



Cisco iNode Manager User Guide, Release 3.1.0

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Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883



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CHAPTER 1

Cisco iNode Manager Application

The Cisco Intelligent Node (iNode) Manager application enables you to provision and monitor the intelligent nodes in the network.

This *User Guide* provides information on the Cisco iNode Manager and how to use the application. For details of installing the application, see the [Cisco iNode Manager Installation Guide](#)

- [Cisco iNode Manager Application, on page 1](#)
- [Logging into Cisco iNode Manager Application , on page 1](#)
- [Cisco iNode Manager Dashboard, on page 2](#)

Cisco iNode Manager Application

The following are some of the features of the Cisco iNode Manager application:

- Intelligent Node Inventory: iNode inventory operations such as monitoring the status of iNodes, current software version of the iNodes, searching for iNodes based on specific criteria.
- Remote configuration of iNodes: RF port configuration and general configuration are available.
- Spectrum analysis: Forward path and Reverse path.
- Alarm monitoring
- Configuration profiles: iNode settings and the RF port settings profile.
- DB import and export.
- RPD information.
- Debugging the iNode: Viewing the latest logs and the boot parameters in the UI.

Logging into Cisco iNode Manager Application

Access the Cisco iNode Manager Web UI using the following URL:

```
https://inode-manager.<ingress-ip>.nip.io
```

- For all-in-one (AIO) cluster, the ingress IP address is the management IP address of the `ops` node or VM.

- For multi node, the ingress IP address is the virtual IP address that is configured for the management network.

You can log into the Cisco iNode Manager application by entering the credentials that are provided for inode manager operations center while installing the Cisco iNode Manager. Currently, `admin` is the only user profile that is allowed.

Enter the password that you mentioned while creating the Cisco iNode Manager cluster.

The LDAP user credentials can be entered if LDAP is configured in the Cisco iNode Manager cluster. For information on how to configure LDAP authentication in the Cisco iNode Manager, see the *Cisco iNode Manager Installation Guide, Release 3.1.0*.



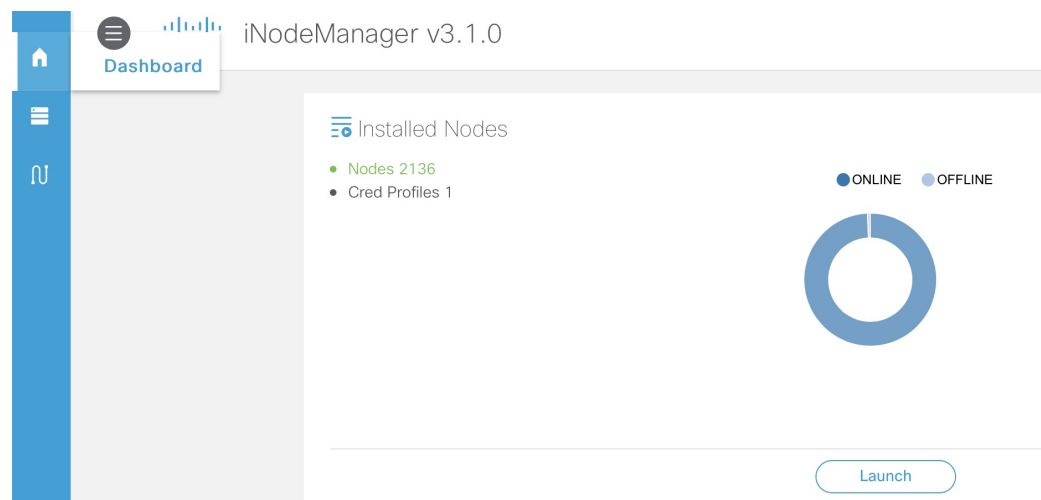
Note The login page is locked for one minute if there are three consecutive unsuccessful attempts to log into the iNode Manager.



Note To logout from the iNode Manager application, click **Settings** icon > **Log out**.

Cisco iNode Manager Dashboard

The Cisco iNode Manager application **Dashboard** gives you a snapshot view of all nodes that are managed and monitored by the Cisco iNode Manager application.



Click the **Launch** button to open the Cisco iNode Manager application page.



CHAPTER 2

How to Use Cisco iNode Manager

This section describes how to use the Cisco iNode Manager application:

- [Cisco iNode Manager Application](#) , on page 3
- [Overview](#), on page 3
- [Config Profiles](#), on page 12
- [Node Config](#), on page 17
- [Alarms](#), on page 23
- [System](#), on page 24
- [Inventory Dashboard](#), on page 26

Cisco iNode Manager Application

The Cisco iNode Manager application page provides you options to add, organize, and update information about the iNodes in the network.

The **Cable iNode Manager** page has five tabs:

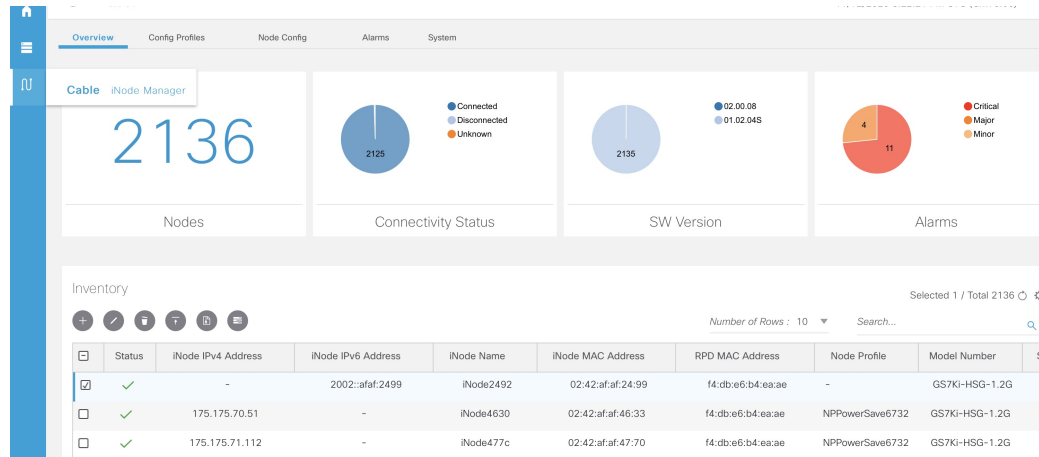
- **Overview**
- **Config Profiles**
- **Node Config**
- **Alarms**
- **System**

Overview

The **Overview** page provides the total number of iNodes, their connectivity status, software version running on them, and the number of active alarms. It also has an **Inventory** table which shows details of all iNodes in the network. You can perform the following tasks on this page:








- Add a new iNode to the inventory
- Update the name of the iNode in the inventory
- Delete iNodes from the inventory

- Export the iNode details from the inventory table in the CSV format
- Download log files that are in the iNode, view the latest logs, and the boot parameters of an iNode
- Perform bulk operations: Initial setup in bulk, assign configuration profiles, and bulk reboot



The following table contains the descriptions of the graphs on the **Overview** page and the fields in the inventory table:


Name	Description
Nodes	Total number of iNodes in the inventory.
Connectivity Status	Shows a pie chart of the connectivity status of the iNodes in the network. The following statuses are displayed: <ul style="list-style-type: none"> • Connected • Disconnected • Unknown
SW Version	Shows a pie chart of the number of iNodes running different software versions.
Alarms	Shows a pie chart of the number of active alarms in the iNodes in the network. The following categories are displayed: <ul style="list-style-type: none"> • Critical • Major • Minor
Inventory Table Fields	
Status	Current Status of the iNode.
iNode IPv4 Address	IPv4 address of the iNode. A hyphen (-) indicates that the iNode does not have an IPv4 address.

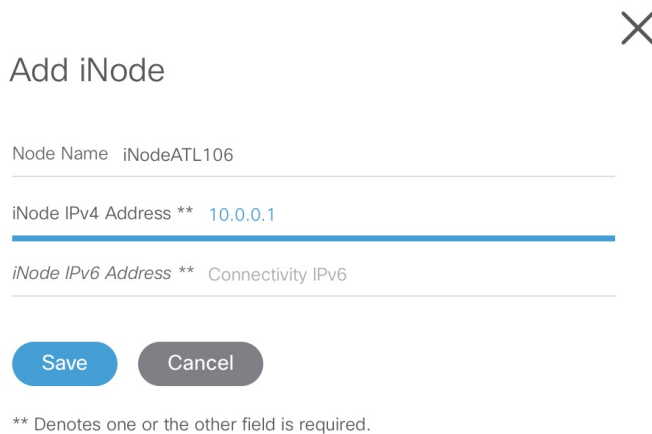
Name	Description
iNode IPv6 Address	IPv6 Address of the iNode. A hyphen (-) indicates that the iNode does not have an IPv6 Address.
iNode Name	Name of the iNode.
iNode MAC Address	MAC address of the iNode.
RPD MAC Address	MAC address of the RPD that is connected to the iNode.
Node Profile	Name of the Configuration Profile that is assigned to the iNode.
Model Number	Model number of the iNode.
Software Version	Software version of the iNode.
Safe Image Version	Software version of the secondary image in the iNode.
Serial Number	Serial number of the iNode.
RPD IPv4 Address	IPv4 address of the RPD that is connected to the iNode.
RPD IPv6 Address	IPv6 address of the RPD that is connected to the iNode.
RPD Serial Number	Serial number of the RPD that is connected to the iNode.
RPD Software Version	Software version of the RPD that is connected to the iNode.
	Adds an iNode to the inventory.
	Updates the iNode information.
	Deletes iNodes from the inventory.
	Exports iNode details to a CSV file.
	Downloads the iNode's logs.
	Perform bulk operations.
	Sets the columns in the inventory table.

Name	Description
Search	Allows you to search for iNodes based on the search criteria.

Add an iNode to Inventory

Step 1 Log into the Cisco iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 Click the  icon to add a node to the Inventory.
The **Add iNode** pop-up window appears.



Add iNode

Node Name iNodeATL106

iNode IPv4 Address ** 10.0.0.1

iNode IPv6 Address ** Connectivity IPv6

Save Cancel

** Denotes one or the other field is required.

Step 3 Enter the IPv4 address or the IPv6 address of the iNode and click **Save**.


The Cisco iNode Manager retrieves the rest of the details of the iNode, such as the name, MAC address, software version, serial number, and so on from the iNode and stores it in the inventory.

Update the iNode Name

You can update only the name of an iNode.

Step 1 Log into the Cisco iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 In the **Inventory** table, check the check box of the iNode which you want to update.

Step 3 Click the  icon to update the name of the iNode.
The **Update iNode** pop-up window appears.

✕

Update iNode

Node Name * iNode20fb

iNode IPv4 Address Connectivity IPv4

iNode IPv6 Address 2002::afaf:20fb

MAC Address 02:42:af:af:20:fb


Save
Cancel

* Denotes that the field is required.

Step 4 Update the node name and click **Save**.


Delete iNode from Inventory

You can delete multiple iNodes from the Inventory.

- Step 1** Log into the Cisco iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.
- Step 2** Select the iNodes from the **Inventory** table and click the  icon.
A confirmation message appears.
- Step 3** Click **Delete** to confirm.

Export the Inventory

You can export the details of all iNodes listed in the Inventory in the CSV format.

- Step 1** Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.
- Step 2** In the **Inventory** table, check the check boxes for the iNodes of which you want the details exported in a CSV file.
- Step 3** Click the  icon to export iNodes in the inventory.
A request message to allow downloads appears. This request appears only once for a user profile.
- Step 4** Click **Allow**.


The CSV file is saved to your downloads location on your device. The file name is in the following format:
inodeInventoryData-yyyy-mm-dd.hhmmss

Download Logs

You can view and download the logs to your device.

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 Check the check boxes for the iNodes of which you want to download the logs.

Step 3 Click the  icon to view the download options.
The **Download Logs** pop-up window appears.

Download Logs

Latest Logs & Boot Params

[Get Latest Logs](#)

View / Download only the latest 130 KB of the iNode logs

[Get Boot Parameters](#)

View Boot parameters of iNode

Historical Logs

	File Name	File Size(MB)
<input type="checkbox"/>	messages	4.88
<input type="checkbox"/>	messages.0	10.25
<input checked="" type="checkbox"/>	messages.1	10.24
<input checked="" type="checkbox"/>	messages.2	10.25

[Download](#) [Close](#)

Step 4 Click the option based on your requirement.

Option	Description
Get Latest Logs	View or download the latest logs. The Latest Logs from iNode window appears. The maximum size of the file is limited to 130 KB.
Get Boot Parameters	View and save the boot parameters.
Historical Logs	Download the entire log file. Downloading the file takes several minutes depending on the size of the log file. The progress bar indicates the current status of the log file download.

Get Latest Logs:

Historical Logs: Check the check boxes for the files that you want to download and click **Download**. The log file is saved to the default download location on your device. The file name is in the following format: `inode-<IP address>-messages-complete`

Bulk Operations on the iNodes

You can do the following bulk operations on the iNodes that are selected in the inventory:

- Assign or clear the configuration profile
- Initial setup
- Reboot


Assign Configuration Profile



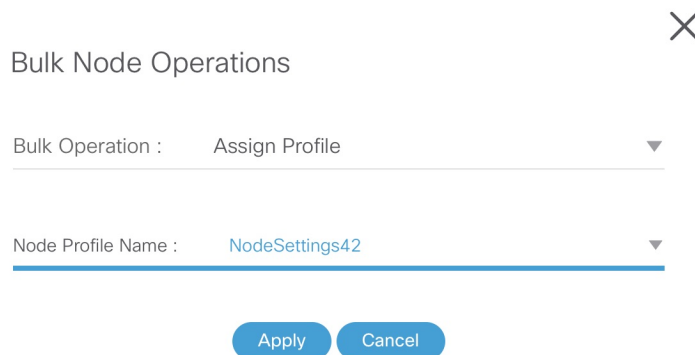
Caution If the iNodes are already associated with a configuration profile, this operation overwrites it.

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 Check the check boxes for the iNodes of which you want to assign the configuration profiles.

Step 3 Click the  icon.

The **Bulk Node Operations** pop-up window appears.



Bulk Node Operations

Bulk Operation : Assign Profile

Node Profile Name : NodeSettings42

Apply Cancel

Step 4 Choose the **Assign Profile** from the **Bulk Operation** drop-down list.

Step 5 Choose the profile name from the **Node Profile Name** drop-down list.

Clear Config Profile: If you choose **None** for **Node Profile Name**, the configuration profile is disassociated from the selected iNodes.

Step 6 Click **Apply**.


The node profile is assigned to the iNodes that are selected in the inventory. A warning message appears if the selected iNodes are already associated with different profiles.

You can see the status of this bulk operation in the **System > Bulk Operation Status** page.

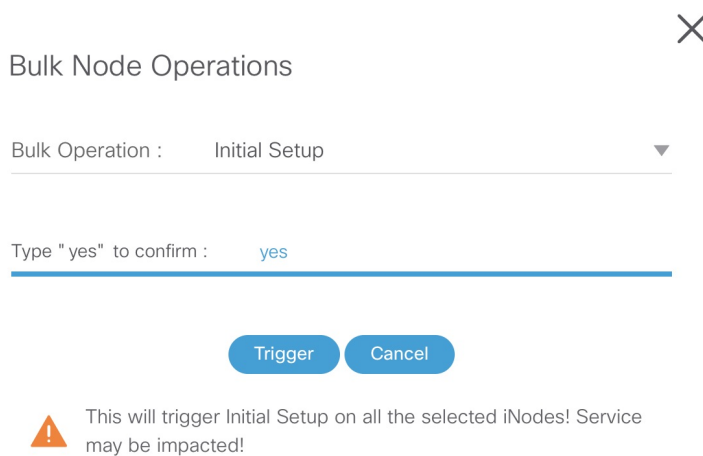
Initial Setup on iNodes

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 Check the check boxes of the iNodes for which you want to run the initial setup.

Step 3 Click the  icon to view the bulk operations options.

The **Bulk Node Operations** pop-up window appears.



Step 4 Choose **Initial Setup** from the **Bulk Operation** drop-down list.

Step 5 Enter **yes** in the **Type "yes" to confirm** field.

Step 6 Click **Trigger**.

You can see the status of this bulk operation in the **System > Bulk Operation Status** page.

Bulk Reboot of iNodes




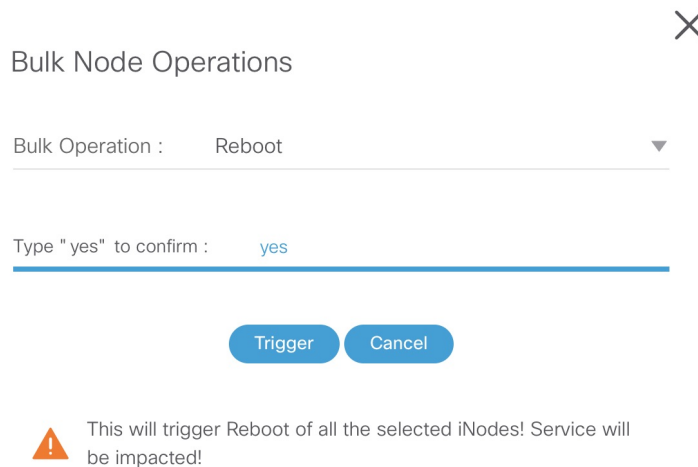
Note Use the bulk reboot operation cautiously. Rebooting several iNodes simultaneously may add load on the network components such as DHCP server and TFTP server.

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Overview**.

Step 2 Check the check boxes for the iNodes of which you want to reboot the iNodes.

Note Before triggering the reboot of iNodes, ensure that you have not checked the check box in the header of the **Inventory** table. Check the check box in the header of the **Inventory** table only if you want to reboot all iNodes in your network. It affects the services until the iNodes are rebooted and active.

- Step 3** Click the  icon to view the bulk operations options.
The **Bulk Node Operations** pop-up window appears.




Bulk Node Operations

Bulk Operation : Reboot

Type "yes" to confirm : yes

Trigger Cancel

 This will trigger Reboot of all the selected iNodes! Service will be impacted!

- Step 4** Choose **Reboot** from the **Bulk Operation** drop-down list.
- Step 5** Enter **yes** in the **Type "yes" to confirm** field.
- Step 6** Click **Trigger**.

Reboot is triggered on the iNodes that are chosen in the Inventory.

View the status of the **Reboot** operation in the **System > Bulk Operation Status** page.

Config Profiles

You can apply the same node configuration to one or more iNodes in the inventory using the options available in the **Config Profiles** tab. The iNode Manager application provides two configuration profile options:

- **RF Profiles:** Contains RF port parameters such as the target frequency and amplitude, wink switch, wink attenuation (in dB, if the Wink Switch is set as variable), and the port status.

The RF profiles are associated to a particular port in the node profile and node profiles are assigned to iNodes.

You cannot apply RF Profiles directly to the iNodes.

- **Node Profiles:** Contains general node settings such as forward and reverse segmentation, power saving modes, OIB reverse attenuation (in dB), and the SNMP community string. In addition, the node profile also contains the RF port settings profiles which are assigned to the RF ports in the iNode.

You can assign a Node Profile to one or more iNodes in the inventory.

Using the **Config Profiles** tab, you can do the following:

- Add new node and RF port configuration profiles
- Update the configuration profile

- Assign the node configuration profile to one or more iNodes in the inventory
- Clear the association of the node configuration profiles from one or more iNodes in the inventory
- View the list of configuration profiles
- Delete configuration profiles

Create RF Profile


The **RF Profiles** tab lists the RF port settings profiles which are already created. Each RF profile panel shows whether the RF profile is in use or not.

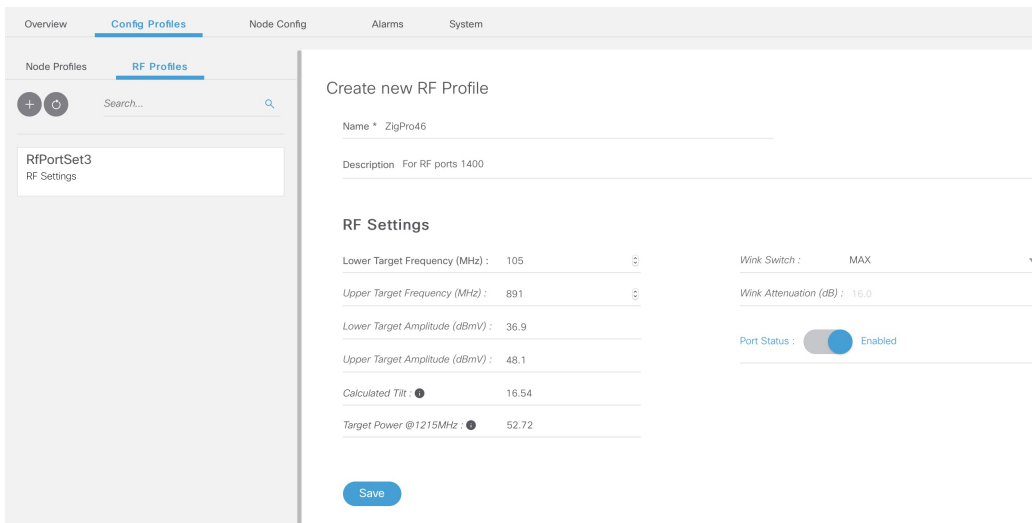
You can do the following with RF port profiles:

- Create a new RF port profile
- Edit the profile
- Search for profiles
- Delete the profile
- Duplicate the profile

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Config Profiles**.

Step 2 Click the **RF Profiles** tab.

Step 3 Click the  icon to create an RF port profile.



The screenshot shows the 'Create new RF Profile' form in the Cisco iNode Manager application. The form is titled 'Create new RF Profile' and has a 'Name' field with the value 'ZigPro46'. The 'Description' field contains 'For RF ports 1400'. Under the 'RF Settings' section, there are several input fields: 'Lower Target Frequency (MHz)' (105), 'Upper Target Frequency (MHz)' (891), 'Lower Target Amplitude (dBmV)' (36.9), and 'Upper Target Amplitude (dBmV)' (48.1). There are also calculated values: 'Calculated Tilt' (16.54) and 'Target Power @1215MHz' (52.72). On the right side, there are two dropdown menus: 'Wink Switch' (MAX) and 'Wink Attenuation (dB)' (16.0). At the bottom right, there is a 'Port Status' toggle switch set to 'Enabled'. A 'Save' button is located at the bottom left of the form.

Step 4 Enter the following details in the appropriate fields.

Field	Description
Name	Name of the RF port configuration profile.
Description	Short description of the port profile.
RF Settings	
Lower Target Frequency (MHz)	Lower end frequency of the RF port.
Upper Target Frequency (MHz)	Upper end frequency of the RF port.
Lower Target Amplitude (dBmV)	Lower level of output power of the RF port.
Upper Target Amplitude (dBmV)	Upper level of output power of the RF Port.
Calculated Tilt	Tilt is the difference in the signal level between the lower and upper end frequencies of the RF port. It is calculated using the following formula: $\left(\frac{\text{UpperTargetAmplitude} - \text{LowerTargetAmplitude}}{\text{UpperTargetFrequency} - \text{LowerTargetFrequency}} \right) * (1215 - 54)$
Target Power @1215MHz	The power level at the highest frequency of the RF port. Formula: $\text{UpperTargetAmplitude} + \left(\frac{\text{tilt} * (1215 - \text{UpperTargetFrequency})}{(1215 - 54)} \right)$
Wink Switch	To toggle the addition of extra attenuation.
Wink Attenuation (dB)	Reduction in the amplitude of the RF.
Port Status	Click to disable the port. By default, the port status is enabled.

Step 5 Click **Save**.

The new RF profile is listed on the left pane in the **RF Profiles** page.

Create Node Profile

The **Node Profiles** tab lists the node settings profiles. Each profile in the list shows the number of iNodes to which the Node Profile is assigned to.

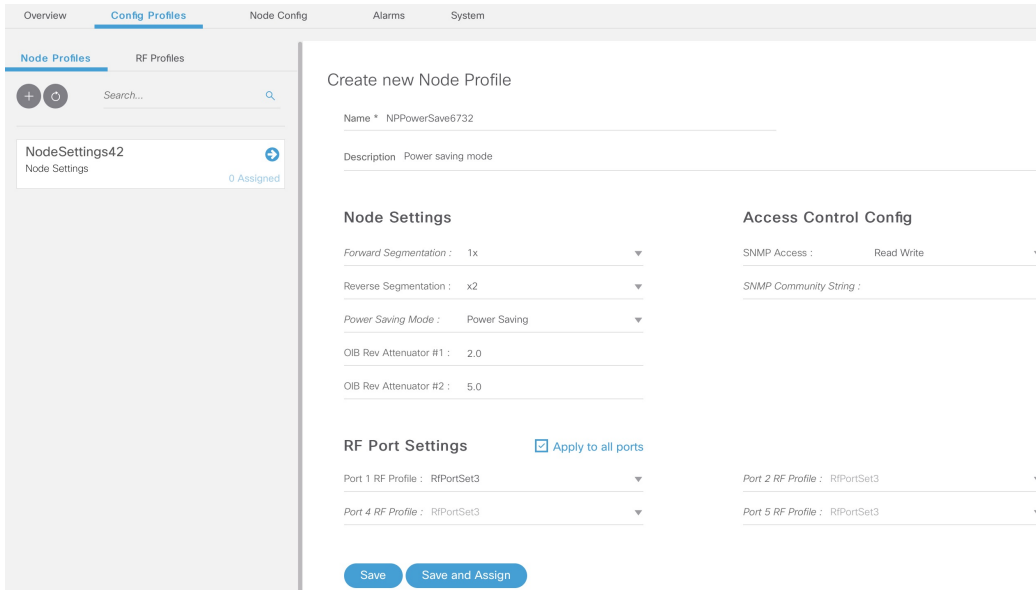
You can do the following with node profiles:


- Create a new node profile
- Edit the profile
- Search for profiles
- Delete the profile
- Duplicate the profile

- Assign the profile

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Config Profiles**.

Step 2 Click the **Node Profiles** tab.



Step 3 Click the  icon to create a node profile.

Step 4 Enter the following details in the appropriate fields.

Field	Description
Name	Name of the node configuration profile.
Description	A short description of the node profile.
Node Settings	
Forward Segmentation	Number of forward paths to the headend. Intelligent Node supports only one forward path.
Reverse Segmentation	Number of reverse paths to the headend. Intelligent Node supports two reverse paths.
Power Saving Mode	Choose whether the node is in power saving mode or in full power.
OIB Rev Attenuator #1	The attenuation in the reverse transmitter #1.
OIB Rev Attenuator #2	The attenuation in the reverse transmitter #2.
Access Control Config	

Field	Description
SNMP Access	To toggle access of the iNode through SNMP.
SNMP Community String	The community string with which the iNode parameters can be viewed and set.
RF Port Settings	
Apply to all ports	Check the check box to apply the settings to all ports.
Port 1 RF Profile	Choose the RF profile from the drop-down list. You can choose profiles for 4 ports.

Step 5 Click **Save**.

The new node profile is listed on the left pane in the **Node Profiles** page.

Assign Node Profile to iNodes

Step 1 Log into the iNode Manager application, and click **Dashboard > Launch** or choose **Cable iNode Manager > Config Profiles**.

Step 2 Click the **Node Profiles** tab and click the right arrow (→) next to the profile name in the left pane. The **Inventory** table appears with the **Assign** and **Clear** options.

Or click the profile that you want to assign and click **Assign** in the **Edit Node Profile** page

The screenshot shows the Cisco iNode Manager interface. On the left, the 'Node Profiles' tab is active, displaying a profile named 'NPPowerSave6732' with '2 Assigned' nodes. On the right, the 'Inventory' table is visible, showing a list of iNodes with columns for Status, iNode IPv4 Address, iNode IPv6 Address, iNode Name, iNode MAC Address, and RPD MAC Address. The table contains 10 rows of data, with the first three rows having their status checked. The 'Assign' and 'Clear' buttons are visible above the table.

	Status	iNode IPv4 Address	iNode IPv6 Address	iNode Name	iNode MAC Address	RPD MAC Address
<input type="checkbox"/>	✓	-	2002::afaf:20fb	iNode20f9	02:42:af:af:20:fb	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:21a5	iNode21a4	02:42:af:af:21:a5	f4:db:e6:b4:ea:ae
<input checked="" type="checkbox"/>	✓	-	2002::afaf:20bb	iNode20b1	02:42:af:af:20:bb	f4:db:e6:b4:ea:ae
<input checked="" type="checkbox"/>	✓	-	2002::afaf:1fef	iNode1fee	02:42:af:af:1f:ef	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:207e	iNode2076	02:42:af:af:20:7e	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:2154	iNode2152	02:42:af:af:21:54	f4:db:e6:b4:ea:ae
<input checked="" type="checkbox"/>	✓	-	2002::afaf:200a	iNode2007	02:42:af:af:20:0a	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:1eed	iNode1eec	02:42:af:af:1e:ed	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:116c	iNode1164	02:42:af:af:11:6c	f4:db:e6:b4:ea:ae
<input type="checkbox"/>	✓	-	2002::afaf:1ef4	iNode1ef1	02:42:af:af:1e:f4	f4:db:e6:b4:ea:ae

Step 3 Check the check boxes of the iNodes to which you want to assign the profile.

Step 4 Click **Assign**.

A message appears showing that assigning the profile is initiated.

View the status in the **System > Bulk Operation Status** page.

Node Config

The Node Config tab provides the following information:

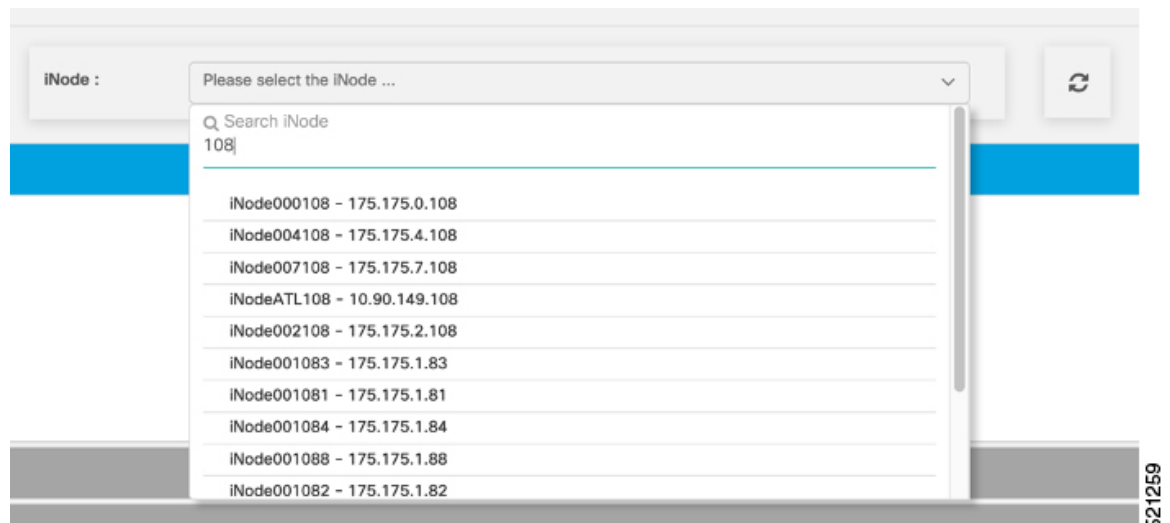
- Displays operational data of the selected iNode, along with the information on its submodule.
- Allows you to configure the general settings of the iNode, and the settings of each of the RF ports of the iNode.
- Allows you to query and view the forward and reverse path spectrum graphs (Amplitude (dBmV) versus frequency (MHz)) of each of the RF ports of the selected iNode.
- Displays active alarms on the iNode.
- Allows you to trigger the initial setup on the iNode, and then reboot the iNode.

iNode Selection Box

You can use the iNode selection box to list the names and IPv4/IPv6 address of the iNode's that are in inventory.

You can search for any substring in the name or the IP address of the iNode using the search bar. The filtered list that is based on the search query would be displayed in the drop-down box, and you can select the iNode from the list. After you select the iNode, the current operational data of the iNode is displayed.

Figure 1: iNode Selection Box



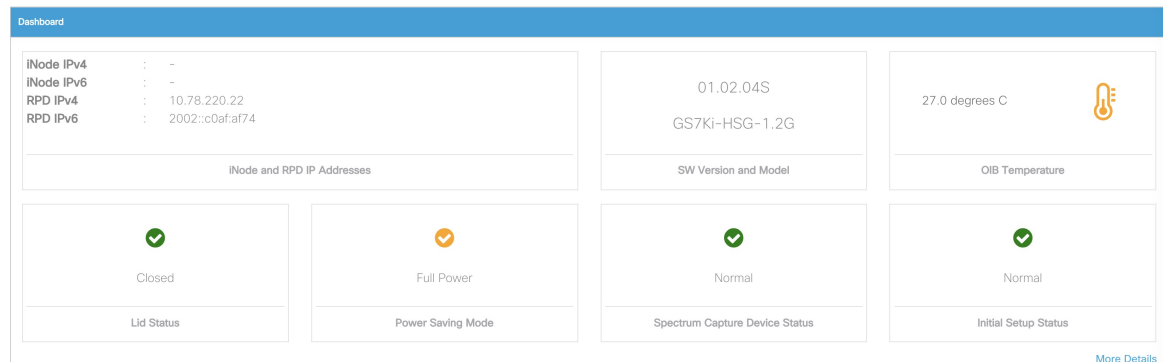
Operational Data of the Selected iNode

The operational data of the iNode is displayed in the form of scorecards. To view the operational data, complete the following steps:

1. On the iNodeManager, click **Node Config**.
2. Select an iNode from the drop-down list.
3. Click **Dashboard**. The following information is displayed by default:
 - iNode and RPD IP addresses
 - Software version and model information
 - OIB temperature
 - Lid status
 - Spectrum capture device status
 - Initial setup status

To view all the operational data, click **More Details**. To view the default scorecards, click **Show Less**.

Figure 2: Dashboard Page with all Operational Data of the iNode



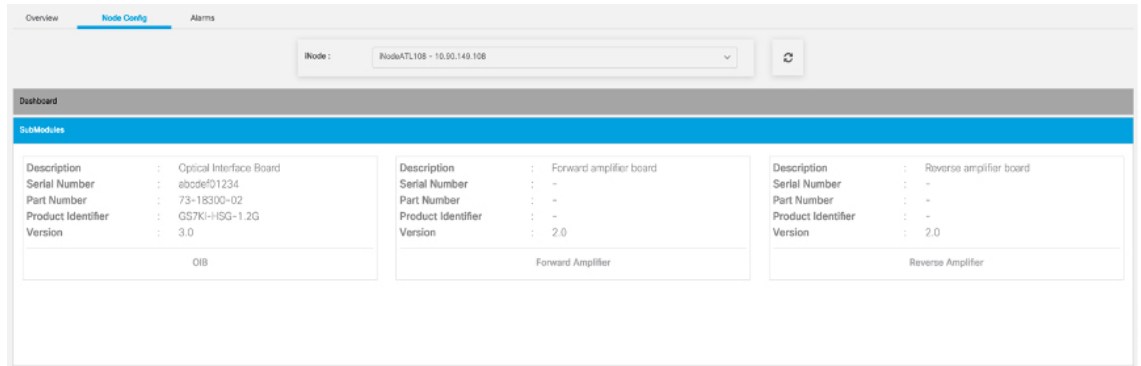
Information About Sub Modules of the iNode

The SubModules pane on the Node Config tab displays the description, serial number, part number, product identifier, and version of the sub-modules of the iNode.

You can view the SubModules pane by completing the following step:

1. On the iNodeManager, click the **Node Config** tab.
2. Select the iNode for which you want to view the settings from the drop-down list.
3. Click **SubModules**. Information on the following sub-modules is displayed:
 - OIB
 - Forward Amplifier
 - Reverse Amplifier

Figure 3: SubModules Pane of the Node Config Tab



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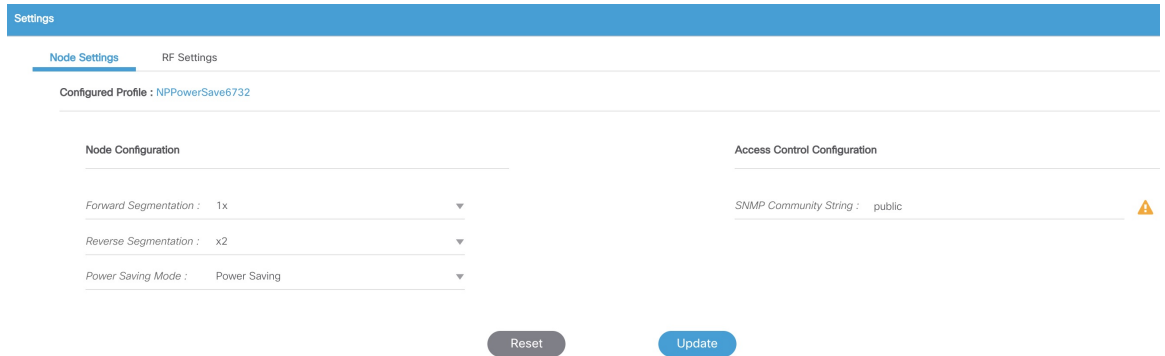
Settings

You can configure the forward segmentation, reverse segmentation, power-saving mode, and the SNMP community string on the Settings pane. You can also view and modify the general settings of the iNode and of each of the RF ports of the iNode using the Settings pane.

To view the Settings pane, complete the following steps:

1. On the iNodeManager, click the **Node Config** tab.
2. Select the iNode for which you want to view the settings from the drop-down list.
3. Click **Settings**.

Figure 4: General Settings Tab



If you have assigned a Node Setting Configuration Profile to the iNode, the profile name and profile information is displayed when you click the profile name.

A warning icon is displayed against settings that are different in the iNode and Node Profile. Values present in the Configuration Profile are displayed when you point to the warning icon.

Figure 5: RF Settings Tab

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You can choose to set the Lower Target Frequency and Amplitude, Upper Target Frequency and Amplitude, Wink Switch, Wink Attenuation (in dB, if the Wink Switch is set as variable), the OIB Reverse Attenuation (in dB), and enable/disable each of the RF Port on the Settings pane. You can also apply the settings that are configured on an RF Port to all the other ports of the iNode by selecting the **Apply Config to all ports** check box.

You can calculate the value of tilt using the following formula:

$$\frac{((\text{UpperTargetAmplitude} - \text{LowerTargetAmplitude}) * ((1215 - 54)) / (\text{UpperTargetFrequency} - \text{LowerTargetFrequency}))}{}$$



Note You can set the RF parameters on the iNode only if the value of tilt is calculated to be 0–22 dBmV.

The target power at maximum frequency is also calculated, and the RF Port Config is allowed to be set on the iNode only if the target power is less than 58 dBmV.

You can calculate the target power at max frequency using the following formula:

$$(\text{UpperTargetAmplitude} + (\text{tilt} * (1215 - \text{UpperTargetFrequency}) / (1215 - 54)))$$

If you have assigned an RF Port Configuration Profile to the iNode, the profile name and profile information are displayed when the profile name is clicked.

A warning icon is displayed against settings that are different in the iNode and RF Port Profile. Values present in the Configuration Profile are displayed when you point to the warning icon.

Spectrum Graph

You can query and view the Forward Path and the Reverse Path Spectrum Graph (amplitude (in dBmV) and frequency (in MHz)) of each of the RF Ports on the Forward and Reverse Path pane.

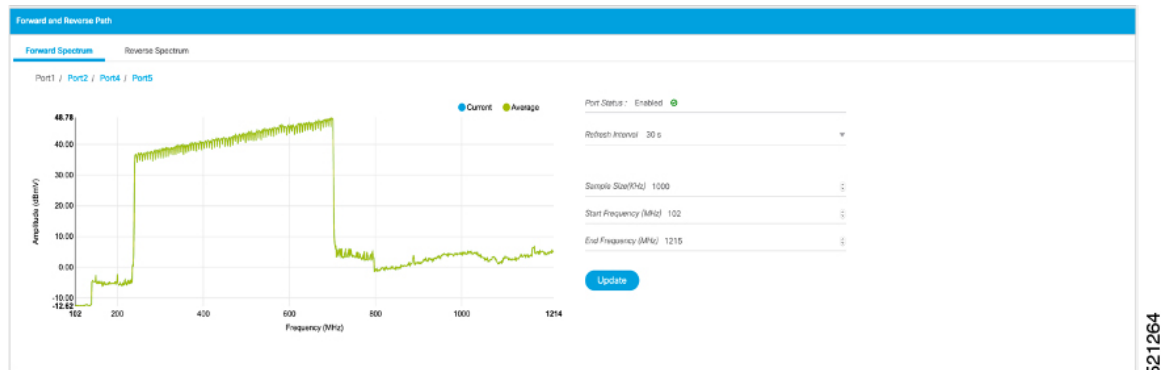
To view the Spectrum Graphs, complete the following steps:

1. On the iNodeManager, click the **Node Config** tab.
2. Select the iNode for which you want to view the settings from the drop-down list.

3. Click **Forward and Reverse Path**.

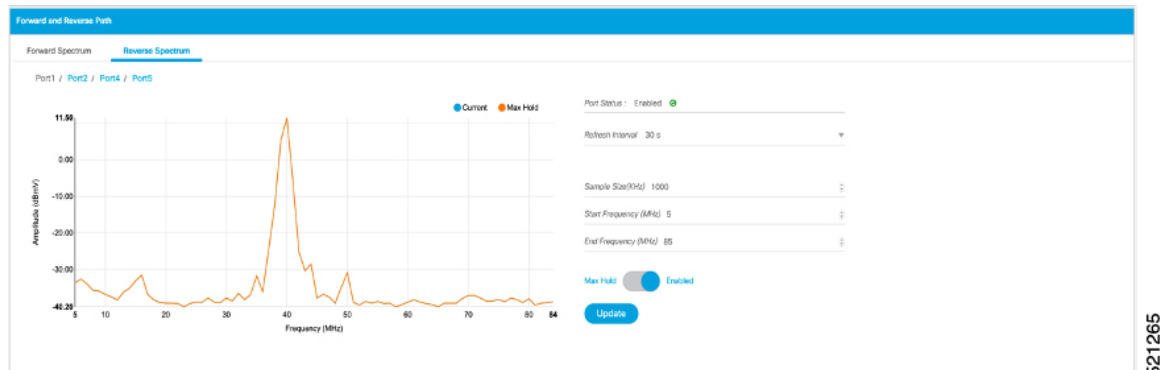
The Forward Path Spectrum Graph displays the full range of frequencies (102–1214 MHz) by default and it refreshes every 30 seconds. You can change the refresh interval, select the sample size (in KHz), the range of frequencies, and refetch the data from the iNode. The current and the average amplitude at the frequency is displayed when you hover on the graph.

Figure 6: Forward Path Spectrum Graph



The Reverse Path Spectrum Graph displays the full range of frequencies (5–85 MHz) by default and it would refresh every 30 seconds. You can choose to change the refresh interval, select the sample size, the range of frequencies and refetch the data from the iNode. The current and the Max Hold amplitude at the frequency is displayed when you hover on the graph.

Figure 7: Reverse Path Spectrum Graph



Alarms

You can view the list of active alarms, and also the history of alarms for selected iNodes by using the Alarms pane.

To view the Alarms, complete the following steps:

1. On the iNodeManager, click the **Node Config** tab.
2. Select the iNode for which you want to view the settings from the drop-down list.
3. Click **Alarms**.

Figure 8: Active Alarms Pane

Time Stamp	Severity	Alarm Message
11/29/2019 2:11:41 AM EST	Major	An error occurred during the auto-setup procedure used to set the input attenuators.
11/28/2019 3:41:03 AM EST	Major	Amplitude at one or more AGC points are out of spec on Port 1.
11/28/2019 3:41:03 AM EST	Major	Amplitude at one or more AGC points are out of spec on Port 2.
11/28/2019 3:41:03 AM EST	Major	Amplitude at one or more AGC points are out of spec on Port 4.
11/28/2019 3:41:03 AM EST	Major	Amplitude at one or more AGC points are out of spec on Port 5.

The Alarm History table lists the timestamp at which the alarms were set and cleared on the iNode. The table lists the active alarms as *SET*.

You can also choose to group the alarms based on the category, and then select each category to view the timestamps.

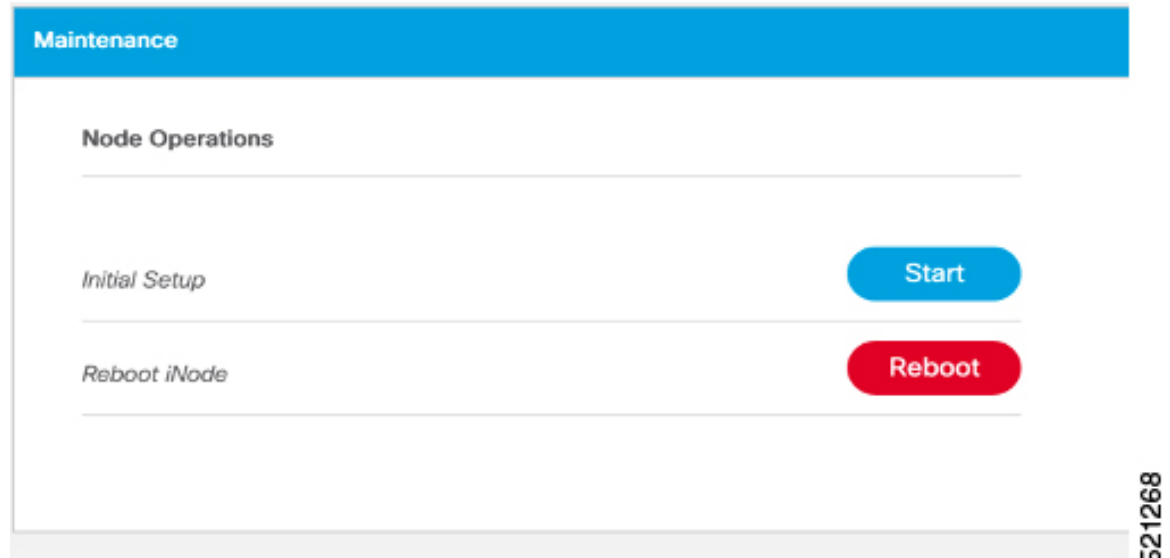
Maintenance

The Maintenance pane allows you to trigger the initial setup operation in the selected iNode, and allows you to reboot the selected iNode.

To view the Maintenance pane, complete the following steps:

1. On the iNodeManager, click the **Node Config** tab.
2. Choose the iNode for which you want to view the settings from the drop-down list.
3. Click **Maintenance**.

Figure 9: Maintenance Pane



Initial Setup

When initial-setup is triggered, the output level of the input source is measured and the attenuators on the OIB are adjusted to optimize the input level into the forward amplifier. After successful completion, the `Initial Setup Status` on the Dashboard turns green (status: Normal)



Note Before you click the **Start** button for the **Initial Setup**, set the port frequencies and levels, enable at least Port 1, and save the configuration on the RF configuration pages.

Perform the Initial Setup in the following scenarios:

- Replacing RPD or iNode
- Changing the RF band, especially when modifying high and low frequencies
- Modifying the power level from CCAP core

Alarms

You can use the Alarms tab to list the total number of active alarms in the iNode's, along with the number of alarms based on their severity in a table. You can select the number of rows to be displayed on page and can filter the alarms that are displayed by specifying a substring using the search. You can also filter the alarms based on severity by clicking the corresponding scorecard.

To view the Alarms, complete the following steps:

1. On the iNodeManager, click the **Alarms** tab.

Figure 10: Alarms Tab

The screenshot displays the Alarms Tab interface. At the top, there are four summary cards: Total Alarms (541), Critical (528), Major (13), and Minor (0). Below these is a table of alarm details with the following columns: Time Stamp, IP Address, Node Name, Severity, and Alarm Message. The table shows several critical alarms for 'iNode is not reachable' and major alarms for 'Amplitude at one or more AGC points are out of spec' on various ports.

Time Stamp	IP Address	Node Name	Severity	Alarm Message
11/28/2019 4:13:07 AM EST	175.175.7.139	iNode007139	Critical	iNode is not reachable
11/28/2019 4:13:08 AM EST	175.175.5.7	iNode005007	Critical	iNode is not reachable
11/28/2019 4:13:08 AM EST	175.175.0.181	iNode000181	Critical	iNode is not reachable
11/28/2019 4:13:09 AM EST	175.175.5.160	iNode005160	Critical	iNode is not reachable
11/28/2019 4:13:09 AM EST	175.175.1.183	iNode001183	Critical	iNode is not reachable
11/28/2019 4:13:09 AM EST	175.175.3.200	iNode003200	Critical	iNode is not reachable
11/21/2019 5:58:10 AM EST	10.78.229.243	iNode24e3	Major	Amplitude at one or more AGC points are out of spec on Port 1.
11/21/2019 5:58:10 AM EST	10.78.229.243	iNode24e3	Major	Amplitude at one or more AGC points are out of spec on Port 2.
11/21/2019 5:58:10 AM EST	10.78.229.243	iNode24e3	Major	Amplitude at one or more AGC points are out of spec on Port 4.
11/21/2019 5:58:10 AM EST	10.78.229.243	iNode24e3	Major	Amplitude at one or more AGC points are out of spec on Port 5.

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System

You can choose to take backup of the database, import a database file into the iNode Manager, and to view the results of the bulk operations using the System tab.

Database Backup and Restore

You can create a backup of the database, and also restore the iNode Manager to an earlier state by importing a database file by using the Database Backup and Restore pane. You can also view the results and status of the backup and restore operations that were performed earlier.

To view the Database Backup and Restore pane, complete the following steps:

1. On the iNodeManager, click the **System** tab.
2. Click **Database Backup and Restore**.

Figure 11: Database Backup and Restore Pane

Database Backup & Restore

Server IP: 10.78.229.249

User Name: inodemgruser

Password: *****

Directory: /home/inodemgruser

Filename (For Import Only *):

Export Import Reset

Database Export/Import Status [↕](#)

Operation	Status	Start Time	End Time	Message
EXPORT	✓	04/14/2020 2:26:50 PM IST (GMT+5:30)	04/14/2020 2:26:51 PM IST (GMT+5:30)	Successfully exported file: 10.78.229.249:/home/inodemgruser//inodemgr..._backup_20200414_142651.tar.g

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Note The Database Import operation is possible only if the iNode Manager does not have any data. Ensure that the iNode Manager does not have any iNode and configuration profiles.

Bulk Operation Status

You can view the status of the bulk operations using the Bulk Operation Status pane.

To view the Bulk Operation Status, complete the following steps:

1. On the iNodeManager, click the **System** tab.
2. Click the **Bulk Operation Status** pane.

Figure 12: Bulk Operation Status

Operation Type	Status	Start Time	End Time	Total iNodes	Failed iNodes	Additional Info
ASSIGN_PROFILE	✓	10/20/2020 9:07:27 AM UTC (GMT0:00)	10/20/2020 9:07:41 AM UTC (GMT0:00)	10	0	Profile Name: nodeSettingsProfile
POST_PROFILE	✗	10/20/2020 6:31:56 AM UTC (GMT0:00)	10/20/2020 6:38:49 AM UTC (GMT0:00)	8501	13	Profile Name: nodeSettingsProfile
POST_PROFILE	✗	10/20/2020 6:16:48 AM UTC (GMT0:00)	10/20/2020 6:23:16 AM UTC (GMT0:00)	8501	6	Profile Name: nodeSettingsProfile
POST_PROFILE	✗	10/20/2020 6:08:49 AM UTC (GMT0:00)	10/20/2020 6:16:06 AM UTC (GMT0:00)	8501	7	Profile Name: nodeSettingsProfile
ASSIGN_PROFILE	✓	10/20/2020 6:02:05 AM UTC (GMT0:00)	10/20/2020 6:06:54 AM UTC (GMT0:00)	8501	0	Profile Name: nodeSettingsProfile
DELETE_INODE	✓	10/19/2020 2:10:24 PM UTC (GMT0:00)	10/19/2020 2:11:06 PM UTC (GMT0:00)	4000	0	-
ASSIGN_PROFILE	✗	10/19/2020 1:21:35 PM UTC (GMT0:00)	10/19/2020 1:33:09 PM UTC (GMT0:00)	12500	15	Profile Name: test
RETRACT_PROFILE	✓	10/19/2020 1:14:02 PM UTC (GMT0:00)	10/19/2020 1:16:46 PM UTC (GMT0:00)	12500	0	-
ASSIGN_PROFILE	✗	10/19/2020 12:55:05 PM UTC (GMT0:00)	10/19/2020 1:06:24 PM UTC (GMT0:00)	12500	16	Profile Name: test
RETRACT_PROFILE	✓	10/19/2020 12:49:48 PM UTC (GMT0:00)	10/19/2020 12:52:25 PM UTC (GMT0:00)	12500	0	-

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For Bulk Configuration Profile operations such as *Post Profile* and *Assign Profile*, the configuration profile name is listed in *Additional Info*. The table displays the status of the last 15 bulk operations carried out. The status of the operation on each iNode can be viewed by clicking the corresponding record on the table.

Figure 13: Bulk Operation Details

MAC Address	St...	Error Type	Error Code	Error Message
02:42:af:af:71:7c	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:87:5d	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:97:79	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:c5:79	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:73:37	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:be:dc	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:84:82	✗	SYSTEM	DEVICE_COMMUNICATION_ERROR	Error while setting the configuration of the ports.
02:42:af:af:6e:02	✓			
02:42:af:af:6e:03	✓			
02:42:af:af:6e:04	✓			

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Click **Retry** to reattempt the bulk operation on the failed iNodes. The corresponding records related to the bulk operation would be updated with the *retry* status.

For bulk operations that might be *In Progress* for a long time, you can choose to click the **Abort** button.

Inventory Dashboard



The Inventory dashboard provides you utilities to add, organize, and update information about the network devices. The Inventory dashboard also allows you to create credential profiles that applies credential settings consistently across devices.




Inventory

You can use the **Inventory** tab to add, organize, and update information about the network devices. This includes non cable devices too, and hence the information to be provided is more exhaustive than in the iNode Manager's view of the inventory.

A new iNode can be added in the inventory table or via the iNode Manager **Dashboard**.

Table 1: Descriptions of the Inventory Table

Name	Description
Status	Shows a graphical pie chart of all devices in the network, which is categorized by status: <ul style="list-style-type: none"> • Online • Offline
Type	Shows a graphical pie chart of the type of devices in the network
Manufacturer	Shows a graphical pie chart of manufacturer of the devices in the network
Status	Current Status of the device
Hostname	Hostname of the device
Key Type	MAC ADDRESS / IP ADDRESS
IP Address	IP Address of the device
MAC Address	MAC Address of the device
UUID	Universally Unique Identifier of the device
Product Type	Product Type of the device
Credential Profile	Credential Profile Name
Latitude	Latitude of the device
Longitude	Longitude of the device
Location	Location of the device
Description	Description of the device
Software Version	Software Version of the device
Model Number	Model Number of the device
	Adds a device to existing inventory.
	Deletes a device from inventory.

Name	Description
	Exports device information to a CSV file.
	Imports devices by using a CSV file.
Details	Displays a dialog box with the history of the connectivity status of the selected device.
	Sets the columns in the device table.
Search	Allows you to search for and filter the network devices.

Credential Profiles

Credential profiles are collections of device credentials for SNMP, and Telnet/SSH to network devices. Using credential profiles allows you to apply credential settings consistently across devices. When you add or import devices, you can specify the credential profile that the devices should use. If you must make credential changes, such as changing a device password, you can edit the profile to update the settings across all devices that use that profile.



Note The Credential Profile is not applicable for iNode's.

To create a Credential Profile, complete the following steps:

1. On the iNodeManager, click **Inventory > Credential Profiles**.
2. Click **Create New**.
3. Provide a profile name, username and other credentials for the profile.

We recommend that you provide the profile with a detailed description, as it will be displayed on the Credential Profiles panel. Note that when a device is added or updated using this profile, the content you specify here is applied to the device.

4. Click **Save**.

Figure 14: Creating a New Credential Profile

The screenshot shows the 'Credential Profiles' section of the Cisco iNode Manager. On the left, there is a list of profiles with a '+ Create New' button. The main area displays the 'New Profile' form with the following fields:

- Profile Name *
- Username *
- Password *
- Enable Password
- Connectivity Type * SSH (dropdown menu)
- Port Number * 22

Buttons for 'Save' and 'Cancel' are located at the bottom of the form. A status indicator 'Selected 0 / Total 1' is visible in the top right corner of the form area.

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Table 2: Descriptions of the Credential Profiles Form

Name	Description
Create New	Allows you to add or edit a credential profile. Note: Mandatory fields are marked with an asterisk.
Profile Name	Name of the profile
Username	Username of the device
Password	Password of the device
Connectivity Type	Choose to use either an SSH or a Telnet connection type
Port Number	Port number of the router

