Alaris Labs
Telecom Software Products
Carrier-Neutral, Protocol-Agnostic

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Alaris MNP Server

User's Guide

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Alaris Labs
Telecom Software Products
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1 MNP server overview

MNP server is an add-on module of Alaris SMS Platform that serves to manage number portability and HLR reselling. It serves to configure supported HLR providers (sources), HLR dipping rules and HLR clients. To enable the module and make it available in the Alaris SMS Platform interface for HLR reselling purposes, contact your Account manager. For regular configuration of HLR dipping rules, submit a ticket on our HelpDesk.

To access the MNP server, proceed as follows:

1. Access the MNP server using a separate URL provided by the Alaris technical support team or the one registered by the System owner. For users that purchased the HLR reselling feature at Alaris SMS Platform, the MNP server can be accessed through the Alaris SMS Platform interface.

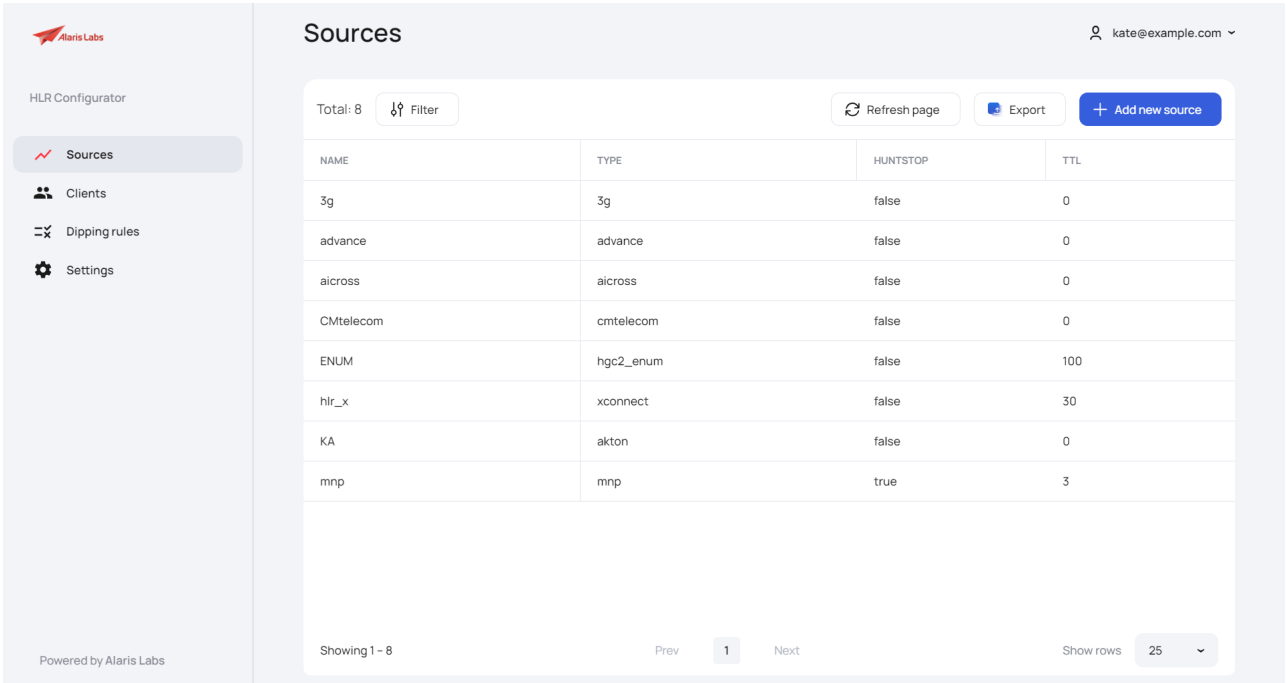
NOTE: For purchasing, contact your Account manager.

2. The interface contains the following subsections: Sources 4, Clients 8, Dipping rules 11 and Settings 12.

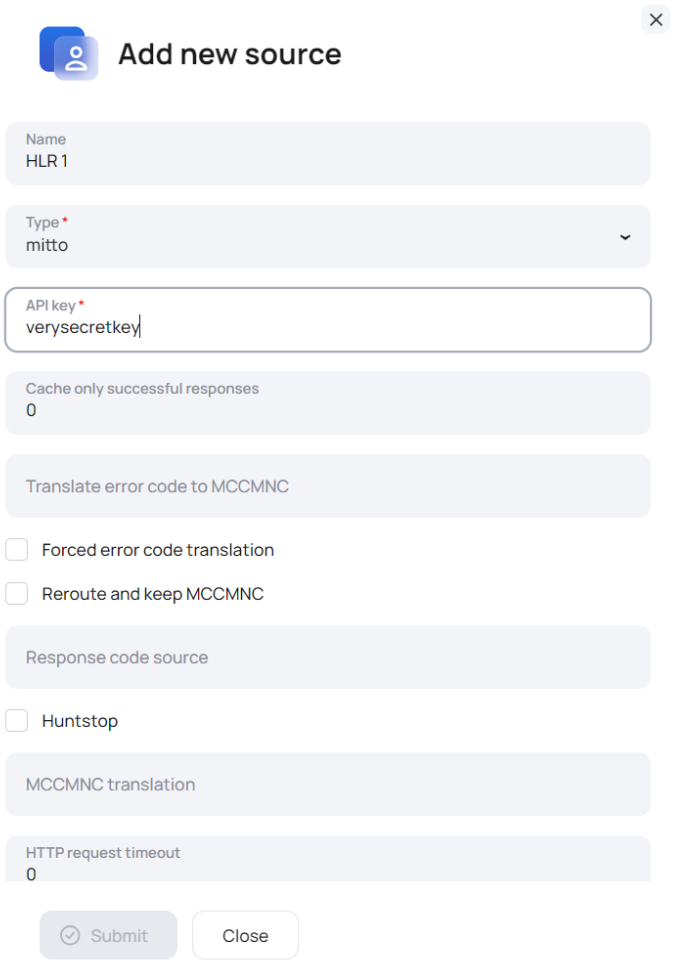
3. Configure the settings as detailed below.

1.1 Sources

The page allows adding a new HLR service that can be used in HLR dipping rules as an HLR source. The main table shows the existing sources that can be filtered with the help of the *Name* and *Type* filters.



Sources



Add new source

To add a new service, click the *Add new source* button and configure the following fields (fields marked with an asterisk * are required). Note that for some fields an example can be found by hovering over the field.

- *Name*: insert a unique provider name. The name will be used to configure HLR dipping rules. It is possible to add several sources with different names but of the same type. It may come in handy for configuration of the same HLR provider with different settings. For example, sources under *mitto_1* and *mitto_2* of the *mitto* type can be added with separate time-to-live values. Such a configuration allows separating sources if for some countries TTL must differ
- *Type*: select the provider type from the drop-down list. Basically, it is the list of supported HLR providers. The type is an internal hardcoded name in accordance with which a request to the provider is formed and sent as well as the provider's response is recognized

Based on the selected *Type*, the following additional fields appear.

- *Cached response lifetime*: TTL, in seconds. The parameter defines the period to store the HLR results in cache for a specific number. For example, the parameter is set to 10 (seconds). A new request to number 3411111111 is received. Once HLR results are obtained from the HLR service, they are placed in cache. If within the following 10 seconds a request to the same number comes, no actual dipping will be performed but the previous results will be used. The minimum value is 0 (that is, no request will be cached). The maximum value is to be clarified with the Alaris technical support team to avoid memory overflow. Generally it is recommended to specify the value not greater than 604800 (a week)

- *Huntstop*: a huntstop option. Even if the HLR source returns an unsuccessful response (for example, with no HLR MCCMNC in it), no further HLR source will be queried
- *Reroute and keep MCCMNC*: when enabled, the next-in-line HLR source (if any) after the HLR source in question will be requested for the number additionally in order to obtain the HLR response code (*hlrResponseCode*). The HLR MCCMNC and the portability flag will be fetched from the HLR source with the enabled *Reroute and keep MCCMNC* flag that was last in the list. The option comes in handy when the first source is MNP, and provides the info about MCCMNC and portability flag, while the second source is regular HLR and supplies the HLR response code.

NOTE: Only the last HLR source will be mentioned in the EDR, therefore the HLR billing happens for the last HLR source only.

- *Cache only successful responses*: specify *1* to place results to cache only if the HLR MCCMNC was successfully obtained. The default value is *0* (all responses are cached). Specify *2* to enable the logic of caching only those responses that received the HLR MCCMNC and the *hlrResponseCode* from the response is included in the *Provider response code list* parameter
- *Provider response code list to cache*: the list of hlrResponseCode (as an array) for the HLR responses to be cached (applicable only if the *Cache only successful responses* parameter is set to *2*). Example: *["1", "SUCCESS"]*
- *Host address for local address*: specify the IP address available for the server scheme which will be used as the source IP address when sending queries if an IP address other than the HLR configurator IP address must be used

HTTP-specific settings:

- *Source URL*: the provider's URL. For example: http://127.0.0.1:5555/websmpp/hlr/lookup

  In some cases (when the provider operates following a 2-step request algorithm) it is required to fill in the *URL for first request to provider* and *Status URL* parameters. In addition to the *Source URL* link some providers require the *MNP service domain* (domain) parameter to be passed in a request
- *Username/Password/API key/User email/Customer ID/Customer key (username)/Secret key (password)*: specify the credentials granted by the HLR provider
- *HTTP request timeout*: the period in seconds to expect the HLR service response. Once reached, the next-in-line HLR service will be used (if any). If a value is not specified, the value of the Default request timeout setting will be applied (Settings 12).
- *Source GT*: global title (applicable to HLR over SS7)
- *MCC list to handle IMSI from response*: the list of MCCs for which first 6 digits are fetched from the imsi field (applicable to HLR over SS7). Example: *[262,302,352,354,467,503,751]*

ENUM-specific settings:

- *Domain for NAPTR record*: the domain name of the ENUM HLR provider. Example: *e164.arpa*
- *IP address*: the IP address of the ENUM HLR provider
- *Port*: the port of the ENUM HLR provider
- *Number of attempts to request provider*: the number of retries to reach the provider's server. Must be greater than 0

- *Timeout for each try of requesting*: the timeout (in ms) to wait for a response from the DNS server
- *Port for local address*: specify a source port from which requests will be sent out. It is recommended to leave the setting empty

Translation-related settings:

- *Use fixed MCCMNC*: when the checkbox is selected and the HLR provider returns *type=fixed*, a fixed MCCMNC will be assigned (for example, for the *tmthttp* HLR service, it will be 999001; for the *netnumbercid* source, it will be 999999)
- *Use error code from error (E) field*: select to obtain values for the *hlrResponseCode* routing metric from the *e* field of the provider's response. When deselected, the values are fetched from the *gsmcode* field or the *pres* field if the *gsmcode* field is not available
- *Translate OCN to MCCMNC*: set translation rules to assign the MCCMNC as a pre-set one in accordance with the ocn value from the provider's response. The format must be JSON. Example: *{"8304":"302002", "8202":"302003"}* where for *ocn=8304* MCCMNC 302002 will be assigned
- *Use error code from Status field*: select to obtain values for the *hlrResponseCode* routing metric from the *status* dictionary of the provider's response. When deselected, the values are fetched from the *error* dictionary
- *Invalid number code*: specify a value (for example, 99) if it must be used as the *hlrResponseCode* routing metric provided that the HLR service returns *status_message=Invalid Number*
- *Response code source*: for netnumber_mnis: specify *nnti* to gather values for the *hlrResponseCode* routing metric from the corresponding field of the provider's response. Otherwise the values are parsed from the *status* field. For *mitto*: specify *absent* to gather values for the *hlrResponseCode* routing metric from the corresponding field of the provider's response. Specify *complex* to enable the logic as follows: if *absent* is not available in the HLR source response, no *hlrResponseCode* is assigned, if *absent* is returned as true, *hlrResponseCode* is set to 1, if *absent* is returned as false, hlrResponseCode will be fetched from *gsmCode* (or, if not available, from *response* with "r" prefix). Otherwise the values are parsed from the *gsmCode*/*response* fields

  For tmtlive: specify *error* or *present* to gather values for the *hlrResponseCode* routing metric from the corresponding field of the provider's response. Otherwise the values are parsed from the *status* field.
- *MCCMNC translation map* and *MCCMNC translation map extra*: set mapping rules to assign the MCCMNC in accordance with the provider's response. The format must be JSON. Example: *{"724301":18, "724302": 54}*

  where 724301 and 724302 are the resulting MCCMNCs and 18 and 54 are codes from the provider's response. To double-check from which fields the codes are collected, consult the Alaris technical support team
- *MCCMNC translation*: set translation rules to convert the MCCMNC from the provider's response to a pre-set one. The format must be JSON. Example: *{"238001":"238002", "238003": "999999"}*
- *Translate error code to MCCMNC*: set rules to assign the MCCMNC in accordance with the codes returned by the providers. The format must be JSON. Example: *{"0":"238002", "r1": "999999"}*

  where *0* and *r1* are error codes and *238002* and *999999* are the final MCCMNCs. Note that the MCCMNC is assigned only if the MCCMNC cannot be parsed or found in the provider's response. To confirm from which fields values are obtained for particular HLR providers, contact the Alaris technical support team

- *Forced error code translation*: enable to assign the MCCMNC in accordance with the Translate *error code to MCCMNC* option even if the HLR MCCMNC was returned by the HLR service
- *Mapping carrier_id from response to MCCMNC*: specify a JSON array to assign an MCCMNC in accordance with the carrier_id value from the provider's response. Example: *{ "1" : "440050", "2" : "440020", "3" : "440010", "6" : "440011" }*
- *Translate network name to MCCMNC*: specify a JSON array to assign an MCCMNC in accordance with the network name from the provider's response. Example: *{"Algar Telecom" : "724032", "Claro" : "724005"}*
- *Inactive subscriber MCCMNC*: specify the MCCMNC which will be assigned as the HLR MCCMNC if *presence=false* in the provider's response. If left empty, no special translation takes place
- *Translate MNP code to MCCMNC*: set MCCMNC in accordance with the mnpcode field of the provider's response. The logic of assignment is as follows: the third, the fourth and the fifth digit of mnpcode is used to define the MCCMNC from the translation set.

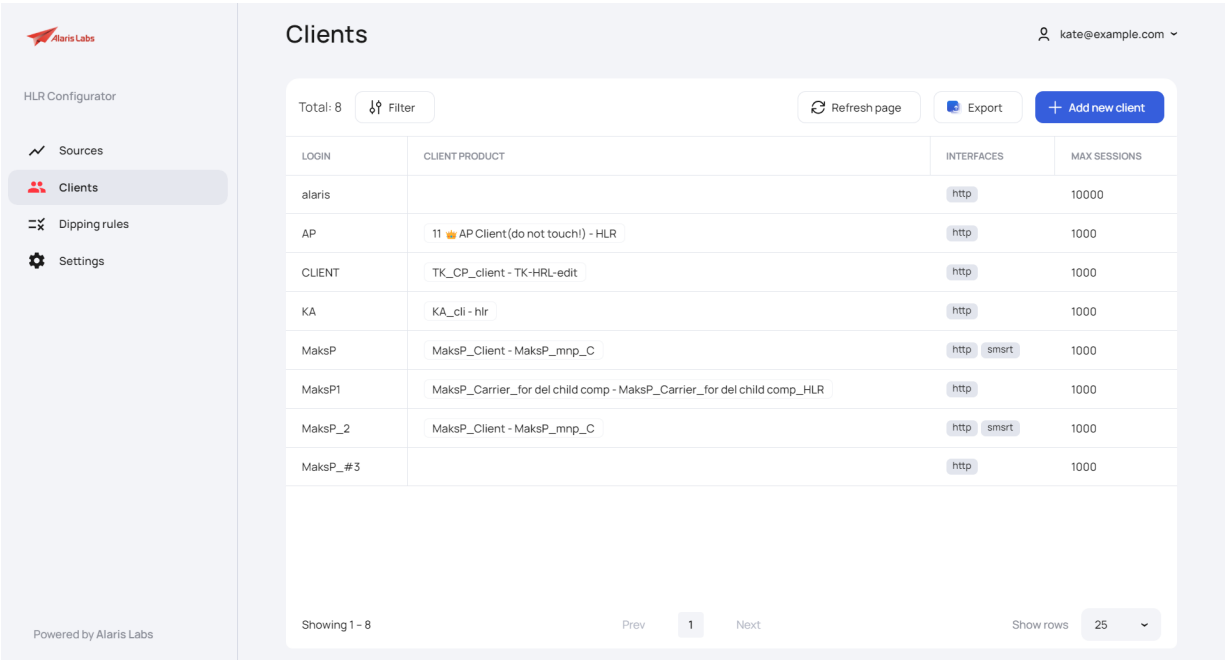
  Example: *{ "321" : "724005", "341" : "724002", "301" : "724018" }*

  Suppose that the provider returned *mnpcode=703013100055*, then value *301* will be used for MCCMNC definition, which is 724018 based on the above example

Click *Close* to stop adding a new source. Click *Reset* to clear the form. Click *Submit* to add a new source. To edit an existing source, click the *Edit* icon. A form similar to the *Add new source* panel will appear. To remove a source, click the *Delete* button. A warning will appear: "Are you sure you want to permanently remove source?" Press *Cancel* to cancel the deletion or *Confirm* to proceed with the operation. To refresh the page, click the *Refresh* button.

1.2 Clients

The *Clients* page serves to create a new HLR reselling client or manage the existing ones. The main table shows the available clients. To filter the table by the client name, click Filter *Filter*, unwrap the *Client product* list and either insert the product name, or select the product(s) from the list.



Clients

To adjust the parameters of an existing client, click the *Edit* button. Use the *Delete* button to remove the record. A warning message will appear.

To add a new record, click the *Add new client* button. The mandatory parameters are as follows:

- *Login*: the client login that will be used for authentication if requests are to be sent over HTTP
- *Password*: the client password that will be used for authentication if requests are to be sent over HTTP. Apply the *Generate button* to generate the password
- *Client product*: select the HLR client product that has been created in the System. The requests received under the client record will be associated with the client product in order to use its rates and issue invoices. The parameter is optional and can be set to *None* if no client product must be assigned to client's requests. Use the *Filter* window to quick-filter and find the required product.
- *Interfaces*: select the protocols over which the client will send requests. The default value is HTTP. The possible values include *HTTP, ENUM, SMSRT* (the System value which is used for System configuration)
- *Remove leading zero from MNC*: select the flag if 5-digit MCCMNCs must be returned to the client (for example, 23801 instead of 238001)
- *Force result to 1:* if enabled, the result field in the response to the client will be forced to 1 when the number is recognized as ported (ported=1).
- *Max sessions*: the default value is 1000. The maximum number of session per client.
- *Response fields*: the field defines the list of fields to be returned to the client in response over HTTP. The default value includes:
  - *mccmnc*: the HLR MCCMNC (6-digit by default)
  - *result*: shows if the result is successful (0: yes, other values: no)

- *ported*: the portability information (0: not ported, 1: ported)
- *source_name*: the HLR service name (in case of several HLR services, the name of the last HLR service)
- *source_type*: the HLR service type (in case of several HLR services, the type of the last HLR service)
- *dnis*: the destination address in e.164 format for which a query was processed
- *login*: the client login

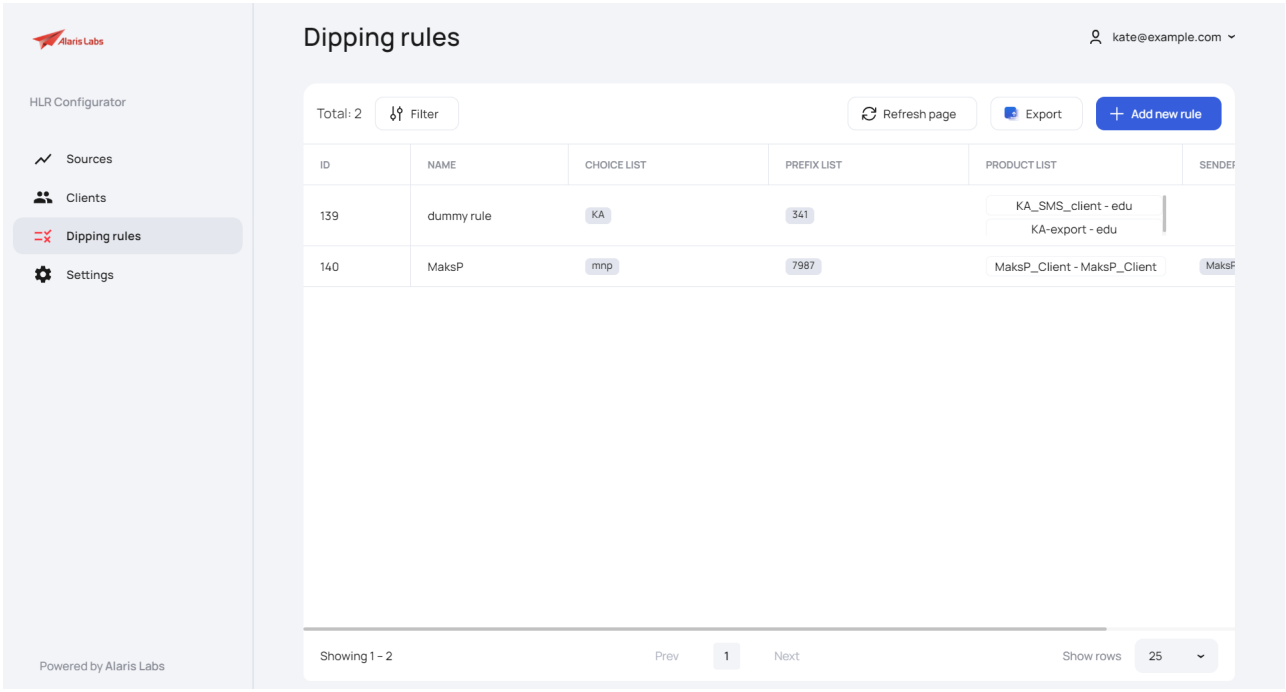
Extra fields to be added:

- *message_id*: the identifier of the request (assigned by the client)
- *rate*: the client rate from the corresponding HLR client product
- *wireless*: if the number was found in the MNP database (0: no, 1: yes). Applicable to the *mnp* source only
- *cached*: if the result was obtained from the cache (0: no, 1: yes)
- *present, roaming:* if the number is present/if the number appears in roaming, respectively, over the HTTP protocol. To add information for an ENUM response, contact the Alaris technical support team and provide the code HLR23. If the flags cannot be recognized from the source HLR response, the returned value will be *NA*. Other possible values: *yes*, *no*. The logic for fetching the *present* and *roaming* fields is added for some types of HLR sources and described below:
  - *mitto* - *present* is fetched from the absent field (if *absent=true*, then *present=no*, if *absent=no*, then *present=yes*); *roaming* is fetched from the the *roaming* field
  - *tyntec* - *present* is fetched from the *presence* field, *roaming* - from the *roaming* field
  - *xconnect* - *present* is taken from the *ns* field (if *ns=000* then *present=yes*; if *ns=001*, or *002*, or *003* then *present=no*), the *roaming* field is not recognized
  - *tmtlive* - *present* is taken from *present*, the *roaming* field is not recognized
  - *infobip* - *present* is recognized from *{status}{groupName}* (if *groupName=DELIVERED*, then present=*yes*, if *groupName=UNDELIVERABLE*, then present=*no*), *roaming* - from the *roaming* field
  - *netnumber_mnis* - *present* is taken from *status*, the *roaming* field is not *recognized*
- *message*: contains extended information in regard to the requested number (for example, "Not valid response" if the HLR source response was not parsed by the HLR module, or "Vendor not found" if no HLR dipping rule was found suitable), may be absent from the response in case of success
- *context_log*: full raw HLR source response proxied from the HLR source alongside internal information of parsing
- *providerResponseCode*: hlrResponseCode from the HLR source response

1.3 Dipping rules

The page serves to configure HLR dipping rules. That is, which HLR services are to be used for number verification. Configuration can be prefix-, sender ID- and client-based.

The main table shows available rules that can be filtered with the help of the *Name*, *Choice list*, *Prefix list* and *Product list* filters. To edit a rule, click the *Edit* button. To remove a rule, use the *Delete* button.



Dipping rules

To add a new rule, click the *Add new rule* button. Configure the following fields in the window that appears:

- *Name*: name of the rule, for example: *Spain TMT*. Mandatory parameter
- *Products inclusive list*: toggle by clicking the button and specify the list of client products for which the rule will be activated. All products are included by default. Select required products to enable the rule for particular client products. Use the *Filter...* window to insert the product name.
- *Prefix list*: list of numeric prefixes for which the rule will be activated. The field is mandatory. It is possible to specify a range of prefixes, for example: *34511120-34511125* which includes prefixes *34511120, 34511121, 34511122, 34511123, 34511124, 34511125*. To add a value to the list, press *Enter*.

NOTE: The length of the range beginning and end must coincide. That is, it is not possible to set a range as 3451112-34511125. Additionally, an exception can be specified to exclude a particular prefix. For example:

34

!34511120

- *Sender ID list*: list of sender IDs for which the rule will be activated. By default all sender IDs are included in the rule. Alpha, alphanumeric and numeric sender IDs are allowed. To add a value to the list, press *Enter*.

- *Choice list*: select the HLR provider names. Several providers can be set up in a specific order - once they are selected, the drag&drop window appears to configure the order. In this case, if the first provider does not supply an HLR MCCMNC (or it is impossible to parse it from the provider's response), the next-in-line provider will be inquired

NOTE: Overlapping rules cannot be created. For example, if 2 rules with empty sender IDs and product IDs (which is "All") for prefix 852 are created, the error will be shown: "Prefix collision error".

Click the *Submit* button to save the changes or the *Close* button to disregard them. The *Reset* button will reset the configured changes.

1.4 Settings

The page serves to configure global settings (that are applied to all HLR services and clients).

- *Default connection timeout*: timeout (in seconds, default value is 2) to establish a connection with the HTTP HLR service. Positive integer values are allowed
- *Default request timeout*: timeout (in seconds, default value is 2) to expect a response from the HTTP HLR service (if a value is not configured in the *HTTP request timeout* parameter of HLR configurator\Sources 4). Positive integer values are allowed
- *Concurrent request timeout*: timeout (in seconds, default value is 5) to wait for concurrent requests. That is, if several requests to the same number have been received within the timeout, only one request will be dipped through the HLR service. If it provides an HLR MCCMNC, the MCCMNC will be used as cached values for the rest of requests, otherwise the requests will be dipped through the HLR service as well. Positive integer values are allowed
- *Enterprise API hostname*: the address to fetch data (for example, HLR client product IDs) from the database to show it (actual names instead of IDs) in the HLR configurator interfaces such as Dipping Rules 11 or Clients 8. Applicable to the HLR Configurator System which is installed separate from the main Alaris System.

  Example: http://localhost:3006/eapi/

- *Check global rules for products*: when deselected, HLR dipping rules with "All" client products are not checked if there is at least one client-based rule. Enabled by default.

  Example: suppose there are 2 rules:

  Rule 1 for prefix 34 and all client products

  Rule 2 for prefix 852 and client product ID 45

  If the checkbox is deselected and a request from client product ID 45 is received, only Rule 2 can be used (if the request is intended for another prefix - for example, 34, no rule will be used). If the checkbox is selected, both rules can be used (but Rule 2 has a priority over Rule 1).

- *Check global rules for Sender IDs*: when deselected, HLR dipping rules with "All" sender IDs are not checked if there is at least one client-based rule. Enabled by default.

  Example: suppose there are 2 rules:

  Rule 1 for prefix 34 and all sender IDs

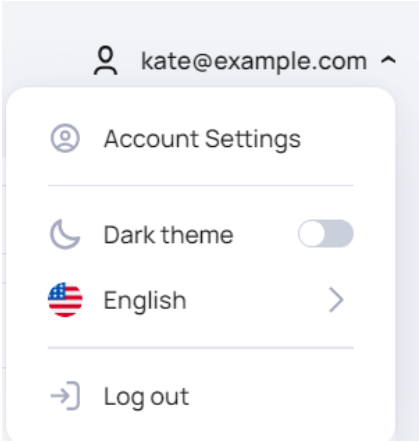
  Rule 2 for prefix 852 and sender ID "Facebook"

  If the checkbox is deselected and a request from sender ID Facebook is received, only Rule 2 can be used (if the request is intended for another prefix - for example, 34, no rule will be used). If the checkbox is selected, both rules can be used (but Rule 2 has a priority over Rule 1)

Save the changes with the help of the *Submit* Submit button.

1.5 Account settings

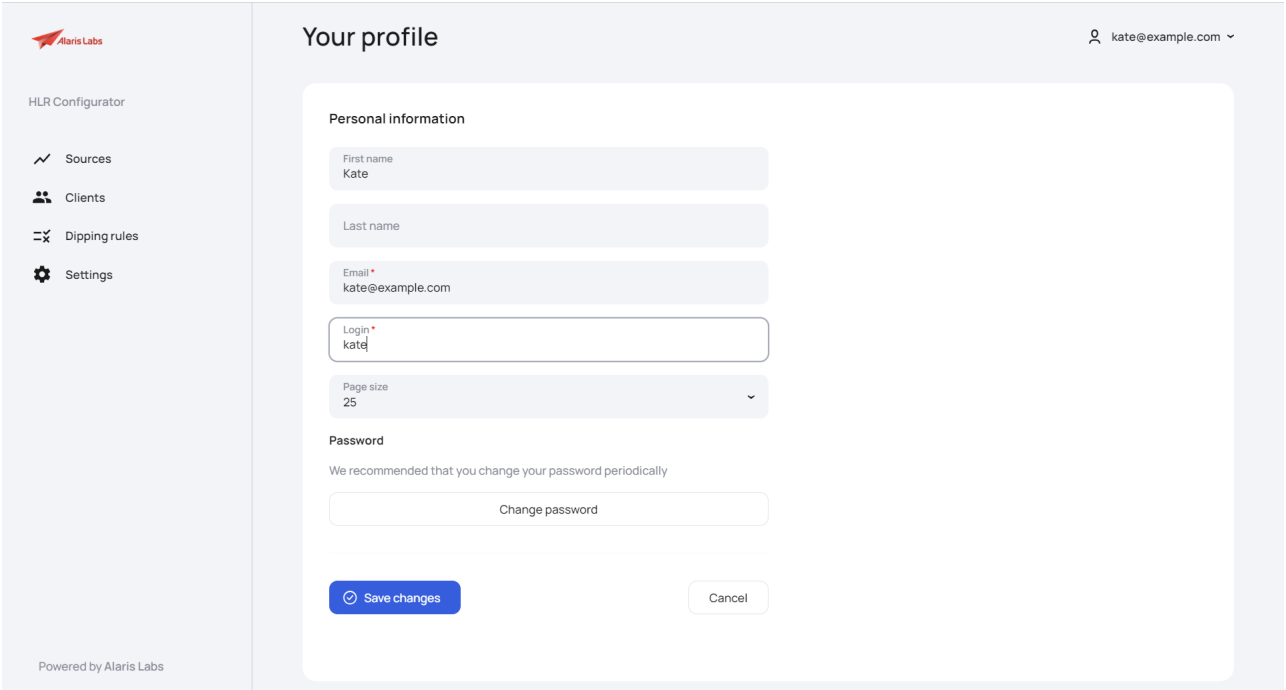
The *Account settings* menu is available if the user has logged in using a separate URL provided by the Alaris technical support team. When accessed through Alaris SMS Platform interface, it is not displayed.



Account settings

Use the *Dark theme* toggle to apply the dark theme. Select the interface language with the help of language switcher. Log out using the *Log out* button.

Click *Account settings* to be forwarded to *Your profile* page where personal information can be filled in.



Your profile

Select a value from the *Page size* list to define the number of records within one page on Sources 4, Clients 8, Dipping rules 11 shown by default.

Use the *Change password* button to set a new password.