

E4-E5 (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.

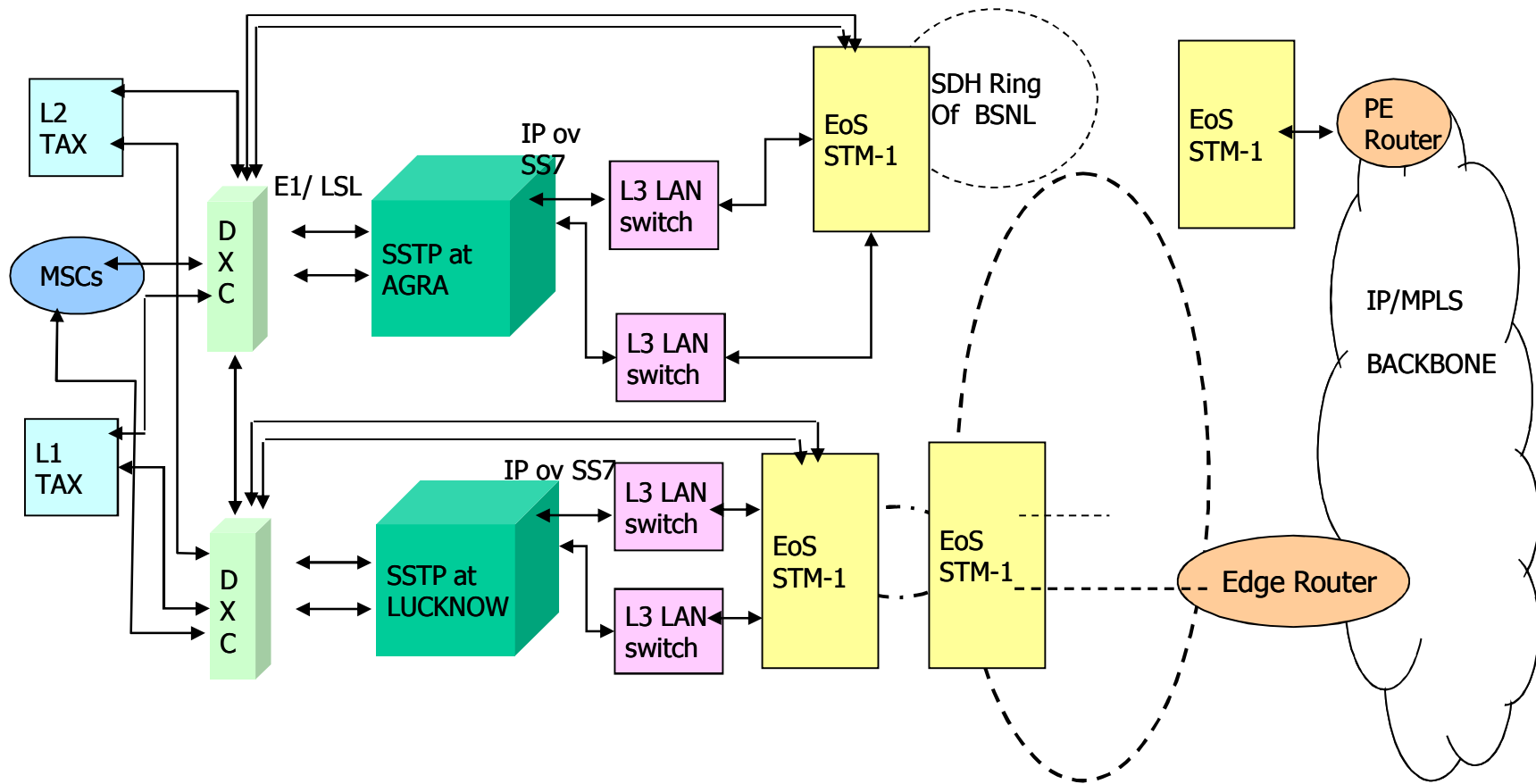
APPLICATION ON SSTP N/W



- Lawful Interception of SMS

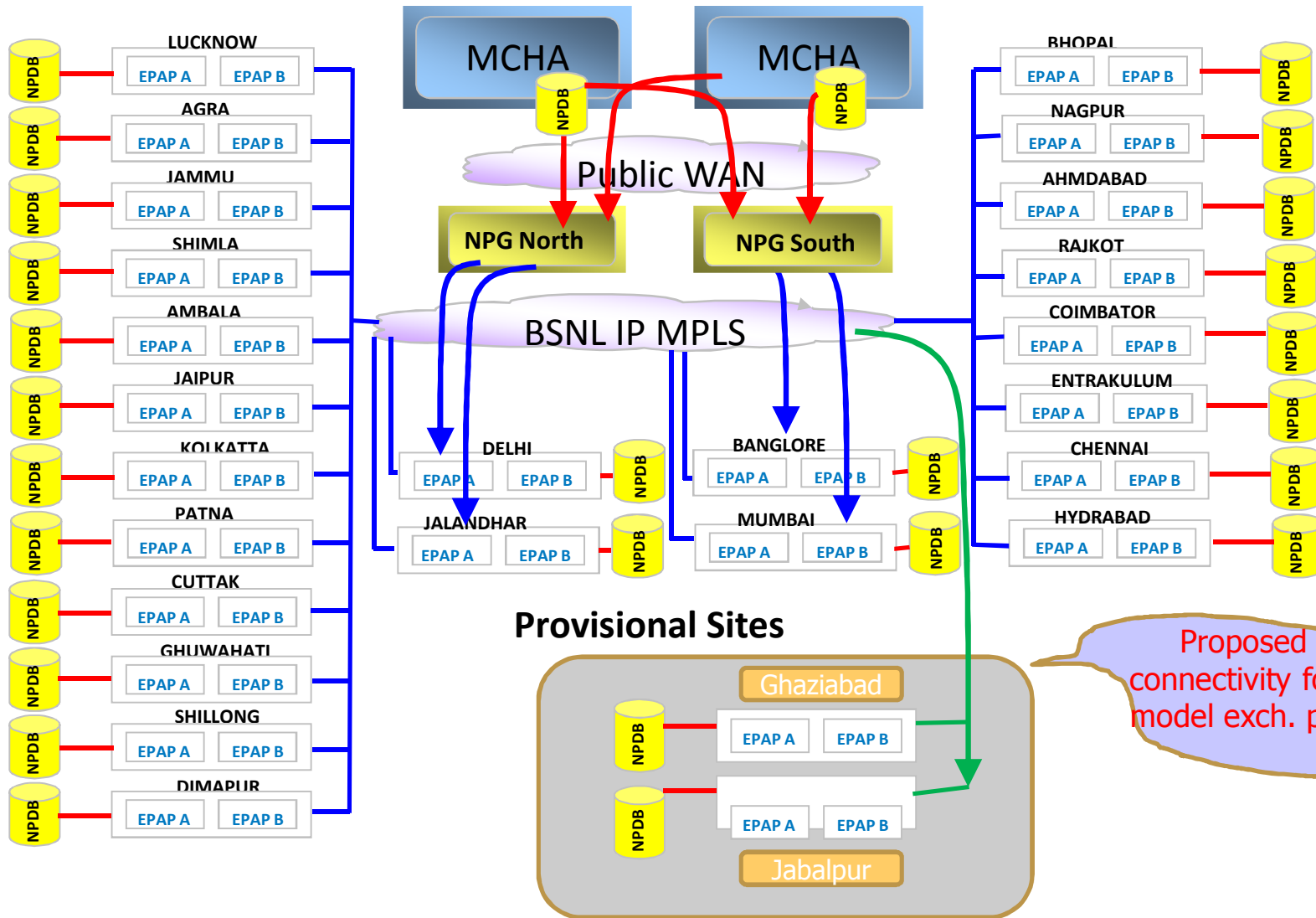
- Mobile Number Portability (MNP)

SSTP Network connectivity details in field units



For internal circulation of BSNL only

BSNL NPDB Connectivity



For internal circulation of BSNL only

SSTP REQUIREMENT ON MNP



CONNECTIVITY:

- 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 REQUIREMENT ON MNP



CONNECTIVITY:

- 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.

