



NSP

Network Services Platform

Release 24.4

User Guide

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About this document

Purpose

The *NSP User Guide* introduces the Network Services Platform, or NSP, to technology officers and network operators by describing at a high level the NSP concepts, product offerings, and functional scope. For operators, the guide also includes general system access and troubleshooting information.

Scope

The NSP User Guide information primarily describes elements that are common to all NSP deployments, but may also include high-level information about optional NSP functions that are separately licensed and deployed.

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1 Product overview

Product deployment

1.1 System components

1.1.1 Overview

The NSP architecture accommodates a wide variety of network management functions and interworking capabilities. In addition to the core system elements, an NSP deployment may include appliances, other products, and multiple interfaces to in-house or third-party systems. For example, the NFM-P, NSP servers, and the WS-NOC product can be included in an NSP system that forwards statistics and other data to various types of OSS clients. See the *NSP System Architecture Guide* for details.

The purchased feature packages, selected installation options, and operator privilege levels determine which elements are available to network operators.

Table 1-1 NSP system component overview

Component	Description
Common nspOS components	<p>The following components make up the base NSP platform:</p> <ul style="list-style-type: none"> • Login—grants SSO access to NSP, GUI clients, and other resources • Entry point for NSP • NSP user authentication • Session Manager—tracks and manages SSO sessions • REST API Gateway—acquires NSP REST API tokens and locates specific NSP APIs • PKI Server—generates TLS certificates for system-wide NSP deployment
VSR-NRC	<p>The Virtual Service Router - Network Resources Controller (VSR-NRC) acts in a Virtual Network Function (VNF) capacity to perform topology discovery. The VSR-NRC is based on the SROS software, and implements the southbound protocols of NSP's path control function, which consist of the Path Computation Element (PCE) function, with PCEP, BGP-LS and IGP protocols, and the OpenFlow Controller (OFC).</p>
NFM-P	<p>The NFM-P is a network management system that functions as an NSP component. It simplifies routine operations and allows the bulk provisioning of network objects. The system is designed using industry standards such as Java, XML/SOAP, REST, and WebDAV. The NFM-P uses open-standard interfaces that allow the system to interoperate with a variety of other network monitoring and management systems.</p>
WS-NOC	<p>The WaveSuite Network Operations Center (WS-NOC) is a standalone optical network management product that can also function as an NSP component. The WS-NOC provides end-to-end optical management functions that include service provisioning over multi-technology optical transport networks such as SDH/SONET, carrier Ethernet, WDM, ROADM, OTN, and packet. Browser-based fault management applications reduce the time and cost of network and service assurance operations, and an API enables OSS integration.</p> <p>For more information about the WS-NOC, see the <i>WS-NOC Getting Started Guide</i>.</p>

Table 1-1 NSP system component overview (continued)

Component	Description
NSP Flow Collectors and Flow Collector Controllers	An NSP Flow Collector is an optional, scalable component that collects AA Cflowd or System Cflowd statistics directly from NEs and forwards the statistics records to one or more remote target servers, or to an NFM-P database, after which they are available for processing by third-party tools or by NSP functions such as Analytics Reports.
NSP servers	An NSP server creates on-demand and scheduled reports about various network conditions and trends for display in the NSP Analytics reports. An NSP server generates the reports using business intelligence software to analyze raw and aggregated NE statistics data collected by the NSP.
Data stores	The NSP uses various forms of persistent storage for statistics and network data model information. Depending on the deployment, the NSP can store information in the NFM-P database or auxiliary databases.

1.2 Deployment flexibility

1.2.1 Compatibility

An NSP deployment can consist of multiple NSP components that interwork with separate products and interface with a variety of network elements. In order to provide specific functions, a specific NSP release supports integration with various releases of system components, integrated products, and network devices.

See the *NSP Release Notice* and *NSP and NFM-P Network Element Compatibility Guide* for specific information about the component, product and device software releases that are compatible with the NSP.

1.2.2 Network growth

NSP components can be installed in stages to allow for the growth and diversification of a given deployment. For example, an IP-only NSP deployment can be expanded to include optical network management components and products.

See the *NSP Installation and Upgrade Guide* for specific system deployment information.

1.2.3 Flexibility

NSP software is licensed and sold based on feature packages or automation packages. These packages provide the ability to fully customize an NSP deployment according to your network type, management requirements, and desired outcomes.

See “NSP product offerings” in the *NSP System Architecture Guide* for information about NSP feature packages. See [3.2 “Delivery” \(p. 39\)](#) for information about NSP software delivery.

1.2.4 Deployment options

The NSP supports a number of recommended deployment types that address a variety of network-management scenarios. A deployment option may require the purchase of multiple feature packages, and may require the installation of various NSP components and separate products.

See the *NSP Installation and Upgrade Guide* for detailed descriptions of the supported deployment options.

NSP UI

1.3 Changes to the UI

1.3.1 Transition to a new user interface

Starting with *NSP Release 23.11*, the user interface (UI) has changed to integrate previously individual applications into a more unified UI that is easily navigated from a main menu.

The functions delivered by some former applications are directly accessible via the new menu in a one-to-one mapping. For example, the former Artifact Administrator is now accessible via Artifacts. Other applications may now be accessible via multiple main menu items, based on their functionality. For example Network Supervision's functionality is now available in Network Map and Health as well as Object Troubleshooting.

See Appendix A in the *NSP Network and Service Assurance Guide* for the Assurance application evolution.

[Table 1-2, "Menu access in NSP Release 23.11 and later"](#) (p. 10) lists the former applications, their new menu access, and their corresponding user guide documentation.

Please refer to [1.15 "User roles"](#) (p. 30) to help guide you through assigning NSP functions to user roles.

Table 1-2 Menu access in NSP Release 23.11 and later

Former application	New menu access	Documented in
Analytics	Data Collection and Analysis, Analytics Reports	<i>NSP Analytics Report Catalog</i>
Artifact Administrator	Artifacts	<i>NSP Network Automation Guide</i>
Cross Domain Coordinator	IP/Optical Coordination	<i>NSP IP/Optical Coordination Guide</i>
Device Administrator	Device Discovery Device Management	<i>NSP Device Management Guide</i>
Fault Management	Current Alarms Network Map and Health	<i>NSP Network and Service Assurance Guide</i>
Group Manager	Maps Layouts and Groups	Documented in the <i>NSP System Administrator Guide</i>
Insights Administrator	OAM Tests Data Collection and Analysis, Management	<i>NSP Data Collection and Analysis Guide</i>
Insights Viewer	Data Collection and Analysis, Visualizations	<i>NSP Data Collection and Analysis Guide</i>
Intent Manager	Network Intents	<i>NSP Network Automation Guide</i>
IP/MPLS Optimization	Path Control	<i>NSP Path Control and Simulation Guide</i>

Table 1-2 Menu access in NSP Release 23.11 and later (continued)

Former application	New menu access	Documented in
IP/MPLS Simulation	Path Simulation	<i>NSP Path Control and Simulation Guide</i>
Modeled Device Configurator	Model Driven Configurator	<i>NSP Device Management Guide</i>
Network Supervision	Network Map and Health Object Troubleshooting	<i>NSP Network and Service Assurance Guide</i>
Resource Administrator	Network Intents	<i>NSP Network Automation Guide</i>
Service Fulfillment	Service Management	<i>NSP Service Management Guide</i>
Service Supervision	Network Map and Health Object Troubleshooting	<i>NSP Network and Service Assurance Guide</i>
Transport Slice Controller	Network Map and Health, Overview	<i>NSP Transport Slice Controller Guide</i>
User Manager	Users and Security	Documented in the <i>NSP System Administrator Guide</i>
Workflow Manager	Workflows	<i>NSP Network Automation Guide</i>

1.3.2 Added and removed features

See *NSP 24.4 Release Description* for new features supported in NSP Release 24.4.

See *NSP 24.4 Release Notice* for support removed in NSP Release 24.4.

1.4 NSP UI overview

1.4.1 Overview

The NSP UI provides access to all NSP functions, including direct access to product documentation. Availability of functions depend on which NSP installation options you specify during system deployment, as well as on your user access permissions.

The main starting point for most users is **Network Map and Health, Overview** as shown in [Figure 1-1, “Banner bar” \(p. 12\)](#). Once you drill down from this default view, you start navigating in context.

This section explains how to recognize and use common features of the NSP UI.

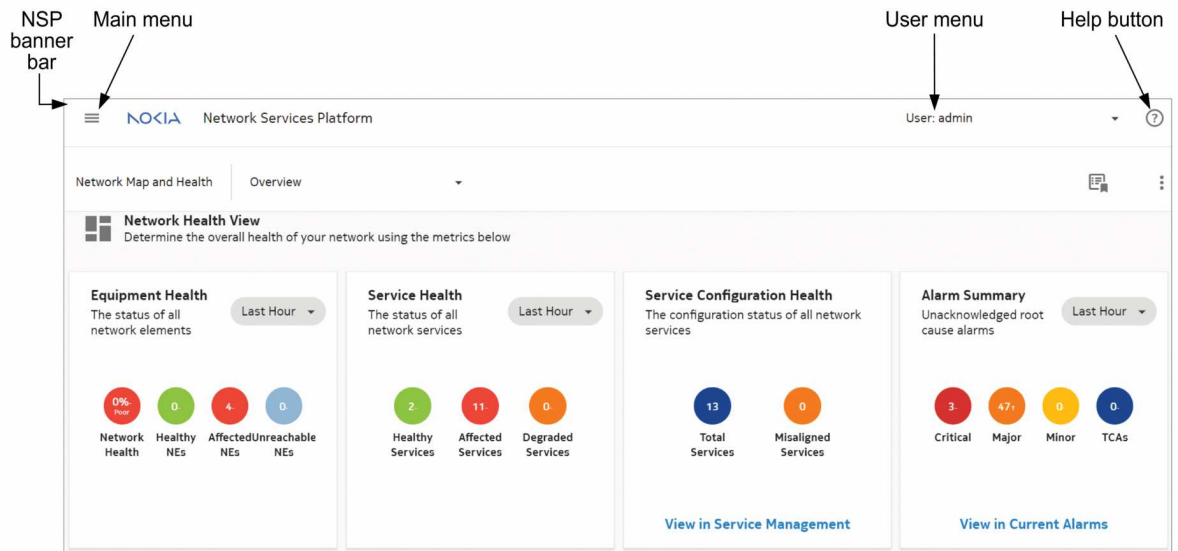
1.4.2 Banner bar

The NSP banner bar is accessible at the top at of every view and comprises the following elements:

- [“Main menu” \(p. 12\)](#)

- “User menu” (p. 13)
- “Help button” (p. 14)


Figure 1-1 Banner bar



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Main menu

The NSP main menu provides access to the major functional areas of NSP. It is your primary navigation tool within the NSP UI. Main menu contents may vary depending on the feature packages installed and on your individual user permissions.

To access the main menu, click  on the top left corner of the NSP banner bar.

As detailed in [Table 1-3, “NSP Main menu and views” \(p. 13\)](#), the major NSP functions are categorized within the menu under the following functional areas:

- NETWORK FUNCTIONS
- PROGRAMMING
- NSP ADMINISTRATION


 **Note:** You may see only a subset of the items in the main menu, depending on which feature packages have been licensed and which installation options selected for the deployment

Table 1-3 NSP Main menu and views

Functional areas	Views
NETWORK FUNCTIONS	Network Map and Health <ul style="list-style-type: none"> • Network Health View • Network Map View • Network Inventory View
	Object Troubleshooting
	Current Alarms
	OAM Tests
	Device Management
	Model Driven Configurator
	Network Mediation
	WaveSuite - Network Operations Center
	IP/Optical Coordination
	Device Discovery
	Data Collection and Analysis <ul style="list-style-type: none"> • Management • Visualizations • Analytics Reports
	Service Management
	Path Control
	Path Simulation
	PROGRAMMING
Network Intents	
Workflows	
NSP ADMINISTRATION	System Health
	Map Layouts and Groups
	File Server
	Users and Security
	Artifacts

User menu

The user menu provides access to release information, linked URLs, and settings. Users can also change their password or sign out of NSP.

For more information about global user menu settings, see the *NSP System Administrator Guide*.

Help button

A ? button on the right-hand side of the NSP banner bar gives you access to the NSP user documentation. You can read Quick Help topics related to the current view, or click **OPEN HELP CENTER** at the bottom of the Quick Help menu to open the full NSP Help Center in a new browser tab. You can use the Help Center to search documentation delivered on-product. For more information about the NSP Help Center and its functionalities, see [4.2 “NSP Help Center” \(p. 44\)](#).

1.4.3 Layouts

NSP UI layouts include dashboards, maps, diagrams, lists, and graphs.

The following topics offer more in-depth information about layouts and contextual options:

- [1.8 “How do I navigate a dashboard?” \(p. 18\)](#)
- [1.10 “How do I navigate a map or a diagram?” \(p. 21\)](#)
- [1.11 “How do I navigate a list?” \(p. 23\)](#)
- [1.13 “How do I navigate a graph?” \(p. 27\)](#)

1.4.4 Keyboard-based navigation

You can use the keyboard to navigate and interact with many NSP views. Keyboard navigation allows you to highlight and select interactive elements using keystrokes instead of a pointing device.

Table 1-4 NSP UI accessibility options

Keystroke	Action
Tab	Advance to next element
Shift + Tab	Return to previous element
Alt + down arrow Option/Alt + down arrow in Apple/OSX	Open pop-up or drop-down menu
Shift + F10 Shift + Fn + F10 in Apple/OSX	Open contextual menu
Ctrl + c Command + c in Apple/OSX	Copy
Ctrl + v Command + v in Apple/OSX	Paste
Enter	Open folder or expandable object such as tile Invoke action on button or menu item
F8 Fn + F8 in Apple/OSX	Move over larger elements or to next page
F5 Shift + Fn + F5 in Apple/OSX	Refresh

Table 1-4 NSP UI accessibility options (continued)

Keystroke	Action
Shift + F1 Shift + Fn + F1 in Apple/OSX	Open tool tip
Esc	Close tool tip or menu
Arrow	After tile in matrix selected using Tab key, navigate among tiles Up and down arrows for navigation through items in open contextual or pop-up menu Up and down arrows for navigation between table rows Left and right arrows for navigation across table column headers
Shift + right or left arrow	Reorder data-table columns in selected header

1.5 How do I navigate between views?

1.5.1 Views and breadcrumbs

NSP opens with its default landing page, **Network Map and Health, Dashboard**. To navigate into an area of NSP, select a function in the main menu. This opens the function's default view.

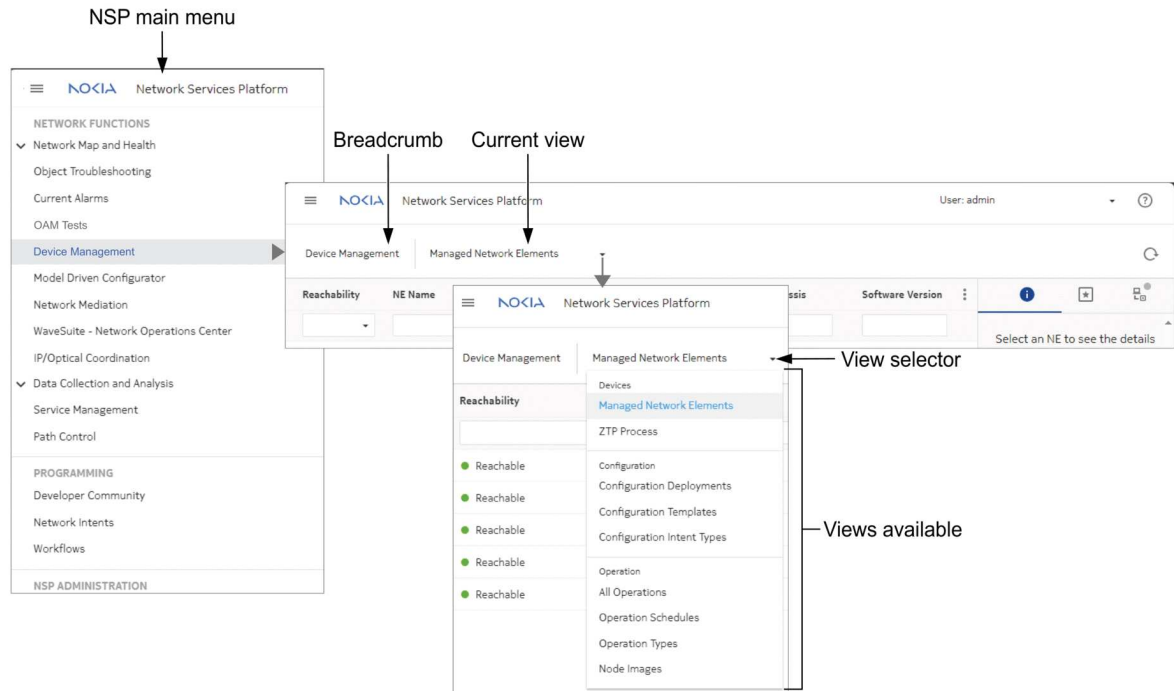
Procedures in the NSP user documentation refer to opening NSP functions from the main menu. For example, the procedure step "**Open Device Management, ZTP Process**" involves clicking on Device Management in the main menu and then selecting the ZTP Process view from the view selector.

The NSP UI uses breadcrumbs that orient you to your current main menu selection and allow you to navigate easily between different views. For example, [Figure 1-2, "Navigation flow" \(p. 16\)](#) shows how to navigate from **Device Management, Managed Network Elements** (the default view) to a different view by clicking the view selector. This opens a drop-down menu of other Device Management views. To return to the default view, click **Device Management**.

Clicking the Nokia logo from any view will take you back to the default view.

Other common navigational starting points are, for example, "[Objects" \(p. 23\)](#) and "[Object links" \(p. 23\)](#) in maps or diagrams, or row actions in lists as described in [1.11 "How do I navigate a list?" \(p. 23\)](#).

Figure 1-2 Navigation flow



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1.6 Why do some views open in new browser tabs?

1.6.1 Experiencing different browser behaviors

NSP's navigation seeks to reduce clutter and the number of browser tabs opened when changing views. Some views may open in new tabs to facilitate referencing information against the current view or to allow you to continue working in the current view while, for example, a plotter works in another tab.

In general, you can predict the behavior based on the verb in the navigation item:

- View/View in – navigates to another page in NSP in the same browser tab
- Show/Show in – shows something on the same page, for example another area in a dashboard, in the same browser tab
- Open/Open in – opens the view in a new browser tab

Utilities such as plotters, NE sessions, and watchlists open in new browser tabs.

1.7 What is the info panel?

1.7.1 Interacting with the info panel

The info panel displays on the right of various views and offers details about a selected object in maps, diagrams, lists, or graphs.

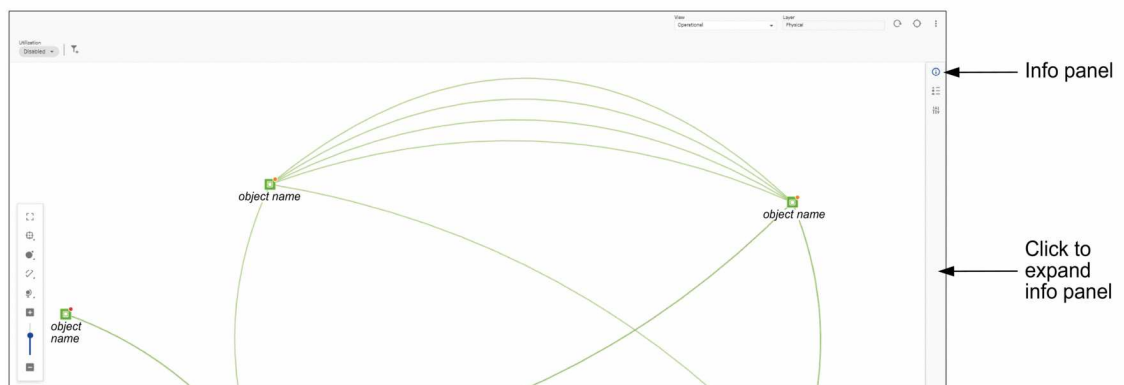
In most cases, the panel expands by default when opening a view. If it doesn't, it can be displayed with **<** or hidden with **>**. The info panel can also be expanded by clicking **i** (Summary); however, it can only be collapsed using **>**.

The info panel's **i** (Summary) provides more in-depth information about a selected object. This can be, for example, an NE in a list or an object in a map or diagram. Depending on context, the info panel may also display information such as **≡** (Legend), **⏏** (Watched Filters), **⚙️** (Mediation Policies), **📏** (Reachability Policies), and so on.

See the following examples for view/info panel combinations:

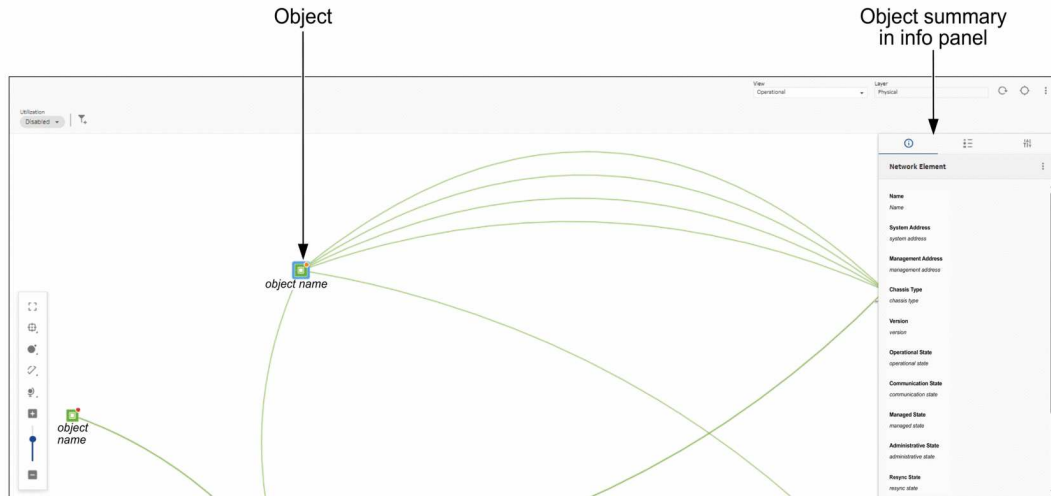
- [Figure 1-3, "Info panel collapsed"](#) (p. 16) and [Figure 1-4, "Info panel expanded and object selected"](#) (p. 18)

Figure 1-3 Info panel collapsed



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Figure 1-4 Info panel expanded and object selected



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1.8 How do I navigate a dashboard?

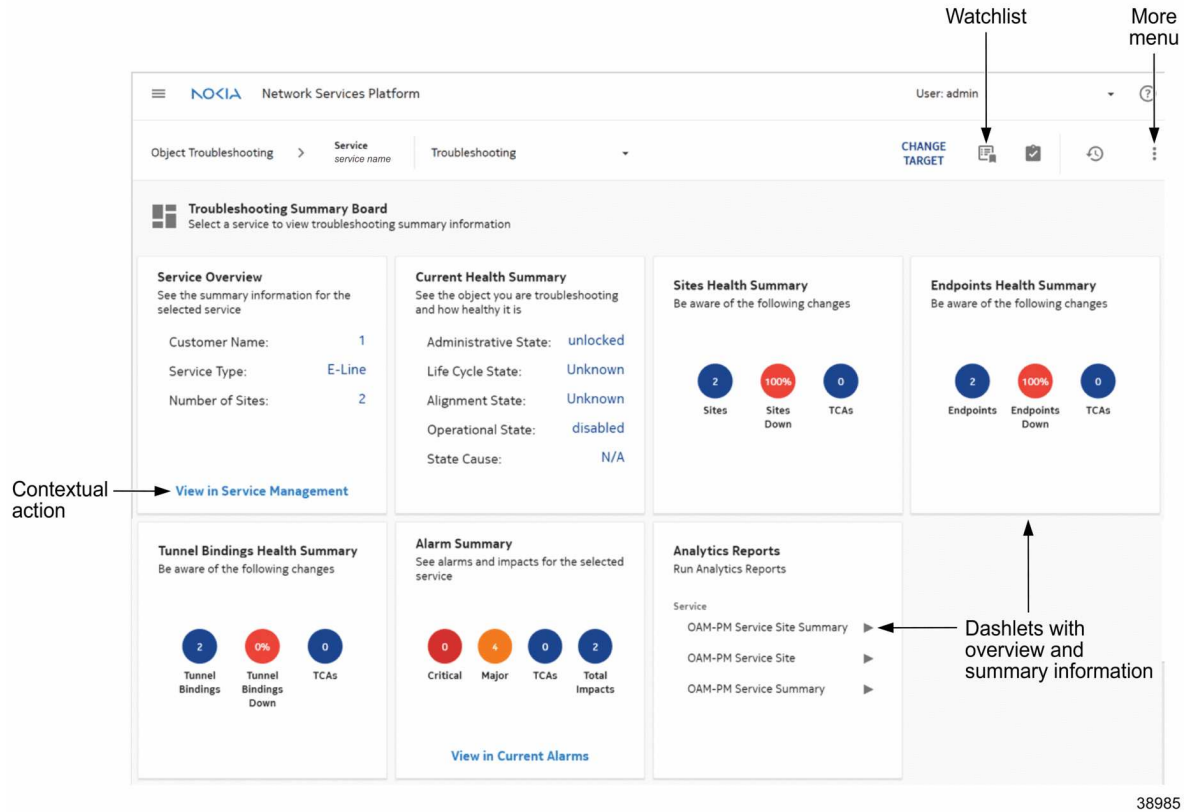
1.8.1 Interacting with a dashboard

A dashboard is a summary of a functional area within NSP. For example, the Network Map and Health dashboard summarizes information about the network. The Object Troubleshooting dashboard summarizes information about specific objects which may include NEs, services, ports, links, and so on.

Contextual actions in a dashboard may include linking to other areas of NSP, filtering information, or adding an object to a watchlist.

Figure 1-5, “Dashboard overview” (p. 19) shows some of the elements a dashboard may contain.

Figure 1-5 Dashboard overview



1.9 How do I customize a dashboard?

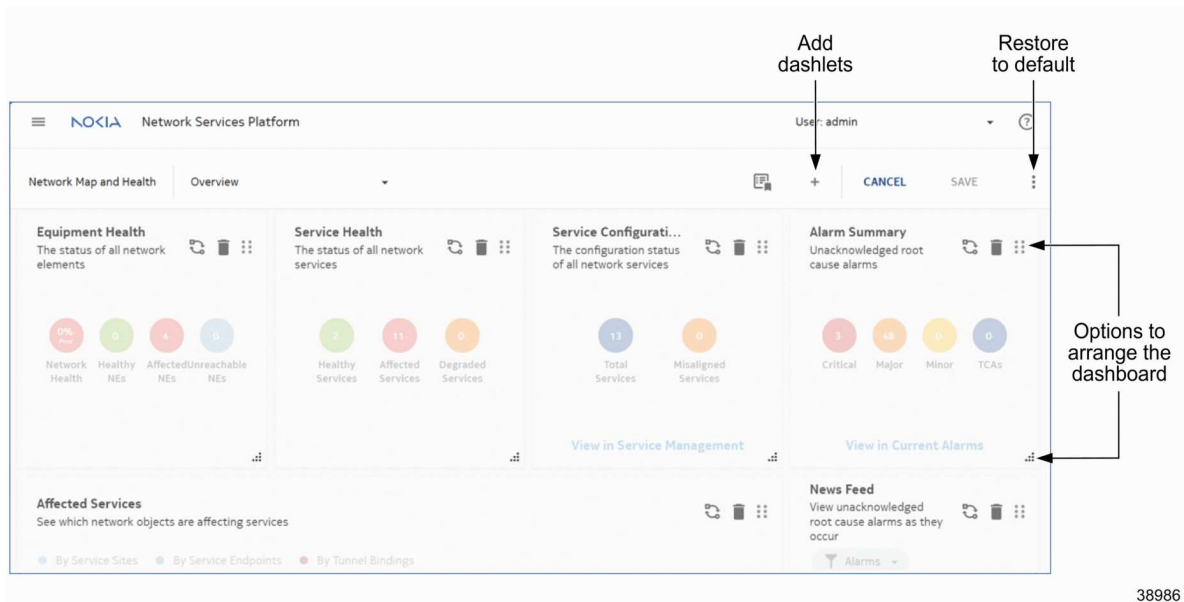
1.9.1 Editing a dashboard layout

You can customize a dashboard to suit your personal requirements by rearranging and re-sizing dashlets. You can also hide dashlets you don't need to see, with the option to re-display them later. The changes you make are saved under your login name and are maintained in future NSP sessions.


When adding dashlets to a dashboard, consider that each displayed dashlet uses a portion of available system resources; an excessive number of dashlets can lead to degraded system performance. When adding dashlets to your dashboard, consider removing any dashlets that you don't need.

Figure 1-6, "Dashboard in edit mode" (p. 20) shows actions you can take to customize a dashboard.






Figure 1-6 Dashboard in edit mode



Steps

1. In the breadcrumb banner of the dashboard, click , **Edit dashboard**.

The dashboard is placed in Edit mode. Complete any of the following tasks to change your dashboard:

- To resize a dashlet, click and drag the resize  handle at the corner of the dashlet.
- To move a dashlet, hover the mouse pointer over the dashlet and then click and drag the dashlet to the desired position. Release the mouse button when the dashlet is in the correct position.
- To remove a dashlet from the dashboard, click  (Delete) on the dashlet you want to remove. Click **DELETE** to confirm the removal.
- To add a currently-hidden dashlet to the dashboard, click . The Add Dashlet form opens. Select the dashlet you want to add to the dashboard and click **ADD**.
If the Add Dashlet form is empty, all available dashlets are already displayed for this context.
- To replace a dashlet with a currently-hidden dashlet, click  (Replace) on the dashlet you want to replace. The Replace Dashlet form opens. Select the dashlet you want to add to the dashboard and click **REPLACE**.
If the Replace Dashlet form is empty, all available dashlets are already displayed for this context.
- To return your dashboard to default layout settings click , **Reset to default layout**. Click **RESET** to confirm your action.

2. When you have finished changing your dashboard layout, click **SAVE**. Then click **SAVE AS DEFAULT** to confirm your changes.

3. To exit editing mode without saving changes to your dashboard layout, click **CANCEL**. Then click **EXIT** to confirm your action.

1.10 How do I navigate a map or a diagram?

1.10.1 Interacting with a map or a diagram

Each map or diagram layout comprises various common components, including:

- “Palette controls” (p. 22)
- “Objects” (p. 23)
- “Object links” (p. 23)
- Info panel

See [Figure 1-7, “Common map layout” \(p. 20\)](#) for a general map overview and [Figure 1-8, “Common diagram layout” \(p. 22\)](#) for a general diagram overview. You can click anywhere in the white space of a map or diagram and drag it to adjust the viewing area in any direction.

In addition, in maps, you can add filters, change the view, rebuild and reload the map, or find a specific object in the map.

In diagrams, the following actions are available for selected alarm objects:




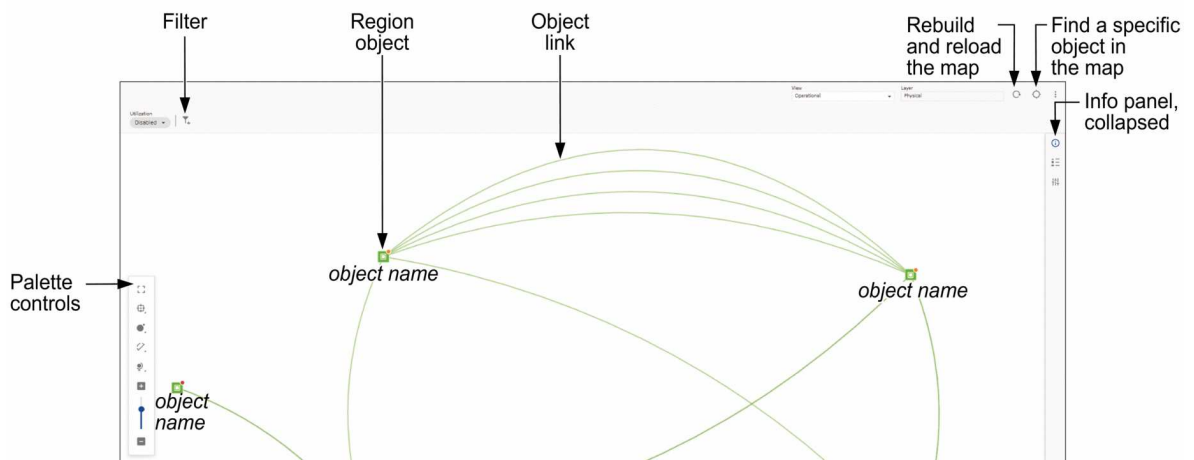
-  (Open affected object) – opens in new browser tab
-  (View root causes) – opens in-place
-  (View root causes (New Tab)) – opens in new browser tab

Figure 1-7 Common map layout

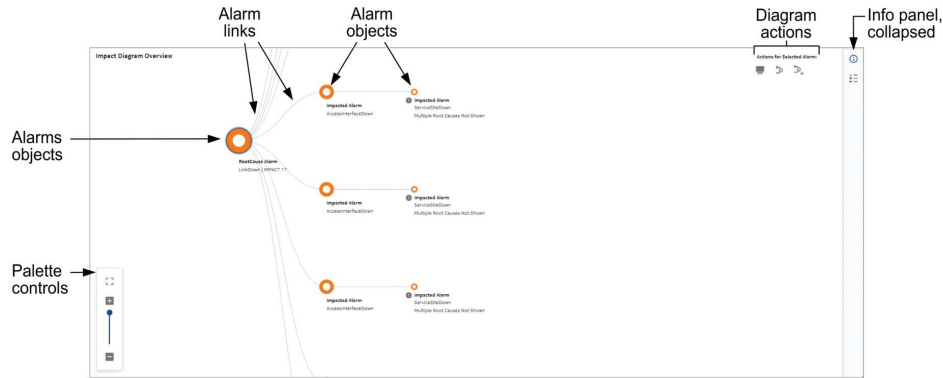


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How do I navigate a map or a diagram?

Note: NEs and routers must be assigned to a region to appear on the map layout. If they are not assigned to a region, they can be manually assigned to one.

Figure 1-8 Common diagram layout



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




Palette controls

Palette controls are used to adjust the behavior and appearance of maps and diagrams. Available palette controls may vary by content.

Table 1-5 Palette controls

Palette control	Action
Fit to screen	Zoom the map or diagram to fit the selected region to available screen area.
Adjust clustering	<p>Show cluster health.</p> <p>Display or hide region and zone boundaries.</p> <p>Option to move all contained objects when moving a region or zone.</p> <p>Display options for connectors to any NEs/routers that are external to a region or zone:</p> <ul style="list-style-type: none"> Group external NEs/routers with their immediate parent zone or region; the map displays all connectors to zones or subzones that contain the external NEs. This option shows greater detail. Group external NEs/routers with their top-level region; the map displays a single connector to the region icon. This option shows less detail.
Adjust vertices	<p>Adjust icon size for NEs/routers, zones, and regions.</p> <p>Show/hide text labels for map objects.</p>

Table 1-5 Palette controls (continued)

Palette control	Action
 Adjust links	Show or hide links between NEs/routers, zones, and regions. Adjust link curvature and threshold.
 Map view	Turn on Bird's-eye View (shows entire map in small inset). Adjust the opacity of the background map.
   Zoom	Zoom into and out from the map or diagram.

Objects

In maps, click and drag a region object to change its location, if desired. The existing link(s) between the object being moved and the object(s) staying in place remain intact.

Hovering over any region object in a map displays a partial summary of what is shown in the info panel for that selected object.

Right-clicking a region object displays options that include, for example, showing the object in the network element list or adding it to the watchlist. [1.6 “Why do some views open in new browser tabs?” \(p. 16\)](#) explains the expected browser tab behavior when selecting those options.

In diagrams, hovering over any alarm object displays a partial summary of what is shown in the info panel for that selected alarm.

Object links

In maps, an object link represents the physical link(s) between at least two objects. You can adjust the way links are displayed in maps and diagrams using palette controls; see [Table 1-5, “Palette controls” \(p. 22\)](#).

In diagrams, links represent relationships between alarms. For example, as shown in [Figure 1-8, “Common diagram layout” \(p. 22\)](#), a RootCause Alarm may be connected to multiple impacted alarm objects, indicating their relationship to each other.

In maps, hovering over a link may display a partial summary of what is shown in the info panel for that selected link.

Right-clicking an object link in a map may display options that include, for example, viewing it in Current Alarms or in the link list. [1.6 “Why do some views open in new browser tabs?” \(p. 16\)](#) explains the expected browser tab behavior when selecting those options.

1.11 How do I navigate a list?


1.11.1 Interacting with a list

Lists share a common layout that generally comprise various components as shown in [Figure 1-9, “Common list layout” \(p. 24\)](#). This may include:


- Columns and column headers

Lists display information based on which view was selected in the view selector. Column headers group related data in each column. For example, the column header Severity groups the severity levels in **Network Map and Health**, **Current Alarms**. You can scroll the list left/right or up/down to see more of the available data, if applicable.

- Rows and row actions

Rows contain information based on the view selected. For example, in Device Management, the Managed Network Elements view displays table rows representing individual NEs. You can right-click a row or click  (Table row actions) for contextual menus.

- Table settings and actions

In  (Table settings & actions) you can, for example clear filters or compact rows. The selection you make affects the entire list.

- [“Filters” \(p. 25\)](#)

- Info panel

When needed, the lists are paginated. Use the page controls at the bottom of the screen to navigate between pages.


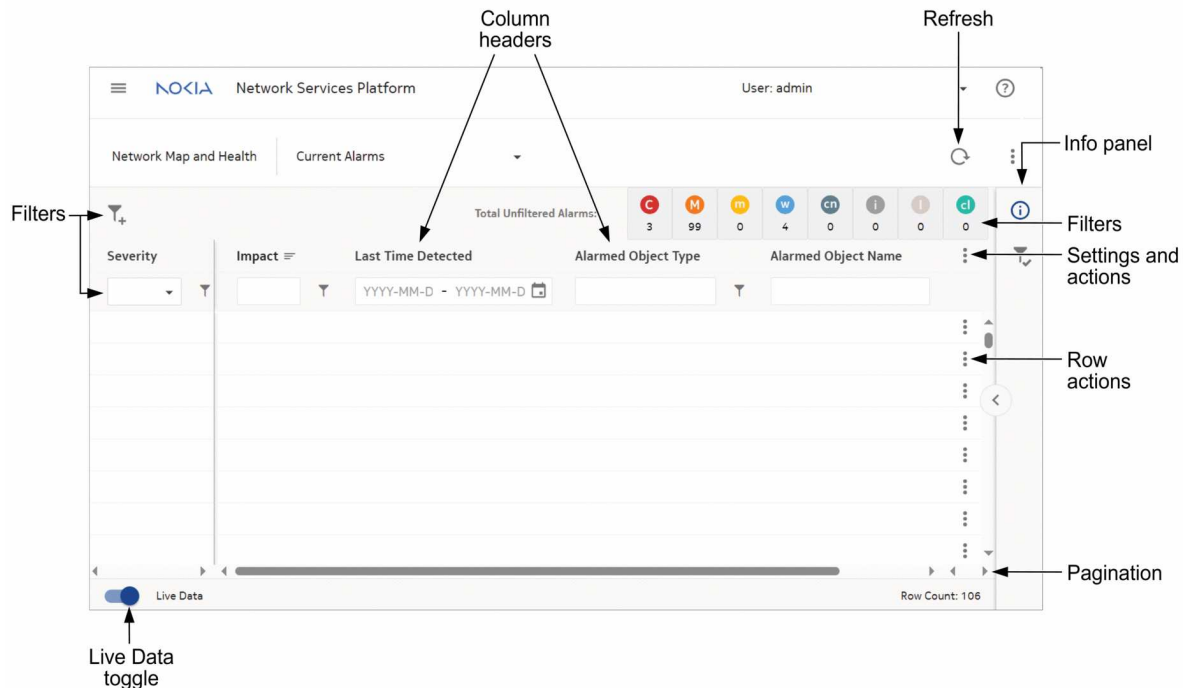
The list view is refreshed automatically when the optional Auto-refresh toggle is enabled at the bottom left corner of the screen. Use  (Refresh) to refresh manually.



Figure 1-9 Common list layout



38989

Filters

Depending on the view selected, lists can be filtered in the following ways:

- use the input fields located just below the column headers.
- use  (Filter menu) to filter using an alphabetic string or use the drop-down for a timeframe.
- use  (Search for a filter to apply) for advanced filtering.
- use the filtering tabs located on the right-hand side above the column headers as shown in [Figure 1-9, “Common list layout” \(p. 24\)](#). Alarms can be sorted by severity. For example, “C” filters objects with critical severity only; “M” filters those with major severity; and so on.

Individual dashlets can be filtered by timeframe. For example, in **Network Map and Health, Overview**, some dashlets show the default time range “Last Hour.” This can be adjusted by choosing a different value from the drop-down options.

To configure the way information is displayed in lists, see [1.12 “How do I manage the display of listed information?” \(p. 24\)](#).

1.12 How do I manage the display of listed information?

1.12.1 Description

You can configure and save display preferences for the columns in any list view as follows.

You have the following options:


- rearrange the sequence of columns
- re-size columns
- pin columns to the left or right of your display
- filter attributes
 - NOTE:** Filtering inputs are not saved for the next session.
- auto-size individual columns or all columns to fit data
- sort column lists based on selected attributes
 - NOTE:** Column sorting changes are not saved for the next session.
- show/hide columns
- export column data to CSV, XLSX, or XML


1.12.2 Steps

1







Open a list view. The columns specific to the service, service component, or inventory object are displayed.


2


Configure the following column display preferences. To reset the columns to the settings at the start of the session, hover over the column heading and click , **Reset columns**. To see more columns, scroll to the right.


- a. To rearrange the left-to-right sequence of columns, click and drag on a column heading.
- b. To resize columns, hover over the vertical line between two columns, then click and drag when the arrows appear.
- c. To pin columns, hover over the column heading and click , **Pin column**. Then click **Pin left**, **Pin right**, or **No pin**.
- d. Some columns provide a filtering field that users can populate with characters in order to refine their search.

To filter attributes, the following rules govern this process:

- By default, when a column will return an alphabetic string - such as a name - the filtering uses the “Contains [...]” logic
 - By default, when a column will return a numeric string - such as a port - the filtering uses the “Equals (=)” logic
 - The user can override this by clicking  inline with the filtering field and choosing an alternate logic
 - When filtering using either the “Contains [...]” or “Not contains [/]” logic, two characters act as wild cards: _ when trying to match a single character, and % when trying to match multiple characters
 - Under these circumstances, the user can only search for these characters themselves if they are preceded by \ in the filtering field
- e. To auto-size one or more columns to fit data, hover over the column heading(s) and click , **Autosize this column** or **Autosize all columns**. You can also use  (Table settings & actions), **Autosize all columns**.
 - f. To sort list objects in ascending or descending order, click on a column header to sort the data. You can perform multi-column sorting by holding down the SHIFT key while clicking the column header. The sort icon  is only visible for columns that are already sorted.
 - g. To clear column sorting or filters, click  (Table settings & actions), **Clear Sorting** or **Clear Filters**.
 - h. To show or hide columns, click  (Table settings & actions), **Manage columns**. Deselect the columns you want to hide, or select the columns you want to show. Click APPLY.

 **Note:** In the **Service Management, Services** view, columns can be shown for custom attributes that have been added by augmenting the existing service models. For more information, visit the [Nokia Network Developer Portal](#).

- i. To export column data to CSV, XLSX, or XML, click , **Export (.csv)**, **Export (.xlsx)**, or **Export (.xml)**.

 **Note:** When this action is performed, only the data loaded into memory will be exported. Additional data from the database will be excluded.

Note: There are columns in multiple grids where sorting and/or filtering is not supported.

END OF STEPS

1.13 How do I navigate a graph?

1.13.1 Interacting with a graph

Graphs are visual representations of statistical information based on the view chosen. For example, **Network Map and Health, Top Problems** describes the total number of times an alarm appears within the network.

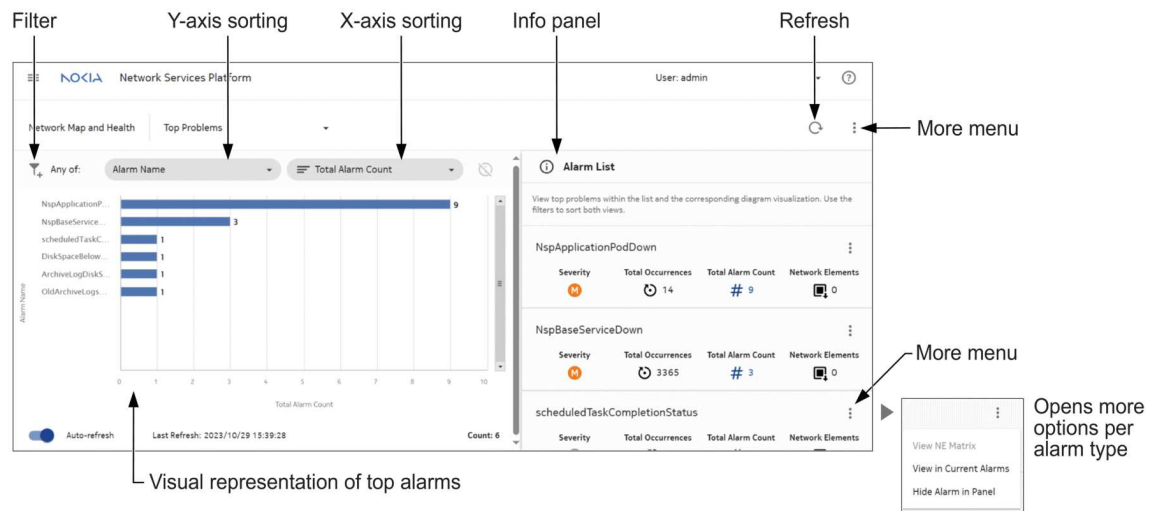
Graphs can be filtered and sometimes sorted based on x- and y-axes. See for example Network Map and Health, Top Problems in [Figure 1-10, “Common graph layout”](#) (p. 26).

⋮, (More Menu), **Settings** provides access to Fault Management and Network Assurance settings.

The graph view is refreshed automatically when the Auto-refresh toggle at the bottom left corner is enabled. Use **↻** (Refresh) to manually refresh.

The info panel lists each item of the diagram visualization in more detail. For example, the **Network Map and Health, Top Problems** info panel shows a detailed alarm list with more menu options.

Figure 1-10 Common graph layout



39007

1.14 What is a watchlist?


1.14.1 Using a watchlist

A watchlist helps you monitor and navigate directly to the NEs and services that you deem most important.


You can add, view, or remove an object from the watchlist.

[Figure 1-11, “Using a watchlist” \(p. 27\)](#) shows the process for adding a watchlist location.

Adding an object to a watchlist

To add an object to your watchlist, for example in Object Troubleshooting, select an NE or service when prompted. In Troubleshooting Summary Board view, click , **Add to Watchlist**. This saves the object to the watchlist; the view remains the same.

Viewing an object in a watchlist

To view the items on your watchlist, click  (Watchlist). A new browser tab opens displaying all the objects already added to the list. You can filter by object or sort by object type or name. The bar to the left of an object displays a lighter or darker color depending on how many other items are affecting it.

Removing an object from a watchlist


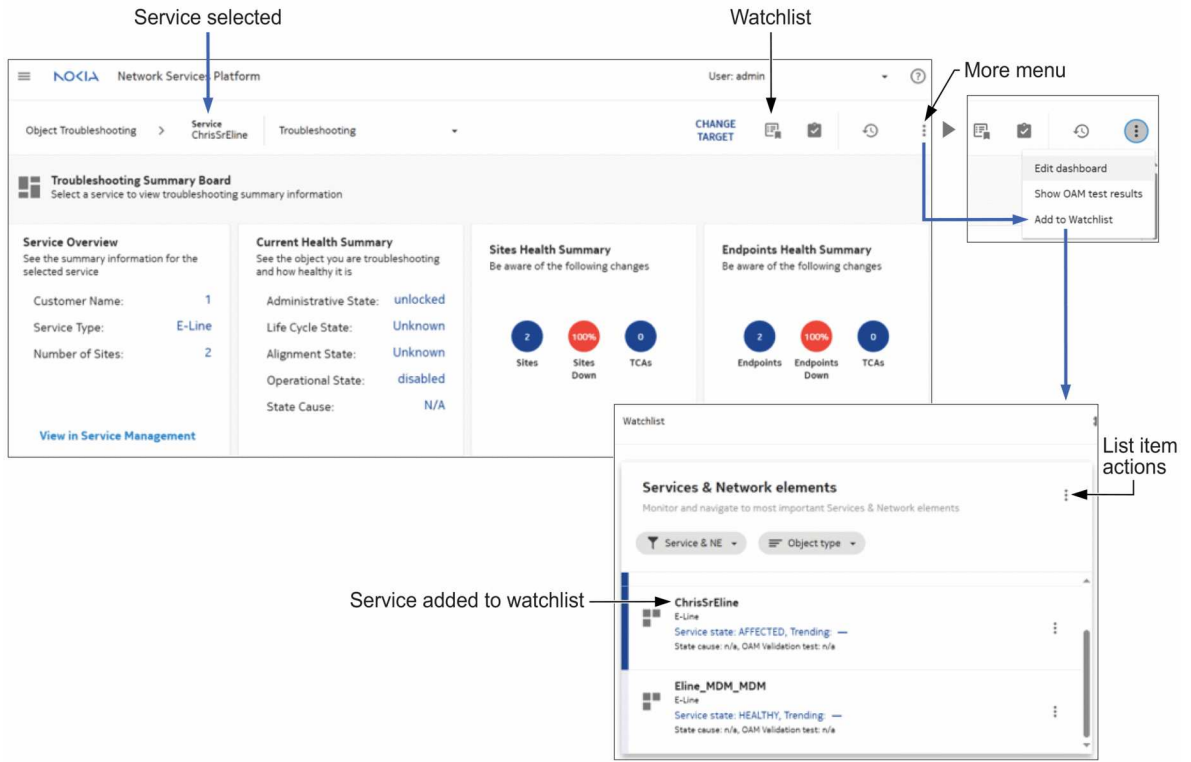
To remove an object previously added to the watchlist, open the watchlist and click  (List item actions), **Remove from Watchlist**. You will not be prompted to confirm your action. Removal of a watchlist item is instant.

Figure 1-11 Using a watchlist



39008

See *NSP Network and Service Assurance Guide* for more information about a watchlist.

Using NSP

1.15 User roles

1.15.1 User roles and responsibilities

NSP users typically fall into the following categories, depending on their areas of expertise and functional roles in an organization.

Table 1-6 NSP user roles

User role	Description	NSP areas most likely used in this role
Developers	Application developers use the NSP REST API to provision and monitor network objects, and to subscribe to real-time network event notifications. The REST API supports service assurance, and IP/MPLS and optical network management functions.	Network Intents Workflows API Model Driven Configurator Artifacts
Network engineers	A network engineer is responsible for device configuration, NE software and script management.	Device Management <ul style="list-style-type: none"> • Configuration • Backup and restore • Upgrade Workflows Network Intents Object Troubleshooting Current Alarms
Network designers	A network designer is involved in network planning work, including IP/optical network connectivity, routing management, and network optimization.	Device Management <ul style="list-style-type: none"> • Configuration Path Control <ul style="list-style-type: none"> • MPLS, Infrastructure Workflows Network Map and Health
Administrators	An NSP system administrator can manage all NSP functional areas, including system security, user account management, user access control, system component management, and database management.	System Health File Server Map Layouts and Groups Users and Security Artifacts
Operators	A network operator takes care of routine tasks, including network fault detection and troubleshooting, equipment health, and service infrastructure monitoring.	Analytics Current Alarms Data Collection and Analysis Network Map and Health OAM Tests Object Troubleshooting

Table 1-6 NSP user roles (continued)

User role	Description	NSP areas most likely used in this role
Service delivery staff	Service delivery staff are responsible for multi-layer service provisioning and assurance.	Service Management Object Troubleshooting

1.16 User interfaces

1.16.1 Client-based applications

The NFM-P GUI client provides an extensive IP/MPLS network management interface as part of the Platform feature package. See the *NSP NFM-P Classic Management User Guide* for information about this application.

1.16.2 Network Map and Health and Object Troubleshooting

The Network Map and Health and Object Troubleshooting dashboards, which can be opened from the main menu in the top-left corner of the NSP UI, combine information and functions from previously different applications into one view, providing a broad perspective on network management. The *NSP Troubleshooting Guide* provides information about end-to-end troubleshooting scenarios relating to NSP assurance functions.

1.16.3 Transport Slice Controller dashboard

The Transport Slice Controller (TSC) dashboard provides a summary of the overall health of all transport slices in the network, as well as allowing drill-down into health views on a per-slice basis. The TSC dashboard displays details about L0/L1/L2/L3 services and tunnels/paths used during the realization of transport slices, and provides pro-active monitoring telemetry data and reports on transport slices. See *NSP Transport Slice Controller Guide* for more information and how to access the TSC dashboard.

1.16.4 APIs

For OSS users, NSP functions are available using the REST and RESTCONF APIs. The NSP APIs are documented on the [Network Developer Portal](#).

1.17 How do I change user settings?

1.17.1 Purpose

You can customize user preferences such as **Global settings** and **Row color with severity**. NSP administrators can access a variety of global NSP settings and customize data refresh rate, GUI language, alarm list settings, and default dashboard view in the NSP Settings form; see the *NSP System Administrator Guide*.

1.17.2 Steps

- 1 _____
To customize user preferences, from the NSP banner bar, click **User, Settings**.

- 2 _____
Click **User Preferences** and configure your settings as needed.
 - **Global settings** let you personalize your settings when you are signed in. Here, you specify the **Polling Time** interval for NSP information display updates.
 - **Row color with severity** provides the option to display the alarm severity color in your alarm tables.

- 3 _____
Click **SAVE** when you have finished changing your settings.

END OF STEPS _____

1.18 How do I change my password?

1.18.1 Purpose

Use this procedure to change your own NSP login password.

1.18.2 Steps

- 1 _____
Click **User, Change Password** from the NSP banner bar.

- 2 _____
In the **Change password** form, type your current NSP login password in the **Enter current password** field.

- 3 _____
Type a new password in the **Enter new password** field and then type it again in the **Confirm new password** field.

- 4 _____
Click **OK**.
When you log out of NSP, the new password is required at your next login.

END OF STEPS _____

1.19 Why am I being signed out?

1.19.1 NSP timeout behaviors

When working in NSP, you may have multiple browser tabs open. This happens, for example, when opening the Help Center or when plotting data while you continue working in other browser tabs. Some of those NSP tabs have auto-refresh behaviors that do not require user interaction to keep them active.

NSP has two types of inactivity timeouts:

- Timeout after UI session inactivity

If you have not interacted with NSP for 60 minutes, you will be signed out of the session on all browser tabs. To restart the session, you can sign back into NSP on any of the open tabs.

Should a tab still display the sign-in page when you switch tabs after signing back into NSP, you can refresh the tab to bypass the sign in and return to the previous view.

- Timeout after sign-in page inactivity

When the sign-in page is displayed on any tab, you must sign in within 30 minutes. If you do not sign in within that time frame on any of the tabs, a warning message is displayed, and you must enter the sign-in credentials again.

In both cases of inactivity, the 30- and 60-minute time-frames are defaults and can be adjusted as needed by the administrator. See *NSP System Administrator Guide* for more information.

2 Features

2.1 Value proposition

2.1.1 Automation

NSP uses automation to provide a faster, more flexible network management solution. This automation function spans multiple components in NSP, allowing for the provisioning of intelligent, adaptive services across multiple domains and use cases.

Service Management

Service management allows operators to provision a service based on service templates that are configured using intent types imported from network intents, which allows for faster service creation and deployment. It can also make use of operator-defined intent types for dynamic network resource selection and automated provisioning. These intent types utilize NSP's real-time view of the network to map service connection requests to the best available tunnels/paths in order to meet the customer's network efficiency goals.

Path Control

Path Control leverages complex algorithms, applied via policies, to automate the rerouting of service paths based on operator-specified constraints. This allows for the provisioning of services that automatically respond to network changes in order to maintain optimization targets.

Intents

NSP allows you to create and execute intent-based automation flows which let you implement network-level planning and design. Intents translate high-level goal to necessary network configuration, and the NSP generates and validates the configuration and continually verifies the state of the network.

Workflows

NSP allows you to create and execute workflows that can be used to define automated procedures and closed loop automation.

2.1.2 Optimization

The NSP unifies service automation with network optimization, allowing network operators to deliver on demand network services cost-effectively and with scalability. Real-time network path computation and optimization is centralized to leverage network-wide views and KPI driven to rapidly adapt to changing network conditions.

Service Management

NSP's service management function allows operators to provision a service based on constraints and on an optimization target. The service is created along with the required infrastructure to fulfill these criteria. Operators can quickly and easily deploy services in a changing environment. Operators can change the optimization objective and PIR/CIR representing the bandwidth that will be used by the service.

Path Control

The NSP supports transport network optimization using path control. Path Control provides a view of the IGP topology and PCE LSPs. It also displays the status of the IGP network and provides functionality to optimize the network resources. This can be done globally or locally e.g. optimizing the LSPs passing specific links only.

Path Control leverages centralized, intelligent network control capabilities so that operators can rapidly adapt to changing demand and traffic patterns and run their networks more efficiently. It accepts path connection requests from OSS and orchestration systems, and from physical/virtual network elements. Path Control calculates optimal paths through the network for a given set of business and technical constraints by leveraging centralized views of all available assets/topologies and their current state.

2.1.3 Assurance

The NSP enables operators to report, supervise, and predict issues using different areas that provide an end-to-end view of any network. Report generation provides full visibility of network capacity and inventory, event correlation reveals the root causes of network problems, and automated troubleshooting and dynamic scaling resolves issues in real-time. In addition, a comprehensive REST NBI allows for integration of other systems.

Network Map and Health

Network Map and Health provides information for physical and virtual network elements, and can integrate with existing orchestration, OSS, and portal solutions, providing end-to-end visibility. Operators can explore IP/MPLS and Ethernet services through service topology maps and view details about service components such as SAPs, sites, and SDP bindings. Visualization tools combined with KPI data, alarm correlation, and event timelines help operators quickly identify problems as they emerge. Comprehensive monitoring with summarized aggregate KPIs enables fast problem detection and impact analysis; event timeline and alarm correlation focuses operator investigations on genuine root causes.

Object Troubleshooting

Object Troubleshooting provides extensive troubleshooting tools for selected equipment and services to resolve problems quickly.

Current Alarms

Current Alarms monitors alarms for IP/MPLS, Ethernet, optical, and integrated IP/optical network elements, both physical and virtual. Operators can drill down from top-level summaries of overall network health to individual element alarms, including root causes and impact analysis. Alarm information gathered in Current Alarms is integrated across the entire NSP, creating a single assurance solution for all network domains.

In an NSP deployment that includes the NFM-P, alarms are raised in response to NE SNMP traps. For MDM-managed devices, NE alarms are displayed if they are supported by the installed MDM adaptors.

2.1.4 Monitoring

The NSP monitors the managed network, internal system processes, and user activity to provide source data for applications and utilities.

Telemetry

The NSP uses SNMP and gNMI protocols to collect and process telemetry from managed NEs and provides monitoring, analysis, visualization, and baseline analytics functions using this data. The supported telemetry types are defined using YANG in NE artifact bundles and translated to objects in the managed network using custom resource (CR) definitions.

The following NSP areas enable you to configure, manage, and review YANG-based telemetry data from NEs:

- **Data Collection and Analysis, Manager**

filters and stores telemetry data; can be configured to publish telemetry data to Kafka topics for subscriber notification

DCA functions provide event-driven telemetry baselining with anomaly detection and can be used for closed-loop automation or similar applications.

- **Data Collection and Analysis, Viewer**

presents historical and real-time telemetry data as graphs

- **Data Collection and Analysis, Analytics Reports**

provides end to end historical analytics and reporting from physical inventory to services to application-level insights for IP/MPLS, mobile and microwave networks

Historical data stored in an auxiliary database is presented as lists, charts, or graphs.

- **OAM Tests**

In NSP, you can create supported OAM tests on managed NEs.

Tests can be created for any service. No additional configuration is required on the service for testing to be performed.

Internal system processes

An NSP cluster continually monitors the local server processes for errors and excessive resource consumption. The connectivity to other components and integrated systems is also checked regularly. NSP displays an alarm when a system process, resource, or connectivity fault is detected.

User activity

Users and Security displays session information for each NSP user, such as authentication success or failure, and the actions of the user.

You can also configure an NSP or NFM-P system to export the user activity logs in syslog format to a remote server.

2.1.5 Microwave awareness (MWA)

In networks where multiple Wavence UBT-SA devices are linked to a single 7250 IXR or 7705 SAR NE, the NSP provides microwave awareness. With MWA, the NSP considers the router and its linked UBTs as a single logical site, while still providing a management path for each of the UBT-SAs.

The UBT SAs are linked to their associated routers either by LLDP links in the NFM-P, or by physical links. Physical links may be created manually in the NFM-P, or by using a Nokia-provided workflow in Workflows. When the NSP detects MWA links, it automatically adjusts the display of the routers and their associated UBT-SA devices in the Network Map view.

Nokia also provides workflows that allow you to perform backup and restore, and software upgrades, on the UBT-SAs linked to a 7250 IXR or 7705 SAR. Contact your Nokia representative for more information about Nokia-provided workflows.

2.1.6 Network Slicing

End-to-end network slicing is a technology for concurrent delivery of differentiated 5G services and a key component of moving 5G use-cases toward a service-driven evolution that supports meeting SLAs deterministically across end-to-end network resources. Network slices are independent, logical self-contained networks representing common physical or virtual network infrastructure that extends from end devices to application servers and includes all intermediate functions and domains.

See the following documents for more information about network slicing:

- *NSP Simplified RAN Transport Solution*
- *NSP Transport Slice Controller Guide*

2.2 Locating NSP feature information

2.2.1 NSP Release Descriptions

The *NSP Release Description* provides high-level feature descriptions of all significant NSP features. It also includes the schedule for delivery. Some but not all of the content is applicable to NFM-P-only customers. Procedures or more detailed conceptual information may be located in other NSP documents.

This document is cumulative for a major release cycle, such as NSP 22.3 through 22.11, and then resets with the next release, such as NSP 23.4.

The *NSP Release Description* is delivered in the on-product NSP Help Center, as well as on the Nokia Doc Center and in offline HTML format.

3 Software

3.1 Packaging

3.1.1 Software bundle

An NSP software bundle is a set of one or more installation files that you download and use to deploy the product.

For NSP cluster deployment, a software bundle consists of a container runtime environment and the NSP software. For NSP components that are deployed outside an NSP cluster, an NSP software bundle consists of a set of RPM installation files. Each bundle type is available for download as one or more compressed archive files.

3.1.2 Feature packages

The purchase of feature packages and the associated license keys grants the right to download and use the software. “Feature packages” are not self-contained from a software-bundling or installation perspective; a feature package simply entitles you to a particular set of features. See “NSP product offerings” in the *NSP System Architecture Guide* for information about available NSP feature packages.

After you download and extract a software bundle, and configure your installation options during installation, the feature packages you purchased are enabled and the associated features are available for your use.

3.2 Delivery

3.2.1 Product software

As a registered customer, you can download NSP software from the Nokia [Support Portal](#). If you are a new customer and require access, contact your sales or support representative for registration information.

To access the NSP software, locate NSP (Network Services Platform) on the main page. Clicking **Downloads** opens a new browser tab on the Delivery→Downloads portal, also called ALED. This is organized by release. You navigate through the hierarchy to select and download the packages you are licensed to use according to your purchase agreement.

WS-NOC and WS-RC deliver software from separate product hierarchies in the portal.

After you select items for download and click Next, you must choose a download method. Click Help for information about the available download methods.

i **Note:** It is strongly recommended that you verify the message digest of each NSP package or file that you download from the Nokia Support Portal. After selecting Packages→Packages.cksum, the download page lists the MD5 or SHA-256 hash value of an item for comparison with the output of the RHEL md5sum or sha256sum command. See the appropriate RHEL man page for information about using a command.

3.2.2 Service packs

Service packs, or patches, are delivered on the Nokia [Support Portal](#) from the same download area as product software. Service Pack Notes bundled with the service packs describe the fixes and provide installation instructions.

3.2.3 Adaptors

Adaptors for model-driven management of multi-vendor devices are delivered on the software download site of the Nokia [Support Portal](#). Hardened adaptors are delivered under the NSP release structure on this site. Customer-specific adaptors are delivered in their own restricted-access Adaptors directory.

Reference adaptors and trial versions of customer-specific adaptors are delivered on the Network Developer Portal.

3.2.4 Network Developer Portal

The [Network Developer Portal](#) hosts the latest NSP software in shared (free) and dedicated (paid) lab environments to allow customers to evaluate the NSP platform and develop and test NSP-enabled OSS applications. The portal is also home to API documentation, samples, and tutorials for the developer community.

3.3 Deployment mechanisms

3.3.1 Containerized NSP deployment

NSP system deployment is supported in a Kubernetes environment. The following container-based environments are supported

- the NSP container environment
- a container environment that you provide and maintain, as specified in the *NSP Planning Guide*.

You can add components that do not support deployment in containers to an NSP container deployment by installing the components using the traditional method, after which you can include the components in the NSP system.

3.3.2 Traditional deployment

Traditional NSP system deployment is performed using the open-source Ansible software-deployment tool. The tool performs the deployment based on parameters that you specify in a configuration file. You can deploy all required components in one operation from one central station.

3.3.3 Deployment documentation

See the following documents for information about the NSP system requirements, and about component installation, upgrade, and other deployment operations:

- *NSP Planning Guide*—provides information about planning an NSP deployment based on scale requirements, network environment, management scope, and the functions required; includes specific information such as firewall rules for inter-component communication

-
- *NSP Installation and Upgrade Guide*—describes the supported deployment types and includes all information required to preconfigure, install, upgrade, integrate and uninstall the NSP software

4 Documentation

4.1 Documentation architecture

4.1.1 Types of help

NSP end user documentation consists of:

- product-level guides
- component-level guides
- component-specific tools

4.1.2 Product-level guides

Information about NSP in general is communicated in product-level documentation. The NSP Help Center includes a base set of product-level guides in all deployments and may describe functions not available in the current deployment.

The *NSP Release Notice* and *NSP and NFM-P Network Element Compatibility Guide* are PDF-only deliverables on the Doc Center and not part of the NSP Help Center.

4.1.3 Component-level guides

Component-level user documentation is included in the on-product NSP Help Center if the component is installed in the deployment.

4.1.4 Component-specific tools

Several tools are available as part of the end user documentation; that is, they are delivered with the guides and help inside the NSP Help Center or the Doc Center.

NSP Alarm Search Tool

NSP alarms can be searched or browsed from the NSP Alarm Search Tool in the on-product NSP Help Center. NSP system alarms, along with alarms originating on MDM- or NFM-P-managed devices, appear in the tool and can be searched, filtered, and exported.

The alarm information displayed in the NSP Alarm Search Tool is drawn from alarm dictionary files installed on the NSP. Alarm dictionaries are added automatically during component installation ensuring the NSP Alarm Search Tool only contains relevant information. Some components may not yet provide an alarm dictionary. For adaptors, refer to the adaptor documentation for information about alarm dictionaries included with the adaptor. Adaptors from older NSP releases do not have alarm dictionaries.

Telemetry Statistic Search Tool

Telemetry statistics can be searched or browsed using the Telemetry Statistic Search Tool in the on-product NSP Help Center. The tool displays statistics for feature packages, adaptor files, and mapping files for cut-through telemetry that are installed on the NSP. For a statistic to appear in the

tool, you must first install the yang files and then the artifacts related to those statistics; for information about installing yang files see the *NSP System Administrator Guide*, and for information about installing artifacts see the *NSP Network Automation Guide*.

The Telemetry Statistic Search Tool is available if Model Driven Configurator is included in the deployment.

Other tools

The following developer tools and search tools are no longer delivered on-product; they are available from either the [Doc Center](#) or the [Network Developer Portal](#).

- IPDR Reference
- JMS Example Code
- MV Metadata Navigator
- NFM-P Alarm Search Tool
- NFM-P Statistics Search Tool
- NSP Flow Collector Fields Dependencies
- Schema Reference
- SDK Navigator
- Template Development Information
- XML API Reference

4.1.5 Delivery formats and locations

NSP guides are available in the following formats and locations:

- on-product, accessible from the [4.2 “NSP Help Center” \(p. 44\)](#)
- off-product as PDF or HTML collection, accessible from the [Doc Center](#) on the Nokia Support Portal

See [4.3 “Documentation delivery online” \(p. 46\)](#) for more information about the NSP HTML collection.

4.2 NSP Help Center

4.2.1 Content

NSP user documentation is delivered in an on-product application, called NSP Help Center. During NSP installation, the NSP Help Center loads the information content associated with each product component in your NSP deployment, providing you with end-to-end search capability across the user documentation.

4.2.2 Context-sensitive help

When you click the ? button in an NSP banner bar, a Quick Help menu opens with suggested topics related to the current view. Short topics may be read in-line, whereas longer topics open in the NSP Help Center.

4.2.3 Access

The Help Center can be opened from a ? button available in the NSP banner bar. You can browse the documentation from menus on the NSP Help Center home page, or use the searching and filtering capabilities to isolate information quickly.

4.2.4 Browsing

From the Help Center home page, you can browse guides under the following menus:


- OVERVIEW
- INSTALL AND COMMISSION
- OPERATE AND MAINTAIN
- MONITOR AND TROUBLESHOOT
- REFERENCE

You can also browse within a guide using the table of contents tree in the left navigation panel.

Use the breadcrumb to return to search results or the home page. Use the browser back button to return to any previously visited page.

4.2.5 Searching

The NSP Help Center is centered on its robust search capabilities. When you conduct a search from the home page or search results page, the NSP Help Center executes a global search across documentation for all installed NSP components. As shown in the tooltip on the search bar, the boolean operators AND/OR/NOT are supported, as are the wildcard characters * (any string) and ? (any character). Exact-phrase search strings enclosed in quotation marks are also supported.

 **Note:** Common, non-technical terms such as “the,” “and,” “on,” and others are ignored in all searches, including exact-string searches.

Search history is tracked as follows:

- The Recent Searches list on the home page is per-user, and the Popular Searches list shows the trend across all users of the system.
- When a search result link is clicked on the search results page, it is captured in the Recent Searches list and considered for forming the Popular Search list. Navigating to a page in any other way (for example, by browsing from the browse menu or following links within a browsed document) does not make the page eligible for capture in the Recent/Popular Searches list.

Searched terms are not highlighted on the target page, but you can use the browser find function to see the hits within a page of content.

4.2.6 Filtering

Filters on the left of the search results page display a count beside the filter facets that contain one or more hits on your searched terms. You can refine your search results by selecting one or more filter facets and clicking APPLY FILTERS.

You can filter by either or both of these facets:

- Location
Select one or more guides or tools to narrow your search results to those areas.
- Information Type
Select one or more content types to narrow your search results to hits that match the content type. For example, if your search term is “LSP” and you only want to see procedural information, select “Procedure” as the content type.

The content types for filtering are:

- Use cases - use-case-based material showcasing product or feature functionality
- Description - explanatory, non-procedural content
- Procedure - step-by-step instructions to complete a task
- Reference - brief look-up data, such as glossary terms
- Workflow - a sequence of procedures to complete an objective

4.2.7 NSP Help Center notable information

The following table explains the NSP Help Center handling of exceptional circumstances.

Table 4-1 Help Center notable information

Case	Description
Recent and popular search history	To avoid accumulation of a large number of records on Recent and Popular searches, NSP triggers a purge job every week, which keeps the 5000 most recent records and deletes the rest.
NSP component addition and removal	The NSP Help Center contains a base set of guides that are present in all deployment types. However, some NSP components load their own documentation to the Help Center. If an NSP component such as NFM-P is added or removed from the deployment, it could take up to 24 for its help to be added or removed from the Help Center.

4.3 Documentation delivery online

4.3.1 Doc Center

The guides in the on-product NSP Help Center are also available to registered users in the Nokia Support Portal ([Doc Center](#)) as individual PDF documents and, starting with NSP 23.4, as an HTML collection.

If you are a new user and require access to the service, contact your support representative.

4.3.2 Using the Doc Center

From the Doc Center on the Nokia Support Portal, you can:

- filter by product, release, model, category, content type, and format
- search for documents within the filtered results
- share results via email
- create a downloadable collection of your filtered documents
- sort the results by issue date, title, or document
- search inside documents
- browse or download the HTML collection

4.3.3 Documentation alerts

To receive an e-mail when new or reissued NSP customer documents are available, subscribe to the notification service on the [Documentation Alerts Subscription](#) page.

4.4 Providing documentation feedback

4.4.1 We want to hear from you

As noted in the front matter of each guide, you can email the NSP documentation team for [Documentation Feedback](#).

The Doc Center also provides two other mechanisms to provide feedback:

- directly from any page of the NSP HTML collection if opened in the Doc Center
- via a form available under “Provide your feedback” in the footer of the Doc Center

