition.
EnumCommandFailureAlarmExt (alarm:Extensions)	—	EnumWritable	Provides alarming based upon mismatch between commanded value and actual (sensed) value. Extension has feedbackValue input property for linking.
NumericChangeOfStateAlarmExt (alarm:Extensions)	NumericPoint	NumericWritable	Provides alarming if the floating-point out value rounded towards zero is equal to any of the specified alarm values.
StatusAlarmExt (alarm: Extensions)	Any type that accepts extensions	Any type that accepts extensions	Provides alarming based upon any combination of status flags, including overridden, null, etc.
LoopAlarmExt (kitControl: Alarm)	—	LoopPoint	Sliding alarm limit for LoopPoint based upon controlled process deviation from setpoint.
ElapsedActiveTimeAlarmExt (kitControl:Alarm)	BooleanPoint with DiscreteTotalizerExt	BooleanWritable with DiscreteTotalizerExt	Provides alarming based upon accumulated runtime (elapsed active time). References a specific DiscreteTotalizerExt under same parent point.
	—	any object with single Boolean Out (also with a DiscreteTotalizerExt)	For example, kitControl: Logic object "And."
ChangeOfStateCountAlarmExt (kitControl:Alarm)	BooleanPoint with Discrete TotalizerExt	BooleanWritable with DiscreteTotalizerExt	Provides alarming based upon accumulated COS (change of states). References a specific DiscreteTotalizerExt under same parent point.
	—	any object with single Boolean Out (also with a DiscreteTotalizerExt)	For example, kitControl: Logic object "And"

alarm-AlarmSourceExt

This component is the abstract super-class of all Baja control alarming algorithms. It is available in the alarm module. Alarm extensions are contained in the **alarm** palette and in other component palettes.

Figure 3 Example of Alarm Source Extension properties

To set up alarming on a component you add an alarm extension to the component's property sheet. Alarm extension types must match their parent component type. For example, an **OutOfRangeAlarmExt** goes with a Numeric point type and a **BooleanChangeOfStateAlarmExt** goes with a Boolean point type.

Each alarm extension shares the same set of properties that specify the alarming conditions and certain routing options. Alarm extension properties define items such as alarm enable (annunciation) transition types, alarm delay times, associated alarm class, and alarm display text for different transition types. You define the actual alarm limits or state(s) in properties in the extension's **Offnormal Algorithm** slot.

Property	Value	Description
Alarm Inhibit	true or false	<p>true prevents all alarm generation due to any transition or state change, thus preventing unintended alarms in after-hours situations when a piece of equipment is turned off. Inhibit Time qualifies this behavior.</p> <p>For example, if set to true and an Offnormal state is reached, a toOffNormal status is not communicated. When the state returns to Normal, a toNormal status also is not communicated. This property also prevents alarm generation during the fault state.</p> <p>A difference between Alarm Inhibit and Alarm Delay is that the former is a boolean value (true/false) and may be controlled by another device (for example, the ON/OFF value of a fan).</p> <p>false allows alarm generation. This value prevents alarms from being inhibited (even if an Inhibit Time is set).</p>
Inhibit Time	hours minutes seconds	<p>Controls the length of time that the current Alarm Inhibit state remains in effect after an Alarm Inhibit state change.</p> <p>When an Alarm Inhibit value changes from true to false, alarm generation continues to be inhibited for the time specified by the value set for Inhibit Time.</p> <p>When an Alarm Inhibit value changes from false to true, alarm generation may continue to be inhibited for a time that is dependent on the point type. For discrete points, the system increases the Inhibit Time value by a factor of three. If the point is a numeric point, nothing changes.</p>
Alarm State	Normal Low Limit High Limit or Fault	Displays the current state of the alarms.
Time Delay	hours: minutes: seconds	<p>Displays the minimum time period that an alarm condition must exist before the object alarms. In other words, the object status must meet the alarm criteria for a continuous period equal to or greater than defined in the this property before an alarm is generated. Time Delay provides a way to prevent nuisance alarms that may be caused by a momentary change in a state value (Normal, Low Limit, High Limit).</p> <p>NOTE: Time Delay does not affect alarms generated by a fault. There is no delay when transitioning in or out of a Fault generated alarm.</p>
Time Delay to Normal	hours: minutes: seconds	Sets the minimum time period that a normal condition must exist before the object may return to normal status.
Alarm Enable	toOffnormal or toFault	<p>toOffnormal turns on the ability of the alarm to transition from normal to the alarm state Offnormal.</p> <p>toFault turns on the ability of the alarm to transition from normal to the alarm state Fault.</p>
To Offnormal Times	text	<p>When a point transitions to an offnormal state, reports four pieces of information:</p> <p>Alarm Time displays when the alarm condition occurred.</p> <p>Ack Time displays the time that the alarm was acknowledged.</p> <p>Normal Time displays the time that the to-normal event occurred.</p>

Property	Value	Description
		Count displays the total number of offnormal events.
To Fault Times	text	When a point transitions to a fault state, reports four pieces of information: Alarm Time displays the time that the to-fault event occurred. Ack Time displays the time that the alarm was acknowledged. Normal Time displays the time that the To Normal event occurred. Count displays the total number of Offnormal events.
Time in Current State	hours: minutes: seconds	Displays the elapsed time since the component transition to the current state occurred.
Source Name	%parent.displayName% (default)	Displays the name of the alarm source. If you use the default script setting, the source name field shows the display name of the alarm extension parent. You can edit this script or type in a multi-line literal string to display.
To Normal Text	text	Configures what displays when the component transitions to a normal status. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
To Fault Text	text	Enters the text to display when the component transitions to a Fault status. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
To Offnormal Text	text	Enters the text to display when the component transitions to an Offnormal (alarm) state. When applicable, text entered for Fault Algorithm , High Limit Text and/or Low Limit Text may override this text.
Hyperlink Ord or Hyperlink	Ord, BQL Query or path	Associates an ORD, BLQ query or path with an alarm state on the component. When an alarm is reported in the console, the Hyperlink button activates. Clicking this button links to the location you specify here.
Sound File		Configures the path to a sound file that plays when the current component is in an alarm state. Use the folder icon to browse to the file. Click the arrow icon to the right of the folder icon to test the path.
Alarm Icon	ord	Defines the path to a graphic file to add to the display in the timestamp column of the alarm table in the Console Recipient view.
Alarm Instructions	text	Opens a window in which you can provide customized instructions to the building attendant concerning how to handle the alarm.
Fault Algorithm	additional properties	Displays Fault options that depend on the alarm extension. You define the actual alarm limits or state(s) in subproperties in this slot.
Offnormal Algorithm	additional properties	Displays offnormal options that depend on the alarm extension.
Ordinal	read-only	Provides a unique identifier for the particular OnCallList . The OnCallService tracks the next free ordinal number.

Property	Value	Description
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Meta Data	text	Defines additional information for the extension.

alarm-OutOfRangeAlarmExt

This extension implements a standard out-of-range alarming algorithm, and applies it to points with a status numeric output. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

Algorithm properties

These properties are unique to the **OutOfRangeAlarmExt**.

Property	Value	Description
Fault Algorithm, High Limit	true, false	Enables and disables high limits for the fault algorithm.
Low Limit	true, false	Enables and disables low limits.
Deadband	number	Defines a band of input values where the output is zero.
High Limit Text	text string	Defines a bformat, which displays when a high limit is reached.
Low Limit Text	text string	Defines a bformat, which displays when low limit is reached.
Offnormal Algorithm, High Limit	true, false	Enables and disables high limits for the offnormal algorithms.
Limit Enable	option box	Enables the configuration of limits.

alarm-FloatLimitAlarmExt

This alarm extension generates an alarm when a NumericPoints's or NumericWritable's Out slot falls outside a normal range defined by a setpoint, high difference limit, low difference limit, and a deadband. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

Algorithm properties

These properties are unique to the **FloatLimitAlarmExt**.

Property	Value	Description
Setpoint	number	Specifies the value that is the basis for defining the normal range provided the value and its status is valid. It can be linked to another point.
Last Valid Setpoint	number	Specifies the setpoint value when its status and value were last valid.
Low Diff Limit	number (0.00–+inf)	Determines the low limit of the normal range by subtracting the value from the last valid setpoint value.
High Diff Limit	number (0.00–+inf)	Determines the high limit of the normal range by adding the value to the last valid setpoint value.

Property	Value	Description
Deadband	number (0.00–+inf)	Defines the differential value applied to high and low limits before return-to-normal. This value is subtracted from the high limit and added to low limit.
High Limit Text	text string	Defines a bformat, which displays when a high limit is exceeded.
Low Limit Text	text string	Defines a bformat, which displays when low limit is exceeded.
Limit Enable	checkbox options Low Limit Enable High Limit Enable	Enables the limit settings.

alarm-StringChangeOfValueAlarmExt

This extension generates an alarm upon inclusion or exclusion of a particular string value, or more accurately, regular expression (regexp) of a StringPoint's or StringWritable's Out slot (string type). This alarm extension is available in the **Extensions** folder of the **alarm** palette.

By default, matching is case sensitive, but this attribute may be configured using the **Case Sensitive** property in the extension's **Offnormal Algorithm** and **Fault Algorithm** container slots.

In addition to the standard alarm properties, this extension supports these properties.

Property	Value	Description
Expression	a value of: .*	This is the regexp value for any text.
Normal On Match	true, false	Matches when the condition is in the specified limits.
Case Sensitive	true (default), false	Matching defaults to case sensitive.

By default, status remains `ok` until an edit is made to one or both properties above.

Simple string example

A hospital emergency room desires an alarm created whenever the moon enters a "full moon" phase. A StringWritable is created and given a StringChangeOfValueAlarmExt. In this extension:

- In the Offnormal Algorithm's **Expression** property, the following string is entered: `Full Moon`.
- The Offnormal Algorithm's **Normal On Match** is set to `false`, and **Case Sensitive** is left at `true`.

In the station's **WeatherService**, a **WeatherProvider** has a **MoonPosition** component, which serves as the link source. A link is made from the **MoonPosition**'s **Phase** property to the **ln16** slot of the **StringWritable**. On all phases of the moon but one, the **StringWritable** has a normal status. When **MoonPosition**'s phase changes to `Full Moon`, the **StringWritable** alarms, and remains in alarm until the next moon phase (`Waning Gibbous`).

NOTE: If the **Expression** string entry was simply: `Moon`, alarms would occur during both phases that include the string "`Moon`", namely "`Full Moon`" and "`New Moon`".

Regexp examples

The **Expression** property in both the **Offnormal Algorithm** and **Fault Algorithm** containers can process a simple string value, as in the example. The **Expression** property also processes a value using regular expression (regexp) syntax. This provides even more flexibility, such as with use of "or" operators, among others.

Regexp syntax is beyond the scope of this document, but a few regexp examples are listed below:

- Contains the word "alarm":

- (.*)(alarm)(.*)
- Contains the word "offnormal" or "fault":
(.*)(offnormal)|(fault)(.*)
 - Eight "1" or "0" characters, with the fourth and eighth characters being 1:
(1|0){3}(1)(1|0){3}(1)
 - Empty text:
^\$
 - Any text:
.*

This is the default **Expression** property value, that is in an extension copied from the **alarm** palette.

alarm-BooleanChangeOfStateAlarmExt

This extension implements a change of state alarm detection algorithm for Boolean objects as described in BACnet Clause 13.3.2. It is available in the **Extensions** folder of the **alarm** palette.

alarm-BooleanCommandFailureAlarmExt

This alarm extension generates an alarm when a BooleanPoint's or BooleanWritable's Out slot does not match a feedback value, which can be linked to other points, for more than **timeDelay**. It applies it to points with a status boolean output.

Algorithm properties

This property is unique to the **BooleanCommandFailureAlarmExt**.

Property	Value	Description
Feedback Value	true or false (default)	Provides FeedbackValue input property for linking. The status is not used by the algorithm.

alarm-EnumChangeOfStateAlarmExt

This extension implements a change of state alarm detection algorithm for enum objects as described in BACnet Clause 13.3.2. Each algorithm instance defines a set of enumerated values that should be considered off-normal conditions and, therefore, should generate an alarm. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

alarm-EnumCommandFailureAlarmExt

This extension implements a command failure alarm detection algorithm for enum objects as described in BACnet. If the feedback and output values of the enum point are not equal for more than **timeDelay**, the system generates an offnormal alarm. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

alarm-FaultAlgorithm

This component is the super-class of all fault detection mechanisms and contains properties that specify fault conditions. The default implementation does not generate any **toFault** alarms. A **FaultAlgorithm** is under each type of alarm extension, along with an **OffnormalAlgorithm** container.

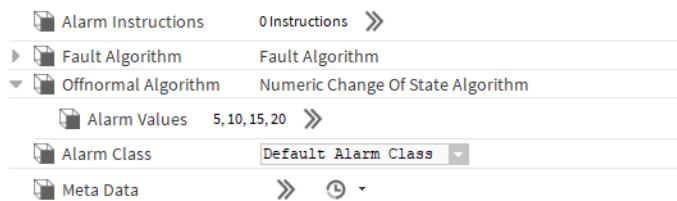
alarm-OffnormalAlgorithm

This super-class of algorithm extension checks for off normal conditions. You access this extension under each type of alarm extension along with a **FaultAlgorithm** container.

This extension's properties specify which alarm conditions to check for.

alarm-NumericChangeOfStateAlarmExt

This extension implements a change of state alarm detection algorithm for numeric objects. Each algorithm instance defines a set of numeric values that should be considered offnormal conditions and, therefore, should generate an alarm. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

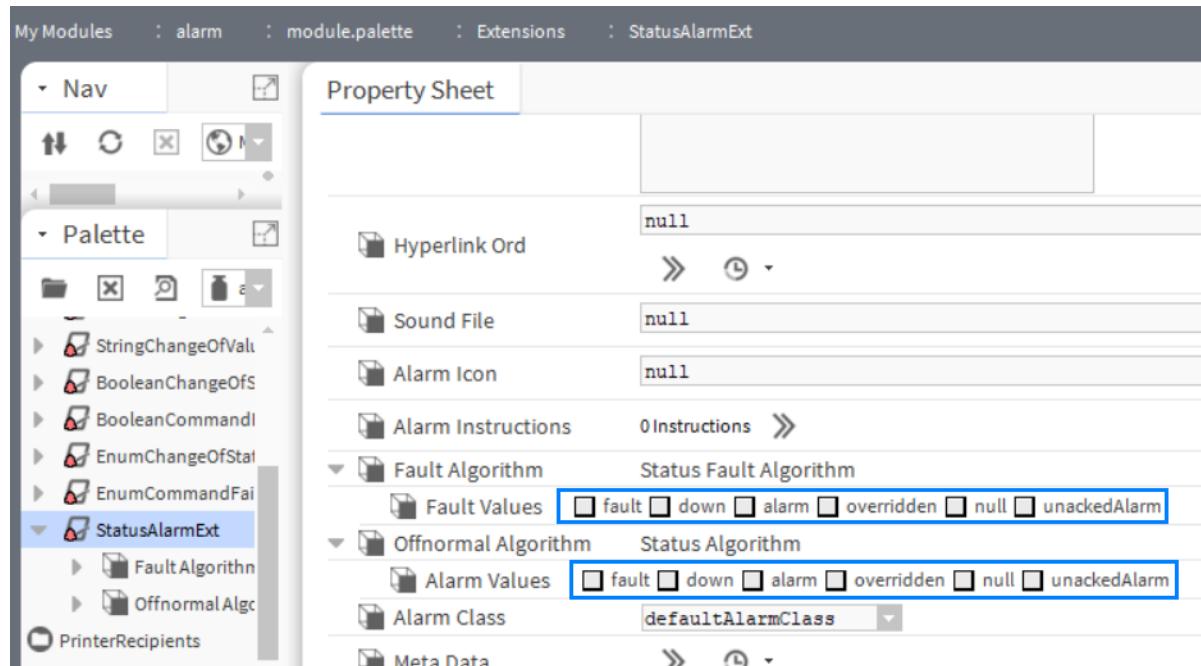


It raises an alarm if the floating-point out-value rounded towards zero is equal to any of the specified alarm values. This is useful when EC-Net numeric points are exported as Integer or Positive Integer BACnet objects. The intrinsic algorithms for these objects are out of range, which means that you must handle the numeric change-of-state through event enrollment objects.

alarm-StatusAlarmExt

This extension provides alarming based upon any combination of status flags, and applies to all points and objects that accept extensions. This alarm extension is available in the **Extensions** folder of the **alarm** palette.

NOTE: The status values "disabled" and "stale" were available as options on StatusAlgorithm and StatusFaultAlgorithm (part of the StatusAlarmExt in the alarm palette) but alarm algorithms are never evaluated if a control point's status is "disabled" or "stale". Therefore, an alarm will never be raised for these status values. These status options have been removed from these alarm algorithms using an Integer facet named "filter" (status bits in the filter are not displayed).



Components in email module

- Email
- EmailAlarmAcknowledger

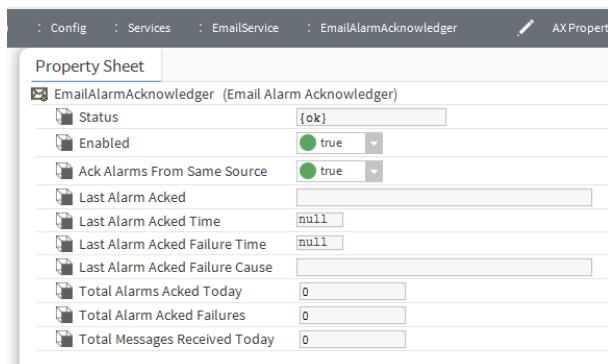
- EmailRecipient
- EmailService
- IncomingAccount
- OutgoingAccount

email-Email

Email represents an email message.

email-EmailAlarmAcknowledger

The **EmailAlarmAcknowledger** component provides a way to acknowledge alarms by sending an email reply to an email alarm notification. This component is available in the **email** palette and works with alarm notifications that are sent out using the **OnCallService** or directly from the **EmailService**.



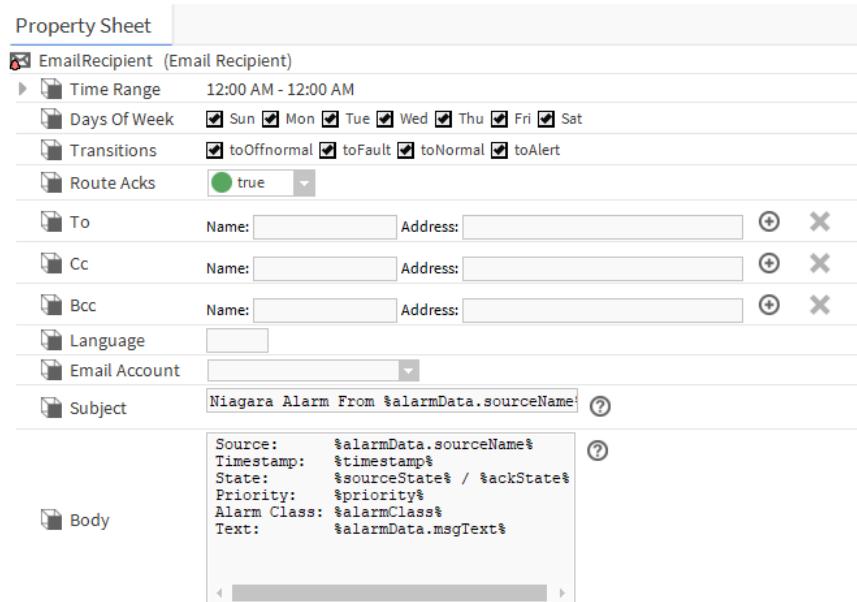
Property	Value	Description
Status	read-only	<p>Reports the condition of the entity or process at last polling.</p> <p>{ok} indicates that the component is licensed and polling successfully.</p> <p>{down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection.</p> <p>{disabled} indicates that the Enable property is set to false.</p> <p>{fault} indicates another problem. Refer to Fault Cause for more information.</p>
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Ack Alarms From Same Source	drop-down list	<p>true acknowledges the current and all previous alarms from this source with a single email reply. For example, a single control point may go in and out of alarm repeatedly generating 23 unacknowledged alarms reported and displayed in the alarm console. With this property set to true, a single email acknowledgment can acknowledge all 23 alarms.</p> <p>false acknowledges a single alarm. Each alarm must be acknowledged separately.</p>
Last Alarm Acked	read-only text	Displays the identity of the last alarm that was acknowledged.

Property	Value	Description
Last Alarm Acked Time	read-only time	Displays the identity of the last alarm that was acknowledged.
Last Alarm Acked Failure Time	read-only time	If an attempt to acknowledge an alarm failed, a message with the time of the last failure displays.
Last Alarm Acked Failure Cause	read-only text	If there has been a failure in the attempt to acknowledge an alarm, this field displays a message indicating the possible reason for the last failure.
Total Alarms Acked Today	read-only number	Displays the current number of alarms that have been acknowledged for the day. This number is reset to zero at midnight.
Total Messages Received Today	read-only number	Displays the current number of email messages that have been received for the day. This number is reset to zero at midnight.

email-EmailRecipient

This component manages the routing of all email messages from message sources to message recipients. It is like other alarm recipients except that it formats the alarm as an email message and delivers it to a destination other than the alarm console.

Figure 4 EmailRecipient property sheet



Actions include Route Alarm.

Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check boxes	Specifies the days of the week to include.

Property	Value	Description
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Route Acks	true (default) or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
To	email address	This is the email address of the email recipient (person who is to receive the emailed alarm).
Cc	email address	This is the email address of anyone that is to receive a carbon copy of the alarm.
Bcc	email address	This is the email address of anyone that should receive a carbon copy of the alarm, but whose name you do not want to display in the delivered email.
Language	two lower-case letters	This is the ISO 639 language code as two lower-case letters. For a list of codes, see the following: http://www.loc.gov/standards/iso639-2/langcodes.html
Email Account	drop-down list	Selects the email account to use for sending the alarm.
Subject	text (default: EC-Net Alert From % alarmData . SourceName%)	Defines the alarm subject line.
Body	text	Defines as a bformat text of the body.

EmailService

This service is required when specifying an EmailRecipient in a station or application. You use the EmailRecipient to route both alarms and reports.

Figure 5 EmailService property sheet

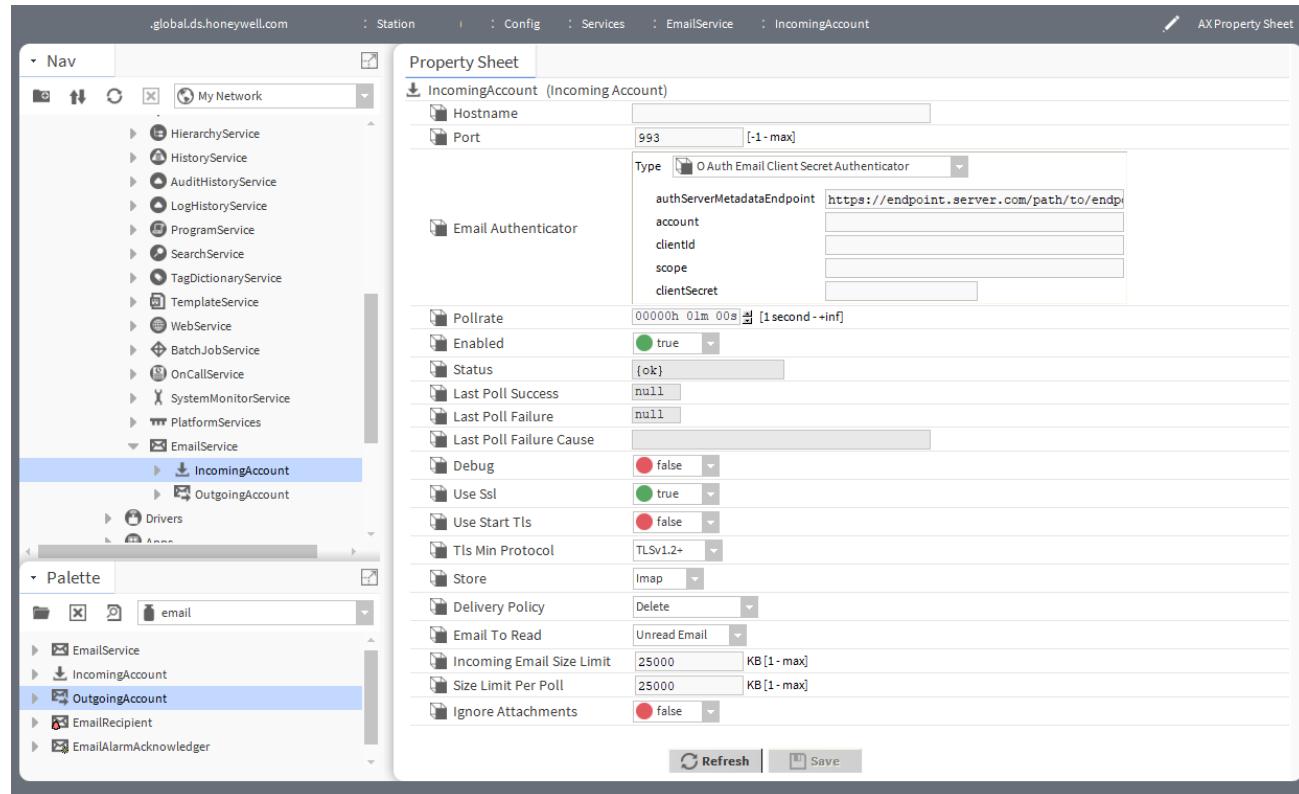


Property	Value	Description
Status	read-only	<p>Reports the condition of the entity or process at last polling.</p> <p>{ok} indicates that the component is licensed and polling successfully.</p> <p>{down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection.</p> <p>{disabled} indicates that the Enable property is set to false.</p> <p>{fault} indicates another problem. Refer to Fault Cause for more information.</p>
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is not working (in fault). This property is empty unless a fault exists.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).

email-IncomingAccount

This component is required for a station to receive email.

Figure 6 Incoming Account Property Sheet



Property	Value	Description
Hostname	mail.name.com, where name varies depending on the host.	Defines the name of the email server. For example mail.acme.com.
Port	number	The number of the port that the system associates with the email account. Typically, the incoming email account number is 110. If you leave the setting at its default value of minus one (-1), the IncomingAccount searches for and uses a valid port.
Email Authenticator	additional properties (defaults to ○ Auth Email Client Secret Authenticator)	Defines the type of email authenticator. For property descriptions, refer to “Email Authenticator” properties below.
Pollrate	hours: minutes: seconds	Specifies how often the account executes a send action. Increasing the pollrate value increases the time between polls. During the time between polls, emails may be queued (up to the max queue size) until the next poll time. At the next poll time all queued emails are sent.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Last Poll Success, Last Poll Failure	hours and minutes	Each of these properties displays the time of the last polling success and failure, respectively.
Last Poll Failure Cause	read-only	Displays an error message to indicate the reason for the polling failure.
Debug	Boolean property	Turns debug mode on and off. When on, and the station sends or receives email, the system displays detailed information using the platform's standard Application Director view.
Use start Tls	true or false (default)	This property allows you to enable and disable communication security. The option must be set to true or false according to the instructions provided by the email provider. NOTE: Use Ssl and Use Start Tls are mutually exclusive. Both may be false. To provide secure email, set one property to true, and the other false. Do not enable or disable the Use Ssl or Use Start Tls properties without configuring the Port.
Tls Min Protocol	defaults to TLSv1.2+	Determines the minimum acceptable TLS version to use.

Property	Value	Description
Store	email retrieval standards	Selects the email retrieval standard. Use the option supported by your mail server: <ul style="list-style-type: none"> • Imap • Pop3
Delivery Policy	various	Provides a list of options that control how the incoming email account handles incoming emails at the mail server. <ul style="list-style-type: none"> • Delete causes the account to remove all emails from the mail server when it checks the account to retrieve new email. This happens even if the emails are already marked as read by another email client. • Mark As Read sets all emails to the read state when the account checks to retrieve new email from the server. • Mark as Unread sets all emails to the unread state when the account checks to retrieve new email from the server
Use Ssl	true or false (default)	This encrypts the connection before it is opened. The encryption automatically uses either SSL v3 or TLS (depending on email server requirements). The option must be set to true or false according to the instructions provided by the email provider. NOTE: Use Ssl and Use Start Tls are mutually exclusive. Both may be false. To provide secure email, set one property to true, and the other false. Do not enable or disable the Use Ssl or Use Start Tls properties without configuring the Port.

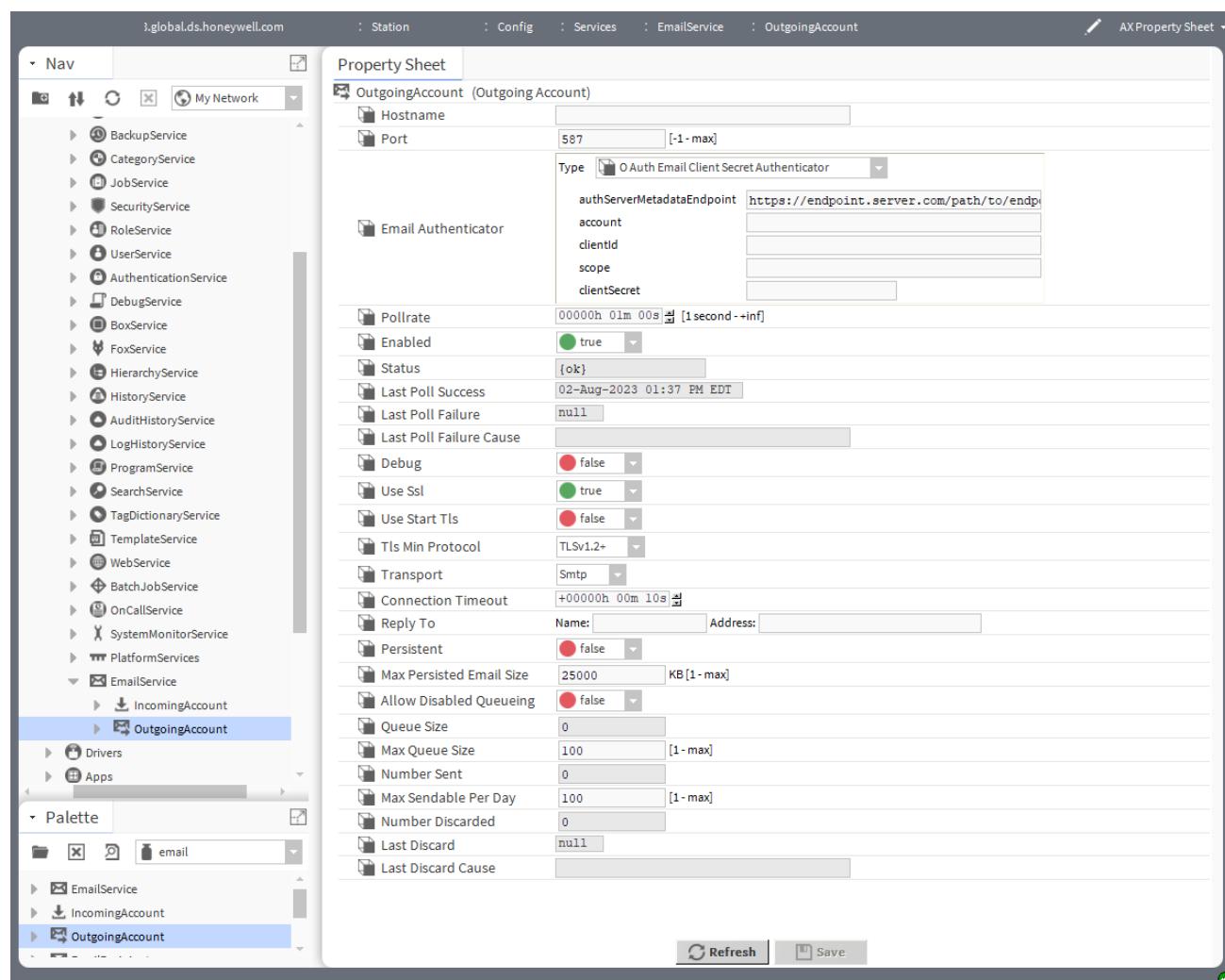
Email Authentication Properties

Property	Value	Description
Type	drop-down list	Selects the type of email authenticator.
Basic Email Client Authenticator	additional properties	account: Specifies account details. password: Enter password.

Property	Value	Description
O Auth Email Client Secret Authenticator		<p>authServerMetadataEndpoint: Displays the URI (published by the Identity Provider) that is used to obtain metadata related to the authentication services provided by the Identity Provider. It is used to configure the authentication client for the services supported by the Identity Provider. When specifying this URI, leave off the '/.well-known/openid-configuration' path segment, as it is appended to the property's value by the authentication client when resolving the authorization server metadata.</p> <p>account: Specifies the email account/user name for which messages will be sent/received.</p> <p>clientId: Specifies the clientId of the application that has been registered with the Identity Provider.</p> <p>scope: Specifies the scopes for which an access token will be requested from the Identity Provider.</p> <p>clientSecret: Specifies the client secret that is associated with the OAuth client that has been registered with the Identity Provider.</p>
O Auth Email Client Certificate Authenticator		<p>authServerMetadataEndpoint: Displays the URI (published by the Identity Provider) that is used to obtain metadata related to the authentication services provided by the Identity Provider. It is used to configure the authentication client for the services supported by the Identity Provider. When specifying this URI, leave off the '/.well-known/openid-configuration' path segment, as it is appended to the property's value by the authentication client when resolving the authorization server metadata.</p> <p>account: Specifies the email account/user name for which messages will be sent/received.</p> <p>clientId: Specifies the clientId of the application that has been registered with the Identity Provider.</p> <p>scope: Specifies the scopes for which an access token will be requested from the Identity Provider.</p> <p>clientCertificate: Specifies the certificate that is associated with the OAuth client that has been registered with the Identity Provider, which is used as proof of identity during authentication.</p> <p>privateKeyPassword:</p> <p>useJWTBearerAssertion: When set to <code>false</code>, token requests to the Identity Provider will use the OAuth Client Credentials grant. When set to <code>true</code>, token requests will use the OAuth JWT Bearer grant, which must be supported by the Identity Provider for this feature to work.</p>

email-OutgoingAccount

This component is required for sending emails from a station through the smtp transport. It is in the **email** palette. You add this component under the **EmailService** component.

Figure 7 Outgoing Account property sheet

Property	Value	Description
Hostname	mail.name.com, where name varies depending on the host.	Defines the name of the email server. For example mail.acme.com.
Port	number	The number of the port that the system associates with the email account of the provider. Typically, the outgoing email account number is 25. If you leave the setting at its default value of minus one (-1), the OutgoingAccount searches for and uses a valid port.
Email Authenticator	additional properties (defaults to OAuth Email Client Secret Authenticator)	Defines the type of email authenticator. For property descriptions, refer to "Email Authenticator" properties below.
Pollrate	hours: minutes: seconds	Specifies how often the account executes a send action. Increasing the pollrate value increases the time between polls. During the time between polls, emails may be queued (up to the

Property	Value	Description
		max queue size) until the next poll time. At the next poll time all queued emails are sent.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Last Poll Success, Last Poll Failure	hours and minutes	Each of these properties displays the time of the last polling success and failure, respectively.
Last Poll Failure Cause	read-only	Displays an error message to indicate the reason for the polling failure.
Debug	Boolean property	Turns debug mode on and off. When on, and the station sends or receives email, the system displays detailed information using the platform's standard Application Director view.
Use Start Tls	true or false (default)	This property allows you to enable and disable communication security. The option must be set to true or false according to the instructions provided by the email provider. NOTE: Use Ssl and Use Start Tls are mutually exclusive. Both may be false. To provide secure email, set one property to true, and the other false. Do not enable or disable the Use Ssl or Use Start Tls properties without configuring the Port.
Tls Min Protocol	defaults to TLSv1.2+	Determines the minimum acceptable TLS version to use.
Use Ssl	true or false (default)	This encrypts the connection before it is opened. The encryption automatically uses either SSL v3 or TLS (depending on email server requirements). The option must be set to true or false according to the instructions provided by the email provider. NOTE: Use Ssl and Use Start Tls are mutually exclusive. Both may be false. To provide secure email, set one property to true, and the other false. Do not enable or disable the Use Ssl or Use Start Tls properties without configuring the Port.
Transport	text	Selects among the available email communication protocols. The most common value is SMTP .
Connection Timeout	time	Controls how long the station waits for a response from the mail server before generating an exception and setting the fault cause. At the next scheduled poll, the account attempts to contact the mail server again.

Property	Value	Description
Use Authentication	true or false	Allows you to require logon credentials for sending any email (true). Sometimes authentication is not required for emails that are routed to recipients within the same domain (as an example of when false would be an appropriate option). The option must be set to true or false according to the instructions provided by the email provider.
Reply To	email address	This Property must follow the instructions provided by the email provider. Most often this is the same as the Account Property: myaccount@example.com.
Persistent, Persistent Directory	true or false	true saves each queued email as an .xml file in the designated persistence directory until all emails are sent. Once sent, the system deletes the xml files from the directory. This prevents lost email in the event the station stops before the system can send the emails.
Queue Tracking Properties	various	Emails wait in the queue to be sent the next time the system polls the account. The length of time in the queue depends on the poll rate. See Queue Tracking Properties, page 81 .

Email Authentication Properties

Property	Value	Description
Type	drop-down list	Selects the type of email authenticator.
Basic Email Client Authenticator	additional properties	account: Specifies account details. password: Enter password.
No Auth Email Client Authenticator		Indicates that no Auth Email Client Authenticator is used.

Property	Value	Description
OAuth Email Client Secret Authenticator		<p>authServerMetadataEndpoint: Displays the URI (published by the Identity Provider) that is used to obtain metadata related to the authentication services provided by the Identity Provider. It is used to configure the authentication client for the services supported by the Identity Provider. When specifying this URI, leave off the '/.well-known/openid-configuration' path segment, as it is appended to the property's value by the authentication client when resolving the authorization server metadata.</p> <p>account: Specifies the email account/user name for which messages will be sent/received.</p> <p>clientId: Specifies the clientId of the application that has been registered with the Identity Provider.</p> <p>scope: Specifies the scopes for which an access token will be requested from the Identity Provider.</p> <p>clientSecret: Specifies the client secret that is associated with the OAuth client that has been registered with the Identity Provider.</p>
OAuth Email Client Certificate Authenticator		<p>authServerMetadataEndpoint: Displays the URI (published by the Identity Provider) that is used to obtain metadata related to the authentication services provided by the Identity Provider. It is used to configure the authentication client for the services supported by the Identity Provider. When specifying this URI, leave off the '/.well-known/openid-configuration' path segment, as it is appended to the property's value by the authentication client when resolving the authorization server metadata.</p> <p>account: Specifies the email account/user name for which messages will be sent/received.</p> <p>clientId: Specifies the clientId of the application that has been registered with the Identity Provider.</p> <p>scope: Specifies the scopes for which an access token will be requested from the Identity Provider.</p> <p>clientCertificate: Specifies the certificate that is associated with the OAuth client that has been registered with the Identity Provider, which is used as proof of identity during authentication.</p> <p>privateKeyPassword:</p> <p>useJWTBearerAssertion: When set to <code>false</code>, token requests to the Identity Provider will use the OAuth Client Credentials grant. When set to <code>true</code>, token requests will use the OAuth JWT Bearer grant, which must be supported by the Identity Provider for this feature to work.</p>

Queue Tracking Properties

Property	Value	Description
Allow Disabled Queueing	true or false	true allows emails to remain in the queue even when Enabled is false.
Queue Size	number	Refers to the number of emails waiting to be sent in the queue. To clear the queue at any time, right-click on the appropriate outgoing account name (OutgoingAccount) and click Action → Clear Queue .
Max Queue Size	number	Specifies how many emails can wait in the queue.
Number Sent	number	Indicates the number of emails sent. To reset this number to zero at any time, right-click the appropriate outgoing account name (OutgoingAccount) and click Actions → Reset Number Sent .
Max Sendable Per Day	number	Allows you to limit the number of emails that may be sent daily according to the instructions of email provider.
Number Discarded	read-only number	Reports how many emails the system did not successfully send.
Last Discard	read-only	Displays the date and time of the last failed email.
Last Discard Cause	read-only	Displays an error message that indicates the cause of the last email send failure.

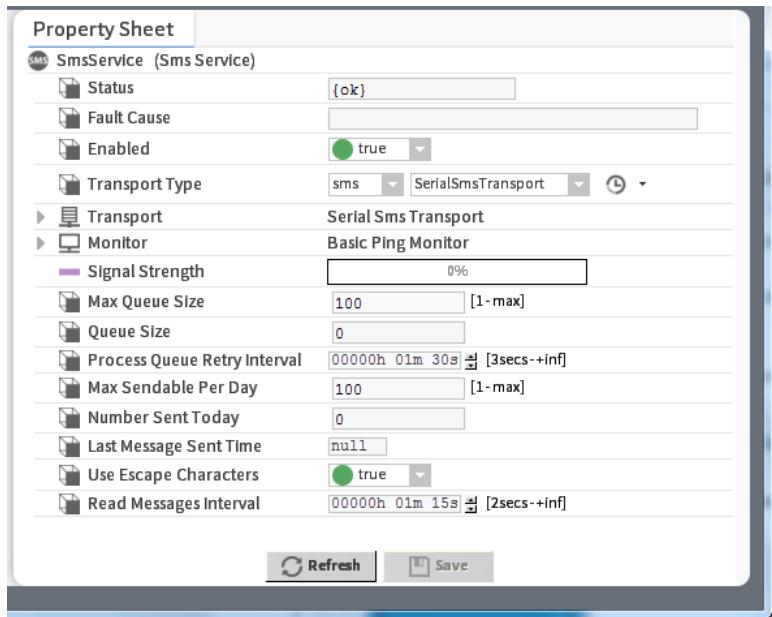
Components in the Sms module

The Sms module contains components that allow you to set up a service for sending text messages. The following components are included in the Sms module:

- SmsService
- SmsRecipient
- Sms
- SmsAlarmAcknowledger

sms-SmsService

This is the main component used for sending text messages. All text messages are queued under this service and sent by the service's **Transport** object. If any text messages are queued when the station shuts down, the station sends them when it next starts up.



Actions

Action	Description
Send	Sends the current message.
Clear Queue	Removes waiting messages from the queue.
Process Queue	Sends messages that are in the queue.
Reset Number Sent Today	Resets this information to zero.
Read Messages	Reads any messages immediately instead of waiting for the next Read Message Interval time.

Property	Value	Description
Status	read-only	<p>Reports the condition of the entity or process at last polling.</p> <p>{ok} indicates that the component is licensed and polling successfully.</p> <p>{down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection.</p> <p>{disabled} indicates that the Enable property is set to false.</p> <p>{fault} indicates another problem. Refer to Fault Cause for more information.</p>
Fault Cause	read-only	Indicates the reason why a system object (network, device, component, extension, etc.) is not working (in fault). This property is empty unless a fault exists.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Transport Type	n/a	Gprs Sms Transport or Serial Sms Transport.

Property	Value	Description
Transport	additional properties	See Transport, page 83 .
Monitor	additional properties	See sms-BasicPingMonitor, page 84
Signal Strength	read-only	Indicates signal strength.
Max Queue Size	number	Defines how many SMS may be collect in the queue before the next poll time. At the next poll time, all queued SMS are sent.
Queue Size	read-only	Displays how many SMSs are currently in the queue (waiting to be sent). To clear the queue at any time, right-click the appropriate outgoing account property and click Actions → Clear Queue .
Process Queue Retry Interval	hours: minutes: seconds	After a Process Queue failure, this is the time to wait before initiating a Process Queue retry.
Max Sendable Per Day	number	Limits the number of SMS that may be sent in one day.
Number Sent Today	read-only	Displays the number already sent today.
Last Message Sent Time	read-only	Displays the time at which last message was sent.
Use Escape Characters	true or false	Allows to name characters with spaces and special symbols.
Read Messages Interval	hours: minutes: seconds	Defines as the time for which the system waits to read message.

Transport

You use the **Transport** object to configure the system's serial properties.

The screenshot shows the configuration interface for the Serial Sms Transport. On the left, there is a tree view with 'Transport' expanded, showing 'Serial Sms Transport' and 'Basic Ping Monitor'. Under 'Serial Sms Transport', several properties are listed with their current values and ranges:

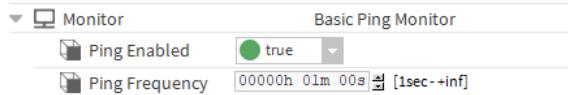
- Signal Strength: 0%
- Max Queue Size: 100 [1-max]
- Queue Size: 0
- Process Queue Retry Interval: 00000h 01m 30s [3secs--+inf]
- Max Sendable Per Day: 100 [1-max]
- Number Sent Today: 0
- Last Message Sent Time: null
- Use Escape Characters: true
- Read Messages Interval: 00000h 01m 15s [2secs--+inf]

Property	Value	Description
Serial Port Config	read-only	Summarizes the serial settings.
Status		Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully.

Property	Value	Description
		{down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Port Name	text string	String for the serial port, as known to the host platform.
Baud Rate	drop-down list (defaults to Baud9600)	Defines communication speed in bits per second.
Data Bits	drop-down list (defaults to Data Bits8)	Defines the number of bits required to encode a character (a byte).
StopBits	drop-down list (defaults to Data Bits1)	Defines the number of bits that indicate the end of a character.
Parity	drop-down list (defaults to None)	Defines the odd or even requirement of a transmitted byte of data for the purpose of error detection.
Flow Control Mode	drop-down	Manages the data between two devices so that data can be handled at an efficient pace.
Inter Message Delay	hours, minutes, seconds (defaults to 0.3 seconds)	Defines the amount of time between messages.
Delete Read Messages	true or false	Eliminates read messages.

sms-BasicPingMonitor

A network's **Monitor** slot holds configuration for the ping mechanism used by the driver network.



Property	Value	Description
Ping Enabled	drop-down list	Verifies the general health of the network devices. If true, (default) a ping occurs for each device under the network, as needed. If false, device status pings do not occur. Moreover, device statuses cannot change from what existed when this property was last true.
Ping Frequency	hours:minutes:seconds	Specifies the interval between periodic pings of all devices. Typical default value is every 5 minutes (05m 00s), you can adjust differently if needed.

sms-SmsRecipient

This component acts as an alarm recipient for transmitting alarm notifications by text message. It is like the [EmailRecipient](#) component.

SMSRecipient properties

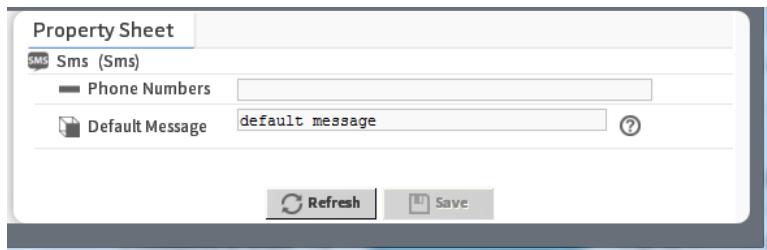
The screenshot shows the configuration interface for the SmsRecipient component. It includes fields for Time Range (12:00 AM - 12:00 AM), Days Of Week (Sun, Mon, Tue, Wed, Thu, Fri checked), Transitions (toOffnormal, toFault, toNormal, toAlert checked), Route Acks (true selected), Enabled (true {ok}), and Phone Numbers. Below these, there's a section for Body with Source: \${alarmData.sourceName\$} and Text: \${alarmData.msgText\$}.

Actions on this component include: Route Alarm

Property	Value	Description
Time Range	Start Time and End Time [hours of the day (defaults to 24 hours)]	Specify when during the day (start and stop times) this recipient receives alarms.
Days of the Week or Days of Week	check box	Specifies the days of the week to include.
Transitions	drop-down list	Selects which alarm transitions to display in the console. Only those transitions selected display although the station saves all transitions in alarm history. Options are: toOffnormal, toFault, toNormal, toAlert
Route Acks	true (default) or false	Enables (true) and disables (false) the routing of alarm acknowledgements to the recipient. The framework does not route trap (event notification) acknowledgements if you select false.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Phone Numbers	phone number international format	Defines the recipient's telephone number. It must be in international format.
Body	140 characters of text	Defines the message itself, which defaults to Source, Text and UUID. You may format the text for the SMS message within the body slot.

sms-Sms

This component is a general use **Sms** component to send text messages.



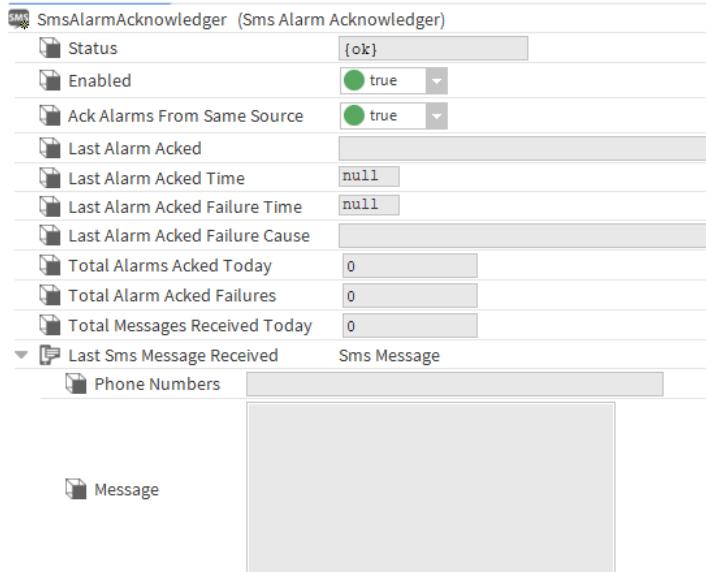
Available actions include:

- Send Default Message
- Send Message

Property	Value	Description
Phone Numbers	phone number international format	Defines the recipient's telephone number. It must be in international format.
Default Message	text string	Defines the text of the default message.

sms-SmsAlarmAcknowledger

This component works with the `OnCallService` or with the `SmsService` to make it possible to acknowledge alarms by replying to a text message alarm notification. This component is available in the `sms` palette.



Actions available on this component include: Received

Property	Value	Description
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.
Enabled	true or false	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Ack Alarms From Same Source	true or false	true acknowledges all alarms from this source, current and previous with a single text reply. false acknowledges a single alarm.
Last Alarm Acked	read-only	Displays the identity of the last alarm that was acknowledged by this component.
Last Alarm Acked Time	read-only	Displays the time that the last alarm was acknowledged by this component.
Last Alarm Acked Failure Time	read-only	If there has been a failure in the attempt to acknowledge an alarm, this field displays a message indicating the time of the last failure.
Last Alarm Acked Failure Cause	read-only	If there has been a failure in the attempt to acknowledge an alarm, this field displays a message indicating the possible reason for the last failure
Total Alarms Acked Today	read-only	Displays the current number of alarms that have been acknowledged for the day. This number is reset to zero at midnight.
Total Alarms Acked Failures	read-only	Displays the current number of alarm acknowledgment attempts that failed for the day. This number is reset to zero at midnight.
Total Messages Received Today	read-only	Displays the current number of Sms messages received for the day. This number is reset to zero at midnight.
Last SMS Message Received	read-only	Displays the phone numbers and the message associated with the last Sms received.

Components in an alarmOrion module

An alarmOrion module contains components that allow you to set up a service for an Orion Alarm Database. The following components are included in the alarmOrion module:

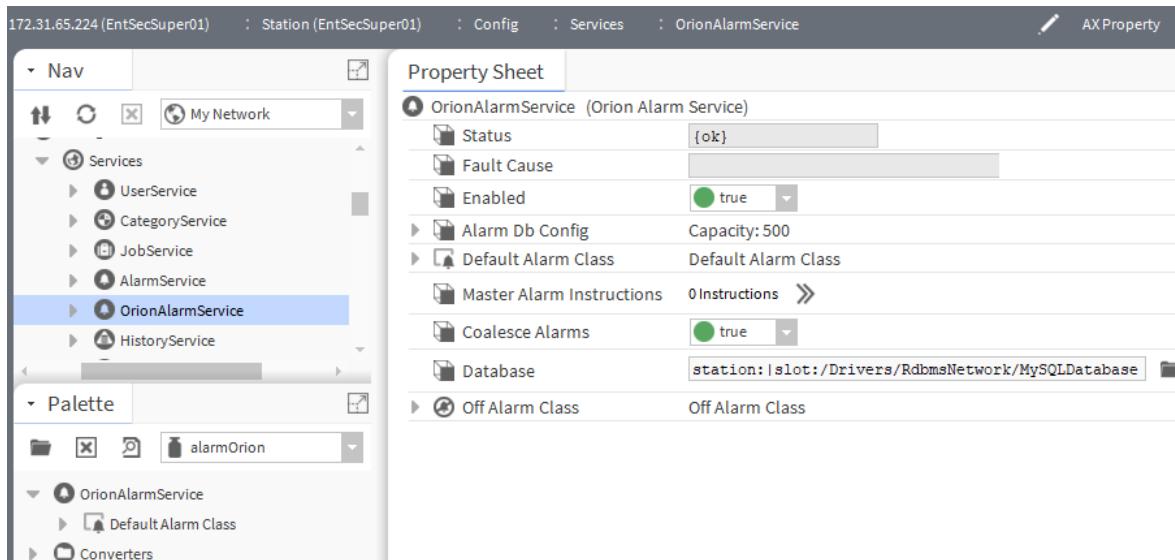
- OrionAlarmService
- Converters
- OrionArchiveAlarmProvider

alarmOrion-OrionAlarmService

The **alarmOrion** provides a way to handle a large number of alarms (i.e more than 200,000). It requires Orion database system. The alarmOrionService supports the RDBMS platform. The rdb provides database ords used to configure exported data in the RDBMS database.

The **OrionAlarmService** component is available in the **alarmOrion** palette.

Figure 8 OrionAlarmService Properties



In addition to the standard properties (Status, Enabled, and Fault Cause), this component provides these properties.

To access, expand **Config**→**Services** and right-click **OrionAlarmService**→**Views**→**AX Property Sheet**.

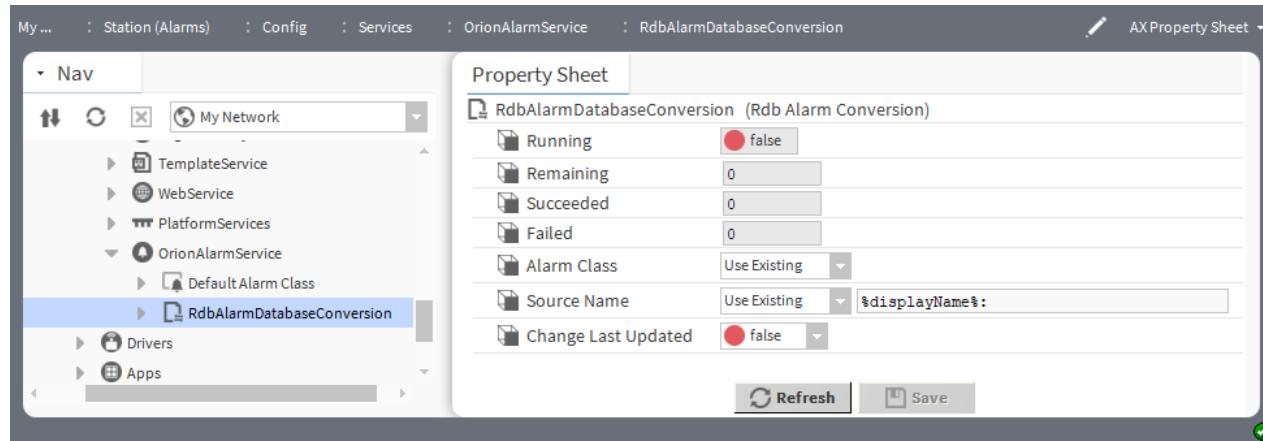
Type	Value	Description
Alarm Db Config	1–250,000 records	Defines the number of alarm records to store in the histories database. When the capacity is reached, newer alarm records overwrite the oldest records.
Alarm Class	drop-down list (defaults to Medium)	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Master Alarm Instructions	additional properties	Click the icon to open a window for adding and managing alarm instructions. Following are the instructions: Add creates a new instruction. Edit edits a existing instruction. Remove deletes the selected instruction from the list. Move Up/Down changes the order of the instructions in the list.
Coalesce Alarms	true or false	When true is selected and saved, this property combines alarm notifications, which may improve system performance and lower network traffic. However, by combining alarm notifications, in some cases (when an alarm is initiated and quickly cleared), you may only see the “alarm cleared” notification and not the

Type	Value	Description
		original alarm. To see all alarm notifications individually, select false. When false is selected and saved, the Coalesce Alarms does not combine the alarms, but sends individual alarm notifications. NOTE: If sequences or notifications in the Supervisor station are triggered by alarms, you should not coalesce alarms. You do not coalesce alarms if you may need to document security incidents.
Database	ord	Provides the ord path to the database that is used by the Orion Alarm Service.
RdbAlarmDatabaseConversion	additional properties	Configures additional parameters to convert a RDBMS to an Orion database.

RdbAlarmDatabaseConversion

This component is used to convert a RDBMS to an Orion database.

Figure 9 RdbAlarmDatabaseConversion Properties



To access, expand **Config→Services→OrionAlarmService** and right-click **RdbAlarmDatabaseConversion→Views→AX Property Sheet**.

Property	Value	Description
Running	read-only	Indicates if the database is currently online (true) or not (false).
Remaining	read-only	Indicates the number of records that still need to be converted.
Succeeded	read-only	Indicates how many records converted successfully.
Failed	read-only	Indicates how many records did not convert.
Alarm Class	drop-down list	Specifies the alarm routing option for the component. Replace provides a selection list of a local alarm classes, from which to select one to use for all alarms received from this device. Use Existing routes alarms from this remote station to any matching alarm class, that is, one with an identical name as that

Property	Value	Description
		in each alarm record. If the program finds no local matching alarm class, it uses the station's default alarm class. Prepend adds leading text (as specified) to the incoming alarm class string, then routes it to any local matching alarm class in the station. Append adds trailing text (as specified) to the incoming alarm class string, then routes it to any local matching alarm class in the station.
Source Name (drop-down list)	drop-down list	Selects how to convert records from the source database.
Source Name (BQL)	text (defaults to % display%:)	Identifies the source database. You may use BQL for this value.
Change Last Updated	true or false (default)	Enables (true) and disables (false) changes from the last update.

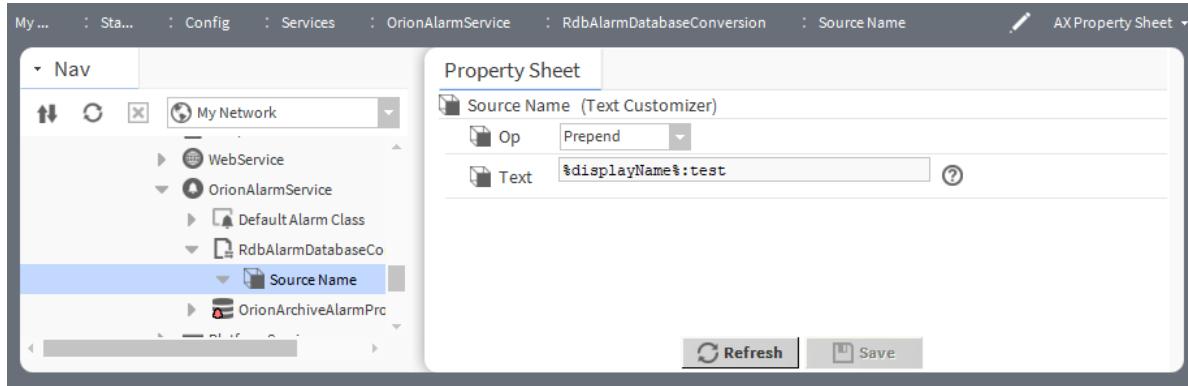
Action

Run converts a RDBMS database to an Orion database.

alarm-SourceName

This component creates a customized alarm source name using a BFormat string that obtains values from objects. This feature is primarily for developers.

Figure 10 Source Name Properties



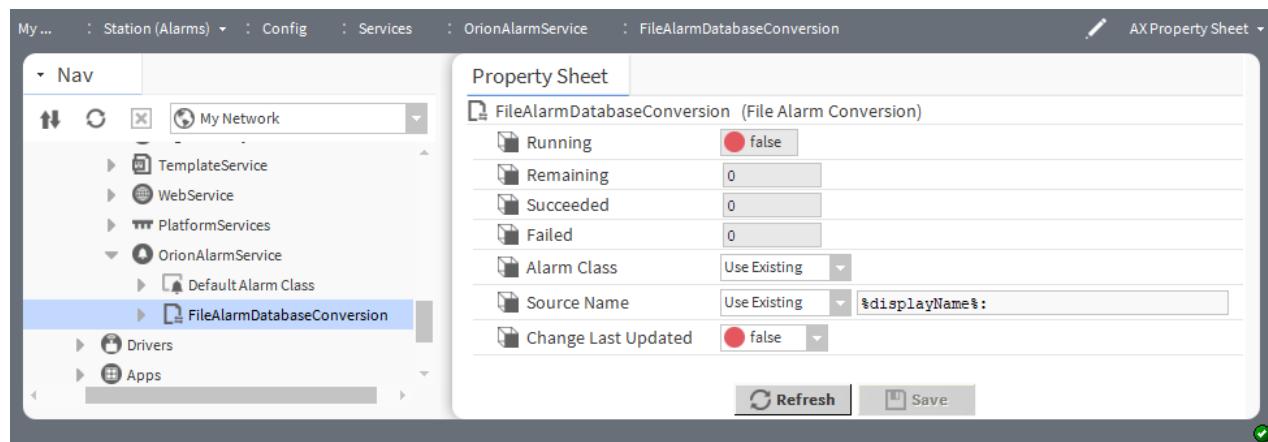
To access, expand **Config→Services→OrionAlarmService→RdbAlarmDatabaseConversion** and double-click **SourceName**.

Property	Value	Description
Op	drop-down list	Selects where to apply text. Use Existing ignores text. Prepend prefixes the name with text. Append places text as a suffix to the name. Replace replaces the name altogether with text.
Text	BF Format	Defines the format string as normal text with embedded scripts denoted by the percentage symbol (%). The driver maps calls within the script to an object's methods. You can chain using the dot operator (.). To insert a percentage character itself, use two percentage symbols (%%). Several special functions are available: "%time()" formats the current time as BAbsTime. "%lexicon(mobile:key)" gets the specified lexicon text.

FileAlarmDatabaseConversion

This component converts a EC-Net database to an Orion database.

Figure 11 FileAlarmDatabaseConversion Properties



To access, expand **Config**→**Services**→**OrionAlarmService** and right-click **FileAlarmDatabaseConversion**→**Views**→**AX Property Sheet**.

Property	Value	Description
Running	read-only	Indicates if the database is currently online (true) or not (false).
Remaining	read-only	Indicates the number of records that still need to be converted.
Succeeded	read-only	Indicates how many records converted successfully.
Failed	read-only	Indicates how many records did not convert.
Alarm Class	drop-down list	Specifies the alarm routing option for the component.

Property	Value	Description
		<p>Replace provides a selection list of local alarm classes, from which to select one to use for all alarms received from this device.</p> <p>Use Existing routes alarms from this remote station to any matching alarm class, that is, one with an identical name as that in each alarm record. If the program finds no local matching alarm class, it uses the station's default alarm class.</p> <p>Prepend adds leading text (as specified) to the incoming alarm class string, then routes it to any local matching alarm class in the station.</p> <p>Append adds trailing text (as specified) to the incoming alarm class string, then routes it to any local matching alarm class in the station.</p>
Source Name (drop-down list)	drop-down list	Selects how to convert records from the source database.
Source Name (BQL)	text (defaults to % display%:)	Identifies the source database. You may use BQL for this value.
Change Last Updated	true or false (default)	Enables (true) and disables (false) changes from the last update.

Action

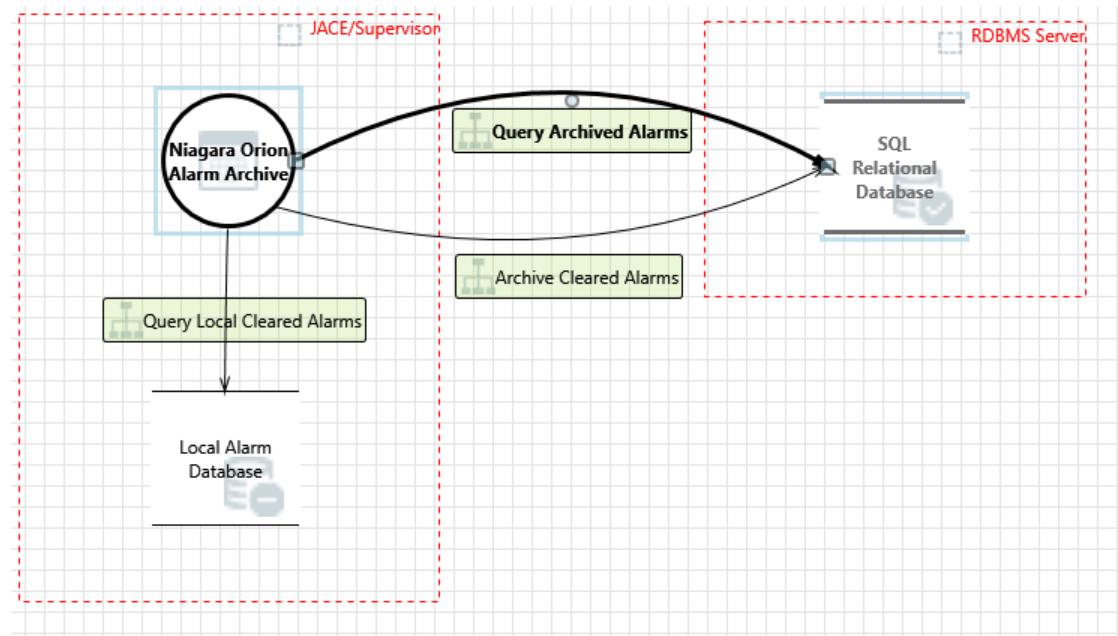
Run converts a EC-Net database to an Orion database.

alarmOrion-OrionArchiveAlarmProvider

In EC-Net 4 v4.11 and later, this component provides the alarm archive feature in the **AlarmService** where it archives cleared and closed alarms.

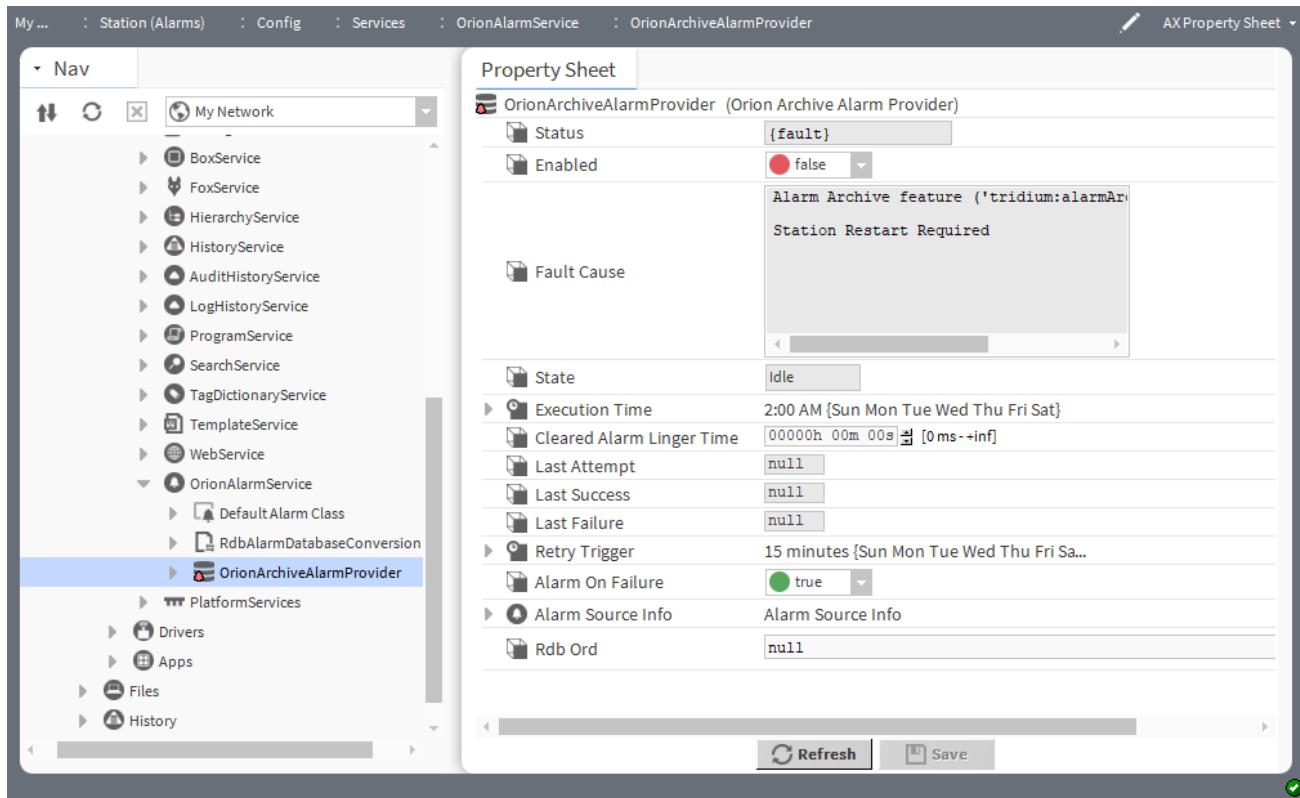
NOTE: The Alarm Archive feature is available only on Supervisor stations.

This component stores open, unacknowledged alarms in the local alarm database where the system can update alarm transitions, acknowledgements, notes, etc. often, and display the alarms in the alarm console. A schedule triggers the system to update cleared alarms to a remote database where retries-on-failure resolve any remote connectivity issues.

Figure 12 Example Alarm Archive architecture

An alarm becomes eligible to be archived once the **AlarmService** clears it from the alarm recipient console or alarm console (it returned to normal or was acknowledged). A cleared or closed alarm exists only temporarily in the local alarm database before being exported to the archive.

The **OrionArchiveAlarmProvider** archives alarm records in the configured relational database and can be extended to run periodically to export cleared alarms to a remote database.

Figure 13 OrionArchiveAlarmProvider properties

To access these properties, expand **Config**→**Services**→**OrionAlarmService** and double-click **OrionArchiveAlarmProvider**.

In addition to the standard properties (Status, Enabled, Fault Cause and Alarm Source Info), these properties configure this component.

Property	Value	Description
State	read-only	Reports the current state of the data transfer as: Idle, Pending or In Progress.
Execution Time	additional time trigger properties	Configures a time trigger that controls when to perform the function. Trigger properties are documented in the <i>Getting Started with EC-Net 4</i> guide.
Cleared Alarm Linger time	hours minutes seconds	The minimum time that an alarm should remain in the cleared state before it can be archived. On execution, the provider will only export the alarm records eligible for archival since the lastUpdate time minus the <code>clearedAlarmLingerTime</code> .
Last Attempt	read-only	Reports the date and time of the last attempted execution.
Last Success	read-only	Reports the last time the station successfully performed this function.
Last Failure	read-only	Reports the last time the system failed to perform this function. Refer to Fault Cause for details.
Retry Trigger	additional time trigger properties	Defines how frequently to attempt a failed operation again. This continues until successful execution occurs.

Property	Value	Description
		Appears in the Nav tree but not in any manager view and is unique in that it requires no linking of its output for operation. <i>Getting Started with EC-Net 4</i> documents Retry Trigger properties.
Alarm on Failure	true (default) or false	Controls the recording of ping failure alarms. true records an alarm in the station's AlarmHistory for each ping-detected device event (down or subsequent up). false ignores device down and up events.
Alarm Source Info	additional properties	Contains a set of properties for configuring and routing alarms when this component is the alarm source. For property descriptions, refer to the <i>Alarms Guide</i>
Rdb Ord	text	Defines the archive's database ORD.

Actions

You can configure these actions in the **OrionArchiveAlarmProvider's Property Sheet** or trigger them manually.

- **Execute** archives the alarm records in the configured RDBMS server.
- **Retry** exports the alarms that failed in the previous execution.
- **Import Open Alarms** imports the alarms that are still open for execution.

Chapter 6 Plugins (views)

Topics covered in this chapter

- ◆ Alarm buttons
- ◆ AX Alarm Console
- ◆ Alarm Console
- ◆ alarm-AlarmPortal
- ◆ Alarm Extension Manager
- ◆ Alarm Class Summary view
- ◆ Alarm Database Maintenance view
- ◆ Alarm Db view
- ◆ Alarm Instructions Manager
- ◆ On Call List Manager view
- ◆ HTML5-On Call List Manager
- ◆ On Call Contact Manager view
- ◆ HTML5–On Call Contact Manager
- ◆ On Call User Report view
- ◆ HTML 5 On Call User Report Ux View
- ◆ Email Account Manager

Plugins provide views of components and can be accessed in many ways. For example, double-click a component in the Nav tree to see its default view. In addition, you can right-click on a component and select from its **Views** menu.

Alarm buttons

The following alarm controls and indicators are common to several alarm views.

Button	Value	Description
Acknowledge	button	Recognizes each selected alarm.
Hyperlink	button	Changes the current view to the hyperlinked target associated with the selected alarm. If no hyperlink is associated with the alarm, the Hyperlink button is not available.
Notes	button	Displays the Notes dialog box for the purpose of adding a note to the selected alarm or alarms
Silence	button	Stops the audible notification associated with the selected alarm.
Filter	button	Opens the Filters window, which allows you to limit the alarms that display to only those of interest. The button name, “Filter” changes from black to red as a reminder that alarms are being filtered.
Show Recurring	button	Opens the Alarm Console window, which allows you to view and edit recurring alarms. The button name, “Show Recurring” changes from Show Recurring to Show All as a reminder that recurring alarms are being shown.
Auto Refresh	button	Refreshes the Alarm Console window automatically.
Close Button	button	Saves and exits the current dialog.

AX Alarm Console

This view of the console recipient displays all the alarms that have been routed to it. To open this view, right-click an **alarmRecipient** under the **AlarmService** and click **Views→AX Alarm Console**.

The **AX Alarm Console** manages alarms on a per-point basis. Each row in the table is the most recent alarm from a point.

Open Alarm Sources						1 Sources / 499 Alarms
Timestamp	Source State	Ack State	Alarm Class	Priority	Message Text	
31-Jan-17 3:39:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:39:00 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:38:00 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:37:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:59 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:52 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:30 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:36:22 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:35:59 PM IST	Normal	Unacked	Default Alarm Class	255		
31-Jan-17 3:35:50 PM IST	Normal	Unacked	Default Alarm Class	255		

This view displays BFormat text under the Message Text column of the window. This message text comes from the text entered using the console's **Property Sheet**.

The **AX Alarm Console** supports alarm sounds when running in desktop browsers. For mobile support, browse to the page on the mobile. Web browsers like Chrome can play mp3 and ogg sound files. This is not recommended due to lack of support in EC-Net 4 Pro.

NOTE: The only format that works in both EC-Net 4 Pro and in a browser is wav.

Open Alarm Sources							1 Sources / 502 Alarms
Timestamp	Source State	Ack State	Source	Alarm Class	Priority	Message Text	
24-Jan-17 6:20:19 PM IST	Offnormal	0 Acked / 502 Unacked	SineWave	Default Alarm Class	255		

[Reset Column Widths](#)
[Export](#)

✓ [Timestamp](#)
✓ [Uuid](#)
✓ [Source State](#)
✓ [Ack State](#)
✓ [Ack Required](#)
✓ [Source](#)
✓ [Alarm Class](#)
✓ [Priority](#)
✓ [Normal Time](#)
✓ [Ack Time](#)
✓ [User](#)
✓ [Alarm Data](#)
✓ [Alarm Transition](#)
✓ [Last Update](#)
✓ [Message Text](#)

[Add Alarm Data Column](#)
[Remove Alarm Data Column](#)

As with other tables, you can show or hide columns using the **Table Options** menu in the top right corner of the table.

Alarm commands

Command	Icon	Description
Acknowledge		Allows you to recognize the currently selected alarm(s).
Hyperlink		Allows you to open the alarm URL.
Add Notes		Allows you to add explanatory text to a specific alarm.
Silence		Allows you to quiet the sound issued by the currently selected alarm(s).
Filter		Allows you to limit the alarms displayed.
Live Update		Provides continuous alarm updating.
Alarm Details		Allows you to view alarm details.
Refresh		Allows you to refresh the window.

Columns

Column	Value	Description
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Ack Time	hours:minutes:seconds	Displays the time that the alarm was acknowledged (if applicable).
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Alarm Data	read-only	Presents a detailed list of alarm data, including this information: Status, toState, msgText, Count, fromState and Timezone.
Transistion	text	Shows the initial source state that generated the alarm. This value may not reflect the current state of the alarm source. Once the framework creates an Alarm Transition , it does not change for a single alarm record. For example, if the source state returned to normal after an offnormal status, this value remains at offnormal.
Message Text	text	Displays the text message.
Export	read-only	Generates the output of the present view.
Reset Column Width	n/a	Resets the column width.
Add Alarm Data	text	Appends alarm data column.
Remove Alarm Data	text	Deletes alarm data column.
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.
Priority [on-call contact]	1–255 for each transition, default: 255; %priority% on a report	Specifies the order in which the OnCallService sends alarm notifications to the OnCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.
Source State	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.

Column	Value	Description
TimeStamp	hours:minutes:seconds%timestamp%(on a report)	Reports the date and time the event occurred.
User [alarms]	Drop-down list	Identifies the person that acknowledged the alarm. An unacknowledged alarm displays "unknown."
Uuid	read-only	Displays the Unique Universal Identifier (UUID) the system uses to identify the alarm record.
Last Update	read-only	Displays the time the system most recently updated the alarm.

Buttons

Button	Value	Description
Acknowledge	button	Recognizes each selected alarm.
Hyperlink	button	Changes the current view to the hyperlinked target associated with the selected alarm. If no hyperlink is associated with the alarm, the Hyperlink button is not available.
Notes	button	Displays the Notes dialog box for the purpose of adding a note to the selected alarm or alarms.
Close Button	button	Saves and exits the current dialog.

Alarm Report window

From the AX Alarm Console, you can view the **Alarm Record** to see all alarms on the point. Select an alarm and double-click it to see the **Alarm Record**.

You can sort the Alarms in order of any column by pressing the **column bar** (once for ascending, twice for descending). Available commands include:

- Acknowledge
- Hyperlink
- Notes
- Filter

Viewing Alarm Record

From the **Alarm Report** window, you can view the alarm record to see all information on the alarm. Select an Alarm and double-click it to see the alarm record. Available commands include:

- Acknowledge
- Hyperlink
- Notes
- Close

Clearing alarms

An alarm is cleared from the AX Alarm Console when both of the following conditions exist:

- The alarm is acknowledged.
- The point is in a normal state.

Alarm Console

This view of the console recipient displays all the alarms that have been routed to it. To open this view, right-click an **alarmRecipient** under the **AlarmService** and click **Views**→ **Alarm Console**.

The screenshot shows the 'Alarm Console' window with a list of alarms. A context menu is open over the second alarm in the list, containing options: Acknowledge, Hyperlink, Notes, Force Clear, Details, and Select all visible.

Info	Timestamp	Source	Message Text	Source State	Priority	Ack St
<input type="checkbox"/>	23-Apr-18 11:39:26 AM IST	HeatingSystem_Outside_Temp		Normal	255	Unack
<input checked="" type="checkbox"/>	23-Apr-18 11:37:26 AM IST	HeatingSystem_Outside_Temp		Normal	255	Unack
<input type="checkbox"/>	23-Apr-18 11:35:27 AM IST	Heatin		Normal	255	Unack
<input type="checkbox"/>	23-Apr-18 11:34:00 AM IST	Heatin		Normal	255	Unack
<input type="checkbox"/>	18-Apr-18 10:58:25 AM IST	Heatin		Normal	255	Unack

Toolbar buttons include: Acknowledge, Hyperlink, Notes, Silence, Filter, and Show All.

The alarm console manages alarms on a per-point basis. Each row in the table is the most recent alarm from a point.

To sort the alarms in order of any column, click the **column bar** (once for ascending, twice for descending).

To view all current alarms from a particular point, double-click a row in the table. This opens the **Open Alarm Sources** view.

To use sound options, click the sound icon in the toolbar of the **Alarm Console** window.

Use the right-click menu in the alarms table or **Hyperlink** at the bottom of the **Alarm Console** view.

This view displays BFormat text under the Message Text column of the window. This message text comes from the text entered using the console's **Property Sheet**.

The **AX Alarm Console** supports alarm sounds when running in desktop browsers. For mobile support, browse to the page on the mobile. Web browsers like Chrome can play mp3 and ogg sound files. This is not recommended due to lack of support in EC-Net 4 Pro.

NOTE: The only format that works in both EC-Net 4 Pro and in a browser is wav.

Icons for managing alarms

Actions	Icon	Description
Force Clear		Allows you to delete the alarm.
Details		Allows you to view the alarm details.
Sound off		Allows you to toggle sound on or off.
Continuous alarm		Allows you to configure an alarm sound to play continuously until silenced.

Actions	Icon	Description
Options		Allows you to open MultiSourceViewOptions window.
Select all visible		Allows you to select all visible alarms in Alarm Console .

OnCallService data in the alarm console

In addition to the default alarm console alarm columns, many on-call data facets are available for optional viewing directly in the alarm console.

Figure 14 Example of on call data facets viewed in the alarm console

Open Alarm Sources								1 Sources / 210 Alarms	
Timestamp	Source State	Ack State	Source	Alarm Class	Priority	Ack Time	Alarm Data		
29-Jan-18 4:12:56 PM IST	Offnormal	0 Acked / 210 Unacked	HeatingSystem_Outside_Temp	High_Priority_Alarms	1	null	presentValue=-		

You add on-call data columns to the alarm console view by using the **Add Alarm Data Column** window.

Alarm icons

Alarm icons appear with color coding and symbolic images.

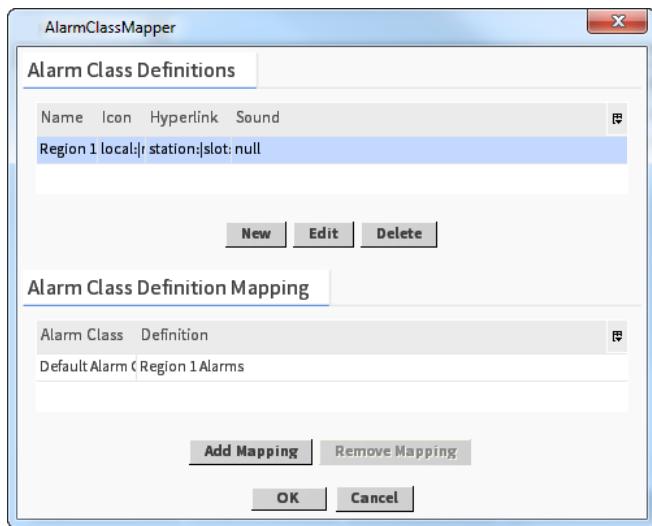
Icon	Description
	Indicates a problem with the alarm source. The current state of the alarm source is offnormal and the alarm has not been acknowledged.
	Indicates that the alarm source is no longer in alarm (an alert), and the alarm has not been acknowledged.
	Indicates that the current state of the alarm source is offnormal and acknowledged.
	Indicates that the current state of the alarm source is normal and the alarm has been acknowledged.
	Indicates that the current state of the alarm source is normal and acknowledged.
	Indicates that a note is associated with the alarm. The bell icon may be any color.
	May appear at the left end of the alarm record row. You set up this optional icon in alarm properties.
	Indicates that the alarm has a link associated with it. When a link is available the system also activates the Hyperlink button.

AlarmClassMapper

Alarm class mapping provides a way to assign one or more alarm classes to a common set of alarm-handling parameters. You access this mapper from the alarm console by clicking **Alarm**→**AlarmClass Mapping ...** or by clicking the chevron next to this property on the **Alarm Console** property sheet.

Alarm Class Mapper window

One benefit of this type of mapping is that you can import alarms from a variety of alarm classes and have them display, link, or sound in a common manner. You do this by creating alarm class definitions and then associating (mapping) existing alarm classes to these definitions.



The window has two panes:

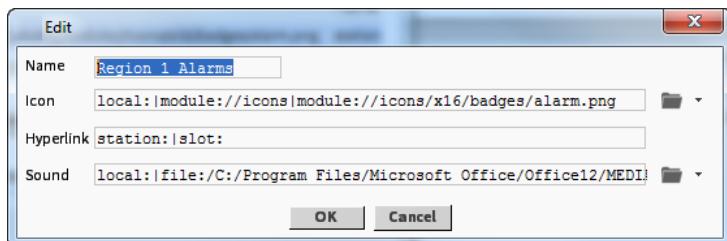
- Upper pane: **Alarm Class Definitions** allows you to create, delete, or edit alarm mapper definitions before assigning them to existing classes.
- Lower pane: **Alarm Class Definition Mapping** assigns any existing alarm classes to the selected definition.

Buttons

Button	Value	Description
New	button	Opens the window used to create the entity you are working on
Edit	button	Opens the Edit dialog box. Use this dialog box to edit an entity. Which entity to edit depends on the context within the system.
Delete	button	Removes the selected record from the database.
Add Mapping	button	Opens the Map Alarm Class window, which is where you associate an alarm class with a definition.
Remove Mapping	button	Deletes the association between the selected alarm class and mapping definition.

Alarm Class Mapper New/Edit window

This window creates or edits an alarm class mapper record. To access this window, click the **New** or **Edit** buttons on the **Alarm Class Mapper** window.

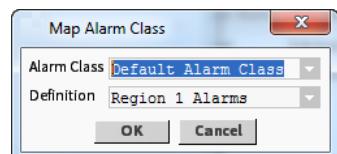


Column	Value	Description
Name	text	Defines the name of an existing alarm class.
Icon	ord	Enters or selects the path of an icon.

Column	Value	Description
Hyperlink	ord	Enters or selects an Ord, a BQL Query or a path to a component that you would like to associate with an alarm status on the component you are configuring.
Sound	ord	Enters the path to a sound file that will execute when the current component is in an alarm state.

Map Alarm Class window

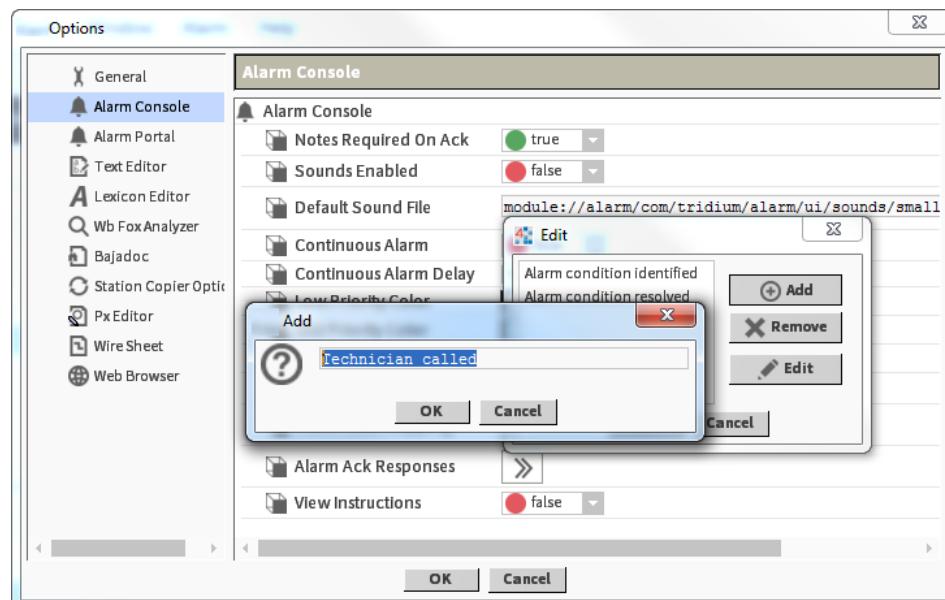
This window associates the alarm class with its definition.



Column	Value	Description
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Definition	text	The name of the definition.

Alarm Ack Responses

Use this property to create one or more text entries that you can use to populate the **Notes** window when acknowledging an alarm.



The text holds a short phrase.

Alarm Details window

The alarm details window displays read-only details about the alarm that is displayed in the **Database Maintenance** view. Double-clicking on any row in the **Database Maintenance** view opens this window. Alarm Details window supports pagination settings as previous alarm and next alarm.

The screenshot shows the 'Alarm Details' window with the following data:

Name	Value
Timestamp	Thu Jan 25 2018 11:10:57 GMT+0530 (India Standard Time)
Uuid	6d7b4179-a918-4325-aad1-ee2c6239361a
Source State	Normal
Ack State	Unacked
Ack Required	true
Source	local:station:slot:/Control_Logic/HeatingSystem/PumpControl/Outside_Temp/OutOfRangeAlarmExt
Alarm Class	High_Priority_Alarms
Priority	127
Normal Time	Thu Jan 25 2018 11:11:42 GMT+0530 (India Standard Time)
Ack Time	Thu Jan 01 1970 05:30:00 GMT+0530 (India Standard Time)
User	Unknown User
Alarm Data	
Key	Value
Count	344
Alarm Value	-0.11400000000000077
Deadband	0.0 °F
From State	lowLimit
Low Limit	0.0 °F
Offnormal Value	-0.1 °F
Present Value	0.0 °F
Source Name	HeatingSystem_Outside_Temp
Status	{ok} @ 10
To State	normal
Alarm Transition	Offnormal

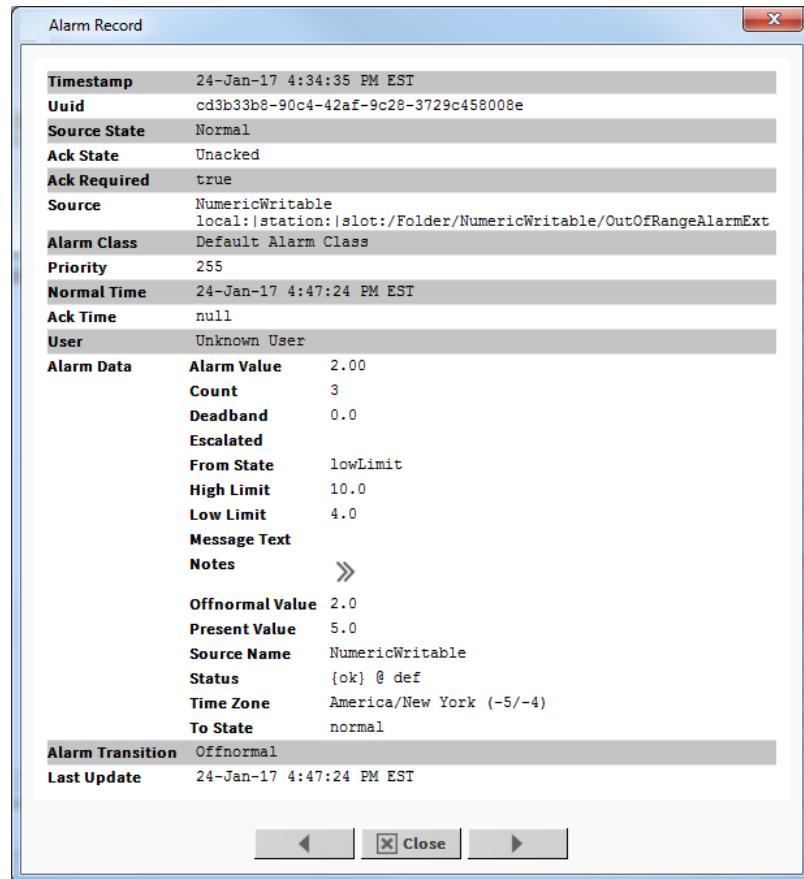
At the bottom are three buttons: **Previous Alarm**, **Close**, and **Next Alarm**.

Information	Value	Description
Timestamp		
Uuid	read-only	Displays the Unique Universal Identifier (UUID) the system uses to uniquely identify the alarm record.
AckState		
Ack Required		
AlarmClass		
Priority		
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.
ACkTime		

Information	Value	Description
User [provisioning]	text	The station user that requested the job. This column displays unknown if job was triggered by a linked schedule.
LastUpdate		

Alarm Record window

This window shows additional detailed information about a specific point alarm.



Information

Name	Value	Description
Timestamp	hours:minutes:seconds%timestamp%(on a report)	Reports the date and time the event occurred.
Uuid	read-only	Displays the Unique Universal Identifier (UUID) the system uses to identify the alarm record.
Source State or sourceState	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).

Name	Value	Description
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Priority [alarm]	read-only	Reports the alarm ranking on a pre-defined importance scale. The lower the number, the higher the priority.
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.
Ack Time	hours:minutes:seconds	Displays the time that the alarm was acknowledged (if applicable).
User [alarms]	Drop-down list	Identifies the person that acknowledged the alarm. An unacknowledged alarm displays “unknown.”
Alarm Data	read-only	Presents a detailed list of alarm data, including this information: Status, toState, msgText, Count, fromState and Timezone.
Alarm Transition	text	Shows the initial source state that generated the alarm. This value may not reflect the current state of the alarm source. Once the framework creates an Alarm Transition , it does not change for a single alarm record. For example, if the source state returned to normal after an offnormal status, this value remains at offnormal.
Last Update	read-only	Displays the time the system most recently updated the alarm.

Buttons

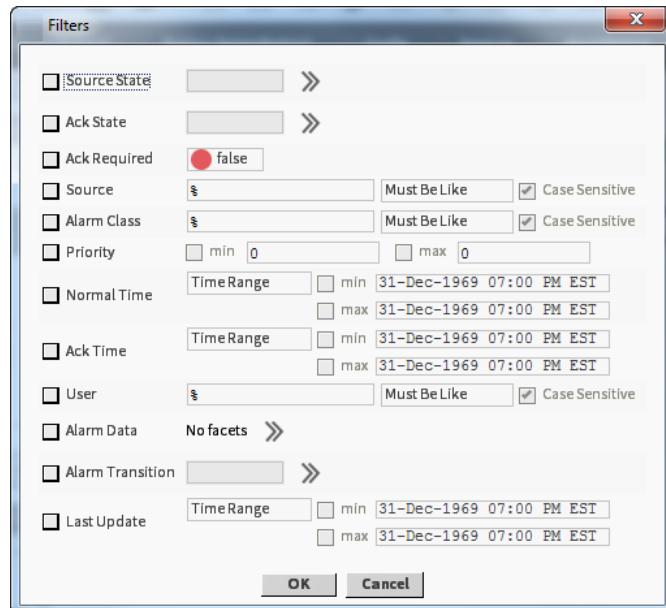
Button	Value	Description
left and right arrows	buttons	If multiple records exist for an alarm, which can happen if repeated alarm transitions occur unacknowledged, arrow buttons may be enabled at the bottom corners of this dialog box: <ul style="list-style-type: none"> • Go to previous alarm record (back in time) • Go to next alarm record (forward in time)
Acknowledge	button	Recognizes each selected alarm.
Hyperlink	button	Changes the current view to the hyperlinked target associated with the selected alarm. If no hyperlink is associated with the alarm, the Hyperlink button is not available.
Notes	button	Displays the Notes dialog box for the purpose of adding a note to the selected alarm or alarms.

Filters window

This window displays the properties you can use to include or exclude alarms from the alarm console. This filter action only affects which alarms display in the alarm console; it cannot be used to edit an alarm record or perform alarm maintenance. To access it, click **Filter** in the bottom of the **Alarm Console Window** or in the top

right-hand corner. If you set the **Filter** on, The **Filter** button turns to red. To select multiple enums, use ctrl +click.

NOTE: If you are filtering on a field that uses a wildcard (**Source**, **Alarm Class** or **User**), make sure to put the percent character (%) at both ends of the text string, otherwise, the filter does not work.

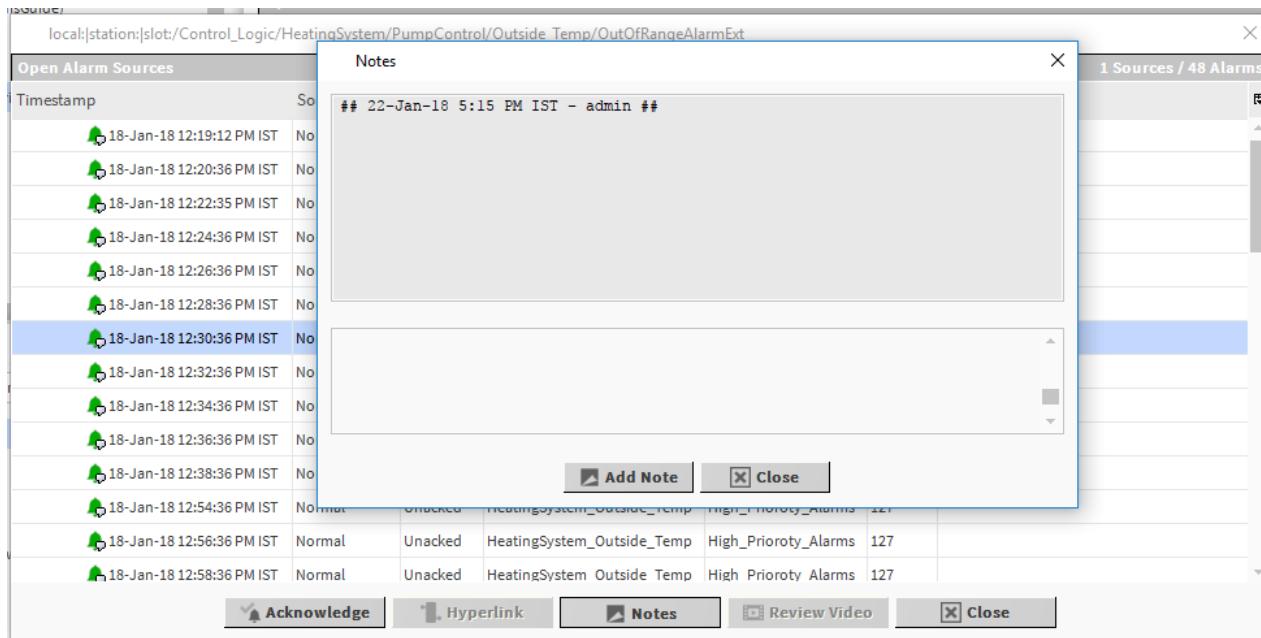


Property	Value	Description
Source State or sourceState	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Priority (for the on-call contact)	1–255 for each transition, default: 255; %priority% on a report	Specifies the order in which the OnCallService sends alarm notifications to the OnCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.

Property	Value	Description
Ack Time	hours:minutes:seconds	Displays the time that the alarm was acknowledged (if applicable).
User [provisioning]	text	The station user that requested the job. This column displays unknown if job was triggered by a linked schedule.
Alarm Data	read-only	Presents a detailed list of alarm data, including this information: Status, toState, msgText, Count, fromState and Timezone.
Alarm Transition	text	Shows the initial source state that generated the alarm. This value may not reflect the current state of the alarm source. Once the framework creates an Alarm Transition , it does not change for a single alarm record. For example, if the source state returned to normal after an offnormal status, this value remains at offnormal.
Last Update	read-only	Displays the time the system most recently updated the alarm.

Notes window

This window adds notes to the alarm record. Use the toolbar or right-click menu to open the **Notes** window.



Name	Value	Description
Message pane (upper half of the window)	text	Displays the text of any notes already associated with the selected row in the alarm console. If multiple alarms are associated with the selected source, the message pane displays <Multiple Alarms>.
Editor pane (lower half of the window)	text	Provides a text field for adding the note.
Add Note	button	The system adds the new note to all the alarms associated with the selected alarm source.
Close Button	button	Saves and exits the current dialog.

Pagination

Pagination is supported in singlesource and multisource view to set the default page size. To set the page size **Setting icon→Page Size** enter the number of pages.



ConsoleRecipient								Alarm UX Console
Time Range			Page	1 of 4	20 Source(s) / 461 Alarm(s)			
Info	Timestamp	UUID	Source State	Next State	Source	Alarm Class	Priority	Message Text
12-Jul-17 9:28:13 AM	9625f012-4077-4573-ab27-7a297237f406	Normal	0 Acked / 23 Unacked	bw19	Default Alarm Class	255		
12-Jul-17 9:28:13 AM	c73b136b-aa94-4938-b638-34400bd0646c	Normal	0 Acked / 23 Unacked	bw1	Default Alarm Class	255		
12-Jul-17 9:28:13 AM	2b57f923-b818-43fb-b535-586976304b9c	Normal	0 Acked / 23 Unacked	bw7	Default Alarm Class	255		
12-Jul-17 9:28:13 AM	80b9473e-80e9-4eed-80c5-cfb63a726385	Normal	0 Acked / 23 Unacked	bw15	Default Alarm Class	255		
12-Jul-17 9:28:13 AM	abee6275-94e6-4a01-9551-06d34ce08960	Normal	0 Acked / 23 Unacked	bw5	Default Alarm Class	255		

To set the default Page size, enter the number of page and click **OK**. In the above fig., Pagination page size is set to five.

In the fig. Pagination Result five records are displayed per page.

Row Highlighting

Row Highlighting provides a way to highlight one or more newly added alarms in alarms table. To highlight row **Alarm Console→Alarms→Points→Actions→Set→True**

Row Highlighting

ConsoleRecipient								Alarm Console
Time Range								4 Source(s) / 18 Alarm(s)
Info	Timestamp	Source	Source State	Message Text	Priority	Ack State	Alarm Class	
16-Aug-17 10:17:52 AM EDT	Chiller	Offnormal	Offnormal -> Chiller	150	0 Acked / 4 Unacked	Medium		
16-Aug-17 10:24:58 AM EDT	Rooftop	Offnormal	Offnormal -> Rooftop	50	0 Acked / 4 Unacked	High		
16-Aug-17 10:24:06 AM EDT	Boiler	Offnormal	Offnormal -> Boiler	100	0 Acked / 7 Unacked	Default Alarm Class		
16-Aug-17 9:51:28 AM EDT	Basement	Offnormal	Offnormal -> Basement	255	0 Acked / 3 Unacked	Low		

ConsoleRecipient								Alarm Console
Time Range								4 Source(s) / 17 Alarm(s)
Info	Timestamp	Source	Source State	Message Text	Priority	Ack State	Alarm Class	
16-Aug-17 10:17:52 AM EDT	Chiller	Offnormal	Offnormal -> Chiller	150	0 Acked / 4 Unacked	Medium		
16-Aug-17 10:17:20 AM EDT	Rooftop	Normal	Normal -> Rooftop	50	0 Acked / 3 Unacked	High		
16-Aug-17 10:24:06 AM EDT	Boiler	Offnormal	Offnormal -> Boiler	100	0 Acked / 7 Unacked	Default Alarm Class		
16-Aug-17 9:51:28 AM EDT	Basement	Offnormal	Offnormal -> Basement	255	0 Acked / 3 Unacked	Low		

Row is highlighted in the above figures to

- red when the alarm turns from normal to offnormal.
- green when the alarm turns from offnormal to normal.

Show Recurring

To access this view **Alarm Console** window, **Show Recurring** at the bottom of it. This feature is used to view the recurring alarms in the system. A new recurring alarms window is displayed. The **Show Recurring** turns to **Show All** if pressed.

Time Range ? to ? Page 1 of 11 HeatingSystem_Outside_Temp / 263 Alarm(s)

<input type="checkbox"/>		29-Jan-18 5:58:55 PM IST	HeatingSystem_Outside_Temp	%err:alarm:AlarmSourceExt:alarmData%...	Offnormal
<input type="checkbox"/>		29-Jan-18 5:56:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:54:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:52:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input checked="" type="checkbox"/>		29-Jan-18 5:50:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:48:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:46:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:44:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:42:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:40:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:38:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:36:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:34:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:32:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:30:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:28:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:26:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:24:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:22:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:20:56 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:18:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:16:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:14:55 PM IST	HeatingSystem_Outside_Temp		Normal
<input type="checkbox"/>		29-Jan-18 5:12:55 PM IST	HeatingSystem_Outside_Temp		Normal

Button	Value	Description
Acknowledge	button	Recognizes each selected alarm.
Hyperlink	button	Changes the current view to the hyperlinked target associated with the selected alarm. If no hyperlink is associated with the alarm, the Hyperlink button is not available.
Notes	button	Displays the Notes dialog box for the purpose of adding a note to the selected alarm or alarms.
Silence	button	Stops the audible notification associated with the selected alarm.

Button	Value	Description
Filter	button	Opens the Filters window, which allows you to limit the alarms that display to only those of interest. The button name, "Filter" changes from black to red as a reminder that alarms are being filtered.
Show All	button	Shows all alarms.

alarm-AlarmPortal

The **Alarm Portal** allows you to view and acknowledge alarms from the alarm consoles of multiple stations. You access it from the main menu by selecting **Tools**→**AlarmPortal**.

Figure 15 Alarm portal

The screenshot shows the 'Alarm Console Monitor' and 'Open Alarm Sources' panes of the Alarm Portal. The 'Alarm Console Monitor' pane at the top displays a table with columns: Station, Port, TLS, Console Ord, Status, Last Connected Time, and Last Disconnected Time. One row is shown for 'ip:localhost' with port 4911, status 'Connected', and times '17-Feb-17 3:05 PM IST'. The 'Open Alarm Sources' pane below lists 208 alarms across 16 sources. The table columns are: Timestamp, Source State, Ack State, Alarm Class, Priority, and Message Text. Each row contains a small red bell icon and a timestamp like '17-Feb-17 3:08:14 PM IST'. At the bottom of the screen, there is a set of functional buttons: Acknowledge, Hyperlink, Notes, Silence, Filter, and Review Video.

The alarm portal has two resizable panes, and a set of buttons along the bottom of the window:

Alarm Console Monitor

This pane displays information about the consoles that are being monitored and contains the following information areas.

- The title bar displays **Alarm Console Monitor** on the left and the number of consoles that are connected to the alarm portal on the right side of the bar.
- Column headings identify the information about each alarm console included in the portal.
- The alarm console lists the alarm consoles that are currently available to monitor, including station identity, connection status (connected or disconnected), and connect and disconnect times.

Open Alarm Sources

This pane displays information about individual alarms. To learn more about a specific alarm, double-click the alarm source. The system opens the **Open Alarm Sources** view.

Column	Value	Description
Timestamp	hours:minutes:seconds%timestamp%(on a report)	Reports the date and time the event occurred.
Source State or sourceState	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.

Buttons

The alarm portal has two resizable panes, and a set of buttons along the bottom of the window:

- 🔔 **Acknowledge** recognizes the selected alarms. Acknowledging an alarm tells the system that a human being is aware that the alarm exists.
- 🔕 **Silence**, when clicked, quiets the alarm sound for the selected point.
- 🔗 **Hyperlink** is active when an alarm extension property. When clicked, opens the alarm source.
- 📝 **Notes** displays a window for adding notes about the alarm to the alarm record.
- FilterWhere allows you to limit the number of alarms displayed. Clicking this button opens the **Filter** window.

Alarm Extension Manager

The alarm extension manager presents alarm extensions in a table format to make it easy to see all the alarm extensions that are associated with the points in a station. To view this manager, right-click **AlarmService** in the Nav tree and select **Alarm Ext Manager** from the drop-down list of views.

The screenshot shows a software interface titled "Alarm Ext Manager". At the top, there's a navigation bar with tabs: "ItemStation" → "Station (SalemStation)" → "Config" → "Services" → "AlarmService". Below the navigation bar is a table titled "Alarm Source Exts". The table has columns: Point, Extension, Alarm State, toOffnormal Enabled, and toFault Enabled. There are 27 extensions listed. A context menu is open over the last row of the table, listing options: "Reset Column Widths", "Export", "Point", "Extension", "Alarm State", "toOffnormal Enabled", "toFault Enabled", "Alarm Class", "Instructions", and "Status".

Alarm Source Exts					27 Extensions
Point	Extension	Alarm State	toOffnormal Enabled	toFault Enabled	
/Drivers/BacnetNetwork/VAV_06/points/Supply Temp	OutOfRangeAlarmExt	Normal	true	Reset Column Widths	
/Drivers/BacnetNetwork/VAV_07/points/Space Temp	OutOfRangeAlarmExt	Normal	true	Export	
/Drivers/BacnetNetwork/VAV_07/points/Supply Temp	OutOfRangeAlarmExt	Normal	true		
/Drivers/BacnetNetwork/VAV_08/points/Space Temp	OutOfRangeAlarmExt	Normal	true	✓ Point	
/Drivers/BacnetNetwork/VAV_08/points/Supply Temp	OutOfRangeAlarmExt	Normal	true	✓ Extension	
/Drivers/BacnetNetwork/VAV_09/points/Space Temp	OutOfRangeAlarmExt	Normal	true	✓ Alarm State	
/Drivers/BacnetNetwork/VAV_09/points/Supply Temp	OutOfRangeAlarmExt	Normal	true	✓ toOffnormal Enabled	
/Drivers/BacnetNetwork/VAV_10/points/Space Temp	OutOfRangeAlarmExt	Normal	true	✓ toFault Enabled	
/Drivers/BacnetNetwork/VAV_10/points/Supply Temp	OutOfRangeAlarmExt	Normal	true	✓ Alarm Class	
/Drivers/BacnetNetwork/VAV_11/points/Space Temp	OutOfRangeAlarmExt	Normal	true	✓ Instructions	
/Drivers/BacnetNetwork/VAV_11/points/Supply Temp	OutOfRangeAlarmExt	Normal	true	Status	
/Logic/MainElectric/MainKw	OutOfRangeAlarmExt	Fault	true		
/Logic/MainElectric/MainKwh	OutOfRangeAlarmExt	Normal	true		
/Logic/MainElectric/MainKwh	StatusAlarmExt	Normal	true		
/Logic/Weather/oaTemp	OutOfRangeAlarmExt	High Limit	true		
/Examples/BooleanWritable	BooleanChangeOfStateAlarmExt	Offnormal	true		

Extension manager display features include:

- Color coding: A colored background on a row in the alarm extension manager table indicates that the alarm state of the parent component is not Normal.
- Hyperlinking: Double-click on any row in the alarm extension manager to change to the property sheet view of the selected alarm extension.

As with other tables, you can show or hide columns and use other standard table controls and options that are provided in the **Table Options** menu, which is located in the top right corner of each table. Also, the export toolbar icon is available on the toolbar when the alarm extension manager view is open.

Column	Value	Description
Point	text	Identifies the point that is the parent of the listed alarm extension.
Extension	text	Identifies the type of extension, for example: <code>OutOfRangeAlarmExt</code> , <code>StatusAlarmExt</code> , and others..
Alarm State	text	Identifies the status of the extension, for example, High Limit or Normal.
toOffnormal Enabled	true or false	Indicates if the <code>toOffnormal</code> property of the extension is enabled (true) or not (false).
toFault Enabled	true or false	Indicates if the <code>toFault</code> property of the extension is enabled (true) or not (false).
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.

Alarm Class Summary view

The alarm class summary provides a tabular presentation of data associated with all alarm classes that are assigned to the `AlarmService`.

As with other tables, you can show or hide columns and use other standard table controls and options that are provided in the Table Options menu. The Table Options menu is located in the top right corner of the table and the export toolbar icon is available on the toolbar.

Alarm Class Summary						4 Alarm Classes
Name	Total	Open	In Alarm	Unacked	Last Alarm	
DefaultAlarm Class	500	35	1	35	25-Jan-17 3:04 PM IST	
NewAlarmClass	0	0	0	0	null	
Total:	500	35	1	35		

NOTE: Double-click on any row in the view to change to the property sheet view of the alarm class that you clicked on. You can also use the popup menu to select a view.

Column	Value	Description
Name	text	Identifies the alarm class.
Total	number	Displays the total number of alarms associated with the alarm class.
Open	number	Displays the total number of open alarms associated with the alarm class.

Column	Value	Description
In Alarm	number	Displays the total number of alarms (points) for the alarm class that are currently in the alarm state.
Unacked	number	Displays the total number of unacknowledged alarms associated with the alarm class.
Last Alarm	date and time	Displays the timestamp of the last alarm associated with the alarm class.
alarm.Class.priority	text	Lists the priority of each alarm transition type, for example: "toOffnoamrl=1," "toFault=60," "toNormal=220," and so on.
To Path String	text	Identifies, as a string value, the path to the alarm class.

Alarm Database Maintenance view

This view presents alarm data in a table to make it easy to monitor and edit the alarm database.

The alarm database resides in a station file system under the station's alarm folder.

The screenshot shows a software interface titled 'Database Maintenance'. At the top, there is a navigation bar with tabs: 'Station' (highlighted), 'Station (SalemStation)', 'Config', 'Services', and 'AlarmService'. Below the navigation bar is a toolbar with a pencil icon and the text 'Database Maintenance'.

The main area contains a table titled 'Time Range' with columns: 'Timestamp', 'Source State', 'Ack State', 'Source', and 'Alarm Class'. The table lists three rows of data:

Timestamp	Source State	Ack State	Source	Alarm Class
19-Aug-15 12:50:07 PM	Normal	Unacked	MainKwh	Default Alarm Class
19-Aug-15 12:50:08 PM	Normal	Unacked	MainKw	Default Alarm Class
19-Aug-15 12:50:34 PM	Normal	Unacked	MainKwh	Default Alarm Class

Below the table are buttons for 'PREVIOUS' and 'NEXT', a page number 'Page 1 of 50', and a dropdown for 'Results: 10 per page'. At the bottom of the table area are several radio buttons for clearing records:

- Clear Records Before
- Clear Selected Record(s)
- Clear All Before Selected Record
- Clear All Records

Finally, there is a large blue button labeled 'RUN MAINTENANCE' at the bottom left.

The upper portion of the window contains the alarm history table. As with other tables, you can show or hide columns and use other standard table controls and options that are provided in the Table Options menu. The Table Options menu is located in the top right corner of the table and the export toolbar icon is available on the toolbar.

The lower portion of the screen provides controls for managing the history database.

Alarm History columns

Column	Value	Description
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Ack Time	hours:minutes:seconds	Displays the time that the alarm was acknowledged (if applicable).

Column	Value	Description
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Alarm Data	read-only	Presents a detailed list of alarm data, including this information: Status, toState, msgText, Count, fromState and Timezone.
Alarm Transition	text	Shows the initial source state that generated the alarm. This value may not reflect the current state of the alarm source. Once the framework creates an Alarm Transition , it does not change for a single alarm record. For example, if the source state returned to normal after an offnormal status, this value remains at offnormal.
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.
Priority [alarm]	four fields for configuring importance	Reports the alarm ranking on a pre-defined importance scale. The lower the number, the higher the priority.
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.
Source State or sourceState	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.
Timestamp	hours:minutes:seconds%timestamp% (on a report)	Reports the date and time the event occurred.
User [provisioning]	text	The station user that requested the job. This column displays unknown if job was triggered by a linked schedule.
Uuid	read-only	Displays the Unique Universal Identifier (UUID) the system uses to identify the alarm record.
Last Update	read-only	Displays the time the system most recently updated the alarm.

Alarm History maintenance

Option	Value	Description
Clear Old Records and Before property	selection bullet	Deletes alarm records before the date and time you define in the Before property.
Clear All Before Selected Record	selection bullet	Deletes all records with a timestamp that is earlier than the timestamp of the currently-selected record in the table.
Clear All Records	selection bullet	Deletes all records regardless of the date.
Run Maintenance	button	Executes the maintenance action.

Alarm Db view

This view is similar to the **Alarm Database Maintenance** view. It provides a table of history records that cannot be deleted by the operator.

The alarm database view only requires read access to allow operator-level personnel to view alarms in the alarm console. When a point is no longer in alarm, it is removed from the console. The primary purpose of this view is to provide operators a way to view alarms without requiring admin access to delete alarms from the alarm database.

The screenshot shows a software interface titled "Alarm Db View". At the top, there's a navigation bar with "SalemStation" and "Station (SalemStation)". Below the navigation bar is a date selector set to "Today". To the right of the date selector is a dropdown menu with the text "Alarm History" and "500 Alarms". A context menu is open on the right side of the screen, listing various alarm-related columns: "Timestamp", "Uuid", "Source State", "Ack State", "Source", "Alarm Class", and "Priority". Some items in the menu have checkmarks next to them. At the bottom of the interface, there's a "Command:" field and a "Help" button.

You can double-click on any row in the alarm database maintenance view table and the Alarm Details dialog box appears.

Columns

Column	Value	Description
Ack Required	true or false	Indicates if the alarm must be acknowledged (true) or not (false).
Ack Time	hours:minutes:seconds	Displays the time that the alarm was acknowledged (if applicable).
Ack State	Acked or Unacked	Indicates if the alarm has been acknowledged.
Alarm Class	read-only used in Lists, console columns, or %alarm-Class% on a report.	Defines alarm routing options and priorities. Typical alarm classes include High, Medium and Low. An alarm class of Low might send an email message, while an alarm class of High might trigger a text message to the department manager.
Alarm Data	read-only	Presents a detailed list of alarm data, including this information: Status, toState, msgText, Count, fromState and Timezone.
Alarm Transition	text	Shows the initial source state that generated the alarm. This value may not reflect the current state of the alarm source. Once the framework creates an Alarm Transition , it does not

Column	Value	Description
		change for a single alarm record. For example, if the source state returned to normal after an offnormal status, this value remains at offnormal.
Message	text	The actual log message.
Normal Time or NormalTime	date and time	Displays the date and time (if applicable) that the alarm state returned to normal.
Priority [alarm]	four fields for configuring importance	Reports the alarm ranking on a pre-defined importance scale. The lower the number, the higher the priority.
Source	%alarmData.sourceName%	Displays the path to the point that is generating the alarm. NOTE: For how to format this information on a report, click on the help icon to the right of the field.
Source State or sourceState	NormalHigh Limit	The status of the entity at the time the event, such as an alarm, occurred.
Timestamp	hours:minutes:seconds%timestamp% (on a report)	Reports the date and time the event occurred.
User [alarms]	Drop-down list	Identifies the person that acknowledged the alarm. An unacknowledged alarm displays “unknown.”
Uuid	read-only	Displays the Unique Universal Identifier (UUID) the system uses to identify the alarm record.
Last Update	read-only	Displays the time the system most recently updated the alarm.

Alarm Instructions Manager

This view displays a standard table-type report that provides a way to view, assign, and edit alarm instructions.

The screenshot shows the 'Alarm Instructions Manager' interface with three main panes:

- Points:** A table listing various points with their conditions. The columns are 'Point' and 'Condition'. Examples include NiagaraNetwork, NiagaraNetwork BuildingSupervisor, BacnetNetwork, BacnetNetwork AHU-1, BacnetNetwork AHU-2, BacnetNetwork VAV-01, Space Temp, Supply Temp, BacnetNetwork VAV-02, Space Temp, Supply Temp, BacnetNetwork VAV-03, Space Temp, and Supply Temp.
- Point Instructions:** A pane showing a list of instructions for a selected point. The list includes "1. Call the shift supervisor" and "2. Notify security of the condition". Below the list are buttons for '+ Add', 'Remove', 'Edit', and 'Save'. A button '+ Add From Master List' is also present.
- Master Instructions List:** A pane where users can enter alarm instructions. It contains a text input field with placeholder "Enter all alarms in the shift log file" and a button "Call the shift supervisor". Below the input field are buttons for '+ Add', 'Remove', 'Edit', and 'Save'.

The view is comprised of three primary panes:

- The **Points** pane, located in the left half of the view, displays all points that are currently available for instruction assignment or editing. These points may have instructions assigned to them, or they may have no instructions. They are simply the points that are available.
- The **Point Instructions** pane, located in the top right portion of the view, lists the instructions that are associated with the point or points currently selected in the **Points** pane. You add, remove, reorder, and edit these instructions using the buttons to the right. When selecting multiple points, all must have identical instructions for the instructions to appear in this pane. If there are differences between instructions for the selected points, nothing appears in the pane.
- The Master Instructions List displays all master instructions that are available for adding to the **Point Instructions** pane. Master instructions allow you to choose and assign a pre-listed set of instructions to one or more points.

NOTE: Always click the **Save** button immediately after making any changes. The Save action applies to all instructions and all points that are selected when you click **Save**. Changes are lost if the screen or if just the pane is refreshed before saving.

Points section

Column	Value	Description
SecurityAlarm	read-only	Identifies the name of the control point source that is associated with the alarm.
Condition	read-only	Provides the name of the property that holds the alarm instructions.

Point Instructions buttons

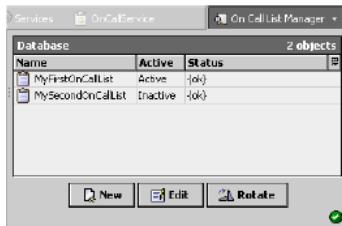
Type	Value	Description
Add	button	Opens the Add window, which you can use to type in the text for an instruction.
Remove	button	Deletes the selected instruction.
Edit	button	Opens the Edit window, which you can use to change the text of an existing instruction.
Save	button	Commits any changes you made to the point instructions. It applies to all instructions and points currently selected. Changes are lost if the screen, or just the pane, is refreshed before saving.
Move Up/Down	buttons	Reorders the instructions in the window.
Add from Master List	button	Adds instructions from the master list.

Master Instructions List

Item	Value	Description
Add	button	Opens the Add window, which allows you to enter the text for the Master Instructions list. These instructions are available to be added to individually-selected point instructions using the Add From Master List button.
Remove	button	Removes the instruction from the Master Instructions list.
Edit	button	Allows you to change an instruction in the Master Instructions list.

On Call List Manager view

This view is the default view of the **OnCallService**. It displays a table of all existing **onCallLists**. You use this view to create, edit, and delete unique on-call lists.



Double-click on any row to display the list in the **On Call Contact Manager** view.

NOTE: If any **OnCallContacts** are added, removed, deleted, reordered, or have any of their properties modified, any alarms that the **OnCallList** is currently handling are resent to the contacts starting at the top of the list, by priority.

Columns

Column	Value	Description
Name	text string	Provides descriptive text that reflects the identity of the entity or logical grouping.
Active	Active or Inactive	Displays the current state of the list as defined by the On Call List Schedule. Only one On Call List is active at a time.
Status	read-only	<p>Reports the condition of the entity or process at last polling.</p> <p>{ok} indicates that the component is licensed and polling successfully.</p> <p>{down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection.</p> <p>{disabled} indicates that the Enable property is set to false.</p> <p>{fault} indicates another problem. Refer to Fault Cause for more information.</p>

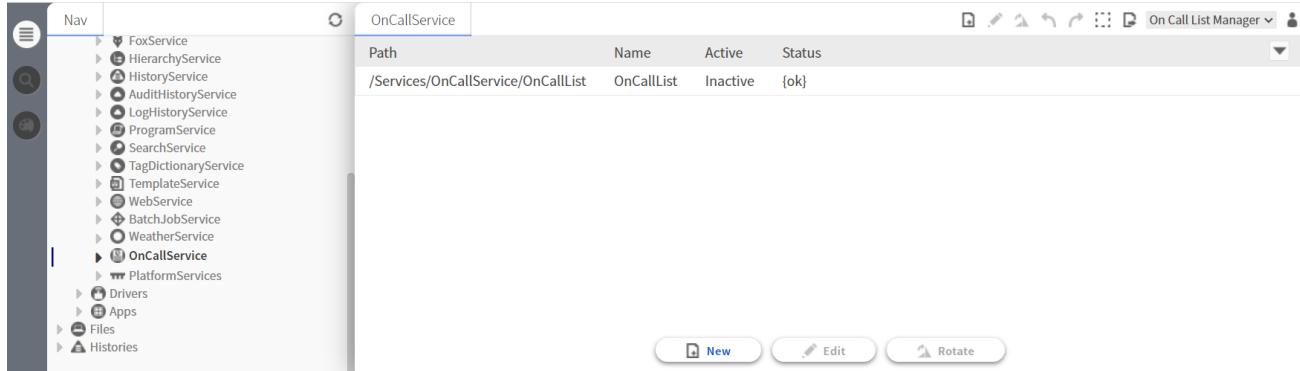
Buttons

Property	Value	Description
New	button	Opens the window used to create the entity you are working on.
Edit	button	Opens the Edit dialog box. Use this dialog box to edit an entity. Which entity to edit depends on the context within the system.
Rotate Button	button	Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner. All selected lists are affected when you click this button.
Tag It	button	Allows to apply the tags to the selected network.

HTML5-On Call List Manager

In EC-Net 4.14 and later, there is added browser support for On Call Service. The HTML5 version of this view is a web-browser-based implementation and it provides the same functions as the EC-Net 4 Pro view.

Figure 16 On Call List Manager



To access this view, expand **Config**→**Services** and double-click **OnCallService** or right-click **OnCallService**→**Views**→**On Call List Manager**.

Columns

Column Name	Description
Path	Displays the path of the service.
Name	Displays the name of the OnCallLists.
Active	Displays the current state of the list as defined by the On Call List Schedule.
Status	Reports the current condition of the entity as of the last refresh: {alarm}, {disabled}, {down}, {fault}, {ok}, {stale}, {unackedAlarm}

Buttons

- New** creates a new device record in the database.
- Edit** opens the device's database record for updating.
- Rotate** Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner.

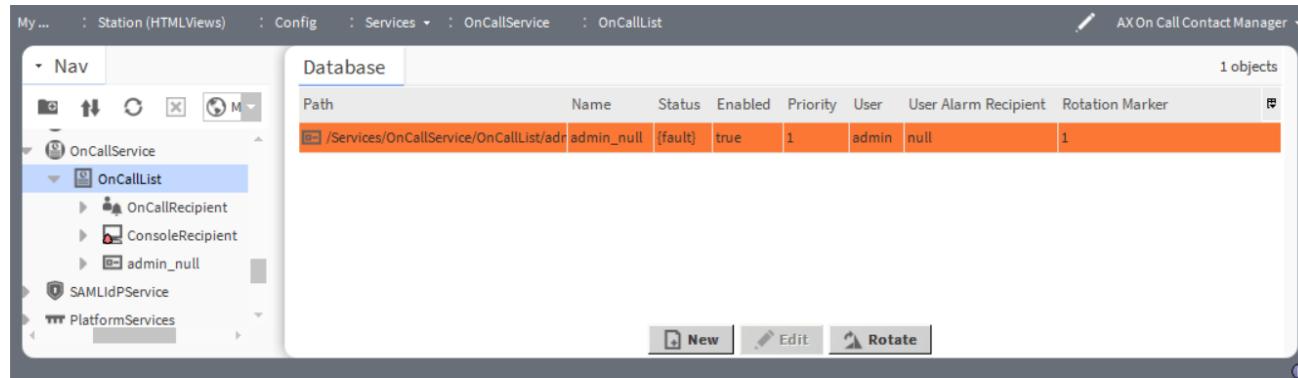
Toolbar for On Call List Manager

Toolbar Icon and Name	Description
Create new objects	It creates new object in the database pane.
Edit objects	Opens the device's database record for updating.
Rotate	Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner
Undo	Reverses the previous command.
Redo	Restores a command action after the Undo command has removed it.

Toolbar Icon and Name	Description
 Multi-selection Mode	Enables you to individually select multiple points without holding down the ctrl key.
 Export	Exports the current view or object.

On Call Contact Manager view

This view is the default view of the **OnCallList** component. The view displays a table listing all contacts in the selected on-call list.



Columns

Column Name	Description
Path	Displays the path of the service.
Name	Provides descriptive text that reflects the identity of the entity or logical grouping.
Status	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false . {fault} indicates another problem. Refer to Fault Cause for more information.
Enabled	Activates (true) and deactivates (false) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Priority	Specifies the order in which the OnCallService sends alarm notifications to the onCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
User	Displays the currently-assigned user and provides a list of all users that are under the UserManager view. To view or edit user information, open the User Manager view, which is the default view of the UserService .

Column Name	Description
User Alarm Recipient	Displays the assigned recipient for each contact in the table.
Rotation Marker	Displays the rotation marker.

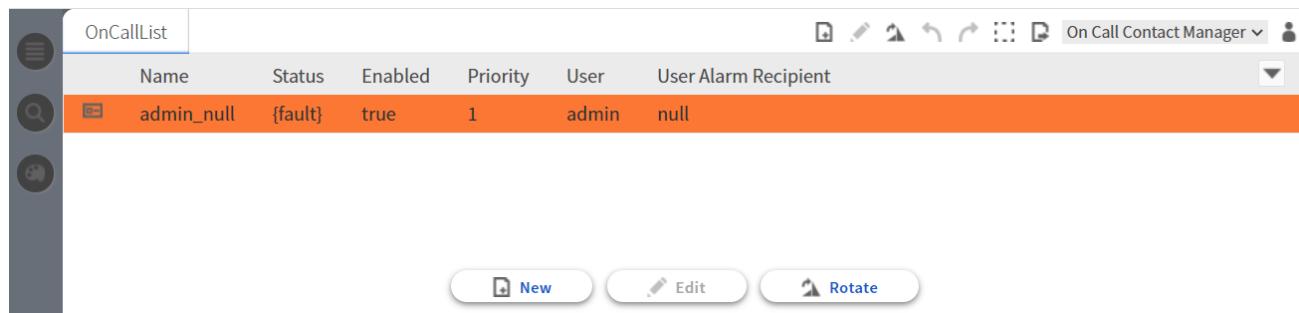
Buttons

- **New** creates a new device record in the database.
- **Edit** opens the device's database record for updating.
- **Rotate** Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner.

HTML5–On Call Contact Manager

EC-Net 4.14 and later, there is added browser support for the Lon Network Link Manager View. The HTML5 version of this view is a web-browser-based implementation and it provides the same functions as the EC-Net 4 Pro view. This view is the default view of the **OnCallList** component. The view displays a table listing of all contacts in the selected on-call list.

Figure 17 On Call Contact Manager View



Columns

Column Name	Description
Path	Displays the path of the service.
Name	Provides descriptive text that reflects the identity of the entity or logical grouping.
Status	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the <code>Enable</code> property is set to <code>false</code> . {fault} indicates another problem. Refer to Fault Cause for more information.
Enabled	Activates (<code>true</code>) and deactivates (<code>false</code>) use of the object (network, device, point, component, table, schedule, descriptor, etc.).
Priority	Specifies the order in which the <code>OnCallService</code> sends alarm notifications to the <code>OnCallContact</code> . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list.

Column Name	Description
	NOTE: Contacts may share the same Priority number. The On-CallService sends an identical notification to all contacts that have the same priority number
User	Displays the currently-assigned user and provides a list of all users that are under the UserService . To view or edit user information, open the User Manager view, which is the default view of the UserService .
User Alarm Recipient	Displays the assigned recipient for each contact in the table.
Rotation Marker	Displays the rotation marker.

Buttons

- **New** creates a new device record in the database.
- **Edit** opens the device's database record for updating.
- **Rotate** Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner.

Toolbar for On Call Contact Manager

Toolbar Icon and Name	Description
 Create new objects	It creates new object in the database pane.
 Edit objects	Opens the device's database record for updating.
	Reassigns the priority value of each user in the contact list to the next user in the list in a revolving manner
 Undo	Reverses the previous command.
 Redo	Restores a command action after the Undo command has removed it.
 Multi-selection Mode	Enables you to individually select multiple points without holding down the ctrl key.
 Export	Exports the current view or object.

On Call User Report view

This report is the default view of the **OnCallContact** component. This view provides a tabular presentation of the details associated with any **OnCallList** that the selected user is assigned to.

This view provides each **OnCallContact** with a table of information, which you may configure, and that shows the scheduled times and priorities associated with all of the lists to which the contact is assigned. As with other tables, contacts may show or hide columns and use other standard table controls and options provided in the **Table Options** menu located in the top right corner of the table.

The export function is available using the export icon on the toolbar or by selecting **File→Export** from the main menu.

OnCallService - MyFirstOnCallList - John_EmailRecipient - On Call User Report View				
	Start: 01-Nov-2009	End: 01-Dec-2009	70 objects	
User Report				
On Call Recipient	On Call List	Priority	Start	End
OnCallRecipient	MySecondOnCallList	2	01-Nov-09 12:00 AM EST	01-Nov-09 12:00 AM EST
OnCallRecipient	MyFirstOnCallList	2	02-Nov-09 12:00 AM EST	02-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	1	03-Nov-09 4:00 PM EST	03-Nov-09 12:00 AM EST
OnCallRecipient	MyFirstOnCallList	2	03-Nov-09 12:00 AM EST	03-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	2	04-Nov-09 12:00 AM EST	04-Nov-09 4:00 PM EST
OnCallRecipient	MyFirstOnCallList	2	05-Nov-09 12:00 AM EST	05-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	2	06-Nov-09 12:00 AM EST	06-Nov-09 4:00 PM EST
OnCallRecipient	MyFirstOnCallList	2	07-Nov-09 12:00 AM EST	07-Nov-09 12:00 AM EST
OnCallRecipient	MySecondOnCallList	2	08-Nov-09 12:00 AM EST	08-Nov-09 12:00 AM EST
OnCallRecipient	MyFirstOnCallList	2	09-Nov-09 12:00 AM EST	09-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	1	09-Nov-09 5:00 PM EST	09-Nov-09 12:00 AM EST
OnCallRecipient	MySecondOnCallList	2	10-Nov-09 12:00 AM EST	10-Nov-09 4:00 PM EST
OnCallRecipient	MyFirstOnCallList	2	11-Nov-09 12:00 AM EST	11-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	2	12-Nov-09 12:00 AM EST	12-Nov-09 4:00 PM EST
OnCallRecipient	MyFirstOnCallList	2	13-Nov-09 12:00 AM EST	13-Nov-09 4:00 PM EST
OnCallRecipient	MySecondOnCallList	2	14-Nov-09 12:00 AM EST	14-Nov-09 12:00 AM EST
OnCallRecipient	MyFirstOnCallList	2	15-Nov-09 12:00 AM EST	15-Nov-09 12:00 AM EST
OnCallRecipient	MySecondOnCallList	2	16-Nov-09 12:00 AM EST	16-Nov-09 4:00 PM EST

To access this view, expand **Config**→**Services**→**OnCallService**→**OnCallList** and double-click any user.

Column	Value	Description
On Call Recipient	text	This is the name of the On Call Recipient being used to coordinate alarms.
On Call List	read-only	Displays the currently-active On Call List and its status.
Priority [on-call contact]	1–255 for each transition, default: 255; %priority% on a report	Specifies the order in which the OnCallService sends alarm notifications to the OnCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
Start	date and time	Indicates when the on-call list becomes active.
End	date and time	Indicates when the on-call list ceases to be active.

HTML 5 On Call User Report Ux View

EC-Net 4.14 and later, there is added browser support for the Lon Network Link Manager View. The HTML5 version of this view is a web-browser-based implementation and it provides the same functions as the EC-Net 4 Pro view. This report is the default view of the **OnCallContact** component. This view provides a tabular presentation of the details associated with any **OnCallList** that the selected user is assigned to.

Figure 18 On Call User Report View

On Call Recipient	On Call List	Priority	Start	End
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This view provides each **OnCallContact** with a table of information, which you may configure, and that shows the scheduled times and priorities associated with all of the lists to which the contact is assigned.

To access this view, expand **Config**→**Services**→**OnCallService**→**OnCallList** and click any user.

Columns

Column Name	Description
On Call Recipient	This is the name of the On Call Recipient being used to coordinate alarms.
On Call List	Displays the currently-active On Call List and its status.
Priority	Specifies the order in which the OnCallService sends alarm notifications to the OnCallContact . Colors graphically identify alarm priority levels. You set up Priority levels using the alarm options window. The contact with the lowest number (highest priority) receives notification first. An alarm that is not acknowledged within the designated time is forwarded to the next contact in the list. NOTE: Contacts may share the same Priority number. The OnCallService sends an identical notification to all contacts that have the same priority number
Start	Indicates when the on-call list becomes active.
End	Indicates when the on-call list ceases to be active.

Toolbar for On Call User Report View

Toolbar Icon and Name	Description
Undo	Reverses the previous command.
Redo	Restores a command action after the Undo command has removed it.
Multi-selection Mode	Enables you to individually select multiple points without holding down the ctrl key.
Export	Exports the current view or object.

Email Account Manager

This is the default view of the **EmailService**. It displays a table of all the **OutgoingAccounts** and **IncomingAccounts**.

AX Email Account Manager						
Name	Transport	Hostname	Use Authentication	Account	Pollrate	Status
IncomingAccount	Pop3	xyz	true	ABC	1min	{ok}
OutgoingAccount	Smtp	ABC	false	DEF	1min	{ok}

Column	Value	Description
Name	text	Displays the name of the account.
Hostname	mail.name.com, where name varies depending on the host.	Defines the name of the email server. For example mail.acme.com.
Account	text	This is the name of a specific account that is authorized to access the mail server identified by Hostname. For example, if you are using an email account named "joejones@acme.com" on

Column	Value	Description
		the host described above, the account name is simply "joe-jones". The Hostname in this case could be "mail.acme.com".
Poll Rate	hours: minutes: seconds	Specifies how often the account executes a send action. Increasing the pollrate value increases the time between polls. During the time between polls, emails may be queued (up to the max queue size) until the next poll time. At the next poll time all queued emails are sent.
Status	read-only	Reports the condition of the entity or process at last polling. {ok} indicates that the component is licensed and polling successfully. {down} indicates that the last check was unsuccessful, perhaps because of an incorrect property, or possibly loss of network connection. {disabled} indicates that the Enable property is set to false. {fault} indicates another problem. Refer to Fault Cause for more information.

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DISTECH
CONTROLS™

Alarms EC-Net4_UG_20_EN