

O/o The GMTD BSNL
CTO Building, New Market
T.T.Nagar Bhopal.



भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

NO: GMTB/SDE-CDR/Broadband/RF-Testing/2016-17/1 Dated at Bhopal: 22.02.2017

Sub: Feasibility report on testing of Broadband over RF Media- Tested at Bhopal

With reference to the above we have received proposal and queries from Customers of Non-Feasible Colonies of Bhopal Telecom District regarding, "Providing High-Speed Internet to BB customer". After thorough discussions and inputs from CDR, NIB and Outdoor Team of Bhopal Telecom District, NOC Bangalore has conducted the tests and following is the summary of the tests.

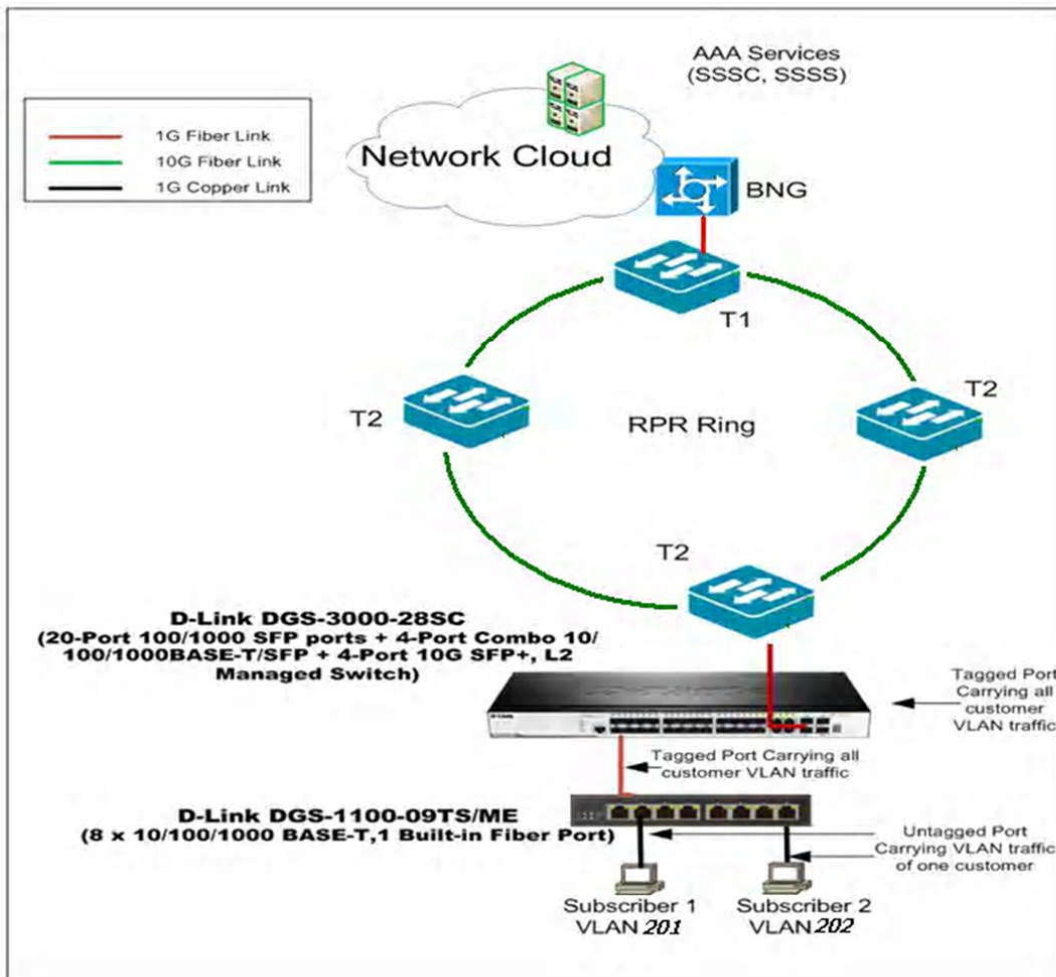
D-Link Switches 24 Port Optical Switch (DGS-3000 28SC) & 8 Port Edge Switch (DGS-1100) are tested on Test bed BNG,RPR & Managed Switch. Here 8 Port Edge switch function will be in similar to DSLAM and 24 Port Optical Switch is in similar to OCLAN.

Case 1:Subscribers connected to Ethernet port of 8 Port Edge Switch. In this case 8 Port switch connected to 24 Port Optical Switch via 1Ge Fiber Port on RF Media. 24 Port Optical Switch is directly Connected to RPR via 1 Ge Port using Fiber.

Observations& recommendations:

- With test user ID we have observed authentication is successful& able to browse internet.
- Speed restrictions on ports extended to customer in all the above cases checked to be working fine.
- As these Switches will be placed in **L2 layer** of network, the scenarios of Provisioning, Authentication, and Billing and from LEA perspective remains similar to the existing ADSL customers. However port configuration through ems is yet to be tested. At present we have configured through console.
- At present we have only 4 spare Management VLANs. For identification of Third party equipment these specific VLANs are very much essential from O & M perspective.
- Speed upto 100Mbps to individual customers can be provided using these Switches subject to connecting to RPR through 1 G port.

Testing Topology:-



Configurations:

Configurations in similar lines with DSLAM cascading with multiple management VLAN interfaces in BNG is required.

Tests on Security features:**1) Loop Back detection :**

D-Link DGS-3000-28SC
(20-Port 100/1000 SFP ports + 4-Port Combo 10/
100/1000BASE-T/SFP + 4-Port 10G SFP+, L2
Managed Switch)



Found working, switch detects and disables the concerned ports which are creating loop on the network. LBD needs to be enabled on ports for this feature. Recommended to enable LBD on all ports by default.

- 2) **IP-MAC-Port binding:** There is provision to bind a specific IP and/or MAC to a specific port manually (or) we can use add entry option in the ARP table.
- 3) **DHCP Server filtering / DHCP Snooping / DHCP Port blocking:** This features will block all other ports on switch except specified (generally Uplink) port to respond to DHCP requests. D-LINK engineer tried to demonstrate but not working as of now,
- 4) **User Privileges:** Asked to demonstrate the levels of user that Switch is capable of creating for managing Switches
Vendor has informed that features mentioned at 3 & 4 will be demonstrated in due course

Recommendations:

- With the available 4 Management VLANs we can allow one Optical switch with 15 Ethernet switches allowed and will be served maximum of 360 Customers (15 *24, 15 ports in Optical switch for connecting 24 port Ethernet switch for extending customer connections
- It is recommended that Connectivity to Optical switch should be from RPR through 1 Ge optical link in order to avoid speed problems.

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Copy to:

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