Alcatel·Lucent Enterprise

| Technical Bulletin | Rainbow PBX Integration |
|---|---|

TC2462 ed.07

Rainbow sprint 1.47 and above

# Configuration and troubleshooting guide for Rainbow PBX integration with OmniPCX Enterprise

This document provides the configuration details required to install the features linked to Rainbow PBX integration in the context of the OmniPCX® Enterprise for UCaaS or CPaaS mode. The troubleshooting part gives tips and tricks in case of issues.

Revision History

| | |
|---|---|
| Edition 1: July 23, 2018 | Creation of the document for Rainbow Sprint 1.43 level and above |
| Edition 2: July 27, 2018 | Update of the document for new OXE R12.1 pre requisite |
| Edition 3: September 12, 2018 | Update of the document for OXE configuration, network requirements, gateway deployment and troubleshooting |
| Edition 4: November 30, 2018 | Update of the document for Web RTC Gateway deployment from version 1.67, Remote extension profile for Pure SoftPhone user and new monitoring section |
| Edition 5: March 5, 2019 | Update of the document |
| Edition 6: July 15, 2019 | Update of the document |
| Edition 7: November 28, 2019 | Update of the document |

# Table of contents

# 1 Rainbow PBX integration with OmniPCX Enterprise Server

The deployment guide is delivered to perform the deployment of the Rainbow PBX features with OmniPCX Enterprise Server (OXE).

PBX integration provides the support of several Telephony Services in the Rainbow application to manage communication using the PBX resources:

- Monitor the user devices to perform Call Control from the Rainbow application
- Provide Nomadic feature to route the call received on the PBX to an external number
- Provide VoIP feature for the Rainbow applications through Web RTC Gateway

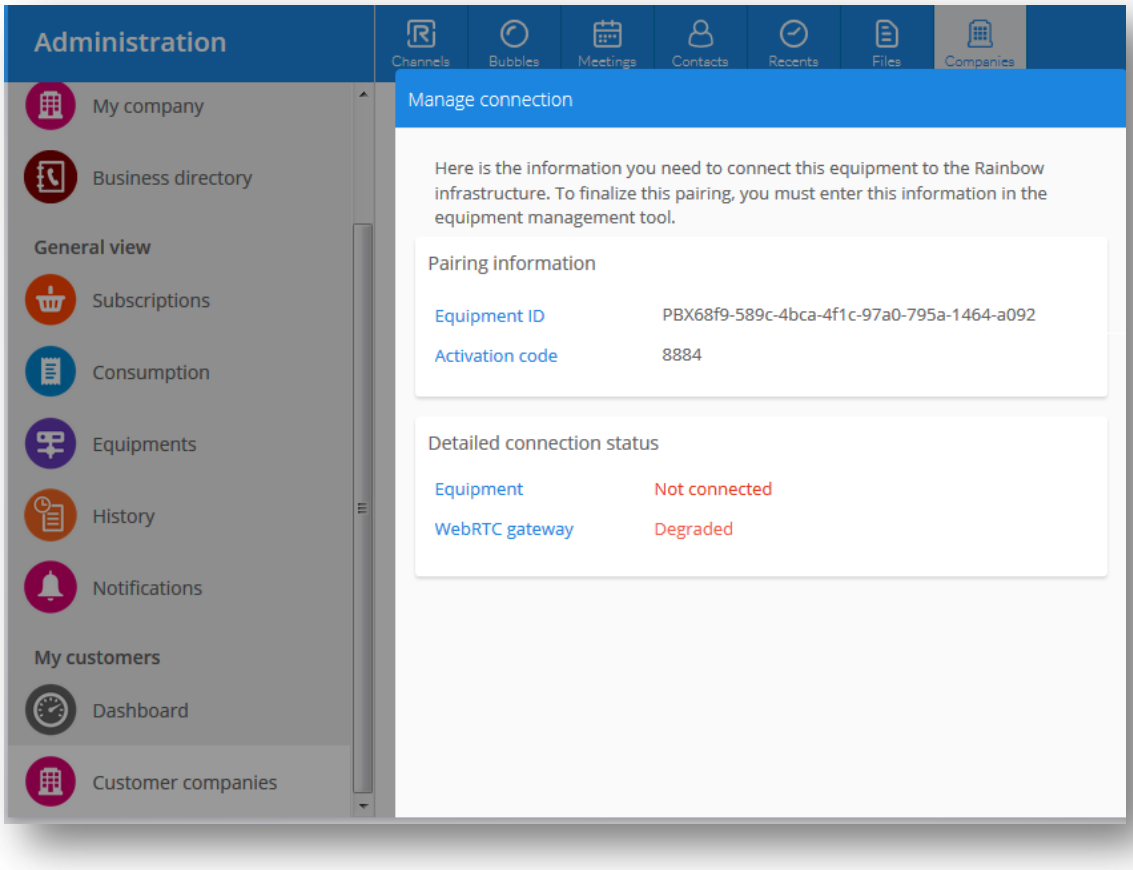
## 1.1 DeskPhone monitoring for Remote Control from OXE R12.0

First step of integration from Rainbow UCaaS application with OXE server for the DeskPhone monitoring has been introduced from OXE R12.0, patch M1.403.12.G minimum.

The deployment requires several steps of installation:

1. From Rainbow application, with Business Partner Operation role, create a company and associate an OXE system to create the Rainbow credential for the Call Server.

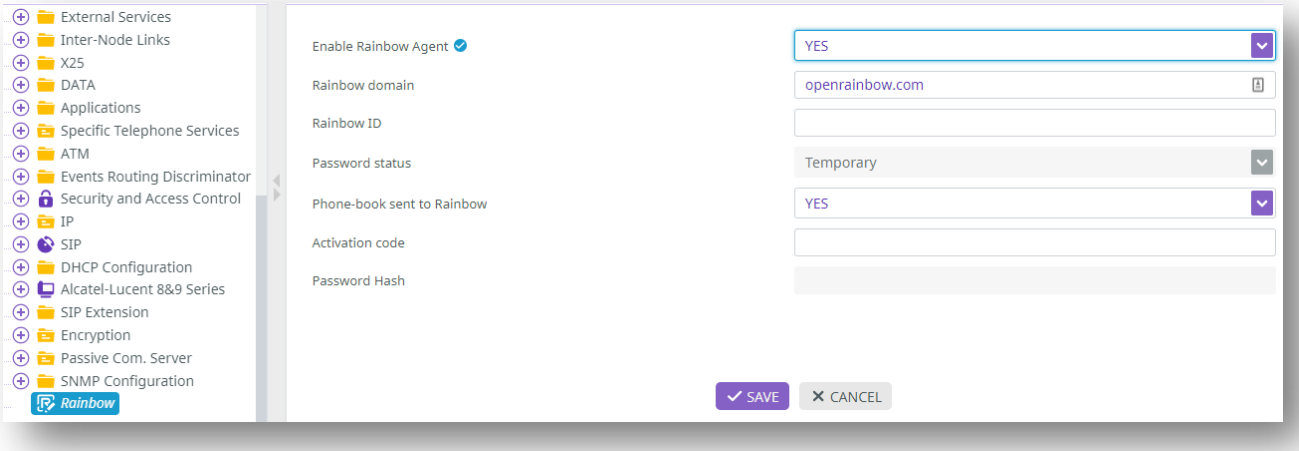
| | | Create/Manage Company *Info / Members invit.* | | Create Equipments *Add Systems* | | Manage Systems *User/Device association* | |
|---|---|---|---|---|---|---|---|
| | | BP company | EC company | BP company | EC company | BP company | EC company |
| Business Partner | Operation Role | YES | YES | YES | YES | YES | YES |
| | Finance Role | YES | YES | NO | NO | NO | NO |
| | Admin | YES | NO | YES | NO | YES | NO |
| End Customer (EC) | Admin | | YES | | NO | | YES |




2. On the Call Server, configure an external DNS and HTTP proxy (if required) to provide connection to public network.

```
(101)csa> netadmin -m

Alcatel-Lucent e-Mediate IP Network Administration
==================================================

  1. 'Installation'
  2. 'Show current configuration'
  3. 'Local Ethernet interface'
  4. 'CPU redundancy'
  5. 'Role addressing'
  6. 'Serial links (PPP)'
  7. 'Tunnel'
  8. 'Routing'
  9. 'Host names and addresses'
 10. 'Copy setup'
 11. 'Security'
 12. 'DHCP configuration'
 13. 'SNMP configuration'
 14. 'DNS configuration'
 15. 'Proxy configuration'
 16. 'VLan configuration'
 17. 'Node configuration'
 18. 'Ethernet redundancy'
 19. 'Cloud Connect'
 20. 'History of last actions'
 21. 'Apply modifications'
  0. 'Quit'

What is your choice ?
```

3. On the Call Server, register the Call Server into the Rainbow infrastructure. At first connection the list of OXE devices is pushed to the Rainbow infrastructure if the parameter “Phone-book sent to Rainbow” is set to “YES”.




4. From Rainbow application, with Business Partner Operation or End Customer Admin role, associate the OXE device and Rainbow account at the user level to activate the monitoring.

## 1.2 Nomadic mode and Computer mode from OXE R12.1 and R12.2

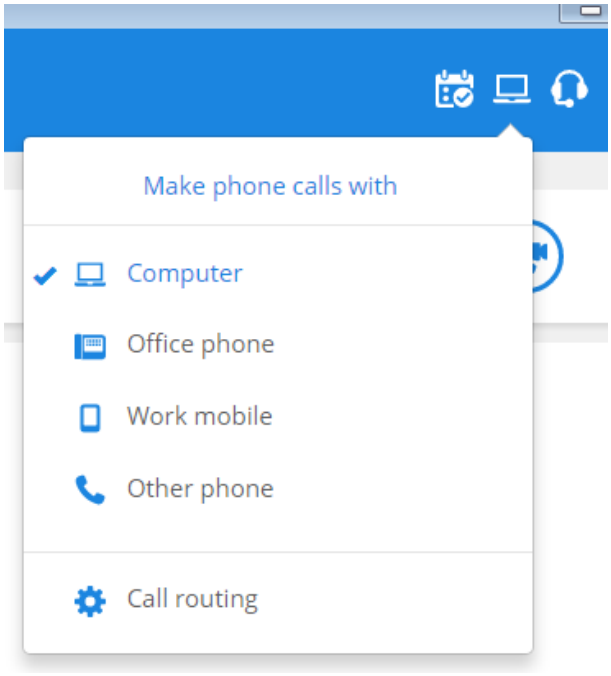
From R12.1 MD2 and R12.2, two additional features are added to the Rainbow PBX integration to manage the routing of the PBX Calls from the Rainbow applications:

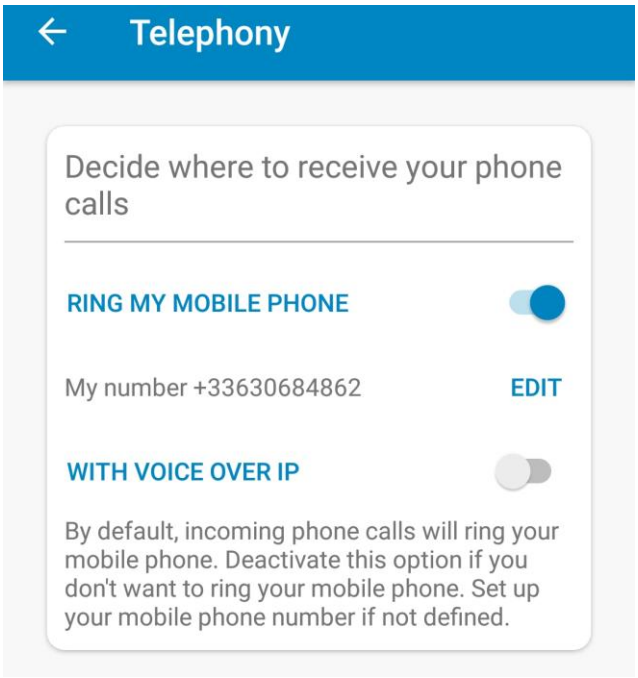
- **Nomadic mode (Any Device):**
  It introduces a routing menu Other Number in the Rainbow application to forward the PBX calls to a second extension configured with an external.
  It is based on a Remote Extension device on the OXE Call Server.

- **Computer mode (Voice Over IP):**
  It introduces a routing menu Computer to forward the PBX Calls to the Rainbow applications, PC or Smartphone. It requires the deployment of the Web RTC Gateway connected to the Call Server to forward the VoIP flows from the PBX Users/Trunk to the Rainbow applications.

It refers to Rainbow article Release-of-Telephone-Functions-AnyDevice-VoIP

New menus are now available on the applications on PC or Smartphone to switch the routing of the calls:




When the end user selects a contact, he now has the capability to call on his internal phone number or external phone number, as detailed in Rainbow article [How-to-Select-the-Device-to-Use-for-Make-my-Phone-Calls].

For R12.1, the minimum OXE patch is M2.300.21.A.

For R12.2, the minimum OXE is patch is M3.402.13.F.

This version of the document is provided for Rainbow Sprint 1.43 and above.

**Note** To retrieve the detailed scope of the feature description compatibilities and restrictions consult the corresponding article on Rainbow knowledge center [WebRTC to PSTN calling: Installation guide [WebRTC Gateway]]

# 2 Documentation

## 2.1 Rainbow Help Center

**Main page** from Rainbow Help Center
https://support.openrainbow.com/hc/en-us

Section **Getting started** - for Feature description for End User:
https://support.openrainbow.com/hc/en-us/categories/200701684

Section **Administration** - for Rainbow administration:
https://support.openrainbow.com/hc/en-us/categories/360000033164

Section **News & Updates** - Content of the releases (sprint)
https://support.openrainbow.com/hc/en-us/categories/200665684

Section **Video** (NEW) – Articles for client installation
https://support.openrainbow.com/hc/en-us/categories/115000512204

Section **Submit a request** - For further information about the Rainbow features and administration redirect the BP to Rainbow Customer Care on email address support@openrainbow.com or the site
https://support.openrainbow.com/hc/en-us/requests/new

**Feature List & White List page** – Provides compatibilities and restrictions for Rainbow features
https://support.openrainbow.com/hc/en-us/articles/115001057424

**What Are Rainbow Network Requirements?** – Details technical requirements to connect Rainbow clients, Rainbow Server and PBX to deliver Rainbow services
https://support.openrainbow.com/hc/en-us/articles/115000301750

## 2.2 OmniPCX enterprise System Documentation

Netadmin configuration Manual, chapter 3 from the document Maintenance:
http://businessportal2.alcatel-lucent.com/8AL91011USAH

Rainbow configuration Manual, chapter 23 from document System Services:
http://businessportal2.alcatel-lucent.com/8AL91000USAI

# 3 Configuration for DeskPhone Monitoring Feature

## 3.1 Network/Firewall requirement

Rainbow infrastructure is based on DNS resolution which requires to set up the border equipment to authorize outgoing connection from the OXE system to the Rainbow infrastructure.

DNS service is mandatory for a correct operation of the service.

Details about the protocols and ports are given in the article What-Are-Rainbow-Network-Requirements.

## 3.2 Association from PBX to Rainbow Infra

### 3.2.1 Activation of DNS client in OXE configuration

Rainbow services are delivered through public access on Rainbow infrastructure.

As IP addresses are not guaranteed, DNS resolution service must be used to guaranty the continuity of the telephony service:

- On the **HTTP Proxy** itself, if this is border element is required by the customer
- On the **Call Server** itself, if the OXE system is connected directly to the public network

One or two DNS Server can be configured on OXE System through the command `netadmin -m` using option `14. 'DNS configuration':`

```
14.DNS Setup
============
  1. 'View DNS configuration'
  2. 'Create/Update DNS setup'
  3. 'Delete DNS setup'
  0. 'Previous menu'

What is your choice ? 2

 Primary DNS address   (default is 127.0.0.1) ? 192.168.2.3
 Secondary DNS address (default is 127.0.0.1) ? 192.168.3.3
```

### 3.2.2 Activation of an HTTP proxy in the OXE configuration (optional)

If the customer requires to use a proxy to access the public network, it must be configured on OXE System through the command `netadmin -m` using option `15. 'Proxy configuration'`:

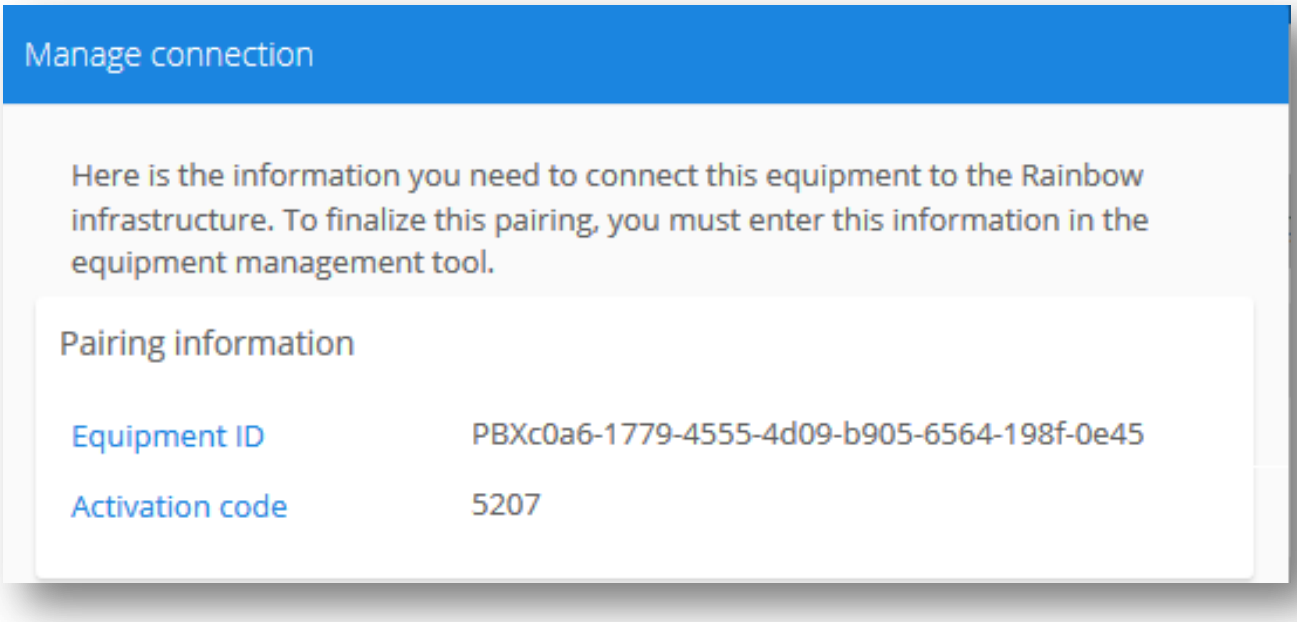
```
15.HTTP proxy menu
==================
  1. 'View HTTP proxy configuration'
  2. 'Create/Update configuration'
  3. 'Delete HTTP configuration'
  0. 'Previous menu'

What is your choice ? 2

 Host address ? 192.168.1.1
 Proxy port ? 8080
 Proxy login ? (optional)
 Proxy password ? (optional)
```

### 3.2.3 Connection OXE to Rainbow Cloud Infrastructure

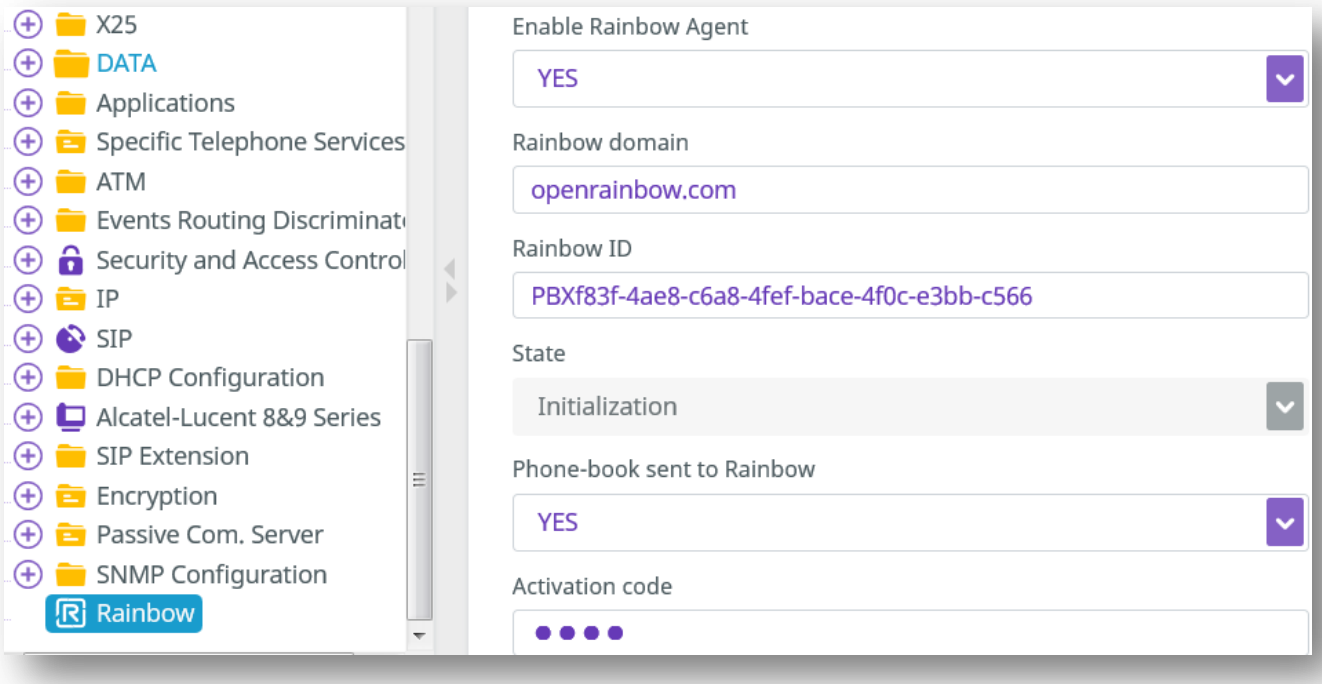
Note

**Pre requisites:** From Rainbow application, with Business Partner Operation role, declare a new OXE equipment in order to get “Equipment ID” and “Activation code” for initial connection.
Review article [Direct Reseller] How-to-Create-a-New-Equipment-PBX

From Rainbow application with Business Partner Operation role



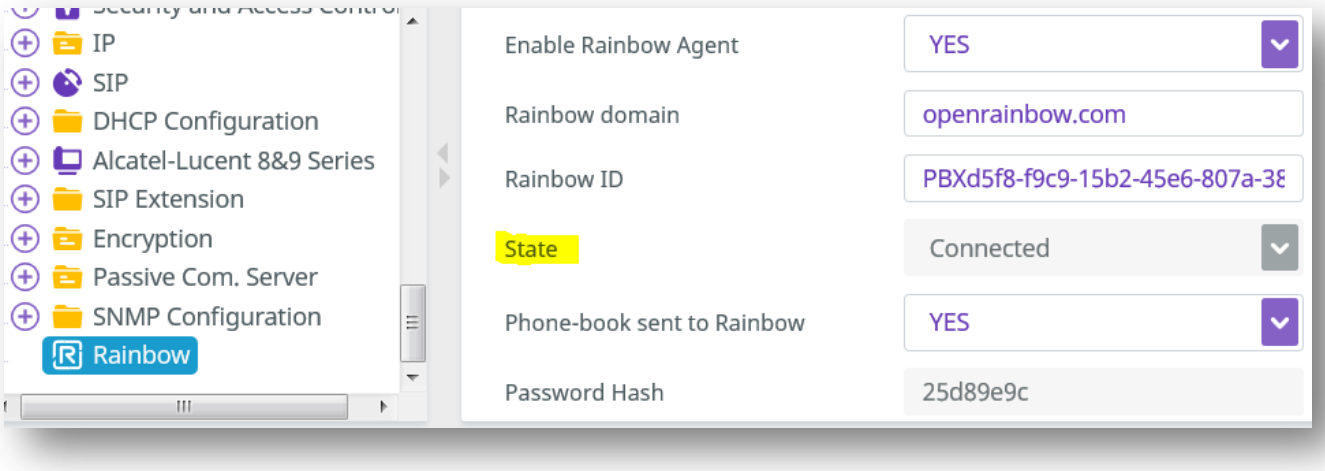

In the OXE configuration tool MGR or WBM, open the Rainbow menu:




1. Activate Enable Rainbow agent to YES
2. Fill the parameters “Rainbow ID”/“Activation code” with “Equipment Id”/”Activation code” provided by Rainbow application previously.
3. Let default value for phone-book to “YES” to send OXE directory to Rainbow Infrastructure
4. Save the changes

### 3.2.4 Check the connectivity of the Rainbow agent

Refresh the menu Rainbow and check that the state switched to Connected:




In addition, incidents will indicate the status of the connection between the Call Server and the Rainbow Infra.

In OXE R12.1 MD2, check the incident generated on CSTA connection

```
(101)xa001001> incvisu -e CSTA
12/06/18 22:29:45 006099M|---/--/-/---|=4:4017=CSTA server : nouvelle creation 1
135.117.104.105
```

From OXE R12.2, new incidents have been introduced to display rainbow status for each channel of connection

```
(101)xa001001> incvisu -e rainbow
12/06/18 22:27:32
12/06/18 22:29:46 006099M|---/--/-/---|=4:4500=rainbowagent: started
12/06/18 22:29:46 006099M|---/--/-/---|=4:4503=rainbowagent: WebSocket
(rainbowagent<->) in service
12/06/18 22:29:46 006099M|---/--/-/---|=4:4505=rainbowagent: XMPP link
(rainbowagent<->Rainbow) in service
12/06/18 22:29:46 006099M|---/--/-/---|=4:4509=rainbowagent: CSTA link (CSTA
server<->Rainbow) in service
12/06/18 22:29:49 006099M|---/--/-/---|=4:4507=rainbowagent: Config link (PBX
config<->Rainbow) in service
12/06/18 22:32:49 006099M|---/--/-/---|=4:4511= rainbowagent: API_MGT link
(API_MGT server<->Rainbow) in service
```

In case of issue refer to the section Post installation checks

## 3.3 Association between the OXE device and the End Customer Rainbow members

The last step of configuration must be completed in the Rainbow interface, with Business Partner Operation or End Customer Admin role, to associate the OXE main device to the EC member at Rainbow company level.

Refers to the Rainbow Feature List and Applications to check the list of compatible devices with Rainbow application.

**Note** Rainbow application can be applied to Business user profiles. It is not compatible with Hotel Room/Guest devices.

To perform the association report to Rainbow article How-to-Associate-or-Modify-PBX-Extensions-of-My-Company-s-Members-in-Bulk

Once this operation is executed, the Rainbow applications PC/Web will then display the DeskPhone icon 

The OXE device will be monitored and controlled by the PC/Web application as a CTI application.

In the case where the main OXE device is a Remote Extension, the latter can be attached directly to the EC Rainbow member: use VOIP on Rainbow application PC/smartphone only for voice communication. The Computer icon will be displayed 

## 3.4 Specific configuration in Multi-Tenant context for OTEC-S solution

The OXE feature Multi-Tenant can be used with Rainbow integration only in the context of an OTEC-S system.

It supports a multi-tenant configuration and which is detailed in article:

[VAD] How to Become a Rainbow Distributor and Manage My Resellers

There is a dedicated type of Node OTEC-S available during the declaration of an equipment as VAD and in the customer company.

On the OXE side, the Multi-Tenant configuration must be configured based on the Company Prefix set up.

**Note** The **Multi-Country** feature is not yet supported on Rainbow side as a single country code can be managed in Rainbow admin.

# 4 Configuration for Nomadic feature

## 4.1 Device management per Rainbow User for UCaaS mode

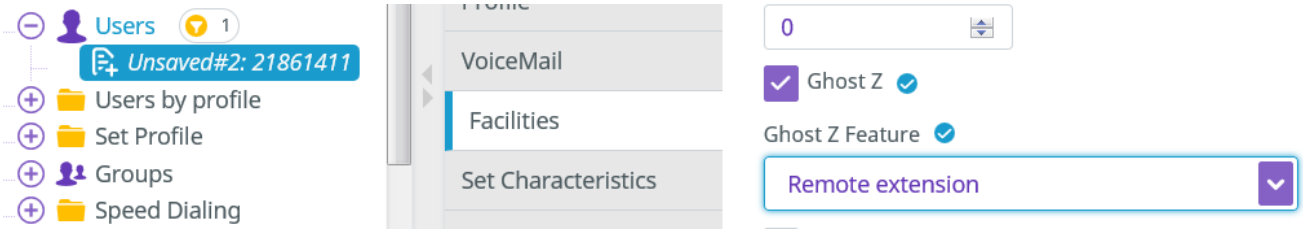
### 4.1.1 Create Ghost Z resources for Remote Extension (UCaaS only)

Ghost fictive devices are required, one per simultaneous call thru the WebRTC Gateway.

A pool of Ghost is therefore required. Their number can include letters as there are not directly called, like A12345.

Create new devices with following settings to match the number of simultaneous calls in:

***Users / Create***

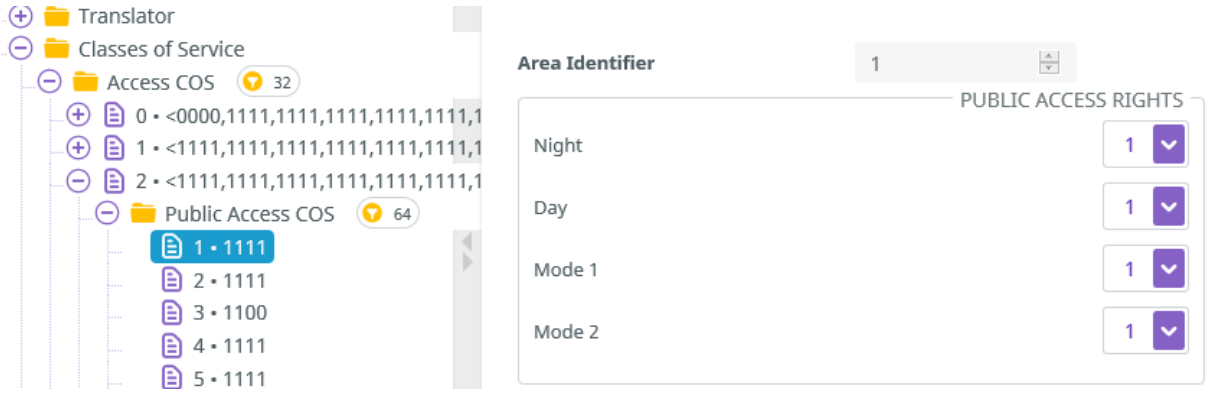



**Configure parameter list:**

**Directory number** ➔ internal directory number with digits and letters
**Set Type** ➔ select Analog
**Ghost Z** ➔ checked
**Ghost Z Feature** ➔ set to remote extension
**Public Network COS** ➔ modify if required, default Public Network COS is set to 2

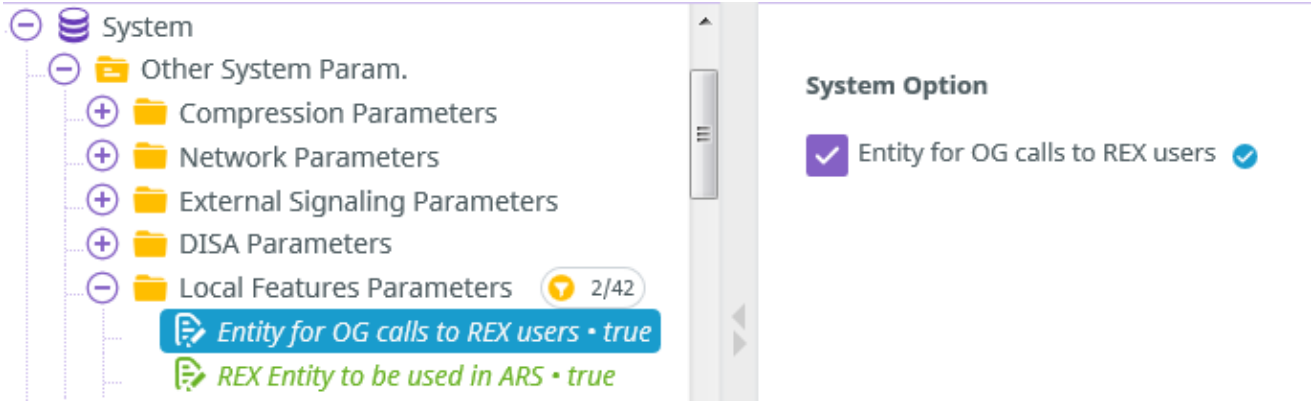
**Note**

Public Network COS of the Ghost Z will be taken into account when the remote extension will be activated in Nomadic mode. In menu **Access COS / Public Access COS**, make sure to authorize outgoing calls for all the Area Identifier used in the discrimination rules. It apply to routing Other Number or VoIP.



### 4.1.2 System Settings to modify the entity of the pool of Ghost resources

Define in **System / Other System Param. / Local Features Parameters** the parameters **Entity for OG calls to REX users** and **REX Entity to be used in ARS** to true:




### 4.1.3 Remote extension device declaration

The UCaaS applications will be associated to a PBX user through a Remote Extension device.

#### *4.1.3.1 Multi-Devices profile with a physical phone*

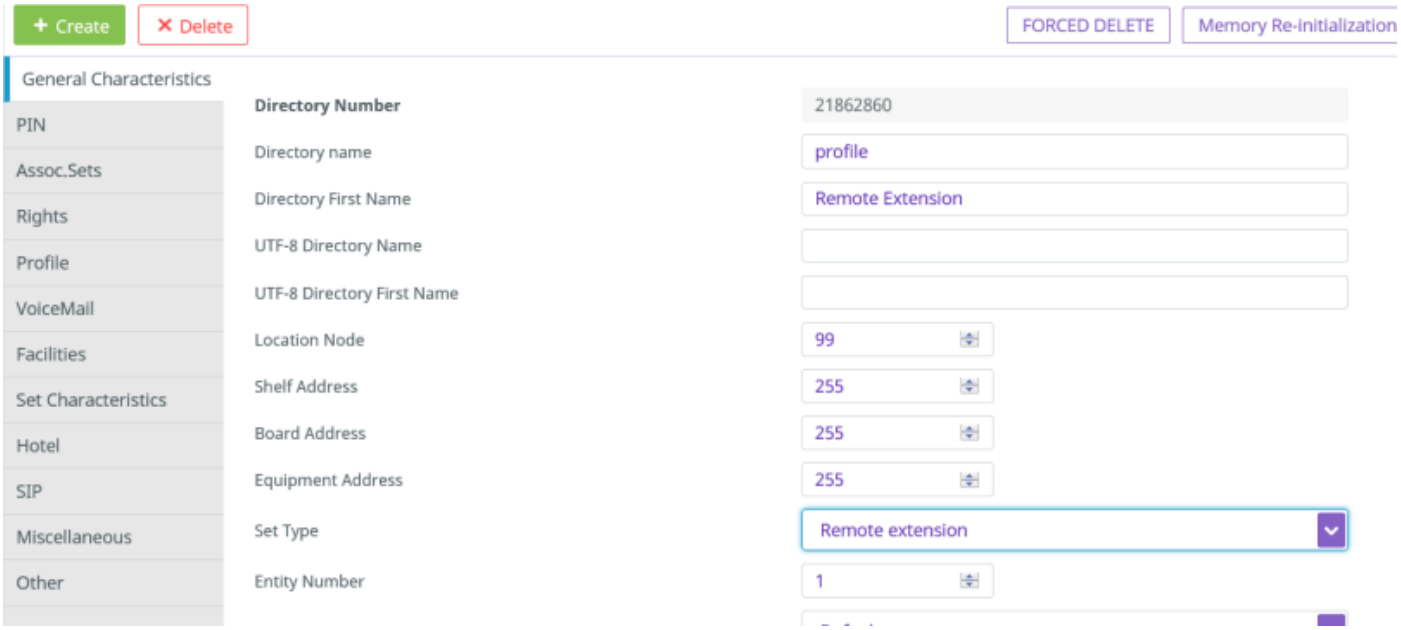
If the user already has a main phone, with possibly secondary devices, create a new device of type Remote Extension with Multi-Line keys and associate it in tandem or multi-tandem in the main device configuration.

**Configuration using by WBM or MGR Tool**

This management interface provides the possibility to create a Default User that will be used a device profile:

1. Create an initial OXE user of type Remote Extension with Multi-line keys
   a. Create the first OXE device of type Remote Extension

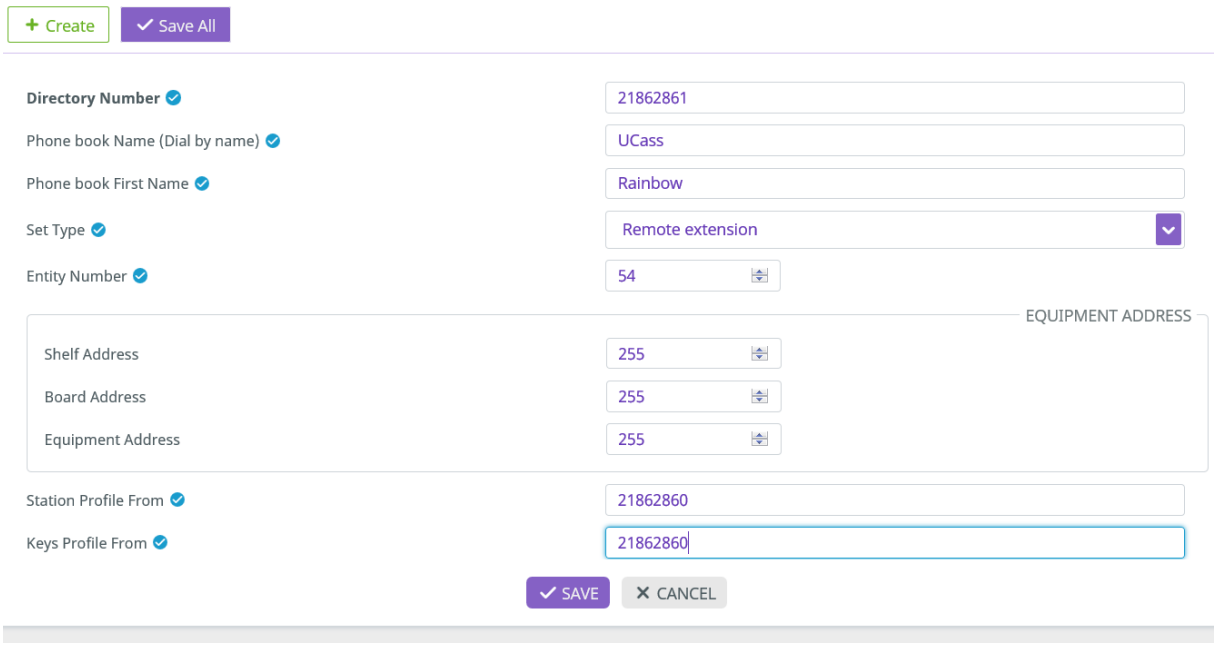
   **Directory number** ➔ must be only digits to be monitored by CSTA
   **Set type** ➔ select Remote Extension
   **Can be Called/Dialed By Name** ➔ set to No
   ***Select other fields to customize if required***



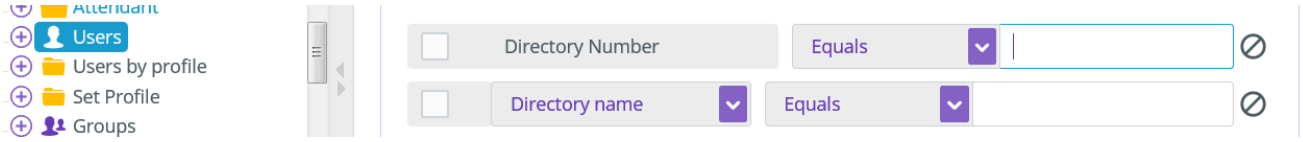

b. Add 2 Multi-line keys to the template device in position 1 & 2. This parameter depends on the number of telephonic function bouton associated to the users. It is recommended to create 2.


2. Create a new Remote Extension device using the menu **Users by profile** from MGR/WBM

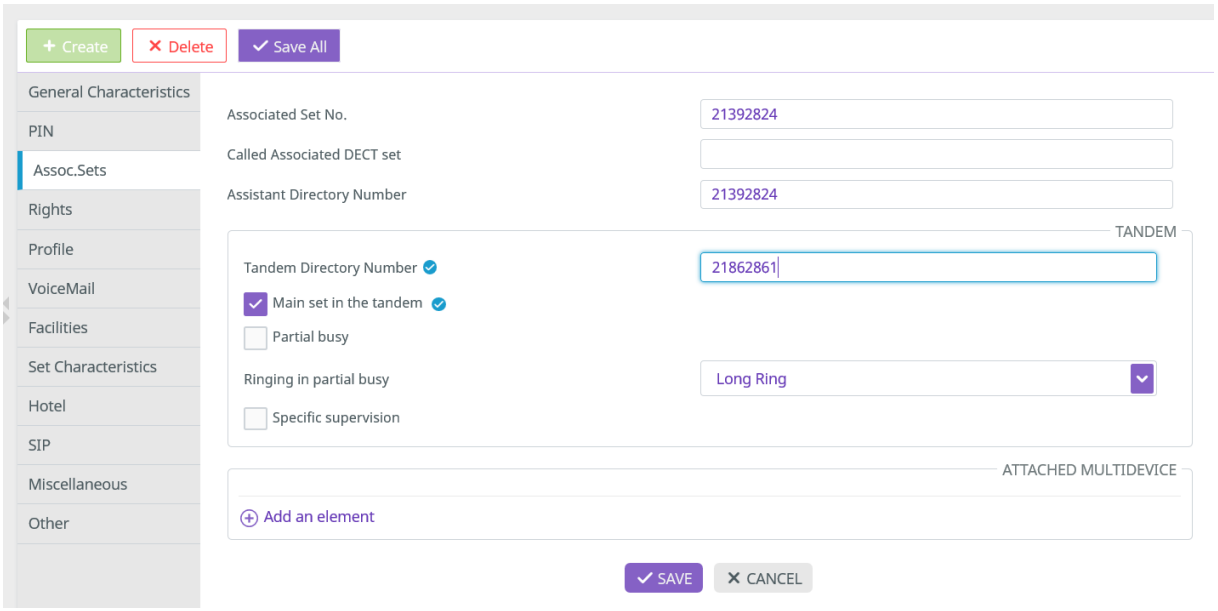

3. Define the Remote Extension device settings
   - **Phone book Name** ➔ User Last name
   - **Phone book First Name** ➔ User First name
   - **Directory number** ➔ must be only digits to be monitored by CSTA
   - **Set type** ➔ Remote Extension
   - **Entity Number** ➔ <copy from Main device>




4. In the menu Users, select the main DeskPhone device by searching the Directory Number or Directory Name:




5. Click tab Assoc.Set.



6. Add the directory number of the Remote Extension device newly created either:
   a. in the field Tandem Directory Number if empty, then check box for Main set in the tandem
   b. if the field Tandem Directory Number is already used, go down to Array ATTACHED MULTIDEVICE and select Add an Element

**Note** It is not necessary to define a destination to the Remote Extension. The field will be set automatically by the Rainbow Infrastructure after the first synchronization of the device.

**Configuration with Omnivista 8770 R3.2 in 1 step:**

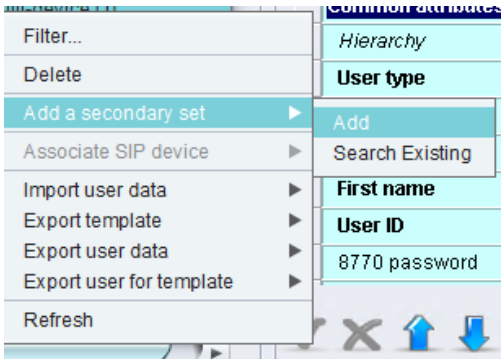
1. Create a profile for Remote Extension as Secondary device with Multi-Lines Keys
   a. Create a new OXE device with Profile function

   **Directory number** ➔ must be only digits to be monitored by CSTA
   **Set Function** ➔ select Profile
   **Profile Name** ➔ set REX_Multi
   **Set type** ➔ select Remote Extension
   **Can be Called/Dialed By Name** ➔ set to No
   ***Select other fields to customize if required***

   b. Add 2 Multi-line keys to the profile device in position 1 & 2

2. In 8770, select Users application and search for an existing OXE user

3. Click on the user and select Add a secondary set then click on entry Add




4. Select OXE ID and define the mandatory fields:
   - **OXE directory number**➔ must be only digits to be monitored by CSTA
   - **Device type** ➔ Remote Extension
   - **OXE profile** ➔ created in step 1

**Note** It is not necessary to define a destination to the Remote Extension. The field will be set automatically by the Rainbow Infrastructure after the first synchronization of the device.

### *4.1.3.2 UCaaS with REX as main OXE device*

For this case, several Rainbow clients can be connected at the same time (Smartphone, PC, Web, …) behind a unique number.

**Note**

Multi-lines keys are recommended to provide extended call handling functionalities for business users.
It is however possible to remains in mono-line configuration in case of a single mobile device.

**Configuration using by WBM or MGR Tool**

This management interface provides the possibility to create a Default User that will be used a device profile:

1. Create an initial OXE user of type Remote Extension

    a. Create the Remote Extension Device in OXE

    **Name** ➔ REX
    **Directory number** ➔ must be only digits to be monitored by CSTA
    **Set type** ➔ select Remote Extension
    **Entity Number** ➔ select the Rainbow users entity
    **Can be Called/Dialed By Name** ➔ set to **Yes**
    ***Select other fields to customize if required***

    b. Add 2 Multi-line keys to the template device in position 1 & 2 *(Not required for mono-line configuration)*

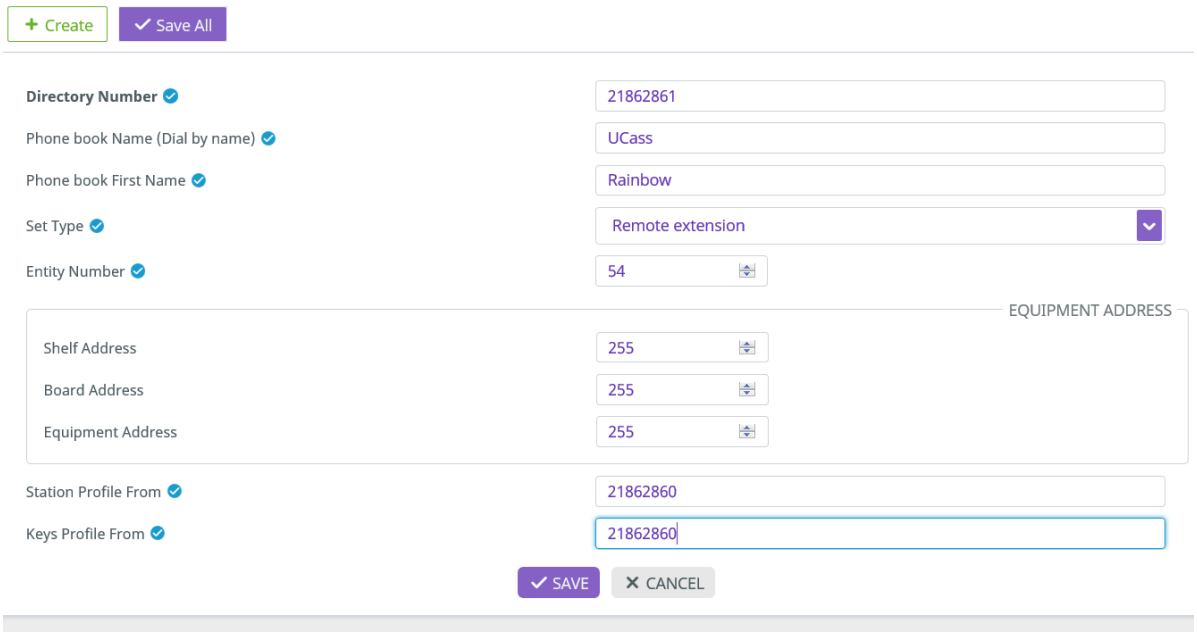
**Note**

From Rainbow sprint 49, it is not required any more to configure the **Remote extension number** to initiate the telephonic service on Rainbow applications.

The field will be set automatically by the Rainbow Infrastructure after the first synchronization of the device.

2. Create the new Rainbow users by the menu **Users by profile** from MGR/WBM

3. Define the Remote Extension device settings
   - **Phone book Name** ➔ User Last name
   - **Phone book First Name** ➔ User First name
   - **Directory number** ➔ must be only digits to be monitored by CSTA
   - **Set type** ➔ Remote Extension
   - **Entity Number** ➔ select the same entity than the Ghost Z other Rainbow users



**Configuration with Omnivista 8770 R3.2 or higher:**

1. Select OXE configuration and create a new OXE device with Profile function for Remote Extension as main device

    a. Create a new device with below attributes

    **Directory number** ➔ must be only digits to be monitored by CSTA
    **Set Function** ➔ select Profile
    **Profile Name** ➔ set REX_Mono
    **Set type** ➔ select Remote Extension
    **Entity Number** ➔ select the same entity than the Ghost Z and other Rainbow users
    **Can be Called/Dialed By Name** ➔ ~~set to Yes~~
    ***Select other fields to customize if required***

    b. Add 2 Multi-line keys to the template device in position 1 & 2 *(Not required for mono-line configuration)*

2. Select Users application and create a new OXE user
    - **OXE directory number**➔ must be only digits to be monitored by CSTA
    - **Device type** ➔ Remote Extension
    - **OXE profile** ➔ created in step 1
    - **Key profile** ➔ created in step 1

**Note**

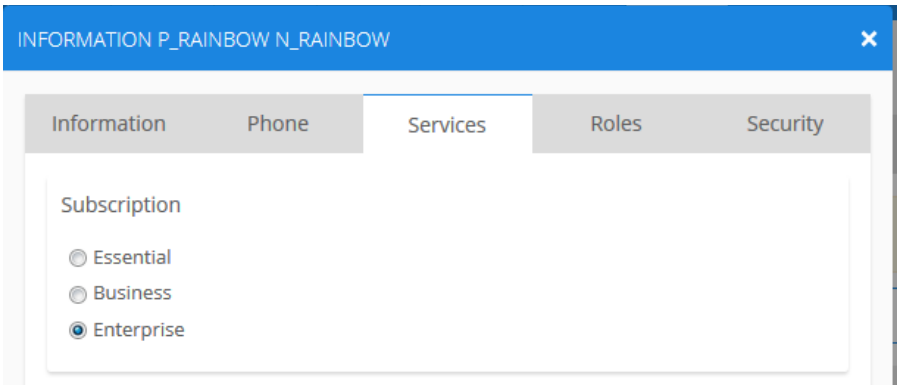
From Rainbow sprint 49, it is not required any more to configure the **Remote extension number** to initiate the telephonic service on Rainbow applications.

The field will be set automatically by the Rainbow Infrastructure after the first synchronization of the device.

## 4.2 Modification of the user Service Subscription per Rainbow user

Access to the new service Nomadic is provided only for Services Subscription Business or Enterprise.

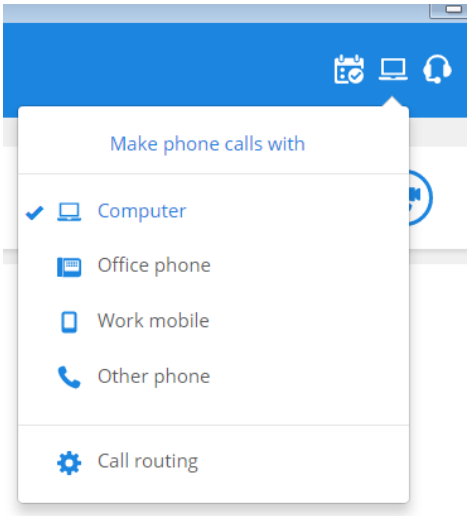
Modify the license on each user in the Services Tab from the Rainbow user configuration:



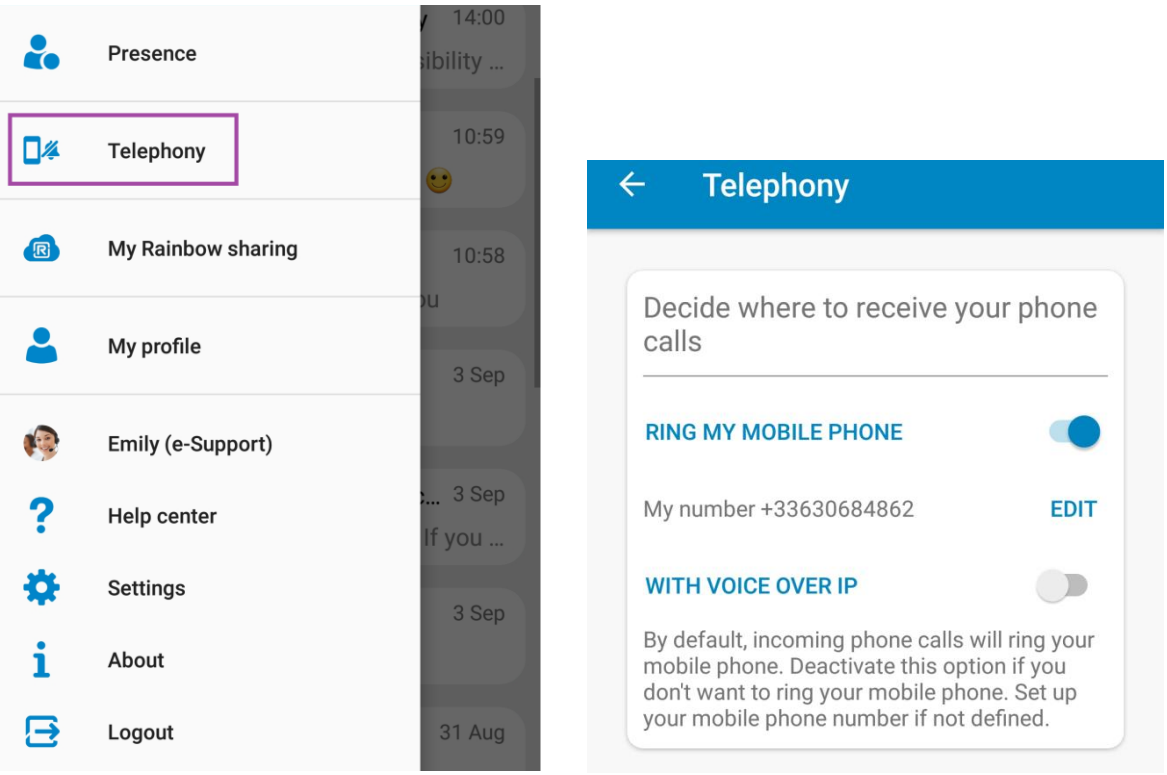

## 4.3 Check the availability of the Routing menu on Applications

After the creation of the Remote extension device in OXE configuration, the device creation will be notified to the Rainbow infrastructure in the user account to provide the support for the new services.

Connect to the application Web or PC to check that the routing menu is now available:



Or connect to the Smartphone application to check the Telephony menu is updated with the new settings:




In case of issue refer to the section Troubleshooting the activation of the Telephony Services

## 4.4 Overflow rules management

Nomadic mode provides the capacity to route internal call to an external number.

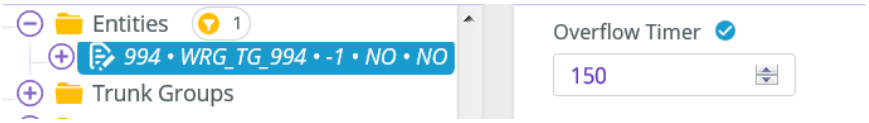
Overflow rules can be applied to provide a default routing of the call to the internal voicemail and receive notification of the message on all device of the user.

Timer needs to be adapted to make sure the overflow to associate will be reached before the voicemail of the external number.

**Note** When the main OXE DeskPhone is put out of service, in case of exchange or move of device, the call is not overflowing on the REX extension to the Rainbow clients.

### 4.4.1 Overflow to associate

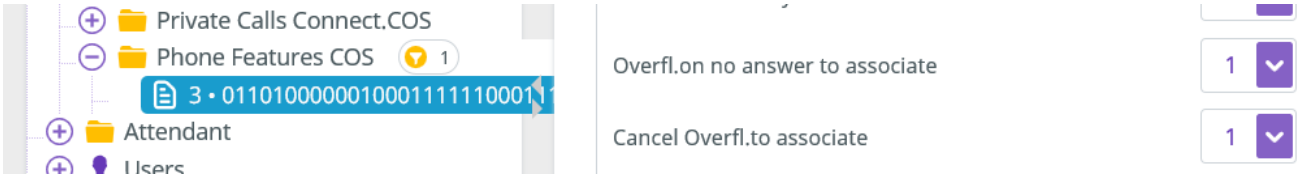
1. Overflow timer has to be defined in the entity of the Main device, the step is 100 ms



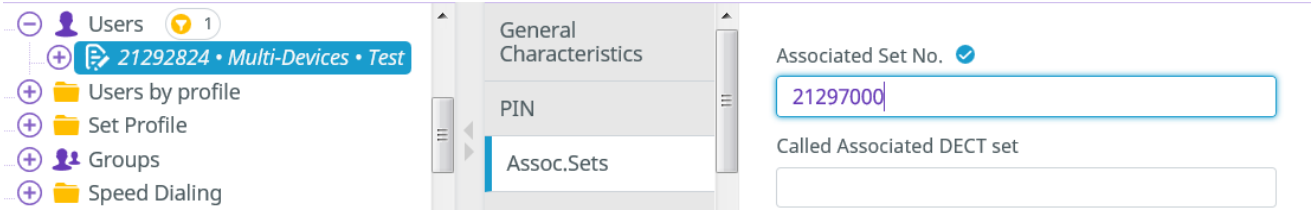

In our example the value of 150 corresponds to 15s.

Modify the corresponding Phone Feature COS to authorize the overflow:

***Classes of Service / Phone Feature COS / <ID> /Overfl.on no answer to associate***




Define in the user configuration the directory number of associated set, by selecting the tab Assoc.Sets:

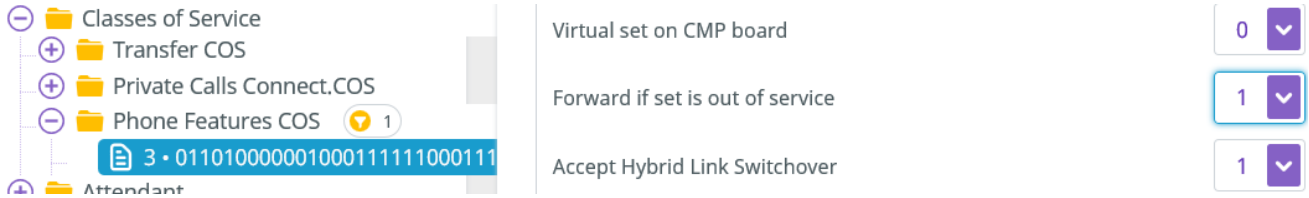



in our example the voicemail directory number 21297000 is associated to the user 21292824.

### 4.4.2 Overflow to associate/secondary device when main device is out of service

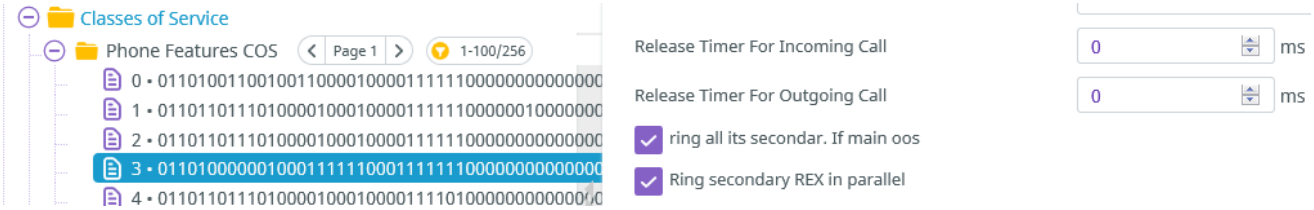
As the rainbow Application may be out of service, it recommended to validate the overflow to associate in the Phone feature COS selected at the user level

***Classes of Service / Phone Feature COS / <ID> / Forward if set is out of service***

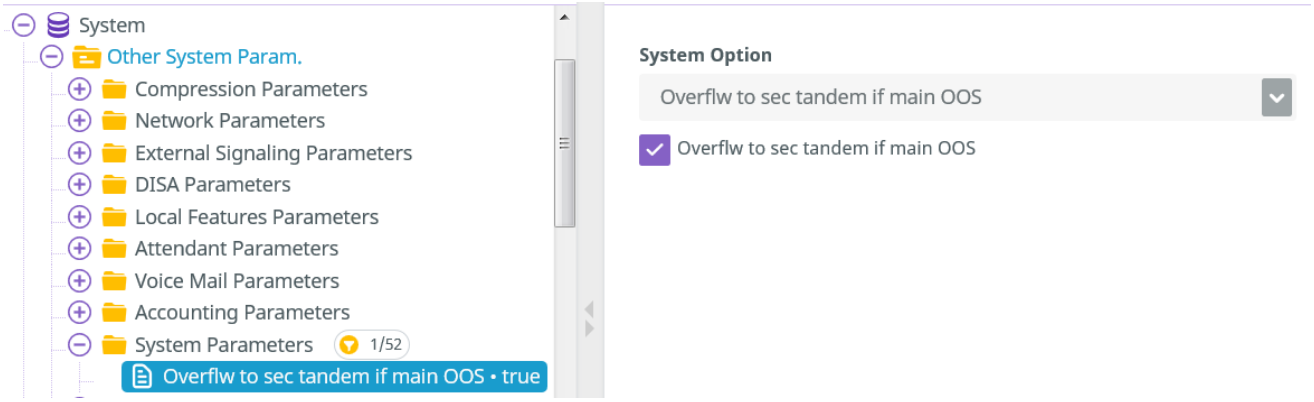



In the case of Multi-Devices profile with physical phone, the overflow to secondary device is preferred to the associate and can be activated from the menu

***Classes of Service / Phone Feature COS / <ID> / ring all its secondar. If main oos***




***System / Other system parameters / System Parameters / Overflw to sec tandem if main OOS***




When main tandem is in out of service state, the calls to main tandem will overflow to the secondary tandem.

If the secondary tandem is also in out of service state, the call overflow to the associate of the main tandem.

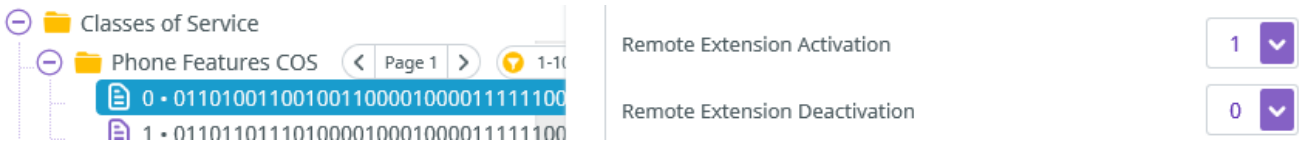
## 4.5 Block the deactivation of the Remote Extension

Once Rainbow clients are associated to the Remote Extension, user's telephony routing configuration must be done from Rainbow clients, which provide an easy way for the user to manage whether the GSM is part of the call distribution, from any Rainbow UCaaS application and consequently any location.

This capability is not compatible with the possibility for end users to deactivate the Remote Extension from their DeskPhone, and OXE must therefore be configured so Remote Extension Deactivation is disabled.

For each of the Phone Feature COS applied to Rainbow user disable the capability from menu:

***Classes of Service / Phone Feature COS / <ID> / Remote extension Deactivation*** set to 0



# 5 Configuration for VoIP feature

## 5.1 Pre-requisites

### 5.1.1 Capacity & Virtual Machine Sizing

A Virtual Machine (VM) must be set-up to host Rainbow WebRTC Gateway.

The WebRTC gateway load depends on the number of simultaneous calls between PBX and Rainbow clients.

The table of Sizing for the VM is detailed in the Pre Sales documentation TBE067 Rainbow WebRTC Gateway.

### 5.1.2 Topologies supported for UCaaS and CPaaS

The Web RTC Gateway deployment is provided for both UCaaS and CPaaS deployment use cases.

For UCaaS use case, one Web RTC gateway is required for each node having users with a Rainbow Business or Enterprise subscription.

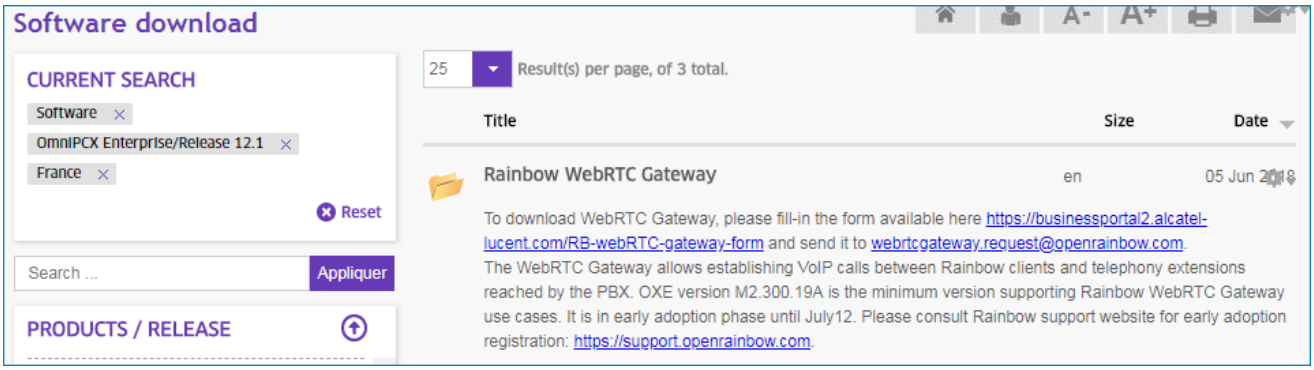
For CPaaS use case with only incoming call from CPaaS application to the native OXE user, a single Web RTC gateway can be managed.

For detailed information about topologies please refer to Pre Sales documentation TBE067 Rainbow WebRTC Gateway.

## 5.2 Software Download

The WebRTC Gateway Software is subject to export control laws and you need to fill-in a form to request the access to the software (detailed instructions are on the ALE Business Portal).

The software is available under OXE Software releases from R12.1:




**Note** Retrieve and fill the template for each customer system and send it to the email address of registration webrtcgateway.request@openrainbow.com

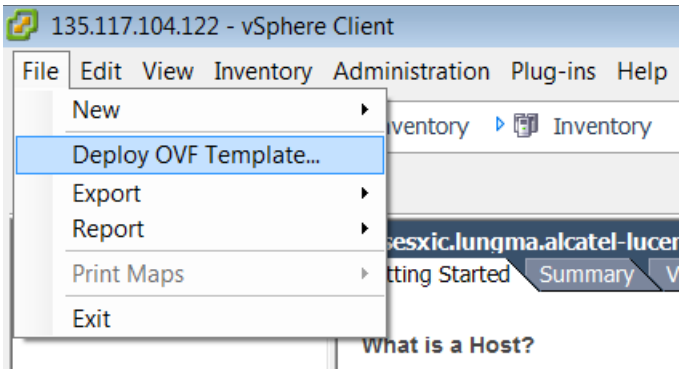
## 5.3 Installation of the Web RTC Gateway

**Note**

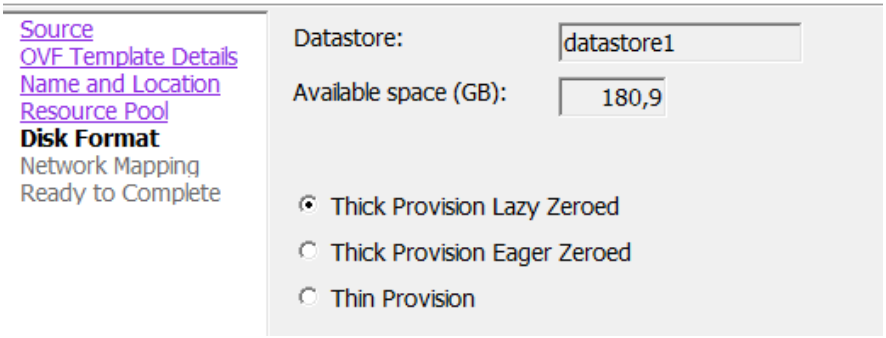
The section below details only the main steps of the deployment.
To retrieve the detailed Installation guide consult the corresponding article on Rainbow knowledge center
WebRTC to PSTN calling: Installation guide [WebRTC Gateway]

### 5.3.1 Virtual Machine deployment

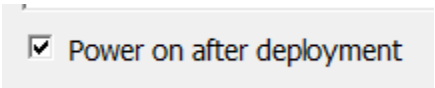
1. Deploy the Virtual Machine template in the VMware client (vCenter, vSphere or webadmin)




2. Select Thick provisioning as Disk Format and keep the pre-defined size of the Disk




3. Select Power on after deployment and start the deployment



### 5.3.2 Keyboard management

The Virtual Machine has been created with a QWERTY keyboard, you may need to change it.
Log in with following credentials:
User=**kb**
Password=**kb**

The wizard to change the keyboard will be automatically started, just follow the instructions on the screen to change your keyboard.

### 5.3.3 First connection

After the initial deployment use the default login to log on the VMware console:

User=**rainbow**
Password=**Rainbow123**

Make sure to change the default rainbow login password.

### 5.3.4 Initial configuration

The configuration is done using the commands **mpnetwork** [options...] and **mpconfig** [options...] in 3 steps:

**Step 1 – Set Network Configuration**

**Step 2 - Configure the WebRTC Gateway account**

**Step 3 - Reboot the server**

**Note** Embedded commands are listed into the following article on Rainbow knowledge center WebRTC to PSTN calling: Installation guide [WebRTC Gateway] in section 1.3 WebRTC Gateway configuration

## 5.4 Web RTC Gateway upgrade (from version 1.67.2)

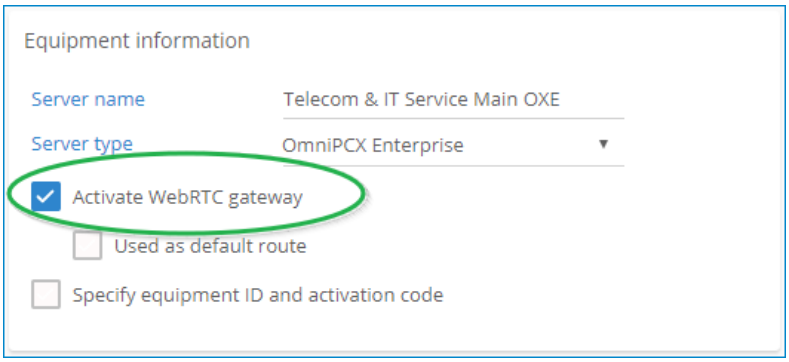
New process of the upgrade of the gateway is supported from version 1.67.2.

**Note** Process is detailed into the following article on Rainbow knowledge center WebRTC gateway upgrade guide

## 5.5 Rainbow Admin Configuration

### 5.5.1 Activation of the Web RTC gateway for the OXE equipment

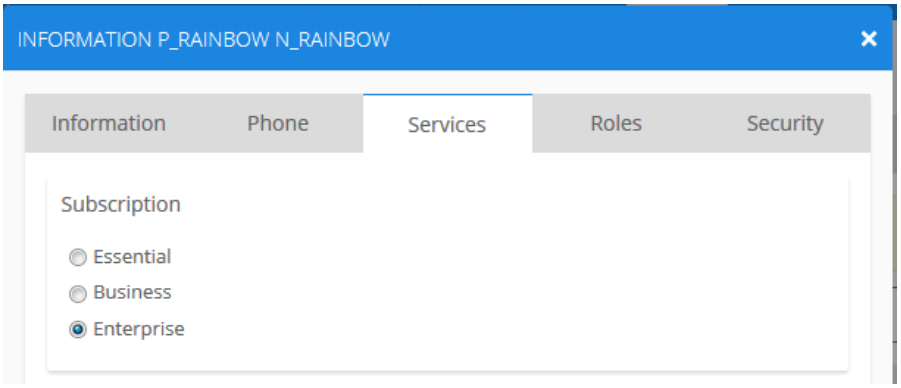
For the OXE connected to the WebRTC Gateway you'll have to select the option "Activate the WebRTC gateway".




### 5.5.2 Modification of the user Service Subscription per Rainbow user

Access to the new services Nomadic and VoIP through the Web RTC Gateway is provided only for Services Subscription Business or Enterprise.

Modify the license on each user in the Services Tab from the Rainbow interface:



# 5.6 OXE Configuration of the SIP Trunk to Rainbow WebRTC Gateway

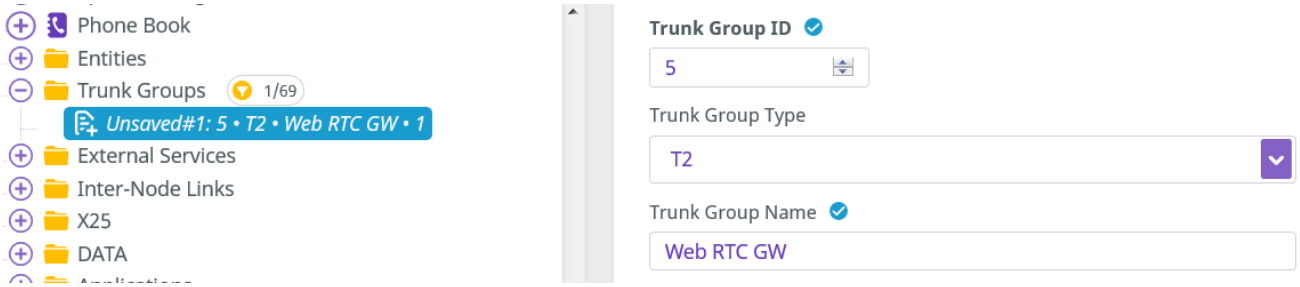
## 5.6.1 Pre requisites

In case of spatial redundancy of OXE system, the node name must be set in netadmin and local DNS resolution must be activated.

## 5.6.2 Trunk Group Creation

Create a new public trunk group with variant ISDN All countries and specification SIP:

***Trunk Group / Creation***

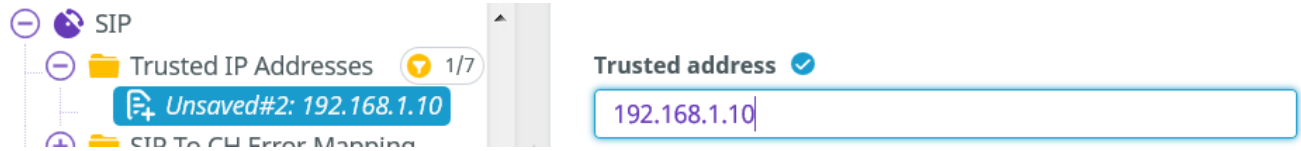



**Configure parameter list:**

Trunk Group ID ➔ New identifier
Trunk Group Name ➔ Web RTC GW
Q931 Signal Variant ➔ ISDN All Countries
T2 Specification ➔ SIP

## 5.6.3 Add Web RTC gateway in the SIP Trusted IP Addresses

***SIP / Trusted IP Addresses***




**Configure parameter list:**

Trusted address ➔ IP Address of WebRTC gateway

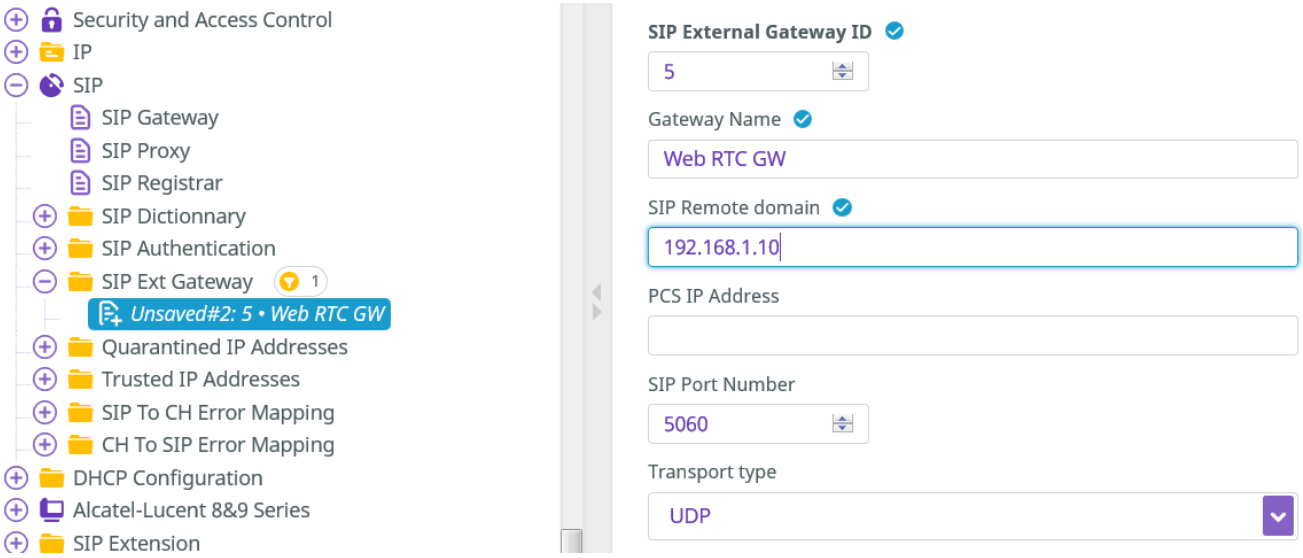
**Note**

By default, 2 access of 31 channels are created on the SIP trunk to support up to 62 channels through the Web RTC Gateway. For higher provisioning increase the number of access on the SIP trunk into menu ***Trunk Groups / Trunk Group / Virtual Access for SIP / Number of SIP Access***.

## 5.6.4 SIP External Gateway Creation

Create a new External SIP Gateway:

***SIP / SIP External Gateway/Create***




**Configure parameter list:**

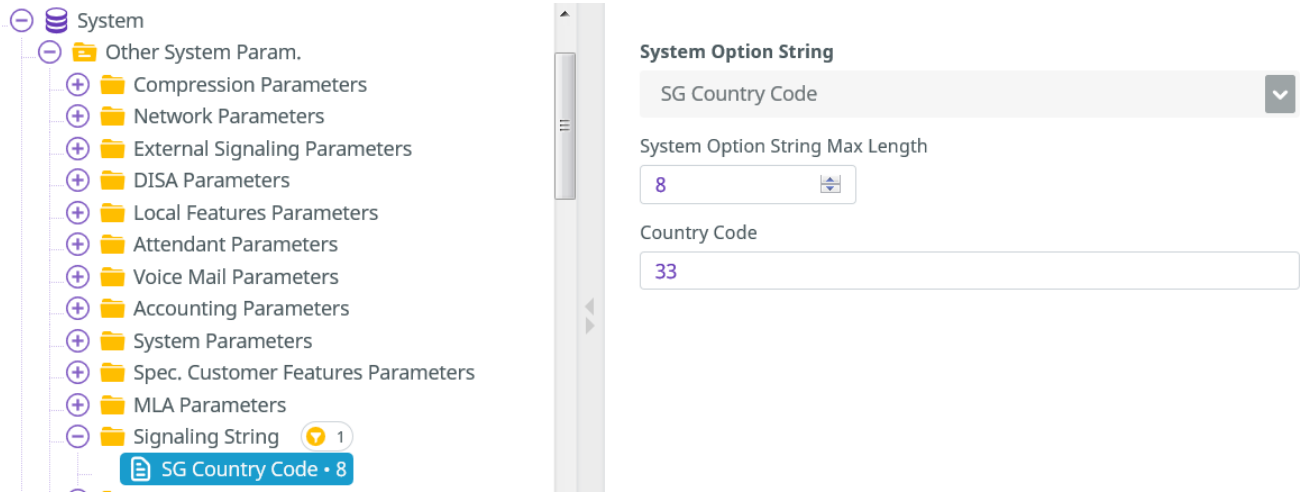
| | |
|---|---|
| SIP Ext Gw Id | ➔ <some id = RainbowSIPGwId> |
| SIP Remote Domain | ➔ IP Address of WebRTC gateway |
| Port number | ➔ 5060 |
| Transport type | ➔ UDP |
| Supervision Timer | ➔ 380 |
| Trunk Group Number | ➔ <reference of Trunk Group defined for Rainbow> |
| SDP in 18x | ➔ False |
| Minimal authentication method | ➔ SIP None |
| Contact with IP address | ➔ False |
| Dynamic Payload type for DTMF | ➔ 101 |
| Gateway Type | ➔ Rainbow |
| CSTA User to User | ➔ False |
| Support Re-invite without SDP | ➔ True |
| Trusted From Header | ➔ True |
| Type of codec negotiation | ➔ Single codec G711 |

**Note** This parameter avoids negotiating G729 codec with the WebRTC Gateway that does not support it. It supports the negotiation of G722 wideband codec for local compatible devices.

### 5.6.5 Manage Country code for OXE

As best practice of OXE management and not specifically related to the WebRTC Gateway, check that "country code" is defined according to the country the PBX is installed in (eg 33 in France).

***System / Other system parameters / Signaling string / Country Code***




## 5.7 Enabling Calls from PBX to Rainbow

The following configuration is required to allow calls from PBX to Rainbow.

It is required for UCaaS and also some CPaaS cases where calls from PBX to Rainbow App would be relevant.

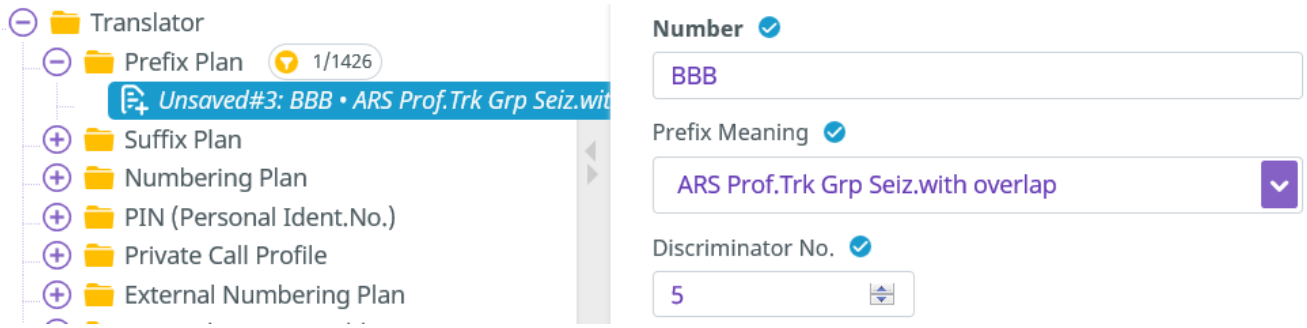
The major points to configure are:

- Prefix configuration for Rainbow Trunk Seizure
- Discrimination/Routing rules configuration for enabling calls to the Rainbow trunk
- Callback rules, to enable calling back from PBX devices' call logs

### 5.7.1 Prefix Creation

Create a "Ars Prof. Trk Grp Seiz. With overlap" Prefix to use the Rainbow Trunk Group defined earlier.

***Translator / Prefix Plan / Create***



**Configure parameter list:**

Number ➔ BBB
Prefix Meaning ➔ ARS Prof.Trg Grp Seizure with overlaping
Discriminator ➔ <select an unassigned number LogicalRainbowDiscri>

The Rainbow prefix is static and set to BBB by default.

**Note** If the prefix BBB is already used in the numbering plan, contact the Rainbow support at support@openrainbow.com

## 5.7.2 Numbering discriminator management

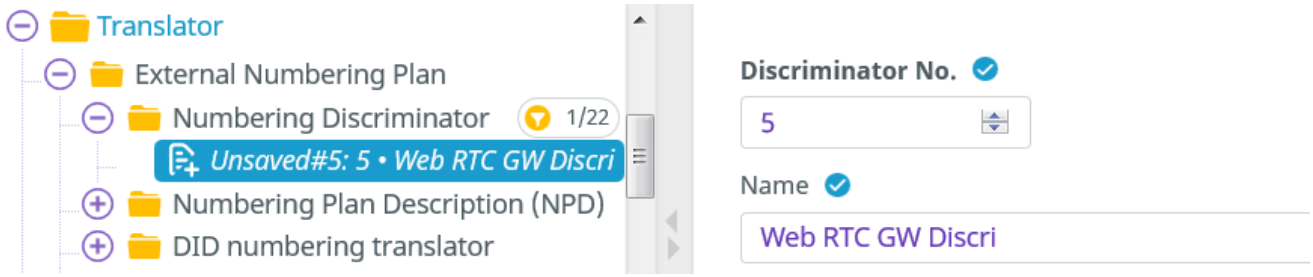
OXE needs to know the authorized numbers for the Rainbow Trunk.

Each of the Rainbow user will be affected a 17 digits Rainbow identifier, in the Rainbow numbering plan.

The Rainbow numbering plan uses 1 as first digits. For now, one rule must be created for digit 1.

### *5.7.2.1 Create a new Real Numbering Discriminator*

***Translator / External Numbering Plan / Numbering Discriminator / Create***




**Configure parameter list:**

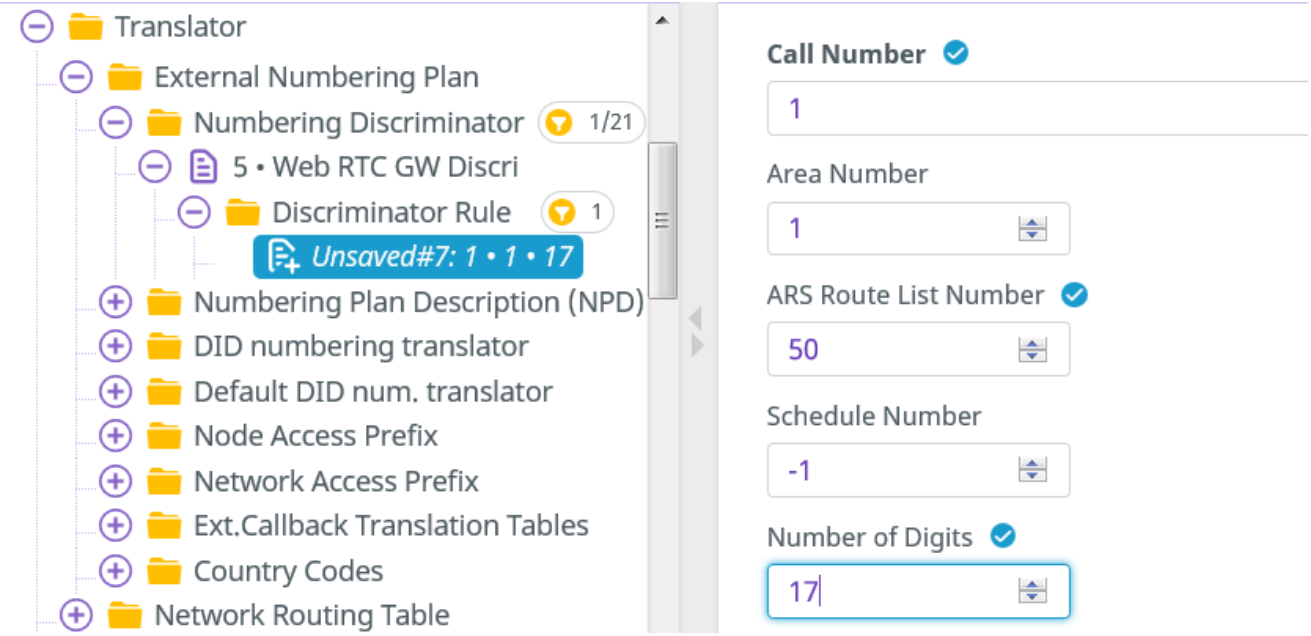
Discriminator No. ➔ < select an unassigned number RealRainbowDiscri>
Name ➔ RainbowDiscriminator

**Note** Logical Rainbow Discriminator will be associated later to Real Rainbow Discriminator in Trunk entity (CPaaS) or User entity (UCaaS).

### *5.7.2.2 Create rules for the Real Rainbow Discriminator*

The first discrimination rule is required for routing the Rainbow unique number of the Rainbow user.

***Translator / External Numbering Plan / Numbering Discriminator / <RealRainbowDiscri> / Discriminator Rule / Create***



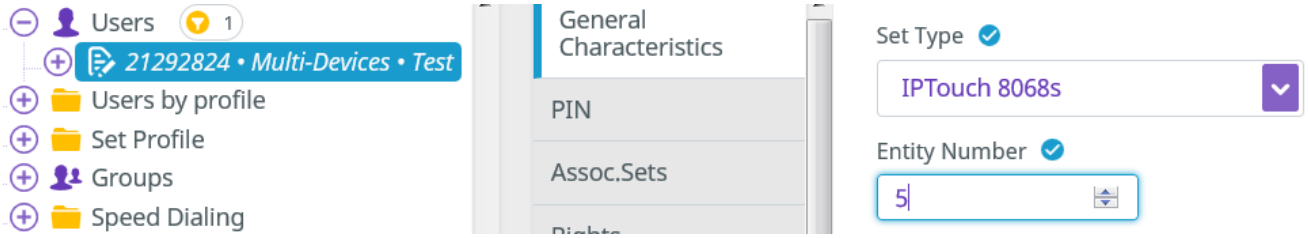

**Configure parameter list:**

Call Number ➔ 1
ARS Route List Number ➔ <RainbowARSRouteList>
Number of Digits ➔ 17

## 5.7.3 Associate Logical Rainbow Discriminator to Real Rainbow Discriminator

The Real Numbering discriminator must be associated to the Logical Numbering Discriminator that was associated to the Rainbow Prefix definition.

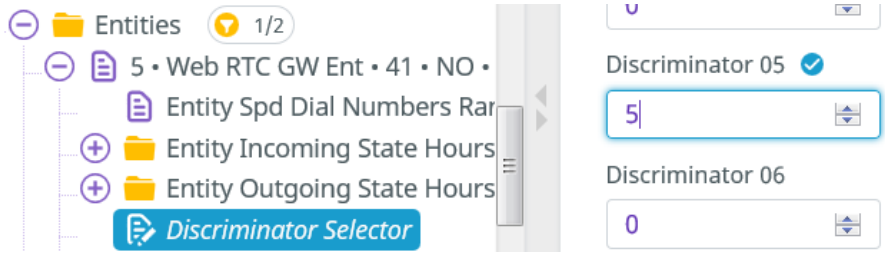
This is done in the Entity object the OXE users and Ghosts Z belong to. Identify the list of Entities in the Users configuration of Rainbow users and Ghosts Z:




Then select each entity of the list to modify:

***Entities / <Entity of PBX Users> / Discriminator Selector***

Associate Logical Rainbow Discriminator as defined in Prefix (<LogicalRainbowDiscri>), with the Real Rainbow Discriminator table (<RealRainbowDiscri>).

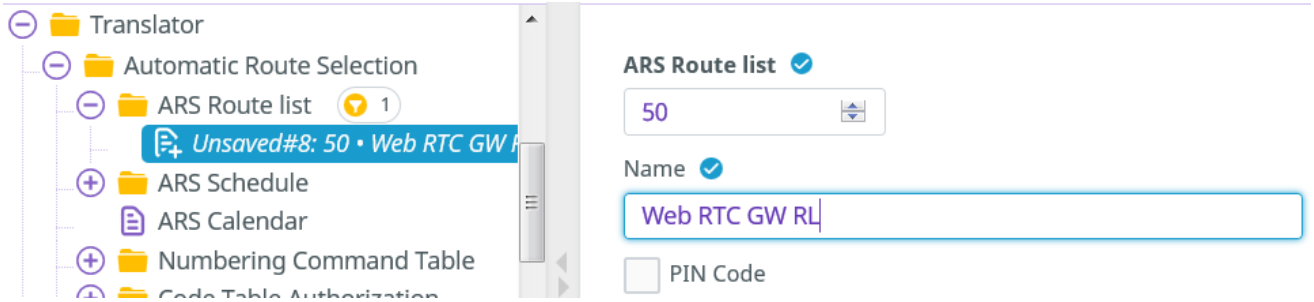



## 5.7.4 ARS Route List

### *5.7.4.1 Create a Route List dedicated to Rainbow trunk*

This route list is the one referenced by the discriminator rules.

***Translator / Automatic Route Selection / ARS Route List / Create***

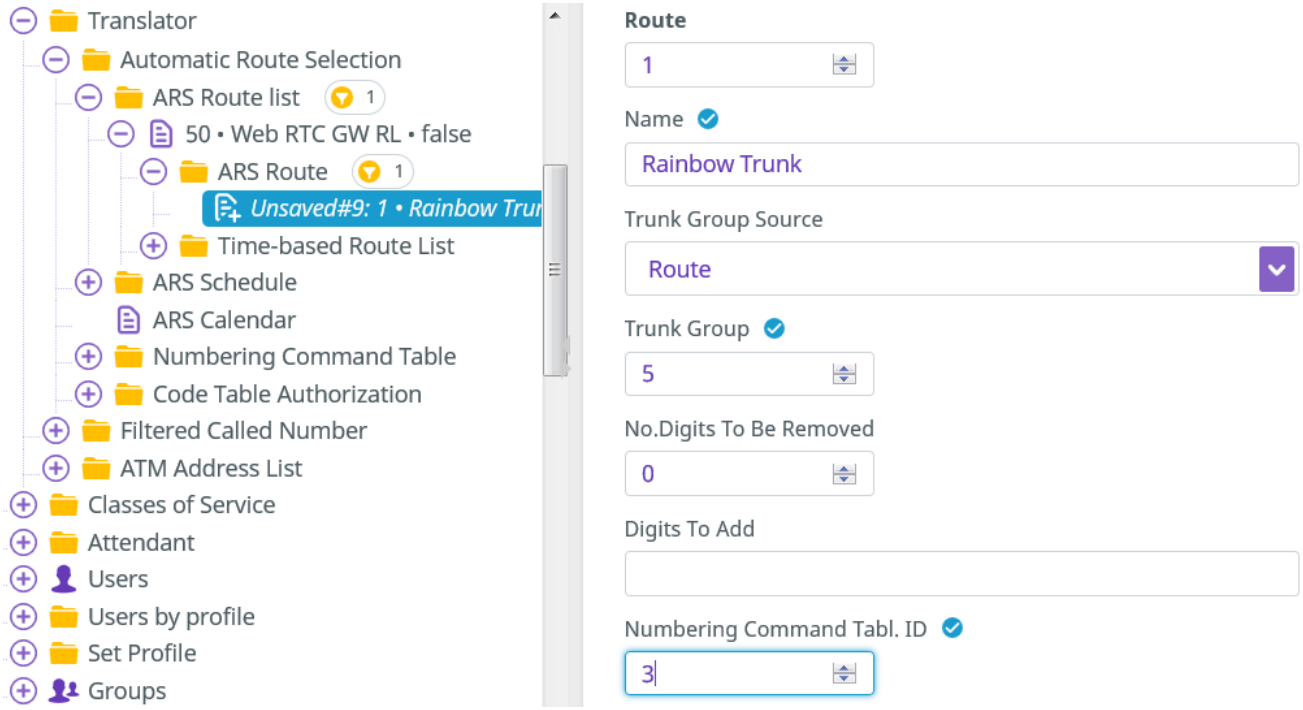



**Configure parameter list:**

ARS Route List ➔ <ARS Route List number define in the Discriminator rules >
Name ➔ Web RTC GW RL

### 5.7.4.2 Create a route

***Translator / Automatic Route Selection / ARS Route List / ARS Route / <RainbowARS> / Create***



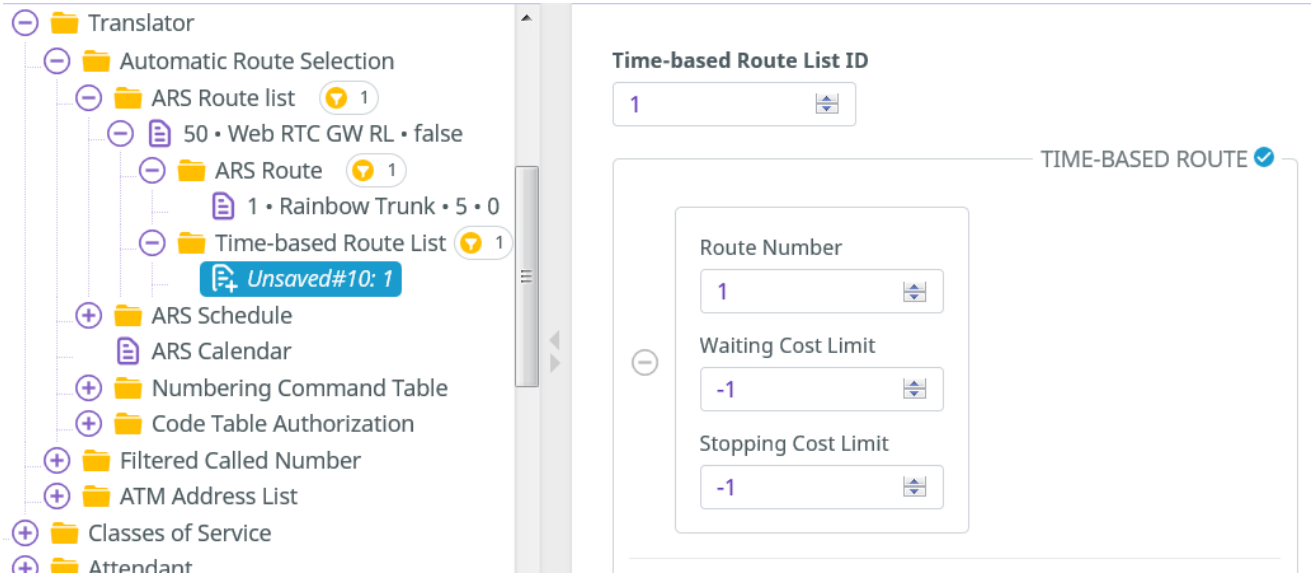

**Configure parameter list:**

Trunk Group ➔ <reference of Trunk Group defined for Rainbow>
Numbering Command Tabl. ID ➔ reference to a Numbering Command Table to create
Quality ➔ add Speech/Restricted & Unrestricted digital information

### 5.7.4.3 Create Time based route list

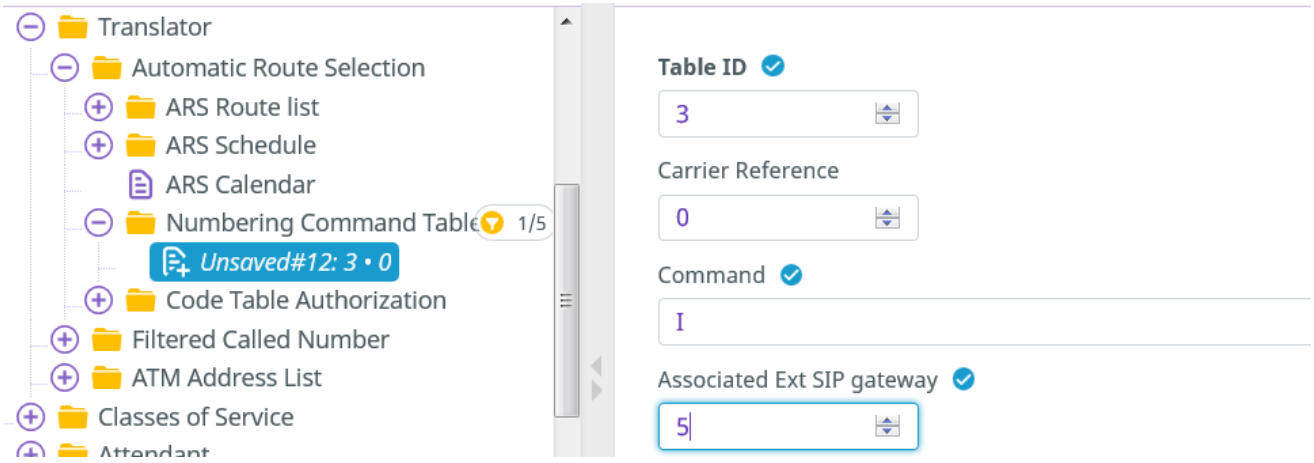
***Translator/Automatic Route Selection/ARS Route List/Time-Based Route List/<RainbowARS>/Create***

Add route 1 (leave default values)




## 5.7.5 Numbering command Table creation

***Translator / Automatic Route Selection / Numbering Command Table / Create***




**Configure parameter list:**

Table Id ➔ <some ref> (referenced in ARS route)
Command ➔ I
Associated Ext Gw ➔ <RainbowSIPGwId>

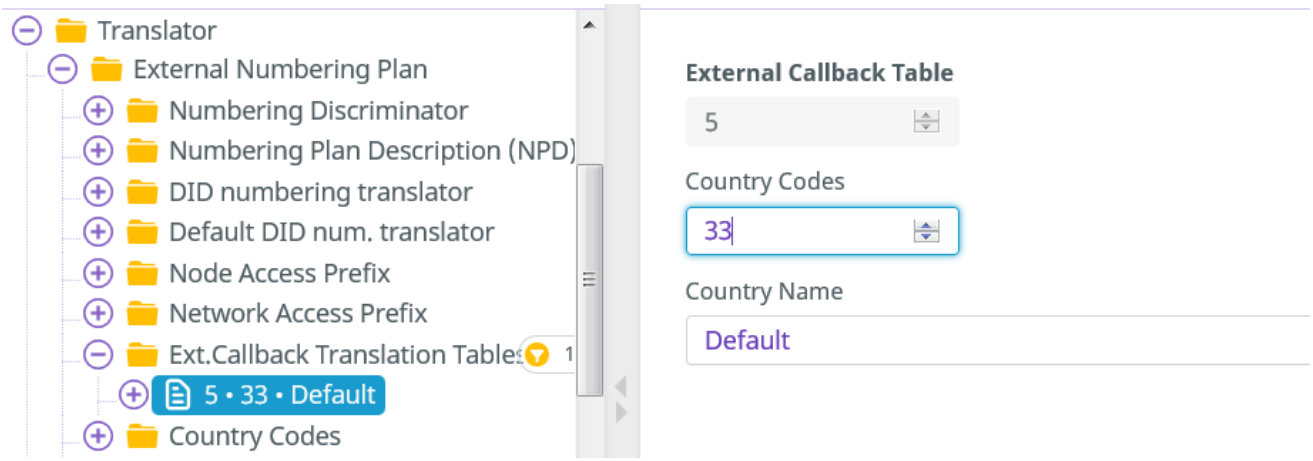
**Note** "carrier reference" may be used for accounting ticket.

## 5.7.6 Callback rules management

To allow callback from PBX device to Rainbow extension (from call-log), Callback rules must be managed as follows.

### *5.7.6.1 Create a new table*

***Translator / External Numbering Plan / Ext. Callback Translation Tables / Create***



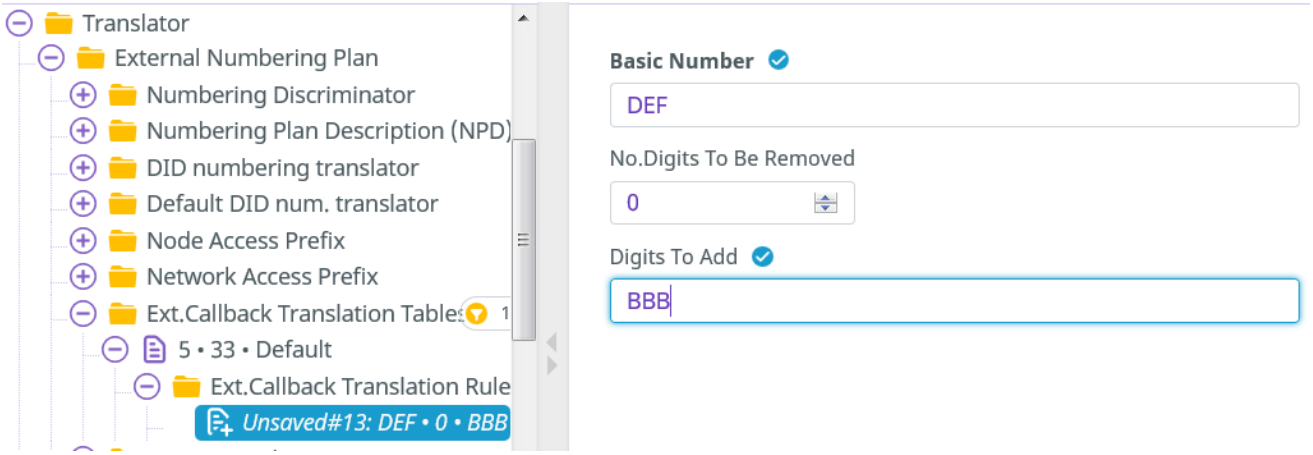

**Configure parameter list:**

External Callback Table ➔ <new number for Rainbow CBT>
Country Codes ➔ <country code> (of the country the PBX is installed in, eg 33 for France)
Country Name ➔ *Default*

### 5.7.6.2 Create a new rule for the new table

For current usages, a default rule can be created as the behavior is similar for all incoming Rainbow numbers.

***Translator / External Numbering Plan / Ext. Callback Translation Tables / Ext. Callback Translation Rules / Create***



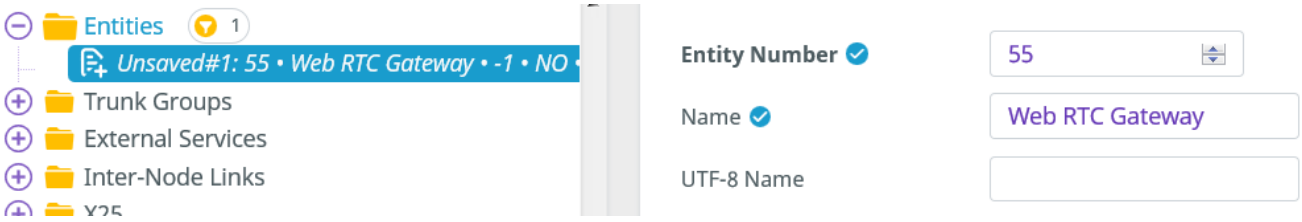

**Configure parameter list:**

| | |
|---|---|
| Basic Number | ➔ DEF |
| Nb of digts to be removed | ➔ 0 |
| Digits to Add | ➔ BBB |

### 5.7.6.3 Associate Callback Translation Table to a Specific Entity

The CBT table must be referenced from the entity the Rainbow Trunk Group is part of. A specific entity must be created to avoid overlaps with other existing callback translation tables.

***Entities/Create***

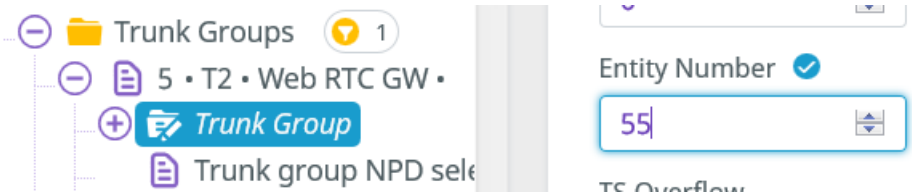



**Configure parameter list:**

| | |
|---|---|
| Entity Number | ➔ <new entity number> |
| Name | ➔ <Entity Name> |
| External Callback Tables | ➔ <Callback Table created in step 1/> |

#### 5.7.6.4 Associate Rainbow Trunk Group to this new entity

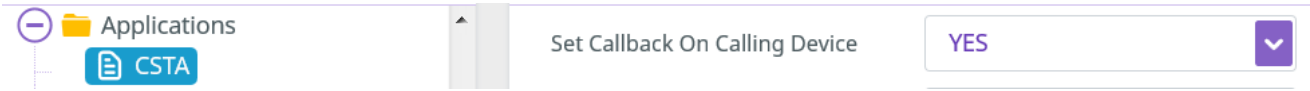
***Trunk Groups / Trunk Group / Entity Number*** ➔ <set Entity Number created in step3>




#### 5.7.6.5 Include the Call Back prefix in the CSTA numbers

The call back prefix must be presented within the calling number to offer the capacity to dial back from the Call log.

***Applications / CSTA / Set Callback on Calling Device ➔ Yes***




### 5.7.7 Display management for NOE sets (CPaaS only)

The following configuration allows displaying the Rainbow caller name on NOE sets.

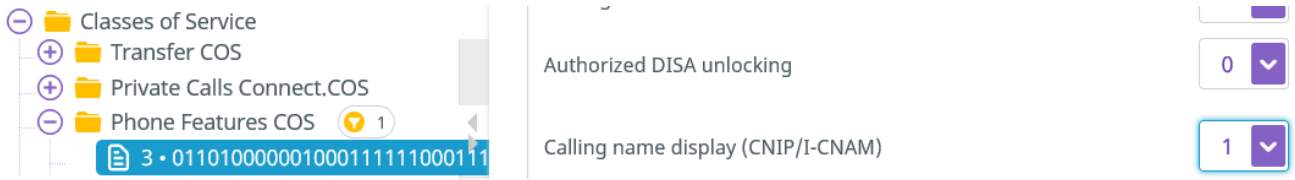
**Note** It is only relevant for CPaaS cases where the call comes from a Rainbow App who is not associated to any PBX extension.

1. Note the Phone Feature COS users the rule must be applied to

***Users/Rights/Phone features COS*** ➔ note the ID

2. Then manage display parameter

***Classes of Service / Phone Feature COS / <ID> / Calling name display (CNIP/I-CNAM)*** : 1




**Note** On SIP devices, the display is managed by the set itself.

## 5.8 Manage rights to disable external calls from Rainbow trunk (optional)

As long as the use case only requires calls between CPaaS Rainbow applications and internal extensions of the PBX network, or/and as long as only UCaaS use cases are deployed, it is recommended to prevent transit calls between the Rainbow trunk and other public trunks, to protect against unauthorized charged calls to external users.

This is managed as follows:

1. Manage the COS ID of the Rainbow trunk and of other public trunks accessing the public network, so that the Rainbow Trunk COS ID is different from other public trunks.

Review each of the public trunk, and note the public trunk COS ID already in use into:
***Trunk Group/<other public trunk>/Trunk Group/Trunk COS***

Review each of the trunk COS and note one which will remain unused: ***External Services/Trunk COS***
Select this ID different from other public trunks and which will be unused on your system, <Rainbow trunk COS ID>

Change trunk type of <Rainbow trunk COS ID>
***External Services/Trunk COS/Change trunk type/<*** Rainbow trunk COS ID>/Trunk type + ABC_F

Apply it to Rainbow trunk
***Trunk Group/<Rainbow trunk>/Trunk Group/Trunk COS***

2. Manage the trunks Connection COS ID so they are different between the Rainbow trunk and other public trunks

Review each of the public trunk, and note the list of Public Connection COS ID already in use into:
***External services / Trunk COS /<public trunk COS ID>/Connection COS***

Select an ID different from other public trunks, <Rainbow Connection COS ID> and apply it to Rainbow Trunk

***External services / Trunk COS /<Rainbow trunk COS ID>/Connection COS***

3. Manage right to make call between Rainbow trunk and other public trunks

To prevent direct calls from Rainbow trunk to other public trunks modify:

***Classes of service / Connection COS / <rainbow Connection COS ID >*** : set 0 for the list of Public Connection COS ID

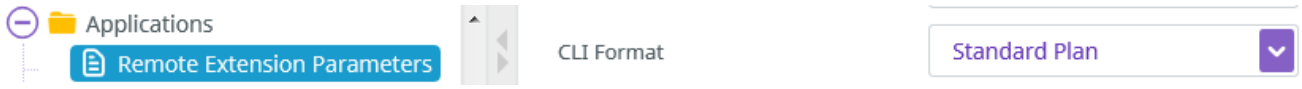
**Note** check that calls from Rainbow Trunk to users is still allowed. Be careful that by default all SIP trunks have the same Connection COS ID as users. Maybe you will need to change the Connection COS for SIP-ISDN trunks on your system (***External services / Trunk COS /31/Connection COS)***, to be able to allow calls from Rainbow trunk to users and disable calls from Rainbow trunk to SIP-ISDN trunks.

# 5.9 Manage the identification of the caller over the SIP trunk

## 5.9.1 CPaaS mode

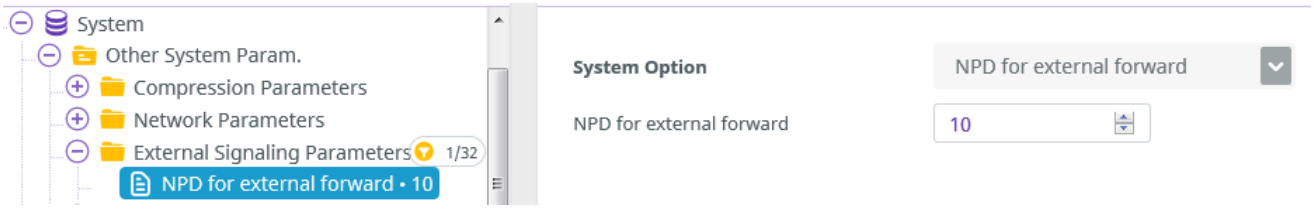
The caller identifier has to be forwarded in the SIP trunk exchanges to display the correct name or number on CPaaS application.

1. ***Manage the CLI format in Applications / Remote Extensions Parameters***




Select **Standard Plan** to forward an external number or **Private Plan** to forward an internal number.

2. Assign a NPD to use for external forward for Standard Plan, use by default 0 for Private Plan



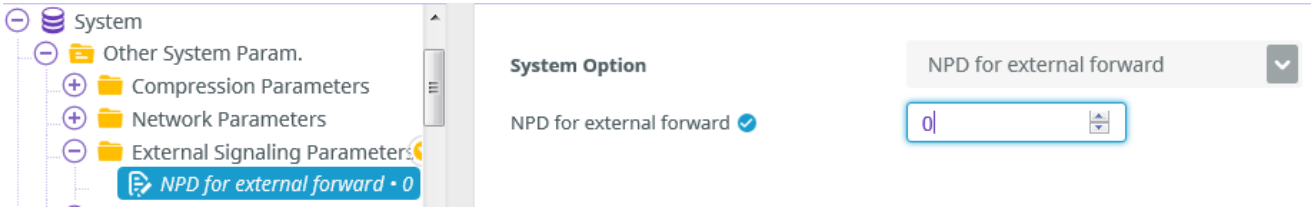

## 5.9.2 UCaaS mode

The caller identifier has to be forwarded to Remote Extension to display the correct name or number.

1. ***Manage the CLI format in Applications / Remote Extensions Parameters***

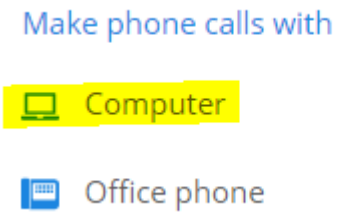

Select **Private Plan** to forward an internal number or **Standard Plan** to forward an external number.

2. Assign a NPD to use for external forward for Standard Plan, use by default 0 for Private Plan

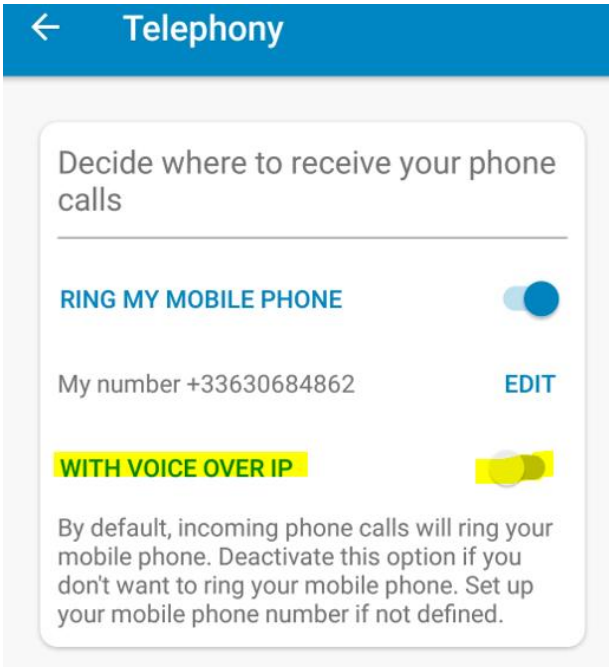


## 5.10 Activation of VoIP feature in the Rainbow applications

In the Routing menu of the PC/WEB application, a new icon computer will appear:




In the Smartphone Telephony menu, the entry with VoIP will be accessible



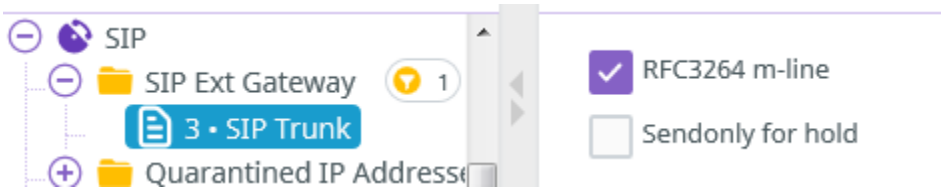

Routing menu description is detailed in Rainbow Article How-to-Select-the-Device-to-Use-for-Make-my-Phone-Calls.

In case of issue refer to the section Post installation checks

# 5.11 OXE specific configuration for Remote Extension devices

## 5.11.1 SIP Trunking option for Hold and Transfer scenarios

In the SIP External Gateway of the Provider SIP Trunk, the parameter **Sendonly for hold** must be disabled:



# 6 Monitoring

## 6.1 List of OXE incidents to monitor

The following list of incidents can be monitored on OXE or 8770 to generate SNMP TRAP or email.

For SIP external Gateway associated to Web RTC Gateway:

| Incident N° | Severity | Description |
|---|---|---|
| 5812 | Information | SIP Gateway put into service |
| 5813 | Information | SIP Gateway put out of service |

For CSTA link:

| Incident N° | Severity | Description |
|---|---|---|
| 4017 | Warning | A new CSTA server is created |
| 4018 | Warning | The CSTA server is closed |
| 4019 | Minor | Exit of the CSTA server |

For Rainbow agent channels:

| Incident N° | Severity | Description |
|---|---|---|
| 4500 | Warning | The process rainbowagent is started |
| 4501 | Warning | The process rainbowagent is stopped |
| 4502 | Warning | Abort of process rainbowagent, rainbowagent will start again |
| 4503 | Warning | The WebSocket with the Rainbow host is in service |
| 4504 | Warning | The WebSocket with the Rainbow host is out of service |
| 4505 | Warning | The XMPP link with the Rainbow host is in service |
| 4506 | Warning | The XMPP link with the Rainbow host is out of service |
| 4507 | Warning | The Config link (PBX config<->Rainbow) is in service |
| 4508 | Warning | The Config link (PBX config<->Rainbow) is out of service |
| 4509 | Warning | The CSTA link (CSTA Server<->Rainbow) is in service |
| 4510 | Warning | The CSTA link (CSTA Server<->Rainbow) is out of service |
| 4511 | Warning | The API_MGT link (API_MGT server<->Rainbow) in service |
| 4512 | Warning | The API_MGT link (API_MGT server<->Rainbow) out of service |

# 7 Troubleshooting

## 7.1 Log files

### 7.1.1 WebRTC Gateway logs

/var/log/otlitemediapillargateway/portal.log
/var/log/janus/janus.log

### 7.1.2 OXE logs

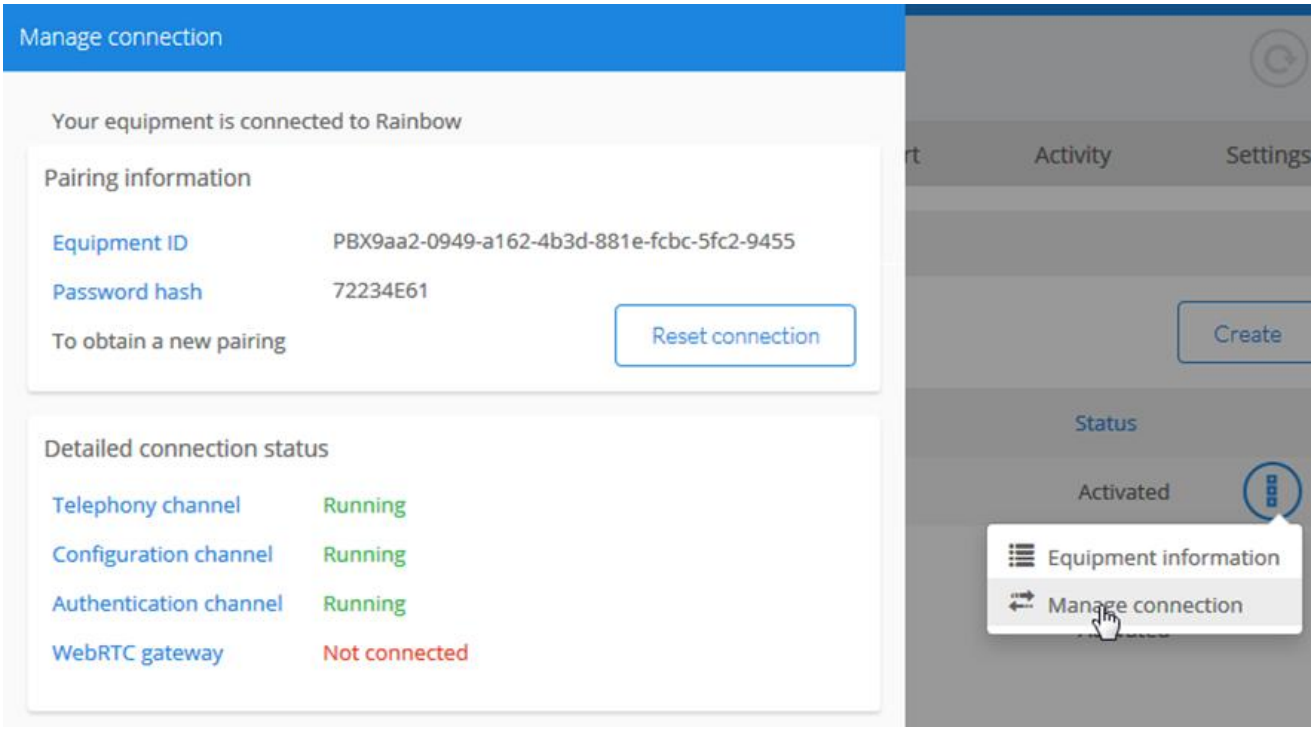
Rainbow agent logs are available
/var/log/rainbowagent.log*
The log level can be modified thru the the file
/etc/oxe/rainbowagent.properties

In general, for any Support Request, it is required to use the infocollect.sh script to collect the logs from the server.

## 7.2 Post installation checks

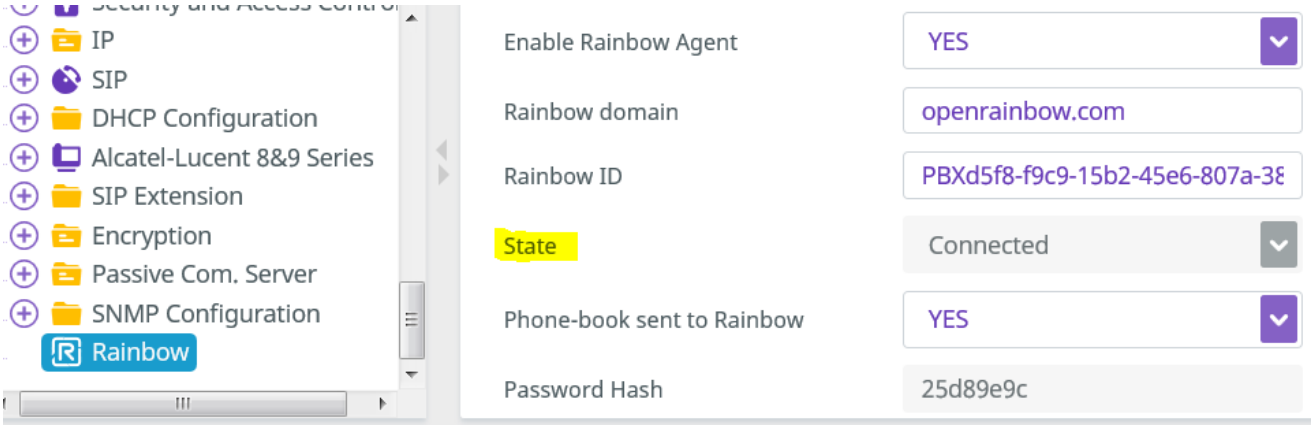
### 7.2.1 Check the connectivity status in Rainbow interface

The connectivity of the PBX integration can the check in the menu **"Manage connection"** from the Rainbow interface with the Business Partner Operation role.



### 7.2.2 Check the connectivity of the Rainbow agent

Enter OXE configuration through MGR or WBM and select the Rainbow menu:




In addition, incidents will indicate the status of the connection between the Call Server and the Rainbow Infra.

In OXE R12.1 MD2, check the incident generated on CSTA connection

```
(101)xa001001> incvisu -e CSTA
12/06/18 22:29:45 006099M|---/--/-/---|=4:4017=CSTA server : nouvelle creation 1
135.117.104.105
```

From OXE R12.2, new incidents have been introduced to display rainbow status for each channel of connection

```
(101)xa001001> incvisu -e rainbow
12/06/18 22:27:32
12/06/18 22:29:46 006099M|---/--/-/---|=4:4500=rainbowagent: started
12/06/18 22:29:46 006099M|---/--/-/---|=4:4503=rainbowagent: WebSocket
(rainbowagent<->) in service
12/06/18 22:29:46 006099M|---/--/-/---|=4:4505=rainbowagent: XMPP link
(rainbowagent<->Rainbow) in service
12/06/18 22:29:46 006099M|---/--/-/---|=4:4509=rainbowagent: CSTA link (CSTA
server<->Rainbow) in service
12/06/18 22:29:49 006099M|---/--/-/---|=4:4507=rainbowagent: Config link (PBX
config<->Rainbow) in service
12/06/18 22:32:49 006099M|---/--/-/---|=4:4511= rainbowagent: API_MGT link
(API_MGT server<->Rainbow) in service
```

**Expected result**

The parameter State must be set to Connected meaning that a first connectivity has been established to retrieve a complex password. The list of the OXE users is uploaded in the Rainbow database if the “Phone-book sent to Rainbow” is to “YES”. This last authorize to perform the association of the Device and Rainbow accounts in the Rainbow Admin interface.

For OXE 12.1, incident 4017 must be displayed at last.

For OXE 12.2, incidents 4500, 4503, 4505, 4509, 4507, 4511 must be displayed at last.

**Actions**

If no incident is generated, R12.1 or only incident 4500 is displayed, R12.2:

1. Check with command `netadmin -m` that the DNS server or HTTP proxy are properly configured in the menus `14. 'DNS configuration'` or `15. 'HTTP Proxy menu'`

2. Check the file `/etc/hosts` doesn't contain the domain `openrainbow.com` in a static entry and clean the list if required

**Warning** Currently Trusted Hosts feature is not compatible with Rainbow connectivity as the DNS service is mandatory to connect a pool of servers to maintain the service

3. Check the process Rainbow agent and threads are activated

```
(699)xa006099> ps -edf | grep rainbow
root     21616  3305 21616  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21647  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21648  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21649  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21650  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21651  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21652  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21653  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21654  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21663  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21664  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21665  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21681  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
mtcl     22484 22365 22484  0    1 08:35 pts/0    00:00:00 grep rainbow
```

If the process is aborted or threads are missing, perform a bascul or restart the rainbow agent process with command `dhs3_init -R RAINBOWAGENT`

4. Check with the customer that all border element authorizes to establish the connectivity to the service agent.openrainbow.com on port 443 based on article What-Are-Rainbow-Network-Requirements

5. If previous actions didn't succeed to establish the link, perform a network capture in root login using the command:
   `tcpdump -s 0 -w /tmpd/filename &`

   Restart the rainbow agent process
   `dhs3_init -R RAINBOWAGENT`

   Stop the capture:
   `killall tcpdump`

Create a Service Request to welcome center to OXE support team using email ebg_global_supportcenter@al-enterprise.com and provide the network capture and `Infocollect` file from the system.

### 7.2.3 Check the status of the external SIP Gateway on OXE

Use command sipextgw -l to display the status from OXE to WebRTC Gateway connectivity.

```
xm000000> sipextgw -l

Wed Jun  6 08:12:22 CEST 2018

=====================================================================
| R E G I S T E R E D   S I P   E X T E R N A L   G A T E W A Y S  |
=====================================================================

        IN SERVICE SIP external gateways list:
          1   2   3   4   5
```

**Expected Result**

The corresponding Gateway should be in the list of IN SERVICE gateway

At startup of the system an incident 5812 will be generated for the corresponding gateway:

```
000000M|---/--/-/---|=0:5812= SIP external gateway 1 is in service
```

**Actions**

If the gateway is out of service, check the external gateway configuration from SIP External Gateway Creation

If the configuration is correct start a SIP traces on OXE call Server using commands:

```
xm000000> motortrace 3
xm000000> traced > /tmpd/WebRTCGateway_SIP.log&
[1] 30370
```

Stop the traces using command:

```
xm000000> killall traced
[1]+  Done                    traced > /tmpd/WebRTCGateway_SIP.log
```

Create a Service Request to welcome center to OXE support team using email ebg_global_supportcenter@al-enterprise.com and provide the corresponding traces and Infocollect file from the system.

### 7.2.4 Check the status from the services on WebRTC gateway

**Note** For last update about Web RTC Gateway troubleshooting tools please consult the corresponding article on Rainbow knowledge center WebRTC to PSTN calling: Troubleshooting guide [WebRTC Gateway]

The WebRTC Gateway runs different services for the connection to Rainbow and to the PBX:

- otlitemediapillargateway
- janus-gateway-mediapillar
- kamailio

To check their status you can run following commands:

```
mpstatus
```

Command should return the

- The status from the system processes
- Time synchronization
- Access to the Rainbow infra
- Authentication to the Rainbow infra
- List of monitored users identified by their 17_digits_Rainbow_ID

```
rainbow@rainbow-mgw:~$ mpstatus
kamailio status ...
  [OK] enabled/active
janus-gateway-mediapillar status ...
  [OK] enabled/active
otlitemediapillargateway status ...
  [OK] enabled/active
ntp status ...
  [OK] enabled/active
registration status ...
  traceroute -n -m 4 -T -p 5060 135.117.104.100
  [OK] route 135.117.104.100
rainbow auth status ...
  [OK] [OK]
rainbow registered users
                Contact:: sip:102484609012997 89@135.117.104.100:33977 Q=
                Contact:: sip:101349280478260 53@135.117.104.100:60462 Q=
                Contact:: sip:109567337131632 89@135.117.104.100:59508 Q=
                Contact:: sip:102013707908442 71@135.117.104.100:53702 Q=
                Contact:: sip:100809177728632 97@135.117.104.100:43847 Q=
```

**Actions**

1. Restart the services using command:

```
sudo service otlitemediapillargateway restart
sudo service janus-gateway-mediapillar restart
sudo service kamailio restart
```

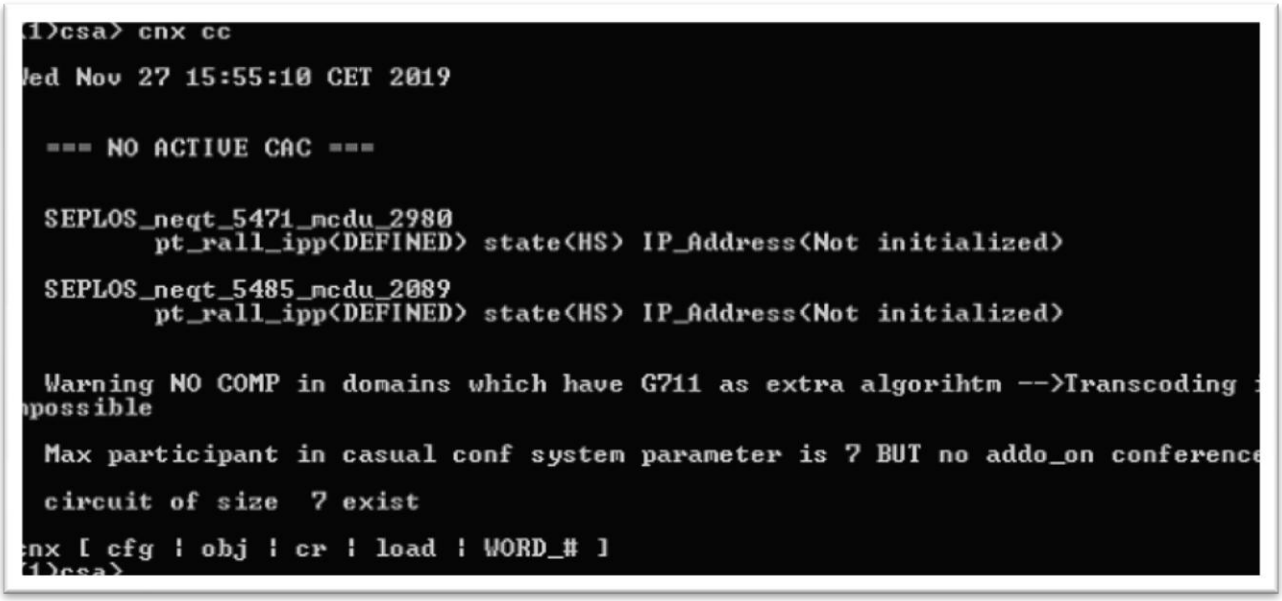
2. Check again the status of the services

If result is still not correction after the restart of the service, collect the logs and the commands result and open a ticket of support to Rainbow support team using email: support@openrainbow.com

### 7.2.5 Check OXE ressources

The WebRTC Gateway doesn't do transcoding so depending on the topology, compressors must be added on the OXE media gateway. To check the compressors available on OXE,
#compvisu lio

The equipments (GDx, GAx, INTIP) providing the voice resources used for WebRTC GW transcoding must be set in the default domain. To check this point, these commands can be used:
#cnx dom
#cnx cc



## 7.3 Troubleshooting loss of Connectivity in the Rainbow Applications

When there is a disturbance of the connectivity of the Rainbow agent, Telephony service is lost on the Rainbow applications of the connected users.

Incident 4018, in R12.1 or incidents 4501, 4502, 4504, 4506, 4510, 4512 in R12.2 should be generated indicating a loss of connectivity on one or several links to Rainbow Infrastructure.

**Actions**

1. Confirm the presence of incidents with command `incvisu`

2. Check with command `netadmin -m` that the DNS server or HTTP proxy are properly configured in the menus `14. 'DNS configuration'` or `15. 'HTTP Proxy menu'`

3. Check the file `/etc/hosts` doesn't contain the domain `openrainbow.com` in a static entry and clean the list if required

**Note** Currently Trusted Hosts feature is not compatible with Rainbow connectivity as the DNS service is mandatory to connect a pool of servers to maintain the service, CROXES-19318.

4. Check in MGR/WBM the configuration of Rainbow service is still correct, meaning that the parameter `Enable Rainbow Agent` is set to `true/Yes` and the status is still `Connected`.

5. Check the process Rainbow agent and threads are activated

```
(699)xa006099> ps -edf | grep rainbow
root     21616  3305 21616  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21647  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21648  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21649  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21650  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21651  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21652  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21653  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21654  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21663  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21664  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21665  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
root     21616  3305 21681  0   13 08:16 ?        00:00:00 /usr/sbin/rainbowagent --log /etc/oxe/rainbowagent.properties
mtcl     22484 22365 22484  0    1 08:35 pts/0    00:00:00 grep rainbow
```

If the process is aborted or threads are missing, perform a bascul or restart the rainbow agent process with command `dhs3_init -R RAINBOWAGENT`

6. If previous actions didn't succeed to restore the link, perform a network capture in root login using the command:
   `tcpdump -s 0 -w /tmpd/filename &`

   Restart the rainbow agent process
   `dhs3_init -R RAINBOWAGENT`

Stop the capture:
`killall tcpdump`

7. In case of presence of the incident 4502 a core file has been generated and needs to be collected.

   Check the rainbow log to confirm the generation of the core file:

   ```
   2018-08-14 16:14:26:203 [F] rainbowagent [7]#AMgt exception(): caught Poco
   exception: System exception: cannot start thread
   2018-08-14 16:14:26:203 [F] rainbowagent [7]#AMgt ABORTED core dumped (see
   /proc/sys/kernel/core_pattern to find the location of the core dump file)
   ```

   Read the file `/proc/sys/kernel/core_pattern` to identify the core file location.

   Zip the file to reduce the size by the command `gzip core.rainbowagent`

Create a Service Request to welcome center to OXE support team using email ebg_global_supportcenter@al-enterprise.com and provide the network capture or core dump and `Infocollect` file from the system.

## 7.4 Troubleshooting WSS connection loss due to network convergence

Sometimes the Web Socket Secure connection is disconnected because the PONG timeout value on the Rainbow infrastructure is too low compared to the convergence time of the network.

Such issue is reported in the /var/log/rainbowagent.log through the message:

```
2019-06-14 03:20:25:442 [E] rainbowagent.WebSocketMux
[3]#WsMx onWsPongTimeout(): No response received to last WebSocket PING
```

It is possible to increase this timer to limit the reset of the rainbow agent process:

Edit the file /DHS3data/mao/ccca.cfg and modify the entry WEB_SOCKET_PONG_TIMEOUT to 40s as below:

```
WEB_SOCKET_PONG_TIMEOUT=40
```

Then restart the rainbow agent process
`dhs3_init -R RAINBOWAGENT`

## 7.5 Troubleshooting the activation of the Telephony Services

Telephony services are available after the association of a user provided from OXE database to a Rainbow account.

Once the association is created the telephony services must be activated in the Rainbow application PC/WEB to provide by default the Remote Call Control of the main device.

**Expected**

In the Rainbow application PC/WEB, a new icon will appear to display the main device selected for the Telephony Services which can be:

- The DeskPhone 
- Professional Mobile 
- Computer or Smartphone for VoIP mode 

**Actions**

If the OXE user is not available in the Rainbow Admin interface setup CSTA traces on the Rainbow Agent:

- login as root and edit /etc/oxe/rainbowagent.properties
- remove "#" at the beginning of these 2 lines (lines 98-99):

```
logging.loggers.cstaConnectionLogger.name = rainbowagent.CstaConnection
logging.loggers.cstaConnectionLogger.level = trace
```

Then restart rainbow agent with mtcl account with the command: `dhs3_init -R RAINBOWAGENT`

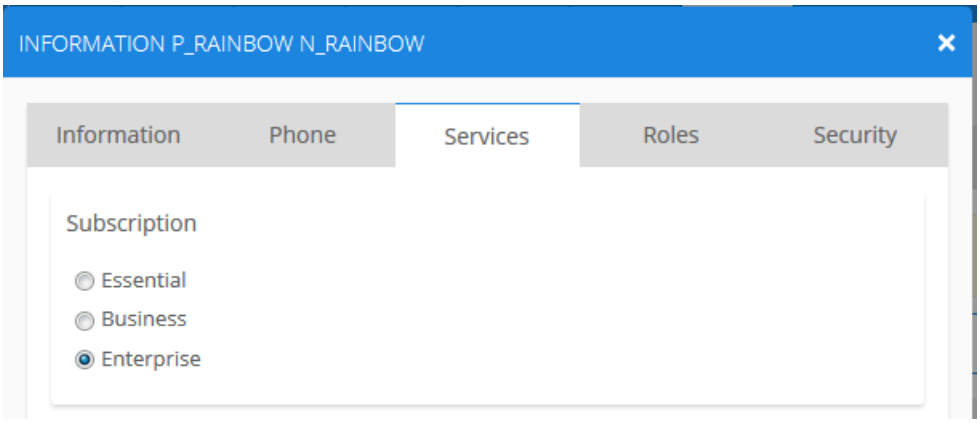
If the menu routing menu does not appear generate the `Infocollect` file, and create a Service Request to welcome center for OXE support team using email ebg_global_supportcenter@al-enterprise.com with the `Infocollect` file from the system.

# 7.6 Troubleshooting activation of services Nomadic/VoIP on a new User

## 7.6.1 Check the allocation of the Business or Enterprise subscription for the user

Access to the new services Nomadic and VoIP through the Web RTC Gateway is provided only for Services Subscription Business or Enterprise.

Open Rainbow user configuration in the Services Tab to check the current Subscription:




**Expected Result**

Business or Enterprise must be selected

**Actions**

Modify the Subscription on the user

## 7.6.2 Check the allocation of OXE sets

Side OXE, the services Nomadic and VoIP through the Web RTC Gateway is based on the Remote Extension and Analog Ghost Z sets. To check these resources, these commands can be used
#remotesets

```
(1)csa> remotesets

Wed Nov 27 16:20:39 CET 2019

================================================================================
Neqt = 06392  Numan = 2201  Active  ExtNbr = 00609092915  AbrIdx = 370
Neqt = 06391  Numan = 2204  Active  No external number associated.
Neqt = 06390  Numan = 2205  Active  No external number associated.
Neqt = 06393  Numan = 2202  Active  ExtNbr = 00781936010  AbrIdx = 2009
Neqt = 06394  Numan = 3980  Active  No external number associated.
Neqt = 06399  Numan = 3981  Active  ExtNbr = BBB10824367319481855  No abbreviate
d number associated.
Neqt = 06398  Numan = 3982  Active  No external number associated.
Neqt = 06397  Numan = 3983  Active  No external number associated.
Neqt = 06396  Numan = 3984  Active  No external number associated.
Neqt = 06395  Numan = 3985  Active  No external number associated.
Neqt = 06400  Numan = 3986  Active  No external number associated.
Neqt = 06401  Numan = 3987  Active  No external number associated.
Neqt = 06402  Numan = 3988  Active  No external number associated.
Neqt = 06403  Numan = 3989  Active  No external number associated.
Neqt = 06404  Numan = 3990  Active  No external number associated.
Neqt = 06405  Numan = 3991  Active  No external number associated.
Neqt = 06406  Numan = 3992  Active  No external number associated.
Neqt = 06407  Numan = 3993  Active  No external number associated.
Neqt = 06408  Numan = 3994  Active  ExtNbr = 00781936010  AbrIdx = 2009
Neqt = 06334  Numan = 2203  Active  ExtNbr = 00659979335  AbrIdx = 1992
Total = 20  Maximum = 20
================================================================================
(1)csa>
```

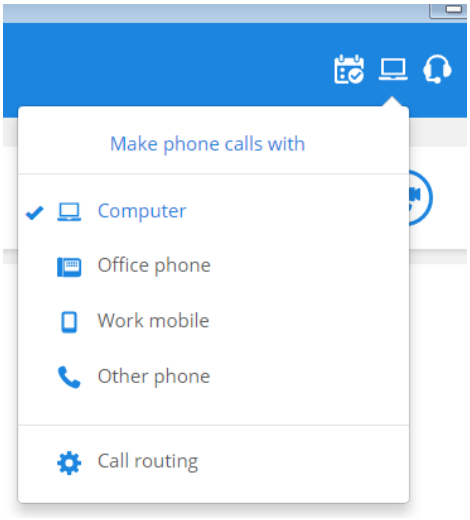
#remoteghosts

```
(1)csa> remoteghosts

Wed Nov 27 16:19:13 CET 2019

========================================
Neqt = 06422  Numan = BA5992
Neqt = 06423  Numan = BA5991
Neqt = 06424  Numan = BA5980
Neqt = 06425  Numan = BA5981
Neqt = 06426  Numan = BA5982
Neqt = 06427  Numan = BA5983
Neqt = 06428  Numan = BA5984
Neqt = 06429  Numan = BA5985
Neqt = 06430  Numan = BA5986
Neqt = 06431  Numan = BA5987
Neqt = 06432  Numan = BA5988
Neqt = 06433  Numan = BA5989
Neqt = 06434  Numan = BA5990
Neqt = 06435  Numan = BA5993
Neqt = 06436  Numan = BA5994
Total = 15  Maximum = 20
========================================
(1)csa>
```

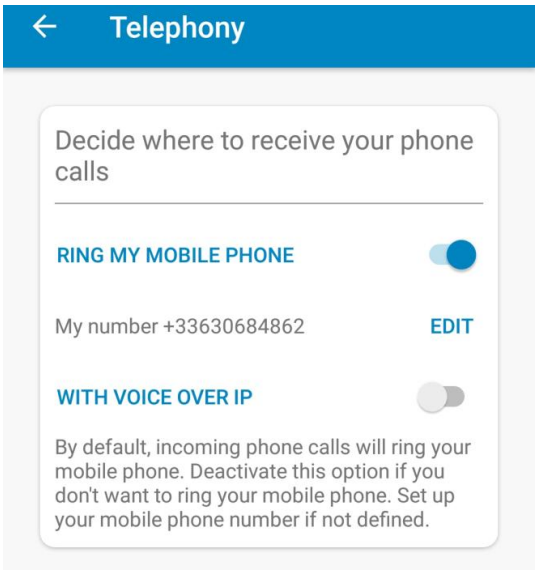
### 7.6.3 Check the availability of the Routing menu on Applications

After the creation of the Remote extension device in OXE configuration, the device creation will be notified to the Rainbow infrastructure in the user account to provide the support for the new services.

Connect to the application Web or PC to check that the routing menu is now available:




Or connect to the Smartphone application to check the Telephony menu is updated with the new settings:




**Expected Result**

Menu reserved for Nomadic and Voice over IP should be displayed.

It is necessary that the user is registered on the Web RTC gateway to activate the monitoring on the Remote extension device. If the entry remains grey it means the registration to the Web RTC gateway didn't completed.

**Actions**

Check the status of the Web RTC gateway  by the command mpstatus.

Command should return the

- The status from the system processes
- Time synchronization
- Access to the Rainbow infra
- Authentication to the Rainbow infra
- List of monitored users identified by their 17_digits_Rainbow_ID

```
rainbow@rainbow-mgw:~$ mpstatus
kamailio status ...
  [OK] enabled/active
janus-gateway-mediapillar status ...
  [OK] enabled/active
otlitemediapillargateway status ...
  [OK] enabled/active
ntp status ...
  [OK] enabled/active
registration status ...
  traceroute -n -m 4 -T -p 5060 135.117.104.100
  [OK] route 135.117.104.100
rainbow auth status ...
  [OK] [OK]
rainbow registered users
                Contact:: sip:102484609012997 89@135.117.104.100:33977 Q=
                Contact:: sip:101349280478260 53@135.117.104.100:60462 Q=
                Contact:: sip:109567337131632 89@135.117.104.100:59508 Q=
                Contact:: sip:102013707908442 71@135.117.104.100:53702 Q=
                Contact:: sip:100809177728632 97@135.117.104.100:43847 Q=
```

If the menu is not displayed, collect the logs from the application and open a ticket of support to Rainbow support team using email: support@openrainbow.com

### 7.6.4 Check the update of the Remote extension number in OXE configuration

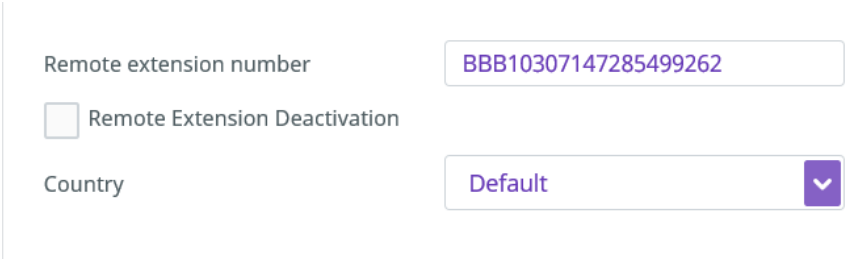
Modification of the routing menu will generate the modification of the destination of the Remote Extension Number by the Rainbow infrastructure.

This change is done in real time after the modification of the ringing device.

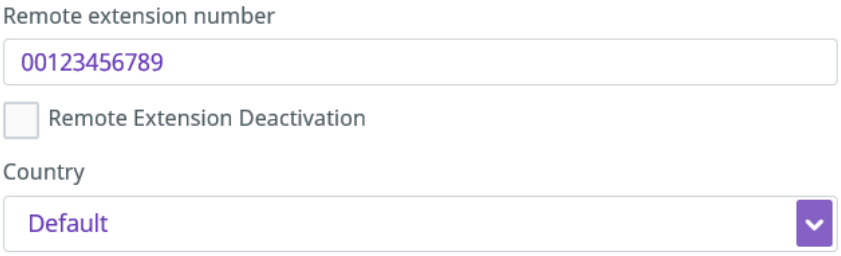
Open the OXE configuration tool MGR / WBM / 8770 application to check the modification of the field.

**Expected Result**

After switching to Computer mode (Web/PC) or activation of Voice over IP (Smartphone), the Remote Extension Number must show the number BBB+<17_digits_Rainbow_ID> as follow:




After switching to Work Mobile / Other Phone (Web/PC) or deactivation of Voice over IP (Smartphone), the Remote Extension Number must show the number <ARS_Prefix>+<External_Number> as follow:




**Note** Parameter Remote Extension Deactivation must remain inactive to ring the secondary device. Disable this setting if activated.

**Actions**

1. Restart the Rainbow agent from OXE using command:

```
dhs3_init -R RAINBOWAGENT
```

2. Perform the change the routing in one of the application:

If the value of the Remote extension number remains blank or is invalid, collect the logs from the application and the Web RTC Gateway, then open a ticket of support to Rainbow support team using email: support@openrainbow.com

# 7.7 Troubleshooting Call establishment in UCaaS mode

## 7.7.1 Check the provisioning of the monitored users in SIP proxy of the WebRTC Gateway

To check the PBX users registered into the WebRTC gateway SIP proxy, run the command:
`mpstatus`

**Expected result**

Command should return the

- The status from the system processes
- Time synchronization
- Access to the Rainbow infra
- Authentication to the Rainbow infra
- List of monitored users identified by their 17_digits_Rainbow_ID

```
rainbow@rainbow-mgw:~$ mpstatus
kamailio status ...
  [OK] enabled/active
janus-gateway-mediapillar status ...
  [OK] enabled/active
otlitemediapillargateway status ...
  [OK] enabled/active
ntp status ...
  [OK] enabled/active
registration status ...
  traceroute -n -m 4 -T -p 5060 135.117.104.100
  [OK] route 135.117.104.100
rainbow auth status ...
  [OK] [OK]
rainbow registered users
                Contact:: sip:102484609012997 89@135.117.104.100:33977 Q=
                Contact:: sip:101349280478260 53@135.117.104.100:60462 Q=
                Contact:: sip:109567337131632 89@135.117.104.100:59508 Q=
                Contact:: sip:102013707908442 71@135.117.104.100:53702 Q=
                Contact:: sip:100809177728632 97@135.117.104.100:43847 Q=
```

**Note** To retrieve the Rainbow_ID follow the section Check the update of the Remote extension number in OXE configuration

**Actions**

1. Restart the Rainbow Applications Web, PC or Smartphone, then check again the list of registered users

2. If not yet updated, restart the Web RTC Gateway using command:

```
sudo reboot
```

3. Check again the list of registered users

If result is still not correct after the restart of the Gateway, collect the logs and the commands result and open a ticket of support to Rainbow support team using email: support@openrainbow.com

### 7.7.2 Check the Remote Extension configuration

Dial the directory the remote extension number from an internal user to check the management of the ARS configuration.

In case of failure, check first the incidents from the Call Server with command:

```
xm000000> incvisu -t 50
```

If no incident is generated, set a Call Handling trace on the ARS table and SIP Trunk with commands:

```
xm000000> tuner km ctr cpu cpl tr s at hybrid=on
xm000000> actdbg all=off ars=on isdn=on sip=on
xm000000> mtracer -aug > /tmpd/WebRTCGateway_CH.log&
[1] 30371
```

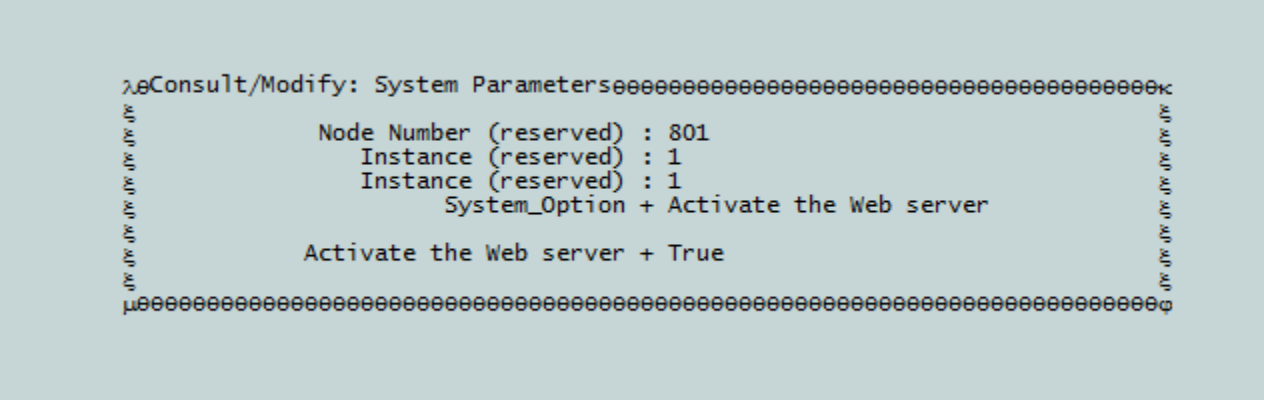
After reproducing the scenario stop the trace

```
xm000000> tuner km ctr
[1]+  Done                    mtracer -aug > /tmpd/WebRTCGateway_CH.log
xm000000> actdbg all=off
```

Create a Service Request to welcome center to OXE support team using email ebg_global_supportcenter@al-enterprise.com and provide the corresponding traces and Infocollect file from the system.

### 7.7.3 Check “Activate the Web server” parameter and Nginx

This parameter is used not only by OXE WBM activation but also by the API management used by Rainbow Agent in OXE. To avoid issue for calls from Rainbow application via WebRTC Gateway set this parameter to “True”




Sometimes even though this setting is enabled, errors still appear, check the Nginx with the trace parameters

```
killall traced
mao trace +obj +gen +ch
srvtrace ON
traced -1 /tmpd/trace_mao -s 20000000 -f 99 -d &
```

### 7.7.4 OXE traces for Rainbow usage

Side OXE, information to check signaling, call flow and delay measurement can de done with these trace parameters

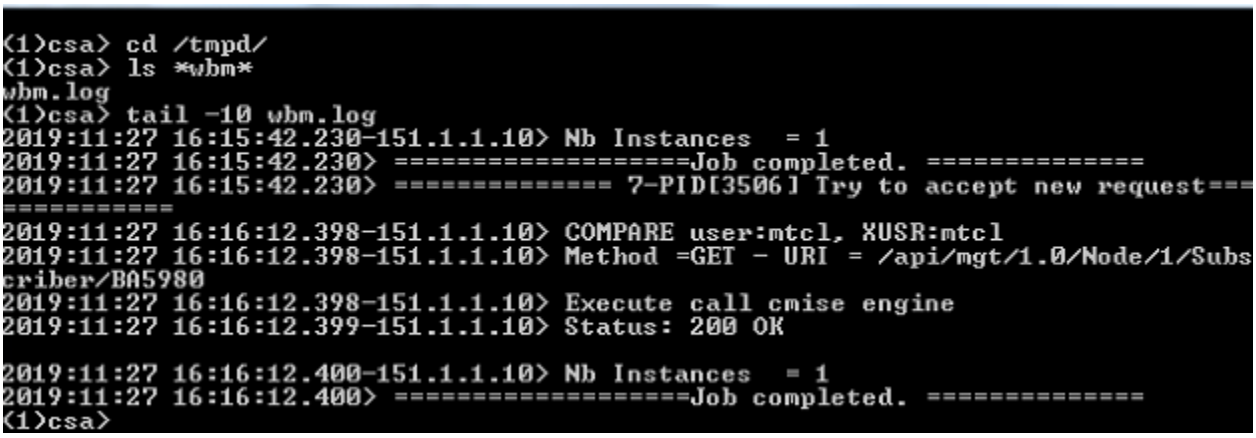
```
trc i
tuner all=off cpu cpl at tr s hybrid=on
actdbg all=off abcf=on isdn=on remote=on cstall=on cnx=on sip=on
mtracer -ag -1 /tmpd/CH_xxx -f 99 -s 20000000 -d&
```

## 7.8 Troubleshooting in REX or Nomadic mode change

In the cases

- changes on the REX not taken into account on Rainbow application
- Lost Nomadic mode

Can be interesting to compare the the WBM OXE logs with MGR information.
Rainbow and WBM use the same API to request OXE. This API is based on the dynamic memory access (REMANENT) while MGR is based on the MAO, therefore it can be interesting to check the potential inconsistency between WBM OXE and MGR information.
The WBM OXE log files (max 2) can be found in the folder “tmpd”.




The size and the level can be changed in the file

```
[root@pfrlmlezpbxcsa tmpd]# cat /usr3/mao/wbm.cfg
DEBUGLEVEL 0
LOGSIZE 320000
```

## Submitting a Service Request

Please connect to our eService Request application.

Before submitting a Service Request, please be sure:

- The application has been certified via the AAPP if a third party application is involved.
- You have read the release notes that list new features, system requirements, restrictions, and more, and are available in the Technical Documentation Library.
- You have read through the related troubleshooting guides and technical bulletins available in the Technical Documentation Library.
- You have read through the self-service information on commonly asked support questions and known issues and workarounds available in the Technical Knowledge Center.

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