Dynamic Network Manager User Guide
- Private IP

Version 7.2
Last Updated: March 17, 2022
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private IP Dynamic Network Manager Overview</td>
<td>4</td>
</tr>
<tr>
<td>Features &amp; benefits</td>
<td>4</td>
</tr>
<tr>
<td>Components</td>
<td>4</td>
</tr>
<tr>
<td>Business rules for Private IP Virtual Private Networks (VPNs)</td>
<td>4</td>
</tr>
<tr>
<td>For your information:</td>
<td>5</td>
</tr>
<tr>
<td>Accessing Dynamic Network Manager</td>
<td>6</td>
</tr>
<tr>
<td>Alternative Verizon Enterprise Center menu access to DNM</td>
<td>7</td>
</tr>
<tr>
<td>Dashboard</td>
<td>10</td>
</tr>
<tr>
<td>Alternative circuit list views</td>
<td>12</td>
</tr>
<tr>
<td>Search, notification alert, documentation &amp; help, interactive tour</td>
<td>12</td>
</tr>
<tr>
<td>Documentation &amp; help, interactive tour</td>
<td>14</td>
</tr>
<tr>
<td>Search</td>
<td>15</td>
</tr>
<tr>
<td>Search filter options</td>
<td>16</td>
</tr>
<tr>
<td>Export</td>
<td>16</td>
</tr>
<tr>
<td>View circuit details</td>
<td>17</td>
</tr>
<tr>
<td>Network Settings</td>
<td>18</td>
</tr>
<tr>
<td>STD QoS DPORT, and ETM to STD*</td>
<td>20</td>
</tr>
<tr>
<td>ETM QoS DPORT, DCAR, Custom Egress, STD to ETM*</td>
<td>20</td>
</tr>
<tr>
<td>Order history</td>
<td>21</td>
</tr>
<tr>
<td>DNM order summary</td>
<td>21</td>
</tr>
<tr>
<td>Diagnostics (Router Commands)</td>
<td>23</td>
</tr>
<tr>
<td>Ethernet Access pre activation test (US only)</td>
<td>23</td>
</tr>
<tr>
<td>Ethernet test tab</td>
<td>24</td>
</tr>
<tr>
<td>Bandwidth utilization</td>
<td>27</td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>View pending tickets, orders and associated Virtual Route Forwarding (VRF)</td>
<td>27</td>
</tr>
<tr>
<td>Configure eBGP routing parameters</td>
<td>27</td>
</tr>
<tr>
<td>Configure Static Routes</td>
<td>28</td>
</tr>
<tr>
<td>Port speed changes</td>
<td>30</td>
</tr>
<tr>
<td>Class of Service: Committed Access Rate speeds and Egress Policies</td>
<td>30</td>
</tr>
<tr>
<td>How to modify port bandwidth and EF CAR</td>
<td>32</td>
</tr>
<tr>
<td>Change order acceptance (full text)</td>
<td>35</td>
</tr>
<tr>
<td>Network to Network Interface (NNI) Toggling for DPORT Change</td>
<td>36</td>
</tr>
<tr>
<td>Bulk operations</td>
<td>39</td>
</tr>
<tr>
<td>Circuit Description</td>
<td>40</td>
</tr>
<tr>
<td>DNM speed change template</td>
<td>49</td>
</tr>
<tr>
<td>Bulk subscriptions</td>
<td>51</td>
</tr>
<tr>
<td>Modify Shaping adjustment</td>
<td>53</td>
</tr>
<tr>
<td>Modify Admin Status</td>
<td>54</td>
</tr>
<tr>
<td>Network Transit Delay</td>
<td>56</td>
</tr>
<tr>
<td>Quality of Service (QoS) egress traffic profiles</td>
<td>58</td>
</tr>
<tr>
<td>PIP ETM general configuration, PIP STD, PIP data centric and PIP data/voice combined</td>
<td>58</td>
</tr>
<tr>
<td>PIP ETM voice centric configuration</td>
<td>60</td>
</tr>
<tr>
<td>Customer Edge (CE) configuration settings</td>
<td>61</td>
</tr>
<tr>
<td>STD QoS DPORT, and ETM to STD (customer managed)</td>
<td>61</td>
</tr>
<tr>
<td>ETM QoS DPORT, DCAR, custom Egress, and STD to ETM</td>
<td>63</td>
</tr>
<tr>
<td>Glossary</td>
<td>66</td>
</tr>
<tr>
<td>Customer support &amp; training</td>
<td>69</td>
</tr>
<tr>
<td>Customer support</td>
<td>69</td>
</tr>
<tr>
<td>Training</td>
<td>69</td>
</tr>
</tbody>
</table>
Private IP Dynamic Network Manager Overview

Private IP Dynamic Network Manager (DNM) enables you to make changes to your Private IP Ports, Committed Access Rates (CARs), and customer egress profiles.

Features & benefits

Following are the features and benefits of Private IP Dynamic Network Manager:

- Schedule a Port or CAR change order up to one year in advance
- Make bandwidth changes in minutes through Verizon Enterprise Center
- Subscribe to electronically delivered activity reports
- Download a site detail report in Microsoft® Excel®
- Access a Customer Edge (CE) sample configuration
- Issue a specific set of Ping and Show commands on the Provider Edge (PE) Router
- Make real-time application aware network adjustments

Components

Private IP Dynamic Network Manager consists of three components:

- Looking Glass: Allows Users to view the configuration information of their Multiprotocol Label Switching (MPLS) networks. It is a mainly a "view only" interface, but there are Looking Glass orders that allow Users to make certain non-billable Layer 3 configuration changes to their Private IP sites. Looking Glass sample configurations can be downloaded for your CE router. Looking Glass also allows specific PING and Show commands to be issued. Private IP customers can use Looking Glass to see and make settings changes to network service attributes. They can also determine how their sites are configured at the Provider Edge (PE) devices on the network.
- Dynamic Port (DPORT): Allows Users to make PIP transport circuit up/down speed changes.
- Dynamic CAR (DCAR): Allows Users to make up/down speed changes to their Expedited Forwarding Committed Access Rate (EF-CAR) speeds including Quality of Service (QOS) egress profiles.

Note: Since DPORT and DCAR enable price impacting changes, they both require specialized Verizon Enterprise Center (VERIZON ENTERPRISE CENTER) entitlements or permissions. Contact your Account Team for assistance with setting up these permissions.

Business rules for Private IP Virtual Private Networks (VPNs)

The following business rules apply with Private IP (PIP) Dynamic Network Manager:

- Available to existing and new customers, both customer-managed and those using Verizon Managed Services.
- Available for sites located globally. Note: There are countries where Dynamic Port cannot be supported due to contractual obligations with our partners. Your account team can provide details on availability.
- Available on direct connections:
For Private IP ports with a W prefix: Dynamic Port is available on direct connections using Time Divisional Multiplexing (TDM) in all regions. Direct Ethernet Access is supported in select countries in Europe.

For Private IP ports with a B prefix: Dynamic Port is available on both direct connections using TDM access or Ethernet Access in the United States.

For Private IP ports with a C prefix: Dynamic Port is available on both direct connections using TDM access or Ethernet Access in all regions.

- For Private IP ports with a W prefix: Dynamic Port requires an initial full port speed of T1, E1, E3, DS3, OC3, STM1, OC12, STM4, and 1 Gigabyte Ethernet (Europe Only).
- For Private IP ports with a B prefix: You can order a lower initial Private IP TDM and Ethernet Port speed and then use Dynamic Port to raise or lower the speed to the level you want in the United States.
- For Private IP ports with a C prefix: You can order a lower initial Private IP TDM and Ethernet Port speed and use Dynamic Port to raise or lower the speed to the level you want in all regions.

Some restrictions apply:

- Dynamic Bandwidth (DCAR and DPORT) is not supported on customer sites using the MPLS VPN Inter-provider Connection (MVIC).
- DPORT is not available with direct connections using NxT1/NxE1 with MLPPP or MLFR.
- "DCAR only" (i.e., when not sold with DPORT) is available on the following access types: NxT1 with MLPPP, and MLFR for U.S. sold sites only.
- Because of contractual agreements, there are countries where Dynamic Port cannot be supported. Contact your Verizon Account Team for more details.

**Below are detailed rules for DPORT changes per day on Private IP ports with a “C” prefix**.

- Unlimited Speed Change Requests: you can make more than one speed change request during a 24-hour period. Greenwich Mean Time (GMT) is used as the start/stop reference for a DNM 24 hour time period. DPORT/DCAR speed changes can be made up until (but not after) 11:00 p.m. GMT.
- Ability to Reverse Speed Change Requests: Within 60 minutes of making a speed upgrade (or downgrade) request, you can “correct” the request (as needed) by reversing the speed change request back to the original speed. After 60 minutes the speed change will be completed from a billing perspective. One speed correction is allowed during a 24-hour period.
- Billing: Verizon will continue to bill in 24 hour minimum daily increments. The highest speed change request made during a 24 hour period will be the speed that is passed to billing for that day.
- Carry Over Speed: The last speed entered for the day will be the one that gets carried over to the next day and be in effect.

For your information:

The Dynamic Network Manager feature does not support Open Shortest Path First (OSPF) or IP Multicasting access at this time. It is important to modify your router configuration for Dynamic CAR and Dynamic PORT in order to keep your router in sync.

If you select Gold CAR (Expedite Forwarding) for Voice over IP calls, a reduction of the CAR value (e.g., 40.456 reduce to 8K) can directly affect the quality of all Voice over IP calls on this link.

2. Enter your user name and password and Click Sign In.
3. Verizon Enterprise Center home page appears.

Accessing Dynamic Network Manager

Click Dynamic Network Manager on Verizon Enterprise Center home page to go to DNM Dashboard page under Product Tools.
Alternative Verizon Enterprise Center menu access to DNM
Tip: To avoid having Verizon Enterprise Center/DNM sessions “time out”, you can edit your Verizon Enterprise Center user profile to alter the amount of time before sessions will end. See instructions below for making session duration changes.

Click User Name and then My Profile

<table>
<thead>
<tr>
<th>Site preferences</th>
<th>Preferred language</th>
<th>Proactive chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Preferred language</td>
<td>Proactive chat</td>
</tr>
<tr>
<td>Active</td>
<td>US English</td>
<td>Disabled</td>
</tr>
<tr>
<td>Allow extended session timeout</td>
<td>Time zone</td>
<td>Time format</td>
</tr>
<tr>
<td>Yes</td>
<td>GMT</td>
<td>12 Hrs</td>
</tr>
<tr>
<td>Date format</td>
<td>Items per page</td>
<td>Preferred contact method</td>
</tr>
<tr>
<td>mm-dd-yyyy</td>
<td>10</td>
<td>E-mail</td>
</tr>
<tr>
<td>Your country dropdown list</td>
<td>Your state dropdown list</td>
<td>Contact and notification preferences</td>
</tr>
<tr>
<td>US</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact and notification preferences</td>
<td>Direct data billing services</td>
<td></td>
</tr>
</tbody>
</table>
When you click the pencil icon on the Site Preferences screen you can edit the preferences.

Click **Extended Hours** to edit/increase Verizon Enterprise Center session timeout duration.
Choose extended session hour’s duration and click **Update**.

**Dashboard**

The DNM Dashboard presents Users with circuits that might require immediate attention. The circuits are arranged by category in horizontal rows. These categories include circuits exhibiting high utilization (thus at risk for packet loss), New Activations, and so on. DNM includes artificial intelligence capability to allow it to learn over time which issues/circuits are of most interest to a User and adjust screen presentation around those preferences.

Select **Network** to see your Verizon Private IP, Internet Dedicated, Ethernet Switched E-Line or Secure Cloud Interconnect (SCI) Services.

The Dashboard displays a menu of your Verizon Enterprise Center entitled IP services choices. Choose Network to list the circuits in inventory that you have permission to review.
Alternative circuit list views

The Dashboard offers Search commands, notification alerts as well as documentation and help options. See the Icon list for each below.
**Documentation & help, interactive tour**

The documentation help screen provides link to user guides, help desk for each product.
## Search

Search allows Users to look up circuits by circuit ID, service ID, VPN, or location. You can also display search results by Location for multiple service types i.e. Private IP, Public IP, Secure Cloud Interconnect (SCI) and SDWAN Co Management (Versa). You can refine your search further by accessing the “Filter” menu.

<table>
<thead>
<tr>
<th>PVC ID</th>
<th>Site ID</th>
<th>Site Description</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXXXX</td>
<td>XXXXXX</td>
<td>XXXXX - XXXXXXXX</td>
<td>400 INTERNATIONAL PKWY RICHARDSON TX USA 75081-6608</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PVC ID</th>
<th>Site ID</th>
<th>Site Description</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>XXXXXX</td>
<td>XXXXXX</td>
<td>XXXXX - XXXXXXXX</td>
<td>400 INTERNATIONAL PKWY RICHARDSON TX USA 75081-6608</td>
</tr>
</tbody>
</table>
Search filter options

Export

Export allows a User to export the current screen data to a CSV file.
View circuit details

You can view the details of the circuit by clicking on the + or open the drop down box and click on View details.

Note: You can change the description for each circuit. Click on the “pencil” symbol near the description. View the pop up. Enter the description that needs to be changed. Click on “save” changes.
Utilization Notifications allows Users to select when (and how often) DNM proactively alerts them about circuits reaching bandwidth utilization thresholds. This helps Users avoid packet loss if/when a circuit “runs too hot”.

Circuit Change Notifications is another subscription option available to all users who are entitled to see/edit particular circuits; all Users who subscribe to this option are notified of changes made by any of the other Users.

Network Settings

This section contains both Customer Edge (CE) settings and Provider Edge (PE) settings information. You can view the General Interface Configuration, Virtual Route (VRF) Information, Quality of Service Information, and IPv4 eBGP Routing Information. You can also produce an example CE design for your router (for a Customer Managed circuit) from the PIP Looking Glass Site Detail screen.

1. Click on the add symbol “+” to view the details of the circuit ID
2. Click on equipment tab to view the customer edge settings details

Virtual Routing and Forwarding (VRF) allows multiple instances of a routing table to exist within the same router at the same time. Because the routing instances are independent, the same or overlapping IP addresses can be used without conflicting with each other. A VRF may be implemented in a network device by having distinct routing tables, also known as forwarding information bases (FIBs), one per VRF.
### General Interface Configuration

<table>
<thead>
<tr>
<th>Details</th>
<th>Network Settings</th>
<th>Orders</th>
<th>Diagnostics</th>
<th>Utilization</th>
<th>Virtual Services</th>
<th>Cloud Services</th>
<th>Other VRF</th>
</tr>
</thead>
</table>

#### Encapsulation
- **ETHERNET**

#### IPv4 Address / Prefix
- **68.095.74.65 / 30**

#### IPv4 MTU

#### Steps Adjustment for Ethernet
- **85%**

### Virtual Route Forwarding (VRF)

<table>
<thead>
<tr>
<th>Details</th>
<th>Network Settings</th>
<th>Orders</th>
<th>Diagnostics</th>
<th>Utilization</th>
<th>Virtual Services</th>
<th>Cloud Services</th>
<th>Other VRF</th>
</tr>
</thead>
</table>

#### VRF Name
- **V726597-ACMEFabrication**

#### Topology
- **HUB**

#### Max Routes
- **1250**

### Quality of Services

<table>
<thead>
<tr>
<th>Details</th>
<th>Network Settings</th>
<th>Orders</th>
<th>Diagnostics</th>
<th>Utilization</th>
<th>Virtual Services</th>
<th>Cloud Services</th>
<th>Other VRF</th>
</tr>
</thead>
</table>

#### PPP Class of Service
- **Enhanced Traffic Management**

#### Port Speed
- **8 Mbps**

#### Policer on Router
- **YES**

#### Peak Speed
- **0 Kbps**

#### Queuing Level
- **Default**

#### FRFI 12 Fragmentation
- **Disabled**

### IPv4 eBGP Routing Information

<table>
<thead>
<tr>
<th>Details</th>
<th>Network Settings</th>
<th>Orders</th>
<th>Diagnostics</th>
<th>Utilization</th>
<th>Virtual Services</th>
<th>Cloud Services</th>
<th>Other VRF</th>
</tr>
</thead>
</table>

#### MultiHop IP

#### Redistribute Static
- **Yes**

#### AS Override
- **No**

#### Redistribute Connected
- **Yes**

### IPv6 eBGP Routing Information

<table>
<thead>
<tr>
<th>Details</th>
<th>Network Settings</th>
<th>Orders</th>
<th>Diagnostics</th>
<th>Utilization</th>
<th>Virtual Services</th>
<th>Cloud Services</th>
<th>Other VRF</th>
</tr>
</thead>
</table>

#### Redistribute Static
- **Yes**

#### AS Override
- **Yes**

#### Hope Away
- **0**

#### Redistribute Connected
- **No**

#### Remote AS
- **0**
**STD QoS DPORT, and ETM to STD**

The Customer Edge (CE) configuration steps are explicit to Cisco switch stages (for customer managed circuits). For other vendor CE, consult the client manual with respect to changing the interface bandwidth speed. We recommend setting up an egress traffic forming rate on your CE router's WAN interface as per your changes in QOS settings. Follow these guidelines to set up your router for Dynamic Port changes.

**ETM QoS DPORT, DCAR, Custom Egress, STD to ETM**

The configuration steps are also explicit to Cisco switch stages (for customer managed circuits). For other merchant CPE, consult the client manual with respect to changing the lining parameters. CBWFQ is typical for Silver CAR and LLQ/Priority Queuing is typical for Gold CAR. We prescribe setting up a settled QOS arrangement on your CE switch's WAN interface as per your changed QOS settings. The external (or parent) strategy should shape all traffic as per your selected DPORT speed. The internal (or kid) strategy ought to contain
data transfer capacity assignments as indicated by your selected DCAR speed and Custom Egress profile. Adhere to these directions to set up your switch for Dynamic CAR changes.

* For more technical details, refer to Customer Edge Configuration Settings section in Appendix

**Order history**

DNM coordinates all order updates going to downstream IT systems. Every hour it picks up new orders that have been provisioned and processes them. It then picks up any rejected orders waiting for a retry and computes a time when the next retry should occur: once every 24 hours through the sixth retry, then once every 72 hours. After a certain number of retries, DNM stops retrying and sends an email informing a User the update could not be completed. Each order is processed in its own transaction to avoid time-outs when there are a lot of orders in the back log. Retries are processed via the regular work flow. The outcome is reflected in the order history so the original error message, as well as the latest error message can be viewed.

**DNM order summary**

This report allows Users to see multiple circuit change activity versus single circuit events (shown in Order History). You can tailor the report to show a defined range of time and frequency of change orders. Results can be exported to PDF and Excel.
## DNM Order Summary

### Order Summary:

<table>
<thead>
<tr>
<th>Order ID</th>
<th>Circuit ID</th>
<th>User ID</th>
<th>Status</th>
<th>Port Speed</th>
<th>Billing ID</th>
<th>Billing Status</th>
<th>Billing Date GMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3074967</td>
<td>W0V327693</td>
<td><a href="mailto:verizondm@gmail.com">verizondm@gmail.com</a></td>
<td>Completed</td>
<td>542 Kbps</td>
<td>01/02/0954</td>
<td>02/10/2020 22:30:05</td>
<td>2020/07/18 18:30:00 GMT</td>
</tr>
<tr>
<td>3073934</td>
<td>W0V327690</td>
<td><a href="mailto:verizondm@gmail.com">verizondm@gmail.com</a></td>
<td>Completed</td>
<td>768 Kbps</td>
<td>01/02/0954</td>
<td>02/10/2020 22:30:05</td>
<td>2020/07/18 18:30:00 GMT</td>
</tr>
<tr>
<td>3073549</td>
<td>C0109668</td>
<td><a href="mailto:verizondm@gmail.com">verizondm@gmail.com</a></td>
<td>Completed</td>
<td>8 Mbps</td>
<td>01/02/0954</td>
<td>02/10/2020 22:30:05</td>
<td>2020/07/18 18:30:00 GMT</td>
</tr>
</tbody>
</table>

**June 22, 2020 to July 22, 2020**
Diagnostics (Router Commands)

Users can issue router commands to verify specifics in their network.

1. Click **Router Commands** under *Site Details*. The **Router Commands** section appears above “Site Details.”
2. Select a command from the **Select Router Command** drop-down list.
3. Click **Submit**. The system displays the response from the router.

**Ethernet Access pre activation test (US only)**

Users can issue an Ethernet Access test prior to activating the circuit.

If all the below conditions are satisfied DNM allows the Ethernet Access Test and will display the Ethernet Access Test Results tab.

**Conditions:**

- Encapsulation must be Ethernet
- Region must be US domestic Circuit
- Port Speed must be less than or equal to 1GB
- Circuit Activation Status cannot be active

**Submission of the Test Steps:**

1. Click **Router Commands** under *Site Details*. The Router Commands section appears above *Site Details*.
2. Select the **Ethernet Test** from the Router Command drop-down list.
3. Initiate the Test.

**Ethernet test tab**

Click **Start Test**.

Click **Continue**, After Confirmation.

Green Bar will appear which states the Ethernet Access Test was successfully submitted.
After Ethernet test is completed

1. Ethernet test results option will appear.
2. Click **Ethernet Test Result**.

Response from Test
## Ethernet Access Test Results

### Ethernet Test Result

<table>
<thead>
<tr>
<th>Event</th>
<th>SumCd</th>
<th>History Key</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activation</td>
<td>TOK</td>
<td>053051704</td>
<td>21-JUN-21 22:05:680000</td>
</tr>
</tbody>
</table>

- **VLAN 64 Service Configuration Results:** OK
  - **FAIL/PASS:** pass pass pass pass
  - **Duration (secs):** 62 62 62 62
  - **Test Phase:** cir cir cir cir

### Maintenance

<table>
<thead>
<tr>
<th>Event</th>
<th>SumCd</th>
<th>History Key</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>TOK</td>
<td>093051808</td>
<td>21-JUL-21 22:05:681000</td>
</tr>
</tbody>
</table>

Download PDF
Bandwidth utilization

Users can view a chart displaying circuit utilization over a time period of 1 day through 30 days. The example below shows received and transmitted results for the Verizon Provider Edge (PE) port. Ingress/Received is what Verizon receives from a customer, and Egress/Transmitted is what Verizon sends to a customer. If you were to view the Customer Equipment (CE) port then you would see the opposite measurements. Verizon PE port measurements and CE port Measurements should closely match.

1. Click on the **Utilization** tab to view the utilization details.
2. By default the daily summary utilization details will be shown.
3. To view 15 min interval usage, select and drag to specific duration so that 15 mins interval usage duration can be viewed.
4. Use the toggle buttons next to Egress and Ingress speed to view specific usage details (i.e. Only Egress or Ingress traffic).

View pending tickets, orders and associated Virtual Route Forwarding (VRF)

Click on the “+” **add symbol** to view the details of the circuit ID. You can view the pending tickets and orders in the right end corner of the details tab.

1. Click on **pending tickets** to see the status of the ticket on the separate page.
2. Click on **pending orders** to see the status of the ticket on the separate page.

Configure eBGP routing parameters

Click on the “+” **add symbol** to view the details of the circuit ID.
1. Click on near the routing protocol in details tab. The Configure eBGP Routing Parameters section appears below the Circuit ID details.

2. Enter the incentive for each eBGP Routing variable. If you are utilizing eBGP or changing to eBGP, you can change the accompanying parameters:
   a. AS Number - BGP autonomous system number for the current network.
   b. AS Override - Replaces your AS Number with our AS number if the source and destination AS numbers are the same.
   c. Send Community - Allows you to send standard communities to us that we will send across the Cloud.
   d. Advertisement Interval - Changes default BGP advertisement timers from 30 seconds to 0 seconds.
   e. Distribute List - Site will see a default route only.
   f. Remove Private AS.

   Note: AS override, send community, Advertisement Interval, Distribute List, Remove Private AS are toggles.

3. Click on schedule toggle to select date and time zone.

4. Select the values from the drop down menus for date time zone.

5. Click on Submit so that the changes will be effected -or- Click on Cancel so that the changes will not take effect.

**Configure Static Routes**

Static routing is a form of routing that occurs when a router uses a manually-configured routing entry, rather than information from a dynamic routing protocol to forward traffic.

1. Click on the Static tab under circuit ID. The Configure Static Routes section appears above Site Details.

2. Select CE IP Address for the following bounce. The IP address is populated in the Next Hop field.

   OR-

   Select Sub Interface for the next hop. The sub-interface is populated in the Next Hop field.

3. Select CE IP Address for the Sending IP. The IP address is populated in the Forwarding IP field.

   OR-
Select Destination IP Address and enter the IP address in the Forwarding IP field.

4. Click Add. Include or expel what should be in the switch or should be expelled from the switch.

5. If relevant, enter a Process Date/Time to plan this activity.

6. Select a period zone starting from the drop list.

7. Click Schedule Order if you are planning for a future date.

8. Snap Process Order to present your request. The Process Order Confirmation spring up shows your request number.

9. Click Submit.

OR-

Click Cancel.
Port speed changes

Dynamic Port (DPORT) is a feature of DNM. It allows Users to submit a change order online to raise/lower Private IP transport speeds. After a Private IP port is ordered and provisioned, you can use Dynamic Port to adjust the port to a desired speed size. After VERIZON ENTERPRISE CENTER entitlements for Dynamic Port (and Dynamic CAR) are confirmed, you must initially wait 24 hours before the first change order can be issued. This is due to the IT processing time for the submitted entitlements/permissions.

Note: 1 Private IP Port (or EF CAR) change is permitted per day for circuits with prefixes “W” and “B”. For circuits with a “C” prefix, the following multi-change-per-day rules apply:

- Unlimited Port Speed Change and Dynamic CAR Requests: Users may make more than one port speed change and/or EF CAR change request during a 24 hour period. Greenwich Mean Time (GMT) is used as the start/stop reference for a DNM 24 hour time period. These speed changes can be made prior to) 11:00 PM GMT.
- Ability to Reverse Speed Change Requests: Within 60 minutes of making a speed upgrade (or downgrade) request, a User can "correct" the request (as needed) by reversing the speed change request back to the original speed. After 60 minutes the speed change will be established as the new highest speed for the day. That speed is what will be sent to Billing for that day. One speed correction is allowed during a 24 hour period. Alternatively a User can submit a new change order (within 60 minutes) to reverse the mistake.
- Billing: Verizon will continue to bill in 24 hour minimum daily increments. The highest speed change request made during a 24 hour period will be the speed sent to Billing for that day.
- Carry-Over Speed: The last speed change request entered for the day is the one that is carried over to the next day. This speed will be billed daily going forward unless another speed change is requested.

If you are using Enhanced Traffic Management (ETM) Class of Service and a circuit’s EF CAR value is set to 90% of your current port speed, then a Dynamic CAR change order should be issued first to lower the EF CAR value before attempting to lower the circuit port speed via Dynamic PORT.

Class of Service: Committed Access Rate speeds and Egress Policies

Dynamic CAR (DCAR) allows Users to submit a change order online to raise/lower Private IP port speeds. However, Users have two options for defining how to set up CAR speeds for use with Private IP circuits:

- Standard (STD) – Standard option supports Best Effort (BE) CAR speeds only. It does not support Expedited Forwarding (EF Real-Time aka Gold) CAR speeds. Moving from ETM to Standard may influence the voice traffic present on this connection. Dynamic CAR is not applicable to standard CAR speeds.
- Enhanced Traffic Management (ETM) - You can expand port speed EF Real-Time (Gold) CAR up to 90% of the port speed. Moving from Standard to ETM enables you to use DCAR online to change the Gold CAR rate. You can upgrade or downgrade the Gold CAR (EF Real Time) value within the limitation of Gold CAR. Minimum Gold CAR
value is 0K, and the maximum Gold CAR value can be set up to 90% of the port speed. Increasing Gold CAR has a CPE performance impact. If you have questions, contact your account team before submitting this change. The Gold CAR is policed on Ingress into the Private IP network. Any traffic marked with EF Real Time that exceeds the subscribed Gold CAR value is discarded. If you select Gold CAR (Expedited Forwarding) and are using this for Voice over IP calls, a reduction of the CAR value (e.g. 40.456 reduce to 8K) can directly affect the quality of Voice over IP calls on this link. Ensure that you make a corresponding reduction on the device that determines the call admission control policy for this link as well as making a reduction on the CE router’s QoS queuing policies.

- The maximum configurable CAR value is governed by the port speed as well as the Egress profile of the Private IP port in service.

- Users may change their “G” or “R” Egress profiles via DCAR. When the Gold CAR value is equal to or greater than 50% of the port speed DCAR will only display “R” level policies.

- Ingress refers to traffic which enters the Private IP Provider Edge (PE) device from the User’s CE router.
  - Private IP Standard: All traffic coming into the PE device on ingress is marked AF3 (DSCP=24).
  - Private IP Enhanced Traffic Management (ETM): Customers subscribe to the EF Class of Service and can use 100% of the port for the five additional data classes: AF4, AF3, AF2, AF1, and BE. The EF Class of Service can range from 0K up to 90% of the port.

- Egress refers to the traffic which is exiting on the Private IP PE device and being delivered to the User’s CE router with a percentage of bandwidth dedicated to each class of service. Egress policies are based on Low Latency Queuing (LLQ) and Class-Based Weighted Fair Queuing (CBWFQ). LLQ is used exclusively for the EF Class of Service and uses strict priority queuing to allow delay-sensitive data (such as Voice over IP) to be sent first, giving delay-sensitive data preferential treatment over other traffic.

- Class-Based Weighted Fair Queuing (CBWFQ) is used for the five data classes of service: AF4, AF3, AF2, AF1, and BE. It allows Verizon to specify a percentage allocation of bandwidth to be allocated for each class of traffic.

- The default egress policy for all Private IP customers is: EF: 50%, AF4: 40%, AF3: 39%, AF2: 16%, AF1: 1%, BE: 4%. This means on egress, up to 50% of the port will be dedicated to the EF class of service. Anything which exceeds 50% on egress is discarded. While a User can still use the port for other traffic classes on egress, the EF traffic is given the highest priority. If you are receiving nothing but AF3 traffic on egress, 100% of the port is used for AF3. If you are receiving both EF and AF3, up to 50% of the port bandwidth is dedicated to the EF traffic.
● Customers with IP Telephony (also referred to as Voice over IP, or VoIP) requirements also have the option to set the EF Class of service up to 90% of the port speed. EF: 90%, AF4: 40%, AF3: 39%, AF2: 16%, AF1: 1%, BE: 4%.

Note: More information about EF CAR & Egress settings is available in Appendix section.

How to modify port bandwidth and EF CAR

Click Modify Bandwidth in the Actions Menu (or in the Expanded Details view, bottom left of screen).
Dynamic Port Speed Menu example:

Scheduler: User may optionally schedule Port/CAR changes out to a year in advance.
Select **Preview** button to see Before/After Speed Changes before Accepting.
Change order acceptance (full text):

Please ensure that the Port speeds you request are set above the existing CAR for each site. If not, your orders will not be processed.

If your network is not managed by Verizon, please be sure to implement any corresponding CE configuration changes.

Depending on the Private IP PE platform, Verizon could provision 'bandwidth shaping' overhead adjustments on Ethernet Interfaces at the PE Egress. These adjustments may reduce the actual bandwidth available to you, depending on your traffic profile. You must apply policies at your CE egress to prevent packet loss due to Ethernet protocol overhead used within the Company Network. Further details can be obtained from your account team.

You acknowledge that by submitting this order, the monthly charges billed to this account may increase or decrease, in accordance with your contract and the changes you have made to your network bandwidth. Note that these changes may impact your network performance if they are not in accordance with the technical and business rules.

The changes to your network will normally be completed within approximately 15 minutes for customer-managed and DNM Full Automation Managed circuits. If you request simultaneous multiple changes, the changes may take longer. For requests submitted on circuits terminating on Verizon Managed Services Customer Edge (CE) routers without support for Dynamic Network Manager (DNM) Full Automation, your requested changes may take up to 72 hours before the CE routers are manually updated by Verizon. Contact your account team for information about how to upgrade your CE device configuration to allow Full Automation. If your site is not managed by Verizon Business, please be sure to implement any corresponding CE configuration changes.
Depending on the Private IP PE platform, Verizon could provision 'bandwidth shaping' overhead adjustments on Ethernet Interfaces at the PE Egress. These adjustments may reduce the actual bandwidth available to you, depending on your traffic profile. You must apply policies at your CE egress to prevent packet loss due to Ethernet protocol overhead used within the Company Network. Further details can be obtained from your account team.

NOTE - You are limited to one successful bandwidth change per 24 hours per site (except for “C” prefixed circuits).

Please print a copy of this request for your records.

Click "Accept" below to acknowledge your acceptance of these changes to your account.

Note for Private IP Ethernet Ports with a prefix of B or C.

Ethernet Access goes from the customer premise to the nearest Layer 2 device. A Network to Network Interface (NNI) connects the Layer 2 device to the nearest Private IP Provider Edge over a shared interface. The bandwidth on the NNI is not reserved. In the event the NNI or Provider Edge device has reached capacity it will not be possible to increase your Ethernet Port speed. You will however be able to lower the speed. The dropdown menu on Dynamic Port will reflect the port speeds available based on the amount of bandwidth on the NNI. If the NNI or Provider Edge has been capped you will need to engage your Verizon account team (or the Verizon Enterprise Help Desk) to enable submission of an order to increase bandwidth. As part of the ordering process your Ethernet Port will be migrated to an NNI with sufficient bandwidth to support the higher port speed. There will be no change in the Circuit ID; it will remain the same.

**Network to Network Interface (NNI) Toggling for DPORT Change**

NNI Toggling allows customers the ability to change the bandwidth on a circuit and if the NNI does not contain enough bandwidth for the change, it will automatically move to an alternate NNI, if one is available. This allows the customer to submit the Dynamic Port (DPort) transaction instead of requiring a standard order via Account Team. If there is no alternate NNI, then the change will have to be made with a standard change order via your account / support team.

**NOTE:** This is only available to US Domestic Commercial customers at this time.

When NNI Toggling is enabled (see the screenshot below), the new message will display next to bandwidths and will highlight the specific bandwidths that exceed the current NNI bandwidth. The “red” bar (next to the speed) represents the current NNI speed, while the “black” bar represents the speeds that exceed the NNI bandwidth.

In the screenshot below, you can see that the Current Bandwidth is at 8Mbps. If a Port change was made to 9Mbps, it would trigger the NNI move, if there is an alternative available with 9Mbps of capacity.
When a User selects a speed that is greater than NNI Capacity + Current Port Speed then a (see screenshot below) message will appear next to the bandwidth selected. This notifies the user that the selected bandwidth change will place a "hot cut" order which will bring down the network for an approximate 15 minutes. During this down time, the system is automatically moving the circuit from one NNI to another NNI that has enough bandwidth for the DPort change.

If there is no alternative NNI with enough bandwidth then the transaction will fail, (back out the bandwidth change) and the user will need to contact their Account Team / Support Team to submit a standard order.

In the example below, the user selected a bandwidth of 9 Mbps, which exceeds the NNI capacity. You can see the message that is displayed to notify the user of NNI toggle change, if they continue to submit the order, the NNI change will trigger a move from one NNI to another that has enough bandwidth. At this point they can continue with the change or change the port speed to a lower value.
Confirmation window of the transaction will be provided. You will need to accept the terms to submit the order. Ensure you come back and verify that the order successfully completed.

If the Bandwidth order fails

User will need to go in and review the order status for the specific change. That change order will display on the order status field:

“Layer 2 provisioning failed.”

Click on that “Activation Support” button. This will trigger the Support team to begin work to resolve the issue as quickly as possible. They will at a minimum roll the bandwidth change back to bring the network back up.

Complete the Contact Information and “Submit” the request.
The Support Team for US Commercial customers, are available 7 days a week 24 hours a day to support the requests.

**Bulk operations**

This Dynamic Network Manager (DNM) feature allows Users to submit multiple circuit changes at one time. There are three categories of DNM bulk changes: 1) Circuit descriptions, 2) Bandwidth (Dynamic PORT), CAR (Dynamic CAR), Profile (Egress) and 3) Bulk subscription (Utilization threshold alerts and circuit change activity). Bulk change requests can be manually entered directly into the tool or via a DNM spreadsheet template (where applicable).

Please note that only Private IP single VRF (virtual route forwarding) and PORT Multi-VRF circuits are supported for Bulk speed changes currently. PVC Multi-VRF circuit support is targeted for 4Q20.

**Tip:** If you elect to use the DNM spreadsheet template to enter your circuits, you can first use DNM’s Export function to download the VPN/circuit list you wish to modify and then copy/paste the appropriate values into the Bulk spreadsheet template fields.
Circuit Description

This option allows changes to Circuit Descriptions (only). You can manually enter circuit information or enter it into a DNM spreadsheet template.
Note: Circuit information submitted via spreadsheet for any DNM bulk change request must be entered in a DNM spreadsheet template format. If data does not match the Template format provided, the sheet will not be uploaded.
After the Excel file (or your manually entered list) has been entered, Click Upload.

Validate
Click Confirm Validation.

Completed Tab displays the jobs that have been processed.
Bandwidth, CAR, profile – change with preset speeds

Enter Bandwidth, CAR and Profile selections in drop down menus.

Click Circuits bar to search & select circuits for Bulk changes.
Click **Upload** to submit circuits for Bulk Changes.

Click **Validate.**
Click **Confirm Validation**.

Important Note: DNM will send you an email confirmation when all submitted circuits are processed after the Confirm Validation step. If however, you go to the Jobs in Progress tab to review status before receiving the DNM email, then hit Refresh to see the most current list of validated circuits (or hit Refresh All for in-progress status of all active requests). DNM processes circuit validations in batches so you may need to hit Refresh/Refresh All several times. Click Revalidate after making corrections (or deletions).
Click **Place Order** once Revalidation is complete.

This is the final step to entering the bulk change request.

Success tab show circuits that have been successfully submitted.
Bandwidth, CAR, profile – upload excel with custom speeds

DNM allows you to drag & drop an Excel spreadsheet into DNM with your defined circuit changes. This spreadsheet must be in the same format as the accessible DNM Excel template.

Click **Upload** after dropping Excel file into DNM.
DNM speed change template

When finished editing, click **Validate**.

Click **Confirm Validate**.
Important Note: DNM will send you an email confirmation when all submitted circuits are processed after the Confirm Validation step. If however, you go to the Jobs in Progress tab to review status before receiving the DNM email, then hit Refresh to see the most current list of validated circuits (or hit Refresh All for in-progress status of all active requests). DNM processes circuit validations in batches so you may need to hit Refresh/Refresh All several times. Click Revalidate after making corrections (or deletions).

Click **Place Order** once Revalidation is complete. This is the final step to entering the Bulk change request.
Bulk subscriptions

Bulk subscription changes work very similarly to single changes that are made in the “Preferences” section displayed for individual circuits. Alternatively here you can apply changes to multiple circuits/VPNs.
Select one or all listed circuits to submit for Alerts/Notifications subscription.

Schedule the desired frequency of Emailed Alerts.
Modify Shaping adjustment

The Ethernet cards handle shaping and policing based on L2 overhead. In the case of Ethernet encapsulation when shaping, the router does not include Inter-Frame Gap (IFG), Preamble, and Start Frame Delimiter (SFD). When dealing with small frames, this overhead could be considerable. The marketed Ethernet speeds and the transmission equipment assumes L1 payload. To adjust for this discrepancy, the shaping rate on the PEs can be adjusted to compensate for the Ethernet overhead depending on the type of service that the customer is buying (voice, voice/data combined, and data).

Click on shaping profile in the details tab. The Modify Shaping Adjustment for Ethernet Overhead section appears above the Site Details.

Select 76, 85, or 94 from the Shape PE departure data transmission to drop-down rundown.

Enter a Process Date/Time to plan this activity, if relevant.

Select a period zone starting from the drop list.

Click Schedule Order on the off chance that you are booking this for a future date.

Click Process Order to present your request. The Process Order Confirmation spring up shows up.

Click Accept to recognize that the solicitation may affect your system and that you oversee rolling out any related improvements required on your client edge (CE) switch. You will get an email when the solicitation is finished. There is no restriction to the quantity of non-billable design changes that can be mentioned, yet
please permit 24 hours for changes submitted Monday through Friday to be finished. On the off chance that a solicitation is made on an end of the week or US occasion, it will be handled on the following industry day.

Click Print to print a duplicate of your solicitation.

**Modify Admin Status**

Click next to Interface Name in the Site Details. The Modify Admin Status section appears above the Site Details.

Enter a *Process Date/Time* to schedule this job, if applicable.

Select a time zone from the drop-down list.

Click **Schedule Order** if you are scheduling this for a future date.

Select no-shutdown or shutdown from the New Admin Status drop-down list.

Click **Process Order** to submit your order. The Process Order Confirmation pop-up appears.

Click **Accept**.
Open Quick (Trouble) Ticket

Click the Headphone icon under Site Details. The Create Quick Ticket pop-up appears.

When you open a ticket, the circuit ID for which you are viewing in the Site Details automatically populates. Enter a different circuit ID, if applicable.

Click Next to verify service and enter the ticket information.
Network Transit Delay

This section displays Verizon metrics for Network Transit Delay (Latency) between Private IP PE (provider edge) devices. This is not a report but rather a listing of those metrics. You can see what Verizon's Service Level Agreements (SLA) Latency metrics are between the selected sites.

Select the region you want, if applicable. Then use the filters to view the region, country, or city that you want to view on the map. By clicking on any Verizon PE location/city we can display the latency measurements between that location and all other Verizon PE locations.
You can also view Network Transit Delay for User VPN sites by adding a VPN site(s) and clicking to see the relative transit delay metrics. In the below graph we added a user VPN site (Tokyo, Japan). By clicking now on Tokyo we can show its relative Network Transit Delay measurements between that location and all other Provider Edge router locations.
Quality of Service (QoS) egress traffic profiles

PIP ETM general configuration, PIP STD, PIP data centric and PIP data/voice combined

The egress QoS policies referenced in the table below are for customers using 50% or less of the EF/Voice over IP CoS and are allocating more bandwidth for other applications, such as data and video.

<table>
<thead>
<tr>
<th>Profile #</th>
<th>Profile Identifier</th>
<th>EF Egress</th>
<th>AF4</th>
<th>AF3</th>
<th>AF2</th>
<th>AF1</th>
<th>BE</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>_G1</td>
<td>50%</td>
<td>40%</td>
<td>39%</td>
<td>16%</td>
<td>1%</td>
<td>4%</td>
<td>Default profile – balanced allocation</td>
</tr>
<tr>
<td>2</td>
<td>_G2</td>
<td>50%</td>
<td>48%</td>
<td>20%</td>
<td>16%</td>
<td>12%</td>
<td>4%</td>
<td>Video-centric #1</td>
</tr>
<tr>
<td>3</td>
<td>_G3</td>
<td>50%</td>
<td>68%</td>
<td>12%</td>
<td>10%</td>
<td>8%</td>
<td>2%</td>
<td>Video-centric #2</td>
</tr>
<tr>
<td>4</td>
<td>_G4</td>
<td>50%</td>
<td>15%</td>
<td>20%</td>
<td>20%</td>
<td>1%</td>
<td>4%</td>
<td>Data-centric with emphasis on bulk-transfer applications</td>
</tr>
<tr>
<td>5</td>
<td>_G5</td>
<td>50%</td>
<td>15%</td>
<td>60%</td>
<td>60%</td>
<td>1%</td>
<td>4%</td>
<td>Data-centric with emphasis on transactional applications</td>
</tr>
<tr>
<td>6</td>
<td>_G6</td>
<td>50%</td>
<td>15%</td>
<td>40%</td>
<td>40%</td>
<td>1%</td>
<td>4%</td>
<td>Data-centric with balanced bulk-transfer and transactional applications</td>
</tr>
<tr>
<td>7</td>
<td>_G7</td>
<td>50%</td>
<td>15%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
<td>30%</td>
<td>Data-centric with large percentage of unmarked (BE-marked) applications and bulk-transfer applications</td>
</tr>
<tr>
<td>Profile #</td>
<td>Profile Identifier</td>
<td>Egress</td>
<td>AF4</td>
<td>AF3</td>
<td>AF2</td>
<td>AF1</td>
<td>BE</td>
<td>Comments</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------</td>
<td>--------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
<td>----------</td>
</tr>
<tr>
<td>8</td>
<td>_G8</td>
<td>50%</td>
<td>30%</td>
<td>10%</td>
<td>10%</td>
<td>5%</td>
<td>25%</td>
<td>Balanced QoS w/ ample video for a 384K video on a T1</td>
</tr>
<tr>
<td>9</td>
<td>_G9</td>
<td>50%</td>
<td>20%</td>
<td>30%</td>
<td>30%</td>
<td>10%</td>
<td>5%</td>
<td>Data-centric w/ balanced applications (matches HSBC policy)</td>
</tr>
<tr>
<td>10</td>
<td>_G10</td>
<td>50%</td>
<td>15%</td>
<td>20%</td>
<td>20%</td>
<td>5%</td>
<td>40%</td>
<td>Data-centric with large percentage of unmarked (BE-marked) applications and transactional applications</td>
</tr>
<tr>
<td>11</td>
<td>_G11</td>
<td>50%</td>
<td>30%</td>
<td>20%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
<td>Data centric with balanced allocation</td>
</tr>
<tr>
<td>12</td>
<td>_G12</td>
<td>50%</td>
<td>60%</td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>20%</td>
<td>Video centric/minimum control traffic</td>
</tr>
<tr>
<td>13</td>
<td>_G13</td>
<td>50%</td>
<td>10%</td>
<td>40%</td>
<td>30%</td>
<td>5%</td>
<td>15%</td>
<td>Data balanced apps #2</td>
</tr>
<tr>
<td>14</td>
<td>_G14</td>
<td>50%</td>
<td>20%</td>
<td>25%</td>
<td>25%</td>
<td>10%</td>
<td>20%</td>
<td>Data balanced AF3/AF2 centric</td>
</tr>
<tr>
<td>15</td>
<td>_G15</td>
<td>50%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
<td>40%</td>
<td>10%</td>
<td>Data centric with emphasis on Scavenger/Standard data apps</td>
</tr>
</tbody>
</table>
**PIP ETM voice centric configuration**

The egress QoS policies referenced in the table below are for customers using 90% of the EF/Voice over IP (VoIP) CoS for VoIP and are allocating more bandwidth for other applications, such as data and video.

<table>
<thead>
<tr>
<th>Profile #</th>
<th>Profile Identifier</th>
<th>EF Egress</th>
<th>AF4</th>
<th>AF3</th>
<th>AF2</th>
<th>AF1</th>
<th>BE</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>_RT</td>
<td>90%</td>
<td>40%</td>
<td>39%</td>
<td>16%</td>
<td>1%</td>
<td>4%</td>
<td>Voice default-centric</td>
</tr>
<tr>
<td>2</td>
<td>_R2</td>
<td>90%</td>
<td>48%</td>
<td>20%</td>
<td>16%</td>
<td>12%</td>
<td>4%</td>
<td>Voice-centric and video-centric #1</td>
</tr>
<tr>
<td>3</td>
<td>_R3</td>
<td>90%</td>
<td>68%</td>
<td>12%</td>
<td>10%</td>
<td>8%</td>
<td>2%</td>
<td>Voice-centric and video-centric #2</td>
</tr>
<tr>
<td>4</td>
<td>_R4</td>
<td>90%</td>
<td>15%</td>
<td>60%</td>
<td>20%</td>
<td>1%</td>
<td>4%</td>
<td>Voice-centric and data-centric with emphasis on bulk-transfer applications</td>
</tr>
<tr>
<td>5</td>
<td>_R5</td>
<td>90%</td>
<td>15%</td>
<td>20%</td>
<td>60%</td>
<td>1%</td>
<td>4%</td>
<td>Voice-centric and data-centric with emphasis on transactional applications</td>
</tr>
<tr>
<td>6</td>
<td>_R6</td>
<td>90%</td>
<td>15%</td>
<td>40%</td>
<td>40%</td>
<td>1%</td>
<td>4%</td>
<td>Voice-centric and data-centric with balanced bulk-transfer and transactional applications</td>
</tr>
<tr>
<td>7</td>
<td>_R7</td>
<td>90%</td>
<td>15%</td>
<td>30%</td>
<td>10%</td>
<td>5%</td>
<td>30%</td>
<td>Voice-centric and data-centric with large percentage of unmarked (BE-marked) applications and bulk-transfer applications</td>
</tr>
<tr>
<td>8</td>
<td>_R8</td>
<td>90%</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>5%</td>
<td>25%</td>
<td>Balanced QoS w/ ample video for a 384K video on a T1</td>
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<tr>
<td>Identifier</td>
<td>Egress</td>
<td>90%</td>
<td>20%</td>
<td>35%</td>
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<td>5%</td>
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<td>20%</td>
<td>35%</td>
<td>30%</td>
<td>10%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voice-centric w/ balanced applications (matches HSBC policy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>_R10</td>
<td>90%</td>
<td>15%</td>
<td>10%</td>
<td>20%</td>
<td>5%</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voice-centric w/ large percentage of unmarked (BE-marked) applications and transactional applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>_R11</td>
<td>90%</td>
<td>30%</td>
<td>20%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voice centric with balanced allocation</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12</td>
<td>_R12</td>
<td>90%</td>
<td>60%</td>
<td>5%</td>
<td>10%</td>
<td>5%</td>
<td>20%</td>
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<tr>
<td></td>
<td>Video centric/minimum control traffic</td>
<td></td>
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</tr>
<tr>
<td>13</td>
<td>_R13</td>
<td>90%</td>
<td>10%</td>
<td>40%</td>
<td>30%</td>
<td>5%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Voice/Data Balanced apps #2</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>_R14</td>
<td>90%</td>
<td>20%</td>
<td>25%</td>
<td>25%</td>
<td>10%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data Balanced AF3/AF2 Centric</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15</td>
<td>_R15</td>
<td>90%</td>
<td>20%</td>
<td>10%</td>
<td>20%</td>
<td>40%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data-centric with emphasis on Scavenger/Standard Data Apps</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Customer Edge (CE) configuration settings**

**STD QoS DPORT, and ETM to STD (customer managed)**

The following configuration steps are specific to Cisco router platforms. For other vendor CPE, consult the user manual with regards to changing the interface bandwidth speed.

We recommend setting up an egress traffic shaping rate on your CE router’s WAN interface according to your changed QOS settings. Follow these instructions to prepare your router for Dynamic Port changes.
policy-map parent
   class class-default
       shape average <DPORT-in-bps>
   !
The policy map needs to be applied to the WAN interface in the outgoing direction.
!
interface <WAN Interface>
   service-policy output parent
!
For smaller and mid-size Cisco routers, the shape command uses a Tc default value of 25 milliseconds if no Bc, and Be values are specified with the shape command. For Ethernet WAN circuits, we recommend lowering the shape Tc value to 4 milliseconds and setting the Be to 0 to avoid buffering issues in the transmission path.

If your router does not shape to layer 1 speeds (most Cisco routers will not), be aware that the layer 2 encapsulation overhead is added AFTER the router shaped the traffic to the configured rate.

We recommend lowering the shape rates accordingly, especially for Ethernet WAN circuits. For Ethernet WAN circuits, our generic recommendation is to adjust the shaping speed to:

- 76% of your DPORT speed in case of pure VoIP traffic (avg. packet size of 78 bytes)
- 85% of your DPORT speed in case of mixed data and VoIP traffic (avg. packet size of 140 bytes)
- 94% of your DPORT speed in case of pure data traffic (avg. packet size of 404 bytes)

The recommended configuration is:
!
policy-map parent
   class class-default
       shape average <adjusted DPORT-in-bps> <adjusted DPORT-in-bps x 0.004> 0
   !
Example:
For a Fast Ethernet WAN circuit with a selected DPORT speed of 60 Mbit/s on a Cisco 7200, and a mixed VoIP and data traffic pattern, the recommended values and configuration are:

<adjusted DPORT-in-bps> : 60,000,000 x 85% = 51,000,000
<adjusted DPORT-in-bps x 0.004> : 51,000,000 x 0.004 = 204,000
!
policy-map parent
class class-default
    shape average 51000000 204000 0

! interface FastEthernet0/0
    service-policy output parent

!

**ETM QoS DPORT, DCAR, custom Egress, and STD to ETM**

The following configuration steps are specific to Cisco router platforms. For other vendor CPE, consult the user manual with regards to changing the queuing parameters. CBWFQ is typical for Silver CAR and LLQ/Priority Queuing is typical for Gold CAR.

We recommend setting up a nested QOS policy on your CE router's WAN interface according to your changed QOS settings. The outer (or parent) policy should shape all traffic according to your selected DPORT speed. The inner (or child) policy should contain bandwidth allocations according to your selected DCAR speed and Custom Egress profile. Follow these instructions to prepare your router for Dynamic CAR changes.

!

policy-map child
    class realtime
        priority <DCAR-in-kbps>
        police <DCAR-in-bps> conform-action transmit exceed-action drop

!

class priority
    bandwidth remaining percent <\% for AF4 according to selected custom Egress profile #>
    random-detect dscp-based

class missioncritical
    bandwidth remaining percent <\% for AF3 according to selected custom Egress profile #>
    random-detect dscp-based

class transactional
    bandwidth remaining percent <\% for AF2 according to selected custom Egress profile #>
    random-detect dscp-based

class general
    bandwidth remaining percent <\% for AF1 according to selected custom Egress profile #>
random-detect dscp-based

class class-default

  bandwidth remaining percent <\% for BE according to selected custom Egress profile #>

random-detect dscp-based

!

policy-map parent

  class class-default

      shape average <DPORT-in-bps>

      service-policy child

!

The parent policy map needs to be applied to the WAN interface in the outgoing direction.

!

interface <WAN Interface>

      service-policy output parent

!

For smaller and mid-size Cisco routers, the shape command uses a Tc default value of 25 milliseconds if no Bc, and Be values are specified with the shape command. For Ethernet WAN circuits, we recommend lowering the shape Tc value to 4 milliseconds and setting the Be to 0 to avoid buffering issues in the transmission path.

If your router does not shape to layer 1 speeds (most Cisco routers will not), be aware that the layer 2 encapsulation overhead is added AFTER the router shaped the traffic to the configured rate.

We recommend lowering the shape rates accordingly, especially for Ethernet WAN circuits. For Ethernet WAN circuits, our generic recommendation is to adjust the shaping speed to:

76\% of your DPORT speed in case of pure VoIP traffic (avg. packet size of 78 bytes)
85\% of your DPORT speed in case of mixed data and VoIP traffic (avg. packet size of 140 bytes)
94\% of your DPORT speed in case of pure data traffic (avg. packet size of 404 bytes)

The recommended configuration for the parent policy is:

!

policy-map parent

  class class-default

      shape average <adjusted DPORT-in-bps> <adjusted DPORT-in-bps x 0.004> 0

      service-policy child
! 

**EXAMPLE:**

For a Fast Ethernet WAN circuit with a selected DPORT speed of 60 Mbit/s, DCAR speed of 10 Mbit/s, a G1 Custom Egress profile on a Cisco 7200, and a mixed VoIP and data traffic pattern, the recommended configuration is:

<DCAR-in-kbps> : 10,000
<DCAR-in-bps> : 10,000,000
<% for AF4 > : 40
<% for AF3 > : 39
<% for AF2 > : 16
<% for AF1 > : 1
<% for BE > : 4
<adjusted DPORT-in-bps> : 60,000,000 x 85% = 51,000,000
<adjusted DPORT-in-bps x 0.004> : 51,000,000 x 0.004 = 204,000
!

policy-map child
class realtime
    priority 10000
        police 10000000 conform-action transmit exceed-action drop
!
class priority
    bandwidth remaining percent 40
    random-detect dscp-based
class missioncritical
    bandwidth remaining percent 39
    random-detect dscp-based
class transactional
    bandwidth remaining percent 16
    random-detect dscp-based
class general
    bandwidth remaining percent 1
    random-detect dscp-based
class class-default
    bandwidth remaining percent 4
    random-detect dscp-based
!

policy-map parent
    class class-default
        shape average 51000000 204000 0
        service-policy child
!

interface FastEthernet0/0
    service-policy output parent
!

Glossary

Looking Glass is a no cost network statistics reporting functionality that is available to all Private IP customers globally. It provides the ability for view only 'Looking Glass' into your Private IP Network parameter settings. The following Network Attributes are available for viewing:

- VPN Level Information
- VPN Defaults
- Site Information
- PE Interface Info
- CE Interface info
- Class of Service Info
- VRF Parameters
- BGP Routing Info
- RIP Routing Info
- PIP Static Routes
- Site of Origin information
<table>
<thead>
<tr>
<th>Configuration Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicasting RP Address</td>
<td>Multicasting Rendezvous Point Address</td>
</tr>
<tr>
<td>Multicasting MDT</td>
<td>Multicast distribution tree IP address</td>
</tr>
<tr>
<td>Apply Static RP ACL</td>
<td>Removes access list 20, only used by ICB for multiple static rendezvous points</td>
</tr>
<tr>
<td>Multicasting VPN</td>
<td>Turn up new sites with multicasting</td>
</tr>
<tr>
<td>Multicasting Number of Routes</td>
<td>Multicasting number of routes</td>
</tr>
<tr>
<td>Multicasting Routes Threshold</td>
<td>Multicasting routes threshold at which to generate warning message</td>
</tr>
<tr>
<td>Change Admin Status</td>
<td>Do a shutdown or no shutdown to set the admin status on the interface</td>
</tr>
<tr>
<td>MTU</td>
<td>Mean transmission unit</td>
</tr>
<tr>
<td>IP Verify Unicast</td>
<td>An anti-spoofing command, also needed on host sites with hub and spoke topologies</td>
</tr>
<tr>
<td>VPN Topology</td>
<td>Type of VPN topology</td>
</tr>
<tr>
<td>Redistribute</td>
<td>Redistribute routes learned from</td>
</tr>
<tr>
<td>Maximum Routes</td>
<td>Maximum routes for the VFR</td>
</tr>
<tr>
<td>Concord Enabled</td>
<td>Concord reporting enabled</td>
</tr>
<tr>
<td>Maximum Paths</td>
<td>Number of expected sites that will be sending out the same routes to load share amongst</td>
</tr>
<tr>
<td>EIBGP Load Sharing</td>
<td>Allows for external and internal BGP load sharing</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>BGP Import Optimization</td>
<td>Make the PE import the paths learned via all the route reflectors</td>
</tr>
<tr>
<td>Default Info Originate</td>
<td>A method of sending out a default route across our network</td>
</tr>
<tr>
<td>OSPF Default Info Originate</td>
<td>Redistributes the default route from BGP to OSPF</td>
</tr>
<tr>
<td>Routing Protocol</td>
<td>Routing protocol between the CE and PE</td>
</tr>
<tr>
<td>BGP Remote AS</td>
<td>BGP autonomous system number for the customer network</td>
</tr>
<tr>
<td>OSPF Cost</td>
<td>OSPF costing for the interface</td>
</tr>
<tr>
<td>Timers Keepalive</td>
<td>Changes the default BGP keepalive from 60 seconds</td>
</tr>
<tr>
<td>Timers Hold time</td>
<td>Changes the default BGP hold time from 180 seconds</td>
</tr>
<tr>
<td>BGP Send Community</td>
<td>Allows customers to send standard communities to us and we will send across the cloud</td>
</tr>
<tr>
<td>Allow AS In</td>
<td>Allows our own AS number to be seen by our PE routers x number of times</td>
</tr>
<tr>
<td>Default AS Override</td>
<td>Replaces the customer's AS number with our AS number if source and destination AS numbers are the same</td>
</tr>
<tr>
<td>Replace AS</td>
<td>Replace our private AS number 65000 with our registered AS number 1684 or a private one in range 64512-65535</td>
</tr>
</tbody>
</table>
Customer support & training

Customer support

Contact customer support for product and general platform questions or errors.

Contact your account team with any account specific questions on equipment or service, pricing information, or adding additional users to Verizon Enterprise Center.

Click on your name in the top right corner of the screen. Click Contact Us & Send Feedback.

- U.S. Call 1.800.569-8799 (M-F 9 AM – 6 PM ET).
- Live Chat: Icon located in VERIZON ENTERPRISE CENTER, Networx and Calnet Portals.
- EMEA Customers: 00 800 4321 5432.
- APAC Customers: apac.Verizon Enterprise Center.support@intl.verizon.com.

Training

Go to https://customertraining.verizon.com to enroll in training or to download user and other reference guides. Log in with an existing login or create a new one.