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GE Lentronics Advanced NMS

User's Guide

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GE Lentonics
Advanced NMS

User's Guide

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GETTING STARTED WITH ADVANCED NMS

Advanced NMS is a rebranded version of MegaSys's Network Management system called Telenium Spectra and is marketed and sold by GE. Advanced NMS is the same software product as Telenium Spectra, but with licenses that permit it to communicate only with specific Advanced NMS equipment and it has customized splash screens and graphic images.

The main menu graphic from the GSM application is the quickest way to get started with monitoring your equipment. Graphic Screen Manager (GSM) is a graphical user interface that dynamically displays database information. A geographical GSM presents alarms and their network locations, while a graphical manager depicts real-life representations of physical equipment.

GSM supports model-specific and generic graphics. Model-specific graphics represent unique features of physical equipment, including equipment cards and shelves. Generic graphics display fields from the corresponding database record and contain links to other screens.

GSM supports right-click navigation allowing Telenium applications to be started in the context of the current record displayed. For example, Element Provisioner can be started in a given NE context for provisioning and data message retrievals.

WHERE TO FIND TELENIUM DOCUMENTATION

Documentation for the Telenium system can be found on the MegaSys website and within each individual Telenium application. The following link takes you to the login page on the MegaSys website to access documentation https://www.megasys.com/downloads/enter.asp.

You can also navigate to the documentation page directly from the MegaSys home page.

- Mouse over the Support menu and select Documentation.
- Enter your user credentials and click [LOGIN].

Accessing Telenium Client Suite Documentation

From the documentation page, select Telenium Documentation/Telenium Client Suite.

To view the System Administrator Training Manual, select System Administrator Documentation. The training documentation is listed by chapter and as a complete document. Not all applications are covered in the training documentation; however, each Telenium application contains online help. It is recommended to use the online help for application-specific documentation. Application help documentation can be accessed from either the Help button, Help menu option, or by pressing F1.

Accessing Telenium Server Installation Documentation

From the documentation page, select Telenium Documentation/Telenium Server Side Procedures.

Server side procedures such as Telenium installation and updating Telenium are only available via the documentation page on the MegaSys website.

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GSM SCREEN COMPONENTS

The GSM Main Menu graphic displays when GSM is launched. See the following figure for the sample Main Menu graphic and GSM screen components.

- The title bar identifies the connected database and name of the record selected.
- The Menu and Toolbar support GSM functions, options, tools.
- The Enter DXL field shows current record and name of graphic showing in main graphic display area.

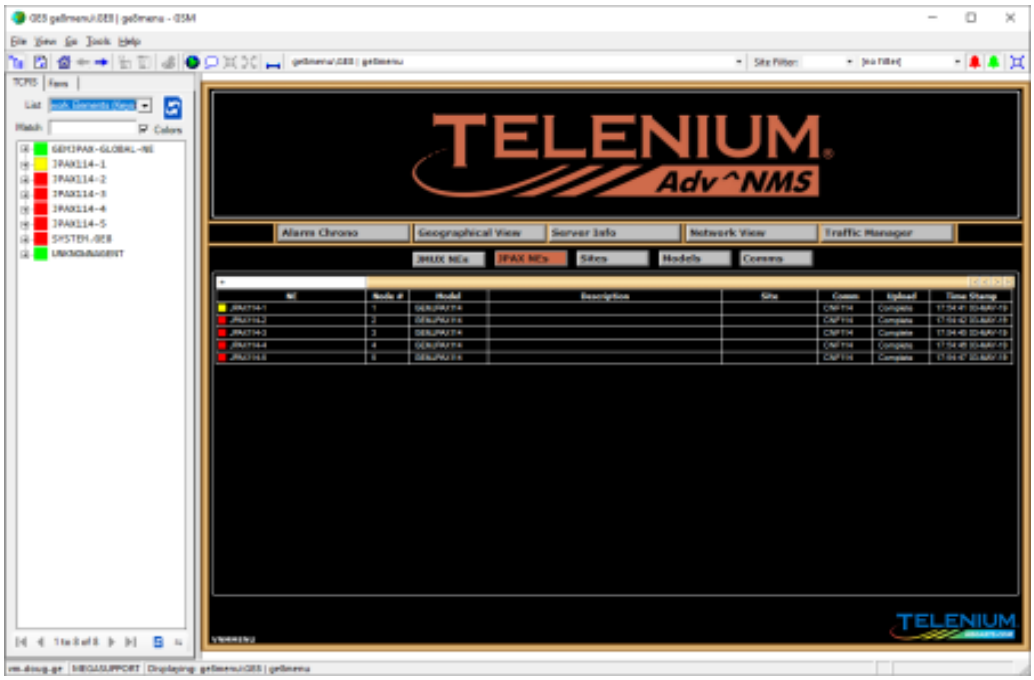

Figure 1: GSM

REFRESH THE SCREEN

GSM can redraw the screen and display new information when the [Refresh] button is clicked.

GSM Home Screen

The GSM home screen, or main menu graphic, has five quick launch buttons:

Figure 2: Quick Launch Buttons

- **Alarm Chrono** – launches the Alarm Chrono application which shows you the active alarms in your network.

- **Geographical View** – displays a geographical map of your network.
- **Server Info** – displays information about server health.
- **Network View** – launches the Network View application, which shows you the logical connections between the devices being monitored.
- **Traffic Manager** – launches the Traffic Manager application, which allows you to create, modify, and delete tunnels and services.

The home screen for GSM also has 5 list buttons.

Figure 3: List Buttons

- **JMUX NEs and JPAX NEs** – This is the default list that is shown on the home screen and lists all the JungleMUX and JunglePAX nodes respectively. This list displays some basic information about each network element, such as its name, its location (site name), and the last time it uploaded a full alarm list from that device. The color of the box beside the network element name represents the highest-priority unacknowledged alarm on that device.
- **Sites** – This list displays the name of each site and how many network elements are at each site. The color of the box beside the site name represents the highest-priority unacknowledged alarm of all network elements at that site.
- **Models** – This list displays the name of each model licensed on your system, the number of devices using that model, as well as some internally used model names. The color of the box beside the model name represents the highest-priority unacknowledged alarm of all network elements using that model.
- **Comms** – This list displays the names and running status of each Advanced NMS application that communicates with devices. There are several internally used Comms. The color of the box beside the comm name represents the highest-priority unacknowledged alarm of all network elements being monitored by that Comm application.

GSM – RECORD SELECTOR

Record Selector displays records of a specified type, which you can select from the List drop-down.

View Records Using Record Selector

1. Toggle Record Selector list visibility by clicking on Record Selector button. Record Selector displays listings and current list view in the GSM screen left pane.

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2. Select the type of record list to display from the List drop-down (e.g., Network Elements (Keys)).
3. To narrow the list or search for a specific record, enter the first letter of the EPN, or entire EPN, in the Match field and click refresh .
4. From the list of records, select a record to display.

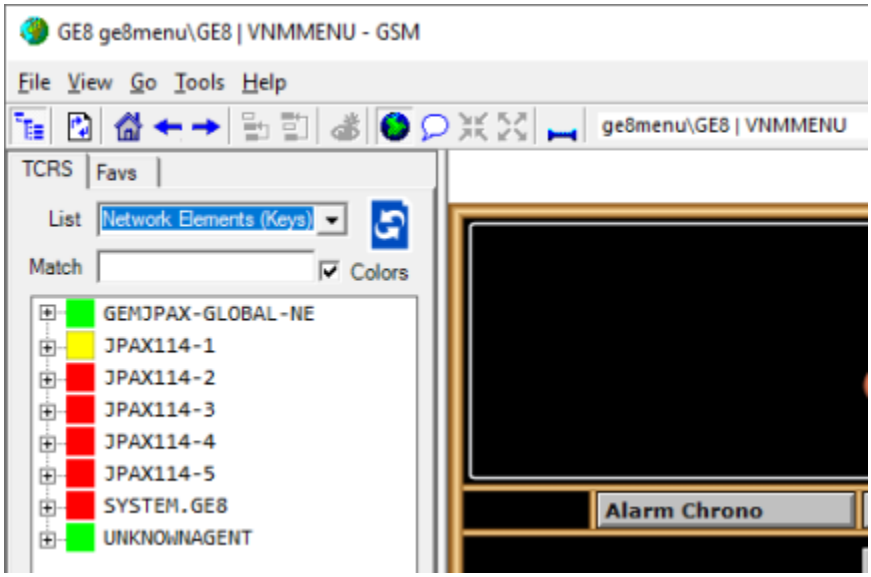

Figure 4: Using Match Field

METHODS OF VIEWING GRAPHICS

Methods to locate and display graphics in GSM include:

- Using the buttons on the Main Menu graphic.
- Using Record Selector (as described above).
- Using the navigation buttons Back for previously viewed graphics, Forward reverses direction. Forward activates if Back is used or next graphic is available.
- Using Parent or Root record buttons.

USING BUTTONS FROM MAIN MENU GRAPHIC

The Telenium main menu graphic was designed to allow for quick access to your most used Telenium applications and records.

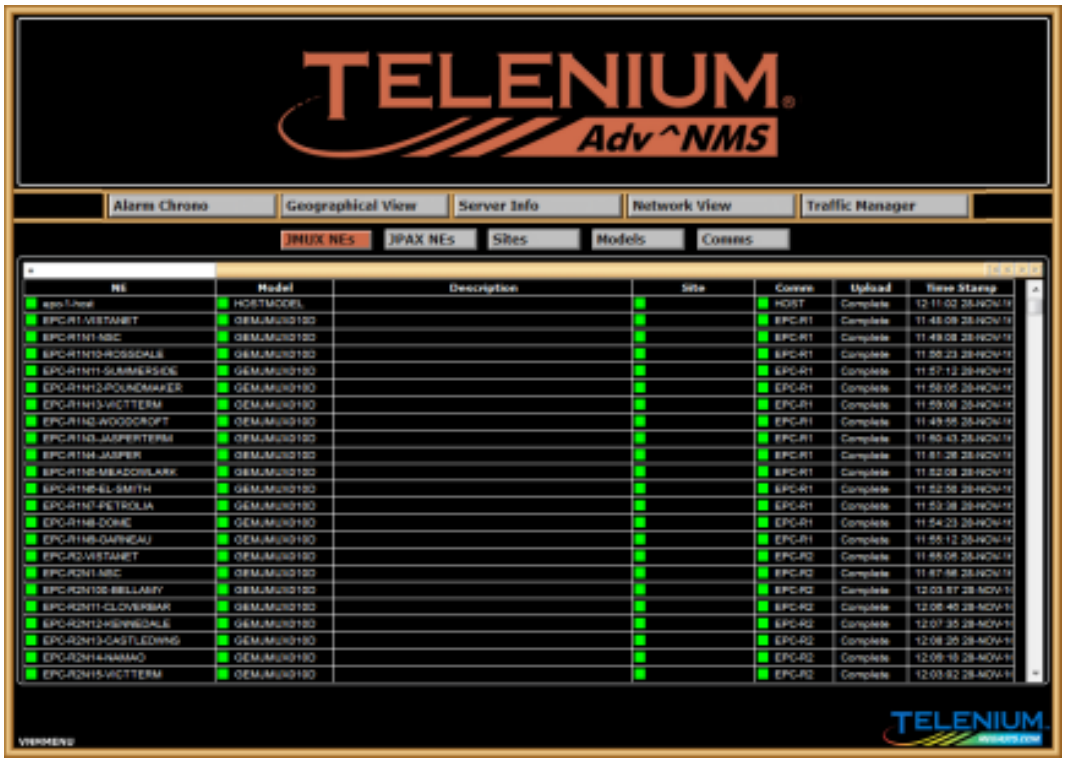

Figure 5: Viewing NEs

When you select Alarm Chrono, the Alarm Chrono application launches in a separate window.

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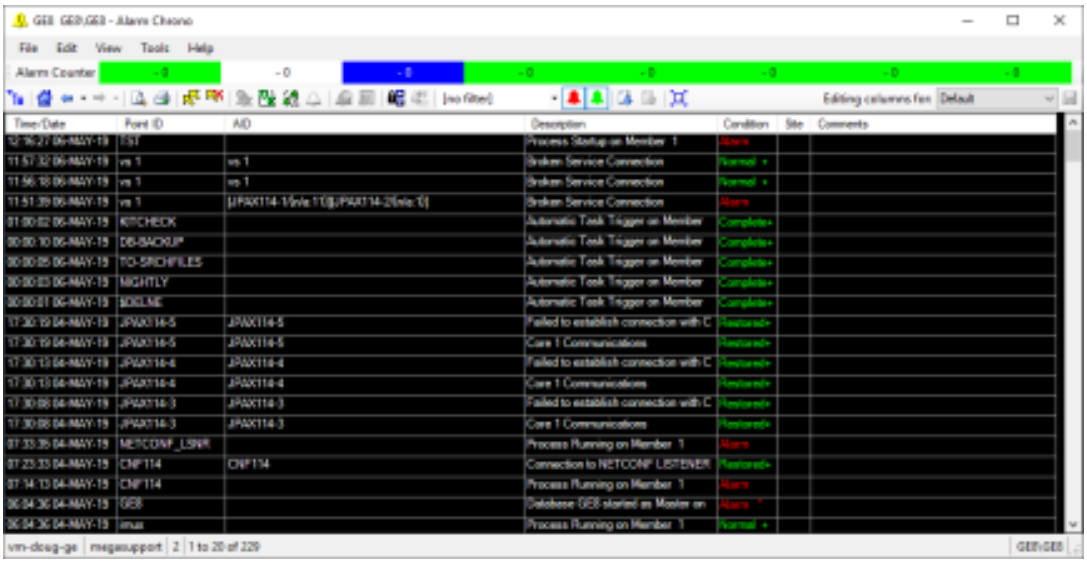

Figure 6: Alarm Chrono Application

When you select **Geographical View**, a geographical view of your network displays in GSM as shown below.

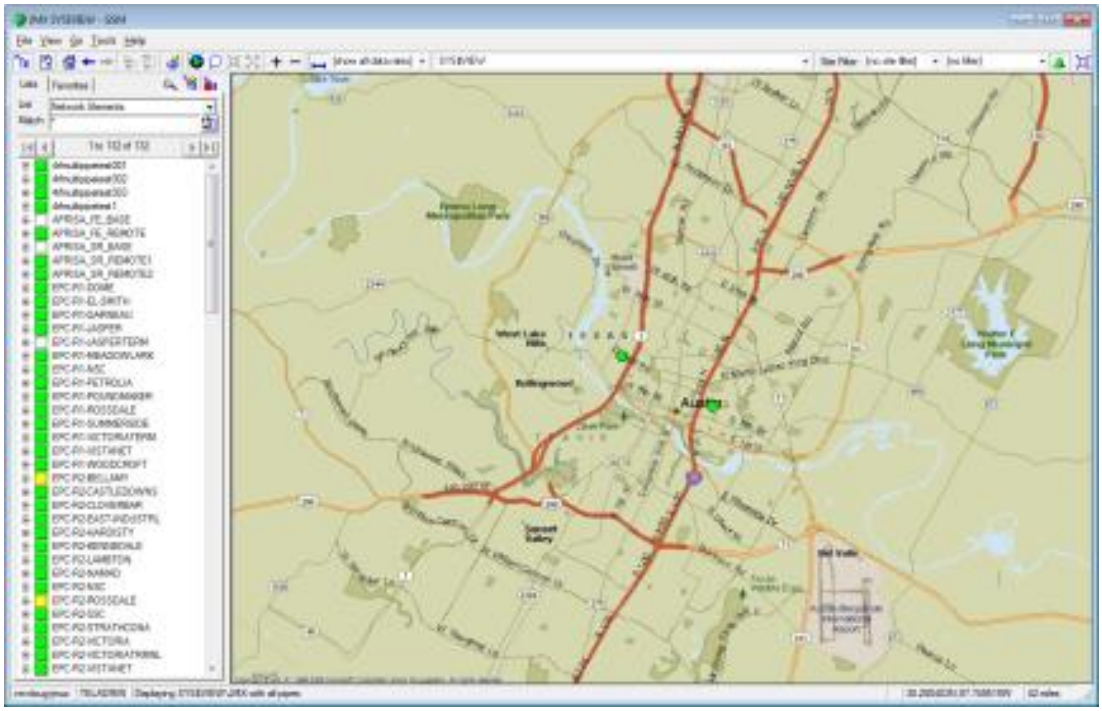

Figure 7: Geographical View of Network

The **Server Info** button displays your server information such as host computer attributes, memory and CPU usage, Telenium licenses, logical disk usage, and database processes.

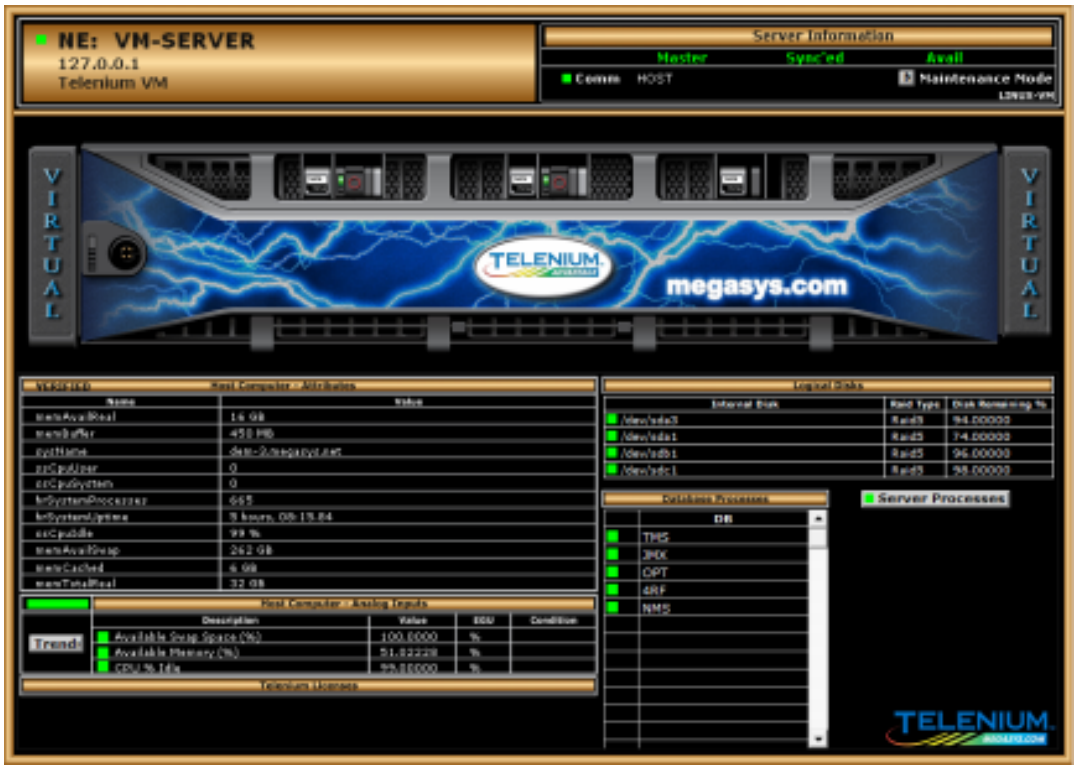

Figure 8: Server Information Screen

Clicking the **Network View** button launches the Network View application in a separate window. Network View displays your Advanced NMS network (and user-defined portions of this network) in a way that shows how the GE devices are connected to each other.

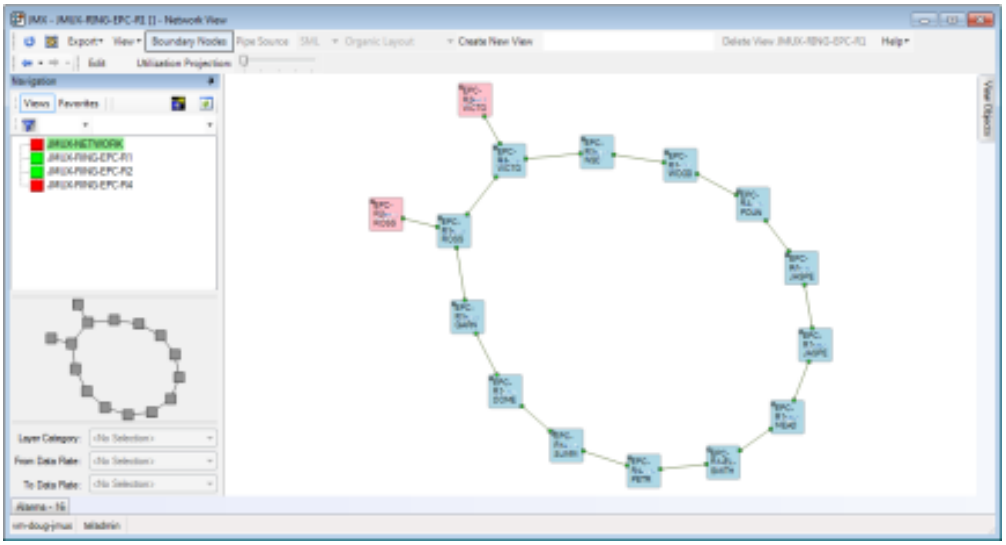

Figure 9: Network View Application

The bottom row of buttons on the Advanced NMS main screen display a listing of all the records in the database of the type listed on the button.

JMUX NEs – Selecting one of the NEs from the list displays the graphic for that piece of equipment.

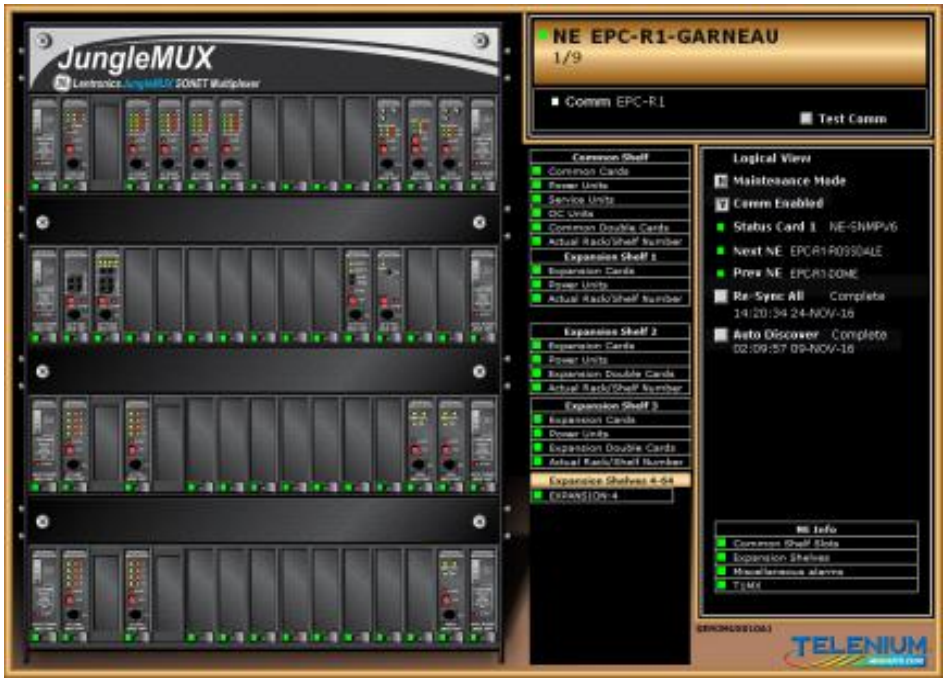

Figure 10: Example of JMUX Network Element Graphic

JPAX NEs – Selecting one of the NEs from the list displays the graphic for that piece of equipment.

Figure 11: Example of JunglePAX Network Element Graphic

Sites – Selecting one of the sites from the list displays the site graphic which can contain the sites address, phone number, latitude, longitude and other information. The site components, listed on the right, identify the name of each GE node at that site.

Figure 12: Example of Site Graphic

Models – This list provides a quick view of your models.

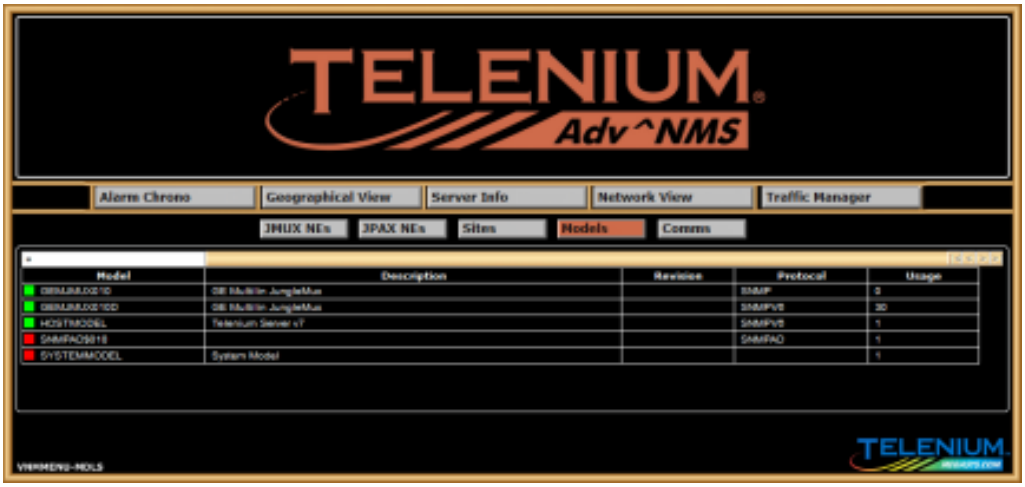

Figure 13: List of Models

Comms – Selecting one of the communication records from the list displays the Comm Interface graphic, which shows whether or not the subdriver is connected and whether or not communication is enabled or disabled on the network element.

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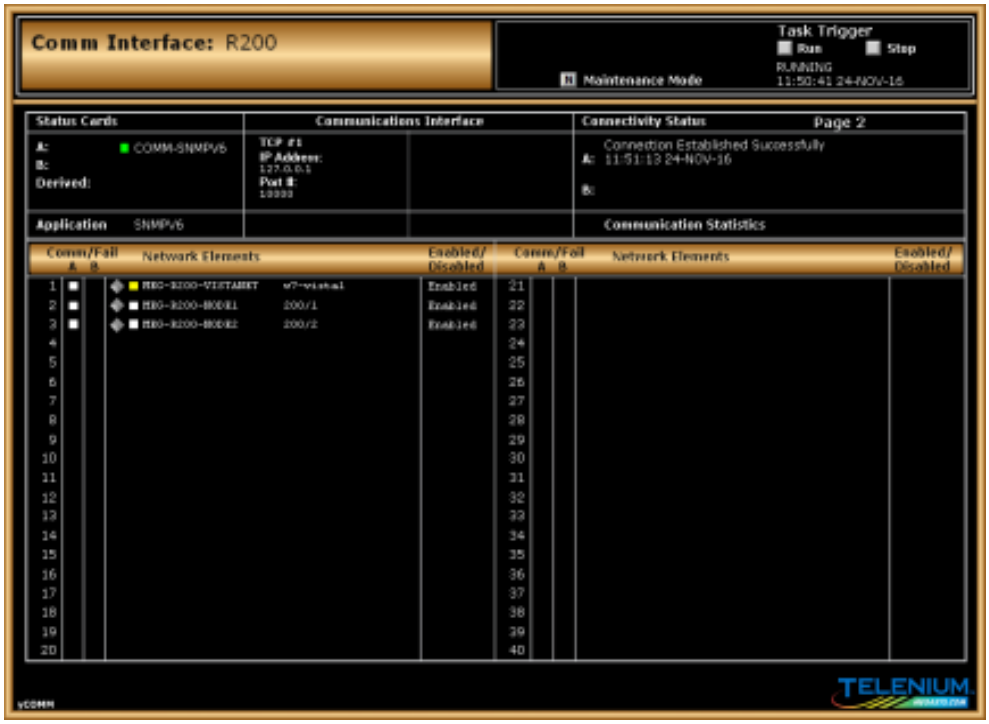

Figure 14: Example of a Comm Interface Graphic

ZOOM BUTTONS AND LINKS

Click zoom buttons or links to navigate the record hierarchy. Multiple GSM windows can be started using [CTRL]+click. For example, to view a comm record in a new GSM window, from the NE screen, press and hold [CTRL], then click the Comm link.

Figure 15: Comm Record and Other Link Buttons

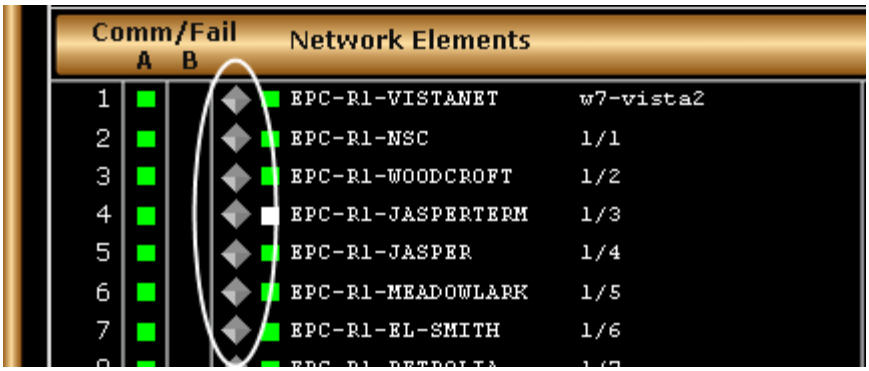

Figure 16: Zoom Buttons

CONTEXT MENUS

Right-clicking on a GSM screen displays a context menu. Depending on the graphical screen displayed and/or zoom button pointed to, the menu options may vary. These menus have items to perform actions to provision or activate applications such as Alarm Chrono and Network View.

Some menus support links to several applications, while others may support one. The figure below shows a context menu from a NE graphic. Selecting an item launches the corresponding application.

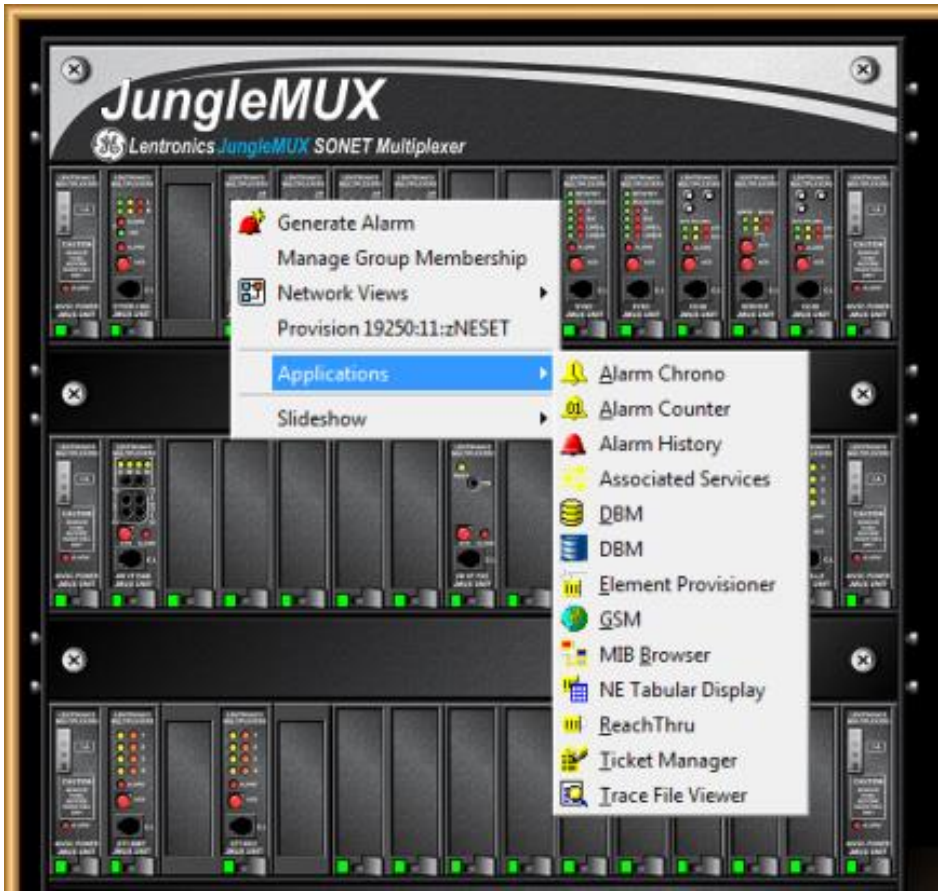

Figure 17: Context Menu

GEOGRAPHICAL MAPPING IN GSM

The GPS information contained in a SITE record is used to drive the geographical mapping component of GSM to display a map. The solid-square or solid-circle icons drawn on the map link to more specific map views and non-geographical screens of sites and equipment.

GEOGRAPHICAL MAPPING SCREEN COMPONENTS

When you select a site record or enter the name for a site record that contains geographical coordinates, the geographical mapping screen is launched. Note that a map only displays if the site has either a Lat/Long pair or subtending site range, and an altitude or a minimum distance between sub-sites.

A map also displays if you enter SYS$VIEW in the Enter DXL field. This is the default geographical screen. An example is shown in the following figure.

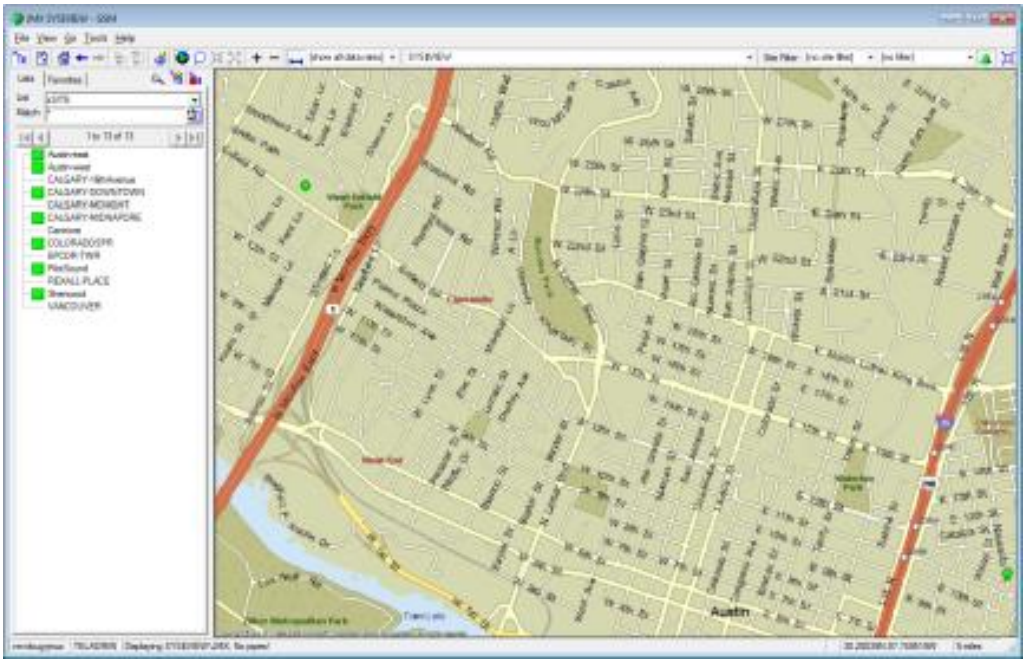

Figure 18: Geographical Screen for SYS$VIEW

VIEWING GEOGRAPHICAL SCREENS

Site records containing network elements are not shown geographically by default. To see the site geographically, you can locate the site via the context menu.

Locate Site

1. From the Telenium main screen click the Sites button to view a list of sites.
2. Right-click on the desired site from the list.

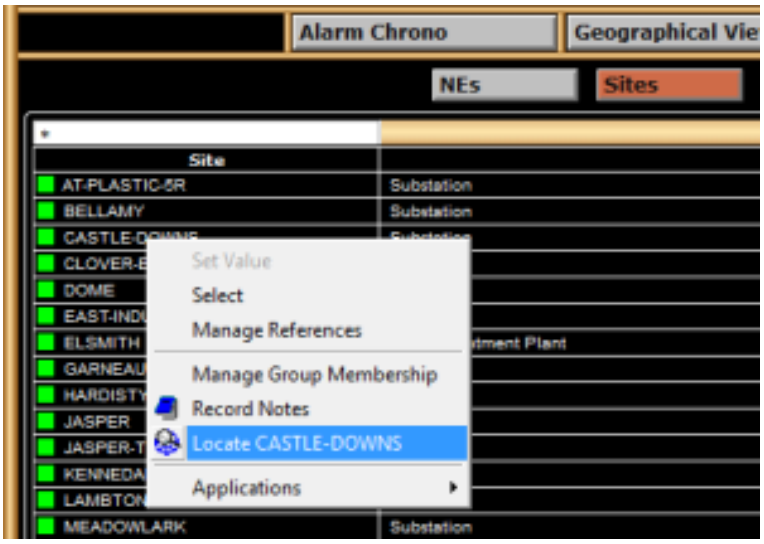

Figure 19: Locate Site Option

3. From the context menu, select Locate <site_name>. The geographical view of the site displays.

Figure 20: Geographical View of Site

Navigate the Geographical Mapping Screen

Click and drag the map screen to pan through the view. Use the wheel on the mouse to zoom in and out on the map.

In the status bar the Zoom level is in the right corner. This is the zoom level from which the map is being viewed.

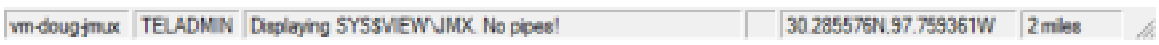

Figure 21: Status Bar

NETWORK VIEW

Network View is a graphical viewer of Network Elements and their associated pipes. Alarm, port, and pipe information is displayed. The graphic can be viewed in several different layouts. For more information about the Network View application, open the web help from the Network View toolbar.

Open Network View in the context of a network element:

1. Open a service in Traffic Manager.
2. Right-click on a node and select **Network View>JPAX Network**, for example.

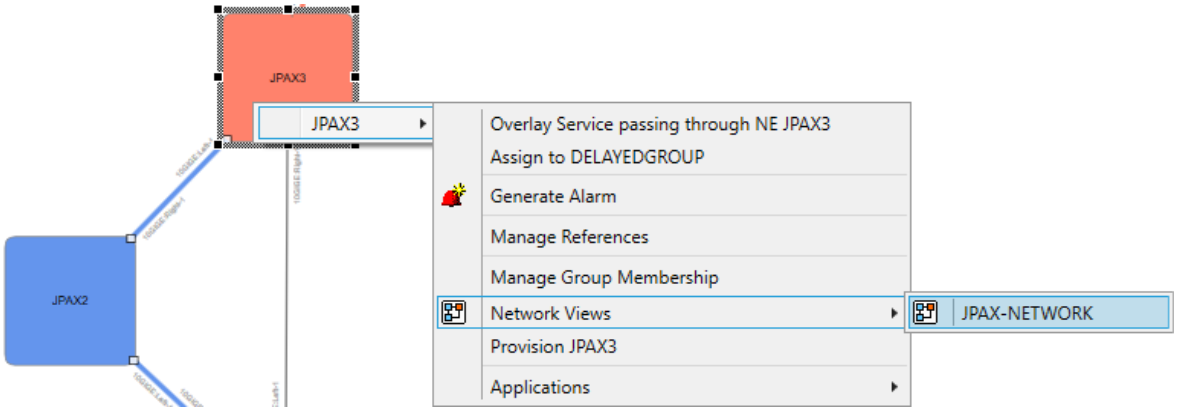

Figure 22: Opening JunglePAX Network View

3. The Network View application displays in context to the node selected.
   Network View only displays the WAN ports on the core cards in the graphic. To view other ports in context to the selected node, open the GSM application.

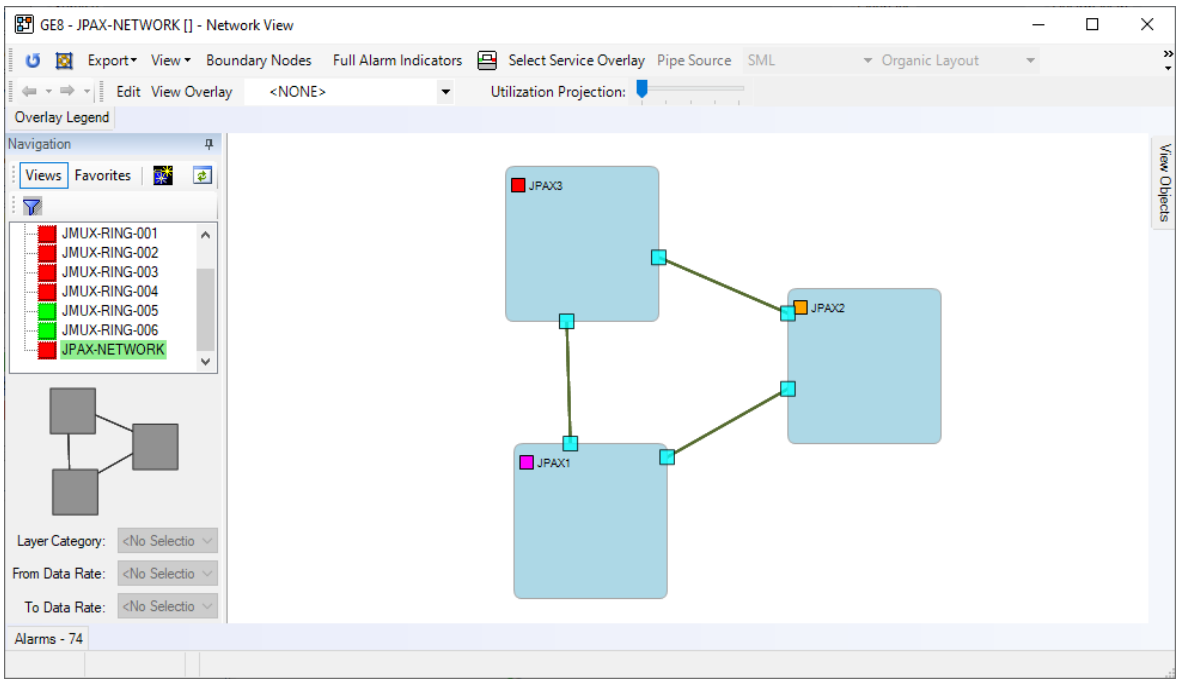

Figure 23: JunglePAX Network View

Service Overlay

Note: This feature is applicable only to JunglePAX networks.

The Select Service Overlay option highlights the nodes and WAN links used by the selected service within the Network View.

Note: A service in Telenium has a broad meaning and it includes WAN links, tunnels, VPWS services, VPLS services and virtual switches.

1. Click the Select Service Overlay button.
2. In the "Select Service to Overlay" dialog, select the desired service and click OK.

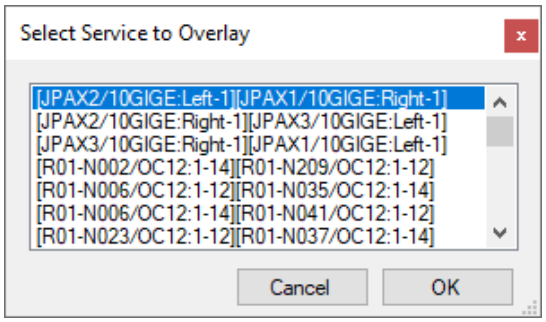

Figure 24: Selecting a Service Overlay

3. The network elements and pipes (WAN links) that reside along the selected service's primary (and secondary) path(s) are highlighted with a purple outline in the network view. The terminal nodes for the selected service and those passing it through are clearly differentiated.

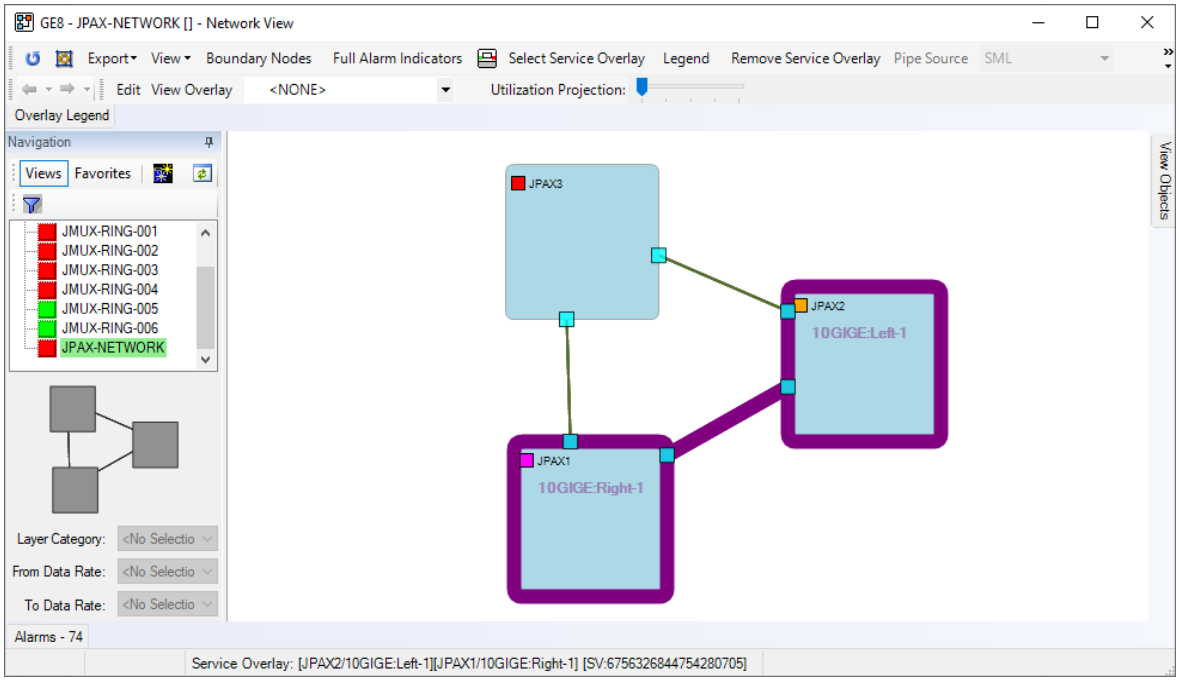

Figure 25: Network View with an Overlay for Selected Service

4. To remove the service overlay, select Remove Service Overlay.

BUILDING TUNNELS & SERVICES

Note: The content of this section is applicable only to JunglePAX networks.

The Telenium Traffic Manager application is used to create different types of services to carry network traffic. There are 3 types of services that Traffic Manager can create; Wireframe, Virtual Private Wire (VPWS), and Virtual Private LAN (VPLS). This document covers JunglePAX specific features of creating VPWS and VPLS services using Telenium. For more information on generic wireframe service creation, view the Traffic Manager help. VPWS and VPLS services require tunnels to carry network traffic, so depending on the current network and equipment setup, new tunnels may have to be created to carry data in the service. Traffic Manager can create new tunnels and pipes between network elements (NEs) to complete a service. Wireframe and VPWS services facilitate traffic getting from point A to point B. A VPLS service uses a virtual switch with pseudowires to connect a starting point to multiple end points.

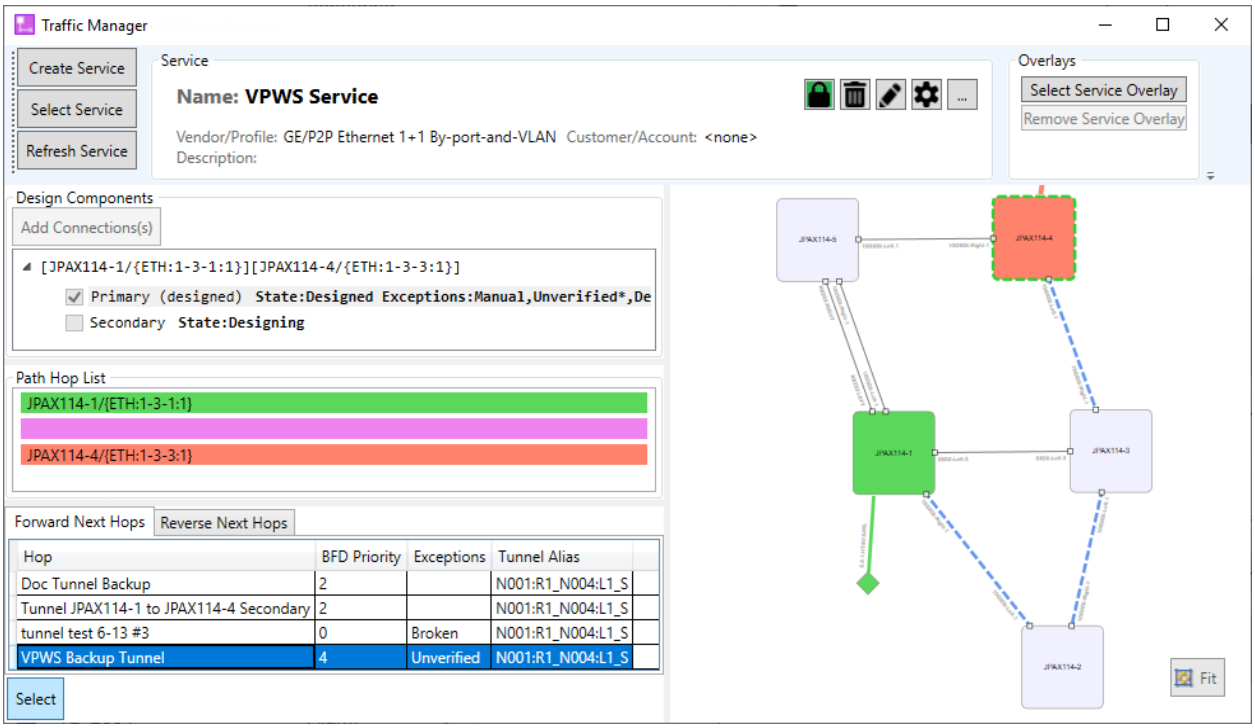

Figure 26: Traffic Manager Application

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BUILDING TUNNELS

In Telenium, a Tunnel is a type of service. Building a Tunnel service involves picking one starting point and one ending point. Once the tunnel created, services can be created using the tunnel.

When a new service/pseudowire is about to be created between two nodes, it is recommended to ensure that two tunnels with diversified paths are available between the two nodes to allow for building a protected service/pseudowire. One of the two tunnels will be designated Primary, while the other will be designated Secondary for the given service/pseudowire.

Note: that a tunnel designated Primary for one service may be designated Secondary for the other.

Create as many tunnels as needed for the new service/pseudowire. This may be:

- Two tunnels if the service/pseudowire is to be protected and no appropriate tunnels are available between the two nodes.
- One tunnel if the new service/pseudowire is to be protected and one of the existing tunnels can be utilized.
- One tunnel if the service/pseudowire is to be unprotected and no appropriate tunnels are available between the two nodes.
- No tunnels if the previously created tunnels (which may or may not be carrying other services between the two nodes) can be reused for the new service/pseudowire.

Tunnel Building Procedure

5. Click the Create Service button.
6. Input a name for the tunnel in the Service Name field. If left blank, Traffic Manager auto-assigns a name based on the traffic identification point (TIP)/port names that exist on the network element.
7. From the Select Vendor drop-down list, select **GE**.
8. Select a New Service Design Profile (e.g.; **Tunnel-for-1+1**).

   NOTE: The selections presently available for building tunnels are: Tunnel-for-1+1 and Tunnel-for-1:1.

   A **Tunnel-for-1+1** is a “straight” tunnel, i.e. a tunnel whose both ends are terminated as soon as they reach the respective destination node (i.e. no extension to the companion unit). These tunnels are suitable for building both 1+1-protected and unprotected services.
   A **Tunnel-for-1:1** is a tunnel that must be terminated on a Left Core, i.e. it gets automatically extended from the right to the left Core if it enters the JunglePAX node through a right WAN port. These tunnels are suitable for building both 1:1-protected and unprotected services/pseudowires. Note that straight left-to-left tunnels are suitable for both 1+1 and 1:1 protected services/pseudowires.

9. Click Create.

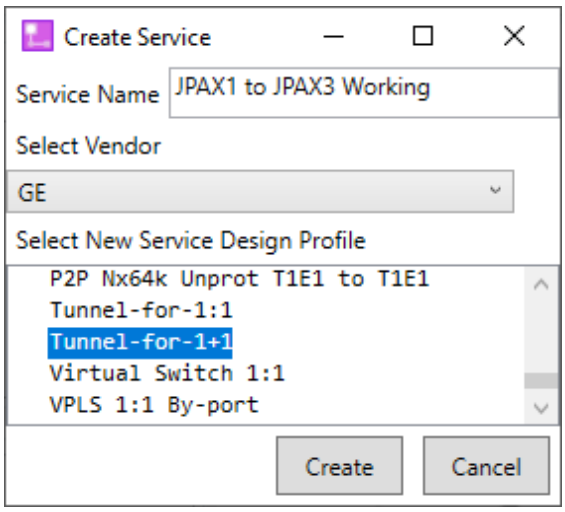

Figure 27: Create Service View – Selecting Tunnel Profile

10. In the "Add Connection" dialog, double-click to select a network element to be the tunnel's starting point (e.g.; **JPAX1**).

For a tunnel, the Port/Interface field automatically populates with {N/A:} because this field is not required for a tunnel.

11. Double-click to select a network element to be the tunnel's end point (e.g.; **JPAX3**).

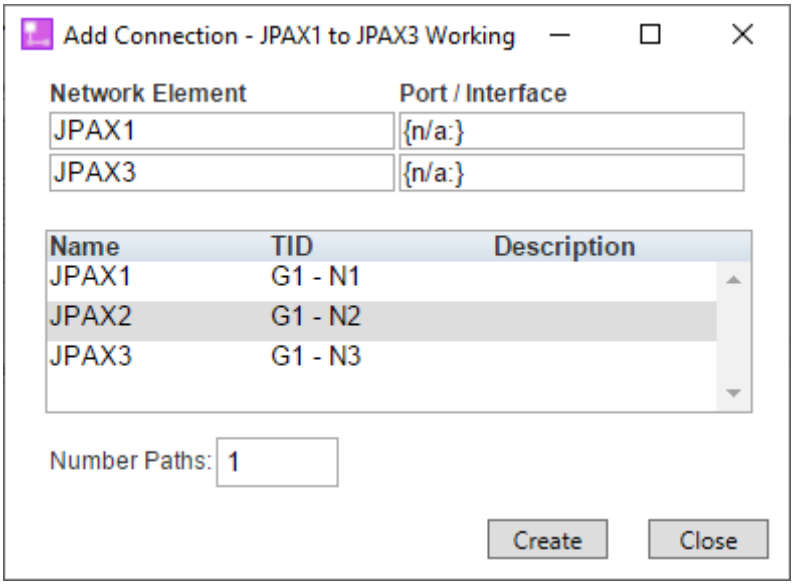

Figure 28: Add Connection for a Tunnel

12. Click Create. The start node is red and the end node is green. The Design Components, Path Hop List, and Next Hop panes are populated with data to complete the new service.

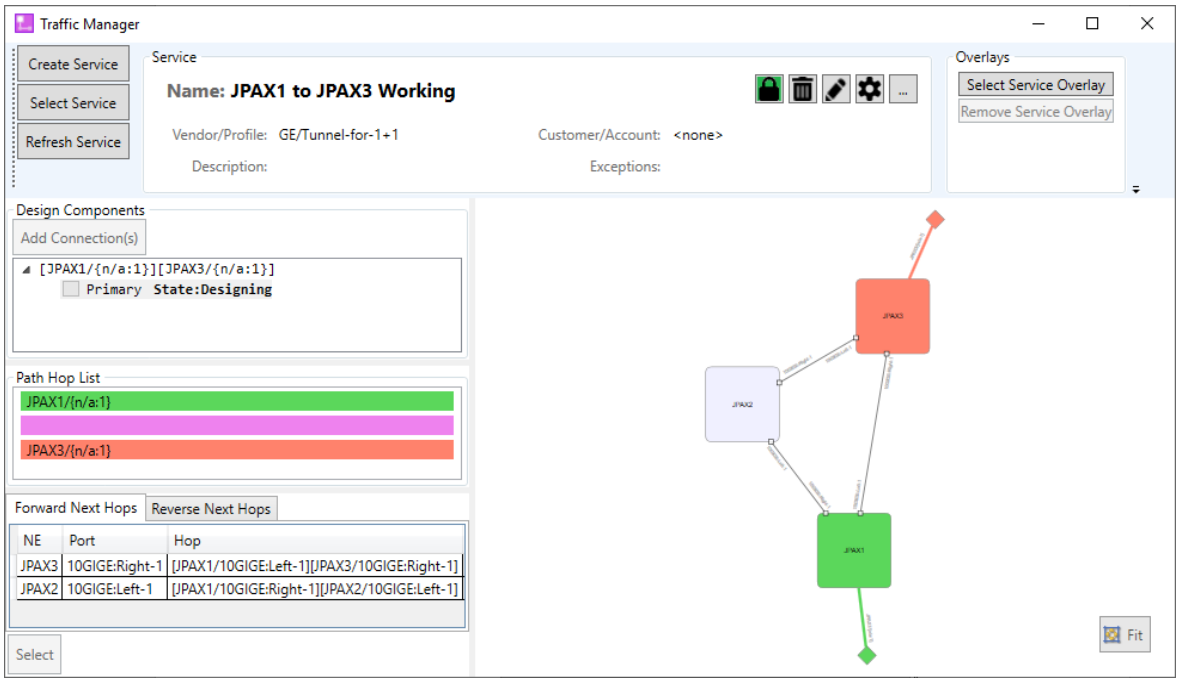

Figure 29: Tunnel Showing Start and End Points

13. In the "Next Hops" pane with the "Forward Next Hops" tab selected, select a hop to begin connecting the tunnel (e.g.; **[JPAX1/10GIGE:Right-1][JPAX2/10GIGE:Left-1]**).

Note: The Next Hops pane gives the option of going forward from the start node (default) or going in reverse from the end node. Click on the respective tab to select the desired option.
Forward hops are displayed with a blue dotted line while the network element the hop is connected to is highlighted with a green dotted line. Reverse hops are displayed with a dotted yellow line while the network element is highlighted with a red dotted line.

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14. Click Select.

    - Click different hops to view which connections are available.
    - Multiple network element hop connections are needed to complete tunnels with interconnecting non-adjacent nodes.

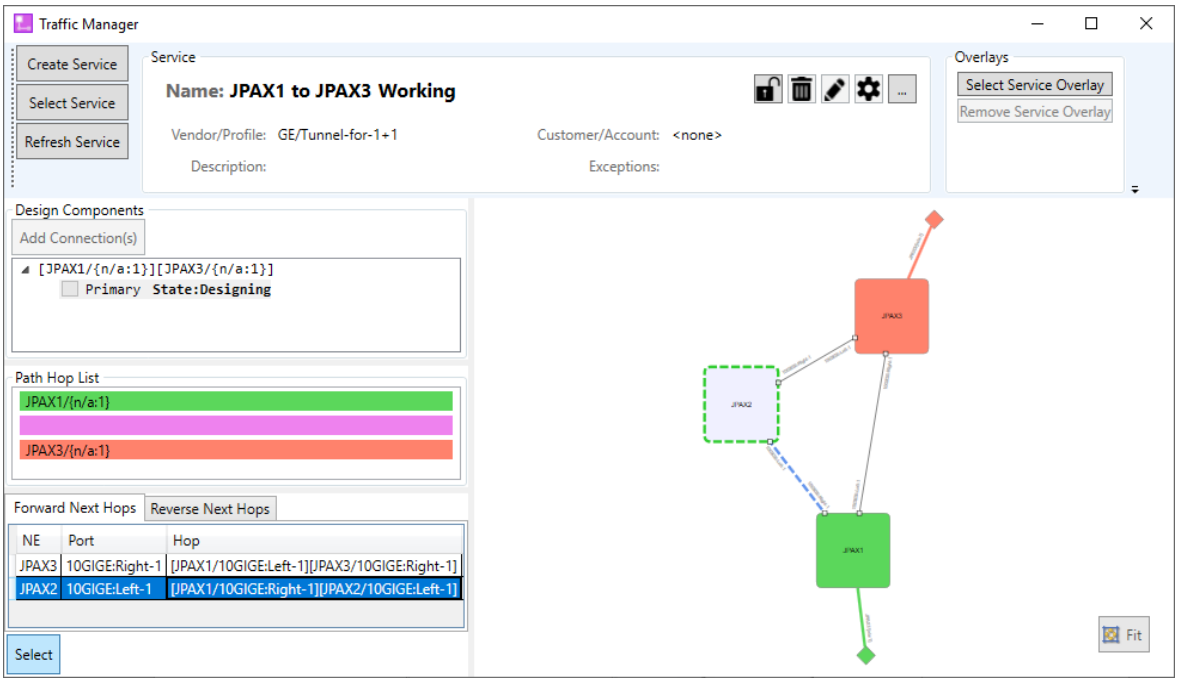

Figure 30: Tunnel Path Showing the Selected Hop

15. The "Next Hop" pane is refreshed and displays new forward and reverse hops. Choose the next hop and click Select.

    - The Path Hop List is updated with the current hop connection.

16. The node graphic updates and confirms the connection by showing the hops with a solid blue line.

    - The Design Components pane displays a check mark and a (designed) notification next to “Primary”.

NOTE: When building tunnels, the term “Primary” is irrelevant.

- The Path Hop List is updated displaying the starting NE (green), connection hops (blue), and ending NE (red).
- The Next Hop pane is blank because the service is complete and there are no other hops required.

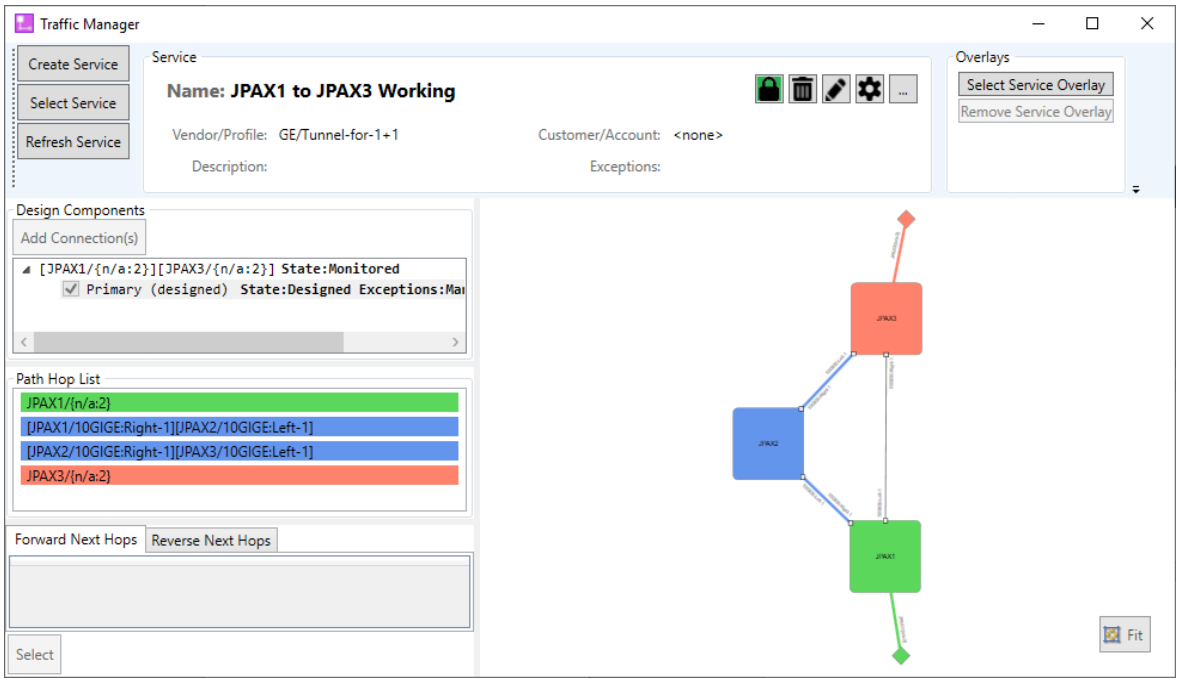

Figure 31: Path Hop List Showing Added Hops

17. The tunnel is designed but needs to be activated to start receiving and transferring data. Right-click the path text and select **Activate**. In the "Activate" dialog click Yes.

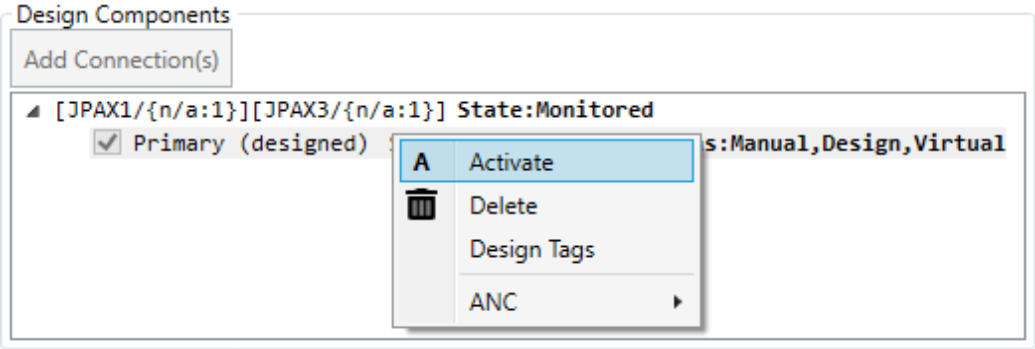

Figure 32: Tunnel Activation

18. In the "Service Activation Feedback" dialog, change the Tunnel name if a different name is to be used for this tunnel inside the Core Units residing along the tunnel's path.
    - By default, the field is populated with the name entered when the tunnel was created.
    - The "Tunnel Name in JPAX" field is limited to 32 characters.
19. Select the desired BFD Priority (e.g.; **7**). Seven is the highest priority and zero is the lowest.
20. Click OK.

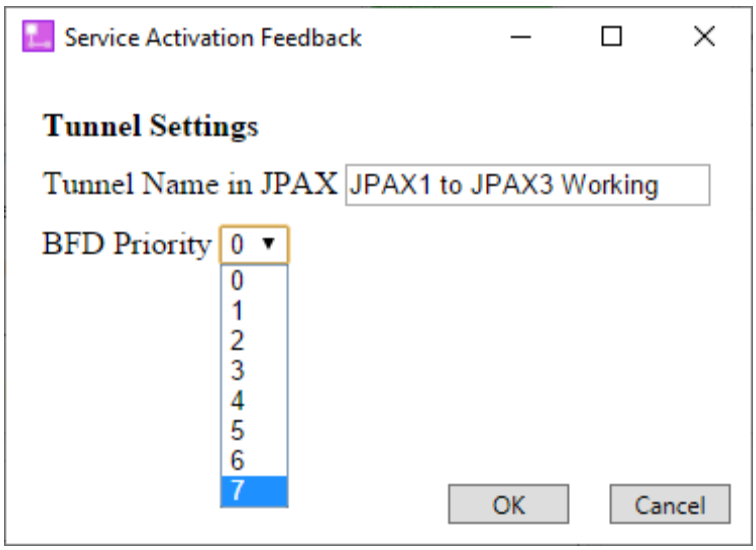

Figure 33: Service Activation Feedback Dialog for Tunnel Builder

The "Activating Tunnel" dialog is displayed. When activation is complete the Status field says either Successful (highlighted in green) or Failed (highlighted in red) depending on whether all the configuration changes along the tunnel path have been successful or not. The Steps field indicates how many steps were taken to perform the action, which matches the number of Core Units along the tunnel's path. If the Failed field has a number other than zero, that is how many steps in the command failed.

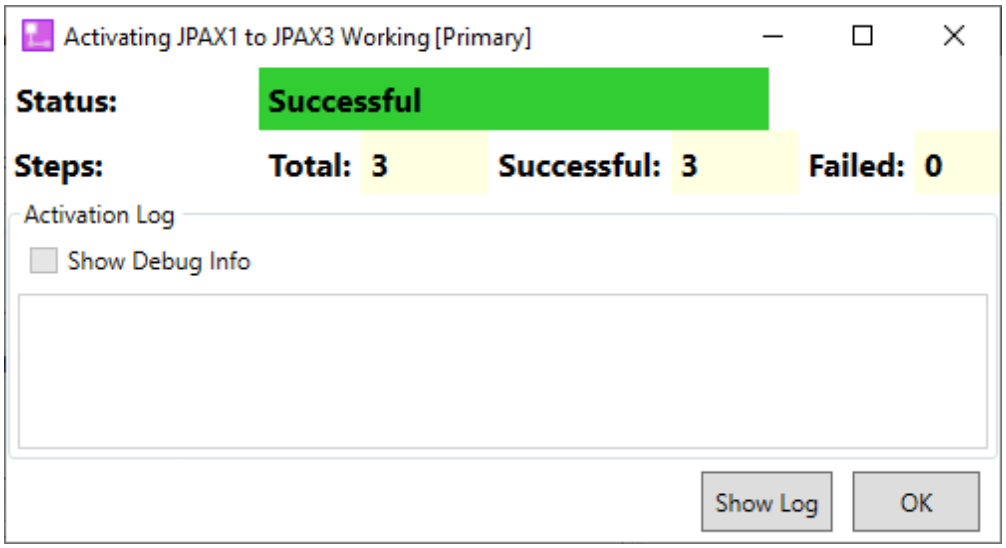

Figure 34: Tunnel Activation Successful

21. Click the Show Log button to view the commands used to activate the tunnel.

The status log is a perpetually growing file. Any time the tunnel is activated and deactivated, encounters errors, or the activate command is executed again after a failed attempt, the information is stored in the status log. The most recent action is at the bottom of the log file.

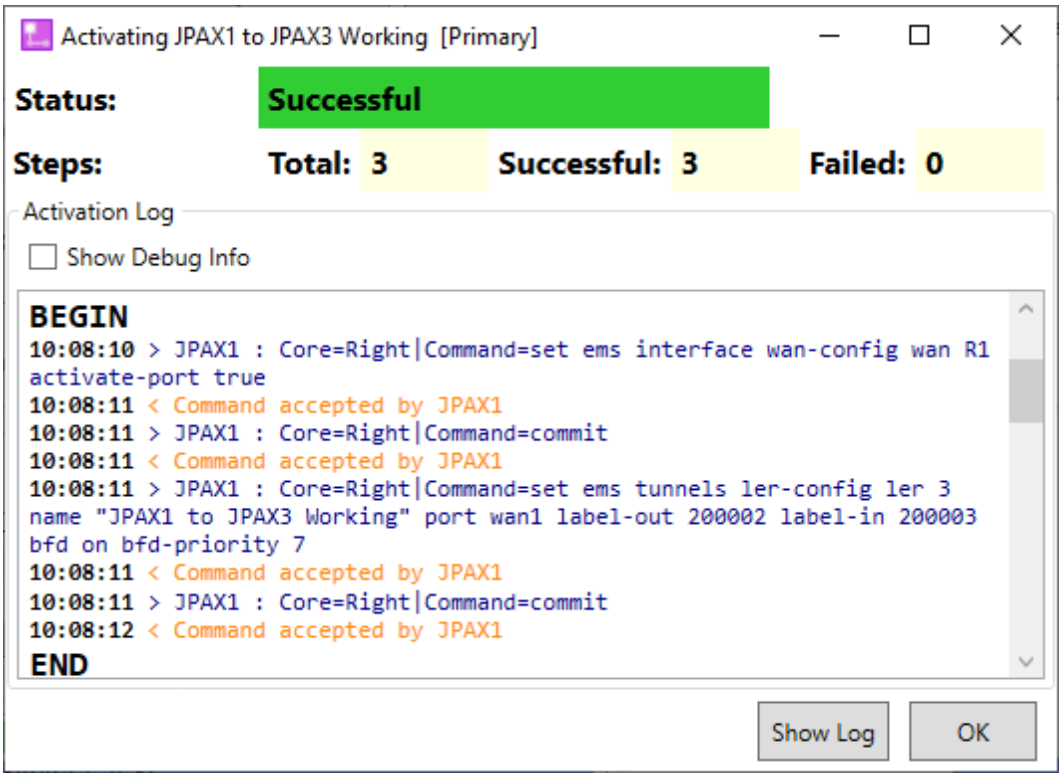

Figure 35: Status Log after Successful Tunnel Activation

When the activation is successful, the Design Components pane displays "Primary" as active and now the right-click context menu has options to deactivate the tunnel, to delete it or to show the activation log.

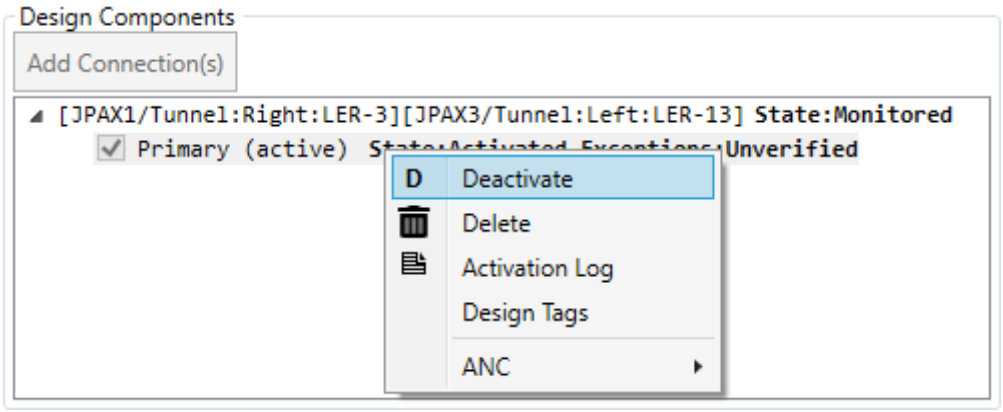

Figure 36: Tunnel Deactivation

All tunnels are displayed as "Primary (active)" in the Design Components pane. Note that the concept of primary and secondary tunnels exists only with reference to a specific service/pseudowire. Any given tunnel may act as the primary tunnel for one service while acting as the secondary tunnel for another.

Select Service Overlay

Traffic Manager's Select Service Overlay feature displays an existing tunnel path while building a new tunnel. Service Overlay is useful when creating a new tunnel that needs to take a different route with respect to an existing tunnel between the same two nodes.

1. Click the Select Service Overlay button. The "Select Service Overlay" dialog displays.
2. Select the previously created tunnel and click OK (or double-click the name). The node graphic pane now shows the selected tunnel highlighted.

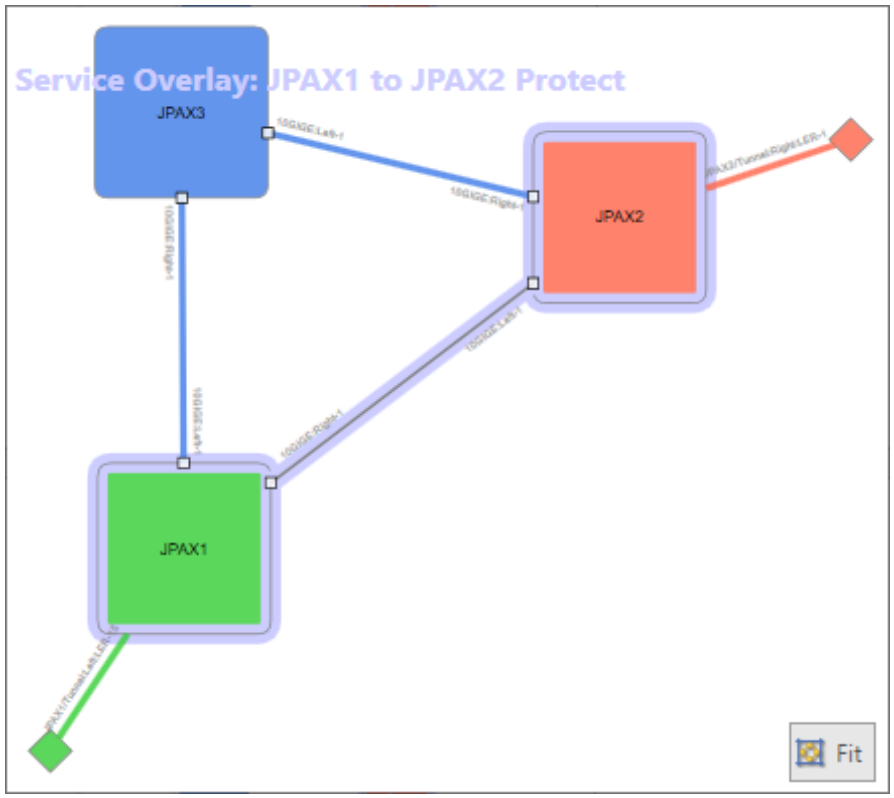

Figure 37: Service Overlay – Showing Path for an Existing Tunnel

3. Remove the overlay by clicking the Remove Service Overlay button.

BUILDING VPWS SERVICES

A tunnel is the building block to facilitate traffic getting from point A to point B while a service is the connection that carries the traffic. A Virtual Private Wire Service (VPWS) is used to create point-to-point connections.

Building services requires two steps: one to get on the tunnel from the near-end access port and one to get off the tunnel to the far-end access port. For protected services, two tunnels (one for the primary and one for the secondary path) need to be selected. When creating a service, the Design Components pane contains a check box for both a Primary and Secondary path design.

Building VPWS Ethernet "By-Port and VLAN" Service (Primary Path)

1. Click the Create Service button.
2. Input a name for the service in the Service Name field. If left blank, Traffic Manager auto assigns a name based on the traffic identification port (TIP)/port names that exist on the network element.
3. From the Select Vendor drop-down list, select **GE**.
4. Select a New Service Design Profile (e.g. **P2P Ethernet 1+1 By-port-and-VLAN**).
   NOTE: The profiles applicable to VPWS (point-to-point) services start with "P2P".
5. Click Create.

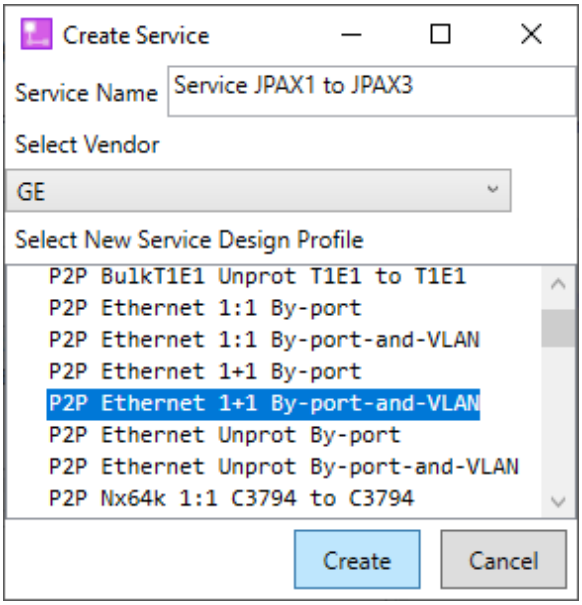

Figure 38: Create Service View – Selecting Service Profile

6. In the "Add Connection" dialog, double-click to select a network element to be the tunnel's starting point (e.g.; **JPAX1**).
7. Double-click to select the Port/Interface for the selected NE (e.g.; **ETH:1-3-4**).

Only ports that are available are offered for selection. To determine which port to select, display the network element graphic using the GSM application. GSM displays a visual representation of available ports.

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8. Double-click to select a network element to be your tunnel's end point (e.g.; **JPAX3**).
9. Double-click to select the Port/Interface for the selected NE (e.g.; **ETH:1-5-1**).

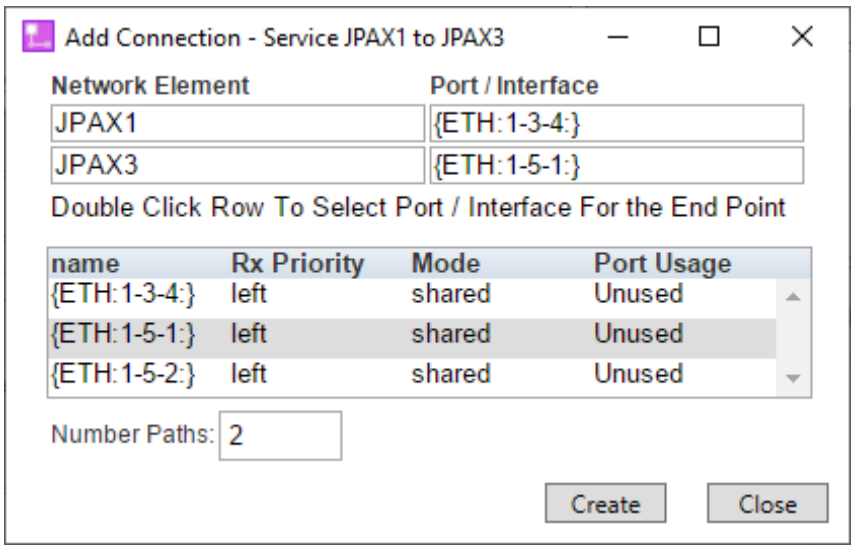

Figure 39: Add Connection for a VPWS Service

10. Click Create. The start node is red and the end node is green. The Design Components, Path Hop List, and Next Hop panes are populated with data to complete the new service. Note that the Path Hop List includes only tunnels that are applicable to the selected service design profile and the selected end nodes.

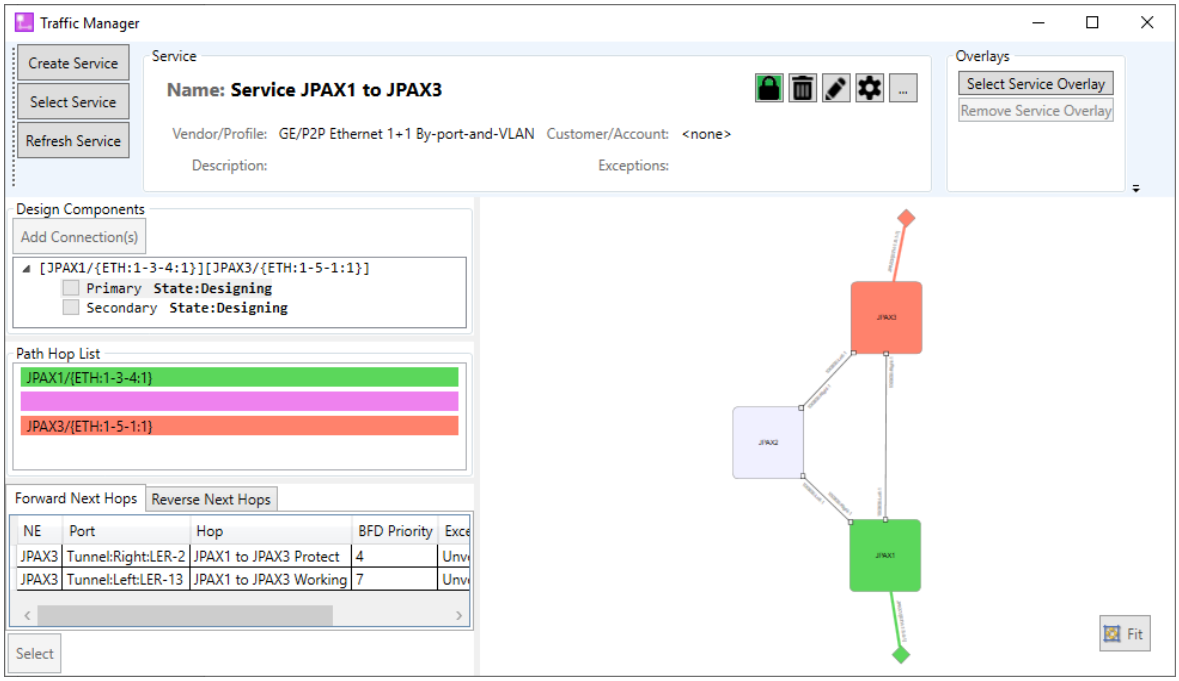

Figure 40: Service Showing Start and End Points

11. In the "Next Hops" pane with the "Forward Next Hops" tab selected, select the tunnel that is to be used as a primary tunnel for this service (e.g. **JPAX1 to JPAX3 Working**).

The Next Hops pane gives the option to go forward from the start node (default) or go in reverse from the end node. Click on the respective tab to select the desired option.
Building forward, the hop is shown with a blue dotted line and the network element the hop is connected to is highlighted with a green dotted line. Building in reverse, the line is dotted yellow and network element is highlighted with a red dotted line.

12. Click Select. Since this service is being created using a tunnel, there is only 1 hop from the start node (green) directly to the end node (red).

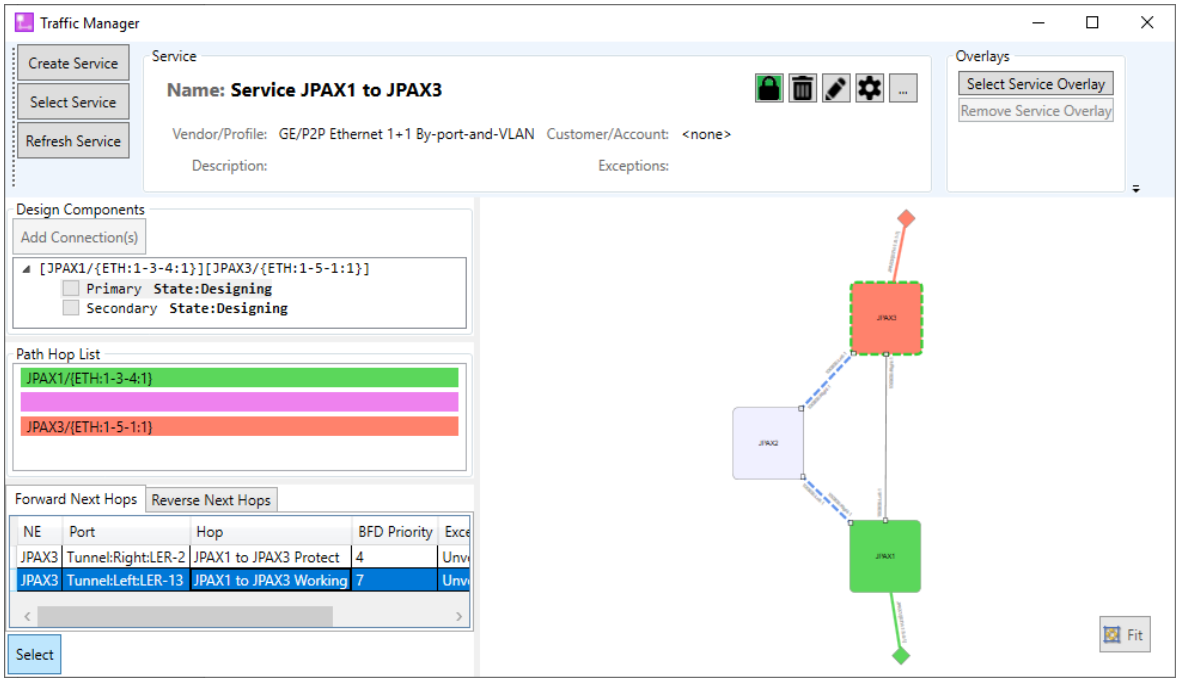

Figure 41: Node Graphic Showing the Selected “Tunnel Hop”

13. The node graphic updates and confirms the connection by showing the path with a solid blue line.
    - The Design Components pane shows a check mark and (designed) notification next to "Primary".
    - The Path Hop List is updated displaying the starting NE (green), the tunnel (blue), and ending NE (red).
    - The Next Hop pane is blank because the service is complete and there are no other hops required.

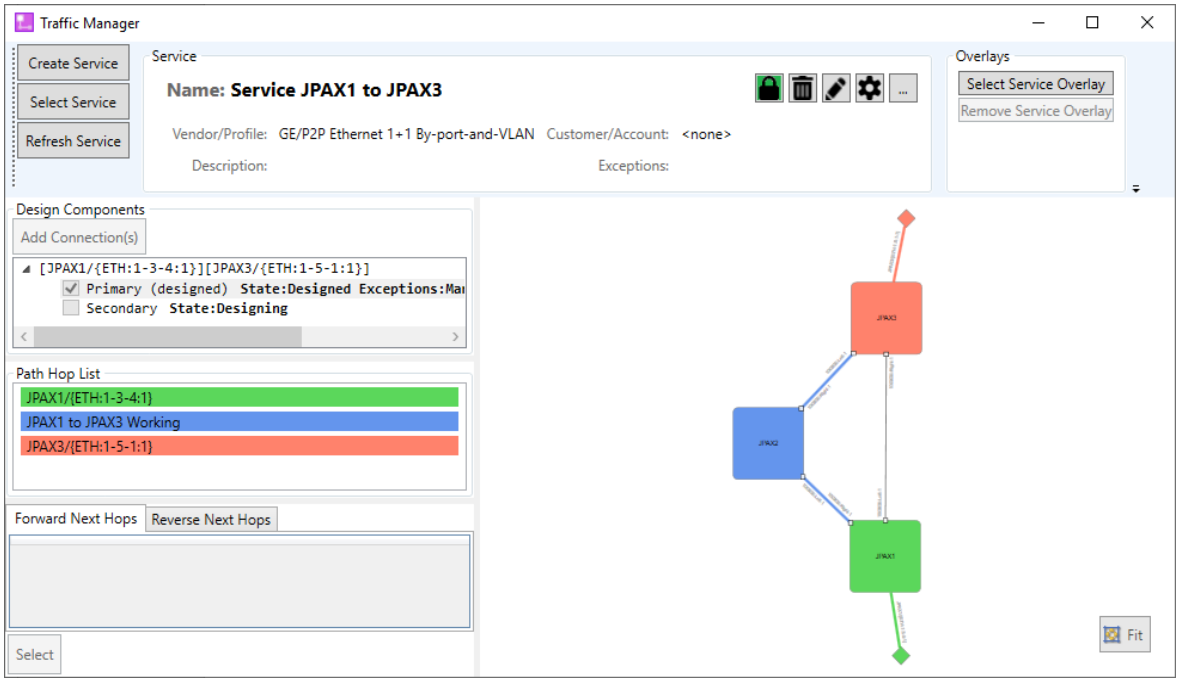

Figure 42: Path Hop List Showing the Completed Path

14. Right-click on the Primary (designed) path and select **Activate**. In the "Activate" dialog click Yes.
15. In the "Service Activation Feedback" dialog, change the name of the service if needed.
    - By default, the field is populated with the name entered when the service was created.
    - The Service Name in the JPAX field is limited to 32 characters.
16. Enter the VLAN number (e.g. **3698**).
17. Click OK.

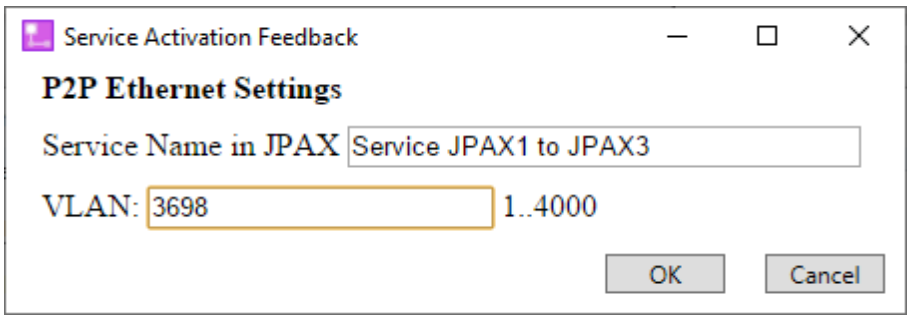

Figure 43: Service Activation Feedback for Ethernet VPWS Service Builder

The "Activating Service" dialog is displayed. When activation is complete the Status field displays with a green fill and says Successful. The Steps field indicates how many steps were taken to perform the action. Since this service was created using a tunnel, there should only be 2 steps.

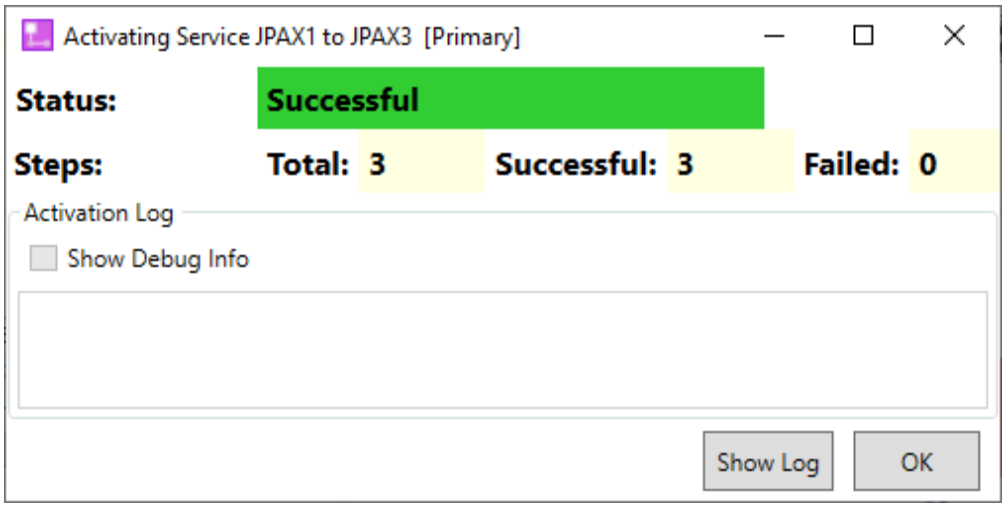

Figure 44: Service Activation Successful

When the activation is successful, the Design Components pane displays "Primary" as active.

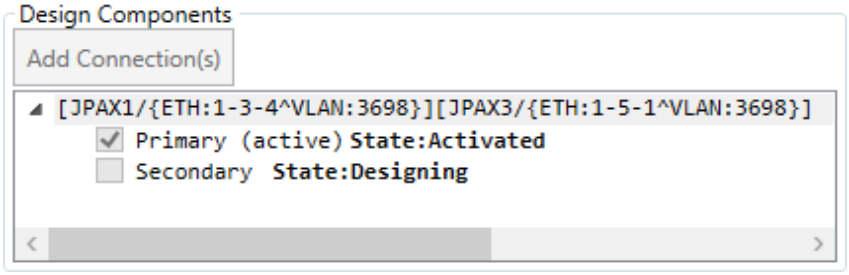

Figure 45: Design Components View after Successful Service Activation

Building VPWS Ethernet "By-Port and VLAN" Service (Secondary Path)

If the service is unprotected, skip this section.

1. In the Design Components pane, click Secondary.

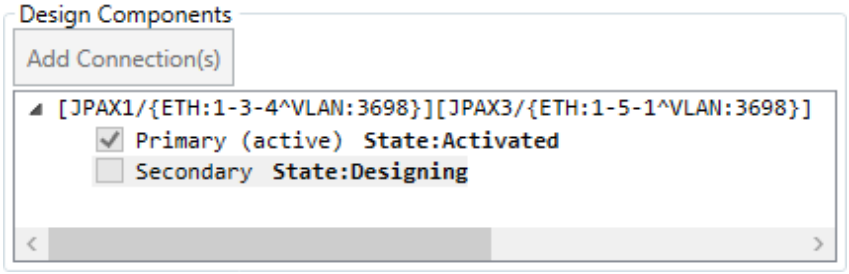

Figure 46: Starting to Build the Secondary Path for a VPWS Service

2. Traffic Manager continues to display the start node and end nodes coloured in red and green, respectively. The Design Components, Path Hop List, and Next Hop panes are populated with data to select the tunnels for the secondary path. Note that the Path Hop List includes only tunnels that can be used in conjunction with the previously selected primary tunnel based on the rules applicable to the selected service design profile.

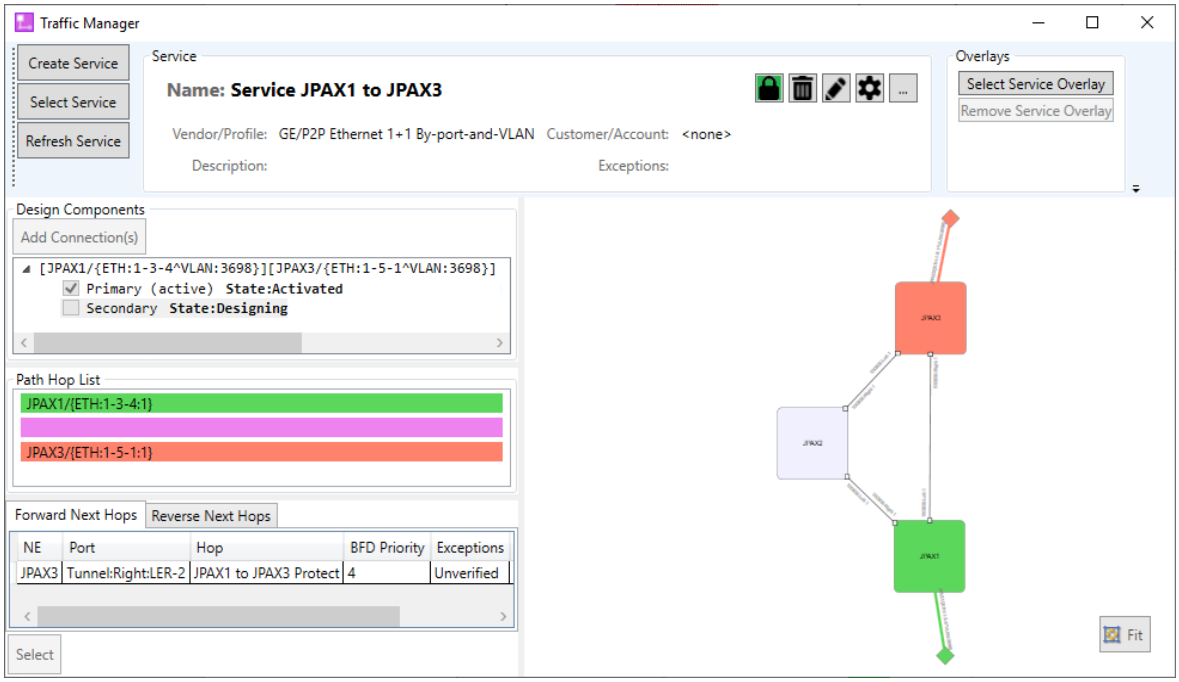

Figure 47: Service Builder Showing Start and End Points for a Service

3. In the "Next Hops" pane, select the tunnel for the secondary path (e.g.; **JAPX1 to JAPX3 Protect**).

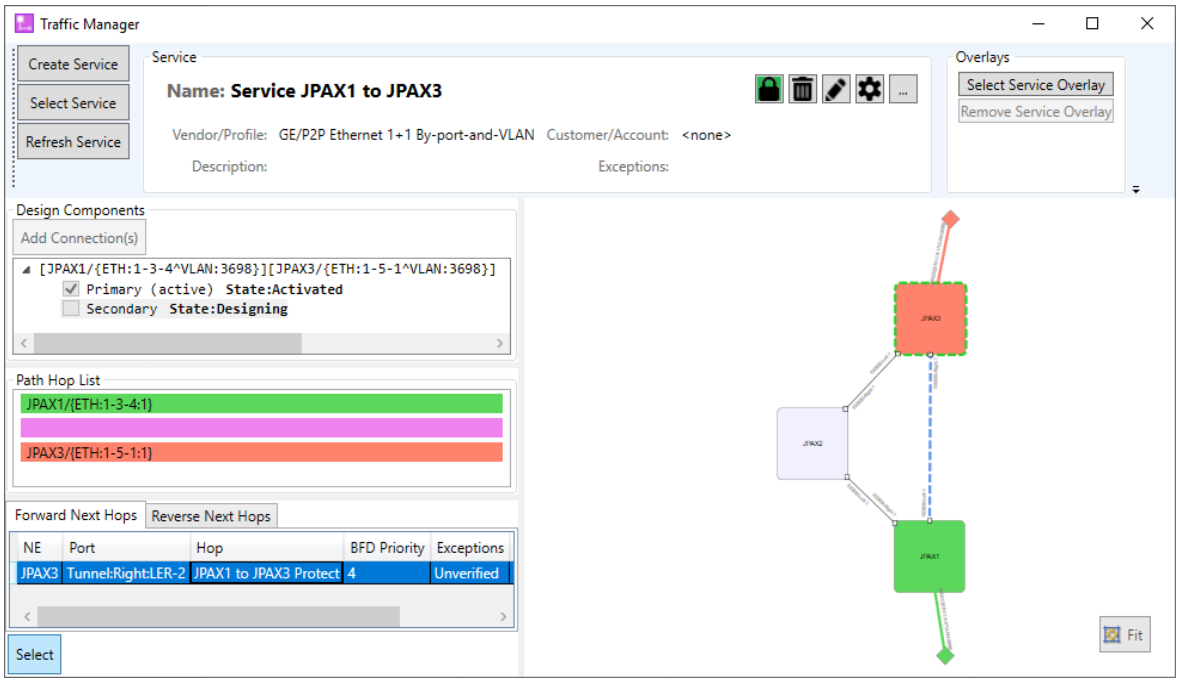

Figure 48: Service Builder View showing the Secondary Tunnel Path

4. Click Select. Since this service is being created using a tunnel, there is only 1 hop from the start node (green) directly to the end node (red).

5. The node graphic updates and confirms the connection by showing the path with a solid blue line.

   - The Design Components pane shows a check mark and (designed) notification next to "Secondary".

- The Path Hop List is updated displaying the starting NE (green), tunnel (blue), and ending NE (red).
- The Next Hop pane is blank because the service is complete and there are no other hops required.

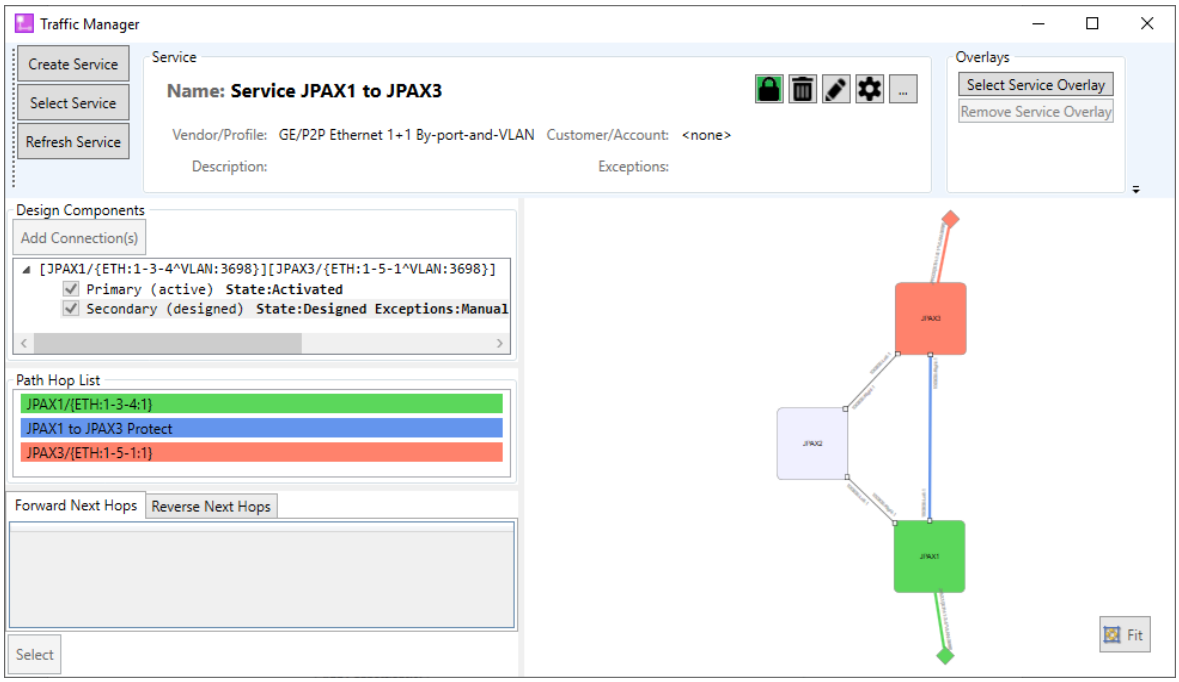

Figure 49: Path Hop List Showing the Completed Secondary Path

6. Right-click on the Secondary (designed) path and select **Activate**. In the "Activate" dialog click Yes.

7. In the "Service Activation Feedback" dialog, click OK. It is recommended to not change the Service Name since this is a secondary/backup service; it should have the same name as the primary.

   - The VLAN number or the secondary service must be the same as the primary, so this field cannot be edited.

   The "Activating Service" dialog displays. When activation is complete the Status field displays with a green fill and says Successful. The Steps field indicates how many steps were taken to perform the action. Since this service was created using a tunnel, there should only be 2 steps.

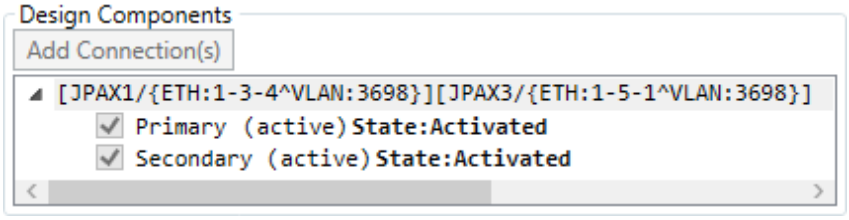

Figure 50: VPWS Service Building Completed

Modify/Delete a Service

If at some point the connections need to be modified within a service, the connection must be deleted and remade. If the connection has already been activated, deactivate the connection before deletion by right-clicking and selecting **Deactivate**.

To delete a connection, right-click the connection and select **Delete**.

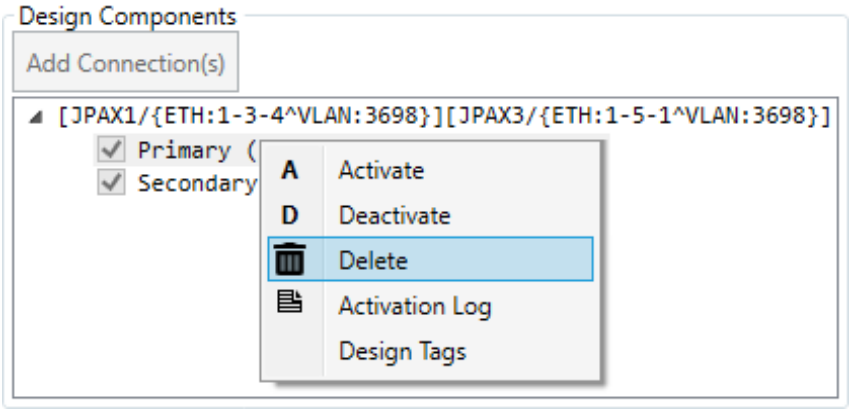

Figure 51: Service Design Components View: Deleting a Service Connection

Delete a service by clicking the delete button in the Service Pane.

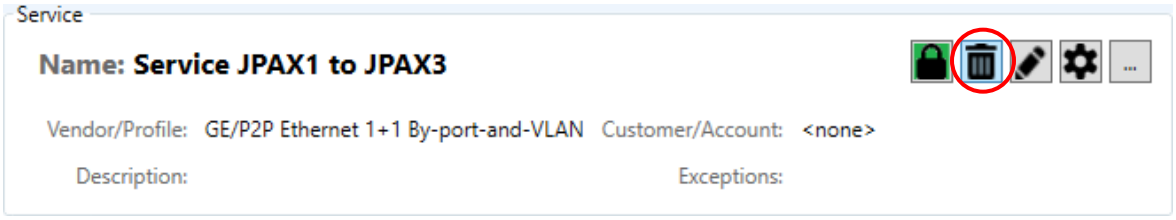

Figure 52: Deleting a Service

BUILDING VPLS SERVICES

A Virtual Private LAN Service (VPLS) is used to create point-to-multipoint and multipoint-to-multipoint Ethernet services. A VPLS service consists of multiple pseudowires providing logical communication links between multiple pairs of nodes. This contrasts with a VPWS service, which consists of only one pseudowire. Each pseudowire may be protected or unprotected.

To create a VPLS service, the user must create a virtual switch with at least two pseudowires where each pseudowire has the primary and (optional but recommended) secondary instance for 1:1 path protection.

Like the VPWS service, each VPLS service's pseudowire uses a tunnel.

Building Tunnel

The following steps provide basic instructions on how to create a tunnel. For more detailed instructions refer to "Building Tunnels".

1. Click Create Service and create a tunnel using the Tunnel-for-1:1 service design profile.
2. In the "Add Connection" dialog select the network elements for the start and end points of the tunnel and click Create.
3. Select next hops until the end point is reached.
4. Right-click the connection and select **Activate**. In the "Activate" dialog click Yes.
5. Select the desired BFD Priority and click OK.

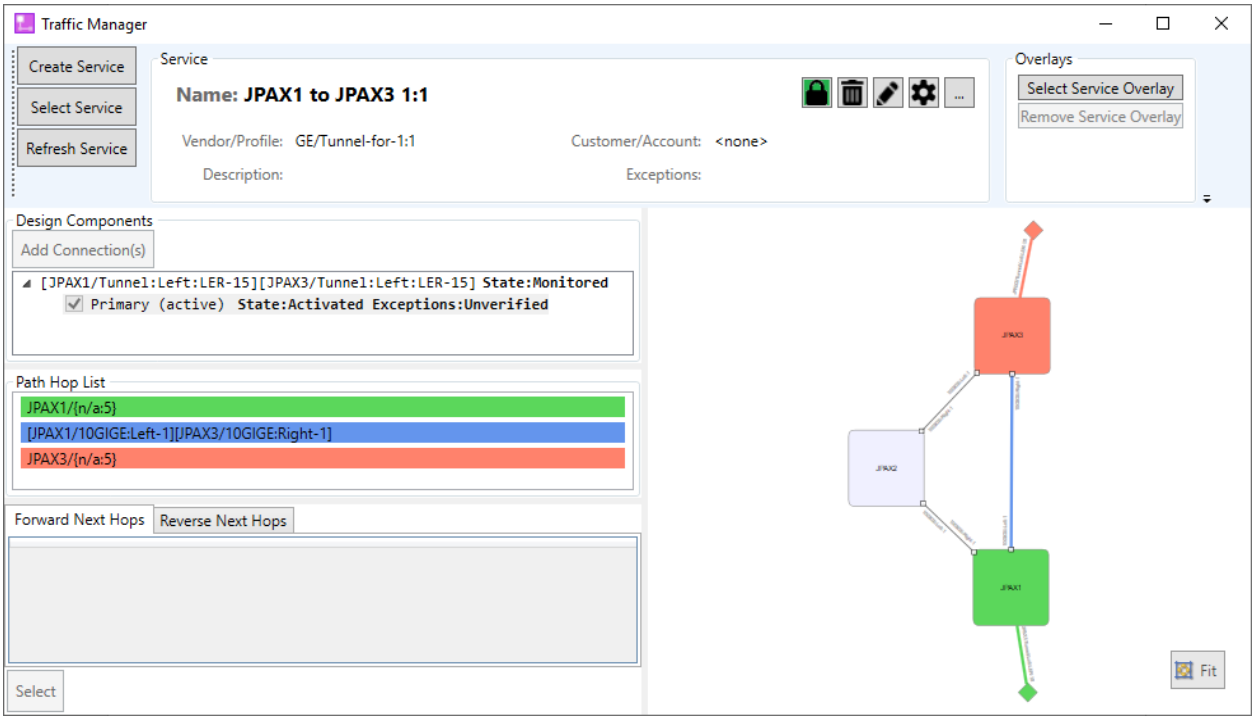

Figure 53: Building a Tunnel for 1:1 Service

Building Virtual Switch

1. Click the Create Service button.
2. Input a name for the switch in the Service Name field (e.g.; **JPAX1 Pseudowires**).
3. From the Select Vendor drop-down list, select **GE**.
4. From the Select New Service Design Profile list, select **Virtual Switch 1:1**).
5. Click Create.

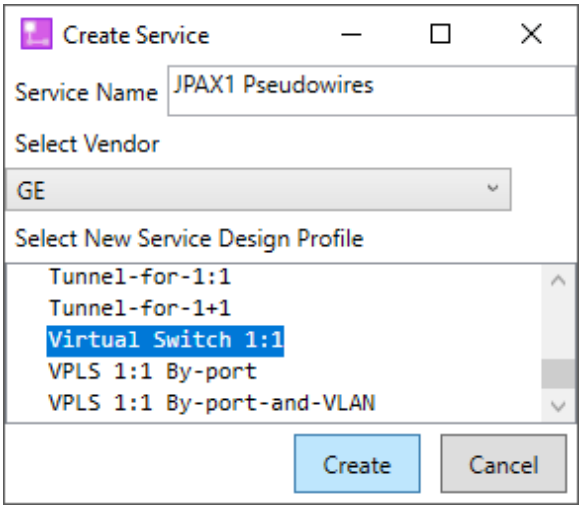

Figure 54: Create Service View – Creating a Virtual Switch

6. In the "Add Connection" dialog, double-click to select a network element to be the starting node for the first pseudowire (e.g.; **JPAX114-1**).

For a virtual switch, the Port/Interface field automatically populates with {N/A:} because this field is not required.

7. Double-click to select a network element to be the end node for the first pseudowire (e.g.; **JPAX114-4**). Click Create.

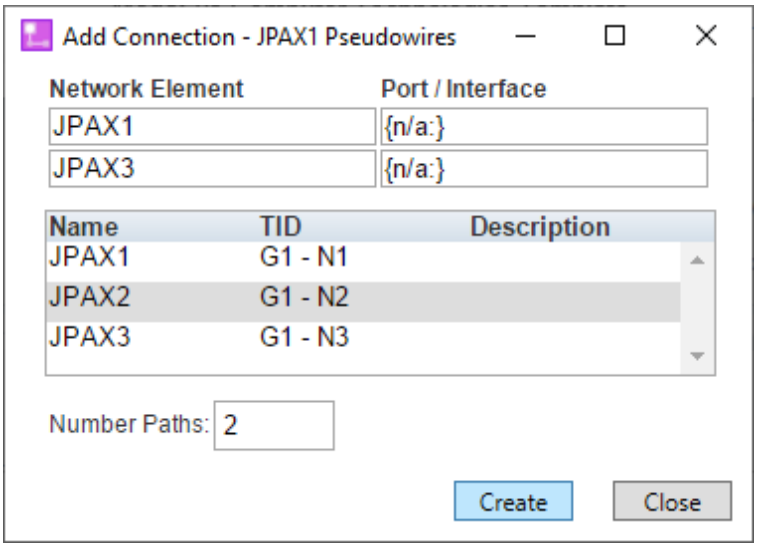

Figure 55: Add Connection for a VPLS Service

8. Traffic Manager displays all available nodes. The start node is red and the end node is green.

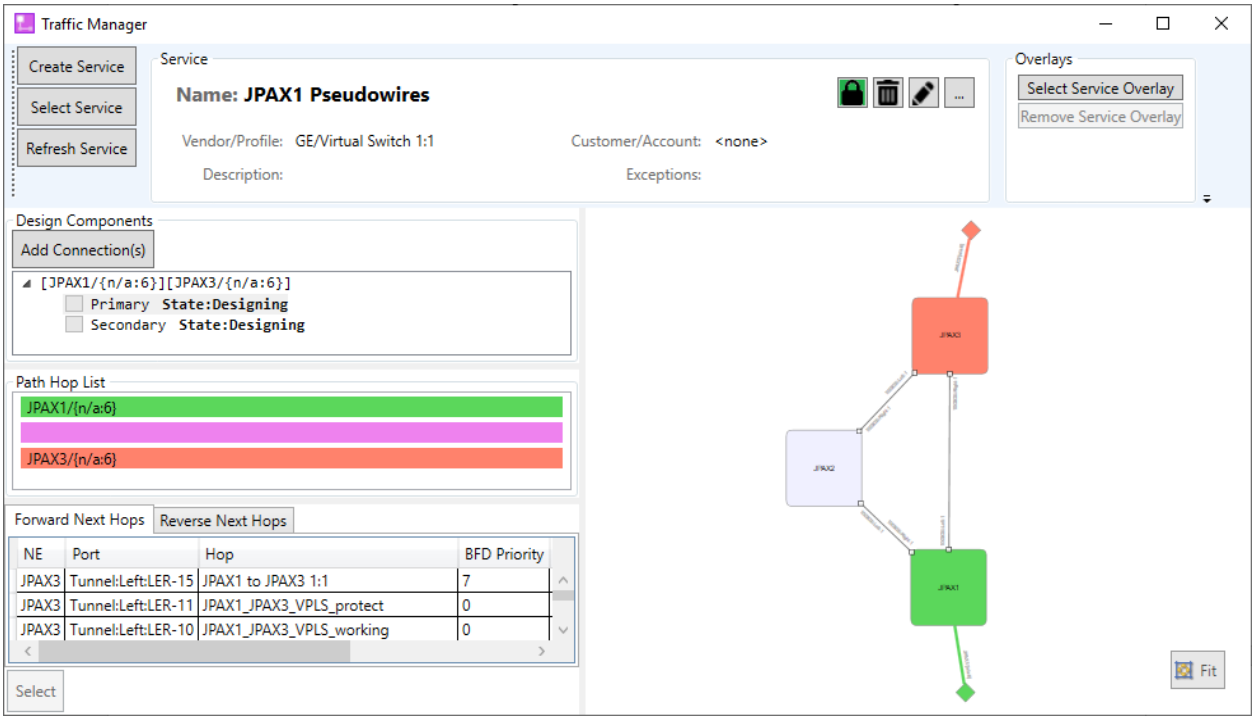

Figure 56: Service Builder Showing Start and End Nodes for a VPLS Pseudowire

9. In the "Next Hops" pane, select the tunnel for the primary path (e.g.; **JPAX1_JPAX3_working**) and click Select.

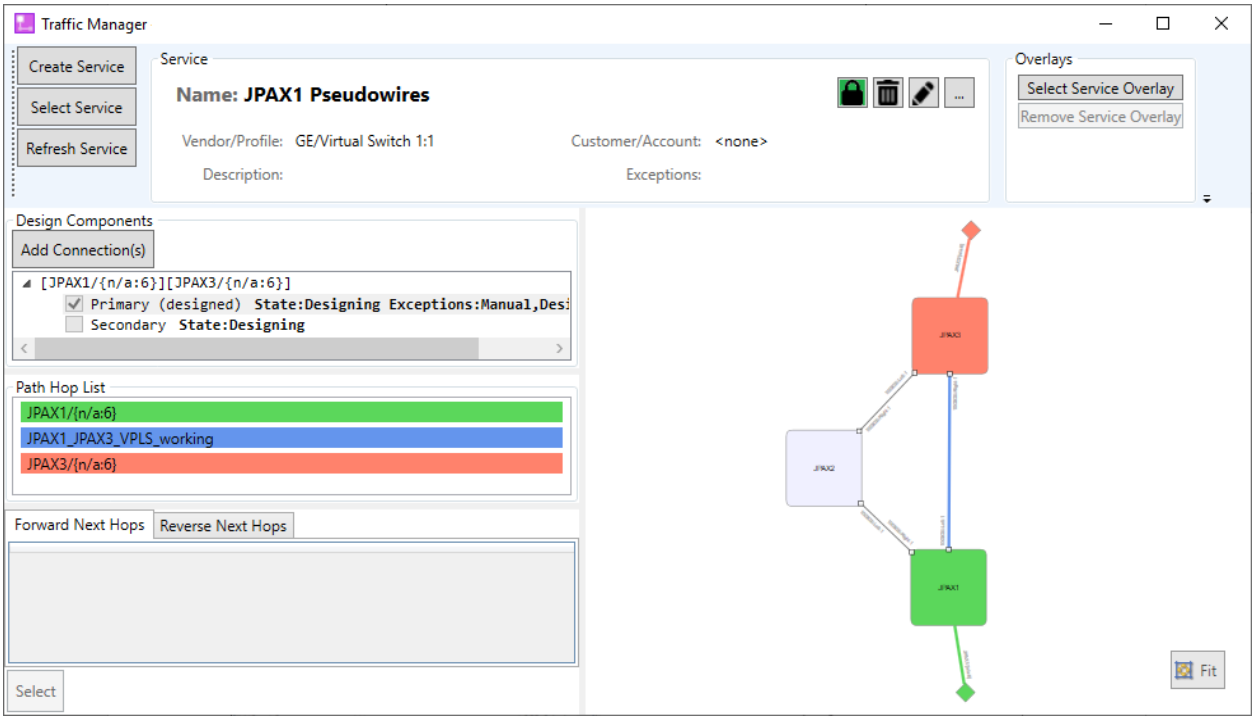

Figure 57: Primary Path Selected for a VPLS Pseudowire

10. In the Design Components pane select Secondary.
11. Select the tunnel for the secondary path (e.g.; **JPAX1_JPAX3_VPLS_protect**) and click Select.

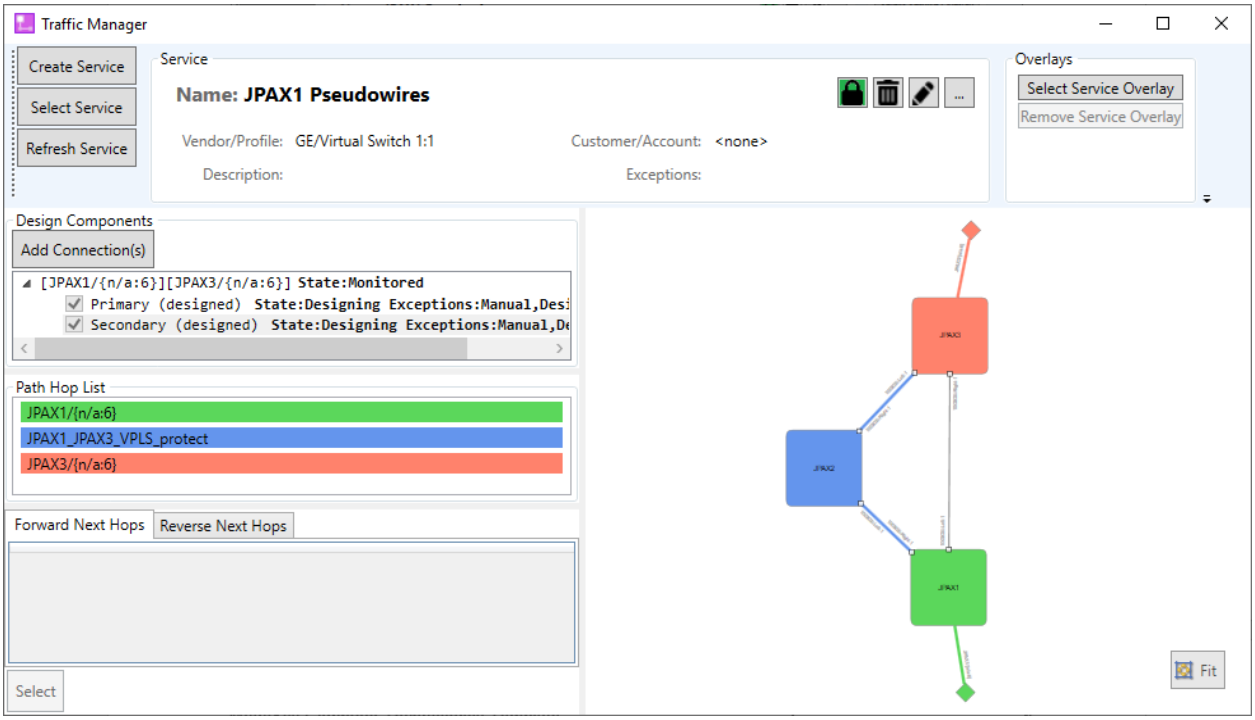

Figure 58: Service Builder Showing Secondary Path Selected for a VPLS Pseudowire

12. Click Add Connections to create the next pseudowire.

13. Repeat steps 6-12 to add additional pseudowires to your virtual switch. The image below shows a virtual switch consisting of two protected pseudowires.

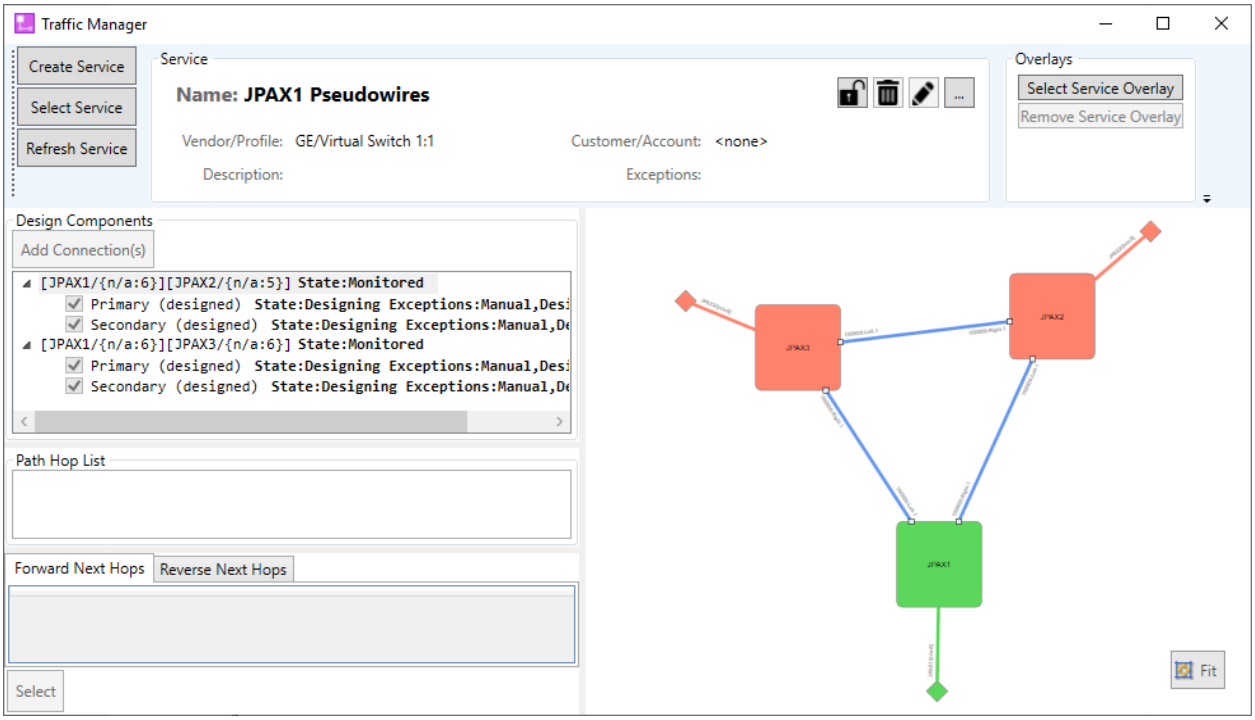

Figure 59: Virtual Switch Consisting of Two Protected Pseudowires

Building VPLS Service

1. Click the Create Service button.
2. Input a name for the service in the Service Name field.
3. From the Select Vendor drop-down list, select **GE**.
4. Select a New Service Design Profile (e.g.; **VPLS 1:1 By-port-and-VLAN**).
5. Click Create.

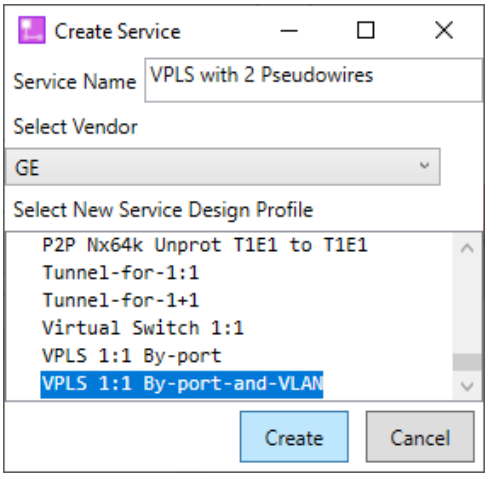

Figure 60: Create Service View – Creating a VPLS Service

6. In the "Add Connection" dialog, from the Switch drop-down select the previously created virtual switch (e.g.; **JPAX1 Pseudowires**).

A virtual switch can only be used by one service.

7. Enter a VLAN Number.

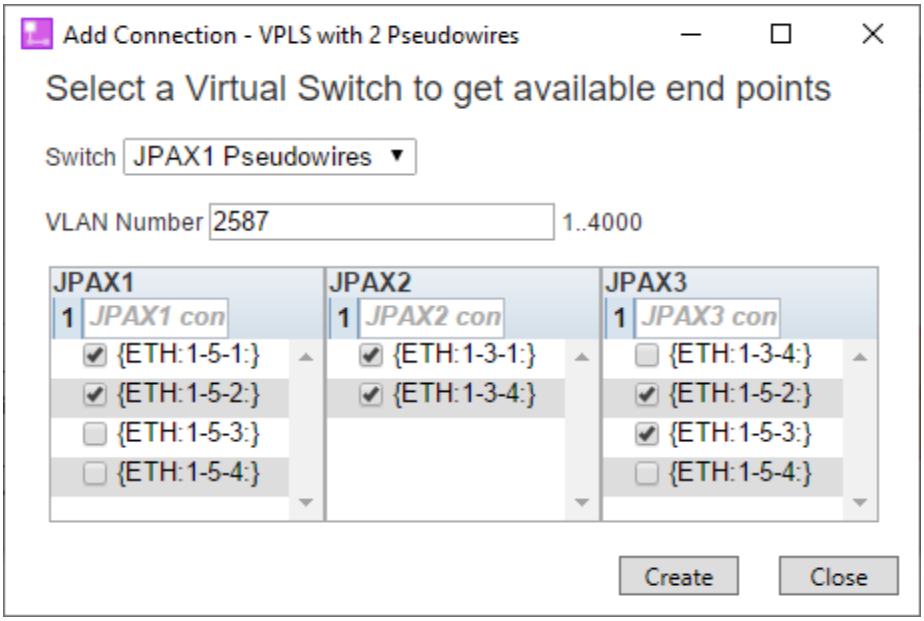

Figure 61: Adding End Points for a VPLS Service

8. Select the checkbox for the desired access port(s) at each node reached by the virtual switch.

9. Click Create. The connections in the Design Components pane now require activation. All connections are bidirectional.

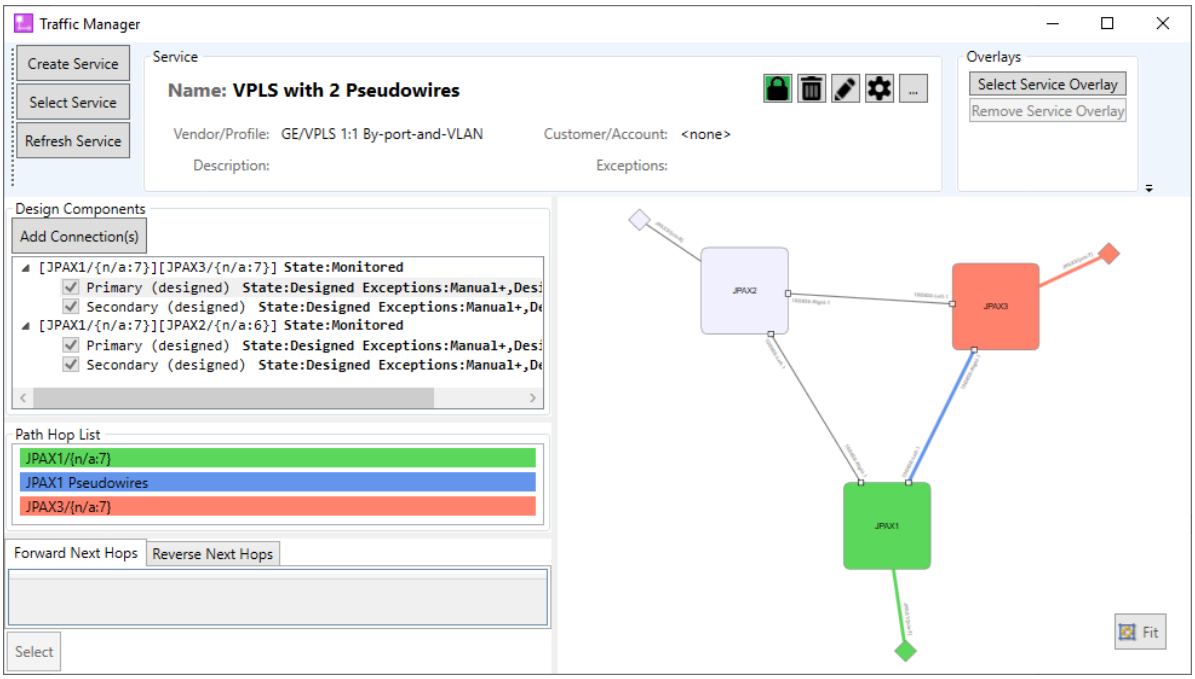

Figure 62: A VPLS Pseudowire Connection

10. Right-click the first connection and select **Activate**.
11. In the "Service Activation Feedback" dialog, click OK, then click OK in the "Activating" dialog box.
12. Repeat steps 10-11 until all the connections are activated.

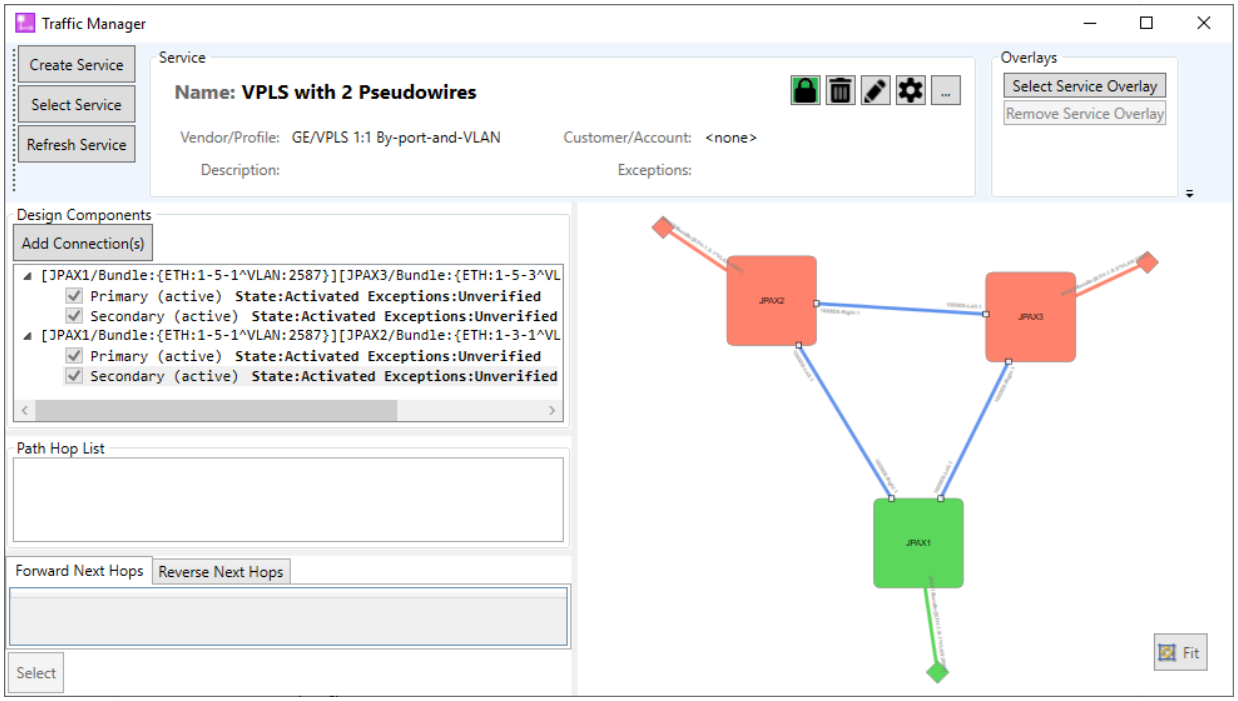

Figure 63: VPLS Service Building Completed

JUNGLEPAX FREQUENCY & TIME SYNCHRONIZATION

FREQUENCY SYNCHRONIZATION

Within Telenium, frequency synchronization information can be viewed by using either the Network View application or GSM. Time synchronization data can be viewed only from the GSM application.

Frequency Sync Overlay in Network View

Network View contains an overlay for JPAX Frequency Sync. The Frequency Sync overlay displays the node in Normal (N), Headend External (HEE), or Headend Internal (HEI) mode. The color of the left (L) and right (R) squares provide information on the respective Core's frequency sync status. Click or hover over the Overlay Legend tab to see a description of what the various colors mean. The port color indicates whether the port is used for line timing (green) or not. The number indicates the SSM received on the port. SSM 15 on black background indicates that SSM 15 has been forced on the Rx side of this port (i.e. this port should never be line timed). A number in a square with thick outline indicates that this port's Rx SSM value has been forced. Arrows indicate the present frequency sync distribution path. The view is updated on any frequency sync status change.

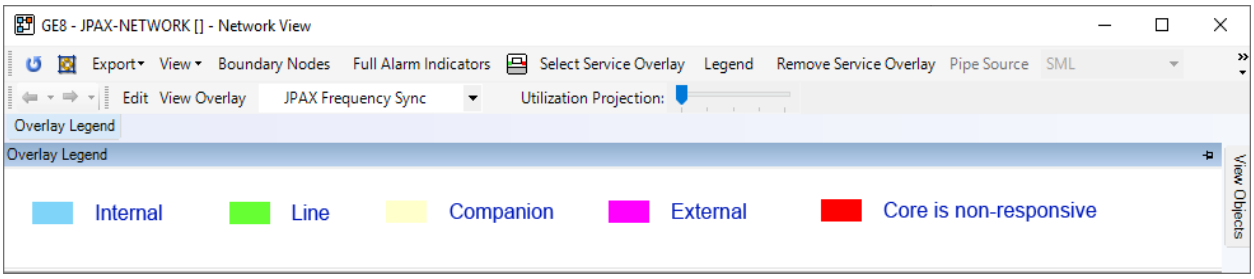

Figure 64: Overlay Legend

1. To display the Frequency Sync overlay, select JPAX Frequency Sync option in the View Overlay drop-down menu.
2. To remove the Frequency Sync overlay, select <NONE> in the View Overlay menu.

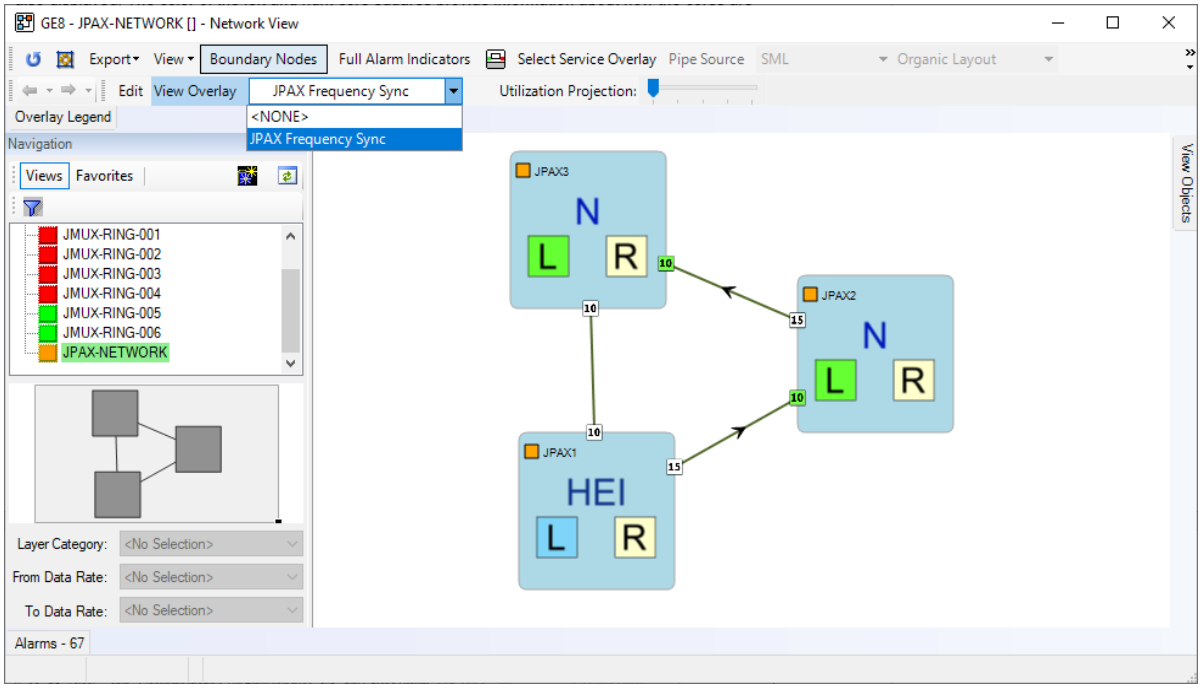

Figure 65: Network View with JPAX Frequency Sync Overlay ON

Frequency Sync Details

1. From the Main Menu graphic in GSM, select a network element.
2. On the network element graphic click, **Click Here to View Core Units - Freq Sync**.
3. The JunglePAX Frequency Synchronization graphic is displayed. This graphic shows the frequency information for both the Left and Right Core Cards simultaneously.

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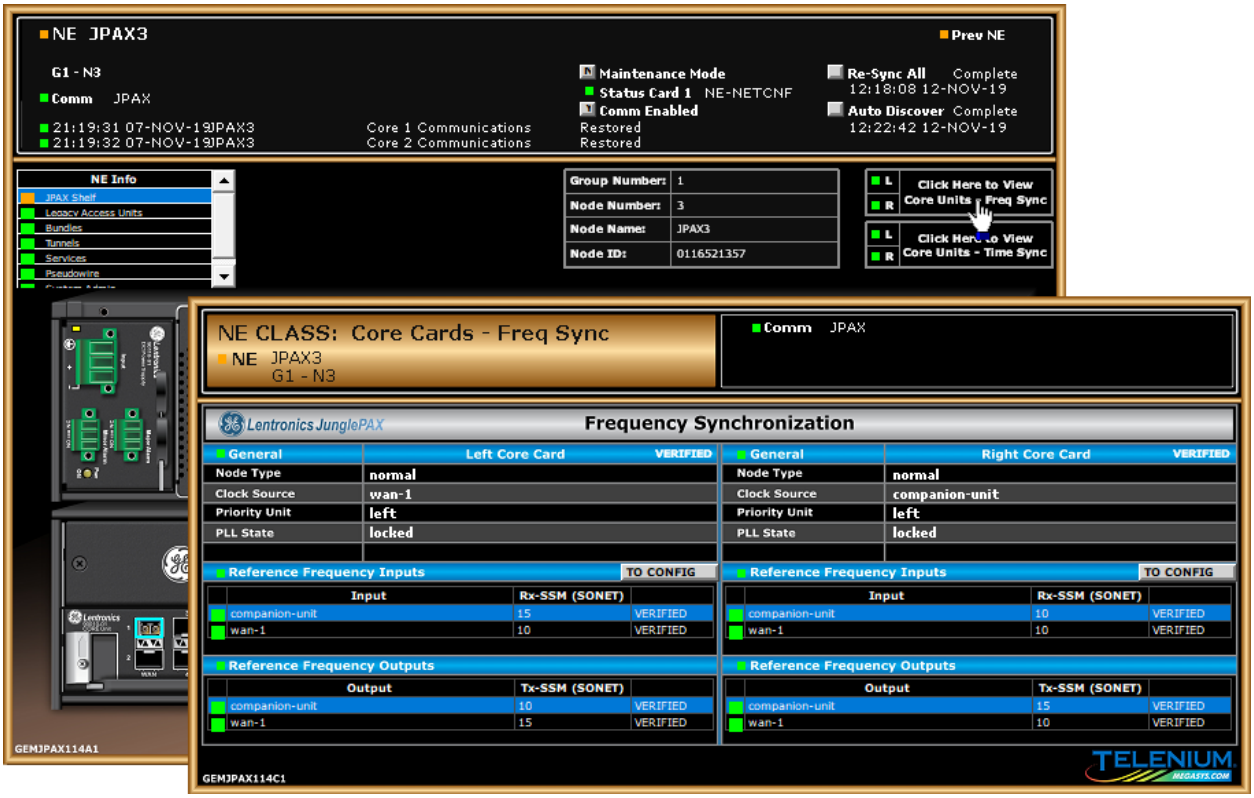

Figure 66: JunglePAX Frequency Synchronization Info

TIME SYNCHRONIZATION

From the GSM application, you can view time synchronization information for both the Left and Right Core Cards.

1. From the Main Menu graphic in GSM, select a network element.
2. On the network element graphic click, **Click Here to View Core Units - Time Sync**.

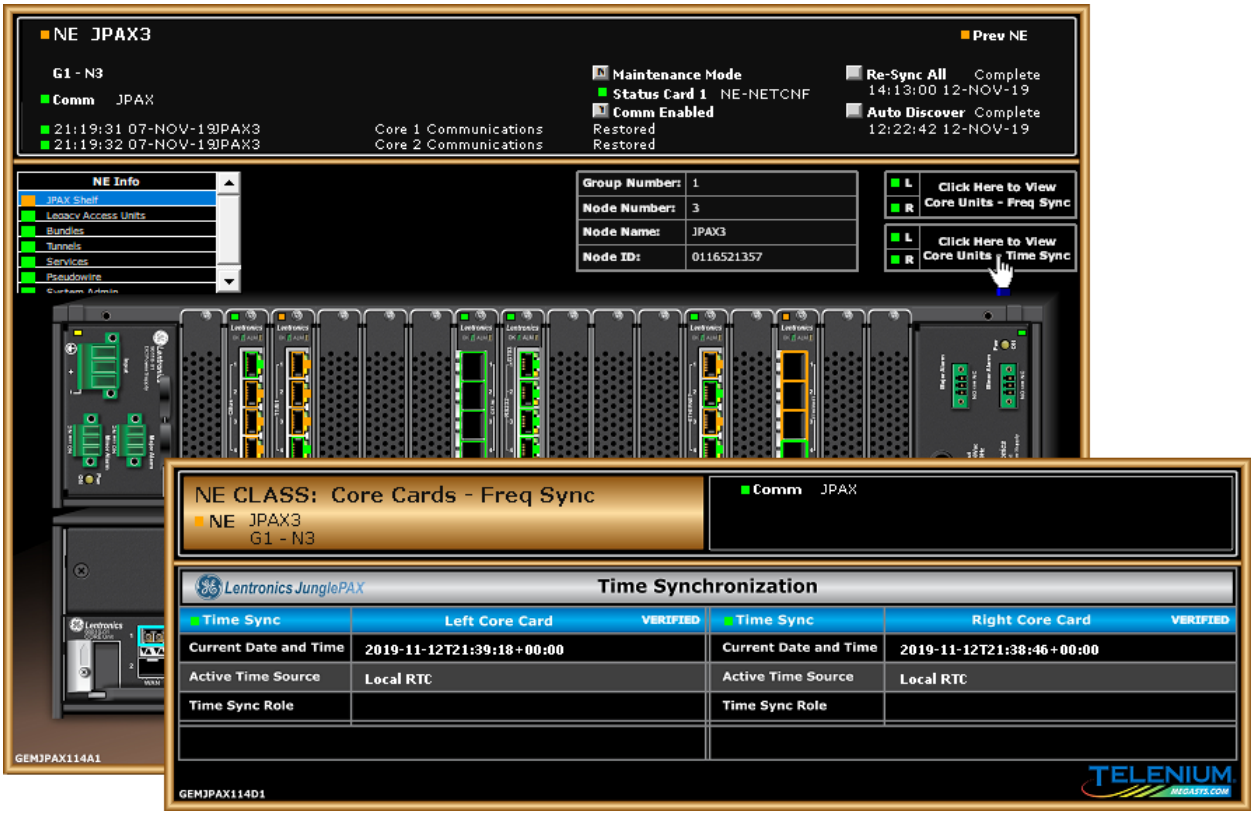

Figure 67: Time Synchronization Info

ASSOCIATED APPLICATIONS

Note: The content of this section is applicable only to JunglePAX networks.

User can open other Telenium applications in context to the element selected in the graphic user interface (GUI). Right-click a service name, network element node, or design component path to view the application options. The following sections briefly describe associated applications that can be used to view information pertaining to building tunnels and services. For more information about Associated Traffic, Traffic Traversal, and Network View, open the Telenium help located in the toolbar of the applications.

ASSOCIATED TRAFFIC

The Associated Traffic application is used to view traffic (tunnels and services) associated with the selected entity (node, WAN link, or tunnel). It can be accessed from the Traffic Manager, Network View and GSM applications.

- To view all traffic associated with a specific node, right-click on a node and select **Applications>Associated Traffic**.

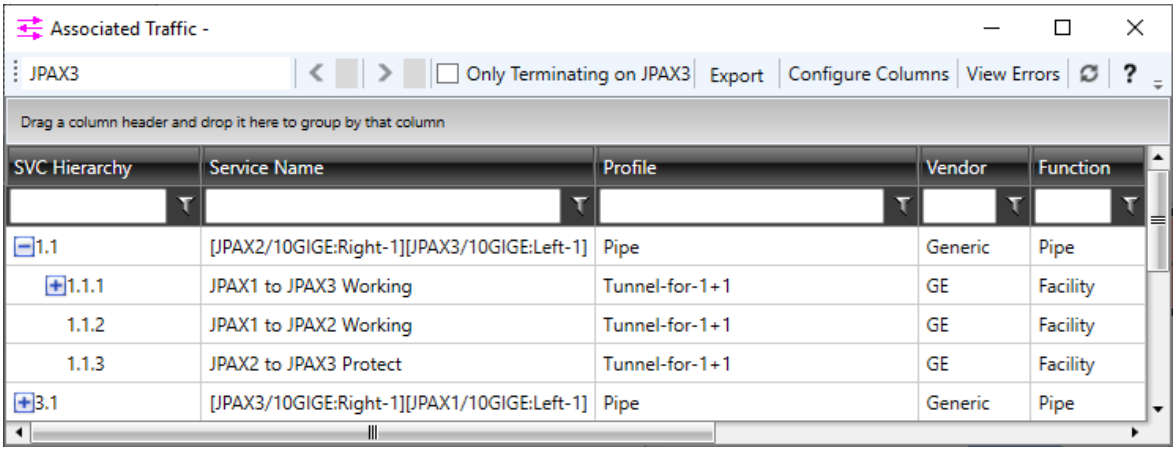

Figure 68: Associated Traffic View

- To view all tunnels and services associated with a WAN link, right-click on the WAN link in the Network View and select **Applications>Associated Traffic**.

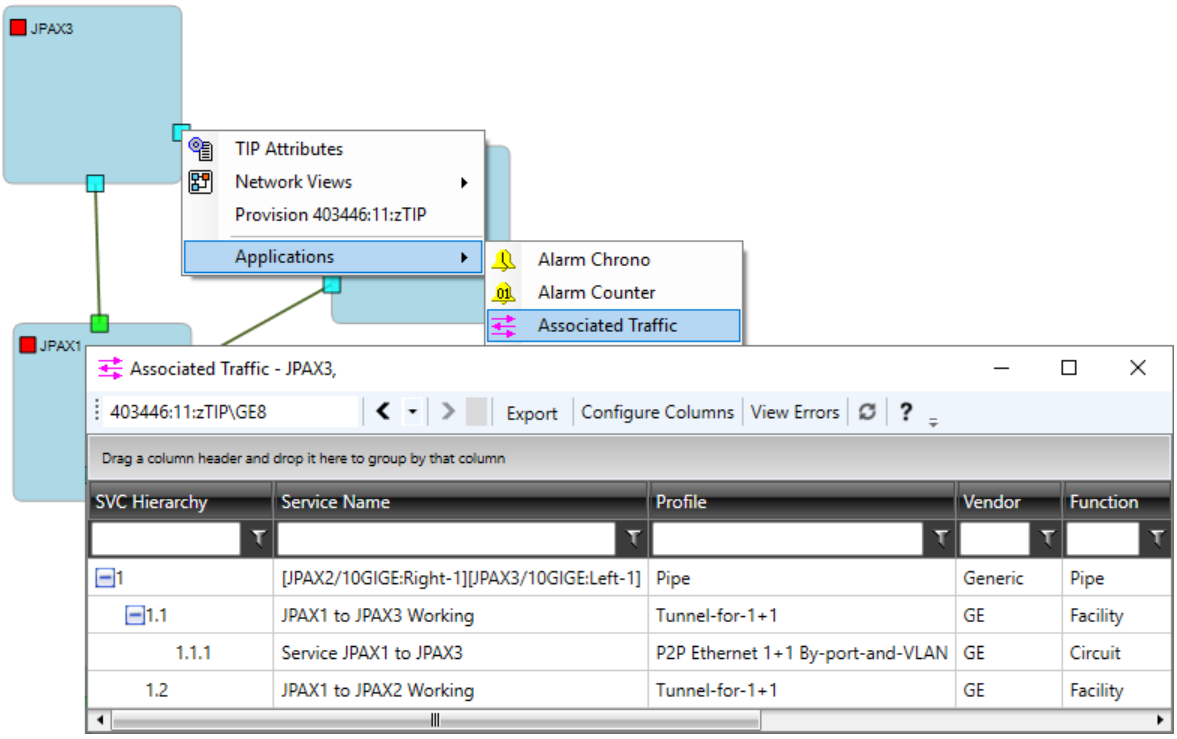

Figure 69: Services Associated with a WAN Link

- To view all traffic associated with a tunnel, right-click the desired tunnel in the Service Pane and select **Applications>Associated Traffic**

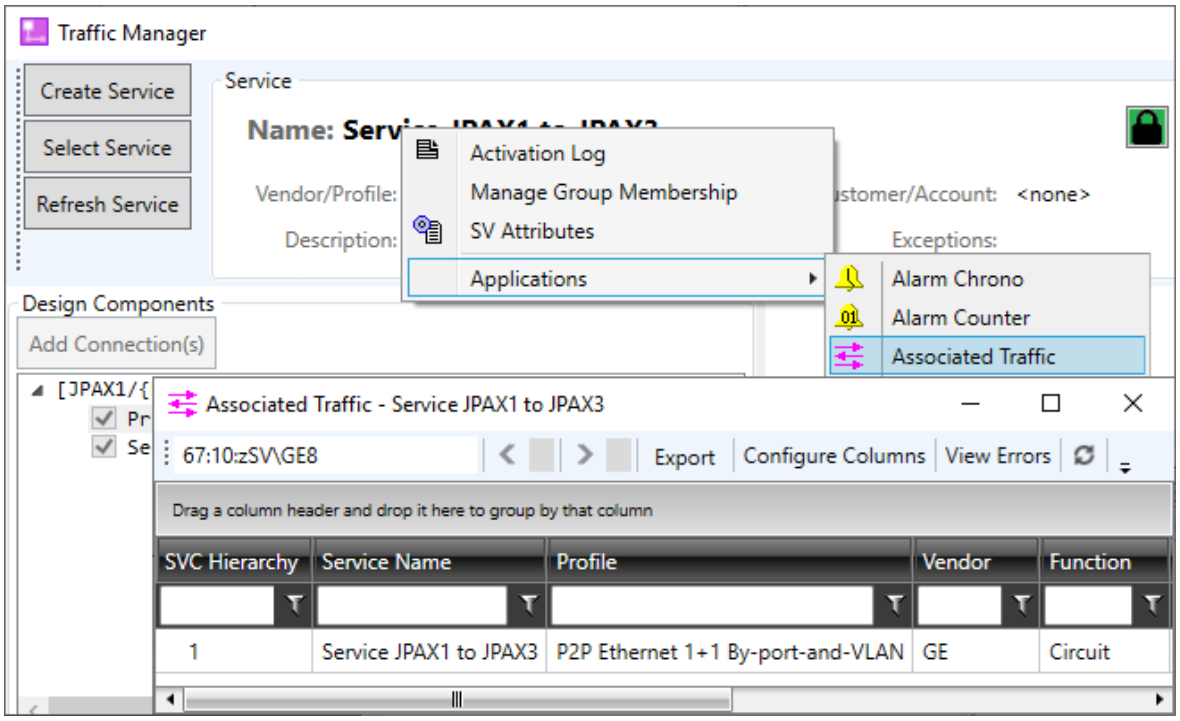

Figure 70: Services Associated with a Tunnel

TRAFFIC TRAVERSAL

The Traffic Traversal application displays the flow of traffic for an entire service.

To display the Traffic Traversal application, right-click the service name in the Service Pane and select **Applications>Traffic Traversal**.

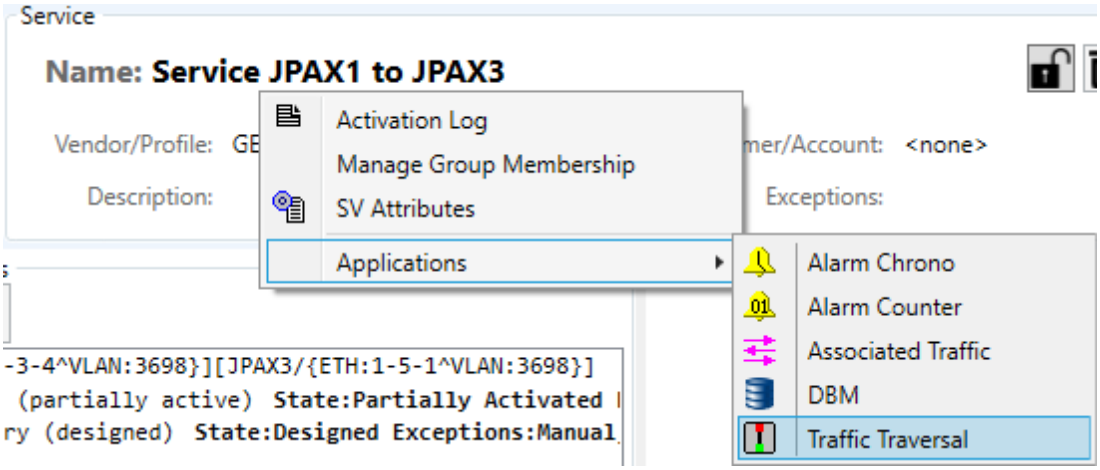

Figure 71: Enabling Traffic Traversal View for a Service

Traffic Traversal displays large boxes that contain connections. The image below shows the node graphic from Traffic Manager compared to the traversal graphic. The node name is shown on the very top of each node box (which can be seen zoomed in), however; for comparison purposes, a larger node name has been added for clarity.

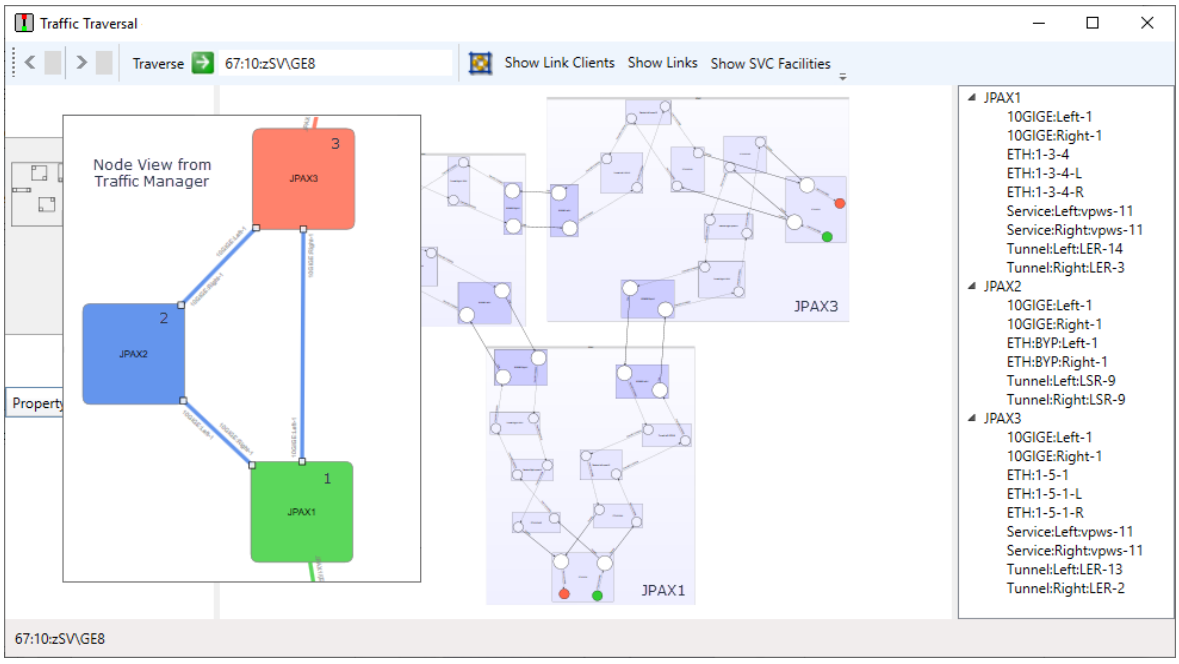

Figure 72: Traffic Traversal View

The darker blue boxes inside the node box are the points at which the service leaves one node and enters another. All the boxes and lines that make up the node box are the components internal to the device that represent the flow of traffic.

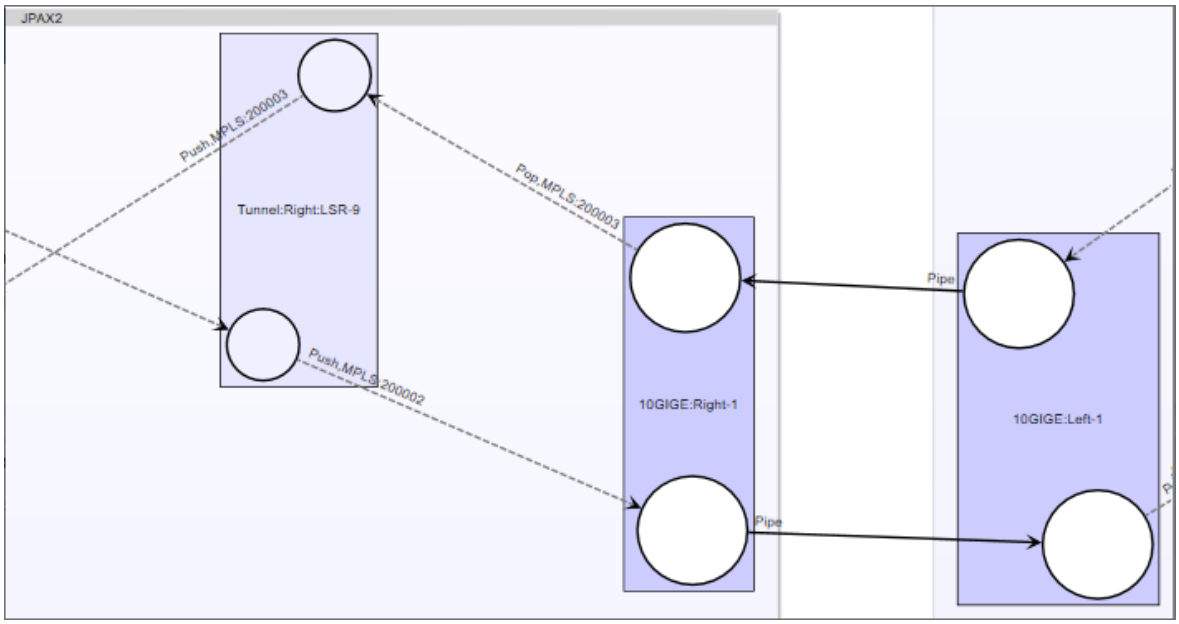

Figure 73: Traffic Traversal View Elements

ORDERING INFORMATION

This section covers the ordering information for JunglePAX and JungleMUX licenses for Advanced NMS. Please contact the Account Manager for your area.

Ordering Information for JunglePAX Advanced NMS Licenses

Equipment	Option Code	Description
90000-50	-50	Advanced NMS - Standard, per node RTU license, 1 client seat
90000-51	-51	High-Availability Advanced NMS - Standard, per node RTU license, 1 client seat
90000-50/G	-50/G	Advanced NMS - Gold, per node RTU license, 1 client seat
90000-51/G	-51/G	High-Availability Advanced NMS - Gold, per node RTU license, 1 client seat
90000-55	-55	Single client seat license

Ordering Information for JungleMUX Advanced NMS Licenses

Equipment	Option Code	Description
86456-71	-71	10x Advanced NMS RTU Node licenses
86456-72	-72	1x Advanced NMS RTU Node license for 10 < Nodes < 50
86456-73	-73	50x Advanced NMS RTU Node licenses
86456-74	-74	1x Advanced NMS RTU Node license for 50 < Nodes < 100
86456-75	-75	100x Advanced NMS RTU Node licenses
86456-76	-76	1x Advanced NMS RTU Node license for 100 < Nodes
86456-80	-80	8x5 Annual Extended STANDARD Support Services
86456-81	-81	24x7 Annual Extended STANDARD Support Services
86456-71/G	-71/G	10x Advanced NMS Gold RTU Node licenses
86456-72/G	-72/G	1x Advanced NMS Gold RTU Node license for 10 < Nodes < 50

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86456-73/G	-73/G	50x Advanced NMS Gold RTU Node licenses
86456-74/G	-74/G	1x Advanced NMS Gold RTU Node license for 50 < Nodes < 100
86456-75/G	-75/G	100x Advanced NMS Gold RTU Node licenses
86456-76/G	-76/G	1x Advanced NMS Gold RTU Node license for 100 < Nodes
86456-80/G	-80/G	8x5 Annual Extended GOLD Support Services
86456-81/G	-81/G	24x7 Annual Extended GOLD Support Services
86456-77	-77	Network Manager - Single Client Seat license (Copper, Std or Gold)

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APPENDIX B: LIST OF ACRONYMS

- AID Access Identifier
- AIDCLC AID Calculator
- ALP Application Logic Processing
- AOR Area of Responsibility
- API Application Program Interface
- ASSOC-DATA Associated Data
- AUTO-ACK Automatically Acknowledge
- BFD Bidirectional Forwarding Detection
- BI Business Intelligence
- CC Clear Condition (Alarm Code)
- CL Clear (Alarm Code)
- COMM Communications
- COMM_LIST Communication List
- COMM-STATS Communication Statistics
- CPU Central Processing Unit
- CR Critical (Alarm Code)
- CSV Comma-Separated Values
- CTNAM Circuit Name
- DART Diagnostic and Resolution Tool
- DBM Database Manager
- DBM Database Manager
- DBTYPE Database Type
- DTSS Distributed Time Service System
- DXL Database Interface Language
- EGU Engineering Units
- EML Element Management Layer
- EPN External Point Name
- FCNAM Facility Name
- GED Graphics Editor
- GID Graphical Identification
- GIS Geographic Information System
- GSM Graphic Screen Manager
- GUI Graphical User Interface
- HE Headend
- HEE Headend External
- HISCOL Historical Collect

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- ID Identifier
- IN Indicator (Alarm Code)
- IP Internet Protocol (Address)
- IPN Internal Point Number
- ITU International Telecommunications Union
- JMUX JungleMUX
- JPAX JunglePAX
- LAN Local Area Network
- LOGMENU Logical Menu
- LOGNODE Logical Node
- MAPPLANS Map Plans
- MIB Management Information Base
- MJ Major (Alarm Code)
- MN Mino (Alarm Code)
- N Normal
- NA Not in Alarm (Alarm Code)
- NBI Northbound Interface
- NE Network Element
- NECLS Network Element Class
- NEFACTYLIST Network Element Facility List
- NEHIST Network Element History
- NETYP Network Element Type
- NML Network Management Layer
- NR Not Reporting (Alarm Code)
- NSA Non-Service Affection (Alarm Type)
- NU Not Urgent (Alarm Code)
- OP Operator
- OSM Open Street Map
- P2P Point to Point
- PCM Partitions Control Module
- PDF Portable Document Format
- PIK Product Install Key
- PLNK Point Link (Address)
- PM-SCHED Performance Monitoring Schedule
- QOS Quality of Service
- REPT EVT Report Event (Alarm Code)
- REPT MISC Report Miscellaneous (Alarm Code)
- REPT SW Report Switch (Alarm Code)

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- RO Read Only
- RTU Remote Terminal Unit
- RW Read/Write
- Rx/Tx Retrieve XConnect/Transmit XConnect
- SA Service Affecting (Alarm Option)
- SC Standing Condition (Alarm Code)
- SML Service Management Layer
- SNMP Simple Network Management Protocol
- SQL Structured Query Language
- SYS System
- TAC Traffic Adaptation Connection
- TAF Traffic Adaptation Function
- TAP Traffic Adaptation Point
- TC Transient Condition (Alarm Code)
- TCP Transport Control Protocol
- TCRS Telenium Client Record Selector
- TEL Telenium
- TID Transaction Identifier
- TID Target Identifier
- TIP Traffic Identification Point
- TL1 Transaction Language 1
- TP Task Provisioner
- TSKTG Task Trigger
- UR Urgent (Alarm Code)
- VIS Visibility
- VPLS Virtual Private LAN Service
- VPWS Virtual Private Wire Service
- WAN Wide Area Network
- WDG Watchdog
- WN Warning (Alarm Code)

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