



Navigator MC Introduction

Course ID – Revision X

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This module provides an introduction to Navigator MC (Multi-layer Controller).

Agenda

Agenda	
1	Navigator MC Functions and Capabilities
2	Navigator MC Network Map
3	Navigator MC Equipment Operations
4	Alarms

Objectives

After completing this module, you will be able to:

- Provide the Overview of Navigator NCS and Navigator MC
- Explain how to Log in to Navigator MC
- Explore the dashboard and access different menus.
- Define the Navigator MC map and its functions.
- Explain Network elements and NE enrollment.
- Discover equipment details and NE operations.
- Describe how to de-enroll NE.
- Perform troubleshooting by viewing active alarms and Alarm history.

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3

After completing this module, you will be able to:

- Provide the Overview of Navigator NCS and Navigator MC
- Explain how to Log in to Navigator MC and discover the dashboard.
- Explore the dashboard and access different menus.
- Define the Navigator MC map and its functions.
- Explain Network elements and NE enrolment.
- Discover equipment details and NE operations.
- Describe how to de-enroll NE.
- Explore IP packet network menu and its functions.
- Explore Optical network menu and its functions.
- Perform troubleshooting by viewing active alarms and Alarm history.
- Introduce Navigator Intelligent Apps (IA)



Navigator MC Overview

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An introduction to Navigator NCS and Navigator MC is provided in this section.

What is Ciena Navigator NCS?

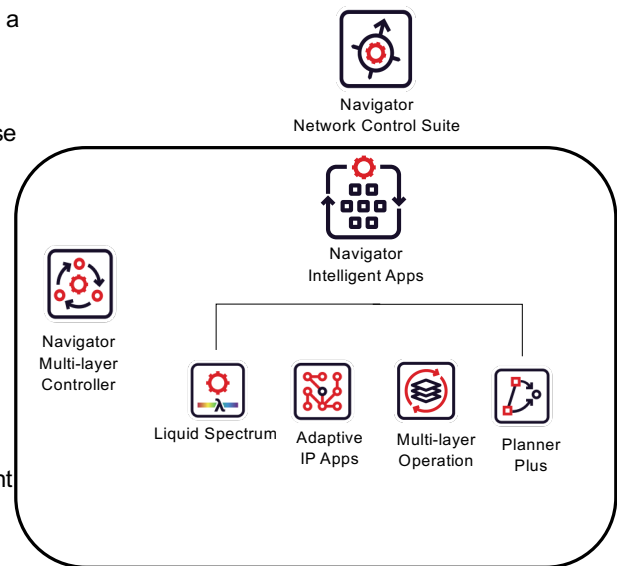
Navigator NCS is a Network Control Suite (NCS) platform, and it is a web-based client platform which can be accessed easily using an industry-standard web browser.

Navigator MC is a multilayer SDN controller supporting various technologies from layer 0 to layer 3. Here is the list of some of these systems supported by Navigator MC:

- 6500 D/S series
- 6500 T-series
- 6500 PTS
- RLS
- ELS
- 5400
- Waveserver (WL3, Waveserver Ai & Waveserver 5)
- Packet Networking (6.x , 8.x & 10.x)

Navigator MC consists of a series of software modules (microservices) that allows Network element planning, management & service management.

Its microservices expose an open and documented set of REST/JSON APIs that can be directly used by external systems



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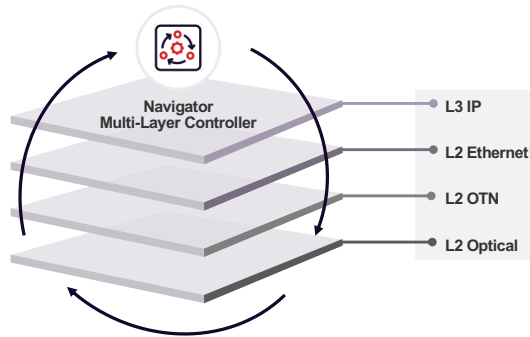
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5

- Navigator NCS is a Network-Control Suite (NCS) platform that manages, controls, and plans the complete network and converges the complete network operations lifecycle through network utilization, monitoring, service planning, infrastructure commissioning, service provisioning, and service assurance.
- Navigator MC is a web-based client platform that can be accessed easily using an industry-standard web browser.
- It has an integrated network planning functionality that helps network designers to plan and deploy network hardware and service configurations.
- It is a multilayer SDN controller which supports various technologies from Layer 0 to Layer 3 such as DWDM, OTN, Ethernet, MPLS, and IP.
 - 6500 D/S series
 - 6500 T-series
 - 6500 PTS
 - RLS
 - ELS
 - 5400
 - Waveserver (WL3, Waveserver Ai & Waveserver 5)
 - Packet Networking (6.x , 8.x & 10.x)

Navigator MC Overview

- Ciena's Navigator MC is a multi-layer Software Defined Networking (SDN) and Network Management System (NMS) platform.
 - Navigator MC's elastic scale allows it to support the management and provisioning of modern customer networks.



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6

Ciena's Navigator MC is a multi-layer Software Defined Networking (SDN) and Network Management System (NMS) platform. Navigator MC's elastic scale allows it to support the management and provisioning of modern customer networks. Let's get familiar with Navigator MC login.



Logging into Navigator MC

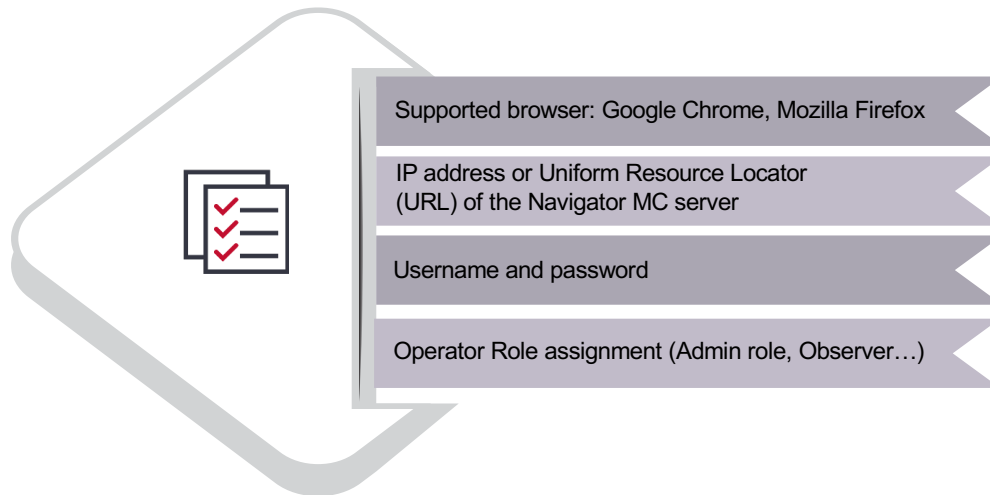
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In this section, you will learn to log in to Navigator MC.

Requirements

Before you log in to the Navigator MC server, you must fulfil the below requirements:



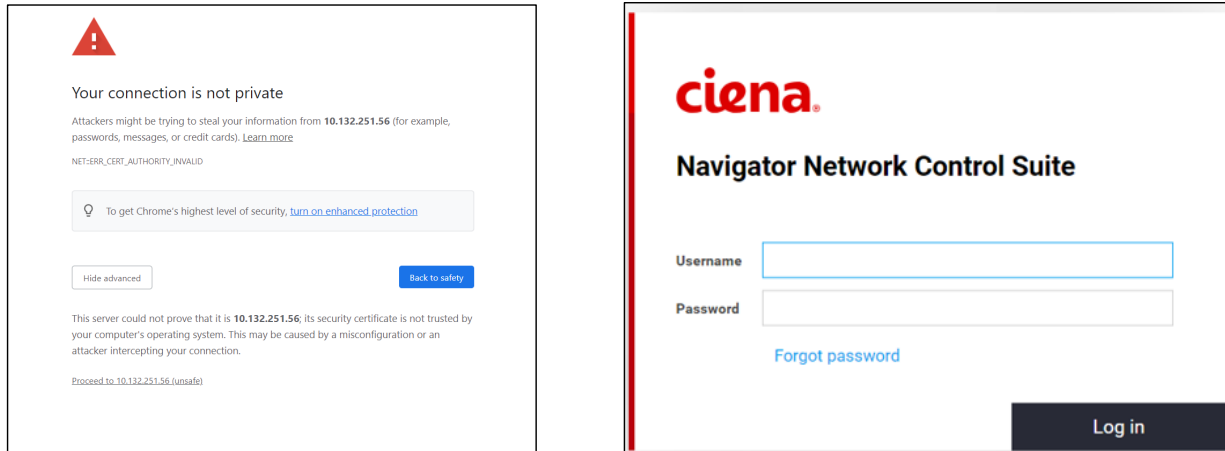
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8

- Navigator MC UI is a web user interface. Google chrome and Mozilla Firefox are officially supported browsers.
- Before you login to Navigator MC server, make sure that the Chrome or Firefox web browser is installed on your device.
- You also need some information from Navigator MC server administrator. Your administrator must provide the URL of the Navigator MC server, which you need to start a session between the server and your web browser.
- The administrator must also provide you with your Navigator MC username and password for logging in to Navigator MC server.
- Your administrator may also tell you the roles you've been assigned. In Navigator MC, roles are security constraints that control your access to the system.
- Your administrator has probably assigned you the Observer role or the Network admin role.
- The Observer role enables basic, read-only visibility of network elements and services.
- The Network admin role enables full, read-write control of network elements and services.

Navigator MC UI Login



Attention: Your web browser may give you a warning as shown.

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9

- To log in to Navigator MC, launch your web browser and enter an IP address or URL for the Navigator MC server that you obtain from your administrator.
 - You may receive a warning as depicted in the picture. The error may be harmless and caused by a certificate configuration issue.
 - Please contact your admin and once confirmed by the administrator:
 - Click Advance
 - Click Proceed to IP address (unsafe)
 - The login page will appear.
 - When the Navigator MC login screen appears, you simply enter the login credentials that your administrator provided.
- Let's explore the Navigator MC dashboard.



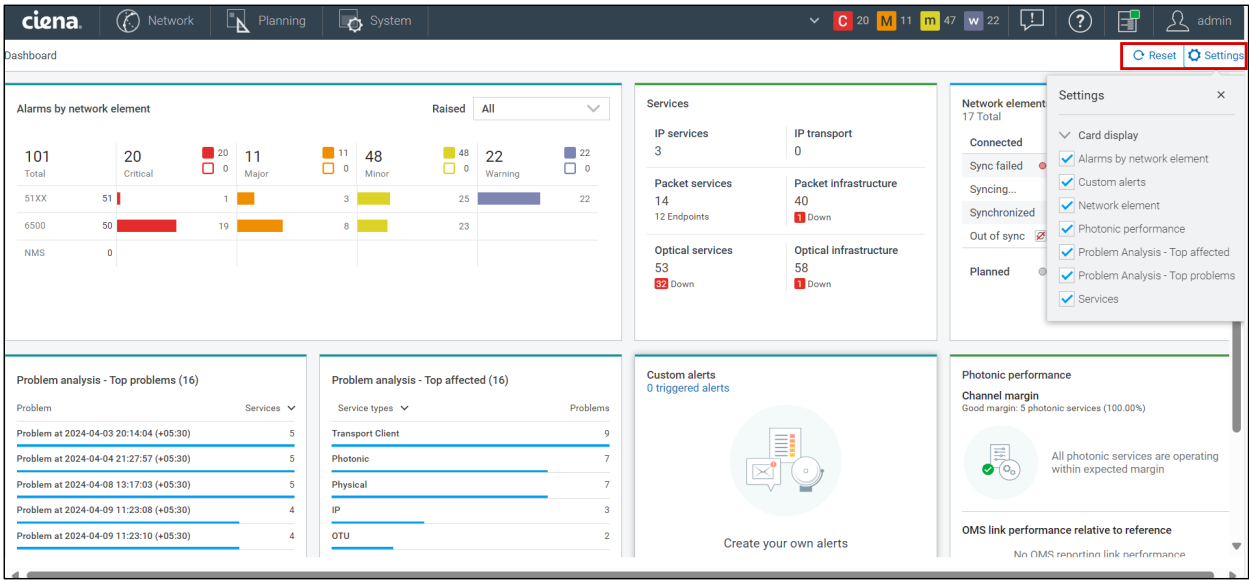
Navigator MC Dashboard

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In this section, you will be introduced to Navigator MC dashboard.

Navigator MC Dashboard



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Reset and settings buttons helps you choose the Dashboard view.
Let's learn about Navigator MC menu.



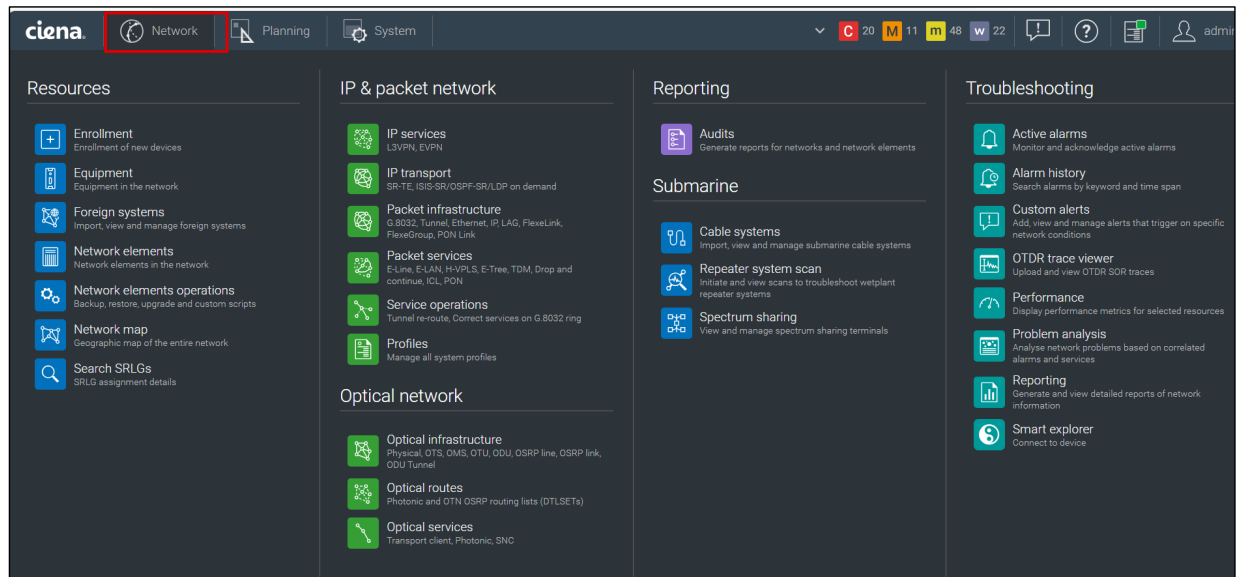
Navigator MC Menus

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In this section, you will explore Navigator MC menus.

Network Menu



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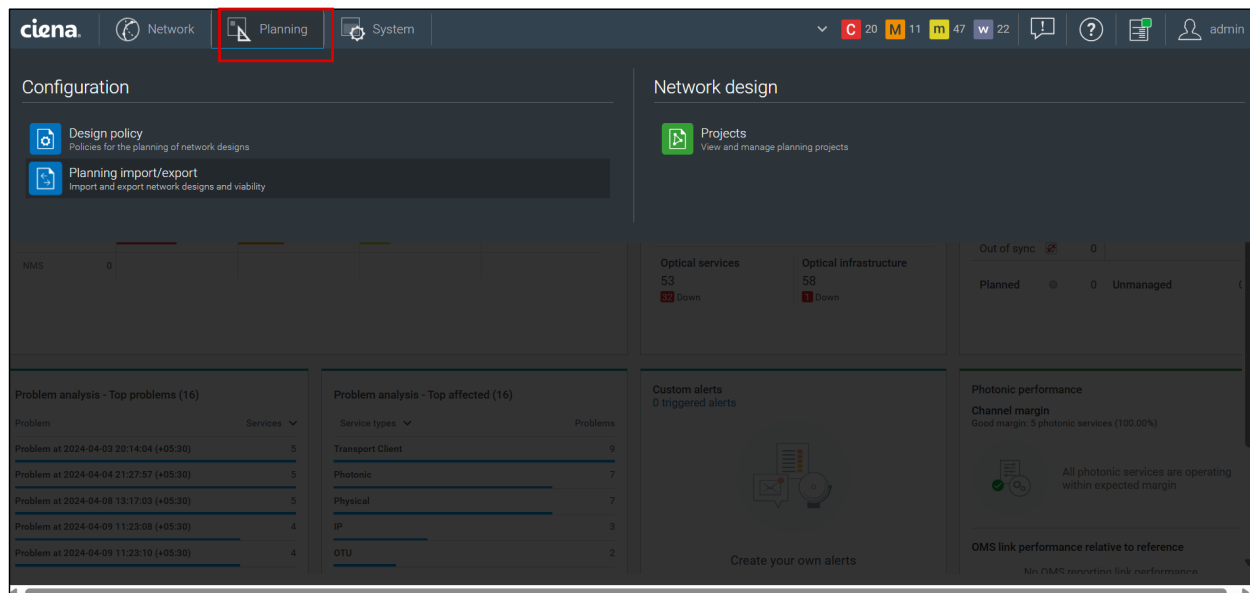
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13

Selecting the Network menu displays four groups of options:

- Resources, IP & Packet network and Optical network, Reporting and Submarine, Troubleshooting
- Resources
 - The resources group contains links to screens that provide means to manage Ciena's network elements and the network map as well as Foreign Systems.
- IP & Packet network and Optical network
 - The IP network and Packet network links to screens that provide options to view and provision services, packet infrastructure & tunnel.
 - The Optical network provides the option to view, manage, and provision Optical Infrastructure, routes, and services.
- Reporting and Submarine
 - The reporting tab contains a link to generate reports for network and network elements through Audits.
 - The submarine group includes links to submarine-specific management applications.
- Troubleshooting
 - The troubleshooting group contains links to Network Element alarms, performance, OTDR, and network information reports. Also, it gives the option to analyze the network problems based on correlated alarms & services.
 - Smart explore is an automated Yang based management tool. It helps in connecting with a device.

Planning Menu



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Planning menu offers two menu options.

1. Configuration:

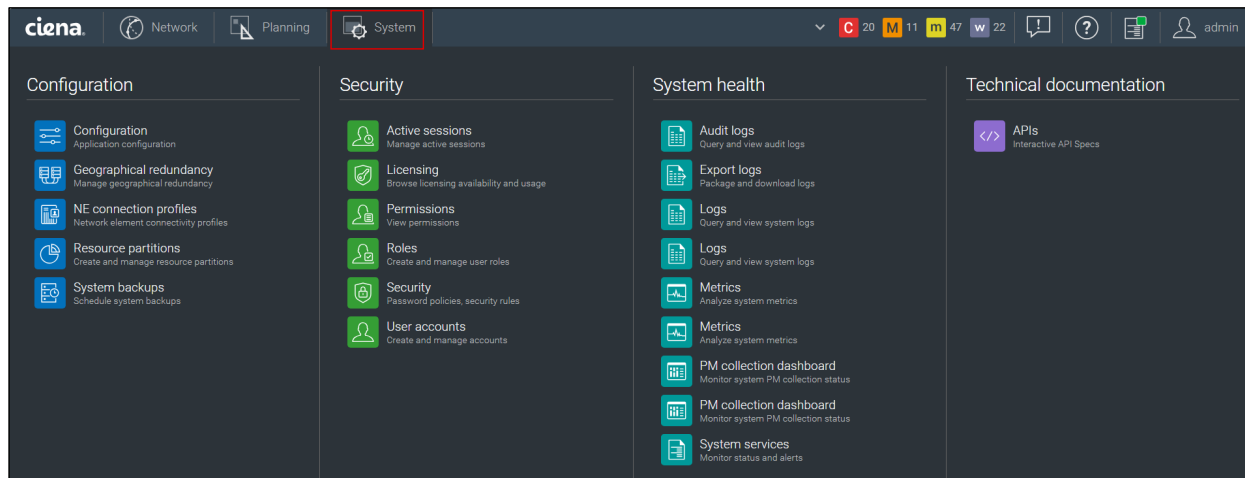
- **Design Policy:** Enables user to configure heat dissipation policy for warning and blocking thresholds globally as well as for specific site and bay thresholds.
- **Planning import/ Export:** Enables planners to import network designs and viability data from the Planning tool (One Planner/PlannerPlus) to Navigator MC and export network designs to the Planning tool (One Planner/Planner Plus) from Navigator MC.

2. Network design:

- **Projects:** Projects selection under Network design enables you to view and manage imported network projects and users are allowed to perform bulk actions like Project commit, delete, and archive.

Click the Ciena logo on the top left to go back to Dashboard.

System Menu



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The System menu provides access to Navigator MC system administration functions such as:

- Configuration
- Security
- System Health
- Technical documentation
- Configuration
 - Configuration: Use configuration to set several values for the applications microservices that make up Navigator MC. This setting should only be edited if it's a part of the procedure in Ciena's Product documentation or based on advice from Ciena technical support team.
 - Geographical redundancy: When geographical redundancy is implanted use this option to view and manage the status of the active and backup site.
 - NE connection profiles: Profiles are defined here. Each network element type requires a profile that contains the connection and authentication information Navigator MC needs to communicate with a device.
 - Resource partitions: This option allows you to create and manage resource partitions.



Network Resources Menu: Network Map

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This section introduces Navigator MC Network Map.

Navigator MC Network Map



Navigator MC provides a map for a topological view of the network.



It provides the ability to display annotations on map objects for link attributes.



Network-admin role is assigned and can make changes to the map, such as placing enrolled NEs on the map.



NEs are placed on the map in two ways: automatically and manually.

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17

Navigator MC provides a map for a topological view of the network.

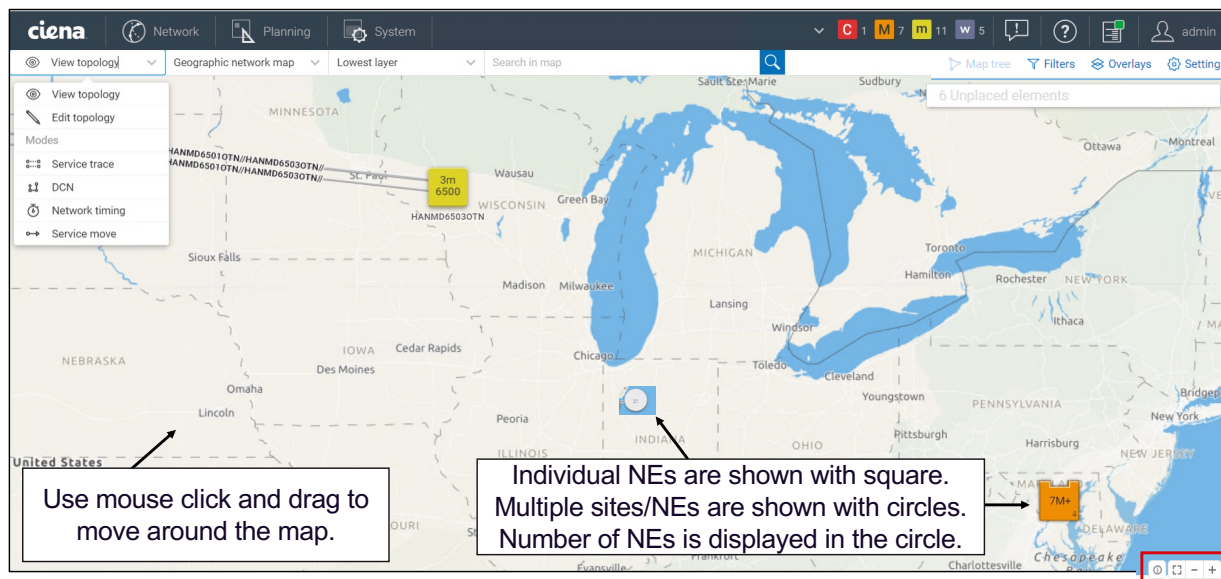
It provides the ability to display annotations on map objects for link attributes.

Network-admin role is assigned and can make changes to the map, such as placing enrolled NEs on the map.

NEs are placed on the map in two ways:

- Automatically
- Manually

Navigator MC Network Map



The default MAP in Navigator MC is a geographical map and you can:

- Click and drag to move around the map or
- Use Zoom in/out (-/+) or the scroll button of the mouse to move around the map

If Network Elements are longitude/latitude defined, then longitude/latitude is used and NEs are placed automatically on the map with their defined geographical location. When you are finished placing NEs on the network map, you will notice two kinds of icons:

- Individual NE site icons, and circles that represent multiple sites that are close to each other.
 - The circles represent multiple NE sites that are near each other on the map.
 - The number of NEs represented by a circle appears on the circle.

You can zoom in on any area to see details of NEs located in that area.

Navigator MC Network Map: Geographical Location of NEs

Select a NE on the map to see details of the NE.

Details button

Details Panel:

Vendor	Ciena
Device type	6500 14-Slot Converged Optical/Rear Electrical Shelf Assembly
Type	6500
Model number	—
Software version	12.7.1
Access id	SHELF-1
CLI	bfe1b78c-d1be-4236-a2a-4ca05510f528
Shelves	1
OSPF areas	0.0.0.0
MAC address	A421.8AEB.88.5F

Buttons: More..., Sync All, Edit, **Details**

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19

On the map, you can select a site to display site details or select a link to display link details.

- Navigator MC discovers links automatically when NEs are enrolled.

Clicking Details button provides additional information.

Navigator MC Network Map: Geographical Location of NEs

Views

Attributes

Equipment

Alarms

Supports

SRLGs

Shared SRLGs

Fault

Configuration

Protection

HANMD6500SFLEXA

Attributes

10.41.88.151

12.71

C o M o m o w o

admin

Primary attributes

Name

TID name

Lifecycle

Connectivity

Inventory sync state

Alarms sync state

Alarms sync last state changed

Alarms sync last synchronized

Inventory sync last state changed

Inventory sync last synchronized

Vendor

Device type

Device version

Type

Latitude

Longitude

IP address

MAC

Serial number

Software type

HANMD6500SFLEXA

HANMD6500SFLEXA

Discovered

Connected

Synchronized

Synchronized

2023-08-05 05:30:50 (+05:30)

2023-08-05 05:30:50 (+05:30)

2023-08-05 05:33:30 (+05:30)

2023-08-05 05:33:30 (+05:30)

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6500 14-Slot Converged Optical/Rear Electrical Shelf Assembly

6500 REARELEC

6500

38.58744

-121.53028

10.41.88.151

A4:21:8A:EB:8B:5

NNTMHQCR0583

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Navigator MC Network Map: Attributes tab displays selected NE or link details.

By clicking the details button in the NE details window, the link or NE details in the Attributes tab can be seen.

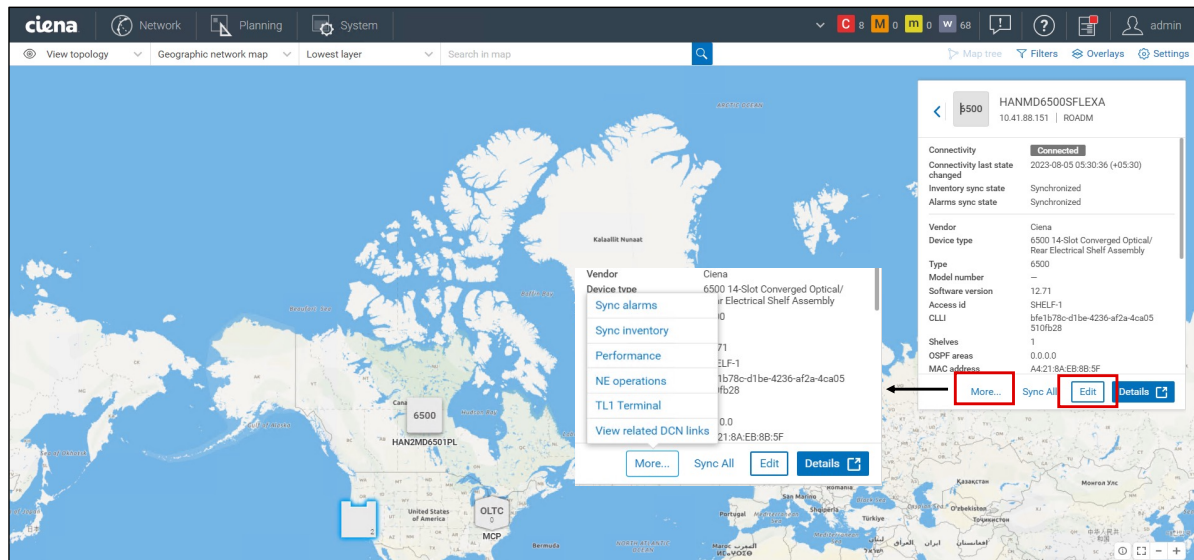
Attributes tab displays NE details or Link details whichever is selected.

For NEs with defined longitude/latitude, the coordinate information is displayed in the attributes tab otherwise the fields will be empty.

Some information may be available for NEs that have been added to the map manually. Those fields will be empty.

Let us go back to the geographical network map screen.

Navigator MC Network Map: Geographical Location of NEs



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21

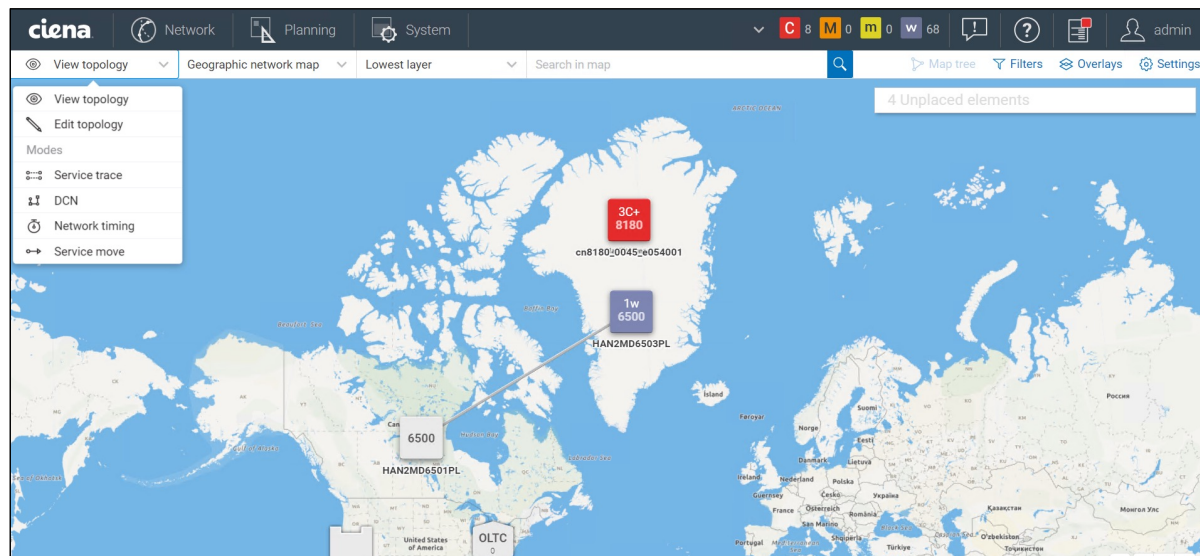
Edit menu allows you to edit:

- Site name
- Latitude and longitude coordinates of a network element

Clicking on More button, provides more configuration options.

If Network Element does not have defined longitude/latitude coordinates, then Navigator MC will not place the NE on the map.

Navigator MC Network Map: Map Menu Options



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22

The map menu provides different menu options to perform various tasks. It opens the options of viewing and editing the topology.

Under View topology, you can select the NE icons and service lines to display their details.

Under Edit, you can manually create objects and can move the map on the screen:

- Move the network elements to different locations on the map
- Change site names and apply metadata tags

Use Service trace to add a trace to the network map.

- Service trace allows you to search for a service:
 - A selected service will be highlighted on the map
 - Services items are added to the trace paths panel and will remain there until removed by you

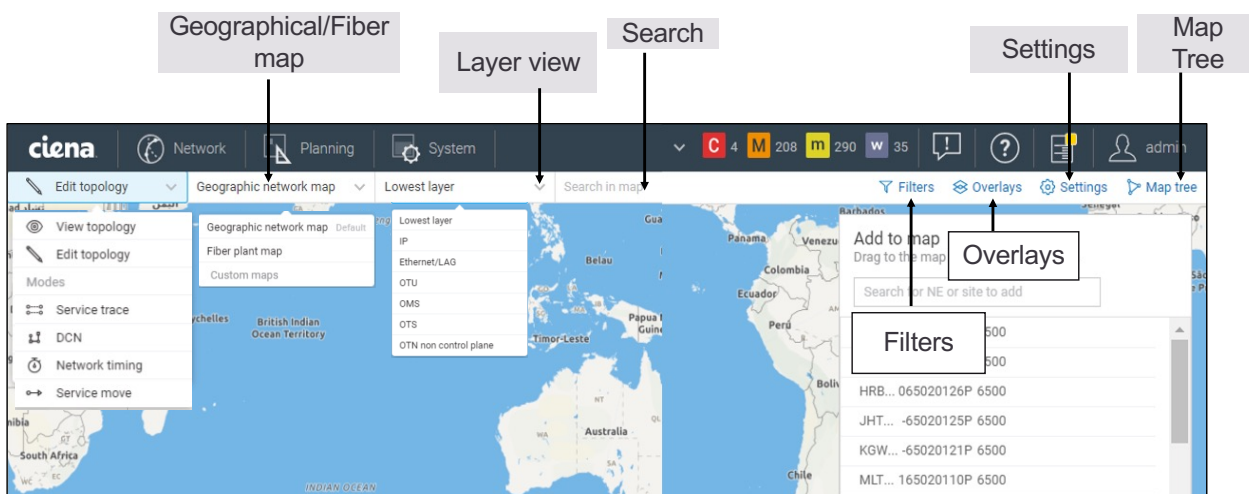
Under DCN, you can select network elements and sites on the geographical map to view their DCN network.

DCN mode allows for the selection of supported nodes from the map to be used as a DCN context, and then to view DCN connectivity within that context.

Network timing feature allows you to identify devices using G.8275.2, show GNSS receivers, and allow source tracing through G.8275.2 logical links.

Under Service move, you can use the move services menu option to move service away from or back to an OTS link.

Network Map Menu Options



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23

- Geographical/Fiber map option provides the ability to switch between Geographical network map and Fiber plant map
- Layer view option allows to switch the layer rate view such as lowest layer, IP, Ethernet, OTU and many others.
- Search option allows to search the NEs on the map

The Last four menu options change the way the map is displayed:

- Filters allows you to filter data based on NE name, IP address NE type and partition
- Overlays provides the options to:
 - filter alarms (display by category or disable)
 - display or hide Links operational state
 - display or hide capacity and utilization
- Use settings to change the way the network appears on screen by adjusting how the network elements and network connections appear
 - Additionally, the background map can be hidden, or the map theme can be changed
- The map tree provides an option to create custom maps based on selected NE, Groups and Tags.



Network Element Enrollment

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This section introduces Network Element Enrollment in Navigator MC.

NE Connection Profile: Create NE Profile

1. From system menu, launch NE connection profiles

2. From NE connection profiles click create

4. Fill profile information

5. Click Confirm button to create the profile

3. Select product family from drop down

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Before enrolling a network element , you must create a profile for type of NE by performing the following steps:

1. From the System menu, select NE connection profiles
2. Then, from NE connection profile window click the + sign “Create” on the top right to open the “Create connection profile” window
3. Select Product family
4. In the “Create connection profile” window, enter the required information by:
 - Entering profile description or name
 - Select a product from the Product family drop-down menu for example 6500 and check required fields such as TL1 protocol for NEs using TL1 such as 6500 and enter username and password
5. Click the confirm button to create the profile and a pop-up ‘Profile created successfully’ will appear.

You need to create a profile for all required types of NEs in your system (6500, WS, RLS, and others....) before being able to enroll these network element types into Navigator MC.

Network Element Enrollment: Enroll Network Elements

The screenshot shows the Ciena Navigator MC interface. The main window displays a table of enrolled network elements with columns: Name, Session management, IP address, Type, Product family, Profile name, and Status. A red box highlights the '+ Pre-enroll' button in the top right corner.

Below the main window, a 'Pre-enroll network elements' dialog box is shown. It has two tabs: 'Pre-enroll by' and 'File import'. The 'Pre-enroll by' tab is active, showing fields for IP address (10.132.17.74), Profile (6500), Alternative IP address, and Backup schedule (No schedule). A red box highlights the 'Pre-enroll' button at the bottom right.

To the left of the dialog box, a text file named '12NODE - Copy.txt' is open, showing a list of IP addresses from 10.182.13.209 to 10.182.13.219. A red box highlights the 'File import' tab in the dialog box.

Annotations include:

- 1. Click "+ Pre-enroll"
- 2. Enter NE information
- 3. Click Pre-enroll button
- Option to select and import a text file for bulk enrollment
- Text file with a list of IP addresses to enroll multiple NEs at once.

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- Enroll Network Elements by accessing the enrollment menu from:
 - Network > Enrollment > then click the "Pre-Enroll +" button
- Enrollment is the procedure for setting up a connection between Navigator MC and an NE so that Navigator MC can manage the NE. To do that:
 - Navigate to the Enrollment page and pre-enroll the NE by clicking "+ Pre-enroll"
 - Pre-enroll window opens offering two options to enroll NEs
 - Enter NE's IP address and a connection profile that contains the type of protocol used for NE communications with Navigator MC and NE login credentials
 - Or using File import option and using a file with the list of IP addresses of NE to enroll into Navigator MC. Select the desired text file.
 - When done, click the Pre-enroll button to pre-enroll the network element or bulk pre-enroll of multiple NEs
- Pre-enroll also requires a Backup scheduled to be entered. "No schedule" can be selected if a schedule has not been previously created.
- The Backup schedule can be later changed from the Network element operations page.

Network Element Enrollment: Additional Steps

1. Select the NE check box. Session management status shows: Pending

2. Click Enroll

At this point session management Status changes to Connecting

3. Session management Status changes to Connected. NE is enrolled

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Complete the Enrollment of the network element into Navigator MC by following below steps:

- Select the NE with status displayed as “Pending”. Multiple selections can also be done.
- Click Enroll button at the bottom right.
- Wait for some time until the session management status changes to “Connected”.



Network Element Management

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This section introduces Navigator MC Network Elements.

Network Menu: Network Elements

The screenshot shows the Ciena Navigator MC interface. On the left, the 'Network' menu is open, and 'Network elements' is selected. The main area displays a table of network elements. A red box highlights the 'More...' button at the bottom right of the table. Numbered callouts 1 through 5 point to the 'More...', 'Sync inventory', 'Sync all', 'Edit', and 'Details' buttons respectively.

Name	Connectivity	IP address	Type	Version	Device #	Note	Equipment capacity	Alarm type
6500-50degree-fx-20	Connected	10.56.65.20	6500	12.80	6500-7-SLOT...		80	Synchroniz...
6500-CDA-19	Connected	10.56.65.19	6500	12.80	6500 OPTICAL		100	Synchroniz...
6500-FLEX-41	Connected	10.56.65.41	6500	12.80	6500 32-SLOT...		78	Synchroniz...
6500-FLEX-45	Connected	10.56.65.45	6500	12.80	6500 32-SLOT...		81	Synchroniz...
6500-ILA-44	Connected	10.56.65.44	6500	12.80	6500 2-SLOT...		100	Synchroniz...
6500-ROADM-32	Connected	10.56.65.32	6500	12.80	6500 OPTICAL		86	Synchroniz...
6500-SRA-35	Connected	10.56.65.35	6500	12.80	6500 OPTICAL		17	Synchroniz...
P230FLEXA	Connected	10.56.40.231	6500	12.40	6500 32-SLOT...		91	Synchroniz...
P230FLEXB	Connected	10.56.40.232	6500	12.40	6500 32-SLOT...		56	Synchroniz...
P230FLEXC	Connected	10.56.40.233	6500	12.40	6500 32-SLOT...		38	Synchroniz...
P230FLEXD	Connected	10.56.40.234	6500	12.40	6500 32-SLOT...		63	Synchroniz...
P230FLEXE	Connected	10.56.40.235	6500	12.40	6500 32-SLOT...		66	Synchroniz...
WS110	Connected	10.56.65.110	Wavev...	1.5.1	001		100	Synchroniz...
WS130	Connected	10.56.65.130	Wavev...	1.5.1	001		100	Synchroniz...
WS-103	Connected	10.56.65.103	Wavev...	2.1.0	003		25	Synchroniz...
WS-104	Connected	10.56.65.104	Wavev...	2.1.0	003		25	Synchroniz...

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29

Network elements menu displays a list of enrolled NEs in Navigator MC.

You can select an NE by checking checkbox next to NE name to perform different tasks.

Sub-menu options are dependent on NE type.

You can perform following tasks:

1. Click the Edit button to perform tagging.
2. Click Sync all to sync alarms.
3. Click Sync inventory to sync inventory.
4. Click more...: to perform:
 - NE De-enroll
 - Reconnect if NE lost contact
 - Set the node in maintenance mode
 - View Equipment
 - Export info into .csv file
 - View performance and related DCN links
5. Click the Details button to see NE details page and access additional menu options. (see additional details in the next slide)

Network Menu: Network Elements Details

Provides ability to toggle the shelf level view type. This is supported for 6500 NEs and currently not supported for RLS nodes

Clicking Details button for the selected network element, provides access to additional NE menu options

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After you click the details button for the selected network element, you will have access to the Nodal tools for selected NE which provides additional NE menu options such as:

- View menu: It provides the ability to toggle the shelf level view type which is currently supported for 6500 nodes and the user will not see this option for RLS NEs. It also provides you access to detailed NE information, alarms, and performance.
- Attributes: displays NE information
- Equipment: displays inventory information and validation summary
- Alarms: shows network elements alarms, allows you to export alarm list into .csv file and locate the NE on the map
- Supports: provides you a list of supported services (Fiber, ROADM, services)
- Faults: Provides you the options to view:
 - OTDR results
 - Card logs
 - Submarine repeater system scan (for SLTE: Submarine Line Terminating Equipment)
 - Active disabled alarms
- Configuration provides you access to:
 - Node settings (node information, Time of day)
 - Photonic procedures (Channel management, SPLI, Configuration management, TID sequence)
 - Subnetwork connection information (SNC, SNCG)
 - OSRP information (OSRP node, line, link, Routing profiles)
 - nodal connections (Photonic, Transponder, and OTN connections)
 - Repeater Scans (Schedules & History)
 - Comms management (IP static routes)

Please note that the NE tools options may vary from device to device.
Let's learn about equipment.

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Equipment

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This section introduces Navigator MC Equipment.

Network Menu: Equipment

The screenshot shows the Ciena Network Menu: Equipment interface. The left sidebar contains a 'Resources' section with the following items:

- Enrollment: Enrollment of new devices
- Equipment: Equipment in the network** (highlighted with a red arrow)
- Foreign systems: Import, view and manage foreign systems
- Network elements: Network elements in the network
- Network elements operations: Backup, restore, upgrade and custom scripts
- Network map: Geographic map of the entire network

The main panel displays a table of network equipment. The table has the following columns:

Name	Primary state	Network element	Secondary state	Type	Shelf	Slot	Subslot	Part #	Serial #
SHEL1-1 (type-sh)	IS	6500-30degree-fxa-20		6500 7-Slot Optical Type 2 Sh...	1			NTK503KA	NNTV...
LIM-1-1 (type-sh-a)	IS	6500-30degree-fxa-20		MLA2 C-Band	1	1		NTK502FA	NNTV...
SP-1-15 (type-sh-a)	IS	6500-30degree-fxa-20		SPAP-2 w/2xOSC 2xSFP	1	15		NTK505NA	NNTV...
P155M-1-15-1 (type-sh-...	IS	6500-30degree-fxa-20		OC3 10-30dB CWDM 1511 nm	1	15	1	NTK502NB	EXLG...
PWR-1-17 (type-sh-a)		6500-30degree-fxa-20		Power Card 100V240V AC Ty...	1	17		NTK505RA	NNTV...
PWR-1-18 (type-sh-a)		6500-30degree-fxa-20		Power Card 100V240V AC Ty...	1	18		NTK505RA	NNTV...
PWR-1-19 (type-sh-a)		6500-30degree-fxa-20		Power Card 100V240V AC Ty...	1	19		NTK505RA	NNTV...
WSSOPM-1-2 (type-sh-a)	IS	6500-30degree-fxa-20		WSS Flex C-Band w/OPM 9x1	1	2		NTK503LB	NNTV...
PWR-1-20 (type-sh-a)		6500-30degree-fxa-20		Power Card 100V240V AC Ty...	1	20		NTK505RA	NNTV...
XLA-1-4 (type-sh-a)	IS	6500-30degree-fxa-20		XLA C-Band	1	4		NTK505KA	NNTV...
SMD-1-5 (type-sh-a)	IS	6500-30degree-fxa-20		SMD Flex C-Band 8x1	1	5		NTK505GB	NNTV...
CCMD12-1-7 (type-sh-a)	IS	6500-30degree-fxa-20		CCMD12 C-Band	1	7		NTK508FA	NNTV...
CM44-1-43 (type-sh-a)	IS	6500-30degree-fxa-20		Enhanced 44 Ch Mux/Demux ...	1	83		NTT862BC	NNTV...
CM44-1-84 (type-sh-a)	IS	6500-30degree-fxa-20		64 Ch Mux/Demux (CM44) 7...	1	84		NTT862JA	NNTV...
FAN-1-21 (type-sh-a)		6500-30degree-fxa-20		Fan Type 2	1	21		NTK507PB	NNTV...
SHEL1-2 (type-sh)	IS	6500-30degree-fxa-20		6500 7-Slot Optical Shelf As...	2			NTK503PA	NNTV...
ESAM-2-1 (type-sh-a)	IS	6500-30degree-fxa-20		ESAM C-Band w/OSC 1xSFP...	2	1		NTK502JT	NNTV...
SP-2-15 (type-sh-a)	IS	6500-30degree-fxa-20		SP-2 Dual CPU	2	15		NTK505FA	NNTV...
PWR-2-17 (type-sh-a)		6500-30degree-fxa-20		Power Card 40A brokenband 2...	2	17		NTK505CE	NNTV...
PWR-2-18 (type-sh-a)		6500-30degree-fxa-20		Power Card 40A brokenband 2...	2	18		NTK505CE	NNTV...

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32

Equipment menu provides information on the network equipment.

Equipment information can be filtered by:

- Network element
- Equipment name
- Card type
- Shelf (TID consolidated)
- Common equipment (Fan, PSU, ...)
- Slots, Sub-Subslot
- Part number
- Serial number
- Shelf real state % used
- Projects

Network Menu: Network Elements Operations

The screenshot displays the Ciena Network Elements Operations interface. The left sidebar contains a 'Resources' section with the following items:

- Enrollment: Enrollment of new devices
- Equipment: Equipment in the network
- Foreign systems: Import, view and manage foreign systems
- Network elements: Network elements in the network
- Network elements operations: Backup, restore, upgrade and custom scripts** (highlighted with a red box)
- Network map: Geographic map of the entire network

The main panel shows the 'NE operations' page with a table of network elements. The table has the following columns: Name, Connectivity, Type, and IP address. The table is filtered by 'Name' and 'IP address'. The table contains the following data:

Name	Connectivity	Type	IP address
3906 3906_0007	Connected	3906	10.182.130.133
3931 3931_0018	Connected	3931	10.182.130.134
3938 3938_0028	Connected	3938	10.182.130.135
5160 5160_0051	Connected	5160	10.182.130.136
5164 5164-1-onx14477	Connected	5164	2620:011b:d0...
8700 87s_0059	Connected	8700	10.182.130.100
8700 87s_0211	Connected	8700	10.182.130.224

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33

Click the Network elements operations under Network to open Network elements operations page. Here, you have the list of NEs enrolled in the Navigator MC.

The Network Element Operations allows you to perform various NE operations such as:

- Set upgrade schedules
- See profiles: system backup/restore and upgrade files
- View system configuration profile (Power profile, RADIUS, SSH....etc.)
- Access to custom script (existing or download and delete option)
- View configuration settings (list of connected network elements)
- And see configuration operations status (for example assigning system node IDs)

Network Menu: Network Elements Operations

The screenshot displays the Ciena NE operations interface. The top navigation bar includes 'ciena', 'Network', 'Planning', and 'System'. The 'NE operations' section is active, with sub-tabs for 'Operations', 'Upgrade management', 'Schedules', 'Profiles', 'Configuration profiles', 'Custom scripts', 'Configuration settings', and 'Configuration operations status'. The 'Upgrade management' tab is selected.

On the left, a 'Refine by' sidebar contains filters for Name, IP address, Partition, Release management schedules, and Upgrade schedules. The main table lists network elements with the following columns: Name, Connectivity, Type, IP address, GNE or RNE, Available on the NE, and Active version. The table contains several rows, including 'TEMS 10.182.34.101' and various '6500' elements. The bottom of the table and the action buttons (Export, FPGA inventory, Circuit packs, Backup, Upgrade, Release management) are highlighted with a red box.

Name		Connectivity	Type	IP address	GNE or RNE	Available on the NE	Active version
☐	TEMS 10.182.34.101	Connected	SubCom	10.182.34.101			7.3.0.1
☐	6500 ILA-6500-2-SLOT	Connected	6500	10.132.242.89	GNE	REL1201Z.BS, REL1280Z...	12.01
☐	6500 OME-5062	Connected	6500	10.132.17.62	GNE	REL1280Z.BP	12.80
☐	6500 OME-5065	Connected	6500	10.132.17.65	GNE	REL1280Z.BP	12.80
☐	6500 OME-5072	Connected	6500	10.132.17.72	GNE	REL1280Z.BP	12.80
☐	6500 OME-5073	Connected	6500	10.132.17.73	GNE	REL1280Z.BP	12.80
☐	6500 OME-5078	Connected	6500	10.132.17.78	GNE	REL1280Z.BP	12.80
☒	6500 OME-5079	Connected	6500	10.132.17.79	GNE	REL1280Z.BP	12.80
☒	6500 Rover5-SH1	Connected	6500	10.132.17.178	GNE	REL1272Z.XZ, REL1280Z...	12.80
☐	6500 Rover5-SH2	Connected	6500	10.132.17.179	GNE	REL1272Z.XZ, REL1280Z...	12.80

At the bottom of the table, there are action buttons: Export, FPGA inventory, Circuit packs, Backup, Upgrade, and Release management.

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34

Upgrade management menu offers to:

- Perform release management (transfer load to Network Elements)
- Upgrade of Network Elements
- Perform system backup
- Acquire list of circuit packs in the system
- Provides you access to list of FPGA load inventory and status of FPGA load
- You can export upgrade-management file (status of upgrade) into a .csv file
- Or Schedule or remove upgrade schedule

Now, Let's learn about IP and Packet Network Menu

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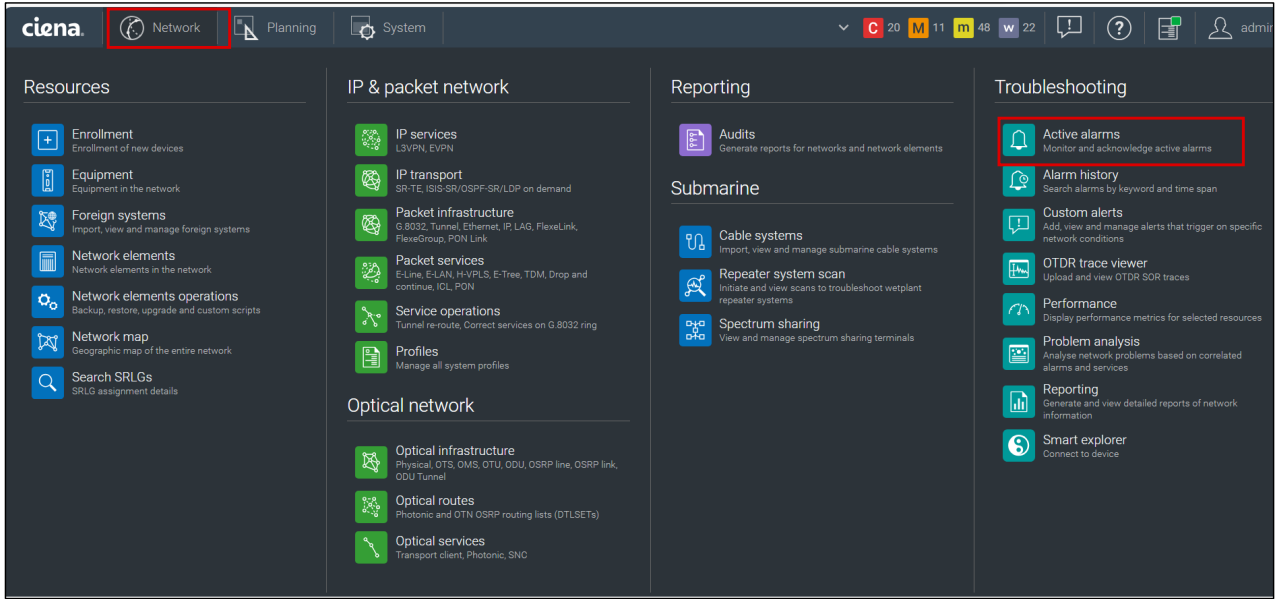
Alarms

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In this section, you will learn about Troubleshooting menu items, Active alarms and Alarm history.

Network Menu



Select Active alarms under the Network menu to access active alarms.

Active Alarms

The screenshot displays the 'Alarm and events' section in the Ciena management interface. On the left, a 'Saved filters' dropdown is highlighted. Below it, a list of filters is shown, including Severity (Critical, Major, Minor, Warning, Info), Service affecting (Yes, No), Device type (NMS), and Acknowledge state (Not acknowledged). A red box highlights the 'Filters' section. In the top right corner, three buttons are highlighted: 'Save view settings', 'Generate Report', and 'Export the list of active alarms'. The main table shows a single active alarm with a severity of 'Critical' and a description of 'Unreachable license serve...'. The table columns include Severity, Description, Class, Card type, Device type, Aggregate NE, Relative loc..., Device name, Note, Device tags, Resource, and Raised.

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37

Alarms can be filtered by:

- Severity
- Service affecting
- Device type
- Acknowledgment and much more

Save view settings such as filters based on severity, Service affecting, Device type and Acknowledge state.

You can generate a report that includes many alarm parameters such as ID, severity and more in a compressed format of complete network.

Or use 'Export' to export the list of active alarms in a .csv file format which has a limit of the first 5000 records.

Let's learn about Alarm history.

Alarm History

The screenshot illustrates the process of viewing and exporting alarm history in the Cienna network management system.

Troubleshooting Menu: The 'Alarm history' option is highlighted, with a callout stating: "Display alarms for custom period".

Alarms and events Window: This window allows filtering alarms by status (Raised, Cleared, Superseded) and duration. The 'Duration' filter is set to '24 hours'. A 'Search' button is highlighted, with a callout stating: "Export alarm history in .csv format".

Alarm History Table: The resulting table displays the following data:

Severity	Description	Class	Card type	Device L	Device R	Note	Device logs	Message	Raised	First raised
Warning	Bad Ethernet Connection	COM		RLS	WEST-02			10x101	2023-04-24 12:40:10 (+05:30)	2023-04-12 14:22:29 (+05:30)
Warning	Circuit Pack Missing	EGPT		RLS	WEST-02			40-1	2023-04-24 12:40:08 (+05:30)	2023-04-12 14:22:29 (+05:30)
Warning	Bad Ethernet Connection	COM		RLS	WEST-02			10x102	2023-04-24 12:40:09 (+05:30)	2023-04-12 14:22:29 (+05:30)
Warning	Bad Ethernet Connection	COM		RLS	WEST-02			10x103	2023-04-24 12:40:10 (+05:30)	2023-04-12 14:22:29 (+05:30)

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You can access the Alarm history from Troubleshooting menu under Network.

'Alarms and events' pop-up window open with two options to view alarms and events with pre-selected filters such as Raised, Cleared, and superseded.

Duration can be specified from last 15 minutes to up to 24 hours.

You can customize the date and time of the alarm history.

After entering the duration or customized date and time, click on the 'Search' button to display the alarms and event for the specified duration. 'Alarms and events' window opens and displays the alarms and events. You can export the results into a .csv format file and download the list of alarm history.



Navigator Intelligent Apps

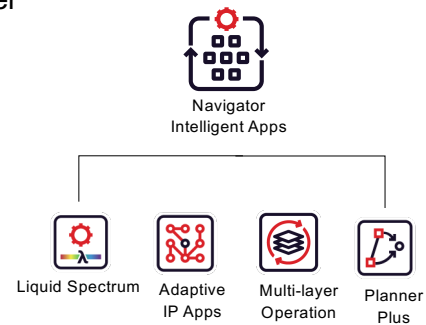
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In this section, you will learn about Navigator Intelligent Applications.

Navigator IA

- By providing proactive insights based on an abundance of historical and real-time data, Navigator IA optimize network performance, simplify troubleshooting, and help make better decisions.
 - Liquid Spectrum
 - Adaptive Ip Apps
 - Multi-layer Operation
 - PlannerPlus



By providing proactive insights based on an abundance of historical and real-time data, Navigator IA optimize network performance, simplify troubleshooting, and help make better decisions.

Liquid Spectrum apps improve visibility of the photonic layer, enabling you to increase network capacity and service availability from optical infrastructure investment, driving down cost and power per bit.

Adaptive IP Apps speed up resolution of customer service issues through advanced visualization, real-time analysis and constraint-based path computation for IP, MPLS and segment routing (SR) networks.

Multi-layer Operations apps provide intuitive visualization of correlated data across multiple network layers, to simplify and automate repetitive tasks and mitigate network issues.

PlannerPlus provides online planning capabilities for accurate and timely network design, delivering maximum return on infrastructure investment. Visualize your new network sites and fibers, run link engineering, and generate a bill of materials with just a few clicks.

Summary

In this module, you learned to:

- Provide the Overview of Navigator NCS and Navigator MC
- Explain how to Log in to Navigator MC and discover the dashboard.
- Explore the dashboard and access different menus.
- Define the Navigator MC map and its functions.
- Explain Network elements and NE enrolment.
- Discover equipment details and NE operations.
- Describe how to de-enroll NE.
- Explore IP packet network menu and its functions.
- Explore Optical network menu and its functions.
- Perform troubleshooting by viewing active alarms and Alarm history.
- Introduce Navigator Intelligent Apps (NIA)

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41

