Ethernet Layer 2 Multiple Streams Traffic Generation

This quick card describes how to set up the OneAdvisor 800 as a Layer 2 Multiple Streams Traffic Generator and measure Metro Ethernet key performance indicators (KPIs). The quick card documents a procedure to set up the OneAdvisor on a 1GigE Optical Interface, but the same workflow may be applied to other data rates.

EQUIPMENT REQUIREMENTS

- OneAdvisor 800 equipped with the following:
 - RAxxMA-O Radio Analysis Module, SPA06MA-O Spectrum Analyzer Module, TM400GB-QQ 400G Module, or TM400GB-QO 400G Module.
 - Transport software release V5.1.0 or greater
 - CA10M1GE or ONA-SP-10M1GE 1 Gigabit Ethernet option
- Optical Transceiver supporting the Ethernet data rate to be tested (SFP, SFP+, SFP28, or QSFP28)
- Cables to match the optical transceiver and the line under test
- Fiber optic inspection microscope (P5000i, FiberChek Probe, or INX-760)
- Fiber optic cleaning supplies

LAUNCH TEST

- 1. Press the Power button on the ONA-800 base top panel to turn on the OneAdvisor.
- 2. Tap fr Home to display the Home Screen.
- 3. Tap 🚣 Tests to display the Tests menu.
- Tap Radio Analysis Transport > or
 400G Transport > to show the Transport test application.



- If the Select Test menu is not displayed, tap
 All Tests in the lower left screen corner.
- 7. Using the Select Test menu or favorite test list, launch the Ethernet Layer 2 Traffic test for the desired data rate and port (P1 or P2).
 For example: Ethernet ►1GigE Optical ► Tores
 Layer 2 Multiple Streams ► P1 Terminate.
- If the current configuration is unknown, tap to open the **Tools** Panel and select
 Reset Test to Defaults.
- 9. Press **V** or to continue.

OneAdvisor 800 Transport and Wireless Platforms

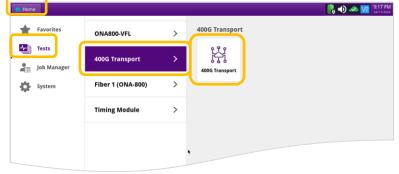


Figure 2: Transport Launch screen

		0G Transport 🗙		
Select VNO		ni ıg Test 🗙		What's This?
Ethernet		10/100/1000	>	
Fibre Chann	el 🕨	1GigE Optical	Optics Self-Test	
OTN	•	10GigE LAN	▶ 😁 5G NR Discovery ►	
Unframed	•	25GigE	V QuickCheck	
Add Test	Þ	40GigE	RFC 2544 (RFC 5180)	
Remove Tes		50GigE 100GigE	4 Y.1564 SAMComplete	
Load Test		100GigE KP4 FEC	Layer 2 Traffic	
🖬 Save Test As		200GigE	Layer 2 Multiple Streams. 🕨 🇱 P1 Terminate	
		4x100GigE	Layer 3 Traffic	
		400GigE Single Por	Layer 3 Multiple Streams	





Figure 1: Equipment Requirements



CONFIGURE TEST

- The following Information is needed to configure the test:
 - Type of Optical Transceiver (10/100/1000 Copper SFP, 1G/10G Single mode, 100G LR4 QSFP28, etc.)
 - Auto Negotiation settings of the port under test.
 - Stream Definitions (Encapsulation, VLAN IDs, Frame Sizes, Destination Addresses, etc.)
- 1. Tap the **Setup** soft key con the top right side of the screen.
- 2. Select the Interface/Connector/SFP folder.
 - Insert desired Optical Transceiver into the Port 1 SFP or QSFP slot on the top of the OneAdvisor.
 - Review SFP information:
 - ✓ Verify that the SFP operates on the required wavelength (850nm, 1310nm or 1550nm).
 - ✓ Verify that the SFP supports the required data rate (1G, 10G, etc.)
 - ✓ Note the Min and Max Tx Levels (dBm) and Max Rx Level (dBm) to assess if optical attenuators are required.
- For 1GigE Optical or 10/100/1000 Copper tests, select the Physical Layer tab and set Auto Negotiation to the same values as the Ethernet port under test.
- 4. Select the All Streams folder.
 - If your loopback device is a Carrier Ethernet Switch or NID supporting IEEE802.1ag LBM/LBR loopback, set **Test Mode** to LBM Traffic. Select the LBM folder and set Maint. Domain Level to 5.
 - For all other loopbacks, set Test Mode to Traffic.
 - Tap the Configure Steams... button. Select the number of streams to generate and the Load (%) per stream, and tap



Figure 4: Work Order

e v Port 1: 1GigE	Laver 2 Streams Term 🗙 📗	+		What's This?
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ns	SFP SFP E pert I2C			
ed Test			ding the management interface of	ontents of the SFP and may
Streams	not necessarily be the sam		s data sheet.	
	Wavelength (nm)	850.00		
	Recommended Rates		Ethernet 1G, 10G L	AN
			Fibre Channel 1G, 10G	
	and the second sec		CPRI 9830.4M	
	Vendor	FINISAR CORP.	Nominal Rate (Mbits/sec)	10,300
	Vendor PN	FTLX8571D3BCV	Min Rate (Mbits/sec)	
	Vendor SN	MV51QXB	Max Rate (Mbits/sec)	
	Vendor Rev	A	Power Level Type	Average Power
	Min Rx Level (dBm)	-20.0000	Wax Rx Level (dBm)	-1.0002
	Win Tx Level (dBm)	-7.9997	🚱 Max Tx Level (dBm)	-1.0002
	Diagnostic Monitoring	1	Diagnostic Byte	104
	Module ID	SFP		
	Transceiver 10G B	ase-SR: Ethernet 1000BA	comps.	

Figure 5: Setup, Interface/Connector/SFP

Select ~ Port 1: Test	1GigE Layer 2 Streams Terr	m 🗙 📃						What's This?	101	
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Timed Test	Auto Negotiation		On		•					
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4										10000
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3	Allow flooding 😌						strea
1		Configure		Test Mode	Traffic		Pip
5		Streams					
5	Tx Payload						
7	Acterna Fill Byte	AA					

Figure 7: Setup, All Streams



CONFIGURE TEST (CONTINUED)

- 5. Select the **1** tab and enter settings for Stream 1:
 - If you are testing a VLAN, set
 Encapsulation to VLAN, tap the
 VLAN field and enter your VLAN ID.
 - Set Frame Size (Bytes) to the desired frame size or EMIX.
 - Tap the SA field to display the Factory Default Source MAC Address. Provide this address to the operator of the far-end test instrument (OneAdvisor, T-BERD/MTS, NSC-200, etc.) upon request.
 - Tap the DA field, Set Loop Type to Unicast, and enter the Source Address (SA) of the far-end test instrument in the Destination MAC field.
 - Provide the stream number to the operator of the far-end test instrument. Their stream number must match yours.
- 6. Tap Copy Setups to other Streams.
- 7. Repeat step 5 for all other streams.
- 8. Tap the **Results** soft key

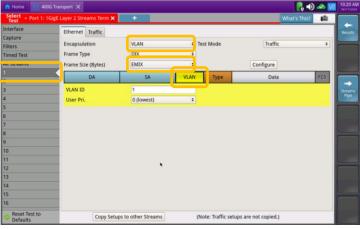


Figure 8: Setup, Stream 1/Ethernet/VLAN

Test Port 1:	1GigE Layer 2 Streams Term 🗙	+		What's T	his?
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Capture					
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			1011		
	Destination Type	Unicast	 Loop Type 	Unicast	•
	Destination MAC	00-80-16-A4-4A-BC			
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1					
2		*			
3					
4					
4					
* 5					

Figure 9: Setup, Stream 1/Ethernet/DA



CONNECT TO LINE UNDER TEST

For Optical Interfaces:

- Use the VIAVI P5000i, FiberChek Probe, or INX 760 microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
 - \circ 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.
- 2. If necessary, insert optical attenuators into the SFP TX and/or RX ports.
- 3. Connect the optical transceiver to the port under test using a jumper cable compatible with the line under test.
- 4. Select the Laser tab in the Actions panel.
- 5. Press $\operatorname{Laser}_{Off}$. The button will turn yellow and be relabeled $\operatorname{Laser}_{On}$.
- 6. Press the **Restart** soft key
- 7. Verify the following:
 - Signal Present LED is green.
 - Sync Acquired LED is green.
 - Link Active LED is green.

► For 10/100/1000M Copper Interfaces:

- 1. Connect the copper SFP to the port under test using CAT5e or better cable.
- 2. Press the Restart soft key.
- 3. Verify the following:
 - Sync Acquired LED is green.
 - Link Active LED is green.

► Select the Actions tab in the Actions Panel.

- If you are testing head-to-head to multiple loopback devices, to a hard loop, or if the loopback devices are already in Local Loop Back (LLB) mode, proceed to page 5.
- If the Loopback device is a OneAdvisor, T-BERD/MTS 5800 or another VIAVI compatible loopback device, tap loop up the far end device.

to

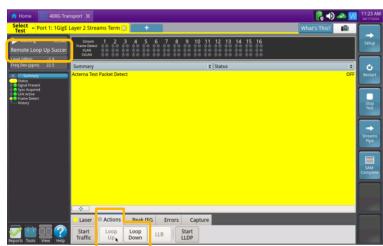
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Figure 10: Inspect Before You Connect

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			SAN
_	Laser Actions Peak IFG Errors Capture		

Figure 11: Optical Interface Results





LOOP UP AND RUN TEST

- 1. Tap Traffic . The button will turn yellow and be relabeled Traffic .
- 2. Press the **Restart** soft key on the right side of the screen. Verify that:
 - ✓ The Frame Detect LED is green for each configured stream.
 - The results window shows ALL
 SUMMARY RESULTS OK.
- Tap the View Icon and select Split Left/Right or 2 x 2 Grid to view additional results windows. Select desired results using the drop-down menus at the top of each results window.
- 4. Tap the **Streams Pipe** soft key to view summary results for all streams.



Figure 13: Start Traffic

Name Term Stream 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 5 5 5 6 7 8 9 10 11 12 13 14 15 16 5 5 6 7 8 9 10 11 12 13 14 15 16 5 5 6 7 8 9 10 11 12 13 14 15 16 5 7 8 9 1 2 5 7 8 9 10 11 12 13 14 15 16 5 7 8 9 10 11 12 13 11 12 13 14 15 16 14 15 16 16 11 12 13 14 1	Running 14s	Layer 2 Streams Term X	4 5	6789	10 11	12 13 14 15 16	What's This?	-
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Figure 15: Streams Pipe

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