



# NSP

## Network Services Platform

Release 23.8

## Troubleshooting Guide

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3HE-18995-AAAB-TQZZA  
Issue 2  
October 2023

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# About this document

## Purpose

The *NSP Troubleshooting Guide* provides information about using NSP alarms, NSP applications, NFM-P tools and other functions to troubleshoot customer services and the NSP network management domain.

## Scope

The scope of this document is limited to the NSP application and the NFM-P. Many configuration, monitoring, and assurance functions are delivered in NSP web-based applications accessible from the NSP Launchpad. Help for all installed NSP applications is available in the NSP Help Center. The content in this document is divided by relevance to the NSP and NFM-P.

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# Part I: Troubleshooting overview

## Overview

### Purpose

This part provides an overview of NSP troubleshooting.

### Contents

<a href="#">Chapter 1, NSP troubleshooting overview</a>	<a href="#">13</a>
<a href="#">Chapter 2, Obtaining Technical Assistance</a>	<a href="#">25</a>





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# 1 NSP troubleshooting overview

## 1.1 Overview

### 1.1.1 General information

This chapter provides information about the troubleshooting process, guidelines, and tools, along with a process for troubleshooting a problem in the NSP.

The *NSP Troubleshooting Guide* is intended for NOC operators and engineers who are responsible for identifying and resolving NSP performance issues. The guide contains troubleshooting information for the following domains:

- managed network
- NSP applications
- NSP platform
- NFM-P platform

### 1.1.2 Managed network troubleshooting

The NSP has a number of powerful troubleshooting apps and dashboards that help to quickly pinpoint the root cause of network and service management problems to speed resolution.

You can use the NSP alarm and service monitoring functions to help you troubleshoot the network of managed NEs.

#### Alarms for network objects

The NSP raises alarms against network objects in response to received SNMP traps from managed NEs. You can then use the NSP Fault Management application to correlate the events and alarms to the managed object, configured services and policies. A correlated event or alarm can cause fault conditions on multiple network objects and services. For example, an alarm raised for a port failure causes alarms on all services that use the port. You can view the alarm notification from the NSP Fault Management, Service Supervision, and Network Supervision applications.

### 1.1.3 Platform troubleshooting

You can troubleshoot NSP platform issues that include the following:

- slow system response, poor performance, or excessive disk activity
- database failure, corruption, disk capacity, or performance degradation
- server communication problems, slow response, system alarms or statistics of concern, or inability to manage new devices

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## 1.2 The troubleshooting process

### 1.2.1 Identifying network performance issues

The troubleshooting process identifies and resolves performance issues related to a network service or component. The performance issue can result in service degradation, or in a complete network failure.

The first step in problem resolution is to identify the problem. Problem identification can include an alarm received from a network component, an analysis of network capacity and performance data, or a customer problem report.

The personnel responsible for troubleshooting the problem must:

- understand the designed state and behavior of the network, and the services that use the network
- recognize and identify symptoms that impact the intended function and performance of the product

### 1.2.2 Network maintenance

The most effective method to prevent problems is to schedule and perform routine maintenance on your network. Major networking problems often start as minor performance issues. See the *NSP System Administrator Guide* for more information about how to perform routine maintenance on your network.

### 1.2.3 Troubleshooting problem-solving model

An effective troubleshooting problem-solving model includes the following tasks:

1. [“Establish a performance baseline” \(p. 14\)](#) .
2. [“Categorize the problem” \(p. 15\)](#) .
3. [“Identify the root cause of the problem” \(p. 15\)](#) .
4. [“Plan corrective action and resolve the problem” \(p. 16\)](#) .
5. [“Verify the solution to the problem” \(p. 16\)](#) .

See [1.4 “Process to troubleshoot a problem in the NSP” \(p. 19\)](#) for information about how the problem-solving model aligns with using the NSP to troubleshoot a network or network management problem.

#### Establish a performance baseline

You must have a thorough knowledge of your network and how it operates under normal conditions to troubleshoot problems effectively. This knowledge facilitates the identification of fault conditions in your network. You must establish and maintain baseline information for your network and services. The maintenance of the baseline information is critical because a network is not a static environment.

See the *NSP System Administrator Guide* for more information on how to generate NSP system baseline information.

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## Categorize the problem

When you categorize a problem, you must differentiate between total failures and problems that result in a degradation in performance. For example, the failure of an access switch results in a total failure for a customer who has one DS3 link into a network. A core router that operates at over 80% average utilization can start to discard packets, which results in a degradation of performance for services that use the device. Performance degradations exhibit different symptoms from total failures and may not generate alarms or significant network events.

Multiple problems can simultaneously occur and create related or unique symptoms. Detailed information about the symptoms that are associated with the problem helps the NOC or engineering operational staff diagnose and fix the problem. The following information can help you assess the scope of the problem:

- alarm files
- error logs
- network statistics
- network analyzer traces
- output of CLI show commands
- accounting logs
- customer problem reports

Use the following guidelines to help you categorize the problem:

- Is the problem intermittent or static?
- Is there a pattern associated with intermittent problems?
- Is there an alarm or network event that is associated with the problem?
- Is there congestion in the routers or network links?
- Has there been a change in the network since proper function?

## Identify the root cause of the problem

A symptom for a problem can be the result of more than one network issue. You can resolve multiple, related problems by resolving the root cause of the problem.

Use the following guidelines to help you implement a systematic approach to resolve the root cause of the problem:

- Identify common symptoms across different areas of the network.
- Focus on the resolution of a specific problem.
- Divide the problem based on network segments and try to isolate the problem to one of the segments.

Examples of network segments are:

- LAN switching (edge access)
  - LAN routing (distribution, core)
  - metropolitan area
  - WAN (national backbone)
  - partner services (extranet)
  - remote access services
- Determine the network state before the problem appeared.

- 
- Extrapolate from network alarms and network events the cause of the symptoms. Try to reproduce the problem.

### **Plan corrective action and resolve the problem**

The corrective action required to resolve a problem depends on the problem type. The problem severity and associated QoS commitments affect the approach to resolving the problem. You must balance the risk of creating further service interruptions against restoring service in the shortest possible time.

Corrective action should:

1. Document each step of the corrective action.
2. Test the corrective action.
3. Use the CLI to verify behavior changes in each step.
4. Apply the corrective action to the live network.
5. Test to verify that the corrective action resolved the problem.

### **Verify the solution to the problem**

You must make sure that the corrective action associated with the resolution of the problem did not introduce new symptoms in your network. If new symptoms are detected, or if the problem has only recently been mitigated, you need to repeat the troubleshooting process.

## **1.2.4 Checklist for identifying problems**

When a problem is identified in the network management domain, track and store data to use for troubleshooting purposes:

- Determine the type of problem.

Review the sequence of events before the problem occurred:

- Trace the actions that were performed to see where the problem occurred.
  - Identify what changed before the problem occurred.
  - Determine whether the problem happened before under similar conditions.
- Check the documentation or your procedural information to verify that the steps you performed followed documented standards and procedures.
  - Check the alarm log for any generated alarms that are related to the problem.
  - Record any system-generated messages, such as error dialog boxes, for future troubleshooting.
  - If you receive an error message, perform the actions recommended in the error dialog box, client GUI dialog box, SOAP exception response, or event notification.

During troubleshooting:

- Keep both the Nokia documentation and your company policies and procedures nearby.
- Check the appropriate release notice from the Nokia Support Documentation Service for any release-specific problems, restrictions, or usage recommendations that relate to your problem.

- If you need help, confirmation, or advice, contact your TAC or technical support representative. See [Table 1-1, “General NSP problem types” \(p. 20\)](#) to collect the appropriate information before you call support.
- Contact your TAC or technical support representative if your company guidelines conflict with Nokia documentation recommendations or procedures.
- Perform troubleshooting based on your network requirements.

## 1.3 NSP and NFM-P troubleshooting tools

### 1.3.1 NSP troubleshooting tools

NSP provides various apps and dashboard that can help your troubleshoot network, provide various alarm details, and see the network health.

#### Network Health dashboard

The Network Health dashboard provides a quick view of essential information relating to the proper function of your network. It presents an abbreviated view of equipment and service alarms, root cause alarms, graphical plots of service-affecting network object counts, and network object status. See [3.2.7 “Use the Network Health Dashboard to retrieve data about the health of a service and its components” \(p. 41\)](#) for information about collecting network data.

#### Troubleshooting dashboard

The Troubleshooting dashboard provides the user with a centralized view of network equipment and service performance. The dashboard allows a network operator to view summarized performance information, and to drill down into specific objects and view performance details, opening objects in NSP applications where necessary. See the *NSP User Guide* for more information.

#### Assurance Apps

There are assurance and analyze apps used by NSP: Fault Management, Analytics, Network Supervision, and Service Supervision.

#### Fault Management

The Fault Management app provides alarm monitoring, correlation, and troubleshooting for the most unhealthy network elements (NE) in the network. You can diagnose problems using various Fault Management tools. See the *NSP Fault Management App Help* for more information.

#### Analytics

The Analytics app uses business intelligence (BI) software to generate graphical and tabular reports, based on the aggregate statistical data that is extracted from the big data cluster. There are two category of the reports available to you: Network and service, and Application assurance. See the *NSP Analytics Report Catalog* for more information.

#### Network Supervision

The Network Supervision app provides a dashboard that helps you monitor the health of core, access, transport, and optical NEs and virtual NFs using pre-defined KPIs and alarms. See the *NSP Network Supervision App Help* for more information.

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## Service Supervision

See the *NSP Service Supervision App help* for more information.

### 1.3.2 NFM-P troubleshooting tools

The NFM-P supports a number of troubleshooting tools and event logs to help identify the root cause of a network or network management problem.

#### OAM diagnostics

The NFM-P supports configurable in-band and out-of-band, packet-based OAM diagnostic tools for network troubleshooting and for verifying compliance with SLAs. See [10.1.1 “STM OAM diagnostics for troubleshooting” \(p. 241\)](#) for more information.

#### Ethernet CFM diagnostics

Ethernet CFM diagnostic tests detect connectivity failures between pairs of local and remote maintenance end points, or MEPs, in a MEG. Each MEP is a reference point that can initiate or terminate one of the following diagnostic tests:

- CFM continuity check
- CFM loopback
- CFM link trace
- CFM Eth test
- CFM two-way delay
- CFM one-way delay
- CFM single-ended loss (7705 SAR only)
- CFM two-way SLM

See the *NSP NFM-P User Guide* for more information about Ethernet CFM diagnostic.

#### RCA audit tool

The NFM-P RCA audit tool allows you to perform on-demand or scheduled verifications of the configuration of services and physical links to identify possible configuration problems. Except for physical links, the NFM-P provides a solution, which, at your request, can automatically be implemented to make all the required configuration changes.

You can perform RCA audits of the following objects:

- VLL services
- VPLSs
- VPRN services
- physical links
- OSPF interfaces, areas, and area sites (NFM-P/CPAM integration only)
- IS-IS interfaces and sites (NFM-P/CPAM integration only)

See the *NSP NFM-P User Guide* for more information about the RCA audit tool.

#### NFM-P log files

You can use NFM-P log files to help troubleshoot your network. The log files can consume a large amount of disk space during a long period of significant activity. Ensure that the contents of the

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various log directories are backed up on a regular basis. See the *NSP System Administrator Guide* for more information about how to perform routine NFM-P system maintenance.



**Note:** The event log files may be overwritten or removed when you restart an NFM-P server.

### NFM-P LogViewer

The NFM-P LogViewer is a system monitoring and troubleshooting utility that parses, formats, and displays the contents of NFM-P log files.

You can use LogViewer to perform the following:

- View and filter real-time log updates.
- View, filter, and sort the entries in a static log view.
- Open compressed or uncompressed log files.
- Compare active logs in real time.
- Automatically send a notification when a specified type of entry is logged.

See [Chapter 17, “Troubleshooting using the LogViewer”](#) for more information.

### User activity log

The NFM-P records each NFM-P GUI and OSS user action. The NFM-P User Activity form allows an operator with the appropriate privilege level to list and view the NFM-P GUI and OSS client user activity, and to navigate directly to the object of a user action. You can also open a pre-filtered list of the recent activity for an object from the object properties form.

See the *NSP NFM-P User Guide* for detailed information about the user activity log. See [Chapter 15, “Troubleshooting using the NFM-P user activity log”](#) for more information.

## 1.4 Process to troubleshoot a problem in the NSP

### 1.4.1 Purpose

Perform the following high-level sequence of actions with respect to the problem-solving model described in [1.2 “The troubleshooting process” \(p. 14\)](#).

### 1.4.2 Stages

1

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Establish an operational baseline for your network. See the *NSP System Administrator Guide* for more information.

2

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When a problem occurs, identify the type of problem. The table below lists some general NSP problem types.

Table 1-1 General NSP problem types

Type	Example problems
Managed network	<ul style="list-style-type: none"> <li>alarms raised against network objects</li> <li>service degradation with no associated alarms</li> <li>problem indications on topology maps</li> </ul>
Service and network health	<ul style="list-style-type: none"> <li>network health issues</li> <li>error or warning messages related to configuration</li> <li>problem encountered during diagnose</li> </ul>
NSP platform	<ul style="list-style-type: none"> <li>pod failure</li> <li>errored cluster member</li> <li>disk capacity or performance issues</li> <li>MDM server issues</li> </ul>

### 3

Identify the root cause of the problem using NSP or NFM-P procedures in the document

- Use [Table 1-2, “NSP Apps and dashboards problems or tasks” \(p. 20\)](#) to identify the appropriate NSP application troubleshooting procedure for the problem.
- Use [Table 1-3, “NSP platform problems or tasks” \(p. 21\)](#) to identify the appropriate NSP platform troubleshooting procedure for the problem.
- Use [Table 1-4, “NFM-P managed NE network problems or tasks” \(p. 21\)](#) to identify the appropriate NFM-P managed NE network troubleshooting procedure for the problem.
- Use [Table 1-5, “NFM-P network management domain problems or tasks” \(p. 22\)](#) to identify the appropriate NFM-P network management domain troubleshooting procedure for the problem.
- Use [Table 1-6, “NFM-P platform problems or tasks” \(p. 23\)](#) to identify the appropriate NFM-P platform troubleshooting procedure for the problem.

Table 1-2 NSP Apps and dashboards problems or tasks

Problem or task
<b>Troubleshooting using NSP applications</b>
<a href="#">3.1 “Troubleshooting services and connectivity” (p. 31)</a>
<a href="#">3.2 “Onboarding a service into Assurance applications” (p. 32)</a>
<b>Troubleshooting using Service Supervision</b>
<a href="#">4.1 “Using routine service maintenance with Service Supervision” (p. 173)</a>
<b>Troubleshooting using Network Supervision</b>
<a href="#">5.1 “Using the Matrix view to identify and troubleshoot equipment problems” (p. 181)</a>



Table 1-2 NSP Apps and dashboards problems or tasks (continued)

Problem or task
<a href="#">5.2 "Using the routine NE maintenance with Network Supervision" (p. 187)</a>
<b>Troubleshooting using Analytics</b>
<a href="#">6.2 "Troubleshooting data collection" (p. 193)</a>
<a href="#">6.3 "Troubleshooting data storage" (p. 196)</a>
<a href="#">6.4 "Troubleshooting report generation" (p. 197)</a>

Table 1-3 NSP platform problems or tasks

Problem or task
<b>Troubleshooting NFM-P platform problems</b>
<a href="#">8.1.2 "Pod troubleshooting" (p. 209)</a>
<a href="#">8.1.3 "NSP cluster member troubleshooting" (p. 210)</a>
<a href="#">8.1.4 "MDM server troubleshooting" (p. 211)</a>
<a href="#">8.1.5 "Disk performance tests" (p. 213)</a>

Table 1-4 NFM-P managed NE network problems or tasks

Problem or tasks
<b>Troubleshooting with alarms</b>
<a href="#">9.3 "To view and sort alarms in the alarm list" (p. 223)</a>
<a href="#">9.4 "To view object alarms and aggregated object alarms" (p. 224)</a>
<a href="#">9.5 "To categorize alarms by object hierarchy" (p. 225)</a>
<a href="#">9.6 "To acknowledge alarms" (p. 228)</a>
<a href="#">9.7 "To determine probable cause and root cause using alarm and affected object information" (p. 229)</a>
<a href="#">9.8 "To determine root cause using related objects" (p. 230)</a>
<a href="#">9.10 "To troubleshoot a service equipment problem" (p. 231)</a>
<a href="#">9.11 "To clear alarms related to an equipment problem" (p. 233)</a>
<a href="#">9.12 "To troubleshoot an underlying port state problem" (p. 233)</a>
<a href="#">9.13 "To clear alarms related to an underlying port state problem" (p. 236)</a>
<a href="#">9.14 "To troubleshoot a service configuration problem" (p. 236)</a>
<a href="#">9.15 "To clear a Frame Size Problem (MTU Mismatch) alarm" (p. 238)</a>
<b>Troubleshooting services and connectivity</b>
<a href="#">10.3 "To identify whether a VPLS is part of an H-VPLS" (p. 244)</a>
<a href="#">10.4 "To verify the operational and administrative states of service components" (p. 245)</a>

Table 1-4 NFM-P managed NE network problems or tasks (continued)

Problem or tasks
10.5 "To verify the FIB configuration" (p. 246)
10.6 "To verify connectivity for all egress points in a service using MAC Ping and MAC Trace" (p. 247)
10.7 "To verify connectivity for all egress points in a service using MEF MAC Ping" (p. 249)
10.8 "To measure frame transmission size on a service using MTU Ping" (p. 250)
10.9 "To verify the end-to-end connectivity of a service using Service Site Ping" (p. 252)
10.10 "To verify the end-to-end connectivity of a service tunnel using Tunnel Ping" (p. 254)
10.11 "To verify end-to-end connectivity of an MPLS LSP using LSP Ping" (p. 256)
10.12 "To review the route for an MPLS LSP using LSP Trace" (p. 257)
10.13 "To review ACL filter properties" (p. 259)
10.14 "To view anti-spoof filters" (p. 259)
10.15 "To retrieve MIB information from a GNE using the snmpDump utility" (p. 260)

Table 1-5 NFM-P network management domain problems or tasks

Problem or task
<b>Troubleshooting network management LAN issues</b>
12.1 "Problem: All network management domain stations experience performance degradation" (p. 267)
12.2 "Problem: Lost connectivity to one or more network management domain stations" (p. 267)
12.3 "Problem: Another station can be pinged, but some functions are unavailable" (p. 268)
12.4 "Problem: Packet size and fragmentation issues" (p. 269)
<b>Troubleshooting using NFM-P client GUI warning messages</b>
13.2 "To respond to a GUI warning message" (p. 274)
<b>Troubleshooting with Problem Encountered forms</b>
14.2 "To view additional problem information" (p. 277)
14.3 "To collect problem information for technical support" (p. 278)
<b>Troubleshooting with the client activity log</b>
15.2 "To identify the user activity for a network object" (p. 279)
15.3 "To identify the user activity for an NFM-P object" (p. 280)
15.4 "To navigate to the object of a user action" (p. 281)
15.5 "To view the user activity records of an object" (p. 282)

Table 1-6 NFM-P platform problems or tasks

Problem or task
<b>Troubleshooting NFM-P platform problems</b>
3.2.7 "Use the Network Health Dashboard to retrieve data about the health of a service and its components" (p. 41)
16.2 "Problem: Poor performance on a RHEL station" (p. 289)
16.3 "Problem: Device discovery fails because of exceeded ARP cache" (p. 292)
<b>Troubleshooting with the NFM-P LogViewer</b>
17.4 "To display logs using the LogViewer GUI" (p. 297)
17.5 "To configure the LogViewer using the GUI" (p. 302)
17.7 "To show or hide buttons from the LogViewer main tool bar" (p. 306)
17.8 "To set highlight colors and fonts for LogViewer components and levels" (p. 307)
17.9 "To automatically show or hide log messages" (p. 308)
17.10 "To manage filters using the GUI Filter Manager" (p. 309)
17.11 "To specify a plug-in using the LogViewer GUI" (p. 311)
17.12 "To display logs using the LogViewer CLI" (p. 312)
17.13 "To configure the LogViewer CLI" (p. 317)
17.14 "To specify plug-ins using the CLI" (p. 318)
<b>Troubleshooting the NFM-P database</b>
18.2 "Problem: NFM-P database corruption or failure" (p. 321)
18.3 "Problem: The database is running out of disk space" (p. 322)
18.4 "Problem: Frequent database backups create performance issues" (p. 323)
18.5 "Problem: An NFM-P database restore fails and generates a No backup sets error" (p. 324)
18.6 "Problem: NFM-P database redundancy failure" (p. 324)
18.7 "Problem: Primary or standby NFM-P database is down" (p. 325)
18.8 "Problem: Need to verify that Oracle database and listener services are started" (p. 325)
18.9 "Problem: Need to determine status or version of NFM-P database or Oracle proxy" (p. 326)
<b>Troubleshooting NFM-P server issues</b>
19.2 "Problem: Cannot start an NFM-P server, or unsure of NFM-P server status" (p. 329)
19.3 "Problem: NFM-P server and database not communicating" (p. 333)
19.4 "Problem: An NFM-P server starts up, and then quickly shuts down" (p. 334)
19.5 "Problem: Client not receiving server heartbeat messages" (p. 334)
19.6 "Problem: Main server unreachable from RHEL client station" (p. 335)
19.7 "Problem: Excessive NFM-P server-to-client response time" (p. 336)

Table 1-6 NFM-P platform problems or tasks (continued)

Problem or task
19.8 "Problem: Unable to receive alarms on the NFM-P, or alarm performance is degraded" (p. 337)
19.9 "Problem: All SNMP traps from managed devices are arriving at one NFM-P server, or no SNMP traps are arriving" (p. 338)
19.10 "Cannot manage new devices" (p. 339)
19.11 "Problem: Cannot discover more than one device, or device resynchronization fails" (p. 340)
19.12 "Problem: Slow or failed resynchronization with network devices" (p. 341)
19.13 "Problem: Statistics are rolling over too quickly" (p. 342)
<b>Troubleshooting NFM-P GUI and OSS clients</b>
20.1 "Problem: Cannot start NFM-P client, or error message during client startup" (p. 343)
20.2 "Problem: NFM-P client unable to communicate with NFM-P server" (p. 344)
20.3 "Problem: Delayed server response to client activity" (p. 345)
20.4 "Problem: Cannot place newly discovered device in managed state" (p. 346)
20.5 "Problem: User performs action, such as saving a configuration, but cannot see any results" (p. 347)
20.6 "Problem: Device configuration backup not occurring" (p. 349)
20.7 "Problem: NFM-P client GUI shuts down regularly" (p. 350)
20.8 "Problem: Configuration change not displayed on NFM-P client GUI" (p. 351)
20.9 "Problem: List or search function takes too long to complete" (p. 351)
20.10 "Problem: Cannot select some menu options or save some configurations" (p. 352)
20.11 "Problem: The NFM-P client GUI does not display NE user accounts created, modified, or deleted using the CLI" (p. 352)

4 \_\_\_\_\_  
Plan corrective action using information in the *NSP User Guide* and *NSP System Administrator Guide*.

5 \_\_\_\_\_  
Verify the solution.

## 2 Obtaining Technical Assistance

### 2.1 Before you call support

#### 2.1.1 Gathering information

Collect the following information before you contact [technical support](#).

Table 2-1 Required technical-support Information

Information type	Description
Issue description	<ul style="list-style-type: none"><li>• recent GUI or XML API operations</li><li>• screen captures or text versions of error or information messages</li><li>• actions performed in response to the issue</li></ul>
Platform specifications	<ul style="list-style-type: none"><li>• NSP software Release and patch level</li><li>• NFM-P software release ID</li><li>• OS type, release, and patch level</li><li>• hardware information such as:<ul style="list-style-type: none"><li>- CPU type</li><li>- number of CPUs</li><li>- disk sizes, partition layouts, and RAID configuration</li><li>- amount of RAM</li></ul></li></ul>
System logs	You can use the following apps to collect the log files required by technical support: Analytics, Service Supervision, and Network Supervision.

### 2.2 NFM-P

#### 2.2.1 To collect NFM-P system logs

You can run the following scripts to collect the log files required by technical support:

- on a main server station:  
`/opt/nsp/nfmp/server/nms/bin/getDebugFiles.bash`
- on an auxiliary server station:  
`/opt/nsp/nfmp/auxserver/nms/bin/getDebugFiles.bash`
- on a main database station:  
`/opt/nsp/nfmp/db/install/getDebugFiles.bash`
- on an auxiliary database station:  
`/opt/nsp/nfmp/auxdb/install/bin/getDebugFiles.bash`

---

## 2.3 NSP

### 2.3.1 To collect NSP system logs

You can run the following script to collect the log files required by technical support:

- on the deployer  
`/opt/nsp/NSP-CN-DEP-releaseID/NSP-CN-releaseID/tools/support/systemDebugInfo/bin/get-debug-info.bash`  
where *releaseID* is the NSP load name in the format N.n.n-rel.n, for example, 23.4.0-rel.2994

### 2.3.2 To collect NSP analytics-server log files

Use this procedure to collect the relevant log files for troubleshooting an NSP analytics server if requested by technical support.

See the *NSP System Administrator Guide* for the procedure to enable and manage analytics server logging.

1. Log in as the root user on the NSP analytics server station.
2. Open a console window.
3. Enter the following:

```
# cd /opt/nsp/analytics/bin ↵
```

4. Enter the following:

Note: You cannot specify /tmp, or any directory below /tmp, as the output directory.

```
# ./getDebugFilesAnalytics.bash output_dir days ↵
```

where

*output\_dir* is a local directory that is to contain the output files

*days* is the optional number of days for which to collect log files; if not specified, all logs are collected

Messages like the following are displayed as the logs are collected:

```
Please wait, capturing workstation information files. This may take a few minutes...
```

```
Done capturing workstation information files.
```

```
Please wait, capturing analytics server debug files. This may take several minutes...
```

```
Done capturing analytics server debug files.
```

```
Please wait, capturing nsp os log files. This may take several minutes...
```

```
Done capturing nsp os log files.
```

```
-----
```

```
Please ftp the output_dir/filespec.tar files to the Nokia ftp server
```

```
ftp to IP_address, login as anonymous
```

```
Put the files in /pub/<ER_NAME>/incoming
```

---

Contact your Nokia support representative for assistance

-----

5. Transfer the files as directed in the script output
6. Close the console window.





---

## Part II: Troubleshooting using NSP applications

### Overview

#### Purpose

This part provides information about troubleshooting using various NSP applications and dashboards.

#### Contents

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---

## 3 Troubleshooting scenarios using multiple NSP applications

### 3.1 Troubleshooting services and connectivity

#### 3.1.1 Before you begin

This process provides a series of tasks you can perform to identify the root cause of a problem.

See the *NSP System Administrator Guide* for information about other NSP troubleshooting actions such as displaying the system status or checking system performance.

#### 3.1.2 Steps

##### Service Supervision application

1

Verify whether the administrative and operational states of each component of the service are Up:

- Sites
- Endpoints
- Tunnel Bindings

See the procedure to investigate a service in the Service Supervision help.

2

Check the Alarm List for alarms against the services in your network.

3

Check the Event Timeline to view the history of events related to alarms, configuration, OAM test failures and state change notifications.

##### Fault management application

4

Verify that there are no alarms associated with any component of the service:

- The Alarm List view provides high-level visibility of all alarms in the network.
- Choose the Current Alarms format to see the alarm information in a list you can filter.  
Select an alarm to view detailed information in an information panel.

---

5

From the Alarm List, check the Historical Alarms and Merged Alarms lists for further information about root causes of any current alarms.

### Original Service Fulfillment application and/or NFM-P

---

6

Verify that the NFM-P service configuration aligns with the customer requirements. For example, ensure that NFM-P configuration uses the correct service type and SAP configuration, and that the circuit and site are included in the service.

---

7

Contact your technical support representative if the problem persists.

---

END OF STEPS

## 3.2 Onboarding a service into Assurance applications

### 3.2.1 Purpose

This process shows you how to use the NSP to create a service and to monitor service health, service components' health, and service performance.

See the online help for the applications for detailed procedures.

### 3.2.2 Create a service using Service Fulfillment



**Note:** This process assumes that intent types for service creation have already been imported into Intent Manager, Service Supervision groups have been created, and rules have been added so that a new service created by Service Fulfillment is automatically added to a Service Supervision group, for example, based on the name of the service.

---

1


In the Service Fulfillment application, create an Epipe service template, and use the template to create an Epipe service.

See the service creation procedure in the Service Fulfillment Application Help.

---

2

Validate that the service is up and running:

Select the service. From the more  menu, choose **Open in Service Supervision**.

SERVICES							
INVENTORY							
TEMPLATES							
Services							
Service Name	Life Cycle State	Alignment State	Operational State	Description	Customer ID	Service Template	Admin State
K_MDM_Epipe_1:1821-fbd078...	Deployed	Aligned	Enabled		1	K_epipe_Template	Unlocked
K_MDM_Grpc	Deployed	Aligned	Enabled		1	K_epipe_Template	Unlocked
K_MDM_Grpc_2	Deployed	Aligned	Enabled		1	K_epipe_Template	
EPIPE 1	Unknown	Unknown	Enabled	Default Eline Template	1		
EPIPE 15	Unknown	Unknown	Enabled	N/A	1		
EPIPE 17	Unknown	Unknown	Enabled	N/A	1		
EPIPE 22	Unknown	Unknown	Disabled	N/A	1		
mdm_vpls_lbsf_service	Deployed	Aligned			1	vpls_template1	
K_MDM_VPLS_1	Pull-From-Network-Failed	Misaligned			1	vpls_template1	

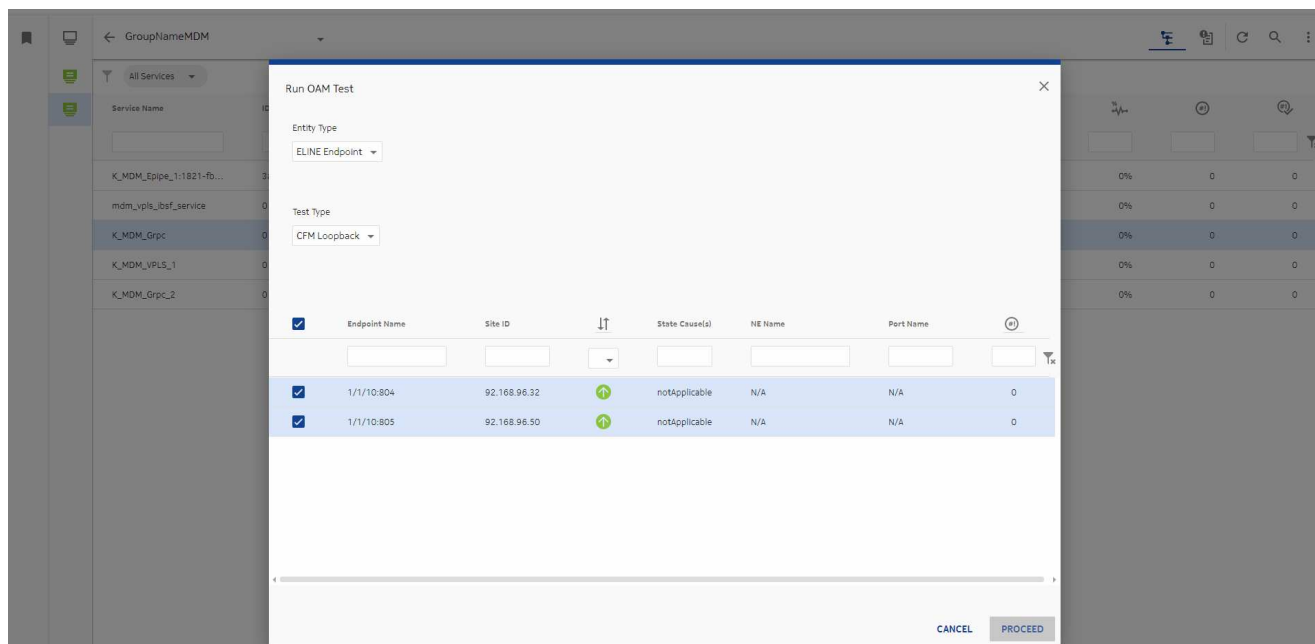
Service Supervision opens, with the service highlighted.

GroupNameMDM											
All Services											
Service Name	Availability States	State Cause(s)									Service Type
K_MDM_Epipe_1:1821-fb...	N/A	N/A	✓	✓	✓	-	0	0%	0	0	E-Line
mdm_vpls_lbsf_service	N/A	N/A	✓	✓	✓	-	0	0%	0	0	E-LAN
K_MDM_Grpc	N/A	N/A	✓	✓	✓	-	0	0%	0	0	E-Line
K_MDM_VPLS_1	N/A	N/A	✓	✓	✓	-	0	0%	0	0	E-LAN
K_MDM_Grpc_2	N/A	N/A	✓	✓	✓	-	0	0%	0	0	E-Line

### 3.2.3 Initiate OAM tests from the service in Service Supervision

Run an end to end OAM test from the service endpoints to verify that the new service was provisioned and activated properly. An OAM test verifies that traffic flows end to end.

- From the services list in Service Supervision, choose **More** ⋮, **Execute OAM Test**.
- In the form that opens, choose the test type, choose both service endpoints, and click **PROCEED**.



Insights Administrator opens, showing the **Generate OAM Tests** form.

3

Verify the test details and click **GENERATE & EXECUTE**.

**Tip:** Note the generated test suite name at the top of the **View Test Suite Details** form.

4

When test generation is completed, view the results in Insights Administrator.

wxsVUxO95FeqXTypn1eXqw View Test Suite Details							
Refresh Results							
Execution ID	Result status	Start time	Finish time	Success rate	Result classifier	Tests executed	Failed executions
20	Finished	2021-11-03 14:02:25 -04:00	2021-11-03 14:02:26 -04:00	100.00%	default	2	0

View Test Suite Details

AGGREGATED RESULTS INDIVIDUAL RESULTS GENERATION LOG TESTS

Test suite execution ID: 20 [SET EXECUTION ID](#)

Last 7 days telemetry/base/oam-result/loopback-result Test suite execution ID: 20 [Refresh Results](#)

Execution ID	System ID	Result classification	Result status	Time captured	Probes sent	Probes received	Probes lost
50	92.168.96.50	Success	success	2021-11-03 14:02:34 -04:00	5	5	0
49	92.168.96.32	Success	success	2021-11-03 14:02:34 -04:00	5	5	0

### 3.2.4 Use the Network Health Dashboard to view telemetry data in real time

From the Network Health Dashboard, you can launch the Insights Viewer utility to view raw utilization data and verify that traffic is moving between service endpoints. Launching Insights Viewer creates a temporary telemetry subscription in Insights Administrator, which is deleted when Insights Viewer is closed.

1

Identify the service endpoints:

1. Open the Network Health Dashboard and navigate to **Service Endpoints**.
2. Filter the list to display the service endpoints. Note the port information for the endpoints.

Service Endpoints

Content updated on 2021/11/3 14:50:53 (Click to update)

Filter by service name to find the ports that serve as SAPs for the service

Name	Operational State	Site ID	Service	Port Name	LAG Name	NE Name	Description	Status Cancelled
1/1/10.804	enabled	92.168.9...	K_MDM_Grpc			ortkan600...		
1/1/10.805	enabled	92.168.9...	K_MDM_Grpc			mtKiriLd440		

2

On the Network Health Dashboard, navigate to **Ports**.

3

Select one of the endpoints in the service from the port list and choose **(More)**, **Plot Utilization Statistics**.

Insights Viewer opens, showing the chart of the pre-configured utilization counters.



In the event that traffic is not flowing, you can look at the error statistics by choosing **Plot Error Statistics** from the Ports list.

#### 4

The creation of the chart in Insights Viewer creates a temporary subscription for the utilization counters in Insights Administrator.

The subscription is automatically deleted when you close the chart in Insights Viewer.

**Tip:** The description of the temporary subscription is **Created by telemetry data subscription**.

#### 5

While the chart is open in Insights Viewer, you can:

a. Review the details of the pre-configured subscription by clicking Configure.

**Tip:** From the **Edit Subscription** form, copy the **Object Filter** string. You can use this string to create a permanent subscription.

b. Edit the chart configuration in Insights Viewer.



New Chart

Configuration

×

Collection Interval (seconds)\*  
10

Time Range  
Last 1 hour

☒ Combine charts

Telemetry & Resource Filter Definitions

+ DEFINITION

Telemetry Type  
telemetry/base/interfaces/utilization

×

Counters

input-utilization × output-utilization × received-octets × transmitted-octets ×

▼

🗑

Object Filter ⓘ

1 /nsp-equipment:network/network-element[ne-id="92.168.96.32"]/hardware-component/port[component-id='shelf=1/cardSlot=1/card=1/mda=1/port=1/1/10']

SAVE AS...

CANCEL

PLOT

c. Save the chart to make the chart available from Insights Viewer in the future.

### 3.2.5 Create telemetry subscriptions for the service endpoints in Insights Administrator

Creating a telemetry subscription is an optional step, used for monitoring performance over time. A telemetry subscription allows you to configure statistics collection, for example, utilization statistics for a service, and to run the collection at any time, for example, for use in SLA management. Statistics can also be used to generate Analytics reports. See the Insights Administrator Application Help for the detailed procedure to create a subscription, and for information about aggregation and retention for use in reporting.

1

Perform the subscription creation procedure in the Insights Administrator Application Help to create subscriptions for the service SAPs.

Use the object filter string you copied from the temporary subscription in [Stage 5](#).

Create Subscription

General

Filters & Counters

These parameters control when and how often statistics are collected

Utilization for service endpoint

Collection Interval (seconds): 900 Sync-Time (hh:mm): 00:00

Description

State: Enabled DB Subscriptions: Disabled

Filters & Counters

Object Filter

1 /nsp-equipment:network/network-element[ne-id='92.168.96.32']/hardware-component/port[component-id='uhelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/port=1/1/10']

Telemetry Type

telemetry:/base/interfaces/utilization

☒ Enable notifications and notification counters + COUNTERS

Counter

input-utilization

output-utilization

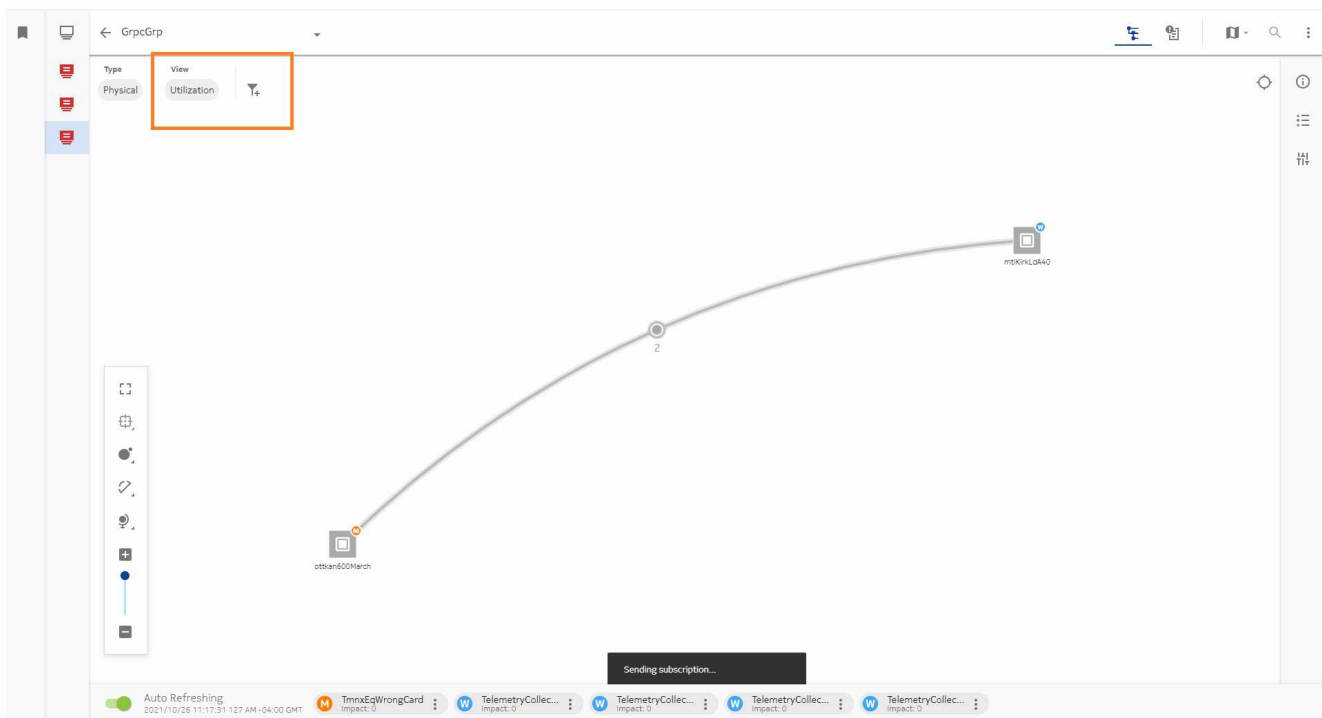
received-octets

transmitted-octets

CANCEL CREATE

### 3.2.6 View utilization statistics from Network Supervision

- 1 In Network Supervision, open the group containing the service in Topology View format.
- 2 Select the Utilization view.



A subscription is automatically created in Insights Administrator for the ports associated with the endpoints for NEs present on the Network Supervision utilization map.

### 3

Edit the subscription in Insights Administrator and chart it in Insights Viewer as needed.

**Note:** Two subscriptions are automatically generated, for two telemetry types: `base/classic-utilization/utilization` and `base/interfaces/utilization`. The interfaces telemetry type must be used for charting.

**Tip:** The name of the subscription starts with `netsup-`.

**Edit Subscription**

**General**

Name: netsup-link-utilization-admin-1636406014531

Description:

Collection Interval (seconds): 30

Sync Time (hh:mm): 00:00

State: Enabled

DB Subscriptions: Disabled

Notification Topic: ns-eg-d71f3f6a-bb41-4481-8db2-7de714ddc632

**Filters & Counters**

Object Filter: [ns-equipment:network-network-element(id=92.168.96.32)/hardware-component/port(component-id=shelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/port=1/1/30)] ns-equipment.net

Telemetry Type: telemetry:/base/interfaces/utilization

☒ Enable notifications and notification counters

**Counter**: output-utilization

**CANCEL** **UPDATE**

### 3.2.7 Use the Network Health Dashboard to retrieve data about the health of a service and its components

You can use the Network Health Dashboard to access service information and information about service components.

1

If a service is experiencing problems, one step in troubleshooting can be checking port details on the service endpoints. This can be done by navigating to the equipment view in Network Supervision:

1. On the Network Health Dashboard, navigate to **Ports**.
2. Select a port associated with one of the service endpoints and choose **Show in**

## Equipment view.

Choose a dashboard  
**Network Health**

Ports

Content updated on 2021/10/26 11:32:21 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (bytes)	Encapsulation Type
1/2/6	disabled	92.168...	ottkan600...		locked	providingService	shelf=1/ca...	12	ethernet	trunk	0	nullEncap
1/1/1	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/2	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/3	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/4	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/5	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/6	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/7	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	trunk	0	nullEncap
1/1/10	enabled	92.168...	ottkan600...	N/A	unlocked	providingService	shelf=1/ca...	11	ethernet	access	0	dot1q

Service Sites Links Tunnel (SDP) Bindings Services

Show in Current Alarm List  
Show in Equipment View  
Plot Utilization Statistics

The equipment inventory page opens in Network Supervision, with the port highlighted in the equipment tree.

Network Supervision shows the status of the port, for example, the administrative state, operational state, and port data rate.

ottkan600March - Equipment Inve...

1/1/2, Operational State: enabled, Administrative State: unlocked

1/1/3, Operational State: enabled, Administrative State: unlocked

1/1/4, Operational State: enabled, Administrative State: unlocked

1/1/5, Operational State: enabled, Administrative State: unlocked

1/1/6, Operational State: enabled, Administrative State: unlocked

1/1/7, Operational State: enabled, Administrative State: unlocked

1/1/8, Operational State: disabled, Administrative State: unlocked

1/1/9, Operational State: disabled, Administrative State: unlocked

1/1/10, Operational State: enabled, Administrative State: unlocked

Card Slot-1/2(me6-10gb-sfp+) (installedNotExpected), Operational State: disabled, Administrative State: unlocked

Card Slot-2(iom4-e-b) (expectedNotInstalled), Operational State: disabled, Administrative State: locked

Card Slot-3(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-4(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-5(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-6(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-7(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-8(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-9(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

Card Slot-10(unassigned) (notExpectedNotInstalled), Operational State: disabled, Administrative State: unlocked

CPM Slot-A(cpm5) (installedAndExpected), Operational State: enabled, Administrative State: unlocked

Auto Refreshing  
2021/10/29 11:19:46 803 AM -04:00 GMT

TrmxEqWrongCard Impact: 0

TelemetryCollec... Impact: 0

TelemetryCollec... Impact: 0

TelemetryCollec... Impact: 0

TelemetryCollec... Impact: 0

Port

Name: 1/1/10

Operational State: enabled

Administrative State: unlocked

Standby State: providingService

Position: shelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/por...

Hardware Mac Address: c0:2f:01:01:00:0a

Port Index: 11

Port Type: ethernet

Actual Rate (Mbps): 10000

Port Mode: access

Encapsulation Type: dot1q

Manufacturer Details

## 2

Service Supervision provides service health information, including KPI status, health status of components, alarms on the service, service mapping, and the event timeline. See the use case for routine maintenance in the Service Supervision Application Help for details.

To verify details about the service and its components, you can navigate to Service Supervision at the service level or at the endpoint level.

a.

1. On the Network Health Dashboard, navigate to **Services**.
2. Select the service and choose **Go to Service Supervision**.

Choose a dashboard  
Network Health

AssuranceNMP-2 enabled  
AssuranceMDM-1 enabled

Services

Content updated on 2021/11/3 15:43:38 (Click to update)

Name	Operational State	# Affected Objects	Degraded Status	Service Type	Description	Customer ID	State Cause(s)
EPIPE 22	disabled	2		E-Line	N/A	1	sdpBindingDow...
K_MDM_Epipe_1:1821-fb07806-a504-475c-865b-...	enabled	0		E-Line		1	
K_MDM_VPLS_1		0		E-LAN		1	
K_MDM_Grpc_2	enabled	0		E-Line		1	
EPIPE 1	enabled	0		E-Line	Default Eline ...	1	
EPIPE 15	enabled	0		E-Line	N/A	1	
mdm_vpls_bsf_service		0		E-LAN		1	
K_MDM_Grpc	enabled	0		E-Line		1	
EPIPE 17	enabled	0		E-Line	N/A	1	

Go to Service Supervision  
Show in troubleshooting dashboard  
Go to Service Fulfillment

The services list opens in Service Supervision for the group containing the service.

← GroupNameMDM

All Services

Service Name	ID	Availability States	State Cause(s)									
K_MDM_Epipe_1:1821-fb...	39912ff1d0ed	1	N/A	N/A	✓	✓	✓	-	0	0%	0	0
mdm_vpls_bsf_service	0	2	N/A	N/A	✓	✓	✓	-	0	0%	0	0
K_MDM_Grpc	0	1	N/A	N/A	✓	✓	✓	-	0	0%	0	0
K_MDM_VPLS_1	0	2	N/A	N/A	✓	✓	✓	-	0	0%	0	0
K_MDM_Grpc_2	0	1	N/A	N/A	✓	✓	✓	-	0	0%	0	0

b.

1. On the Network Health Dashboard, navigate to **Service Endpoints**.
2. Select an endpoint of the service and choose **⋮ (More)**, **Go to Service Supervision**.

Choose a dashboard  
**Network Health**

AssuranceNFM-1 enabled  
AssuranceNFM-2 enabled  
AssuranceMDM-1 enabled

**Service Endpoints**

Content updated on 2021/11/3 15:46:27 (Click to update)

Name	Operational State	Site ID	Service	Port Name	LAG Name	NE Name	Description	State Cause(s)
1/1/10:1...	enabled	92.168.9...	mdm_vpls_lbsf_service			ottkan600...		
1/1/10:1...	enabled	92.168.9...	mdm_vpls_lbsf_service			mtlKirkLdA40		
1/1/10:8...	enabled	92.168.9...	K_MDM_Grpc_2			mtlKirkLdA40		
1/1/10:9...	enabled	92.168.9...	K_MDM_VPLS_1			mtlKirkLdA40		
1/1/10:9...	enabled	92.168.9...	K_MDM_VPLS_1			ottkan600...		
1/1/8:506	enabled	15.15.15...	K_MDM_Epipe_1:1821-fbd07806-a504-476c-865b-3...			Assurance...		
1/1/8:505	enabled	16.16.16...	K_MDM_Epipe_1:1821-fbd07806-a504-476c-865b-3...			Assurance...		
1/1/10:8...	enabled	92.168.9...	K_MDM_Grpc			ottkan600...		
Port 1/1...	enabled	11.11.11...	EPIPE 17	Port 1/1/8		AssuranceN...	N/A	
1/1/10:8...	enabled	92.168.9...	K_MDM_Grpc			mtlKirkLdA40		

Go to current alarm list  
Go to Service Supervision  
Go to equipment view

The service endpoints list in Service Supervision opens.

← K\_MDM\_Grpc - Endpoints

Endpoint Name	Site ID	State Ca...	Port Name	NE Name	Description
1/1/10:804	92.168.96.32	N/A	N/A	N/A	N/A
1/1/10:805	92.168.96.50	N/A	N/A	N/A	N/A

## 3.3 LSP Throughput with Forecast reporting scenario

### 3.3.1 Purpose

The LSP Throughput with Forecast (NSP) report provides the throughput trend for an LSP. The report can generate a forecast for daily and monthly granularities.

This process shows how to set up a service for LSP Throughput with Forecast reporting in the Analytics application.



### 3.3.2 Confirm that prerequisites for service provisioning are completed

1

Two intent type bundles are required for provisioning our service, and for setting up QoS and telemetry: icm-intent-types, and mdt-intents.

Checking the Artifact Bundles page in the Artifacts Administrator application shows that both bundles are in Installed status.

NOKIA NSP Artifact Administrator						User: admin		
Artifact Bundles						IMPORT & INSTALL		
Bundle Name	Bundle Version	Status	Number of Artifacts	Author	Import Time	Artifact Bundle Details		
nsp-icm-intent-types-23.4.0-rel.369-cam.zip	23.4.0-rel.369	Installed	23	NOKIA R&D	2023/05/04 14:33:23	Select a Bundle to see the details		
nsp-mdt-intents-23.4.0-rel.507-svc-intent-bundle.zip	23.4.0-SP1	Installed	18	NOKIA R&D	2023/05/04 14:13:15			
nsp-ne-upgrade-eth-sat-1.2.0.zip	1.2.0	Installed	8	NOKIA R&D	2023/05/02 09:46:04			
nsp-ne-sw-import-1.1.0.zip	1.1.0	Installed	4	NOKIA R&D	2023/05/02 09:46:02			
nsp-ne-backup-1.2.2.zip	1.2.2	Installed	7	NOKIA R&D	2023/05/02 09:46:01			
nsp-ne-restore-1.1.0.zip	1.1.0	Installed	6	NOKIA R&D	2023/05/02 09:46:00			
nsp-ne-backup-audit-1.0.0.zip	1.0.0	Installed	2	NOKIA R&D	2023/05/02 09:45:57			
nsp-ne-upgrade-1.3.0.zip	1.3.0	Installed	20	NOKIA R&D	2023/05/02 09:45:57			
nsp-ne-upgrade-with-phases-1.3.0.zip	1.3.0	Installed	27	NOKIA R&D	2023/05/02 09:45:57			
nsp-ne-wavence-upgrade-1.0.0.zip	1.0.0	Installed	8	NOKIA R&D	2023/05/02 09:45:57			
nsp-wavence-service-migration-1.0.0.zip	1.0.0	Installed	4	NOKIA R&D	2023/05/02 09:45:57			
<div> <div>Auto-refresh</div> <div>Last Refresh: 2440 seconds ago</div> <div>Note: Automatic reconcile of artifacts and artifact bundles is done every 3 mins. Next reconcile will happen in 8 sec.</div> <div>Count: 11</div> </div>								

2

Artifact Administrator installs the intent types to Intent Manager, from which they can be imported to Service Fulfillment.

Checking the Intent Type Catalogue list on the TEMPLATES page in Service Fulfillment shows that the intent types have been imported and are available for use in Service Fulfillment.

3

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3HE-18995-AAAB-TQZZA

### 3.3.3 Verify the service parameters

On the SERVICES page in Service Fulfillment, we can see the provisioned services.

Nokia

NSP Service Fulfillment

User: admin

SERVICES

INVENTORY

TEMPLATES

Services

+ CREATE

↺

⋮

Life Cycle State	Alignment State	Composite Service	Service Name	Description	Service Template	
Unknown	Unknown		EPIPE 5001	NodeC-epipe-5001		⋮
Deployed	Aligned		EPIPE 979	Epipe Between Classic and MD ...	Basic Epipe	⋮
Unknown	Unknown		EPIPE 120089	Demo_Epipe_1289		⋮
Unknown	Unknown		EPIPE 101101	N/A		⋮
Unknown	Unknown		EPIPE 7001	Epipe 7001		⋮
Unknown	Unknown		EPIPE 10112	N/A		⋮
Unknown	Unknown		EPIPE 5301	NodeC-epipe-5301		⋮
Unknown	Unknown		EPIPE 1104	Epipe for troubleshooting demo		⋮
Unknown	Unknown		EPIPE 6004	N/A		⋮
Unknown	Unknown		EPIPE 5002	NodeE-epipe-5002		⋮
Unknown	Unknown		EPIPE 6003	N/A		⋮
Unknown	Unknown		EPIPE 10991	N/A		⋮
Deployed	Aligned		EPIPE 7002	Epipe 7002	Basic Epipe	⋮
Unknown	Unknown		EPIPE 1105	Service Desc		⋮
Unknown	Unknown		EPIPE_113322			⋮
Unknown	Unknown		Eline123			⋮
Unknown	Unknown		Epipe-1170	Epipe created via API		⋮

Last Refresh : Jul 27, 2023, 4:40:39 PM EDT (Local Time)

<

>

Page: 1 / 1

Total Row Count : 42

Total Service Count : 42

Deployed : 42

Info

Select a service

## 2

Opening the Edit form for a service will let us verify that everything we'll need is in place. Select the service and select Edit from the Table Row actions menu.

NSP Service Fulfillment

User: admin

SERVICESINVENTORYTEMPLATES

Services

Life Cycle State

Alignment State

Composite Service

Service Name

Description

Service Template

Unknown	Unknown		EPIPE 5001	NodeC-epipe-5001	
Deployed	Aligned		EPIPE 979	Epipe Between Classic and MD ...	Basic Epipe
Unknown	Unknown		EPIPE 120089	Demo_Epipe_1289	
Unknown	Unknown		EPIPE 101101	N/A	
Unknown	Unknown		EPIPE 7001	Epipe 7001	
Unknown	Unknown		EPIPE 101112	N/A	
Unknown	Unknown		EPIPE 5301	NodeC-epipe-5301	
Unknown	Unknown		EPIPE 1104	Epipe for troubleshooting demo	
Unknown	Unknown		EPIPE 6004	N/A	
Unknown	Unknown		EPIPE 5002	NodeE-epipe-5002	
Unknown	Unknown		EPIPE 6003	N/A	
Unknown	Unknown		EPIPE 10991	N/A	
Deployed	Aligned		EPIPE 7002	Epipe 7002	Basic Epipe
Unknown	Unknown		EPIPE 1105	Service Desc	
Unknown	Unknown		EPIPE_113322		
Unknown	Unknown		Eline123		
Unknown	Unknown		Epipe-1170	Epipe created via API	

Action

Edit

Audit config

Align

Unassociate

Migrate

Resync

Execute workflow

Remove

View

Service details

Open in Service Supervision

Info

States

Life Cycle State

Deployed Jun 11, 2023, 7:29:59 PM EDT

Alignment State

Aligned

General Info

Service ID

EPIPE 7002.28:sam

NE Service ID

7002

Service Name

EPIPE 7002

Description

Epipe 7002

Service Type

ELINE

Customer ID

40

Last Refresh : Jul 27, 2023, 4:40:39 PM EDT (Local Time)

Page: 1 / 1

Total Row Count : 42

Total Service Count : 42

Deployed : 42

### 3

The Edit service form shows the basic service parameters such as service name and customer ID, and the service endpoints.

Nokia

NSP Service Fulfillment

User: admin

Edit Service: EPIPE 7002

Site A

Site B

SDP Details

Template Name

Basic Epipe

Current Life Cycle State

Deployed

Alignment State

Aligned

Service Name\*

EPIPE 7002

NE Service ID\*

7002

MTU

1514

Customer ID\*

40

Description

Epipe 7002

Admin State

unlocked

Job ID

Site A

Device ID

92.168.96.61

Site Name

epipe:23.7002.nodeD(92.168.96.61)

Description

MTU

Endpoint

+ ADD

Port ID	Encap Type	Inner VLAN Tag	Outer VLAN Tag	Admin State	Description
Port 1/1/c1/9		-1	702	unlocked	

Reserve Resources

CLOSE

MODIFY

DEPLOY

#### 4

Site A of the service is on node D. Select the endpoint and choose Edit to verify the endpoint parameters.

In the Edit Endpoint form, we can see the ingress and egress QoS policies applied, and any overrides that have been added.

Service > Edit Endpoint 1

Ingress

QoS

SAP Ingress

Overrides

Policer Control Policy

Scheduler Policy

Overrides

Egress

QoS

SAP Egress

Overrides

Policer Control Policy

Scheduler Policy

Overrides

Port ID

Port 1/1/c1/9

✕

?

Encap Type

Inner VLAN Tag

-1

Outer VLAN Tag

702

Admin State

unlocked

⌵

🔗

Description

☒ Collect Accounting Statistics

Accounting Policy

99

✕

?

☒ Enable QoS

☐ Enable IP/IPv6 Filter

Ingress

QoS

Match QinQ Dot1p

Select Item

⌵

🔗

SAP Ingress

Policy Name

SAP Ingress QoS Analytics

Queuing Type

Select Item

⌵

🔗

Overrides

Queue

+ ADD

Queue ID	CBS	MBS	PIR (kbps)	CIR (kbps)
----------	-----	-----	------------	------------

CANCELUPDATE

5

Returning to the Edit Service form, we can see the SDP details, the service destination points. An SDP has been added to the service for each direction.

Each SDP uses an LSP, and it's this LSP that will provide the throughput telemetry data for our report.

To collect statistics on an NE, a file and accounting policy must be configured on the NE. This can be done by deploying a template in the CONFIGURATIONS page of Device Administrator. In the Configuration Deployments list, we can see that a template called File and Accounting v5 has been deployed on the NE and the Deployment Status is Deployed Aligned.



Nokia NSP Device Administrator User: admin

NETWORK ELEMENTS NETWORK ADMIN OPERATIONS CONFIGURATIONS

Configuration Deployments

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Catego
Deployed Aligned	Modified	classicNodeB	92.168.96.8	SAP Egress QoS Policy#99	SAP Egress QoS	Logical	QoS
Deployed Aligned	Modified	newNodeE	92.168.96.17	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	newNodeD	92.168.96.61	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	mdNodeE	92.168.96.16	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	mdNodeD	92.168.96.60	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	mdNodeC	92.168.96.26	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	mdNodeB	92.168.96.7	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	classicNodeB	92.168.96.8	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical	QoS
Deployed Aligned	Modified	newNodeE	92.168.96.17	Port 1/1/c1/9	Access Port	Physical	Port
Deployed Aligned	Modified	newNodeD	92.168.96.61	Port 1/1/c1/9	Access Port	Physical	Port
Deployed Aligned	Modified	newNodeE	92.168.96.17	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	newNodeD	92.168.96.61	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	newNodeC	92.168.96.27	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	mdNodeE	92.168.96.16	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	mdNodeD	92.168.96.60	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	mdNodeC	92.168.96.26	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	mdNodeB	92.168.96.7	66	File and Accounting v5	Logical	Log
Deployed Aligned	Modified	classicNodeB	92.168.96.8	66	File and Accounting v5	Logical	Log

Auto-refresh Last Refresh: 0 seconds ago Page: 1 / 1 Count: 36

CONFIGURATION DEPLOYMENT

Deployment Details

NE Name: newNodeE  
NE ID: 92.168.96.17  
Identifier: Accounting Policy ID 66

Deployment Status: Deployed Aligned

AUDIT ALIGN

Last Audit: Jul 5, 2023 2:20:51 pm by admin

VIEW RESULT

Last Alignment: Jul 5, 2023 2:17:31 pm by admin  
Template Name: File and Accounting v5  
Created: Jul 5, 2023 2:17:28 pm  
Last Updated: Jul 5, 2023 2:17:31 pm  
Role: logical  
Category: log  
Configuration Status

## 2

We can view the template details to see policy details:

1. Select the deployment and choose View/Edit from the Table row actions menu.
2. In the form that opens, click **VIEW/EDIT TEMPLATE CONFIG**.

The template information shows the rollover duration, or how long a statistics collection file remains open before a new file is started, the retention period for the file, and the compact flash location where the file is stored. Accounting policy details show that the policy applied is number 66, and it will be collecting Combined MPLS LSP Egress statistics.

The screenshot shows the NSP Device Administrator interface. A modal window titled 'File and Accounting v5' is open. It contains two main configuration sections. The 'File' section has fields for 'File ID' (66), 'File Policy Name' (FP66), 'Description' (File Policy 66 for Analytics demo), 'Roller (minutes)' (15), and 'Retention (hours)' (4). The 'Accounting Policy' section has fields for 'Accounting Policy Name' (AP66), 'Admin State' (enable), 'Description' (Accounting Policy 66 for MPLS LSP egress), 'Record' (Combined MPLS LSP Egress), and 'Collection Interval (minutes)' (5). The window has 'CANCEL' and 'UPDATE' buttons at the bottom right.

### 3.3.5 Verify the LSP parameters

1

LSPs must be configured on the NE. Opening an NE session will show us the configuration of the LSP in use by the SDP. It's called `lsp_mdNodeB_to_nodeD`.

We can see that an accounting policy is in place on the LSP, and collection of egress statistics is enabled. These are required for any LSPs we want to monitor for LSP Throughput reporting.

The account policy ID for this LSP is 66.

```

55 fast-reroute {
56 }
57 egress-statistics {
58   admin-state enable
59   collect-stats true
60   accounting-policy 66
61 }
62 primary "path_to_node0" {
63 }
64 }
65 lsp "lsp_mdNode8_to_node0" {
66   admin-state enable
67   type p2p-rsvp
68   from 92.168.96.8
69   to 92.168.96.61
70   pce-report true
71   path-computation-method local-cspf
72   fast-reroute {
73   }
74   frr-method facility
75 }
76 egress-statistics {
77   admin-state enable
78   collect-stats true
79   accounting-policy 66
80 }
81 primary "path_to_node0" {
82 }
83 }
84 lsp "lsp_mdNode8_to_node0" {
85   admin-state enable
86   type p2p-rsvp
87   from 92.168.96.8
88   to 92.168.96.17
89   pce-report true
90   path-computation-method local-cspf
91   fast-reroute {
92   }
93   egress-statistics {
94     admin-state enable
95     collect-stats true
96     accounting-policy 66
97   }
98   primary "path_to_node0" {
99   }
100 }
101 [g] configure router "Base" mpls
102
103 Session end
104
105

```

### 3.3.6 Verify statistics collection configuration in Insights Administrator

Now that we have verified that the service and LSP are configured, we can confirm that statistics collection has been set up.

#### 1

In the Telemetry Subscriptions list in Insights Administrator, we can see that there is a subscription called LSP Egress Statistics.

The telemetry type is base/lsp/lsp-egress. The collection interval is 300 s, meaning that every 5 min the NSP will collect the statistics from the node.

Most important, database subscriptions are enabled. Data is stored in the auxiliary database, where it will be available to the Analytics application.

NOKIA NSP Insights Administrator User: admin

Subscriptions + SUBSCRIPTION

Telemetry Subscriptions

State	Name	Telemetry Type	Collection Interval (seconds)	Sync-time (UTC)	Notification Subscriptions	DB Subscriptions	Description
Enabled	SAP Throughput subsc...	telemetry/base/accounting/complete-service-ingress-packet-octets	60	00:00	✓	✓	Subscription for collec...
Enabled	SAP Throughput subsc...	telemetry/base/accounting/complete-service-egress-packet-octets	60	00:00	✓	✓	Subscription for collec...
Enabled	LSP Egress Statistics	telemetry/base/lsp/lsp-egress	300	00:00	✓	✓	LSP Egress Statistics f...
Enabled	TestSuiteEx__OAM-PM...	telemetry/base/oampm-accounting/twl-session-loss-acc-stats	300	00:00	✓		TWL Loss accounting
Enabled	TestSuiteEx__OAM-PM...	telemetry/base/oampm-accounting/twl-bin-acc-stats	300	00:00	✓		TWL bin accounting
Enabled	TestSuiteEx__OAM-PM...	telemetry/base/oampm-accounting/twl-session-acc-stats	300	00:00	✓		TWL accounting
Enabled	TestSuiteEx__OAM-PM...	telemetry/base/oam-pm/twamp-light-delay-streaming	10	00:00	✓		TWL streaming
Enabled	TestSuiteEx__OAM-PM...	telemetry/base/oam-pm/eth-cfm-delay-streaming	10	00:00	✓		CFM DMM streaming

Auto-refresh Last Refresh: 2023-07-27 15:52:06 -04:00 (Local Time) Row Count : 8

## 2

The report we need creates forecasts based on aggregated data. Switching to the Aggregation list, we'll take a look at the aggregation settings for the telemetry type. Select the telemetry type and click Edit.

Here we see that all aggregation types are enabled, and the retention period is set to maximum for each. The Last Success Time can also be used to verify that the subscriptions are working. For example, the last success time for daily aggregation should not be longer than a day ago.

NOXIA NSP Insights Administrator

User: admin

Aggregation

Name	Type	Sync-time	Hourly Enabled - Last Success	Daily Enabled - Last Success	Weekly Enabled - Last Success	Monthly Enabled - Last Success
md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface/errors	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/e				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/e				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/lsp/lsp/egress				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-delay-session				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/mpls-interfaces/mpls-interface				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/system-info/system				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oampm-accounting/tel-bin-acc				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/hardware/temperature				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/ethernet				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oampm-accounting/cfm-dmm				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oampm-accounting/cfm-dmm				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-slm-loss-ses				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oampm-accounting/tel-session				Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...

Edit Aggregation Rule

Name

md-aggr/md-aggr-base/telemetry-base-lsp-lsp-egress/telemetry-base-lsp-lsp-egress

Type

telemetry/base/lsp/lsp/egress

Sync-time

03:00

Enable Aggregation

☒ Hourly

☒ Daily

☒ Weekly

☒ Monthly

Retention Period

403

403

52

36

Last Success Time

2023-07-27 16:00:00 -04:00

2023-07-27 00:00:00 -04:00

2023-07-24 00:00:00 -04:00

2023-06-30 20:00:00 -04:00

CANCEL

UPDATE

Last Refresh: 2023-07-27 17:21:56 -04:00 (Local Time)

Aggregation Time Zone - America/Toronto (-05:00)

Row Count: 15

3

We also need to confirm that the aggregation time zone has been set correctly. If the aggregation time zone doesn't match the reporting time zone, Analytics will show an error when we try to generate an aggregated report. Click on the More menu at the top of the page and select **Time Zone Setting**.

The time zone has been set to local time.

NSP Insights Administrator

User: admin

Aggregation

Name	Type	Sync-time	Hourly Enabled - Last Success	Daily Enabled - Last Success	Weekly Enabled - Last Success	Monthly Enabled - Last Success
md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface/errors	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/egress/packet/octets	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/ingress/packet/octets	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/lspa/lsp/egress	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-delay-session	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/mpls-interfaces/mpls-interface		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/system-info/system		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/tel-bin-acc-stats		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/hardware/temperature		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/ethernet/port		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/cfm-dmm-session-acc-stats		Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/cfm-dmm-bin-acc-stats	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-slm-loss-session	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/tel-session-acc-stats	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...

Time Zone Setting

Aggregation Time Zone

Local Time - (GMT-05:00) Eastern Time - Toronto

CANCEL

SAVE

Last Refresh: 2023-07-27 17:27:48 -04:00 (Local Time) Aggregation Time Zone - America/Toronto (-05:00)

Row Count: 15

#### 4

To generate a report using daily or monthly data, we need to ensure we have an appropriate retention policy for the telemetry type. Switching to the Age-Out Policy list, we can see that the retention policy for the telemetry type has been set to the maximum.

Nokia NSP Insights Administrator

User: admin

Age-Out Policy

Telemetry Policies

Name	Retention (hours)	
telemetry/base/classic-utilization/utilization	24	
telemetry/base/hardware/temperature	24	
telemetry/base/interfaces/interface	24	
telemetry/base/interfaces/interface-errors	24	
telemetry/base/interfaces/utilization	24	
telemetry/base/oam-pm/eth-cfm-delay-base	24	
telemetry/base/oam-pm/eth-cfm-delay-bin	24	
telemetry/base/oam-pm/eth-cfm-delay-session	24	
telemetry/base/oam-pm/eth-cfm-lmm-loss-base	24	
telemetry/base/oam-pm/twamp-light-delay-session	24	
telemetry/base/oam-pm/eth-cfm-lmm-loss-session	24	
telemetry/base/oam-pm/twamp-light-delay-base	24	
telemetry/base/oam-pm/eth-cfm-slm-loss-session	24	
telemetry/base/lsp/lsp-egress	9672	
telemetry/base/accounting/complete-service-ingress-packet-octets	9672	
telemetry/base/accounting/combined-network-ingress-packets	24	
telemetry/base/accounting/combined-service-ingress-octets	24	
telemetry/base/accounting/combined-service-egress-octets	24	

Last Refresh: 2023-07-27 17:24:28 -04:00 (Local Time)

Row Count: 139

### 3.3.7 Generate the report in Analytics

Now that we've confirmed that all the prerequisites are in place, we can run the report.

1

In the Analytics application, the report we need is under Reports and Dashboards, NSP, Utilization. Navigate through the folders and choose LSP Throughput with Forecast (NSP).

2

1. Select all the NE types.
2. In the NE list, choose NEs that host the service endpoints.
3. In the LSP field, choose the LSP between the two NEs.
4. Select the Show report output on one page check box.
5. Click Apply.



NOXIA NSP Analytics

User: admin

Repository

REPOSITORY TOP

LSP Throughput with Forecast (NSP)

Options

Back

100%

search report

Page

%

\* NE

Available: 8 Selected: 2

Search list...

classicNode0(92.168.96.8:7750 SR-12)

mdNodeB(92.168.96.7:7750 SR-12)

mdNodeC(92.168.96.26:7750 SR-2s)

mdNodeD(92.168.96.60:7750 SR-7s)

mdNodeE(92.168.96.16:7750 SR-14s)

newNodeC(92.168.96.27:7750 SR-2s)

newNodeD(92.168.96.61:7750 SR-7s)

newNodeE(92.168.96.17:7750 SR-14s)

✓ Select ... ✗ None ✗ Invert

Name or name pattern for LSP

%

\* LSP

lsp\_mdNodeB\_to\_nodeE

Forecast periods

5

Periods per Season

1

Logo resource ID

default (Nokia)

\* Logo position

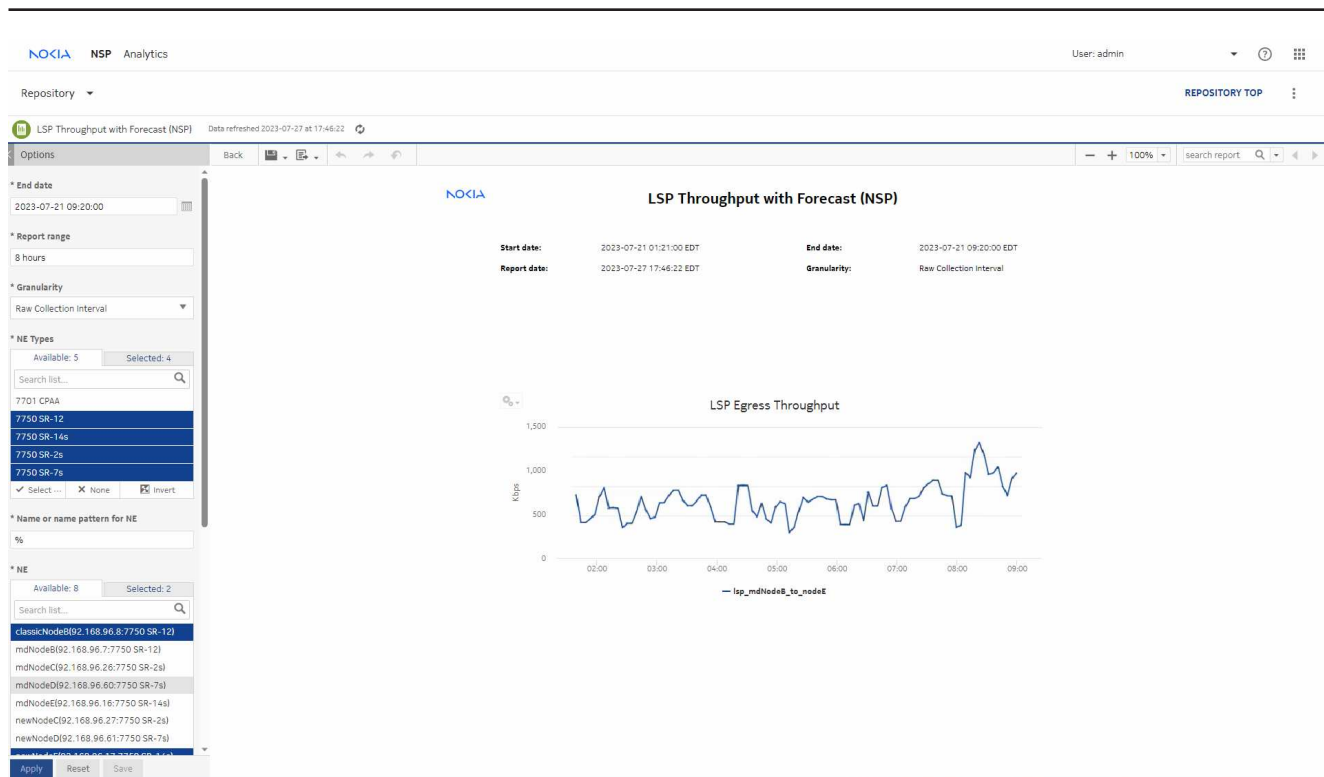
Left

✓ Show report output on one page

Apply Reset Save

Please apply input values to display the report.

The report shows the raw LSP utilization data.



### 3

Next, we'll re-run the report on daily aggregated data. When you run this report with daily or monthly aggregation, a forecast is provided.

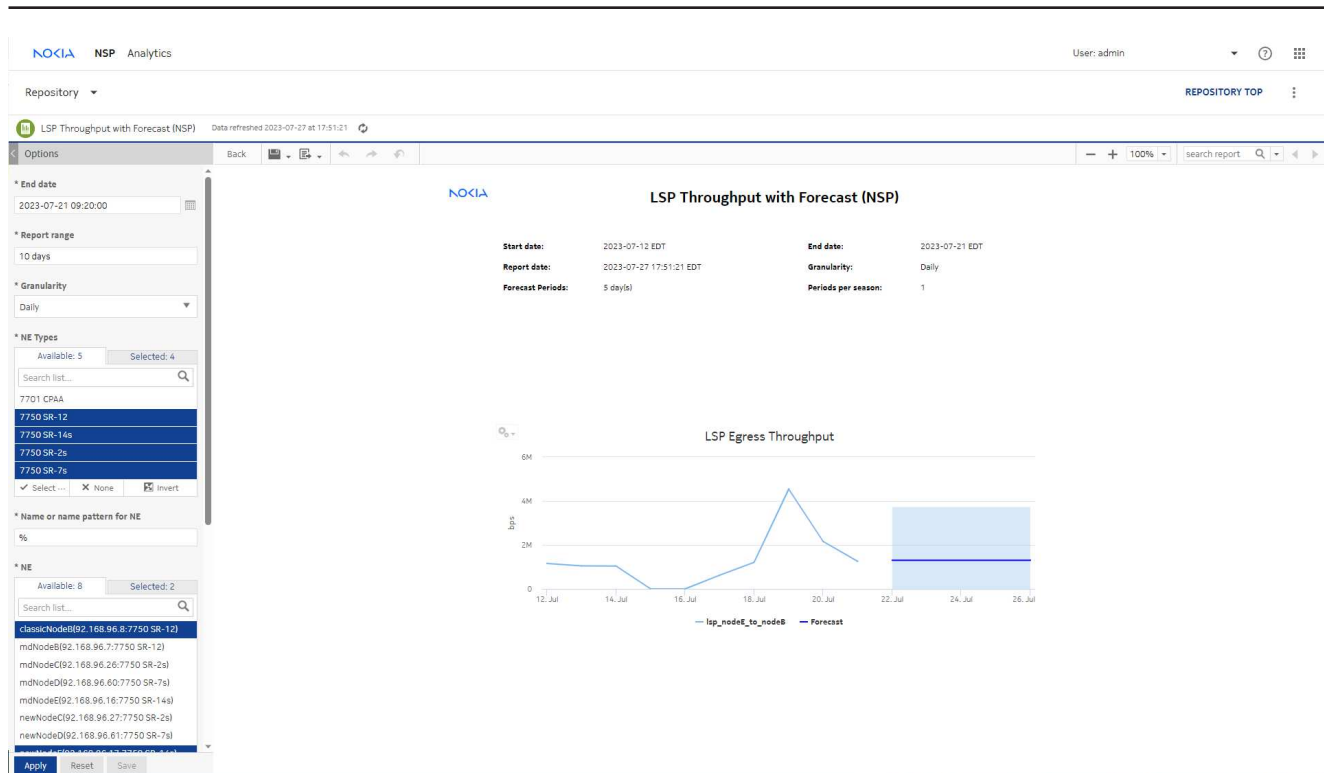
We'll set the report range to 10 days, the forecast periods to 5 and the periods per season to 1.

Periods per season refers to the number of aggregations you want to track to see a repeating pattern. For example, to see a weekly pattern with daily aggregation, you would set Periods per season to 7. Setting this to one means we expect traffic to be similar from one day to the next.

To generate a forecast, you must provide at least two seasons of data, although more may be required if the input data is not linear. For example, if you choose a periods per season value of 7 and the granularity is daily, you must use a report range of at least 14 days.

### 4

View the report.



This report shows the 10 days of collected data and 5 days of forecasting based on that data. The blank space on the graph indicates that data hasn't been aggregated yet for the current date.

After the current date is the forecasted data. The shading shows the upper and lower range of the predicted throughput, and the line shows the expected throughput value for the next five days.

## 3.4 SAP Throughput reporting scenario

### 3.4.1 Purpose

The SAP Throughput (NSP) report shows throughput by a specified service and SAPs. The SAP Throughput (NSP) report includes throughput data for NEs managed by the NFM-P only, MDM (model-driven) only, or NFM-P+MDM-mediated NEs. The default display is a set of time series graphs, showing ingress, egress and total throughput.

This process shows how to set up a service for SAP Throughput reporting in the Analytics application.

## 3.4.2 Confirm that prerequisites for service provisioning are completed

1

Two intent type bundles are required for provisioning our service, and for setting up QoS and telemetry: icm-intent-types, and mdt-intents.

Checking the Artifact Bundles page in the Artifacts Administrator application shows that both bundles are in Installed status.

NOKIA NSP Artifact Administrator User: admin

Artifact Bundles IMPORT & INSTALL

Bundle Name	Bundle Version	Status	Number of Artifacts	Author	Import Time	
nsp-icm-intent-types-23.4.0-rel.369-cam.zip	23.4.0-rel.369	Installed	23	NOKIA R&D	2023/05/04 14:33:23	
nsp-mdt-intents-23.4.0-rel.507-svc-intent-bundle.zip	23.4.0-SP1	Installed	18	NOKIA R&D	2023/05/04 14:13:15	
nsp-ne-upgrade-eth-sat-1.2.0.zip	1.2.0	Installed	8	NOKIA R&D	2023/05/02 09:46:04	
nsp-ne-sw-import-1.1.0.zip	1.1.0	Installed	4	NOKIA R&D	2023/05/02 09:46:02	
nsp-ne-backup-1.2.2.zip	1.2.2	Installed	7	NOKIA R&D	2023/05/02 09:46:01	
nsp-ne-restore-1.1.0.zip	1.1.0	Installed	6	NOKIA R&D	2023/05/02 09:46:00	
nsp-ne-backup-audit-1.0.0.zip	1.0.0	Installed	2	NOKIA R&D	2023/05/02 09:45:57	
nsp-ne-upgrade-1.3.0.zip	1.3.0	Installed	20	NOKIA R&D	2023/05/02 09:45:57	
nsp-ne-upgrade-with-phases-1.3.0.zip	1.3.0	Installed	27	NOKIA R&D	2023/05/02 09:45:57	
nsp-ne-wavence-upgrade-1.0.0.zip	1.0.0	Installed	8	NOKIA R&D	2023/05/02 09:45:57	
nsp-wavence-service-migration-1.0.0.zip	1.0.0	Installed	4	NOKIA R&D	2023/05/02 09:45:57	

**Artifact Bundle Details**

Select a Bundle to see the details

Auto-refresh Last Refresh: 2440 seconds ago Note: Automatic reconcile of artifacts and artifact bundles is done every 3 mins. Next reconcile will happen in 8 sec. Count: 11

2

Artifact Administrator installs the intent types to Intent Manager, from which they can be imported to Service Fulfillment.

Checking the Intent Type Catalogue list on the TEMPLATES page in Service Fulfillment shows that the intent types have been imported and are available for use in Service Fulfillment.

3

Release 23.8  
October 2023  
Issue 2

### 3.4.3 Verify policy configuration

To collect statistics on an NE, a file and accounting policy must be configured on the NE. This can be done by deploying a template in the CONFIGURATIONS page of Device Administrator. In the Configuration Deployments list, we can see that a template called File and Accounting v4 has been deployed on the NE and the Deployment Status is Deployed Aligned. The policy identifier is 99.

Nokia NSP Device Administrator User: admin

NETWORK ELEMENTS NETWORK ADMIN OPERATIONS CONFIGURATIONS

Configuration Deployments

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	SAP Ingress QoS Analyti...	SAP Ingress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	SAP Egress QoS Policy#99	SAP Egress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeD	92.168.96.61	99	File and Accounting Policy v4
<input checked="" type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	SAP Egress QoS Policy#99	SAP Egress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	66	File and Accounting v5
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	SAP Ingress QoS Analyti...	SAP Ingress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	SAP Ingress QoS Analyti...	SAP Ingress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	SAP Ingress QoS Analyti...	SAP Ingress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	66	File and Accounting v5
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	99	File and Accounting Policy v4
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	SAP Egress QoS Policy#99	SAP Egress QoS
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeD	92.168.96.61	66	File and Accounting v5
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	SAP Egress QoS Policy#99	SAP Egress QoS

Auto-refresh Last Refresh: 10 seconds ago Page: 1 / 1 Count: 36

### Deployment Details

NE Name: newNodeE  
NE ID: 92.168.96.17  
Identifier: Accounting Policy ID 99

Deployment Status: Deployed Aligned

AUDIT ALIGN

Last Audit: May 29, 2023 3:26:02 pm by N/A

VIEW RESULT

Last Alignment: Jun 30, 2023 12:10:31 pm by admin  
Template Name: File and Accounting Policy v4  
Created: May 29, 2023 3:23:18 pm  
Last Updated: Jun 30, 2023 12:10:31 pm  
Role: logical  
Category: log

Configuration Status

## 2

We can view the template details to see policy details:

1. Select the deployment and choose View/Edit from the Table row actions menu.
2. In the form that opens, click **VIEW/EDIT TEMPLATE CONFIG**.

The template information shows the rollover duration, or how long a statistics collection file remains open before a new file is started, the retention period for the file, and the compact flash location where the file is stored.

Accounting policy details show that the policy applied is number 99, and it will be collecting Complete Service Ingress Egress statistics. The collection interval is 300 s, meaning that every 5 min the NSP will collect the statistics from the node and save them to the database.

The screenshot displays the Nokia NSP Device Administrator interface. A modal window titled 'File and Accounting Policy v4' is open, showing configuration options for a file and accounting policy. The window is divided into sections: 'Log', 'File', 'Compact Flash Location', and 'Accounting Policy'. The 'Log' section has a 'Log' button. The 'File' section includes fields for 'File ID\*' (99), 'File Policy Name\*' (FP99), 'Description' (File Policy 99 for Analytics demo), 'Roller (minutes)' (15), and 'Retention (hours)' (4). The 'Compact Flash Location' section has a 'Primary' dropdown menu set to 'cf3:'. The 'Accounting Policy' section includes fields for 'Accounting Policy Name' (AP99), 'Admin State' (enable), 'Description' (Accounting Policy 99 for Analytics demo), 'Record' (Complete Service Ingress Egress), and 'Collection Interval (minutes)' (5). At the bottom right of the modal are 'CANCEL' and 'UPDATE' buttons. The background interface shows a sidebar with 'Select Template', 'Select Target', and 'Assign Identifiers' options, and a main area with 'Deploy Logical Configuration' and 'CONFIG' buttons.

### 3

Additionally, there are egress and ingress QoS policies deployed, which allows traffic shaping and to prioritize certain types of traffic.

The ingress QoS policy identifier is SAP Ingress QoS Analytics.



Nokia NSP Device Administrator User: admin

NETWORK ELEMENTS NETWORK ADMIN OPERATIONS CONFIGURATIONS

Configuration Deployments

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	SAP Egress QoS Policy#99	SAP Egress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeD	92.168.96.61	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	SAP Egress QoS Policy#99	SAP Egress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	66	File and Accounting v5	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	99	File and Accounting Policy v4	Logical
<input checked="" type="checkbox"/>	Deployed Aligned	Modified	newNodeE	92.168.96.17	SAP Ingress QoS Analyti...	SAP Ingress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	66	File and Accounting v5	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	99	File and Accounting Policy v4	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	SAP Egress QoS Policy#99	SAP Egress QoS	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeD	92.168.96.61	66	File and Accounting v5	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	SAP Egress QoS Policy#99	SAP Egress QoS	Logical

Auto-refresh Last Refresh: 0 seconds ago Page: 1 / 1 Count: 36

CONFIGURATION DEPLOYMENT

Deployment Details

NE Name: newNodeE  
NE ID: 92.168.96.17  
Identifier: SAP Ingress Policy Name: SAP Ingress QoS Analytics, SAP Ingress Policy ID: 99

Deployment Status: Deployed Aligned

AUDIT ALIGN

Last Audit: Jun 11, 2023 6:29:12 pm by admin

Last Alignment: Jun 11, 2023 6:29:12 pm by admin

Template Name: SAP Ingress QoS

Created: Jun 11, 2023 6:29:08 pm

Last Updated: Jun 11, 2023 6:29:12 pm

Role: logical

Category: QoS

Configuration Status: Modified

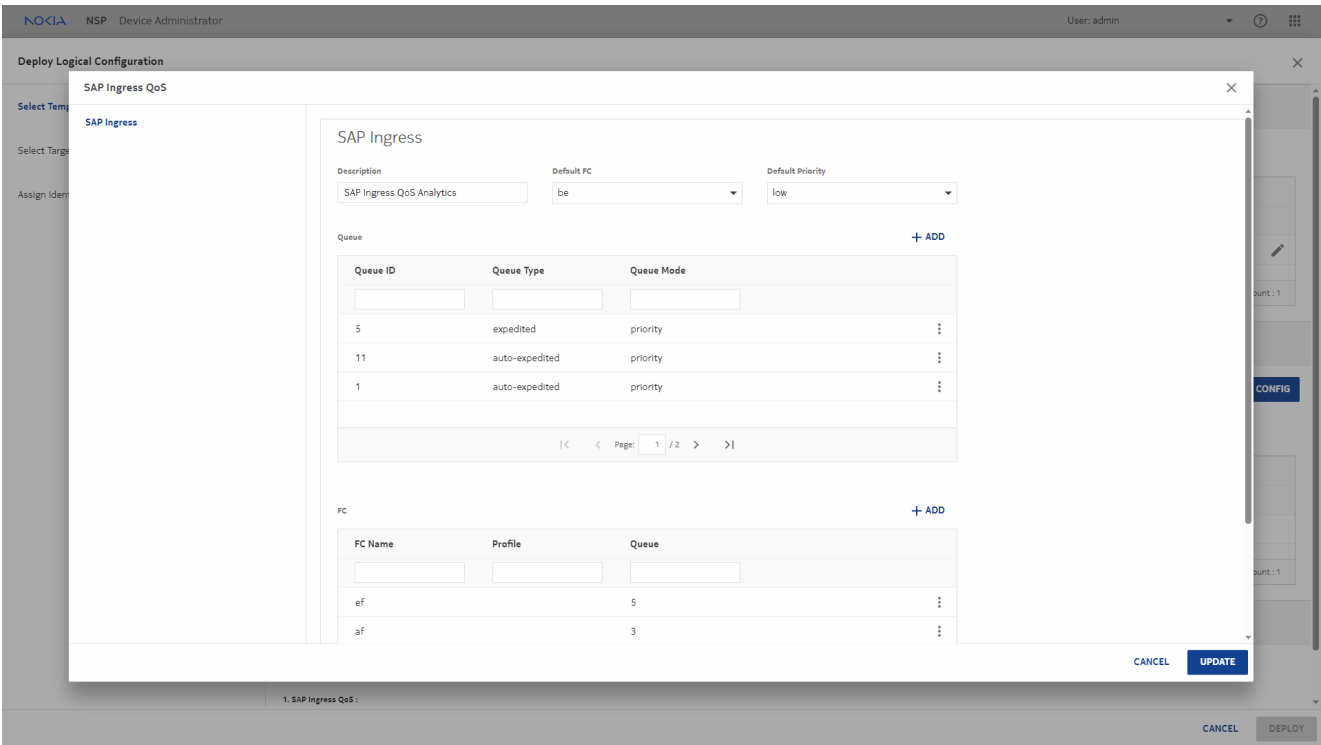
#### 4

We'll view the ingress template details as an example:

1. Select the deployment and choose View/Edit from the Table row actions menu.
2. In the form that opens, click **VIEW/EDIT TEMPLATE CONFIG**.

There are a total of four queues configured. Of the three that display on this page, queues 1 and 11 are defaults. Queue 5 has been configured as an expedited queue with high priority. At the bottom of the form, we can see that forwarding class ef will be forwarded to queue 5.

Clicking **Next page** in the queue list shows queue 3, a best effort queue. Forwarding class af will be forwarded to this queue for lower-priority traffic.



Policers have also been applied directly to the NEs.

3.4.4 Verify the service parameters

- 1
- On the SERVICES page in Service Fulfillment, we can see the provisioned services.

Nokia

NSP Service Fulfillment

User: admin

SERVICES

INVENTORY

TEMPLATES

Services

+ CREATE

↺

⋮

Life Cycle State	Alignment State	Composite Service	Service Name	Description	Service Template	
Unknown	Unknown		EPIPE 5001	NodeC-epipe-5001		⋮
Deployed	Aligned		EPIPE 979	Epipe Between Classic and MD ...	Basic Epipe	⋮
Unknown	Unknown		EPIPE 120089	Demo_Epipe_1289		⋮
Unknown	Unknown		EPIPE 101101	N/A		⋮
Unknown	Unknown		EPIPE 7001	Epipe 7001		⋮
Unknown	Unknown		EPIPE 10112	N/A		⋮
Unknown	Unknown		EPIPE 5301	NodeC-epipe-5301		⋮
Unknown	Unknown		EPIPE 1104	Epipe for troubleshooting demo		⋮
Unknown	Unknown		EPIPE 6004	N/A		⋮
Unknown	Unknown		EPIPE 5002	NodeE-epipe-5002		⋮
Unknown	Unknown		EPIPE 6003	N/A		⋮
Unknown	Unknown		EPIPE 10991	N/A		⋮
Deployed	Aligned		EPIPE 7002	Epipe 7002	Basic Epipe	⋮
Unknown	Unknown		EPIPE 1105	Service Desc		⋮
Unknown	Unknown		EPIPE_113322			⋮
Unknown	Unknown		Eline123			⋮
Unknown	Unknown		Epipe-1170	Epipe created via API		⋮

Last Refresh : Jul 27, 2023, 4:40:39 PM EDT (Local Time)

<

>

Page: 1 / 1

Total Row Count : 42

Total Service Count : 42

Deployed : 42

## 2

Epipe 979 is Deployed and Aligned.

Opening the Edit form for the service will let us verify that everything we'll need is in place.  
Select the service and select Edit from the Table Row actions menu.

3

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3HE-18995-AAAB-TQZZA

Nokia

NSP Service Fulfillment

User: admin

Site A

Site B

SDP Details

Template Name

Basic Epipe

Current Life Cycle State

Deployed

Alignment State

Aligned

Service Name\*

EPIPE 979

NE Service ID\*

979

MTU

1514

Customer ID\*

100

Description

Epipe Between Classic and MD Nodes

Admin State

unlocked

Job ID

Site A

Device ID

92.168.96.8

Site Name

Epipe 979

Description

Epipe Between Classic and MD Nodes

MTU

Endpoint

+ ADD

Port ID	Encap Type	Inner VLAN Tag	Outer VLAN Tag	Admin State	Description
1/1/9		-1	979	unlocked	

Reserve Resources

CLOSE

MODIFY

DEPLOY

#### 4

Site A of the service is on port 1/1/9. Select the endpoint and choose Edit to verify the endpoint parameters.

In the Edit Endpoint form, we can see that accounting statistics collection and QoS have been enabled, and the policies and overrides that have been applied. The accounting policy is 99, and the SAP Ingress policy is SAP Ingress QoS Analytics: the policies we verified in Device Administrator.

Release 23.8  
October 2023  
Issue 2

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3HE-18995-AAAB-TQZZA

73

Scroll down to see the egress settings: the egress policy is SAP Egress QoS Analytics.

**5**

Returning to the Edit Service form, we can see the SDP details, the service destination points. An SDP has been added to the service for each direction.

NOCLIA NSP Service Fulfillment User: admin

Edit Service: EPIPE 979

Site A  
Site B  
SDP Details

Site B

SDP Details

SDP

Admin State	Source Device ID	Destination Device ID	Steering Parameter	SDP ID	Description
unlocked	92.168.96.8	92.168.96.17		4	
unlocked	92.168.96.17	92.168.96.8		4	

Reserve Resources CLOSE MODIFY DEPLOY

### 3.4.5 Verify statistics collection configuration in Insights Administrator

Now that we have verified that the service is configured, we can confirm that statistics collection has been set up.

1

For the report we need to generate, we need to collect statistics for two telemetry types: base/accounting/complete-service-ingress-packet-octets and base/accounting/complete-service-egress-packet-octets.

In the Telemetry Subscriptions list in Insights Administrator, we see that subscriptions have been configured and enabled for each. The collection interval is 60 s, meaning the data will be collected by NSP every minute.

Database subscriptions are enabled: this will make the historical data available to Analytics.



2

Here we see that all aggregation types are enabled for the telemetry types of interest. The Last Success Time can also be used to verify that the subscriptions are working. For example, the last success time for daily aggregation should not be longer than a day ago.

NSP Insights Administrator

User: admin

Aggregation

Name	Type	Sync-time	Hourly Enabled - Last Success	Daily Enabled - Last Success	Weekly Enabled - Last Success	Monthly Enabled - Last Success
	base/accounting X					
md-aggr/md-aggr-ba...	telemetry:/base/accounting/complete/ethernet/port	03:00	Enabled, 2023-08-22 ...	Enabled, 2023-08-22 ...	Enabled, 2023-07-31 ...	Enabled, 2023-08-01 ...
md-aggr/md-aggr-ba...	telemetry:/base/accounting/complete/service/egress/packet/octet	03:00	Enabled, 2023-08-22 ...	Enabled, 2023-08-22 ...	Enabled, 2023-07-31 ...	Enabled, 2023-08-01 ...
md-aggr/md-aggr-ba...	telemetry:/base/accounting/complete/service/ingress/packet/octet	03:00	Enabled, 2023-08-22 ...	Enabled, 2023-08-22 ...	Enabled, 2023-07-31 ...	Enabled, 2023-08-01 ...

Last Refresh: 2023-08-22 11:25:40 -04:00 (Local Time) Aggregation Time Zone - America/Toronto (-05:00)

Row Count : 3

### 3

We also need to confirm that the aggregation time zone has been set correctly. If the aggregation time zone doesn't match the reporting time zone, Analytics will show an error when we try to generate an aggregated report. Click on the More menu at the top of the page and select **Time Zone Setting**.

The time zone has been set to local time.

NOKIA NSP Insights Administrator

User: admin

Aggregation

Name

Type

Sync-time

Hourly Enabled - Last Success

Daily Enabled - Last Success

Weekly Enabled - Last Success

Monthly Enabled - Last Success

md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface/errors	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/egress/packet/octets	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/service/ingress/packet/octets	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/lspa/lsp/egress	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-delay-session	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/interfaces/interface			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/mpls-interfaces/mpls-interface			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/system-info/system			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/tel-bin-acc-stats			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/hardware/temperature			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/accounting/complete/ethernet/port			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/cfm-dmm-session-acc-stats			Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/cfm-dmm-bin-acc-stats	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oam-pm/eth-cfm-slm-loss-session	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...
md-aggr/md-aggr-ba...	telemetry/base/oamp-accounting/tel-session-acc-stats	03:00	Enabled, 2023-07-27 ...	Enabled, 2023-07-27 ...	Enabled, 2023-07-24 ...	Enabled, 2023-06-30 ...

Time Zone Setting

Aggregation Time Zone

Local Time - (GMT-05:00) Eastern Time - Toronto

CANCEL

SAVE

Last Refresh: 2023-07-27 17:27:48 -04:00 (Local Time) Aggregation Time Zone - America/Toronto (-05:00)

Row Count: 15

#### 4

To generate a report using daily or monthly data, we need to ensure we have an appropriate retention policy for the telemetry type. Switching to the Age-Out Policy list, we can see that the retention policy for the telemetry types have been set to 24 hours.

NOKIA NSP Insights Administrator

User: admin

Age-Out Policy

Telemetry Policies

Name	Retention (hours)
complete-service	
telemetry/base/accounting/complete-service-egress-packet-octets	9672
telemetry/base/accounting/complete-service-ingress-packet-octets	9672

Last Refresh: 2023-08-22 18:44:34 -04:00 (Local Time)Row Count : 2

3.4.6 Generate the report in Analytics

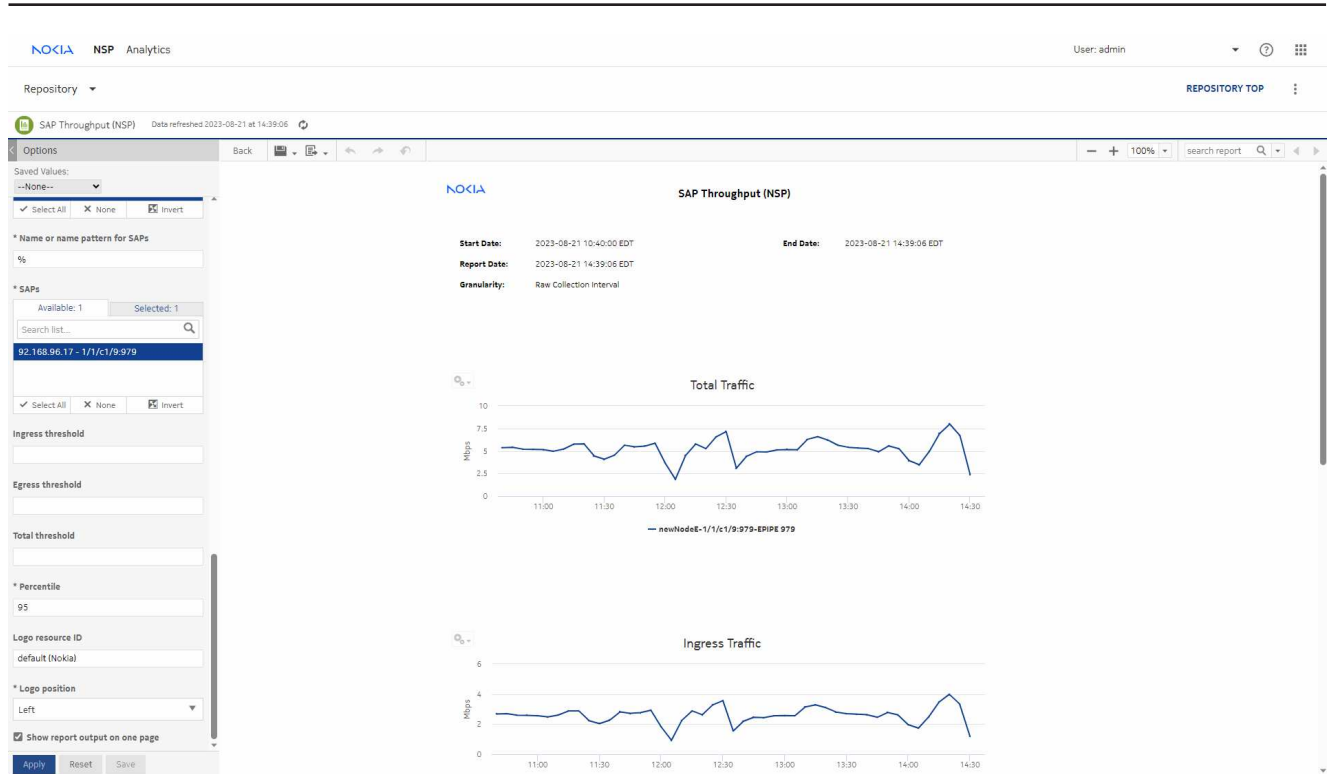
Now that we've confirmed that all the prerequisites are in place, we can run the report.

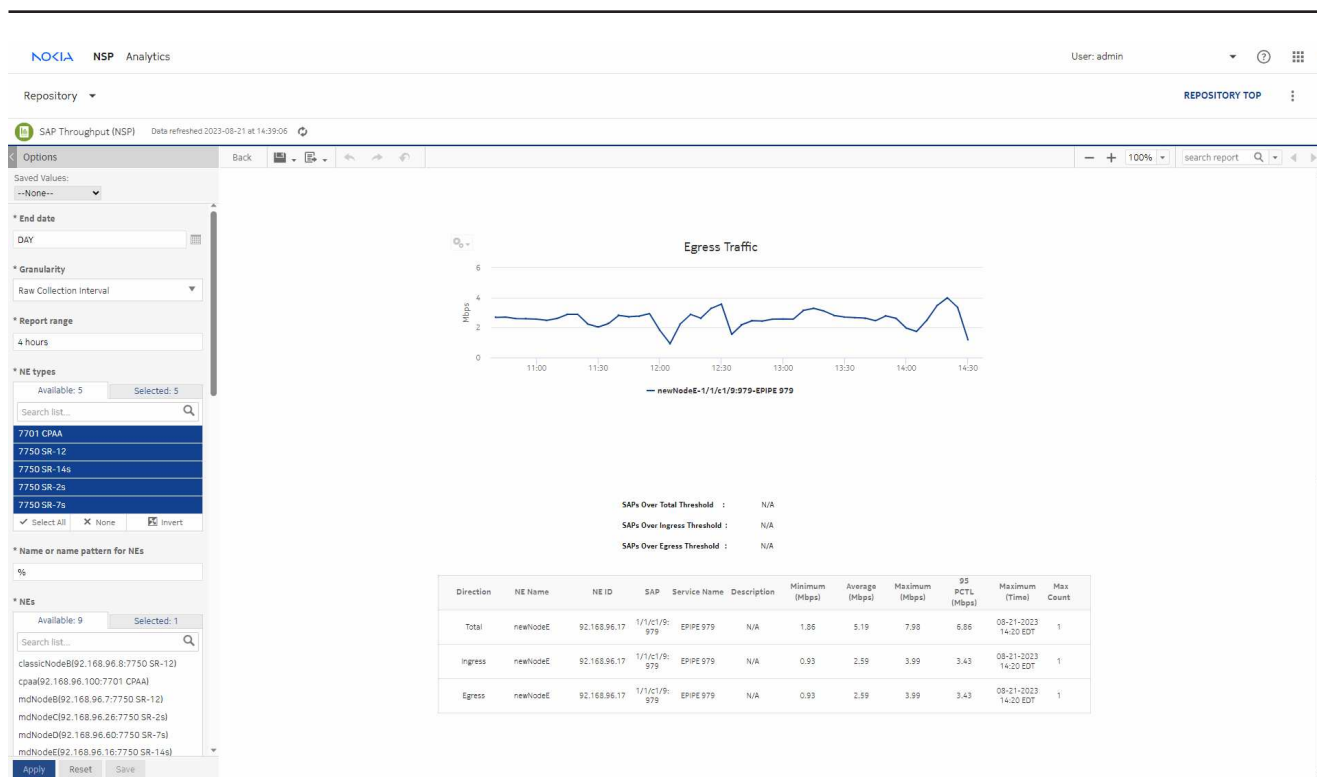
- 1
- In the Analytics application, the report we need is under Reports and Dashboards, NSP, Utilization. Navigate through the folders and choose SAP Throughput (NSP).

2

1. Select all the NE types.
2. In the NE list, choose NEs that host the service endpoints.
3. Choose a customer, a service, and one or more SAPs.
4. Select the Show report output on one page check box.
5. Click Apply.

The report shows the raw SAP utilization data.



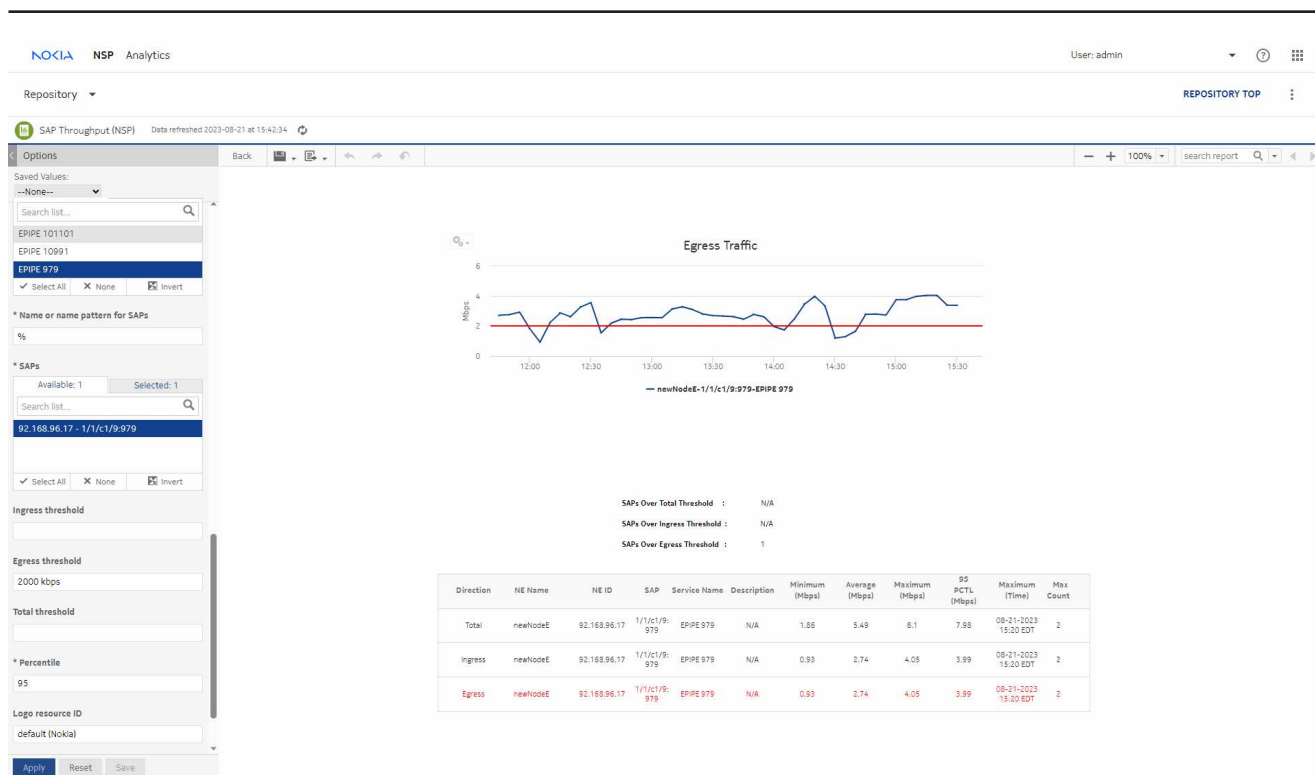


### 3

Next, we'll re-run the report with a threshold. A threshold helps to visualize whether traffic is exceeding expected values.

For example, we'll set an egress threshold of 2 000 kbps.

The report shows the threshold level on the graphs. If the average throughput rate exceeds the threshold, the table shows the values in red.



## 3.5 End-to-end NE troubleshooting scenario

### 3.5.1 Purpose

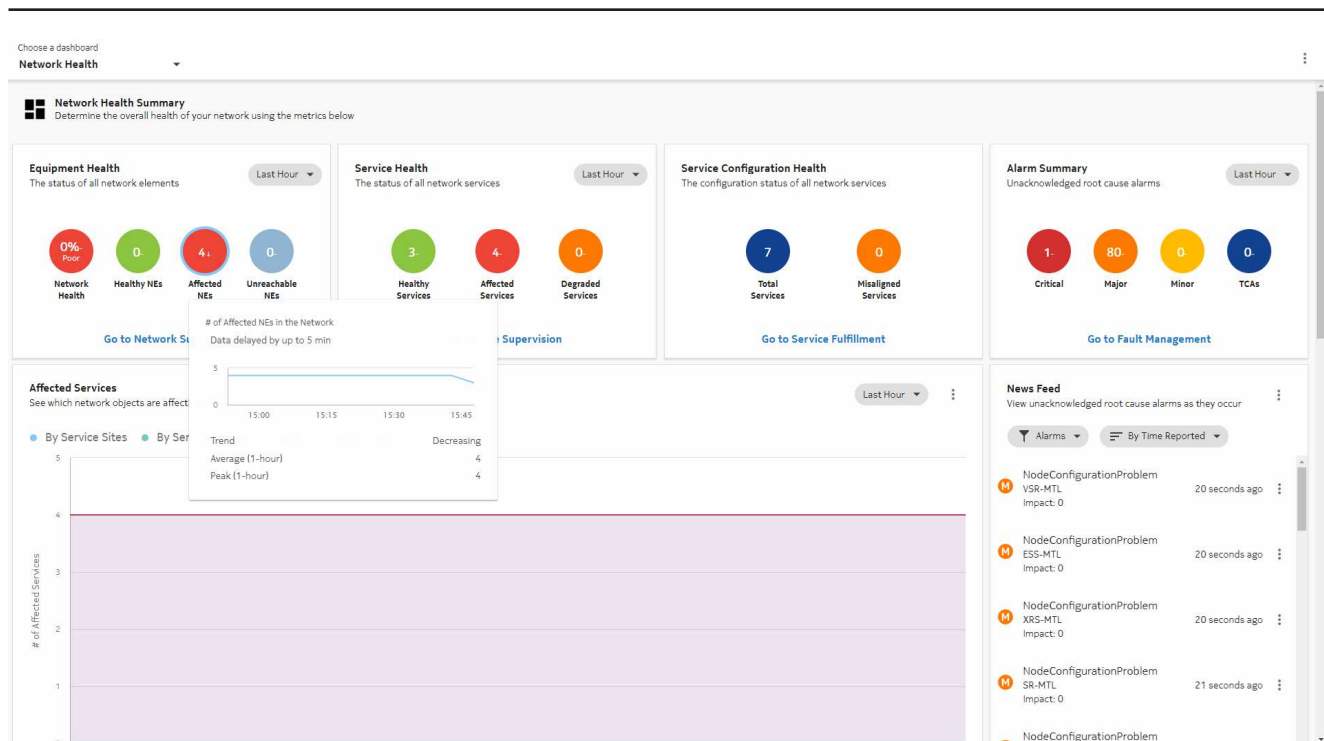
This process shows you how to use NSP Applications in troubleshooting issues on NEs. In this scenario, an NE is experiencing problems.

### 3.5.2 View affected equipment related resources

1

The Equipment Health dashlet in the Network Health dashboard uses KPIs to show NE states. The **Affected NEs** KPI indicates that there are NEs to look at to start investigating.





The Network Elements data page appears, filtered to show the list of NEs with at least one affected object. The default filter can be changed if needed, for example, to focus on NEs with more affected objects. We'll focus on the Affected Objects column for the NE we're troubleshooting.

Let's open Network Supervision to get more details. Select an NE and choose **Go to equipment view** from the table row actions menu.

Choose a dashboard  
Network Health

Network Elements

Content updated on 2023/01/13 15:55:33 (Click to update)

Name	Operational State	# Affected Objects	System Address	Management Address	Product	Chassis Type	Version	Communication State	Managed State	Administ
VSR-MTL	enabled	43	92.168.96.16	135.228.141.125	7750 SR	VSR-I	TIMOS-B-2...	up	managed	unlocke
ESS-MTL	enabled	18	92.168.96.26	135.228.141.185	7450 ESS	7450 ESS-7	TIMOS-C-2...	up		
SR-MTL	enabled	17	92.168.96.9	135.228.141.167	7750 SR	7750 SR-12	TIMOS-C-2...	up		
XRS-MTL	enabled	12	92.168.96.7	135.228.138.153	7950 XRS	7950 XRS-16	TIMOS-C-2...	up		

- Go to Network Supervision
- Go to equipment view
- Show in map
- Open NE session
- Plot statistics
- Show in troubleshooting dashboard

Service Sites

Name	Operational State
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled
EPIPE-1-ESS-SR	disabled
epipe	disabled

Links

Name	Operational State
No data to display	

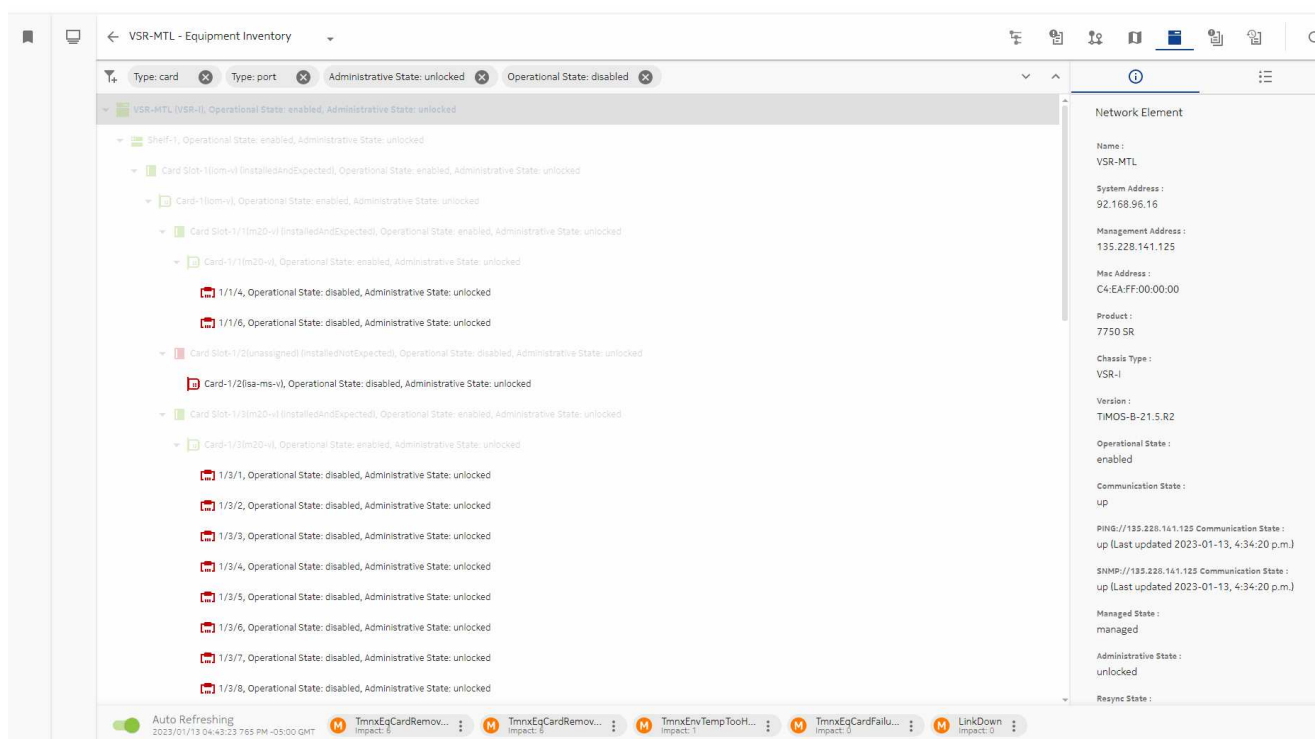
Ports

Name	Operational State
1/1/c2	disabled
1/1/c3	disabled
1/1/c4	disabled
1/1/c5	disabled

Services

Name	Operational State
epipe	disabled
EPIPE-1-ESS-SR	disabled
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled

The Network Supervision application opens in a new tab, showing affected objects in the Equipment Tree.

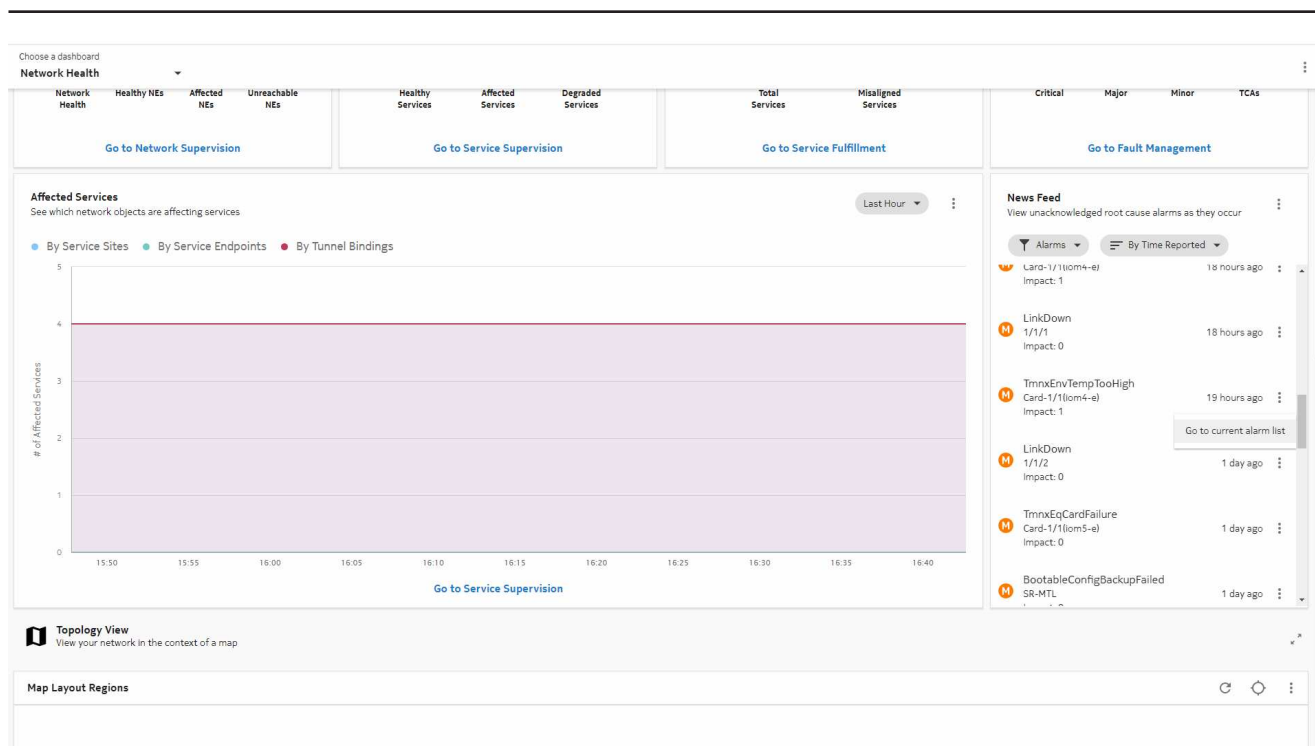


### 3.5.3 View the News Feed

The News Feed provides a live feed of unacknowledged root cause alarms as they occur in real time. Alarm severity and number of impacts are displayed, and cross launch is available depending on the alarm. All alarms can cross launch to the Current Alarm List. NE and link alarms can cross launch to the current alarm list and the map, and NE and port alarms can cross launch to the current alarm list, equipment view or port utilization.

1

Select an alarm with impact and show it in the current alarm list to dig deeper into possible causes of the problem.



2

Hover over the alarm row to see options. For example, open an impacts diagram to see other alarms caused by this root cause.

TOP UNHEALTHY NEs ALARM LIST TOP PROBLEMS INSPECTOR

Current Alarms

Unsaved Advanced F... Total Unfiltered Alarms: 1 87 0 14 0 1 0 0

Severity	Impact	Last Time Detected	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name
M	1	2023/01/12 09:38:26 9...	92.168.96.16	VSR-MTL	equipmentEquip...	Card-1/16(om4-e)	

Show impacts

Live data

Row Count: 1

- General
- Severity
- Acknowledgement
- Acknowledgement Notes
- Statistics
- Description
- Remedial Action
- Raising Condition
- Clearing Condition
- Additional Text
- Custom Text
- Specific Problem

TOP UNHEALTHY NEs ALARM LIST TOP PROBLEMS INSPECTOR

← TmnxEmpTooHigh (Impact 1) - Impact Diagram

Choose alarm to display

Fault Management also provides details of the alarm, such as the alarm description, raising and clearing conditions, and remedial action.

3

Another option is to note the NE name and switch to the Top Unhealthy NEs or Top Problems tabs, to see what other alarms are present on the NE, to see what other issues the NE is experiencing.

### 3.5.4 View the Network Health Dashboard map view

Another option the Network Health Dashboard offers is a network map view. The map view is the same as the one provided by Network Supervision. Viewing the NE in the map will show us the status of links, in case there are any port issues affecting connectivity.

1

From the Network Elements list, click on the NE and choose **Show in map**.

Choose a dashboard  
Network Health

Network Elements

Content updated on 2023/01/13 15:55:33 (Click to update)

Name	Operational State	# Affected Objects	System Address	Management Address	Product	Chassis Type	Version	Communication State	Managed State	Adminis
VSR-MTL	enabled	43	92.168.96.16	135.228.141.125	7750 SR	VSR-I	TIMOS-B-2...	up	managed	unlocke
ESS-MTL	enabled	18	92.168.96.26	135.228.141.185	7450 ESS	7450 ESS-7	TIMOS-C-2...	up		
SR-MTL	enabled	17	92.168.96.9	135.228.141.167	7750 SR	7750 SR-12	TIMOS-C-2...	up		
XRS-MTL	enabled	12	92.168.96.7	135.228.138.153	7950 XRS	7950 XRS-16	TIMOS-C-2...	up		

- Go to Network Supervision
- Go to equipment view
- Show in map
- Open NE session
- Plot statistics
- Show in troubleshooting dashboard

Service Sites

Name	Operational State
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled
EPIPE-1-ESS-SR	disabled
epipe	disabled

Links

No data to display

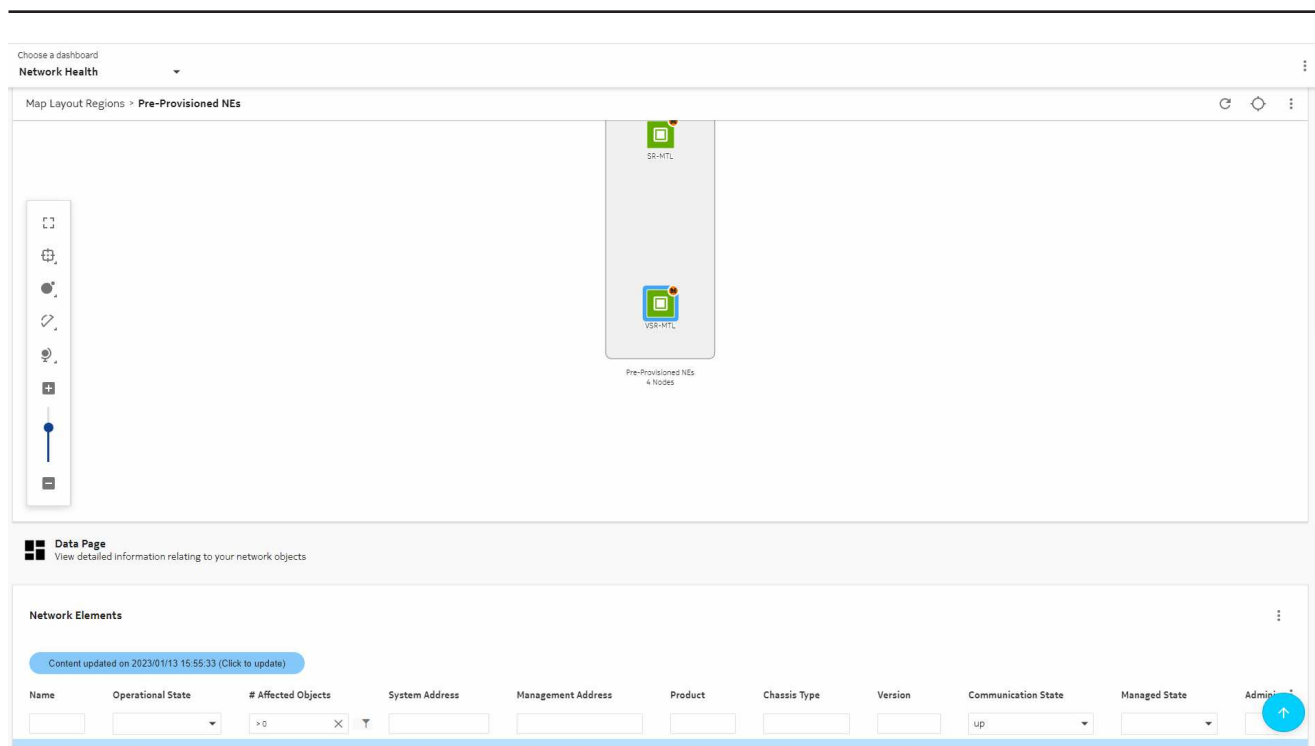
Ports

Name	Operational State
1/1/c2	disabled
1/1/c3	disabled
1/1/c4	disabled
1/1/c5	disabled

Services

Name	Operational State
epipe	disabled
EPIPE-1-ESS-SR	disabled
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled

A network map opens within the Network Health dashboard, highlighting the NE.



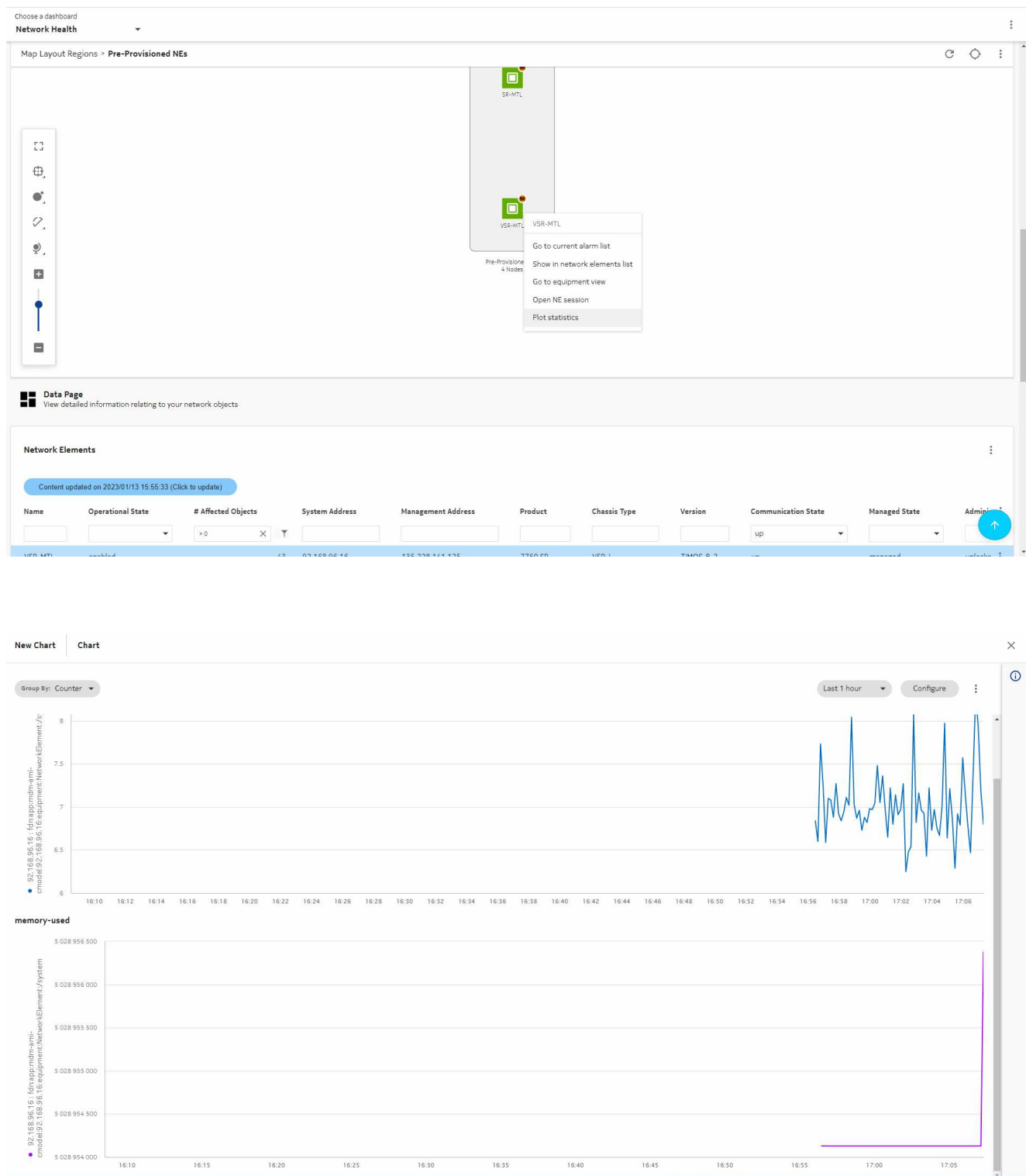
2

From the map view, there are similar options to the Network Elements list, such as showing the NE in the Current Alarm list or the Equipment View. In addition, you can plot statistics for the NE.

3

Right click on the NE in the map view and choose **Plot statistics**.

The Insights Viewer utility opens, showing an on-demand chart of memory and CPU usage for the NE.





In the event that a subscription is already present for the memory and CPU usage counters, historical data will also be displayed.

### 3.5.5 Open the alarm list from the Network Health dashboard

1

From the Network Elements list in the Network Health dashboard, choose **Go to Network Supervision**.

The screenshot shows the NSP Network Health dashboard. At the top, there's a 'Choose a dashboard' dropdown set to 'Network Health'. Below this is the 'Network Elements' section, which includes a table of network elements. The table has columns for Name, Operational State, # Affected Objects, System Address, Management Address, Product, Chassis Type, Version, Communication State, Managed State, and Admin. The first row is highlighted in blue, and a context menu is open over it, showing options like 'Go to Network Supervision', 'Go to equipment view', 'Show in map', 'Open NE session', 'Plot statistics', and 'Show in troubleshooting dashboard'. Below the table are four panels: 'Service Sites', 'Links', 'Ports', and 'Services', each with its own table of related information.

Name	Operational State	# Affected Objects	System Address	Management Address	Product	Chassis Type	Version	Communication State	Managed State	Admin
VSR-MTL	enabled	43	92.168.96.16	135.228.141.125	7750 SR	VSR-I	TIMOS-B-2...	up	managed	unlock
ESS-MTL	enabled	18	92.168.96.26	135.228.141.185	7450 ESS	7450 ESS-7	TIMOS-C-2...	up		
SR-MTL	enabled	17	92.168.96.9	135.228.141.167	7750 SR	7750 SR-12	TIMOS-C-2...	up		
XRS-MTL	enabled	12	92.168.96.7	135.228.138.153	7950 XRS	7950 XRS-16	TIMOS-C-2...	up		

Name	Operational State
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled
EPIPE-1-ESS-SR	disabled
epipe	disabled

Name	Operational State
No data to display	

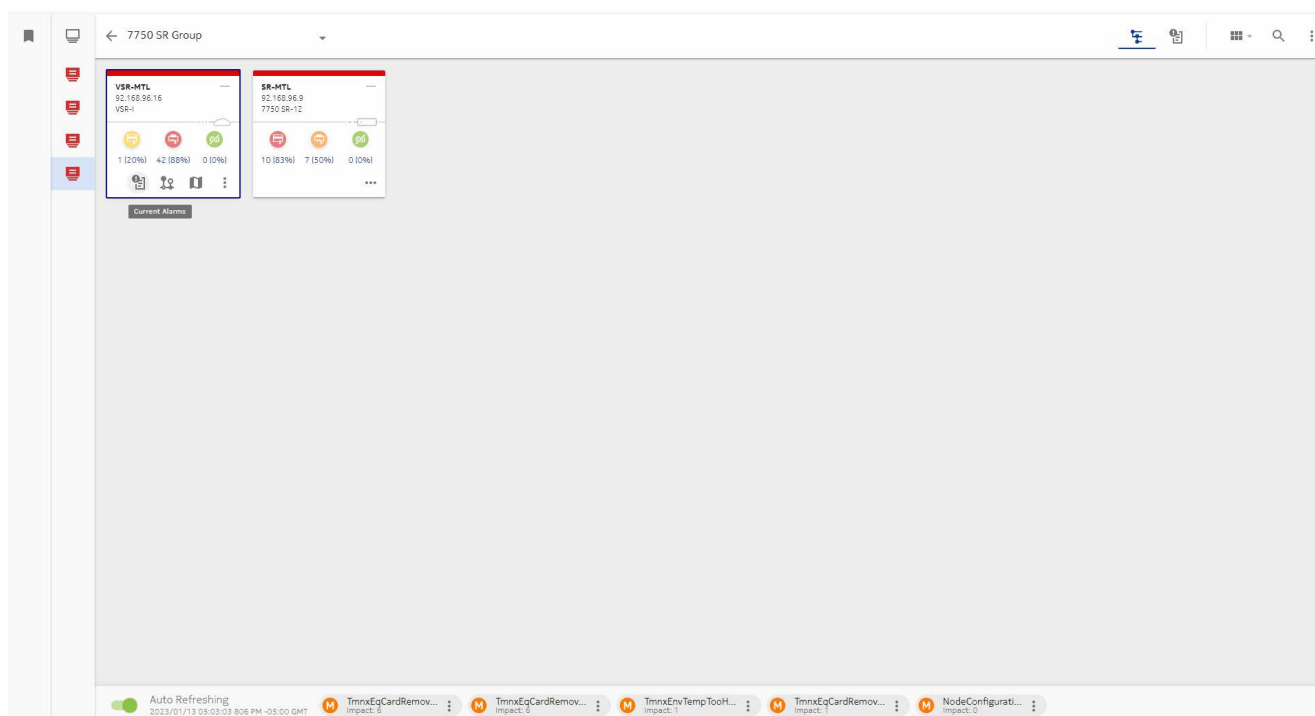
Name	Operational State
1/1/c2	disabled
1/1/c3	disabled
1/1/c4	disabled
1/1/c5	disabled

Name	Operational State
epipe	disabled
EPIPE-1-ESS-SR	disabled
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled

The NSP Network Supervision application opens, displaying the selected NE.

Click **...** (Show more), **Current Alarms** to see the alarm list for the NE.



VSR-MTL - Current Alarms

Severity	Impact	Site ID	Site Name	Alarmed Object...	Alarmed Object...	Alarm Name	Probable Cause	Time
M	0	92.168.96.16	VSR-MTL	necontrolDis...	VSR-MTL	NodeConfiguratio...	configurationOrC...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	Card-1/1(iom...	TmnxEqCardFailure	equipmentMalfun...	2023/01/13 05:03:03
M	1	92.168.96.16	VSR-MTL	equipmentE...	Card-1/1(iom...	TmnxEqCardFailure	equipmentMalfun...	2023/01/13 05:03:03
W	0	92.168.96.16	VSR-MTL	equipmentN...	VSR-MTL	TelemetryCollecti...	underlyingResour...	2023/01/13 05:03:03
W	0	92.168.96.16	VSR-MTL	equipmentN...	VSR-MTL	TelemetryCollecti...	underlyingResour...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/1/7	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/1/6	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/1/4	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/1	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/2	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/4	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/5	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/6	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/8	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/9	LinkDown	equipmentMalfun...	2023/01/13 05:03:03
M	0	92.168.96.16	VSR-MTL	equipmentE...	port=1/3/7	LinkDown	equipmentMalfun...	2023/01/13 05:03:03

Auto Refreshing 2023/01/13 05:04:33 845 PM -05:00 GMT

Row Count: 53

## 2

Click on an alarm row to see more information in the Details panel.

From the Current Alarms, you can also investigate alarms by looking into the alarm details, showing Impacts, showing Root cause, or opening an NE session to use CLI.

### 3.5.6 Check the Troubleshooting Dashboard

## 1

Viewing a target in the Troubleshooting Dashboard can help you see where to look to investigate a problem.

From the Network Elements dashlet in the Network Health dashboard, right click on the NE and choose **Show in troubleshooting dashboard**.

The screenshot shows the Network Health dashboard. At the top, there's a 'Choose a dashboard' dropdown set to 'Network Health'. Below this is the 'Network Elements' section, which includes a table of network elements. The table has columns for Name, Operational State, # Affected Objects, System Address, Management Address, Product, Chassis Type, Version, Communication State, Managed State, and Admin. A right-click context menu is open over the first row (VSR-MTL), showing options like 'Go to Network Supervision', 'Go to equipment view', 'Show in map', 'Open NE session', 'Plot statistics', and 'Show in troubleshooting dashboard'. Below the table, there are four dashlets: 'Service Sites', 'Links', 'Ports', and 'Services'. Each dashlet has a table with columns for Name and Operational State. The 'Links' dashlet shows 'No data to display'.

Name	Operational State	# Affected Objects	System Address	Management Address	Product	Chassis Type	Version	Communication State	Managed State	Admin
VSR-MTL	enabled	43	92.168.96.16	135.228.141.125	7750 SR	VSR-I	TIMOS-B-2...	up	managed	unlocke
ESS-MTL	enabled	18	92.168.96.26	135.228.141.185	7450 ESS	7450 ESS-7	TIMOS-C-2...	up		
SR-MTL	enabled	17	92.168.96.9	135.228.141.167	7750 SR	7750 SR-12	TIMOS-C-2...	up		
XRS-MTL	enabled	12	92.168.96.7	135.228.138.153	7950 XRS	7950 XRS-16	TIMOS-C-2...	up		

Name	Operational State
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled
EPIPE-1-ESS-SR	disabled
epipe	disabled

Name	Operational State
No data to display	

Name	Operational State
1/1/c2	disabled
1/1/c3	disabled
1/1/c4	disabled
1/1/c5	disabled

Name	Operational State
epipe	disabled
EPIPE-1-ESS-SR	disabled
EPIPE-10-ESS-SR	disabled
Epipe-30-between-9-26	disabled

The Troubleshooting dashboard shows summary information for the NE, and provides a health and an alarm summary.

We can click **Go to equipment view** to see the port in Network Supervision, or **Go to Network Supervision** to view alarms and impacts.

Choose a dashboard  
**Troubleshooting**

Search for a target to troubleshoot  
Network Element

Troubleshooting Target  
VSR-MTL

**Troubleshooting Summary Board**  
Select an NE to view troubleshooting summary information

**NE Overview**  
See the summary information for the selected NE

**Current Health Summary**  
See the healthy status of the selected NE

**Alarm Summary**  
See alarms and impacts for the selected NE

System Address: 92.168.96.16  
Management Address: 135.228.141.125  
Product: 7750 SR  
Location: N/A

Operational State: enabled  
Communication State: up  
Administrative State: unlocked  
Availability State: N/A  
Resync State: done  
[Go to equipment view](#)

0  
Critical

51  
Major

0  
TCAs

13  
Total Impacts

[Go to Network Supervision](#)

### 3.5.7 Check configuration alignment and operation history in Device Administrator

1

From Network Supervision, click on the matrix menu and choose Device Administrator.

Severity	Impact	Site ID	Site Name	Alarmed Object	Alarm Name	Probable Cause	Last
M	0	92.168.96.16	VSR-MTL	necontrol.Dis...	VSR-MTL	configurationOrC...	2023/01/1
M	0	92.168.96.16	VSR-MTL	equipment.E...	Card-1/1/1om...	TmrxEqCardFailure	2023/01/1
M	1	92.168.96.16	VSR-MTL	equipment.E...	Card-1/1/1om...	TmrxEnvTempToo...	2023/01/1
W	0	92.168.96.16	VSR-MTL	equipment.N...	VSR-MTL	TelemetryCollect...	2023/01/1
W	0	92.168.96.16	VSR-MTL	equipment.N...	VSR-MTL	TelemetryCollect...	2023/01/1
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/1/7	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/1/6	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/1/4	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/1	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/2	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/4	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/5	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/6	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/8	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/9	LinkDown	2023/01/0
M	0	92.168.96.16	VSR-MTL	equipment.E...	port+1/3/7	LinkDown	2023/01/0

## 2

In the NETWORK ELEMENTS tab in Device Administrator, select the NE and choose Operation history from the Table row actions menu. The most recent operations are displayed.

From the history list, we can see when the most recent successful backup was performed, and see if any recent operations have failed.

You can click on the link icon from a failed operation to view error information in Workflow Manager.

To restore from a backup, select a successful backup and choose **Restore** from the Table row actions menu. The restore operation is launched.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

NETWORK ELEMENTS

VSR-MTL

Operation History

Completion Date	Operation Type	Operation Name	Duration	Status	Trigger	
DD/MM/ - DD/MM/						
2023/01/12 14:11	nsp-ne-backup	VSR-MTL_167355063...	1m 2s 520ms	Success	admin	
2023/01/12 12:19	nsp-ne-backup	VSR-MTL_167354390...	44s 331ms	Error	admin	<div>Restore</div> <div>Open Workflow Manager</div>

Auto-refresh

Last Refresh: 60 seconds ago

Row Count : 2

#### 4

If the NE was configured using Infrastructure Configuration Management, we can check for a misalignment in the CONFIGURATIONS tab.

Click on the misaligned object and click **View Result** under Last Audit.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

Deployment Status

Configuration Status

NE Name

NE ID

Identifier

Template

Role

Category

☒ Deployed Misaligned

☐ Modified

VSR-MTL

92.168.96.16

1/1/7

configure-port

Physical

Port

Deployment Details

NE Name  
VSR-MTL

NE ID  
92.168.96.16

Identifier  
Port-ID  
1/1/7

Deployment Status  
☒ Deployed Misaligned

AUDIT

ALIGN

Last Audit  
12th January, 2023 4:03 PM by admin

VIEW RESULT

View result of the last audit  
12th January, 2023 3:55 PM by admin

Template Name  
configure-port

Created  
12th January, 2023 3:55 PM

Last Modified  
12th January, 2023 3:55 PM

Role  
physical

Category  
port

Configuration Status  
☒ Modified

Auto-refresh: Last refresh: 22 seconds ago

Page: 1 / 1

Count: 1

The audit results show the misaligned attributes.

Audit Result from 12th January, 2023 4:03 PM

MISALIGNED ATTRIBUTES (1)

MISALIGNED OBJECTS (1)

Attribute

Expected Value (Template)

Actual Value (NE)

/configure/port=1/1/7/admin-state

enable

disable

CANCEL

ALIGN ALL



5

Click **ALIGN ALL** to fix the misalignment.

## 3.6 End-to-end service troubleshooting scenario

### 3.6.1 Purpose

This process shows you how to use NSP Applications in troubleshooting issues on services.

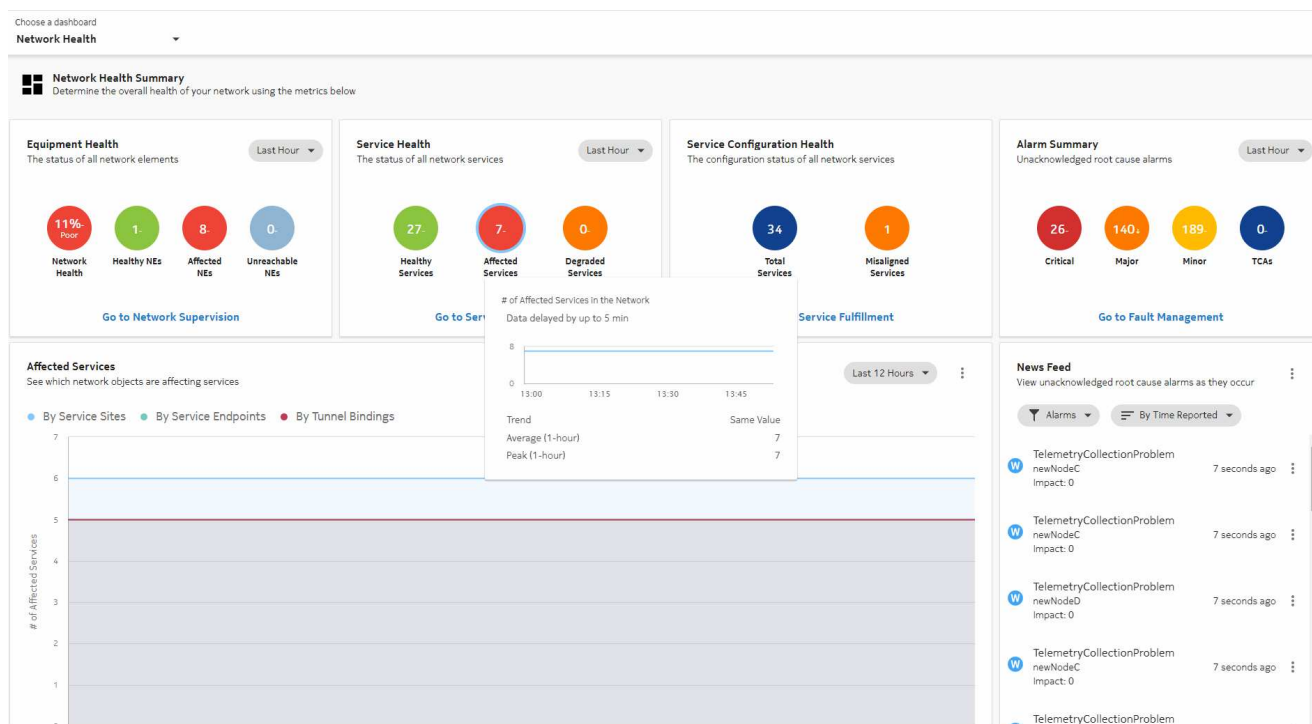
In this scenario, a service is experiencing problems.

### 3.6.2 View service health summary

1

The Service Health dashlet in the Network Health dashboard uses KPIs to show service states.

The **Affected Services** KPI indicates that there is an unhealthy service to look at to start investigating.



The Services data page appears, filtered to show the list of services with at least one affected object. The default filter can be changed if needed, for example, to focus on services with more

affected objects. From the Services data page, we can see that the Operational State is disabled, and there is a potential cause: a site is down.

Let's open the troubleshooting dashboard to get more details. Select the affected service and choose **Show in troubleshooting dashboard** from the table row actions menu.

Choose a dashboard  
Network Health

Services

Content updated on 2022/12/19 14:16:42 (Click to update)

Name	Operational State	# Affected Objects	Degraded Status	Life Cycle State	Alignment State	Service Type	Description	Customer ID	State Cause(s)
Demo_VPLS_22_11	enabled	4		Deployed	Aligned	E-LAN		10	
Epipe 979	disabled	3		Deployed	Aligned	E-Line	Epipe for Troubl...	100	sdpBindingOr...
Epipe_LAG_UP	disabled	3		Deployed	Aligned	E-Line		10	
Epipe_LAG	disabled	3		Deployed	Aligned	E-Line		10	
Demo_Epipe_120089	disabled	2		Deployed	Aligned	E-Line	Demo_Epipe_1...	10	siteDown
EPIPE 1104	disabled	2		Deployed	Aligned	E-Line	Epipe for troubl...	100	siteDown
EPIPE_DEMO_234	disabled	2		Deployed	Aligned	E-Line			

- Go to Service Supervision
- Show in troubleshooting dashboard
- Go to Service Fulfillment

Network Elements

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

Links

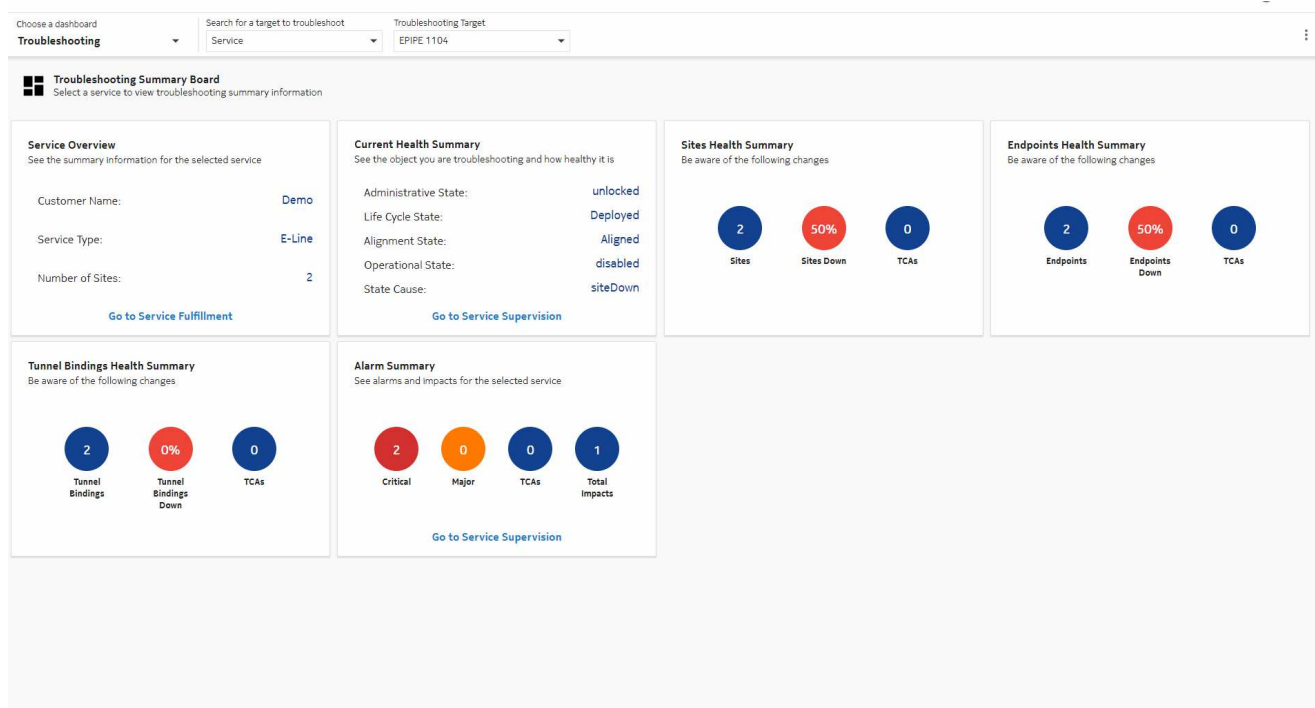
Name	Operational State
mdNodeE:1/1/c1/8--mdN...	disabled
mdNodeE:1/1/c1/9--mdN...	disabled
mdNodeC:LAG-11--mdNo...	disabled
mdNodeC:1/1/c1/6--mdN...	disabled

Ports

Name	Operational State
Port 1/1/2	disabled
Port 1/1/3	disabled
Port 1/1/4	disabled
Port 1/1/c2	disabled

The Troubleshooting Dashboard opens in a new tab, filtered to show the service we're investigating. The Service Overview and Current Health Summary dashlets show similar information to what we saw in the Network Health dashboard: The dashboard also includes health summaries for the sites, endpoints, and tunnel bindings. Here we can see that there is a problem with one site and one endpoint. The tunnel bindings look healthy.

In addition, there are alarms against this service, with one impact.



2

From here, we can click **Go to Service Supervision** in the Current Health Summary. Service Supervision opens, showing the service group with our service of interest selected.

← 92.168.96.27												
All Services												
Service Name	Availability States	State Cause(s)										Service Type
EPIPE 6004	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
VRN 5100	↑	N/A	N/A	✓	✓	✗	✓	0	0%	3	0	L3 VPN
VPLS 5300	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-LAN
VRN 5101	↑	N/A	N/A	✓	✗	✗	✓	0	0%	3	0	L3 VPN
VPLS 5005	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-LAN
VPLS 5006	↑	N/A	N/A	✓	✗	✓	✓	0	0%	0	0	E-LAN
EPIPE 101101	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
EPIPE 5301	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
EPIPE 1104	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	33%	2	0	E-Line
EPIPE 5001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
VPLS 6001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-LAN
EPIPE 10112	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
EPIPE 7001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	0	E-Line
IES 5201	↑	N/A	N/A	✓	✓	✗	✓	0	0%	0	0	IES
Demo_Epipe_1...	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	66%	2	0	E-Line
Epipe 979	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	33%	2	0	E-Line

Items on Page : 16

Auto Refreshing 2022/12/19 04:03:40 913 PM -05:00 GMT

AccessInterface... Impact: 1

AccessInterface... Impact: 1

AccessInterface... Impact: 1

ServiceSiteDown Impact: 0

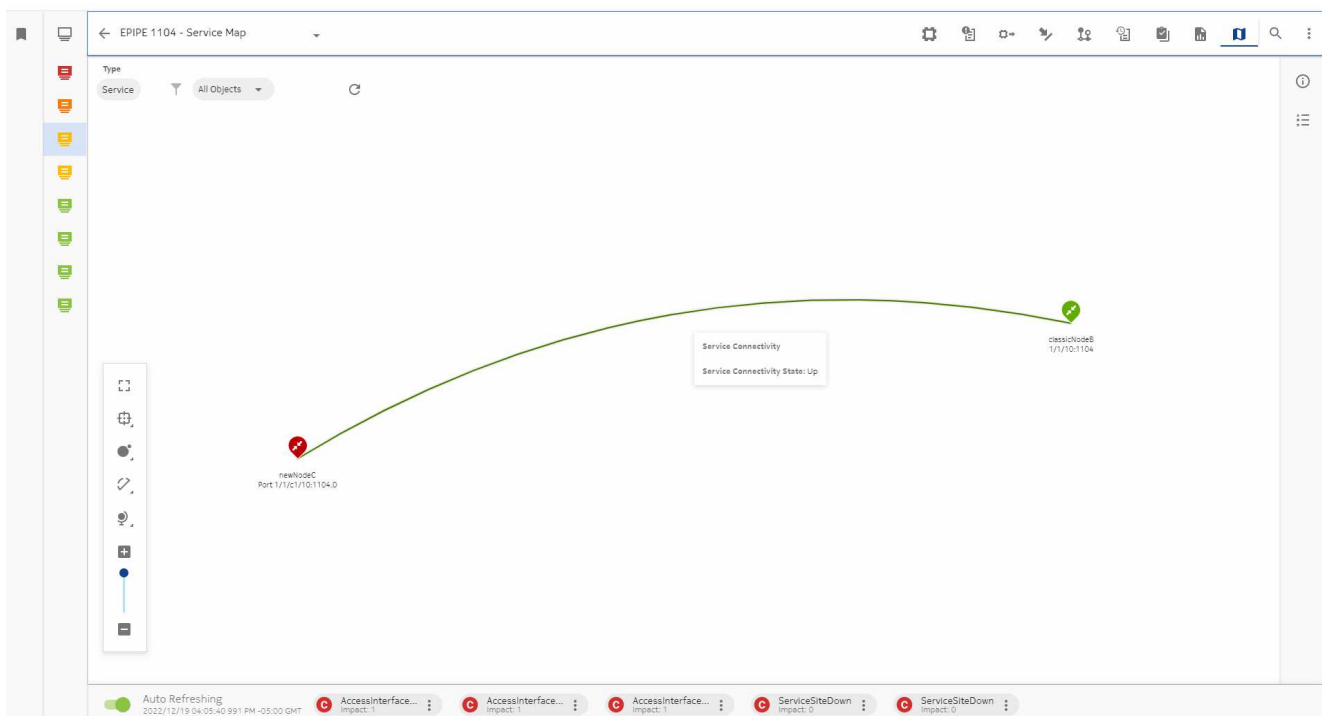
ServiceSiteDown Impact: 0

Filter on Affected Services at the top of the page to show only the unhealthy service.

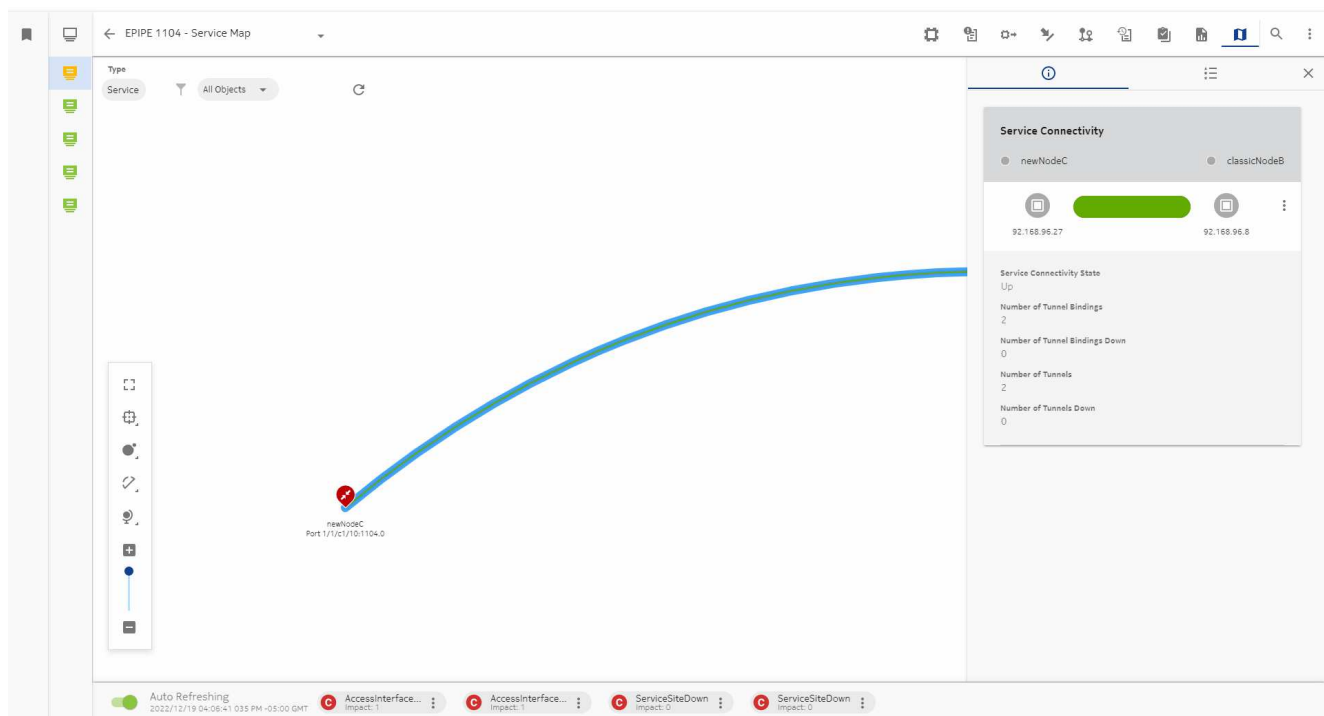
### 3

From here, we can open the Service Map to see a visual indication of the health of the service. Select the service and click Service Map.

The service map shows one healthy site, one unhealthy site, and healthy connectivity between sites. Click on the connection for more information about service connectivity.

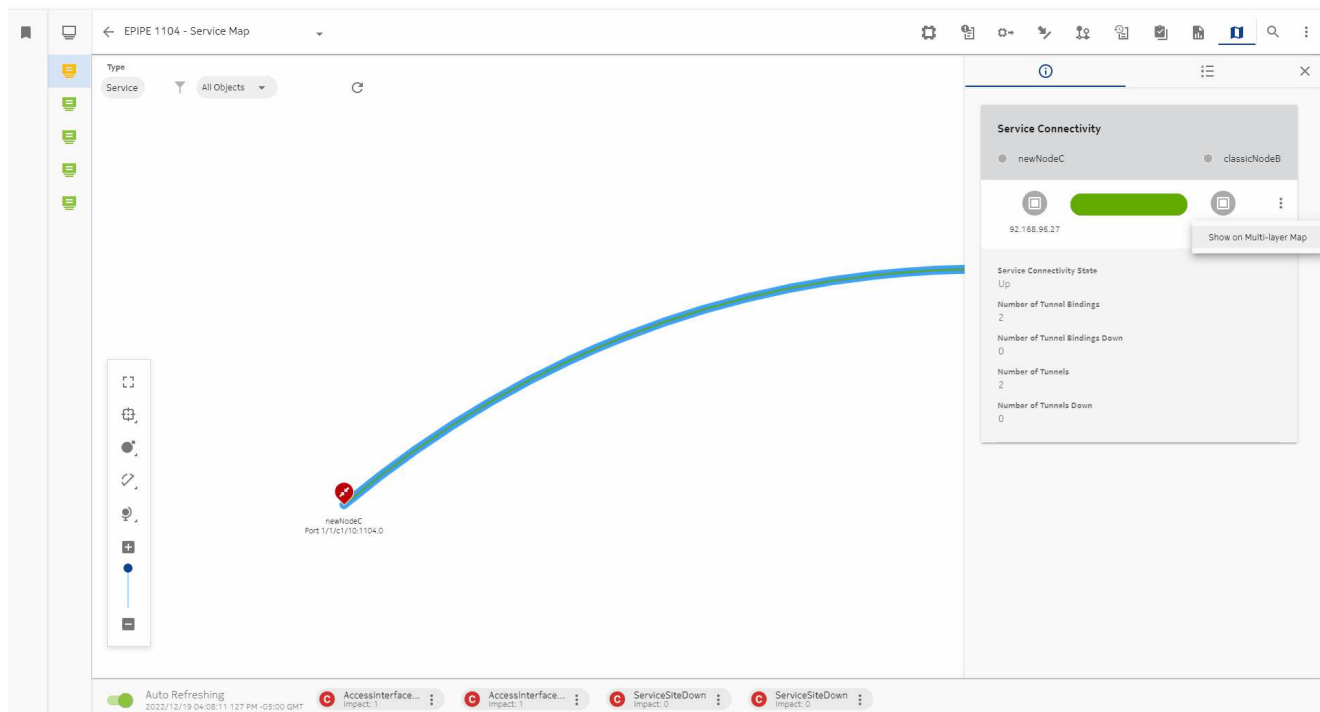


The Service Connectivity details show two tunnel bindings and two tunnels, all of which are up.

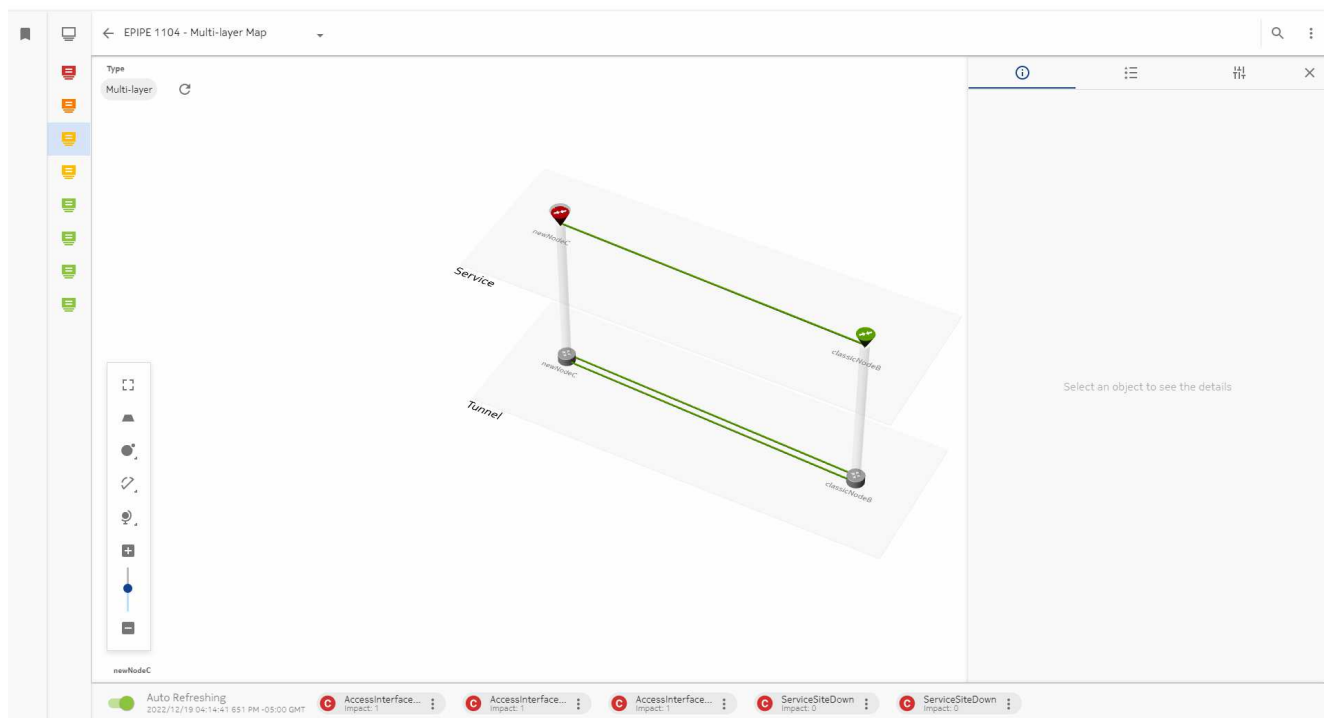


4

From the Service Connectivity details, we can open a multi-layer map by clicking Show on Multi-layer Map.



The multi-layer map shows that the service and tunnel connections are working, and the service connectivity is working, but there is an issue with one of the sites. Click on the site object for more detail.



## 5

Returning to Service Supervision, we can view results of historical OAM tests, or initiate a test. Select the affected service and choose **Historical OAM Test Results** or **Execute OAM Test** from the table row actions menu.



Service Name	Availability Status	State Cause(s)	Service Type
EPIPE 6004	Up	N/A	E-Line
VRN 5100	Up	N/A	L3 VPN
VPLS 5300	Up	N/A	E-LAN
VRN 5101	Up	N/A	L3 VPN
VPLS 5005	Up	N/A	E-LAN
VPLS 5006	Up	N/A	E-LAN
EPIPE 101101	Up	N/A	E-Line
EPIPE 5301	Up	N/A	E-Line
EPIPE 1104	Down	Site(s) Down	E-Line
EPIPE 5001	Up	N/A	E-Line
VPLS 6001	Up	N/A	E-LAN
EPIPE 101112	Up	N/A	E-Line
EPIPE 7001	Up	N/A	E-Line
IES 5201	Up	N/A	E-Line
Demo_Epipe_1...	Down	Site(s) Down	E-Line
Epipe 979	Down	Site(s) Down	E-Line

6

We can also view the endpoints for the service. Select the service and click Endpoints.

92.168.96.27											
All Services											
Service Name	Availability States	State Cause(s)									Service Type
EPipe 6004	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
VRN 5100	↑	N/A	N/A	✓	✓	✗	✓	0	0%	3	L3 VPN
VPLS 5300	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-LAN
VRN 5101	↑	N/A	N/A	✓	✗	✗	✓	0	0%	3	L3 VPN
VPLS 5005	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-LAN
VPLS 5006	↑	N/A	N/A	✓	✗	✗	✓	0	0%	0	E-LAN
EPipe 101101	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
EPipe 5301	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
EPipe 1104	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	33%	2	E-Line
EPipe 5001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
VPLS 6001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-LAN
EPipe 10112	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
EPipe 7001	↑	N/A	N/A	✓	✓	✓	✓	0	0%	0	E-Line
IES 5201	↑	N/A	N/A	✓	✓	✗	✓	0	0%	0	IES
Demo_Epipe_1...	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	66%	2	E-Line
Epipe 979	↓	N/A	Site(s) Down	✗	✗	✓	✓	2	33%	2	E-Line

Items on Page : 16

Auto Refreshing  
2022/12/19 04:44:37 713 PM -05:00 GMT

AccessInterface... Impact: 1

AccessInterface... Impact: 1

AccessInterface... Impact: 1

ServiceSiteDown Impact: 0

ServiceSiteDown Impact: 0

## 7

Looking deeper into the Endpoint that is down we can initiate the Event Timeline to investigate events related to this service. Select the endpoint and click Event Timeline.

EPIPE 1104 - Endpoints									
Endpoint Name	Site ID	↓↑	State Ch...	Port Name	NIE Name				Description
Port 1/1/c1/10:1104.0	92.168.96.27	↓	SAP Ad...	Port 1/1/c1/10	newNodeC	1	0		
1/1/10:1104	92.168.96.8	↑	N/A	1/1/10	classicNodeB	0	0		

Auto Refreshing  
2022/12/19 04:45:07 721 PM -05:00 GMT

AccessInterface... Impact: 1

AccessInterface... Impact: 1

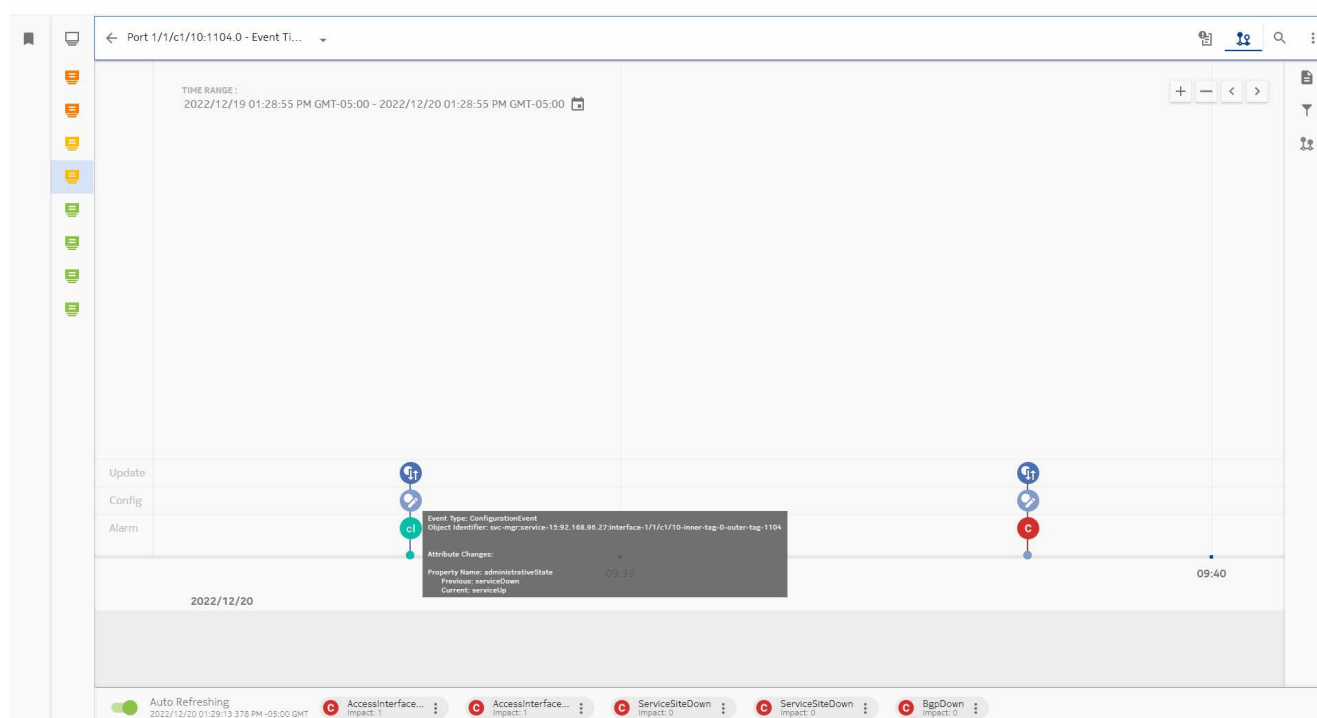
AccessInterface... Impact: 1

ServiceSiteDown Impact: 0

ServiceSiteDown Impact: 0

Items on Page: 2

On the event timeline, we can see that a configuration event immediately preceded a state change event, which was also soon followed by a critical alarm raising event. This configuration change may be the cause of the issue.



From the event timeline, we can click Alarms to view an alarms page in Service Supervision.



## 8

Select the alarm for details , such as Remedial Action and Raising Condition. For this alarm, there is an impact. The alarm page in Service Supervision works like Fault Management: we can click Show Impacts from this alarm page to see an impact diagram.

The screenshot shows the NSP Alarms interface. The main table displays a list of alarms with columns for Severity, Site ID, Site Name, Alarmed Object Type, Alarmed Object Name, Alarm Name, and Probable Cause. A single alarm is visible with a red 'C' icon, Site ID 92.168.96.27, Site Name newNodeC, Alarmed Object Type VLL2AccessInterf..., Alarmed Object Name Port 1/1/c1/10-110..., Alarm Name AccessInterfaceD..., and Probable Cause. A 'Show Impacts' button is next to the alarm. The right sidebar shows a 'Details' panel with expandable sections: General, Severity, Acknowledgement, Acknowledgement Notes, Statistics, Description, Remedial Action, Raising Condition, Clearing Condition, Additional Text, Custom Text, and Specific Problem. The bottom status bar shows 'Auto Refreshing' and a list of active alarms with their impact levels.

Severity	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name	Probable Cause
C	92.168.96.27	newNodeC	VLL2AccessInterf...	Port 1/1/c1/10-110...	AccessInterfaceD...	

The screenshot shows the NSP Impact Diagram interface. The main area displays a network diagram with a red circle icon labeled 'AccessInterfaceDown' and 'IMPACT 1' on the left, and a red dot icon labeled 'ServiceSiteDown' on the right. The right sidebar shows a 'Choose alarm to display' section. The bottom status bar shows 'Auto Refreshing' and a list of active alarms with their impact levels.

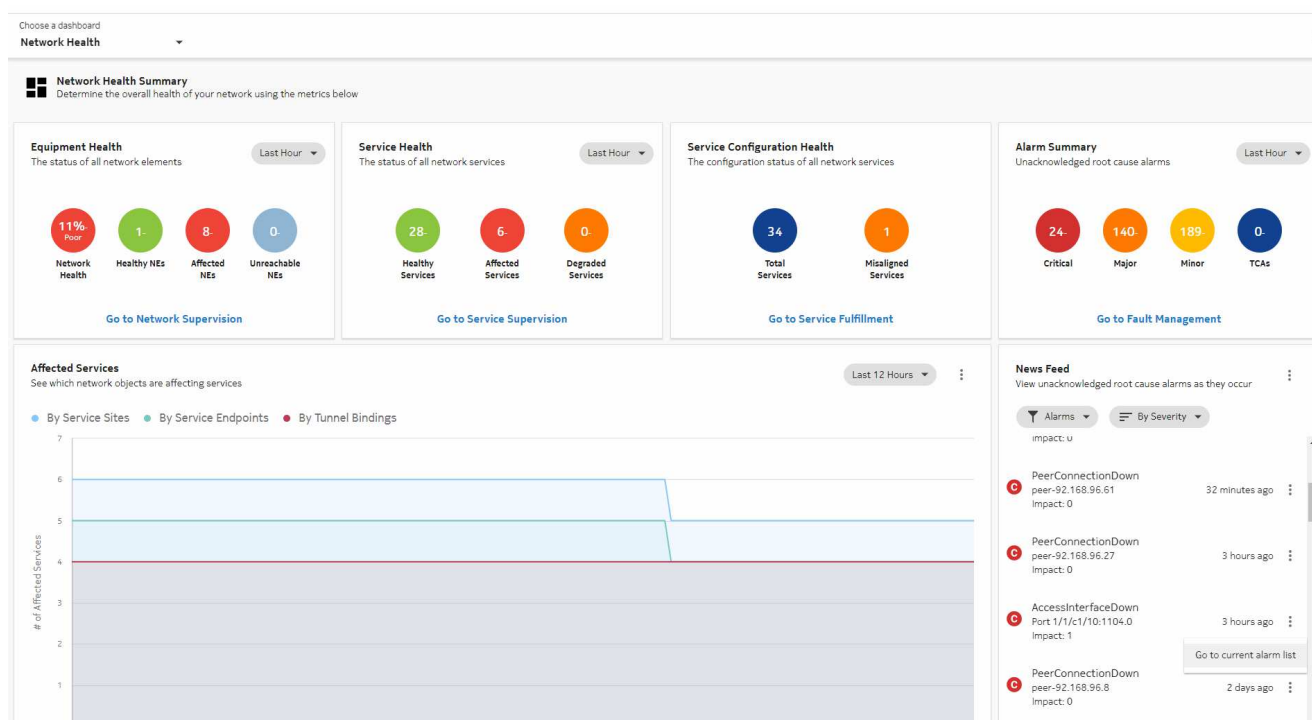
The impact diagram shows that the alarm of interest also causes a ServiceSiteDown alarm. Click on the ServiceSiteDown alarm to see a description and remedial action.

### 3.6.3 Investigate service alarms from the News Feed

Another option for investigating alarm details is to start from the News Feed. The News Feed provides a live feed of unacknowledged root cause alarms as they occur in real time. Alarm severity and number of impacts are displayed, and cross launch is available depending on the alarm. All alarms can cross launch to the Current Alarm List in Fault Management.

1

From the News Feed, select the alarm and choose **Go to current alarm list** from the More menu.



Fault Management opens, with the alarm selected.

2

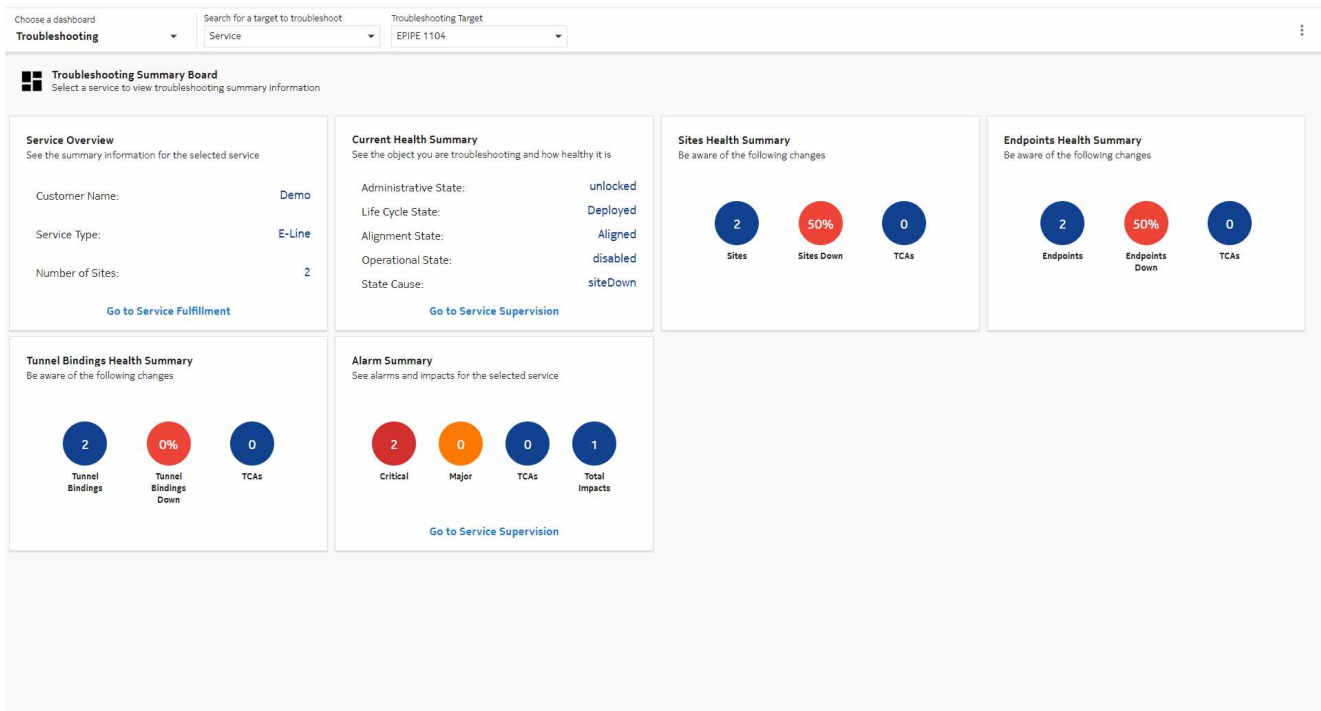
From Fault Management, you can see the NE in the Top Unhealthy NEs tab to see what other alarms are present on the endpoint NEs, or check Top Problems to see what other issues the network is experiencing.

### 3.6.4 View service provisioning details

Returning to the Troubleshooting Dashboard, we can also launch Service Fulfillment to look at the provisioning of the service.

1

From the Service Overview dashlet, click **Go to Service Fulfillment**.



Service Fulfillment opens in a new tab, filtered to show the service in question.



2

Release 23.8  
October 2023  
Issue 2

SERVICESINVENTORYTEMPLATES

Services

Life Cycle State

Alignment State

Composite Service

Service Name

Description

Service Template

Deployed

Aligned

EPIPE 1104

Epipe for troubleshooting demo

Default Epipe

Action

Edit

Audit config

Align

Resync

Execute workflow

Remove

View

Service details

Open in Service Supervision

Info

Service ID

EPIPE 1104:15:sam

NE Service ID

1104

Service Name

EPIPE 1104

Description

Epipe for troubleshooting demo

Service Type

ELINE

Customer ID

100

Service Manager ID

15

Template Name

Default Epipe

Life Cycle State

Deployed

Dec 19, 2022, 3:41:56 PM EST

Alignment State

Aligned

Service Functions

Last Refresh : Dec 20, 2022, 1:55:26 PM EST (Local Time)

Page: 1 / 1

Filtered Row Count: 1

Total Service Count: 34

Deployed: 34

### 3

In the Edit form, we can see that all the mandatory fields for the service are populated and, the administrative state is unlocked, as expected.

We'll scroll further down to look at the sites.

Edit Service: EPIPE 1104

Site A

Site B

SOP Details

Template Name

Default Epipe

Service Name\*

EPIPE 1104

Customer ID\*

100

Job ID

Current Life Cycle State

Deployed

NE Service ID\*

1104

Description

Epipe for troubleshooting demo

Alignment State

Aligned

MTU

1514

Admin State

unlocked

Site A

Device ID

92.168.96.27

Site Name

Demo\_Epipe\_1104

Description

Epipe for troubleshooting demo

Mtu

Endpoint

+ ADD

Port ID	Inner VLAN Tag	Outer VLAN Tag	Admin State	Desc
Port 1/1/c1/10	-1	1104	unlocked	

Page: 1 / 1

Site B

☒ Reserve Resources

CLOSE

MODIFY

DEPLOY


For both sites, everything looks good. The administration state is unlocked, inner and outer VLAN tags are present and correct.

If we scroll further down to look at the service tunnels, they're both unlocked and provisioned with a source and destination.

The provisioning looks good on the NSP side, so we'll close the Edit form.

#### 4

The next thing we can do is confirm that the provisioning is also correct on the NEs by doing an audit config. This will compare the configuration on the NSP with what is present on the NE.

From the services tab, click  (Table row actions), **Audit config**.

SERVICESINVENTORYTEMPLATES

Services

+ CREATE

Life Cycle State	Alignment State	Composite Service	Service Name	Description	Service Template	
<div>Deployed</div>	<div>Aligned</div>		EPIPE 1104	Epipe for troubleshooting demo	Default Epipe	<div><div>Action</div><div>Edit</div><div>Audit config</div><div>Align</div><div>Resync</div><div>Execute workflow</div><div>Remove</div><div>View</div><div>Service details</div><div>Open in Service Supervision</div></div>

Info

Service ID

EPIPE 1104:15:5am

NE Service ID

1104

Service Name

EPIPE 1104

Description

Epipe for troubleshooting demo

Service Type

ELINE

Customer ID

100

Service Manager ID

15

Template Name

Default Epipe

Life Cycle State

Deployed

Dec 19, 2022, 3:41:56 PM EST

Alignment State

Aligned

Service Functions

Last Refresh : Dec 20, 2022, 2:00:00 PM EST (Local Time)

<

<

Page: 1 / 1

>

>

Filtered Row Count: 1

The audit operation has found a misaligned attribute. The NSP configuration shows that the state of this SAP should be serviceUp, but the actual value is serviceDown.


The screenshot shows the NSP Services tab with a modal window titled "Audit Result for EPIPE 1104:15.sam". The modal contains a table with the following data:

MISALIGNED ATTRIBUTE		MISALIGNED OBJECT	UNDESIRED OBJECT
Name	Attribute	Expected Value	Actual Value
EPIPE 1104:15.sam	vLLZAccessInterface...	serviceUp	serviceDown

The background interface shows a list of services with a filter for "Misaligned". The right sidebar displays details for the selected service, including Service ID, NE Service ID, Service Name, Description, Service Type, Customer ID, Service Manager ID, Template Name, Life Cycle State, and Alignment State.

## 5

Now that we have verified that there is a mismatch between NSP provisioning and the NE, we can use the align function to push the configuration to the network.

From the services tab, click  (Table row actions), **Align**, **Push to network** and confirm.

The screenshot displays the NSP Services management interface. At the top, there are tabs for SERVICES, INVENTORY, and TEMPLATES. Below these, a table lists services with columns for Life Cycle State, Alignment State, Composite Service, Service Name, Description, and Service Template. The first row shows a service with a green 'Deployed' status and a red 'Misaligned' alignment state. A context menu is open over this row, showing options like Action, Edit, Audit config, Align, Resync, Execute workflow, Remove, View, Service details, and Open in Service Supervision. The 'Align' option is highlighted, and a sub-menu is visible with 'Push to network' and 'Pull from network' options. To the right of the table, an 'Info' panel provides details for the selected service, including Service ID, NE Service ID, Service Type, Customer ID, Service Manager ID, Template Name, Life Cycle State, and Alignment State. The bottom of the interface shows a status bar with 'Total Service Count: 34' and 'Deployed: 34'.

Life Cycle State	Alignment State	Composite Service	Service Name	Description	Service Template
Deployed	Misaligned		EPIPE 1104	Epipe for troubleshooting demo	Default Epipe

**Info Panel:**

- Service ID: EPIPE 1104:15:iam
- NE Service ID: 1104
- Epipe for troubleshooting demo
- Service Type: ELINE
- Customer ID: 100
- Service Manager ID: 15
- Template Name: Default Epipe
- Life Cycle State: Deployed (Dec 19, 2022, 3:41:56 PM EST)
- Alignment State: Misaligned

**Status Bar:**

- Total Service Count: 34
- Deployed: 34

When the alignment operation is complete, the Alignment State shows as Aligned. Within a minute or two, the operational state should be changed to enabled and the service should be working.

SERVICES

INVENTORY

TEMPLATES

Services

+ CREATE

Life Cycle State	Alignment State	Composite Service	Service Name	Description	Service Template	
<div>Deployed</div>	<div>Aligned</div>		EPIPE 1104	Epipe for troubleshooting demo	Default Epipe	

Info

Service ID

EPIPE 1104-15:saam

NE Service ID

1104

Service Name

EPIPE 1104

Description

Epipe for troubleshooting demo

Service Type

ELINE

Customer ID

100

Service Manager ID

15

Template Name

Default Epipe

Life Cycle State

Deployed

Dec 19, 2022, 3:41:56 PM EST

Alignment State

Aligned

Service Functions

Last Refresh : Dec 20, 2022, 2:03:14 PM EST (Local Time)

<

<

Page:

1 / 1

>

>

Total Service Count : 34

Deployed : 34

Filtered Row Count: 1

## 3.7 End-to-end link troubleshooting scenario

### 3.7.1 Purpose

This process shows you how to use NSP Applications in troubleshooting issues on links.

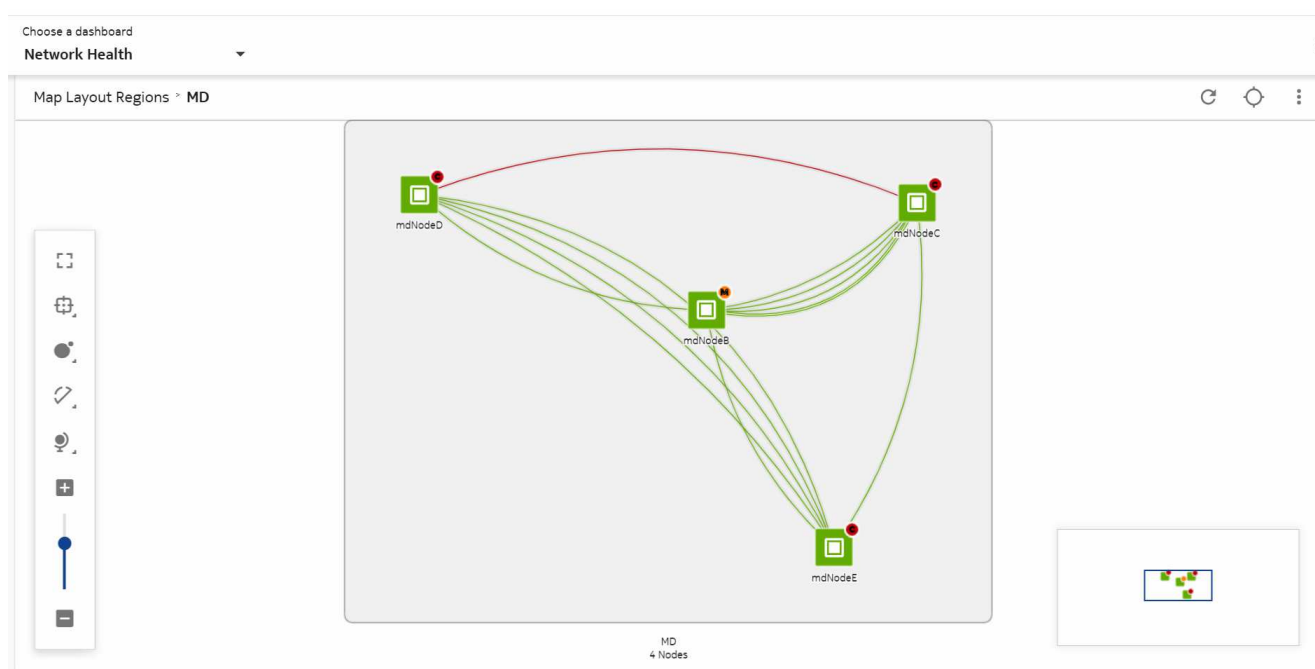
In this scenario, a link is experiencing problems.

### 3.7.2 View the Topology View

1

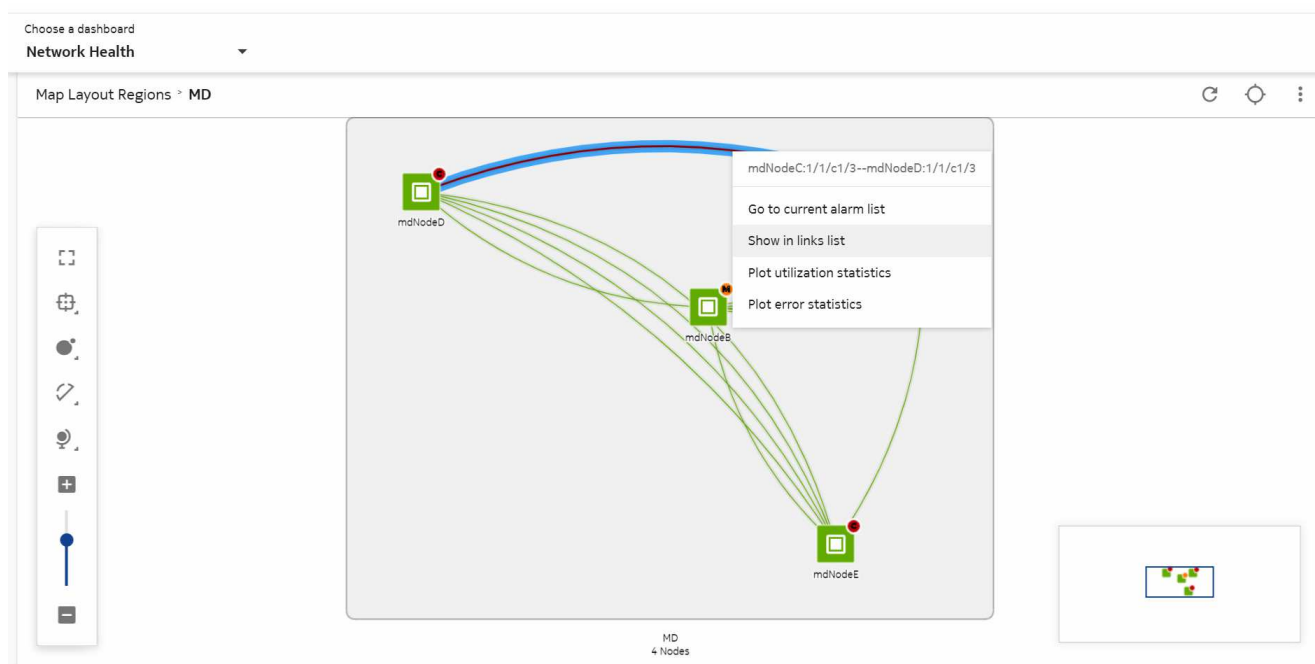
The Topology View in the Network Health dashboard provides a graphical view of links in the network.

Here we can see that a link is down.



2

Right-click on the down link and choose **Show in links list** from the menu that opens.





The Links data page in the Network Health dashboard opens, filtered on the selected link.

3

From here, we can see more details about the link, including link type, endpoints and operational state. As we saw earlier, the operational state is down.

To begin investigating the problem, choose **Plot Utilization Statistics** from the Table row actions menu.

Choose a dashboard  
Network Health

Links

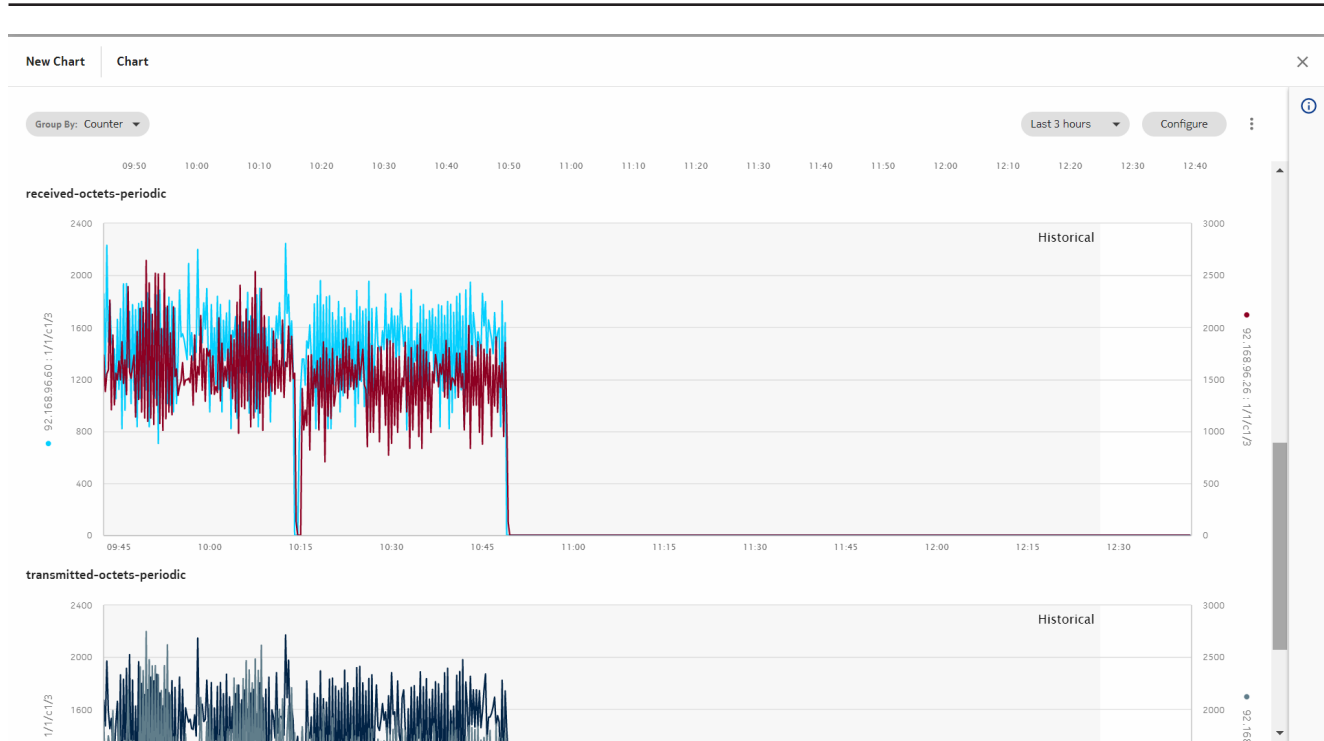
Content updated on 2023/01/5 11:24:59 (Click to update)

Name	Operational State	Link Type	Type	Latency	Description	EndPoint A Source	EndPoint A	EndPoint A Type
mdNodeC...	disabled	IP/IP/CUPS	pointToP...		N/A	mdNodeC	1/1/c1/3	physicalPort

- Go to current alarm list
- Show in map
- Plot utilization statistics
- Plot error statistics
- Show in troubleshooting dashboard

4

The Insights Viewer utility opens in a new tab, showing utilization charts.



The utilization charts show normal traffic until 10:50, when traffic drops. Something may have occurred around that time to cause the issue.

We'll leave the tab open so we can check back later.

## 5

Returning to the Links data page, we can view the link in the Troubleshooting dashboard. Select the link and choose **Show in troubleshooting dashboard** from the Table row actions menu.

Choose a dashboard  
**Network Health**

Links

Content updated on 2023/01/5 11:24:59 (Click to update)

Name	Operational State	Link Type	Type	Latency	Description	EndPoint A Source	EndPoint A	EndPoint A Type	EndPoint B Source
mdNodeC...	disabled	IP/IGP/CUPS	pointToP...		N/A	mdNodeC	1/1/c1/3	physicalPort	mdNodeD

- Go to current alarm list
- Show in map
- Plot utilization statistics
- Plot error statistics
- Show in troubleshooting dashboard

The Troubleshooting Dashboard opens, filtered on the link.

Choose a dashboard  
**Troubleshooting**

Search for a target to troubleshoot  
Link: mdNodeC:1/1/c1/3--mdNodeD:...

Troubleshooting Target  
mdNodeC:1/1/c1/3--mdNodeD:...

**Troubleshooting Summary Board**  
Select a link to view troubleshooting summary information

**Link Endpoints Overview**  
See the summary endpoint information of the selected Link.

mdNodeC	1/1/c1/3	mdNodeD	1/1/c1/3
Port Type:	ethernet	Port Type:	ethernet
Port Mode:	trunk	Port Mode:	trunk
Management Address:	135.228.141.248	Management Address:	135.228.138.189
System Address:	92.168.96.26	System Address:	92.168.96.60

**Current Health Summary**  
See what object you are troubleshooting and how healthy it is.

mdNodeC	1/1/c1/3	mdNodeD	1/1/c1/3
Operational State:	disabled	Operational State:	enabled
Administrative State:	locked	Administrative State:	unlocked
Availability State:	N/A	Availability State:	N/A
NE Communication State:	up	NE Communication State:	up

**Alarm Summary - Link**  
See alarms and impacts for the selected link.

0 Critical 0 Major 0 TCAs 0 Total Impacts

[Go to Fault Management](#)

**Alarm Summary - mdNodeC**  
See alarms and impacts for endpoint A

0 Critical 1 Major 0 TCAs 0 Total Impacts

[Go to Fault Management](#)

**Alarm Summary - mdNodeD**  
See alarms and impacts for endpoint B

0 Critical 0 Major 0 TCAs 0 Total Impacts

[Go to Fault Management](#)

The alarm summary for endpoint A shows an alarm. Click on the alarm to launch Fault Management.

## 6

Fault Management opens, filtered on the alarm. Select the alarm to see the Details panel for more information. We can also see that there are no impacts, but there may be a root cause.

The screenshot displays the NSP Fault Management interface. At the top, there are tabs for 'TOP UNHEALTHY NES', 'ALARM LIST', 'TOP PROBLEMS', and 'INSPECTOR'. The 'ALARM LIST' tab is active. Below the tabs, there is a 'Current Alarms' section. On the left, there is a filter bar with 'Unsaved Advanced F...' and a search icon. To the right of the filter bar, there is a 'Total Unfiltered Alarms' summary showing counts for various severity levels: 31 (C), 150 (M), 189 (W), 149 (D), 0 (I), 2 (I), 0 (I), and 0 (I). Below this, there is a table of alarms with columns: Severity, Impact, Last Time Detected, Site ID, Site Name, Alarmed Object Type, Alarmed Object Name, and Alarm Name. The first row is highlighted in blue and shows an 'M' severity, impact of 0, last time detected of 2023/01/05 10:49:08 03..., site ID of 92.168.96.26, site name of mdNodeC, alarmed object type of equipment.Equipment, alarmed object name of port=1/1/c/1/3, and alarm name of LinkDown. To the right of the table, there is a 'Details' panel for the selected alarm. It includes sections for General, Severity, Acknowledgement, Acknowledgement Notes, Statistics, Description, Remedial Action, Raising Condition, Clearing Condition, Additional Text, and Custom Text. The Description section is expanded, showing a detailed description of the alarm: 'This alarm is generated when the SNMP entity, acting in an agent role, has detected that port used for one of its communication links is about to enter the down state from some other state (but not from the not-present state). This other state is indicated by the included value of if-oper-status leaf'. The Remedial Action section is also expanded, showing instructions: 'If the admin state is 'down' then the interface state is deliberate and there is no recovery. If the admin state is 'up' then try to determine the cause of the interface going down: cable cut, distal end went down, etc.'.

## 7

Click Show Root Causes to see a root cause diagram.

TOP UNHEALTHY NES
ALARM LIST
TOP PROBLEMS
INSPECTOR

Current Alarms

Unsaved Advanced F...

Total Unfiltered Alarms:

C

38

M

150

W

191

W

149

W

0

W

2

W

0

W

0

Severity	Impact	Last Time Detected ↓	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name
M	0	2023/01/05 10:49:08 03...	92.168.96.26	mdNodeC	equipment.Equipment	port=1/1/c/1/3	

Show Root Causes

General

Severity

Acknowledgement

Acknowledgement Notes

Statistics

Description

Remedial Action

Raising Condition

Clearing Condition

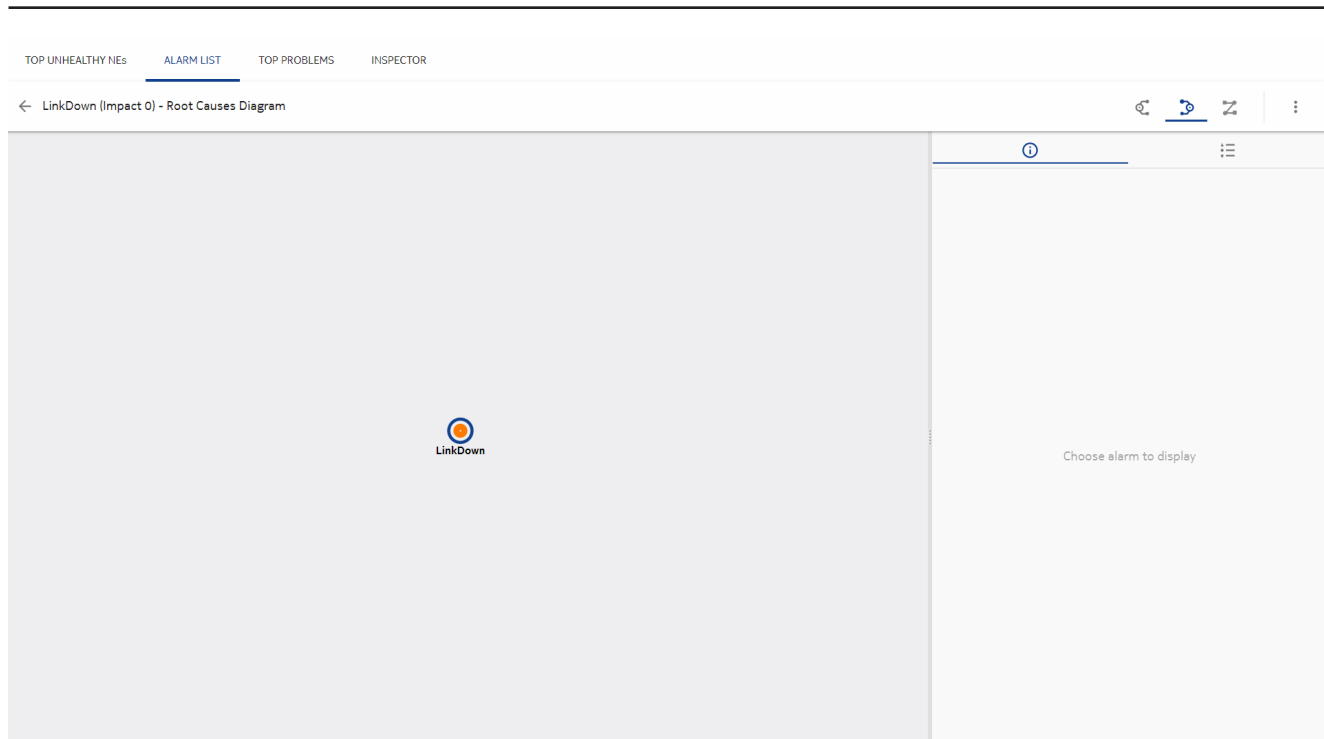
Additional Text

Custom Text

Live data

Row Count: 1

In this case, the root cause diagram does not show a specific root cause: the alarm in question is the only one present.

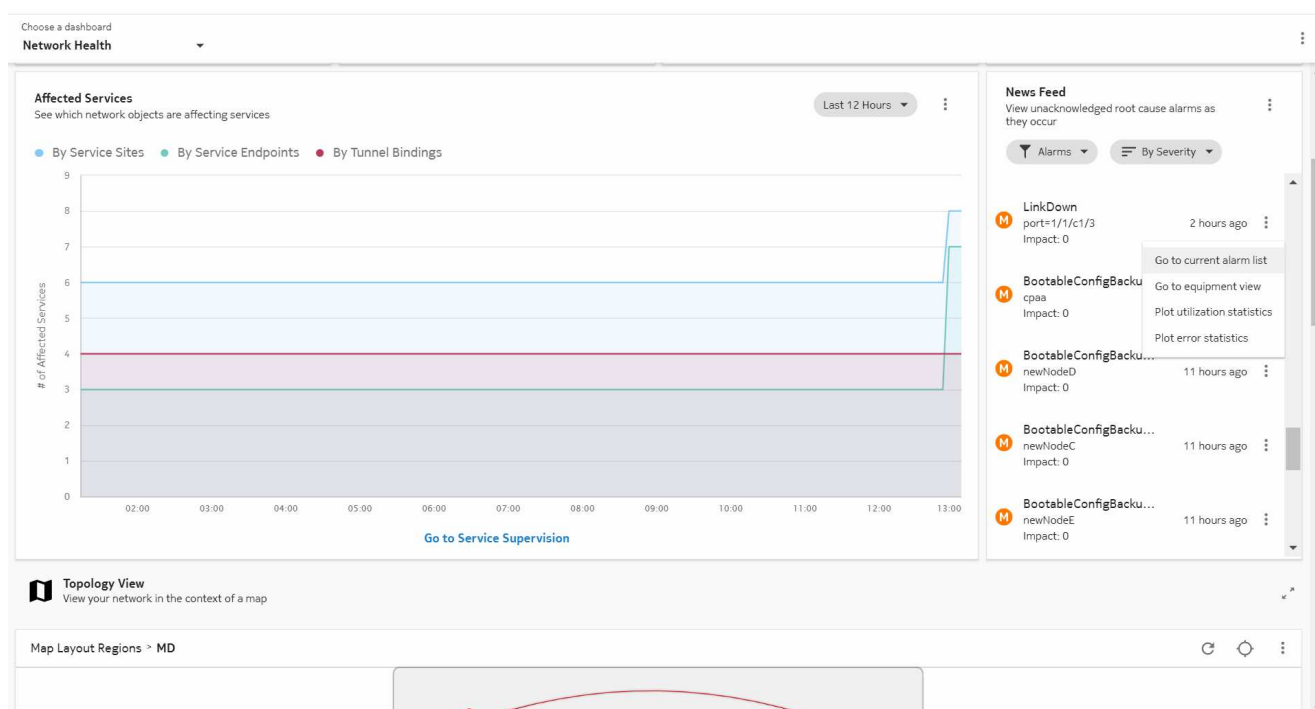


### 3.7.3 Investigate link alarms from the News Feed

Another option for investigating alarm details is to start from the News Feed. The News Feed provides a live feed of unacknowledged root cause alarms as they occur in real time. Alarm severity and number of impacts are displayed, and cross launch is available depending on the alarm. All alarms can cross launch to the Current Alarm List in Fault Management.

1

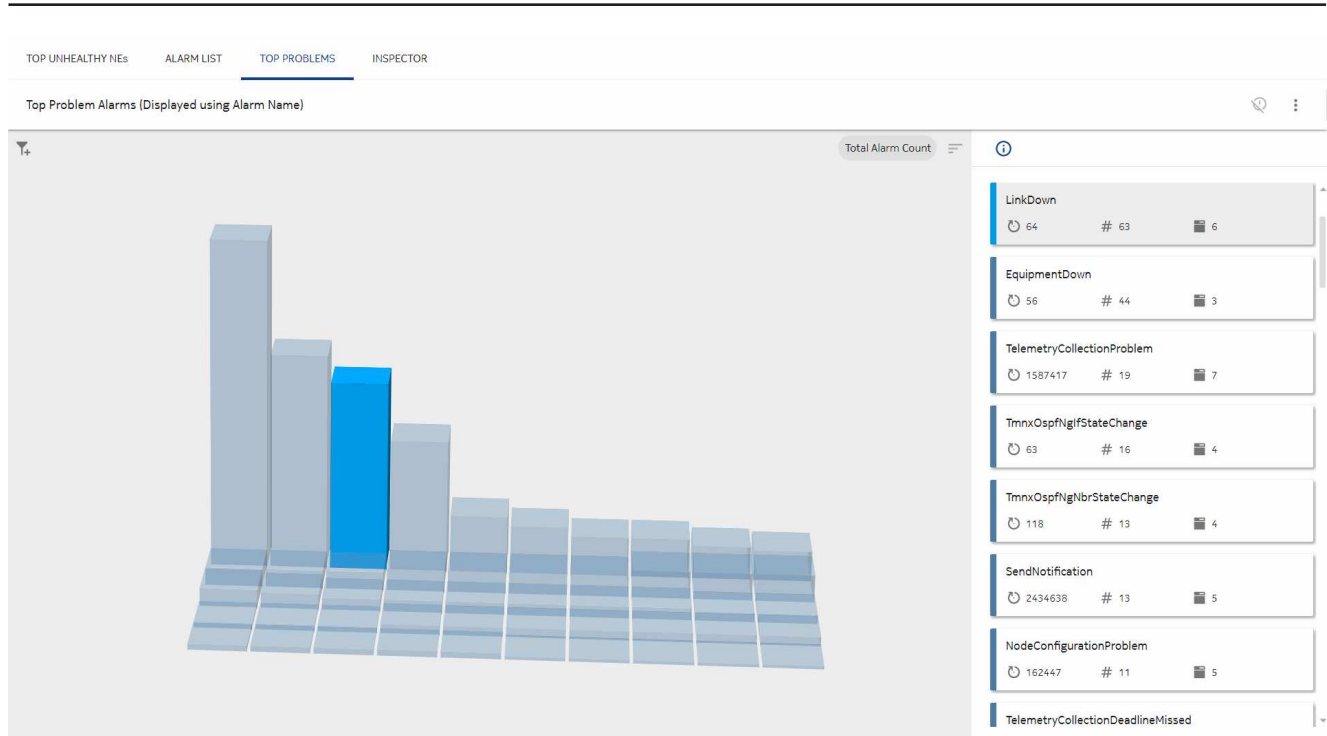
From the News Feed, select the alarm and choose **Go to current alarm list** from the More menu.



Fault Management opens, with the alarm selected.

## 2

From Fault Management, you can see the NE in the Top Unhealthy NEs tab to see what correlated alarms may be present on the endpoint NEs, or check Top Problems to see what other issues the network is experiencing. Here we see that Link Down is currently the third most common problem.



### 3.7.4 View port details

Returning to the Troubleshooting Dashboard, we can also launch Network Supervision to look at the status of the endpoint ports.

1

From the Current Health Summary dashlet, click on the port for which the Operational State is disabled.



Choose a dashboard: Troubleshooting | Search for a target to troubleshoot: Link | Troubleshooting Target: mdNodeC:1/1/c1/3--mdNodeD:...

### Troubleshooting Summary Board

Select a link to view troubleshooting summary information

#### Link Endpoints Overview

See the summary endpoint information of the selected Link:

mdNodeC	1/1/c1/3	mdNodeD	1/1/c1/3
Port Type:	ethernet	Port Type:	ethernet
Port Mode:	trunk	Port Mode:	trunk
Management Address:	135.228.141.248	Management Address:	135.228.138.189
System Address:	92.168.96.26	System Address:	92.168.96.60

#### Current Health Summary

See what object you are troubleshooting and how healthy it is.

mdNodeC	1/1/c1/3	mdNodeD	1/1/c1/3
Operational State:	disabled	Operational State:	disabled
Administrative State:	locked	Administrative State:	locked
Availability State:	N/A	Availability State:	N/A
NE Communication State:	up	NE Communication State:	up

#### Alarm Summary - Link

See alarms and impacts for the selected link

Critical	Major	TCA's	Total Impacts
0	0	0	0

[Go to Fault Management](#)

#### Alarm Summary - mdNodeC

See alarms and impacts for endpoint A

Critical	Major	TCA's	Total Impacts
0	1	0	0

[Go to Fault Management](#)

#### Alarm Summary - mdNodeD

See alarms and impacts for endpoint B

Critical	Major	TCA's	Total Impacts
0	1	0	0

[Go to Fault Management](#)

Network Supervision equipment inventory opens in a new tab, with the port in question selected.

mdNodeD - Equipment Inventory

- mdNodeD (7750 SR-7s), Operational State: enabled, Administrative State: unlocked
  - Link Aggregation Groups
    - Power Shelf Slot-1(psa10-shelf-dc) [InstalledAndExpected], Operational State: enabled, Administrative State: unlocked
    - Power Shelf Slot-2(unassigned) [InstalledNotExpected], Operational State: disabled, Administrative State: unlocked
  - Shelf-1, Operational State: enabled, Administrative State: unlocked
    - Card Slot-1(xcm-7s) [InstalledAndExpected], Operational State: enabled, Administrative State: unlocked
      - Card-1(xcm-7s), Operational State: enabled, Administrative State: unlocked
        - Card Slot-1/1(s36-400gb-qspdd) [InstalledAndExpected], Operational State: enabled, Administrative State: unlocked
          - Card-1/1/s36-400gb-qspdd, Operational State: enabled, Administrative State: unlocked
            - 1/1/c1, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/1, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/2, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/3, Operational State: disabled, Administrative State: locked**
              - 1/1/c1/4, Operational State: disabled, Administrative State: unlocked
              - 1/1/c1/5, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/6, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/7, Operational State: disabled, Administrative State: unlocked
              - 1/1/c1/8, Operational State: enabled, Administrative State: unlocked
              - 1/1/c1/9, Operational State: enabled, Administrative State: unlocked

Port details:

- Name: 1/1/c1/3
- Operational State: disabled
- Administrative State: locked
- Standby State: providingService
- Position: shelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/por...
- Hardware Mac Address: c0:5e:01:01:00:03
- Port Index: 111
- Port Type: ethernet
- Actual Rate (Mbps): 10000
- Port Mode: trunk
- Encapsulation Type: dot1q

Auto Refreshing: 2023/12/08 10:43:31 073 AM -05:00 GMT

LinkDown Impact: 0 | TmnSysLicenseE... Impact: 0 | NodeConfigurati... Impact: 0 | TmnPowerShelfC... Impact: 0 | TelemetryCollec... Impact: 0

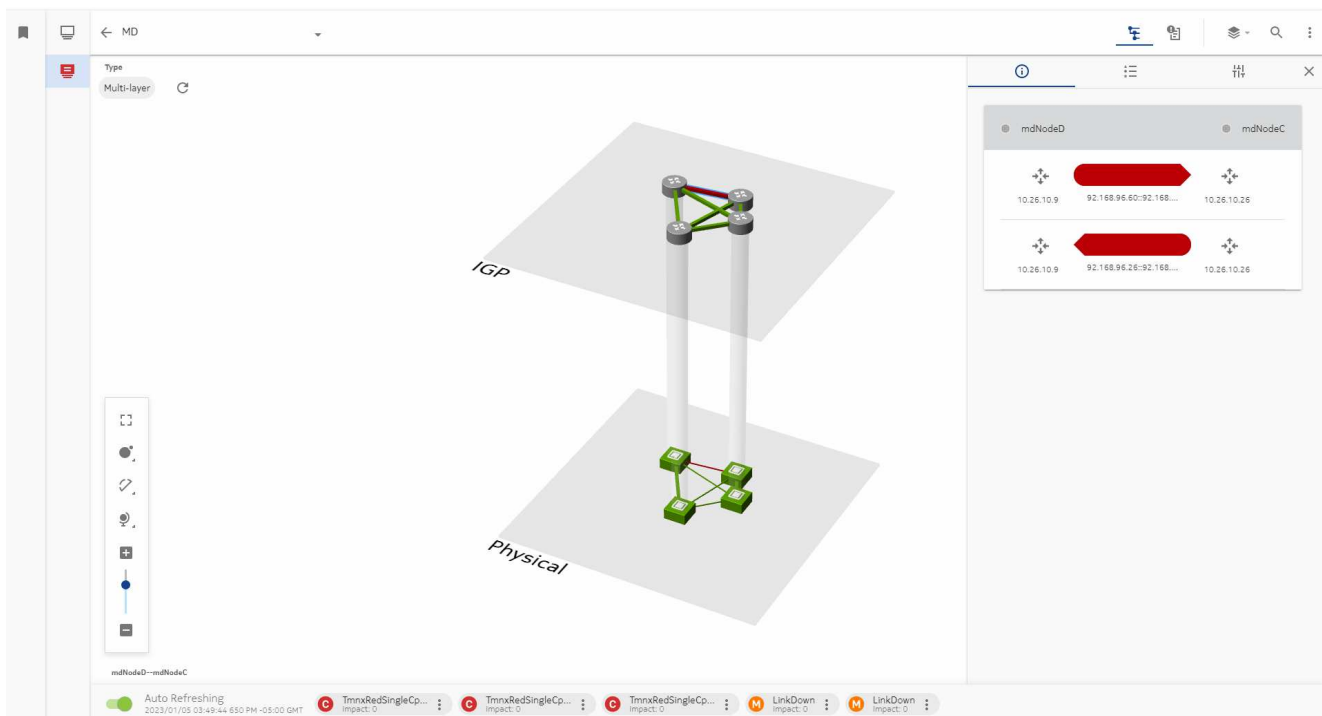
## 2

From here, we can open the multi-layer view in Network Supervision to see the physical and logical links the NE is a part of. Choose the group in the hierarchy, double click on the group to show all the NEs, and select Multi-Layer View from the format changer.

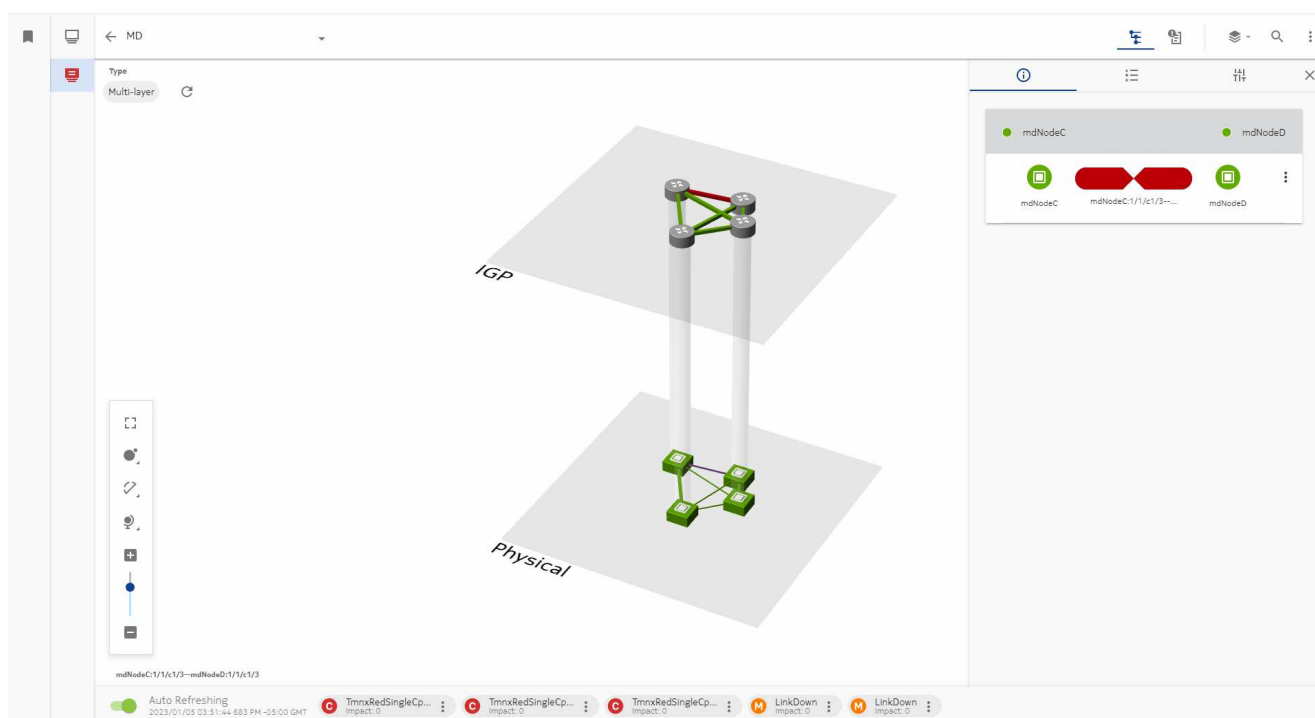


## 3

We can see that one of the logical links is down, because it displays in red. Click this link to see more information in the Details panel.



Clicking on the physical link in red shows that it is also down.



### 3.7.5 Evaluate the NE configuration using Device Administrator

1

If the NE was configured using Infrastructure Configuration Management, we can check deployment status of the endpoints in the CONFIGURATIONS tab in Device Administrator. From the Configurations tab, filter the Identifier column with the port number to display the deployments that configured the ports in the link. The deployment status column shows the status from the last audit operation performed.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+ CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Category
<div><div></div><div>Deployed Aligned</div></div>	<div><div></div><div>Modified</div></div>	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<div><div></div><div>Deployed Aligned</div></div>	<div><div></div><div>Modified</div></div>	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port

Deployment Details

Select a deployment to view

Auto-refresh

Last Refresh: 0 seconds ago

Page: 1 / 1

Count: 2

## 2

Select an endpoint and click **AUDIT** in the Deployment Details panel to check for misalignments.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

 CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Category
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.25	1/1/c/1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeD	92.168.96.60	1/1/c/1/3	ICM Access port	Physical	Port

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c/1/3

Deployment Status

Deployed Aligned

AUDIT

ALIGN

Last Audit

5th January, 2023 4:23 PM by admin

VIEW RESULT

Last Alignment

12th December, 2022 3:56 PM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

12th December, 2022 3:56 PM

Role

physical

Category

port

Configuration Status

Modified

Auto-refresh

Last refresh: 0 seconds ago

<

>

Page: 1 / 1

<

>

Count: 2

### 3

After auditing both port deployments, we can see that one is misaligned. Select the deployment and click **VIEW RESULT** to see the results of the audit.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

Deployment Status

Configuration Status

NE Name

NE ID

Identifier

Template

Role

Category

<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/>	Deployed Misaligned	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port

CONFIGURATION DEPLOYMENT

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Misaligned

AUDIT

ALIGN

Last Audit

5th January, 2023 4:23 PM by admin

VIEW RESULT

Last Alignment

12th December, 2022 3:56 PM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

12th December, 2022 3:56 PM

Role

physical

Category

port

Configuration Status

Modified

Auto-refresh

Last refresh: 20 seconds ago

Page: 1 / 1

Count: 2

The results show a misaligned attribute. The administrative state for one of the ports is incorrect.

---

Audit Result from 5th January, 2023 4:23 PM ↻ ×

MISALIGNED ATTRIBUTES (1)	MISALIGNED OBJECTS (0)	
Attribute	Expected Value (Template)	Actual Value (NE)
<input type="text" value="/configure/port=1/1/c1/3/admin-state"/>	<input type="text" value="enable"/>	<input type="text" value="disable"/>

CANCEL ALIGN ALL

---

4

We can perform an alignment to fix the discrepancy. From the list of deployments, select the misaligned deployment and click **ALIGN**.

The alignment operation pushes the expected configuration to the NE.



NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

 CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Category
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/> Deployed Misaligned	<span>Modified</span>	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Misaligned

AUDIT

ALIGN

Last Audit

5th January, 2023 4:23 PM by admin

VIEW RESULT

Last Alignment

12th December, 2022 3:56 PM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

12th December, 2022 3:56 PM

Role

physical

Category

port

Configuration Status

Modified

Auto-refresh

Last refresh: 10 seconds ago

Page: 1 / 1

Count: 2

Performing an audit after the alignment shows us that the deployment is now aligned.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

 CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Category	
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/>	Auditing	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Misaligned

AUDIT

ALIGN

Last Audit

5th January, 2023 4:23 PM by admin

VIEW RESULT

Last Alignment

12th December, 2022 3:56 PM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

12th December, 2022 3:56 PM

Role

physical

Category

port

Configuration Status

Modified

Auto-refresh

Last Refresh: 0 seconds ago

<

>

Page: 1 / 1

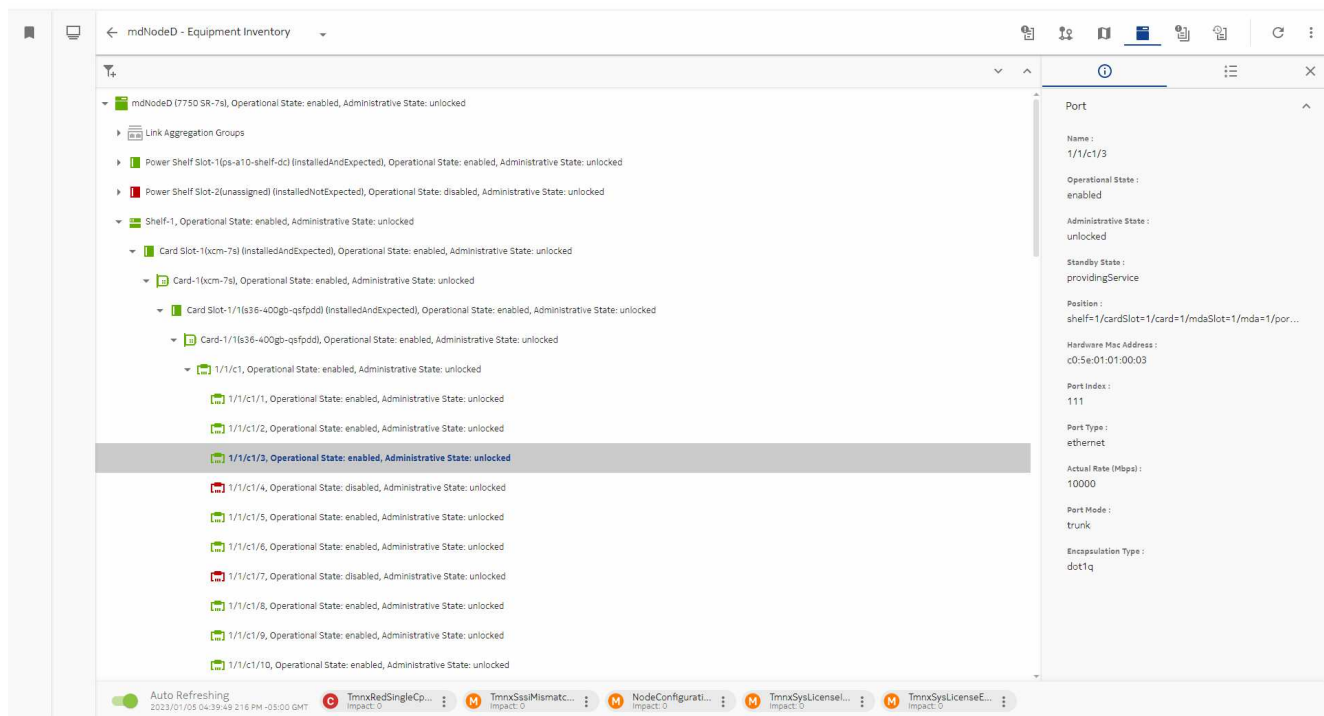
<

>

Count: 2

5

Returning to the Equipment Inventory in Network Supervision, we see that the port now displays green and its administrative state is unlocked.



6

In the Multi-layer view, the links now also display green.



## 7

Returning to Insights Viewer, we can also see that traffic utilization has resumed.



## 3.8 End-to-end port troubleshooting scenario

### 3.8.1 Purpose

This process shows you how to use NSP Applications in troubleshooting issues on ports.

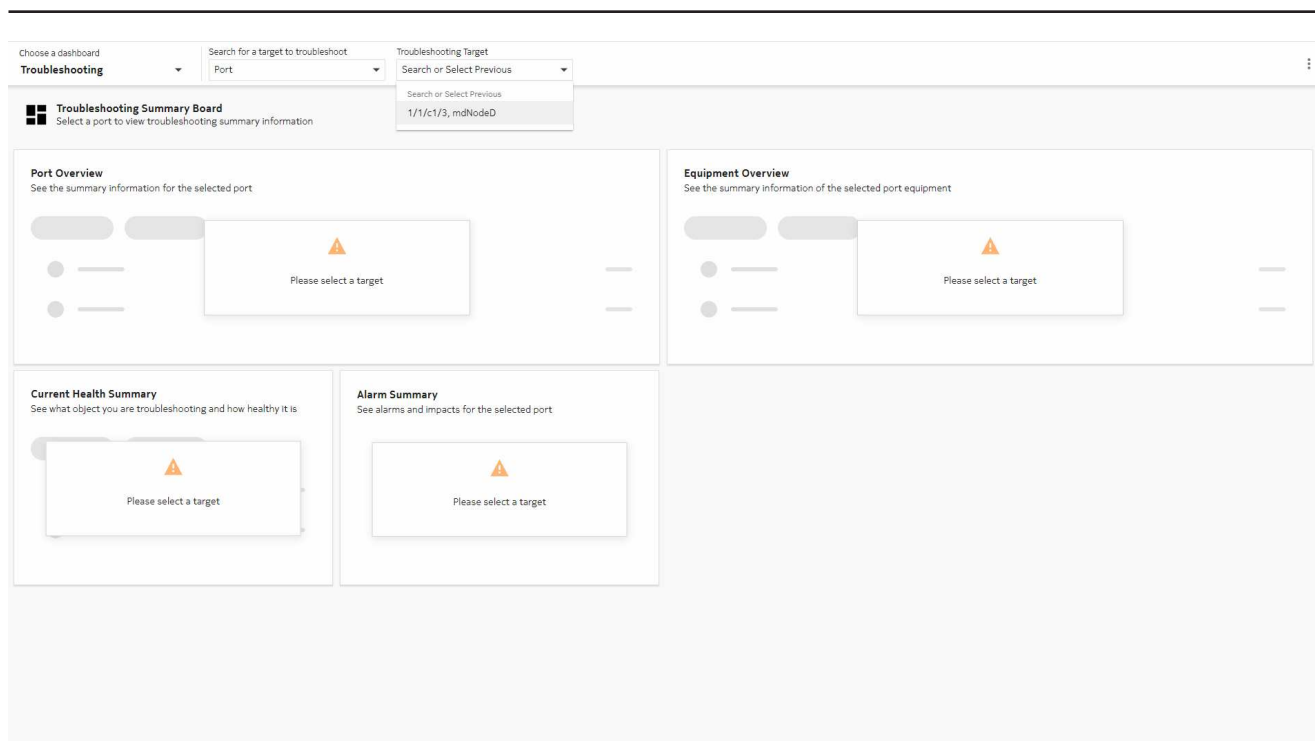
In this scenario, a service has been affected or an alarm has come up. Investigation will show that the problem is due to a port issue.

### 3.8.2 View the Troubleshooting Dashboard

Viewing a target in the Troubleshooting Dashboard can help you see where else you can look to investigate a problem.

1

From the Troubleshooting Dashboard, choose **Port** and the port of interest from the target pick lists.



## 2

The Troubleshooting dashboard displays summaries of information about the port. The Alarm Summary shows that an alarm is present, and the Current Health Summary shows the operational and administrative states.

Choose a dashboard  
**Troubleshooting**

Search for a target to troubleshoot  
Port

Troubleshooting Target  
1/1/c1/3, mdNode0

**Troubleshooting Summary Board**  
Select a port to view troubleshooting summary information

**Port Overview**  
See the summary information for the selected port

Port Type: ethernet  
Port Mode: trunk  
Management Address:  
System Address: 92.168.96.60  
Location: N/A

**Equipment Overview**  
See the summary information of the selected port equipment

Position: shelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/po...  
Product: 7750 SR  
Chassis Type: 7750 SR-7s  
Version: TiMOS-C-21.2.R2  
Manufacture Date: N/A

**Current Health Summary**  
See what object you are troubleshooting and how healthy it is

Operational State: disabled  
Administrative State: locked  
Availability State: N/A  
NE Communication State: up  
[Go to equipment view](#)

**Alarm Summary**  
See alarms and impacts for the selected port

0  
Critical

1  
Major

0  
TCAs

0  
Total Impacts

[Go to Fault Management](#)

### 3

From the Alarm Summary, we can click **Go to Fault Management** to open the full alarm list in the Fault Management application, or click on the circle showing one Major alarm to open a filtered alarm list.

4

Hover over the alarm row to see options. Click Show Root Causes to open a root cause diagram.



TOP UNHEALTHY NES   ALARM LIST   TOP PROBLEMS   INSPECTOR

Current Alarms

Unsaved Advanced F... ✕

Total Unfiltered Alarms: 29 152 189 153 0 2 0 0

Severity	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name	Probable Cause
M	92.168.96.60	mdNodeD	equipment.Equipment	port+1/1/c1/3	LinkDown	equipm

Live data

Row Count: 1

General

Severity

Acknowledgement

Acknowledgement Notes

Statistics

Description

Remedial Action

Raising Condition

Clearing Condition

Additional Text

Custom Text

Specific Problem

TOP UNHEALTHY NES   ALARM LIST   TOP PROBLEMS   INSPECTOR

← LinkDown (Impact 0) - Root Causes Diagram

LinkDown

Choose alarm to display

Fault Management shows that there is no root cause for this alarm.

5

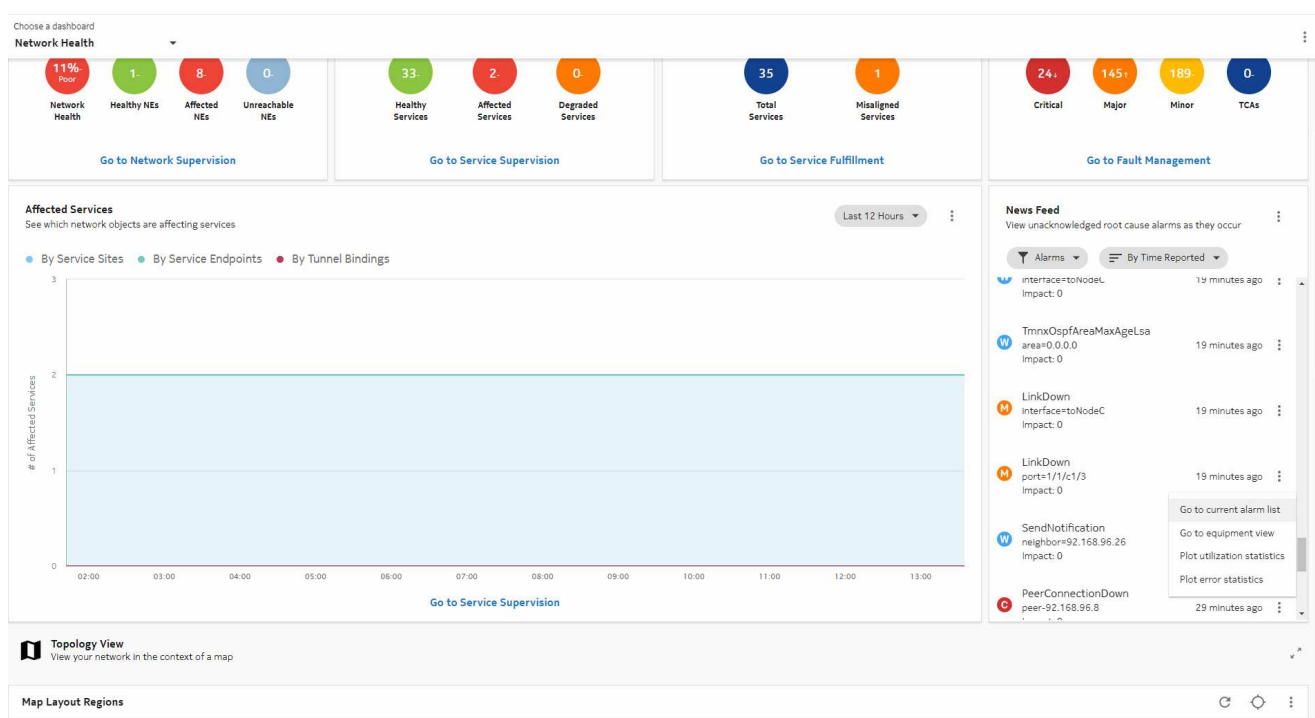
Another option is to switch to the Top Unhealthy NEs or Top Problems tabs, to see what other alarms are present on the NE, and to see what other issues the network is experiencing.

### 3.8.3 View the News Feed

Another starting point could be the News Feed, in the Network Health dashboard. The News Feed provides a live feed of unacknowledged root cause alarms as they occur in real time. Alarm severity and number of impacts are displayed, and cross launch is available depending on the alarm.

1

The News Feed shows a Link Down alarm on a port. Select the alarm and choose **Go to current alarm list** from the More menu.



Fault Management opens, showing the current alarm.

TOP UNHEALTHY NEs

ALARM LIST

TOP PROBLEMS

INSPECTOR

Current Alarms

Unsaved Advanced F...

Total Unfiltered Alarms:

29

152

189

153

0

2

0

0

Severity	Impact	Last Time Detected	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name
M	0	2023/01/23 01:20:07 29...	92.168.96.60	mdNodeD	equipment.Equipment	port=1/1/c1/3	LinkDown

Live data

Row Count: 1

General

Severity

Acknowledgement

Acknowledgement Notes

Statistics

Description

Remedial Action

Raising Condition

Clearing Condition

Additional Text

Custom Text

Specific Problem

### 3.8.4 Investigate from the Ports data page

Viewing the port in the Ports list on the Network Health Dashboard will show us some configuration and state details.

1

From the Ports list, filter on the port name in the Name column, and the NE in the NE Name column. The dashboard shows that the Operational State of the port is disabled and the Administrative State is locked.

Choose a dashboard  
Network Health

Ports

Content updated on 2023/01/23 14:16:38 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (b)
1/1/c1/3	disabled	92.168.9...	mdNodeD		locked	providingService	shelf=1/car...	3	ethernet	trunk	

Network Elements

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

Links

Name	Operational State
mdNodeC:1/1/c1/3--mdN...	disabled
mdNodeE:1/1/c1/9--mdN...	disabled
Unmanaged-Ne--newNod...	enabled
newNodeE:1/1/c1/8--new...	enabled

Tunnel Bindings

Name	Operational State
92.168.96.27-circuit-2-1...	enabled
92.168.96.61-circuit-1-5...	enabled
92.168.96.27-circuit-4-6...	enabled
92.168.96.27-circuit-2-5...	enabled

Services

Name	Operational State
Epipe 979	disabled
EPIPE 1104	disabled
VPLS 5300	enabled
EPIPE 5002	enabled

## 2

We can continue to investigate the issue by plotting statistics. Select the port and choose **Plot utilization statistics** from the Table row actions menu.

Choose a dashboard  
**Network Health**

**Ports**

Content updated on 2023/01/23 14:16:38 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (b)
1/1/c1/3	disabled	92.168.9...	mdNodeD		locked	providingService	shelf=1/car...	3	ethernet	trunk	

- Go to current alarm list
- Go to equipment view
- Plot utilization statistics
- Plot error statistics
- Show in troubleshooting dashboard

**Network Elements**

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

**Links**

Name	Operational State
mdNodeC:1/1/c1/3--mdN...	disabled
mdNodeE:1/1/c1/9--mdN...	disabled
Unmanaged-Ne--newNod...	enabled
newNodeE:1/1/c1/8--new...	enabled

**Tunnel Bindings**

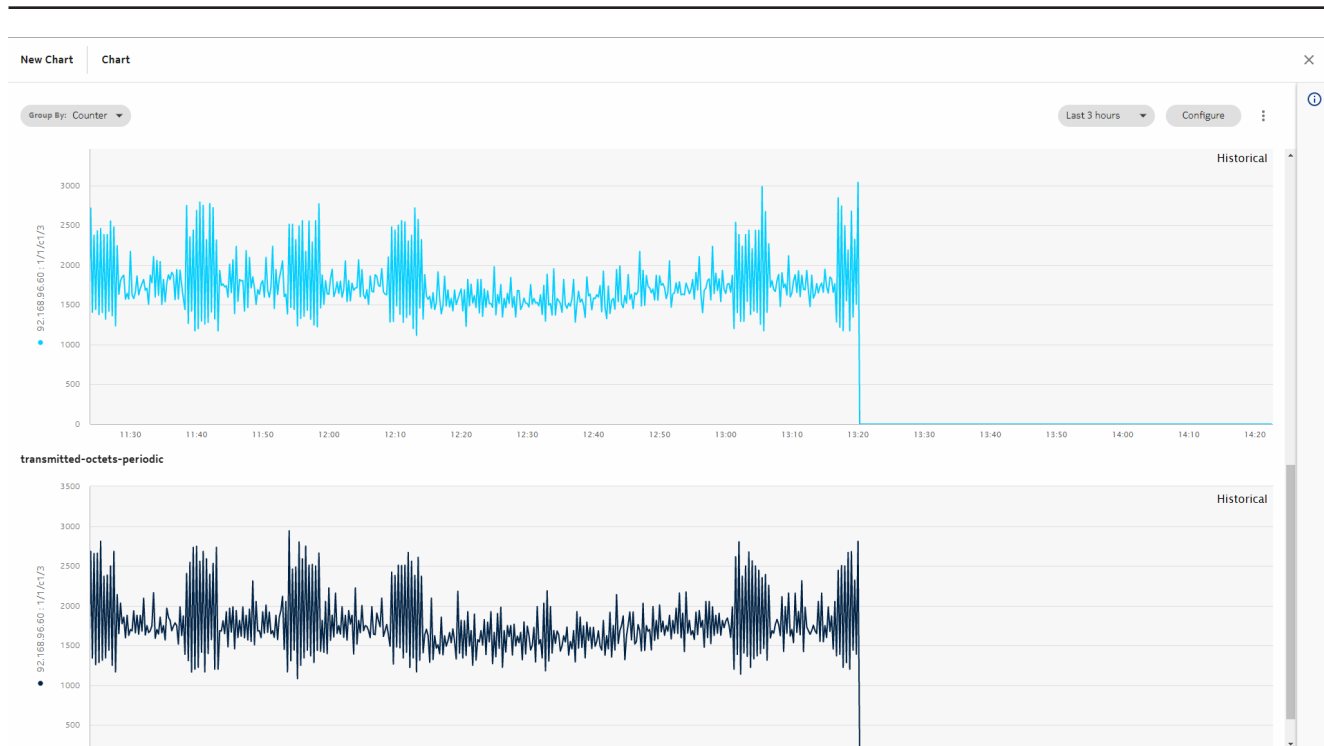
Name	Operational State
92.168.96.27-circuit-2-5...	enabled
92.168.96.61-circuit-1-5...	enabled
92.168.96.27-circuit-4-6...	enabled
92.168.96.27-circuit-2-1...	enabled

**Services**

Name	Operational State
Epipe 979	disabled
EPIPE 1104	disabled
VPLS 5300	enabled
EPIPE 5002	enabled

### 3

The Insights Viewer utility opens, showing several charts of utilization statistics.



Here we can see that traffic had been normal, but has stopped abruptly. This provides additional information about what has happened.

#### 4

We can also plot error statistics for the port. Return to the port in the Ports list and choose **Plot error statistics** from the Table row actions menu.

Choose a dashboard  
Network Health

Ports

Content updated on 2023/01/23 14:16:38 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (b)
1/1/c1/3	disabled	92.168.9...	mdNodeD		locked	providingService	shelf=1/car...	3	ethernet	trunk	

- Go to current alarm list
- Go to equipment view
- Plot utilization statistics
- Plot error statistics
- Show in troubleshooting dashboard

Network Elements

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

Links

Name	Operational State
mdNodeC:1/1/c1/3--mdN...	disabled
mdNodeE:1/1/c1/9--mdN...	disabled
Unmanaged-Ne--newNod...	enabled
newNodeE:1/1/c1/8--new...	enabled

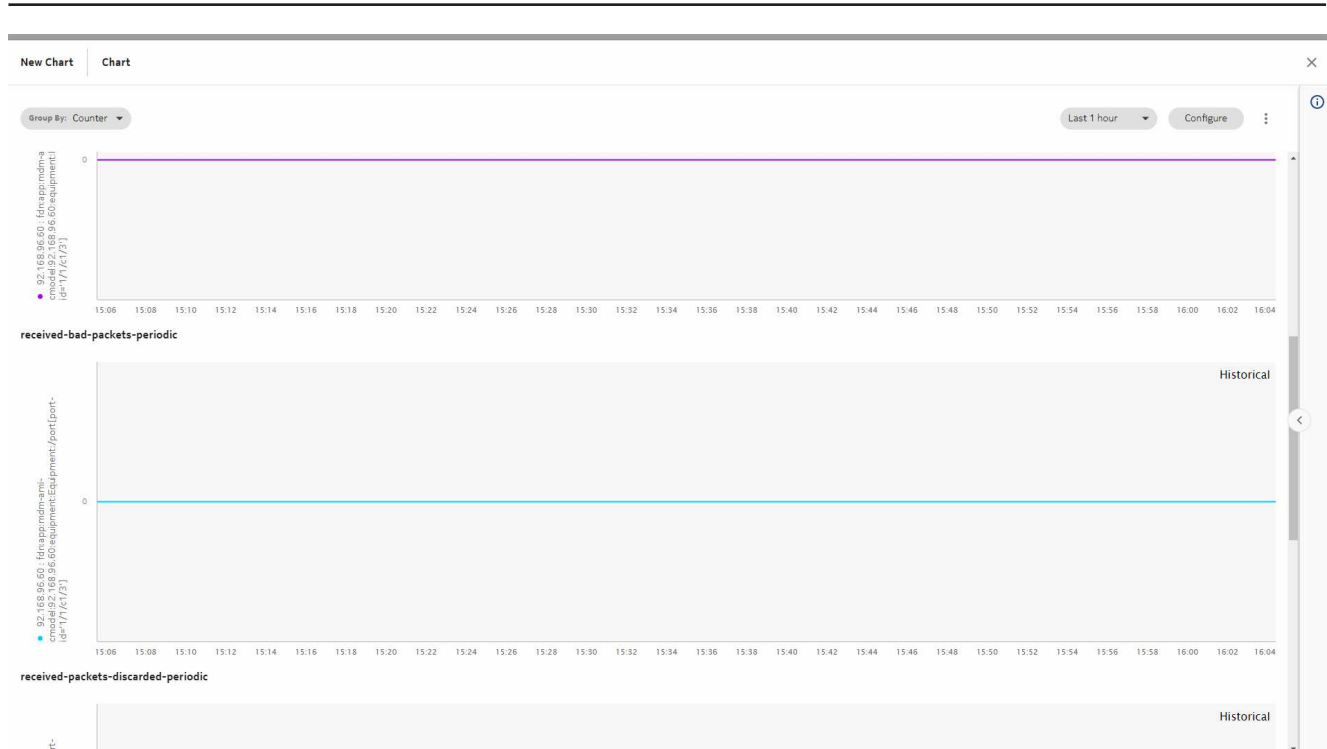
Tunnel Bindings

Name	Operational State
92.168.96.27-circuit-2-1...	enabled
92.168.96.61-circuit-1-5...	enabled
92.168.96.27-circuit-4-6...	enabled
92.168.96.27-circuit-2-5...	enabled

Services

Name	Operational State
EPIPE 979	disabled
EPIPE 1104	disabled
VPLS 5300	enabled
EPIPE 5002	enabled

Another Insights Viewer tab opens, charting multiple error statistics counters, for example, received bad or discarded packets. For this port, there are no errors being recorded.



### 3.8.5 Investigate using the Troubleshooting Dashboard

1

From the Ports list, choose **Show in troubleshooting dashboard** from the Table row actions menu.



Choose a dashboard  
Network Health

Ports

Content updated on 2023/01/23 14:16:38 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (b)
1/1/c1/3	disabled	92.168.9...	mdNodeD		locked	providingService	shelf=1/car...	3	ethernet	trunk	

- Go to current alarm list
- Go to equipment view
- Plot utilization statistics
- Plot error statistics
- Show in troubleshooting dashboard

Network Elements

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

Links

Name	Operational State
mdNodeC:1/1/c1/3--mdN...	disabled
mdNodeE:1/1/c1/3--mdN...	disabled
Unmanaged-Ne--newNod...	enabled
newNodeE:1/1/c1/3--new...	enabled

Tunnel Bindings

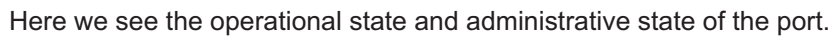
Name	Operational State
92.168.96.27-circuit-2-1...	enabled
92.168.96.61-circuit-1-5...	enabled
92.168.96.27-circuit-4-6...	enabled
92.168.96.27-circuit-2-5...	enabled

Services

Name	Operational State
Epipe 979	disabled
EPIPE 1104	disabled
VPLS 5300	enabled
EPIPE 5002	enabled

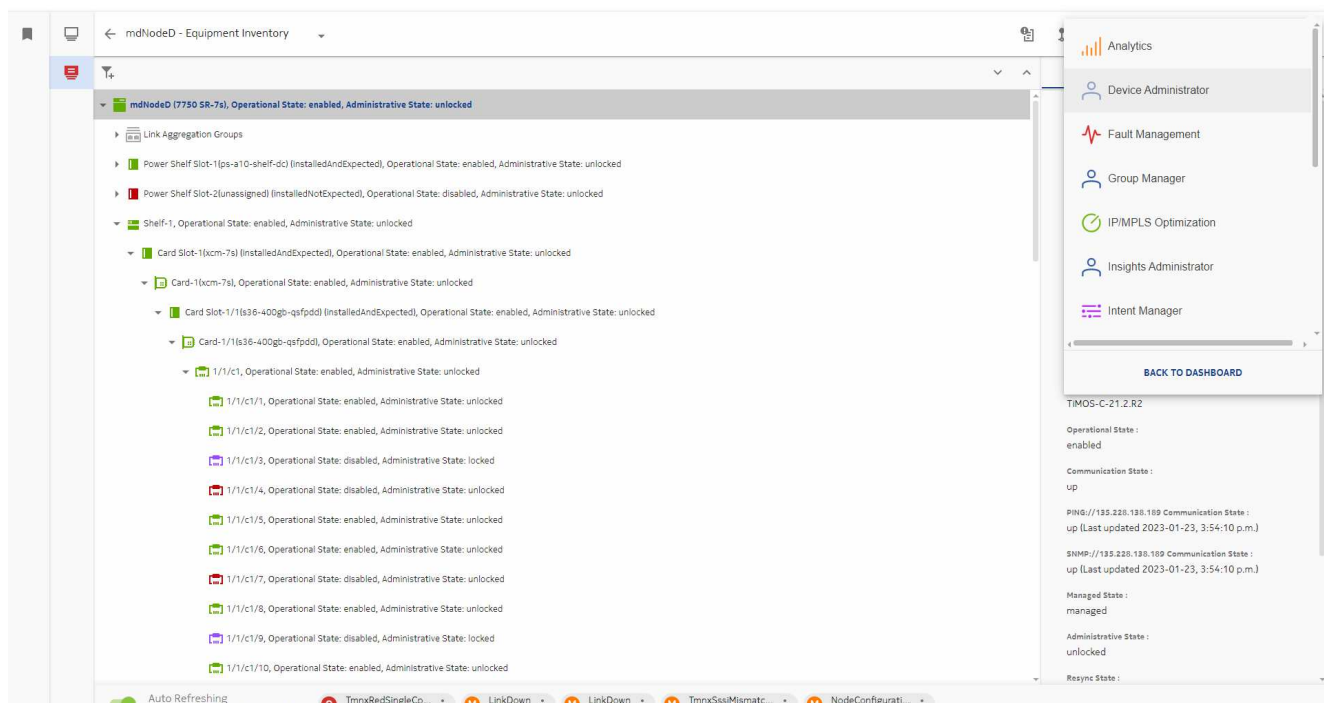
## 2

From the Troubleshooting Dashboard, click **Go to equipment view** to see the port in Network Supervision. Network Supervision opens, with the port selected.



1

From Network Supervision, click on the matrix menu and choose Device Administrator.



Device Administrator opens. Click on the CONFIGURATIONS tab.

2

Click on the port to see information about the port deployment. The Deployment Status column shows the status after the last alignment performed.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

 CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Categ
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical
<input checked="" type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Misaligned	Modified	newNodeC	92.168.96.27	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/5	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/5	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/5	ICM Access port	Physical

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Aligned

AUDIT

ALIGN

Last Audit

20th January, 2023 8:42 AM by admin

VIEW RESULT

Last Alignment

20th January, 2023 8:43 AM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

20th January, 2023 8:43 AM

Role

physical

Category

port

Configuration Status

Modified

3

Let's audit the configuration to compare the configuration of the port in the NSP to the configuration that is present in the network. Click **AUDIT** in the Deployment Details panel.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Categc
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical
<input checked="" type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Misaligned	Modified	newNodeC	92.168.96.27	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/7	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/5	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/5	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/6	ICM Access port	Physical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	lag-11#11	Default_LAG	Logical
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/5	ICM Access port	Physical

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Aligned

AUDIT

ALIGN

Audit configurations to check misalignments

20th January, 2023 8:42 AM by admin

VIEW RESULT

Last Alignment

20th January, 2023 8:43 AM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

20th January, 2023 8:43 AM

Role

physical

Category

port

Configuration Status

Modified

4

When the audit completes, we see that the deployment is misaligned. The configuration on the port is different from the configuration in Device Administrator.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

+

 CONFIGURATION DEPLOYMENT

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Categ
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/> Deployed Misaligned	<span>Modified</span>	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	newNodeC	92.168.96.27	Port 1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	newNodeC	92.168.96.27	Port 1/1/c1/7	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	classicNodeB	92.168.96.8	1/2/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	classicNodeB	92.168.96.8	1/2/7	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Misaligned	<span>Modified</span>	newNodeC	92.168.96.27	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeB	92.168.96.7	1/1/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeB	92.168.96.7	1/1/7	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeB	92.168.96.7	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	1/1/c1/7	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeD	92.168.96.60	1/1/c1/5	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeE	92.168.96.16	1/1/c1/5	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeD	92.168.96.60	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeE	92.168.96.16	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/> Deployed Aligned	<span>Modified</span>	mdNodeC	92.168.96.26	1/1/c1/5	ICM Access port	Physical	Port

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Aligned

AUDIT

ALIGN

Last Audit

20th January, 2023 8:42 AM by admin

VIEW RESULT

Last Alignment

20th January, 2023 8:43 AM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

20th January, 2023 8:43 AM

Role

physical

Category

port

Configuration Status

Modified

5

Click **VIEW RESULT** for more details.

NETWORK ELEMENTS

NETWORK ADMIN

OPERATIONS

CONFIGURATIONS

Configuration Deployments

Deployment Status

Configuration Status

NE Name

NE ID

Identifier

Template

Role

Category

<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
<input checked="" type="checkbox"/>	Deployed Misaligned	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/7	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/7	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Misaligned	Modified	newNodeC	92.168.96.27	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/7	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeB	92.168.96.7	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/7	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/5	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/5	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/6	ICM Access port	Physical	Port
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	lag-11#11	Default_LAG	Logical	LAG
<input type="checkbox"/>	Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/5	ICM Access port	Physical	Port

CONFIGURATION DEPLOYMENT

Deployment Details

NE Name

mdNodeD

NE ID

92.168.96.60

Identifier

Port-ID

1/1/c1/3

Deployment Status

Deployed Aligned

AUDIT

ALIGN

Last Audit

20th January, 2023 8:42 AM by admin

VIEW RESULT

Last Alignment

20th January, 2023 8:43 AM by admin

Template Name

ICM Access port

Created

30th November, 2022 3:16 PM

Last Modified

20th January, 2023 8:43 AM

Role

physical

Category

port

Configuration Status

Modified

The audit results show a state mismatch for the port.

Audit Result from 20th January, 2023 8:42 AM

MISALIGNED ATTRIBUTES (1)

MISALIGNED OBJECTS (0)

Attribute	Expected Value (Template)	Actual Value (NE)
/configure/port=1/1/c1/3/admin-state	enable	disable

CANCEL

ALIGN ALL

## 6

Returning to the Deployment Details panel, click **ALIGN** to align the port configuration with the NSP.

The screenshot displays the 'CONFIGURATIONS' tab in the NSP interface. A table lists various network elements (NEs) with columns for Deployment Status, Configuration Status, NE Name, NE ID, Identifier, Template, Role, and Category. The row for 'mdNodeD' is highlighted, showing it is 'Deployed Misaligned' and 'Modified'. To the right, the 'Deployment Details' panel for 'mdNodeD' is visible, showing its NE ID (92.168.96.60), Port-ID (1/1/c1/3), and a 'Deployed Misaligned' status. It includes buttons for 'AUDIT' and 'ALIGN', and a 'VIEW RESULT' link. The bottom of the interface shows a pagination bar with 'Page: 1 / 1' and a 'Count: 21'.

Deployment Status	Configuration Status	NE Name	NE ID	Identifier	Template	Role	Categ
Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/3	ICM Access port	Physical	Port
Deployed Misaligned	Modified	mdNodeD	92.168.96.60	1/1/c1/3	ICM Access port	Physical	Port
Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	newNodeC	92.168.96.27	Port 1/1/c1/7	ICM Access port	Physical	Port
Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	classicNodeB	92.168.96.8	1/2/7	ICM Access port	Physical	Port
Deployed Misaligned	Modified	newNodeC	92.168.96.27	lag-11#11	Default_LAG	Logical	LAG
Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeB	92.168.96.7	1/1/7	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeB	92.168.96.7	lag-11#11	Default_LAG	Logical	LAG
Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/7	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/5	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/5	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeD	92.168.96.60	1/1/c1/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeE	92.168.96.16	1/1/c1/6	ICM Access port	Physical	Port
Deployed Aligned	Modified	mdNodeC	92.168.96.26	lag-11#11	Default_LAG	Logical	LAG
Deployed Aligned	Modified	mdNodeC	92.168.96.26	1/1/c1/5	ICM Access port	Physical	Port

**Deployment Details**

NE Name: mdNodeD  
NE ID: 92.168.96.60  
Identifier: 1/1/c1/3  
Port-ID: 1/1/c1/3

Deployment Status: Deployed Misaligned

**AUDIT** **ALIGN**

Last Audit: 23rd January, 2023 4:21 PM by admin

**VIEW RESULT**

Last Alignment: 20th January, 2023 8:43 AM by admin

Template Name: ICM Access port

Created: 30th November, 2022 3:16 PM

Last Modified: 20th January, 2023 8:43 AM

Role: physical

Category: port

Configuration Status: Modified

Page: 1 / 1 Count: 21

### 3.8.7 Verify the results

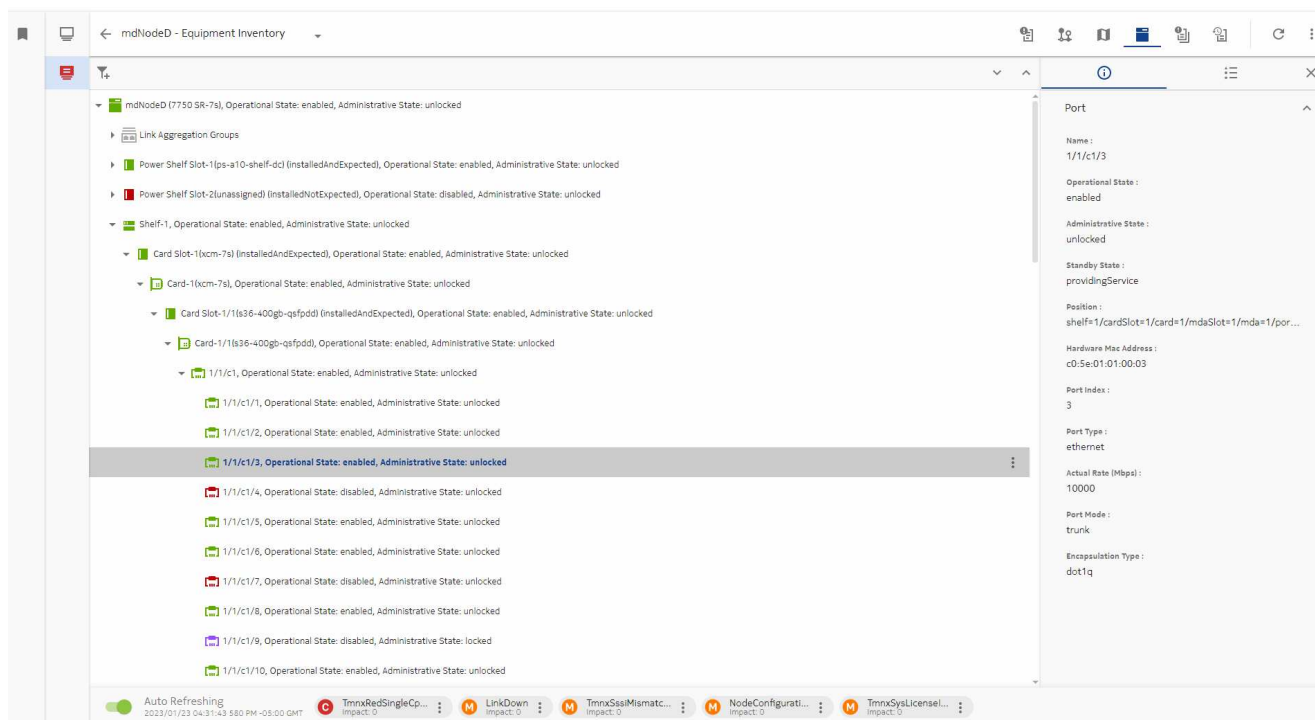
## 1

After the audit is completed, we can check the applications to see that the problem has cleared. Device Administrator shows that the configuration is now aligned:





Network Supervision shows the port in green, with Operational State enabled and Administrative State unlocked:



The Troubleshooting Dashboard shows the Major alarm cleared and Operational and Administrative states as expected:

Choose a dashboard  
**Troubleshooting**

Search for a target to troubleshoot  
Port

Troubleshooting Target  
1/1/c1/3\_mdNodeD

**Troubleshooting Summary Board**  
Select a port to view troubleshooting summary information

**Port Overview**  
See the summary information for the selected port

Port Type: ethernet  
Port Mode: trunk  
Management Address: 135.228.138.189  
System Address: 92.168.96.60  
Location: N/A

**Equipment Overview**  
See the summary information of the selected port equipment

Position: shelf=1/cardSlot=1/card=1/mdaSlot=1/mda=1/po...  
Product: 7750 SR  
Chassis Type: 7750 SR-7s  
Version: TiMOS-C-21.2.R2  
Manufacture Date: N/A

**Current Health Summary**  
See what object you are troubleshooting and how healthy it is

Operational State: enabled  
Administrative State: unlocked  
Availability State: N/A  
NE Communication State: up  
[Go to equipment view](#)

**Alarm Summary**  
See alarms and impacts for the selected port

0  
Critical

0  
Major

0  
TCAs

0  
Total Impacts

[Go to Fault Management](#)

Clicking **Go to Fault Management** from the Troubleshooting Dashboard takes you to the alarm list, where the Link Down alarm no longer appears.

TOP UNHEALTHY NEs

ALARM LIST

TOP PROBLEMS

INSPECTOR

Current Alarms

Unsaved Advanced F...

Total Unfiltered Alarms:

29

150

189

150

0

2

0

0

Severity	Site ID	Site Name	Alarmed Object Type	Alarmed Object Name	Alarm Name	Probable Cause
No items to show.						

Live data

Row Count: 0

General

Severity

Acknowledgement

Acknowledgement Notes

Statistics

Description

Remedial Action

Raising Condition

Clearing Condition

Additional Text

Custom Text

Specific Problem

This alarm is generated when the SNMP entity, acting in an agent role, has detected that port used for one of its communication links is about to enter the down state from some other state (but not from the not-present state). This other state is indicated by the included value of if-oper-status leaf

If the admin state is 'down' then the interface state is deliberate and there is no recovery, if the admin state is 'up' then try to determine the cause of the interface going down: cable cut, distal end went down, etc.

The Ports list in the Network Health Dashboard shows the updated port states:

Choose a dashboard  
**Network Health**

**Ports**

Content updated on 2023/01/23 16:35:22 (Click to update)

Name	Operational State	NE ID	NE Name	Description	Administrative State	Standby State	Position	Port Index	Port Type	Port Mode	MTU (bytes)
1/1/c1/3	enabled	92.168.9...	mdNodeD		unlocked	providingService	shelf=1/car...	3	ethernet	trunk	

**Network Elements**

Name	Operational State
mdNodeE	enabled
newNodeE	enabled
classicNodeB	enabled
mdNodeB	enabled

**Links**

Name	Operational State
mdNodeE:1/1/c1/9--mdN...	disabled
Unmanaged-Ne--newNod...	enabled
mdNodeC:1/1/c1/5--mdN...	enabled
newNodeE:1/1/c1/8--new...	enabled

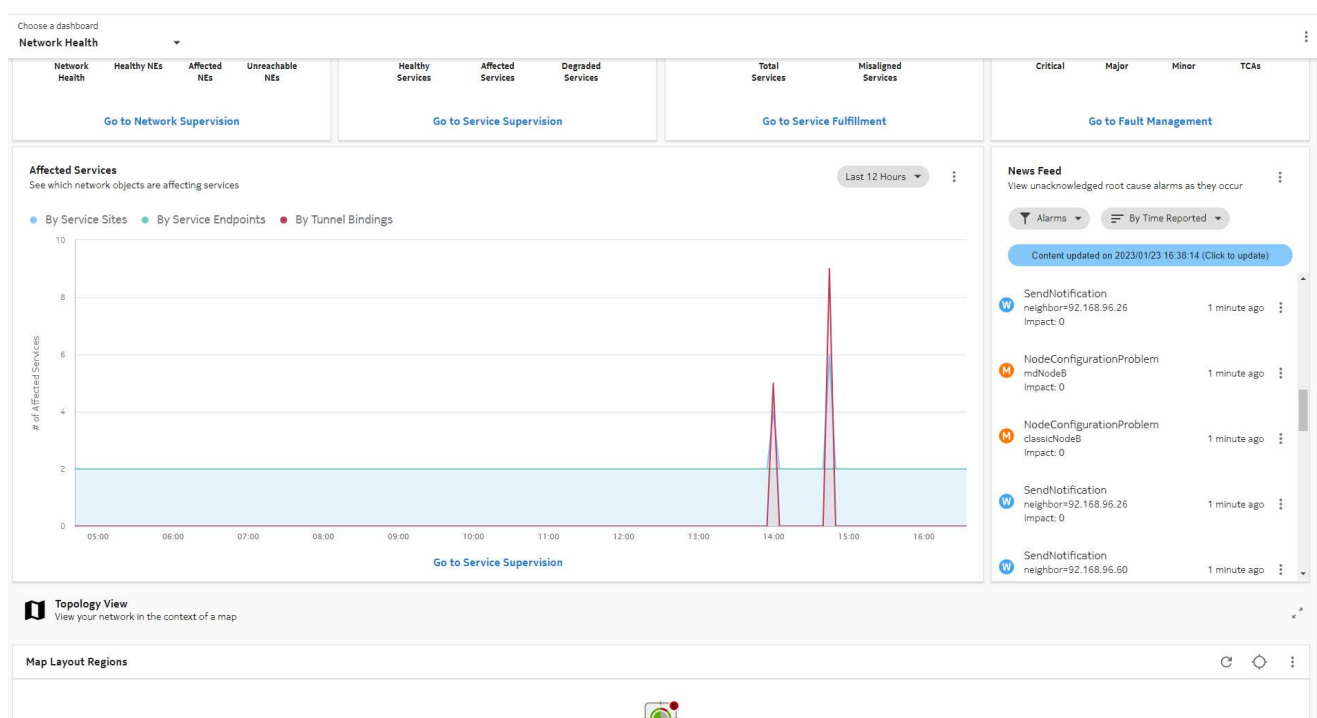
**Tunnel Bindings**

Name	Operational State
92.168.96.27-circuit-2-1...	enabled
92.168.96.61-circuit-1-5...	enabled
92.168.96.27-circuit-4-6...	enabled
92.168.96.27-circuit-2-5...	enabled

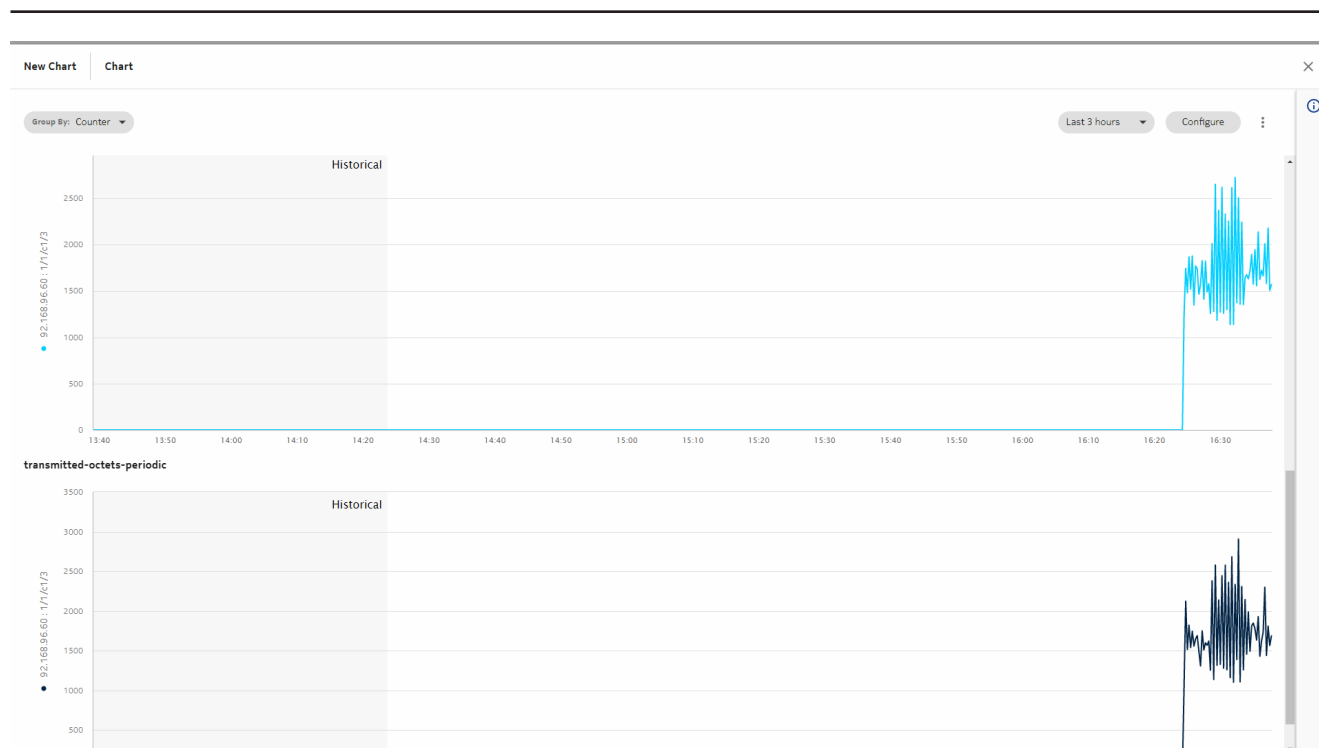
**Services**

Name	Operational State
Epipe 979	disabled
EPIPE 1104	disabled
VPLS 5300	enabled
EPIPE 5002	enabled

The News Feed also shows that the Link Down alarm has cleared:



Returning to Insights Viewer, we can also see that the traffic on the port has resumed.







---

## 4 Troubleshooting using Service Supervision

### 4.1 Using routine service maintenance with Service Supervision


#### 4.1.1 Purpose

This article shows you how to use the Service Supervision application to monitor the status of the services running in your network and to locate and troubleshoot problems.

#### 4.1.2 Starting points for troubleshooting monitored services

Changes to services manifest themselves through trending arrows on group tiles, and through changes to KPI icon color on service objects.

Any of the following events could indicate that you need to troubleshoot your services:

- One or more KPI icons turn red on services in the Watch view.  
To add services to the Watch view, hover over a service item in the Service list and click **More, Add To Watch Drawer**.
- A Trending Arrow  appears on a tile, or the tile changes color as services are impacted by new issues.
- A service item in the Service list shows problems with service objects: service site down, endpoint down, tunnel binding down, and/or OAM test validation failure.

#### 4.1.3 Triaging steps for a group

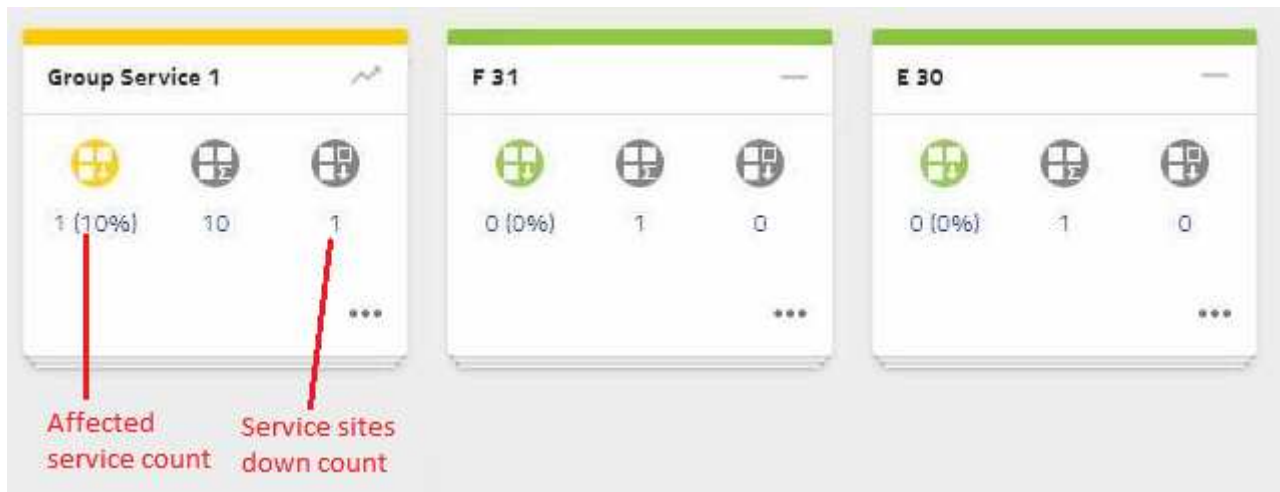
- 1 

---

Select an affected group tile in the view.
- 2 

---

Determine the number of affected services and services with sites down for the group.



Click **\*\*\* More Details** to expand a group tile and view additional KPIs: services with endpoints down, tunnel bindings down, or OAM test failures.

3

Double-click on the group to display its affected services in the Service list.

From the Service list, you can open the Alarms list  to view alarms for the entire group.

4

Proceed to [4.1.4 “Triaging steps for services” \(p. 174\)](#).

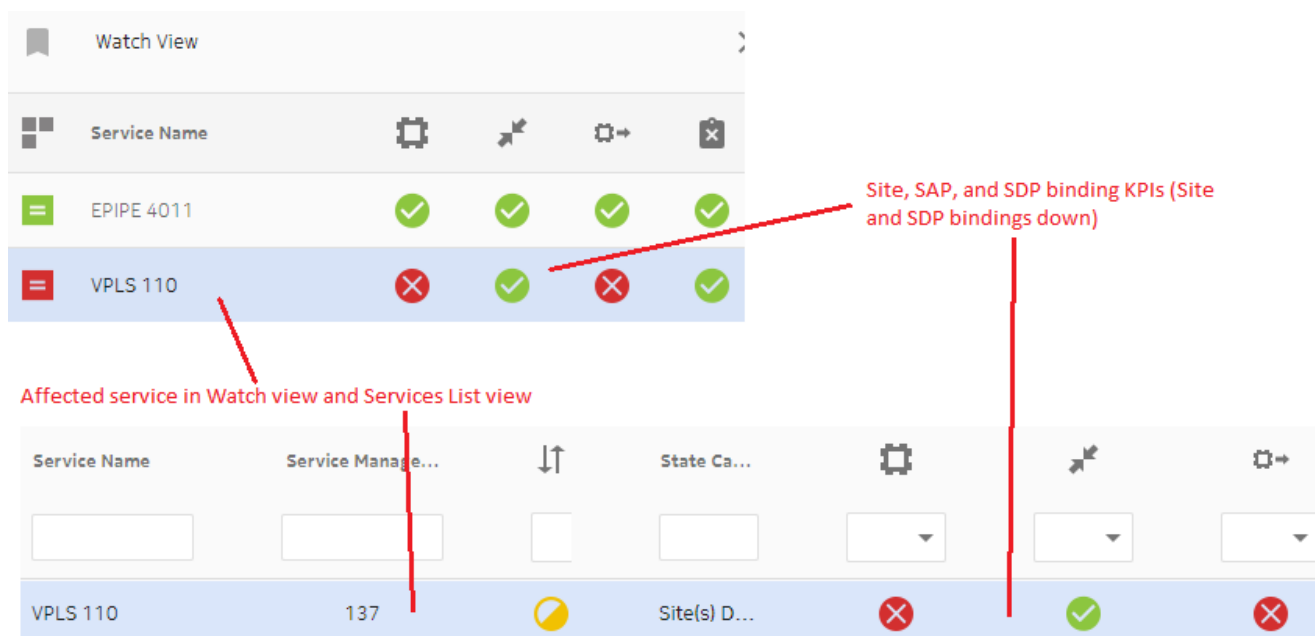
END OF STEPS

## 4.1.4 Triaging steps for services

One or more KPI icons turn red on services in the Service list or in the Watch view.

1

Double-click on an affected service in the Service list or click on an affected service in the Watch view.



The affected service opens in the Service list as a list of service sites.

2

Determine which KPIs are affected (i.e. down ✗): service site down, endpoint down, tunnel binding down, and/or OAM test validation failure.

3

Open the Alarms list for the affected service; on the service item click **More, Alarms**. Use the Alarms List, Impacts diagram, and Event Timeline as described in [4.1.8 "Troubleshoot problems in Alarms list" \(p. 177\)](#) and [4.1.9 "Troubleshoot problems in the Event Timeline" \(p. 178\)](#) to view events that might point to the problem.

4

On the service item, click **Service Map**. On the Service map, check the status of tunnel bindings as described in [4.1.11 "Troubleshoot problems in the Service Map" \(p. 180\)](#).

5

To change the configuration of the service item in its management application, hover over a service item and click **More, View Properties**. Monitor the object in Service Supervision to determine if KPIs improve as a result of the change.

---

6

After troubleshooting, verify that all alarms and KPIs have cleared and run OAM tests to prove that traffic can flow.

END OF STEPS

---


### 4.1.5 Triaging steps for a service site

For a selected service item in the Service list, the  **Service Site** KPI is Down.

1

Double-click on the service item to drill down to a list of all sites for the service.


2

Open the Alarms list for the affected service site; on the site item, click  **More, Alarms**.


3

Use the Alarms List and Impacts diagram as described in [4.1.8 “Troubleshoot problems in Alarms list” \(p. 177\)](#) to view events that might point to the problem.

4

On the service item, click  **Event Timeline**. Use the Event Timeline as described in [4.1.9 “Troubleshoot problems in the Event Timeline” \(p. 178\)](#) to view events that might point to the problem.

5

Select multiple affected service site item(s) and click  **OAM Test**. Perform OAM tests as described in [4.1.10 “Troubleshoot problems with OAM tests” \(p. 179\)](#).

END OF STEPS

---

### 4.1.6 Triaging steps for an endpoint

For a selected service item in the Service list, the  **Endpoint** KPI is Down.

1

On the service item, click on the endpoint icon to drill down to a list of endpoints on the service.

2

On an affected endpoint item, click  **Alarms**. Use the Alarms List and Impacts diagram as described in [4.1.8 “Troubleshoot problems in Alarms list” \(p. 177\)](#) to view events that might point to the problem.


---

3

On an affected endpoint item, click  **Event Timeline**. Use the Event Timeline as described in [4.1.9 “Troubleshoot problems in the Event Timeline” \(p. 178\)](#) to view events that might point to the problem.

---


4

Select multiple affected endpoint item(s) and click  **OAM Test**. Perform OAM tests as described in [4.1.10 “Troubleshoot problems with OAM tests” \(p. 179\)](#) .

---

END OF STEPS

### 4.1.7 Triaging steps for a tunnel binding

For a selected service item in the Service list, the  **Tunnel Binding** KPI is Down.

---

1

On the service item, click the Tunnel Binding icon to drill down to a list of tunnel bindings on the service.


---

2

On an affected tunnel binding item, click  **Alarms**. Use the Alarms List and Impacts diagram as described in [4.1.8 “Troubleshoot problems in Alarms list” \(p. 177\)](#) to view events that might point to the problem.


---

3

On an affected tunnel binding item, click  **Event Timeline**. Use the Event Timeline as described in [4.1.9 “Troubleshoot problems in the Event Timeline” \(p. 178\)](#) to view events that might point to the problem.

---

4

Select one or more affected tunnel binding item(s) and click  **OAM Test**. Perform OAM tests as described in [4.1.10 “Troubleshoot problems with OAM tests” \(p. 179\)](#) .


---

END OF STEPS


### 4.1.8 Troubleshoot problems in Alarms list

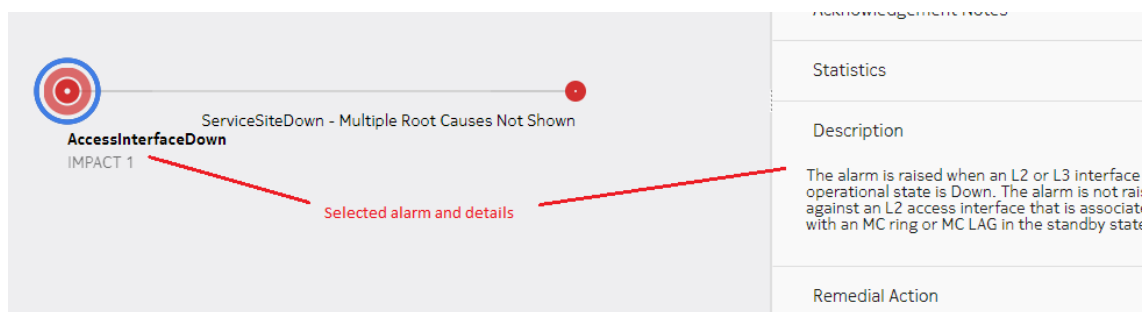
Click on an alarm message in the list to display complete details of the alarm, including descriptive and remedial information.


If you suspect that the affected object for the selected alarm is a cause of the current problem, you can open the affected object in its management application directly from the Alarms list. On the



selected alarm item, click More  → Show Affected Object. Make configuration changes to the affected object while monitoring the object in Service Supervision to determine if KPIs improve as a result of the change.

From the Alarms list (in the context of the selected service) you can take the following actions:

- For an alarm item in the list, click  **Show Impacts** to determine the root cause of the alarm.
- The selected alarm object is circled in dark blue. Click on an alarm object to view details and remedial information.





If you suspect that the affected object for the selected alarm is a cause of the current problem, you can open the affected object in its management application from the Impact Analysis view. At the bottom of the Details panel, click  **Show Affected Object**. Make configuration changes to the affected object while monitoring the object in Service Supervision to determine if KPIs improve as a result of the change.

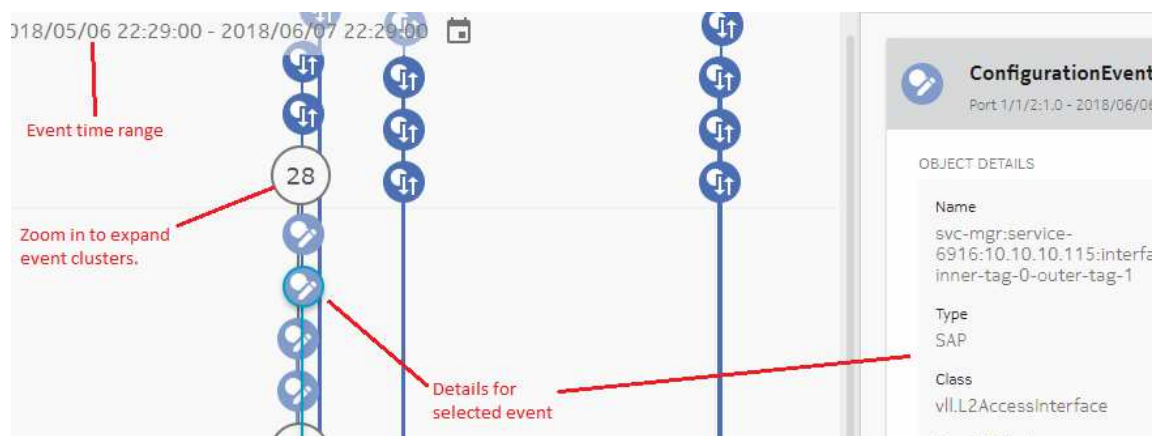
- Open the  **Event Timeline** for the alarm.  
Set a date range  around the alarm event and view events that occurred prior to alarm being raised to determine a possible cause (for example, an object configuration change).

#### 4.1.9 Troubleshoot problems in the Event Timeline

You can open the Event Timeline directly from a service object, or from individual alarm objects. View events that occurred prior to a hardware problem or an alarm being raised to determine a possible cause (for example, an object configuration change).

- Set an appropriate date range  around the hardware problem or alarm event.
- Select an event icon in the timeline and click  **Event Details** to view information related to the event. Use the Zoom function to expand clusters of events and search for causal events for a

failure.



#### 4.1.10 Troubleshoot problems with OAM tests

OAM diagnostic tests allow on-demand service performance monitoring and SLA verification to ensure that a service meets its performance settings in a controlled test time.

2 Items Selected **DESELECT ALL** Multi-select SAPs and click OAM Test button

SAP Name	State Ca...	Site ID
Port 1/1/13:104.0	N/A	
Port 1/1/11:104.0	Service ...	

Run OAM Tests

OAM tests can be run on a service by multi-selecting service sites, endpoints, or tunnel bindings. A failed OAM test result generally indicates that the service or part of the service is not operational. Not all OAM test types apply to all service types.

Select a test type and click **Run Test**. The results are displayed in the Test Results Summary.

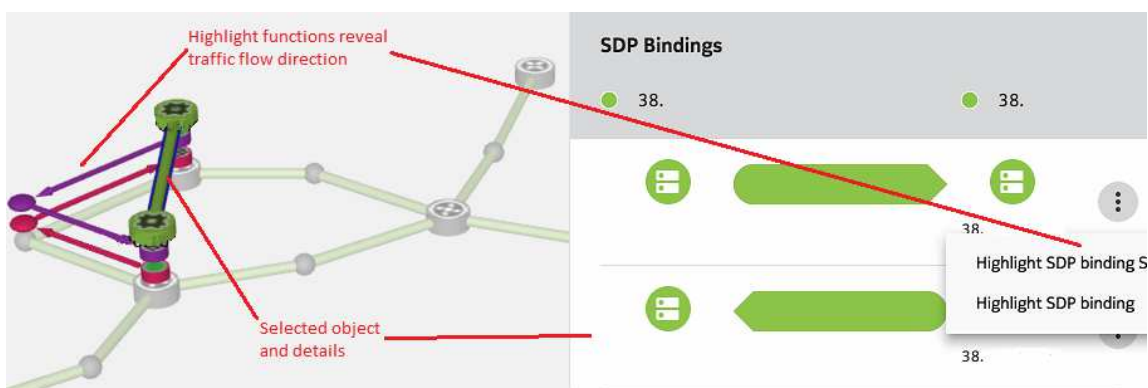
VPLS 104 - OAM Test Set						
Status	Test Type	CFM Level	Executed	E:		
Failed Result	CFM Loop Back	Level 7	2		Test Type CFM Loop Back	CFM Level Level 7
					Test Execution Statistics	
					0% (0) Succeeded	
					100% (2) Failed	

#### 4.1.11 Troubleshoot problems in the Service Map

**Note:** CPAM configuration is required in the service management application in order for the Service Map to display.

From the Service list, you can open a selected service in the **Service Map**. The Service Map can be useful in identifying the service segment that is experiencing a failure.

- In the Service Map, click on a tunnel binding, Service link, or Service site object and then click **Info** to view details about the object.



- Set the **Map Type** parameter to Troubled Tunnel Bindings to display only tunnel bindings that are not working on the service.



---

## 5 Troubleshooting using Network Supervision

### 5.1 Using the Matrix view to identify and troubleshoot equipment problems

#### 5.1.1 Overview

Network operators are tasked with resolving problems in complex networks. Some network problems are identified using trouble tickets, others by active monitoring. For operators who are actively monitoring the network, there are several options in Network Supervision for identifying problems and investigating root causes. For example, Network Supervision provides multiple display formats for showing information about network equipment: Matrix View, NE List, Topology View, and others. Each view provides a different perspective for identifying problems, comparing KPIs, and troubleshooting to find root causes.

In this article we'll look at the Matrix view, and see how problem indicators on NE tiles help identify which NEs need closer inspection. Then we'll discuss how to troubleshoot those NEs using three main entry points and processes.

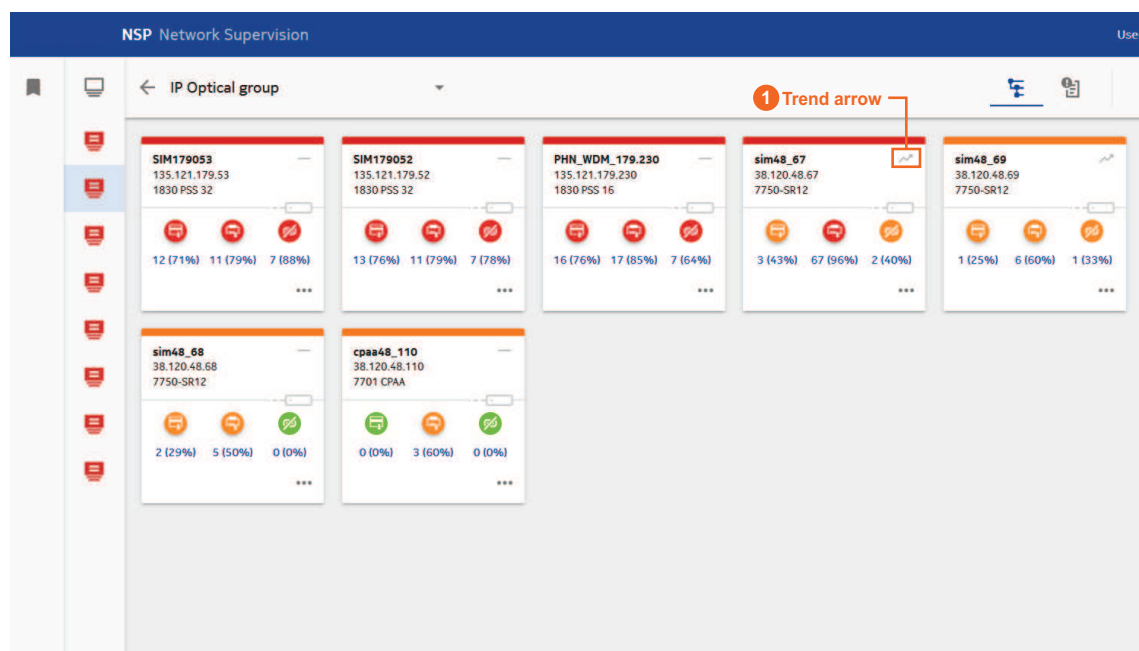
This article assumes you are already familiar with views and supervision groups, and know how to recognize when a supervision group requires closer inspection.

#### 5.1.2 Problem indicators in the Matrix View

The Matrix View shows the NEs in a supervision group as tiles in a grid. When you're looking at the tiles in the Matrix View, how can you tell which NEs have problems that require investigation?

There are three main problem indicators on the NE tiles:


- Tile location
- Tile color
- Trend arrows



29443

**Tile location:** Tiles in the upper left have the most serious problems. Network Supervision sorts the tiles at every Trend Time interval, and moves tiles to the upper left based on either the number of unacknowledged critical alarms, or the number of components affected (cards, ports, links). You can choose to sort based on alarms or components by setting User Preferences. Trend Time interval is also configurable.

**Tile color:** Red means trouble. Tiles may be green, yellow, orange, or red, and problems are more serious as the colors change, in that order. The colors indicate the percentage of affected components on the NE. You can set KPI Threshold settings to customize the percentages at which the colors change.




**Trend arrows:** If you see one of these  on an NE tile, problems on that NE have become worse since the last Trend Time interval.

As you actively monitor the NE matrix, the NE tiles that sift to the upper left, show red, or have a trend arrow, indicate that you may need to investigate the NE to troubleshoot and identify problems.

### 5.1.3 Entry points for troubleshooting

OK, you've identified an NE that needs further investigation. Now what?

At the bottom of each NE tile is a **Show More** menu. When you hover over the **Show More** menu, three icons appear:

-  **Current Alarms**
-  **Event Timeline**
-  **Troubleshooting Map**

The icons provide entry points for active troubleshooting. Clicking on an icon starts a process that allows you to troubleshoot the root cause of the problem. Let's look at the troubleshooting options one at a time.

### 5.1.4 Troubleshooting using the Current Alarms list

The Current Alarms list shows all alarms on the NE that have not been cleared. You can filter and sort the alarms using the column headings; for example, you can sort to show all critical alarms at the top of the list, or sort by impact, or by probable cause.

Sev...	Impact	Site ID	Site Name	Alarmed Obj...	Alarmed Obj...	Alarm Name	Probabl
C	2	38.120.48.67	sim48_67	ospf.interface	toCisco	InterfaceDown	Interfac
C	0	38.120.48.67	sim48_67	ldp.interface	toCisco	InterfaceDown	Interfac
C	0	38.120.48.67	sim48_67	accounting.P...	Kamel_TwoW...	AccountingPolicy...	account
C	0	38.120.48.67	sim48_67	bgp.Peer	peer-172.30...	PeerConnectionD...	connec
C	0	38.120.48.67	sim48_67	netw.Network...	sim48_67	SnmpDown	snmpD...
C	0	38.120.48.67	sim48_67	bgp.Peer	peer-192.67...	PeerConnectionD...	connec
C	0	38.120.48.67	sim48_67	netw.Network...	sim48_67	InBandManageme...	managi
C	1	38.120.48.67	sim48_67	equipment.P...	Port 1/1/3	LinkDown	portLin
C	0	38.120.48.67	sim48_67	netw.Network...	sim48_67	TraceError	traceEr
C	0	38.120.48.67	sim48_67	rtr.Networkin...	toCisco	InterfaceDown	Interfac
M	1	38.120.48.67	sim48_67	equipment.P...	Port 1/2/42	EquipmentDown	inopera
M	0	38.120.48.67	sim48_67	equipment.P...	Port 1/1/6	LinkDown	portLin
M	1	38.120.48.67	sim48_67	equipment.P...	Port 1/2/5	EquipmentDown	inopera
M	0	38.120.48.67	sim48_67	equipment.P...	Port 1/2/22	LinkDown	portLin
M	0	38.120.48.67	sim48_67	equipment.P...	Port 1/1/8	LinkDown	portLin

29440

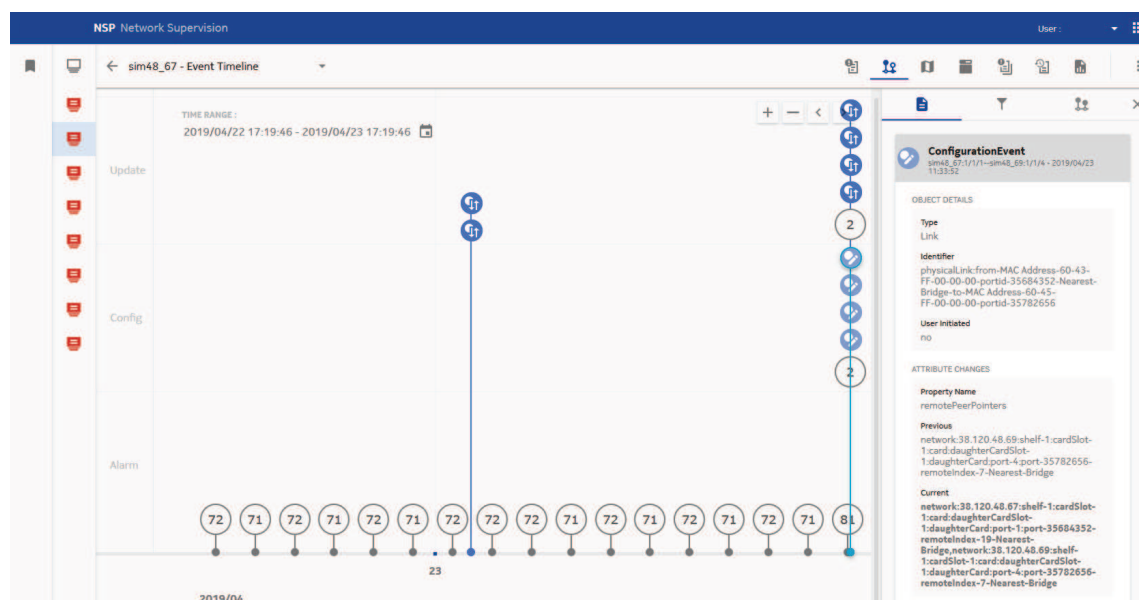
When you select an alarm in the list, information about that alarm appears in the Details panel. The Description and Remedial Action are expanded by default; these details may provide enough information to fix the problem. Expanding Additional Text may provide further help. You can expand any of the Details headings as needed.

You may have to select more than one alarm in the list to identify the root cause of the problem.

From the Current Alarms list, you can select several other options for troubleshooting or more information, using the icons or the **More** menu located above the list. For instance, you can open the Event Timeline (discussed next).

To fix the problem, you may need to open the NFM-P properties form for the NE by clicking **More**, **Show object**. The properties form for the object opens in the NFM-P client, and you can make configuration changes to resolve the issue.





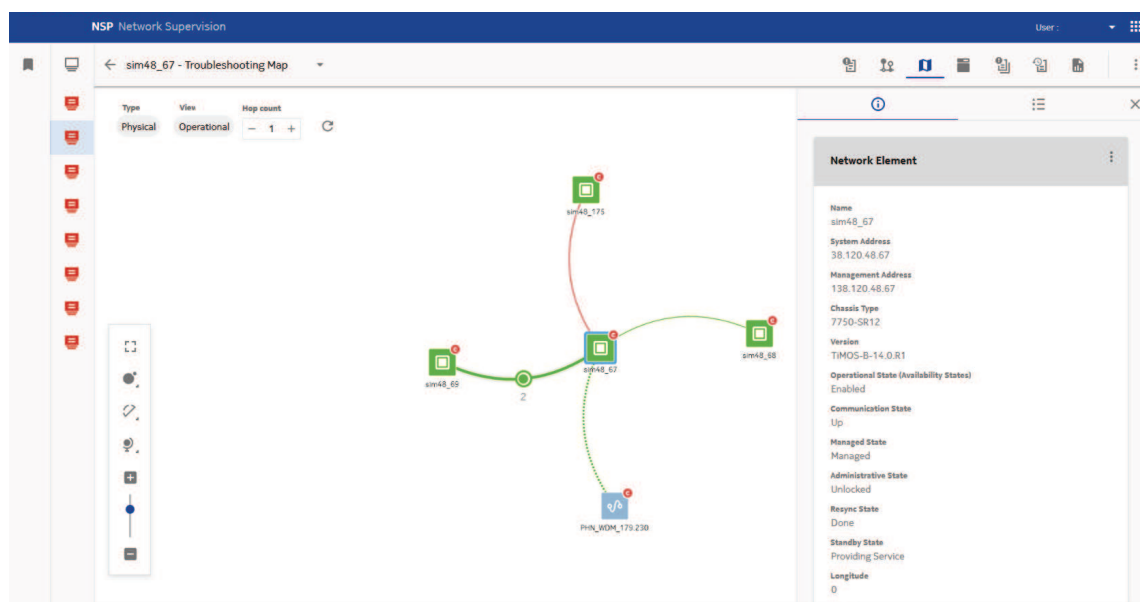
29442

By default, the timeline shows the 24 hour period immediately prior to when it was opened. You can configure the time range to narrow down the number of events. This is useful when you have an indication of when the problem started.

As with the Current Alarms list, from the Event Timeline you can select several other options for troubleshooting, more information, or to fix the problem, using the icons or the **More** menu.

### 5.1.6 Using the Troubleshooting Map

Some problems have their root cause in equipment other than the NE you are investigating. The Troubleshooting Map shows related equipment in the segment of network topology immediately surrounding the initial problem NE. Map tools allow you to explore for issues on NEs and links that are closely connected to that initial NE.



29444

When you open the Troubleshooting Map, the initial NE is shown, along with the NEs to which it has immediate links. The links are shown also. If NEs have alarms, a badge appears on the NE icon, showing the highest level alarm on the NE. When you hover over NEs or links, basic information is displayed.

Typically, you look at the NEs that have alarms and are immediately connected to the initial NE that you are investigating, to see if they have issues that are causing the problem on that NE. You can expand the map to investigate additional NEs farther away from the initial NE, by right-clicking on an NE in the map and choosing Explore. The map expands outward by the number of hops you have configured in the Hop count.

To show more detailed information, you can open an information panel on the right. When you click on any NE or link on the map, it's outlined in blue and details are displayed in the panel. The displayed information may be enough to identify the root cause, but if not, you can use the **More actions** menu in the panel to show the equipment inventory or open a Current Alarms list for any NE on the map, to further troubleshoot on the related NEs.

If the problem is an equipment configuration error, you can fix it on the properties form for an NE by clicking **More, Show object**. If you need to investigate further, you can choose several other options for troubleshooting or more information, using the icons or the **More** menu located above the map.

The Troubleshooting Map has display controls and a legend to help you manage the view and identify map objects.

## 5.1.7 Matrix view - use case summary

The Network Supervision application provides multiple methods for identifying and investigating equipment problems in the network. In this article, we discussed how to identify problems using the Matrix View, then looked at three main entry points and processes for troubleshooting and fixing the root cause of equipment problems:

- Current Alarms
- Event Timeline
- Troubleshooting Map

Any of these methods may lead to the successful resolution of equipment problems. The best method will depend on the type of problem encountered, and on the operator's preference and experience. There are other troubleshooting methods in Network Supervision besides those described here, such as Equipment Inventory and Analytics Reports, or using display formats other than the NE Matrix. More detailed procedures, descriptions, and processes are available in the NSP Help Center.

The Network Supervision application works in conjunction with the NFM-P, Fault Management, Service Supervision, and other NSP applications to provide effective management of network equipment, using efficient processes and navigation to solve problems in dynamic networks.

## 5.2 Using the routine NE maintenance with Network Supervision

### 5.2.1 Purpose

This article shows you how to use the Network Supervision application to monitor the status of your network hardware (NEs and their installed equipment) and to locate and troubleshoot the root cause of problems.

### 5.2.2 Starting points for troubleshooting monitored NEs


Any of the following events could indicate that you need to troubleshoot your network:

- One or many KPI icons turn red or show upward trending arrows ↗ on NEs in the Watch view. To add NEs to the Watch view, hover over an NE tile in the NE Matrix and click **⋮ Show More, Add To Watch View**.
- A supervision group turns red or shows upward trending arrows.

Summary group with high KPIs	Number of affected NEs	Current critical unacknowledged alarm count	
Group Name			#
East Subnet	4	53	4

- NE tiles change color or show upward trending arrows  in the NE Matrix.

### 5.2.3 Triaging steps for a supervision group

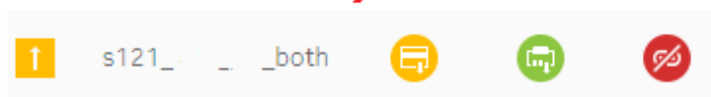
- 1 \_\_\_\_\_  
Select an affected supervision group in the view.
- 2 \_\_\_\_\_  
Determine the number of affected NEs and critical alarms for the group.
- 3 \_\_\_\_\_  
Click on the supervision group to display its NEs in the NE Matrix.  
From the Matrix, you can open the  **Alarms list** to view alarms for the entire group.
- 4 \_\_\_\_\_  
Proceed to [5.2.4 “Triaging steps for an NE”](#) (p. 187).

END OF STEPS

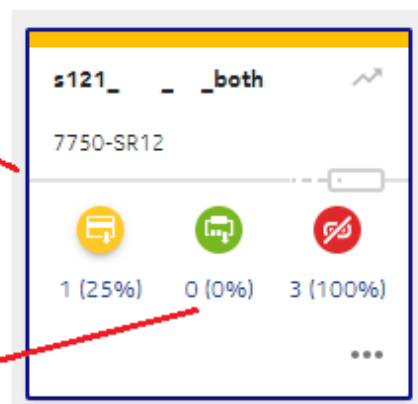
### 5.2.4 Triaging steps for an NE

- 1 \_\_\_\_\_  
Select an affected NE in the Watch view or NE Matrix.
- 2 \_\_\_\_\_  
Determine which KPIs on the NE are affected (yellow or red color): the number of cards, ports, or links that are down.

NE object with moderate KPIs in Watch view and Matrix view



Affected card, port, and link KPI indicators



Also look for upward trending arrows on NEs in the Watch view or NE Matrix. These indicate affected NEs that developed problems recently.



3

Select one or more of the following methods to troubleshoot the problem.

## Troubleshooting with the Current Alarms list and Event Timeline

4

Open the Alarms list to view all standing alarms for the selected NE; on the NE tile, click **⋮ Show More**, **🔔 Current Alarms**.

5

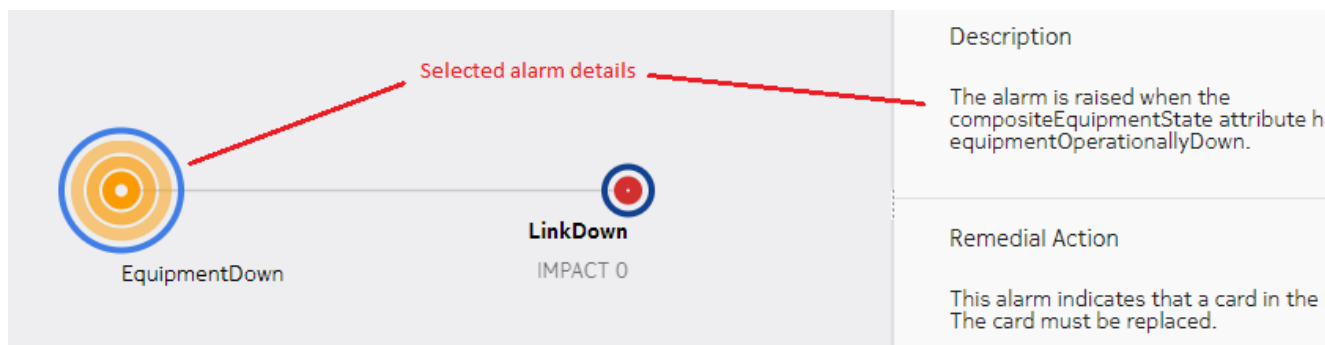
Click on an alarm message in the list to display complete details of the alarm, including descriptive and remedial information.

If you suspect that the affected object for the selected alarm is a cause of the current problem, you can open the affected object in its management application directly from the Alarms list. On the selected alarm item, click **More > Show Affected Object**. Make configuration changes to the affected object while monitoring the object in Network Supervision to determine if KPIs improve as a result of the change.

6

To further investigate a selected alarm, open its Impact Analysis diagram to view objects impacted by the alarm. On the selected alarm item, click **🔗 Show Impacts**.

The selected alarm object is circled in dark blue. Click on an alarm object to view details and remedial information.

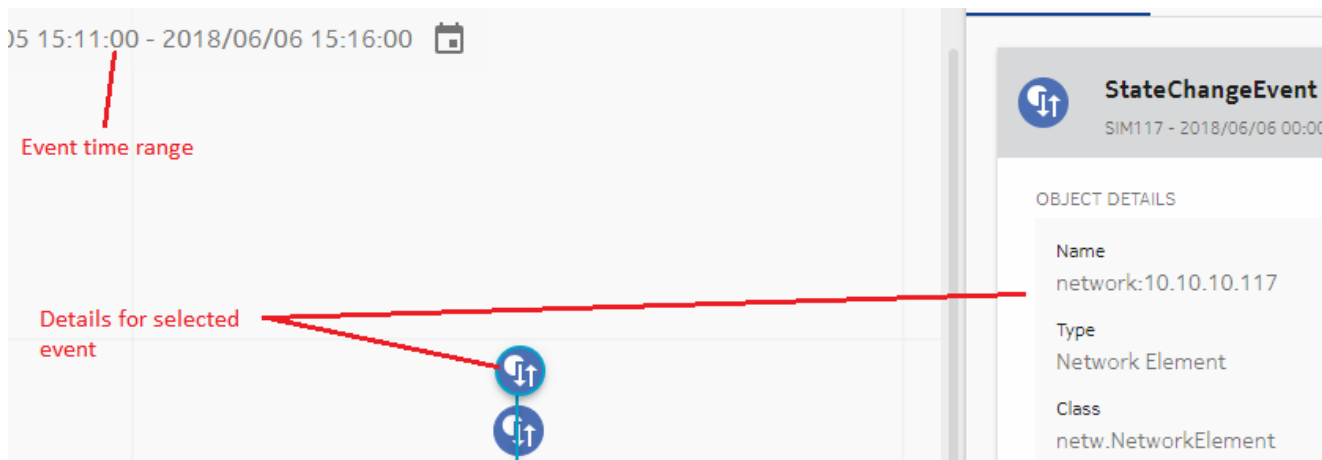


If you suspect that the affected object for the selected alarm is a cause of the current problem, you can open the affected object in its management application from the Impact Analysis view. At the bottom of the Details panel, click **🔗 Show Affected Object**. Make configuration changes to the affected object while monitoring the object in Network Supervision to determine if KPIs improve as a result of the change.

7

Open the **🕒 Event Timeline** for the alarm to view events that occurred just prior to the alarm being raised, and determine the possible cause (for example, an object configuration change).

Adjust the date range around the alarm event using the **Date Chooser**.

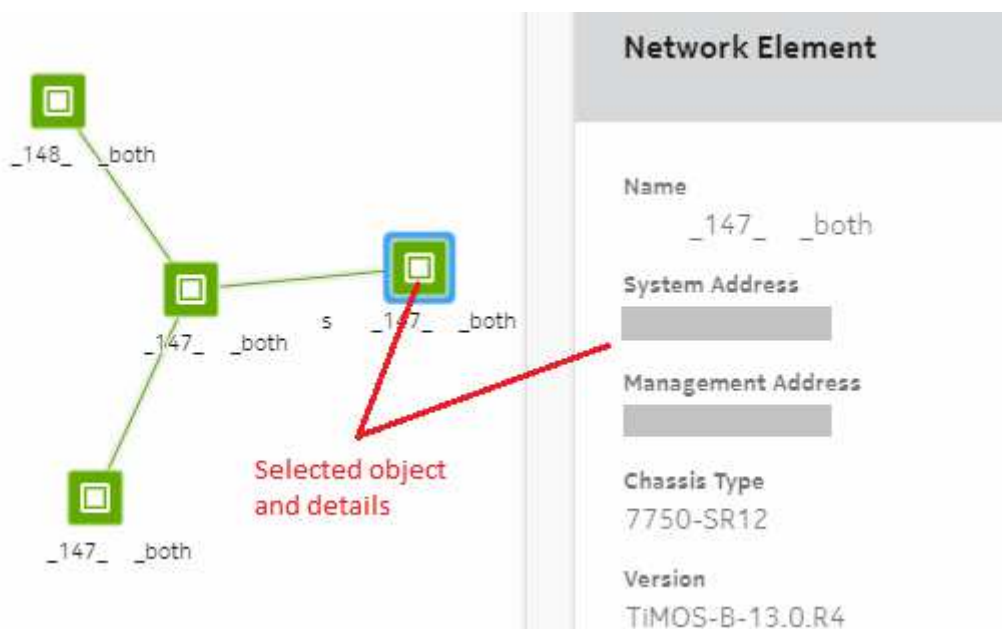


Select an event icon in the timeline to view information related to the event.

## Troubleshooting with the Troubleshooting Map

8

Return to the NE Matrix or Watch view and open the **Troubleshooting Map** for the selected NE. Click on a red NE or link object and then click **Info** to view details about the object.



---

NE objects with alarms carry a badge. The badge color indicates alarm severity, as described in the Details panel. Hover over an NE or link object to view basic status or alarm information about the object.

To correct a problem on an affected object, you can open the object in its management application to change its configuration, or to undo a previous configuration change that caused the problem. On the Details panel, click **\*\*\* Show More, Show Object**. Make configuration changes to the affected object while monitoring the object in Network Supervision to determine if KPIs improve as a result of the change.

---

**9**

When troubleshooting is complete, verify that all alarms have cleared and KPI indicators are green.

---

**END OF STEPS**



---

## 6 Troubleshooting using the Analytics application

### 6.1 Troubleshooting overview

#### 6.1.1 Troubleshooting

An effective troubleshooting model for solving Analytics application problems includes the following tasks:

- Eliminate the possibility of a hardware or network problem. For example, if you are having trouble with a Port Throughput report, verify that the port is up.
- Check the report description in this guide for the report-specific requirements, such as statistics, aggregation, or policies that must be in place.
- Verify that the NE is generating the required files. For example, if the report requires a statistic, verify that counters for that statistic are being generated.
- Categorize the problem.

The following are the most common categories of problems affecting Analytics reports:

- [Data collection issues](#)
- [Data storage issues](#)
- [Report generation issues](#)
- Plan corrective action and resolve the problem.
- Verify that the problem is resolved.

### 6.2 Troubleshooting data collection

#### 6.2.1 Statistics collection for Application Assurance reports

A blank report may be due to a statistics collection issue, or a prompt selection that excludes all available data.

The description of the report shows the statistics type required for the report, and whether an NSP Flow Collector is required. [Table 6-1, “Troubleshooting statistics collection for Application Assurance reports” \(p. 194\)](#) describes options for checking statistics collection.

Table 6-1 Troubleshooting statistics collection for Application Assurance reports

Statistics type	Items to verify	See
AA accounting	<ul style="list-style-type: none"> <li>• Are required policies in place?</li> <li>• Are statistics being collected?</li> <li>• What is the accounting retrieval status of the NE?</li> <li>• Is additional information available from server performance statistics?</li> </ul>	<p>"Workflow for accounting statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p> <p>"Workflow for server performance statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p> <p>"To view the accounting statistics collection status of an NE" in the <i>NSP NFM-P User Guide</i></p>
AA Cflowd	<ul style="list-style-type: none"> <li>• Has AA Cflowd sampling been configured?</li> <li>• Are required policies in place?</li> </ul>	<p>"To enable and configure global Cflowd sampling on an NE" in the <i>NSP NFM-P User Guide</i></p> <p>"To configure Cflowd collectors on an ISA-AA group or partition" in the <i>NSP NFM-P User Guide</i></p> <p>"To configure an AA Cflowd group policy" in the <i>NSP NFM-P User Guide</i></p> <p>"Workflow to configure flow statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p> <p>If the report requires special study statistics collection, see "Workflow to configure AA Cflowd special study statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p>
	<p>Is the NSP Flow Collector operating correctly?</p> <p>Is the Flow Collector mode correct? A single Flow Collector can collect AA Cflowd or IPFIX, but not both simultaneously.</p>	<p>"To display the NSP Flow Collector status" in the <i>NSP System Administrator Guide</i></p> <p>Check the NSP Flow Collector logs to verify connectivity to the auxiliary database; see <a href="#">6.3 "Troubleshooting data storage"</a> (p. 196)</p>
Subscriber	<ul style="list-style-type: none"> <li>• Are required policies in place?</li> <li>• Are statistics being collected?</li> </ul>	<p>"To configure AA subscriber statistics collection on an ISA-AA group or partition" in the <i>NSP NFM-P User Guide</i></p>
	<p>Is the NSP Flow Collector operating correctly?</p>	<p>"To display the NSP Flow Collector status" in the <i>NSP System Administrator Guide</i></p>

## 6.2.2 Statistics and data collection for Network and Service reports

A blank report may be due to a statistics collection issue, or a prompt selection that excludes all available data.

The description of the report shows the statistics or data type required for the report, and any other prerequisites that may apply. [Table 6-2, "Troubleshooting statistics and data collection for Network and Service reports"](#) (p. 195) describes options for checking collection.

Table 6-2 Troubleshooting statistics and data collection for Network and Service reports

Statistics type	Items to verify	See
Accounting (also known as XML statistics)	<ul style="list-style-type: none"> <li>• Are required policies in place?</li> <li>• Are statistics being collected?</li> <li>• Are required aggregators configured?</li> </ul>	<p>"Workflow for accounting statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p> <p>"How do I configure analytics aggregation?" in the <i>NSP Analytics Report Catalog</i></p>
Performance (SNMP) data	<ul style="list-style-type: none"> <li>• Are required policies in place?</li> <li>• Is SNMP connectivity established between the NE and the NFM-P?</li> <li>• Are required statistics being collected?</li> <li>• Are required aggregation rules enabled?</li> <li>• Alarms: if the system cannot collect and process all performance statistics in the specified polling period, the PollerDeadlineMissed alarm will be raised.</li> </ul>	<p>"How do I configure analytics aggregation?" in the <i>NSP Analytics Report Catalog</i></p>
IPFIX (also called System Cflowd or Netflow v10)	<ul style="list-style-type: none"> <li>• Has IPFIX sampling been configured?</li> <li>• Are required policies in place?</li> </ul>	<p>"Workflow to configure flow statistics collection" in the <i>NSP NFM-P Statistics Management Guide</i></p>
	<p>Is the NSP Flow Collector operating correctly?</p> <p>Is the Flow Collector mode correct? A single Flow Collector can collect AA Cflowd or IPFIX, but not both simultaneously.</p>	<p>"To display the NSP Flow Collector status" in the <i>NSP System Administrator Guide</i></p>
OAM data	<ul style="list-style-type: none"> <li>• Is OAM testing configured in the NFM-P?</li> <li>• Are required policies in place?</li> <li>• Are OAM aggregation rules enabled?</li> </ul>	<p>"How do I configure analytics aggregation?" in the <i>NSP Analytics Report Catalog</i></p>
Event data for Uptime reports	<ul style="list-style-type: none"> <li>• Is an event log policy in place with an appropriate retention time for assurance events?</li> <li>• Is event logging configured in the Service Supervision application?</li> <li>• Are maintenance windows configured appropriately?</li> </ul>	<p>"To configure an event log policy" in the <i>NSP NFM-P User Guide</i></p> <p>Online help for the Service Supervision application</p> <p>"To create and manage custom auxiliary database table attributes" in the <i>NSP System Administrator Guide</i></p>

### 6.2.3 NFM-P auxiliary database

In order to enable data collection, the auxiliary database must be configured and operational.

---

The NFM-P forwards statistics to the auxiliary database only if the `auxdb-storage` parameter is enabled in the `aa-stats` section of each NFM-P main server configuration. See the *NSP Installation and Upgrade Guide* for information about using the `samconfig` utility to modify the NFM-P configuration.

If you suspect an auxiliary database problem, you can run the following script on an auxiliary database station to collect log files for technical support:

```
/opt/nsp/nfmp/auxdb/install/bin/getDebugFiles.bash
```

#### 6.2.4 NFM-P main database

For Inventory reports, the NFM-P main database must be operational and able to receive files from NEs.

To confirm that files are being received and stored, monitor the following folder on the standalone or primary main server to ensure that new statistics files are being generated:

```
/opt/nsp/nfmp/server/xml_output
```

### 6.3 Troubleshooting data storage

#### 6.3.1 OAM test result storage

For OAM test reporting, the OAM test results must be stored in the auxiliary database, which requires that the `oam-test-results` parameter is enabled in the `samauxdb` section of each NFM-P main server configuration. See the *NSP Installation and Upgrade Guide* for information about using the `samconfig` utility to modify the NFM-P configuration.

#### 6.3.2 Statistics retention policy

Verify that the statistics retention policy is appropriate; data is unavailable for reporting if statistics are removed prematurely.

#### 6.3.3 Auxiliary database log locations

Logs for each NE can be found in the following directory on an auxiliary database station:

```
/opt/nsp/nfmp/auxdb/catalog/samdb/member_ID_catalog/vertica.log
```

where `member_ID` is the ID of the auxiliary database station, for example, `v_samdb_node0002`

The following log file contains basic auxiliary database status information:

```
/opt/nsp/nfmp/auxdb/install/proxy/log/EmsAuxDbProxy.log
```

#### 6.3.4 Assurance event logging

If an auxiliary database is present, assurance events are recorded in the following auxiliary database table:

```
samdb.assurance_assuranceevent
```

If no auxiliary database is present, assurance events are recorded in the following main database table:



---

PsoAssuranceEvent obj\_199a4deb

## 6.4 Troubleshooting report generation

### 6.4.1 Analytics server

The analytics-server installation logs are in the following location on an analytics server:

/opt/nsp/analytics/log

By default, an analytics server logs only errors. The server application log is the following:

/opt/nsp/analytics/log/analytics.server.log

You can enable additional logging using a script. See “To enable and manage analytics server logging” in the *NSP System Administrator Guide* for information.

The SQL log shows the data table names. Verify that the table for your report is requesting and receiving timed frame data to generate reports.

Additional logs are available in the following location on an analytics server:

/opt/nsp/os/tomcat/logs

For example, the analytics-registration.log file records analytics server communication with the NSP ZooKeeper service, and the tomcat catalina.out file records web-server operations and events.

### 6.4.2 Other reporting problems

The following may assist with troubleshooting NSP Analytics reporting:

- See “Using the Analytics application” in the NSP Analytics Report Catalog document to ensure that the reporting criteria are correctly specified. For example, all data for a report must be collected using the same collection interval.
- Verify the connectivity between the analytics servers, auxiliary database, and NFM-P main servers.
- If a report is taking a long time to execute, or generating errors, try reducing the number of objects in the data set.
- Verify that TLS is configured correctly in the NFM-P, and on each analytics server; see “TLS configuration and management” in the *NSP Installation and Upgrade Guide* for information.



## 7 Troubleshooting using Workflow Manager

### 7.1 Evaluating failed or slow workflow executions

#### 7.1.1 Purpose

This article shows you how to use the Workflow manager application to evaluate failed or slow workflow executions and troubleshoot the source of workflow errors.

#### 7.1.2 Parent workflows and sub-workflows

Workflows may call other workflows as part of their execution. Both the parent workflow and the sub-workflow appear in the Workflow Execution list.

If a workflow execution's **Executed by** parameter is blank, the workflow was executed by another workflow, as shown in the following figure.

Workflow Executions ▾ EXECUTION

Status	Workflow Name	Created	Run Time	Description	Executed By	Worker
✓	LSO_Transfer_Files_NE	50 minutes ago	3s	execution_identifier = /nsp-iso-operation...		Isom
✗	LSO_7x50_Backup_MD_Mixed	an hour ago	11s	execution_identifier = /nsp-iso-operation...		Isom
✗	LSO_7x50_Backup	an hour ago	12s	execution_identifier = /nsp-iso-operation...	nsp_internal_system_user	Isom
✗	LSO_7x50_Backup	an hour ago	5s	execution_identifier = /nsp-iso-operation...	nsp_internal_system_user	Isom
✗	LSO_7x50_Backup_MD_Mixed	an hour ago	3s	execution_identifier = /nsp-iso-operation...		Isom
✓	LSO_7x50_Backup	2 hours ago	1m 16s	execution_identifier = /nsp-iso-operation...	nsp_internal_system_user	Isom

*Parent workflow* (red arrow from LSO\_7x50\_Backup to LSO\_7x50\_Backup\_MD\_Mixed)

*Sub-workflow* (red arrow from LSO\_7x50\_Backup to LSO\_7x50\_Backup\_MD\_Mixed)

Note the Created field for these example executions. The LSO\_7x50\_Backup\_MD\_Mixed sub-workflow execution was created at the same time as the LSO\_7x50\_Backup workflow execution. The LSO\_7x50\_Backup may be the parent workflow that created this failed execution.

Start your troubleshooting with a parent workflow to ensure that you see all the relevant information.

#### 7.1.3 Check the information page of a successful execution

If you have an example of a successful execution of the workflow, it can help you narrow your search for the source of issues with slow or failing workflows.

1

Double click on a successful workflow execution. The Execution info page displays.

2

Choose **Flow** from the **Info** drop-down. The Flow diagram shows the sequence of tasks performed when the workflow was executed.

NOKIA NSP Workflow Manager

Execution  
LSO\_7x50\_Backup ▾

Flow ▾





---

Hover over the icons on each task for more information on the task type. In this example, `decideMode` is a message action, and `runBackupOnMdNode` is a sub-workflow.

---

3

Expand the panel at the right of the screen for further details:

- Click  Run Time to see the run time for each task.
- Select a task and click  Action Executions to see the list of actions executed by the task.

For this example, `runBackupOnMdNode` represents most of the runtime of the workflow, and it took 16 seconds to run. This provides expected behavior to compare to a workflow that may be running slowly.

The list of actions performed also shows whether the workflow is transferring files, calling APIs, or communicating with other applications. Problems with any of these could be the cause of a slowdown or failure.

---

4

Double-click on a sub-workflow task to see the execution status.

NOKIA NSP Workflow Manager

Execution

Execution	Status
62a6b42e-0544-4b48-...	SUCCESS

runBackupOnMdN...

SUCCESS

SUCCESS

backupSuccessful

SUCCESS

---

Double click on the execution status to open the info page for the sub-workflow execution in a new tab, and investigate actions and tasks executed by the sub-workflow.

END OF STEPS

---

#### 7.1.4 Check the process of a slow workflow

1

Double-click on a workflow execution, and select **Tasks** from the Info drop-down. The Tasks list shows the time stamps when each task was created, and each task's run time.

The Created column shows the time since the task was created. Hover over a time in the Created column to see the precise time of creation.

2

Check for delays in the sequence of tasks. For example, if one task was created at midnight and had a run time of 2 seconds, the following task should be created at 2 seconds after midnight.

3

If there are delays, Workflow Manager is experiencing slowness due to memory usage. When database usage is high, it takes Workflow Manager longer than expected to query the database for the next action.

If you are experiencing these delays, your cleanup policy may need to be adjusted; see the Workflow Manager application help.

END OF STEPS

---

#### 7.1.5 Check concurrency

If a workflow is experiencing slowdowns or API errors, check for tasks with loops and ensure the concurrency is set correctly. If Workflow Manager is creating too many actions at one time, the Workflow Manager database could be impacted, causing slowdowns, or APIs could be overwhelmed with too many simultaneous calls.

1

From the Workflows page, double click on a workflow to open the Info page. Choose **Definition** from the Info drop-down.

2

In the YAML panel, search for a task with a `with-item` statement. The `with-item` statement provides the number of times the task will initiate the action.

3

Verify that any task with a `with-item` statement also has a `concurrency` property set.

---

The `concurrency` property sets a limit on the number of times the task will create the action concurrently. For example, if the `concurrency` is set to 1, the task will create the action once and wait for it to complete before executing it again.

4

---

Ensure that the concurrency value and the size of the with-items loop are appropriate for the task. For example, if the task is an API call, ensure that the concurrency is low enough to prevent the resource from being overwhelmed with simultaneous API calls. Remember that this workflow may not be the only entity calling the API at the time you execute it.

END OF STEPS

---

## 7.1.6 Check task output

If a workflow is experiencing slowdowns or getting stuck in a Running state, resource usage may be impacted by large amounts of output.

1

---

From the Workflows page, double click on a workflow to open the Info page. Choose **Definition** from the Info drop-down.

2

---

In the YAML panel, search for the `output` statements for the tasks and the workflow itself, as applicable.

3

---

Ensure that output for all tasks is as minimal as possible. This minimizes the database usage of each task execution and helps to prevent resource overload. For more information; see the Mistral documentation and the Best Practices section in the Network Automation tutorial on the [Network Developer Portal](#).

END OF STEPS

---

## 7.1.7 Heartbeat errors

A `Heartbeat not received` error occurs when Workflow Manager attempts to contact an API or another NSP application and no response is received within ten minutes. Check logs to verify the source of the error.

1

---

Check the logs for the Mistral executor to see whether responses were received from the other entity.



---

**2**

Check logs for the RabbitMQ messaging bus to see whether there was an interruption to monitoring, which may have caused Mistral to miss a response.

**END OF STEPS**

---



---

## Part III: NSP troubleshooting

### Overview

#### Purpose

This part provides information about NSP troubleshooting.

#### Contents

<a href="#">Chapter 8, NSP system troubleshooting</a>	<a href="#">209</a>
---	---------------------



## 8 NSP system troubleshooting

### 8.1 Troubleshooting NSP cluster issues

#### 8.1.1 Purpose

The commands provided in this section can help diagnose and resolve NSP deployment and installation issues by providing detailed information about the status of various deployed components.

#### 8.1.2 Pod troubleshooting

This topic covers troubleshooting the pods that are part of the NSP cluster.

##### Retrieve a list of pods

Enter the following command to view a list of pods in the NSP cluster:

```
# kubectl get pods ↵
```

##### Retrieve pod information

Enter the following to view information about a specific pod:

```
# kubectl describe pod pod_name ↵
```

where *pod\_name* is the name of the pod to view

The command output includes many parameters, including any events associated with the pod. For example:

Type	Reason	Age	From	Message
----	-----	----	----	-----
Warning	FailedScheduling	<unknown>	default-scheduler	0/1 nodes are available: 1 Insufficient memory.

##### Recover pods

Enter the following command to recover a pod:

```
# kubectl delete pod pod-name ↵
```

where *pod-name* is the name of the pod

The pod is automatically redeployed. You can use the command to recover a pod in an errored state.

##### Recover executor pods

The following applications use executor and driver pods:

- act-pipeline-app
- rta-anomaly-detector-app
- rta-trainer-app
- rta-windower-app

An executor pod name has the following format:

*app\_name-instance-exec-executor\_ID*

where

*app\_name* is the application name

*instance* is the pod instance ID

*executor\_ID* is a number that identifies the executor instance

Enter the following to recover an executor pod, where *app\_name* is the application name:

```
# kubectl delete pod app-name-driver ↵
```

The driver pod is automatically redeployed, thereby recovering any associated errored executor pods.

### 8.1.3 NSP cluster member troubleshooting

This topic describes troubleshooting the members of an NSP cluster.

#### Retrieve a list of members

Enter the following to list the NSP cluster members:

```
# kubectl get nodes ↵
```

#### Retrieve member information

Enter the following to view information about a specific member:

```
# kubectl describe nodes node_name ↵
```

where *node\_name* is the name of the member to view

The command output includes member information such as the following:

- member status; for example:

```
Type Status LastHeartbeatTime LastTransitionTime Reason Message
-----
NetworkUnavailable False Wed, 30 Sep 2020 12:19:23 -0400 Wed, 30 Sep 2020 12:19:23 -0400
CalicoIsUp Calico is running on this node
```

- member resource capacity; for example:

```
Capacity:
  cpu: 24
  ephemeral-storage: 67092472Ki
  hugepages-1Gi: 0
  hugepages-2Mi: 0
```

```
memory:          64381888Ki
pods:            110
```

- running pods on the member; for example:

```
Namespace Name CPU Requests CPU Limits Memory Requests Memory Limits AGE
-----
default nginx-ingress-controller-8fj7s 100m (0%) 12 (37%) 500Mi (0%) 1000Mi (0%) 7h9m
default nspos-appl-tomcat-8597d67787-wdgd 5100m (16%) 12100m (38%) 17230Mi (13%) 17230Mi (13%) 7h10m
default nspos-neo4j-core-default-1 2050m (6%) 2050m (6%) 2650Mi (2%) 2650Mi (2%) 7h10m
default nspos-postgresql-primary-0 6050m (19%) 6050m (19%) 1290Mi (1%) 1290Mi (1%) 7h9m
```

- resources allocated to the member; for example:

Resource	Requests	Limits
cpu	22870m (71%)	41150m (129%)
memory	42120228Ki (32%)	44290630912 (33%)
ephemeral-storage	0 (0%)	0 (0%)

## 8.1.4 MDM server troubleshooting

This topic describes troubleshooting MDM instances.

**Note:** The NSP system must be operational before these operations can be performed.

### Retrieve detailed information about MDM servers

From the NSP deployer host software directory, enter the following to show the MDM server roles, the number of NEs managed using MDM, and which MDM server is hosting which NE.

```
# tools/mdm/bin/server-load.bash --user username --pass password--detail
```

where

*username* is the NSP username

*password* is the NSP password

The command output includes information such as the following:

```
{
  "mdmInstanceInfos": [
    {
      "name": mdm-server-0,
      "ipAddress": mdm-server-0.mdm-server-svc-headless.default.svc.
cluster.local,
      "grpcPort": 30000,
      "status": Up,
      "neCount": 0,
```

---

```

        "neIds": null,
        "active": False
        "groupIds": [1, 2],
    },
    {
        "name": mdm-server-1,
        "ipAddress": mdm-server-1.mdm-server-svc-headless.default.svc.
cluster.local,
        "grpcPort": 30000,
        "status": Up,
        "neCount": 2,
        "neIds": ["1.1.1.1", "1.1.1.2"],
        "active": True
        "groupId": 1,
    },
    {
        "name": mdm-server-2,
        "ipAddress": mdm-server-2.mdm-server-svc-headless.default.svc.
cluster.local,
        "grpcPort": 30000,
        "status": Up,
        "neCount": 2,
        "neIds": ["1.1.1.3", "1.1.1.4"],
        "active": True
        "groupId": 2,
    }
  ]
}
```

### Rebalance NE load on MDM servers

From the NSP deployer host software directory, enter the following to rebalance the NE load on the MDM servers.

```
# tools/mdm/bin/server-load.bash --user username --pass
password--rebalance
```

where



---

*username* is the NSP username

*password* is the NSP password

## 8.1.5 Disk performance tests

This topic describes NSP disk tests for collecting performance metrics such as throughput and latency measurements.

### Verify disk performance for etcd

As the root user, enter the following:

```
# mkdir /var/lib/test  
  
# fio --rw=write --ioengine=sync --fdatasync=1 --directory=/var/lib/test  
--size=22m --bs=3200 --name=mytest ↵
```

The command produces output like the following:

Starting 1 process

mytest: Laying out IO file (1 file / 22MiB)

Jobs: 1 (f=1)

mytest: (groupid=0, jobs=1): err= 0: pid=40944: Mon Jun 15 10:23:23 2020

write: IOPS=7574, BW=16.6MiB/s (17.4MB/s) (21.0MiB/1324msec)

clat (usec): min=4, max=261, avg= 9.50, stdev= 4.11

lat (usec): min=4, max=262, avg= 9.67, stdev= 4.12

clat percentiles (nsec):

| 1.00th=[ 5536], 5.00th=[ 5728], 10.00th=[ 5920], 20.00th=[  
6176],

| 30.00th=[ 7584], 40.00th=[ 8896], 50.00th=[ 9408], 60.00th=[  
9792],

| 70.00th=[10432], 80.00th=[11584], 90.00th=[12864], 95.00th=  
[14528],

| 99.00th=[20352], 99.50th=[23168], 99.90th=[28800], 99.95th=  
[42752],

| 99.99th=[60672]

bw ( KiB/s): min=16868, max=17258, per=100.00%, avg=17063.00,  
stdev=275.77, samples=2

iops : min= 7510, max= 7684, avg=7597.00, stdev=123.04,  
samples=2

lat (usec) : 10=64.21%, 20=34.68%, 50=1.08%, 100=0.02%, 500=0.01%

In the second block of output, which is shown below, the 99th percentile durations must be less than 10ms. In this block, each durations is less than 1ms.

```
fsync/fdatasync/sync_file_range:
  sync (usec): min=39, max=1174, avg=120.71, stdev=63.89
  sync percentiles (usec):
    | 1.00th=[ 42], 5.00th=[ 45], 10.00th=[ 46], 20.00th=[
48],
    | 30.00th=[ 52], 40.00th=[ 71], 50.00th=[ 153], 60.00th=[
159],
    | 70.00th=[ 167], 80.00th=[ 178], 90.00th=[ 192], 95.00th=[
206],
    | 99.00th=[ 229], 99.50th=[ 239], 99.90th=[ 355], 99.95th=[
416],
    | 99.99th=[ 445]
  cpu          : usr=2.95%, sys=29.93%, ctx=15663, majf=0, minf=35
  IO depths    : 1=200.0%, 2=0.0%, 4=0.0%, 8=0.0%, 16=0.0%, 32=0.0%,
>=64=0.0%
  submit      : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%,
>=64=0.0%
  complete    : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%,
>=64=0.0%
  issued rwts: total=0,10029,0,0 short=10029,0,0,0 dropped=0,0,0,0
  latency     : target=0, window=0, percentile=100.00%, depth=1
```

### Verify disk performance for NSP

Enter the following as the root user in the /opt/nsp directory to create a file called 'test' in the directory:

```
# fio --randrepeat=1 --ioengine=libaio --direct=1 --gtod_reduce=1
--name=test --filename=random_read_write.fio --bs=4k --iodepth=64
--size=4G --readwrite=randrw --rwmixread=50 ↵
```

The command produces output like the following:

```
test: (g=0): rw=randrw, bs=(R) 4096B-4096B, (W) 4096B-4096B, (T)
4096B-4096B, ioengine=libaio, iodepth=64
fio-3.7
Starting 1 process
test: Laying out IO file (1 file / 4096MiB)
Jobs: 1 (f=1): [m(1)][100.0%][r=22.1MiB/s,w=22.2MiB/s][r=5645,w=5674
IOPS][eta 00m:00s]
test: (groupid=0, jobs=1): err= 0: pid=32439: Mon Sep 21 10:25:11 2020
```

```

read: IOPS=6301, BW=24.6MiB/s (25.8MB/s) (2049MiB/83252msec)
    bw ( KiB/s): min=13824, max=39088, per=99.57%, avg=25098.60,
    stdev=5316.27, samples=166
    iops      : min= 3456, max= 9772, avg=6274.49, stdev=1329.11,
    samples=166
write: IOPS=6293, BW=24.6MiB/s (25.8MB/s) (2047MiB/83252msec)
    bw ( KiB/s): min=13464, max=40024, per=99.56%, avg=25062.73,
    stdev=5334.65, samples=166
    iops      : min= 3366, max=10006, avg=6265.57, stdev=1333.67,
    samples=166
    cpu       : usr=5.13%, sys=18.63%, ctx=202387, majf=0, minf=26
    IO depths : 1=0.1%, 2=0.1%, 4=0.1%, 8=0.1%, 16=0.1%, 32=0.1%,
    >=64=100.0%
    submit    : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.0%,
    >=64=0.0%
    complete  : 0=0.0%, 4=100.0%, 8=0.0%, 16=0.0%, 32=0.0%, 64=0.1%,
    >=64=0.0%
    issued rwts: total=524625,523951,0,0 short=0,0,0,0 dropped=0,0,0,0
    latency   : target=0, window=0, percentile=100.00%, depth=64
Run status group 0 (all jobs):
    READ: bw=24.6MiB/s (25.8MB/s), 24.6MiB/s-24.6MiB/s (25.8MB/s-25.
    8MB/s), io=2049MiB (2149MB), run=83252-83252msec
    WRITE: bw=24.6MiB/s (25.8MB/s), 24.6MiB/s-24.6MiB/s (25.8MB/s-25.
    8MB/s), io=2047MiB (2146MB), run=83252-83252msec
Disk stats (read/write):
    vda: ios=523989/526042, merge=0/2218, ticks=3346204/1622070,
    in_queue=4658999, util=96.06%

```

## 8.2 Intent Manager errors with CAS authentication

### 8.2.1 Description

If you are using legacy CAS authentication in NSP, you may encounter authorization errors when using the Intent Manager application.

As a workaround for this problem, an Admin user can assign access permissions to Intent Manager users through Keycloak:

1. Log into Keycloak: **[https://<NSP\\_system\\_IP\\_address>/auth](https://<NSP_system_IP_address>/auth)** - admin / <admin\_password>
2. Ensure that the realm is set to Nokia.
3. Under the manager section, click on **Users**.

4. Click on **View All Users**.
5. Click on the `altiplano_admin` user ID.
6. Click on **Role Mappings**.
7. Under Client Roles, click on **NSP**.
8. Select `ALTIPLANO_ADMIN`, `ALTIPLANO_SYSTEM`, `ALTIPLANO_VIEWER`, and `SNMP_MGR_SYSTEM`.
9. Click **Add Selected**.
10. Restart the `nsp-mdt-ac-0` pod.

## 8.3 Alarms not appearing for rapidly reoccurring faults

### 8.3.1 Issue

Alarms are not generated under certain circumstances when the underlying fault is occurring and resolving faster than the duration of the NSP alarm flush interval. This only applies to alarms created by NSP alarm rules, and not to alarms received from other sources, for example using NETCONF. By default, the flush interval is four seconds, and the NSP may not capture events that occur and resolve faster than that, such as an ISIS interface that is flapping once every second.

You can configure the duration of the flush interval to capture rapidly flapping events. However, this impairs the performance of the NSP, as it increases how often the NSP writes to the alarm database. The following procedure describes how to configure the NSP alarm flush interval.

### 8.3.2 Configuring the NSP alarm flush interval

**i** **Note:** Performing this procedure involves restarting a component of the NSP, and should not be performed outside of a maintenance window. In the event that `resync-fw` is upgraded, this procedure must be repeated to change the alarm flush interval again.

- 1 \_\_\_\_\_  
Log in as the root user on the NSP cluster host. For information about logging in to the NSP, see the *NSP System Administrator Guide*.
- 2 \_\_\_\_\_  
Open a console window.
- 3 \_\_\_\_\_  
In the **`nspos-resync-fw`** Kubernetes pod, open the following file in a text editor:  
`/opt/nsp/os/resync-fw/config/resync-fw-overrides.conf`
- 4 \_\_\_\_\_  
The file contains parameter settings in nested declarations. The existing parameters depend on your current NSP configuration. Find or add the `flush-buffer-interval-in-second` parameter, which is nested under `resync-fw > mdm > notification`, as shown below:

---

```
resync-fw
{
  mdm
  {
    notification
    {
      flush-buffer-interval-in-second = 1
    }
  }
}
```

Configure the value of the parameter to the required duration of the NSP alarm flush interval, in seconds.

---

## 5

Save the configuration file, and enter the following to restart the **nspos-resync-fw** pod:

```
# kubectl delete pod nspos-resync-fw↵
```



---

## Part IV: Troubleshooting using NFM-P

### Overview

#### Purpose

This part provides information about troubleshooting a managed network using the NFM-P.

#### Contents

<a href="#">Chapter 9, Troubleshooting using network alarms</a>	221
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---

## 9 Troubleshooting using network alarms

### 9.1 Network alarms overview

#### 9.1.1 The alarm handling process

Incoming alarms from network objects are displayed in the dynamic alarm list and are associated with the affected objects. When the failure of an object affects a higher-level object, an alarm called a correlated alarm is raised against the higher-level object. The original alarm is called the correlating alarm. When a correlating alarm clears, the correlated alarms clear automatically.

An alarm can be raised in response to one or more network problems. To identify the root cause of a problem, you must identify the root cause of individual alarms starting with alarms on the lowest-level managed object. If the affected object is not the cause of the alarm, the problem may be found on a related, supporting object below the lowest-level object in the alarm.

See the *NSP Alarm Search Tool* for information about a specific alarm. See the *Fault Management Application Help* for information about NSP alarm management.

### 9.2 Process to troubleshoot using network alarms

#### 9.2.1 Stages

1

---

View and monitor alarms using the dynamic alarm list or the navigation tree:

- a. Use the alarm list to monitor alarms and sort them according to time received. See [9.3 "To view and sort alarms in the alarm list" \(p. 223\)](#) for more information.
- b. Use the Service Supervision and Network Supervision applications to view object alarms and navigate to affected objects. See the *NSP User Guide* for more information.

2

---

Categorize alarms by object hierarchy and identify the alarm that is lowest in the network object hierarchy. See the *Fault Management Application Help* for more information.

3

---

Acknowledge alarms on the affected object and on the related problems. See the *Fault Management Application Help* for more information.

---

4

View detailed information about the alarm to determine the probable cause or root cause of the problem. See the *Fault Management Application Help* for more information.

See the following sources of information:

- Fault Management application alarm list
- managed object hierarchy table
- alarm description tables in the *NSP Alarm Search Tool*

---

5

View the affected object information to determine the probable cause or root cause of the problem. See [9.7 “To determine probable cause and root cause using alarm and affected object information” \(p. 229\)](#) for more information.

---

6

View related object information if the root cause is not found on the affected object. See [9.8 “To determine root cause using related objects” \(p. 230\)](#) for more information.

---

7

In the event of a service equipment problem which produces a series of alarms, assess the alarms in the order that they are raised. See [9.10 “To troubleshoot a service equipment problem” \(p. 231\)](#) for more information.

---

8

If there is an equipment down alarm, use the equipment view of the navigation tree for more information and check the physical connections to the port. See [9.11 “To clear alarms related to an equipment problem” \(p. 233\)](#) for more information.

---

9

In the event of an underlying port state problem which produces a series of alarms, assess the alarms in the order that they are raised. See [9.12 “To troubleshoot an underlying port state problem” \(p. 233\)](#) for more information.

---

10

As required, clear the alarms related to the underlying port state problem. See [9.13 “To clear alarms related to an underlying port state problem” \(p. 236\)](#) for more information.

---

11

In the event of a service configuration problem which produces a series of alarms, assess the alarms in the order that they are raised. See [9.14 “To troubleshoot a service configuration problem” \(p. 236\)](#) for more information.

---

12

As required, clear alarms associated with SDP binding frame size problems. See [9.15 “To clear a Frame Size Problem \(MTU Mismatch\) alarm” \(p. 238\)](#) for more information.

---

13

As required, use the alarm description tables and the database of historical alarms to help interpret the data and troubleshoot network problems.

## 9.3 To view and sort alarms in the alarm list

### 9.3.1 Purpose

Monitor the dynamic alarm list in the Fault Management application and attempt to address alarms in the order that they are raised.

### 9.3.2 Steps

---

1

In the Fault Management application, click on the Alarm List tab to display the alarm list.

---

2

Click on the First Time Detected column heading to sort the alarms in ascending order according to the first time the alarm was raised.

Multiple alarms received at approximately the same time indicate that the alarms may be correlated and may have a common root cause. Review the alarms in the order in which they are received. The alarm types, severity, and probable causes may provide the first indication of the root cause of the problem.

---

3

Before you start to deal with each alarm systematically, determine the total alarm count so that you can track your alarm-clearing progress. A count of each alarm type is displayed at the top of the alarm list.

---

END OF STEPS

---

## 9.4 To view object alarms and aggregated object alarms

### 9.4.1 Purpose

You can use the navigation tree to view object alarm status, and aggregated alarm status for parent objects. See the *NSP NFM-P User Guide* for more information about the relationship between objects, related alarms, and aggregated alarms.

Consider the following:

- When an aggregated alarm is indicated, and no object alarm is seen for any child object, change the view of the equipment tree.
- An aggregated alarm may not appear in the selected view from the navigation tree. For example, with the Equipment drop-down menu selected, a critical alarm aggregated against the device object may appear. However, no object below the device object has a critical alarm. That is because the critical alarm is aggregated from the network view of the router. The alarm is based on the entire object, but the equipment view shows a subset of the entire object.

### 9.4.2 Steps

1

From the navigation tree, view alarms against objects. Alarms in circles are aggregated alarms. Alarms in squares are object alarms.

2

Right click on the object in the navigation tree and choose Properties. The Properties form appears.

3

Click on the Faults tab.

4

View object alarms from the Object Alarms tab. View aggregated alarms against a parent object from the Aggregated Alarms tab.

To view the object on which the aggregated alarm was raised:

1. Choose an alarm from the aggregated alarms list.
2. Click View Alarm. The Alarm Info form appears.
3. Click View Alarmed Object. The Properties form for the object appears.

END OF STEPS

---

---

## 9.5 To categorize alarms by object hierarchy

### 9.5.1 Steps

1

---

In the Fault Management application alarm list, click on the Object Type column to sort the alarms alphabetically according to object type. If required, resize the column width to display the full text.

2

---

Scroll through the alarm list to locate the object type that is the lowest level in the network managed object hierarchy. Level 1 is the highest level, as listed in [Table 9-1, “Hierarchy of NFM-P-managed objects”](#) (p. 224) .

If two or more objects in the alarm are at the same level, choose the alarm with the earliest detected time. If two or more alarms at the same level are raised at the same time, use the alarm information provided to determine which alarm may be closer to the root cause of the problem and begin troubleshooting using this alarm.



**Note:** Alarm reporting latency can vary depending on network conditions. Therefore, the First Time Detected stamp is not a reliable indication of the exact time an event occurred and should be used only as an aid in troubleshooting.

3

---

If you need more information about an alarm, see the *NSP Alarm Search Tool*.

Table 9-1 Hierarchy of NFM-P-managed objects

Level	Managed object	Domain (class)
—	General network management or NFM-P objects	Accounting (accounting)
		Alarm mapping (trapmapper)
		Anti-spoofing (antispoof)
		Application assurance (isa)
		APS (aps)
		Auto-config (autoconfig)
		Database (db)
		DHCP (dhcp)
		File policy (file)
		Generic object (generic)
		LI (mirrorli)
		Mediation (mediation)
		MLD (mld)
		MSDP (msdp)
		NE security (sitesec)
		Policy (policy)
		PPP (ppp)
		RADIUS accounting (radiusaccounting)
		Residential subscriber (ressubscr)
		Schedule (schedule)
		Scheduler (vs)
		Security (security)
		Server (server)
		SNMP (snmp)
		Software (sw)
		Subscriber identification (subscriber)
		Template (template)
		VRRP (vrrp)

Table 9-1 Hierarchy of NFM-P-managed objects (continued)

Level	Managed object	Domain (class)
1	Network	CAC (cac)
		CCAG (ccag)
		Circuit emulation (circem)
		IGH (igh)
		IPsec (ipsec)
		L2 (layer2)
		L2 forwarding (l2fwd)
		L3 forwarding (l3fwd)
		LAG (lag)
		Network (netw)
		NE (rtr)
		Multichassis (multichassis)
		SRRP (srrp)
2	Service	Aggregation scheduler (svq)
		Epipe (epipe)
		Ipipe (ipipe)
		NAT (nat)
		Resiliency (resiliency)
		Service management (service)
		Service mirror (mirror)
		STM (sas)
		VLANs (vlan)
		VLL (vll)
		VPLS (vpls)
		VPNN (vprn)
3	SDP binding	Service tunnel management (tunnelmgmt)
4	Tunnel	Ethernet tunnel (ethernetunnel)
		L2TP (l2tp)
		MPLS (mpls)
		Rules (rules)
		Service tunnel (svt)

Table 9-1 Hierarchy of NFM-P-managed objects (continued)

Level	Managed object	Domain (class)
5	LSP binding	MPLS (mpls)
6	LSP	
7	Session	RSVP (rsvp)
8	LDP interface or targeted peer	LDP (ldp)
9	Network interface	BGP (bgp)
		IGMP (igmp)
		IS-IS (isis)
		OSPF (ospf)
		PIM (pim)
		RIP (rip)
10	Physical equipment	Equipment (equipment)
		Ethernet equipment (ethernetequipment)
		Ethernet OAM (ethernetoam)
		GNE (genericne)
		LPS (lps)
		MPR (mpr)
		RMON (rmon)
		Wireless (radioequipment)
11	SONET / SDH bundle	Bundle (bundle)
	SONET	SONET (sonet)
	SONET port/channel	SONET equipment (sonetequipment)
12	DS1 / E1 channel	TDM equipment (tdmequipment)

END OF STEPS

## 9.6 To acknowledge alarms

### 9.6.1 Purpose

When you select an alarm to investigate the root cause, you should acknowledge the alarm and its related problems to indicate that the problem is under investigation. This ensures that duplicate resources are not applied to the same problem.



---

## 9.6.2 Steps

1

Open the Fault Management application and select an alarm in any alarm list.

2

To acknowledge the selected alarm:

1. Click on the More button in the row for the selected alarm and choose Acknowledge Alarm(s). The Alarm Acknowledgment form opens.

If required, add text in the Acknowledgment Text box or assign a new severity to the alarm.

2. Select the Acknowledgement check box and click OK.
3. Click OK.

END OF STEPS

---

## 9.7 To determine probable cause and root cause using alarm and affected object information

### 9.7.1 Purpose

Alarms are raised against managed objects. Objects with alarms are called affected objects.

### 9.7.2 Steps

1

Open the Fault Management application and select an alarm from the alarm list. The Alarm Info panel displays detailed information about the alarm.

The alarm cause indicates the probable cause, which can result from a problem on a related object lower in the hierarchy, even though no alarms are reported against it. However, the problem may be caused by the state conditions of the affected object itself.

2

To view the affected object states, click on the More button and select Show Affected Object.

- a. If the Administrative State is Up and the Operational State is Down, there are two possibilities:

- The affected object is the root cause of the problem. The alarm probable cause is the root cause. See the *NSP Alarm Search Tool* for additional information about the alarm, which may help to correct the problem. When the problem is fixed, all correlated alarms are cleared. See [9.9 "Two-NE sample network" \(p. 231\)](#) for a sample equipment problem.
- The affected object is not the root cause of the problem. The alarm probable cause does not provide the root cause of the problem. The root cause is with a related, supporting object that is lower in the managed object hierarchy. Perform [9.8 "To determine root cause using related objects" \(p. 230\)](#) to review related object information.

- b. If the Administrative State is Up and the Operational State is not Up or Down but states a specific problem such as Not Ready or MTU Mismatch, this is the root cause of the alarm. Correct the specified problem and all correlated alarms should clear. See [9.9 “Two-NE sample network” \(p. 231\)](#) for a sample configuration problem. If alarms still exist, perform [9.8 “To determine root cause using related objects” \(p. 229\)](#).
- c. If the object Administrative State is Down, it is not the root cause of the alarm on the object; however, it may cause alarms higher in the network object hierarchy. Change the Administrative State to Up. See [9.9 “Two-NE sample network” \(p. 231\)](#) for a sample underlying port state problem. This does not clear the alarm on the affected object that you are investigating. Perform [9.8 “To determine root cause using related objects” \(p. 229\)](#) to review related object information.

---

END OF STEPS

## 9.8 To determine root cause using related objects

### 9.8.1 Steps

1

In the Fault Management application, select an alarm and click on Show Object Impacts.

2

Find the object type that is lowest in the network object hierarchy. See the object hierarchy in [Table 9-1, “Hierarchy of NFM-P-managed objects” \(p. 226\)](#).

Through this process, you should find the lowest level managed object related to the object in the alarm.

3

Check the States information. This information should point to the root cause of the alarm. The problem should be found on the related, supporting object below the lowest level object in the alarm.

If required, check the Administrative State of the supporting port objects. A port with Administrative State Down does not generate alarms on the port, card, shelf, LAG, protocols, or sessions, but generates network path and service alarms. If the Administrative State is Down, change it to Up.

After the problem is fixed, the correlated alarms should automatically clear.

---

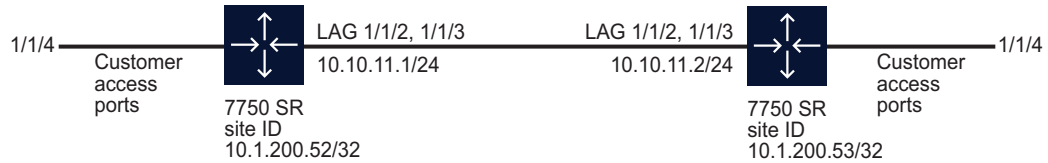
END OF STEPS

## 9.9 Two-NE sample network

### 9.9.1 Two-NE network

The configuration below shows a two-NE example network configured with a VPLS that was used to create problems and generate alarms. This configuration generates the maximum number of alarms per problem type because alternate network paths are not available for self-healing.

Figure 9-1 Sample network



BGP, OSPF, and MPLS are on each network interface.

17558

The dynamic alarm list is used to troubleshoot the following types of problems that are created:

- physical port problem that causes an Equipment Down alarm
- underlying port state problem that causes a number of related alarms at the LSP level
- configuration problem that causes a Frame Size Problem alarm

## 9.10 To troubleshoot a service equipment problem

### 9.10.1 Purpose

An equipment problem in the example network in [Figure 9-1, “Sample network” \(p. 231\)](#) produces a series of alarms. The following procedure provides an example of how to troubleshoot the problem.

### 9.10.2 Steps

- 1 

---

Review the alarms in the order that they are raised. When the First Time Detected column or Last Time Detected column shows that the alarms are raised at approximately the same time, it is a good indication that these alarms may be correlated.
- 2 

---

Determine the total alarm count to track the alarm-clearing progress. Right-click on any column heading in the dynamic alarm list. The contextual menu displays the alarm count.
- 3 

---

Click on the Object Type column to sort the alarms alphabetically according to object type.

---

4

Scroll through the dynamic alarm list and find the object type that is lowest in the network object hierarchy, as listed in [Table 9-1, “Hierarchy of NFM-P-managed objects” \(p. 226\)](#).

In [Figure 9-1, “Sample network” \(p. 231\)](#), the lowest-level object type in the alarm list is Physical Port in the equipment domain. There are four physical port objects in the alarm. Each alarm has the same severity level.

---

5

Choose one of the physical port alarms and acknowledge the alarm.

In [Figure 9-1, “Sample network” \(p. 231\)](#), the alarm to investigate is one of the first two detected Physical Port alarms: Port 1/1/2 on Site ID 10.1.200.52.

---

6

Select the alarms related to this affected object and acknowledge the alarms.

---

7

View alarm information for the affected object. Select the alarm in the list to view the information in the Alarm Info panel.

---

8

Review the information about the alarm. In [Figure 9-1, “Sample network” \(p. 231\)](#):

- The Equipment Down alarm is a Physical Port alarm in the Equipment domain.
- The device at Site ID 10.1.200.52. raised the alarm on object Port 1/1/2.
- The alarm cause is inoperable equipment.

---

9

Check the port states.

In this case, the Administrative State is Up and the Operational State is Down, which results in an alarm. The Operational state cannot be modified manually.

---

10

The root cause is indicated by the probable cause of alarm on the affected object: physical Port 1/1/2 at site ID 10.1.200.52 is inoperable.

The dynamic alarm list also indicates that a second port on site 10.1.200.52, Port 1/1/3, is down. This port forms LAG 2 with port 1/1/2 and LAG 2 is down.

---

11

For equipment alarms, use the navigation tree view to identify the extent of the problem. Locate ports 1/1/2 and 1/1/3 under the Shelf object that supports LAG 2 at Site 10.1.200.52. The state for each port is operationally down. The tree view displays the aggregated alarms on objects up to the Router level.

---

A related LAG, LAG 1, is down but the alarms on LAG 2 ports were detected first.

END OF STEPS

---

## 9.11 To clear alarms related to an equipment problem

### 9.11.1 Purpose

This procedure describes how to clear the 22 alarms from the sample problem in [9.9 “Two-NE sample network” \(p. 231\)](#). The troubleshooting process determined that two physical ports in LAG 2 at Site 10.1.200.52. are operationally down.

### 9.11.2 Steps

1

Check the physical connection to the port. The physical inspection shows that the two port connections supporting LAG 2 at Site 10.1.200.52. are not properly seated.

2

Seat the port connections. The 22 alarms, including the second two physical port Equipment Down alarms on LAG 1, automatically clear.

END OF STEPS

---

## 9.12 To troubleshoot an underlying port state problem

### 9.12.1 Purpose

An underlying port state problem in the sample network in [9.9 “Two-NE sample network” \(p. 231\)](#) produces a series of alarms. The following procedure provides an example of how to troubleshoot the problem.

### 9.12.2 Steps

1

The First Time Detected column shows that 16 alarms are raised at approximately the same time, which is a good indication that these alarms may be correlated.



**Note:** The list contains an Lsp Down alarm and an Lsp Path Down alarm. Approximately one half hour later, a second Lsp Down alarm and a second Lsp Path Down alarm were raised for a total of 18 alarms.

2

Click on the Object Type column to sort the alarms alphabetically according to object type.

---

3

Scroll through the alarm list and find the object type that is lowest in the network object hierarchy, as listed in [Table 9-1, "Hierarchy of NFM-P-managed objects" \(p. 226\)](#).

In the sample network in [Figure 9-1, "Sample network" \(p. 231\)](#), the lowest-level object type in the alarm list is Lsp Path in the Path/Routing Management domain. There are two Lsp Path Down alarms. One was raised later than the other.

---

4

Choose the earlier Lsp Path alarm and acknowledge the alarm.



**Note:** Alarm reporting latency can vary depending on network conditions. Therefore, the First Time Detected stamp is not a reliable indication of the exact time an event occurred and should be used only as an aid in troubleshooting.

---

5

Choose the alarms related to this affected object and acknowledge those alarms. In this case, the only alarm listed under Related Problems is the dynamic Lsp Down alarm.

---

6

View alarm information for the affected object. Select the alarm in the list to view the information in the Alarm Info form.

---

7

Review the information about the alarm:

- Lsp Down is a path alarm on MPLS path 53 to 52.
- The affected object name and site name indicate that the alarm arose on the LSP path from device/site 53 to site 52.
- The Site information identifies the site that raised the alarm. The root cause is related to the device with Site Id 10.1.200.53.

---

8

Click View Alarmed Object and click Properties.

---

9

On the Alarm Info form, click Affected Object tab and then click Properties to view the state and other information about the object in the alarm.

In the sample network in [Figure 9-1, "Sample network" \(p. 231\)](#), the Administrative State is Up and the Operational State is Down, which results in an alarm. The Operational State cannot be modified manually.

---

10

Check the additional information for the alarm, which in this case indicates that the root cause may be a lower object in the managed object hierarchy.

---

**11** View the details from the Related tab on the Alarm Info form to display the managed objects related to the object in alarm.

---

**12** Find the object type that is lowest in the network object hierarchy, as listed in [Table 9-1, “Hierarchy of NFM-P-managed objects”](#) (p. 226). The lowest level object is a LAG.

---

**13** Open the equipment view of the navigation tree. It indicates that there are alarms related to both existing LAGs (Site Id 10.1.200.52 and Site Id 10.1.200.53). However, there is no LAG alarm in the dynamic alarm list and the LAG State is Up.

---

**14** Check states of related, supporting objects for the lowest-level object in the alarm.

Underlying port states may propagate alarms higher up the managed object hierarchy without causing alarms on ports, LAGs, interfaces, protocols, and sessions.

1. In the equipment view of the navigation tree, choose a port under the LAG on Router 53 (Site 10.1.200.53) and choose Properties. The LAG member properties form opens.
2. Click on the Port tab to view the underlying port state of the LAG member. The LAG Member 1/1/2 properties form shows the Underlying Port State: Shut Down.
3. Repeat [Step 14 2](#) for the second port. The LAG Member 1/1/3 properties form shows the State: Up.

---

**15** In the equipment view of the navigation tree, choose port 1/1/2 under the Shelf object that supports LAG 1 (Site 10.1.200.53), and click Properties. The Properties form opens.

The form includes the following port information:

- Status is Admin Down.
- Operational State is Down
- Administrative State is Down
- Equipment Status is OK
- State: Link Down

There are no physical port equipment alarms. However, the port Status is Admin Down. This indicates that the root problem is the port Administrative state. Perform [9.13 “To clear alarms related to an underlying port state problem”](#) (p. 236) to clear alarms related to an underlying port state problems.

---

**END OF STEPS**

---

## 9.13 To clear alarms related to an underlying port state problem

### 9.13.1 Purpose

This procedure describes how to clear the 16 alarms from the sample problem described in [9.9 “Two-NE sample network” \(p. 231\)](#). The troubleshooting process determined that a port, which supports LAG 1 at Site 10.1.200.53, is Down.

### 9.13.2 Steps

- 1 \_\_\_\_\_  
In the equipment view of the navigation tree, locate port 1/1/2 under the Shelf object supporting LAG 1 at Site 10.1.200.53. The State is Admin Down.
- 2 \_\_\_\_\_  
Choose the port and choose Turn Up. Of the 18 alarms, 16 automatically clear. The remaining two alarms are Session alarms.
- 3 \_\_\_\_\_  
In the Fault Management application, choose one of the remaining alarms in the alarm list and choose Show Object Impacts.
- 4 \_\_\_\_\_  
Select an object and click Show Impacted Object to open the object properties form in the NFM-P.
- 5 \_\_\_\_\_  
Click Resync. An Object Deleted notification appears and the alarm clears automatically.
- 6 \_\_\_\_\_  
Repeat [Step 3](#) and [Step 5](#) for the remaining alarm.

END OF STEPS \_\_\_\_\_

## 9.14 To troubleshoot a service configuration problem

### 9.14.1 Purpose

A service configuration problem in the sample network in [9.9 “Two-NE sample network” \(p. 231\)](#) produces a series of alarms. The following procedure provides an example of how to troubleshoot the problem.



---

## 9.14.2 Steps

1

Using the Fault Management application, review the alarms in the order that they were raised. The First Time Detected column shows that three alarms were raised at the same time, which is a good indication that these may be correlated.

2

Find the object in the Object Type column that is lowest in the network object hierarchy, as shown in [Table 9-1, "Hierarchy of NFM-P-managed objects" \(p. 226\)](#). SDP binding is the lowest object. There are two SDP binding alarms on 28-2.

3

Choose one of the two SDP binding alarms and acknowledge the alarm. In the sample network in [Figure 9-1, "Sample network" \(p. 231\)](#), the selected alarm is the SDP binding alarm raised against Site ID 10.1.200.53.

4

Select the alarms related to this affected object and acknowledge those alarms as described in [9.6 "To acknowledge alarms" \(p. 228\)](#).

5

Double-click on the alarm in the list to view information for the affected object in the Alarm Info form.

Review the information about the alarm:

- Affected object is SDP binding (formerly known as circuit).
- Alarm type is configuration alarm.
- Probable cause is frame size problem.
- Domain is Service Tunnel Management.

6

Click the Show Object Impacts, then click Show Impacted Object to determine the SDP binding states.

- Administrative State is Up.
- Operational State is MTU Mismatch.

MTU Mismatch is the root cause of the Frame Size Problem alarm. You do not need to investigate the related objects.

---

7

Click on the Frame Size tab on the SDP binding object form to find more information about the problem.

- The Max Frame Size Mismatch box is selected. The Max. Frame Size box shows a value greater than the value in the Actual Tunnel Max Frame Size box.
- The maximum frame size configured exceeds the maximum frame size supported for the service ingress and service egress termination points, which are also called the MTU.

---

8

See the *NSP Alarm Search Tool* for additional information about the Frame Size Problem alarm.

Perform [9.15 “To clear a Frame Size Problem \(MTU Mismatch\) alarm” \(p. 237\)](#) to clear the Frame Size Problem alarm.

---

END OF STEPS

## 9.15 To clear a Frame Size Problem (MTU Mismatch) alarm

### 9.15.1 Purpose

This procedure describes how to clear the SDP binding Frame Size Problem alarm described in [9.9 “Two-NE sample network” \(p. 231\)](#).

### 9.15.2 Steps

---

1

Choose Manage→Service→Services from the NFM-P main menu.

---

2

Choose the service identified by the Alarmed Object Id in the Alarm Info form for the alarm that you are trying to clear.

---

3

Click Properties. The Service form opens.

---

4

Click on the Sites tab. The list of available sites for the service appears.

---

5

Choose the site identified by the Site Id in the Alarm Info form for the alarm that you are trying to clear.

---

6

Click Properties. The Site form opens.

---

**7**

Change the MTU to a value less than 1492, for example, 1000.

**8**

Save your changes. The MTU configuration change is applied to customer, service, and site objects. The SDP binding and related service alarms clear automatically.

**END OF STEPS**

---



## 10 Troubleshooting services and connectivity

### 10.1 Service and connectivity diagnostics

#### 10.1.1 STM OAM diagnostics for troubleshooting

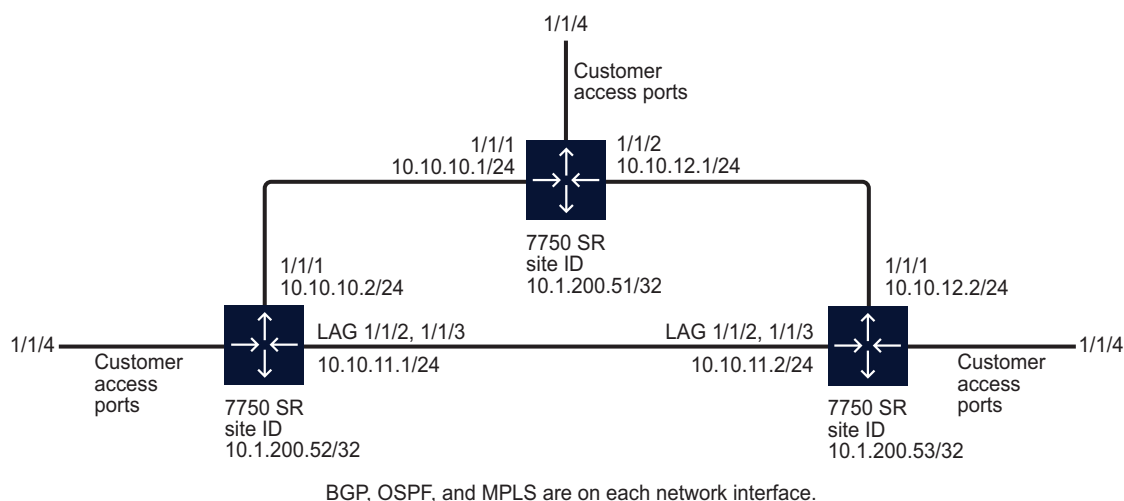
This chapter documents how to troubleshoot service and general connectivity problems when there is no associated alarm condition. See [Chapter 9, “Troubleshooting using network alarms”](#) for information about troubleshooting a service using NFM-P alarms.

You can use the NFM-P Service Test Manager, or STM, OAM diagnostic tools for network troubleshooting and for verifying compliance with SLAs. The STM provides the ability to group OAM diagnostic tests into test suites for more comprehensive fault monitoring and troubleshooting. A test suite can perform end-to-end testing of a customer service and the underlying network transport elements. The use of test suites is especially valuable when multiple objects of the same type require testing. Test suites can be scheduled to run on a regular basis to provide continual network performance feedback. See the *NSP NFM-P User Guide* for information about using the STM and creating scheduled tasks.

#### 10.1.2 OAM diagnostics sample network

The configuration below shows a network that is used as an example for the OAM diagnostics procedures in this chapter.

Figure 10-1 Sample network



17557

---

## 10.2 Workflow to troubleshoot a service or connectivity problem

### 10.2.1 Purpose

Perform the following tasks in sequence until you identify the root cause of the problem.

### 10.2.2 Stages

1

Verify that there are no alarms associated with the service by clicking on the Faults tab in the Service form.

- a. If there are alarms that affect the service, see [Chapter 9, “Troubleshooting using network alarms”](#).
- b. If there are no alarms that affect the service, see [Stage 2](#).

2

If you are troubleshooting a VPLS service, determine whether it is part of an H-VPLS configuration. See [10.3 “To identify whether a VPLS is part of an H-VPLS”](#) (p. 244).

3

Verify whether the administrative and operational states of each component of the service are Up; see [10.4 “To verify the operational and administrative states of service components”](#) (p. 245).

4

Verify the connectivity of the customer equipment using the entries in the FIB; see [10.5 “To verify the FIB configuration”](#) (p. 246).

5

Verify that the NFM-P service configuration aligns with the customer requirements. For example, ensure that NFM-P configuration uses the correct service type and SAP configuration, and that the circuit and site are included in the service.

6

Verify the connectivity of all egress points in the service:

- a. using MAC Ping and MAC Trace; see [10.6 “To verify connectivity for all egress points in a service using MAC Ping and MAC Trace”](#) (p. 247).
- b. using MEF MAC Ping; see [10.7 “To verify connectivity for all egress points in a service using MEF MAC Ping”](#) (p. 249).

7

Use the results from the MAC Ping and MAC Trace diagnostics to choose one of the following options:

---

a.

If the MAC Ping, MEF MAC Ping, or MAC Trace diagnostics returned the expected results for the configuration of your network:

1. Measure the frame transmission size on all objects associated with the service such as the service sites, access and network ports, service tunnels, and circuits; see [10.8 “To measure frame transmission size on a service using MTU Ping”](#) (p. 250).
2. Review the ACL filter policies to ensure that the ACL filter for the port is not excluding packets that you want to test; see [10.13 “To review ACL filter properties”](#) (p. 259).
3. Verify the QoS configuration.

b.

If the MAC Ping and MAC Trace diagnostics did not return the expected results for the configuration of your network:

1. Verify the end-to-end connectivity on the service using the Service Site Ping diagnostic; see [10.9 “To verify the end-to-end connectivity of a service using Service Site Ping”](#) (p. 252).
2. Verify the end-to-end connectivity on the service tunnel using the Tunnel Ping diagnostic; see [10.10 “To verify the end-to-end connectivity of a service tunnel using Tunnel Ping”](#) (p. 254).
3. Verify the end-to-end connectivity of an MPLS LSP using the LSP Ping diagnostic; see [10.11 “To verify end-to-end connectivity of an MPLS LSP using LSP Ping”](#) (p. 256).

c.

If the MAC Ping diagnostic returned the expected results for the configuration of your network, and the MAC Trace diagnostic did not return the expected results for the configuration of your network:

1. Verify that the correct service tunnels are used for the service.
2. Correct the service tunnel configuration, if required.
3. Review the route for the MPLS LSP using the LSP Trace OAM diagnostic. (For MPLS encapsulation, only.) If the LSP Trace results do not meet the requirements of your network, review the resource availability and configurations along the LSP expected routes; see [10.12 “To review the route for an MPLS LSP using LSP Trace”](#) (p. 257).

---

## 8

As required, perform one or more of the following.

- a. Review ACL filter properties; see [10.13 “To review ACL filter properties”](#) (p. 259).
- b. View anti-spoof filters; see [10.14 “To view anti-spoof filters”](#) (p. 259).
- c. Retrieve MIB information from a GNE using the snmpDump utility; see [10.15 “To retrieve MIB information from a GNE using the snmpDump utility”](#) (p. 260).

---

9

Contact your technical support representative if the problem persists; see [Chapter 1, “NSP troubleshooting overview”](#).

## 10.3 To identify whether a VPLS is part of an H-VPLS

### 10.3.1 Steps

1

Choose Manage→Service→Services from the NFM-P main menu.

2

Choose the service associated with the service problem.

3

Click Properties. The Service form opens.

4

Click on the Mesh SDP Bindings or Spoke SDP Bindings tab.

5

Drag and drop the Service ID, VC ID, and Service Type columns to first three positions on the left side of the form.

6

Sort the list by VC ID.

If a VC ID has more than one unique Service ID, these services are involved in an H-VPLS relationship.

- a. If there are no alarms on the H-VPLS service, go to [Stage 3](#) in [10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).
- b. If there are alarms on the H-VPLS service, see [Chapter 9, “Troubleshooting using network alarms”](#).



**Note:** An alarm on a service can propagate across the services in the H-VPLS domain.

END OF STEPS

---



---

## 10.4 To verify the operational and administrative states of service components

### 10.4.1 Steps

- 1 \_\_\_\_\_  
Open the service properties form.
- 2 \_\_\_\_\_  
On the navigation tree, click on the site on which you want to verify the operational and administrative states of service components; expand the entries for that site.
- 3 \_\_\_\_\_  
Click on the site. The *service* (Edit) form opens. Review the states for the site using the Operational State and Administrative State parameters.
- 4 \_\_\_\_\_  
On the navigation tree, click on the L2 Access Interfaces, L3 Access Interfaces, and Mesh SDP Bindings or Spoke SDP bindings objects to review the operational and administrative states for the remaining components of the service.
- 5 \_\_\_\_\_  
Use the operation and administrative states of the service components to choose one of the following options:
  - a. If the operational and administrative states for all service components are Up, go to [Stage 4 in 10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#) .
  - b. If the operational state is Down and the administrative state is Up for one or more service components, the NFM-P generates an alarm. You must investigate the root problem on the underlying object. See [Chapter 9, “Troubleshooting using network alarms”](#) for more information.
  - c. If the administrative state is Down for one or more service components, change the administrative state to Up. Go to [Step 7](#) .
- 6 \_\_\_\_\_  
If the service problem persists, another type of service problem may be present. Perform the steps of the [10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#) troubleshooting workflow.
- 7 \_\_\_\_\_  
If the workflow does not identify the problem with your service, contact your technical support representative. See [Chapter 1, “NSP troubleshooting overview”](#) for more information.

END OF STEPS

---

---

## 10.5 To verify the FIB configuration

### 10.5.1 Purpose

This procedure describes how to verify the connectivity of customer equipment on the service tunnel.

### 10.5.2 Steps

1

Click on the L2 Access Interfaces tab on the Services (Edit) form. A list of L2 access interfaces appears.

2

Double-click on a row in the list. The L2 Access Interface form appears.

3

Click on the Forwarding Control tab.

4

Click on the FIB Entries tab.

5

Click Resync.

- a. If there is a list of FIB entries, confirm the number of entries with the customer configuration requirement. If the configuration meets the customer requirement, go to [Stage 5 in 10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#).
- b. If there are no FIB entries, there is a configuration problem with the customer equipment or the connection from the equipment to the service tunnel.
  1. Confirm that the NFM-P service configuration aligns with the customer requirements.
  2. Confirm that there are no problems with the customer equipment and associated configuration.

6

If the service problem persists, another type of service problem may be present. Perform the steps of the [10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#) troubleshooting workflow.

7

If the workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

END OF STEPS

---

## 10.6 To verify connectivity for all egress points in a service using MAC Ping and MAC Trace

### 10.6.1 Steps

- 1 

---

Choose Tools→Service Test Manager (STM) from the NFM-P main menu. The Manage Tests form appears.
- 2 


---

Click Create.
- 3 

---

Choose L2 Service→Create MAC Ping from the Create contextual menu. The MAC Ping (Create) form appears.
- 4 

---

Clear the results from the previous diagnostic session from the Results tab, if necessary.  
 **Note:** You must use the MAC Ping and MAC Trace diagnostic to test the service in both directions for the connection.
- 5 

---

Configure the required parameters for the diagnostic session and run the diagnostic.
  - a. You can target the MAC broadcast address of FF-FF-FF-FF-FF-FF in the data plane to flood the service domain and receive a response from all operational service access ports. Enter the service ID for the VPLS or VLL service between the sites, and the sites you want to ping, in this case, from site ID 10.1.200.51/32 to site IDs 10.1.200.52/32 and 10.1.200.53/32 using the network in [Figure 10-1, “Sample network” \(p. 241\)](#).  
Click on the Results tab to view the list of ping responses. Double-click on a row in the list to view its details.
  - b. You can target the specific MAC address of a service site. Enter the target MAC address of the specific site in the service that you want to ping, in this case, from site ID 10.1.200.51/32 to site ID 10.1.200.52/32 using the network in [Figure 10-1, “Sample network” \(p. 241\)](#).  
Click on the Results tab to view the list of ping responses. Double-click on a row in the list to view its details.
- 6 

---

Review the results and assess whether the configuration meets the network requirements.  
In particular, review the results in the Return Code column. The table below lists the displayed messages.

**Table 10-1** MAC Ping OAM diagnostic results

Displayed message	Description
notApplicable (0)	The OAM diagnostic message does not apply to the OAM diagnostic performed.
fecEgress (1)	The replying router is an egress for the FEC. The far-end egress point exists and is operating correctly. No action required.
fecNoMap (2)	The replying router has no mapping for the FEC.
notDownstream (3)	The replying router is not a downstream router.
downstream (4)	The replying router is a downstream router, and the mapping for this FEC on the router interface is the specified label.
downstreamNotLabel (5)	The replying router is a downstream router, and the mapping for this FEC on the router interface is not the specified label.
downstreamNotMac (6)	The replying router is a downstream router, but it does not have the specified MAC address.
downstreamNotMacFlood (7)	The replying router is a downstream router, but it does not have the specified MAC address and cannot flood the request to other routers.
malformedEchoRequest (8)	The received echo request is malformed.
tlvNotUnderstood (9)	One or more TLVs were not understood.

7

Click Create.

8

Choose L2 Service→Create MAC Trace from the Create contextual menu. The MAC Trace (Create) form appears.

9

Configure the required parameters for the diagnostic session and run the diagnostic. A MAC Trace shows the path, protocol, label, destination SAP, and hop count to the location of the destination MAC. Enter the service ID for the VPLS or VLL service between the sites, and the sites you want to trace, in this case, from site ID 10.1.200.51/32 to site IDs 10.1.200.52/32 and 10.1.200.53/32 using the network in [Figure 10-1, “Sample network”](#) (p. 241) .

Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details.

10

Review the diagnostic results and assess whether the configuration meets the network requirements.

- a. If MAC Ping and MAC Trace diagnostics returned the expected results for the configuration of your network, go to [Stage 7 a](#) in [10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).

- b. If MAC Ping and MAC Trace diagnostics did not return the expected results for the configuration of your network, go to [Stage 7 b](#) in 10.2 “Workflow to troubleshoot a service or connectivity problem” (p. 242).
- c. Go to [Stage 7 c](#) in 10.2 “Workflow to troubleshoot a service or connectivity problem” (p. 242) if:
  - MAC Ping diagnostic returned the expected result for the configuration of your network
  - MAC Trace diagnostic did not return the expected result for the configuration of your network

---

END OF STEPS

## 10.7 To verify connectivity for all egress points in a service using MEF MAC Ping

### 10.7.1 Steps

- 1 

---

Choose Tools→Service Test Manager (STM) from the NFM-P main menu. The Manage Tests form appears.
- 2 


---

Click Create.
- 3 

---

Choose L2 Service→Create MEF MAC Ping from the Create contextual menu. The MEF MAC Ping (Create) form appears.
- 4 

---

Clear the results from the previous diagnostic session from the Results tab, if necessary.  
 **Note:** MEF MAC Ping must run simultaneously in both directions between the source and destination VPLS sites.
- 5 

---

Configure the required parameters for the diagnostic session and run the diagnostic.  
You can target the specific MAC address of a service site. Enter the target MAC address of the specific site in the service that you want to ping.  
Click on the Results tab to view the list of ping responses. Double-click on a row in the list to view its details.
- 6 

---

Review the results and assess whether the configuration meets the network requirements.

In particular, review the results in the Return Code column. The table below lists the displayed messages.

Table 10-2 MEF MAC Ping OAM diagnostic results

Displayed message (return code)	Description
responseReceived (1)	A response was received on the device to the OAM diagnostic performed.
requestTimedOut (5)	The OAM diagnostic could not be completed because no reply was received within the allocated timeout period.

7

Review the diagnostic results and assess whether the configuration meets the network requirements.

- a. If MEF MAC Ping diagnostics returned the expected results for the configuration of your network, go to [Stage 7 a](#) in [10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#).

END OF STEPS

## 10.8 To measure frame transmission size on a service using MTU Ping

### 10.8.1 Steps

1

Record the maximum frame transmission size for the service.

2

Choose Manage→Service Tunnels from the NFM-P main menu. The Manage Service Tunnels form appears.

3

Filter to list only the source and destination routers of the service tunnel and click Search. The list of service tunnels appears.

4

Double-click on a service tunnel from the list. The Tunnel (Edit) form appears.

5

Click on the Tests tab.

---

6

Click on the MTU Ping tab and click Create. The MTU Ping (Create) form appears with the General tab selected. The form displays information about the service tunnel being tested and the originating tunnel ID.



**Note:** You must use the MTU Ping diagnostic to test the service in both directions for the connection.

---

7

Configure the required parameters for the diagnostic session. Click on the Test Parameters tab and enter the MTU value recorded in [Step 1](#) for the MTU End Size (octets) parameter.

---

8

Run the diagnostic. The MTU Ping increments the datagram size until it fails to pass through the SDP (service tunnel) data path, in this case, an MTU Ping from site ID 10.1.200.52/32 to site ID 10.1.200.53/32 using the network in [Figure 10-1, “Sample network”](#) (p. 241).

Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details. The number of responses is determined by the incremental increase in datagram size.

---

9

Review the diagnostic results and assess whether the configuration meets the network requirements. Click on the Packets tab.

- a. If the Status column displays Response Received for all circuits, the service tunnel supports the configured frame transmission size for the circuit. Go to [Stage 7 a 2 in 10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).
- b. If the Status column displays Request Timed Out for any of the circuits, the transmission failed at that frame size. If the frame size for the failure point is below the MTU value configured for the service, the packets are truncating along the service route. Investigate the cause of the truncated packets.

---

10

If the service problem persists, another type of service problem may be present. Perform the steps of the troubleshooting workflow in this chapter.

---

11

If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

---

END OF STEPS

## 10.9 To verify the end-to-end connectivity of a service using Service Site Ping

### 10.9.1 Steps

1

Choose Tools→Service Test Manager (STM) from the NFM-P main menu. The Manage Tests form appears.

2

Click Create.

3

Choose Service→Create Service Site Ping from the Create contextual menu. The Service site ping (Create) form appears.



**Note:** You must use the Service Site Ping diagnostic to test the service in both directions for the connection.

4

Configure the required parameters for the diagnostic session and run the diagnostic.

The originating service tunnel for the Service Site Ping is from site ID 10.1.200.51/32 to site ID 10.1.200.53/32, the other end of the service using the network in [Figure 10-1, “Sample network” \(p. 241\)](#).

Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details.

5

Review the diagnostic results and assess whether the configuration meets the network requirements. The table below lists the displayed messages.

Table 10-3 Service Site Ping OAM diagnostic results

Displayed message	Description
Sent - Request Timeout	The request timed out with a reply.
Sent - Request Terminated	The request was not sent because the diagnostic was terminated by the operator.
Sent - Reply Received	The request was sent and a successful reply message was received.
Not Sent - Non-Existent Service-ID	The configured service ID does not exist.
Not Sent - Non-Existent SDP for Service	There is no SDP for the service tested.
Not Sent - SDP For Service Down	The SDP for the service is down.



Table 10-3 Service Site Ping OAM diagnostic results (continued)

Displayed message	Description
Not Sent - Non-Existent Service Egress Label	There is a service label mismatch between the originator and the responder.

- a. If the Service Site ping passes, the routes between the two sites are complete and in an operational state. If the MAC Ping performed in [10.6 "To verify connectivity for all egress points in a service using MAC Ping and MAC Trace" \(p. 247\)](#) failed:
  1. Investigate the status of the two SAPs used for the circuit.
  2. Correct the configuration issue related to the SAPs, if required.

If there is no configuration problem with the SAPs, the service problem is related to the MAC addresses.

The MAC address problem could be caused by the:

    - ACL MAC filter excluding the required MAC address
    - external customer equipment
- b. If the Service Site Ping fails, there is a loss of connectivity between the two sites.
  1. Log in to one of the sites using the CLI.
  2. Enter the following command:

```
ping <destination_site_ip_address> ↵
```

where <destination\_site\_ip\_address> is the address of the other site in the route  
If the CLI IP ping passes, go to [Stage 7 b 2 of 10.2 "Workflow to troubleshoot a service or connectivity problem" \(p. 242\)](#).

---

## 6

Use the CLI to verify that the IP address of the destination site is in the routing table for the originating site by entering:

```
show router route-table ↵
```

If the IP address for the destination site is not in the routing table for the originating site, there is an L3 or L2 problem.

1. Verify that the appropriate protocols are enabled and operational on the two sites.
2. Verify the administrative and operational states of the underlying L2 equipment, for example, ports and cards.

---

## 7

If the service problem persists, another type of service problem may be present. Perform the steps [10.2 "Workflow to troubleshoot a service or connectivity problem" \(p. 242\)](#).

---

8

If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

END OF STEPS

---

## 10.10 To verify the end-to-end connectivity of a service tunnel using Tunnel Ping

### 10.10.1 Steps

1

Choose Manage→Service Tunnels from the NFM-P main menu. The Manage Service Tunnels form appears.

2

Filter to list only the source and destination routers of the service tunnel and click Search. The list of service tunnels appears.

3

Double-click on a service tunnel from the list. The Tunnel (Edit) form appears.

4

Click on the Tests tab.

5

Click on the Tunnel Ping tab and click Create. The Tunnel Ping (Create) form appears with the General tab displayed. The form displays information about the circuit being tested, including the originating tunnel ID.



**Note:** You must use the Tunnel Ping diagnostic to test the service in both directions for the connection.

6

Configure the required parameters for the diagnostic session as follows.

- The Return Tunnel parameter must specify the return tunnel ID number, because the tunnels are unidirectional.
- From the Test Parameters tab, the Forwarding Class parameter must specify the forwarding class for the service tunnel. Make sure that the forwarding classes for the service tunnels map to the QoS parameters configured for customer services, such as VLL.
- The Number of Test Probes and Probe Interval parameters must be configured to send multiple probes.

## 7

Run the diagnostic. Set the diagnostic configuration for a Tunnel Ping from site ID 10.1.200.51/32 to site ID 10.1.200.53/32 using the network in [Figure 10-1, "Sample network" \(p. 241\)](#), by specifying the return ID of the tunnel you want to test.

Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details. Double-click on the entry in the Tunnel Ping results form to view the diagnostic details.

## 8

Review the diagnostic results and assess whether the configuration meets the network requirements.

The table below lists the displayed messages.

*Table 10-4* Tunnel OAM diagnostic results

Displayed message	Description
Request Timeout	The request timed out with a reply.
Orig-SDP Non-Existent	The request was not sent because the originating SDP does not exist.
Orig-SDP Admin-Down	The request was not sent because the originating SDP administrative state is Down.
Orig-SDP Oper-Down	The request was not sent because the originating SDP operational state is Down.
Request Terminated	The operator terminated the request before a reply was received, or before the timeout of the request occurred.
Far End: Originator-ID Invalid	The request was received by the far-end, but the far-end indicates that the originating SDP ID is invalid.
Far End: Responder-ID Invalid	The request was received by the far-end, but the responder ID is not the same destination SDP ID that was specified.
Far End:Resp-SDP Non-Existent	The reply was received, but the return SDP ID used to respond to the request does not exist.
Far End:Resp-SDP Invalid	The reply was received, but the return SDP ID used to respond to the request is invalid.
Far End:Resp-SDP Down	The reply was received, but the return SDP ID indicates that the administrative or operational state of the SDP is Down.
Success	The tunnel is in service and working as expected. A reply was received without any errors.

- If the Tunnel Ping passes, the network objects below the tunnel are operating with no performance issues.
- If the Tunnel Ping fails, go to [Stage 7 b 3 of 10.2 "Workflow to troubleshoot a service or connectivity problem" \(p. 242\)](#) to verify the end-to-end connectivity of services using MPLS LSP paths, if required.

---

9

If the service problem persists, another type of service problem may be present. Perform the steps of [10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#).

---

10

If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

---

END OF STEPS

## 10.11 To verify end-to-end connectivity of an MPLS LSP using LSP Ping

### 10.11.1 Steps

---

1

Choose Tools→Service Test Manager (STM) from the NFM-P main menu. The Manage Tests form appears.

---

2

Click Create.

---

3

Choose MPLS→Create LSP Ping from the Create contextual menu. The LSP Ping (Create) form appears.



**Note:** You must use the LSP Ping diagnostic to test the service in both directions for the connection.

---

4

Configure the required parameters for the diagnostic session and run the diagnostic. Target an LSP or an LSP path. Choose the MPLS site for the test, then configure the LSP you want to ping that is associated with the MPLS site, in this case, an LSP Ping from site ID 10.1.200.51/32 to site ID 10.1.200.52/32 using the network in [Figure 10-1, “Sample network” \(p. 241\)](#).

Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details. Double-click on the entry in the LSP Ping results form to view the diagnostic details.

---

5

Review the diagnostic results and assess whether the configuration meets the network requirements.

The table below lists the displayed messages.

Table 10-5 LSP Ping OAM diagnostic results

Displayed message	Description
notApplicable (0)	The OAM diagnostic message does not apply to the OAM diagnostic performed.
fecEgress (1)	The replying router is an egress for the FEC. The far-end egress point exists and is operating correctly. No action required.
fecNoMap (2)	The replying router has no mapping for the FEC.
notDownstream (3)	The replying router is not a downstream router.
downstream (4)	The replying router is a downstream router, and the mapping for this FEC on the router interface is the specified label.
downstreamNotLabel (5)	The replying router is a downstream router, and the mapping for this FEC on the router interface is not the specified label.
downstreamNotMac (6)	The replying router is a downstream router, but it does not have the specified MAC address.
downstreamNotMacFlood (7)	The replying router is a downstream router, but it does not have the specified MAC address and cannot flood the request to other routers.
malformedEchoRequest (8)	The received echo request is malformed.
tlvNotUnderstood (9)	One or more TLVs were not understood.

- a. If the LSP Ping passes, you have completed the workflow for troubleshooting services. Contact your technical support representative if the problem persists; see [Chapter 1, “NSP troubleshooting overview”](#).
- b. If the LSP Ping fails, verify the administrative and operational status of the underlying L2 equipment.

6

If the service problem persists, another type of service problem may be present. Perform the steps of [10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).

7

If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

END OF STEPS

## 10.12 To review the route for an MPLS LSP using LSP Trace

### 10.12.1 Steps

1


Choose Tools→Service Test Manager (STM) from the NFM-P main menu. The Manage Tests form appears.

---

2 Click Create.

---

3 Choose MPLS→Create LSP Trace from the Create contextual menu. The LSP trace create form appears.

 **Note:** You must use the LSP Trace diagnostic to test the service in both directions for the connection.

---

4 Configure the required parameters for the diagnostic session and run the diagnostic. Target an LSP, any LSP or an LSP path. Choose the MPLS site for the test, then configure the LSP or LDP you want to trace that is associated with the MPLS site, in this case, an LSP Ping from site ID 10.1.200.51/32 to site ID 10.1.200.52/32 using the network in [Figure 10-1, “Sample network” \(p. 241\)](#).  
Click on the Results tab to view the list of trace responses. Double-click on a row in the list to view its details. Double-click on the entry in the LSP Trace results form to view the diagnostic details.

---

5 Review the diagnostic results and assess whether the configuration meets the network requirements.

- a. If the LSP Trace returned the expected results for the configuration of your network, the troubleshooting is complete.
- b. If the LSP Trace did not return the expected results for the configuration of your network, verify that the correct MPLS LSP is used for the service.

---

6 If the service problem persists, another type of service problem may be present. Perform the steps of [10.2 “Workflow to troubleshoot a service or connectivity problem” \(p. 242\)](#).

---

7 If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

---

END OF STEPS

---

## 10.13 To review ACL filter properties

### 10.13.1 Steps

- 1 

---

Click on the L2 Access Interfaces or L3 Access Interfaces tabs on the Services (Edit) form. A list of interfaces appears.
- 2 

---

Double-click on a row in the list. The L2 or L3 Interface configuration form appears.
- 3 

---

Click on the ACL tab.
- 4 

---

Review the ingress and egress filter configurations to ensure that ACL filtering configurations do not interfere with the service traffic.
  - a. If there are no ACL filtering configurations that interfere with the service traffic, go to [Stage 7 a 2](#) in [10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).
  - b. If there are ACL filtering configurations that interfere with the service traffic, implement and verify the solution for the service problem.
- 5 

---

If the service problem persists, another type of service problem may be present. Perform the steps of [10.2 “Workflow to troubleshoot a service or connectivity problem”](#) (p. 242).
- 6 

---

If the troubleshooting workflow does not identify the problem with your service, contact your technical support representative; see [Chapter 1, “NSP troubleshooting overview”](#).

END OF STEPS 

---

## 10.14 To view anti-spoof filters

### 10.14.1 Purpose

If a host is having a problem connecting to the network, one possibility for the problem is dropped packets as a result of anti-spoofing filters on the SAP. The NFM-P allows you to view the anti-spoof filters currently in effect on a SAP.

Anti-spoof filters are frequently created and deleted in the network. As a result, the NFM-P does not keep synchronized with the anti-spoof filters on the managed devices. However, the NFM-P allows you to retrieve, on demand, the current anti-spoof filters for a SAP.

---

## 10.14.2 Steps

- 1 \_\_\_\_\_  
Select Manage→Service→Services from the NFM-P main menu. The Manage Services form opens.
- 2 \_\_\_\_\_  
Select the service for which you want to view the anti-spoof filters.
- 3 \_\_\_\_\_  
Click Properties. The Service (Edit) form opens.
- 4 \_\_\_\_\_  
Click on the L2 Access Interfaces or L3 Access Interfaces tab, depending on the service that you selected.
- 5 \_\_\_\_\_  
Select an interface from the list and click Properties. The Access Interface (Edit) form opens.
- 6 \_\_\_\_\_  
Click on the Anti-Spoofing tab.
- 7 \_\_\_\_\_  
Click on the Filters tab.
- 8 \_\_\_\_\_  
Click Search to retrieve the current anti-spoof filters for the SAP. The Filters tab refreshes with a list of the current anti-spoof filters.

END OF STEPS \_\_\_\_\_

## 10.15 To retrieve MIB information from a GNE using the snmpDump utility

### 10.15.1 Purpose

Perform this procedure to export all object values from the NFM-P-supported SNMP MIBs on a GNE. The exported information may help with troubleshooting the GNE configuration on the device or in the NFM-P.

### 10.15.2 Steps

- 1 \_\_\_\_\_  
Log in to an NFM-P main server station as the nsp user.



2

Open a console window.

3

Navigate to the /opt/nsp/nfmp/server/nms/bin directory.

4

Enter the following:

```
./snmpDump.bash option_list ↵
```

where *option\_list* is one or more of the options listed in [Table 10-6, “snmpDump .bash options”](#) (p. 260)



**Note:** Each option must be separated by a space, as shown in the following example:  
snmpDump.bash -v 3 -h 192.168.18.77 -u jsmith -apw mypass -ppw yoda  
If an option has a default value, the default value is included in the option description.

Table 10-6 snmpDump .bash options

Option	Description
-v <i>version</i>	The SNMP version in use on the GNE Default: 2
-f <i>file_name</i>	The output filename Default: <i>host-snmpDump.out</i> in the current directory
-h <i>host</i>	The IP address or hostname of the GNE Default: localhost
-c <i>community</i>	The SNMP community
-u <i>v3_user</i>	The SNMPv3 user name
-e <i>snmp_engine_ID</i>	The SNMP engine ID
-ap <i>v3_auth_protocol</i>	The SNMPv3 authorization protocol, which can be MD5 or SHA Default: MD5
-apw <i>v3_auth_password</i>	The SNMPv3 authorization password
-ppw <i>v3_privacy_password</i>	The SNMPv3 privacy password
-cn <i>v3_context_name</i>	The SNMPv3 context name
-ci <i>v3_context_ID</i>	The SNMPv3 context ID
-p <i>port</i>	The TCP port on the main server that snmpDump must use to reach the GNE Default: 161
-t <i>timeout</i>	A communication timeout value
-r <i>retries</i>	The number of times to retry connecting to the GNE

The utility displays status messages similar to the following as it initializes:

---

```
Init Products ...
Init ProductFamilyDefs ...
Init PollingDirectiveDefs ...
Start reading from Node ...
```

The utility then begins to retrieve the MIB tables. As It processes a MIB table, it lists the table name and the number of entries the table contains, as shown below:

```
IF-MIB.ifEntry : 21
IP-MIB.ipAddrEntry : 5
MPLS-LSR-STD-MIB.mplsInterfaceEntry : 8
MPLS-TE-STD-MIB.mplsTunnelEntry : 0
MPLS-TE-STD-MIB.mplsTunnelHopEntry : 0
MPLS-TE-STD-MIB.mplsTunnelARHopEntry : 0
MPLS-TE-STD-MIB.mplsTunnelCHopEntry : 0
MPLS-LDP-STD-MIB.mplsLdpEntityEntry : 3
MPLS-LDP-STD-MIB.mplsLdpEntityStatsEntry : 3
MPLS-LDP-STD-MIB.mplsLdpPeerEntry : 3
```

The utility is finished when the command prompt is displayed.

---

## 5

To view the utility output, open the file using a MIB browser or a text editor.

**END OF STEPS**

---

---

# 11 Troubleshooting using the NE resync audit function

## 11.1 NE resync auditing overview

### 11.1.1 Functional description

The NE resync audit function detects and reports differences between the NFM-P database version of the NE configuration and the version stored on the NE. The NE resync audit manager displays a list of misaligned parameters and values as represented in the NE and NFM-P databases, and provides quick navigation to the affected object. A resync audit polls the NE in the same manner as a standard full resynchronization, but instead of updating the objects in the NFM-P database, the NFM-P compares the NE configuration retrieved by the resync with the NE configuration in the NFM-P. See [11.3 “To perform an NE resync audit” \(p. 264\)](#) for information about performing an NE resync audit.

Differences identified during the audit are displayed in the Show Difference manager. In this manager, you can navigate to the associated NE object that contains the difference and perform a resync on that object to resolve the difference. You can access the results of one audit per NE in the NE audit result list.

You can specify whether to include or ignore read-only parameters in a resync audit. Some read-only parameters are set by the NE after a configuration change. Other read-only parameters, such as temperature measurements and time stamps, change frequently on the NE and will often differ from the values in the NFM-P database. Disabling the inclusion of read-only parameters can help prevent cluttered audit results.

The difference entries that an NE resync audit returns are categorized as follows:

- Property Change—the value of a specific parameter is different in the NFM-P and NE databases
- Missing—the object and contained parameters exist in the NFM-P, but not on the NE
- Added—the object and contained parameters exist on the NE, but not in the NFM-P

### 11.1.2 Additional information

Consider the following information about NE resync audits:

- The NFM-P limits the audit result to 1 000 differences.
- NE resync audits only compare parameters that are synchronized with the NFM-P database. Parameters that are stored in the NE database only and are not managed by the NFM-P are not included in the audit report.
- NE resync audit results do not include statistics.
- NE resync audits cannot be used to deploy changes to an NE.
- You cannot perform a full resync from the NE audit manager or Show Differences form.
- Dynamic read-only objects and dynamic parameters are excluded from NE resync audits. For

---

example, the following objects are excluded: LDP session, RSVP session, MPLS In Segment, Out Segment, Cross Connect, MPLS Actual Hop and Actual Path, ISIS SPF Log.

## 11.2 Workflow for NE resync auditing

### 11.2.1 Stages

- 1 

---

Perform NE resync auditing to identify specific object and parameter misalignment between an NE and the NFM-P; see [11.3 “To perform an NE resync audit” \(p. 263\)](#) .
- 2 

---

View the results of NE resync audits and manage audit results; see [11.4 “To view NE resync audit results using the NE audit manager” \(p. 265\)](#) .

## 11.3 To perform an NE resync audit

### 11.3.1 Steps

- 1 


---

Choose Equipment from the navigation tree view selector. The managed NEs are displayed.
- 2 

---

Right-click on an NE and choose NE Resync Audit.
- 3 

---

Enable the check box if you want to include read-only attributes in the audit and click Yes. The NE Audit Result form appears and displays the NE Audit State as “in progress”.  
  
 **Note:** The NFM-P displays an error message and does not begin the resync audit if the NE is unreachable.
- 4 

---

When the audit completes, choose one of the following based on the NE Audit State:
  - a. If the NE Audit State displays “succeeded” and the NE Audit Result displays “misaligned”, go to [Step 5](#) .
  - b. If the NE Audit State displays “succeeded” and the NE Audit Result displays “aligned”, then no further action is required.
  - c. If the NE Audit State displays “failed”, information about the failure is displayed in the Error Messages panel. Click to expand the panel.

---

**5**

Click Show Difference. The Show Difference form opens with a list of difference entries displayed.

---

**6**

To resync a missing or added object, perform a full resync.

---

**7**

To resync a property change for a single object with the NFM-P:

1. Select a difference entry from the list. The panes at the bottom of the form display the misaligned data for the entry.
2. Click Properties for the SAM Object. The Properties form of the object is displayed.
3. Click Resync.
4. Click Yes and wait for the object to resync with the NFM-P. The value of the misaligned parameter changes if the resync operation is successful.

---

**8**

To save the results of the resync audit to an HTML or CSV file:

1. Right-click on a column header in the differences list and choose Save to File. The Save As form is displayed.
2. Navigate to the required location on the client workstation and specify a file name.
3. Choose a file type and click Save.

---

**9**

Close the forms.

---

END OF STEPS

## 11.4 To view NE resync audit results using the NE audit manager

### 11.4.1 Purpose

You can use the NE audit manager to view the results of previous NE audits and delete audit results.

### 11.4.2 Steps

---

**1**

Choose Administration→NE Maintenance→NE Audit Results from the NFM-P main menu. The NE Audit Manager list form opens.

---

**2**

To view an entry, select an entry from the list and click Show Difference. If there are results to display, the Show Difference form opens.

---

**3**

To delete an entry:

1. Select an entry from the list and click Delete.
2. Click Yes. The entry is deleted.

---

**4**

Close the NE Audit Manager list form.

---

**END OF STEPS**

---

## 12 Troubleshooting network management LAN issues

### 12.1 Problem: All network management domain stations experience performance degradation

#### 12.1.1 Steps

1

Verify that there is sufficient bandwidth between the elements of the network management domain.

Bandwidth requirements vary depending on the type of management links set up, and the number of devices in the managed networks. For information about network planning expertise, contact your technical support representative.

See the *NSP NFM-P Planning Guide* for more information about the bandwidth requirements.

2

When you are using in-band management, ensure that the network devices used to transport the management traffic are up. Ping each of the devices to ensure the management traffic can flow along the in-band path.

In-band management uses a connection provided by a customer service, such as a VLL. The management traffic is sent in-band along with the customer payload traffic. The packets with the management data arrive at the device using one of the virtual interfaces.

END OF STEPS

---

### 12.2 Problem: Lost connectivity to one or more network management domain stations

#### 12.2.1 Purpose

Perform this procedure on a RHEL or Windows station to check the reachability of another station.

#### 12.2.2 Steps

1

Log in to the station.

2

Open a console window.

---

3

Enter the following:

**ping station ↵**

where *station* is the station hostname or IP address

---

4

To interrupt the ping operation, press Ctrl+C.

---

5

Review the output, which resembles the following when connectivity is good:

```
PING station: 56 data bytes
64 bytes from station (192.168.106.169): icmp_seq=1, time=1.0 ms
64 bytes from station (192.168.106.169): icmp_seq=2, time=0.3 ms
64 bytes from station (192.168.106.169): icmp_seq=3, time=0.2 ms
----station PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
rtt (ms) min/avg/max = 0.2/0.7/1.0
```

---

6

If the packets arrive out of order, if some packets are dropped, or if some packets take too long to complete the round trip, LAN congestion may be a problem. Contact your IT department or check the physical LAN connectivity.

---

7

If you can ping the station, but are unable to connect to the station to perform a function, there may be a problem with access to a function on the station.

If the NFM-P deployment includes a firewall, the firewall log entries are in the `/var/log/` messages file on a RHEL station.

See [12.3.1 “Purpose” \(p. 268\)](#) for information about how to verify the following:

- ports that need to be open across firewalls
- routing configuration

---

END OF STEPS

## 12.3 Problem: Another station can be pinged, but some functions are unavailable

### 12.3.1 Purpose

Perform this procedure to determine whether port availability or routing is the cause of a management domain LAN issue.



---

The NFM-P uses TCP and UDP ports for communication between components. Some of the ports, such as the SNMP trap port, are configured during installation. Other ports are configured automatically by the NFM-P software.

### 12.3.2 Steps

1

Log in as the root user on a station in the network management domain.

2

Verify that the required ports are open or protected by a firewall. See the *NSP NFM-P Planning Guide* for a complete list of the ports that the NFM-P requires and the purpose of each port.



**Note:** If you modify the port configuration, ensure that you record the changes for future reference.

3

Perform the following steps to check the local routing configuration.:

1. Open a console window on a station in the management domain.
2. Use one of the following commands to determine the path to a destination:
  - on a Windows station—tracert
  - on a RHEL station—tracerouteThe command uses ICMP echo request messages to list the near-side interfaces that packets traverse between the source and destination stations. A near-side interface is the interface closest to the source host.
3. Use OS commands such as netstat -r and arp -a to display a list of active TCP connections, Ethernet statistics, the IP routing table, and the ports on which the station is listening.

END OF STEPS

---

## 12.4 Problem: Packet size and fragmentation issues

### 12.4.1 General information

Large packet sizes from the managed devices are being dropped by intermediate routers because the packets exceed the device MTU or the devices are not configured to forward fragmented packets, causing resynchronizations to fail. The managed devices are configured to send SNMP packets of up to 9216 bytes. The NFM-P can accept such large SNMP packets.

However, the typical L2 or L3 interface MTU on an NFM-P-managed device is likely configured to transmit smaller SNMP packets, usually in the 1500-byte range. This causes packet fragmentation. In order to handle these fragmented packets, intermediate devices between the NFM-P-managed device and NFM-P must be configured to handle or forward fragmented packets. When an

---

intermediate network device, such as a router, cannot handle or forward fragmented packets, then packets may be dropped and resynchronization may fail.

Consider the following:

- The network infrastructure that carries traffic between the NFM-P main and auxiliary servers and the managed NEs must support fragmentation and reassembly of the UDP packets for NEs that have an SNMP PDU size greater than the MTU configured for the network path between the NE and NFM-P. The 7210 SAS, 7450 ESS, 7705 SAR, 7710 SR, 7750 SR, and 7950 XRS require an SNMP PDU size of 9216 bytes and fragmentation support in the network path between the NFM-P and the NE.
- Ensure that the CPM filters on managed devices are configured to accept fragmented packets, and that this filter policy is configured on each server in a redundant NFM-P deployment.
- Ensure that devices located between the managed devices, such as the 7750 SR, and the NFM-P can handle an MTU size of 9216 bytes, can fragment large SNMP packets, or can forward fragmented L2 or L3 packets.
- Verify the MTU packet sizes for all LAN devices.
- Verify that large packets can travel from the managed devices to the NFM-P by using CLI to ping the IP address of the NFM-P server, with a large packet.
- Ensure that the firewalls between the managed devices and the NFM-P server are configured to allow traceroute and ping packets.

## 12.4.2 Steps

1

---

Log in to the 7750 SR or another NFM-P-managed device.

2

---

Run the traceroute command:

```
> traceroute SAM_server_IP_address ↵
```

A list of hops and IP addresses appears.

3

---

Ping the first hop in the route from the managed device to the NFM-P server:

```
> ping intermediate_device_IP_address size 9216 ↵
```

A successful response indicates that the intermediate device supports large SNMP packets or packet fragmentation.

4

---

Repeat for all other hops until a ping fails or until a message indicates that there is an MTU mismatch. A failed ping indicates that the intermediate device does not support large SNMP packets or packet fragmentation.

---

**5**

Check the configuration of the intermediate device, and configure fragmentation or enable a larger MTU size.

**END OF STEPS**

---



---

## 13 Troubleshooting using NFM-P client GUI warning messages

### 13.1 Client GUI warning message overview

#### 13.1.1 Warning message scenarios

Warning messages in the NFM-P client GUI provide an error recovery mechanism to inform you when:

- information has been entered incorrectly
- additional information is required
- the operation you are attempting cannot be completed
- a change to a configuration sub-form is not committed until the parent form is committed
- an operation that may result in service disruption is requested
- a configuration form for an object is open that can potentially conflict with a previously opened form

When an error condition is encountered that the NFM-P client has not anticipated, a Problems Encountered form is displayed. See [14.1 "Overview" \(p. 277\)](#) for more information.

You can use the client GUI to suppress warning messages within containing windows. See the *NSP NFM-P User Guide* for more information.

#### 13.1.2 Incorrect data entry

When incorrect information is entered for a parameter, a warning message that describes the error is displayed. For example, when you configure a password for a site user, the value entered for the Password parameter and the Confirm Password parameter must match. If they do not match, a warning message is displayed.

#### 13.1.3 Additional information required

When the value selected for a parameter has a condition that requires another parameter to be configured, a warning message indicates the missing information that is required. For example, when you configure a new or existing user with MD5 or SHA as the value for the Authentication Protocol parameter, a password must be configured. If you do not configure a password, a warning message is displayed.

The warning message indicates the information that is required. In this case, click OK to close the dialog box, and configure the New Authentication Password and Confirm New Auth Password parameters.

#### 13.1.4 Unable to complete requested action

Warning messages are used to indicate that a specific action cannot be completed. These warnings may occur when you try to create a new object or modify an existing object that results in an

---

unsupported configuration. For example, the message “Can't bind LSP to a non-mpls service tunnel” indicates that you cannot bind an LSP to a service tunnel that is not configured with the MPLS protocol.

These errors can be difficult to resolve and may require that you retrace your steps to determine the cause of the warning. Check the documentation to ensure that you are following procedures correctly.

### 13.1.5 Commitment of changes from a form and its sub-forms

From a configuration form, you can open sub-forms that require completion before you continue with the parent form. For example, when you create a VLL service, the Create Service Site form opens during one of the configuration steps. After you configure parameters in this sub-form and click on the Finish button, a warning message is displayed.

Changes entered in the sub-form are not committed until you click OK or Apply on the parent form. When you click OK or Apply on the parent form, a final confirmation is displayed.

When you click Yes for the last confirmation, the changes to the parent or sub-forms are committed.

### 13.1.6 Service disruption warning

A service disruption dialog box is displayed when you perform an action that may be service-affecting. For example, if you attempt to shut down a daughter card, a warning message is displayed.

As indicated by the warning message, the action you are about to perform may cause a disruption to customer service because of a potential dependency that another object or service has on the current object. Click View Dependencies to indicate the number of services that may be affected by the action.

Verify that the requested action is appropriate. Click on the checkbox beside the statement “I understand the implications of this action” to continue with the action.

### 13.1.7 Duplicate configuration form conflicts

There are multiple ways to access a configuration form for the same object. For example, you can view the configuration form for a port by choosing Manage→Equipment, or you can access the port by clicking on the port object in the expanded navigation tree. When you try to perform both accesses, a warning message is displayed.

When this warning message is displayed, another form is open for the same object. When two forms are open concurrently for the same object, there may be unexpected results because changes committed from one form are not reflected in the other form.

## 13.2 To respond to a GUI warning message

### 13.2.1 Steps

1

Perform an action.

---

A warning message dialog box opens. For example, when you configure a site password policy, at least one authentication order must be specified as the default in order to configure the authentication order parameters. If at least one authentication order is not configured, a warning message is displayed.

2

---

After you read the warning message, click OK. The warning message dialog box closes.

3

---

Correct the problem based on the information provided.

4

---

If you cannot correct the problem and continue to get the same warning message:

- a. Check the documentation to ensure that you are following the steps correctly.
- b. Verify that you are trying to perform an action that is supported.
- c. Review the general troubleshooting information in [1.2.4 "Checklist for identifying problems" \(p. 16\)](#).
- d. If you cannot resolve the problem, collect the logs identified in [3.2.7 "Use the Network Health Dashboard to retrieve data about the health of a service and its components" \(p. 41\)](#) before you contact your technical support representative.

**END OF STEPS**

---





## 14 Troubleshooting with Problems Encountered forms

### 14.1 Overview

#### 14.1.1 The Problems Encountered form

The Problems Encountered form reports error conditions on the client software for which there are no associated warning messages or when the client software cannot identify the problem.

Table 14-1 Problems Encountered form field descriptions

Field name	Description
Class	Specifies the object type that is the source of the problem
Operation	Specifies the type of operation that was attempted when the problem occurred.
Affected Object	Specifies the name of the affected object. Typically, if a Problems Encountered form appears when you are trying to create a object, this field contains N/A because the object has not been created.
Description	Specifies a short description of the problem, which may help you determine the cause of the problem and how to correct the problem. For additional information, click on the Properties button. The information may not be enough for you to correct the problem. The information can be used by your technical support representative to help resolve the problem.

### 14.2 To view additional problem information

#### 14.2.1 Steps

- 1 \_\_\_\_\_  
Choose an entry in the Problems Encountered form and click Properties.
- 2 \_\_\_\_\_  
Try to correct the problem based on the information provided. If you cannot correct the problem, complete the procedure and perform [14.3 "To collect problem information for technical support" \(p. 278\)](#).
- 3 \_\_\_\_\_  
Close the details form.
- 4 \_\_\_\_\_  
If there is more than one problem, repeat [Step 1](#) to [Step 3](#).

---

5

Close the form.

END OF STEPS

---

## 14.3 To collect problem information for technical support

### 14.3.1 Purpose

The following procedure describes what to do before you contact your technical support representative when you cannot resolve a problem on the Problems Encountered form.

### 14.3.2 Steps

1

Review the problem information in the Problems Encountered form, as described in [14.2 “To view additional problem information” \(p. 277\)](#).

2

Record the actions performed up to the point when the Problems Encountered form appeared. For example, if you were trying to create a VLL service, record the details about the service that you were trying to create.

3

Record the appropriate problem information, as described in [Chapter 1, “NSP troubleshooting overview”](#).

4

Collect logs for your support representative, as described in [3.2.7 “Use the Network Health Dashboard to retrieve data about the health of a service and its components” \(p. 41\)](#).

END OF STEPS

---

---

## 15 Troubleshooting using the NFM-P user activity log

### 15.1 Overview

#### 15.1.1 Logging user activity

The NFM-P user activity log allows an operator to view information about the actions performed by each NFM-P GUI and OSS user.

**i** **Note:** An NFM-P operator with an Administrator scope of command role can view all user activity log records except records associated with LI management. Viewing LI management records requires the Lawful Intercept Management role.

You can use the User Activity form to do the following:

- List and view information about recent user activities.
- List and view information about recent user sessions and the actions performed during each session.
- Navigate directly to the object of a user action.
- View NFM-P client session information that includes connection, disconnection, and authentication failure events.
- View NFM-P server session information, that includes startup, shutdown, and access violation events.

**i** **Note:** The NFM-P also raises an alarm for a security-related event such as an authentication failure or access violation.

You can navigate directly from an object properties form to a filtered list of the activities associated with the object. See the *NSP NFM-P User Guide* for more information about the user activity log and using the User Activity form.

**i** **Note:** The User Activity form and related list forms do not refresh dynamically. To view the latest log entries in a list form, you must click Search.

Each log entry has a request ID. There can be multiple log entries associated with a single request ID. For example, the creation of a discovery rule that has multiple rule elements creates one log entry for each rule element. You can use the request ID to sort and correlate the multiple log entries associated with a single client operation.

### 15.2 To identify the user activity for a network object

#### 15.2.1 Steps

- 1 \_\_\_\_\_  
Open the User Activity form.

- 
- 2 

---

Click on the Activity tab.
  - 3 

---

Specify the filter criteria for the object and click Search. A list of user activity entries is displayed.
  - 4 

---

View the State column values for the activities associated with the object. A value of Failure or Timeout means that the action did not modify the object. A value of Success represents the successful deployment of the configuration action.
  - 5 

---

To view a suspect entry, such as a failed or incorrect configuration attempt, select the required entry and click Properties. The Activity form opens.
  - 6 

---

Use the activity information from one or more entries to determine whether a sequence of user actions is the source of the problem.
  - 7 

---

Close the forms.

END OF STEPS 

---

## 15.3 To identify the user activity for an NFM-P object

### 15.3.1 Steps

- 1 

---

Open the User Activity form.
- 2 

---

Click on the Activity tab.
- 3 

---

Specify a Site Name of NONE as the filter criterion and click Search. A list of user activity entries is displayed.
- 4 

---

Sort the entries to locate the affected NFM-P object.

- 
- 5 

---

View the State column values for the activities associated with the object. A value of Failure or Timeout means that the action did not modify the object. A value of Success means that the object modification succeeded.
  - 6 

---

To view an entry, select the required entry and click Properties. The Activity form opens.
  - 7 

---

Use the activity information from one or more entries to determine whether a sequence of user actions is the source of the problem.
  - 8 

---

Close the forms.

END OF STEPS 

---

## 15.4 To navigate to the object of a user action

### 15.4.1 Steps

- 1 

---

Open the User Activity form.
- 2 

---

Click on the Activity tab.
- 3 

---

Specify the filter criteria, if required, and click Search. A list of user activity entries is displayed.
- 4 

---

Select an entry and click Properties. The Activity form opens.
- 5 

---

Click View Object. The object properties form opens.
- 6 

---

Close the forms.

END OF STEPS 

---

---

## 15.5 To view the user activity records of an object

### 15.5.1 Steps

- 1 \_\_\_\_\_  
Open the required object properties form.
- 2 \_\_\_\_\_  
Click User Activity, or, if the button is not displayed, click More Actions and choose User Activity. The User Activity form opens and displays a filtered list of user activity records associated with the object.
- 3 \_\_\_\_\_  
To view an entry, select the entry and click Properties. The Activity form opens.
- 4 \_\_\_\_\_  
Close the forms.

END OF STEPS \_\_\_\_\_

## 15.6 To view the user activity performed during a user session

### 15.6.1 Steps

- 1 \_\_\_\_\_  
Open the User Activity form.
- 2 \_\_\_\_\_  
Specify the filter criteria, if required, and click Search. A list of user session entries is displayed.
- 3 \_\_\_\_\_  
Select an entry and click Properties. The Session form opens.
- 4 \_\_\_\_\_  
Click on the Activity tab.
- 5 \_\_\_\_\_  
Specify the filter criteria, if required, and click Search. A list of the actions performed by the user during the session is displayed.
- 6 \_\_\_\_\_  
To view an entry, select the entry and click Properties. The Activity form opens.

---

**7**

Close the forms.

**END OF STEPS**

---





---

# Part V: Troubleshooting the NFM-P platform

## Overview

### Purpose

This part provides information about troubleshooting the NFM-P platform, database, server, or clients.

### Contents

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---

## 16 Troubleshooting the NFM-P platform

### 16.1 To collect NFM-P log files

#### 16.1.1 Purpose

Perform this procedure to collect the relevant log files for troubleshooting an NFM-P database, server, single-user client or client delegate server station.

**i** **Note:** When an NFM-P log file reaches a predetermined size, the NFM-P closes, compresses, and renames the file to include a timestamp and sequence number in the following format:

`EmsServer.yyyy-mm-dd_hh-mm-ss.n.log`

During a system restart, NFM-P log files are backed up to directories that are named using a timestamp. A component that runs for a long time can generate multiple log files. Before you restart an NFM-P component, ensure that there is sufficient disk space to store the backup log files.

#### 16.1.2 Steps

1

To collect the logs for a problem specifically related to installation, perform the following steps.

1. Navigate to the installation directory, which is one of the following:

- NFM-P database—`/opt/nsp/nfmp/db/install`
- main server—`/opt/nsp/nfmp/server`
- auxiliary server—`/opt/nsp/nfmp/auxserver`
- single-user client—typically `/opt/nsp/client` on RHEL, and `C:\nsp\client` on Windows
- client delegate server—typically `/opt/nsp/client` on RHEL, and `C:\nsp\client` on Windows

2. Collect the following files:

- `NFM-P_component.install.time.stderr.txt`
- `NFM-P_component.install.time.stdout.txt`
- `NFM-P_component_InstallLog.log`

where

*component* is the NFM-P component type, such as `Main_Server` or `Main_Database`

*time* is the installation start time

3. Go to [Step 7](#).

2

If required, collect the NFM-P database logs.

1. Log on to the NFM-P database station as the Oracle management user.
2. Collect the following files:

- 
- /opt/nsp/nfmp/db/install/config/dbconfig.properties
  - all files in /opt/nsp/nfmp/db/install/admin/diag/rdbms/*instance*/*instance*/alert
  - all files in /opt/nsp/nfmp/db/install/admin/diag/rdbms/*instance*/*instance*/trace
  - all files in /opt/nsp/nfmp/db/install/admin/diag/proxy
  - all files with a .log extension in the following directories:
    - /opt/nsp/nfmp/db/install
    - /opt/nsp/nfmp/db/install/config
- where *instance* is the database instance name, which is maindb1 in a standalone deployment, or maindb1 or maindb2 in a redundant deployment

### 3

---

If required, collect the main or auxiliary server logs; the log files have a .log extension and are in the following directories:

- main server—/opt/nsp/nfmp/server/nms/log
- auxiliary server—/opt/nsp/nfmp/auxserver/nms/log

### 4

---

If required, collect the RHEL single-user client or client delegate server log files:

- *install\_dir*/nms/config/nms-client.xml
- all files and subdirectories in the *install\_dir*/nms/log/client directory

where *install\_dir* is the client software installation location, typically /opt/nsp/client

### 5

---

If required, collect the Windows single-user client or client delegate server log files:

- *install\_dir*\nms\config\nms-client.xml
- all files and subdirectories in the *install\_dir*\nms\log\client directory

where *install\_dir* is the client software installation location, typically C:\nsp\client

### 6

---

If required, use a script to collect a comprehensive set of log files.

1. Log in to the station as the root user.

2. Open a console window.

3. Enter one of the following:

- On a main server station:

```
# /opt/nsp/nfmp/server/nms/bin/getDebugFiles.bash output_dir days  
↵
```

- On an auxiliary server station:

```
# /opt/nsp/nfmp/auxserver/nms/bin/getDebugFiles.bash output_  
dir days ↵
```

- On an NFM-P database station:  

```
# /opt/nsp/nfmp/db/install/getSAMDebugFiles.bash output_dir days ↵
```
- On an auxiliary database station:  

```
# /opt/nsp/nfmp/auxdb/install/bin/getDebugFiles.bash output_dir  
days ↵
```

where  
*output\_dir* is a local directory that is to contain the output files  
*days* is the optional number of days for which to collect log files

**Note:**

You cannot specify /tmp, or any directory below /tmp, as the output directory.

4. Collect the output files:

**Note:**

On a station that hosts a collocated NFM-P database and main server, all files are present.  
On a station in a distributed deployment, only two files are present.

- *hostname\_date.WsInfoFiles.checksum.tar.gz*  
Contains station-specific information such as the hardware and network configuration
- *hostname\_date.ServerLogFiles.checksum.tar.gz*  
Contains server and JBoss logs, and configuration information
- *hostname\_date.DBLogFiles.checksum.tar.gz*  
Contains NFM-P database logs and configuration information

---

7

Store the files in a secure location to ensure that the files are not overwritten. For example, if two NFM-P clients have problems, rename the files to identify each client and to prevent the overwrite of one file with another of the same name.

---

8

Send the files to technical support, as required.

---

END OF STEPS

## 16.2 Problem: Poor performance on a RHEL station

### 16.2.1 Checking CPU performance

When a RHEL station is taking too long to perform a task, you can check the CPU status to ensure that one process is not using most of the CPU resources, and then use commands to review the CPU usage.

Perform this procedure when CPU usage remains high and performance degrades.

You can also perform other procedures to monitor performance: If you are performing a large listing operation using the NFM-P client GUI or OSS, check the LAN throughput using the `netstat` command, as described in [20.3 “Problem: Delayed server response to client activity” \(p. 345\)](#).

---

## 16.2.2 Steps

1

Log on to the station as the root user.

2

Open a console window.

3

Perform the following steps to check for processes that are consuming excessive CPU cycles:

1. To list the top CPU processes using the UNIX utility `prstat`, type:

```
# top ↵
```

Depending on your system configuration, approximately the top 20 processes are displayed.

2. Review the output.

The top NFM-P process in the CPU column should be the Java process. However, the Java process should not consume too much CPU time. Some Oracle processes may also consume CPU time, depending on the database load.

3. Press Ctrl-C to stop the command.

4

Perform the following steps to view a CPU activity summary.

1. Enter the following command:

```
# mpstat time ↵
```

where *time* is the interval, in seconds, between CPU polls; a value between 10 and 60 is recommended

2. Review the command output.

**mpstat output example**

CPU	%usr	%nice	%sys	%iowait	%irq	%soft	%steal	%
guest	%idle							
all	0.25	0.00	0.17	0.00	0.00	0.00	0.00	0.
00	99.58							
all	0.50	0.00	0.08	0.08	0.00	0.00	0.00	0.
00	99.33							
all	0.17	0.00	0.08	0.00	0.00	0.00	0.00	0.
00	99.75							
all	0.25	0.00	0.17	0.08	0.00	0.00	0.00	0.
00	99.50							

---

### mpstat field descriptions

Field	Description (events per second unless noted)
CPU	Processor number; the keyword all indicates that statistics are calculated as averages among all processors
%usr	Percentage of CPU utilization at the user application level
%nice	Percentage of CPU utilization at the user level with nice priority
%sys	Percentage of CPU utilization at the system level; does not include time spent servicing hardware and software interrupts
%iowait	Percentage of CPU idle time during which the system had an outstanding disk I/O request
%irq	Percentage of CPU time spent servicing hardware interrupts
%soft	Percentage of CPU time spent servicing software interrupts
%steal	Percentage of time spent in involuntary wait by the virtual CPU or CPUs during hypervisor servicing of another virtual processor
%guest	Percentage of CPU time spent running a virtual processor
%idle	Percentage of CPU idle time without an outstanding disk I/O request

Review the %usr, %sys and %idle statistics, which together indicate the level of CPU saturation. A Java application that fully uses the CPUs typically falls within 80 to 90 percent of the %usr value, and 20 to 10 percent of the %sys value. A smaller percentage for the %sys value indicates that more time is being spent running user code, which generally results in better execution of the application.

3. Press Ctrl-C to stop the command.

## 5

---

If processes are competing for CPU resources, perform the following steps to isolate the information about a single process.

1. Check the state of CPUs by typing:

```
ps -aux ↵
```

A list of processes is displayed.

2. Review the command output.

For CPU troubleshooting, the important data is listed in the %CPU row. If a process is taking 90% or more of the CPU resources, there may be a problem with the process. Contact your account or technical support representative for more information.

3. Press Ctrl-C to stop the command.

## 6

---

Contact technical support and provide the data obtained in the previous procedure steps.

### END OF STEPS

---

---

## 16.3 Problem: Device discovery fails because of exceeded ARP cache

### 16.3.1 ARP cache and /var/log/messages

When an NFM-P system manages a large number of NEs in a broadcast domain, the ARP cache on a main server station may fill and prevent the discovery of additional devices. When this happens, the /var/log/messages file contains entries like the following:

```
Jan 21 09:37:40 hostname kernel: Neighbour table overflow
```

```
Jan 21 09:37:40 hostname kernel: Neighbour table overflow
```

```
Jan 21 09:37:40 hostname kernel: Neighbour table overflow
```

```
Jan 21 09:38:00 hostname kernel: __ratelimit:190 callbacks suppressed
```

Perform this procedure when one of the following occurs:

- The /var/log/messages file contains more than 1024 entries like the example entries above.
- You need to increase the ARP cache size to accommodate the network.

The default ARP cache threshold values are the following:

- Threshold 1—128
- Threshold 2—512
- Threshold 3—1024

### 16.3.2 Steps

1 \_\_\_\_\_

Log in to the main server station as the root user.

2 \_\_\_\_\_

Open a console window.

3 \_\_\_\_\_

Perform one of the following to increase the ARP cache thresholds.

a. To temporarily increase the thresholds, type the following:

```
# echo 8096 > /proc/sys/net/ipv4/neigh/default/gc_thresh1 ↵  
# echo 25600 > /proc/sys/net/ipv4/neigh/default/gc_thresh2 ↵  
# echo 32384 > /proc/sys/net/ipv4/neigh/default/gc_thresh3 ↵
```

b. To permanently override the default thresholds, perform the following steps.

1. Open the /etc/sysctl.conf file using a plain-text editor such as vi.
2. Add the following lines to the end of the file:

```
net.ipv4.neigh.default.gc_thresh1 = 8096
```



---

```
net.ipv4.neigh.default.gc_thresh2 = 25600  
net.ipv4.neigh.default.gc_thresh3 = 32384
```

3. Save and close the file.

4. Enter the following:

```
# sysctl -p ↵
```

**4**

---

Close the console window.

**END OF STEPS**

---

Problem: Device discovery fails because of exceeded ARP cache

---

---

## 17 Troubleshooting using the LogViewer

### 17.1 LogViewer overview

#### 17.1.1 Managing log files

The LogViewer is a system monitoring and troubleshooting utility that parses, formats, and displays the contents of log files.

You can use LogViewer to perform the following:

- View and filter real-time log updates.
- View, filter, and sort the entries in a static log view.
- Open compressed or uncompressed log files.
- Compare active logs in real time.
- Automatically send a notification when a specified type of entry is logged.

LogViewer is available on NFM-P main or auxiliary server stations, and on single-user client and client delegate server stations as separate GUI and CLI utilities. The GUI has more functions than the CLI, which is designed for use on a character-based console over a low-bandwidth connection such as a Telnet session.

LogViewer can interpret various log formats. The log files must be local server or database logs.

#### 17.1.2 Configuration

The LogViewer GUI and CLI utilities share a set of configuration options; an option change by one utility affects the other utility. Some options apply only to the GUI.

You can customize LogViewer by creating and saving log filters and log profiles that are available to all GUI and CLI users, and can save the GUI configuration, or workspace, to have LogViewer display the currently open logs the next time it starts. LogViewer does not save the current filter and display configuration for a log when you close the log unless you export the configuration to a log profile.

Your operating configuration of LogViewer is stored in the user directory. Any filters, fonts, colors, or other preferences you have set such as location, size and splitter location, are used the next time you start the utility.

For multiple instances of LogViewer running on the same server, you can set the system environment variable LOGV\_HOME to make all instances use the same properties file. In this way, properties such as filters, window location, and window size are common to all instances.

#### 17.1.3 Filters

You can use the LogViewer CLI or GUI to create multiple filters that define the log entries that are displayed in a log view. A filter uses Java regular expressions as match criteria to specify which entries to display and optionally uses colors to identify the filtered entries.

---

### 17.1.4 Plug-ins


LogViewer supports the use of plug-ins to provide additional functionality. You can specify a plug-in for use with a specific log, or assign a default plug-in configuration that applies to the subsequently opened logs.

LogViewer has default plug-ins that can send notifications, such as e-mail messages and GUI pop-ups, when a new log entry matches a set of filter criteria. The LogViewer e-mail plug-in uses SMTP as the transport.

## 17.2 LogViewer GUI and Quick Links panel

### 17.2.1 Accessing log entries

The LogViewer GUI opens to display a Quick Links panel that has shortcuts to the logs that are present on the local file system. When you click on a log shortcut, LogViewer opens a tab that displays the most recent log entries.

 **Note:** If you hover your mouse cursor over a GUI tab, toolbar button, or field, a description or configuration instruction specific to that object appears.

### 17.2.2 LogViewer GUI and log tabs

Each log that you open using the LogViewer GUI is displayed on a separate tab whose label contains the name of the log profile and an icon that indicates the log type. The log entries are highlighted using the colors configured for the log debug levels. A log tab that displays dynamic log updates also has a tool bar for common operations.

The lower panel of a log tab contains the following sub-tabs:

- Preview—displays the unparsed log-file text for the currently selected log entries
- Filter—lists and permits management of the currently active filters for the log
- Status—displays status information about the current log
- Plugin—displays information about the plug-ins associated with the log
- Legend—displays a legend that correlates log file names to the numbers in the File column on a log tab that contains multiple open logs, for example, merged logs; is not shown for log comparisons

The LogViewer GUI allows you to drag and drop a log file into the GUI window. If you drop a file onto an open log tab, LogViewer provides options such as merging or comparing the log with another.

You can open a tab to list static log entries, such as the contents of an archived log or a snapshot of entries from an active log, and can pause the updates to active logs. The GUI also includes a text-search function.

#### GUI-based log filtering

The GUI provides a Filter Manager applet that lists the filters defined using the CLI or GUI and allows filter creation, modification, and deletion. A GUI operator can also use Filter Manager to test the regular expressions as filter match criteria.

To rapidly isolate a specific log entry or type of entry, you can create a temporary filter, or quick filter, by entering a regular expression in the field below a column header on a log tab. You can convert a quick filter to a saved filter for later use. A drop-down menu above the Level column allows the immediate filtering of log entries based on the debug level.

You can also create and use simple filters. These filters do not require the use of regular expressions, but instead, perform a case insensitive “contains” filtration of a string you specify. The use of simple filters must be enabled using the Preferences→Options menu option.

A color that is specified as the highlight color for a filter is saved with the filter and applies to all logs that use the filter.

## 17.3 LogViewer CLI

### 17.3.1 Accessing log entries using the CLI

The CLI-based LogViewer works like the UNIX tail command when in display mode. The command mode has a multiple-level menu that you can display at any time. You can specify a command or log file using the minimum number of unique characters in the name, and can quickly toggle between the command and display modes. LogViewer buffers new log entries while in command mode and displays them when it returns to display mode.

The LogViewer CLI assigns a different color to each logging level, for example, WARN or INFO, using standard ANSI color attributes that can be specified as CLI startup options or configured through the GUI. The CLI also supports the use of filters, plugins, and quick links.

## 17.4 To display logs using the LogViewer GUI

### 17.4.1 Purpose

Perform this procedure to start the LogViewer GUI utility and view one or more logs. Move the mouse cursor over a GUI object to view a description of the object, for example, a tool bar button.

### 17.4.2 Steps

- 1 \_\_\_\_\_  
Log in to a station as the nsp user.
- 2 \_\_\_\_\_  
Open a console window.
- 3 \_\_\_\_\_  
Enter the following:  

```
bash$ /opt/nsp/nfmp/server/nms/bin/logviewerui.bash ↵
```

  
The LogViewer GUI opens with the Quick Links panel or the log tabs in the saved workspace displayed.

---

4

To open a log file, perform one of the following:

- a. If the Quick Links panel is displayed, click on a link to view the associated log file.
- b. Choose Quick Links→*log\_name* from the LogViewer main menu.
- c. To open a recently viewed log, choose File→Recent Logs→*log\_file\_name* from the LogViewer main menu.
- d. To browse for a log file, perform the following steps:
  1. Choose File→Local Log File from the LogViewer main menu or click Open log in the main tool bar. The Local Log File form opens.
  2. Use the form to navigate to the log-file location.
  3. Select a log file and click Add between the form panels. The log is listed in the panel on the right.
- e. Drag and drop a log file into a section of the LogViewer main window that does not contain a log tab.
- f. Drag and drop a log file onto a log tab in the LogViewer main window. The Add File form opens.

**Note:**

The log file can be in compressed or uncompressed format.

4. If LogViewer cannot determine the type of log that the file contains, for example, if a log file is renamed, it sets the Type to Other. Use the Type drop-down menu to specify the log type, if required.
5. Configure the Max. Messages parameter to specify the maximum number of entries that are listed on the log tab. LogViewer removes the oldest entries as required to keep the number of entries at or below this value.
6. Configure the Auto-Tail parameter to specify whether the log tab dynamically displays the log updates.
7. Click OK. The Local Log File form closes.

Perform the following steps:

1. Choose one of the following options:
  - New View—specifies that the log is displayed on a new log tab
  - Replace Existing File—specifies that the log tab displays the new log instead of the current log
  - Add to View—specifies that the entries in the new log and the entries in the current log are merged into one list on the same log tab
  - Add to Compare View—specifies that the new log is to be displayed on the same log tab as the current log in a separate panel for comparison
2. Click OK. The new log is displayed as specified.

A log tab opens to display the most recent entries in a log. If the log is active and the Auto-Tail parameter is enabled, the list scrolls upward to display new log entries as they are generated.



**Note:** The Auto-Tail parameter for a log is enabled by default.

## Common display operations

5

To specify which columns are displayed on a log tab, right-click on a column header, and select or deselect the column names in the contextual menu, as required.

6

To reposition a column, drag the column title bar to the desired position, or right-click on the column header and choose Move Left or Move Right.

7

To view the raw log-file text of one or more entries, select the entries. The entry text is displayed on the Preview sub-tab.

8

To restrict the list of displayed entries to a specific debug level, choose a debug level from the drop-down menu under the Level column header.

9

To find log entries that contain a specific text string:

1. Choose Edit→Find from the LogViewer main menu. The Find form opens.
2. Specify a text string to search for using the text field and search options on the form.

**Note:**

The LogViewer Find function does not support the use of regular expressions. To perform a search using a regular expression, use the Find In Path function, as described in [17.6 “To search log files in a path” \(p. 305\)](#).

3. Click Find, as required, to find the next list entry that contains the text string.
4. To find all list entries that contain the text string, click Find All. The Find form closes and a new log tab opens to display the result of the search.
5. Close the Find form if it is open.

**Note:**

After you close the Find form, you can use the F3 key or the Find next button on the main tool bar to perform repeated find operations for the same text string on the same log tab.

10

To remove one or more log entries from the current view, perform one of the following.

- a. To clear all listed log entries, choose Log→Clear All Events from the LogViewer main menu, or click Clear all in the main tool bar.
- b. To clear the currently selected log entries, choose Log→Clear Selected Events from the

---

LogViewer main menu, or click Clear Selected in the main tool bar.

- c. To clear all log entries that match the currently selected cell, select a cell and choose Log→Hide All Like Selected from the LogViewer main menu, or click Hide All Like Selected in the main tool bar.
- d. To show only log entries that match the currently selected cell, select a cell and choose Log→Show All Like Selected from the LogViewer main menu, or click Show All Like Selected in the main tool bar.

---

11

To apply a quick filter, enter a regular expression as a match criterion in the field below a column header and press ↵. The list is cleared, and only subsequent log entries that match the criterion are displayed; see [17.10 “To manage filters using the GUI Filter Manager” \(p. 309\)](#) .

---

12

Repeat [Step 11](#) to apply an additional quick filter, if required.

---

13

To apply a saved filter:

1. Choose Log→Add Filter from the LogViewer main menu, or click Add filter in the main tool bar. The Select Filters form opens.
2. Select one or more filters in the list and click OK. The filters are applied to the log view and are listed on the Filters sub-tab of the log tab.

See [17.10 “To manage filters using the GUI Filter Manager” \(p. 309\)](#) for information about creating saved filters.

---

14

To remove a filter from the log, select the filter in the Filter sub-tab and choose Log→Remove Selected Filters, or click Remove filter in the main tool bar.

---

15

If the log display is static, such as for an archived log or the result of a Find All operation, go to [Step 22](#).

## Dynamic view operations

---

16

To edit the log display properties, choose Edit→Edit Log from the LogViewer main menu, or click Edit log in the log tab tool bar, and perform the following steps.

1. Configure the Max. Messages parameter to specify the maximum number of entries that are listed on the log tab. LogViewer removes the oldest entries as required to keep the number of entries at or below this value.



2. Configure the Auto-Tail parameter to specify whether the log tab dynamically displays the log updates.
3. Click OK to close the Local Log File form.

---

17

To pause the display of log-file updates, choose Log→Pause from the LogViewer main menu, or click Pause log updates in the log tab tool bar.

---

18

To resume the display of log-file updates, choose Log→Initialize Connection from the LogViewer main menu, or click Initialize log updates in the log tab tool bar.

---

19

By default, a dynamic log view focuses on a new log entry. To focus the display on an earlier log entry and prevent the display from automatically focusing on a new log update, click Follow latest updates in the log tab tool bar. Click on the button again to enable the default behavior.

---

20

To compare logs in real time:

1. Choose Log→Specify Compare from the LogViewer main menu, or click Add log to compare on the log tab tool bar. The Compare Files form opens.
2. Use the form to navigate to the log-file location.
3. Select a log file and click Add between the form panels. The log is listed in the panel on the right.

**Note:**

The log file can be in compressed or uncompressed format.

4. If LogViewer cannot determine the type of log that the file contains, for example, if a log file is renamed, it sets the Type to Other. Use the Type drop-down menu to specify the log type, if required.
5. Click OK. The Compare Files form closes, and a second panel opens on the log tab to display the specified log.  
The log entry lines are synchronized by timestamp. Dynamic log updates to each log are displayed as they occur. Blank entry lines serve as spacers to preserve the chronological order of the combined log entries.
6. By default, the scroll bars in the two panels are synchronized; when you scroll in the right panel, the display in the left panel scrolls by the same amount. Click Synchronize scroll bars between views in the log tab tool bar to disable or re-enable this behavior, as required.
7. To remove the added log from the comparison, choose Log→Clear Compare from the LogViewer main menu, or click Clear compared logs on the log tab tool bar. The right panel is removed from the log tab form.

---

21

To capture one or more log entries for display in a static view on a separate tab:

- a. To capture all listed log entries, choose Log→Full Snapshot from the LogViewer main menu, or click Snap all in the main tool bar.
- b. To capture the currently selected log entries, choose Log→Snapshot from the LogViewer main menu, or click Snap selected in the main tool bar.

A new tab opens to display the captured log entries in a static view.

## Static view operations

---

22

To sort a list of log entries in a static view, right-click on a column header and choose Sort Ascending, Sort Descending, or No Sort. The log entries are sorted accordingly.



**Note:** You cannot sort the log entries in a dynamic view, but you can sort the entries in a snapshot of a dynamic log view.

---

23

To copy the text of selected log entries to the clipboard, select one or more log entries in a log tab and choose Edit→Copy from the LogViewer main menu, or click Copy in the main tool bar.

---

24

To save selected log entries to a file, select one or more log entries in a log tab and click Save Selected in the main tool bar.

---

25

To save the current workspace for subsequent sessions, choose File→Save Workspace from the LogViewer main menu, or click Save configuration in the main tool bar.

---

26

Choose File→Exit from the LogViewer main menu to close the LogViewer GUI.

---

END OF STEPS

## 17.5 To configure the LogViewer using the GUI

### 17.5.1 Purpose

Perform this procedure to use the LogViewer GUI to configure general options for the LogViewer GUI and CLI.

---

## 17.5.2 Steps

1

Open the LogViewer GUI.

2

Choose Edit→Options→General from the LogViewer main menu, or click Application options in the main tool bar. The Options form opens.

3

Configure the required parameters:

- Last Directory—Click in the parameter field and use the browser form that opens to specify where to save exported log profiles.
- Base File Messages Directory—Click in the parameter field and use the browser form that opens to specify the base log directory.
- Default Character Set—Edit this parameter to specify the character set that LogViewer uses to display the log-file contents.
- Default Log Pattern—Edit this parameter to specify a regular expression that LogViewer uses to interpret log-file contents.
- Default Date Format—Enter a colon-separated string to specify the LogViewer date format using y for year digits, M for month digits, d for date digits, H for hour digits, m for minute digits, s for second digits, and S for millisecond digits, for example, yyyy:MM:dd HH:mm:ss:SSS.
- Regular Expression Help URL—Enter a value to specify the location of the Java regular-expression help web page that opens when you click Help while testing a regular expression for a filter.
- Web Browser Location—Enter a value to specify the location of the local file browser used to open the Java regular-expression help web page.
- Quick Links Refresh Time (ms)—Enter a value to specify how often LogViewer refreshes the Quick Links list.
- Rollover Remove Size—Enter a value to specify the number of log entries to remove from the LogViewer display when the maximum number of displayed log entries is reached.
- Delay for local file polling (ms)—Enter a value to specify, in ms, how long LogViewer waits before it checks local log files for updates.
- Hide Table Tooltips—Select this parameter to suppress the display of tool tips when the mouse pointer moves over log entries in a log tab.
- Use Simple Filters—Select this parameter to allow the use of simple filters.
- Advanced Quick Filter—Select this parameter to display the advanced Quick Filter table header on log tabs.
- Display Advanced Quick Filter—Select this parameter to display the advanced Quick Filter table header on the log tab when a log file is opened.
- Include Host in Title—Select this parameter to display the hostname in the log title.

- 
- Show Memory Monitor—Select this parameter to display the memory monitor at the bottom right corner of the LogViewer window.
  - Memory Monitor Clear Messages—Select this parameter to allow the memory monitor to attempt recovery by clearing some messages from live event logs when the memory threshold is exceeded.
  - Clear Log on Rollover—Select this parameter to clear the events from the logs when a Style View file rolls over or is moved.
  - Style View—Select this parameter to display the styled preview pane.
  - Memory Monitor Threshold (%)—Enter a value to specify the percentage of available memory that LogViewer uses before it stops displaying log updates.
  - Max. Recent Files—Enter a value to specify the number of files that LogViewer keeps in the list of recently opened files.
  - Max. Profile Files—Enter a value to specify the number of profile files that LogViewer keeps in the list of recently opened files.
  - LogViewer Log Level—Choose a logging level from the drop-down menu to specify the minimum log level of the LogViewer-specific log messages.
  - Enable Viewer Performance Stats—Select this parameter to enable the display of LogViewer performance statistics.
  - Stats Timer (seconds)—Enter a value to specify the number of seconds that LogViewer waits between log statistics updates.

---

#### 4

Click on the Command Line tab to configure the LogViewer CLI.

---

#### 5

Configure the following parameter:

- Command line buffer size—Enter a value to specify the number of log messages that LogViewer buffers when the CLI is in command mode.

---

#### 6

Choose an ANSI display attribute from the drop-down menu beside each of the following parameters to specify how the CLI displays the corresponding text.

- Normal Display—for normal text
- Trace Level Display—for trace-level log entries
- Debug Level Display—for debug-level log entries
- Info Level Display—for info-level log entries
- Warning Level Display—for warning-level log entries
- Error Level Display—for error-level log entries
- Fatal Level Display—for fatal-level log entries
- Filter Display—for filtered log entries

---

7

Configure the Always Use ANSI Display parameter, as required.

---

8

Click on the NFM-P tab to configure the required parameters that are specific to the NFM-P.

---

9

Configure the required parameters by clicking in the parameter field and using the browser form that opens to specify a directory:

- Database Location—specifies the base NFM-P database installation directory
- Oracle Location—specifies the base NFM-P Oracle installation directory
- NMS Root—specifies the nms directory under the base NFM-P server installation directory

**Note:**

Your configuration of LogViewer is stored in the user directory. Any filters, fonts, colors, or other preferences you have set are preserved when you install a newer version.

---

10



**CAUTION**

**Service Disruption**

*The parameters on the Advanced tab typically require configuration only when LogViewer has performance problems.*

*Consult technical support before you attempt to modify a parameter on the Advanced tab, as it may affect server performance.*

Click on the Advanced tab to configure the required parameters related to LogViewer performance.

---

END OF STEPS

## 17.6 To search log files in a path

### 17.6.1 Purpose

Use this procedure to perform a search on all log files in a specified path using a plain text search or a regular expression.



**Note:** You can test regular expressions in the Find In Path window by clicking Test beside the expression. Enter sample text in the Example box, and an expression in the Expression box, then click on the green Execute button to test the results of the expression.

---

## 17.6.2 Steps

- 1 \_\_\_\_\_  
Open the LogViewer GUI.
- 2 \_\_\_\_\_  
Choose Edit→Find In Path from the LogViewer main menu, or click Search all files. The Find In Path window opens.
- 3 \_\_\_\_\_  
Perform one of the following:
  - a. To perform a text search, specify the text string to search for in the Text to find parameter and deselect the Regular expression option.
  - b. To perform a search using a regular expression, enter a regular expression in the Text to find parameter and select the Regular expression option.
- 4 \_\_\_\_\_  
In the Directory parameter, enter the directory path you need to search, or click Browse and select a directory. To search subdirectories, select the Recursive option.
- 5 \_\_\_\_\_  
To restrict the search to logs with certain filenames, enter a regular expression in the File Mask parameter. To search all logs in the specified path, leave this parameter blank.
- 6 \_\_\_\_\_  
Click Find. The log entries matching the search parameters are displayed in a new tab.



**Note:** A new search using the Find In Path function cannot be performed until the search tab is closed.

END OF STEPS

---

## 17.7 To show or hide buttons from the LogViewer main tool bar

### 17.7.1 Purpose

Perform this procedure to show or hide specific buttons from the LogViewer main tool bar.

### 17.7.2 Steps

- 1 \_\_\_\_\_  
Open the LogViewer GUI.

- 
- 2 

---

Choose Edit→Preferences→Manage Toolbar from the LogViewer main menu. The Manage Toolbar page opens divided into a Palette and Toolbar section.
  - 3 

---

Use the directional arrows to manage which buttons appear in the main tool bar, and the order in which the buttons appear.
  - 4 

---

Click OK to save your settings.

END OF STEPS 

---

## 17.8 To set highlight colors and fonts for LogViewer components and levels

### 17.8.1 Purpose

Perform this procedure to set highlight colors and fonts for the various LogViewer components and levels.

### 17.8.2 Steps

- 1 

---

Open the LogViewer GUI.
- 2 

---

Choose Edit→Preferences→Highlight Colors from the LogViewer main menu. The Highlight Color Selection form opens.
- 3 

---

Set the item for which you want to specify colors and/or fonts by choosing it from the Component/Level drop-down menu.
- 4 

---

For the item that you want to change, choose the foreground or background plane as required, by clicking on the appropriate tab. The foreground is the text contained in a field. The background is the fill color of the field behind the text.
- 5 

---

For foreground text items, set the font type, style, and size, as required.

---

6

For either foreground or background items, set the color as required. You can choose a color from the samples shown on the Swatch tab, or you can specify a color by entering its red, green, and blue values in the RGB tab.

Previews of your choices appear in the sample fields at the bottom of the form.

---

7

Click OK to save your settings.

---

END OF STEPS

## 17.9 To automatically show or hide log messages

### 17.9.1 Purpose

Perform this procedure to automatically filter (show or hide) log messages based on the current selected cell in the message table.

### 17.9.2 Steps

---

1

Open the LogViewer GUI.

---

2

To automatically show or hide log messages:

1. Select a log entry.
2. To hide log messages based on a selected cell in the message table, perform one of the following:
  - Right-click on the cell and choose Hide All Like Selected.
  - Choose Log→Hide All Like Selected from the LogViewer main menu.
  - Click the Hide All Like Selected button in the main tool bar.LogViewer hides all messages that contain the selected cell. For example, if you have selected the cell in the “Logger” column that contains the word “samConsole”, all messages that have the logger set to “samConsole” are hidden.
3. Perform one of the following to show log messages based on a selected cell in the message table.
  - Right-click on the cell and choose Show All Like Selected.
  - Choose Log→Show All Like Selected from the LogViewer main menu.
  - Click the Show All Like Selected button in the main tool bar.This shows all messages that contain the selected cell. For example, if you have selected the cell in the “Logger” column containing the word “samConsole”, all messages that have the logger set to “samConsole” are displayed.

---

END OF STEPS



---

## 17.10 To manage filters using the GUI Filter Manager

### 17.10.1 Purpose

Perform this procedure to create, modify, assign or delete a LogViewer filter.



**Note:** The Filter Manager is opened from within LogViewer, but runs as a separate applet. This enables the dragging and dropping of filters between Filter Manager and the Filters sub-tab of a job tab.

### 17.10.2 Steps

1

Choose Log→Filter Manager from the LogViewer main menu. The Filter Manager applet opens.

2

To add a regular filter or a simple filter:

1. Click Add or Add Simple, as required. The Add Filter form opens.
2. Configure the Name parameter by specifying a unique name for the filter.
3. Configure the required parameters that correspond to the fields in a log entry by entering regular expressions for regular filters, or just strings for simple filters as a filter criterion for each:
  - Level
  - Message
  - Thread
  - Logger
  - Timestamp
  - Platform
4. If you are configuring a simple filter, go to [Step 2 11](#) .
5. Test a regular expression that you enter by clicking Test beside the regular expression. The Regular Expression form opens.
6. Paste an example log entry that you want to match using the regular expression into the Example field.
7. Click on the green right-pointing arrow to test the expression. If the expression is invalid, a message is displayed to indicate the error in the expression.
8. Correct the errors in the expression.
9. Repeat [Step 2 7](#) and [Step 2 8](#) until no error message is displayed.
10. Repeat [Step 2 5](#) to [Step 2 9](#) to test additional regular expressions, if required.
11. Enable the Color parameter and click in the field beside the parameter to specify a highlight color for the matching log entries. A standard color chooser form opens.
12. Use the form to specify a color and click OK. The color chooser form closes and the Add Filter form reappears.

---

13. Click OK. The Add Filter form closes and the Filter Manager form lists the new filter.

---

3

To create a saved filter based on the current quick filter, perform the following steps:

1. Choose Log→Create from Quick Filter from the LogViewer main menu, or click Create from quick in the main tool bar. The Add Filter form opens and is populated with the quick filter match criteria.
2. Modify the match criteria as required.
3. Click OK to save the filter.

---

4

To create a saved filter using a log entry as a template:

1. Select a log entry.
2. Choose Log→Create from Selected from the LogViewer main menu, or click Create from entry in the main tool bar. The Add Filter form opens and is populated with the current log-entry field values as match criteria.
3. Modify the match criteria as required.
4. Click OK to save the filter.

---

5

To move a filter to other instances of the LogViewer:

1. To export a filter, click Export in the main tool bar, or choose Log→Filter Manager from the LogViewer main menu. The Export form opens, and allows you to export a filter to a specified file.
2. To import a filter, click Import in the main tool bar, or choose Log→Filter Manager from the LogViewer main menu. The Import form opens, and allows you to import a filter from a specified file.
3. Click OK to save the filter.

---

6

To make a copy of a filter, select the filter and click Copy. A copy of the filter is listed on the Filter Manager form.

---

7

To edit a filter, select the filter and click Edit. Configure the required parameters described in [Step 2](#).

---

8

To delete a filter, select the filter and click Delete.

---

END OF STEPS

---

## 17.11 To specify a plug-in using the LogViewer GUI

### 17.11.1 Purpose

Perform this procedure to configure and enable plug-ins for a log file.

### 17.11.2 Steps

1

Choose File→Local Log File from the LogViewer main menu, or click Open log in the log tab tool bar. The Local Log File form opens.

2

Use the form to navigate to the log-file location.

3

Select a log file and click on the Add object... icon button between the form panels. The log is listed in the panel on the right.



**Note:** The log file can be in compressed or uncompressed format.

4

Click on the Plugins tab.

5

Choose a plug-in from the Plugin drop-down menu.

6

If you choose the Bring to Front plug-in, perform the following steps:

1. Specify a regular expression as a match criterion in the Message Filter field.
2. Go to [Step 8](#).

7

If you choose the E-Mail plug-in, perform the following steps:

1. Specify a regular expression as a match criterion in the Message Filter field.
2. Configure the required parameters:
  - Message Filter—specifies a regular expression that is used as a filter to identify the log entries that invoke the plug-in
  - Subject—specifies the e-mail message subject line
  - Body Prefix—specifies the text that precedes the log-entry text in an e-mail message
  - Authenticate? —specifies whether or not authentication is enabled
  - User—specifies a user name associated with the plug-in

- 
- Password—specifies an SMTP password
  - Host—specifies the name of an SMTP server
  - Use TLS? —specifies whether the mail server uses Transport Layer Security (TLS) encryption
  - Use SSL? —specifies whether the mail server uses Secure Sockets Layer (SSL) encryption
  - To—specifies the e-mail address of the recipient
  - From—specifies the sender e-mail address used by the plug-in
  - Minimum E-mail Time (minutes)—specifies the minimum time between messages that the plug-in sends, to prevent e-mail flooding

8

---

Click OK. The Local Log File form closes.

END OF STEPS

---

## 17.12 To display logs using the LogViewer CLI

### 17.12.1 Purpose

Perform this procedure to start the LogViewer CLI and view one or more logs.

### 17.12.2 Steps

1

---

Log in to a station as the nsp user.

2

---

Open a console window.

3

---

Enter the following:

```
bash$ /opt/nsp/nfmp/server/nms/bin/logviewer.bash argument options  
parameter ↵
```

where

*argument* is an argument listed in [Table 17-1, “LogViewer CLI startup arguments”](#) (p. 313)

*options* is one or more of the options listed in [Table 17-2, “LogViewer CLI startup options”](#) (p. 313)

*parameter* is a parameter listed in [Table 17-3, “LogViewer CLI startup parameters”](#) (p. 313)

Table 17-1 LogViewer CLI startup arguments

Argument	Meaning
--version	Display LogViewer version information.
--help	Display LogViewer CLI help text.

Table 17-2 LogViewer CLI startup options

Option	Meaning
-counter	Prepend a counter number to each displayed log entry.
-parseAll	Parses and display the entire contents of a file before displaying the real-time updates.
-ansi <i>level attribute</i>	Display events and filters using ANSI-specified colors where <i>level</i> is a logging level, such as debug <i>attribute</i> is an ANSI color attribute, such as 42m to specify the color green
-quit	Quit LogViewer after parsing the log files.

Table 17-3 LogViewer CLI startup parameters

Parameter	Meaning
-xml <i>file_name</i>	Read information such as log file, plug-in and filter specifications from the XML file specified by <i>file_name</i> . The LogViewer GUI can export this information to an XML file.
<i>file name</i>	Display the specified file when LogViewer starts.

The LogViewer CLI opens in display mode. If a log file is specified as a startup parameter, the most recent entries in the log file are displayed as they are written to the log file. Otherwise, a cursor is displayed.

#### 4

Enter command mode by pressing ↵. The following prompt is displayed:

```
log>
```

This prompt is called the root prompt. The table below describes the options that are available at the root prompt.

Table 17-4 LogViewer CLI root menu options

Option	Function
open	opens a submenu for choosing the logs to view
include	opens a submenu for specifying which log files to list in the <i>open</i> submenu
filter	opens a submenu for adding, listing or deleting filters

Table 17-4 LogViewer CLI root menu options (continued)

Option	Function
plugin	opens a submenu for adding, listing or delete plugins
options	opens a submenu for configuring LogViewer CLI and GUI options
list	lists the files in the <i>open</i> submenu file list
reset	resets the log message counts
stats	displays LogViewer statistics for the current log
The following options are also available in submenus:	
back	goes to the previous menu
root	goes to the root menu
quit	quits LogViewer
return	returns to display mode

5

Enter the following:

**open** ↵

The following prompt is displayed:

```
log-open>
```

6

Press ↵ to display the list of available logs.

7

Perform one of the following:

a. To view a log in the list, enter the name of a log and press ↵.

b. To view a log that is not listed, perform the following steps.

1. Enter the following:

**other** ↵

The following prompt is displayed:

```
File Name (full path)?
```

2. Enter the absolute or relative path of the log file that you want to open and press ↵.

LogViewer opens the file.

8

Enter the following to enter display mode and view the real-time log updates:

**return** ↵

---

LogViewer enters display mode. Log updates are displayed as they occur.

---

9

To add a filter that restricts the types of log entries that are displayed during the current LogViewer session, perform the following steps:

1. Press ↵ to enter command mode.
2. Enter the following to return to the root menu:

**root** ↵

The following prompt is displayed:

log>

3. Enter the following:

**filter** ↵

The following prompt is displayed:

log-filter>

**Note:**

You can also use commands at this menu level to list and delete filters.

4. Enter the following:

**add** ↵

The following prompt is displayed:

Filter name:

5. Enter a name for the filter and press ↵.

6. The following prompts are displayed in sequence:

Level:

Logger:

Thread:

Timestamp:

Message:

At each prompt, enter a regular expression to use as a match criterion, if required, and press ↵.

7. The following prompt is displayed:

Display Filter? (Y/N):

Enter y ↵ to apply the filter to the current log display. LogViewer applies the filter.

8. Enter the following to return to display mode:

**return** ↵

LogViewer enters display mode. The log updates are filtered before they are displayed.

---

10

To list the available log files, perform the following steps:

1. Press ↵ to enter command mode.
2. Enter the following:  
`list ↵`  
LogViewer lists the available log files.
3. Enter the following to return to display mode:  
`return ↵`

---

11

To display statistics about the current LogViewer session, perform the following steps:

1. Press ↵ to enter command mode.
2. Enter the following:  
`stats ↵`  
LogViewer displays statistics about the current session.
3. Enter the following to return to display mode:  
`return ↵`

---

12

To reset the statistics counters for the current LogViewer session, perform the following steps:

1. Press ↵ to enter command mode.
2. Enter the following:  
`reset ↵`  
LogViewer resets the counters.
3. Enter the following to return to display mode:  
`return ↵`

---

13

Enter the following to close LogViewer:

`quit ↵`

---

END OF STEPS



---

## 17.13 To configure the LogViewer CLI

### 17.13.1 Purpose

Perform this procedure to use the LogViewer CLI to configure general CLI options.



**Note:** The options configured in this procedure apply only to the current LogViewer CLI session.

### 17.13.2 Steps

1

Open the LogViewer CLI.

2

To add a file to the list of files in the *open* menu, perform the following steps:

1. Press `↵` to enter command mode.
2. Enter the following at the root prompt:  
`include ↵`  
The following prompt is displayed:  
`log-include>`
3. Enter the following:  
`add ↵`  
The following prompt is displayed:  
`File Name (full path)?`
4. Enter the absolute or relative path of the log file that you want to add and press `↵`. LogViewer adds the file to the list in the *open* menu.

**Note:**

The LogViewer CLI supports file drag-and-drop functionality.

5. Enter the following to return to the root prompt:

`root ↵`

3

To configure LogViewer file parsing, perform the following steps:

1. Press `↵` to enter command mode.
2. Enter the following at the root prompt:

`options ↵`

The following prompt is displayed:

`log-options>`

3. Enter y ↵ to confirm the action.
4. To specify whether LogViewer parses the entire log file, enter the following:  
`parseAll` ↵  
A confirmation prompt is displayed.
5. To force LogViewer to reparse the current log file, enter the following:  
`reparse` ↵
6. If you are prompted to enable parsing of the entire log file, enter y ↵.
7. Enter the following to return to the root prompt:  
`root` ↵

END OF STEPS

## 17.14 To specify plug-ins using the CLI

### 17.14.1 Purpose

Perform this procedure to specify a plug-in for the current LogViewer CLI session.

### 17.14.2 Steps

- 1 \_\_\_\_\_  
Open the LogViewer CLI.
- 2 \_\_\_\_\_  
Press ↵ to enter command mode.
- 3 \_\_\_\_\_  
Enter the following at the root prompt:  
`plugin` ↵  
The following prompt is displayed:  
  
`log-plugin>`
- 4 \_\_\_\_\_  
Enter the following:  
`add` ↵  
LogViewer displays a list of the available plug-ins and the following prompt:  
  
`Which plugin would you like to specify? (name)`
- 5 \_\_\_\_\_  
Enter the name of a plug-in from the list and press ↵.

---

6

You may be prompted for plug-in configuration information. Supply the information, as required.



**Note:** The currently available plug-ins and the associated configuration options are described in [17.11 “To specify a plug-in using the LogViewer GUI” \(p. 311\)](#).

END OF STEPS

---



---

## 18 Troubleshooting the NFM-P database

### 18.1 Database troubleshooting overview

#### 18.1.1 Database status

The NFM-P monitors the primary and standby database status and displays a colored status based on the primary and standby database connection and availability states. The following describes the conditions that determine database status color. These conditions also cause the NFM-P to raise database alarms.

##### Clear

The database status panel changes to clear status (gray) when the database connection, proxy, and applicable standby entities are up and all database error conditions are cleared.

##### Yellow

The following conditions cause the panel to change to yellow status:

- A database switchover or failover is complete.
- The database connection is partially down.
- The primary database is up and the standby database is down.
- A problem is detected with synchronization or archiving.

##### Red

The following conditions cause the panel to change to red status:

- A database switchover or failover is starting.
- The database connection is down.
- The primary database is down.

### 18.2 Problem: NFM-P database corruption or failure

#### 18.2.1 Solution

You can restore an NFM-P database using a backup copy.



**Note:** Before you perform a database restore operation, you must shut down the databases and main servers in the NFM-P system. Contact technical support before you attempt to perform a database restore.

In a redundant NFM-P system, you must perform one or both of the following to regain database function and redundancy:

- Restore the primary NFM-P database.

- Reinstantiate the standby NFM-P database.

Both operations are required after a primary database failure. After a standby database failure, no restore operation is required, but you must reinitiate the standby database to restore redundancy. You can use the NFM-P client GUI or a CLI script to reinitiate a database.

**i** **Note:** In a redundant NFM-P system, you can restore a database backup only on a primary database station. To restore a database backup on a station other than the primary station, you must do the following on the station before you attempt the restore:

- Uninstall the NFM-P database, if it is installed.
- Install a primary NFM-P database on the station.

**i** **Note:** In a redundant NFM-P system, you can reinitiate a database only on a standby database station. To reinitiate a database on a station other than the standby station, you must do the following on the station before you attempt the reinitiation:

- Uninstall the NFM-P database, if it is installed.
- Install a standby NFM-P database on the station.

See the *NSP System Administrator Guide* for information about restoring or reinitiating an NFM-P main database.

## 18.3 Problem: The database is running out of disk space

### 18.3.1 Database disk space

Sufficient database disk space is essential for efficient NFM-P database operation. You can also check whether your database backup schedule is adequate. Underscheduling backups while the database is in ARCHIVELOG mode creates numerous log files.

### 18.3.2 Steps

1

Verify that the database platform is adequately sized. See the *NSP NFM-P Planning Guide* or consult technical support.

2

Verify that the thresholds for disk space and archive logs are sufficient for your network, and determine how the disk space is being used. Contact your technical support representative for more information.

3

Check the root database backup directory or partition to ensure that:

- the size of the assigned disk space or slice is sufficient
- the disk directory or slice is sufficient to hold the configured number of database backups

---

4 —————  
If the disk directory has many archived log files due to underscheduling of database backups, contact your technical-support representative for information about deleting archived log files.

5 —————  
Back up the NFM-P database, as described in the *NSP System Administrator Guide*.

END OF STEPS —————

## 18.4 Problem: Frequent database backups create performance issues

### 18.4.1 Overscheduling database backups

Overscheduling the number of database backups can affect database performance by consuming excessive system resources.

### 18.4.2 Steps

1 —————  
Choose Administration→Database from the NFM-P main menu. The Database Manager form appears.

2 —————  
Click on the Backup tab.

3 —————  
Check the Backup Interval and Interval Unit parameters. For example, setting the Backup Interval parameter to 6 and setting the Interval Unit parameter to hour means a backup is performed every 6 hours, or four times a day. Such frequent backups can cause performance issues.

 **Note:** Nokia recommends scheduling database backups to occur once daily.

4 —————  
Modify other parameters as required to improve performance.

5 —————  
Save your changes and close the Database Manager form.

END OF STEPS —————

---

## 18.5 Problem: An NFM-P database restore fails and generates a No backup sets error

### 18.5.1 Solution



#### WARNING

##### Equipment Damage

*Performing NFM-P database modifications using Oracle database tools can cause irreparable harm to the NFM-P database and the network management data, and can void your warranty or support agreement.*

*Contact your technical support representative for assistance with database troubleshooting.*

Database backup sets expire based on a retention period. After the retention period passes, the database backup sets are set to expired. You cannot restore databases from expired backup sets. Contact your technical support representative for assistance with an NFM-P database restore failure.

## 18.6 Problem: NFM-P database redundancy failure

### 18.6.1 Steps



#### WARNING

##### Equipment Damage

*Performing NFM-P database modifications using Oracle database tools can cause irreparable harm to the NFM-P database and the network management data, and can void your warranty or support agreement.*

*Contact your technical support representative for assistance with database troubleshooting.*

1

---

Ensure that the database redundancy configuration is correct, as specified in the *NSP Installation and Upgrade Guide*:

- The primary and standby database directory structures and disk partition configurations are identical.
- The same OS version and patch level, and the same NFM-P software release and patch level, are installed on the primary and standby database stations.

2

---

Ensure that there are no network communication problems between the primary and standby database stations; see [Chapter 8, “NSP system troubleshooting”](#).

END OF STEPS

---



---

## 18.7 Problem: Primary or standby NFM-P database is down

### 18.7.1 Primary or standby database is down

The status bar of the NFM-P client GUI indicates that the primary or standby database is down.

### 18.7.2 Steps



#### WARNING

##### Equipment Damage

*Performing NFM-P database modifications using Oracle database tools can cause irreparable harm to the NFM-P database and the network management data, and can void your warranty or support agreement.*

*Contact your technical support representative for assistance with database troubleshooting.*

1

Verify the correct IP address and instance name of the database. From the NFM-P main menu, select Administration→Database to open the Database Manager. Verify the information in the Instance Name and DB Server fields.

2

Verify the network connectivity between the NFM-P primary server and the primary or standby database by ensuring that the primary server and the primary or standby database can ping each other; see [Chapter 8, “NSP system troubleshooting”](#).

END OF STEPS

---

## 18.8 Problem: Need to verify that Oracle database and listener services are started

### 18.8.1 Purpose

Perform the following procedure to determine the status of the Oracle database and listener services, each of which starts automatically during NFM-P database station initialization.

### 18.8.2 Steps

1

Open an NFM-P GUI client.

---

2

View the status bar at the bottom of the GUI. The background of the NFM-P database section of the status bar is yellow or red when there is a problem with a service. The status bar text indicates the database service status.

END OF STEPS

---

## 18.9 Problem: Need to determine status or version of NFM-P database or Oracle proxy

### 18.9.1 Purpose

Perform the following procedure to determine the status of the NFM-P database or Oracle proxy, each of which starts automatically during NFM-P database station initialization.

### 18.9.2 Steps

1

Log in as the Oracle management user on the database station.

2

Open a console window.

3

Navigate to the /opt/nsp/nfmp/db/install/config/db directory

4

Enter the following command.

```
bash$ ./oracleproxy.sh option ↵
```

where *option* is one of the options in the table below.

Table 18-1 oracleproxy.\* flag options

Flag option	Description
start	Starts the Oracle proxy
no option, or help	Lists the available options
proxy_version	Displays Oracle proxy version information
proxy_status	Displays Oracle proxy status information
db_version	Displays NFM-P database version information
db_status	Displays NFM-P database status information

---

5

Review the command output.

The following sample shows the output of the proxy\_status option.

```
Proxy is UP
```

The following sample shows the output of the db\_version option.

```
NSP Version Release - Built on Wed Mar 27 03:14:15 EST 20XX
```

6

Close the console window.

**END OF STEPS**

---

Problem: Need to determine status or version of NFM-P database or Oracle proxy

---

---

## 19 Troubleshooting NFM-P server issues

### 19.1 Overview

#### 19.1.1 Problems associated with the NFM-P server

NFM-P server statistics collection is a useful troubleshooting tool for memory, alarm, and SNMP issues on an NFM-P main or auxiliary server. See the *NSP NFM-P Statistics Management Guide* for more information.

When no NE is associated with an NFM-P alarm, the alarm Site ID and Site Name properties are populated with the IP address and hostname, respectively, of the NFM-P main or auxiliary server that raised the alarm.

### 19.2 Problem: Cannot start an NFM-P server, or unsure of NFM-P server status

#### 19.2.1 Server status indicators

The NFM-P main or auxiliary server startup script provides server status indicators that include the following:

- how long the server has been running
- the used and available memory
- the NFM-P database connectivity status
- NFM-P license capacity

#### 19.2.2 Steps

1 \_\_\_\_\_  
Log in to the NFM-P server as the nsp user.

2 \_\_\_\_\_  
Open a console window.

3 \_\_\_\_\_  
To check the status of an NFM-P main server, perform the following steps.

1. Enter the following:  

```
/opt/nsp/nfmp/server/nms/bin/nmsserver.bash appserver_status ↵
```

The general server status is displayed.
2. Enter the following at the CLI prompt:

```
/opt/nsp/nfmp/server/nms/bin/nmsserver.bash nms_status ↵
```

Detailed NFM-P server information is displayed.

3. To obtain more specific server status information, run the nmsserver script in step 3 using the appropriate option from the following table in place of the nms\_status or appserver\_status option.

#### NFM-P main-server startup script options

Option	Description
start	Starts the NFM-P main server in a non-interactive mode
stop	Stops the NFM-P main server
debug	Starts the NFM-P server in an interactive mode. <b>Note:</b> The server shuts down if the console is closed or if Ctrl-C is pressed.
appserver_status	Returns information about the status of the NFM-P main server (both active and standby servers when the NFM-P is configured for redundancy)
appserver_version	Returns NFM-P software release information that includes the start time of the current NFM-P main server instance
nms_status	Returns the following information: <ul style="list-style-type: none"><li>• NFM-P standalone, primary, or standby server start time and running time</li><li>• total used and available memory</li><li>• NFM-P database connectivity status</li><li>• redundancy configuration and status</li><li>• NFM-P license information</li><li>• JVM memory-usage information</li><li>• alarm forwarding information</li><li>• basic auxiliary server information</li><li>• number and status of current process threads</li></ul>
-v nms_status	Verbose version of the nms_status option that returns the following additional information: <ul style="list-style-type: none"><li>• ID and status of the current process threads</li><li>• general JMS server information</li><li>• currently connected JMS subscribers, by topic</li></ul>
-s nms_status	Short version of the nms_status option that returns the following information: <ul style="list-style-type: none"><li>• system information</li><li>• IP address</li><li>• NFM-P database information</li><li>• installation information</li></ul>

Option	Description
nms_info	Returns the following information from the NFM-P database: <ul style="list-style-type: none"> <li>• number of managed devices by device type; for example, 7750 SR</li> <li>• number of MDA ports by type</li> <li>• number of equipped ports by type</li> <li>• number of services by type; for example, IES or VLL</li> <li>• number of access interfaces, connection termination points, and channels, by type</li> <li>• number of alarms, listed in order of severity</li> <li>• lists of enabled statistics, file, and accounting policies, including the counts and the polling frequency for different types of objects</li> </ul>
nms_version	Returns NFM-P software release information
jvm_version	Returns version information about the currently running Java Virtual Machine environment
script_env	Returns main server script environment information
read_config	Rereads the nms-server.xml server configuration file while the server is running in order to put configuration file updates into effect
force_restart	Forces the NFM-P main server to restart
force_stop	Forces the NFM-P main server to stop
passwd <username> <current> <new> where username is the NFM-P database username, for example, samuser current is the current password new is the new password	Changes the NFM-P database user password
read_metrics_config	Reads the server metrics configuration file
import_license	Imports a new license zip file for the server
threaddump	Prints a thread dump for every SAM java process running on the station
webstart	Starts the web server
webstop	Stops the web server
webstatus	Prints web server status
webforce_restart	Forces the web server to restart
webforce_stop	Forces the web server to stop and not restart
jmsstart	Starts the JMS server in interactive mode
jmsstop	Stops the JMS server

Option	Description
jmsstatus	Returns information that includes the following: <ul style="list-style-type: none"><li>• general JMS server information</li><li>• currently connected JMS subscribers, by topic</li></ul>
jmsread_config	Rereads the JMS server configuration file while the JMS server is running
jmsforce_restart	Forces the JMS server to restart
jmsforce_stop	Forces the JMS server to stop
jmsjvm_version	Returns version information about the currently running Java Virtual Machine environment
jmsappserver_status	Returns the JMS server status
jmsscript_env	Returns the JMS script environment
no keyword, help, or ?	Lists the available command options

#### 4

To check the status of an NFM-P auxiliary server, perform the following steps.

1. Enter the following at the CLI prompt:  
`/opt/nsp/nfmp/auxserver/nms/bin/auxnmsserver.bash aux_status ↵`  
The general server status is displayed.
2. Enter the following at the CLI prompt:  
`/opt/nsp/nfmp/auxserver/nms/bin/auxnmsserver.bash auxappserver_status ↵`  
Detailed NFM-P server information is displayed.
3. To obtain more specific server status information, run the nmsserver script using the appropriate option from the following table in place of the aux\_status or appserver\_status option.

#### NFM-P auxiliary-server startup script options

Option	Description
auxappserver_status	Returns information about the operational status of the auxiliary server
auxdebug	Starts the auxiliary server in interactive mode
auxforce_restart	Forces the auxiliary server to restart
auxforce_stop	Forces the auxiliary server to stop
auxjvm_version	Returns the auxiliary server JVM version
auxread_config	Directs the auxiliary server to read and apply the settings in the general configuration file



Option	Description
auxread_metrics_config	Directs the auxiliary server to read and apply the settings in the metrics configuration file
auxscript_env	Returns auxiliary server script environment information
auxstart	Starts the NFM-P auxiliary server
auxstatus	Returns information about the auxiliary server that includes the following: <ul style="list-style-type: none"><li>• IP address</li><li>• port number</li><li>• NFM-P database connections</li><li>• installed server software release ID</li></ul>
auxstop	Stops the NFM-P auxiliary server
aux_version	Returns auxiliary server software release information
auxthreaddump	Returns a thread dump for every auxiliary server process currently running on the station
auxhelp, no keyword, or ?	Lists the available command options

5 \_\_\_\_\_  
Review and record the displayed information for technical support, if required.

6 \_\_\_\_\_  
Close the console window.

7 \_\_\_\_\_  
View the NFM-P server logs for error messages using the LogViewer utility, as described in [Chapter 3, “Troubleshooting scenarios using multiple NSP applications”](#).

8 \_\_\_\_\_  
Report the error messages that you find to a technical support representative.

END OF STEPS \_\_\_\_\_

## 19.3 Problem: NFM-P server and database not communicating

### 19.3.1 Purpose

Perform this procedure when an NFM-P server cannot connect to an NFM-P database.

---

## 19.3.2 Steps

1

Verify network connectivity between both the primary and standby servers and the primary and standby NFM-P databases by ensuring that both the primary and standby servers and the primary database can ping each other. See [Chapter 8, “NSP system troubleshooting”](#).

2

Ensure that the ports specified at installation time are available and not being blocked by firewalls; see [Chapter 8, “NSP system troubleshooting”](#).

3

Perform the following troubleshooting activities for the primary NFM-P database, as described in [18.7 “Problem: Primary or standby NFM-P database is down”](#) (p. 325).

- Verify the NFM-P database IP address and instance name.
- Verify that the database instance is running.
- Verify that the database is running in the correct mode.

END OF STEPS

---

## 19.4 Problem: An NFM-P server starts up, and then quickly shuts down

### 19.4.1 Solution

When a server starts then stops, collect the logs identified in [3.2.7 “Use the Network Health Dashboard to retrieve data about the health of a service and its components”](#) (p. 41) and contact your technical support representative.

## 19.5 Problem: Client not receiving server heartbeat messages

### 19.5.1 Purpose

Perform this procedure when an NFM-P client is not receiving heartbeat messages.

### 19.5.2 Steps

1

Verify network connectivity between both the primary and standby servers and the clients by ensuring that both the primary and standby servers and the clients can ping each other. See [Chapter 8, “NSP system troubleshooting”](#).

---

2

Verify that the NFM-P server and client clocks are synchronized. To set the date and time for NFM-P server and client clocks, see the *NSP System Administrator Guide*.

END OF STEPS

---

## 19.6 Problem: Main server unreachable from RHEL client station

### 19.6.1 Purpose

Perform this procedure to check the IP connectivity between an NFM-P client and main server using ping commands. When the ping commands indicate that IP communication is active but there are still IP reachability issues, the problem could be poor LAN performance.

### 19.6.2 Steps

---

1

Perform a ping test to measure reachability, as described in [12.2 “Problem: Lost connectivity to one or more network management domain stations”](#) (p. 267).

---

2

If you cannot ping the main server from a RHEL single-user client or client delegate server station, ensure that the server hostname is in the `/etc/hosts` file on the client station.

1. Log on to the client station as the root user.
2. Enter the following:  

```
# cd /etc ↵
```
3. Open the hosts file with a plain-text editor such as vi.
4. Edit the file, as required, to contain the following:  

```
server_IP server_hostname
```

where  
`server_IP` is the IP address of the main server  
`server_hostname` is the hostname of the main server
5. Save the changes and close the file.

END OF STEPS

---

---

## 19.7 Problem: Excessive NFM-P server-to-client response time

### 19.7.1 Increasing available server network management resources

As the number of managed devices grows and as more GUI or OSS clients are brought online, the processing load on the NFM-P system increases. For optimum NFM-P performance, you must ensure that the NFM-P configuration meets the requirements in the *NSP NFM-P Planning Guide* as your network expands.

You can do the following to increase the available NFM-P server network management resources:

- Deploy the NFM-P system in a distributed configuration.
- Deploy the NFM-P system in a redundant configuration.
- Deploy NFM-P auxiliary servers.
- Reallocate the NFM-P server resources that are assigned to groups of managed devices.

See the *NSP NFM-P User Guide*, , and the *NSP Installation and Upgrade Guide* for information about a particular option. Contact technical support for reconfiguration assistance.

Perform this procedure to check the following:

- NFM-P auxiliary server status  
System performance may degrade if the number of available Preferred and Reserved auxiliary servers drops below the number of configured Preferred auxiliary servers.
- NFM-P main server status  
Alarms raised against the NFM-P main server may provide information about the performance degradation.

### 19.7.2 Steps



#### CAUTION

#### Service Disruption

*Only Nokia support staff are qualified to assess and reconfigure an NFM-P deployment.*

*Contact your technical support representative for assistance.*

- 1 \_\_\_\_\_  
Open an NFM-P client GUI.
- 2 \_\_\_\_\_  
Choose Administration→System Information. The System Information form opens.
- 3 \_\_\_\_\_  
Click on the Faults tab to view auxiliary server and general NFM-P system alarm information, if required.

---

## 4

If your NFM-P deployment includes one or more auxiliary servers, perform the following steps to check the status of each auxiliary server.

1. Click on the Auxiliary Servers tab.
2. Review the list of auxiliary servers.
3. Select an auxiliary server in the list and click Properties. The properties form for the auxiliary server is displayed.
4. Review the information, which includes:
  - the auxiliary server IP address
  - the auxiliary server hostname
  - the auxiliary server port number
  - the auxiliary server type (Reserved or Preferred)
  - the auxiliary server status (Unknown, Down, Up, or Unused)
5. If the auxiliary server status is Down, perform [19.2 “Problem: Cannot start an NFM-P server, or unsure of NFM-P server status” \(p. 329\)](#) on the auxiliary server.
6. If the auxiliary server status is Unknown, perform [19.12 “Problem: Slow or failed resynchronization with network devices” \(p. 341\)](#) to check the connectivity between the managed network and the main and auxiliary servers.

---

## 5

Close the System Information form.

END OF STEPS

---

## 19.8 Problem: Unable to receive alarms on the NFM-P, or alarm performance is degraded

### 19.8.1 General information

By default, the system begins purging alarms when the outstanding alarm count reaches 50 000, unless historical alarm record logging and purging alarm policies are configured to keep the outstanding alarm count below that level.

### 19.8.2 Steps



#### CAUTION

#### Service Disruption

*Exceeding the alarm limit configured in the nms-server.xml file may cause system performance problems.*

*Contact your technical support representative for assistance.*

Problem: All SNMP traps from managed devices are arriving at one NFM-P server, or no SNMP traps are arriving

1

Check the status bar of the NFM-P client GUI status bar for indications that the maximum number of alarms for the system is reached.

2

If required, clear outstanding alarms or delete them to the alarm history record log, as described in the *NSP NFM-P User Guide*.

3

If the NFM-P system includes one or more auxiliary servers, perform [19.7 “Problem: Excessive NFM-P server-to-client response time” \(p. 336\)](#) to ensure that system performance is not degraded because of auxiliary-server unavailability.

4

Contact your technical support representative for more information.

END OF STEPS

## 19.9 Problem: All SNMP traps from managed devices are arriving at one NFM-P server, or no SNMP traps are arriving

### 19.9.1 Configuration for SNMP trap notifications

When you install the NFM-P, you specify the port on which SNMP traps arrive.

In addition, the following configuration is required for SNMP trap notifications to work:

- Enable the SNMP parameters on the devices before managing them.
- Ensure that a unique trapLogId is specified for each router to communicate with the NFM-P.



**Note:** You must have sufficient user permissions, for example, admin permissions, to configure SNMP on a device.

### 19.9.2 Steps

1

See the commissioning chapter of the *NSP NFM-P User Guide* for more information about configuring devices for NFM-P management.

2

Configure SNMP on the device using CLI.

END OF STEPS

---

## 19.10 Cannot manage new devices

### 19.10.1 New devices cannot be managed

The possible causes are:

- The number of managed devices or MDAs exceeds the licensed quantity.
- Large packet sizes from the managed devices are being dropped by intermediate routers because the packets exceed the device MTU, causing resynchronizations to fail.

Additional devices cannot be managed, but can be discovered, when the licensed MDA limit is exceeded.

### 19.10.2 Steps



#### CAUTION

##### Service Disruption

*Do not modify other nms-server.xml parameters. Modifying the file can seriously affect network management and performance of the NFM-P.*

*Consult technical support before you attempt to modify parameters.*

1

---

Check the license key status.

1. The NFM-P generates an alarm when a license limit is exceeded or nearly exceeded. View the NFM-P alarm list in the client GUI, or use an OSS client to monitor the JMS alarm event stream for license alarms.
2. Choose Help→NFM-P License Information from the NFM-P main menu. The NFM-P License (Edit) form opens.
3. Click on the Devices and Quantities Licensed tab.
4. View the information to ensure that the required Remaining quantity is not equal to zero.

#### Note:

If you have a new license that supports a greater number of managed objects, you can dynamically update the license without restarting the main server. See the *NSP NFM-P User Guide* for information about updating an NFM-P license.

5. Close the NFM-P License (Edit) form.

2

---

Ensure that the new devices are configured to send SNMP packets of up to 9216 bytes. Check the MTU size, as described in [12.4 “Problem: Packet size and fragmentation issues” \(p. 269\)](#).

END OF STEPS

---

---

## 19.11 Problem: Cannot discover more than one device, or device resynchronization fails

### 19.11.1 General information

Consider the following:

- When using SNMPv3 encryption, the engine ID of the managed device must be unique. As well, SNMP issues may result in Polling Problem alarms. Otherwise, the following issues may occur:
  - unreliable or slow discovery of network devices
  - resynchronization during scheduled polling fails
  - slow communication and synchronization times
  - polling fails completely
- When NFM-P resynchronizes some functions on an NE, for example, BGP configurations for the 7750 SR, the SNMP packets may be broken into two or more smaller packets, when the maximum PDU size of 9216 bytes is exceeded.
- Each MIB entry policy has its own polling interval. When there is insufficient time in a polling interval for a resynchronization to occur, the interval may need to be changed to ensure proper resynchronization.

### 19.11.2 Steps

1

For resynchronization issues that may be caused due to insufficient MIB polling intervals.

2

Choose Administration→Mediation from the NFM-P main menu. The Mediation (Edit) form opens with the General tab selected.

3

Ensure that the Polling Admin State is Up.



**Note:** Polling and scanning use system resources, and can increase the amount of management traffic. Consider your network needs and network management domain capabilities before setting these parameters.

4

Check the MIB polling intervals for different managed devices, as required, by clicking on the MIB Entry Policies tab.

A list of MIBs appears, organized by managed device type.

1. Select a MIB in the list and click Properties.
2. Configure the Polling Interval parameter to ensure that sufficient time is configured for the polling to occur.
3. Configure the Administrative State of polling for the MIB entry, if required.



- 
- Click OK to save the changes and close the form, or click Cancel to close the form without saving changes, as required.

END OF STEPS

---

## 19.12 Problem: Slow or failed resynchronization with network devices

### 19.12.1 General information

When NFM-P performance is slow, especially when performing network device resynchronizations, SNMP and IP performance along the in-band or out-of-band interfaces between the network device and the NFM-P server may be the problem.

Check the following:

- configuration of the LAN switch port and the NFM-P station port match
- configuration of the LAN switch port and the network device management ports match
- mediation policy SNMP timeout and retry values are sufficient to allow the transfer of data between network devices and the NFM-P

### 19.12.2 Steps

1

---

Ensure that port configurations are compatible for the NFM-P server, the network device management ports, and the LAN switch. This is normally done by configuring auto-negotiation between the platforms, but your network may require more specific configuration.

2

---

Check whether all data is being transferred between the network device in-band management port and the NFM-P server.

- Open a Telnet or SSH session to the device from the NFM-P.
- Check statistics on the in-band management port of the device:

```
# monitor port 1/2/3
```

Check the output for the following.

- errors that may indicate a communication problem with the a LAN switch.
- Over each time interval, is the number of input and output packets constant? This may indicate intermittent traffic.
- Are there more input packets or octets being transferred than output packets or octets? This may indicate a unidirectional traffic problem.

The types of error messages displayed determine the action to take.

- For failure errors, consider increasing the SNMP timeout value
  - For collision errors, consider increasing the SNMP retry value
- Check the mediation policy for the device using the NFM-P client GUI. Check the SNMP timeout and retry value for the mediation policy.

---

If the output of step 2 indicates failures, consider increasing the default SNMP timeout value and perform step 2 again.

When the output of step 2 indicates frequent collisions, consider increasing the default SNMP number of retries value, then retest to see if resynchronizations are more reliable. Increasing the number of retries increases the likelihood that an SNMP packet is not dropped due to collisions.

You can check SNMP timeout and retry values from the Administration→Mediation menu. Click on the Mediation Security tab.

**CAUTION:**

When LAN performance is poor, increasing timeout values may mask an underlying problem. Increasing the SNMP timeout value in an environment where collisions are frequent reduces performance. Timeout values should be based on typical network response times

Check LAN communication issues, as specified in [Chapter 8, “NSP system troubleshooting”](#). If problems persist, collect the logs as specified in [3.2.7 “Use the Network Health Dashboard to retrieve data about the health of a service and its components” \(p. 41\)](#) and contact your technical support representative.

---

END OF STEPS

## 19.13 Problem: Statistics are rolling over too quickly

### 19.13.1 Problem

Statistics database tables roll over, or lose statistics during an interval, if the tables fill before all statistics are collected or the next collection interval starts.

#### Solution

To ensure sufficient statistics collection, consider the following:

- the statistics table size, depending on the configuration specified in the *NSP Installation and Upgrade Guide*
- the number of statistics collected, the number of objects with statistics collection enabled, and the frequency of statistics collection, as specified in the *NSP NFM-P User Guide*
- the OSS requests data from the statistics tables less frequently than the configured rollover interval
- FTP must be enabled on the managed device in order for the NFM-P to retrieve statistics.

Nokia recommends that statistics collection planning includes the following considerations to prevent the loss of statistics data.

- measure the rate of statistics collection over a sufficient time interval
- determine the appropriate collection interval and statistics database table size based on individual network configurations
- ensure that the polling interval is sufficient for polled statistics

---

## 20 Troubleshooting NFM-P clients

### 20.1 Problem: Cannot start NFM-P client, or error message during client startup

#### 20.1.1 Prerequisites

Before you proceed, ensure that the following conditions are present:

- the NFM-P client and server have the same software versions and compatible patch sets
- the login name and password of the user are correct
- there are no OS errors
- a local firewall is running on the client station

#### 20.1.2 Steps

1

If the NFM-P client is installed on RHEL and you receive a “Cannot execute” message when you try to run the client, the client executable file permission may have been reset by an event such as an auto-client update failure. You must ensure that the correct file permissions are assigned.

1. Log in as root, or as the user that installed the client, on the client station.
2. Open a console window.
3. Enter the following:

```
# chmod +x path/nms/bin/nmsclient.bash
```

where *path* is the NFM-P client installation location, typically /opt/nsp/client

2

Review the login messages that are displayed when a client GUI attempts to connect to a server. Messages that state things like the server is starting or the server is not running indicate the type of problem.

3

Ensure that the user name and password are correct.

4

To check that the NFM-P server is up and to view additional server configuration information, perform the following steps.

1. Log on to the NFM-P server station as the nsp user.

2. Open a console window.
3. Navigate to the /opt/nsp/nfmp/server/nms/bin directory.
4. Enter the following:  

```
./nmsserver.bash appserver_status ↵
```

Server status and configuration information are displayed.
5. To check additional server status conditions, perform [19.2 “Problem: Cannot start an NFM-P server, or unsure of NFM-P server status” \(p. 329\)](#).

5

Check the client GUI login error message.

When a firewall is running locally on the client station, a login error message may appear indicating that the server is not available. Ensure that a local firewall is not preventing a connection to the server, and that the NFM-P server IP address is in the client host-lookup file.

END OF STEPS

## 20.2 Problem: NFM-P client unable to communicate with NFM-P server

### 20.2.1 Prerequisites

Before you proceed, ensure that the following conditions are present:

- The NFM-P client points to the correct IP address and port of the server.
- The problem is not a network management domain LAN issue. See [Chapter 8, “NSP system troubleshooting”](#) for more information.
- Firewalls between the NFM-P clients and the server are correctly configured

### 20.2.2 Steps

1

To check that the NFM-P client points to the correct IP address and port of the server, open the nms-client.xml file using a text editor. The default file location is *installation\_directory/nms/config*.

where *installation\_directory* is the directory in which the NFM-P client software is installed, for example, /opt/nsp/client

2

Verify the IP address of the server as specified by the ejbServerHost parameter.

3

Verify the server port as specified by the ejbServerPort parameter.

- 
- 4 

---

Modify the IP address and port values, if required.
  - 5 

---

Save the file, if required.
  - 6 

---

Perform [19.2 “Problem: Cannot start an NFM-P server, or unsure of NFM-P server status” \(p. 329\)](#) to check the server status. A client cannot connect to an NFM-P server that is not started.
  - 7 

---

If the server is started, compare the firewall and network configuration guidelines in the *NSP NFM-P Planning Guide* to with your network configuration to ensure that it complies with the guidelines.
  - 8 

---

Contact your technical support representative if the problem persists.

END OF STEPS 

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## 20.3 Problem: Delayed server response to client activity

### 20.3.1 Causes

Possible causes are:

- a congested LAN
- improperly sized platforms

Using the netstat command on the client may help troubleshoot network throughput problems. When an Ethernet LAN is highly congested, the actual throughput slows down. This is caused by packets colliding on the LAN as multiple machines begin to transmit at approximately the same time, for example, when multiple GUI or OSS clients are performing tasks simultaneously.

### 20.3.2 Steps

- 1 

---

Client GUIs may respond more slowly than normal during resynchronizations of managed devices. Repeat the client GUI action when the resynchronization is complete.
- 2 

---

Check for LAN throughput issues.
  1. Open a shell console window.

2. Enter the following at the console prompt to display local network-interface transmission data over a period of time:

```
# netstat -i s ↵
```

where *s* is the time, in seconds, over which you want to collect data. Nokia recommends that you start with 50 s

3. Review the output. The following is sample netstat output:

```
netstat -i 5
input   le0           output          input (Total)    output
packets errs  packets errs  colls packets errs  packets
errs  colls
6428555 41    541360  80    49998 6454787 41    567592  80
49998
22      0     0      0     0     22      0     0      0     0
71      0     7      0     3     71      0     7      0     3
```

This sample displays the number of input and output packets, errors and collisions on the le0 interface. One column displays the totals for all interfaces. This sample only has one interface, so both sets of columns display the same data.

Calculate the number of collisions as a percentage of the number of output packets. For example, according to the last line of output, there were three collisions and seven output packets resulting in a 42% rate.

This number is high, but the time in which the sampling was obtained (5 s), was low. Change the sample rate to, for example, 50 s for an accurate sampling of the network throughput.

When collisions are between 2% and 5%, congestion on the interface is within the normal operating range.

In a typical network, when collisions are greater than 5%, you may have a serious congestion problem on the interface. Review your LAN topology and design to reduce the number of network bottlenecks.

4. To stop the command, press Ctrl-C.

### 3

Check that the server and client platforms are appropriately sized. See the *NSP NFM-P Planning Guide* for more information.

#### END OF STEPS

## 20.4 Problem: Cannot place newly discovered device in managed state

### 20.4.1 Solution

If the newly discovered device cannot be placed in a managed state, ensure that the number of managed MDAs do not exceed the NFM-P license. Also, check for resynchronization problems between the managed network and the NFM-P. See [19.10 "Cannot manage new devices" \(p. 339\)](#).

## 20.5 Problem: User performs action, such as saving a configuration, but cannot see any results

### 20.5.1 Causes

Possible causes are:

- Failed SNMP communication between the server and managed device; see [19.9 “Problem: All SNMP traps from managed devices are arriving at one NFM-P server, or no SNMP traps are arriving”](#) (p. 338).
- Failed deployment of the configuration request.

### 20.5.2 Steps

1

For the NFM-P client, perform the following:

1. Choose Administration→NE Maintenance→Deployment from the NFM-P main menu.

The Deployment form opens. Incomplete deployments are listed, and deployer, tag, state and other information is displayed.

The possible states for a deployment are:

- Deployed
- Not Deployed
- Pending
- Failed — Resource Unavailable. Failure occurred because one of the resources required to apply the configuration is not present in the NFM-P database
- Failed — Configuration. Failure occurred because the configuration could not be applied to the specified objects
- Failed — Partial. Failure occurred at deployment and some of the configuration can be sent to the network
- Failed — Internal Error. Failure occurred due to general error conditions. Code is intended as a catch-all code for all other possible errors
- Cancelled
- Postponed

You can also suspend or resume deployment retries by clicking Suspend Retries or Resume Retries. You can clear a deployment by clicking Clear. When you clear a deployer, no further attempt is made to reconcile the network device status with the NFM-P database. Affected objects should be resynchronized.

If a deployment is not sent to a managed device, the intended configuration change is not made on the device.

2. Choose a failed deployment and click Properties to view additional information. The deployment properties form opens.

---

## 2

When a deployment fails and you receive a deployment alarm, check the following steps:

1. Using CLI, check on the device whether the deployment change is on the device.
2. If the change is on the device, the deployment alarm was likely raised because the configuration already exists on the device. Clear the failed deployment and resynchronize the device with the NFM-P.

If the change is not on the device, collect the information from the deployment properties form and contact your technical support representative.

---

## 3



**Note:** These steps describe how to troubleshoot asynchronous deployment requests only. Nokia recommends that deployment requests be made in asynchronous mode.

For OSS clients, perform the following steps:

1. Browse real-time alarms received via JMS. An alarm denoting a deployment failure contains the following text:

Attribute: alarmClassTag Value: generic.DeploymentFailure

The alarm also contains additional information, including the object affected by the alarm and the severity of the alarm. See the *NSP NFM-P XML API Developer Guide* for more information.

2. Find the following text in the alarm:

Attribute: requestID=requestID

The parameter specifies the request id sent with the original request. The request id should be unique per request.

3. Determine the original request using the request id.
4. Troubleshoot the original request. If there are problems with the original request, clear the deployer, fix the request, and send the new request. See the *NSP NFM-P XML API Developer Guide* for more information.
5. If there are no problems with the original request, the failure may be caused by a network communication or device failure, or by packet collisions caused by conflicting configurations.

You can:

- resend the request
- troubleshoot your network or device

**END OF STEPS**

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## 20.6 Problem: Device configuration backup not occurring

### 20.6.1 Steps

- 1 

---

Use the NFM-P client to check the device database backup settings. Choose Administration→NE Maintenance→Backup/Restore from the NFM-P main menu. The Backup/Restore form opens.
- 2 

---

Click on the Backup/Restore Status tab. The managed devices are listed and backup and restore status information is displayed.
- 3 

---

Select the device and click Properties. The NE Backup/Restore Status form opens.
- 4 

---

View the information in the Backup Status panel. A Backup State other than Successful may indicate a communication problem or a backup policy configuration error.
- 5 

---

Ensure that the device configuration file and the associated index file are saved on the device and available for backup. Click on the Configuration Saves tab, and ensure that the Config Save State indicator reads Success.  
See the appropriate device OS documentation for more information.
- 6 

---

Click on the Backups tab to view a list of backup operations that are currently in progress. A backup operation disappears from the list after it completes.
- 7 

---

Click on the Faults tab to view additional troubleshooting information.
- 8 

---

Close the NE Backup/Restore Status form. The Backup/Restore form is displayed.
- 9 

---

Use the information obtained from the NE Backup/Restore Status form to check the backup policy configuration, if required. Click on the Backup/Restore Policy tab.
- 10 

---

Select the backup policy for the device and click Properties. The Backup Policy (Edit) form opens.

---

11

Ensure that the policy is assigned to the device.

1. Click on the Backup/Restore Policy Assignment tab.
2. If required, configure a filter and click OK.
3. Move the device to the Assigned Sites list if it is not there by selecting the site from the Unassigned Sites list and clicking on the right-arrow button.
4. Click Apply to save changes, as required.

---

12

Click on the General tab.

---

13

Verify the parameter settings and modify, if required.

---

14

Save the changes and close the form.

---


END OF STEPS

## 20.7 Problem: NFM-P client GUI shuts down regularly

### 20.7.1 Causes

The NFM-P client GUI automatically shuts down under the following conditions:

- no activity on the GUI for a specified amount of time
- no communication between the GUI and the server for a specified amount of time.
- when there is an communication error that causes problems between the server and the client

 **Note:** Changing the OS clock setting on the server station can cause communication problems on the client. If the server clock setting changes significantly, the clients must log off and the server must be restarted. Nokia recommends that the server OS clock be tied to a synchronous timing source to eliminate time shifts that may lead to polling and communication problems.

### 20.7.2 Steps

---

1

Disable the GUI activity check, if required. Choose Administration→Security→NFM-P User Security from the NFM-P main menu. The Security Management (Edit) form appears with the General tab selected.

---

2

Set the Client Timeout (minutes) parameter to 0 to disable the GUI inactivity check. Alternately, you can configure a higher value for the parameter, to increase the time that must pass before the client GUI is shut down due to inactivity.

---

3

Click Apply and close the form.

---

END OF STEPS

## 20.8 Problem: Configuration change not displayed on NFM-P client GUI

### 20.8.1 Solution

The NFM-P supports the configuration of complex objects, for example, services, using configuration forms or templates. Additional configuration forms and steps may be contained by main, or parent, configuration form. For example, when you configure a VLL service, a site configuration form is contained within the main configuration form. In turn, an L2 interface configuration form is contained within the site configuration form. Alternatively, when you use service templates, parent templates for site configuration must also be configured.

Objects configured in contained configuration forms are not saved until the parent configuration form is saved. For example, when you configure a VLL service, sites or L2 interfaces that you configure are not saved during service creation until the parent configuration form is saved. You cannot view new objects or new object configurations in other parts of the GUI, such as the navigation tree, until the service is saved. The NFM-P displays a dialog box to indicate that configured objects in a configuration form are not saved until the parent configuration forms are saved.

## 20.9 Problem: List or search function takes too long to complete

### 20.9.1 Solution

You can perform simple listings or complex searches using the Manage menu on the NFM-P main menu to query the database for information about services, customers, and other managed entities.

Depending on the type of information and the number of entries returned, a list or search operation may take considerable time to complete. As a general rule, Nokia recommends that you use filters to restrict the number of items in a list or search operation to 10 000 or fewer.

See the *NSP NFM-P User Guide* for information about the NFM-P client GUI list and search functionality. See the *NSP NFM-P Planning Guide* for information about NFM-P scalability and system capacity guidelines.

---

## 20.10 Problem: Cannot select some menu options or save some configurations

### 20.10.1 Solution

An NFM-P administrator can restrict user access to GUI functions, and limit the ability of a user to configure objects. See your administrator for information about your general user permissions, scope of command, and span of control.

The NFM-P license may also affect user access to functions or objects; see the *NSP System Administrator Guide* for information.

An administrative change to a user or group permission takes effect immediately, and determines which actions are available to the user or user group.

See [19.10 "Cannot manage new devices" \(p. 339\)](#) to identify which NEs are licensed for NFM-P management.

## 20.11 Problem: The NFM-P client GUI does not display NE user accounts created, modified, or deleted using the CLI

### 20.11.1 Cause

When an NE user account is created, modified, or deleted using the CLI, the NFM-P client GUI does not update the user list in the NE User Profiles form. For increased security, the NE does not send a trap for changes made to NE user accounts. You can update the NFM-P with the NE user account changes by resynchronizing the NE.

### 20.11.2 Steps

1

On the Equipment tree, navigate to the NE. The path is Network→NE.

2

Right-click on the NE and choose Resync.

The Resync menu option specifies that SNMP MIB and CLI information bases are reread to resynchronize them with the NFM-P, which also resynchronizes the network management settings with the router. Resynchronization does not impact the contents of the historical statistics database.

END OF STEPS

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