

# NMIS Node Status

## Introduction

NMIS (Network Management Information System) was developed as an Open Source Network Management System to provide information to IT professionals to support decision making, both operational and longer term. The goal was to provide a dashboard of the all the nodes being managed in a single view so that it is possible to rapidly identify where problems are with "traffic lights". Over the years we have learnt that people see information differently, and while some people see colours and arrows other see data textually, so for some people the details are lost in the colours.

In NMIS 8.5.6G we have returned to this goal and wanted to help people to view the data in different ways. We have done this by providing a new way to see the status of all nodes, this was done by introducing a trinary state, instead of just a node being UP or DOWN, nodes are now reachable, degraded or unreachable.

This page will describe some details on this new feature as well as the concept of the NMIS modes of classes, coarse and fine-grained for viewing status.

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## Classic, Coarse or Fine-Grained

The NMIS dashboard has been working the same way for 15 years, and mostly people like it, that is the "classic" NMIS view, granular colours and information to help see the status of the network. However some people prefer a more coarse view, an Opmantek customer requested less granularity, that is if a node is down any node, don't be granular just make it be red and that way his operators would see it was red and act.

That gives us two dashboard modes, and we have a third optional mode, which is fine-grained. The fine-grained more is about nodes with "Reachable, Degraded and Unreachable" states, so you will see how many nodes are "down" being unreachable and how many nodes are degraded which means they are "up" but have some performance issue.

By default, NMIS8 will be in "classic" mode, you can select which mode you want with the new "Basic Setup" screen, reached from the menu "Setup -> Basic Setup", change the "Node Status Mode". The new Basic Setup screen looks like this:

Basic Setup Fri 17:41

**Welcome to the NMIS Setup interface!**

In this menu you'll find the most essential settings for getting started with NMIS. Entries that likely need to be adjusted are marked with

<b>Server Name</b>	<input type="text" value="demo"/>	This is the primary name of this NMIS server. It's used in lots of places and really must be set.
<b>NMIS Host</b>	<input type="text"/>	This is the FQDN (or IP address) of the NMIS server, and is used in emails and other notifications for creating links back to this system.
<b>Mall Server</b>	<input type="text" value="127.0.0.1"/>	The FQDN (or IP address) of your outgoing mail server. NMIS needs that to send you email notifications.
<b>Mall Server Port</b>	<input type="text" value="25"/>	The port number your mail server listens on for SMTP conversations. Common choices are 25 and 587, but note that 587 commonly requires authentication!
<b>Mall User</b>	<input type="text"/>	This is the mail user name for authenticating at your mail server. Leave this blank if you don't need to authenticate at your mail server.
<b>Mall Password</b>	<input type="password"/>	This is the password for authenticating at your mail server. Leave this blank if you don't need to authenticate at your mail server.
<b>Mall Sender Address</b>	<input type="text" value="nmis@yourdomain.com"/>	This is the From address for email notifications.
<b>Mall Domain</b>	<input type="text" value="yourdomain.com"/>	This is required for some mail servers that enforce strict HELO messages. Using your company domain here is a good idea.
<b>Use TLS Encryption</b>	<input type="button" value="false"/>	If you select true here, then NMIS will try to negotiate STARTTLS encryption with your mail server. Not useful if your mail server is localhost.
<b>Combined Emails</b>	<input type="button" value="false"/>	Do you want to get separate NMIS mails for every event or should NMIS combine multiple messages into one mail?
<b>Node Status Mode</b>	<input type="button" value="fine-grained"/>	NMIS has three methods for classifying a node's status, which are documented in detail <a href="#">on this page</a> . Classic is the default.
<b>Groups</b>	<input type="button" value="Add or Edit Groups"/>	You have configured 21 groups Use the button to the left to edit groups.
<b>Nodes</b>	<input type="button" value="Add Nodes"/>	You have configured 27 nodes Use the button to the left to add nodes.

Don't show this setup window again.

When you change these settings, it may take one polling cycle (5 mins) for the dashboard to fully reflect the new status.

## Manual Configuration of Node Status Mode:

The configuration which relates to these modes are as follows and can be set in Config.nmis

### classic mode

```
'node_status_uses_status_summary' => 'false',
'display_status_summary' => 'false',
'overall_node_status_coarse' => 'false',
```

### coarse mode

```
'node_status_uses_status_summary' => 'false',  
'display_status_summary' => 'false',  
'overall_node_status_coarse' => 'true',
```

## **fine-grained mode**

```
'node_status_uses_status_summary' => 'true',  
'display_status_summary' => 'true',  
'overall_node_status_coarse' => 'false',
```

# Reachable, Degraded and Unreachable

The new optional trinary state provides an additional level of detail, this means:

- Reachable - Node is ping-able and has no detected proactive or alert events
- Degraded - Node is ping-able but SNMP is not responding or one or more proactive or alert events have been detected.
- Unreachable - Node is NOT responding to ICMP or SNMP packets.

So the new state is Degraded, this is there to reflect the KPI's for a node and show you that the node is up and working, but has some other performance condition active.

## The Gory Details of Classic Mode

### Level Status - Normal, Warning, Minor, Major, Critical

The level status is intended to provide some prioritisation to the customer, for example if a Node which has the role Core is down, its status would be Critical, while an access node would be Major. The actual policy is configurable and defined in the NMIS Model file, /usr/local/nmis8/models/Common-event.nmis and for node down looks like this:

```
'node down' => {  
  'core' => {  
    'logging' => 'true',  
    'level' => 'Critical'  
  },  
  'access' => {  
    'logging' => 'true',  
    'level' => 'Major'  
  },  
  'distribution' => {  
    'logging' => 'true',  
    'level' => 'Major'  
  }  
},
```

## How these get calculated? % NodeUp (NodeDn) + role weight (access vs core)?

Overall Node Status for all nodes or for a group is calculated in the subroutine overallNodeStatus in /usr/local/nmis8/lib/NMIS.pm

First the status for each node in the group or in the entire network is calculated and summarised, so we end up with a count of how many nodes are Normal, Minor, Major, Critical, based on the Common-event.nmis policy described above.

Now we add those together weighted as follows:

```
$status_number = 100 * $statusHash{Normal};  
$status_number = $status_number + ( 90 * $statusHash{Warning} );  
$status_number = $status_number + ( 75 * $statusHash{Minor} );  
$status_number = $status_number + ( 60 * $statusHash{Major} );  
$status_number = $status_number + ( 50 * $statusHash{Critical} );  
$status_number = $status_number + ( 40 * $statusHash{Fatal} );  
if ( $status_number != 0 and $statusHash{count} != 0 ) {  
  $status_number = $status_number / $statusHash{count};  
}
```

Then if there is more than one node, we map an overall status to that weighting.

```
if ( $status_number == 100 ) { $overall_status = "Normal"; }
elseif ( $status_number >= 95 ) { $overall_status = "Warning"; }
elseif ( $status_number >= 90 ) { $overall_status = "Minor"; }
elseif ( $status_number >= 70 ) { $overall_status = "Major"; }
elseif ( $status_number >= 50 ) { $overall_status = "Critical"; }
elseif ( $status_number <= 40 ) { $overall_status = "Fatal"; }
elseif ( $status_number >= 30 ) { $overall_status = "Disaster"; }
elseif ( $status_number < 30 ) { $overall_status = "Catastrophic"; }
```