

Broadband DLC Architecture

1. Introduction

BSNL Plans to introduce Broadband Services through the following Channels

1. *ADSL Equipments through Project 2.2 of NIB – II*
2. *Broadband DLC's*
3. *Wi-Fi and Wi-MAX*

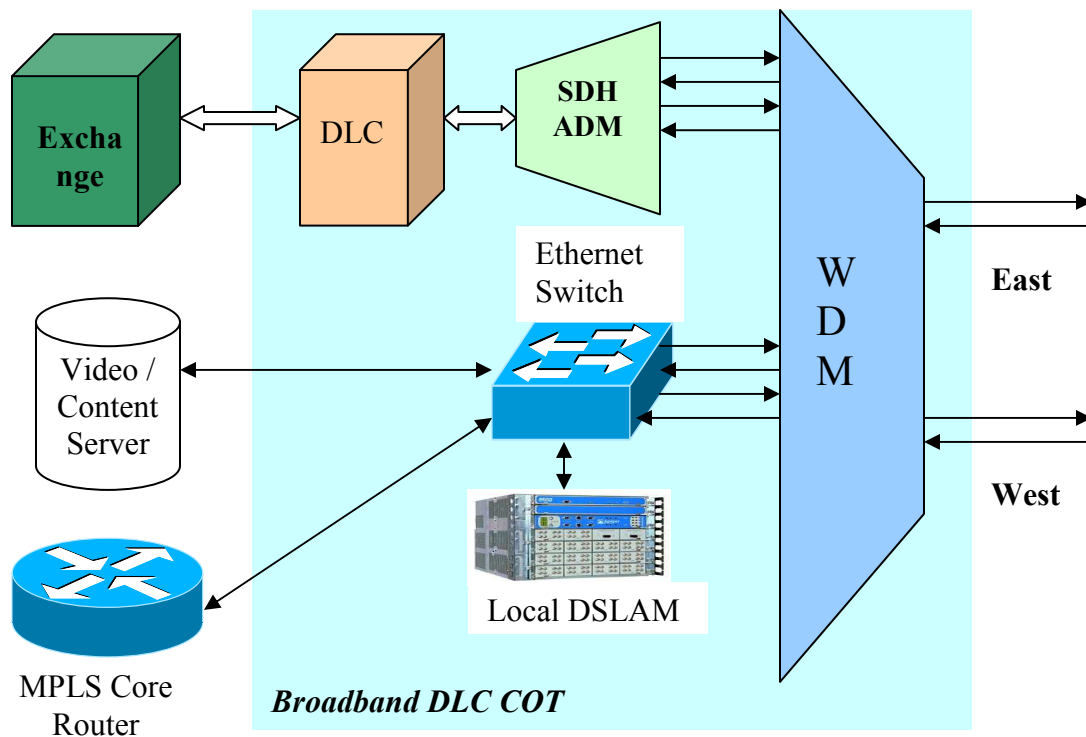
Kerala circle has to achieve a target of 45,000 Broadband Lines by December 2005. Out of this, 33,000 lines are expected to be through NIB-II and 12,000 are through Broadband DLC's.

BSNL Plans to introduce Broadband DLC in the network through three routes

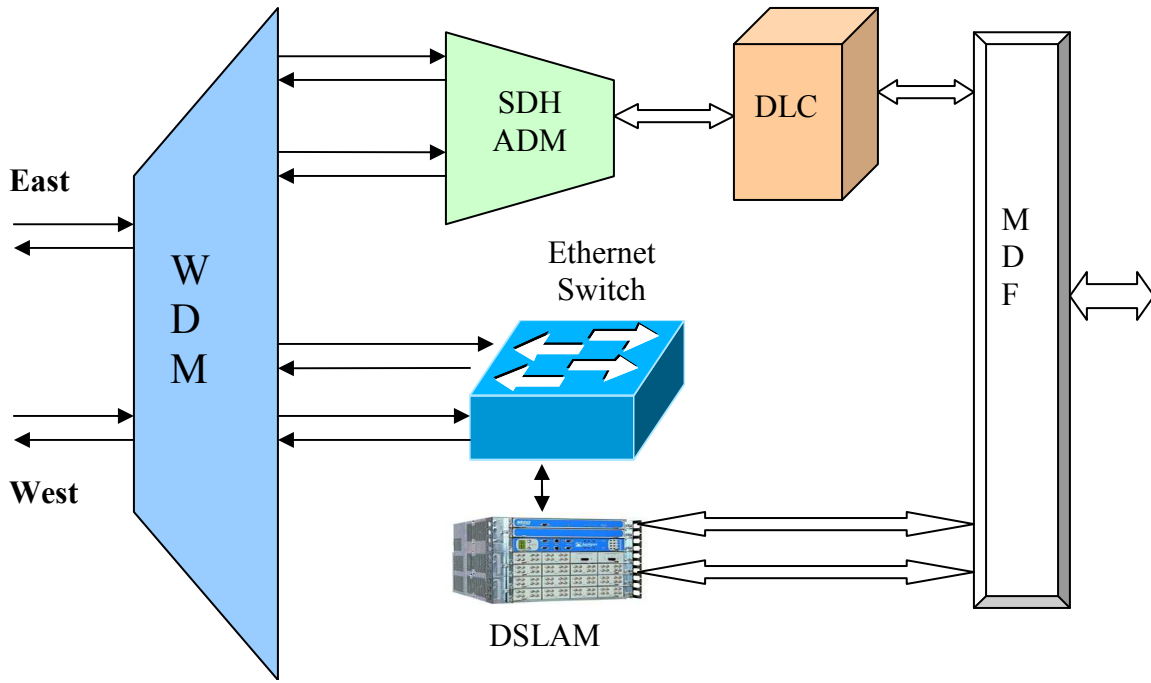
1. *Upgradation of Existing DLC's*
2. *Procurement of BLC's from ITI*
3. *Through BLC Tender*

2. BLC Architecture for the Upgradation / ITI Procurement

2.1 COT Block Schematic

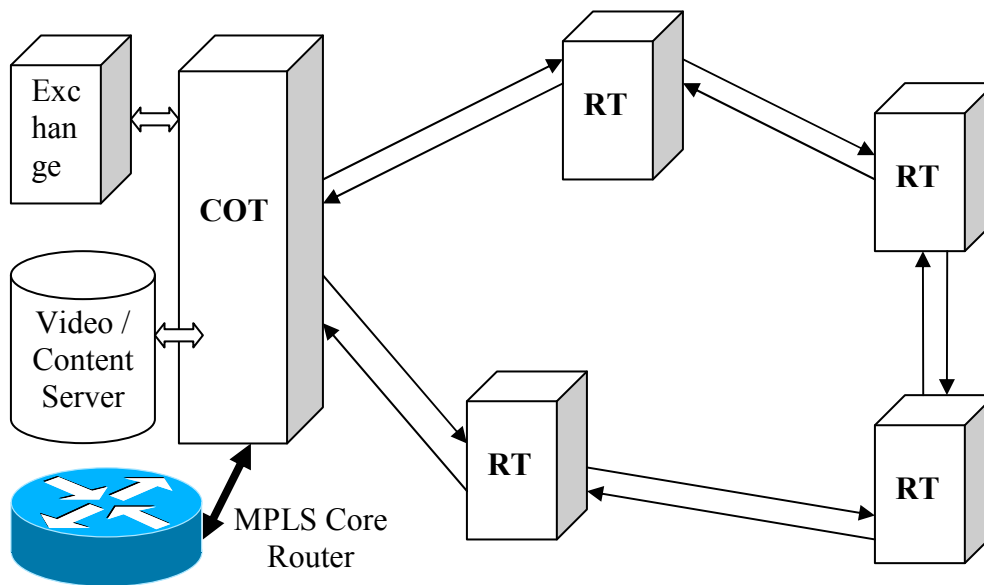


2.2 RT Block Schematic



Broadband DLC RT

2.3 COT – RT Architecture



2.4 Capacity

1. The Upgradation / New DLC equipments ordered are as per the above configuration.

2. **Capacity**

	<i>DEL</i>	<i>Broadband Lines</i>
<i>COT</i>	<i>NA</i>	<i>256</i>
<i>RT</i>	<i>480</i>	<i>128</i>

3. Total Ring capacity – 768 Broadband Lines

2.5 Alternate Deployment Plan

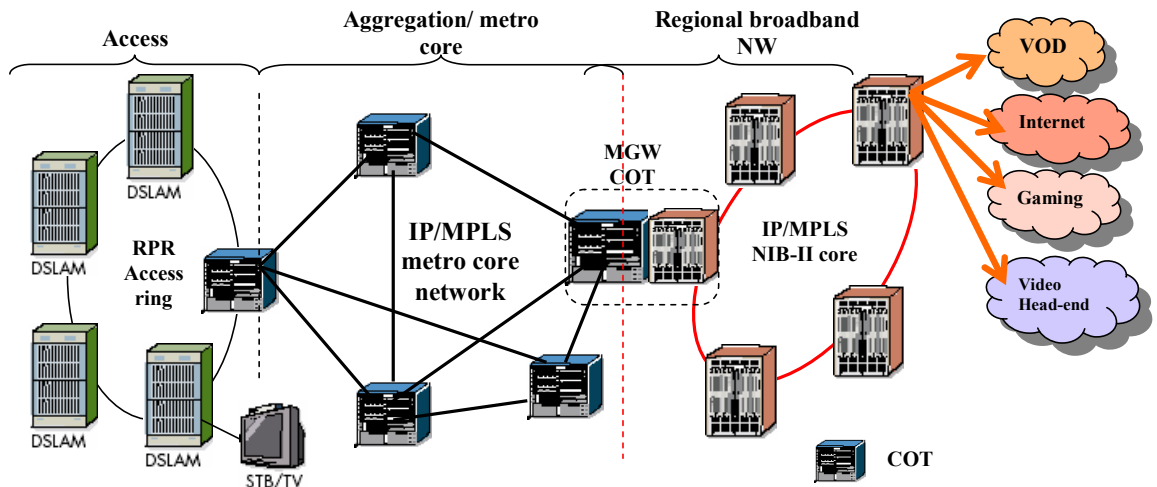
1. The PSTN DLC can be separated out i.e. the ADM and DLC in the above block schematic.
2. The broadband equipment along with the WDM equipment can be integrated with any other ADM Ring working on 1310 nm
3. The distance criteria will be around 40 Km.
4. Existing Fiber can be utilized.
5. All the ADM's in the Ring are to be converted to broadband.
6. Accordingly it is possible to install the Broadband COT in any main exchange and the RT's can be located in the RSU's. This is based on the convention that the main exchange and the RSU's are generally connected on an ADM Ring.

3. BLC New Tender Architecture

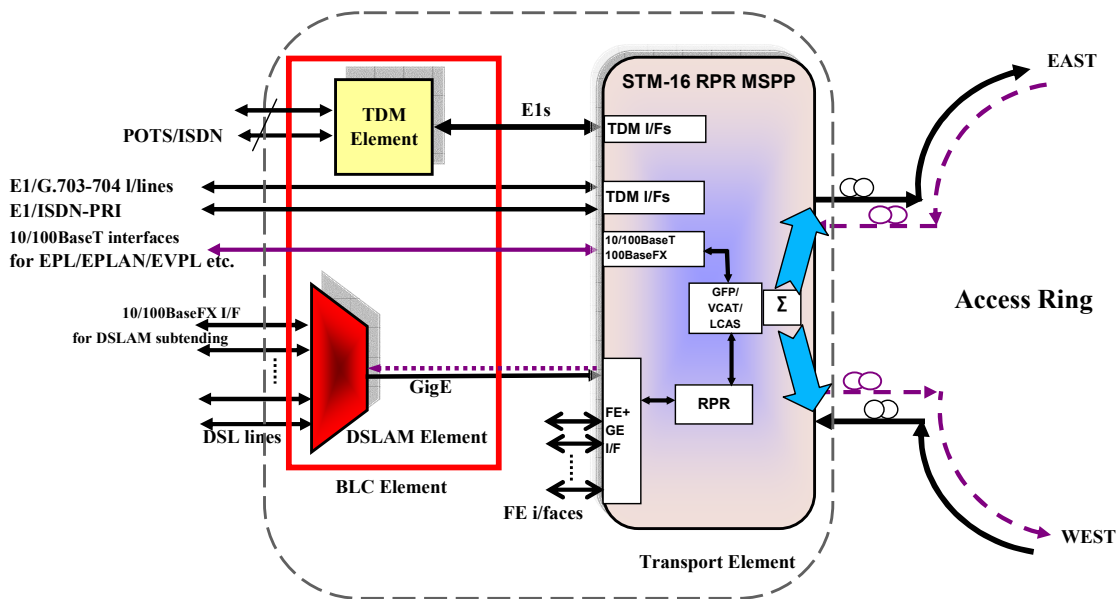
1. BSNL is planning for a **0.36 Million** new BLC Tender.
2. The COT and its RT's are to be planned within the **same SDCA**
3. **Package I Architecture**
 - a. Package I is for 12 Major cities including Ernakulam
 - b. STM-16 RPR Access Ring
 - c. There will be 4 Access Rings per COT
 - d. 3 COT and **72** Type I/II/III RT's per city is planned
 - e. Additionally there will be around 80 Type IV RT's per city

Network anatomy	
RT per COT	24
RT per Access ring	6
Access rings per city	4
RT per city	72
COT per city	3

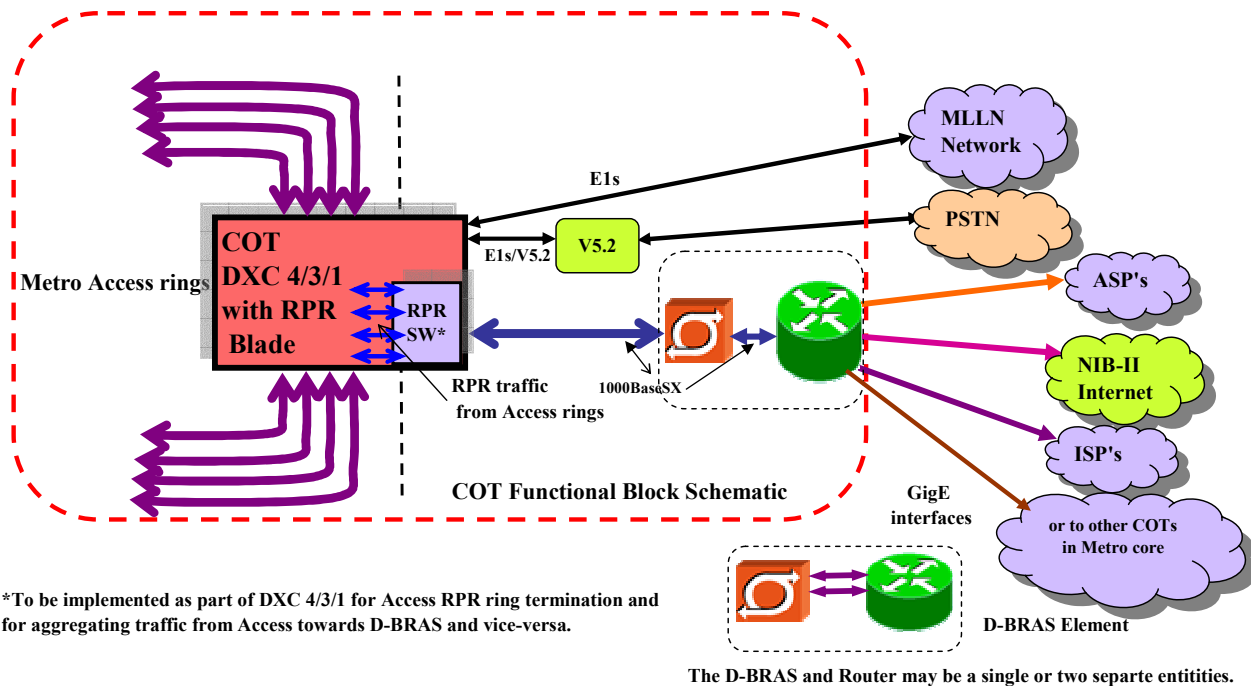
- f. The mesh network among the COT's will form the metro core.



g. Package I BRT Block schematic



h. Package I COT Architecture



- i. Each COT can have up to 4 access rings terminated as shown above.
- j. Each access ring can have up to 6 RT's and hence 24 RT's per COT.
- k. One of the COT's will act as the Gateway to NIB II etc.
- l. The three COT's in Ernakulam can be located at say CSR, Boat Jetty and Panampalli nagar exchanges. These will be interconnected on Gig Ethernet to form the metro core ring. The CSR will act as the gate way to NIB-II

m. Type IV RT

- i. There will be 24 DSL Ports
 - ii. This will be connected to the COT/Type I/II/III RT on a star network.
 - iii. Connectivity to the COT/Type I/II/III RT will be on dark fiber over Fast Ethernet.
 - iv. No Battery and Power Plant will be provided for these locations.
- n. 20 % of the Type I/II/III RT's and all Type IV RT's are to be planned without Battery and Power Plants.

o. Ports planned

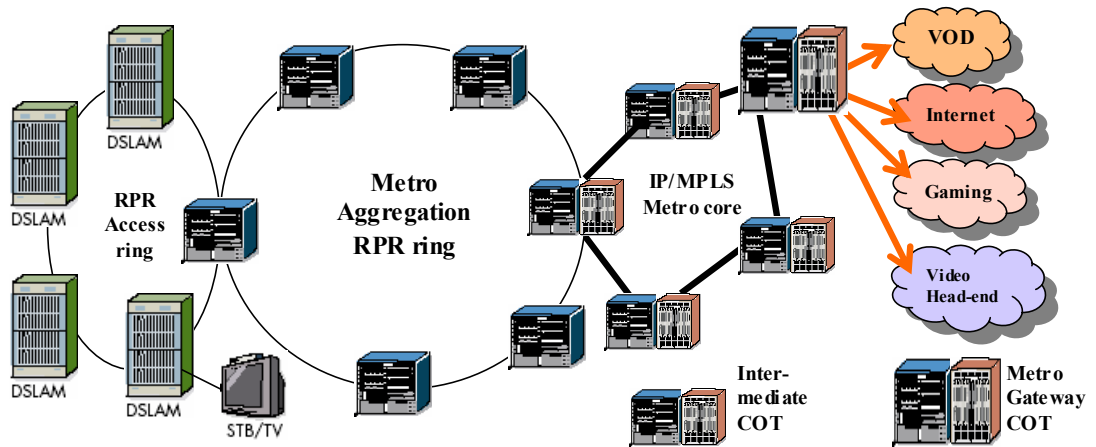
Ports type	Type I	Type II	Type III	Type IV
POTS interfaces	60	120	240	0
DSL interfaces	60	120	240	24
10/100BaseT customer LAN interfaces for EPL/EPLAN/EVPL/EVPLAN/L2-L3 VPNs	8	12	16	0
ISDN-PRI interfaces	2	2	2	0
ISDN-BRI interfaces	8	8	8	0
E1 G.703/G.704 interfaces for leased-lines	4	4	4	0
N*64Kbps G.703/G.704 interfaces for TDM leased-lines on point to point SHDSL modems	4	8	12	0

4. **Package II Architecture**

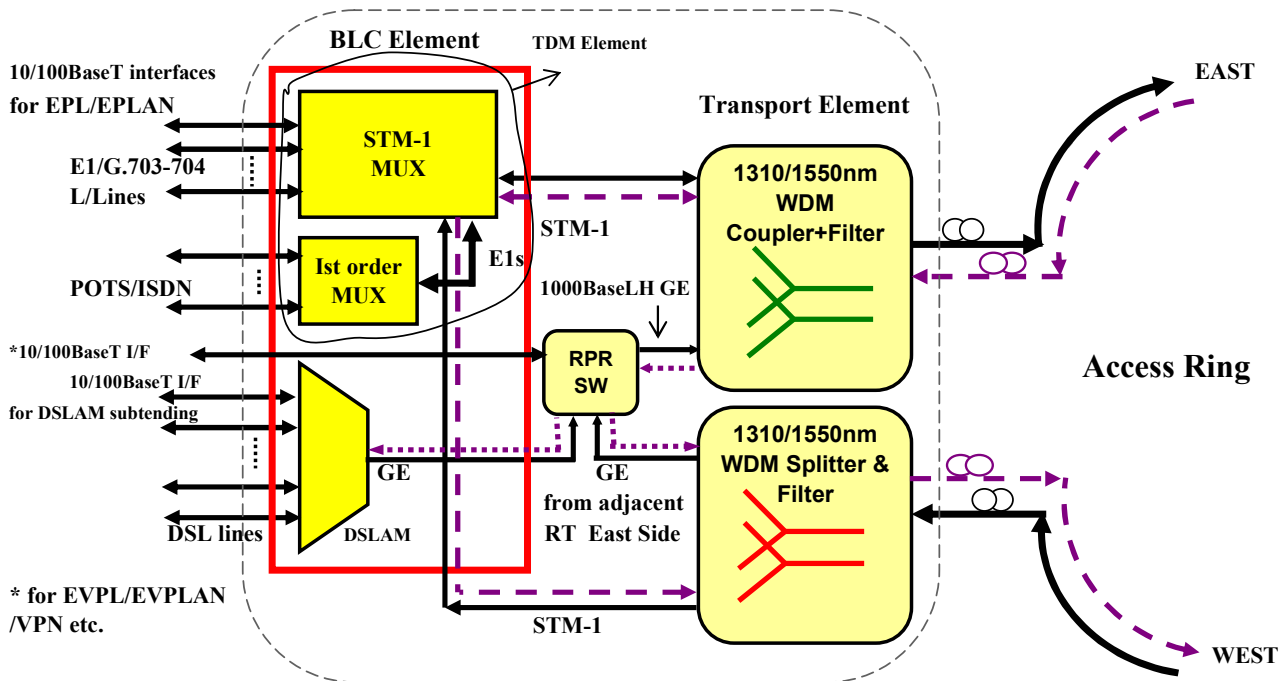
- a. Package II is for 155 cities. All remaining SSA's of Kerala are covered under this package.
- b. The Access Ring is WDM with Gigabit Ethernet RPR Ring for Data and STM-1 for Voice.
- c. 1 COT and 15 RT's per city is planned

Network anatomy	
RT per COT	15
RT per Access ring	5
Access rings per city	3
RT per city	15
COT per city	1

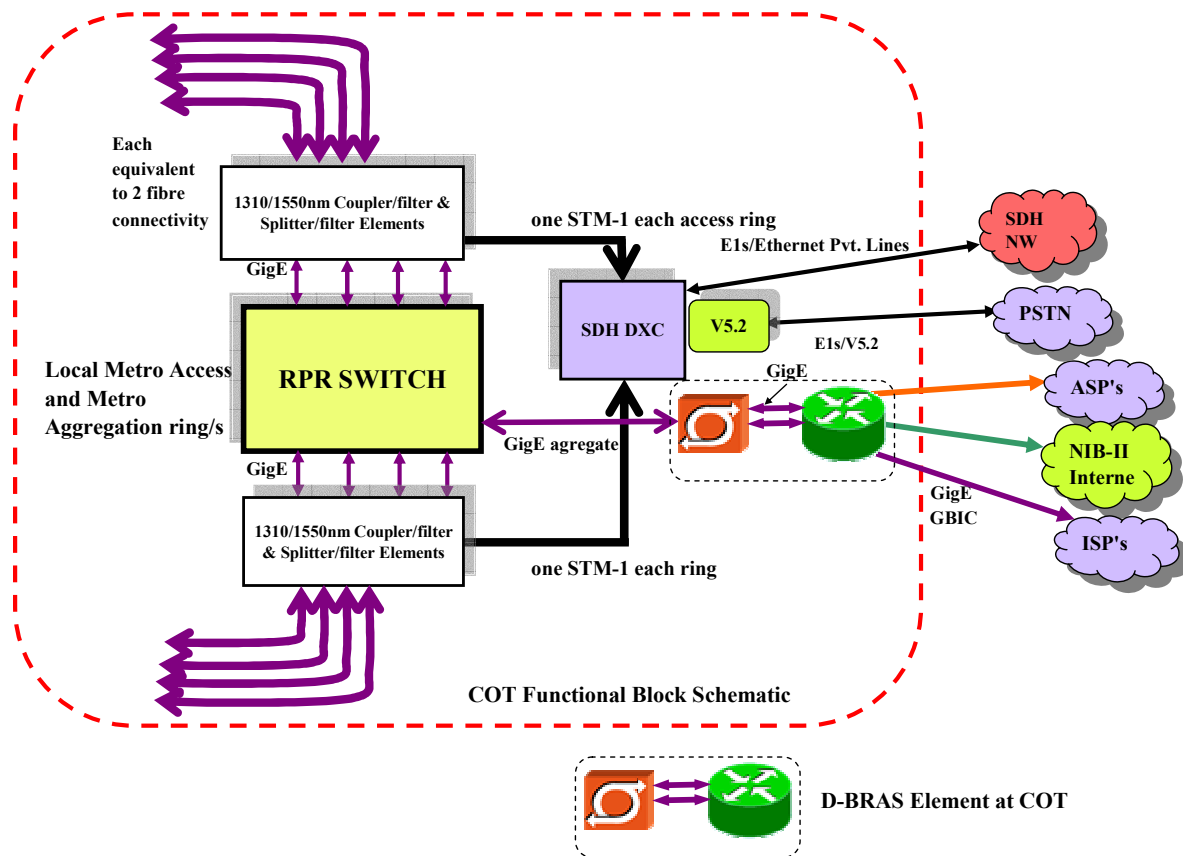
d. The architecture is as follows



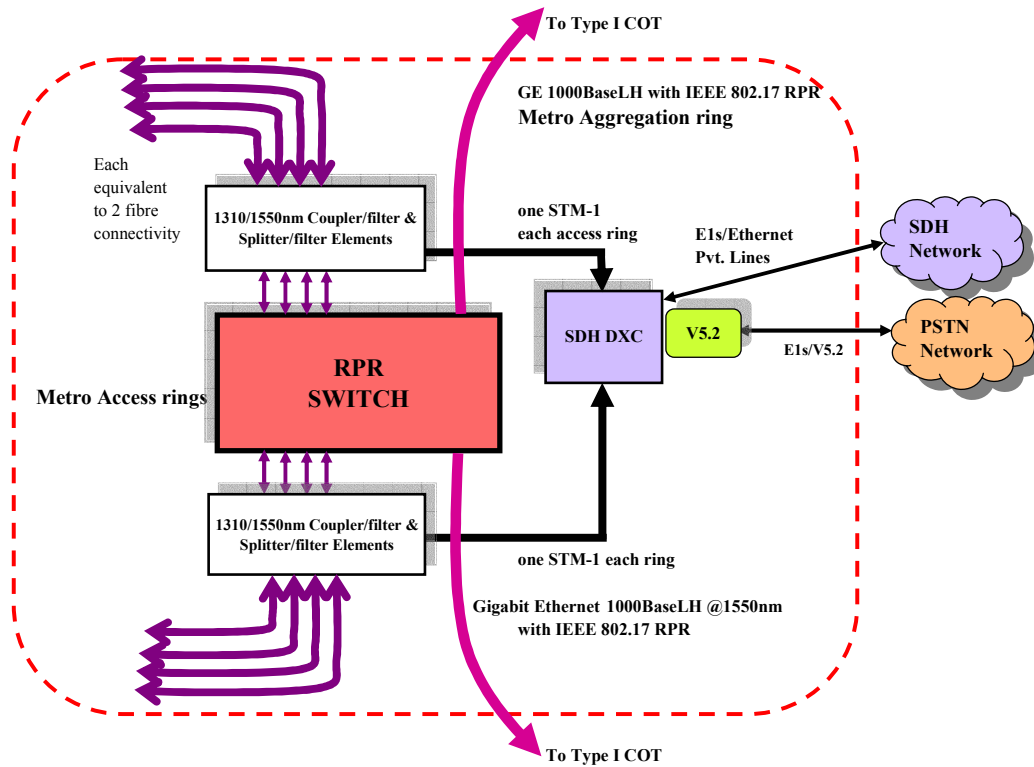
e. Package II BRT Block Schematic



f. Package II COT acting as metro gate way



g. Package II Type II COT part of metro aggregation Ring.



- h. Each Type II COT of the Access Ring can terminate up to 3 Access Rings with 5 RT's each and hence 15 RT's per COT
- i. Each City will have around 6 Type IV RT's in addition to the above.
- j. Type IV RT**
 - i. There will be 24 DSL Ports
 - ii. This will be connected to the COT/Type I/II/III RT on a star network.
 - iii. Connectivity to the COT/Type I/II/III RT will be on dark fiber over Fast Ethernet.
 - iv. No Battery and Power Plant will be provided for these locations.
- k. 20 % of the Type I RT's and all Type IV RT's are to be planned without Battery and Power Plants.

l. Ports Planned

Ports type	Type I	Type IV
POTS interfaces	60	0
DSL interfaces	60	24
10/100BaseT customer LAN interfaces for EPL/EPLAN/EVPL/EVPLAN/L2-L3 VPNs	8	0
ISDN-BRI interfaces	8	0
ISDN-PRI interfaces	2	0
E1 G.703/G.704 interfaces for leased-lines	4	0
N*64Kbps G.703/G.704 interfaces for TDM leased-lines on point to point SHDSL modems	4	0

- m. 3 Type II COT's along with one Type I COT will get interconnected over Gig Ethernet to form the metro aggregation Ring.
 - i. Say 3 Type II COT's of TVM, KLM and PTA can form one metro aggregation Ring with Type I COT at ALP.
 - ii. KTM, TCR and PGT can form another aggregation Ring with Type I COT at TCR.
 - iii. CNN, MRX and CLT can form another aggregation ring with Type I COT at CLT.
 - n. The Type I COT's at ALP, TCR and CLT will be mesh connected to form the metro core network.
 - o. One of the Type I COT can act as the gateway to NIB II Backbone network.
5. Services offered
- a. POTS
 - b. Broadband DSL
 - c. Direct Ethernet
 - d. ISDN PRI and BRI
 - e. 2 Mbps and n*64 Kbps leased lines with MLLN integration