E3-E4 CFA SSTP ARCHITECTURE & NETWORK

AGENDA

- Terminologies in SSTP

- What is SSTP?

- Need of SSTP

- Objectives of SSTP

- SSTP in BSNL Network

- Selection of SSTP Sites

- Mobile Number Portability

TERMINOLOGIES IN SSTP

SSTP: Standalone Signal Transfer Point

SS7: Signaling System 7

STP: Signaling Transfer Point

DPC: Destination Point Codes

MNP: Mobile Number Portability

MAP: Mobile Application Part

INAP: Intelligent Network Application Part

SMSC: Short Message Service Centre

SSP: Service Switching Point

SP/SEP: Signaling Point/ Signaling End Point

GTT: Global Title Translation

M2PA: MTP2 Peer-to-Peer Adaptation Layer

M3UA: MTP3 User Adaptation Layer

HLR: Home location register

GGSN: Gateway GPRS support Node

SGSN: Serving GPRS support Node

SSTP

What is SSTP?

Standalone Signal Transfer Point

NEED OF SSTP

SS7 had made a numbers of applications possible e.g.

- Fast connection setup in PSTN

- Short Message Service (SMS)

- Location update

NEED OF SSTP

SSTP is needed in BSNL network because:-

■ SSTP handle the non call related messages efficiently.

■ SSTP became the vantage point in the network because of the signaling protocol was common i.e. SS7

NEED OF SSTP

- The SSTP provided a single routing database by enabling the uniform signaling in SS7 domain.

- Routing database is able to make the routing decision based on the Destination Point Codes (DPC), Global Title Translation (GTT), Routing Keys etc.

NEED OF SSTP

- To measure and know the type of signaling traffic, SSTP was planned and installed so that billing to private operators can be done accordingly.

OBJECTIVES OF SSTP

■ Regulate, measure, and account for inter-network traffic including SMS messages from mobile networks including GSM and CDMA.

■ Achieve a flexibility and transparency in management of signaling for BSNL's wired and wireless networks.

OBJECTIVES OF SSTP

- Optimal expansion of GSM & CDMA network of BSNL.

- Introduction of New Services.

- Offer CCS7 & IP Signaling Services to other Wire line & Wireless Network Operators.

OBJECTIVES OF SSTP

- BSNL awarded a contract to M/s ITI Ltd. for the supply and installation of 10 SSTP nodes in September, 2005.

- Project was further expanded to provide 24 nodes in total covering all the major location including all the Level-1 TAX locations.

SSTP IN BSNL NETWORK

- 21 TAX Locations with an STP at each location.

- Pair of SSTPs (i.e.STPs) are designated as mated pair with identical routing data and complete failover capability.

- Phase 1 - 10 Locations.

SSTP IN BSNL NETWORK

- Phase 2 - 11 additional locations: This was later changed to 24 locations to take care of the connectivity issues.

- 4 Additional locations are Jammu, Shimla, Dimapur, Shillong and dropping Raipur.

- Phase 3 Expansion of all 24 nodes to about capacity of 1800 Low Speed Link per node.

SSTP IN BSNL NETWORK

- 6 STPs are designated as ANSI-ITU MTP gateway (ILD Gateways).

- Connect multiple SS7 nodes (MSC, L1-TAX, L2-TAX, Local Exchanges, SMSC, HLR, SCP) to a mated pair using SS7 E1 links.

- SSTPs interconnected using BSNL's IP/MPLS network on M2PA

SSTP IN BSNL NETWORK

- Later on M3UA functionality is also included to connect the access nodes e.g. Soft switch, GMSC, IN, HLR etc.

- Centralized Network Management with an Active and DR Standby site.

- Central Billing Server for billing inter-carrier SS7 usage.

SSTP IN BSNL NETWORK

- The SSTPs shall form primary and secondary signaling path through the designated mated pairs only.

- The connectivity with private operators (including MTNL) for signaling traffic to be established either on link basis or with their.

SSTP IN BSNL NETWORK

- In case of emergencies the direct routes between two Level-1 TAXs will carry the signaling traffic.

- SSTP connectivity of TAXs will be governed by instructions issued by NM branch from time to time.

SELECTION OF SSTP SITES

- Preferably where MPLS VPN equipment is already working.

- Preferably in Telecom building where at least two independent OFC rings are working.

SELECTION OF SSTP SITES

■ If, the installation of SSTP equipment is not technically feasible in MPLS-VPN building, then the location where spare STM-1 is available between the MPLS-VPN building site and SSTP equipment building, on two OFC rings working on independent cable paths.
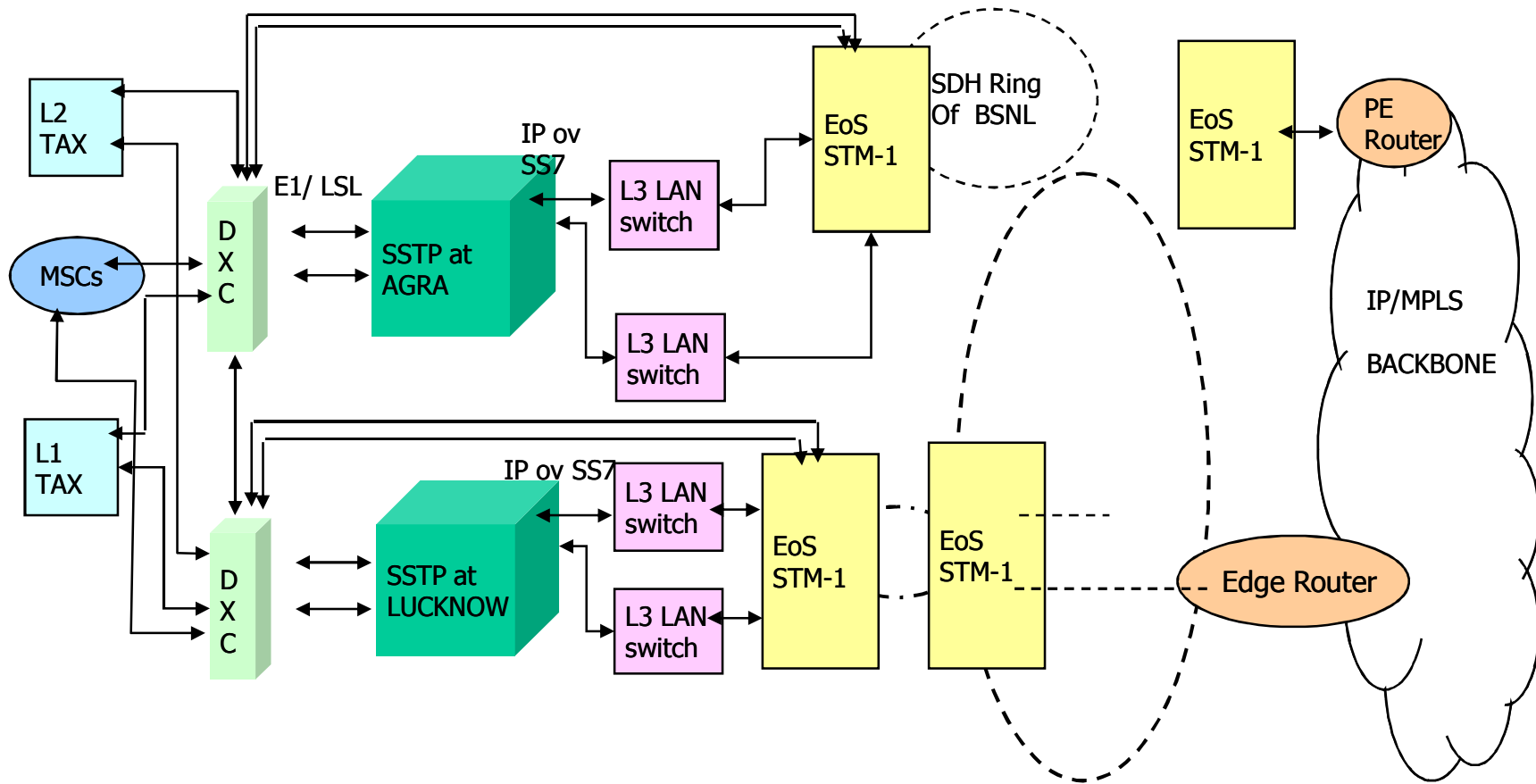
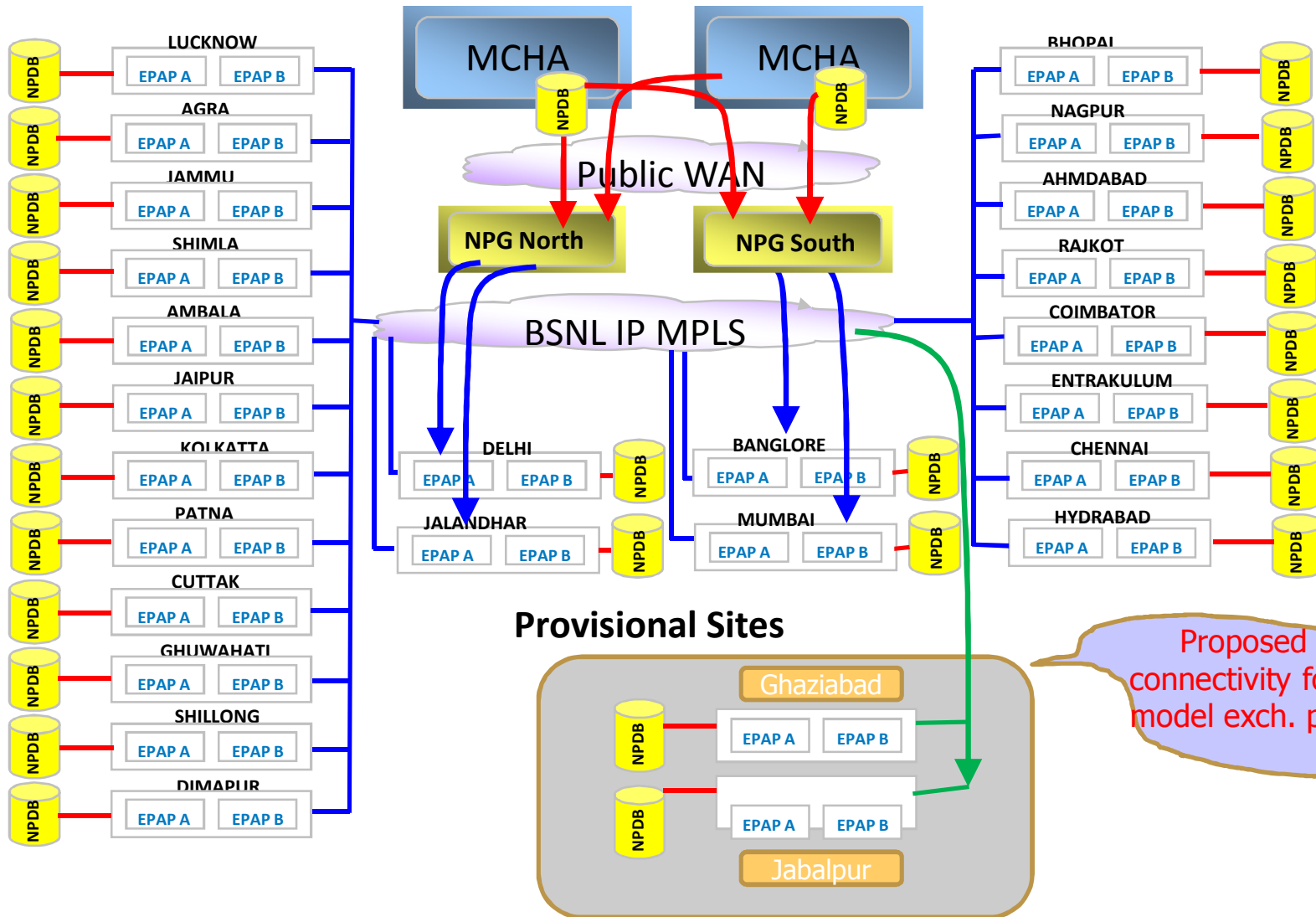# APPLICATION ON SSTP N/W

- Lawful Interception of SMS

- Mobile Number Portability (MNP)

SSTP Network connectivity details in field units

BSNL NPDB Connectivity

For internal circulation of BSNL only

SSTP REQUIRMENT ON MNP

CONNECETIVITY:

- All BSNL Network elements SMSC, IN, HLRs, MSCs to be connected to the SSTP.

- In case of circle STP/SGW already existing, these should be directly connected to the SSTPs so that directly or indirectly all the SS7 elements are connected via SSTP.

SSTP REQUIRMENT ON MNP

CONNECETIVITY:

- All GSM & CDMA MAP traffic to be routed via the SSTP, including SGSN and GGSN.

- All PSTN traffic to be connected to SSTP via Level-1/Level-2 TAX.