

Understanding Notification Escalations in Nagios XI 2024

Purpose

This document describes notification escalations in Nagios XI 2024.

Notification Basics

Nagios XI has Host Escalations and Service Escalations that allow for enhanced notifications. A brief explanation of notifications is required first.

A host or service object is configured with several notification options and are also tied to the check intervals of the host or service object. When a Nagios XI Object enters a HARD state (that is not UP or OK) the following occurs:

- Nagios XI checks to see if the object has notifications enabled and appropriate contacts
- Nagios XI checks to see if there is a notification delay defined
- Nagios XI sends the notification to the contacts defined on the object (including contacts inherited through templates)
- This notification is the first notification (notification #1)
- Nagios XI uses the objects notification interval to determine when the next notification will be sent (commonly 60 minutes)
- Nagios XI schedules the next check of the object using the check interval directive (commonly every 5 minutes)

When the next check of the object occurs, the following happens:

- Nagios XI checks the objects notification interval to determine if enough time has past since the last notification was sent
- In the above example using a check interval of 5 minutes, the object needs to be checked 12 more times ($12 \times 5 = 60$) before the next notification is sent
- When the next notification is sent, this is determined to be notification #2

This continues until the object problem is acknowledged OR the object returns to an UP or OK state.

What Are Escalations And Why Are They Required

Escalations allow you to send notifications based on different criteria. In the **Notification Basics** section, the notifications will always be sent to the contacts defined on the object. Escalations allow you to send the notifications to different contacts after x number of notifications have been sent.

Understanding Notification Escalations in Nagios XI 2024

Hence you can escalate a problem from the Help Desk Team to the On Call Team and then to the Department Manager.

Escalations allow you to send notifications to the required people at the right time. The Department Manager does not want to be notified of a problem initially, they only want to know about it if the Help Desk Team and the On Call Team have not addressed the issue.

Escalations Take Priority

Escalations will overwrite ANY notification options on the host or service object when they take effect (this includes the contacts/contact groups). This is very important to remember when determining who should be notified. When an escalation no longer takes effect then the notification options on the host or service object will be used.

When Are Notifications Escalated

Notifications are escalated if and only if one or more escalation definitions match the current notification that is being sent out. If a host or service notification does not have any valid escalation definitions that apply to it, the contact group(s) specified in either the host group or service definition will be used for the notification.

In the **Notification Basics** section, it was explained that each notification is numbered, notification #1, notification #2 and so on. Every escalation definition defines the first and last notification, this is what determines when an escalation definition takes effect. This means you create multiple escalations for the different notification numbers.

Here's an example:

Help Desk Team

- First Notification: 1
- Last Notification: 3

Help Desk Team, On Call Team

- First Notification: 4
- Last Notification: 6

Help Desk Team, On Call Team, Department Manager

- First Notification: 7
- Last Notification: 0 (using 0 means to keep using this escalation entry until the problem is resolved)

Understanding Notification Escalations in Nagios XI 2024

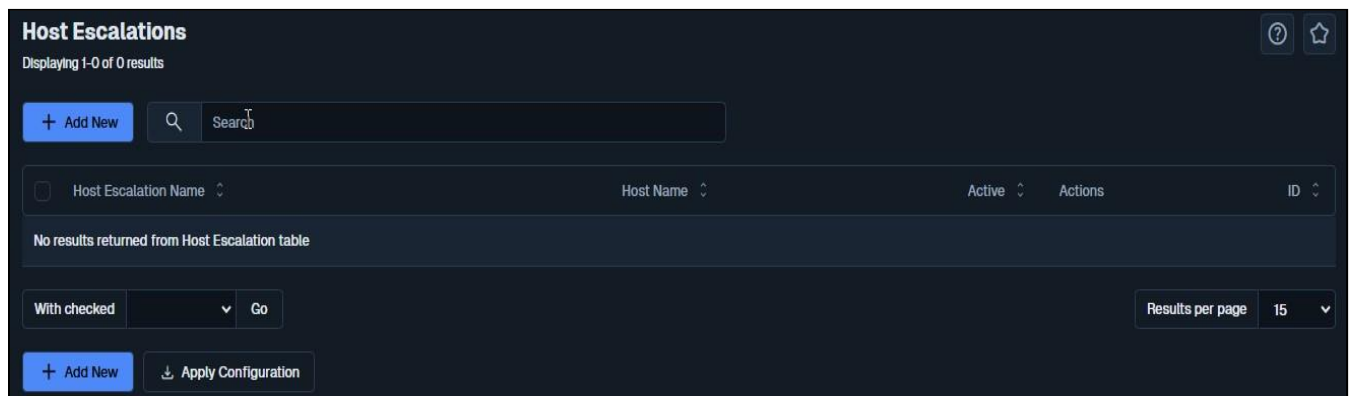
Contacts vs Contact Groups

It is best practice to add your contacts to contact groups and use these groups in your escalations. It is easier to add/remove users from groups, as every object that uses these groups will be automatically updated. Otherwise, you will need to update every object / escalation whenever you need to make contact changes, this can take a long time and can lead to mistakes, resulting in notifications not going to the correct contacts.

Host Escalation Example

Let's use the example under When Are Notifications Escalated and create three escalations.

1. **Navigate to Configure > Core Config Manager** and under **Alerting** select **Host Escalations**.



Understanding Notification Escalations in Nagios XI 2024

The screenshot shows the 'Host Escalation Management' configuration page in Nagios XI. The page has a dark theme. At the top, the title 'Host Escalation Management' is displayed in a large, bold, white font. Below the title, there are several configuration sections:

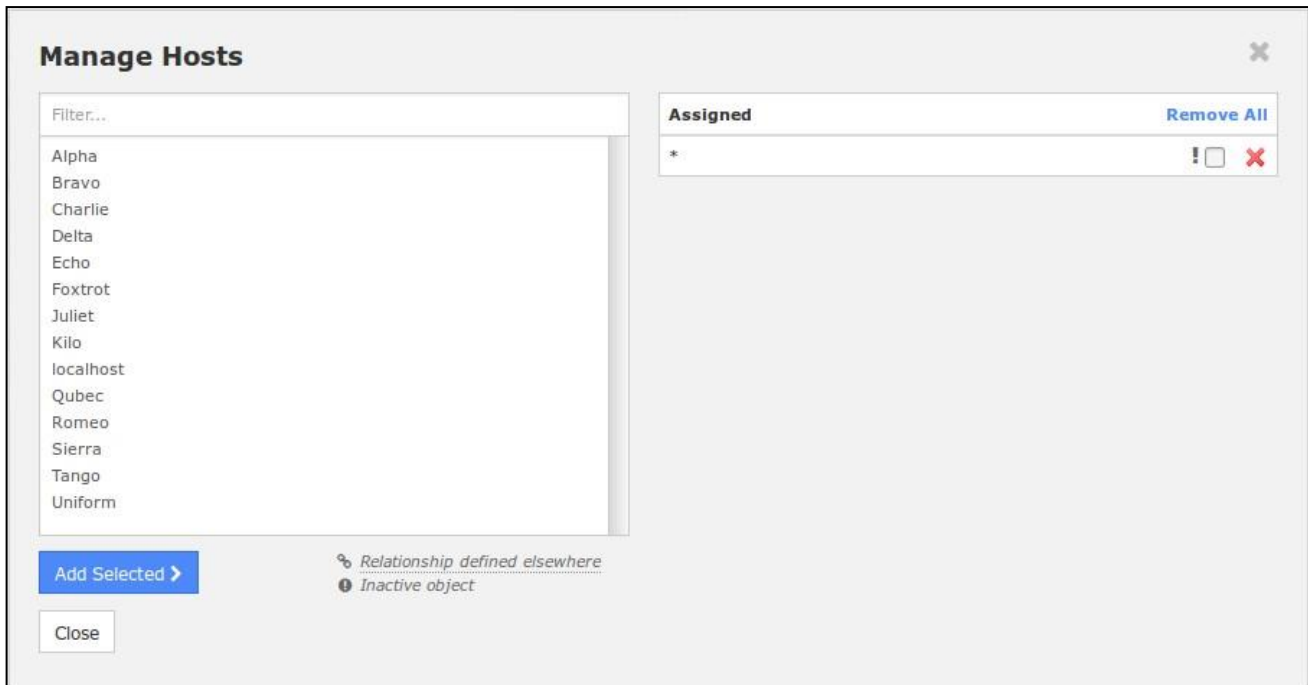
- Config Name:** A text input field containing 'All Hosts 1 - 3'.
- First / Last Notification:** Two input fields, the first containing '1' and the second containing '3'.
- Notification Interval:** An input field containing '60' and a unit dropdown menu set to 'min'.
- Escalation Options:** A row of three buttons: 'Down', 'Up', and 'Unreachable'.
- Host Escalation Period:** A dropdown menu set to '24x7'.
- Active:** A checked checkbox followed by the text 'Active' and an information icon.

On the right side of the page, there are four buttons: 'Manage Hosts 0', 'Manage Host Groups 0', 'Manage Contacts 0', and 'Manage Contact Groups 0'. At the bottom left, there are two buttons: 'Save' (in a blue box) and 'Cancel'.

2. Click the **Add New** button to create a new escalation.
3. In the **Config Name** field provide a name.
4. The **First Notification** is **1** and **Last Notification** is **3**. These fields determine when this escalation will be used.
5. The **Notification Interval** is **60**. This determines how frequently these notifications will be sent.

Understanding Notification Escalations in Nagios XI 2024

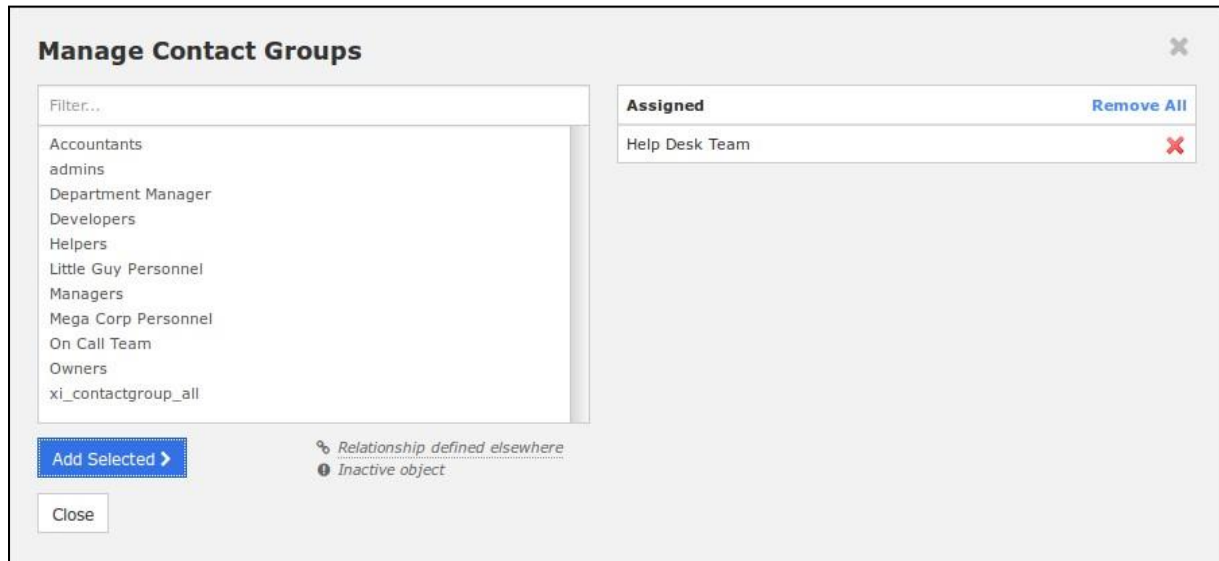
6. The **Escalation Options** has **Down**, **Up** and **Unreachable** selected, notifications will be sent when a host is in any of these states.
7. Make sure a **Host Escalation Period** is selected.
8. Click the **Manage Hosts** button to select the hosts that this escalation applies to.



Note: In this example we want all hosts to use this escalation, so we have used the asterisk * to do this. You can also use a **Host Group** to make it easier to target a specific set of hosts.

9. Click **Close** when you finish selecting hosts.
10. Click the **Manage Contact Groups** button to select the contact groups that this escalation applies to.

Understanding Notification Escalations in Nagios XI 2024



Note: In this example the Help Desk Team group has been selected.

11. Click **Close** when you have finished selecting contact groups.
12. Click the **Save** button to create the new host escalation.
13. Repeat the above steps to create these additional escalations:
 - **Config Name:** All Hosts - 4 to 6
 - **First Notification:** 4
 - **Last Notification:** 6
 - **Notification Interval:** 45
 - **Escalation Options:** Down, Up and Unreachable
 - **Hosts:** *
 - **Contact Groups:** Help Desk Team, On Call Team
 - **Config Name:** All Hosts - 7 to 0
 - **First Notification:** 7
 - **Last Notification:** 0
 - **Notification Interval:** 30
 - **Escalation Options:** Down, Up and Unreachable
 - **Hosts:** *
 - **Contact Groups:** Help Desk Team, On Call Team, Department Manager

Understanding Notification Escalations in Nagios XI 2024

14. **Apply Configuration** to make these escalations live.

In the example above, three escalations were created to implement host notifications for all hosts on the Nagios XI server. The options used were deliberately simplified to demonstrate how escalations can be used.

When defining escalations, it is important to keep in mind that any contact groups that were members of "lower" escalations (i.e. those with lower notification number ranges) should also be included in "higher" escalation definitions. This should be done to ensure that anyone who is notified of a problem continues to get notified as the problem is escalated (you can see this in the example above).

Recovery notifications

Recovery notifications behave slightly differently than problem notifications when it comes to escalations. Using the example above, after three problem notifications the host returns to an UP state. When the recovery notification is sent out, who gets notified?

The recovery is the fourth notification that gets sent out. However, the escalation logic is smart enough to determine that only those people who were notified about the problem on the third notification should be notified about the recovery. In this case, only the Help Desk Team would be notified of the recovery, and the On Call Team would not receive any notifications.

Notification Intervals

In Nagios XI you can change the frequency at which escalated notifications are sent out by using the Notification Interval option.

When the host notification is escalated on the 4th, 5th and 6th notifications, an interval of 45 minutes will be used between notifications (instead of the 60-minute interval defined on the previous escalation). On the 7th and subsequent notifications, the notification interval will be 30 minutes. This way, as time passes by since the problem originally occurred, more people will be notified more frequently.

Since it is possible to have overlapping escalation definitions for a particular host or hostgroup, and since a host can be a member of multiple hostgroups, Nagios must decide on what to do as far as the notification interval is concerned when escalation definitions overlap. In any case where there are multiple valid escalation definitions for a particular notification, Nagios will choose the smallest notification interval.

One last note about notification intervals, an interval of 0 means that Nagios should only send a notification out for the first valid notification during that escalation definition. All subsequent notifications will be suppressed.

Service Escalation Example

Service escalations are almost identical to host escalations. With that in mind, we're going to create a more complicated series of escalations.

There are two hosts (Alpha and Bravo) that have the same service called CPU Usage. The details of each service are as follows:

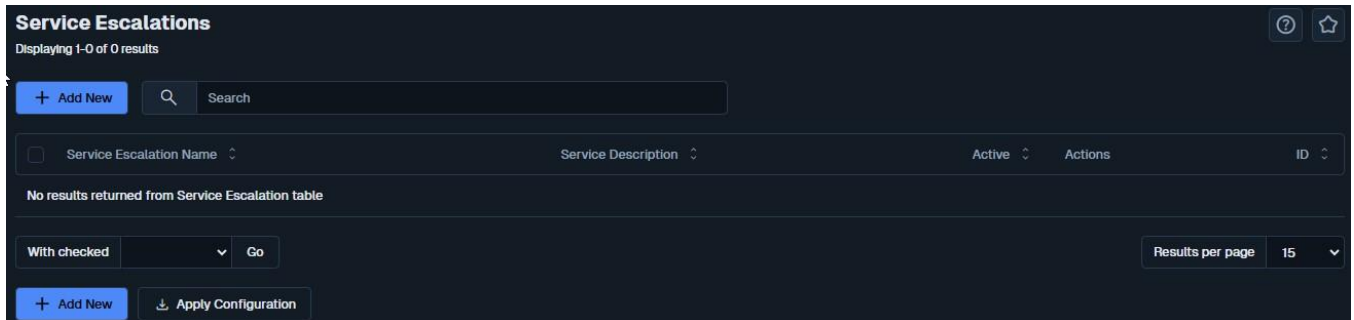
- Alpha CPU Usage
 - Contact Groups: Accountants
 - Interval: 30
- Bravo CPU Usage
 - Contacts: Bob
 - Interval: 60

We are going to create the same escalations that will be used by both (host/service).

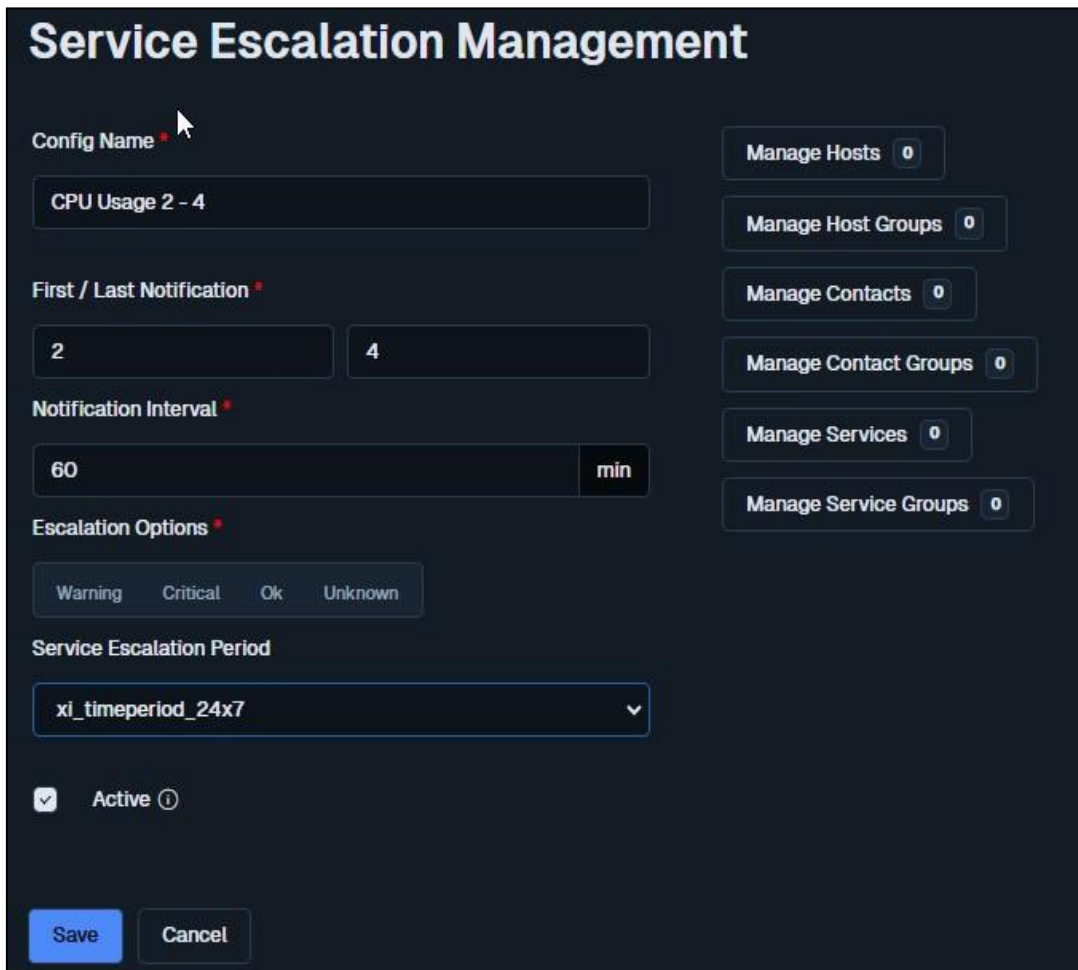
- Help Desk Team
 - First Notification: 2
 - Last Notification: 4
- On Call Team
 - First Notification: 3
 - Last Notification: 6
- Department Manager
 - First Notification: 7
 - Last Notification: 0 (using 0 means to keep using this escalation entry until the problem is resolved)

Understanding Notification Escalations in Nagios XI 2024

1. Navigate to **Configure > Core Config Manager** and under **Alerting** select **Service Escalations**.



The screenshot shows the 'Service Escalations' management interface. At the top, it says 'Service Escalations' and 'Displaying 1-0 of 0 results'. There is a search bar and a '+ Add New' button. Below that is a table with columns for 'Service Escalation Name', 'Service Description', 'Active', 'Actions', and 'ID'. A message states 'No results returned from Service Escalation table'. At the bottom, there are buttons for '+ Add New' and 'Apply Configuration', along with a 'Results per page' dropdown set to 15.



The screenshot shows the 'Service Escalation Management' configuration page. The main title is 'Service Escalation Management'. The configuration is divided into several sections:

- Config Name:** A text input field containing 'CPU Usage 2 - 4'.
- First / Last Notification:** Two input fields containing '2' and '4'.
- Notification Interval:** An input field containing '60' and a unit dropdown set to 'min'.
- Escalation Options:** A row of buttons: 'Warning', 'Critical', 'Ok', and 'Unknown'.
- Service Escalation Period:** A dropdown menu set to 'xl_timeperiod_24x7'.
- Active:** A checked checkbox labeled 'Active' with a help icon.
- Management Buttons:** A vertical column of buttons on the right: 'Manage Hosts 0', 'Manage Host Groups 0', 'Manage Contacts 0', 'Manage Contact Groups 0', 'Manage Services 0', and 'Manage Service Groups 0'.
- Save/Cancel:** Two buttons at the bottom left.

Understanding Notification Escalations in Nagios XI 2024

2. Click the **Add New** button to create a new escalation.
3. In the **Config Name** field provide a name.
4. The **First Notification** is **2** and **Last Notification** is **4**.
5. The **Notification Interval** is **60**.
6. The **Escalation Options** has **Warning, Critical, Ok** and **Unknown** selected.
7. Make sure a **Service Escalation Period** is selected.
8. Click the **Manage Hosts** button.
9. Select the **Hosts Alpha** and **Bravo**

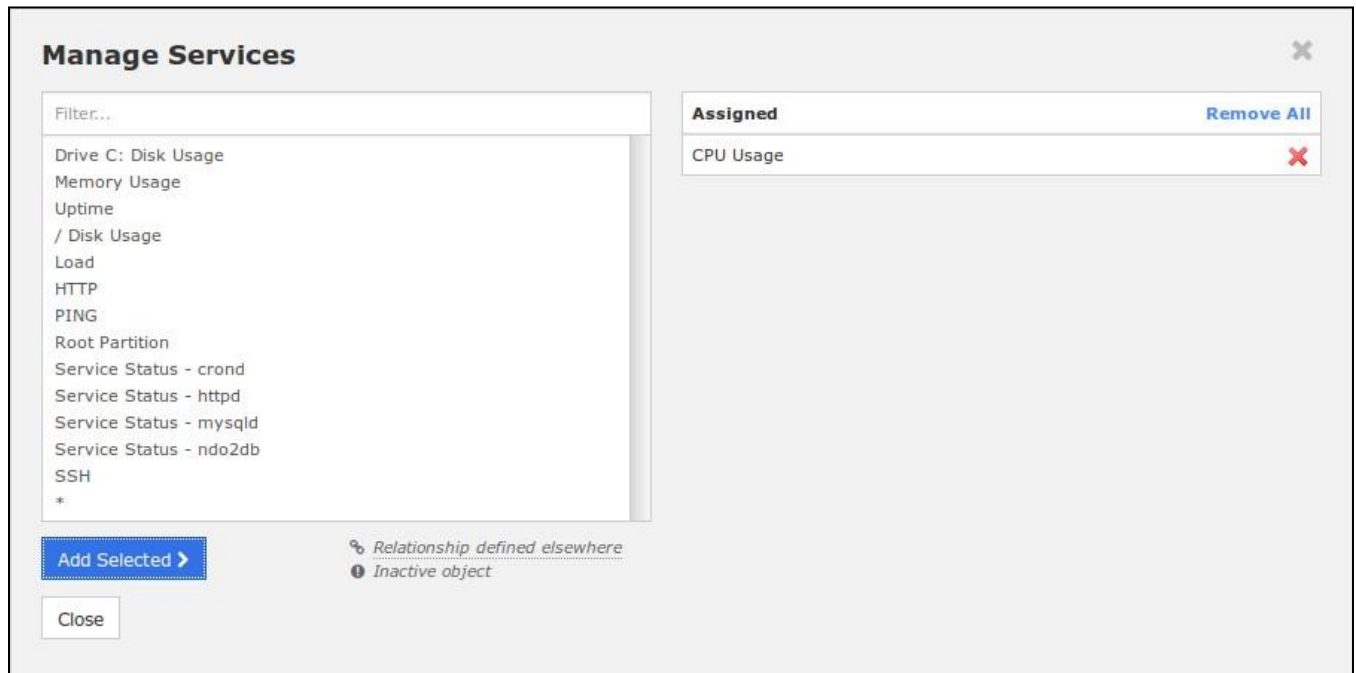
The screenshot shows the 'Manage Hosts' dialog box in Nagios XI. On the left, there is a list of hosts with a search filter. The hosts listed are Charlie, Delta, Echo, Foxtrot, Juliet, Kilo, localhost, Qubec, Romeo, Sierra, Tango, Uniform, and *. Below the list is a blue 'Add Selected >' button and a 'Close' button. On the right, there is an 'Assigned' table with a 'Remove All' button. The table has two rows: 'Alpha' and 'Bravo', each with a checkbox and a red 'X' icon. Below the table, there are two informational messages: 'Relationship defined elsewhere' and 'Inactive object'.

Assigned	Remove All
Alpha	<input type="checkbox"/> X
Bravo	<input type="checkbox"/> X

10. Click **Close** when you finish selecting hosts.

Understanding Notification Escalations in Nagios XI 2024

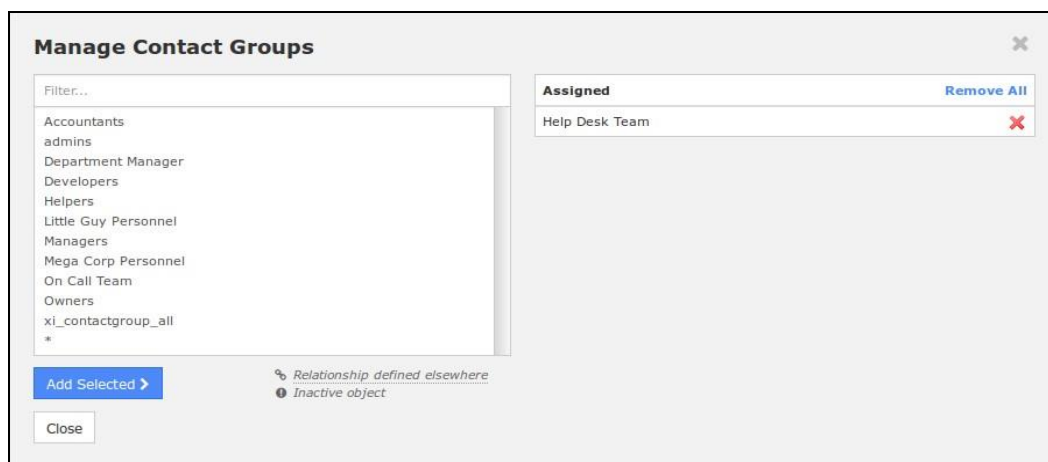
11. Click the **Manage Services** button.



12. Select the service **CPU Usage**.

13. This list of services is of all the services that exist on the Nagios XI server. It's important that all the hosts that are assigned to this escalation have the service(s) you select here.

14. Click **Close** when you've finished selecting services.



15. Click **Close** when you've finished selecting services.

Understanding Notification Escalations in Nagios XI 2024

16. Click the **Manage Contact Groups** button and select the contact groups that this escalation applies to.
17. Click **Close** when you have finished selecting contact groups.
18. Click the **Save** button to create the new service escalation.

Repeat the above steps to create these additional escalations and then Apply Configuration:

- **Config Name:** CPU Usage - 3 to 6
 - **First Notification:** 3
 - **Last Notification:** 6
 - **Notification Interval:** 45
 - **Escalation Options:** Warning, Critical and Unknown
 - **Hosts:** Alpha and Bravo
 - **Contact Groups:** On Call Team
- **Config Name:** CPU Usage - 7 to 0
 - **First Notification:** 7
 - **Last Notification:** 0
 - **Notification Interval:** 30
 - **Escalation Options:** Critical and Unknown
 - **Hosts:** Alpha and Bravo
 - **Contact Groups:** Department Manager

The Table on the following page demonstrates the notifications that will be sent and how these escalations apply (or not).

Understanding Notification Escalations in Nagios XI 2024

Time	Event	Alpha CPU Usage	Bravo CPU Usage
03:00:00 AM	Service enters HARD WARNING state	Notification sent to Accountants Next notification @ 03:30:00 This is Notification #1	Notification sent to Bob Next notification @ 04:00:00 This is Notification #1
03:30:00 AM	Service still HARD WARNING state	Notification sent to Help Desk Team Next notification @ 04:30:00 This is Notification #2	
04:00:00 AM	Service still HARD WARNING state		Notification sent to Help Desk Team Next notification @ 05:00:00 This is Notification #2
04:30:00 AM	Service still HARD WARNING state	Notification sent to Help Desk Team Notification sent to On Call Team Next notification @ 05:15:00 This is Notification #3	
05:00:00 AM	Service still HARD WARNING state		Notification sent to Help Desk Team Notification sent to On Call Team Next notification @ 05:45:00 This is Notification #3
05:15:00 AM	Service still HARD WARNING state	Notification sent to Help Desk Team Notification sent to On Call Team Next notification @ 06:00:00 This is Notification #4	
05:45:00 AM	Service still HARD WARNING state		Notification sent to Help Desk Team Notification sent to On Call Team Next notification @ 06:30:00 This is Notification #4
06:00:00 AM	Service still HARD WARNING state	Notification sent to On Call Team Next notification @ 06:45:00 This is Notification #5	
06:30:00 AM	Service still HARD WARNING state		Notification sent to On Call Team Next notification @ 07:15:00 This is Notification #5
06:45:00 AM	Service still HARD WARNING state	Notification sent to On Call Team Next notification @ 07:30:00 This is Notification #6	
07:15:00 AM	Service still HARD WARNING state		Notification sent to On Call Team Next notification @ 08:00:00 This is Notification #6
07:30:00 AM	Service still HARD WARNING state	Notification sent to Accountants Next notification @ 08:00:00 This is Notification #7	
08:00:00 AM	Service still HARD WARNING state	Notification sent to Accountants Next notification @ 08:30:00 This is Notification #8	Notification sent to Bob Next notification @ 09:00:00 This is Notification #7
08:14:23 AM	Service recovers to OK state	Notification sent to Accountants This is Notification #9	Notification sent to Bob This is Notification #8

Understanding Notification Escalations in Nagios XI 2024

The example above was to demonstrate how the notification options on the service object are still used when the criteria on the escalations are not met. Most noticeably, because this service was in a WARNING state the **CPU Usage - 7 to 0** escalation was not used because it was only configured for CRITICAL or UNKNOWN states.

You will have also noticed that the escalation **CPU Usage - 2 to 4** only applied from notification #2. This meant that the service object's notification options were used for notification #1. The **Alpha CPU Usage** service had a notification interval of 30, so notification #2 was sent sooner than **Bravo CPU Usage**. Additionally, when the escalation **CPU Usage - 2 to 4** applied, the notification interval increased back to 60 minutes.

The other difference in this example is that the First / Last escalations overlapped AND only the specific contact groups were used in each escalation. This meant that the **Help Desk Team** contact group did not receive notifications after notification #4, however the **On Call Team** received notifications from #3 onwards.

Finishing Up

This completes the documentation on understanding notification escalations in Nagios XI 2024. If you have additional questions or other support-related questions, please visit us at our Nagios Support Forum, Nagios Knowledge Base, or Nagios Library:

[Visit Nagios Support Forum](#)

[Visit Nagios Knowledge Base](#)

[Visit Nagios Library](#)