



REST API Reference guide

API version 1.1

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Introduction

Starting with KalliopePBX firmware release 3.9.3-2664 a new set of REST API is available, to perform both consultative and dispositive tasks. The former version of the REST API is 1.0; a minor modification to cdr API has been introduced with the KalliopePBX 3.9.5 firmware upgrade (API version 1.1).

The base url for REST calls is:

```
http[s]://<IP_KALLIOPEPBX >/rest/
```

REST APIs use HTTP Basic Authentication, which requires that a valid username and password are provided. Version 1.0 of the APIs supports only administrative access. Username must be “admin” (without quotes) and the password is the md5 sum of the administrator web interface password. As an example, if the administrator password is the standard one (i.e. “admin”, without quotes) then the API password is the string “21232f297a57a5a743894a0e4a801fc3”.

The HTTP methods GET, PUT, POST and DELETE are supported, depending on the specific API.

GET and DELETE methods do not require a request body, and all the parameters are included in the URL, as in the example below:

```
http[s]://<IP>/rest/<family>/<request>?param1=value1&param2=value2[&...]
```

POST and PUT methods require that request parameters are passed in the request body, XML formatted, according to the related documentation of the specific API. The base XML format of the requests body is as follows:

```
<?xml version="1.0"?>
<kpbx_request>
  ...
</kpbx_request>
```

By default, the PBX sends back the responses as XML messages:

```
<?xml version="1.0"?>
<kpbx_response>
  ...
</kpbx_response>
```

Alternatively, some APIs allow the client to request the response in a format different than XML. As an example, Call Detail Record can be exported as XML or CSV; in order to receive a

CSV file, the additional header “Accept: text/csv” must be added in the request. The availability of the CSV response is specified in the single APIs.

Request_id

All requests can include an optional “request_id” parameter; if it is present, the response will include the same “request_id” value. The “request_id” parameter can be an arbitrary value (alphanumeric string) and it doesn’t have to be unique, i.e. multiple requests can have the same “request_id”.

Request_id parameter is useful to associate the responses to the originating requests, when APIs are used asynchronously, or when several requests from different entities are multiplexed at REST client side.

For GET and DELETE methods, the request_id is passed as one of the parameters in the request URL:

```
http[s]://<IP>/rest/<family>/<request>?request_id=xyz123[&param1=...]
```

For PUT and POST methods, the request_id is included in the XML body, in a <request_id> tag included directly under the main <kpbx_request>:

```
<?xml version="1.0"?>
<kpbx_request>
  <request_id>xyz123</request_id>
  ...
</kpbx_request>
```

In all the cases, the response include the request_id information as a tag, included directly under the <kpbx_response> tag:

```
<?xml version="1.0"?>
<kpbx_response>
  <request_id>xyz</request_id>
  ...
</kpbx_response>
```

REST APIs and KalliopePBX license activation

In case a KalliopePBX activation using a license key is required (i.e. in the case of KPBX-V3-ESX Virtual Machines), the APIs are not active, and an error response is returned to the client. The response has the following format:

```
<?xml version="1.0"?>
<kpbx response>
  <request_not_allowed>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </request_not_allowed>
```

```
</kpbx_response>
```

Error codes and messages:

Code	Message	Description
1	License missing	The license has not been yet activated
2	License expired	The license has expired
3	License disabled	The license has been disabled or invalidated

The following APIs are available irrespective of license activation status, and allow to change KalliopePBX networking settings and apply them, as well as activate the license:

- `/system/network`: the whole `/system/network` tree, which includes APIs to change KalliopePBX network settings (IP address, netmask, gateway and DNS), in order to allow the PBX to reach the license server
- `/license`: the whole `/license` tree, which includes APIs to activate and check activation status of the license
- `/pbx/apply`: the API which applies the pending changes

/system

PUT /system/restart

Reboots the PBX, without any confirmation.

Response

```
<kpbx_response>
  <system_restarted>true/false</system_restarted>
</kpbx_response>
```

PUT /system/halt

Shuts down the PBX, without any confirmation.

Response

```
<kpbx_response>
  <system_halted>true/false</system_halted>
</kpbx_response>
```

/system/firmware

GET /system/firmware

Provides information on KalliopePBX firmware versions

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <firmware>
    <primary>...</primary>
    <secondary>...</secondary>
    <running>primary/secondary</running>
  </firmware>
</kpbx_response>
```

PUT /system/firmware/rebootsecondary

Reboot the KalliopePBX using the secondary firmware. The API always return a response, for both successful and failed invocations. If the PBX is already running with secondary firmware, it returns an error. An error is returned also if the request could not be fulfilled:

Response

```
<?xml version="1.0"?>
<kpbx_response>
```

```

<reboot_secondary>
  <error>
    <code>...</code>
    <message>...</message>
  </error>
</reboot_secondary>
</kpbx_response>

```

Error codes and messages

Code	Message	Notes
0	Success	PBX reboot with secondary firmware started successfully
14	System running from secondary firmware	PBX is already running with the secondary firmware
16	System not rebooted from secondary firmware	Action failed

PUT /system/firmware/promotesecondary

Promote the currently running secondary firmware to primary, and reboots the PBX. If the API is invoked while PBX runs with primary firmware, it returns an error.

Response

```

<?xml version="1.0"?>
<kpbx_response>
  <promote_secondary>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </promote_secondary>
</kpbx_response>

```

Error codes and messages

Code	Message	Notes
0	Success	
13	System running from primary firmware	PBX is already running with primary firmware
15	Firmware not promoted to primary	Action failed

PUT /system/firmware/restoreprimary

When running with secondary firmware, reboot the KalliopePBX with the primary firmware.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <restore_primary>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </restore_primary>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
13	System running from primary firmware	PBX is already running with primary firmware
17	Primary firmware not restored	Action failed

PUT /system/firmware/update

Start the KalliopePBX firmware update process. To control update progress refer to “GET /system/firmware/updatestatus” API.

Request body

```
<?xml version="1.0"?>
<kpbx_request>
  <update>
    <firmware version>...</firmware version>
  </update>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <update>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </update>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	Firmware update started
12	One or more required field	

	missing	
18	Invalid firmware update request	Missing <update> tag in the request
19	Invalid version format	The firmware_version tag has an invalid format. Correct one is A.B.C-dddd
20	Firmware update already in progress	There is already another update in progress
21	Version to update too old	Requested firmware version is the same or older than the running one
22	Required update before	It is not possible to update to the requested version because there is a mandatory update in between.
23	Unable to launch firmware update	Invalid requested firmware version
24	Firmware update not started	Generic error. Unable to start update process

GET /system/firmware/updatestatus

Provides information about the progress status of the ongoing update process.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <update_status>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </update_status>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
25	No firmware update in progress	
26	Initializing updating process	
27	Downloading update	
28	Uncompressing file	
29	Migrating configuration	
30	Updating is successful	Update finished correctly. It is possible to reboot using secondary firmware, and then promote secondary to primary.

31	An error has occurred during update process
----	---

/system/pbxengine

PUT /system/pbxengine/reload

Reloads PBX engine configuration. It does not have any effect on ongoing calls.

Response

```
<kpbx_response>
  <pbxengine_reloaded>true/false</pbxengine_reloaded>
</kpbx_response>
```

PUT /system/pbxengine/restart

Reboots PBX engine. All calls are dropped immediately.

Response

```
<kpbx_response>
  <pbxengine_restarted>true/false</pbxengine_restarted>
</kpbx_response>
```

/system/network

POST /system/network/interfaces

Provides the list of network interfaces, and their IP configuration (address, netmask). Values of 0.0.0.0 for ip_address and netmask means that DHCP client is enabled on that interface.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <interfaces>
    <interface>
      <id>1</id>
      <enabled>true</enabled>
      <name>eth0</name>
      <ip_address>192.168.0.100</ip_address>
      <netmask>255.255.255.0</netmask>
    </interface>
    <interface>
      ...
    </interface>
  </interfaces>
</kpbx_response>
```

PUT /system/network/interfaces

Changes the IP configuration of a network interface. The <id> tag is mandatory, since it univocally identifies the interface. The other three tags are optional, but at least one of the three must be present.

Note: eth0 interface (which has id=0) cannot be disabled.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <interface>
    <id>...</id>
    <enabled> true/false </enabled>
    <ip_address>...</ip_address>
    <netmask>...</netmask>
  </interface>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <interface>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </interface>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
12	One or more required field missing	
32	Invalid network interface update request	Missing <interface> tag in the request
33	Invalid network id	
34	Invalid network IP address	
35	Invalid network netmask	
36	Network interface not saved	

GET /system/network/dns

Provides the configured DNS address.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <dns>
    <ip_address>192.168.0.100</ip_address>
  </dns>
</kpbx_response>
```

PUT /system/network/dns

Changes the configured DNS address.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <dns>
    <ip_address>192.168.0.100</ip_address>
  </dns>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <dns>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </dns>
</kpbx_response>
```

Error codes and messages

Code	Message	
0	Success	
12	One or more required field missing	
37	Invalid network DNS update request	Missing <dns> tag in the request
38	Invalid network DNS IP address	
39	Network DNS IP address not saved	

GET /system/network/routes

Provides all the configured IP routes. The route with destination 0.0.0.0 is the default gateway.

Response

```
<?xml version="1.0"?>
<kpbx response>
  <routes>
    <route>
      <id>1</id>
      <enabled>true</enabled>
      <destination>0.0.0.0/0</destination>
      <gateway>192.168.23.100</gateway>
    </route>
    ...
    <route>
      ...
    </route>
  </routes>
</kpbx_response>
```

POST /system/network/routes

Adds a new static IP route.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <route>
    <enabled>true</enabled>
    <destination>192.168.1.0/24</destination>
    <gateway>192.168.1.1</gateway>
  </route>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <route>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </route>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
12	One or more required field missing	
40	Invalid network route request	Missing <route> tag in the request
41	Invalid network route	The route destination must be in the format

	destination address	aa.bb.cc.dd/NN
42	Invalid network route gateway address	
43	Invalid network route	The route is invalid since the provided gateway does not belong to any of the local subnets of the PBX.
44	Network route not saved	

PUT /system/network/routes

Changes an existing IP route, identified by its id.

The 0.0.0.0/0.0.0.0 route cannot be disabled nor the ip_address or netmask values can be changed.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <route>
    <id>...</id>
    <enabled> true/false </enabled>
    <ip_address>...</ip_address>
    <netmask>...</netmask>
    <gateway>...</gateway>
  </route>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <route>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </route>
</kpbx_response>
```

Error codes and messages

Code	Message	
0	Success	
12	One or more required field missing	
40	Invalid network route request	Missing <route> tag in the request
41	Invalid network route destination address	The route destination must be in the format aa.bb.cc.dd/NN

42	Invalid network route gateway address	
43	Invalid network route	The route is invalid since the provided gateway does not belong to any of the local subnets of the PBX
44	Network route not saved	
45	Invalid network route id	The provided <id> is not a valid one.

DELETE /system/network/routes/<id>

Removes the route with the specified <id>. The default route (with destination 0.0.0.0/0.0.0.0) cannot be removed.

Response

```
<?xml version="1.0"?>
<kpbx response>
  <dns>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </dns>
</kpbx_response>
```

Error codes and messages

Code	Message	
0	Success	
45	Invalid network route id	The provided <id> is not a valid one
46	Network route not deleted	

/system/backup

POST /system/backup/create

Generates a backup of the currently running configuration, and returns the backup file.

In case of success, the API returns the backup file as data stream with Content-Type “application/octet-stream”.

In case of errors, the API returns an XML response message, instead of the file.

The only mandatory tag is the <name>. The <phonebook> and <sounds> tag instruct the API whether to include the phonebooks and the custom audio files in the backup. Please pay

attention when including a large collection of files, since the backup size can become noticeable and an out-of-memory error may happen.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <backup>
    <name>...</name>
    <description>...</description>
    <includes>
      <phonebook>true/false</phonebook>
      <sounds>true/false</sounds>
    </includes>
  </backup>
</kpbx_request>
```

Response (in case of error)

```
<?xml version="1.0"?>
<kpbx_response>
  <backup>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </backup>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
10	Invalid backup request	Missing <backup> tag in the request
11	Backup not created	Error during creation of the backup (i.e. out-of-memory error)
12	One or more required field missing	

/license

GET /license/pxbinstance

Provides information about the KalliopePBX license activation state (for the models which require a license key for operation), as well as on the number of licensed extensions.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <pbx_instance_license>
    <license_status>ACTIVE/DISABLED/EXPIRED</license_status>
    <licensed_exten>...</licensed_exten>
  </pbx_instance_license>
</kpbx_response>
```

Response (in caso di errore)

```
<?xml version="1.0"?>
<kpbx_response>
  <pbx_instance_license>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </pbx_instance_license>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
10	Invalid part number for request	The device do not require a license
11	No license present	
12	One or more required field missing	

POST /license/pxbinstance

Allows to activate a KalliopePBX license, by means of an activation key.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <pbx_instance_license>
    <activation_key>...</activation_key>
  </pbx_instance_license>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <pbx_instance_license>
    <error>
      <code>...</code>
      <message>...</message>
    </error>
  </pbx_instance_license>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
10	Invalid part number for request	Device is not a KalliopePBX which requires a license to operate
12	Invalid PBX instance license request	Missing <pbx_instance_license> tag in the request
13	Activation key field missing	Missing <activation_key> tag in the request
14	Missing response from license server	
15	Invalid response from license server	
16	Error message from license server	
17	License activation failed	

/users

/users/registrations

GET /users/registrations/<exten>

Provides information about the registration status of the extension <exten>.

Response

```
<kpbx_response>
  <registrations>
    <registration>
      <exten>xxx</exten>
      <status>OK/UNREACHABLE/UNKNOWN</status>
      <rtt>xxx ms</rtt> <rtt />
      <contact>sip:xxx@192.168.0.100:5060</contact>
      <ip>192.168.0.100</ip>
      <port>5060</port>
      <useragent>blah blah blah</useragent>
    </registration>
  </registrations>
</kpbx_response>
```

GET /users/registrations/

Provides information about the registration status of all the enabled extensions.

Response

```
<kpbx_response>
  <registrations>
    <registration>
      ...
    </registration>
    <registration>
      ...
    </registration>
    ...
  </registrations>
</kpbx_response>
```

/users/brief

GET /users/brief/<exten>

Provides basic status and identity information about the extension <exten>.

Response

```
<kpbx_response>
  <users>
    <user>
      <exten>...</exten>
      <enabled>true/false</enabled>
      <first_name>...</first_name>
      <last_name>...</last_name>
    </user>
  </users>
</kpbx_response>
```

GET /users/brief/

Provides basic status and identity information about all the configured extensions.

Response

```
<kpbx_response>
  <users>
    <user>
      ...
    </user>
    <user>
      ...
    </user>
    ...
  </users>
</kpbx_response>
```

/users/configs

GET /users/configs/<exten>

Provides extended configuration information of the extension <exten>. Refer to POST method /users/config for the meaning of the configuration tags.

Response

```
<kpbx_response>
  <configs>
    <config>
      <exten>...</exten>
      <sip secret>...</sip secret>
      <enabled>true/false</enabled>
      <first_name>...</first_name>
      <last_name>...</last_name>
      <gui secret md5>...</gui secret md5>
      <phonebook_manager>true/false</phonebook_manager>
      <vm_enabled>true/false</vm_enabled>
      <vm_secret>...</vm_secret>
      <vm_email>...</vm_email>
      <vm attach enabled>true/false</vm attach enabled>
      <vm_message_delete>true/false</vm_message_delete>
      <failover>
        <intro>...</intro>
        <type>...</type>
        <destination>
          <name>...</name>
          <value>...</value>
          <gateway_type>...<gateway_type>
          <gateway id>...<gateway id>
          <gateway_name>...</gateway_name>
        </destination>
      </failover>
    </config>
  </configs>
</kpbx_response>
```

GET /users/configs/

Provides extended configuration information of all the extensions defined in the KalliopePBX.

Response

```
<kpbx_response>
  <configs>
    <config>
      ...
    </config>
    <config>
      ...
    </config>
    ...
  </configs>
</kpbx_response>
```

POST /users/configs/

Allows to add a new extension in the KalliopePBX.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <user>
    <exten>...</exten>
    <sip_secret>...</sip_secret>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <vm_enabled>true/false</vm_enabled>
    <vm_secret>...</vm_secret>
    <vm_email>...</vm_email>
    <vm_attach_enabled>true/false</vm_attach_enabled>
    <vm_message_delete>true/false</vm_message_delete>
    <failover>
      <intro>...</intro>
      <type>...</type>
      <destination>
        <name>...</name>
        <value>...</value>
        <gateway_type>...</gateway_type>
        <gateway_id>...</gateway_id>
        <gateway_name>...</gateway_name>
      </destination>
    </failover>
  </user>
</kpbx_request>
```

The meaning of the tags follows (M stands for Mandatory; the other tags are optional).

exten	M	Extension number
Sip_secret	M	SIP secret for registration and call authentication
First_name	M	Identity First name
Last_name	M	Identity Last name
Vm_enabled		Flag to specify whether voicemail is defined for the exten
Vm_secret		Voicemail password, used when accessing voicemail from a telephone
Vm_mail		E-mail address associated to the voicemail
Vm_attach_enabled		Flag to specify whether to send the recorded message as audio attachment in the mail notification sent to the associated e-mail address
Vm_message_delete		Flag to specify whether the voicemail messages sent as attachments via e-mail have to be deleted from KalliopePBX
Failover		Where to forward an incoming call to the extension, in case of busy subscriber, call not answered or device unreachable.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <user>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </user>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
10	Invalid user request	Missing <user> tag in the request
11	User already exists	Extension is already defined in the KalliopePBX
12	One or more required field missing	
13	Licensed extensions number reached	
14	User not saved	

PUT /users/configs/<exten>

Allows to modify the settings of an existing extension. All the tags within the <user> tag are optional, but at least one must be present.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <user>
    <sip_secret>...</sip_secret>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <vm enabled>true/false</vm enabled>
    <vm_secret>...</vm_secret>
    <vm_email>...</vm_email>
    <vm_attach_enabled>true/false</vm_attach_enabled>
    <vm message delete>true/false</vm message delete>
    <failover>
      <intro>...</intro>
      <type>...</type>
      <destination>
        <name>...</name>
        <value>...</value>
        <gateway_type>...</gateway_type>
        <gateway_id>...</gateway_id>
        <gateway_name>...</gateway_name>
      </destination>
    </failover>
  </user>
</kpbx_request>
```

```

        </failover>
    </user>
</kpbx_request>
    
```

Response

```

<?xml version="1.0"?>
<kpbx_response>
  <user>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </user>
</kpbx_response>
    
```

Error codes and messages

Code	Message	
0	Success	
10	Invalid user request	Missing <user> tag in the request
14	User not saved	Generic error. The required change has not been saved
15	User does not exist	
16	Empty request	No tag inside <user>

DELETE /users/configs/<exten>

Remove the extension <exten> from KalliopePBX

Response

```

<?xml version="1.0"?>
<kpbx_response>
  <user>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </user>
</kpbx_response>
    
```

Error codes and messages

Code	Message	
0	Success	
15	User does not exist	

/pbx

GET /pbx/pending

Returns true if there are pending changes in the KalliopePBX configuration. Pending changes are in volatile memory, are not operational, and get lost if a power failure or a reboot occur.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <pbx_pending>true/false</pbx_pending>
</kpbx_response>
```

PUT /pbx/apply

Applies pending changes, saving to non-volatile memory Returns true if there are pending changes in the KalliopePBX configuration.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <pbx_applied>true/false</pbx_applied>
</kpbx_response>
```

PUT /pbx/revert

Drops any pending change in the configuration

Response

```
<?xml version="1.0"?>
<kpbx response>
  <pbx_reverted>true/false</pbx_reverted>
</kpbx_response>
```

/pbx/callgroups

GET /pbx/callgroups

Returns the configuration of all the callgroups defined in the KalliopePBX.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <callgroups>
    <callgroup>
      <id>...</id>
      <name>...</name>
      <selection>...</selection>
      <enabled>true/false</enabled>
```

```

        <timeout>...</timeout>
        <failover>
            <intro>...</intro>
            <type>...</type>
            <destination>
                <name>...</name>
                <value>...</value>
                <gateway_type>...<gateway_type>
                <gateway_id>...<gateway_id>
                <gateway_name>...</gateway_name>
            </destination>
        </failover>
        <priorities>
            <priority>
                <id>...</id>
                <members>
                    <member>
                        <exten>...</exten>
                        <display name>...</display name>
                    </member>
                    <member>
                        ...
                    </member>
                    ...
                </members>
            </priority>
            <priority>
                ...
            </priority>
            ...
        </priorities>
    </callgroup>
    <callgroup>
        ...
    </callgroup>
    ...
</callgroups>
</kpbx_response>

```

The <callgroups> tag includes a <callgroup> tag for each callgroup defined.

The <callgroup> tag contains the unique identifier <id>, the name, the optional numeric selection associated to the callgroup, the ring timeout associated to each priority, as well as the <priorities> and <failover> tag.

The <priorities> tag contains a <priority> tag for each ring priority defined in the callgroup. Each <priority> tag includes the definition of all the extensions associated to that priority.

The <failover> tag contains the configuration of the failover action to be performed on incoming call when no member of the callgroup answers the call (at the end of all priorities, because they are all busy, or the last priority timeout expires without answer).

The <type> tag can assume the following values:

- FORWARD_TO_EXTEN: Forward the call to an exten of the KalliopePBX. The <value> tag contains the extension number, and the <name> tag contains the identity (first and last name) associated.
- FORWARD_TO_CALLGROUP_WITHOUT_CHECKTIME: Forward the call to another callgroup, bypassing internal checktime. The <value> tag contains the <id> of the target callgroup, and the <name> tag contains the target callgroup name.
- FORWARD_TO_CALLGROUP_WITH_CHECKTIME: Forward the call to another callgroup, including internal checktime. The <value> tag contains the <id> of the target callgroup, and the <name> tag contains the target callgroup name.
- FORWARD_TO_QUEUE_WITHOUT_CHECKTIME: Forward the call to a queue, bypassing internal checktime. The <value> tag contains the <id> of the target queue, and the <name> tag contains the target queue name.
- FORWARD_TO_QUEUE_WITH_CHECKTIME: Forward the call to a queue, including internal checktime. The <value> tag contains the <id> of the target queue, and the <name> tag contains the target queue name.
- FORWARD_TO_VOICEMAIL: Forward the call to a voicemail box. The <value> tag contains the voicemail number, and the <name> tag is empty.
- FORWARD_TO_IVR: Forward the call to a IVR menu. The <value> tag contains the IVR menu id, and the <name> tag contains the IVR menu name.
- FORWARD_TO_EXTERNAL_NUMBER: Forward the call to an external number. The <value> tag contains the destination telephone number, the <name> tag is empty; the two tags <gateway_type> and <gateway_id> identify the outbound line through which route the call. The <gateway_type> tag can assume one of the following values:
 - GATEWAY
 - BALANCER
 - TRUNK
 - VOIP_TERM

The <gateway_id> contains the outbound line identifier, while the <gateway_name> its mnemonical name.

- FORWARD_TO_CHECKTIME: Forward the call to one of the configured checktime. The <value> tag contains the id of the checktime, and the <name> tag its mnemonical name.
- HANGUP: Hangup the call.

GET /pbx/callgroups/<callgroupid>

Returns the configuration of the callgroup with requested id.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <callgroups>
    <callgroup>
```

```

        ...
    </callgroup>
</callgroups>
</kpbx_response>

```

The response is the same of the /pbx/callgroups API, but it contains only a single <callgroup> instance.

POST /pbx/callgroups

Adds a new callgroup to KalliopePBX.

Request

```

<?xml version="1.0"?>
<kpbx_request>
  <callgroup>
    <name>...</name>
    <timeout>...</timeout>
    <selection>...</selection>
    <enabled>true/false</enabled>
    <priorities>
      <priority>
        <id>...</id>
        <members>
          <member>
            <exten>...</exten>
          </member>
          <member>
            ...
          </member>
        </members>
      </priority>
      <priority>
        ...
      </priority>
    </priorities>
  </callgroup>
</kpbx_request>

```

Response

```

<?xml version="1.0"?>
<kpbx_response>
  <callgroup>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </callgroup>
</kpbx_response>

```

Error codes and messages

Code	Message	Notes
------	---------	-------

0	Success	
10	Invalid callgroup request	Missing <callgroup> tag in the request
12	One or more required field missing	
13	Licensed callgroup number reached	Maximum number of licensed callgroups exceeded
14	Callgroup not saved	

PUT /pbx/callgroups/<callgroupid>

Modifies the existing callgroup with id <callgroupid>, altering the parameters specified in the request.

IMPORTANT NOTE: Members of the callgroup **MUST** always be specified, since the callgroup members are always substituted with the ones present in the request.

Request

```
<?xml version="1.0"?>
<kpbx request>
  <callgroup>
    <name>...</name>
    <timeout>...</timeout>
    <selection>...</selection>
    <enabled>true/false</enabled>
    <priorities>
      <priority>
        <id>...</id>
        <members>
          <member>
            <exten>...</exten>
          </member>
          <member>
            ...
          </member>
        </members>
      </priority>
      <priority>
        ...
      </priority>
    </priorities>
  </callgroup>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <callgroup>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </callgroup>
```

```
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
10	Invalid callgroup request	Missing <callgroup> tag in the request
12	One or more required field missing	
14	Callgroup not saved	
15	Callgroup not exists	
16	Empty request	No attribute tag within <callgroup> tag

DELETE /pbx/callgroups/<callgroupid>

Removes the callgroup with id <callgroupid>. The callgroup with id “incoming” cannot be deleted.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <callgroup>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </callgroup>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
15	Callgroup not exists	
17	Callgroup not deleted	

/pbx/conferences

GET /pbx/conferences

Provides the list of of configured conference rooms.

Response

```
<kpbx_response>
<conferences>
  <conference>
    <name>...</name>
    <enabled>true/false</enabled>
    <selection>
      <internal>...</internal>
      <external>...</external>
    </selection>
    <admin_pin>...</admin_pin>
    <user pin>...</user pin>
  </conference>
</conferences>
</kpbx_response>
```

/phonebook

/phonebook/contacts

GET /phonebook/contacts

Provides the list of the contacts in the phonebook.

Response

```
<kpbx_response>
<contacts>
  <contact>
    <id>...</id>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <organization>...</organization>
    <organizational_unit>...</organizational_unit>
    <type>system/private</type>
    <phone>...</phone>
    <mail>...</mail>
    <speed_dial>...</speed_dial>
  </contact>
  <contact>
    ...
  </contact>
</contacts>
</kpbx_response>
```

GET /phonebook/contacts/<id>

Returns a single contact, with id <id>.

Response

```
<?xml version="1.0"?>
<kpbx response>
<contacts>
  <contact>
    <id>...</id>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <organization>...</organization>
    <organizational_unit>...</organizational_unit>
    <type>system/private</type>
    <phone>...</phone>
    <mail>...</mail>
    <speed_dial>...</speed_dial>
  </contact>
</contacts>
</kpbx_response>
```

POST /phonebook/contacts

Adds a contact to the phonebook. It can be either a private contact (if the <owner> tag is present and contains a valid extension number) or a system contact (if the <owner> tag is missing, or it contains the value -1). The only mandatory tags are <first_name>, <last_name> and <phone>.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <contact>
    <owner>-1/...</owner>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <organization>...</organization>
    <organizational_unit>...</organizational_unit>
    <phone>...</phone>
    <mail>...</mail>
    <speed_dial>...</speed_dial>
  </contact>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <contact>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </contact>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	

10	Invalid contact request	Missing <contact> tag in the request
11	Invalid owner for user	The <owner> tag contains an invalid value
12	One or more required field missing	
13	Contact not saved	

POST /phonebook/search

Provides a means to perform a search in the phonebook for the contacts which match the filter specified in the request.

If the <any> tag is not present, the API returns the list of all the contacts which match all the other non-empty tags. If the <any> tag is present and non-empty, then the API returns the list of all the contacts which match the related value in any of its attributes.

The API operates by default with exact match of the tag values; if the special character % is included in a tag value (at the beginning, at the end, or both) it is interpreted as “zero or more other characters”, and the match is then performed as a “like” function.

If the <filter> tag does not contain any filter tag, then all the contacts are returned, just like the GET /phonebook/contacts

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <filter>
    <any>...</any>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <organization>...</organization>
    <organizational_unit>...</organizational_unit>
    <phone>...</phone>
    <mail>...</mail>
  </filter>
</kpbx_request>
```

Error codes and messages

Code	Message	Notes
0	Success	
19	Invalid filter request	Missing <filter> tag in the request

DELETE /phonebook/contacts/<id>

Removes the contact with id <id> from the phonebook.

Response

```
<?xml version="1.0"?>
<kpbx_response>
```

```
<contact>
  <error>
    <code>0</code>
    <message>Success</message>
  </error>
</contact>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
14	Invalid contact ID	
15	Contact not found	
16	User can not handle system contact	* For future API version, when user login will be made available
17	Admin can not handle private contact	
18	Contact not deleted	
20	This contact is not yours	* For future API version, when user login will be made available

PUT /phonebook/contacts

Modifies an existing contact from the phonebook.

Request

```
<?xml version="1.0"?>
<kpbx request>
  <contact>
    <id>...</id>
    <first_name>...</first_name>
    <last_name>...</last_name>
    <organization>...</organization>
    <organizational_unit>...</organizational_unit>
    <phone>...</phone>
    <mail>...</mail>
    <speed_dial>...</speed_dial>
  </contact>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx response>
  <contact>
    <error>
      <code>0</code>
      <message>Success</message>
    </error>
  </contact>
```

```
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
10	Invalid contact request	Missing <contact> tag is missing
12	One or more required field missing	
13	Contact not saved	
15	Contact not found	
16	User can not handle system contact	
17	Admin can not handle private contact	
20	This contact is not yours	

/voicemails

GET /voicemails/count/<mailbox>

Provides information about the number of urget, unread and read messages in the mailbox specified in
Modifies an existing contact from the phonebook.

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <voicemails>
    <voicemail>
      <urg_messages>...</urg_messages>
      <new_messages>...</new_messages>
      <old_messages>...</old_messages>
    </voicemail>
  </voicemails>
</kpbx_response>
```

/cdr

POST /cdr

API version 1.0 (KalliopePBX 3.9.3+)

Provides the Call Detail Record, filtered according the parameters included in the request.

By default, the response is provided as an XML file, as described below; if the HTTP request includes the header “Accept: text/csv”, then the response will be provided as a CSV file, where each column corresponds to a tag value.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <cdr>
    <privacy_password> md5sum(privacy_pwd) </privacy_password>
    <begin>YYYY-MM-DD hh:mm:ss</begin>
    <end>YYYY-MM-DD hh:mm:ss</end>
    <start_flag>true/false</start_flag>
    <filter>
      <any>...</any>
      <direction>...</direction>
      <caller_num>...</caller_num>
      <caller_name>...</caller_name>
      <called_num>...</called_num>
      <called_name>...</called_name>
      <called_callgroup>...</called_callgroup>
      <gateway_id>...</gateway_id>
      <gateway_name>...</gateway_name>
      <status>...</status>
      <billsec>...</billsec>
    </filter>
  </cdr>
</kpbx_request>
```

All the tags inside the <cdr> tags are optional. If none of them is included, then the <cdr> tag must be specified in the self-closing form <cdr/>.

- **privacy_password**: if specified (and equal to the md5sum of the privacy password configured in the PBX, the full numbers and names in the CDR are exposed. If missing, the external numbers will have the last three digits masked by XXX, and the names will be empty.
- **begin**: the date and time of the beginning of the CDR in the response. The format is “YYYY-MM-DD hh:mm:ss”; if not specified, it defaults to the first day of the month, at 00:00.
- **end**: the date and time of the end of the CDR in the response. It has the same format of the begin tag; if empty or missing, it defaults to current timestamp.

- **start_flag:** If set to true, then the calls which start within the period begin-end are included in the response. Otherwise, the calls which end in the same period are returned.
- **filter:** It is an optional tag to perform a search among the CDR entries. The tags included (which are all optional) allow to return only the entries of the CDR which matches the filter parameters. The `<any>` tag, if present, excludes all the others; in this case, the provided string is searched in all the CDR fields. Otherwise, all the specified tags are searched for a match. By default, the match is exact; the special character `%` can be used (at the beginning or end of the string, or both) to specify that 0 or more characters can be present (before, after, or at both ends).

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <cdr>
    <error_code>
      <code>0</code>
      <message>Success</message>
    </error_code>
    <calls>
      <call>
        <id>...</id>
        <direction>1/2/4</direction>
        <caller_num>...</caller_num>
        <caller_name>...</caller_name>
        <called_num>"..."</called_num>
        <called_name>...</called_name>
        <called_callgroup>...</called_callgroup>
        <gateway_id>...</gateway_id>
        <gateway_name>...</gateway_name>
        <status>1/2/3/4/8</status>
        <billsec>...</billsec>
        <start>YYYY-MM-DD hh:mm:ss</start>
        <answer>YYYY-MM-DD hh:mm:ss</answer>
        <end>YYYY-MM-DD hh:mm:ss</end>
        <duration>...</duration>
      </call>
      <call>
        ...
      </call>
    </calls>
  </cdr>
</kpbx_response>
```

The `<direction>` and `<status>` tag can assume the following values:

`<direction>`:

- 1: inbound call (from outside to an internal destination)
- 2: outbound call (from an extension to an external destination)
- 4: internal call (between two extensions, or an extension and other internal destination)

`<status>`:

- 1: call failed
- 2: busy destination
- 3: congestion
- 4: no answer
- 8: normal call clearing

Error codes and messages

Code	Message	Notes
0	Success	The <calls> tag is present only in this case; in all the others the response will not include the <calls> tag
3	Authentication error	The <privacy_password> tag contains a wrong value
11	Invalid date time interval	The <end> timestamp is before the <begin> timestamp
12	Internal error	

API version 1.1 (KalliopePBX 3.9.5+)

A new call attribute is exported. Thi is the unique_id, which is assigned to the call by the PBX as soon as it arrives at the PBX. Please note that this is the same UniqueID value which can be used as an argument to the URL or external script opened by the KalliopeCTI application at call reception, answer or end.

The request may include the optional filter field <unique_id>...</unique_id>. Like the other fields, the value can include a trailing and/or leading character %, as a wildcard.

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <cdr>
    <privacy_password> md5sum(privacy_pwd) </privacy_password>
    <begin>YYYY-MM-DD hh:mm:ss</begin>
    <end>YYYY-MM-DD hh:mm:ss</end>
    <start_flag>true/false</start_flag>
    <filter>
      <any>...</any>
      <unique id>...</unique id>
      <direction>...</direction>
      <caller_num>...</caller_num>
      <caller_name>...</caller_name>
      <called_num>...</called_num>
      <called name>...</called name>
      <called_callgroup>...</called_callgroup>
      <gateway_id>...</gateway_id>
      <gateway name>...</gateway name>
      <status>...</status>
      <billsec>...</billsec>
    </filter>
  </cdr>
</kpbx_request>
```

```
</cdr>
</kpbx_request>
```

The response include the `<unique_id>` tag, for each call. In the case that the call does not have such attribute (e.g. for all the calls performed before the upgrade to the new firmware), then the output will include the tag `<unique_id/>`

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <cdr>
    <error_code>
      <code>0</code>
      <message>Success</message>
    </error_code>
    <calls>
      <call>
        <unique_id>...</unique_id>
        <id>...</id>
        <direction>1/2/4</direction>
        <caller_num>...</caller_num>
        <caller_name>...</caller_name>
        <called_num>"..."</called_num>
        <called_name>...</called_name>
        <called_callgroup>...</called_callgroup>
        <gateway_id>...</gateway_id>
        <gateway_name>...</gateway_name>
        <status>1/2/3/4/8</status>
        <billsec>...</billsec>
        <start>YYYY-MM-DD hh:mm:ss</start>
        <answer>YYYY-MM-DD hh:mm:ss</answer>
        <end>YYYY-MM-DD hh:mm:ss</end>
        <duration>...</duration>
      </call>
      <call>
        ...
      </call>
    </calls>
  </cdr>
</kpbx_response>
```

/cdrcallcenter

POST /cdrcallcenter

This API provides the details of the calls to the queues defined in the PBX. It is available only if the CllCenter license is activated in the PBX, and provides additional information with respect to the plain CDR.

Request

```
<?xml version="1.0"?>
```

```

<kpbx_request>
  <cdrcallercenter>
    <privacy_password>md5sum(privacy_pwd)</privacy_password>
    <begin>YYYY-MM-DD hh:mm:ss</begin>
    <end>YYYY-MM-DD hh:mm:ss</end>
    <start_flag>true/false</start_flag>
    <details>true/false</details>
    <filter>
      <any>...</any>
      <caller_num>...</caller_num>
      <called_num>"..."</called_num>
      <operator>"..."</operator>
      <gateway_id>...</gateway_id>
      <gateway_name>...</gateway_name>
      <status>...</status>
      <waiting_time>...</waiting_time>
      <conversation_time>...</conversation_time>
    </filter>
  </cdrcallercenter>
</kpbx_request>

```

The filter tags are mostly the same of the /cdr API. The <detail> tag specifies whether the response must include also the details of each step of the call inside the queuing system, included failover from a queue to another. All the tags are optional; in that case the cdrcallercenter tag must be in its self-closing form: <cdrcallercenter/>

Response

```

<?xml version="1.0"?>
<kpbx_response>
  <cdrcallercenter>
    <error_code>
      <code>0</code>
      <message>Success</message>
    </error_code>
    <calls>
      <call>
        <id>...</id>
        <direction>1/4</direction>
        <caller_num>...</caller_num>
        <called_num>"..."</called_num>
        <operator>...</operator>
        <gateway_id>...</gateway_id>
        <gateway_name>...</gateway_name>
        <waiting_time>...</waiting_time>
        <conversation_time>...</conversation_time>
        <status>1/2/3/4/8</status>
        <start>YYYY-MM-DD hh:mm:ss</start>
        <answer>YYYY-MM-DD hh:mm:ss</answer>
        <end>YYYY-MM-DD hh:mm:ss</end>
        <details>
          <detail>
            <id>...</id>
            <destination>...</destination>
            <destination_id>...</destination_id>
            <destination_name>...</destination_name>
            <queue_open>true/false</queue_open>
            <operator>...</operator>
          </detail>
        </details>
      </call>
    </calls>
  </cdrcallercenter>
</kpbx_response>

```



```

        <enter_time>...</enter_time>
        <enqueue_time>...</enqueue_time>
        <answer_time>...</answer_time>
        <exit_time>...</exit_time>
        <exit_cause>...</exit_cause>
        <waiting_time>...</waiting_time>
        <waiting_time_no_greeting>
            ...</waiting_time_no_greeting>
        </detail>
        ...
    </details>
</call>
<call>
    ...
</call>
</calls>
</cdrcallcenter>
</kpbx_response>
    
```

Error codes and messages

Code	Message	Notes
0	Success	The <calls> tag is present only in this case; in all the others the response will not include the <calls> tag
3	Authentication error	The <privacy_password> tag contains a wrong value
10	Call center license not found	
11	Invalid date time interval	The <end> timestamp is before the <begin> timestamp
12	Internal error	

/click2call

POST /click2call

This API allows to trigger a call from the PBX to the <exten> specified in the request. When the target phone answers, another call to the number <number_to_call> is performed and connected to the phone. The API returns a response with the outcome of the action.

The <type> parameter is optional; it specifies whether the number to call is an extension (internal) or external. If omitted, the behavior is the same of the <auto> setting; the

KalliopePBX will try and match the selection internally, and if no match occurs, it dials the selection through the outbound lines (using the LCR class of <exten>).

Request

```
<?xml version="1.0"?>
<kpbx_request>
  <click2call>
    <exten>...</exten>
    <number_to_call>...</number_to_call>
    <type>auto/exten/out</type>
  </click2call>
</kpbx_request>
```

Response

```
<?xml version="1.0"?>
<kpbx_response>
  <click2call>
    <error_code>
      <code>0</code>
      <message>Success</message>
    </error_code>
  </click2call>
</kpbx_response>
```

Error codes and messages

Code	Message	Notes
0	Success	
10	Error	
11	Missing extension tag	Missing or empty <exten> tag in the request.
12	Missing number to call tag	Missing or empty <number_to_call> tag in the request.