Implementation of CRBT VAS using Music Box

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Abstract

The telecom industry has undergone rapid changes in terms of technology and services being offered to the customer to meet ever increasing demands. Although many new Value Added Services (VAS) have been introduced to the market, Color Ring Back Tone (CRBT) has been drawing more attention. CRBT facility allows a user to respond to the caller with a song or a pre-set melody instead of monotonous normal ring. Intelligent Network (IN) is a network system that is used to create and realize various supplementary services in a fast, flexible, and convenient yet cost effective way for telecom industry. Music Box is one such newly emerging feature in CRBT VAS which allows user to purchase more songs in a single purchase lesser cost.

Keywords

CRBT, IN, VAS, SS7, Music Box, IVR

1.   Introduction

Value Added Services (VAS) in Telecom industry has been growing rapidly. Each VAS generates more and more revenue for the service providers. Service providers are targeting user with beyond basic voice and messaging services like entertainment, gaming, multimedia content location based services etc. CRBT VAS is one such service which is generating more revenue for the service providers as well as enhancing customer satisfaction.

An important distinction between CRBT and other value added services is that this network-based solution is independent of both handset and Subscriber Identity Modules (SIMs). Therefore, service providers have the flexibility to offer personalized ring back services to all types of subscribers (for example, postpaid or prepaid, fixed or mobile). Music Box is one of the many value added services that are being developed to meet the demands of the customer. A subscriber can have limited number of songs in his library. But with this new feature a subscriber can store more songs in his library

and greet the caller with different songs every time the caller calls.

Intelligent Network is a service independent telecommunication network. The Intelligent Network (IN) is an architectural concept applicable to all telecommunications networks and also aims to ease the introduction and management of new services.

In this architectural concept the intelligence is taken out of the switch and placed in computer nodes. These computer nodes are distributed throughout the network. This helps the network operator to develop and control services more efficiently. Services can be rapidly introduced and modified to meet individual customer's needs. The IN provides a network capability to meet the ever-changing needs of customers. Several value added services provided by the IN are Toll Free, CRBT etc.

IN is built on the existing communication network infrastructure. It has centralized service control point and database, providing centralized service management system and service creation environment. The following are the few network components used in IN.

1) *SSP (Service Switching Point):* SSP deals with basic calls access and establishing connection. Service switching function identifies the IN service call, notifies IN layer, accepts the commands from IN layer and controls the call.

2) *SCP (Service Control Point):* It accepts the call information from switching layer, analyses the service flow and Sends the commands to switching layer.

3) *Intelligent Peripheral (IP):* IP provides the interface for the users and also play announcement.

4) *Service Management Point (SMP) and Service Management Access Point (SMAP):* Service logic management will load, unload, active and

inactive the service, Service data management for user data, service data, charging data management and operator management.

5) Service Creation Environment (SCE): SCE creates and modifies the service logic and generate service file. This service file is used for the execution of the service by developing the environment.

6) Common Channel Signaling System No.7: SS7 is a global standard for telecommunications defined by the International Telecommunication Union (ITU-T). This standard defines the procedures and protocol that network elements in the network exchange information over a digital signaling network to effect wireless (cellular) and wire line call setup, routing and control. The SS7 network and protocol are used for basic call set up, management and tear down.
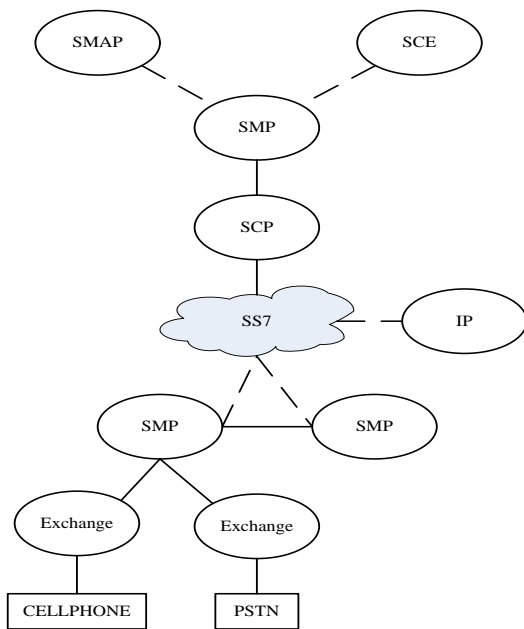

Figure 1. IN Structure

2.   CRBT Platform

CRBT platform consists of two parts namely Service control & processing, and Service access & tone playing. Service control & processing will be responsible for creating service logic, implementing the logic, generating Call data Record (CDR), billing & notifying the subscriber.

Service access & tone playing is responsible for the management of tones in the database.

Whenever a need for playing a tone arises, the request will come to tone player which will play the tone using the help of Operation and Maintenance (OAM).

The CRBT platform is connected to the Mobile Switching Centre with ISUP adopted to implement user connection over voice paths. Besides, Platform provides abundant interfaces to enable the seamless integration with existing external system. Via TCP/IP links, it is accessed by the Internet to enable connection to prepaid system, Short Message System, Billing System, Provisioning System and third-party service providers (SP). The SPs then provide more diversified personalized ring back tones to users.
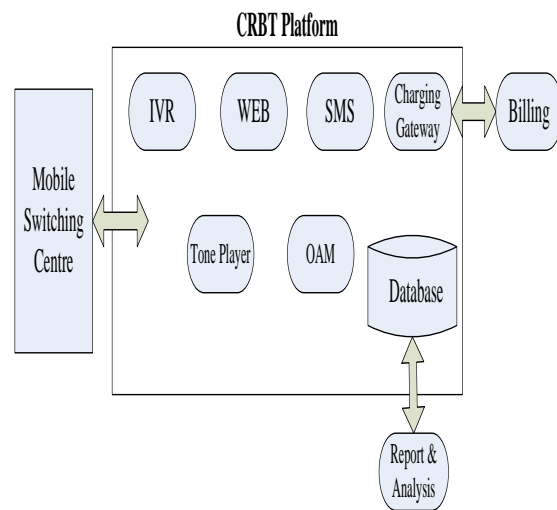

Figure 2. CRBT Platform

3.   The Challenge

CRBT Subscriber is limited to have only 'n' songs in his library. Also purchasing 'n' songs of a single artist can cost more to the subscriber. User will also have problem in managing the songs from the library. Subscribers want easy way of purchasing songs of a single artist or album to manage.

4.   The Solution

Music box gives a new dimension towards song management for the subscriber. One music box can contain more than one song from a single artist or different artist or from a film. Number of songs & contents in a music box is decided by the service providers. Service providers can have remix songs or songs of the same artist in one

box to target the specific or wider audience. Subscriber can request to subscribe to music box via IVR (Interactive Voice Response), SMS (Short Message Service) and Web. When purchase operation is successful, subscriber will be charged accordingly and notified via SMS.

5.   Methodology

5.1 Via IVR

A subscriber can subscribe himself to CRBT service to avail Music Box feature via IVR/SMS/WEB. Subscriber need to call a predefined number (Ex: 123#) set by the service providers to avail music box through IVR. For implementing this feature a switch has been configured to receive the calls from IVR. All the tones will be loaded on to Media Record Buffer (MRB). OAM will handle the MRB. Service logic is loaded in Service Control Point (SCP) where in the service can be modified as and when requirements are changed.

When switch gets a call, it will be given to SCP where the service is loaded. Then the loaded service is triggered. MRB will play the tones as and when needed. Any input that user gives during call will be closely validated and call flow will be changed depending on the input. Ex: Press 1 to purchase Music Box. Press 2 to listen to next Music Box. Press # to go back to main menu. If the user is valid and purchases the music box then the user will be charged accordingly and a sms notification will be sent to him.

5.2 Via SMS

When user tries to purchase music box through sms, a predefined sms command has to be sent to the SMSC (Short Message Service Centre). The validity of the sms command will be checked by the Service modules and also a check will be made on the user whether he is a CRBT subscriber or not. If not then the request will not be processed. If the user is valid and the received sms is a valid command then purchase process will be a success and user will be charged accordingly.

5.3 Via Web

User can also purchase music box through Web. User can search and select various music boxes from service provider's web portal. The validity

of the music box and the subscriber will be checked by the Service modules. He must be a CRBT subscriber in order to purchase music box. If not then the request will not be processed. If the operation is a success then, user will be charged accordingly and a notification will be sent to the user.
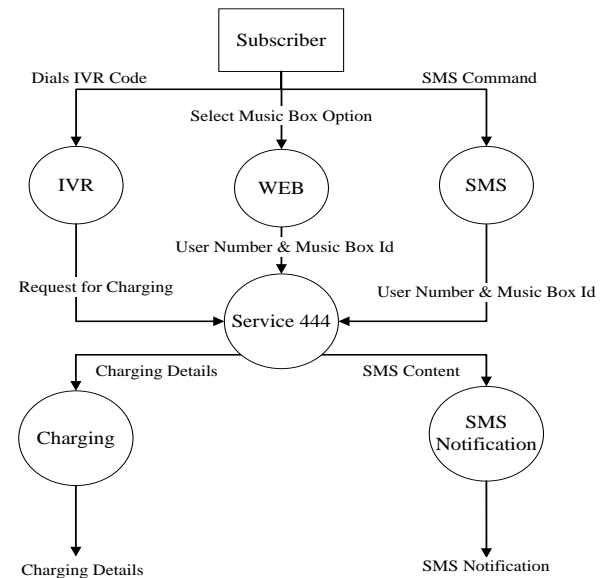

Figure 3. System Flow

6.   Limitations

Any user willing to purchase music box has to be a CRBT subscriber first. Limited number of music boxes can be bought by the user.

7.   Conclusion

Music box is a new feature where in a user can purchase more songs for a relatively lesser prize. The ease with which the new value added service can be accessed helps in attracting more subscribers. The operation is very simple and can access the service via ivr, web and sms to purchase the music box.

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