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No.AIBSNLOA/CHQ/2010/35 Dated: 17th June 2010

To

Shri Kuleeep Goyal,
Chairman and Managing Director,
Bharat Sanchar Nigam Limited,
New Delhi – 110 001

Subject: **BSNL as Primary Reference Clock (PRC) outsourcing vendor – suggestion reg**

Sir,

We are enclosing herewith an article from a young and innovative BSNL Executive on the above subject suggesting a lucrative business model for implementation by BSNL which may help BSNL to improve its financial position.

2. We feel that this suggestion which is aimed at proper utilization of untapped resources available with BSNL and to strengthen BSNL's financial position needs serious consideration. This will also encourage other Executives to suggest many novel and ground-breaking ideas in the overall interest of BSNL.

3. We therefore request that feasibility and advisability of implementing the suggestion may be got analysed and action taken to put it into practice, if found viable and practicable.

With kind regards,

Yours sincerely,

(V.P.Arya)
General Secretary

Encl: As stated
Copy to:

1. Shri Gopal Das,
   Director (HR), BSNL
2. Shri S K Seth,
   GM (BP), BSNL

BSNL as a PRC outsourcing vendor

Primary Reference Clock (PRC)

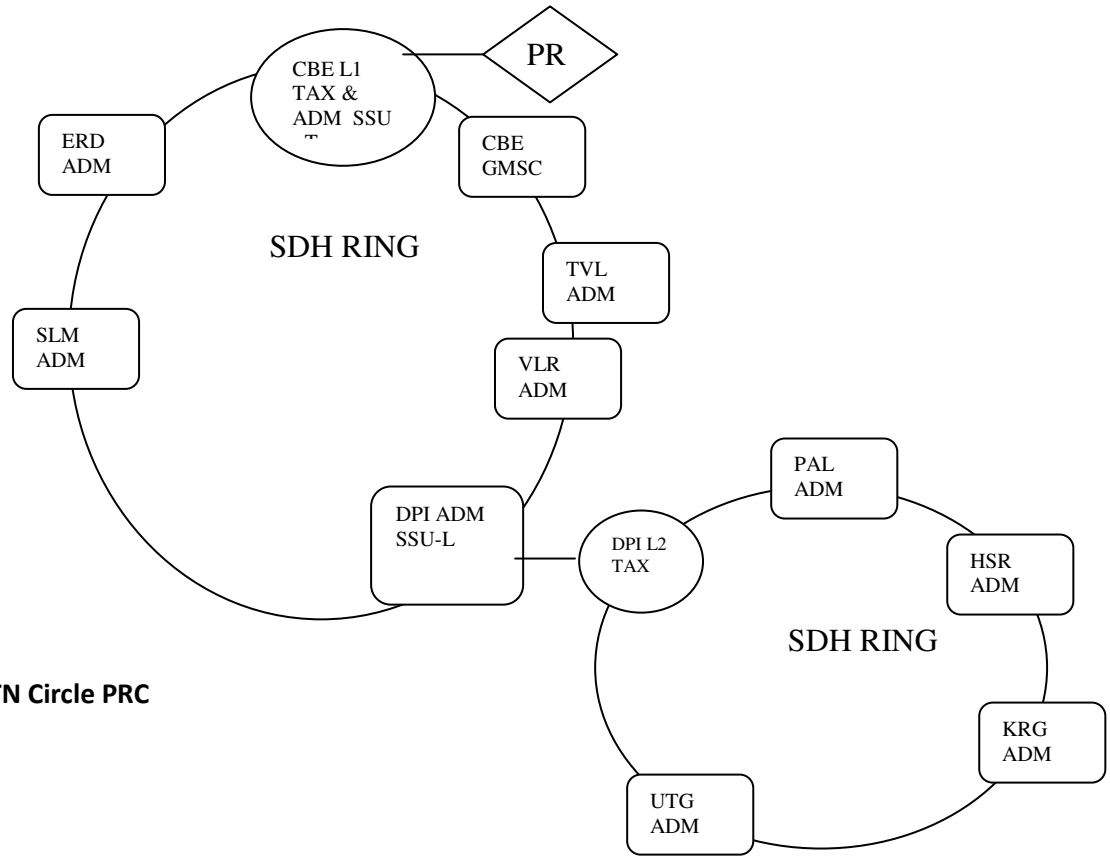
PRC is nothing but the high stable clock used for synchronizing the entire elements or components (i.e Switches, SDH/PDH, BSC, BTS, Routers etc) of the Telecom Network. The synchronization of network elements helps to achieve the best QoS and simultaneous working of all digital telecom equipments. The failure of PRC will lead to immediate collapse of the telecom network.

PRC in BSNL

In 1990s and initial period of 2000s BSNL was depending on VSNL and MTNL for PRC on payment basis. To have its own PRC BSNL has invested around 100 crores rupees during 2004 and 2005 and installed the PRC in all L1 TAX locations. This PRC at L1 TAX locations will percolate into entire circle area by means of SSUs (Synchronization Sub Units). BSNL has adopted Master-Slave clock synchronization, so the clock at L1 TAX is Primary or Master and remaining all network elements will follow this primary clock.

Clock Synchronization in BSNL

For Example the TN Circle PRC is provided in the diagram given below. This Network architecture is only to visualize the concept, the actual architecture in the field may vary. The PRC clock will reach the SSA L2 TAXs through Primary/Regional RINGs. From the L2 TAXs the clock will go up to the SDCA switches and RSUs by SSA RINGs. This clock will be distributed to nearby MSCs, BSCs, BTSc etc.



TN Circle PRC

Inter connection with other operators

BSNL is having interconnection (i.e POIs and POPs) with other operators at it's L1 TAXs, L2 TAX, SDCAs, GMSC and ILD gateways. BSNL has extended various types of links to these operators for simple E1 streams to SDH-STM N links. The clock can be extracted from these links very easily and the same can be used to synchronize their networks. In case of E1 stream the operators has to use highly sophisticated units to extract the clock, but from STM-N it can be easily extracted. May be some of the operators are using their own PRC or GPS (GPS is owned by US Govt. and Controlled by US Military). Due to high CAPEX, only already established operators can have their own PRC. Also using GPS involves lot of interfacings and heavy cost. So the potential of operators using our clock is very high. But if we ask to pay for it, the operators may say that they are not using BSNL clock. Also BSNL cannot stop this because it requires unframed E1s and PDH systems.

To capitalize this opportunity BSNL can come out with a comprehensive formula, such that BSNL can sell the clock on payment basis at least for the new operators (viz. Videocon, Uninor, Etilsat (Swan) etc). By this way BSNL can even sell the point to point leased lines required to their BTS and BSC & BSC to MSC, etc connectivity. This will be lucrative business model to BSNL.

Costing for PRC

BSNL is using Cesium atom based PRC, which is having one of the best stability. Also it costs nearly 5 Million rupees. Consider for particular circle that BSNL has installed Cesium based PRC at L1 TAX, SSU-T at major L2 TAX hubs and GMSC/VMSC etc, SSU-L at remaining L2 TAXs with 70Ω and 120Ω ports to extend the clocks to various elements in the network.

A- Cost of PRC set up

B- Cost of SSU-T

C- Cost of SSU-L

D- Cost of installation

Total CAPEX = A+ (No. of SSU-T)*B + (No. of SSU-T)*C + D

Usually this CAPEX will be utilized for at least ten years.

Total OPEX for a month = Electrical units+ 0.3 JTO COST + Space rent+ 0.1 STM Rent

In this example if BSNL will be able to provide for 4 operators (excluding it's own usage)

Monthly cost for an operator = ((CAPEX/10)/12)+OPEX+ Link cost (i.e. 2 Mbps Links is optional)

The management should think about this and should take necessary action to en-cash this opportunity. Thanks for spending your precious time with this article.

Thanks to RTTC, BSNL, Trivandrum where I learnt PRC basics.

The views expressed are my personal opinion. By nag.muralidharan@gmail.com