

Name of Course : E1-E2 CFA

Chapter 11

Topic : CDR Billing

Date of Creation : 17.03.2011

CDR Based

Convergent Billing and Customer Care SYSTEM

Introduction:

CDR based convergent billing and customer care system is Under Implementation stage in BSNL. As on 15th March 2011, 277 out of 344 SSAs (83%) already implemented CDR Billing. This is a big project undertaken by any Telecom service provider in India. It is around 1200 Crore Project.

The implementation of CDR based Billing project will have a number of positive fallouts:

1. **Standardization of systems and processes** - Instead of varieties of systems all over BSNL, a single seamlessly integrated standard operation system will support all the operational activities providing the associated advantages. The overall quality of billing and payment accrual systems should improve.
2. **High quality Customer Care** - The seamless integration will make possible single point high quality customer care.
3. **Paradigm change of CDR based billing** - The shift from call meter base to CDR base will make possible flexible call dependent charging and customer segment based marketing schemes. In addition, this paradigm change in billing will make possible new mandatory TRAI functions such as Carrier selection.
4. **Value added functionalities** - The additional value added functionalities will make possible new powerful functionalities such as formal Revenue Assurance, formal improved CRM, Marketing Campaign Management and so on.
5. **E-Stapling** - Through a special mechanism of E-Stapling, charges of various BSNL services of one customer will be billed together.
6. **Time to Market** – The new convergent billing solution and a services layer built into the integration layer will facilitate the launch of new functionality and products faster into the market.

7. **Process Efficiency** – New Systems will incorporate Industry best practices that should significantly improve the process efficiency in some of the areas.

This project will replace all the existing systems of Commercial, TRA (Telecom Revenue Accounting), FRS (Fault Repair Service) and DQ (Directory Enquiry). The project will cover the customer care and billing for the following services:

1. Landline
2. Broadband
3. CDMA
4. Leased line

The project is not simply a replacement of the existing systems, but it is much more than that. For the first time in the history of BSNL, we are going to have State-of-the-Art Customer Relationship Management (CRM) software. This software will take care of all types of requests from the customers and integrate with other systems such as Order Management and Billing systems.

This software will also provide a Web Self Care (WSC) module, which will enable customers to access the system through Internet for placing any request, for making payments, or for general enquiry.

What is CONVERGENT BILLING and what are advantages?

This project shall implement a convergent billing system, which enables us to issue a single bill for a customer taking any type of service from BSNL by means of electronic stapling software which will be implemented in all the four zones.

A customer having presence only in a particular zone, spanning across SSAs and Circles, can have a single bill for all the services he takes from BSNL whether the bill for the particular service is prepared or not from this system.

The electronic stapling software installed at Hyderabad, shall take care of corporate customers having All India presence. This system will have interfaces with other zonal billing systems, GSM billing systems and the NIB billing system. With these interfaces, it is possible to issue a single bill to a corporate customer having All India presence.

The system is also capable of taking the payments against this single bill and then distributing the payments back to the original billing systems of the different services taken by the customer for proper accounting. This is one of the biggest advantages of this project. The system will also help us introduce Combo Plans, offering flexible tariff plans to customers availing Landline, Broadband and GSM services.

IMPLEMENTATION DATA CENTRES for CDR Project

The entire project is going to be implemented with four Data Centre

Hyderabad

Kolkata

Pune

Chandigarh

These four Data Centre will take care of all the activities of the Circles in the respective Zones. The South and East Zones are considered as one project The North and West Zones are considered as the second project.

Zones for Implementation of CDR project

CDR Project	Zone	Circles
Project-1	SOUTH	Andhra Pradesh, Chennai District, Tamilnadu, Karnataka, Kerala (Data Centre at Hyderabad)
	EAST	Kolkata Telecom District, West Bengal Circle, Orissa, Jharkhand, Bihar, Assam, North East-I, North East-II, Andaman & Nichobar (Data Centre at Kolkata)
Project-II	WEST	Maharashtra, Gujarat, Madhya Pradesh, Chattisgarh (Data Centre at Pune)
	NORTH	Punjab Circle, UP-East, UP-West, Haryana, Rajasthan, Himachal Pradesh, Uttarakhand, Jammu & Kashmir (Data Centre at Chandigarh)

DISASTER RECOVERY in CDR Project

The customer care and billing and other related operations of 334 SSAs are going to be migrated to the four Data Centre. It is very important therefore to have business continuity Plan in case of a disaster.

A disaster is defined as an event that makes continuation of normal functions of a Data Centre impossible. An event could be any one of the incidents like Flood, Fire, prolonged power shut down, strike, earthquake, etc.

In this project, Hyderabad is configured as the DR site for Kolkata and vice versa. Similarly Pune is configured as the DR site for Chandigarh and vice versa. The degradation of performance for the applications failing over to the DR site is permitted up to 50%. This means for example, a billing operation taking 8 hours in the normal course, can take up to 16 hours in case of a disaster.

HARDWARE for CDR Project

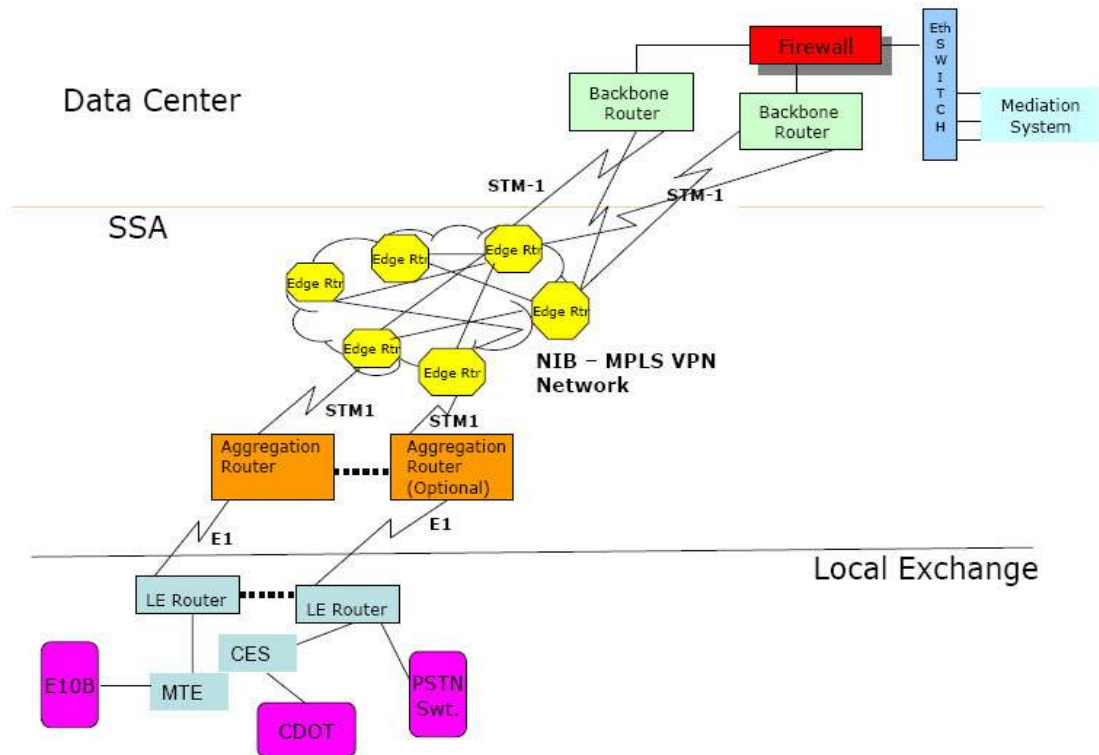
As far as hardware is concerned, we are buying Data Centre (DC) Class servers which are high-end servers having 64 cores/CPU's in each machine. These high-end machines shall be used for hosting the main applications such as Billing and CRM. We are buying low-end servers, which are two-CPU servers for small applications like Anti-virus, HTTP, Web servers, Authentication etc. They are mostly Windows or Linux based servers. In the Hyderabad Data Centre alone, we are going to have 18 DC class servers and around 200 low-end servers.

NETWORK for CDR Project

This project shall implement a countrywide Intranet.

This network will connect all SSAs, Circles and the Corporate Office, providing connectivity to all its main exchanges, all officers dealing with customers, such as JTOs, SDEs, AOs, and the entire management. So far, each SSA or Circle has established networks for implementing DOTSOFT and other local systems. This project is going to integrate all the networks and provide a countrywide IP network with MPLS as the backbone. This network will be used not only for implementation of the CDR project, but also for implementing all other IT projects in future, such as ERP.

The following figure shows in general the exchange network and the collection methodology of CDR.



CDR Project Connectivity to exchanges

Each exchange is connected to a router, which is called LE router (Local Exchange router). All new technology switches such as OCB, EWSD, 5ESS, AXE, shall be connected using X.25 cards and Ethernet interface (wherever available). All CDOT exchanges will be connected to the LE router using CES equipment supplied by CDOT through HCL. All E10B exchanges will be connected to the LE router through MTE (Magnetic Tape Emulator). Each LE router is connected to the Aggregation Router through E1 links. All the E1s coming from the different exchanges will be aggregated to the Aggregation Router. Each Aggregation Router in each SSA shall be connected over STM-1 link to the nearest MPLS node. For redundancy purposes, the connectivity shall be established to two MPLS nodes. The Data Centre is also connected to the MPLS network presently through STM-1 links, to start with. This end link will be enhanced to 1 GBPS link or more, later. Thus, each exchange shall be connected to the Data Centre over E1 end links and through the MPLS network.

CDR Project Connectivity to terminals

The existing CSR network will also get connected to the Aggregation Router.

Thus, all the terminals of Commercial, TRA, FRS and Directory Enquiry which are now connected to the local systems, will be connected to the Data Centre through the Aggregation Router.

The project envisages –

- Establishment of new network for collection of CDR from the exchanges,
- Usage of existing CSR network, with addition of a few CSR, if necessary,
- And re-utilization of existing PCs in the network.

CDR Project IVRS and Integration with Call Centres

This project is going to have centralized IVRS (in each zone), CTI (Computer Telephony Interface), IP EPABX, etc. The core equipment required for Call Centre operations will therefore be installed at the Data Centres. The existing Call Centres, mostly one per each Circle, will then be connected to the Data Centres. In future, the 1500 calls and the 198 calls will be routed to this IVRS. Depending upon the Number or the CLI, the call will be routed through the IP network to the respective Call Centres. IP phones are provided to each Circle as part of this project. The Call Centre Agent will therefore have one IP phone and a PC connected over an IP network to the Data Centre. The customer data is displayed on the screen of the computer and the IP phone provides the voice communications with the customer. This is how the existing Call Centres will be integrated with the Data Centres.

Software Components of CDR Project

- i. CRM (including FRS)
- ii. Billing
- iii. Accounting
- iv. Mediation
- v. Provisioning (Clarity)
- vi. Web Self Care (WSC)
- vii. Bill formatter
- viii. Revenue Assurance (RA)
- ix. Inventory management, which takes care of customer inventory such as MDF particulars, Piller, DP particulars, etc.(Through Clarity)
- x. Directory enquiry
- xi. Inter Operator Billing and Accounting system (IOBAS)
- xii. Fraud Management System (FMS)
- xiii. Enterprise Management System (EMS)
- xiv. Enterprise Application Interface (EAI)
- xv. RDBMS

AFTER CDR PROJECT

- The introduction of this new project will eliminate the need of individual SSAs maintaining and operating TI systems for all the four functionalities, i.e. Commercial, TRA, FRS and DQ.
- The SSAs shall be the end-users of the systems and will have better tools and software at their disposal to provide better customer services.
- The database related jobs would be with the IT team at the Data Centres.
- Change certain business processes within BSNL, a few of them are explained below:

Business processing going to change due to CDR Project

Because of the introduction of new systems and to take advantage of the features of the system, it is proposed to change some Business processes within BSNL that are proposed to change for CDR project

1. Revenue Accounting:
2. Surcharge/Late Fee
3. PCO Billing
4. Deposits
5. Billing Cycles
6. CDR based billing

1.Revenue Accounting:

In the new system Balance brought forward accounting method shall be used instead of invoice based accounting. For example, a June Bill issued to a customer if not paid, will be added to the July Bill and the July Bill will be issued for an amount, which is equal to both the June and July amounts.

Every customer will be identified by an Account Number, which shall be unique throughout the country. Revenue booking shall be based on the Account even though the services under the account are scattered across the various SSAs. The customers can pay any amount at any time and it shall be credited to the account and adjusted against the outstanding

2. Surcharge/Late Fee

Surcharge will be treated as late fee, which will be a percentage of the outstanding instead of at the slab rate as is being done today. The late fee concept is already introduced in the GSM billing system and the same shall be followed here.

3. PCO Billing

For PCO billing, the commission payable and the minimum guarantee will be as per the billing cycle instead of on a monthly basis. PCO operators are now eligible for discounts instead of commission. These changes are already done in the existing systems and shall be continued in the new system.

4. Deposits

Deposits are already made uniform i.e. Rs.500/- for Local, Rs.1000/- for STD and Rs.2000/-for ISD. This shall be common for all the Plans. Therefore, we shall not be offering any OYT or TATKAL deposits/schemes. The existing OYT subscribers shall continue to be billed till the completion of 20 years. However, no new OYT connection shall be provided.

5. Billing Cycles

The number of billing cycles in an SSA may increase. The new system is going to have a centralized billing process common for all the SSAs in a zone.

Therefore, the customers in the entire zone shall be divided into different billing cycles to evenly distribute the process load on the servers.

The number of billing cycles may even go up to 15 once the project is rolled out in all the SSAs.

6. CDR based billing

The existing tariff, which is based on MCUs and number of calls, will get migrated to MOU (Minutes of Usage) based system.

The discounts may be given not in terms of Free Calls, but shall be in terms of Free Talk Time given as Minutes per month or Rupees per month.

Though the system offers lot of flexibility in configuring different Plans, BSNL in turn may have to follow certain discipline in offering various Plans to the customers.

It is proposed to authorize the Circle Office team to configure the plans as per business requirements and in future SSAs may not be able to configure new Plans on their own.

Each Plan shall be identified by a Plan Code in the system.

This discipline will help the organization in monitoring the launch of tariff Plans across the country and it will help BSNL to take correct business decisions.

SHORT OBJECTIVE TYPE QUESTIONS

1. The existing tariff which is based on MCU's and number of calls will get migrated to _____ based system
2. In CDR no new _____ connection shall be provided.
3. The Services for which CDR project will cover the customer care and billing
 - a. a) Landline, CDMA & Broadband b) Landline & CDMA
 - b. c) Landline, CDMA, Leased line & broadband d) Landline
4. Write any five software components of CDR Project.
5. In CDR project, Disaster recovery site for Chandigarh data center is _____
6. In CDR Surcharge will be treated as _____
7. In CDR Balance brought forward accounting method shall be used instead of _____

Key Answers

1. MOU Minutes of Usage
2. OYT
3. Landline, CDMA, Leased line & broadband
4. CRM, Billing, Accounting, Provisioning (Clarity), Mediation, Web Self Care, Revenue assurance, Fraud Management System
5. PUNE
6. Late fee
7. Invoice based accounting

XXXX