

Takarub

A proposal to mobile operators and service providers

PROPRIETARY INFORMATION

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Introduction

Takarub is a technology/content and a solution provider, was established to serve both customers and mobile operators since 2004. Takarub offers mobile consumers rich content that is distributed over SMS, MMS and IVR. Takarub serves mobile operators by providing various voice and SMS solutions such as Ring Back Tones, Video Ring Back Tones, Back Ground Music, Back Ground Videos, USSD Gateways, Billing and Intelligent Networks Multiplexers.

The idea of giving subscribers the ability to use the popular Ring Back Tones during a call came about towards the end of 2006. Ever since; Takarub started working on the technical solution and lining up strategic partners for this project.

A number of exclusive content agreements were signed with different sources to provide the content on Takarub's RBT platforms in the region. Takarub; being a content provider and having a mass experience with the end user was able to benefit highly from customers feedback to design a product with unique business rules that would ensure the success of the product at launch for any operator. The flexibility of adding new customized features required by any operator is one of the strong points since the development is all in house.

Operators in their struggle to keep a competitive advantage are always seeking differential services. Takarub with its flexible RBT solution can offer the operator with the ability to design a complete set of products with the proper promotional and pricing plans. The platform is supported by a highly exquisite library of content that would make the solution more appealing to end users.

Customers will have to subscribe to the service once and choose their library of songs/effects and then:

- Their MSISDNs would be flagged on the switch/HLR so that every time they make a call they will pass through the RBT platform and be always ready to use effects.
- Their purchased tones will be stored for each call.
- Takarub offers customized content including Arabic, English and Sound Effects to enrich the offering to your customers.

Business Model

Takarub offers the flexibility to implement different models that can be suggested by the operator. These models can be different and the implementation time for each model might vary.

Takarub suggests the following model:

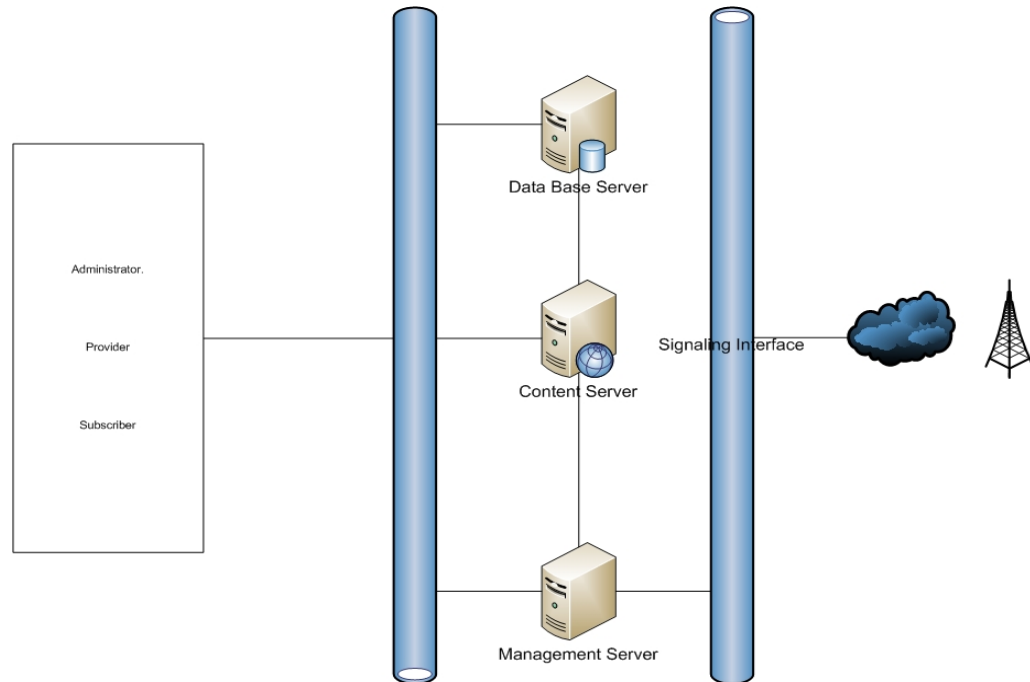
- A Service Management Interface (IVR Menu, USSD, SMS, or through RBT's Web interface) needs to be defined (note that all the mentioned techniques can be used at once). A subscriber wishing to benefit from the RBT service needs to use one of the above mentioned techniques. Consider a subscriber using the IVR Subscription Menu; the subscriber then can browse through the different menus of the IVR and purchase different tones through browsing the music categories that can be assigned and created by various content providers. Subscribers can purchase tones directly, where the billing of subscription and purchased tones can be done in more than one scenario depending on the operator's liking. Purchased tones are stored in the Private Music Library for future allocation to callers. Subscribers can assign tones depending on timely basis, received caller number, special occasions and promotions. Using an HLR flag with this model offers more call tariffs and easier use for RBT subscribers, however, Takarub offers our Intelligent Network Multiplexer in case of lack of HLR flags. Takarub offers its dynamic speech recognizer engine for easing the IVR based subscription process.

Operators can choose their most appropriate model and Takarub can customize its Ring Back Tones platform to fit operators needs.

System Details

- **Architecture:**

The diagram below illustrates the logical modular architecture of the RBT Platform.



- **Signaling Gateway:** Through this layer, the Ring Back Tone platform integrates with the core mobile network. Depending on the deployment option chosen by the operator, the communication protocol can either be done through IN, CAMEL or ISUP SS7 Protocols.
- **System Servers:** The servers are divided to three main servers, one for Data Base handling, one for managing RBT content, one for managing calls, which is the main server. RBT can be provided with two servers as well, where the database and the content will be stored on one server.
- **System Interface:** Administrator, Provider and Subscriber interface.

- **Deployment:**

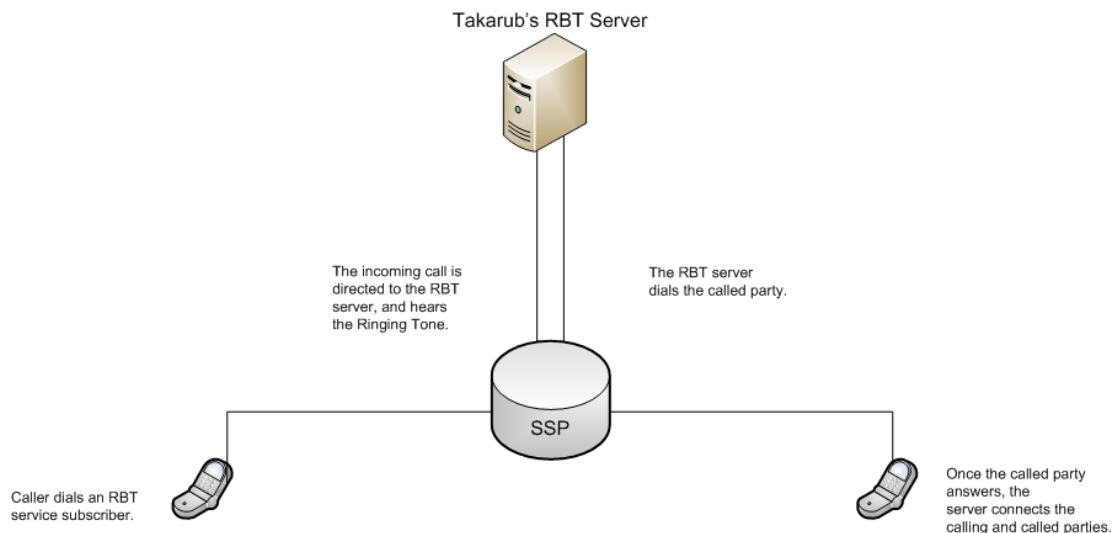
Takarub offers more than one deployment options, they are:

- **ISUP Call Control Implementation**

In this scenario, the network is configured to route incoming calls for a specific called party to Takarub's RBT server. Where Takarub's RBT server can:

- Answer an incoming SS7 call
- Play a specific Ring Tone to the caller (based upon the calling and called party number)
- Make an outgoing call to the called party number while the tone plays
- Disconnect the Ring Tone as the called party answers
- Connect the incoming and outgoing calls together

The HLR, MSC (SSP) and the RBT Platform play an important role in call setup.



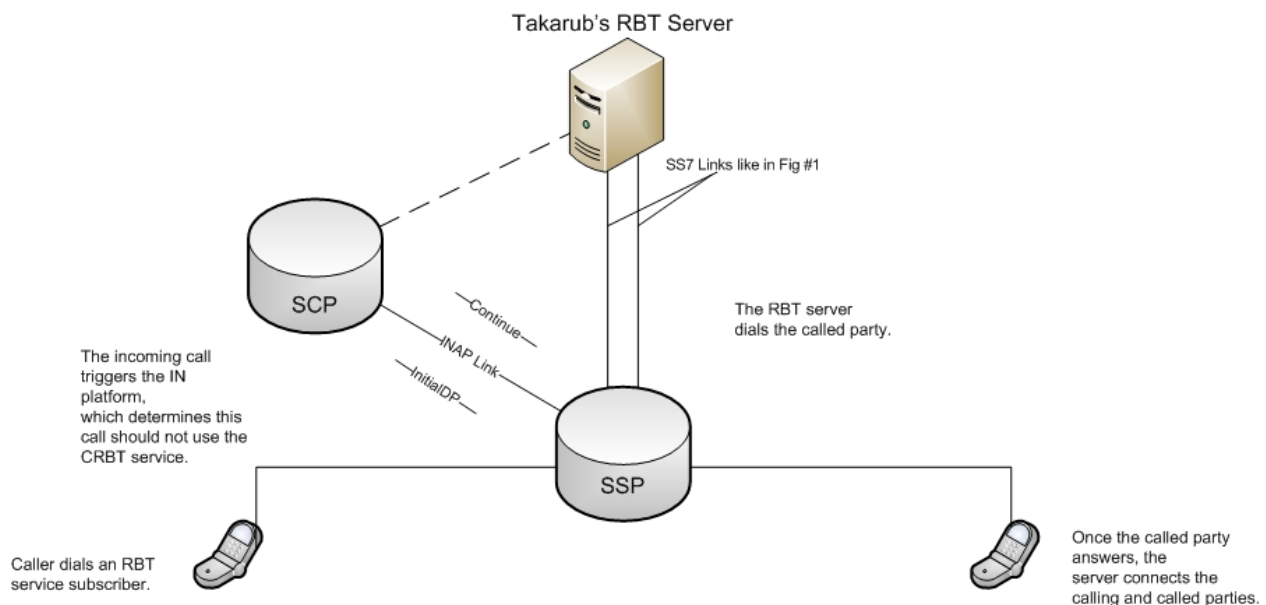
Note that two trunks have been used to route the call to and from the tone server; this is known as "tromboning," which can occur as a call is routed through a circuit switched.

- **IN Signaling Implementation**

Using Intelligent Networking (IN), it is possible to centralize subscriber information on an external database away from the core switching platform, allowing an RBT service provider to maintain a record of current subscribers. In Scenario 2, Figures 2 and 3 show how IN signaling can be integrated into the ISUP RBT to determine how incoming calls should be handled.

As in Scenario 1, the caller dials a called party who has subscribed to the service. The mobile subscriber's incoming call to the SSP, in this case, hits a Trigger Detection Point (TDP) data filled within the SSP. The SSP detects the TDP request and sends an INAP InitialDP message to a Service Control Point (SCP) requesting instructions to complete the call.

The SSP can be data filled to cause incoming calls to trigger towards the IN platform (SCP) or only calls to a specific range of mobile numbers.



The SCP uses onboard service logic to determine how the call should be handled. Using the called party number parameter contained in the **InitialDP** message, the CRBT database (shared with the CRBT tone server) is checked to determine if the called party is a current CRBT service subscriber. The two ways to how to handle the call are:

- If the called party is an RBT service subscriber, the SCP responds to the SSP with an INAP **Connect** message.
- If the called party is not an RBT service subscriber, an INAP **Continue** message is returned to the SSP. The INAP **Continue** message causes the SSP to continue analyzing the originally received digits and route the call onward, without involving the RBT server.

○ **CAMEL Application Part (CAP) Phase 4 Signaling:**

In order to implement this method, the connected MSC (or SSP) must support CAMEL Phase 4 (or INAP CS2) Call Party Handling operations.

IN Signaling is used as follows:

- Incoming call triggers towards the SCP as in Scenarios 1&2. The RBT service running at the SCP determines how the call should now be handled. (*The SCP conducts a database check to determine if the called party is a subscriber to the CRBT service.*) The SCP instructs MSC A to make an outgoing call leg directly to the called party. An IN Initiate Call Attempt [ETSI TS 129 078] message is used.
- Outgoing call leg 2 made from MSC A to the called party is monitored by the SCP to detect network events such as the call ringing and being answered.
- Once the called party starts to ring, the SCP is notified with an IN Event Report BCSM (Basic Call State Machine) Event (ERB).
- Once it is known that the called party is ringing, an IN Establish Temporary Connection (ETC) operation is sent to MSC A, to connect the calling party to the RBT tone server. (In this example, an IN Intelligent Peripheral [IP] behaves as the tone server.)
- Once the IP has answered the incoming call, the SCP is notified using an IN Assist Request Instructions (ARI) message. The IP is directed by the SCP to play the correct CRBT tone to the caller via a Play Announcement (PA) message. At this point, one call is the original calling party listening to the custom ring tone. A second call has been made directly from MSC A, ringing the called party.
- The called party answers, and now the custom ring tone should be removed and the two separate call legs joined.
- Once the called party answers the second call leg, the SCP is notified with the IN Event Report BCSM (Basic Call State Machine) Event (ERB) message.
- This notification causes the SCP to disconnect the call between the calling party and the CRBT tone server. (The IN message Disconnect Forward Connection with Argument (DFCWA) is used to achieve this.)
- Finally, the IN message MoveLeg is sent to MSC A, causing the two separate call legs to be joined. Hence, the called and calling parties are directly connected together in speech state, with no tromboning of ISUP circuits.

Such an implementation could be adopted to make full use of the ISUP circuits provisioned to the CRBT tone server. This implementation could also use a centralized subscriber database shared by the IN platform (SCP) and the tone server, holding details of all the current service subscribers.

- **ISUP Call Control Implementation**

In order for the SCP based RBT to be implemented in the network, the following is assumed to be supported in the SSP;

- Support for INAP CS2 or CAMEL Phase I, II or III.
- Be able to support t_busy, t_alerting and t_calledpartynotreachable detection points.
- Be able to disconnect a call segment that is connected to the RBT platform.
- Be able to bridge the call segments between the calling and called party.

- **Billing:**

Takarub's RBT platform can reflect the overall business model of the operator with the Billing and IN platform in order to conduct any billing or charging to be performed on the subscribers' transactions and to reflect the overall business model of the operator.

The platform can be integrated directly with the Billing and IN platform, or through using billed MT SMS from operator's side.

In general the platform can be customized to cater for any operator business model, as it can charge/bill the operator's customers for one or more and up to all of the scenarios mentioned below:

- IVR call: charge per minute or per call.
- Service initiation / set up fee.
- Service subscription fee.
- Content rental fee.
- Content renewal fee.
- Receiving content updates by SMS: per SMS or Monthly subscription.
- Requesting Music library (SMS).
- Fee to all allow Self generated Content creation and upload.
- Sending Gift Tone.
- Copy Tone from another library.
- Service un-subscription fee.

System Web Interfaces

- 1- Administrator:
 - a. Report generation and stats viewing.
 - b. Add/Edit/Delete tones, categories, packages and users.
 - c. Accepting tones uploaded by Content Providers or subscribers.
 - d. Monitoring the service and the server.
 - e. Modify the system features.
 - f. Change account settings.
- 2- Content Providers:
 - a. Upload new content, which is only launched after the administrator accepts the uploaded content.
 - b. Create new packages.
 - c. View stats and hits on the content uploaded by this content provider.
 - d. Change account settings.
- 3- Customer Care:
 - a. Add/Edit/Delete users.
 - b. View call logs.
 - c. View subscriber's stats.
 - d. Edit subscribers' playlists.
- 4- Users:
 - a. Add/Edit/Delete content from playlist.
 - b. Use Karaoke, Voice Modulation, and time or month control.
 - c. Unsubscribe from the service.
- 5- System Administrator:
 - a. Monitor the service and sever.
 - b. Control the service and serve r.
 - c. Manage the service and server.

System SMS Alerts

SMS alerts are sent for:

- 1- Renewal of items.
- 2- New purchases.
- 3- Notification of new items.
- 4- Billing actions.
- 5- Play list information

SMS commands can be used to:

- 1- Subscribing to the service.
- 2- Un-subscribing from the service.
- 3- Deleting tones from play list, adding tones to play list...

System Features

- 1- A voice modulator: which can be used with RBT to modulate the Subscribers' voice, example: the subscriber calls the IVR number, and starts recording a sound file with their own voice, the sound file is then saved as a robots voice or an aliens voice, once accepted, people can hear the modulated voice when they ring the subscriber.
- 2- Karaoke service, where subscribers can enjoy recording their own voices over music and assign the recorded songs as RBT.
- 3- Time control: that is, a subscriber can set more than one tone as one tone, but every tone starts on a specific time.
- 4- Date control: a subscriber can set more than one tone to one tone, but every tone starts on a specific date.
- 5- Song gifting and copying.
- 6- Radio channel streaming, users can stream from radio channels instead of songs and music.
- 7- Adding different language support for the service for both SMS and IVR. Languages supported so far are Arabic and English.
- 8- Adding USSD support which could be integrated with the operator.
- 9- The ability to mute or stop the RBT music.
- 10- General and specific assigning of tones.
- 11- Subscribers can use the RBT's web application to use and manage their accounts.

Other Features

- 1- User friendly interfaces for all types, along with an easy to use IVR subscription menu.
- 2- Speech recognition can be added to the IVR subscription menu to enable callers to benefit from the IVR without using old and boring DTMF digits.
- 3- Takarub offers 24/7 support to all of its products.
- 4- A rich a massive amount of content to be provided with RBT.

Future Features

It is very important to mention that this platform is flexible and upgradable to become another exciting and vital platform that is used for Mobile advertising.

Some great features can be gained by having such platform; this is another license that can save lots of investment for the operator benefit.

In brief, Mobile advertising platform will allow the operator to have/offer one or all of the below features on the same platform

- 1- Sponsored call option
- 2- RBT advertising
- 3- Call waiting advertising
- 4- Back ground advertising
- 5- SMS related advertising
- 6- Rewarding system
- 7- Video RBT advertising (3G network is required)

The system will cater for all related parties needs including, advertisers, advertising agencies, customers, mobile operators and service providers.

More information can be made at your disposal if needed.

Supplementary components Features

- **System Maintenance:**

System administrator can monitor system performance and may view the system activities in real time. In addition to that Takarub technical team offers maintenance support for hardware and software functionalities, hardware malfunctioning may include Memory Utilization, CPU or any other vital signs concerning computer hardware. Software maintenance includes any performance disorders in addition to any future customization, addition or deletion of system features.

- **Alarm Notifications:**

This solution is also enhanced with alarm administrating tools that log the time and reason of any malfunction; only system administrator can access those alarms. Once those alarms are generated they directly prompt the system engineers either through SMS, email or through the web interfaces.

- **System Reporting:**

Takarub RBT solution provides the Operator with efficient and flexible reporting system that generates several reports according to the operator's needs.

Reports are divided into two main categories:

- **Statistical Reports:**

Helps the operator to better monitor and evaluate the use of the RBT system by the end- users, such statistical reports are:

- **Tone Traffic Report:** it shows all tones in the system and how frequent it was played in a specified period of time.
- **Tone Download Report:** it shows the number of downloads for each tone in a specified period of time and the current number of subscribers.
- **TDR Statistical Report:** provides statistics of all transactions that were performed during a specified period of time.
- **CDR Statistical Report:** provides statistics of the calls during a specified period of time.

- **Transactional Reports**

- **TDR transactional Report:** provides statistics of all transactions that were performed during a specified period of time.
- **CDR transactional Report:** provides statistics of the calls during a specified period of time.

Conclusion

Takarub's RBT platform is equipped with a rugged operating system and state of the art software developed in house. Any customization required by operators will be within reach and in an efficient manner. In addition to the grand chance of having mobile Advertising FREE system upgrade.