

V08 - DCS Remote Node Validation

ENGINEER: _____

DATE: _____

COMMENTS:

MARS

Org: WHOI

Engr: Fritz Sonnichsen

Date: 03/20/05

V08 - DCS Remote Node Validation

GENERAL PROCEDURE

This test is to be performed after node deployment

This test will be divided into parts:

Optical Output Power Test

Testing the optical power emanating from the shore and sub sea systems.

Optical Passthrough Test

Testing the optical power emanating from the shore and sub sea systems.

Routed Data Test

Testing that the router, electrical converted and fiber optic channels are running error free

> CAUTION! Be sure that you do not overdrive any of the optical receivers by injecting too much light into them. All attenuators should be properly installed for these tests.

NOTES:

- 1) We will use the phrases East .98 East .75 and East .32 as shorthand for East 1558.98 East 1555.75 and East 1549.32 channels
- 2) We will use the phrases West .98 West .75 and West .32 as shorthand for West 1558.98 West 1555.75 and West 1549.32 channels
- 3) The east side only is shown in the figures that follow. All tests should be mirrored for the West side.
- 4) We assume the use of an ANCOT Netminer BERT tester deployed with SFPs as the BER test unit.
- 5) There is an obvious preference to perform the test with the actual MARS cable and shore station, however should physical circumstances prevent this, the test may be performed with a fiber spool or VOA (variable optical attenuator), and with a mobile test shore station.
- 6) If a VOA is used, set it to 15dB loss to simulate the MARS cable plus termination assemblies.
- 7) If a VOA is used you may use the second port on the BER tester instead of using 2 BER testers since the sub sea node and shore station can be placed in close proximity.
- 6) Proper fiber handling and safety techniques are assumed throughout and not further mentioned.
- 7) Use SM fiber for all loopbacks

OPTICAL POWER CHECK

- 1) Set and optical power meter set to 1550nm
- 2) Power up the node and shore station, but insure that no data or BER test is flowing
- 3) Measure the output of the sub sea transmit fibers for East and West
- 4) Measure the output of the shore transmit fibers for East and West
- 5) Record the results in the results table at the end of this document
- 6) Access in secession, each sea and shore EDFA using the serial port access techniques for the devices (See OBC documents).
- 7) Record the received power and the output power for each and record in the results section

ELECTRICAL POWER CHECK

With all of the DCS system powered up:

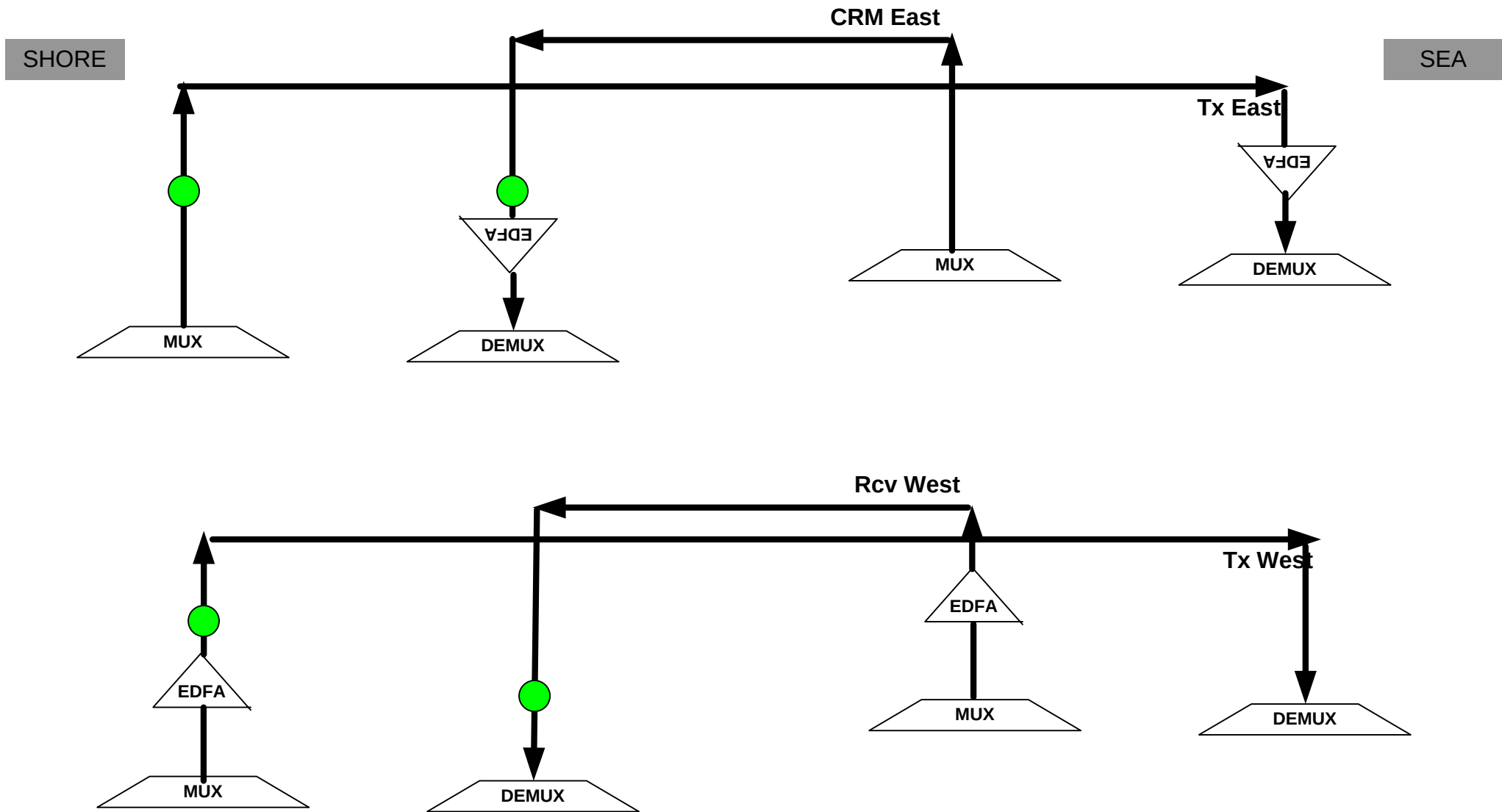
- > Read the overall electrical power consumption of the DCS elements
- > Using the node power controller managment interface read the power consumption of the individual DCS elements
- > Record the values in the results section of this document

TEMPERATURE CHECK

With all of the DCS system powered up:

- > Using the node power controller managment interface read the temperature of the individual DCS elements (excepting the EDFAs)
- > Using the EDFA serial interface read the temperature of the EDFAs
- > Record the values in the results section of this document

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SUB SEA NODE OPTICAL BER TEST (Pass Through Channels)

This test is done while the sea node closed. It is, at this point, the only optical test which can still be performed without engaging the CISCO switches.

This test is unique as it can be performed completely from the shore side, after the sub sea node is deployed in the water.

The setup for this test is shown on the next page. The magenta circles are points where the optical system is tapped into for insertion of the BER tester.

- 1) ON THE SHORE SIDE Remove the East .32 SFP with fibers from the CISCO A Router (The SFP at port 27) and place it in an SFP socket of the BERT tester.
- 2) ON THE SHORE SIDE Remove the West .32 SFP with fibers from the CISCO B Router (The SFP at port 27) and place it in an SFP socket of the BERT tester.
- 3) Run a BERT test for 30 minutes
- 4) The BERT test should run error free

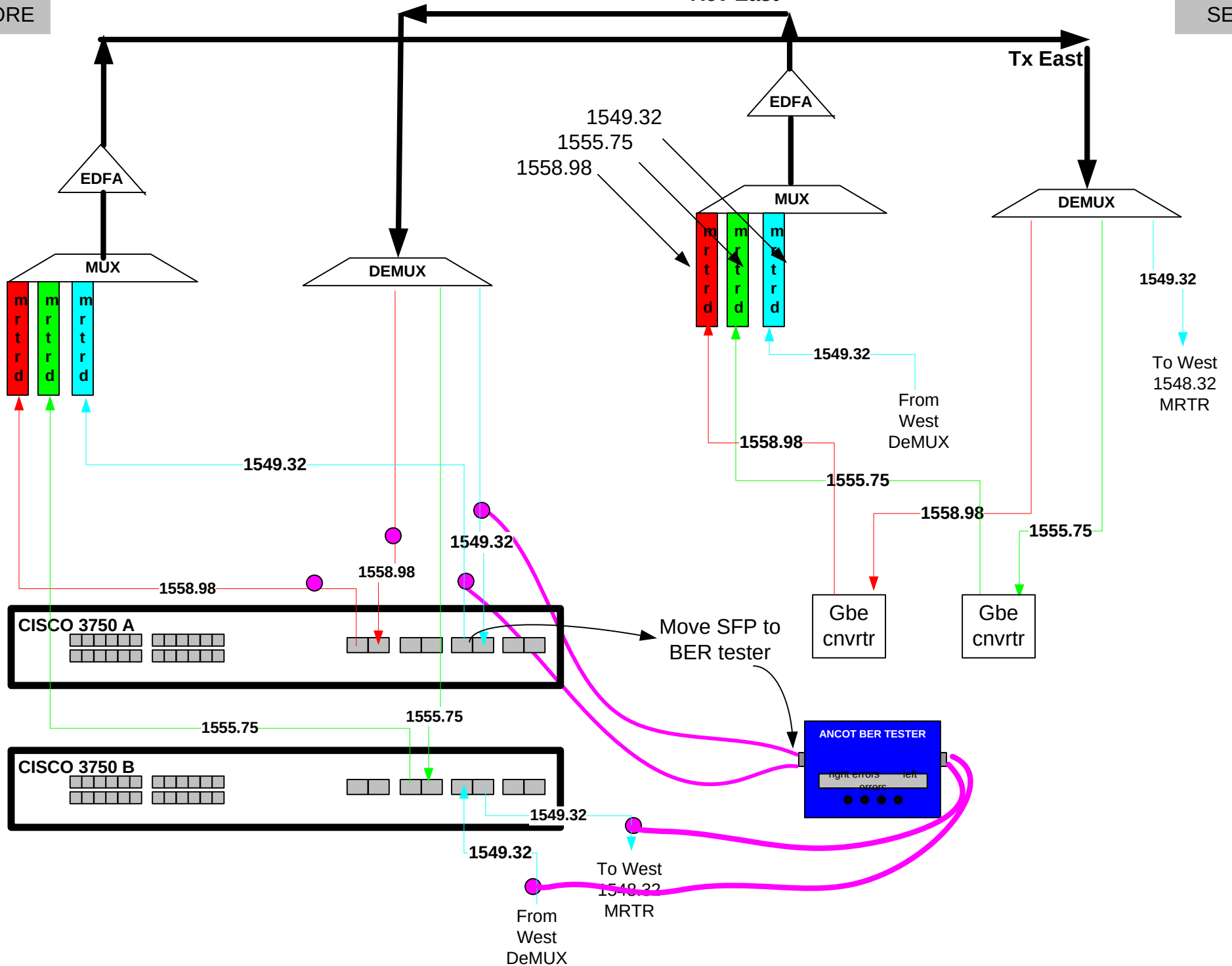
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SHORE

SEA

Rcv East

Tx East



V03 – DCS Closed Node Validation

REMOTE LOOPBACK TEST

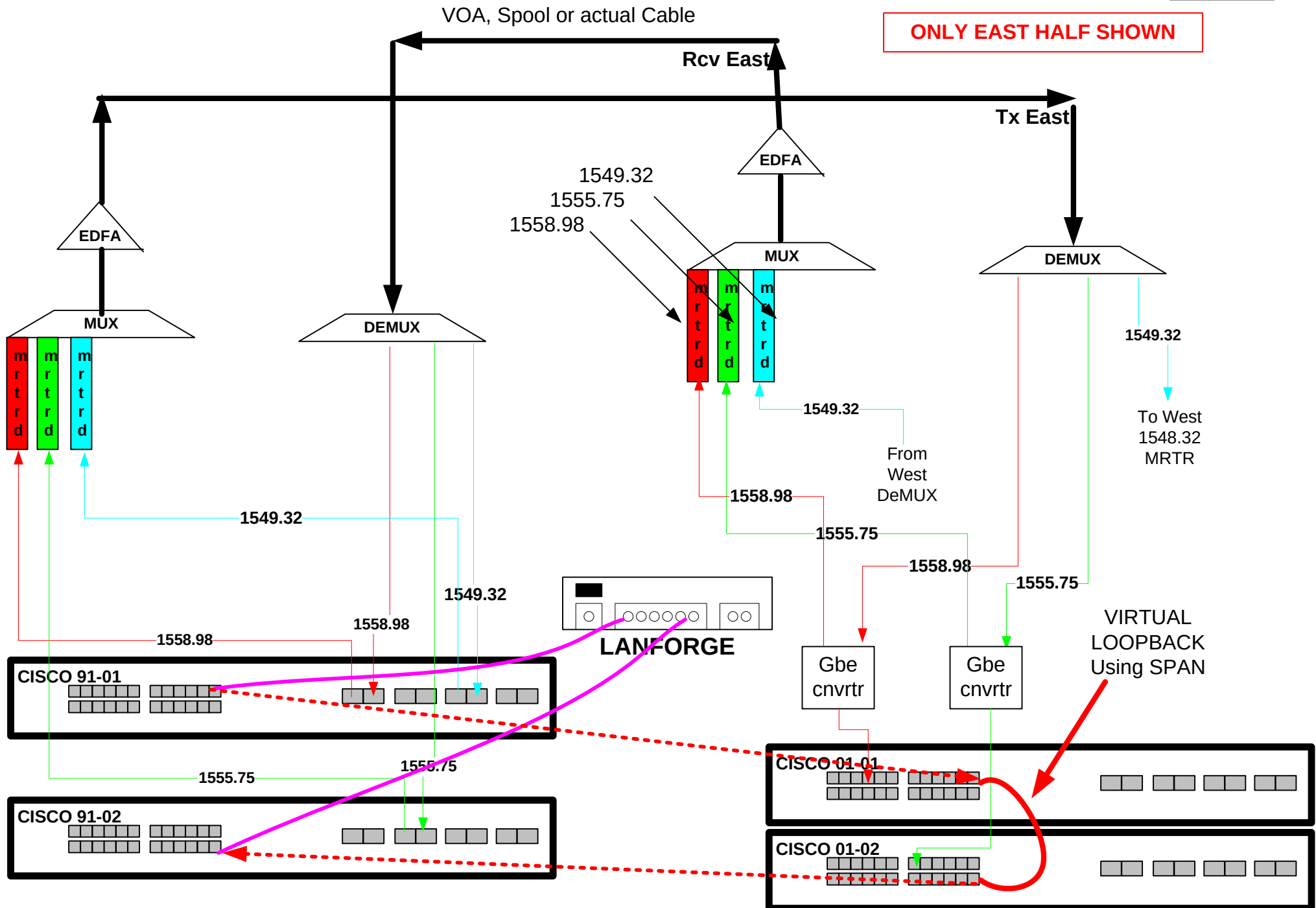
This test is done using the CISCO SPAN feature, which maps a port on a router to a second port on the same or another router and mirrors all traffic at that port.

- 1) Using the commands that follow, map a port on the sub sea 01 CISCO to a port on the sub sea 02 CISCO.
- 2) Start the LanForge and assure that the loop is complete and that there are no packet drops for about 5 minutes
- 3) Remove the East .75 and the West .75 and .98 fibers from the Shore Routers. This will insure that traffic is only arriving to the shore via the East .98 path. Continue to run the LanForge for 5 more minutes and record any packet errors or drops
- 4) Repeat this test for the other 3 paths, removing the East .98 fiber and reconnecting the appropriate fiber
- 5) Record the results in the Results section of this document

V03 – DCS Closed Node Validation

SHORE

SEA



V08 - DCS Remote Node Validation (Results)

DCS POWER TEST- Power of optical lines measured at shore (dBm)

	Power measured at splitter mon port
Subsea Tx East	
Subsea Tx West	
Shore Tx East	
Shore Tx West	

DCS Optical POWER TEST- Power of EDFAs reported by software

Subsea East IN		Subsea East OUT	
Shore East IN		Shore East OUT	
Shbsea West IN		Subsea West OUT	
Shore West IN		Shore West OUT	

Electrical Power Test	
East EDFA	
West EDFA	
East OEs	
West OEs	
East NE	
West NE	
CISCO 01	
CISCO 02	
OBC	
Total (dry side)	

Temperature Test	
East EDFA	
West EDFA	
East OE .98	
West OE .98	
East NE .98	
West NE .98	
upper ambient	
lower ambient	
humidity	

V08 - DCS Remote Node Validation (Results)

Optical Pass Through Channel Test		
Test	Duration of Run	# Errors
CST		
CJT		
CRT		

Remote Loopback Test		
Science Port Used:		
PATH	Duration of Run	# Packet Errors
E 1558.98		
E 1555.75		
W 1558.98		
W 1555.75		