

SIM Card Management System for the Bharat Sanchar Nigam Ltd, Chennai

Introduction

The Bharat Sanchar Nigam Ltd launched Mobile Cellular Services in Chennai in the year 2003. Pre-paid and post-paid cell phone connections are sold to customers through a network of Customer Service Centres (CSC), distributors and dealers spread over Chennai.

SIM card distribution to the various agencies, and Mobile Number allotments are centrally monitored by the Headquarters of BSNL Mobile Services, at the RK Nagar Telephone Exchange, of Chennai Telephones. The Accounts Officer at the headquarters issues SIM cards and recharge cards to the various CSCs as and when required. Other than CSCs, post-paid cards are also sold through approved dealers. Pre-paid SIM cards and recharge cards are purchased by distributors who in turn sell them to customers. The Accounts Officer keeps track of cards issued/ sold to CSCs/Dealers/Distributors, and of all related accounts.

At the Customer Support Centre, a customer is allowed to choose a GSM number of his/her liking, for the mobile phone, from an available list of numbers. A GSM number may be blocked, for later purchase, for a period of 48 hours on request by a customer, and released if payment for the connection is not made within the period. Fancy (or vanity) numbers are sold for a special fee. In case of loss of mobile phone, or damage of SIM card, a new SIM card with same mobile number may be obtained after payment of replacement charges.

SIM Card Management System

The **SIM Card Management System** is an intranet application designed - to handle sale transactions at Customer Support Centres; to carry out all activities related to SIM card/ GSM number distribution/ allotment by the headquarters; and to maintain accounts; through a centralised database. The SIM Card Management system uses intranet technology to give a cost-effective solution that delivers powerful and robust results. By connecting Customer Support Centres, dealers, and distributors with the Mobile Services headquarters, through a centralised server, information is managed effectively and efficiently. Up-to-date and reliable information on stock of SIM cards and recharge cards and the revenue earned through their sale is available at any given time.

Product Features

- Maintenance of all SIM card details in a centralised environment
- Handle sale transactions at the twelve Customer Support Centres in Chennai
- Handle SIM card/ GSM number distribution and allotment by the Headquarters
- Maintenance modules for incorporation of new schemes, plans etc with ease
- Automate generation of all accounting and statistical statements
- Efficient query system for the enquiry counter

The CSCs located at twelve telephone exchanges are connected to the headquarters, BSNL Mobile Services, located at RK Nagar, through dedicated lines.

A centralized database, located on the server at the headquarters, is used to track the transactions involving stock and sales of SIM cards and recharge cards, and allotments of mobile numbers, through the various Customer Support Centres, dealers and distributors.

Counter operations handled are Sale of connections – post-paid as well as pre-paid, Sale of recharge packs, Blocking of GSM number for a period of 48 hours on request by a customer, Sale of vanity numbers, Conversion of pre-paid to post-paid connection, Replacement of damaged SIM cards, and Receipt generation for all these transactions. The counter facilitates the customer visiting the CSC center to

view the list of available mobile numbers, at the time of buying, and choose one of his preference.

The software provides an Administrative module for incorporating various plans and schemes offered by BSNL from time to time. The SIM Card Management system handles tallying and accounting of daily sales at the CSCs and generation of consolidated statements of Stock and Amounts collected. Facility is provided for Administrator to disseminate FAQ's and other essential messages to the counter staff.

Software Architecture

SIM Card Management System is implemented as an Intranet application. The Web Server is located at the Mobile Services, Headquarters, at RK Nagar, on which the application software is hosted. The application software is developed in **ASP, JavaScript, and HTML** . The central database is based on MS SQL Server 2000. The system can be accessed over the Intranet of BSNL connecting all the Customer Support Centres to the Mobile Services Headquarters. Clients equipped with web-browsers can access the system from the counters located at the Customer Support Centres.

The SIM Card Management System is user-friendly, designed to be easy to use through a series of screens and pull-down menus. The software can be used by anyone with necessary domain knowledge at the Mobile Services Headquarters, BSNL, and the Customer Support Centres.

The following facilities are made available by the application software, with appropriate permission levels :

Facilities for Accounts Officer

1. Issue of post-paid SIM cards to CSCs
2. Issue of pre-paid SIM cards to CSCs
3. Issue of spare pre-paid SIM cards to CSCs
4. Issue of recharge cards to CSCs

5. Issue of pre-paid SIM cards to distributors
6. Issue of post-paid SIM cards to dealers
7. Issue of recharge cards to dealers
8. Issue of recharge cards to distributors
9. Invoice printing – incorporating commission to distributors and TDS
10. Daily statement of sales – per Customer Service Centre
11. Daily statement of sales – overall
12. Various statements for listing category wise sales

Facilities for Customer Support Centres

1. Sale of post-paid cards
2. Sale of post-paid cards - Vanity levels one, two and three
3. Account number entry for post-paid connection after activation
4. Sale of pre-paid cards
5. Sale of pre-paid cards - Vanity levels one, two and three
6. Blocking of pre-paid GSM number
(of a SIM available at any CSC, from any other CSC)
7. Blocking of post-paid GSM number from any CSC
8. Sale of blocked post-paid cards
9. Sale of blocked pre-paid cards
10. Sale of recharge cards
11. Conversion of pre-paid to post-paid connection
12. Pre-paid SIM card replacement
13. Post-paid SIM card replacement
14. Including additional facilities, such as STD or ISD, to a connection after taking additional deposit
15. Marking as validated, after verification of documents submitted by a customer
16. Surrendering a connection
17. Waiving of activation fee - available with special access permission
18. Waiving of replacement charges- available with special access permission
19. Daily collection list on account of sales – post-paid
20. Daily collection list on account of sales - pre-paid
21. Query on Friends/Family GSM numbers
22. Query on schemes

23. Query for PIN and PUK number
24. List of cancelled receipts
25. FAQ

The above facilities incorporate the following features:

- a. Ensuring that a customer does not avail of post-paid card quoting the same land-line phone more than once.
- b. Validation of land-line phone numbers.
- c. Barring non-payment defaulters from SIM replacement.
- d. Record demand note number in lieu of land-line number where required.
- e. Capture and validate Friends and Family GSM numbers if opted for.
- f. Recording history of allotment time, designation of data entry person and location for all transactions to enable future queries on the same.
- g. Option for printing of receipts on plain as well as pre-paid stationery for all transactions

Enquiry Counter for public

1. Facility to query on available GSM numbers by patterns with corresponding numerology detail.
2. FAQ for available plans and schemes.

Administrative/ Maintenance Functions

1. Incorporation of new plans, schemes
2. Updating talk value/ validity period/ etc. for existing plans
3. Updating messages for receipt-footnotes, messages for broadcast to counter-staff
4. Release of a surrendered connection for sale
5. Periodic statistical reports generation
6. Display entire history and status of transactions for a given GSM number or SIM number
7. Reprinting receipt for an old transaction, if required
8. Canceling receipt for a completed transaction
9. General administrative and maintenance functions
10. Queries

Operating Environment

The intranet constitutes the various Customer Support Centres of BSNL, connected to the Mobile Services Headquarters, through dedicated lines.

An **Intranet Web Server**, running **IIS**, is required at the Mobile Services, headquarters, on which the application software is hosted. The backend database is **MS SQL Server 2000**, which may be hosted on a separate Database Server. An additional standby server is recommended for redundancy in case of any system failures. The only pre-requisite for the **Client systems** at the Customer Support Centres is for them to be equipped with a web-browser. These will be located at the counters.

Security

Only authorized users are permitted to access the software. Entry into any module is permitted only after the software checks validity of the user-id and password. Several security levels have been devised with separate privileges for different functions. Access to any of the modules is also controlled through permissions available to particular users which can be managed by the System Administrator.

Following access permissions are implemented for the various functions:

<u>User Type</u>	<u>Permissions</u>
CSCs	To sell all types of cards, replacement of SIM cards, conversion, blocking GSM No., document validation, queries, generating daily sales reports, etc.
Dealers	To sell post-paid cards, replace spoilt cards, view daily sales details.
Distributors	To sell pre-paid, re-charge cards and view daily sales
Accounts Officer	Issue all types of cards to CSCs, dealers and distributors, generate accounts statements, assign commission values and record TDS details of distributors
Customer Relations Manager	Sale of post-paid cards with activation fee waived
Administration	Generating accounts statements, reprinting receipts, canceling receipts

The application takes care of maintaining an audit-trail of the transactions carried out by the counter operators/ accounts officers - of each SIM-card issue, Sale of SIM card/ recharge card, replacement, blocking of GSM number, cancellation of receipt, reprinting of receipt, surrendering connection, release of surrendered connection for sale, waiving of charges, etc. History of transactions can be viewed by Administration and Management whenever necessary.

Future Enhancements:

In order to improve customer service, it is proposed to soon introduce touch-screen kiosk at the Enquiry Counter, so that customers are able to make their own enquiries with respect to availability of numbers, bill amounts, plans / schemes etc.

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