Network & Service Companion (NSC-100/200)

QUICK CARD

Ethernet Layer 2 Traffic Loopback
This quick card describes how to set the NSC-100 or NSC-200 Network & Service Companion (NSC) up as a Layer 2 Loopback device for another VIAVI test instrument.

• Mobile Device (Smartphone or Tablet) with VIAVI Mobile Tech App
• Network & Service Companion equipped with the following:
  o Software release V4.2.19 or greater
  o NSC-LOOPBACK-1G option for up to 1 Gigabit Ethernet loopback
  o NSC-LOOPBACK-10G option for 10 Gigabit Ethernet loopback
  o NSC-OPTICAL ETHERNET for loopback using the SFP port
• Optical Transceiver supporting the line rate to be tested:
  o NSC-SFP-ELEC-10G 10G Electrical Ethernet SFP+
  o NSC-SFP-ELEC-1-2.5-5-10G 1G, 2.5G, 5G and 10G Electrical Ethernet SFP+
  o NSC-SFP-ELEC-AUTO-10G 2.5G, 5G and 10G Auto-neg Electrical Ethernet SFP+
  o NSC-SFP-850-1G-10G 1G and 10G Optical Ethernet SFP+ 850 nm SR
  o NSC-SFP-1310-1G-10G 1G and 10G Optical Ethernet SFP+ 1310 nm LR
  o NSC-SFP-1550-1G-10G 1G and 10G Optical Ethernet SFP+ 1550 nm ER
• Cables to match the optical transceiver and the line under test
• Fiber optic inspection microscope (P5000i or FiberChek Probe)
• Fiber optic cleaning supplies

PAIRING THE NSC TO YOUR MOBILE DEVICE

On the Network & Service Companion:
1. Press the Power button to turn on the unit. The Power indicator will turn solid green when the NSC is on.
2. Press and hold the Pair button on the NSC for 3 seconds to enter pairing mode. The blue Pair indicator blinks.

Figure 1: Equipment Requirements

Figure 2: Front View
QUICK CARD

On the Mobile Device:

1. Go to the Settings menu, enable Bluetooth, and scan for available devices.
2. Pair with VIAVI NSC.
3. Launch the VIAVI Mobile Tech App and tap LOCAL MODE.
4. Press CONNECT to connect to VIAVI NSC.
5. Press show more to view device information, including MAC Addresses of the RJ45 port and SFP port. Provide this information to the operator of the Traffic Generator upon request.
6. Press to view the Companion menu. You can now control the instrument through the Mobile Tech App and run all tests on the Companion.
7. Press to exit Job View.

CONFIGURE PROFILE

The following Information is needed to configure the Loopback Profile:

- Interface Type (RJ-45 or SFP)
- Interface Rate (1G, 10G)
- Interface Protocol (Layer 2 VIAVI LB or Port LB)
- VLAN Filter (ID and/or Priority)

1. Press to display the Profile Manager screen.
2. Press to create a new profile.
3. Select New Loopback Profile and, if prompted, ACCEPT TERMS OF USE.
4. Configure Interface settings as follows:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Interface Type</th>
<th>Interface Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1G Copper</td>
<td>RJ45</td>
<td>1G</td>
</tr>
<tr>
<td>10G Copper</td>
<td>SFP</td>
<td>10G</td>
</tr>
<tr>
<td>1G Optical</td>
<td>SFP</td>
<td>1G</td>
</tr>
<tr>
<td>10G Optical</td>
<td>SFP</td>
<td>10G</td>
</tr>
</tbody>
</table>
5. Disable **Persist on Boot** if do not want the NSC to resume loopback testing again after a shutdown and startup.

6. Set **Interface Protocol** to **LAYER2-VIAVI-LB**.

7. Enable **VLAN Filter** and enter a **VLAN ID** and **VLAN Priority** to limit loopback to a single VLAN ID or Priority.

8. Press **SAVE AND RUN** to initiate the test.

**CONNECT TO LINE UNDER TEST**

**For 1G Copper RJ45 interfaces:**
1. Connect the **RJ45** jack to the port under test using **CAT 5E** or better cable.
2. Verify the following:
   - **Speed** is 1 Gbps
   - **Auto-Negotiation** is On.

**For 10G Copper SFP interfaces:**
1. Insert desired 10G Copper SFP into the SFP cage on the bottom of the NSC.
2. Connect the SFP to the port under test using **CAT 6A** or better cable.
3. Verify the following:
   - **Speed** is 10 Gbps
   - **Auto-Negotiation** is Off.
CONNECT TO LINE UNDER TEST (Continued)

For Optical Interfaces:
1. Insert desired Optical Transceiver into the SFP port on the bottom of the NSC.
2. Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
   - Focus the fiber on the screen.
   - If it appears dirty, clean the fiber end-face and re-inspect.
   - If it appears clean, run the inspection test.
   - If it fails, clean the fiber and re-run inspection test. Repeat until it passes.
3. Connect the SFP to the port under test using a jumper cable compatible with the line under test.
4. Verify the following:
   - **Tx Power** is within the limits of the port under test.
   - **Rx Power** is within the limits of the SFP in the NSC.
5. If necessary, insert optical attenuators into the SFP TX and/or RX ports.

LOOP UP
1. The NSC may be looped up by either of the following methods.
   - **Broadcast Loop up message**: NSC will respond to VIAVI Loop up messages received via Broadcast MAC address and will enter Loopback state.
   - **Unicast Loop up message**: The NSC will respond to VIAVI Loop up messages received via Unicast MAC address and will enter Loopback state.
2. Once looped, the NSC will reflect all received test packet after inverting Source and Destination MAC addresses.
3. When the test is finished, press STOP to stop the test.