

NCM User Guide

User Guide

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1 Overview

Network Connectivity Manager (NCM) provides End-to-End service management of a generic Mobile Back Haul network domain IP or Ethernet based.

End-to-end transport between the Access and the Core network can be implemented by different technologies and service types in different parts of the network, for example, L2 Ethernet services in the access part and L3 IP VPN services in the aggregation part over a transport underlay managed by ENM WAN SDN.

In the following figure a mobile backhaul network is represented which can be provisioned using ENM together with the NCM application.

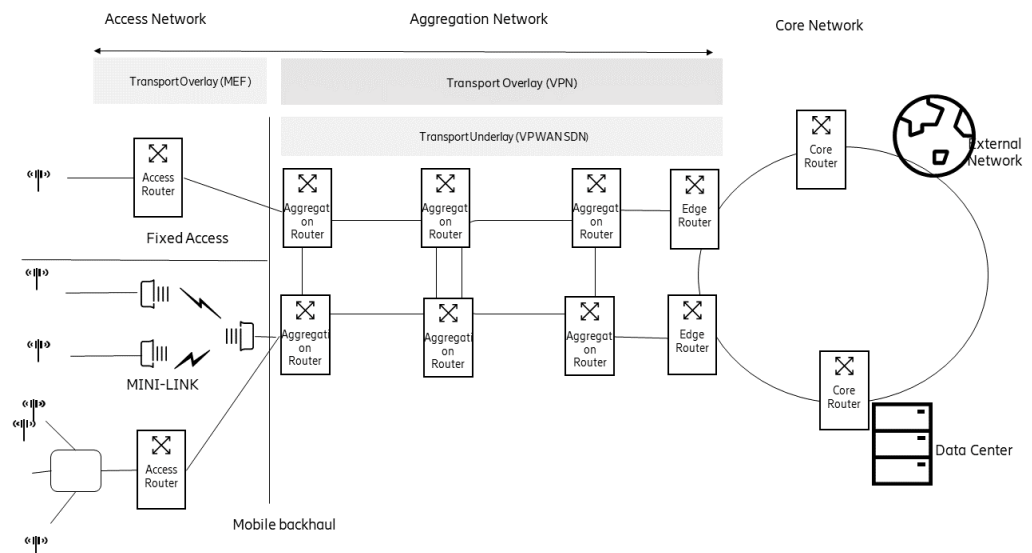


Figure 1 Mobile Backhaul Network



2 Use the NCM Application

The NCM application consists of a dashboard, header, a navigation bar, and a view panel.

2.1 Network Objects

The network objects used by NCM are NEs and component domains. These resources must be either configured or synchronized before services can be designed and activated with the NCM application. For details about view/configuration of the following objects:

- NEs, see [Network Elements View](#).
- Ports, port configuration is possible only via Topology Browser or Node CLI.
- Links, see [Links View](#).
- Component Domain, see Prepare the Network for NCM Service, Reference [\[5\]](#) for the population of a new component domain.

For details about resynchronizing the following objects: NEs, Ports, links and configuring the objects like component domains, see the corresponding ENM documentation.

2.2 Dashboard

The dashboard provides panels that show summary breakdowns by type and state for Services.

Service Summary Panels

Service summary panels display the Service types. The graph bars in these summary panels are service states.

Service summary panel: Active, Partially Active, and Inactive.

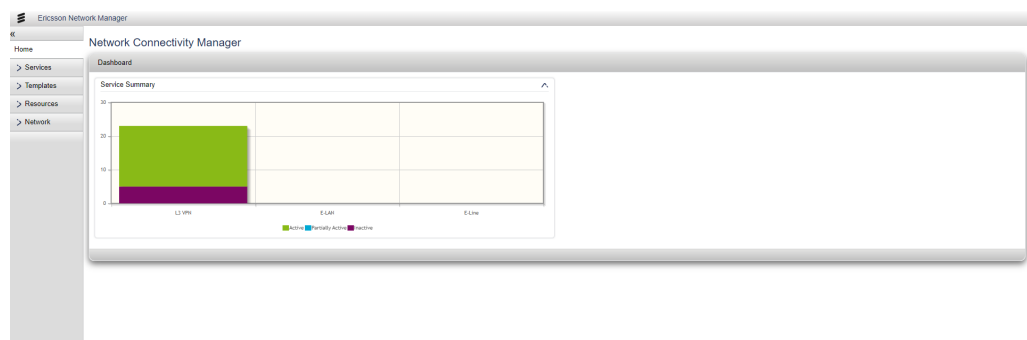




Figure 2 Summary Panel

2.3 Navigation Bar and View Panels

The navigation bar allows to access all the functional areas of the application. The view panels provide various actions to access resources, create templates and services. The view panels also offer query functionality for resource information. Refer to the table below for a list of available menus and actions that it is possible to perform using the menus.

Table 1 Navigation Bar and View Panels

Menu	Submenu	View Panel Description	More Information
Services	Service LCM (Life Cycle Management)	Add, view, edit, activate, and remove services. Activate, bulk activate, deactivate, detach, and unroute Ethernet services. Import CSV file containing services. For more details, see <i>Inventory Import</i> in the NCM Service Discovery guide, Reference[8] .	See Section: Manage Services .
	Service Discovery	Initiate the service discovery task for Ethernet services.	See Section: Discover and Synchronize Existing Services .
Templates	E-LAN	Add, view, edit, remove, and bulk modify E-LAN service templates.	Create NCM Service Template. Reference [6] See also NCM Service Creation Roadmap, Reference [4].
	E-Line	Add, view, edit, remove, and bulk modify E-Line service templates.	
	IP	Add, view, edit, and remove standard service templates and related configuration information of Service Templates, CLI Templates, and Global Configuration.	
	UNI Bandwidth	Add, view, edit, and remove Bandwidth.	
	End-Point	Add, view, edit, remove, and bulk modify End-Point service templates.	
	End-Point Profile	View, remove, customize End-Point profiles.	



Menu	Submenu	View Panel Description	More Information
Resources	Network Elements	Manage NEs available for Ethernet services: <ul style="list-style-type: none">— Access related views and launch actions— Organize NEs into component domains— Synch the NE	
	Links	View, filter the list of Links.	See Section: Network Objects .
	Component Domains	Add, populate, and modify component domains.	See Section: Network Objects .
	Reports	Manage the different types of service specific or network reports. Select a report type, enter specific date-range parameters, and generate reports that can be viewed online and saved.	See Section: Generate Reports .
	Diagnostics	Collect the NCM server logs and provide the database diagnostic information.	For collection of server logs, refer to <i>Collecting System Diagnostics</i> in the ENM System Administrator Guide.
	Options	User preferences can be defined in 'General' tabs, as follows: "Do not prompt confirmation dialog during service activation" can be enabled or disabled. Prompt Confirmation Dialog during service activation is based on this preference.	See section: Manage User Preferences .
Network	Synchronization	Synchronize with the current state of the Network	See Section: Network Objects .



2.4 Tables

Tables are widely used in the NCM application to present information. They are accessed from the navigation bar and by browsing from one table to another using the Browse-to functionality.

By right-clicking a row in a table, it is possible to open a context-sensitive menu that provides additional actions. These menus show possible actions depending on the particular context: some menus permit basic actions like viewing, modifying, and deleting, while some other provide advanced actions (basic actions plus Browse-to functionality to other tables and launching functions). The tables in the NCM application allow to delete multiple items at once. To delete multiple items in a table:

- If the items are non-consecutive, hold the **Ctrl** button and select the rows to be deleted.
- If the items are consecutive, shift-click the first and last items of the table that to be deleted.
- Right-click in any row to open a context-sensitive menu.
- Select Remove.

Task Name	Type	Service Type	Start Time	Stop Time	Total Services	Pending Services	State	Status
mauro_1	Discovery	L3 VPN	2020-10-15 11:46 IST	2020-10-15 11:46 IST	0	0	COMPLETED	Service Discovery
SampleSD	Discovery	Ethernet	2020-10-15 10:55 IST	2020-10-15 10:55 IST	0	0	COMPLETED	Service Discovery
SampleSD	Discovery	Ethernet	2020-10-15 10:18 IST	2020-10-15 10:18 IST	0	0	COMPLETED	Service Discovery
L3_VPN_Mauro	Discovery	L3 VPN	2020-10-15 09:03 IST	2020-10-15 09:03 IST	0	0	COMPLETED	Service Discovery
d3	Discovery	L3 VPN	2020-10-15 09:02 IST	2020-10-15 09:02 IST	1	1	PENDING_ANALYSIS	Service Discovery
A_2	Discovery	L3 VPN	2020-10-12 12:16 IST	2020-10-12 12:17 IST	1	1	PENDING_ANALYSIS	Service Discovery
A_1	Discovery	L3 VPN	2020-10-12 09:58 IST	2020-10-12 09:58 IST	1	0	COMPLETED	Processing Result
1	Discovery	L3 VPN	2020-10-12 09:13 IST	2020-10-12 09:13 IST	0	0	COMPLETED	Service Discovery
12102020	Discovery	L3 VPN	2020-10-12 08:40 IST	2020-10-12 08:40 IST	1	1	PENDING_ANALYSIS	Service Discovery
5	Discovery	L3 VPN	2020-10-09 16:10 IST	2020-10-09 16:11 IST	0	0	COMPLETED	Service Discovery
dd	Discovery	L3 VPN	2020-10-09 13:34 IST	2020-10-09 13:36 IST	0	0	STOPPED	Service Discovery
Mario_SD	Discovery	L3 VPN	2020-10-09 10:13 IST	2020-10-09 10:13 IST	3	0	COMPLETED	Processing Result
Salvo_6675_1	Discovery	L3 VPN	2020-10-09 08:14 IST	2020-10-09 08:14 IST	3	0	COMPLETED	Processing Result
Salvo_6274_1	Discovery	L3 VPN	2020-10-09 08:08 IST	2020-10-09 08:08 IST	3	0	COMPLETED	Processing Result

A vertical scroll bar appears when there are more rows that can be displayed in the window. When there are more items that can be useably displayed on a page, the table is paginated, and it is possible easily to move from page to page using controls that appear below the table.

In any table accessed from the navigation bar, the number of items displayed has an upper limit. Filter the table to make sure all the items to be viewed in the table are displayed.



2.4.1 Customize the Appearance of Tables

It is possible to change the appearance of a table to display or organize rows differently. The changes persist between user sessions. It is possible to make the following alterations to the appearance of a table:

- Move columns: Click a column heading and drag and drop to the desired spot.
- Change column width: Click the column border and slide the double-arrow mouse cursor left and right. The minimum width of a column is 30 pixels.
- Sort within a column: Click the arrow next to the column heading to toggle the sort order. If the table is grouped, the sorting is done within the current grouping.
- Hide and show columns: Click the gearwheel icon at the far right of the heading row to open the pop-up menu. Click the check box beside a column label to show or hide the column.
- Group by a column: Click the gearwheel icon at the far right of the heading row. Go to Columns grouping to open a drop-down menu, and click the column label to group the table rows by. Click on a checked column label to ungroup the rows.
- Expanding the table width off-screen: Click the gearwheel icon at the far right of the heading row. Go to Expand content and click the percentage value that the table width must be expanded by.

2.4.2 Filter Information in Tables

Filtering a table reduces the amount of information displayed, making it easier to find an item of interest. Filtering is only available for tables accessed from the navigation bar.

The filtering criteria for tables appear in one or more collapsible field groups above the table. Click on the label to expand or collapse a field group. Enter the search parameters in the fields. Wildcard characters are supported in text fields.

2.4.3 Access Tables

The NCM application is designed to access the tables that contain the detailed needed information.

Two strategies are used: frequently accessed and essential information is accessed rapidly using the navigation bar, and specialized information is accessed intuitively using the Browse-to submenu in the context-sensitive menus.



2.4.4 Export Information in Tables

Each table's content can be exported as CSV file.

To export the information contained in the table:

1. Click Export
2. Save the export.csv file

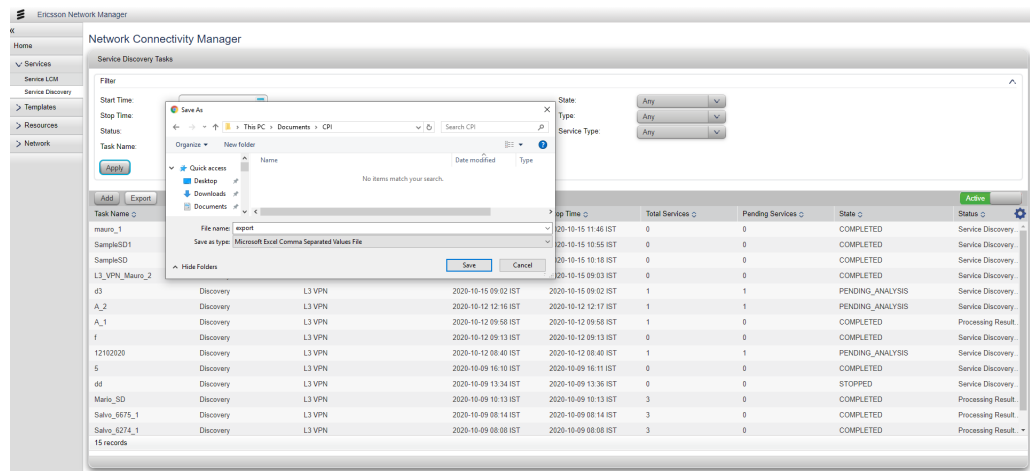
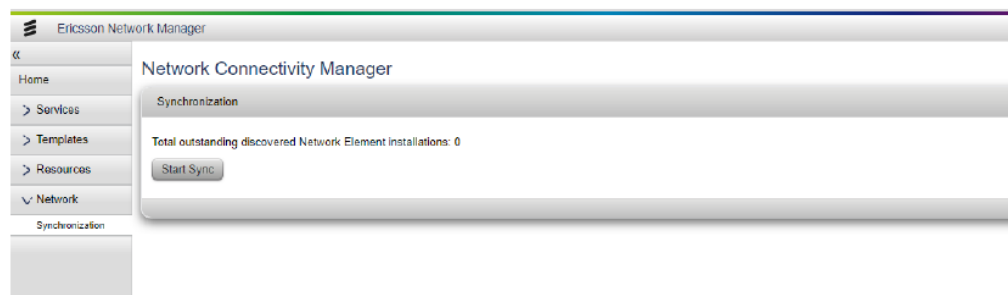


Figure 3 Export of the Table Content

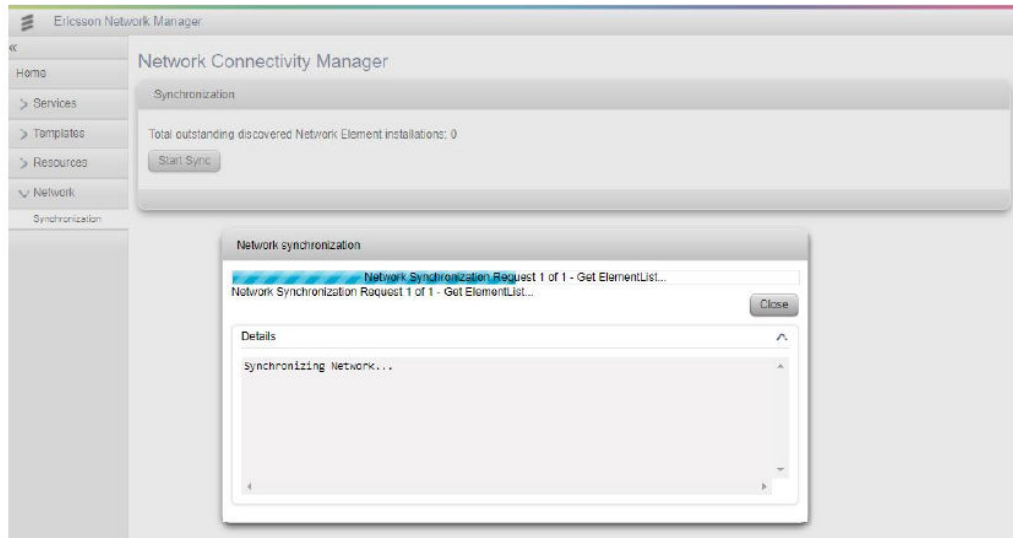
Once the export is complete it is possible to rename the export file as needed.

2.4.5 Synchronization

Click the **Network** navigation tab, to access the **Synchronization** page.



From this page, it is possible to synchronize with the latest state of Network.



The status messages of synchronization are shown in progress dialog as shown above.

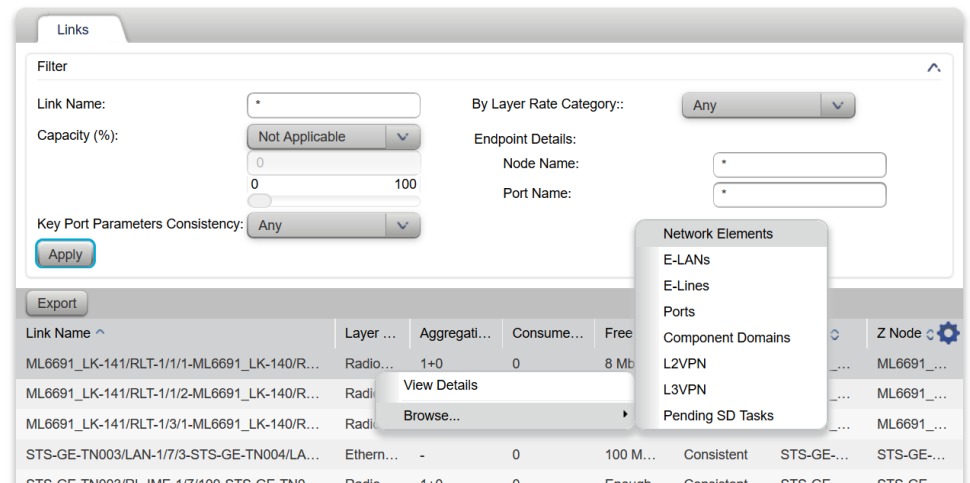
2.4.6 Network Elements View

The first time the NE view is open, all the NEs available for configuring E-Line/E_LAN services are listed in order by name. It is possible to use the fields in the Query filter field list to filter the NE list, to display the NEs of interest.

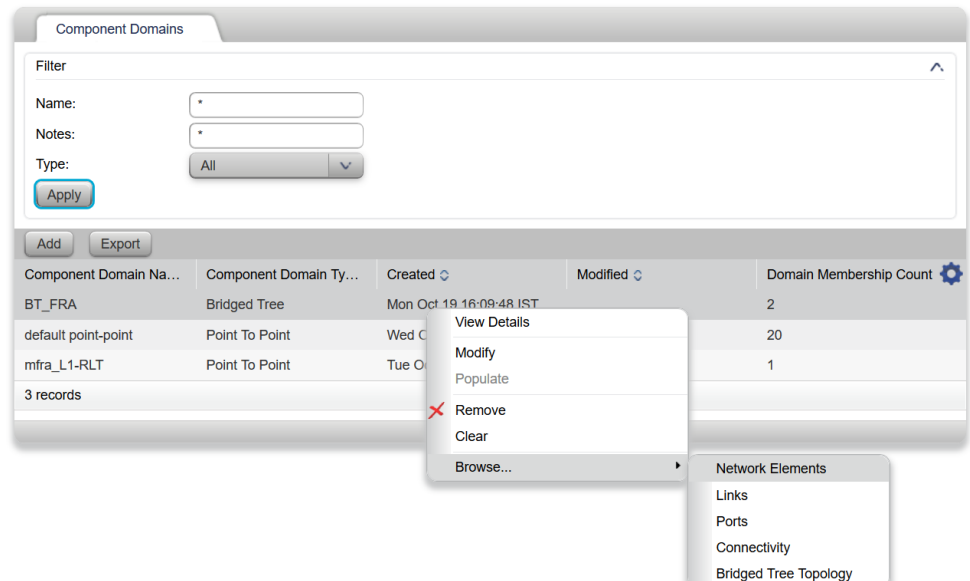
It is possible to navigate to Network Elements list following different paths:

Steps

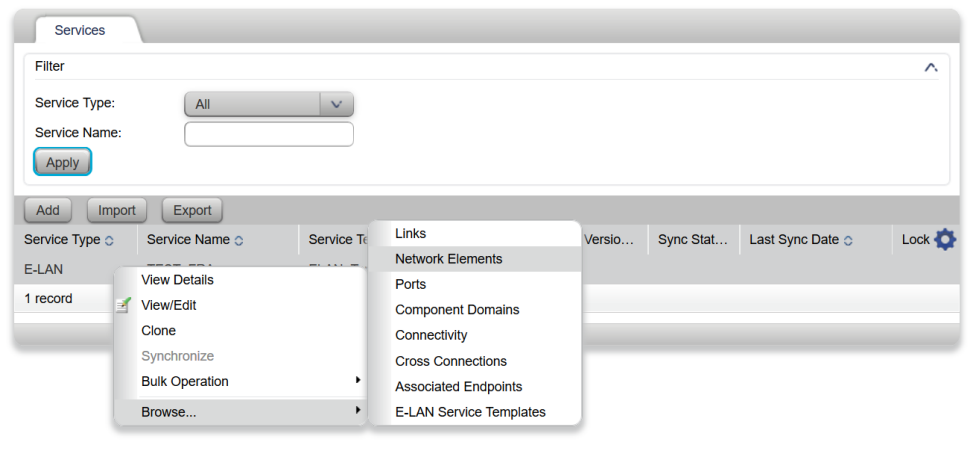
1. **Resources > Network Elements** page.
2. **Resources > Links** page. Right-click on a link entry and select **Browse > Network Elements** page.



3. **Resources > Component Domains** page. Right-click on a Component Domain entry and select **Browse > Network Elements** page.



4. **Services > Service LCM** page. Right-click on a service entry and select **Browse > Network Elements** page.



2.4.7

Links View

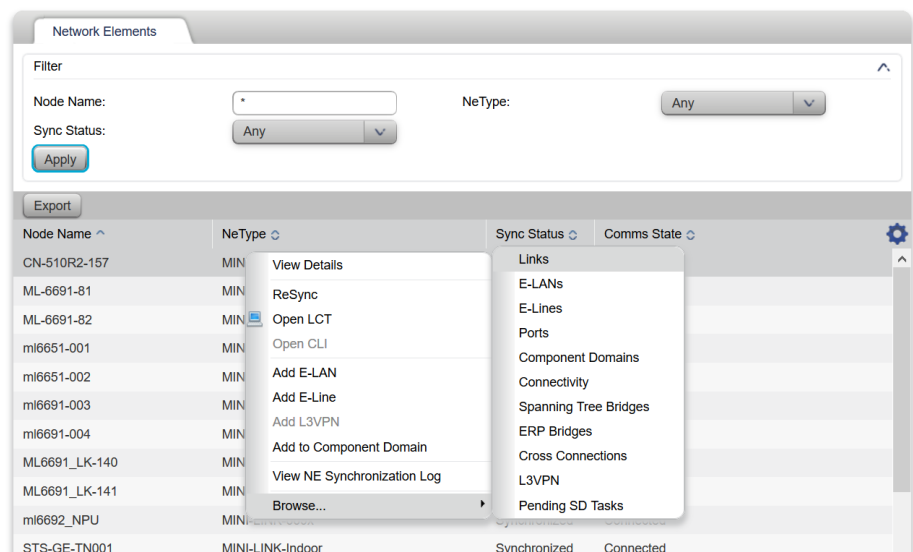
The ENM user interface displays a link as a line connecting two network Element icons. The ENM user interface also allows to retrieve information about links in tabular form.

The NCM UI provides graphical representations of links in the logical service topology view and the link diagram. There is no symbol to represent the technology types of a link.

1. Path to Link Tables.

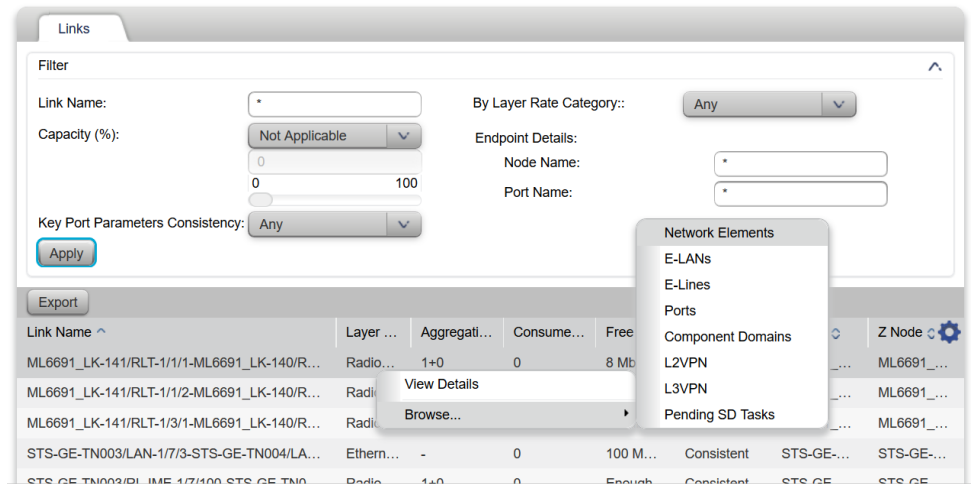
It is possible to navigate to Links list following different Paths:

- a. **Resources > Network Elements** page. Right-click on a Network Element entry and select **Browse > Links** page.

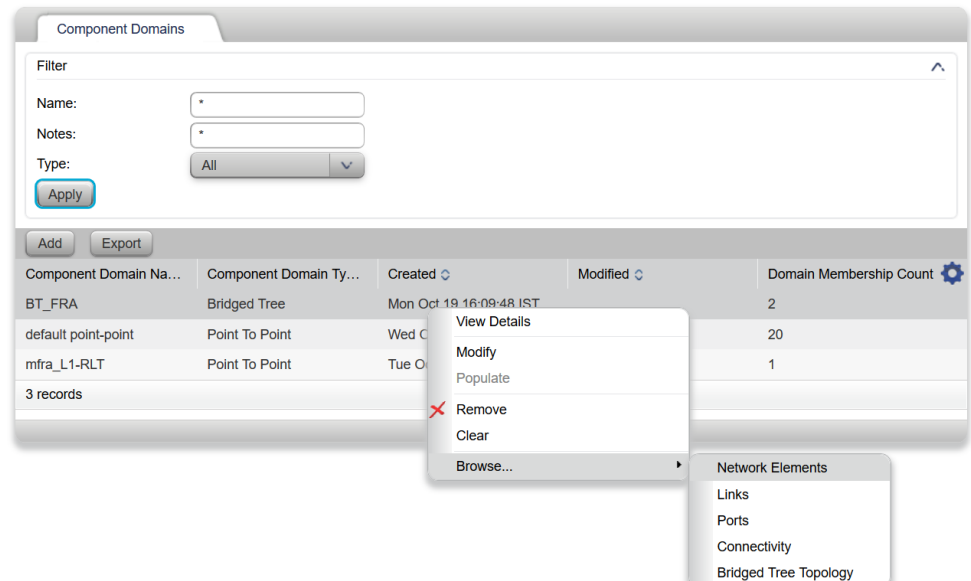




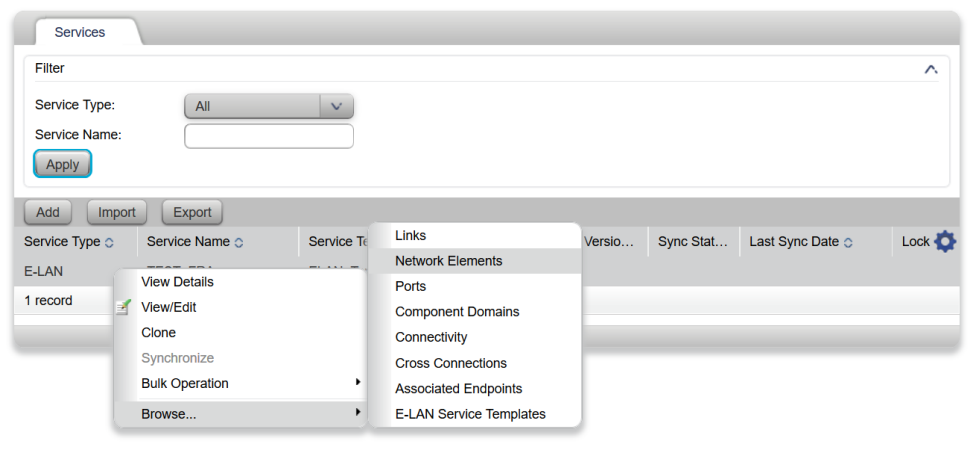
2. **Resources > Links** page. Right-click on a link entry and select **Browse > Network Elements** page.



3. **Resources > Component Domains** page. Right-click on a Component Domain entry and select **Browse > Network Elements** page.



4. **Services > Service LCM** page. Right-click on a service entry and select **Browse > Network Elements** page.



2.5 Manage User Preferences

Click **Resource-Options** navigation, to access the 'Options' page.

Thus, from the General tab, the user can configure the available options, according to the required preferences, as follows:

1. Do not prompt confirmation dialog during service activation:

It is the user preference to activate any service, with or without confirmation dialog prompt to the user.

- a. If enabled, service activation starts immediately without prompting any confirmation dialog to the user.
- b. If disabled, during service activation 'confirmation dialog' is prompted to the user. User can enable the preference again by selecting "Do Not Show this message again" check-box in any 'Service Activation Confirmation Dialog Prompt' and this preference is persisted for that user.

The option is applicable to the activation process of all types of services.



3 Manage Services

Using NCM it is possible to Create, Edit, View, Discover, Activate and Deactivate E-LAN, E-Line and L3VPN Services on NEs managed by ENM.

Table 2 Services by Type

Service	Description
E-Line	Point-to-point service.
E-LAN	Multipoint-to-multipoint service
L3VPN	Both full-mesh and unconstrained (custom) topologies are available. Includes Virtual Private Network context and attachment circuit configuration

Each service instance is built from a service template. For information on service template design, refer to Create NCM Service Template, Reference [6].

Selecting a service allows to display the logical view of its topology. The services allow to browse to information about the resources used by the service itself. The tabs for service history and operator notes are visible only for L3 VPN services.

For information on building specific services, refer to the following sections in Create NCM Service, Refer [6]:

- Building an E-LAN Service
- Building an E-Line Service
- Building an L3 VPN Service

Note: Before removing a node in ENM verify that the node is not associated to any service.

Any references to VpWS or CESoIP services reported on the NMC GUI refer to future implementation and are not active.

3.1 Access the Services Views

The Services views allow to create new services, read the service status, modify existing services as well as discovering and synchronizing existing services. To access the Services views:

- **Service-Service LCM** to access the view for Add (Creating), View/Edit and Synchronize services.



— **Service-Service Discovery** to access the view to discovery services.

Service Type	Service Name	Service Template	State	Active Version	Sync Status	Last Sync Date	Lock
L3 VPN	Service_6675-6371	2_mod_ST	Not Deployed	-			
L3 VPN	Service_6371-6675	2_mod_ST	Deployed	1	Synchronized	2020-10-21 14:30 IST	
L3 VPN	SCL3-VPN40	[System] L3VPN Discovery	Deployed	2	Synchronized	3hr 50m ago	
L3 VPN	SCL3-VPN39	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	23hr 6m ago	
L3 VPN	SCL3-VPN38	[System] L3VPN Discovery	Deployed	1	Synchronized	23hr 37m ago	
L3 VPN	SCL3-VPN37	[System] L3VPN Discovery	Deployed	2	Synchronized	23hr 30m ago	
L3 VPN	SCL3-VPN36	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN35	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN34	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN33	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN32	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN31	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN30	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN29	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 16:54 IST	

Figure 6 Service Page

The Services table provides a list of existing service instances and their service details. It is possible to filter the table by service type and/or service name.

From the service view:

1. Filter the service table - see Section [Filter the Service Table](#).
2. Create new services - see Section [Create a Service](#).
3. Edit an existing service—Select the service, right-click, and select View/Edit. The multi-tabbed service page refreshes with the Design tab selected. Each tab provides access to a service-specific design or management tool, including:
 - Routing and activating Ethernet services, see Section [Route and Activate Ethernet Services](#).
4. View the state of a service, see Section [View Service States](#).

3.2 Filter the Service Table

It is possible to filter all services by service name. For E-Line and E-LAN services, filters on various service-specific criteria are available.

To filter the service table:

Steps

1. In the Service Type field, select either E-LAN, E-Line, L3VPN or All (the default).

When filtering:



- E-LAN Services—It is possible to filter on certain columns using the fields shown:

The screenshot shows a dialog box titled "Services" with a "Filter" section. The filter fields are as follows:

Service Type:	E-LAN	▼
Service Name:	*	
State:	Any	▼
Notes:	*	
Service Template:	Any	▼
Terminating on NE:	<input type="checkbox"/>	
Mid-Point NE:	<input type="checkbox"/>	

At the bottom left of the filter section is an "Apply" button.

Figure 7 E-LAN Filter

- E-Line Services—It is possible to filter on certain columns using the fields shown:



The screenshot shows a 'Services' window with a 'Filter' section. The filter fields are: Service Type (E-Line), Service Name (*), State (Any), Notes (*), Service Template (Any), Service Class (Any), VPN Type (Any), Terminating on NE (checkbox), and Mid-Point NE (checkbox). An 'Apply' button is at the bottom left.

Figure 8 E-Line Filter

- L3VPN Services—It is possible to filter on certain columns using the fields shown:

The screenshot shows a 'Services' window with a 'Filter' section. The filter fields are: Service Type (L3 VPN), Service Name (empty), Network Element (Please select...), and a 'Find' button next to it. An 'Apply' button is at the bottom left.

Figure 9 L3VPN Filter

- All services—It is possible to filter on the Service Name columns only.

When filtering E-LAN or E-Line services, additional fields appear if checking either the Terminating on NE or Mid-Point NE check boxes. A NE must be selected, and, optionally, a port name.



3.3 Design Service Templates

Before creating services, service-specific templates containing configuration details that are common to and can be shared among multiple instances of the services planned to be provided must be designed.

For more information about templates, see the document [Create NCM Service Template, Reference \[6\]](#).

3.4 Create a Service

To create a service:

Steps

1. Click **Service-Service LCM**.
2. Click **Add**

Type a name to identify the service. This name can be up to 32 characters and must be unique. Special characters are allowed.

3. Click **Service Type** and select the service type for designing the service.
4. Click **Service Template** and select the service template for designing the service. The service template determines the coming input fields.

For information on creating service templates, refer to the [Create NCM Service Template, Reference \[6\]](#).

5. 3. During E-LAN or E-Line service creation: :
 - a. Click **Next**. The view refreshes with the Create Service - Select Service Endpoints page.

For instructions about specific services, see the following sections in [Create NCM Service, Reference \[7\]](#):

- b. Click **Finish** when all service parameters are provided. The page refreshes with the Design tab selected.
- c. 3. Click **Close** and the new service appears in the Services list in the Created state.
- d. To deploy the service, right click the service and select **Route**.

For information on activating services and deploying service components, refer to [Route and Activate Ethernet Services](#).

6. During L3 VPN service creation:



- a. **Optional.** Click Order # and type the order number for this service.
- b. Click **Next**. The page refreshes with the following tabs selected:
 - Design

Service parameters depend on the particular service you are building. The service design state is In Design. As you configure service details, you can click **Save** at any time.

For detailed instructions about a specific service, see the following section in Create NCM Service, Reference [7]:

- Build an L3 VPN Service
- c. Click **Complete Design** when all service parameters are provided.
 - d. Click **Close** and the new service appears in the Services list in the Not Deployed state.

When the user is ready to deploy the service select it, click the right button and open the **View/Edit** menu. Then click **Complete Design** and **Activate Service**. For information on activating services and deploying service components, see section [Activate VPN Services](#) on page 18

3.5 Activate VPN Services

When the user activates a non-Ethernet service, all components belonging to the service are deployed. When a service component is deployed, the component configuration is sent to the network device.

Note: It is not possible to use NCM application to create a Layer 3 service on an NE that requires manual confirmation for context creation. Use the no system confirmations context command to allow the application to deploy and create Layer 3 services that include context creation. By default, confirmation query is disabled.

The service state indicates whether a service has been successfully activated. Deployment attempts that are not successful after 5 minutes are ended, and an error message is sent.

To activate a service:

Steps

1. On the Services page, right-click a service that has a service state of Not Deployed, and select **View/Edit**.

The service details page appears with the Design tab selected.

2. If the service design is complete, click **Activate Service**.



3. In the Activation dialog box, click **Confirm**.

To deactivate a service, click an activated service, click **Deactivate Service**, and confirm the deactivation. The user must have Service Deactivation permission to deactivate services.

3.6 Route and Activate Ethernet Services

Before an Ethernet service is activated, it must be routed. Before routing an Ethernet service, create the service and select endpoints; see Building an E-Line Service or Building an E-LAN Service in Create NCM Service, Reference [7]. See Prepare the Network for NCM Service, Reference [5] for the population of a new component domain.

A service must have a service state of Created before it can be routed.

To route and activate an Ethernet service:

Steps

1. On the Design page of a created service, click **Route**.

The service topology is available on each routing step view, and the selected or being configured object is highlighted in the logical view.

2. To use existing VLAN tags, select Enable automatic link discrimination. If no VLAN tag is detected, the next available VLAN tag is assigned.

To manually provide a VLAN tag to identify the traffic stream, do not select this option.

3. Click **Next**.

The Route Ethernet service page displays different options depending on the component domain configured on the NEs.

- Point-Point component domain allows to swap the start and end boundary points.
- ERP component domain allows to select a discriminator value.

A message confirming the routing information appears.

4. Click **Finish** to route the service.

The service page is updated with the current service status.

Note: On closing the Design page without routing, the service appears in the service list page with the Created service state.

5. On the Design page, click **Activate Service**.



The **Activating Ethernet Service** page acquires the routing information and activates the service. A confirmation message appears, depending on user preference set for **Do not prompt confirmation dialog during service activation** in Options Tab. Then, the service state changes to Active on the service list page.

3.7 View Service States

In the State column on the Services page, it is possible to view the current state of the available services. Service state information is read only.

It is also possible to right-click a service and select View or Edit to view its service state. The service state is shown in the header information along with customer, order number, service type, service name, and service template.

From the Design tab of a service, click **Analyze State** to refresh the current state value. Additional information is provided if the service state has changed. An error message is shown if a service is only partially deployed due to a problem during deployment.

For details related to the possible Service State Values for Ethernet Services see the document Create NCM Service, Reference [7].

3.8 Lock and Unlock Services

Service locking and unlocking is available only for VPN services.

Service Type	Service Name	Service Template	State	Active Version	Sync Status	Last Sync Date	Lock
L3 VPN	Service_6675-6371	2_mod_ST	Not Deployed	-			
L3 VPN	Service_6371-6675	2_mod_ST	Deployed	1	Synchronized	2020-10-21 14:30 IST	
L3 VPN	SCL3-VPN40	[System] L3VPN Discovery	Deployed	2	Synchronized	3hr 50m ago	
L3 VPN	SCL3-VPN39	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	23hr 6m ago	
L3 VPN	SCL3-VPN38	[System] L3VPN Discovery	Deployed	1	Synchronized	23hr 37m ago	
L3 VPN	SCL3-VPN37	[System] L3VPN Discovery	Deployed	2	Synchronized	23hr 30m ago	
L3 VPN	SCL3-VPN36	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN35	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN34	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN33	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN32	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN31	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN30	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN29	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 16:54 IST	

Figure 10 Example of Locked and Unlocked Services

When a service is locked, it cannot be deleted or modified. To lock , or unlock an existing service, the user must have a security role with read-write access NCM Locking service type.

To lock or unlock a service:



Steps

1. Navigate to the **Services** page.
2. Right-click an unlocked service and select **Lock Service**.

After it is locked, the service cannot be modified or deleted until it is unlocked.

3. Right-click a locked service and select **Unlock Service**.

Note: Service locking is available to any NCM user with the appropriate security role. If a user locks a service, another user with the same security role can unlock the service.

3.9 Service Topology View

It is possible to view the topology of a service using the Logical view. Right-click a service from the service menu page and select View or Edit details. The service topology page appears with the Logical views. The Logical view provides a graphical representation of a service, including its components and connections.

It is possible to adjust the view to see all connections in a service, or it is possible to focus on a specific section. It is also possible to select a service object, get configuration details about the object, move objects within the view. Each service object is represented by an icon. Icons that are shown depend on the configuration of the selected service and the view selected.

Relationships between service objects are represented in the Logical view by straight lines. For E-LAN and E-line services, link type icons appear on the line representing a link between two NEs. If a link type icon is available, it is possible to right-click on it to display more information about the link.

Click to pan the topology, select an object, or reposition network objects. It is possible to use the mouse wheel or zoom tools to zoom in and out, or shift-click to zoom in on a specific area of the view.

Leaving the view without saving the new layout makes losing any changes.





Tool Icon	Description
	Zoom in or out of the view
	Save layout
	Cycle through the zoom history (when you exit the topology view, the zoom history resets)
	Reload the top-level map (Logical view only)

Figure 11 Topology View Tools



3.9.1 Logical View of a Service

To view the topology of a service in Logical view:

Steps

1. Navigate to the Services page and open a service:
2. Depending on the service type, click:
 - The **Topology** tab and then click the Logical View subtab
 - The **Logical View** tab

The logical view opens, showing a schematic layout of the service.

3. Click an object to display configuration details and access the actions available for that object.

The service object configuration details include information about the corresponding service component. For example, click a component domain object to open the component domain and view the logical layout of NEs and links within the component domain.

Configuration details for service components are available on Design tab.

Logical View

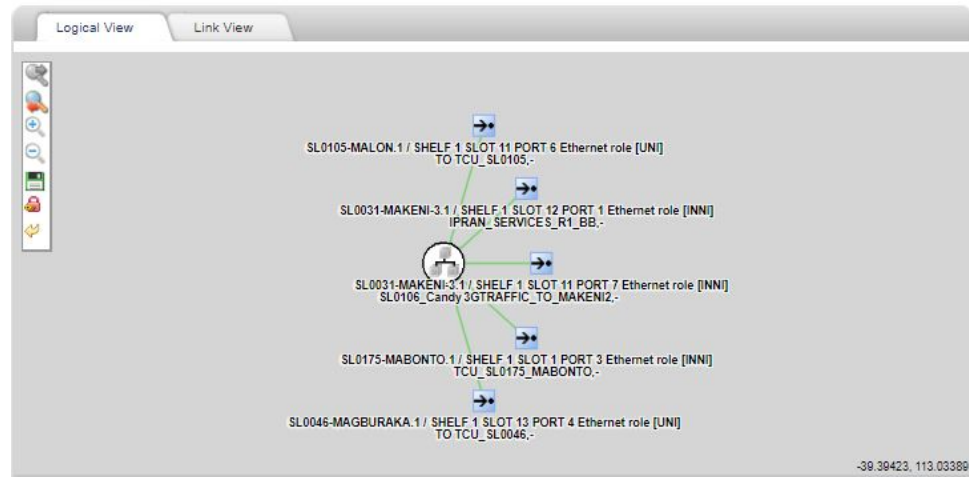


Figure 12 Logical View
Component Domain View

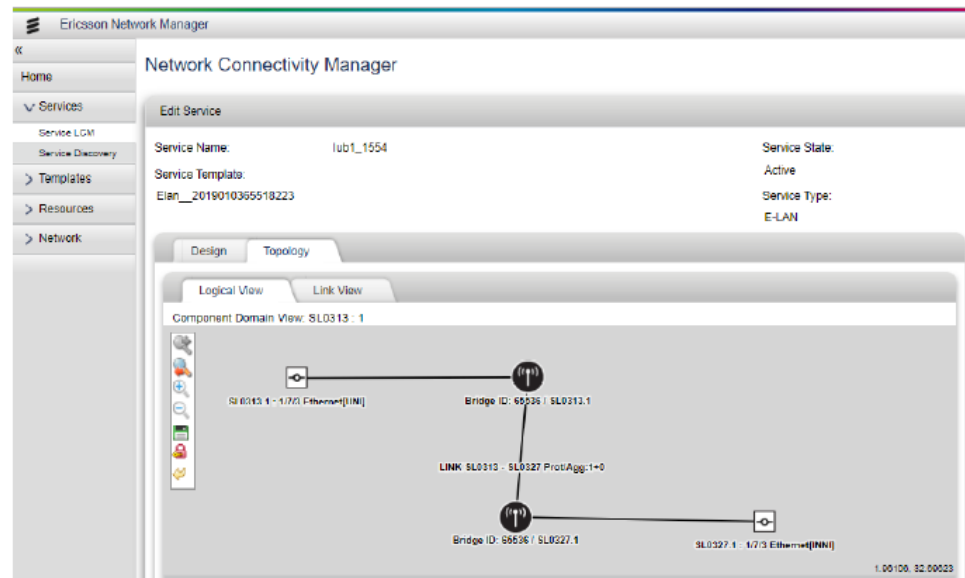


Figure 13 Component Domain View

3.9.2 Link View of Ethernet Service

To view the topology of an Ethernet service in Link view:

Steps

1. Navigate to the Services page and open a service.
2. Depending on the service type, click:
 - The Topology tab and then click the Link View subtab
 - The Link View tab
3. Select one link, and check the **Show Link Diagram** option, a diagram of the link is shown under the link table.

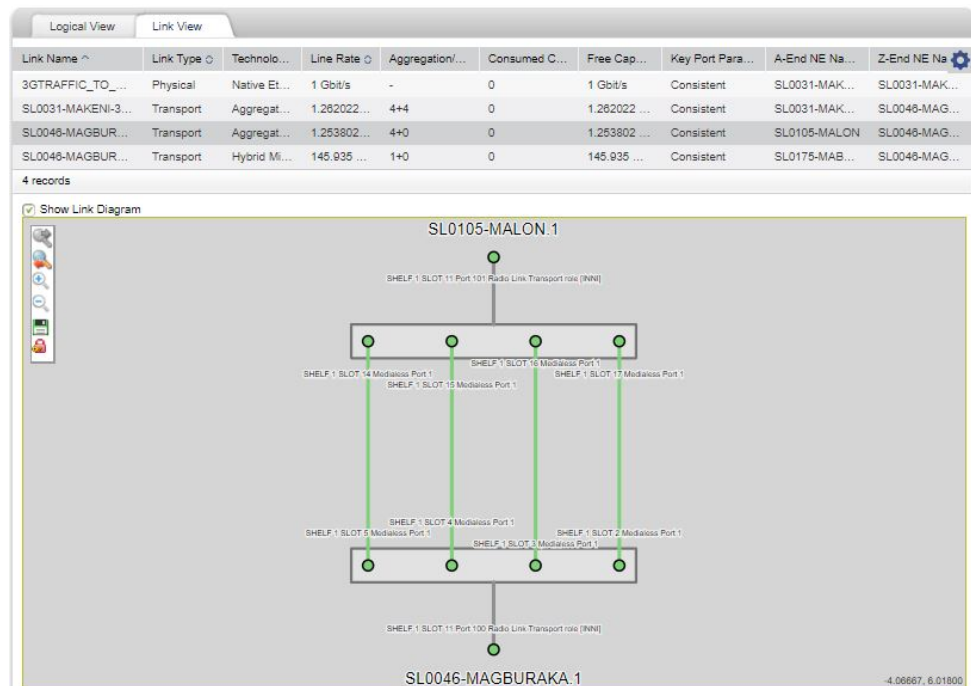


Figure 14 Link View

3.10 Verify a Service Deployment

Audit a deployed service to collect deployment information. For Ethernet services, clicking Audit Service resynchronizes participating NEs in NCM and generates an audit report. The audit report includes NE configuration data, such as links, cross-connections, and ports, from each NE in the service.

To run a service audit:

Steps

1. Navigate to the Services page.
2. Right-click the service to be audited and click **View/Edit**.
3. From the service details page, click **Audit Service**.
4. To audit an Ethernet service, click **OK** to confirm auditing for the selected service. A window showing the progress of the audit appears.

The result of the service audit report is displayed in the Service Audit dialog box. If the device configuration differs from the service definition or there is a configuration error, NCM generates a service issue for each associated object. Any service issues for deployed service objects are listed first, followed by a separate table identifying any issues for undeployed service objects.



Use the content in the service audit report to correct any configuration discrepancies in the service definition. If necessary, correct the configuration on the NE, or notify the network administrator.

If the service audit report returns no service issues, the configuration defined in the service is consistent with the configuration on the NEs.

Table 3 Service Audit Report Field Descriptions

Field	Description	Possible Values
Severity	Identifies the severity level for the service issue.	<ul style="list-style-type: none"> — CRITICAL—Identifies a service issue with an impact to a critical area of the associated service. Critical service issues must be addressed for the service to function as expected. — INFO—Identifies a critical service issue for an undeployed service object. Before a service is deployed, all outstanding service issues with this severity level must be addressed for the service to function as expected.
Type	Lists the service object with a configuration inconsistency or error.	
Description	Describes the details of the service issue.	<p>Includes the following information:</p> <ul style="list-style-type: none"> — The NE or device that the service object is configured on — The service object identification details; for example, the name of the service object or the circuit ID — The configuration expected and found on each corresponding NE or device



3.11 Manage an L3VPN Service

Service Design, Service Topology, Service Diagnostics, Service History, Service Notes, View Tabs are only available for existing L3 VPN Services as shown in Figure 12.

To run a service audit:

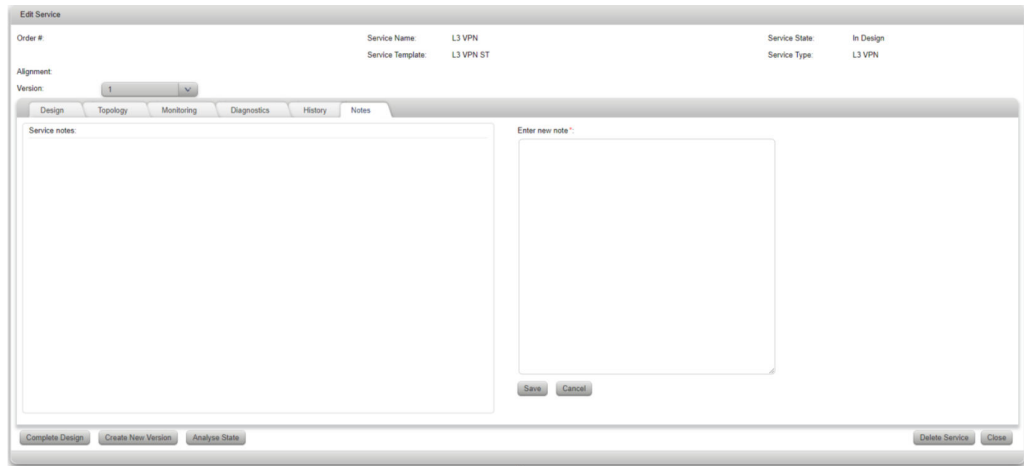


Figure 15 View/Edit Page for L3VPN Service

Service Design, Alarms and Topology View tabs are available for existing Ethernet Service, as shown in the following Figure:



Figure 16 Edit/View Page for Ethernet (E-Line/E-LAN) Services

3.12 Bulk Operation on Ethernet Services

Users can perform bulk operation for Ethernet services at one time. The bulk operations include activate, deactivate, detach and unroute Ethernet services.



Users can perform bulk operation for Ethernet services when the services are under the status listed in the following table.

Table 4 Conditions to Perform Bulk Operation

	Routed	Partially Active	Active	Service Degrade
Activate	Yes	Yes	N/A	Yes
Deactivate	N/A	Yes	Yes	Yes
Detach	N/A	N/A	Yes	Yes
Unroute	Yes	N/A	N/A	N/A

To bulk operate the Ethernet Services:

Steps

1. Click Services in the navigation bar.
2. Select one or multiple Ethernet Services from the Services list and right-click **Bulk Operation**, and then perform Activate, Deactivate, Detach or Unroute as needed.

The maximum number of selected Ethernet services is 25 by default. Users can define a service number for bulk operation, refer to Configuring Bulk Operation Maximum Service Number in ENM System Administrator Guide for more details.

3. When performing bulk Detach operation, the Remove existing route option is shown on the Bulk Operation pop up window.

See *Attaching and Detaching Route in Building an E-LAN Service* or *Building an E-Line Service* sections in Create NCM Service Template, Reference [6], for the detailed information about this option. Click **OK** to continue the bulk operation.

4. When performing Activate, Deactivate or Unroute operations, there is no Remove existing route option on pop up window. Click **OK** to continue the bulk operation, or click **Cancel** to quit.
5. A bulk operation task page pops up.

On the pop-up bulk operation task page, it is possible to perform the following actions:

- Active/Frozen — By default, the Ethernet services status are automatically refreshed. Switch Active to Frozen by clicking the button at the top right corner to stop the auto-refresh.
- Abort—Click **Abort** to abort the task after the running services have



completed running.

- Close—Click **Close** to close the bulk operation task page.
- View Service Detail—Click the icon to view certain Ethernet service operation detail information.

All the bulk operation tasks are reserved in the Bulk Operation Tasks page.

- To view bulk operation task right-click a certain task in the Bulk Operation Tasks list and click **View**.
- On the pop-up task page, perform the actions as step [unresolved external reference].

3.13 Get List of Services

The List of Services in NCM can be obtained from: NCM application, Go to Services.

The maximum number of records displayed in GUI is 1000. If there are more than 1000 records, the following message is displayed to the User:

Maximum records retrieved. There are more, please narrow your search.

Then User has to apply filter Criteria based on Service name, Service Type (E-LAN or E-LINE) and Service State.

User can view the details in .csv file by using **Export** button.

Service Type	Service Name	Service Template	State	Active Version	Sync Status	Last Sync Date	Lock
L3 VPN	Service_6675-6371	2_mod_ST	Not Deployed	-			
L3 VPN	Service_6371-6675	2_mod_ST	Deployed	1	Synchronized	2020-10-21 14:30 IST	
L3 VPN	SCL3-VPN40	[System] L3VPN Discovery	Deployed	2	Synchronized	3hr 58m ago	
L3 VPN	SCL3-VPN39	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	23hr 13m ago	
L3 VPN	SCL3-VPN38	[System] L3VPN Discovery	Deployed	1	Synchronized	23hr 45m ago	
L3 VPN	SCL3-VPN37	[System] L3VPN Discovery	Deployed	2	Synchronized	23hr 37m ago	
L3 VPN	SCL3-VPN36	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN35	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN34	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-26 13:05 GMT	
L3 VPN	SCL3-VPN33	[System] L3VPN Discovery	Partially Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN32	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN31	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN30	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 17:31 IST	
L3 VPN	SCL3-VPN29	[System] L3VPN Discovery	Deployed	1	Synchronized	2020-10-23 16:54 IST	

Figure 17 List of Services



4 System Level Operations

4.1 Database Analyzer

The database analyzer helps locate Network Connectivity Manager service related problems. To access the database analyzer, click **System > Diagnostics > DB Analyzer**.

On each tab, filter helps to search the dedicated records. — Ethernet Analysis: The user can query the Ethernet service discrepancy information triggered by Audit or NE resynchronization operations. These information can be viewed in the table by mouse over the Discrepancy Information. When the service is deleted, the discrepancy information is also deleted from the database. Click **gear icon > Export** to save the information into a file.

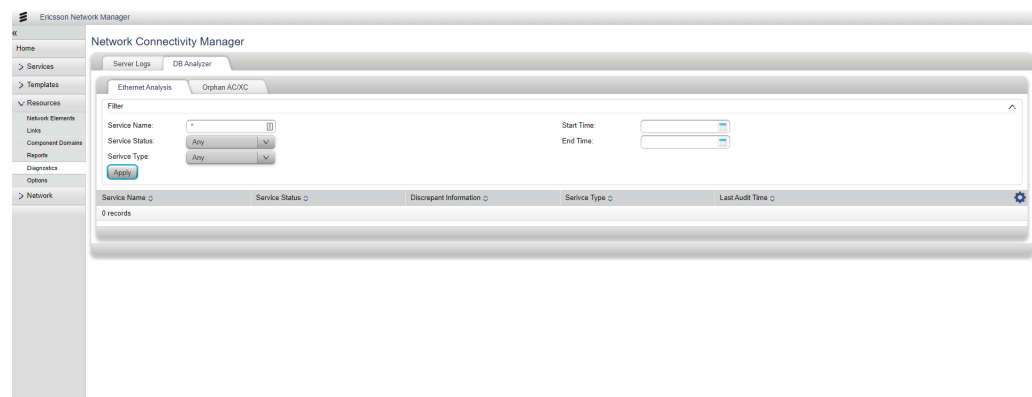


Figure 18 Database Analyzer

4.2 Discover and Synchronize Existing Services

When NCM application manages a network where the services it supports have been already configured on NEs, those services can be discovered and imported into the NCM database.

The service discovery task examines only NEs that are installed in ENM and belong to component domains.

The service discovery task is managed from the NCM application. After the service discovery task is completed, it is possible to review the services and accept or reject them for future management. For details on when and how to use this task, see *NCM Services Discovery*, Reference [8].



Figure 19 Service Discovery

4.3 Generate Reports

Click the Reports navigation tab to access the reports. Only a valid NCM user with permission to generate reports can use the action buttons on this page. Reports are generated immediately based on current data and are displayed in a new web browser page.

Note: You must have pop-ups enabled on your browser to view reports.

Generated reports are saved in the database. You can use your web browser to copy the URL of a generated report and add it to a list of bookmarks if you need to reference the report in the future.

The following report pages are available:

1. Network Summary (Service Type)
2. Service Report
3. Delete stored report
4. Schedule Report
5. Export Report

1. To view a report, click the following buttons:

- Service Report - lists all service details by service name.
- Delete Stored Reports
- Network Summary (Service Type)
- Export Report

2. To delete all stored reports in the database, click Delete stored reports (you must be assigned the Report Delete role). There is no response information from the database to indicate the operation is successful. Delete stored



reports periodically if the reporting functionality is used frequently; otherwise, the stored data accumulates in the database.

Note: This action deletes all report data generated by all users. All saved bookmarks become obsolete and result in browser errors when used.

3. To schedule a report task, click Schedule Report. The scheduled tasks if present already are listed with status under the Schedule Report. Delete and Stop operations are applicable to the tasks in the list.

The output files are stored in the ENM and only the latest 30 files of each type (.xml and .csv) are kept, the expired files are cleared automatically.

Before starting a schedule task, the options in Schedule Report need to be set. You can choose to report any one or more of Services, Links, Nodes, NodePorts, FlowPoints or/and ServiceEndPoints, and select the formats of the output files.

A number of schedule schemes are provided and the scheduled tasks are performed at midnight of the day you choose, as follows:

- Once: the task is executed immediately and only run once.
- Before starting a schedule task, the options in Schedule Report need to be set. Recur Every: sets the frequency. For example, for value 2, the scheduled task is executed every two days. 1 to 15 days are the scope of this field.
- Start On and Finish On: set the start date and end date. If Never is checked, then no end date is set.

While scheduling Service reports, Ethernet services can be filtered based on the following attributes:

- Service Type (Available options are E-LINE, E-LAN and ALL)
- 1) On Clicking the "Schedule Report" button, the following page shows up:
- 2) Selecting the "Services" check-box enlists the "Service Type" drop-down as follows:
- 3) After selecting "E-LINE" or "E-LAN" from the "Service Type" drop-down, two more components "Network Element" and "VLAN Id" appear as follows:
- 4) If "Terminating on NE" or/and "Mid-Point NE" is/are selected, a drop-down "Ne Name" is displayed as follows:
- 5) To export the output files of the scheduled tasks, click Export Report. You can download or delete these files, by selecting the required file and



then performing the required step, by either clicking Download or Delete option.



NCM Reference List

- [1] *NCM Quick Start Guide*, 1551-CNA 403 3666
- [2] *NCM User Guide*, 1/1553-CNA 403 3666
- [3] *NCM Network Scenarios*, 2/1553-CNA 403 3666
- [4] *NCM Service Creation Roadmap*, 3/1553-CNA 403 3666
- [5] *Prepare the network for NCM Service*, 1/1543-CNA 403 3666
- [6] *Create NCM Service Template*, 2/1543-CNA 403 3666
- [7] *Create NCM Service*, 4/1543-CNA 403 3666
- [8] *NCM Service Discovery*, 3/1543-CNA 403 3666
- [9] *ENM Operators Guide*, 1/1553-AOM 901 151