PORTA ONE

M2M / IOT FOR CSP

PortaSIP

Media Applications Guide

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MAINTENANCE
RELEASE

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Please address your comments and suggestions to: Sales Department, PortaOne, Inc. Suite #408, 2963 Glen Drive, Coquitlam BC V3B 2P7 Canada.

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Table of Contents

Preface

PortaSIP® Media Server (hereinafter referred to as the Media Server) is a component of PortaSIP® that includes multilingual customizable Interactive Voice Response (IVR), handles voice, fax, and regular email messages, which users can access via a web interface or by telephone.

This document provides a general overview of supported IVR applications. For general information about PortaSIP® architecture and features, consult the **PortaSIP® Administrator Guide**.

Where to get the latest version of this guide

The hard copy of this guide is updated upon major releases only, and does not always contain the latest material on enhancements that occur in-between minor releases. The online copy of this guide is always up-to-date, and integrates the latest changes to the product. You can access the latest copy of this guide at **www.portaone.com/support/documentation/**.

Conventions

This publication uses the following conventions:
Commands and keywords are given in **boldface**.

Exclamation mark draws your attention to important actions that must be taken for proper configuration.

NOTE: Notes contain additional information to supplement or accentuate important points in the text.

Timesaver means that you can save time by taking the action described here.

Tips provide information that might help you solve a problem.

Archivist explains how the feature worked in previous releases.

Gear points out that this feature must be enabled on the Configuration server.

Trademarks and copyrights

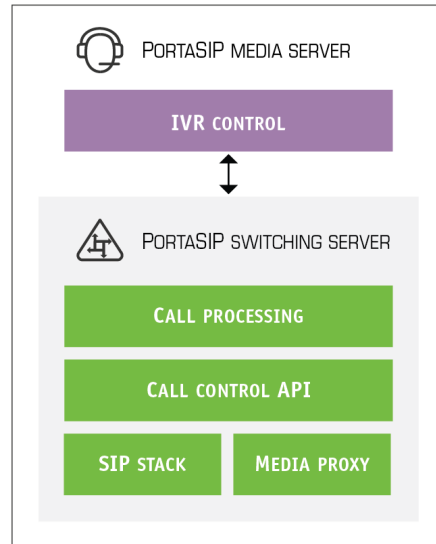PortaBilling®, PortaSIP® and PortaSwitch® are registered trademarks of PortaOne, Inc.

What is new in Maintenance Release 75?

Updated:

- The **Separate charge for incoming leg in the prepaid card application** chapter.

1. System concepts

The Media Server's role

PortaSIP® Media Server is a component of PortaSIP® that includes multilingual customizable Interactive Voice Response (IVR). This application defines how the call is to be further processed, i.e., what the user on the other end will hear.

The Media Server handles voice, fax and regular email messages, which users can access via a web interface or by telephone.

Conceptual elements

Mailbox

A mailbox is a portion of disk space on PortaSIP® which has been allocated for storing messages. Messages can be voice messages, faxes, or generic emails. You may set a quota (maximum allowed disk space) for user mailboxes, to prevent a situation where some users store too much information in their mailboxes, thus creating problems because the disk space is unavailable for other customers.

Entry point (access number)

When a pre-defined number is dialed from any phone connected to PortaSIP®, or calls to this number are received from an external network

– PortaSIP® launches an IVR application that is associated with this number.

IVR applications

When an incoming call is answered, an IVR (Interactive Voice Response) application is launched. This application defines how the call is to be further processed, i.e. what the user on the other end will hear. The IVR applications include, among others:

- Voicemail, allowing callers to leave a message which will be delivered to the user's mailbox.
- Fax-to-email.
- Auto attendant – a custom-designed set of voice menus (see the **Auto Attendant** section for more details).
- Check balance / top-up account.
- Prepaid card.
- Conferencing.
- Sound quality check.

Each application normally has a set of parameters which customize its behavior (e.g. whether the prepaid card calling application should announce the available balance or not). Using the PortaBilling® web interface, administrators can quickly and conveniently define how users access IVR applications.

Auto attendant

The auto attendant is a flexible utility designed to provide IVR for callers and allow them to navigate among different options by pressing keys on their phones. Auto attendant capabilities include simple features such as playing a certain voice prompt to the end user or collecting his input, as well as more advanced features such as incoming fax detection or call queues.
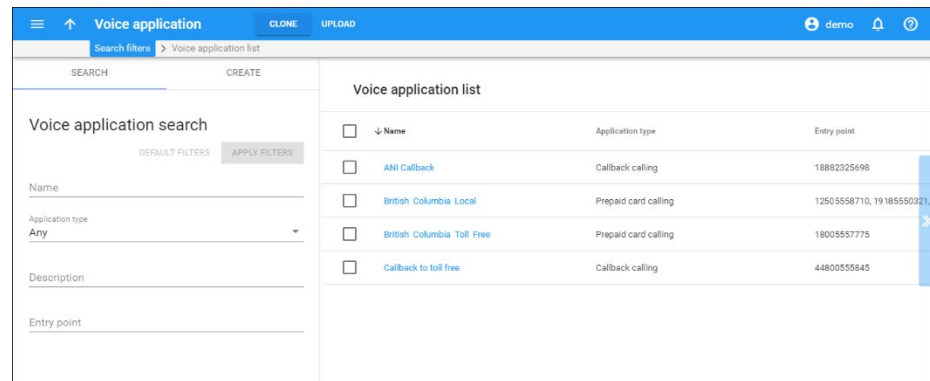
Managing IVR applications via Web GUI

Using PortaBilling® web interface administrators can quickly and conveniently define how users access IVR applications by dialing phone numbers. Your customers would dial a phone number from the PSTN network or their IP phone to access a specific IVR application.

For example, *98 for voicemail, 12125551234 to access the prepaid calling card IVR, or *123 to access the audio conferencing facility. So when PortaSIP® receives a call, it matches the destination number with one of

the access numbers and then launches the specific IVR application associated with that access number.

An IVR application can contain one or several entry points (access numbers). Using the PortaBilling® web interface, administrators can type in or paste the list of access numbers.

Application options

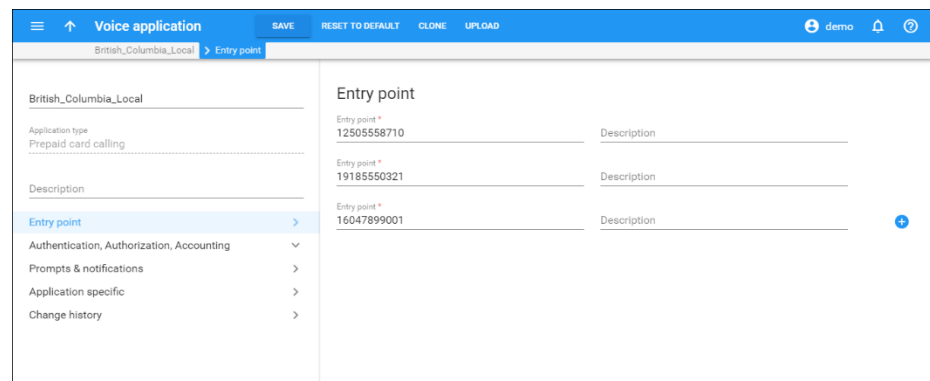The administrator can customize the properties of the IVR application. The access numbers assigned to it inherit the given IVR application settings.
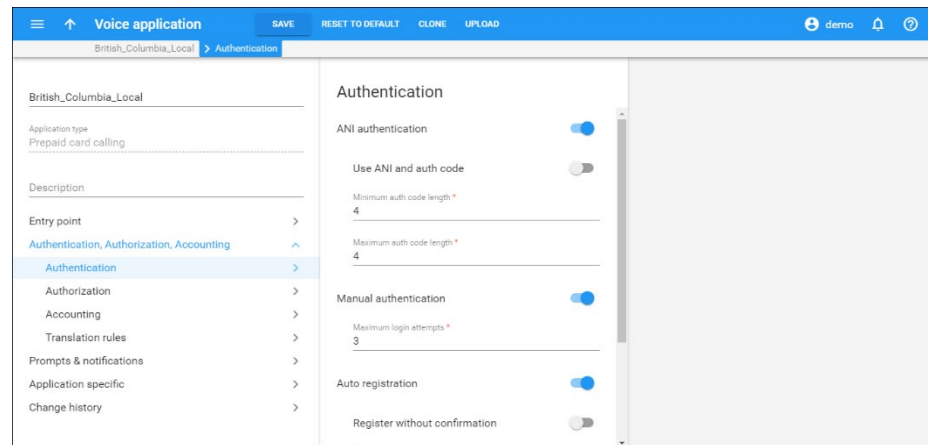
Conferencing

Conferencing architecture

PortaSIP® enables you to provide voice-conferencing services to your customers. Multiple customers can simultaneously use the conferencing service, and each customer has access to their own set of virtual conference rooms. In addition, the customer can manage all of their conferences (virtual conference rooms) via the account self-care interface.

A conference can be scheduled for a specific time, or a continually functioning conference (i.e. meeting room) can be created. Each conference is identified by a pair of unique access codes (one for the conference host, the other for conference guests). Although multiple conferences can be created in PortaSIP®, its resources are only used when a conference is in progress (i.e. at least one participant is present).
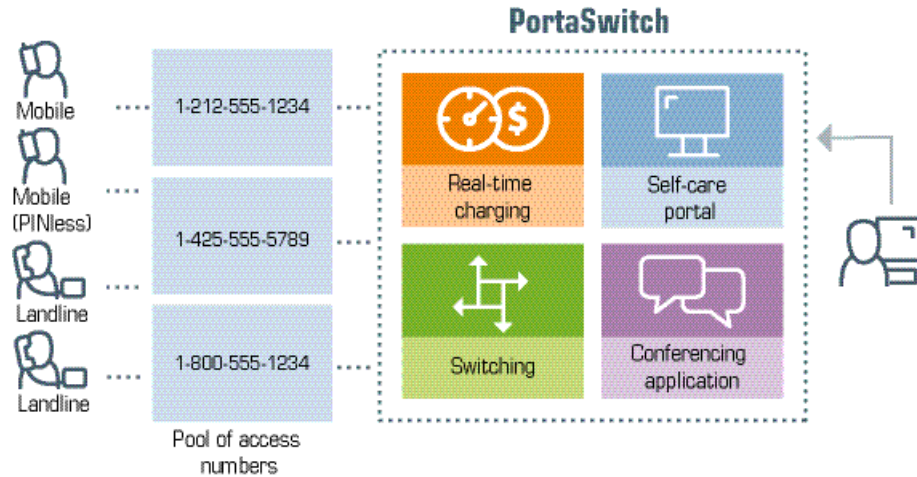
For a customer to utilize the conferencing service, the PortaBilling®
administrator assigns a separate tariff for this service in the customer's
product configuration, and the owner of the meeting room is then billed
for each incoming call of a conference session.

For example, if your conference rate is $0.03/min and a customer
organizes a conference for two participants where he (the host) stays
connected for 30 minutes and his two partners stay connected for 25 and
20 minutes, respectively, then there will be three charged transactions in
total, for $0.90, $0.75 and $0.60. To prevent potential service abuse by
guests, customers may create a moderated conference. In this case, guests
can only participate in a conference when the host has already joined it.

When mixing the audio from several participants during a conference, the
system carries out intensive calculations and requires significant amounts
of CPU power. However, since conference rooms are distributed among
PortaSIP® processing nodes, the CPU load is balanced. This enables your
other IVR services (voicemail, auto attendant, self-care, etc.) to continue
to run properly.

Call flow
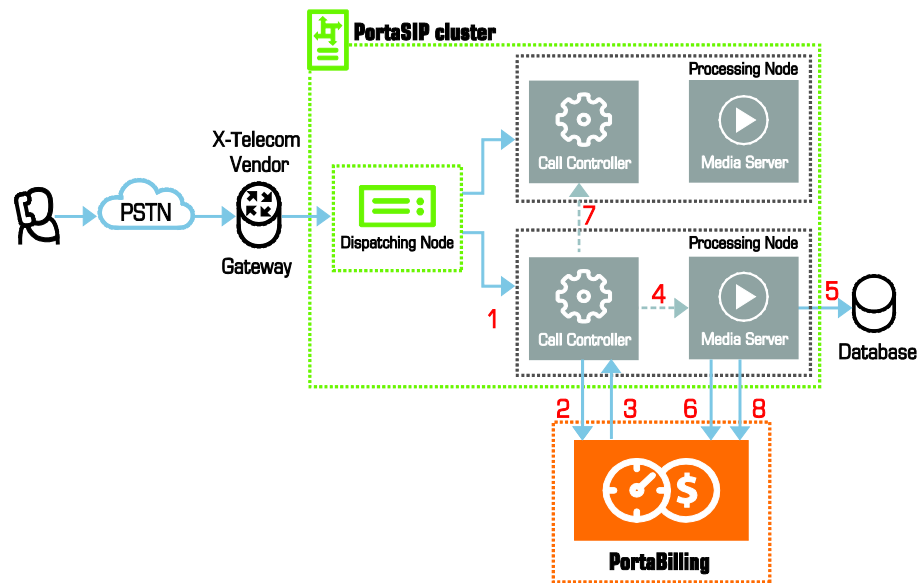
- The service provider wants to allow customers to access the audio conferencing service. The number to be dialed by users (e.g. 18665552637 – 1866-555-CNFR) is purchased from the DID provider.
- The administrator creates a new entry in the Access Numbers section in PortaBilling, assigning the "Conferencing" application to 18665552637, and configures the parameters of the application, if necessary.
- When a customer signs up for a conference service, an account for managing the service is created in PortaBilling® (e.g. conf1234) and provided to the customer. The customer then logs into their account self-care interface and creates particular conferences (i.e. virtual meeting rooms).
- The customer distributes the conference access information (access phone number and access code) to the intended conference participants.
- A participant (connected to a network of some other telco) wishes to join the conference so he dials 18665552637 from his mobile phone.
- The call is routed through the cellular carrier's telecom network or via several transit operators that provide services to the participant. Eventually the call is delivered to the DID consolidator X-Telecom, which supplies incoming DID calls to the service provider. The call is then sent to the PortaSIP® cluster from X-Telecom's gateway.

- When an incoming call arrives to the PortaSIP® (**1**), the processing node checks the call handling rules to determine how this call should be authorized, based on the remote IP address or by using the username and password. After gathering the required information, the processing node sends an authorization request to billing (**2**).
- PortaBilling® detects an entry in the **Access Numbers** section that designates 18665552637 as a special IVR application number. The authorization confirmation is sent back to the processing node (**3**).
- Within the processing node, the call is passed to the Media Server (**4**).
- The Media Server connects the incoming call and, based on the number called (18665552637), launches the "Conferencing" application.
- The application prompts the user to enter the conference access code and validates it within the internal database (**5**).
- If a valid conference code is provided, the ID of the account that owns this conference room (conf1234) is retrieved. An authorization request is sent to PortaBilling (**6**) to check that usage is permitted for this particular conference number (18665552637) and that the account has sufficient balance to cover the costs.
- If authorization is successful, the participant is permitted to join the conference.
- If the conference room is running on another processing node, the INVITE request is sent to that node (**7**) which continues to process the call.
- When the participant hangs up, an accounting request is sent to PortaBilling (**8**), so that account conf1234 (and the customer who owns it) is charged based on the price per minute associated with this access number.

Conferencing in geo-redundant installations

Conferencing services are fully supported for the site-redundant installations. Information about a conference room and its participants is stored in the database and shared among the sites. This makes it possible for users registered on different sites to talk with each other within the same conference room.

If one of the sites is down or for some reason unavailable, the system creates a "local" conference room for new users who dial the conference access number. For example, a conference room is enabled on site A of your geo-redundant installation and for some reason (power outage, lost connectivity, etc.), this site becomes unavailable. Users registered on site B would dial the access number to enter the conference room. The

PortaSIP® of site B verifies that the site A conference room is unavailable and therefore creates a site B conference room that permits users to talk with each other.

When the connection between the sites is restored, calls already in progress are handled by site B until they are completed; meantime, all new calls to the conference room are routed to site A.

Thereby is the conferencing services you provide have an additional layer of high-availability and security.

Codecs support

Normally, PortaSIP® sends pre-converted voice prompts to a user as a byte stream, so no codec licenses are involved. In the case of conference calls, the audio-stream (with each participant's voice) is decoded in real time and then sent back to each participant as an encoded audio-stream mixed in with sound. The G.711 and G.729 codecs are currently supported for conferencing services.

Video conferencing

In future releases video conferencing will also be supported.

2nd number service

Customers whose businesses receive many incoming calls may want to have one or more additional contact numbers for those purposes that are separate from their existing home or personal mobile numbers. At the same time, they may still want to be able to answer incoming calls to those numbers using their home or mobile phones. PortaBilling® now allows you to provide a so-called 2nd number service to satisfy those requirements.

Let's take a look at the following example:
- A customer with the mobile phone number 42073723123 buys a 2nd number service from you.
- You allocate another number for him, e.g. 42027777100, from the DID range and create an account in PortaBilling® that represents that phone number.
- Add the alias 42073723123@pstn (the "Allow authentication/registration" check box should be disabled for this) to the account 42027777100 to associate the customer's external phone number with the DID.

- Set the default answering mode to "Forward then voicemail" for this account.

Listening to voice mail and making an outgoing call
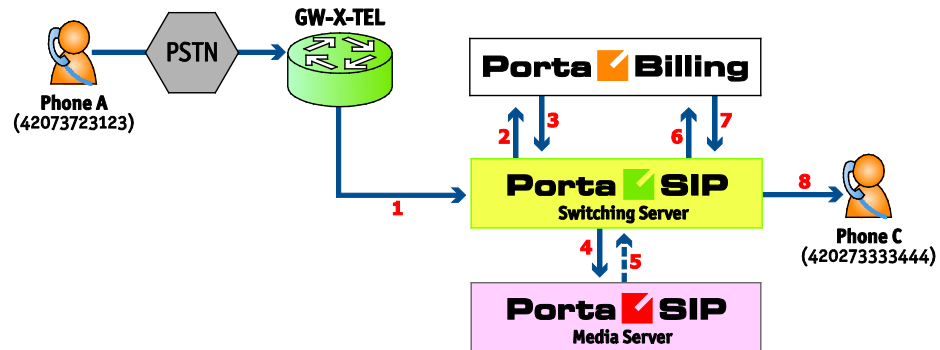
- From his 42073723123 mobile (**1**), the customer dials the phone number 42027777100 that was provided to him.
- PortaSIP® sends an authorization request to billing (**2**).
- He is authorized by ANI 42073723123, and since 42073723123@pstn is an alias of the number dialed, the call is treated as an incoming call to the user's own mailbox.
- The authorization confirmation, including the routing list (with just the Media Server in it), is sent back to PortaSIP®(**3**). PortaSIP® internally routes the call to the Media Server.
- PortaSIP® connects the incoming call (**4**) and the Media Server launches the "Voicemail Access" application.
- The customer can listen to messages the same way he would from his IP phone.
- If, after navigating the menu structure, the customer chooses the option of making an outgoing call, he will be prompted to input the destination.
- Customer inputs 420273333444.
- The Media Server passes the call processing to B2BUA (**5**).
- B2BUA sends an authorization request to billing (**6**).
- Billing sends an authorization response to PortaSIP® (**7**).
- PortaSIP® sends the call (**8**) to 420273333444 (the party being called will see 42027777100 as the CLI).

Receiving an incoming call
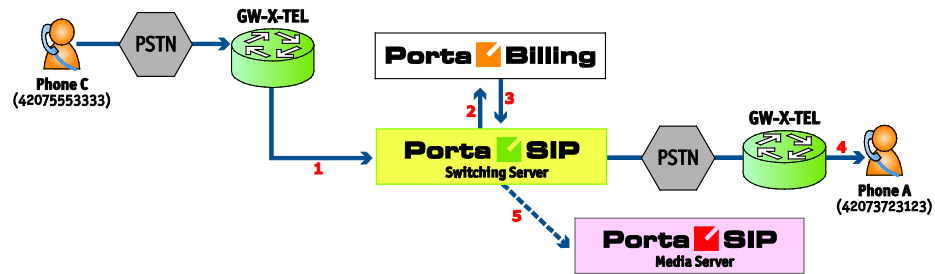
- From PSTN (42075553333), the user dials (**1**) customer's number: 42027777100.
- PortaSIP® sends an authorization request to billing (**2**).
- The account for ANI authentication is not found and the call is treated as an incoming call to the 42027777100 account. PortaBilling® recognizes that this account has Follow-me services enabled, and produces a list of routes, accordingly.
- The authorization confirmation including the routing list (with the Follow-me number and the Media Server in it), is sent back to PortaSIP® (**3**).
- PortaSIP® redirects the call (**4**) to a Follow-me number (customer will see 42027777100 as the CLI).
- If the call is not answered it will be redirected to voicemail (**5**), and the user can leave a message.

Prepaid card application

Prepaid services enable Internet telephony service providers (ITSPs) to offer calling card services that customers can pay for in advance.

The market for prepaid services includes tourists, immigrant communities, mobile populations such as military personnel, and people with limited credit histories who cannot otherwise get a private telephone line in their homes.

For example, you to sell prepaid calling cards that offer cheap calls for users all over the world via either local or toll-free telephone (access) numbers.

Each card has one or several access numbers printed on it that a user can dial to access the service. Once the call connects, the user enters their personal identification number (PIN) and the phone number of the contact they wish to reach. The charge for the call is then withdrawn from the user's prepaid calling card.

Separate charge for incoming leg in the prepaid card application

As a rule, telecom operators do not charge users for calls to access numbers (either local or toll-free). However, your carrier may charge you for delivering incoming calls to an access number (e.g. you own a toll-free number, or your costs depend on origination locations).

With PortaSwitch® you have two ways to cover the incoming call cost:
1. You include the cost of an incoming call into the price for an outgoing call (a call to a destination number). In this case, one xDR is created.

   This could cause service abuse, since some users may call the access number only to check their balance and not make a further outgoing call.

2. You provide a separate price for an incoming call leg (leg A) and therefore you charge users for both incoming and outgoing (leg B) call legs. In this case, two xDRs are created.
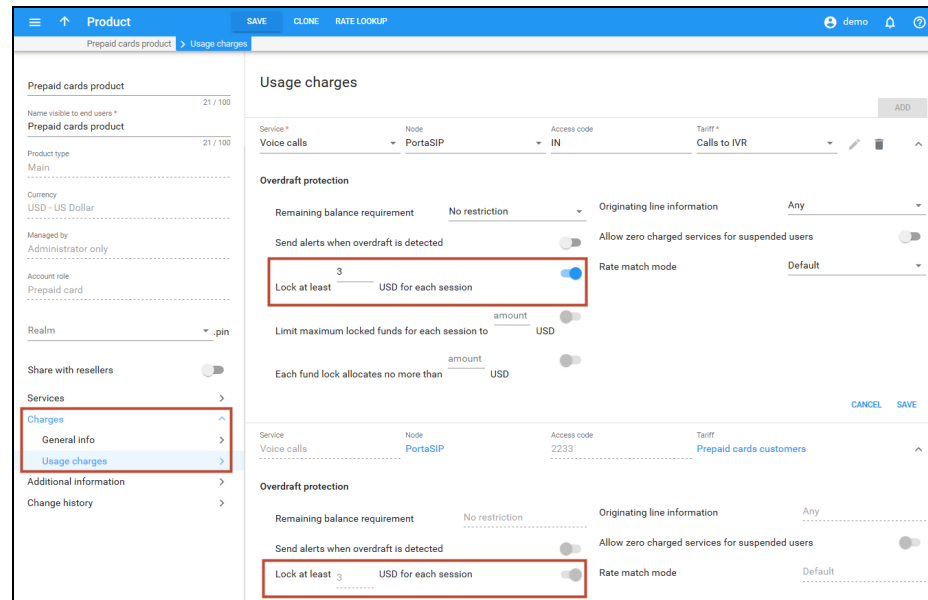
Find how to configure the prepaid card application to apply a separate charge for incoming call legs in the **How To…** section of the *Prepaid Services* handbook.

Fund locking for Prepaid card application

If you charge users for incoming calls to the IVR via a separate call leg, make sure that overdraft protection is configured. To make this happen, specify the amount of money to be locked for each session within the product configuration.

This instructs PortaBilling® to lock the defined amount of money until the entire session (calls to destinations and to the IVR) is disconnected.

Let's see how the charges for a call are calculated when a user, John Doe, makes several calls (e.g. +442087677788, +331085577338) using a prepaid card with a $15 balance. For simplicity's sake, the price for incoming calls to the IVR (2233) is $1 per minute and the calls to London and France cost $2 per minute. Overdraft protection is set to lock at least $3 for every session.

1. John Doe dials the 2233 access number and listens to the welcome IVR prompt during 1 minute. He starts the session with a price of $1 per minute for the incoming call to the IVR.
2. John enters the PIN. Now he is authorized.
3. PortaBilling® locks $3 for this call to the IVR according to the overdraft protection settings.
4. John listens to the IVR prompts during 1 minute more. This is the 2nd minute of calling the IVR.
5. John dials the destination number +442087677788 to call his mother in London.
6. PortaBilling® locks $15 and authorizes the call to London for 4.3 minutes. The call duration is calculated based on the card's balance and tariff rates, plus PortaBilling® considers the call to the IVR which is still in progress. The call covers:
   - The call to London (+442087677788) for 4.3 minutes (4.3 min*$2=$8.6).
   - The call to the IVR (2233) for 6.3 minutes ((4.3 min for the call to London + 2 min for the call to the IVR)*1$=$6.3).
7. John disconnects the call to London after 1 minute.
8. PortaBilling® creates an xDR for the call to London for $2 (1 min*$2=$2).

9. PortaBilling® reduces the locked amount to $3 according to the overdraft protection settings.
10. John's available funds are now $13 ($15-$2).
11. John listens to the IVR prompts during 1 minute more. This is the 4th minute he spends calling the IVR.
12. John dials another destination number +331085577338 to call his friend in France.
13. PortaBilling® locks $13 and authorizes the call to France for 3 minutes. The call covers:
    - The call to France (+331085577338) for 3 minutes (3 min*$2=$6).
    - The call to the IVR (2233) for 7 minutes ((3 min for the call to France + 4 min already spent for the call to the IVR)*1$=$7).
14. John disconnects the call to France after 1 minute.
15. PortaBilling® creates an xDR for the call to France for $2 (1 min*$2=$2).
16. PortaBilling® reduces the locked amount to $3 according to the overdraft protection settings.
17. John's available funds are now $11 ($13-$2).
18. John listens to the IVR prompts during 1 minute more. This is the 6th minute he spends calling the IVR.
19. John disconnects the session.
20. PortaBilling® creates an xDR for the entire incoming call to the IVR for $6 (6 min*$1=$6).
21. John now has $5 available.

With the PortaSwitch® Prepaid card IVR application you can offer various products, manage prices for calling card services without administrative overwhelm and therefore increase your revenue. For more details on configuration options see the Appendix A.

Prepaid card ANI number reassignment provisioned via the self-care menu

Depending on their business models, ITSPs can configure PINless dialing service so that customers who purchase a new prepaid card must reassign the ANI number associated with the previous card to the new card.

ANI number reassignment takes place through the self-care menu of the Prepaid Card Calling IVR application, allowing end users to perform more personalized account management.

It works as follows:
- The administrator configures the Prepaid Card Calling IVR application.

- The end user dials the access number and enters the self-care menu.
- By following the IVR prompts, the user associates his or her ANI number with a new prepaid account.

To illustrate:
End user John has signed up for PINless dialing service. His mobile phone number 16045558521 (the ANI number) is associated with prepaid card number 72313070131 worth $10.

His account balance drops to $0.02 and is not enough to make further calls. He therefore buys another prepaid card, number 77854126029 worth $20. He dials the access number, enters the self-care menu, and associates his ANI number with 77854126029. Now John's balance is $20 and he can continue to use the PINless dialing service.

Alternatively, ITSPs can enable end users to delete their existing ANI number and associate this deleted number (or a new number) with a prepaid card. For example, if Jane Doe has associated the ANI number of a temporary location (e.g., a hotel phone number) with her prepaid card, once the number is of no further use to her, she simply deregisters it from her card.

Thus, with this functionality ITSPs can provide their customers with a flexible tool for ANI number management. An additional benefit is that, by making customers abandon depleted accounts, ITSPs receive additional funding from residual account balances.

The description of the Prepaid Card Calling IVR application configuration can be found in the **Prepaid Calling Cards** handbook.

Supported services

Leaving voice messages for a PortaSIP® user

The Media Server gives your SIP customers an automatic answering machine whenever they are not online or do not answer within a certain (configurable) time period. This service works when a call comes from PSTN, as well as when it comes from another SIP customer. See the *Call Process / Supported Services* section of the **PortaSIP® Administrator Guide** for detailed call flow descriptions.

Direct Inward System Access (DISA) functionality for one's own voice mailbox access application

When a customer accesses an IVR application to check their voicemail he may also want to make an outgoing call right away (e.g. to call back the person who left the voicemail). The customer can make an outgoing call from the voice mailbox by simply choosing that option from the application menu.

Fax-to-email services

In addition to voice messages, UM-enabled SIP customers will be able to receive faxes on their "answering machine". When a call is connected to the Media Server and the remote party initiates a fax transmission, the Media Server automatically detects this event and switches into fax receiving mode. The fax will be processed and then delivered to the user's mailbox as a .pdf or .tiff document attached to an email message.

Sending email messages to a PortaSIP® user

PortaSIP® also allows your SIP customers to have regular email accounts, where they can receive regular emails.

Retrieving voice and email messages using a SIP phone

Your SIP customers will be able to retrieve their messages using a SIP phone. To do this, they must dial a special number, which transfers them to the Media Server IVR menu. This menu allows them to listen to recorded messages. Additionally, for SIP phones that support a message waiting indicator (MWI), the Media Server can automatically manage the SIP phone's MWI status, so that the user is notified when he has new messages.

Retrieving voice messages, email messages and faxes using a web browser

Users can retrieve their messages and send regular email messages using a standard web browser. The JavaScript applet built into the interface allows users not only to listen to voice messages, but also to upload a previously recorded voice messages. It is also possible to access the system using any email client that supports the IMAP or POP3 protocols.

Forwarding messages to an external email server

When a new message arrives in the Media Server message storage, a full copy of the message, or just a short notification, can be sent to the user's other email address (e.g. corporate mail server or private gmail account), depending on the user's preferences.

Managing personal UM settings using a SIP phone

In addition to retrieving messages, your SIP customers can manage their personal settings, such as greetings, from a SIP phone using the Media Server IVR menu.

Managing personal UM settings using a web browser

Users are also able to manage their personal settings by logging into the account self-care interface. The JavaScript applet built into the interface allows users to record personal greetings (a microphone is required).

Managing user's current balance

PortaSIP® users can listen to the current state of their accounts by using the IVR menu. Also, they can hear their current balance by dialing the access number for their mailbox and pressing option "0." There is also an IVR menu enabling the use of vouchers to add funds to an account. In *APPENDIX D. Balance Announcements*, there are balance announcement examples for different IVR configurations.

Balance top-up

When your customers' balance has gotten too low, remind them that it is necessary to refill it.

This can be done in the following way:
- Select the **Play an announcement about self-care menu** and **Enable self-care menu** check boxes.
- Select **None** in the **Restriction for Calling with Low Balance;**
- The acceptable balance level is specified in the **Breakage** field of the product.
- Your users will hear the "Your balance is low, please refill your account soon" prompt and they can refill their balance within the self-care IVR menu by pressing the **#** key.

Prepaid card IVR

The Media Server includes an IVR system that allows you to offer a prepaid card service for incoming VoIP calls. This IVR supports all the PortaBilling® extensions for the prepaid card application (access codes, real and announced call duration, and so on).

Sound quality check

This IVR application gives end users the opportunity to perform a simple sound test during which they can check the connection to the server and basic sound quality points, for example, sound clarity.

This is how it works:

Upon calling an access number associated with the Sound quality check IVR, an end user is prompted to record a message. After the predefined number of seconds, the end user hears their message played back. If the message sounds fine, then the end user's sound and microphone are working properly and there are no issues with the connection and media transmission to PortaSIP®.

The recorded message is then stored as a regular call record. Both an administrator and an end user can access it via the web interface and use it for resolving disputable issues.

Auto attendant

Every user can program his own set of menus for auto attendant, from a simple message such as "I am on vacation right now, press 1 to connect to my assistant" to a complex menu system with various options for small or medium-sized businesses. Users can program the voice dialog from their web browser, record voice prompts using a microphone on their PC or upload professionally recorded prompts, create multiple sub-menus and define an activity period for each of them, program their company's dial-by-name directory, construct multiple call queues, and so on.

Registration for PINless Dialing Service via SMS

This is an extension to the "classic" PINless dialing service, in which the user is identified by his caller ID (ANI/CLI), maintains a balance in PortaSwitch® and is able to call any destination with charges applied to his balance. Traditionally, the registration for PINless dialing service is performed by the end user via the purchase of a top-up card and then calling the special IVR. When the user's balance is low, he needs to buy more top-up cards or pay his bill online. The registration via SMS (simply send an SMS message to a certain number) is an easier alternative. A simplified registration process and further management of the account make this service especially convenient for users of mobile networks. The service provider collects funds from the end user's mobile phone (by sending the balance transfer request to the mobile operator that the end user is connected to.) However, this must be supported by the mobile carrier. One advantage of this feature is that a customer can use any "ordinary" number to send an SMS.

To start using the service, the end user simply sends an SMS with the message SUBSCRIBE to the registration number. Upon receiving the message, the SMS processing module in PortaSwitch® automatically provisions his account with the CLI/ANI of the mobile phone as the authentication ID; requests a balance transfer from the mobile operator and then adds these funds to the customer's balance in PortaSwitch® so

they can be used again in the future. End user will receive an SMS that confirms the service activation and provides important service information, such as the number to call for PINless dialing or a username/password for accessing the web self-care. Once that occurs, the end user can start using the service by dialing the access number and then entering the final destination number. The entire registration process is very easy to perform and can be completed in just a few seconds. PortaSwitch® can also perform an automated balance top-up: when the balance of the created account goes below a specified threshold, the system initiates another balance transfer from the user's balance on the mobile network. The telecom client can disable this automatic recharge by sending an SMS to the SMS access number with the message STOP.

2. Callback

Callback principle

The main idea behind callback is that when user A wishes to have a phone conversation with user B, he does not make an outgoing call to user B (as he would do with normal telephony service); instead:

- He initiates a callback call (we will discuss the available methods for triggering a callback later).
- The system establishes a call to A, and instead of originating the call, A actually answers it (in most telephony networks a subscriber does not pay for incoming calls, so this call is free for A).
- The system establishes a call to B and then bridges the two calls together so that A and B can communicate.

Main components

The previous section described the callback service from an end user perspective. Now let's look at the internal architecture of this solution. There are three main components of callback:

- Callback trigger.
- Callback engine.
- Authorization and billing.

Callback trigger

The user informs the system of his desire to make a callback call in one of several available ways. The part of the system capable of interacting with the end user in some way and, upon receiving certain information from him, initiating the callback process, is called the callback trigger. Several types of callback triggers are available, and of course new ones can be invented and developed.

ANI (missed call) callback trigger

This is perhaps the most common trigger type; it is available in PortaSIP® as a built-in IVR application.

The task of this module is to:

- Intercept an incoming call and collect information about the ANI number.
- Authenticate this number with PortaBilling®.
- Disconnect the incoming call.

- Establish an outgoing call to the destination (the caller's number).
- Once this call is connected, hand over call processing to the callback engine which will do the rest (give the balance, ask for destination, etc.).

The user dials a certain access number, the call is forwarded by his telco operator and the incoming call arrives to PortaSIP® where a callback trigger application is configured. The application does not answer the call; instead it records the originating phone number (ANI or CLI number) and then disconnects it. Since the call is never connected, the end user is not charged by the telco operator. Now the application has the user's phone number and can therefore initiate a call back to him. Then an IVR is initiated which gives the user his current balance and prompts him for the destination number, etc.

Needless to say, this service only works when the correct caller info is delivered to PortaSwitch®. If information about a user's phone number is not available during an incoming call or if it is garbled (for instance, only the four last digits are discernible) then there is no way to call back the user. Usually you can only rely on ANI information for calls made within the same country. Thus, if you have an access number in the Czech Republic and your users make calls from within the Czech Republic (fixed or mobile phones), you receive correct ANI information. But if someone calls your access number from Slovakia or France, there is a high chance that either no ANI will be provided at all, or else it will be provided in a local format such as 02345464 (no country code), in which case it is impossible to determine whether this number is actually in the Czech Republic, Slovakia or France unless a correct translation rule is applied to the ANI number.

DNIS (DID) callback trigger

This is a slightly different approach to the callback function described above. In a situation where a correct ANI number is not likely to be available, one of the remaining options is to allocate an access number to each of your callback users.

Each access number is associated with a **Callback calling** IVR application and is provisioned as the account ID in PortaBilling®. Therefore, every callback user has an account in PortaBilling® with an account ID that is equal to the callback access number. The user then enters the user's actual phone number into the account's properties (in the **Associated Number** field on the **Service configuration** panel).

When the user wishes to make a callback call, he simply makes a call to his dedicated access number. Every incoming call to this number will be dropped, but the system is triggered to initiate a call to the phone number

associated with this access number. After that, the call is handled similarly to an ANI callback.

Thus, the DNIS callback functions as follows:

- It intercepts the incoming call and gets information about the DNIS number (access number dialed by the customer).
- Authenticates this number with PortaBilling®.
- Disconnects the incoming call.
- Establishes an outgoing call to the number specified in the **Associated Number** property for the account in PortaBilling.
- After the call is connected, the trigger relays call processing to the callback engine which does the rest (gives the balance, asks for destination, etc.).

One definite advantage of this method is that it can be used by callers located in one country who have been provisioned access numbers from a different country.

A disadvantage is that you will need a relatively large quantity of access numbers.

PIN callback trigger

This is yet another type of callback. Here a caller is not authenticated by the ANI number. The ANI number is noted by the trigger and the call is dropped. The so-called internal account is authenticated and authorized for the call leg to the party initiating the callback. Therefore, the internal account must be provisioned in the system and defined for the trigger.

After the callback is established to the party that initiated it, the IVR is brought up, prompting the caller to enter the PIN. After the PIN number is collected, the system searches for an account in PortaBilling® with the same account ID as the PIN entered by the caller. Once found, the account is authorized for the outgoing call leg. Upon successful authorization, the call is handled the same way as in the ANI callback.

The PIN callback trigger functions as follows:

- It intercepts the incoming call and records information about the ANI number.
- Checks for the internal account.
- Authenticates the internal account with PortaBilling®.
- Disconnects the incoming call.
- Establishes an outgoing call to the destination (the caller's number).
- And after the call is connected, relays call processing to the callback engine.

- The callback engine collects the PIN number and authenticates the PIN with PortaBilling®.
- Upon successful PIN authentication, the callback engine performs further call processing (gives the balance, asks for destination, etc.).

The advantage of this method is the ability of the service provider to prevent service abuse, allowing the system to initiate callbacks to only a certain number of destinations. This is achieved by assigning a special tariff to the internal account's product.

Configuration

The ANI / DNIS / PIN callback trigger configuration consists of associating an access number with a callback calling IVR application and customizing the general parameters for the application. These include languages and authentication by ANI, DNIS or PIN.

The step-by-step configuration of the ANI Callback trigger can be found in the **Setting up an ANI Callback** handbook. For the complete overview of the available IVR application configuration parameters, please also consult the *APPENDIX A. Configuration parameters for IVR applications* section.

SMS callback trigger

Most mobile phones on the market have the ability to send short text (SMS) messages. These messages can also be used to initiate callback. When a user needs to make a callback call, he simply sends a message with the relevant information to your access number. This message is wirelessly delivered to PortaSIP® where the information is processed instantaneously and the callback is initiated.

An SMS message sent from a user's mobile phone reaches PortaSIP® via a triggered component that therefore allows SMS messages to be relayed via a hosted SMS provider connection.

The hosted SMS provider interconnects with wireless carriers around the world, providing you with consolidated SMS flow (using a well-documented API) and a centralized management and billing interface. One good example of such a company is Connection Software, **http://www.csoft.co.uk/**.

Another supported hosted SMS provider is Mega-M, **http://www.mega-m.si**. It is supported as an outgoing provider, i.e. for the dispatch of SMS flow from PortaSIP® to end users.

NOTE: The incoming SMS flow from end users to PortaSwitch® is provided via Connection Software, **http://www.csoft.co.uk/**.

There are several advantages to this method:
- It is possible to include the destination (B) number in the text message. Thus the call can be connected immediately and the user does not have to manually enter this information in the IVR.
- It is possible to include extra information in the text message. For instance, the user can include a password in the message and then initiate a call from a friend's phone. Or he can initiate a call from his mobile phone, but tell the system to connect his hotel phone in Singapore with a destination number in the USA.
- SMS messages have a low fixed cost so there is no risk of being charged for an outgoing call. Also, while traveling in foreign countries, outgoing calls may be disabled unless a special roaming service has been activated, and SMS messages are normally allowed.

Other features of SMS Callback:

SMS messages can not only be used to initiate calls, but to perform other actions, too, such as:
- New user registration.
- Balance top-up.
- Balance check.
- Password change.

Configuration

The configuration of the SMS trigger is performed via the admin web interface. A detailed description of the SMS trigger instance configuration is described in the **Setting up SMS Callback Services** handbook.

Usage

After the SMS trigger is configured, your customers can send SMS messages to your access number that contain any of the commands described in *APPENDIX B – SMS callback commands.*

Web callback trigger

The purpose of this module is to allow end users to initiate callback calls by filling in a form on the web interface.

When a user wants to initiate a callback call, he just goes to your website, enters all the required information (username, password, phone number, etc.) and clicks the Submit button to initiate the call. This request is

delivered to the callback trigger via HTTP or HTTPS, and the callback call is initiated.

The workflow of the web callback trigger is as follows:

- The customer retrieves the web form and fills in values such as account ID, password, first number, second number, etc.
- By pressing the submit button the customer's request goes to the CGI script (hosted on PortaSIP®).
- The script processes the input parameters and then relays the callback request.

A sample HTML document that contains a form with callback parameters is built in, and available upon the configuration of web callback. This document is only an example of the required parameters; you can customize it (change text and colors, insert pictures, etc.) or even design the form to be a part of your existing customer portal. However, it is important that all of the form's parameters and their names be left unchanged.
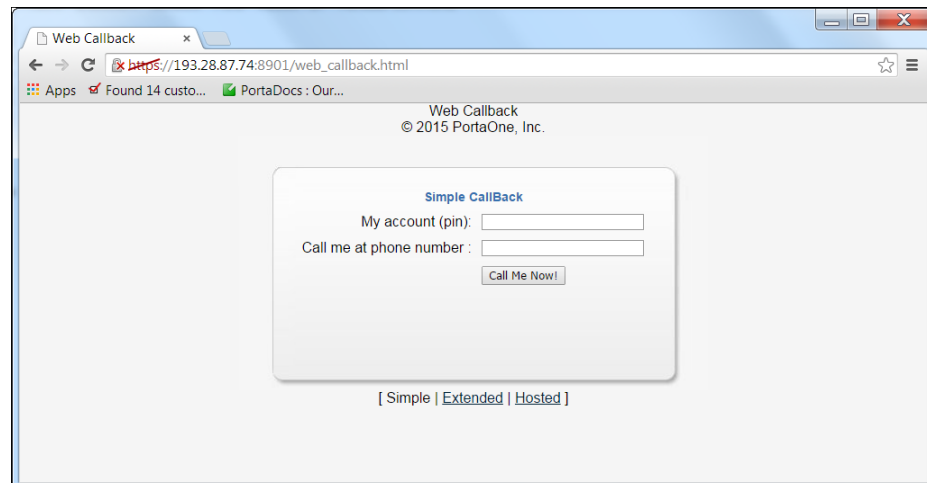
You may also entirely omit this web form where users fill in data and press the submit button. In this case, the HTTP request for callback would be sent from another application.

An advantage of this method is that (similar to SMS callback) the user can enter all the required information in one place. A disadvantage is that the user needs access to the Internet in order to use the service.

The following are the types of web callback:

Simple

This type of callback provides a convenient way for a user to get connected to the helpdesk or central office.
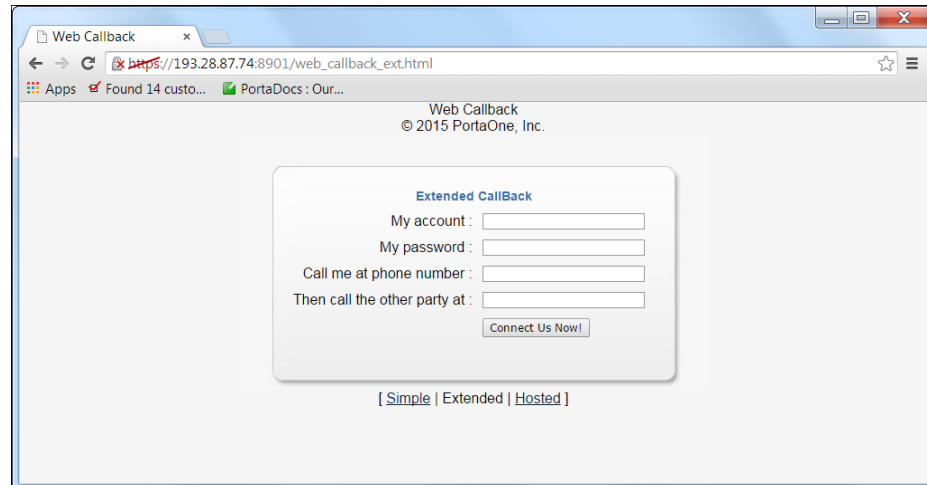
- The user provides his account ID (PIN) and the phone number.
- The second number is pre-defined in the application configuration.
- The system checks with billing that the account provided is valid and allowed to establish a call to the given number (the user's phone number).
- When the user answers, the second call (to the pre-defined number) is established.
- After the second call is established, the two calls are bridged together.

Extended

This is the typical callback scenario, in which all of the information is provided by filling in the web form.

- The user provides his account ID (PIN), service password and two phone numbers (the first is the number the user wants to be called back to and the second is the number of the remote party the user wants to reach).
- The system checks with PortaBilling® that the account provided is valid and allowed to initiate a call to the first number.
- When the user answers, he hears the current balance and maximum allowed call duration while the second number is being dialed.
- When the second call is answered, the two calls are bridged together.

Hosted

This type of callback is a convenient way for a user to request a call to the user's phone from the service provider's helpdesk (at the expense of the service provider).
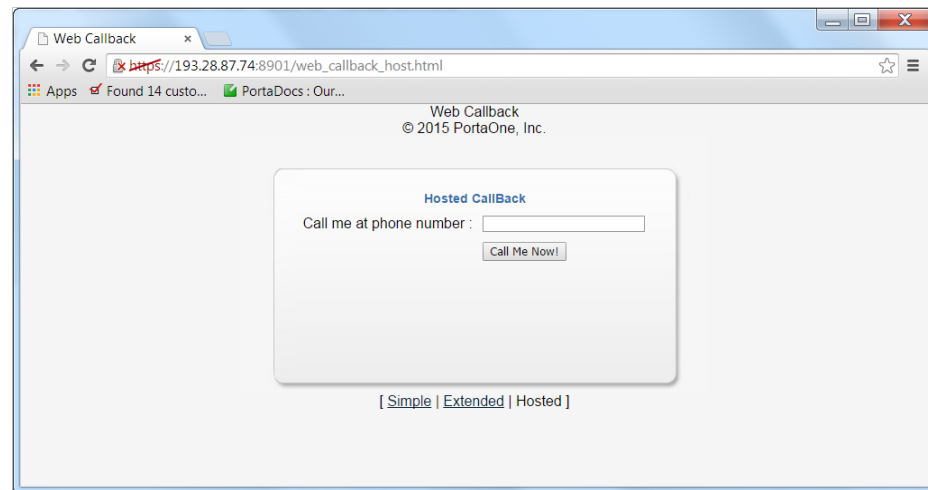
- The user provides the phone number where he wants to be called.
- The system authenticates the internal account for the call to the user's phone number.
- After the call is established, the system establishes an outgoing call to the pre-defined number in the application configuration.

NOTE: Since the first outgoing call is established without any authentication, to prevent service abuse, make sure that unauthorized users may not access the web callback trigger for hosted mode.

Configuration

The configuration of a web callback trigger is performed via the admin web interface. A detailed description of the web callback trigger instance configuration is described in the **Setting up WEB Callback Services** handbook.

Email Callback Trigger

The purpose of this module is to allow users to request callback calls via sending an email.

The workflow of the email callback is as follows:
- The user composes an email according to the pre-defined format in which the user provides his account number, password and phone numbers inside a message and sends it to a specific email address (e.g. callback@yourdomain.com). The format of the

message must correspond to the format of the "Initiate callback –
type C" SMS command. Please refer to *APPENDIX B – SMS
callback commands* for the detailed command description.

- When the email arrives to PortaSIP®, the mail filter parses the
  information contained in it and passes it to the callback trigger.
- The trigger authenticates the account provided in the email and
  relays the call processing to the callback engine.
- The callback engine then initiates the call legs.

One small advantage of this method over web callback is that while in
some office environments users are not permitted to browse the web, they
can still send and receive emails.

Configuration

The configuration of the email callback trigger is performed via the admin
web interface. A detailed description of the email callback trigger instance
configuration is described in the **Setting up Email Callback Services**
handbook.

Callback engine

The callback engine is a component of the VoIP network that actually
establishes calls to A and B and bridges them together. The functions that
the callback engine must perform are as follows:

- It includes an interface for configuring a callback trigger which
  transfers the required call information to the callback engine.
- Performs call authorization in PortaBilling® to ensure that the
  user is allowed to make the call and has sufficient funds to cover
  it.
- Correctly establishes and connects outgoing calls.
- Disconnect calls when caller has exceeded his credit limit.
- Reports call duration and other relevant call information to
  PortaBilling® so the call will be correctly charged.

The callback engine in PortaSIP® does just that. It works in close
conjunction with the callback trigger. After the callback trigger gathers the
initial information (ANI number, account and password) and performs
the initial account authentication / authorization, the callback engine
performs further call processing.

A detailed description of the callback call flow will better illustrate its
functions:

- When a new request is received from the callback trigger (e.g. for
  phone numbers 12065554123 and 16047770456) including the

username and password for the account trying to establish the call, a request to establish call leg A (to number 12065554123) is sent to PortaSIP® server.

- PortaSIP® authorizes call leg A in PortaBilling®.

- Upon successful call leg A authorization, PortaSIP® asks PortaBilling® for the optimal routing for destination number 12065554123 and establishes the outgoing call to the first destination number.

- After call leg A is connected (i.e. the user picks up the phone), it sends a request to PortaSIP® to establish call leg B (to number 16047770456) if no additional actions are required from the user's side (i.e. to enter the PIN, the destination number, etc.).

- PortaSIP® authorizes call leg B as well, but differently: PortaBilling® is informed that there are two simultaneous calls, i.e. to 12065554123 and 16047770456. Thus PortaBilling® calculates the maximum allowed call duration so that the sum of the charges for both calls according to the appropriate rates will not be greater than the current balance.

- If authorization is successful, PortaSIP® obtains the routing for the second destination number and establishes the outgoing call.

- When the user of the second phone number (16047770456) answers, PortaSIP® starts a timer. Notification that call leg B is connected is sent to the callback engine.

- Call legs A and B are bridged together and users of phone numbers 12065554123 and 16047770456 can now start their conversation.

- When one of the users hangs up, the callback engine sends a request to PortaSIP® to disconnect the other call leg as well. The same happens if call leg B is disconnected because the time has run out (the time for call leg B is calculated based on the time for call leg A); the callback engine will request that call leg A be disconnected as well.

- PortaSIP® sends accounting information to PortaBilling® so that the account is charged for two call legs (to 12065554123 and 16047770456). Two xDRs appear in the database, and its balance is modified accordingly.

Advantages

Compared to similar software solutions, the callback engine in PortaSIP® has the following principal advantages:

- No specialized hardware since the callback engine is the part of PortaSIP®.

- This is the "out of the box" solution. To enable callback, simply perform the application configuration on the web interface.

Billing

Call authorization

The billing system must support a type of call authorization which is specific to callback services. For normal service (e.g. using prepaid cards) the question for authorization is, "If account 12065554123 has $5 available, and tries to call 861234567, is he allowed to talk at all and, if yes, for how long?" In this case, the billing system finds the applicable rate for 861234567 (let us assume it is $0.10/min, rounded to 60-second increments) and then calculates the allowed maximum duration as 5/0.10=50 minutes. This task becomes more complicated as the rating formula is more complex, including multiple intervals and special surcharges (a.k.a. billing tricks).

With callback, it becomes more complicated still. Now the question is, "If account 12065554123 has $5 available, and tries to call 861234567 and 42029876543 at the same time, for how long should he be allowed to talk?"

Thus the maximum allowed call duration must be calculated in such a way that the sum of the charges for the first and second calls does not exceed $5. Since rates for China and the Czech Republic will most certainly be different, and the rates will include different intervals and surcharges, this task becomes quite complicated and is therefore not supported by most billing systems. However, PortaBilling® supports special callback authorization, and is available to provide authorization for advanced callback services.

Charging a call

After the call has been completed, billing should take appropriate action to calculate the call charges, write an xDR to the database and modify the account's balance as well as any other applicable tasks. PortaBilling® supports all of the callback features described and allows you to implement flexible rating for callback services.

FAQ

Can I use ANI callback when my users from country A call my access number in country B?

Yes, you can set up this service, however, there is a high chance that the customer's ANI information will not be relayed correctly to PortaSwitch® – so the system may be unable to determine the customer's callback number. In this type of case you can offer your customers DNIS callback.

Can I use your SMS callback on CDMA-based wireless networks?

Yes. The wireless protocol used for sending SMS messages is irrelevant to callback as long as the message is delivered to the PortaSIP® Media Server. If you use one of the hosted SMS providers they will deal with the protocol details on their side, and all messages will be delivered to the PortaSIP® Media Server in a unified format.

Can I combine residential and callback calling services?

Yes, you can set up such a service bundle so that callback call (leg A) is initiated to your customers' SIP phones. However, be aware that in this case, voicemail, follow-me and other call redirect options will not work if the call is not answered.

3. Appendices

APPENDIX A. Configuration parameters for IVR applications

Prepaid card calling

Field	Description
Authentication	
ANI authentication	If this option is turned on, the IVR application will attempt to authenticate the customer's phone number (ANI). If authentication is successful, the IVR does not ask for a PIN.
Use ANI and auth code	This feature enables service for enterprise customers when multiple individuals place outgoing calls using the same caller number (typically from the company's main phone line). The IVR application finds the customer's phone number (ANI) and his company ID (in this account's **associated number** field) and collects the user's Authentication Code. The call is then authorized and billed to the account with an ID consisting of a company ID followed by the # sign and the authentication code, e.g. 534564#555.
Minimum auth code length	The minimum number of characters the authentication code consists of. By default: 4.
Maximum auth code length	The maximum number of characters the authentication code consists of. By default: 4.
Manual authentication	If **ANI authentication** is disabled or fails for some reason, users will still be able to authenticate their identities by using their PIN numbers when this option is enabled.
Maximum login attempts	The maximum number of attempts for a user to enter a card number. By default: 3.
Auto registration	If the user's ANI is not found and PIN authentication is successful, the user will be prompted to register his ANI for future PINless dialing. If the user confirms, the ANI number he is calling from is added as an alias to his account. The next time a call is made from that phone number, it will be authenticated by the ANI and he will not be asked to enter a PIN number.
Register without	When this option is enabled, the IVR will not ask for confirmation before registering a user's ANI for

confirmation	future PINless dialing. This option is available only when the **Auto registration** option is selected.

Check service password	Use this option to increase the security of a PIN-less dialing service or to allow end users to input their "ANI numbers" confirmed by service passwords for PIN authentication:
	
	• **None**
	   o **For ANI authentication** – The IVR application will never prompt the user for their service password after successful authentication by ANI.
	   o **For PIN authentication** – It will be successful *only* if the user's account doesn't have a service password specified. This is a common use case for prepaid card services.
	
	• **Always**
	   o **For ANI authentication** – The IVR application will always prompt the user for their service password.
	   o **For PIN authentication** – The IVR application will prompt the user for their service password as long as the password is defined.
	
	• **Only PIN**
	   o **For ANI authentication** – The IVR application will never prompt the user for their service password. This is a common use case for ANI services.
	   o **For PIN authentication** – The IVR application will prompt the user for their service password as long as the password is defined.
	
	• **Only ANI**
	   o **For ANI authentication** – The IVR application will always prompt the user for their service password.
	   o **For PIN authentication** – It will be successful *only* if the user's account doesn't have any service password defined. This is a common use case

	for PIN services. For example, in case of the **Always** or **Only ANI** options, the IVR will do the following: upon collecting an ANI number, the IVR prompts the user for their password and uses it for account validation (the password provided must match the account's service password). **NOTE**: If the account has an empty service password field, any user input will match it.
Minimum password length	Minimum number of characters the valid service password consists of. By default: 4.
Maximum password length	Maximum number of characters the valid service password consists of. By default: 4.
Authorization	
Disconnect call before, sec	The call can be disconnected before an account's balance is actually depleted. Specify in seconds (till the calculated end of the call) when to disconnect the call.
Dynamic reauthorization	Enable this feature to perform dynamic reauthorization for calls made though this access number. Dynamic reauthorization is required in cases where an account is concurrently using multiple services and making a payment while the session is still in progress. Please consult the *Overdraft Protection* section in the **PortaBilling® Administrator Guide** for more information.
Restrict calls for accounts with low balance	• When account balance is less than product breakage and **disconnect** is defined, IVR plays the "you have insufficient funds" voice prompt and disconnects the call. • If **no outgoing calls** is defined, IVR prompts for the destination number but gives a busy tone and drops the call immediately after dialing it. Option **none** disables this feature.
Accounting	
Separate incoming leg cost	This option allows you to set separate prices for outgoing (a call to a destination number) and incoming (a call to an access number) call legs.
Rate by	This specifies which number should be used for charging an incoming call leg. Available options are:

	CLI, CLD.
Incoming access code prefix	This option allows you to define an access code value (e.g. IN) and therefore charge users according to one tariff for incoming calls to access numbers. To make this happen, add this value as an **Access code** (e.g. IN) for the product's rating entry.
Charge the incoming leg for idle time	Idle Time is the period that begins from launching the IVR application until the call is connected to its destination including the periods between several outgoing calls. The default value is **enabled**, meaning that PortaBilling® includes idle time within the cost for an incoming call leg. To exclude idle time from the cost of an incoming call leg, **disable** the option. Once disabled, the length of the incoming call leg will be equal to the sum of the outgoing call length and be charged accordingly. .
No charge if call is not connected	If this option is set, the caller will not be charged for an incoming call leg if the outgoing call is not connected.
Use fixed access code for first calls	This option specifies the special access code format that must be applied for the *first* outgoing call with prepaid cards. • If this option is enabled, then the "FIRSTCALL" access code will be used. If this option is disabled, then the "FIRST#12345" access code will be used, where 12345 is the access number dialed.
Use special access code for first calls	If this option is enabled, a special tariff will be used for the first outgoing call made by users with prepaid cards. This tariff should be associated with the appropriate access code in the product's **Services and Rating** list. This access code depends on the **Use fixed access code for first calls** option.
Grouping access code prefix	This option allows you to group multiple access numbers under one access code value (e.g. LOCAL) and therefore charge users according to one tariff for outgoing calls to destination numbers via any of the access numbers. To make this happen, add this value as an **Access code** value (e.g. LOCAL) for the product's rating entry.
Translation rules	

ANI translation rule	If **ANI authentication** is turned on, the voice application will attempt to authenticate the customer's phone number (so he does not have to enter a PIN). Unfortunately, caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not confused with the actual phone numbers provisioned for on IP phones.
PIN translation rule	When the **Check service password** option is enabled and the **PIN translation rule** is set, the IVR application modifies the collected PIN according to the PIN translation rule that allows the use of an ANI-based account (for example, ani442031234567) for PIN authentication. This provides your end users, normally identified by caller IDs (ANI/CLI), with the option of making calls from other phone numbers without having to input hard-to-remember PIN numbers.
Minimum card length	Minimum length of a card number. By default: 11.
Maximum card length	Maximum length of a card number. By default: 11.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is

	the classic mode, ideal for typical postpaid customers). • Note that a third **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35. In *APPENDIX B. Balance Announcements*, there are balance announcement examples for different IVR configurations.
Announce credit limit	If this option is enabled, the balance announced to the end user will be followed by an announcement of the credit limit. This allows you to separate cases where credit limits are assigned only as a precaution (and so the end user should not really know about them) from cases where they are an integral part of the service (e.g. loyal customers are rewarded with an increased credit limit the longer they stay with you).
Play pre-ring MOH	By default, the calling party hears a ringtone while waiting until the remote party answers. You may want to replace the ringtone with music on hold (MOH). Select this check box to allow IVR to play a special MOH ring when the call has already been placed but the ring signal has not yet been received.
Play welcome message	If enabled, the IVR will play the welcome message to the user once he reaches an access number.
Disconnection warning	
Disconnection warning interval, sec	This feature allows you to provide a warning when a call is about to be disconnected because of insufficient funds. This ensures that the customer has a sufficient amount of time to react and either finish the call or top up their balance.
Repeat every, sec	This feature allows you to provide multiple warnings before a call is disconnected because of insufficient funds. In this case, IVR repeats the warning every specified number of seconds until the end of the call. These warnings help your customers to estimate whether there is enough time to finish their conversation or not, or if necessary, to top up their balance.
Type of	Choose one of the following warning types:

disconnection warning	• **beep** – plays "beeping" sound. • **voice** – announces the remaining time in seconds.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Brief language announcement	Select this check box to play a brief announcement, "Please select your language or press 1 to proceed in *the first language on the list,*" instead of listing all of the available languages.
Conf language list is preferred	Select this check box to give the language list defined on this page a higher preference than the account's preferred language has.
Language Auto Select	Select this check box to allow the IVR application to proceed in the first language on the list if a caller does not choose any of the available languages.
Maximum language selection attempts	Type the maximum number of times that the IVR application replays the language menu prompt. By default: 3. This means that if a caller doesn't choose any of the available languages after the first time the menu is played, the IVR application replays the menu two more times.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use the default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt	The maximum number of seconds the system waits

timeout, sec	until a user dials a key before playing a prompt. By default: 3.
Music on hold class	Specify a pre-ring MOH class here. **NOTE**: Ringtone files for custom MOH should be placed under /porta_var/psmsc/custom-files/prompts/moh/OPTION_VALUE/ (e.g. for the MOH class "my-ringtone" the path will be /porta_var/psmsc/custom-files/prompts/moh/my-ringtone/).
Time announcement	
Announce Time	When a user inputs the destination, IVR announces the maximum call duration allowed for this destination and then connects the call.
Use Announcement Tariff	It is possible to use different tariffs for the announcement of the maximum call duration allowed and the rate for this call. The first (transparent) tariff should be associated with the "ANNOUNCE+DNIS" access code in the product's **Usage charges** list. The second tariff should be associated with an actual access code. Thus, the user hears the time announced according to the first tariff, while the call is actually authorized and rated according to the second tariff.
Seconds rounding mode	This option defines the way the seconds portion of "available time" is announced to a customer: **none** – there is no rounding, so the time is announced including seconds, e.g. "Five minutes and 49 seconds." **up** – the time is rounded up to the nearest minute, so 5:49 will be announced as "Six minutes."
Application specific	
Check associated number	When this option is enabled, the prepaid card application checks that the account has specified an associated number. If it has, the call is then redirected to that number. For example, an end user does not want to dial a callee's number every time he makes a call. Having the option already configured, the callee's number is then automatically dialed by

	the system, thereby avoiding manual dialing via phone touchpad. This field can also be used in other scenarios, e.g. together with the **Use ANI and auth code feature**.
Maximum dial attempts	Maximum number of dial attempts within one session. By default: 3.
Self-care menu	
Self-care menu	Enables the menu with additional options such as making a call using another prepaid card or the balance top-up. User can enter this menu by pressing the **#** key.
Announce self-care menu	If this option is enabled, the IVR will allow the user to enter the self-care menu by pressing the **#** key.
Allow ANI deregistration	Selecting this option allows end users to disassociate ANI numbers from their prepaid cards through the self-care menu. When users next make a call, they are authenticated by PIN.
Account top up	Selecting this option allows end users to top up their account balances by using vouchers on the self-care menu. The feature is enabled by default.
Minimum Voucher Length	Minimum length of a voucher number. By default: 11 characters.
Maximum Voucher Length	Maximum length of a voucher number. By default: 11 characters.
Announce Balance	If enabled, the IVR will announce the current balance for the user before prompting for the phone number he wishes to reach.

Callback Calling

Field	Description
Authentication	
Authenticate by	This option defines a user-name for an authentication request. Choose one of the following: • **ani** – Calling-Station-ID (caller's number) is used for an authentication request. • **dnis** – Called-Station-ID (access number which was dialed) is used for an authentication request. This application establishes a callback to the associated number parameter of the account equal to the access number.

	• **none** – Do not immediately authenticate. This application prompts the user to enter a card number for authentication after calling the user back.
Auto registration	When enabled, this allows a caller to use callback with the auto registration feature. When the customer dials an access number, the system drops the call to initiate a callback. Customer is prompted to enter a PIN number and after successful PIN validation, the system adds the caller's number as an alias to the customer's account.
Maximum login attempts	Maximum number of attempts for a user to enter a card number. By default: 3.
Authorization	
Disconnect call before, sec	You can configure the system to disconnect a call before an account's balance is actually depleted. Specify in seconds (till the calculated end of the call) when to disconnect the call.
Expected connect time	This option verifies that the account's balance is sufficient for the leg B setup time. If the **Expected connect time** value is more than the maximum leg A duration, leg B will not be allowed. By default: 20 seconds.
Internal account	Specifies an internal account. Also, you can allow/deny certain destinations in this account's tariff as the initial callback will be authorized with the 'fake account'. **NOTE**: If it is not defined, the Media Server uses the application access number by default.
Restriction calls for accounts with low balance	When account balance is less than product breakage and **disconnect** is defined, IVR plays the "you have insufficient funds" voice prompt and disconnects the call. If **no outgoing calls** is defined, IVR prompts for the destination number but gives a busy tone and drops the call immediately after dialing it. Option **none** disables this feature.
Send authorization	When enabled, an authorization request will be sent along with authentication. It allows you to: • Check if the caller has sufficient balance to

	initiate a call leg (i.e. user will not be called back if the balance is insufficient). • Block some destinations for callback calls in the account's tariff (mark destinations as forbidden in the appropriate tariff rates). • Use a **Minimum sufficient time** option.
Minimum sufficient time, sec	Specify the minimum amount of seconds a user needs for leg A in order to use the callback service. This option is applicable when **Send authorization** is set to **Yes** and **Minimum sufficient time** > 0).
Strict authorization	When enabled, call leg A will be disconnected if caller doesn't have sufficient funds to place call leg B.
Accounting	
LegA CLD prefix	Leg A (callback to a user's number) access code prefix. Allows billing leg A with different tariff. A separate rating entry with the appropriate access code and tariff should exist in the product's list of rating entries. **NOTE**: Access code must contain DNIS after the Prefix. For example, if the **LegA CLD Prefix** is LEG_A and the Access Number is 12125551234, then the Access Code should be LEG_A.12125551234.
LegB CLD prefix	Leg B (user's call to destination) access code prefix. Allows billing leg B with different tariff. A separate rating entry with the appropriate access code and tariff should exist in the product's list of rating entries. **NOTE**: Access code must contain DNIS after the Prefix. For example, if the **LegB CLD Prefix** is LEG_B and the Access Number is 12125551234, then the Access Code should be LEG_B.12125551234.
Special charge if LegB fails	By enabling this, you can charge users differently for calls with failed leg B (e.g. incomplete call is not charged). Just add a new rating entry to the product's rating list, set its access code to "CALLBACK_FAIL" and associate it with a special tariff.
Translation rules	
ANI translation rule	If ANI authentication is used, the voice application will attempt to authenticate the customer's phone

	number (so he does not have to enter a PIN). Unfortunately, caller identification (the ANI or CLI number) is usually delivered in a specific format (e.g. "local" - without the country code and area code: "021234567"). In this case, you need to translate the number into a unified format so it matches the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44 we can apply ANI translation rule s/^0/cb44/ to obtain "cb4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they do not overlap) and the "cb" prefix ensures that these accounts are not confused with actual phone numbers provisioned for on IP phones.
Destination translation rule	When the caller identification (ANI or CLI number) is delivered in a specific format (e.g. "local") and should be modified for a callback, this translation rule is used. For example, when caller identification is delivered in a domestic European dialing format (0 + area code + phone number, e.g. **0 5 888 7766**) and we need to call the user back using an E164 format. In this case (assuming that the country code is **44**) we would apply Dial Translation Rule **s/^0/44/** to obtain **44 5 888 7766** as the number to call back.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers). • **Balance** – Always announce balance (this is the classic mode, ideal for typical postpaid customers. Note that a third **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to

	MR35. In *APPENDIX B. Balance Announcements*, there are balance announcement examples for different IVR configurations.
Announce credit limit	If enabled, the IVR will announce the credit limit as well as the account balance This option is applicable when **Credit accounts balance announcement** is set to **balance** or **funds / balance**.
Play pre-ring MOH	By default, the calling party hears a ringtone while waiting until the remote party answers. You may want to replace this ringtone with music on hold (MOH). Select this check box to allow IVR to play a special ringing MOH when the call has been placed but the ring signal has not yet been received.
Play welcome message	If enabled, the IVR will play the welcome message to the user once an access number is reached.
Disconnection warning	
Disconnection warning interval, sec	This feature announces the remaining time in seconds or simply plays a "beeping" sound. This "time left" warning is played when a specified number of seconds is left before the call is disconnected.
Repeat every, sec	This feature allows you to provide multiple warnings before call is disconnected because of insufficient funds. In this case IVR repeats the warning every specified number of seconds until the end of the call. These warnings help your customers to estimate whether there is enough time to finish their conversation or not, or if necessary, to top up their balance.
Type of disconnection warning	Choose one of the following types of "time left" warnings: • **beep** – play "beeping" sound; • **voice** – announce the remaining time in seconds.
Language	
Language	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific

	order, and then upon reaching an access number, the end user can choose one of these languages.
Conf language list is preferred	If this check box is selected, the language list defined on this page has a higher preference than the account's preferred language.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Music on hold class	Specify a pre-ring MOH class here. **NOTE**: Ringtone files for custom MOH should be placed under /porta_var/psmsc/custom-files/prompts/moh/OPTION_VALUE/ (e.g. for the MOH class "my-ringtone" the path will be /porta_var/psmsc/custom-files/prompts/moh/my-ringtone/).
Time announcement	
Announce time	When user inputs the destination, IVR announces the maximum call duration allowed to this destination and then connects the call.
Use announcement tariff	It is possible to use different tariffs for the announcement of the maximum call duration allowed and for rating this call. The first (transparent) tariff should be associated with the "ANNOUNCE+DNIS" access code in the product's rating list. The second tariff should be associated with an actual access code. Thus, the user hears the time announced according to

	the first tariff, while the call is actually authorized and rated according to the second tariff.
Seconds rounding mode	This option defines the way the seconds portion of "available time" is announced to a customer: • **none** – there is no rounding, so the time is announced including seconds, e.g. "Five minutes and 49 seconds." **up** – the time is rounded up to the nearest minute, so 5:49 will be announced as "Six minutes."
Application specific	
Template account	Specify the account ID here to use its configuration properties as a template for all auto registered accounts.
Maximum dial attempts	Maximum number of dial attempts within one session. By default: 3.
Minimum card length	Minimum length of a card number. By default: 11.
Maximum card length	Maximum length of a card number. By default: 11.
Minimum voucher length	Minimum length of a voucher number. By default: 11.
Maximum voucher length	Maximum length of a voucher number. By default: 11.
Wait time	Delay (in seconds) before the callback application calls the user back.

Account top-up via credit card

Field	Description
Authentication	
Maximum login attempts	Specify maximum number of attempts for a user to enter a card number. By default: 3.
Use account information provided by PortaSIP	If this option is enabled, an IVR application securely identifies a user if his account was originally authenticated by PortaSIP® instead of attempting to authenticate the customer's phone number (ANI). Only enable this for access numbers dialed from SIP phones connected to PortaSwitch® (calls within your VoIP network). This option is useful in cases when normal ANI authentication by the IVR application can either be

	very difficult or unsafe (as the calling account may be mismatched): • The end user makes a call from his / her IP phone with a CLI that is either hidden or different from the authenticated account ID. The account ID is an internal ANI number (e.g. 000999123) or even a non-E164 identifier like an email address that can't be used as a normal CLI for outgoing calls.
Translation Rules	
ANI translation rule	If ANI authentication is turned on, the voice application will attempt to authenticate the customer's phone number (so he does not have to enter a PIN). Unfortunately, caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not confused with the actual phone numbers provisioned for on IP phones.

Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is the classic mode, ideal for typical postpaid customers). • Note that a third **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35. In *APPENDIX B. Balance Announcements*, there are balance announcement examples for different IVR configurations.
Announce credit limit	If this option is enabled, the IVR will announce the credit limit as well as the account balance (applicable when **Credit accounts balance Announcement** is set to "balance" or "funds / balance").
Language	
Conf Language list is preferred	If this check box is selected, the language list defined on this page has a higher preference than the account's preferred language.
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** icon to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files.

	For example, put customized English prompts under /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Customer center number	Specify the number where a user may reach an operator.
Minimum card length	Minimum length of a card number. By default: 11.
Maximum card length	Maximum length of a card number. By default: 11.
Minimum voucher length	Minimum length of a voucher number. By default: 11.
Maximum voucher length	Maximum length of a voucher number. By default: 11.
Minimum sum	Specify minimum amount of funds to be transferred from a customer's credit card.

Account top-up via voucher

Field	Description
Authentication	
Maximum login attempts	Specify maximum number of attempts for a user to enter a card number. By default: 3.
Use account information provided by PortaSIP	If this option is enabled, an IVR application securely identifies a user if his account was originally authenticated by PortaSIP® instead of attempting to authenticate the customer's phone number (ANI). Only enable this for access numbers dialed from SIP phones connected to PortaSwitch® (calls within your VoIP network). This option is useful in cases when normal ANI authentication by the IVR application can either be very difficult or unsafe (as the calling account may be mismatched):

	• The end user makes a call from his / her IP phone with a CLI that is either hidden or different from the authenticated account ID. The account ID is an internal ANI number (e.g. 000999123) or even a non-E164 identifier like an email address that can't be used as a normal CLI for outgoing calls.
Translation Rules	
ANI translation rule	Caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not confused with the actual phone numbers provisioned for on IP phones.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is the classic mode, ideal for typical postpaid customers). • Note that a third **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35. In *APPENDIX B. Balance Announcements*, there are

	balance announcement examples for different IVR configurations.
Announce credit limit	If this option is enabled, the IVR will announce the credit limit as well as the account balance (applicable when **Credit accounts balance announcement** is set to "balance" or "funds / balance").
Language	
Language	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** icon to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Allow to transfer the balance from debit accounts	Select this check box to allow a customer to top-up his main account using another pre-paid card (i.e. from a debit account) in PortaBilling® instead of a top-up voucher. In order for the balance transfer between two accounts to function properly, the "donor" account must have the same currency and product as the "recipient" account and must never be used for making calls prior to the recharge (this is to prevent potential fraudulent attempts at "stealing" someone

	else's balance).
Maximum voucher length	Maximum length of a voucher number. By default: 11.
Minimum sum	Specify minimum amount of funds to be transferred from a customer's credit card.

One-stage calling

Note that the number for this application must be in the format <special-prefix>%, e.g. 5061999%.

The process of One-stage calling to an Access Number is the following:

- The customer dials any number (e.g. 12065551234) from his home phone.
- The local telco sends this call to your system with a special 5061999 prefix (so, for example, the CLD is 506199912065551234); alternatively this special prefix can be added in the **Translation Rule** field of the particular connection or even dialed by the customer (this depends upon the agreement between the local telco and your company).
- The call is routed to the Media Server.
- The Media Server starts the One-stage calling application.
- The application strips the 5061999 prefix from the CLD and sends an authorization request to PortaBilling®.
- PortaBilling® performs the authentication by ANI, checks whether the customer is allowed to call this particular destination and the length of the maximum allowed call duration, and sends back a reply.
- IVR announces the maximum allowed call duration (if enabled).
- The application sends the call to the SIPProxy (the CLD is 12065551234).
- The SIPProxy routes the call according to the system routing plan.

Field	Description
Translation rules	
ANI translation rule	If ANI authentication is turned on, the voice application will attempt to authenticate the customer's phone number (so he does not have to enter a PIN). Unfortunately, caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a

	non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not confused with the actual phone numbers provisioned for on IP phones.
Prompts & notifications	
Play welcome message	If this option is enabled, the IVR will play the welcome message to a user once he reaches an access number.
Language	
Conf language list is preferred	If this check box is selected, the language list defined on this page has a higher preference than the account's preferred language.
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompt customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Time	

announcement	
Announce Time	When user inputs the destination, IVR announces the maximum call duration allowed to this destination and then connects the call.
Use announcement tariff	It is possible to use different tariffs for the announcements of maximum call duration allowed and the call's rating. The first (transparent) tariff should be associated with the "ANNOUNCE+DNIS" access code in the product's **Services and Rating** list. The second tariff should be associated with an actual access code. Thus, the user hears the time announced according to the first tariff while the call is actually authorized and rated according to the second tariff.
Seconds rounding mode	This option defines the way the seconds portion of "available time" is announced to a customer: **none** – there is no rounding, so the time is announced including seconds, e.g. "Five minutes and 49 seconds." **up** – the time is rounded up to the nearest minute, so 5:49 will be announced as "Six minutes."

One's own voice mailbox access

Field	Description
Accounting	
Access code	This allows you to apply a special rating to outgoing calls made by customers from their voice mailboxes. For example, if an administrator specifies the **VOICEMAIL** access code in the application settings, then PortaBilling® will use a rating entry with this very access code from the account's product to authorize outgoing calls from users' voice mailboxes.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: **Funds / balance** – For prepaid customers

	(those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is the classic mode, ideal for typical postpaid customers). Note that the third mode, **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35.
Announce credit limit	If enabled, the balance announced to the end user will be followed by an announcement of the credit limit. This allows you to separate cases where credit limits are assigned only as a precaution (and so the end user should not really know about them) from cases where they are an integral part of the service (e.g. loyal customers are rewarded with an increased credit limit the longer they stay with you).
Full mailbox notification	• Select this check box to play a notification during voicemail access when a mailbox is full.
Play dial-tone notification	The IVR plays the dial tone when end users make outgoing calls from their voice mailboxes.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click Select languages to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify

	"my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Allow to check account balance	Select this check box to allow end users to check current balance from voice mailbox.
Allow to place an outgoing call	Select this check box to allow end users to make outgoing calls from voice mailbox.
Extended greetings options menu	When selected, this allows end users to access the **Extended greetings options** voicemail menu and change their voicemail greetings.

Account self-care

Field	Description
Accounting	
Access code	This allows you to apply a special rating to outgoing calls made by customers from their voice mailboxes. For example, if an administrator specifies the **VOICEMAIL** access code in the application settings, then PortaBilling® will use a rating entry with this very access code from the account's product to authorize outgoing calls from users' voice mailboxes.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is

	the classic mode, ideal for typical postpaid customers). Note that the third mode, **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35.
Announce credit limit	If enabled, the balance announced to the end user will be followed by an announcement of the credit limit. This allows you to separate cases where credit limits are assigned only as a precaution (and so the end user should not really know about them) from cases where they are an integral part of the service (e.g. loyal customers are rewarded with an increased credit limit the longer they stay with you).
Full mailbox notification	Select this check box to play a notification during voicemail access when a mailbox is full.
Play welcome message	If this option is enabled, the IVR will play the welcome message to the user once he reaches an access number.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click Select languages to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By

Field	Description
	default: 3.
Follow we timeout	This option specifies how long the IP phone will ring before the call goes to follow-me numbers.

Balance information

Field	Description
Authentication	
Use account information provided by PortaSIP	If this option is enabled, an IVR application securely identifies a user if his account was originally authenticated by the PortaSIP® server instead of attempting to authenticate the customer's phone number (ANI).
	Only enable this for access numbers dialed from SIP phones connected to PortaSwitch® (calls within your VoIP network).
	This option is useful in cases when normal ANI authentication by the IVR application can either be very difficult or unsafe (as the calling account may be mismatched):
	• The end user makes a call from his / her IP phone with a CLI that is either hidden or different from the authenticated account ID.
	The account ID is an internal ANI number (e.g. 000999123) or even a non-E164 identifier like an email address that can't be used as a normal CLI for outgoing calls.
Translation rules	
ANI translation rule	Caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number.
	For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID.
	This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not

	confused with the actual phone numbers provisioned for on IP phones.
Prompts & notifications	
Credit accounts balance announcement	You can configure your IVR applications to announce the current balance *for credit accounts* in one of two modes: • **Funds / balance** – For prepaid customers (those who have a credit limit of 0 or less), announce "available funds" (calculated as credit limit minus balance) and announce the current balance for others (postpaid customers); • **Balance** – Always announce balance (this is the classic mode, ideal for typical postpaid customers). Note that the third mode, **Backward compatibility** mode is enabled by default. It preserves the announcements exactly the way they worked in releases prior to MR35.
Announce credit limit	If enabled, the balance announced to the end user will be followed by an announcement of the credit limit. This allows you to separate cases where credit limits are assigned only as a precaution (and so the end user should not really know about them) from cases where they are an integral part of the service (e.g. loyal customers are rewarded with an increased credit limit the longer they stay with you).
Use early media	If this option is enabled, the IVR will announce the account's balance without establishing a call so the end user is not charged by their telco.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click Select languages to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look

	for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.

Call forwarding management

Field	Description
Brand prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.

Conferencing

Field	Description
Authentication	
Maximum Login Attempts	Specify maximum number of attempts for a user to enter a card number. By default: 3.
Prompts & notifications	
Play welcome	If enabled, the IVR will play the welcome message

message	to the user once he reaches an access number.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click Select languages to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand Prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Maximum people in a conference	The maximum number of people who can join a conference. By default: 8.
Record with Review	If this option is enabled, the IVR will play back the name that the end user recorded; if preferred, it can be re-recorded.
Options available after joining a conference	There is a number of options available for a **Moderator** or a **Participant** after joining a conference. Press the star ('*') key to hear the conference menu and select an option. In case you join a conference as a **Participant**, the following options are available by dialing the corresponding numbers: 1 – Mute or unmute yourself;

	2 – Decrease your talking volume; 3 – Increase your talking volume; 5 – Decrease the conference volume; 6 – Increase the conference volume; * – Exit menu. As a **Moderator,** you have access to the following options: 1 – Mute/unmute yourself; 2 – Decrease your talking volume; 3 – Increase your talking volume; 4 – Eject the last entered user; 5 – Decrease the conference volume; 6 – Increase the conference volume; 7 – Lock/unlock the conference; 0 – Enter Moderator sub-menu; * – Exit menu. To enter **Moderator sub-menu** dial 0 (zero) or '*0' starting from entering menu. The sub-menu includes the following options: 1 – Mute or unmute all users who are not moderators; 2 – Listen to participants count; 4 – Eject all users; * – Exit sub menu.

Pass-through IVR

This IVR application introduces prepaid card calling features to traditional residential VoIP service. For example, the application can play a "time left" warning when a specified number of seconds is left – before the call is disconnected. It can also announce the maximum call duration allowed to the dialed destination and then connect the call. In addition, the Pass-through IVR permits additional verification of the outgoing toll (e.g. on international) calls.

The administrator controls whether the outgoing calls are made in a normal fashion or if the calls are handled by the Pass-through IVR application. This is specified in the account's **Service Features** configuration section.

Please consult the *Call Control via IVR* section in the **PortaSIP® Administrator Guide** for more information.

Field	Description
Authentication	

Maximum length of the auth code	Maximum allowable length for an authorization code. By default: 4.
Maximum login attempts	Specify maximum number of attempts for a user to enter a card number. By default: 3.
Authorization	
Authorize paid calls	Enable this option to perform an additional verification for toll calls. This will prevent unauthorized usage of phones available in public areas. Furthermore, if a single phone is shared among multiple users, then the outgoing calls can be billed to separate accounts; this will allow for accountability for each user based on the input authorization code. By default: disabled. Note that if this option is disabled and the **Treat Auth Code as Part of Account ID** option is enabled at the same time, the user will only be able to make toll-free calls.
Treat auth code as part of account ID	Enable this feature if a single phone is shared among multiple users and there is a need to bill outgoing calls to separate accounts; the account with ID *AccountID#AuthCode* (account ID followed by # followed by authorization code, e.g. 12121234567#1234) will be used to authenticate the call. If this feature is disabled, the input authorization code will be compared with the account's **Service Unblock Code** (defined in the **Fraud Detection** tab) to confirm that a legitimate user is attempting to make a call. By default this feature is enabled.
Use associated number to produce auth ID	When this option is enabled, the application checks for an associated number specified for the account. If there is one, the authorization is done using the associated number and authorization code input by the user (i.e. account's associated number followed by # followed by authorization code, e.g. 74951234567#1234) will be used to authenticate the call). By default this is disabled.
Prompts &	

notifications	
Announce time	When user inputs the destination, the IVR announces the maximum call duration allowed to this destination and then connects the call. By default this feature is disabled.
Disconnection warning	
Disconnection warning interval	This feature announces the remaining time in seconds or simply plays a "beeping" sound. This "time left" warning is played when a specified number of seconds is left before the call is disconnected.
Repeat every, sec	This feature allows you to provide multiple warnings before call is disconnected because of insufficient funds. In this case IVR repeats the warning every specified number of seconds until the end of the call. These warnings help your customers to estimate whether there is enough time to finish their conversation or not, or if necessary, to top up their balance.
Type of disconnection warning	Choose one of the following types of "time left" warnings: • **beep** – play "beeping" sound. • **voice** – announce the remaining time in seconds.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.

Payment remittance – TransferTo

Field	Description
Authentication	
Maximum Login Attempts	The maximum number of attempts for a user to enter a card number. By default: 3.
Prompts & notifications	
Play welcome message	If enabled, the IVR will play the welcome message to the user once he reaches an access number.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand Prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Minimum card length	Minimum length of a card number. By default: 11.
Maximum card length	Maximum length of a card number. By default: 11.

Simplified account self-care

Field	Description
Authentication	
Use account information provided by PortaSIP	If this option is enabled, an IVR application securely identifies a user if his account was originally authenticated by the PortaSIP® server instead of attempting to authenticate the customer's phone number (ANI). Only enable this option for access numbers dialed from SIP phones connected to PortaSwitch® (calls within your VoIP network). This feature is useful in cases when normal ANI authentication by the IVR application can either be very difficult or unsafe (as the calling account may be mismatched): • The end user makes a call from his / her IP phone with a CLI that is either hidden or different from the authenticated account ID; • The account ID is an internal ANI number (e.g. 000999123) or even a non-E164 identifier like an email address that can't be used as a normal CLI for outgoing calls.
Translation rules	
ANI translation rule	Caller identification (ANI or CLI number) is usually delivered in the "local" format, without the country code, etc., e.g. "021234567." In this case, you need to translate the number into a unified format so it will match the ID of the billing account. The recommended format is a non-numeric prefix followed by an E164 number. For example, assuming that the country code is 44, we can apply ANI Translation Rule s/^0/ani44/ to obtain "ani4421234567" as the authorization ID. This allows you to manage numbers from different countries (so they will not overlap) and the "ANI" prefix will ensure that these accounts are not confused with the actual phone numbers provisioned for on IP phones.
Prompts & notifications	
Early media	If this option is enabled, the IVR will announce the

announcement	account's balance without establishing a call so the end user is not charged by their telco.
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an access number, the end user can choose one of these languages.
Prompts customization	
Brand Prompts	IVR prompts can be customized per access number. Specify the directory where the custom prompt files are located. The Media Server will look for the prompts in that folder first and if found – use them. Otherwise, it will use default files. For example, put customized English prompts under the directory /porta_var/psmsc/custom-files/prompts/brands/my_company/en and specify "my_company" in this field.
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Template account	Specify the account ID here to use its configuration properties as an etalon for all accounts.

Sound quality check

Field	Description
Prompts & notifications	
Language	
Select languages	This option allows the user to select the language(s) to be used for voice prompts. Click **Select languages** to open the language selection dialog box and define languages in a specific order, and then upon reaching an

	access number, the end user can choose one of these languages.
Prompts customization	
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Minimum duration, sec	To ensure that stored messages are long enough to judge their sound quality, an administrator can set the required minimum length for a message to be stored. If the value is 0, then the IVR application stores messages of any length.
Maximum duration, sec	The maximum length of a message. The IVR application stops recording a message after this number of seconds and immediately plays it back.

Call trace

Field	Description
Prompts & notifications	
Confirm by pound	If this option is enabled, the IVR suggests confirmation of multi-digit input by pressing the '#' key.
Default prompt timeout, sec	The maximum number of seconds the system waits until a user dials a key before playing a prompt. By default: 3.
Application specific	
Trace Without Confirmation	Trace the last call attempt without announcement of its details and confirmation.
Traceable Calls Lifetime, days	The time period (in days) after a call attempt during which it remain traceable.

User application

You can add interactivity to your CTI solutions by enabling customers to program and use their own IVRs with PortaSwitch®. For example, a visa processing center (one of your customers) develops the IVR application to announce visa status to callers and integrates it with their web site.

When a caller dials the access number, PortaSwitch® sends the call to the IVR associated with that customer. The IVR prompts the caller to enter their registration number, then retrieves their visa status from the external database and plays the corresponding prompt. The customer's IVR application communicates with PortaSwitch® via the API and it can be implemented in any programming language.

Please consult the *Call control API for custom IVR application* chapter in the **PortaSwitch® Architecture and Concepts** guide for more information.

APPENDIX B. SMS callback commands

Command syntax

- Most of the commands have the syntax **`<code> <value>`**, where <code> is an abbreviated parameter code such as **`R`** or **`DN`** and <value> is a required parameter. Note that <code> and <value> can be separated by a space; if more than one <value> is to be provided, the individual elements can be separated by a space as well.
- The callback trigger is not case-sensitive, so **`DN 420212345`** is equal to **`dn 420212345`**
- Phone numbers should be specified in the E.164 format (country code, followed by area code, followed by the phone number). You should not put 00 or + in front of the phone number; if you do so, the callback trigger will automatically strip them off.

In the description below, the following terminology is used:
- **Source phone number** means the phone number that was used to send the SMS message.
- **Registered phone number** means the phone number that is subscribed to the service (there is an account in billing with such an ID).

Registration of a new account

Format of the SMS message: **`R`** or **`R NNNNNNN`** (note the space after R!)

Action: The system will take the source number and attempt to create a new account with such an ID (parameters such as product, billing model, account prefix, etc. will be taken from the config file). The new account is created with a zero balance; but if the voucher code NNNNNNN is provided, the new account will immediately be recharged using this voucher.

Following registration, the user will receive an SMS message confirming his subscription and providing him with basic information on the use of the service.

If an account with such an ID already exists and no voucher ID is provided, this command will be ignored; otherwise it is executed as an account recharge.

Examples:
`R`

```
R 234873640324
```

Initiate callback call – type A

Connect a registered phone number with the provided destination number.

Format of the SMS message: **NNNNNNN** or **DN NNNNNNN**

Action: Establish a call to a registered phone number. When the call is connected, establish a call to destination number NNNNNNN and bridge the two calls together. This is the most commonly used service, so it allows for easy use of an SMS message: the user just includes the phone number.

Examples:
```
6581433653
DN 420212345678
```

Initiate callback call – type B

Connect a provided source phone number with a provided destination number.

This service is typically used when SMS messages can be sent from the user's phone (the one registered in the system) though he does not wish to receive incoming calls to it. For example, he may be abroad, so an incoming GSM call would be very expensive for him. Instead, he can instruct the system to call him on a local access number.

Format of the SMS message: **SN XXXXXXX DN NNNNNNN**

Action: Establish a call to phone number XXXXXXX. When the call is connected, establish a call to destination number NNNNNNN and bridge the two calls together.

Examples:
```
SN 6581433653 DN 420212345678
```

Initiate callback call – type C

It may happen that the user is not able to send SMS messages from his mobile phone (phone not working, prepaid balance exceeded, etc.). Instead he may use another phone to send an SMS message. In this case, of course, in addition to providing his original phone number he must also provide a valid password, so that no misuse of this service can occur.

Format of SMS message: **P AAAA YYYY DN NNNNNNN SN XXXXXXX** or **P AAAA YYYY DN NNNNNNN**

Action: Authenticate by account AAAA with password YYYY. If source number XXXXXXX is not provided, then assume that the first call must be established to the registered number. Establish the first call. When the call is connected, establish a call to destination number NNNNNNN and bridge the two calls together.

Examples:
```
P 6192345678 1ak45 SN 6581433653 DN 420212345678
P 6192345678 1ak45 DN 420212345678
```

Check current balance

Format of SMS message: `CB`

Action: If the phone number from which the SMS was sent is registered, send back the current balance information by SMS.

Examples:
```
CB
```

Change current password

Format of the SMS message: `CP XXXXX YYYYY`

Action: If the old password XXXXX provided is correct, change the password for the account with the registered phone number to YYYYY.

Examples:
```
CP 1ak45 andrew1
```

APPENDIX C. Voice applications settings

One's own voice mailbox access

Field	Description
Access Code	This allows you to apply a special rating to outgoing calls made by customers from their voice mailboxes. For example, if an administrator specifies the **VOICEMAIL** access code in the application settings, then PortaBilling® will use a rating entry with this very access code from the account's product to authorize outgoing calls from users' voice mailboxes.

APPENDIX D. Balance announcements

In the table below you can see available variants for balance announcements with the **Credit accounts balance announcement** option set to **backward compatibility** or **funds / balance** value:

	Backward Compatibility	Funds/Balance
Balance = 10; Credit Limit = 300	"You have 290 dollars."	"You have 290 dollars available."
Balance = 10; Credit Limit = n/a	"You have unlimited available funds."	"Your balance is 10 dollars."
Balance = -10; Credit Limit = 300	"You have 310 dollars."	"Your balance is minus 10 dollars."
Balance = -10; Credit Limit = 0	"You have 10 dollars."	"You have 10 dollars available."

In the following table you can see available variants for balance announcements with the **Credit account balance announcement** option set to **balance** value (with the **Announce credit limit** option enabled / disabled):

	Balance	
	Without Credit Limit Announcement	With Credit Limit Announcement
Balance = 10; Credit Limit = 300	"Your balance is 10 dollars."	"Your balance is 10 dollars, your credit limit is 300 dollars."
Balance = 10; Credit Limit = n/a	"Your balance is 10 dollars."	"Your balance is 10 dollars, there is no credit limit."
Balance = -10; Credit Limit = 300	"Your balance is minus 10 dollars."	"Your balance is minus 10 dollars, you credit limit is 300 dollars."
Balance = -10; Credit Limit = 0	"Your balance is minus 10 dollars."	"Your balance is minus 10 dollars, you credit limit is 0 dollars."

APPENDIX E. Supported DTMF methods

PortaSIP® supports the following DTMF methods:

- Inband (as normal audio tones in the RTP stream with no special coding or markers).
- RFC 2833 (as named telephone events in the RTP stream).
- SIP INFO method – This is the preferred DTMF method.

Please note that to use these DTMF methods they must be enabled on the Configuration server web interface.

APPENDIX F. Fax transmission-supported codecs

PortaSIP® supports high-quality fax transmission in the following codecs:
- T.38
- G.711 (G.711a and G.711u)

APPENDIX G. Supported Languages

The following tables show which languages are supported by specific Media Server IVR applications.

- No – Not supported.
- Yes – Supported.
- P – Partially supported (incomplete prompts list or prompts are out of date).

NOTE: With every release, we update the English prompts. For other languages, we usually do batch updates of prompts every few releases because of high studio recording costs. If you wish to expedite the prompts recording for a specific language, please contact our sales team to discuss our agenda.

Self-care IVR Applications

LANGUAGE / APPLICATION	English (en)	Spanish (es)	French (fr)	Swiss French (fr-CH)	Hebrew (he)	Brazilian Portuguese (pt-BR)	Russian (ru)	Cantonese Chinese (yu)	Persian (fa)	Dutch (nl)
Account top-up via credit card	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes
Simplified account self-care	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes
Call forwarding management	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Account self-care	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Account top-up via voucher	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Balance information	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes
One's own voice mailbox access (with PIN protection)	Yes	Yes	P	No	P	Yes	P	No	Yes	Yes
One's own voice mailbox access	Yes	Yes	P	No	P	Yes	P	No	Yes	Yes
Payment remittance	Yes	Yes	No	No	No	Yes	No	No	Yes	Yes
Auto attendant	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes

Voicemail	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Sound Quality Check	Yes	No	No	No	No	Yes	No	No	No	Yes
Call Trace	Yes	No	No	No	No	Yes	No	No	No	No

LANGUAGE / APPLICATION	Mandarin Chinese (cm)	Greek (el)	Arabic (ar)	Swedish (sv)	German (de)	Italian (it)	Myanmar (my)	Turkish (tr)
Account top-up via credit card	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Simplified account self-care	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Call forwarding management	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Account self-care	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Account top-up via voucher	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Balance information	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
One's own voice mailbox access (with PIN protection)	Yes	No	Yes	Yes	Yes	Yes	No	Yes
One's own voice mailbox access	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Payment remittance	No	No	No	No	Yes	Yes	No	Yes
Auto attendant	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Voicemail	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Sound Quality Check	No	No	No	No	No	No	No	No
Call Trace	No	No	No	No	No	No	No	No

The language of the Voicemail and Auto Attendant prompts depends on the end user's preferred IVR language.

Thus, when a call to Voicemail or Auto Attendant arrives, the Media server first checks the caller's Preferred IVR Language.

If the caller is unknown (e.g. a call comes from PSTN or a mobile number), the Media server checks the account's Preferred IVR Language. If the language is defined and supported, the Media server uses the language of that account being called and the prompts play in that language.

If the caller is a local account and the account's Preferred IVR Language is defined and supported, the Media server uses that preferred language to play the prompts.

If the preferred IVR Language is not explicitly defined for a caller / callee, the Media server uses its default IVR language.

Outgoing Calling Applications

LANGUAGE / APPLICATION	English (en)	Spanish (es)	French (fr)	Swiss French (fr-CH)	Hebrew (he)	Brazilian Portuguese (pt-BR)	Russian (ru)	Cantonese Chinese (yu)	Persian (fa)	Dutch (nl)
One-stage calling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	P	Yes	Yes
Callback calling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	P	Yes	Yes
Prepaid card calling	Yes	Yes	Yes	P	P	Yes	Yes	P	Yes	Yes

LANGUAGE / APPLICATION	Mandarin Chinese (cm)	Greek (el)	Arabic (ar)	Swedish (sv)	German (de)	Italian (it)	Myanmar (my)	Turkish (tr)
One-stage calling	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Callback calling	Yes	P	Yes	Yes	Yes	Yes	Yes	Yes
Prepaid card calling	Yes	P	Yes	Yes	Yes	Yes	P	Yes

Other IVR Applications

LANGUAGE / APPLICATION	English (en)	Spanish (es)	French (fr)	Swiss French (fr-CH)	Hebrew (he)	Brazilian Portuguese (pt-BR)	Russian (ru)	Cantonese Chinese (yu)	Persian (fa)	Dutch (nl)
Conferencing	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes
Call screening (fraud protection)	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes

LANGUAGE / APPLICATION	Mandarin Chinese (cm)	Greek (el)	Arabic (ar)	Swedish (sv)	German (de)	Italian (it)	Myanmar (my)	Turkish (tr)
Conferencing	No	No	No	No	No	No	No	Yes
Call screening (fraud protection)	No	No	No	No	No	No	No	Yes

Supported currency

By default, if an account's currency is not supported by the account's preferred IVR language, then the IVR uses the default currency for this language to announce the account balance.

For example, let's say that John Doe lives in London and is charged in British pounds (GBP). His preferred IVR language is English. When John wants to check his balance he dials the IVR access number (e.g. 4545), and hears, "You have 32 pounds and 79 pence."

If, for some reason John changes his preferred IVR language to Portuguese (which does not support GBP), his balance will be announced in EUR, which is the default currency for Portuguese, i.e. "You have 32 euros and 79 cents" in Portuguese.

Language	Supported currency (ISO 4217 code)	Default currency (ISO 4217 code)
Arabic	BHD, USD, EUR, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	BHD
Cantonese Chinese	USD, CNY, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	USD
English	USD, RUB, EUR, GBP, THB, INR, MYR, BND, AED, IRR, ZAR, CHF, CNY, DKK, MXN, TRY, NGN, BHD, AUD, HKD, NZD, SGD, PKR, JOD, IQD, EGP, PHP, IDR, BDT, CRC, SLL, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	USD
French	USD, EUR, RUB, GBP, THB, INR, MYR, BND, AED, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	USD
German	USD, RUB, EUR, GBP, CHF, CAD, AUD, BBD, BMD, BND, BSD, BZD,	EUR

	GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	
Greek	USD, EUR, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	EUR
Hebrew	ILS, USD, EUR, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	ILS
Italian	USD, RUB, EUR, GBP, CHF, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	EUR
Mandarin Chinese	USD, CNY, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	USD
Myanmar	USD, EUR, THB, MMK, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	MMK
Portuguese	USD, BRL, EUR, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	EUR
Russian	USD, RUB, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	RUB
Spanish	USD, EUR, CRC, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	EUR
Swedish	SEK, USD, RUB, EUR, GBP, THB, INR, MYR, BND, AED, IRR, CAD	USD
Swiss French	USD, EUR, FRF, CAD, AUD, BBD, BMD, BND, BSD, BZD, GYD, HKD, JMD, KYD, LRD, NZD, SBD, SGD, TTD, TWD, ZWD	USD

ISO 4217 code

AED – United Arab Emirates dirham
AUD – Australian dollar
BDT – Bangladeshi taka
BHD – Bahraini dinar
BND – Brunei dollar
BRL – Brazilian real
CAD – Canadian dollar
CHF – Swiss franc

CNY – Renminbi
CRC – Costa Rican colón
DKK – Danish krone
EGP – Egyptian pound
EUR – Euro
FRF – French franc
GBP – Pound sterling
HKD – Hong Kong dollar
IDR – Indonesian rupiah

ILS – Israeli new shekel
INR – Indian rupee
IQD – Iraqi dinar
IRR – Iranian rial
JOD – Jordanian dinar
MMK – Burmese kyat
MXN – Mexican peso
MYR – Malaysian ringgit
NGN – Nigerian naira
NZD – New Zealand dollar

PHP – Philippine peso
PKR – Pakistani rupee
RUB – Russian ruble
SEK – Swedish krona
SGD – Singapore dollar
SLL – Sierra Leonean leone
THB – Thai baht
TRY – Turkish lira
USD – United States dollar
ZAR – South African rand

APPENDIX H. IVR Flow Diagrams

An archive with IVR flow diagrams can be downloaded from **www.portaone.com**:

http://portaone.com/docs/sip/mr75/ivr_flow_diagrams_MR75.zip