NAICE

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Table of Contents

Main page

Description

The NAICE system home page serves as a dashboard containing a set of widgets. The widgets display key system performance indicators, providing summary information about its current state over the last 24 hours. Automatic data refresh is implemented for all widgets with a 2-minute interval.

Dashboard features:

- Widget set configuration is saved individually for each system user;
- All changes to widget arrangement and composition apply only to the current system user;
- The system automatically saves settings between work sessions.

Main page elements:

- `Control Panel` - located at the top of the interface, contains main dashboard controls;
- `Widget Set` - configurable workspace containing informational widgets with key system metrics.

Viewing the dashboard panel

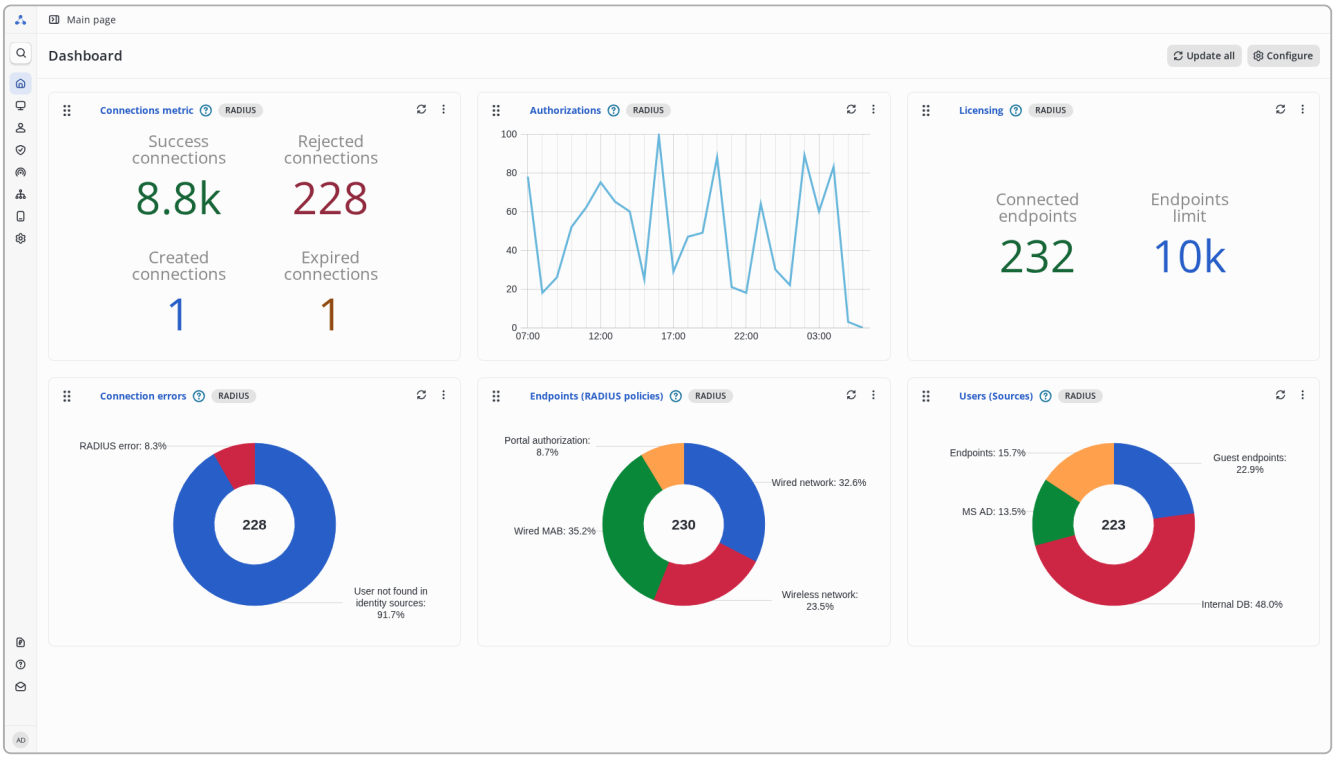


Figure 1. Dashboard control panel and displayed widgets

Dashboard control elements:

- Update all - Refresh data for all widgets displayed on the dashboard.
- Configure - Open the dashboard panel settings window.

Each widget consists of the following control elements:

- - Used to change widget order.
- Authorizations - Widget name. Serves as a hyperlink to the parent page.
- `RADIUS` - widget tag. Indicates which part of the functionality the widget belongs to.
- - Brief information about the widget.
- - Refresh data for this specific widget.
- - Action panel for the widget (e.g., delete).
- Data visualization area in the specified display format.

Configuring dashboard widgets

To select widgets for display on the dashboard, click Configure, which will open the **Dashboard panel settings** window:

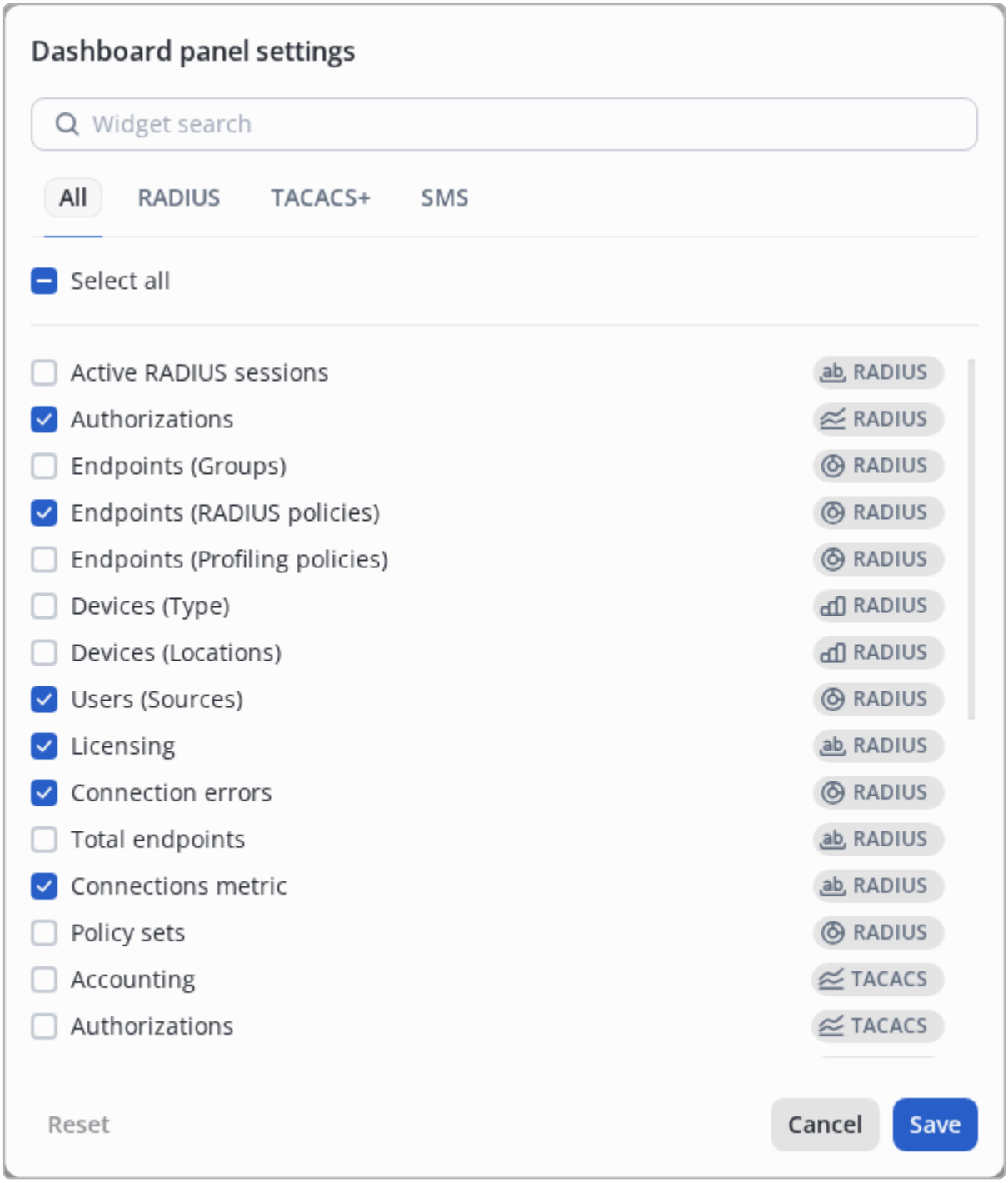


Figure 2. Dashboard panel settings window

The **Dashboard panel settings** window contains the following controls:

- - Checkbox to select items for further action (add or remove).
- - Widget data display type. Four display types are supported - graph, histogram, pie chart, and metric.
- `"Authorizations"` - Widget name.
- `RADIUS` - Widget tag.
- `Widget Search` - Widget search field.
- `Reset` - Return to the default widget set.

To add or remove a widget from the dashboard, select it using the checkbox and click the **Save** button. Widgets with checked checkboxes will be displayed on the dashboard.

Widget search

For easier customization and selection of displayed widgets, they are grouped into sections, depending on what part of the functionality they relate to. Also, for greater convenience, a search for widgets by name has been implemented.

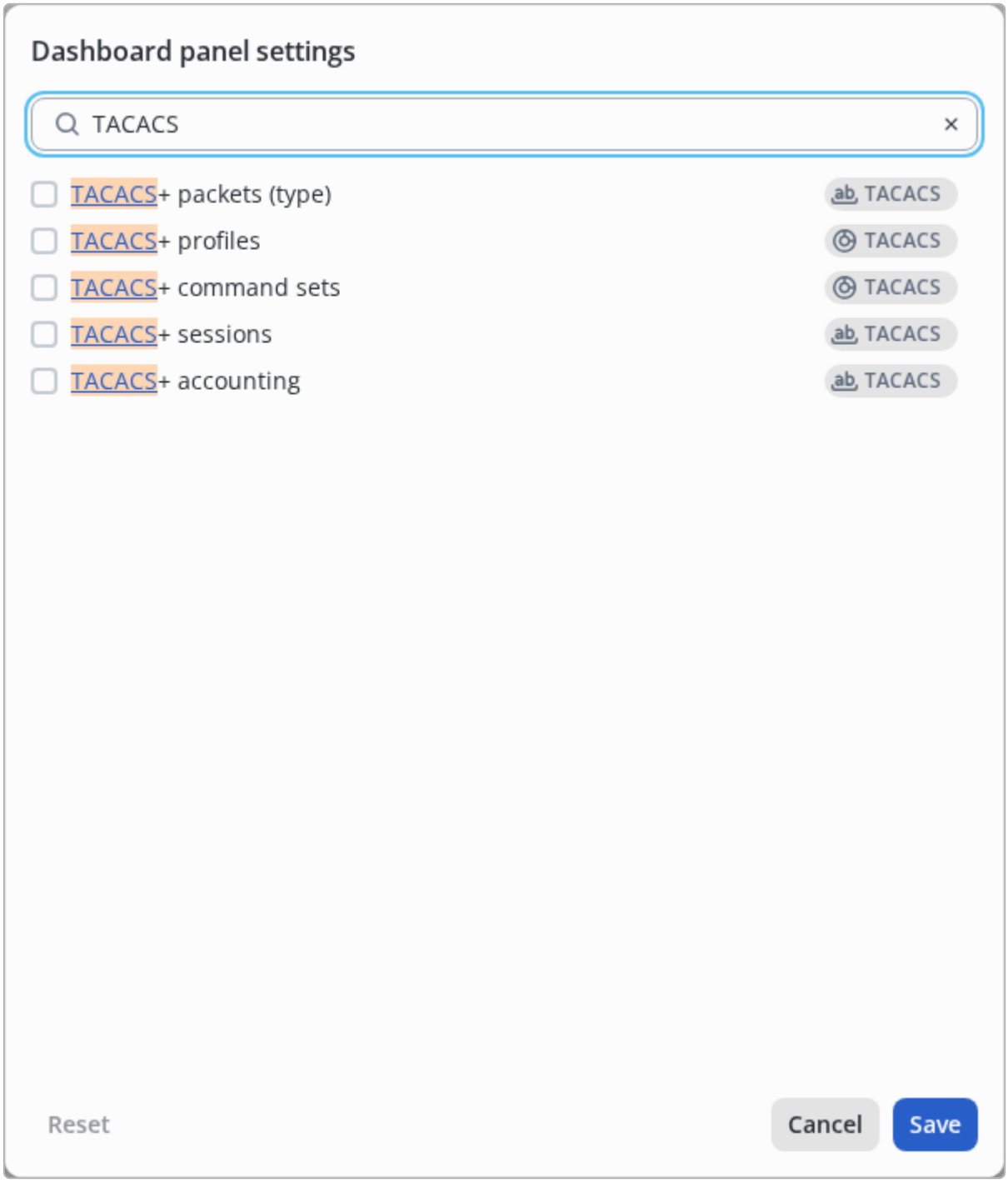


Figure 3. Widget search by name

Standard widget set

The **standard widget set** is displayed by default when you first log in to NAICE.

The **Standard Widget Set** is a preset dashboard configuration with widgets that is displayed on the home page when you first log in to NAICE system. This set contains the most popular widgets to quickly understand the current state of the system.

The standard set of widgets can be reset using the “Reset” button in the Dashboard panel settings window.

The standard set includes the following widgets:

- `RADIUS` Connection metrics;
- `RADIUS` Authorizations;
- `RADIUS` Licensing;
- `RADIUS` Connection errors;
- `RADIUS` Endpoints (Access policies);
- `RADIUS` Users (Sources);

Widget types

Widgets with display type — Graph

`Functionality:`

- Graph navigation via click for detailed data examination.
- Zoom and time range selection using scroll functionality.
- Hovering over a graph point displays device count with a tooltip showing time and date.
- Default view restoration via button in the widget’s top-right corner.

Widgets with display type — Metric

`Functionality:`

- Compact display of key numerical indicators.
- Support for multiple simultaneous metrics.
- Numerical presentation for quick data comprehension.

Widgets with display type — Histogram

`Functionality:`

- Each data segment includes a left-aligned name corresponding to the last nested group element.
- Value appears to the right of the data segment.
- Hover tooltip shows detailed information in the format: "Full nesting from last child to parent group: count".
- Limited to 10 data segments.
- Additional "Other" segment aggregates non-top-10 data.

Widgets with display type — Pie chart 

`Functionality:`

- Each segment is labeled in "Name: %" format.
- Hover tooltip shows "Name: % - count" details.
- Limited to 10 data segments.
- Additional "Other" segment aggregates non-top-10 data.

RADIUS widgets

List of available widgets

Widget	Data display type	Brief description
Active RADIUS sessions	Metric	Count of active RADIUS sessions
Authorizations	Graph	Count of authorizations per hour for the last 24 hours
Licensing	Metric	Current count of connected endpoints and maximum allowed per license
Connection metrics	Metric	Count of connected, rejected, created, and expired connections for the last 24 hours
Total Endpoints metric	Metric	Total count of learned endpoints
Devices (Type)	Histogram	Count of network devices through which the client was connected, by network device type
Devices (Locations)	Histogram	Count of network devices through which the client was connected, by location of network devices
Endpoints (Groups)	Pie chart	Count of endpoints studied that were authorized in the last 24 hours, by group
Endpoints (Profiling policies)	Pie chart	Count of endpoints studied that were authorized in the last 24 hours, by profiling policy
Endpoints (RADIUS policies)	Pie chart	Count of endpoints studied that have been authorized in the last 24 hours, by policy set
Policy Sets	Pie chart	Current count of policy set hit
Connection errors	Pie chart	Client connection errors for the last 24 hours
Users (Sources)	Pie chart	Count of unique users, by source of identification, who were authorized in the last 24 hours

Widget	Data display type	Brief description
RADIUS sessions	Metric	Total number of sessions for the entire data retention period. The retention period is displayed in days.

Each widget has a specific data display type. The display type cannot be changed.

Widgets with the data display type "metric" or "pie chart" show large numbers in an short format (for example, 40k instead of 40123). The exact metric value is displayed in a tooltip when hovering over the value.

Widget "Active RADIUS sessions"

The widget displays the total number of active user sessions. All active sessions can be seen in the Monitoring section Active sessions

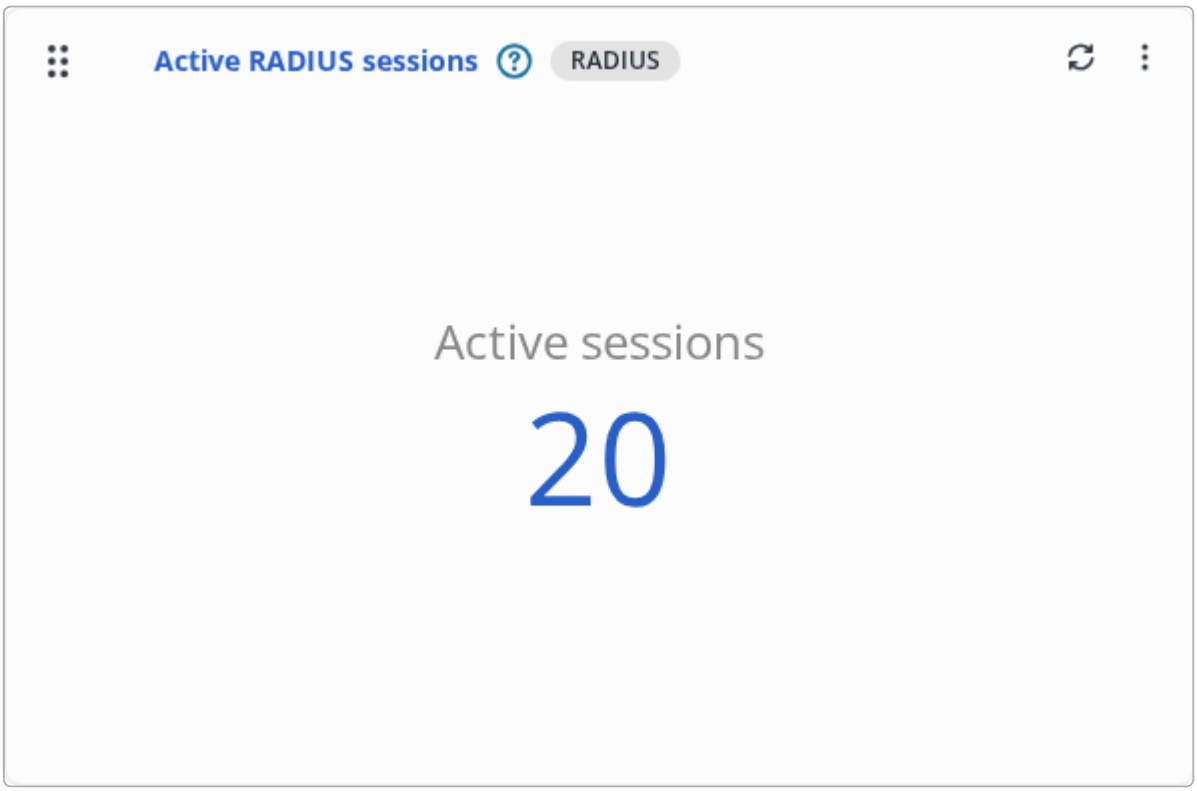


Figure 4. Widget "Active RADIUS sessions"

Widget "Authorizations"

Displays data about authorization attempts (both Connected and rejected) in the system per hour for the last 24 hours, based on Connections journal data.

Data is visualized as a time graph where:

- Vertical axis (Y) shows authorization attempt quantity;
- Horizontal axis (X) represents hourly timeline.

Enables quick monitoring of user activity and peak period identification.

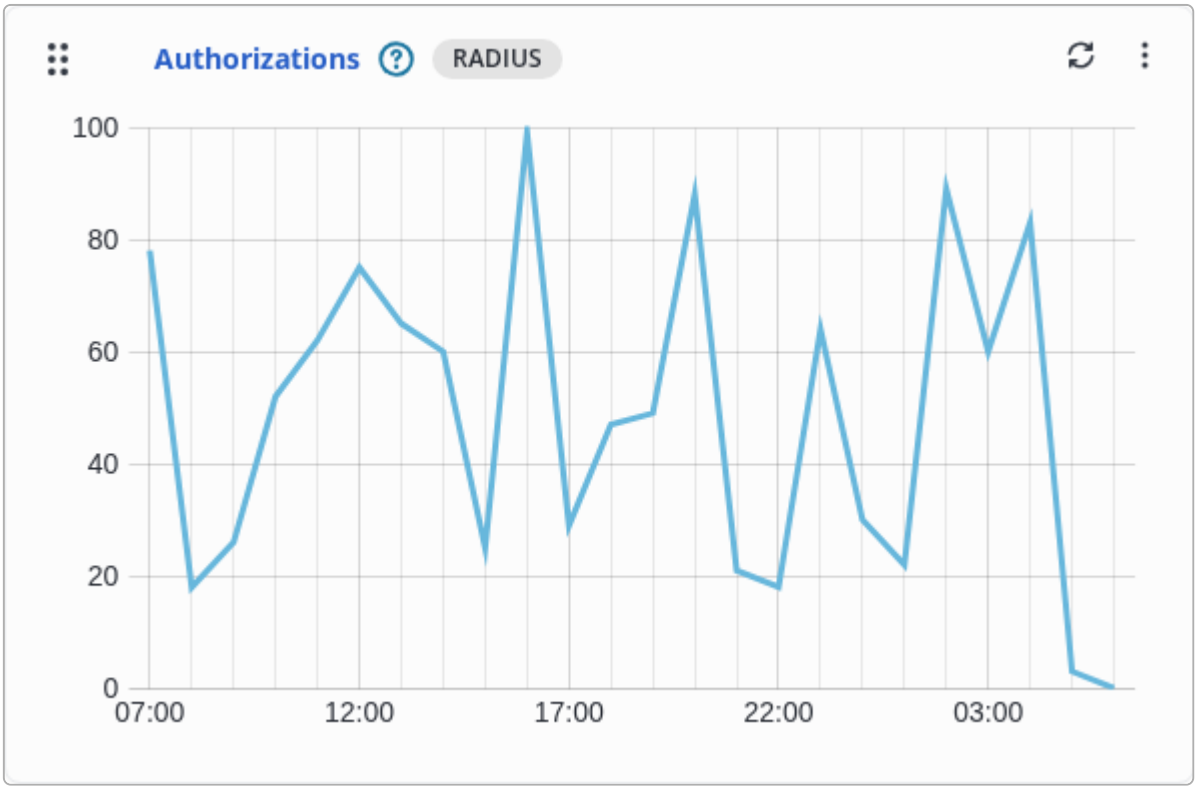


Figure 5. Widget "Authorizations"

Widget "Licensing"

Displays summary licensing information:

- `Connected Endpoints` - Current count of connected authorized unique endpoints for last 24 hours;
- `Endpoint Limit` - Maximum allowed count of endpoints according to the license.

Helps track endpoint limit proximity.

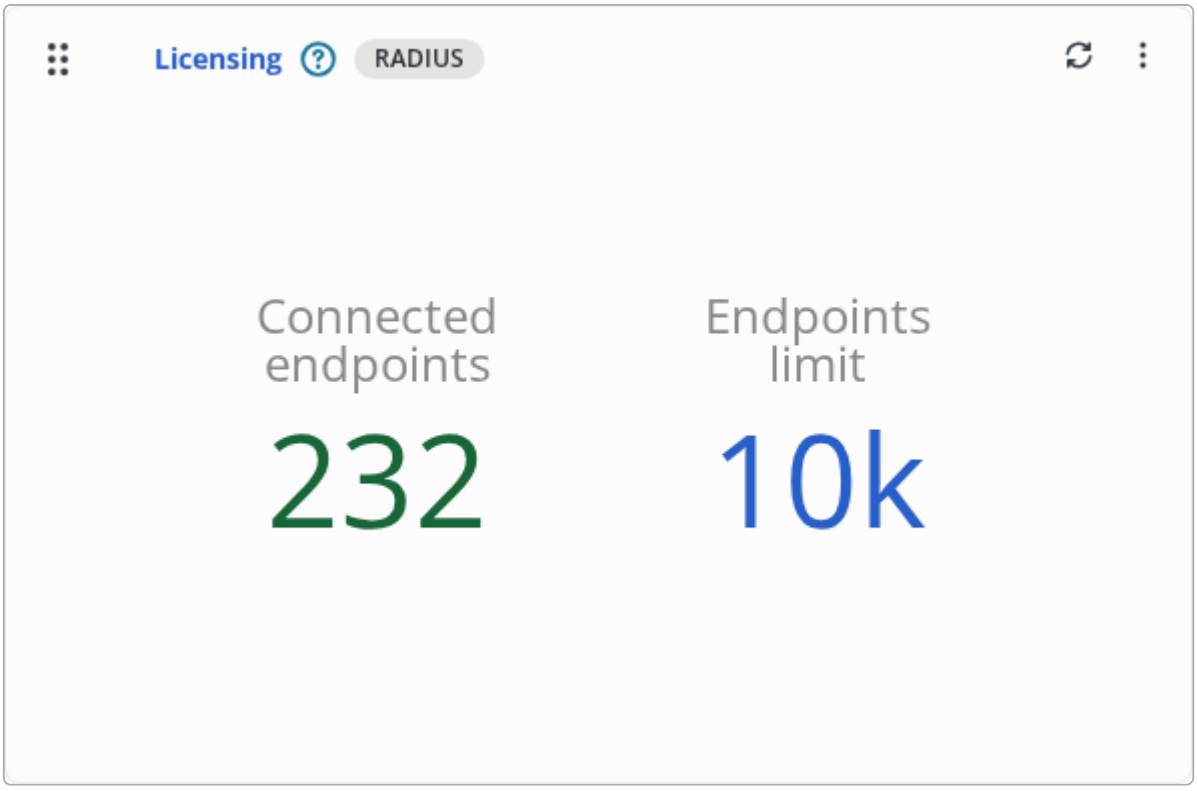


Figure 6. Widget "Licensing"

Widget "Connection metrics"

Displays connected and rejected connection counts for the last 24 hours based on Connections journal data.

Shows session status ratio (connected vs rejected attempts) for daily tracking.

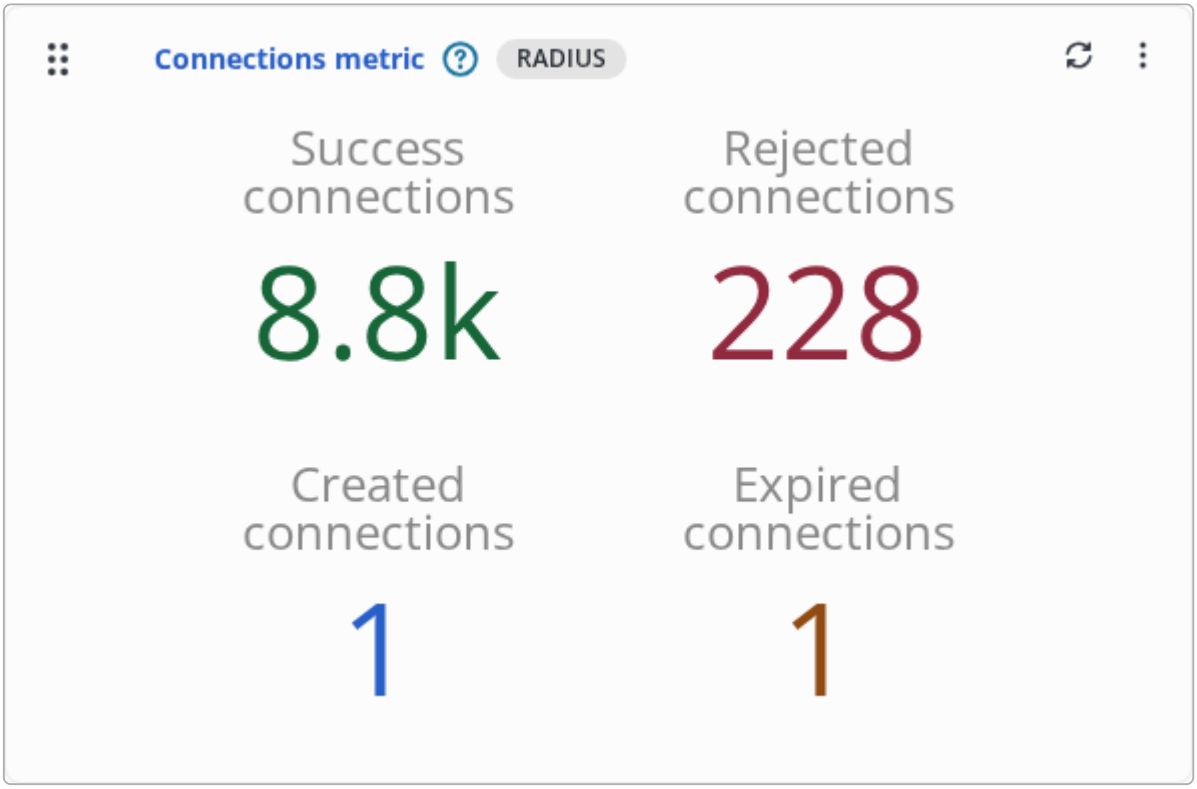


Figure 7. Widget "Connection metrics"

Widget "Total endpoints"

Displays the total count of known endpoints in the NAICE system based on data from the Endpoints table.

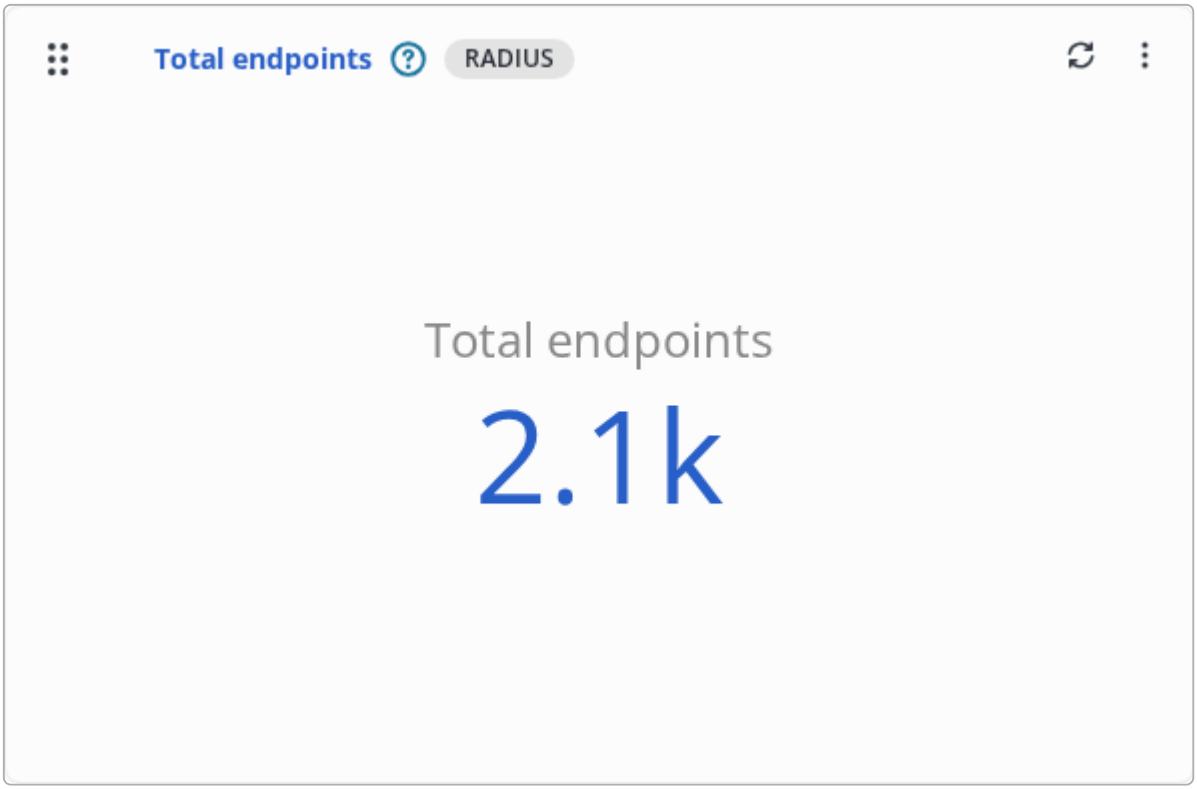


Figure 8. Widget "Total endpoints"

Widget "Devices (Type)"

Displays the count of network devices by type through which client connections occurred.

Device groups for classification come from Device Groups.

Tracks device type usage trends.

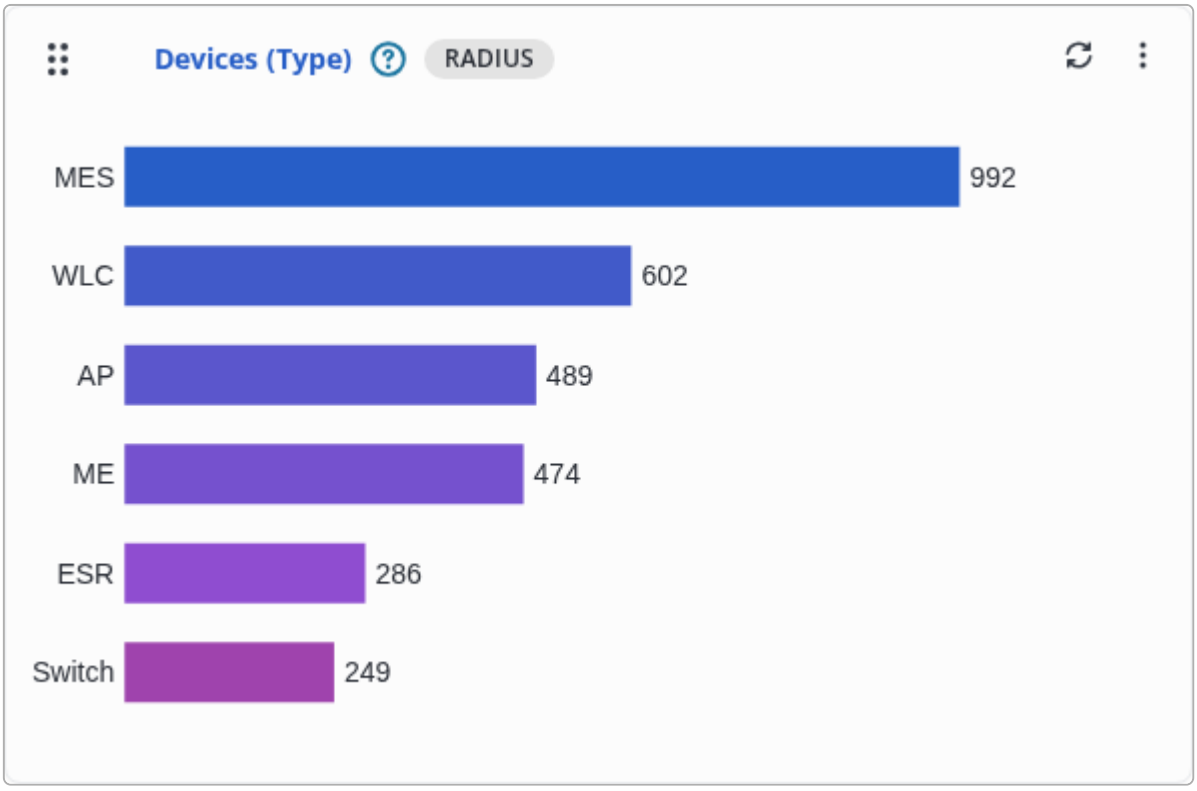


Figure 9. Widget "Devices (Type)"

Widget "Devices (Locations)"

Displays the count of network device by location through which client connections occurred.

Device groups for classification come from Device Groups.

Tracks device location usage trends.

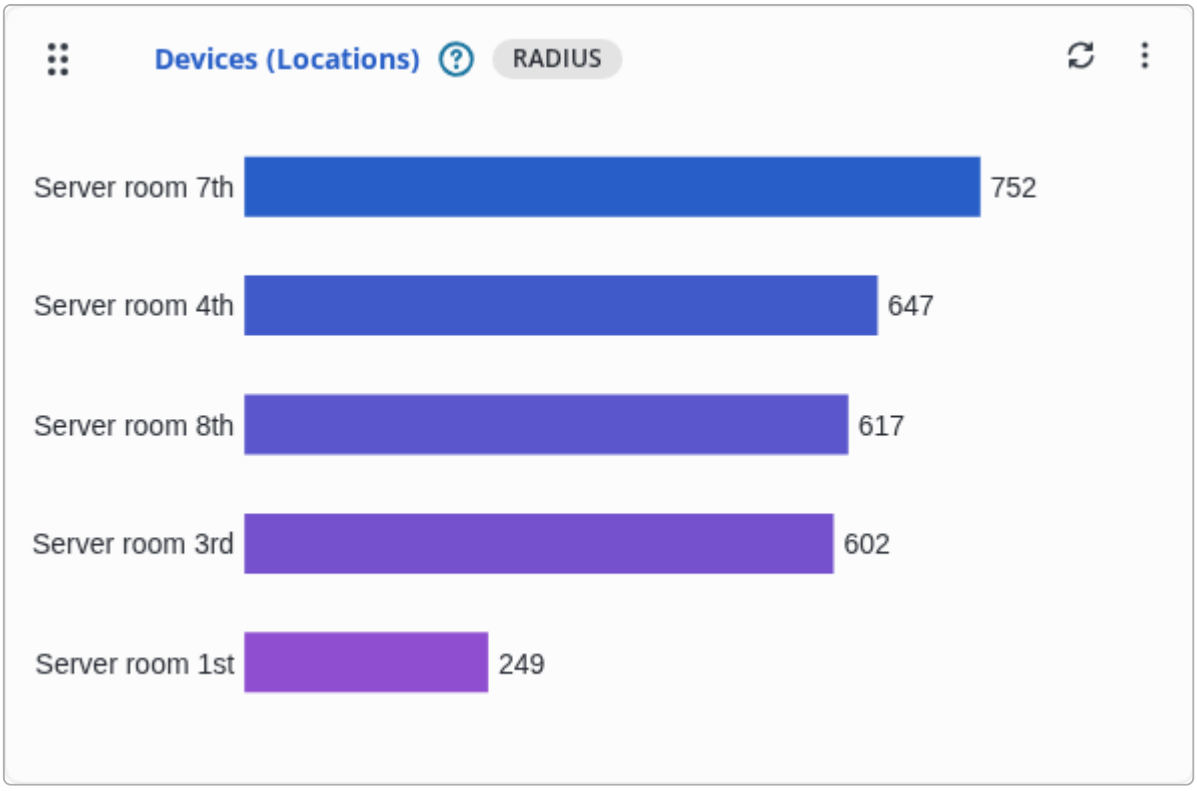


Figure 10. Widget "Devices (Locations)"

Widget "Endpoints (Groups)"

Displays the count of **learned** endpoints that underwent authorization in the last 24 hours, grouped by Endpoint Groups from profiling.

Data sourced from Endpoints and Connections journal.

Uses the last group upon reconnection.

- Randomly generated MAC addresses are not counted.
- An endpoints is considered known if it is present in Endpoints table.
- *In automatic mode*, new endpoints added via RADIUS requests appear only after reconnection when system adds them to **Endpoints**.

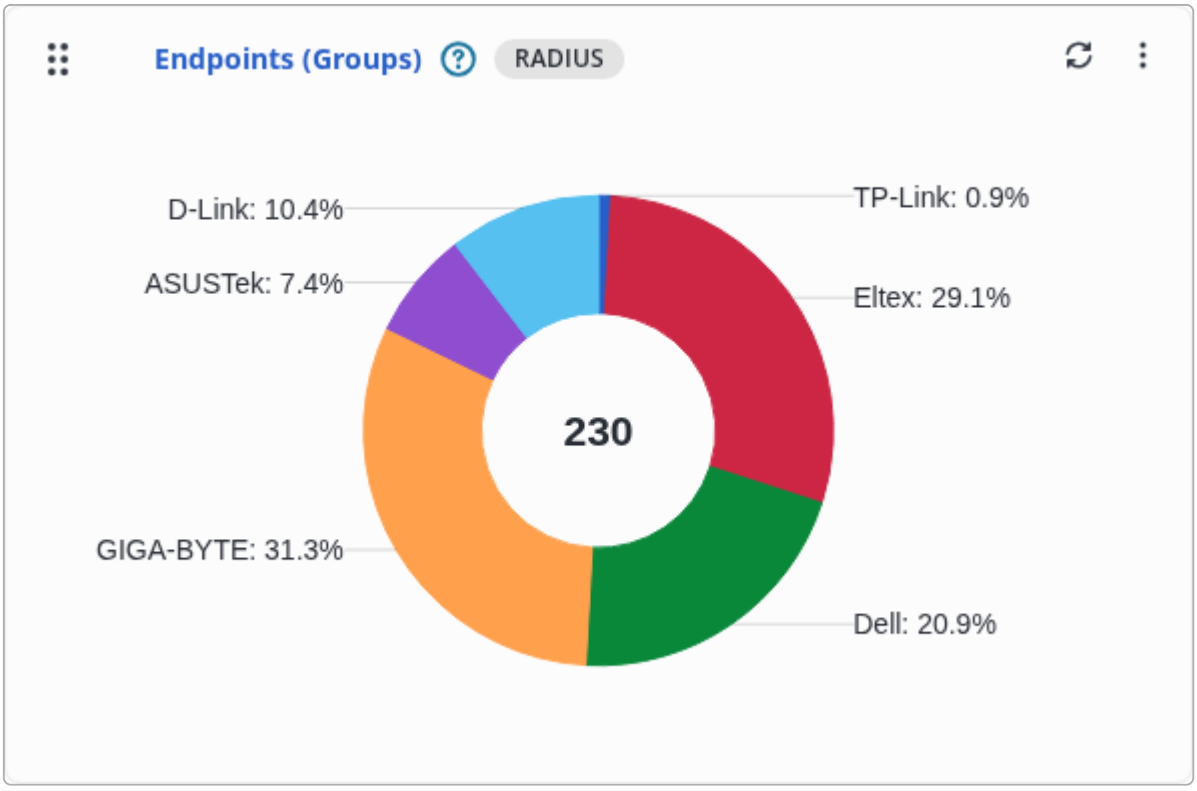


Figure 11. Widget "Endpoints (Groups)"

Widget "Endpoints (Profiling policies)"

Displays the count of **learned** endpoints that underwent authorization in the last 24 hours, grouped by Profiling policies from profiling.

Data sourced from Endpoints and Connections journal.

The widget allows you to analyze the effectiveness of profiling policies and evaluate the distribution of endpoints to the profiling policies assigned to them.

Uses the last group upon reconnection.

- Randomly generated MAC addresses are not counted.
- An endpoints is considered known if it is present in Endpoints table.
- *In automatic mode*, new endpoints added via RADIUS requests appear only after reconnection when system adds them to **Endpoints**.

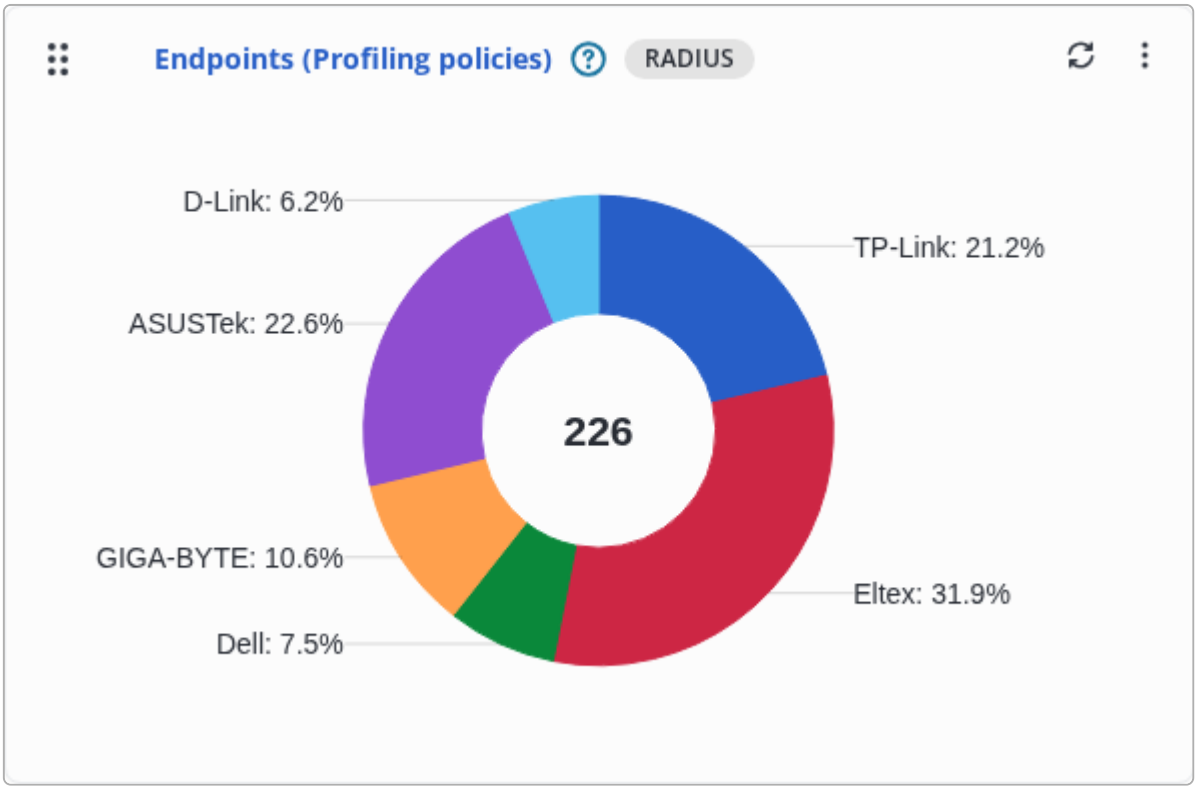


Figure 12. Widget "Endpoints (Profiling policies)"

Widget "Endpoints (RADIUS policies)"

Displays the count of **learned** endpoints that underwent authorization in the last 24 hours, grouped by policy sets.

Data sourced from Endpoints and Connections journal.

The widget allows you to evaluate the distribution of endpoints across RADIUS policies.

Uses the last group upon reconnection.

- Randomly generated MAC addresses are not counted.
- An endpoints is considered known if it is present in Endpoints table.
- *In automatic mode*, new endpoints added via RADIUS requests appear only after reconnection when system adds them to **Endpoints**.

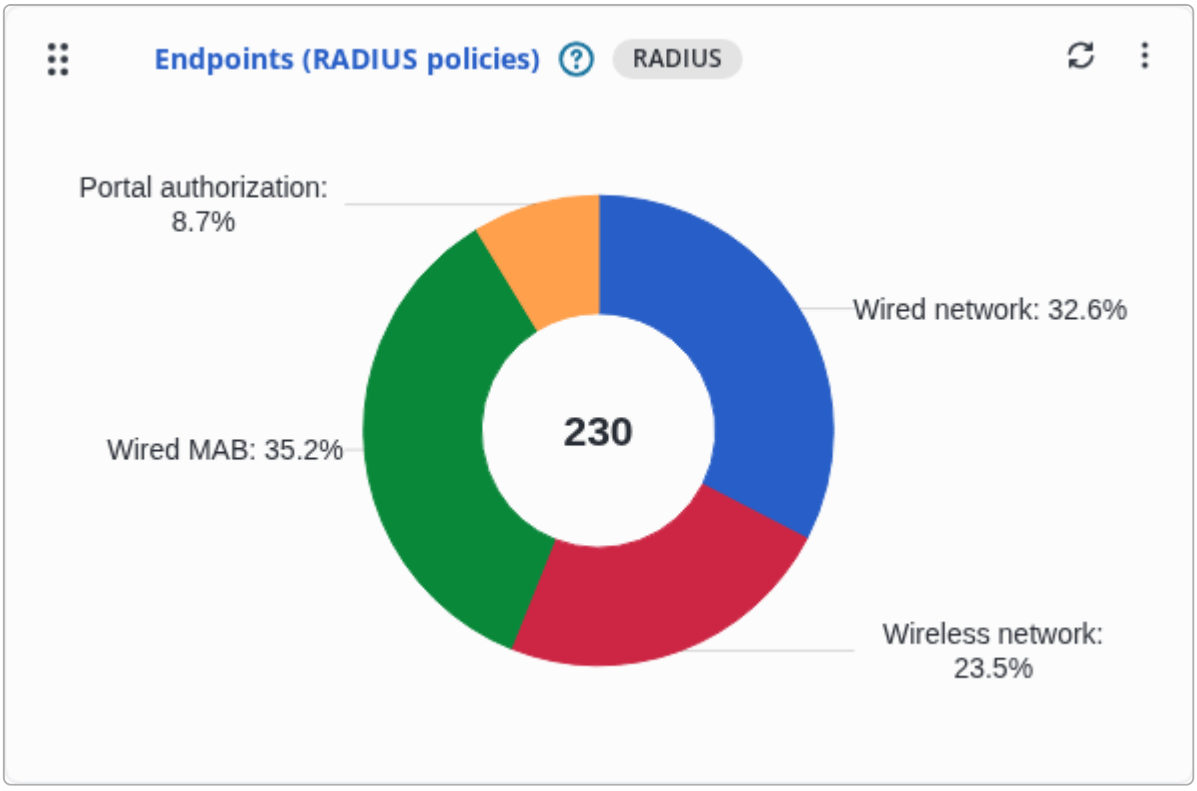


Figure 13. Widget "Endpoints (RADIUS policies)"

Widget "Users (Sources)"

Displays unique user count by identification sources that underwent authorization in the last 24 hours.

Possible sources of identification:

- Internal DB - users from the system's internal database;
- Endpoints - devices when authorizing by MAC-address (MAB);
- External authentication systems (LDAP/Active Directory) configured in External identity sources.

The widget allows you to track the distribution of users authenticated through different identity sources.

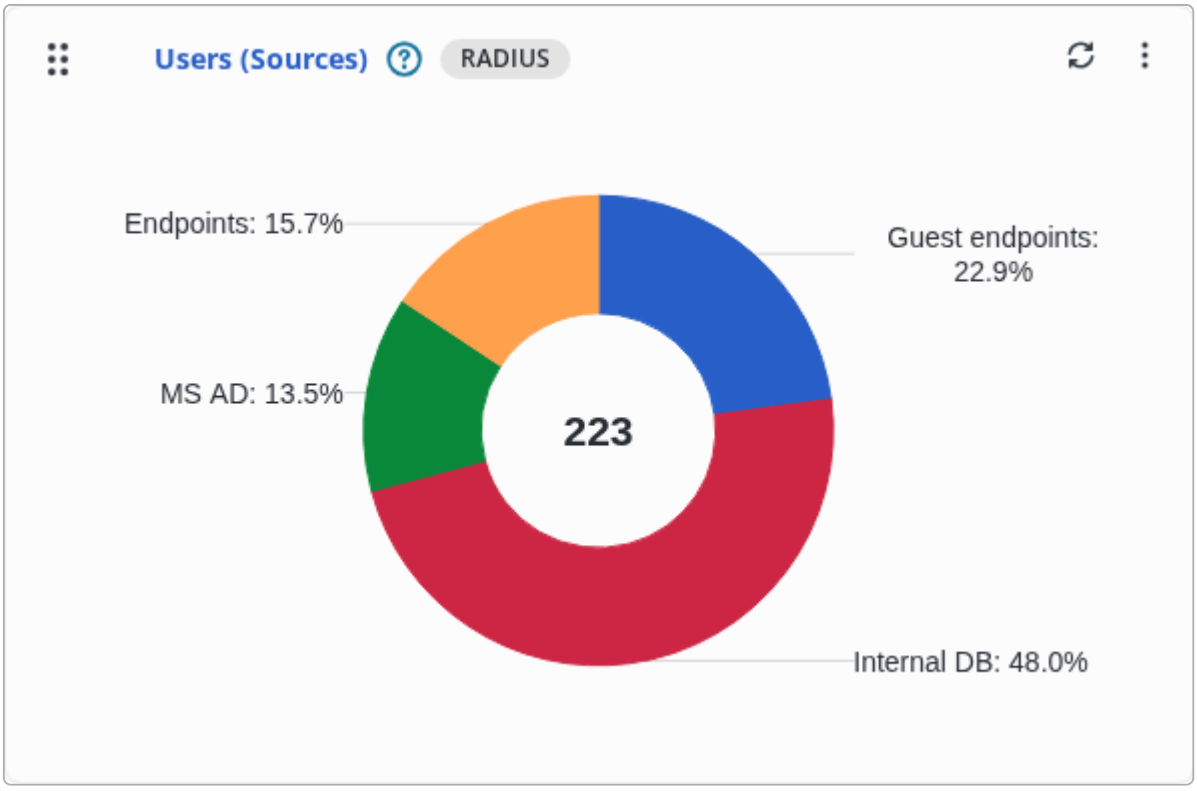


Figure 14. Widget "Users (Sources)"

Widget "Policy sets"

Displays the current count of policy set hit.

Policies with zero triggers are excluded.

Hits count data comes from the Policy Sets list.

The widget allows you to track the frequency of application of different sets of policies to analyze the effectiveness of access conditions.

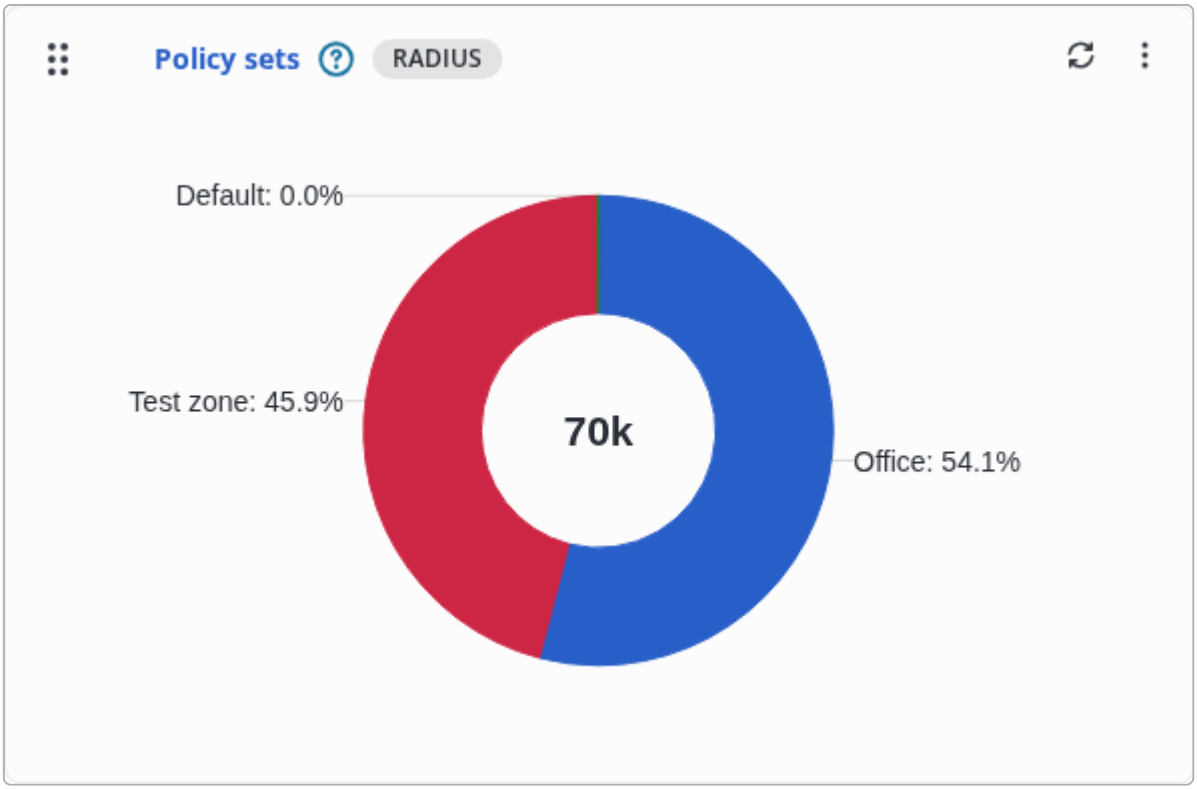


Figure 15. Widget "Policy sets"

Widget "Connection errors"

Displays client connection errors for the last 24 hours.

Connections rejected by RADIUS policies are not included.

Error data comes from Connections journal.

The widget will allow you to identify and classify errors when connecting customers, excluding cases of deliberate blocking.

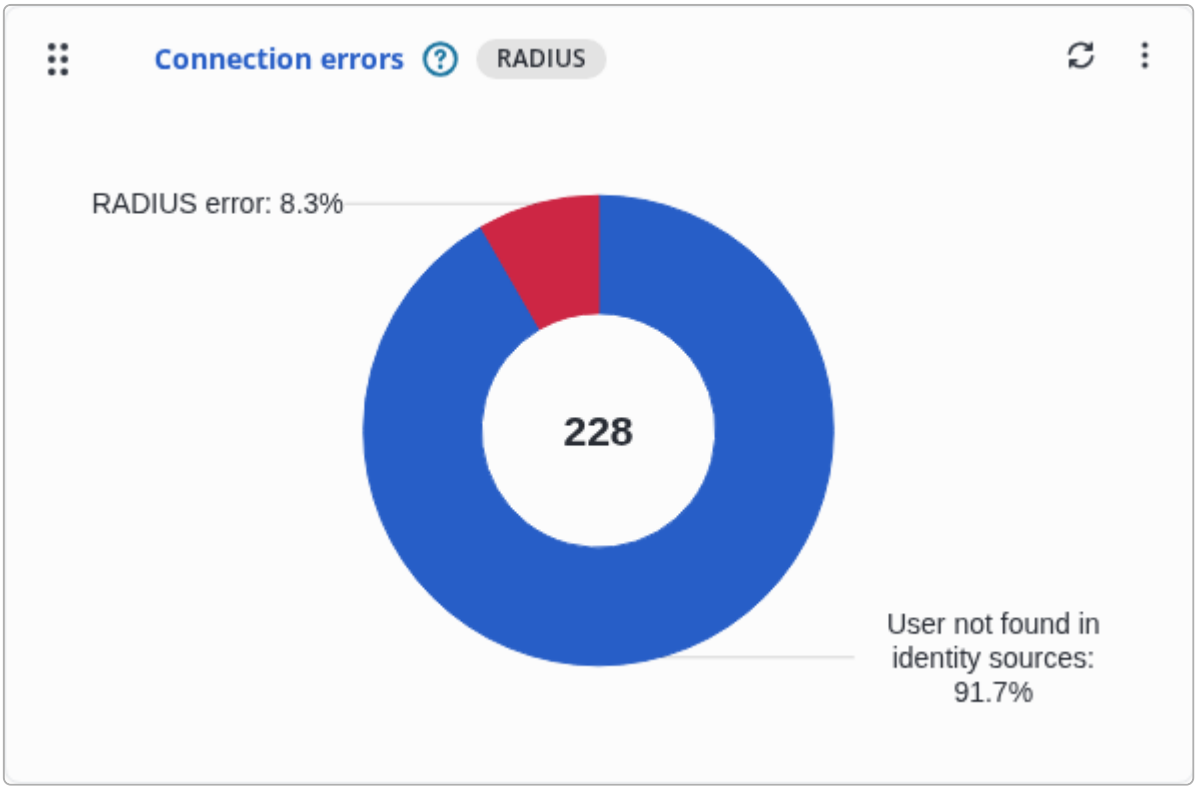


Figure 16. Widget "Connection errors"

Widget "RADIUS sessions"

The widget displays the total number of RADIUS sessions for the entire data retention period, without applying any filters during the count. The retention period is also displayed in the widget, the unit of display is days.

The list of sessions can be seen in the table Connections journal.

The widget allows estimating the size of the corresponding table in the database, as well as the number of user connections over a period longer than a day.

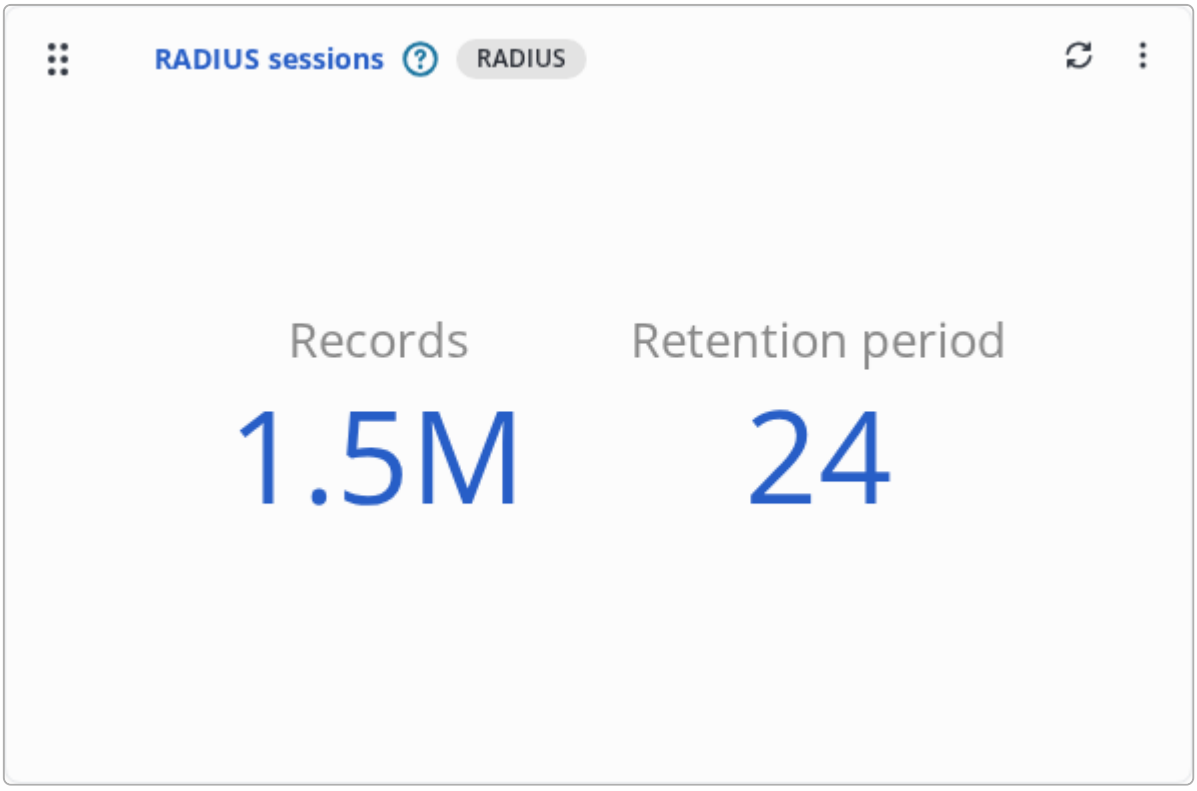


Figure 17. Widget "RADIUS sessions"

TACACS+ widgets

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

List of available widgets

Widget	Data display type	Brief description
Authorizations	Graph	Count of network administrator authorizations and authentications over the last 24 hours by hour.
Accounting	Graph	Count of accounting requests over the last 24 hours by hour.
Connection count	Metric	Count of successful and rejected connections by network administrators over the past 24 hours.
TACACS packets (type)	Metric	Count of TACACS+ packets by type received in the last 24 hours.
Devices (Type)	Histogram	Count of network devices through which the administrator connected, by network device type.
Devices (Locations)	Histogram	Count of network devices through which the administrator connected, by the location of the network devices.

Widget	Data display type	Brief description
TACACS profiles	Pie chart	Current number of TACACS+ profile hits.
TACACS Command sets	Pie chart	Current number of TACACS+ Command sets hits.
TACACS Policy Sets	Pie chart	Current number of TACACS+ policy sets hits.
Connection errors	Pie chart	Network administrator connection errors over the last 24 hours.
Users (Sources)	Pie chart	Count of unique network administrators, by source of identification, who were authorized in the last 24 hours
TACACS+ sessions	Metric	Total count of TACACS+ sessions for the entire data retention period. The retention period is displayed in days.
TACACS+ accounting	Metric	Total count of TACACS+ accounting records for the entire data retention period. The retention period is displayed in days.

Each widget has a specific data display type. The display type cannot be changed.

Widgets with the data display type "metric" or "pie chart" show large numbers in an short format (for example, 40k instead of 40123). The exact metric value is displayed in a tooltip when hovering over the value.

Widget "Authorizations"

Displays data about authorization and authentication attempts (both Connected and rejected) in the system per hour for the last 24 hours, based on Connections journal data.

Data is visualized as a time graph where:

- Vertical axis (Y) shows authorization and authentication attempt quantity;
- Horizontal axis (X) represents hourly timeline.

Enables quick monitoring of user activity and peak period identification.

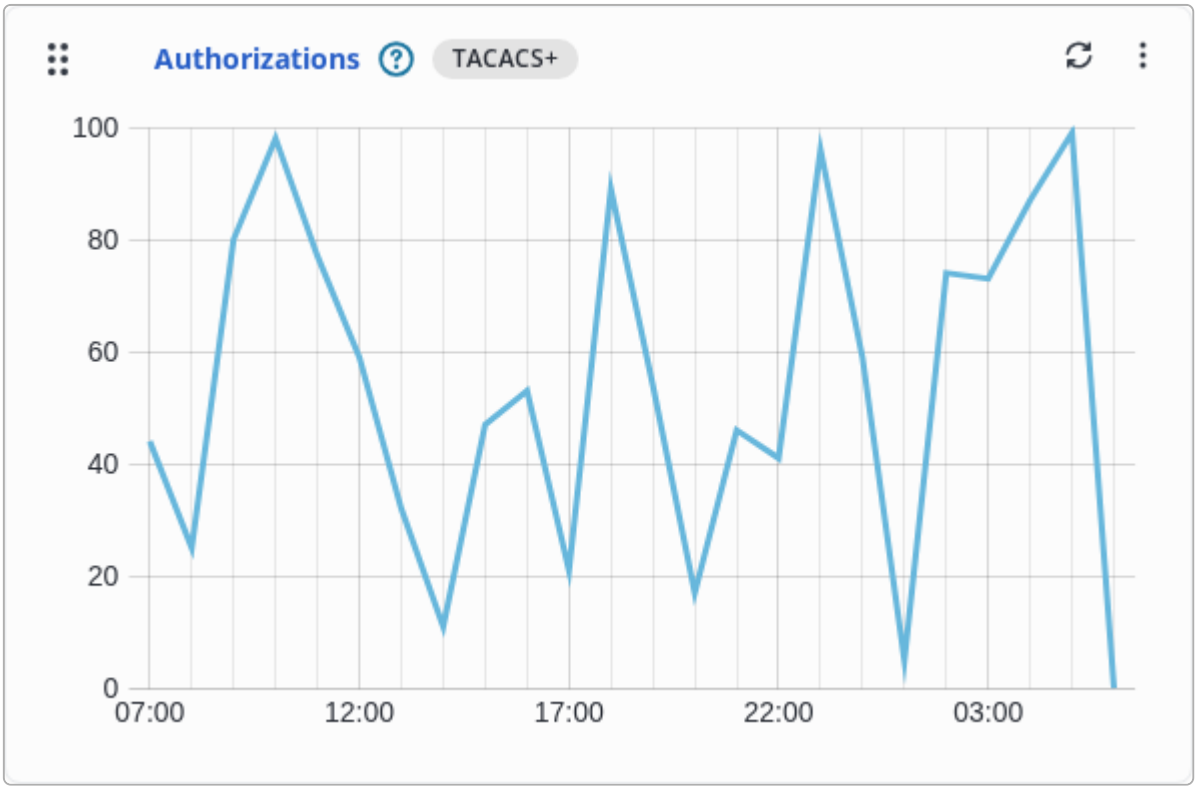


Figure 18. Widget "Authorizations"

Widget "Accounting"

Displays data on the number of accounting requests in the system per hour for the last 24 hours, based on Connections journal.

Data is visualized as a time graph where:

- Vertical axis (Y) shows authorization attempt quantity;
- Horizontal axis (X) represents hourly timeline.

Enables quick monitoring of user activity and peak period identification.

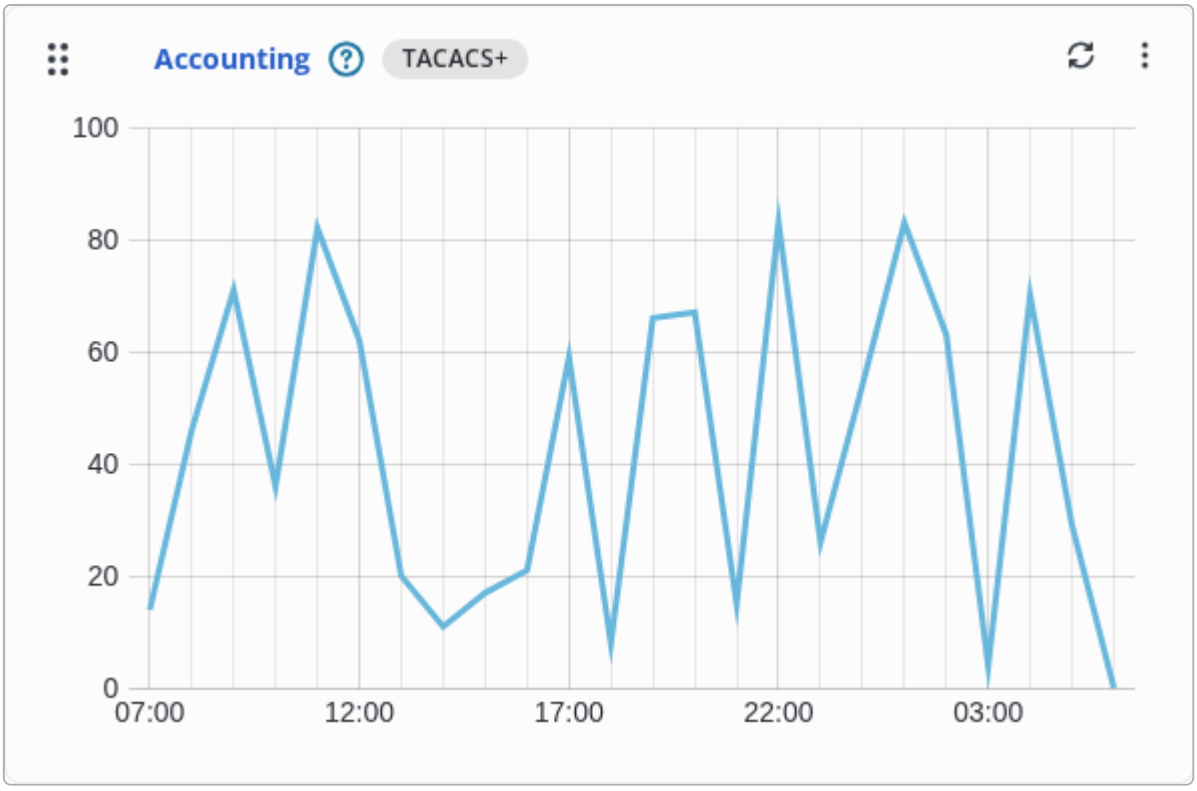


Figure 19. Widget "Accounting"

Widget "Connection count"

Displays connected and rejected connection counts for the last 24 hours based on Connections journal data.

Shows session status ratio (connected vs rejected attempts) for daily tracking.

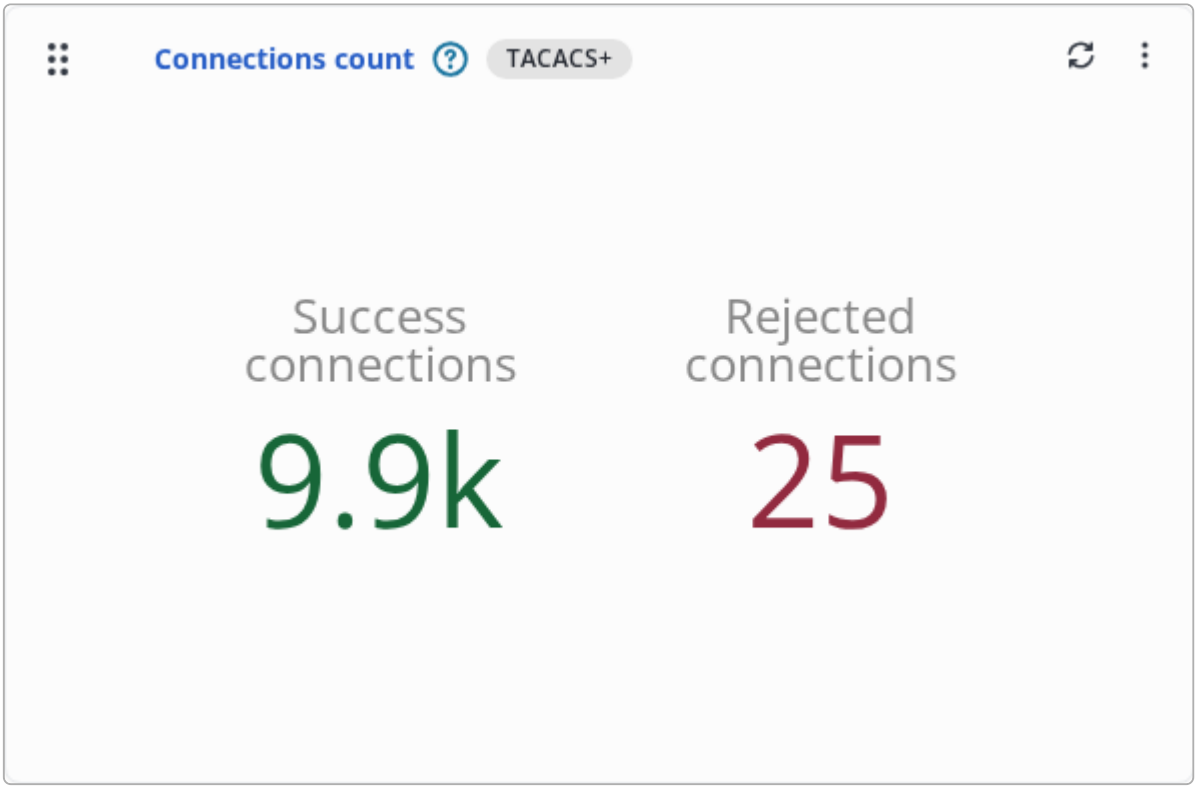


Figure 20. Widget "Connection count"

Widget "TACACS packets (type)"

The widget displays data on the number of received TACACS+ packets on network devices by packet type over the last 24 hours based on data from Connections journal.

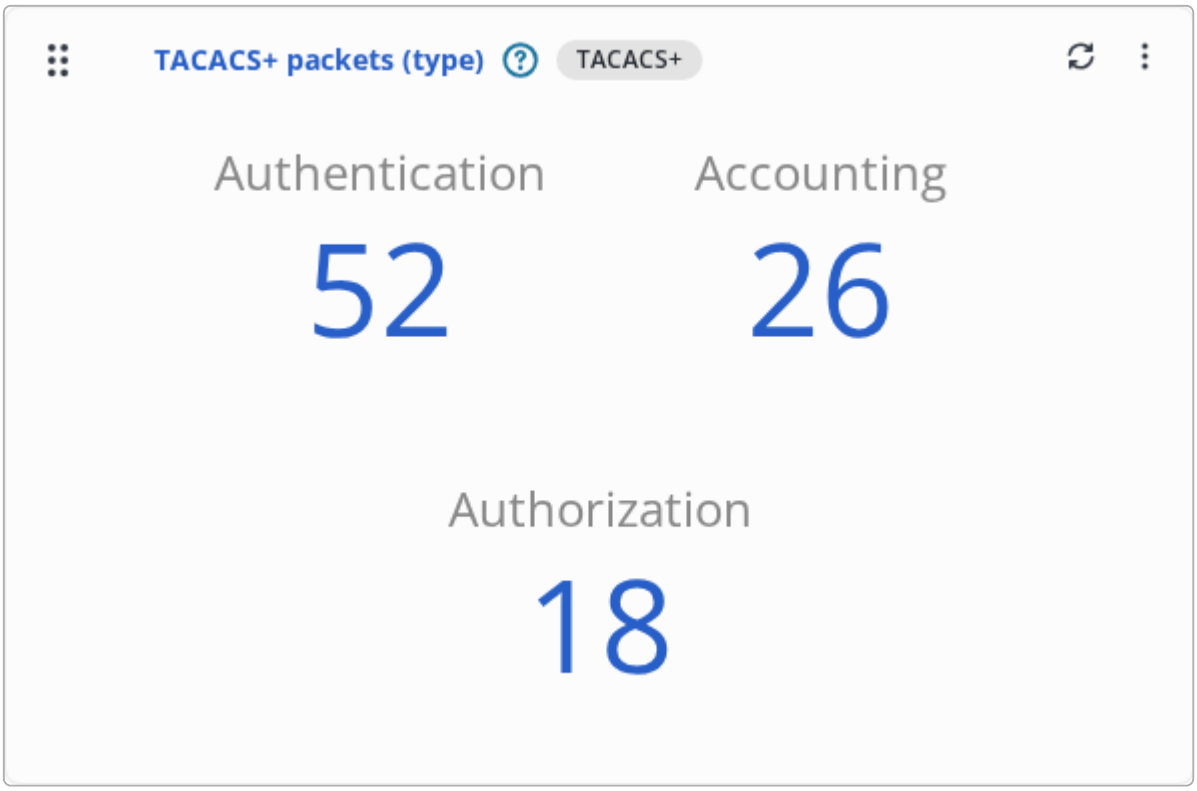


Figure 21. Widget "TACACS packets (type)"

Widget "Devices (Type)"

Displays the count of network devices by type through which system administrator connections occurred.

Device groups for classification come from Device Groups.

Tracks device type usage trends.

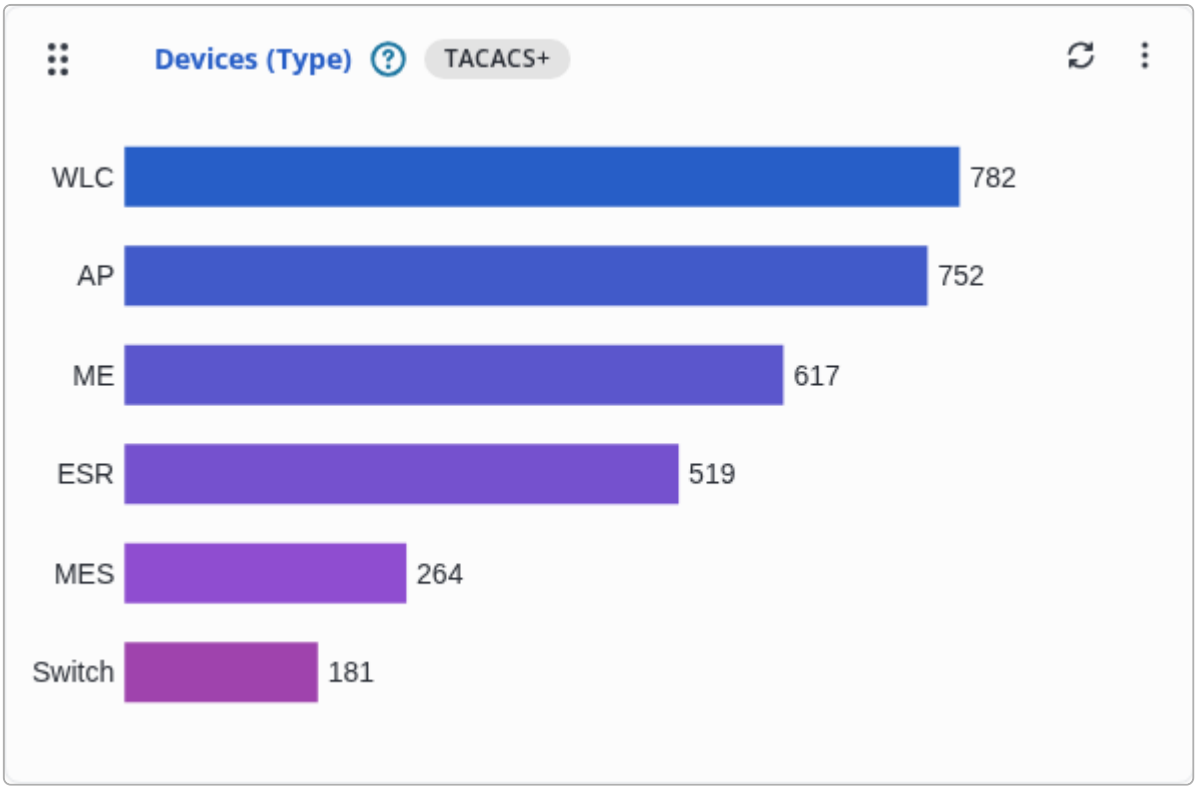


Figure 22. Widget "Devices (Type)"

Widget "Devices (Locations)"

Displays the count of network device by location through which system administrator connections occurred.

Device groups for classification come from Device Groups.

Tracks device location usage trends.

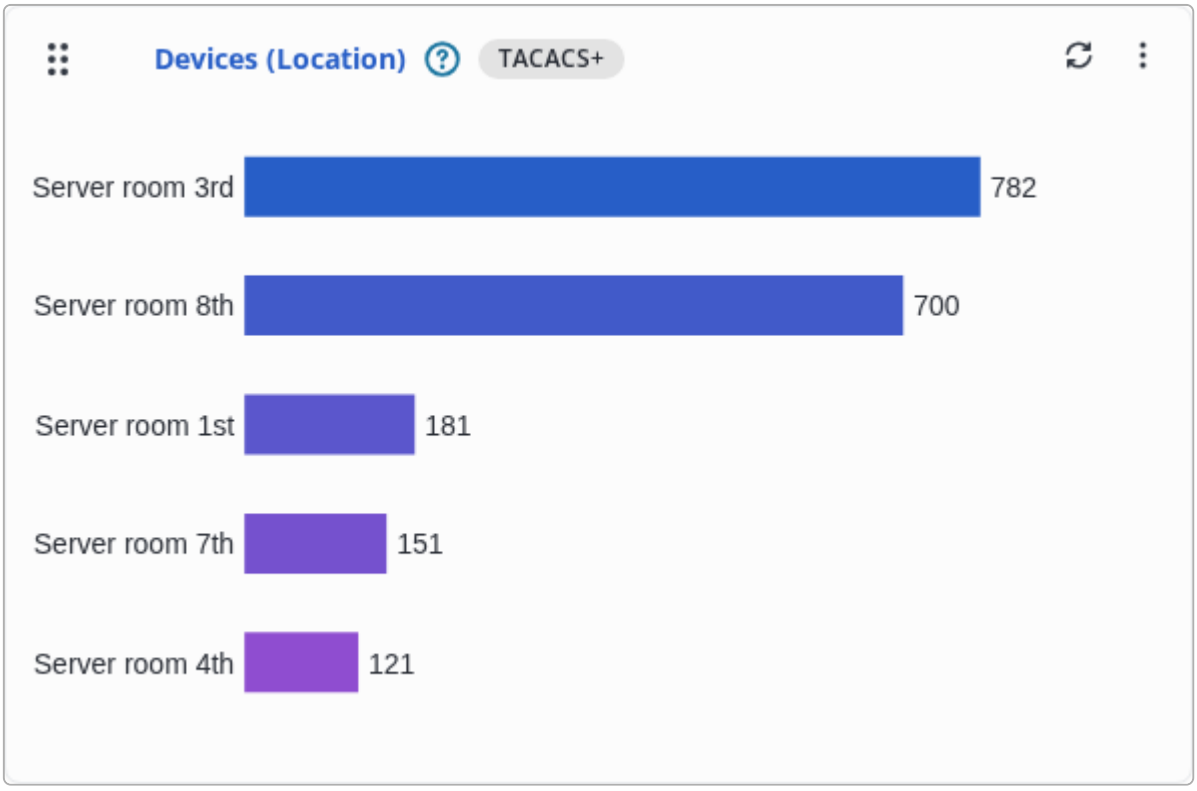


Figure 23. Widget "Devices (Locations)"

Widget "TACACS profiles"

The widget displays the current number of assigned TACACS+ profiles.

Profiles with zero hits are not displayed.

The data on the number of assigned profiles for the widget is taken from the list TACACS Profiles.

The widget allows you to track the frequency of using different profiles to analyze the effectiveness of access conditions.

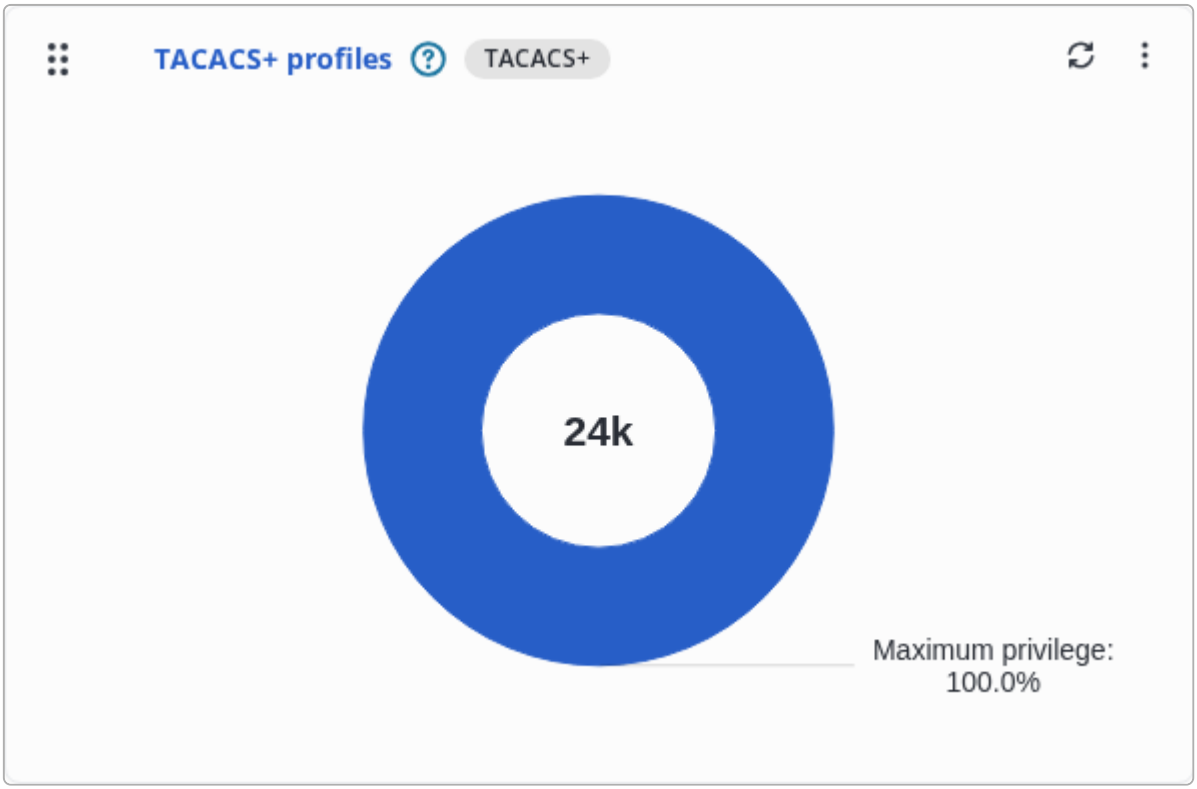


Figure 24. Widget "TACACS profiles"

Widget "TACACS Command sets"

The widget displays the current number of assigned TACACS+ Command sets.

Command sets with zero hits are not displayed.

The widget command set hit count data is taken from the Command Sets list.

The widget allows you to track the frequency of use of different command sets to analyze the effectiveness of access conditions.

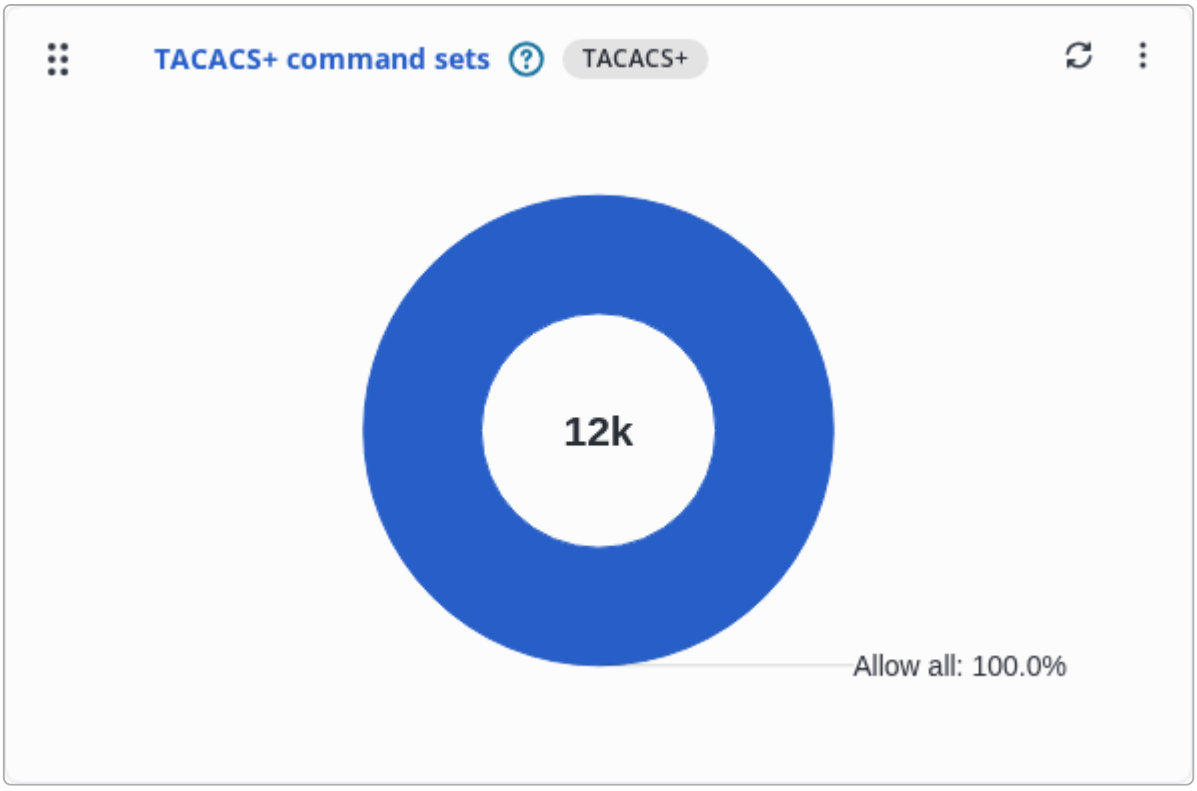


Figure 25. Widget "TACACS Command sets"

Widget "TACACS Policy Sets"

The widget displays the current number of TACACS+ policy sets being triggered.

Policies with zero triggers are not displayed.

The widget's policy set triggers are taken from the list Policy Sets.

The widget allows you to track the frequency of application of different policy sets to analyze the effectiveness of access conditions.

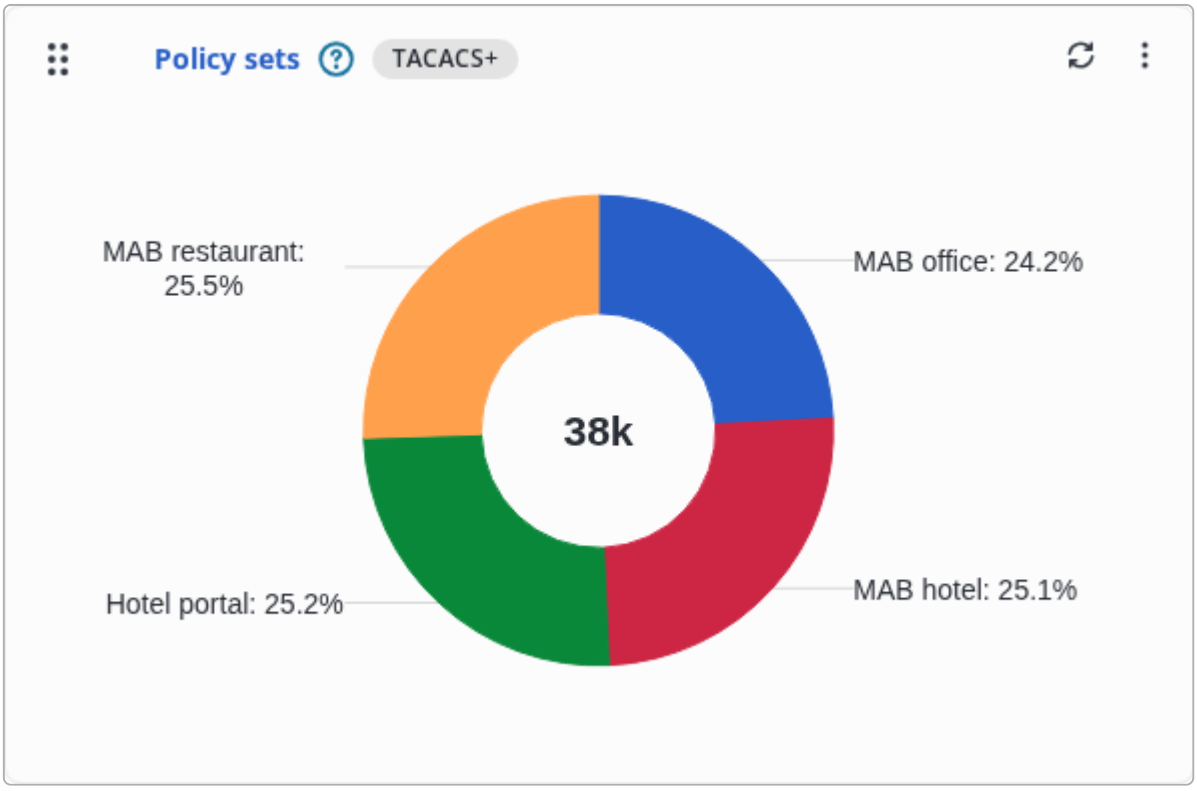


Figure 26. Widget "TACACS Policy Sets"

Widget "Connection errors"

Displays client connection errors for the last 24 hours.

Connections rejected by access policies are not included.

Error data comes from Connections journal.

The widget will allow you to identify and classify errors when connecting customers, excluding cases of deliberate blocking.

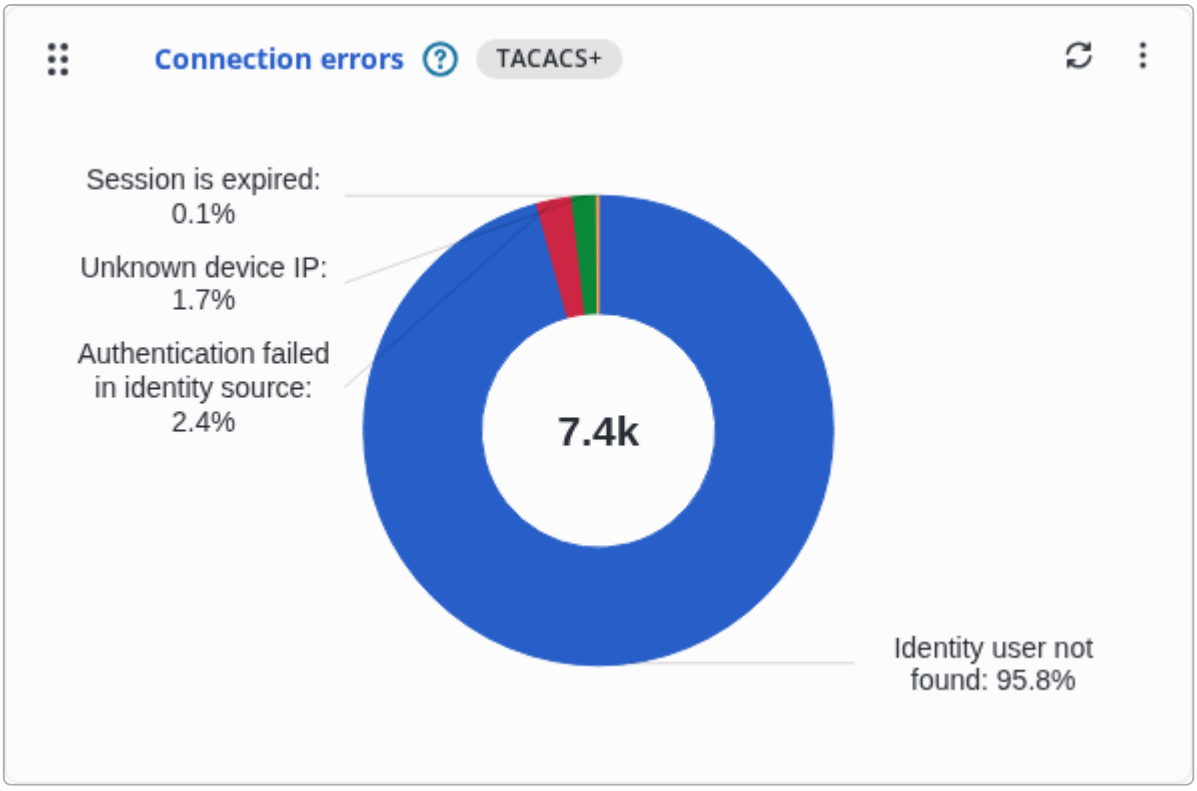


Figure 27. Widget "Connection errors"

Widget "Users (Sources)"

Displays unique system administrator count by identification sources that underwent authorization in the last 24 hours.

Possible sources of identification:

- Internal DB - users from the system's internal database;
- External authentication systems (LDAP/Active Directory) configured in External identity sources.

The widget allows you to track the distribution of system administrators authenticated through different identity sources.

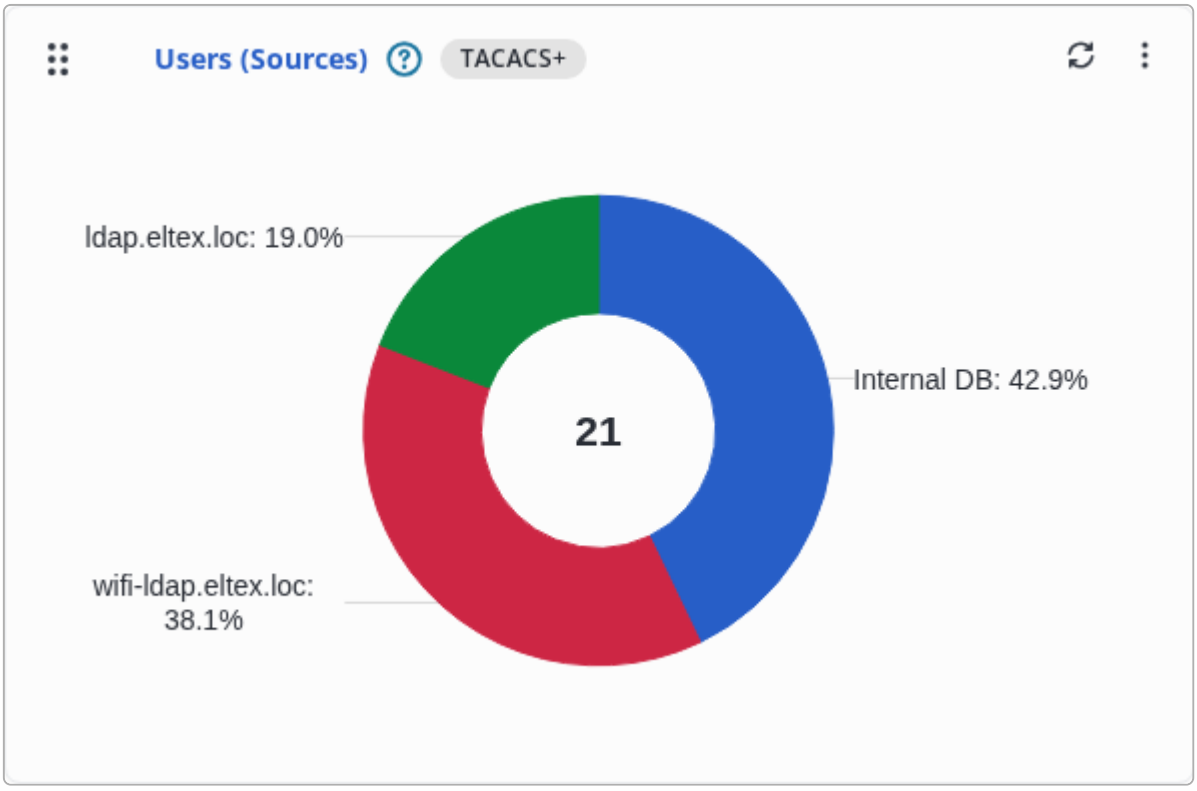


Figure 28. Widget "Users (Sources)"

Widget "TACACS+ sessions"

The widget displays the total number of TACACS+ sessions for the entire data retention period, without applying any filters during the count. The retention period is also displayed in the widget, the unit of display is days.

The list of sessions can be seen in the table Connections journal.

The widget allows estimating the size of the corresponding table in the database, as well as the number of user connections over a period longer than a day.

Figure 29. Widget "TACACS+ sessions"

Widget "TACACS+ accounting"

The widget displays the total number of TACACS+ accounting records for the entire data retention period, without applying any filters during the count. The retention period is also displayed in the widget, the unit of display is days.

The list of accounting sessions can be seen in the table Accounting.

The widget allows estimating the size of the corresponding table in the database, as well as the number of user connections over a period longer than a day.

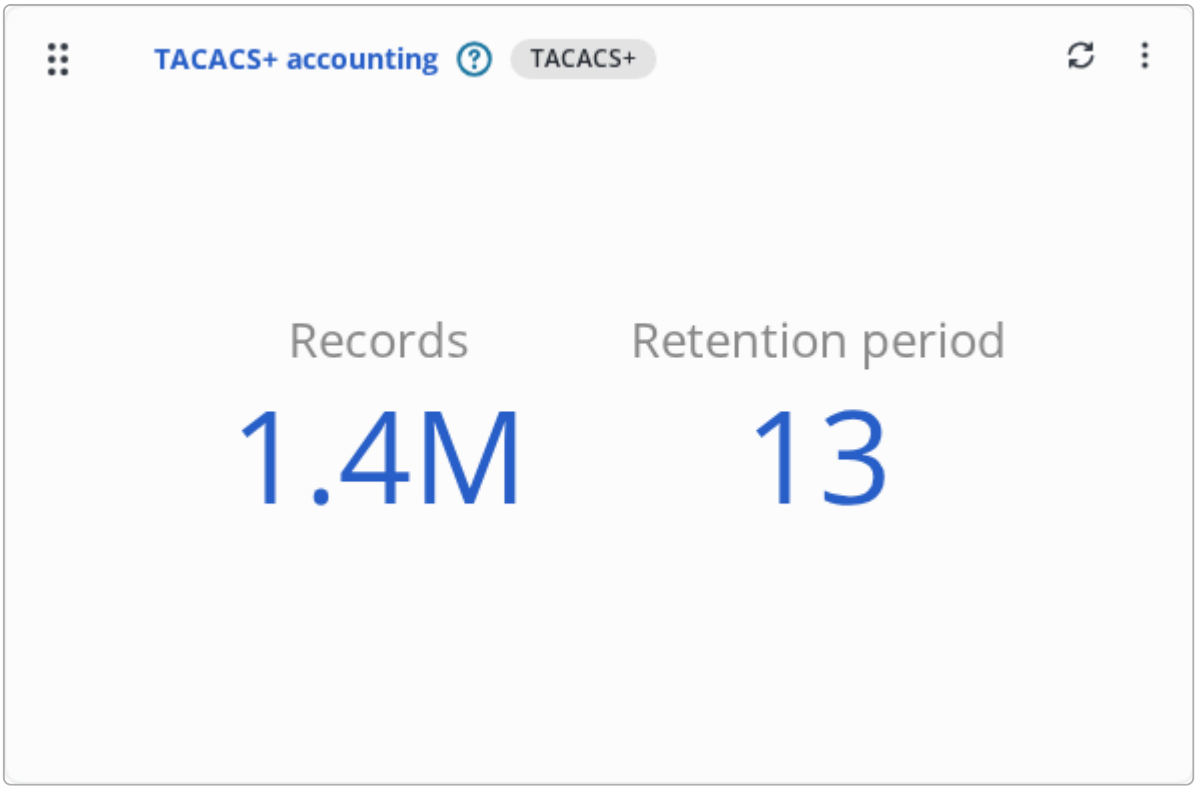


Figure 30. Widget "TACACS+ sessions"

SMS widgets

This section provides information about functionality available with the **ADVANCED** level license. To purchase this functionality, contact your manager or write to the e-mail address eltex@eltex-co.ru.

List of available widgets

Widget	Data display type	Brief description
SMS Sending Schedule	Graph	Count of SMS sendings over the last 24 hours by hour.
Total SMS Sent	Metric	Count of successful and failed SMS over the past 24 hours.

Widget "SMS Sending Schedule"

Displays data about SMS sendings in the system per hour for the last 24 hours.

Data is visualized as a time graph where:

- Vertical axis (Y) shows authorization attempt quantity;
- Horizontal axis (X) represents hourly timeline.

Enables quick monitoring of user activity and peak period identification.

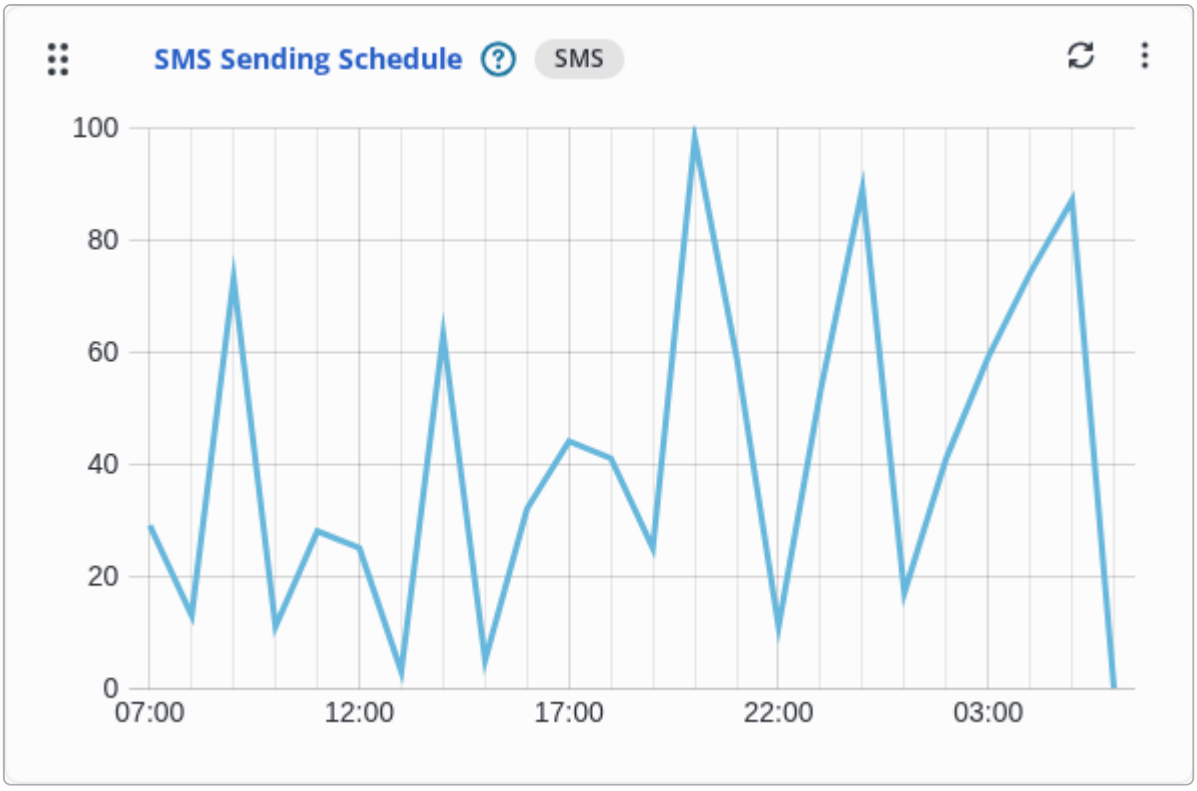


Figure 31. Widget "SMS Sending Schedule"

Widget "Total SMS Sent"

Displays successful and failed SMS counts for the last 24 hours.

Shows SMS status ratio for daily tracking.

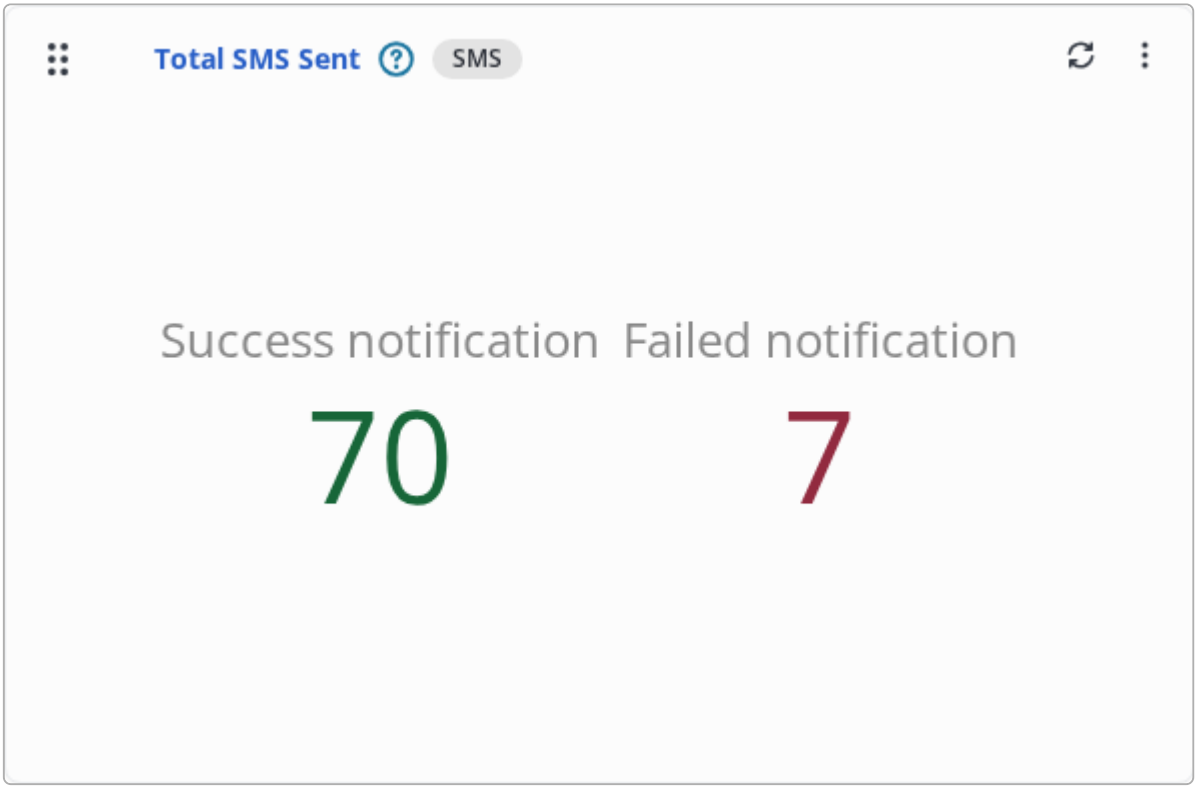


Figure 32. Widget "Total SMS Sent"

Monitoring

RADIUS

Connections journal

Description

Monitoring user sessions allows you to view user connections over a certain period of time, filter to find the necessary records, and analyze detailed information about a specific session.

View the list of user sessions

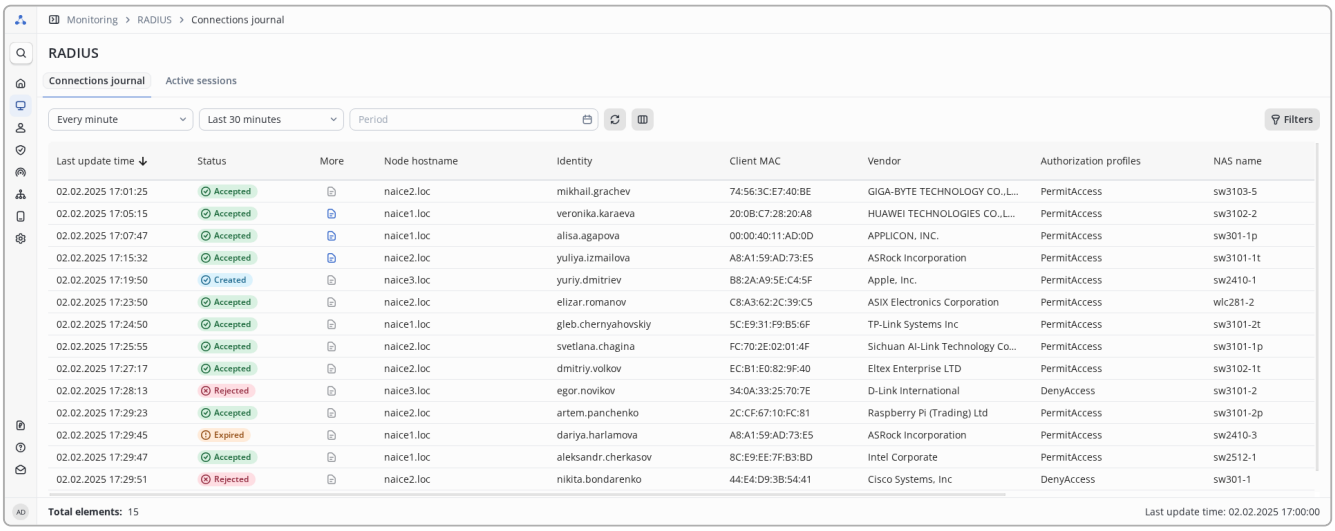


Figure 33. Table with a list of user sessions

The default table contains columns:

- `Last update time` — the time when the last RADIUS packet was received during this session.
- `Status` — the status of the session, can take values:
  - Created — the session was created, but for some reason the authorization was not completed;
  - Accepted — authorization was successful;
  - Rejected — authorization failed;
  - Expired — the session was terminated after a certain time.
- `More` — a link to open the detailed session page, which contains detailed information about the session.:
  - — a link is exist.
  - — a link is not exist. This situation can occur when the session storage duration exceeds the storage duration of detailed session information (7 days).
- `Node hostname` — name of the node that generated the event. Useful for cluster installation.
- `Identity` — the username of the user who was logged in.

The user login when authorizing in Active Directory is always displayed in UPN format (for example, username@example.org)!

- `Client MAC` — the identifier of the authorized client, which is specified in the RADIUS attribute Calling-Station-Id (if the attribute is missing in the RADIUS request or does not contain a MAC, the field will be empty).
- `Vendor` — the name of the organization that produced the device that was authorized.
- `Authorization profiles` — a list of authorization profiles that were applied based on the results of the client's authorization.
- `NAS name` — the name of NAS devices in the system.
- `NAS IP` — IP address of the NAS device, obtained from the RADIUS attribute NAS-IP-Address.
- `Acct Session ID` — the session ID from the Acct-Session-Id RADIUS attribute.

Additional columns are also available, configurable in  in the table header:

- `Authentication Policy` is the name of the authentication policy rule that was applied during this session;
- `Authorization Policy` is the name of the authorization policy rule that was applied during this session;
- `Failure reason` — the reason for the connection error.
- `Flow type` — the type of connection that was determined based on the settings of the network device profile.
- `Authentication protocol` — the protocol used for authorization (for example, PAP).

Controls:

Figure 34. User activity display settings

- `Refresh rate` — setting the frequency of automatic re-reading of user sessions.

After scrolling the first 25 elements, the "Refresh rate" parameter switches to the "Disabled" state.
To return, you must either manually specify the update time or click the update button  .

- `Time range` — selection of a predefined time period during which user session activity occurred for display, from a finite list of options. When the **Custom period** option is selected, the `Period` field configuration is required.
- `Period` — selection of a custom time period during which user session activity occurred for display.

Sessions are displayed from 00:00 of the start day until 23:59 of the end day for the selected period. The time accounts for the timezone specified in the Account settings section of the current administrator.

— update the table data manually.

- — open the settings window for the displayed columns of the table.
- Filters — open the filtering settings window.

Filtering is configured in the following window:

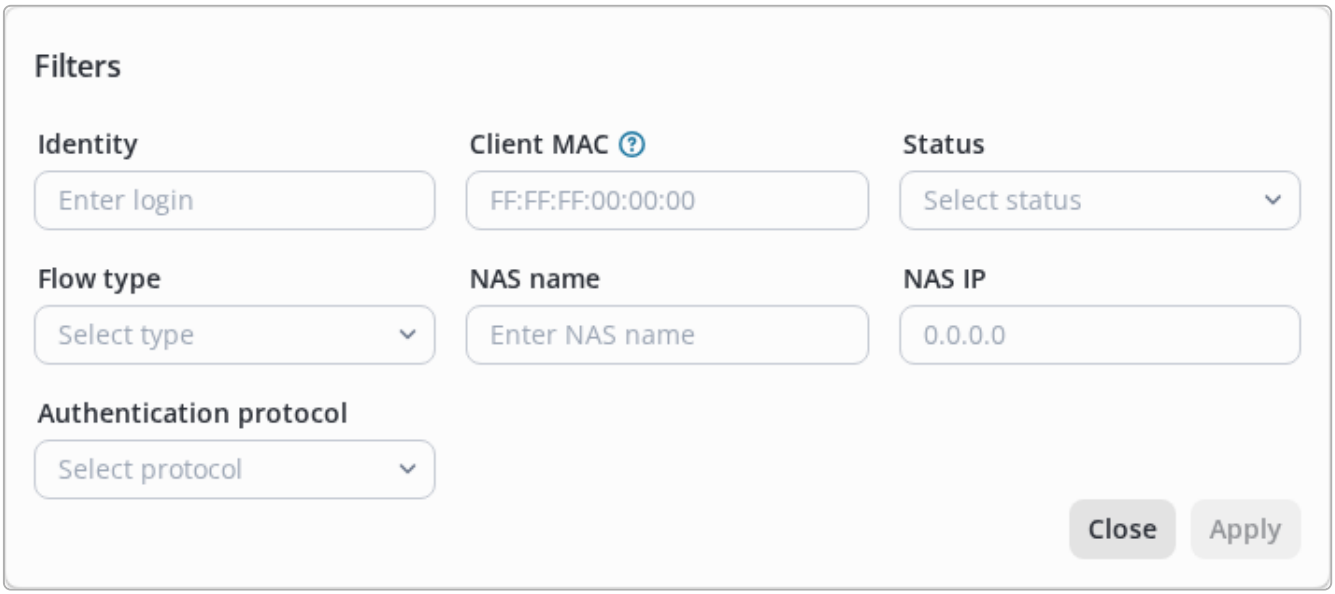


Figure 35. Window for filtering records

Filtering of records is available by the parameters "Identity", "Client MAC", "Status", "Flow type", "NAS name", "NAS IP" and "Authentication protocol".

In the client MAC address input field, only hex digits can be entered. Octet separators (colons) are entered automatically.

A partial byte representation search is available.

To search for a part of the MAC address, it is necessary that all the searchable bytes of the address are the same. they were indicated in full.
for example: it is possible to search for "AA:BB:CC"; when searching for "A:BB:C" - no.

The **Reset all** button is designed to reset the configured search parameters. It is displayed only if at least one of params are filled.

In the table settings you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

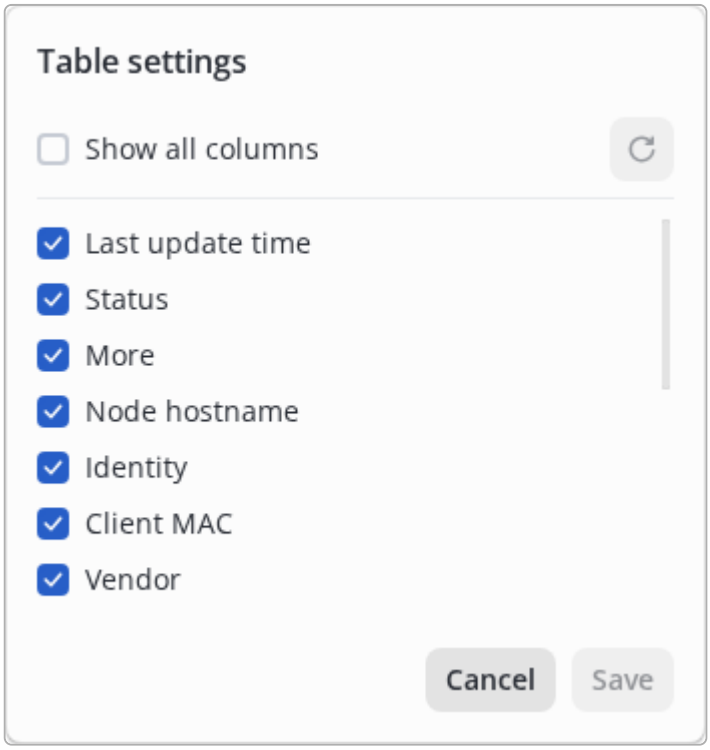


Figure 36. The window for configuring the displayed columns in the table

View detailed session information

To view detailed information about a session from a table with all sessions, click on in the “Details” column for the selected session.

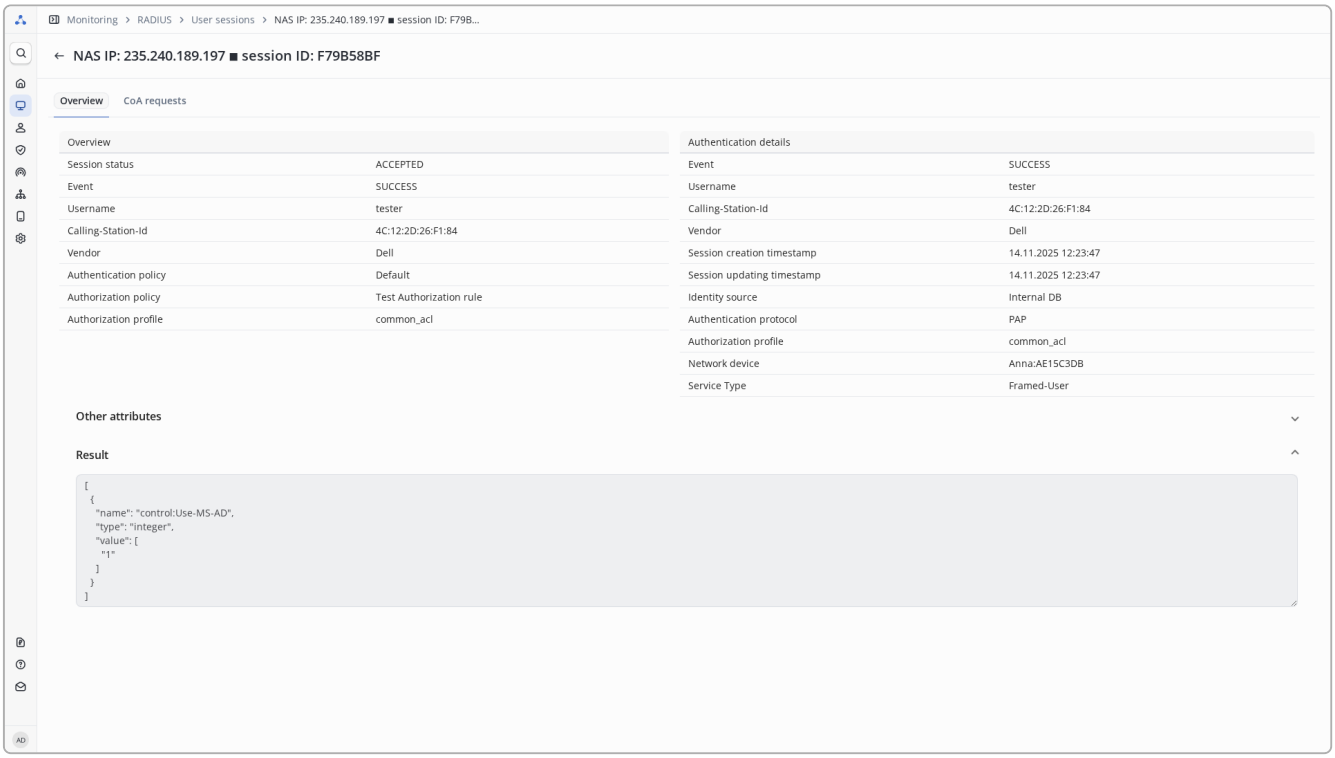


Figure 37. Detailed information about the session

The information on the page is divided into 4 blocks:

- `Overview` — brief and most important information about the session;

`Authentication details` — detailed information that can be useful for debugging;

- `Other attributes` — the contents of the package received by NAICE from the RADIUS server;
- `Result` is a list of attributes that were used to enrich the response to the client as a result of authorization (for example, attributes for issuing VLANs or ACLs). If the authorization profile is not configured to issue additional attributes, the list will be empty.

You can also view CoA requests associated with this session in a separate tab.

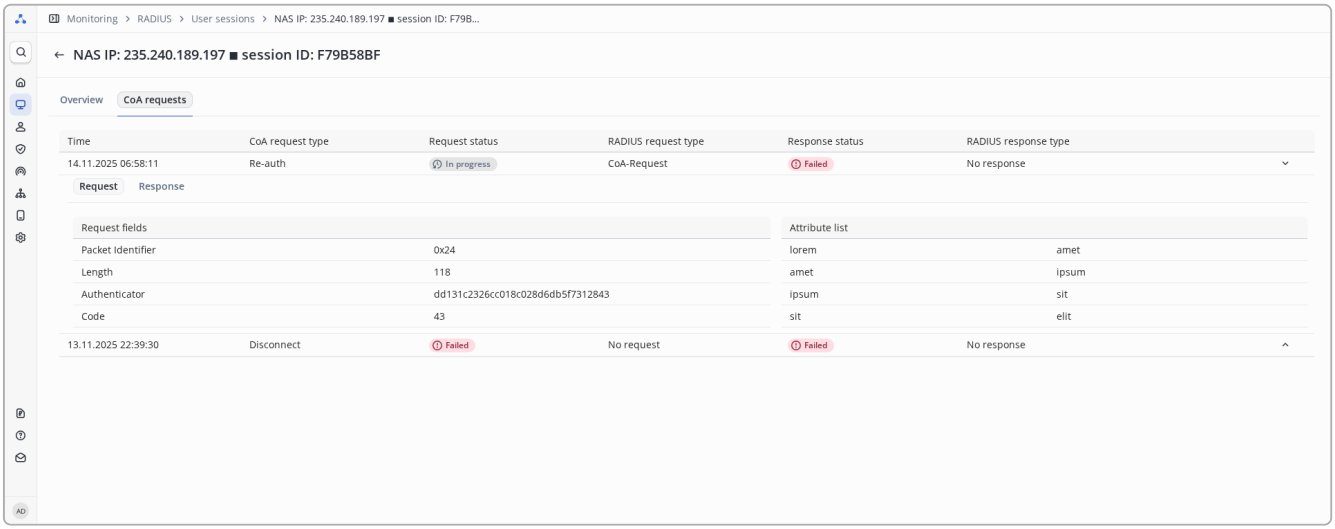


Figure 38. CoA Requests List

Active sessions

Description

The *Active sessions* section is designed for monitoring user sessions that are in an active state in real time. The log allows you to view information about each session, filter records, and manually terminate hung sessions.

Viewing the List of Active Sessions

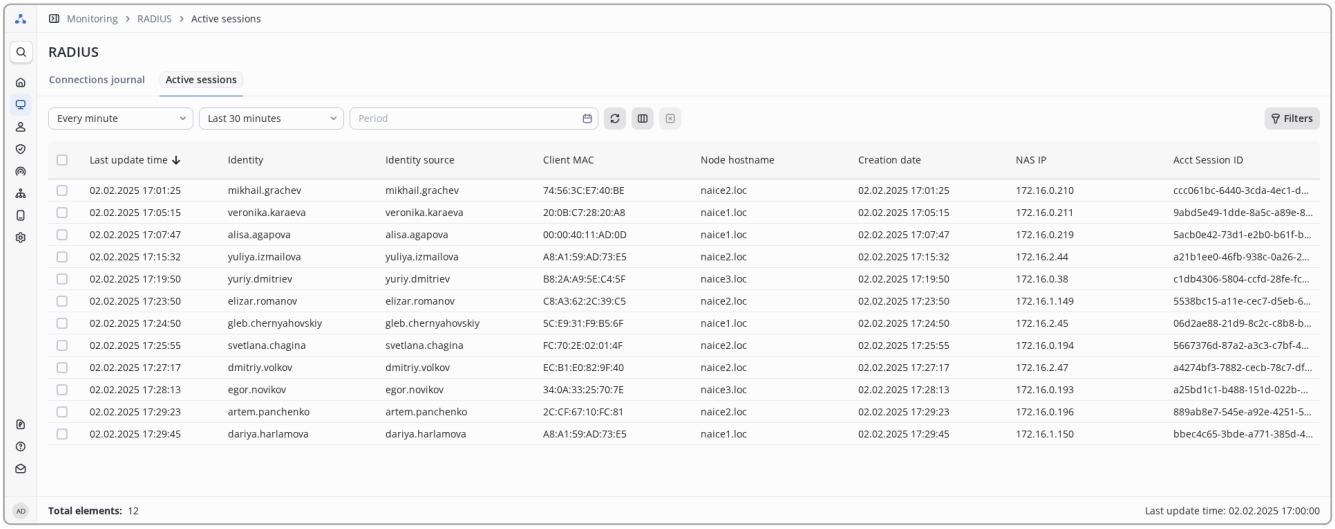


Figure 39. Active RADIUS sessions table

The table contains the following columns:

`Last update time` - the time when the last RADIUS Accounting packet was received for this session.

- `Identity` - the username under which the connection was made.
- `Identity source` - the name of the authentication source to which the connected user belongs.
- `Client MAC` - the MAC address of the authorized device, specified in the RADIUS attribute Calling-Station-Id.
- `Node hostname` - the name of the NAICE node that processed the packet that created the session.
- `Creation date` - the date and time when the session was created.
- `NAS IP` - the IP address of the NAS device, obtained from the RADIUS attribute NAS-IP-Address.

Controls:

Figure 40. Active sessions display settings

- `Refresh rate` - setting the frequency of automatic re-reading of active session data.

> After scrolling the first 25 elements, the "Refresh rate" parameter switches to the "Disabled" state.
> To return, you must either manually specify the update time or click the update button .

- `Time range` - selection of a predefined time period for displaying sessions from the list of options. When the **Custom period** option is selected, the `Period` field configuration is required.
- `Period` - selection of a custom time period for displaying sessions.
- - update the table data manually.
- - open the displayed columns settings window.
- - terminate selected sessions. The button is disabled if no active session is selected.
- Filters - open the filtering settings window.

Filtering is configured in the following window:

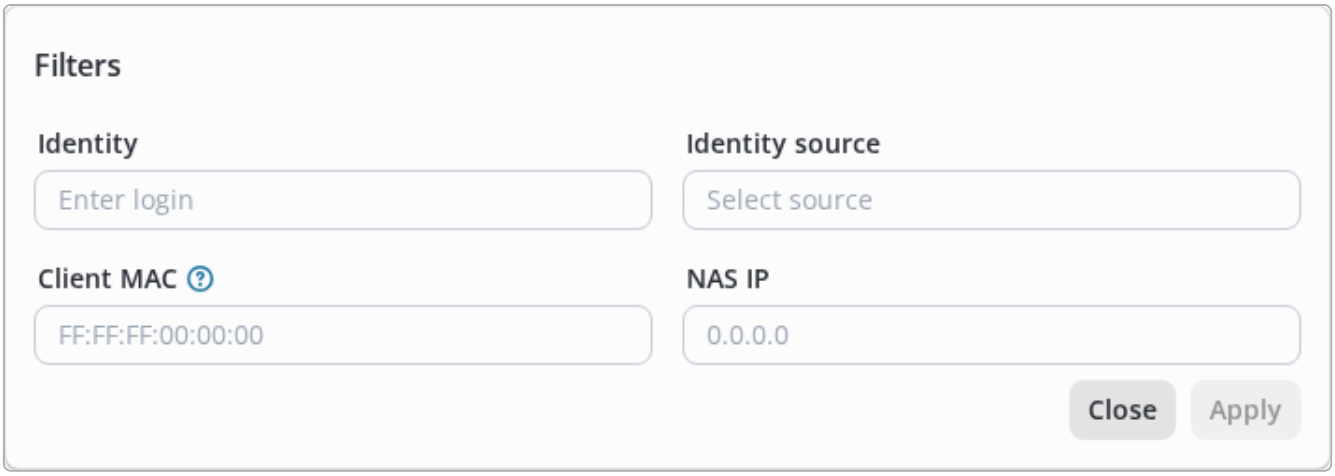


Figure 41. Window for filtering records

Filtering of records is available by the parameters: "Identity", "Identity source", "Client MAC", and "NAS IP".

The **Close** button closes the filtering window without applying changes. The **Apply** button applies the configured filters to the table.

Partial matching search is available for text fields.

To search for a part of the MAC address, it is necessary that all searchable octets of the address are specified in full.
For example, searching for "AA:BB:CC" is possible, searching for "A:BB:C" - is not.

In the table settings  you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

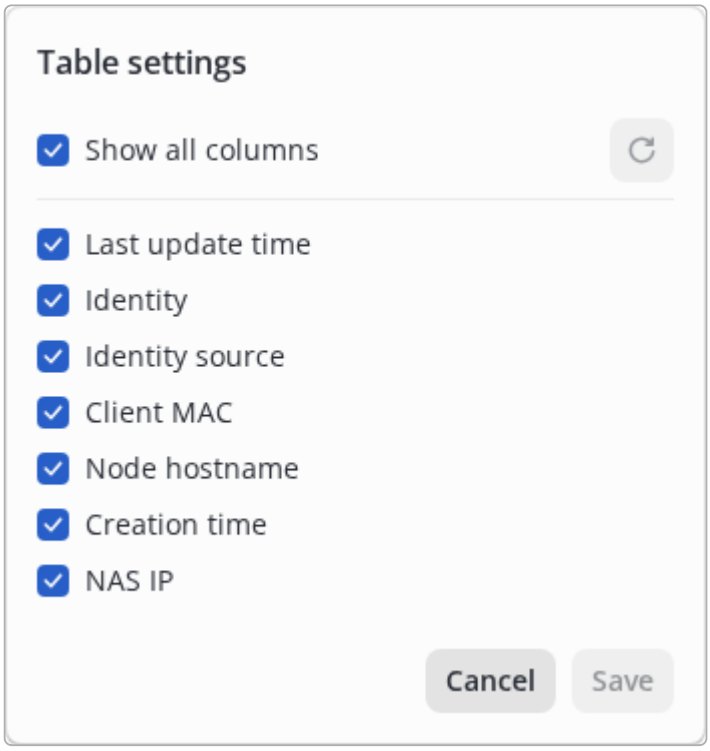


Figure 42. Window for configuring displayed columns in the table

Terminating an Active Session

To terminate an active session, use the checkbox to select the required session and click in the panel above the table.

The session is closed only in the NAICE system. The CoA request is not sent, and the actual network connection may remain active.

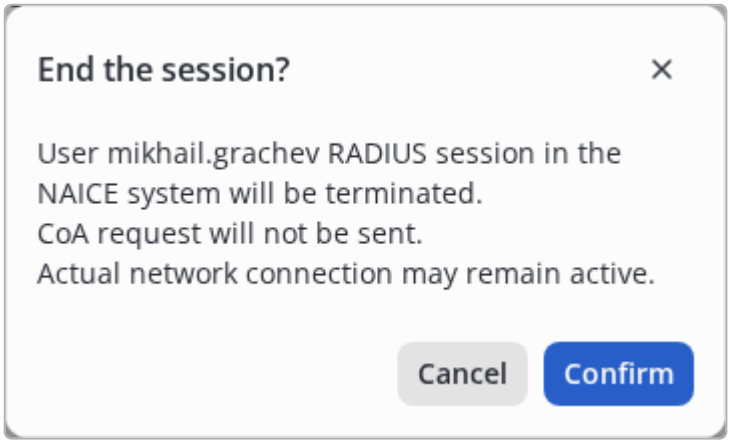


Figure 43. Confirmation of terminating a single session

When clicking the terminate button, a modal window appears with information that the user's RADIUS session will be terminated in the NAICE system and the CoA request will not be sent.

To mass-terminate sessions, use the checkboxes in the first column of the table:

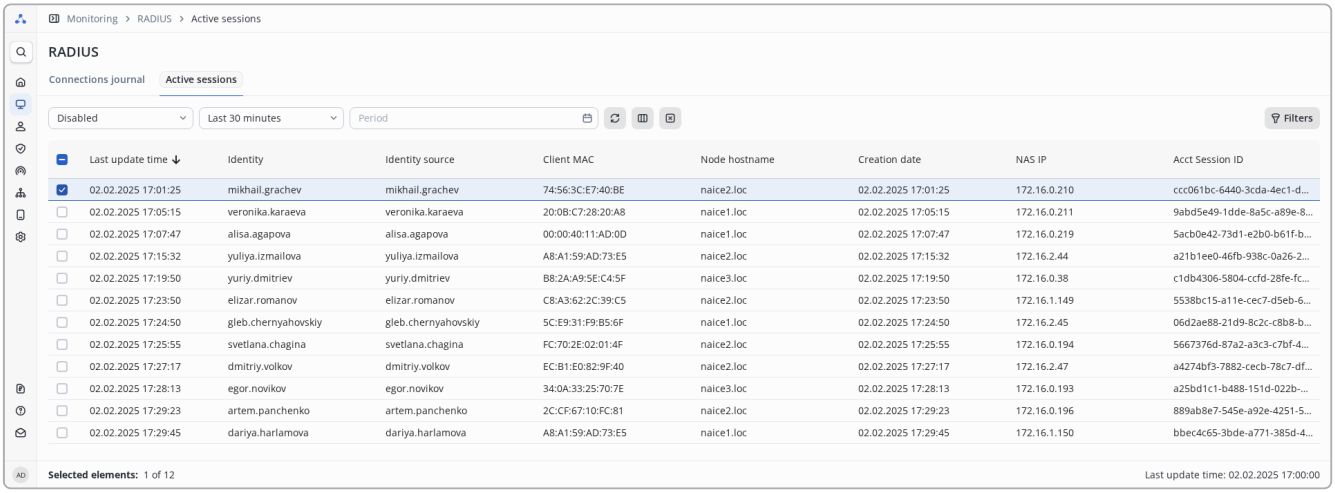


Figure 44. Session selection checkbox

After selecting one or more sessions, the button becomes active and allows to terminate all selected sessions:

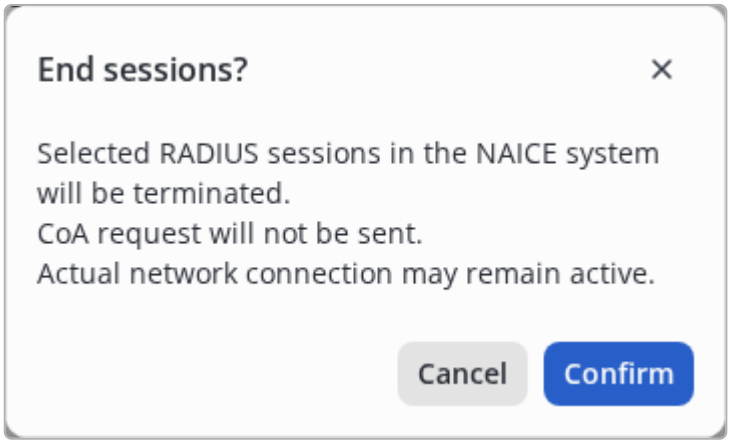


Figure 45. Confirmation of terminating multiple sessions

The terminate button action is similar to receiving a RADIUS Accounting Stop packet - the session is closed in the NAICE system and the quota is freed for the next user connection.

To use the session terminate button, privileges to edit the active session monitoring log are required.

How a Session Is Terminated

A session is considered active from the moment of successful user authentication and is displayed in the table until one of the following events occurs:

- Receiving a *RADIUS Accounting Stop* packet - the session is terminated automatically, the simultaneous connection quota is freed.
- Inactivity timeout - if no Accounting packets (Interim-Update) are received for the session within the specified period, the system automatically terminates the session. The lifetime is configured in the RADIUS Session Limits section.
- Manual termination by the administrator - the session is closed in the NAICE system, the simultaneous connection quota is freed. The CoA request is not sent.

After termination, the session is excluded from the active list and is no longer counted in the simultaneous session limit check. An event indicating the reason for session termination is recorded in the event log.

TACACS+

Connections journal

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

Monitoring connections journal allows you to view administrator connections over a certain period of time, filter to find the necessary records, and analyze detailed information about a specific session.

View the list of TACACS+ connections

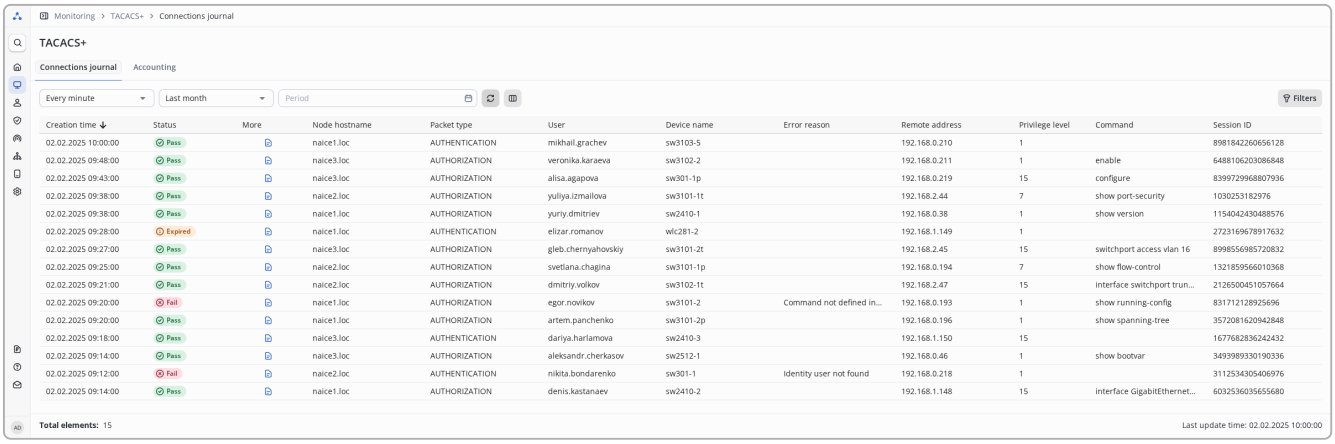


Figure 46. Table with a list of connections TACACS+

The default table contains columns:

- `Creation time` — the time when a connection attempt was made within this session.
- `Status` — the status of the session, can take values:
  - Accepted — authorization was successful;
  - Rejected — authorization failed;
  - Expired — the session was terminated after a certain time.
- `More` — a link to open the detailed session page, which contains detailed information about the session.
- `Node hostname` — name of the node that generated the event. Useful for cluster installation.
- `Packet type` — takes the values "AUTHENTICATION" or "AUTHORIZATION", depending on what the request was for in the session.
- `User` — the identifier of administrator.
- `Device Name` — the name of the network device on which authorization took place.
- `Error reason` — description of the error that caused unsuccessful authentication or authorization.
- `Remote address` — the IP address of the device from which the administrator made the connection.
- `Privilege level` — values of the privilege level assigned to the administrator.
- `Command` — the name of the command on the network device for which the authorization request was made.
- `Session ID` — TACACS session identifier.

Additional columns are also available, configurable in in the table header:

- `Device IP` — the address of the device to which the connection was made.
- `Authentication Policy` is the name of the authentication policy rule that was applied during this session;

`Authorization Policy` is the name of the authorization policy rule that was applied during this session;

- `Port` — the name of the protocol used to connect to the device.
- `Device type` — the device type that was determined based on the device settings.
- `Device location` — the location of the device, which is determined from the device settings.
- `TACACS profile` — the name of the TACACS profile assigned to the administrator as a result of authorization.
- `Command set` — the name of the set of commands assigned to the administrator as a result of authorization.

Controls:

Figure 47. User activity display settings

- `Refresh rate` — setting the frequency of automatic re-reading of user sessions.
- `Show` — setting the number of records to display in the table.
- `Time span` — selection of the time period in which user session activity occurred for display.
- — update the table data manually.
- — open the settings window for the displayed columns of the table.
- Filters — open the filtering settings window.

After scrolling the first 25 elements, the "Refresh rate" parameter switches to the "Disabled" state.
To return, you must either manually specify the update time or click the update button .

Filtering is configured in the following window:

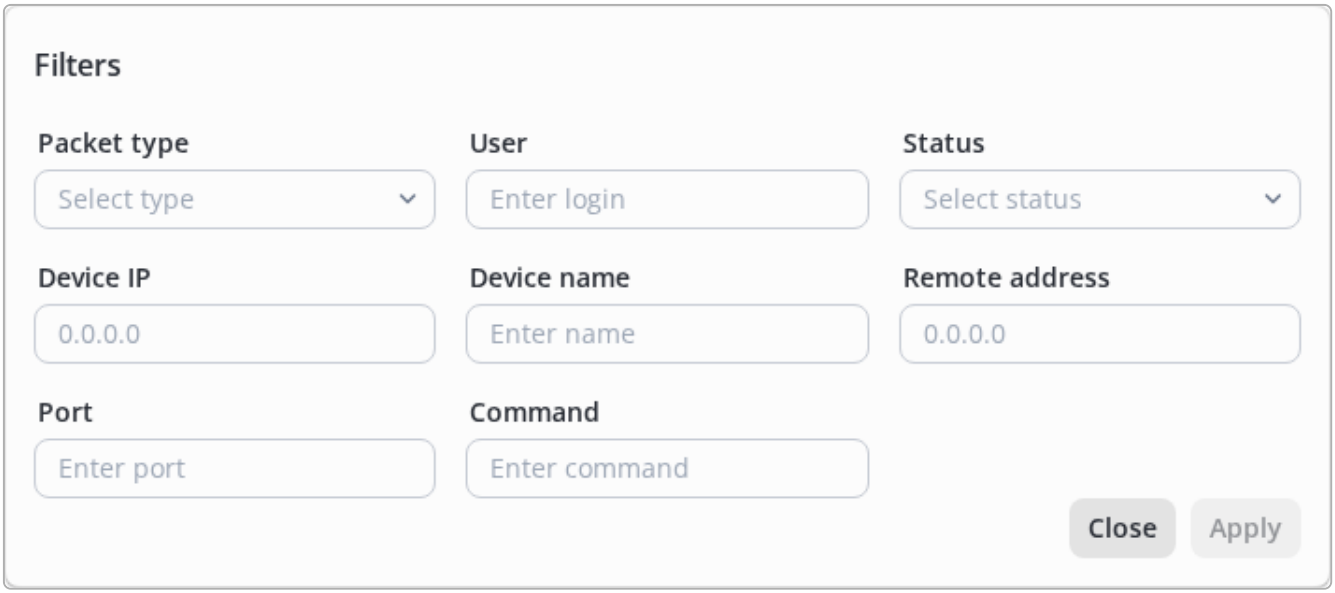


Figure 48. Window for filtering records

Filtering of records is available by the parameters "Packet type", "User", "Status", "Device IP", "Device name", "Remote address", "Port", "Command".

For device and remote user addresses, a partial match search is available for any octet/octets of the IP address.

The **Reset all** button is designed to reset the configured search parameters.

In the table settings  you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

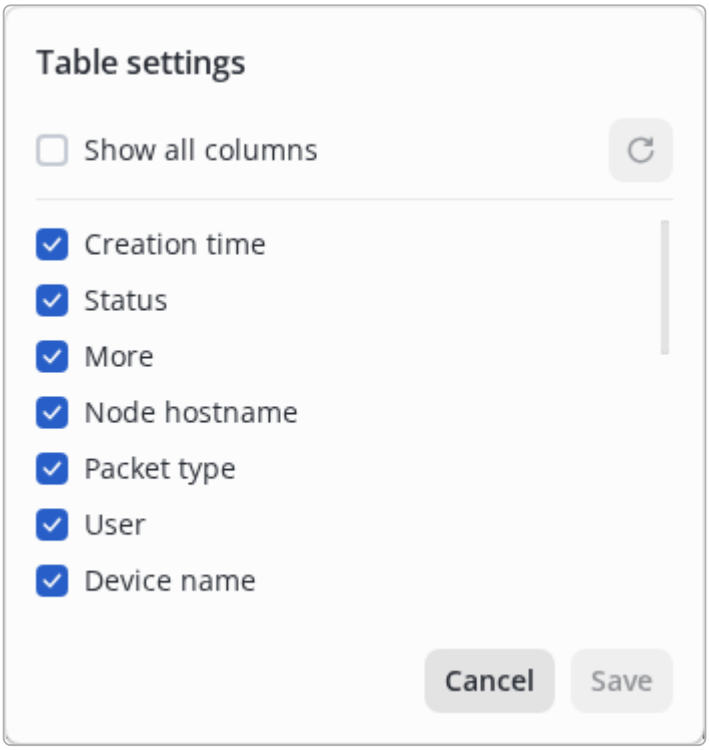


Figure 49. The window for configuring the displayed columns in the table

View detailed session information

To view detailed information about a session from a table with all sessions, click on in the “Details” column for the selected session.

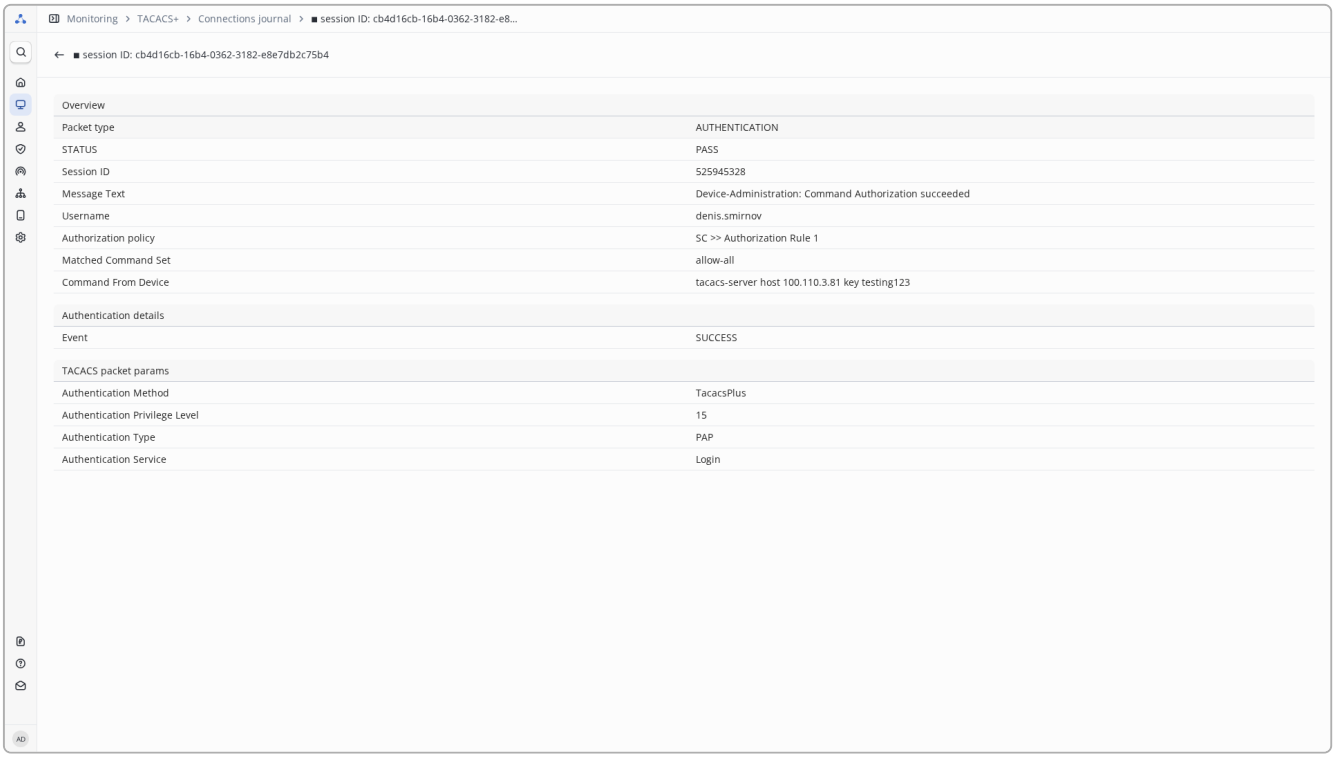


Figure 50. Detailed information about the session

The information on the page is divided into 4 blocks:

- `Overview` — brief and most important information about the session;
- `Authentication details` — detailed information about the authentication that can be useful for debugging;
- `Authorization details` — detailed information about the authorization that can be useful for debugging;
- `TACACS packet params` — other attributes received by NAICE from the TACACS server.

Displaying of blocks "Authentication details" and "Authorization details" depends on the packet type.

Accounting

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

The TACACS+ account allows you to view information about the actions of network device administrators using the TACACS+ protocol for a specified period of time and filter to find the necessary records.

View the TACACS+ command accounting list

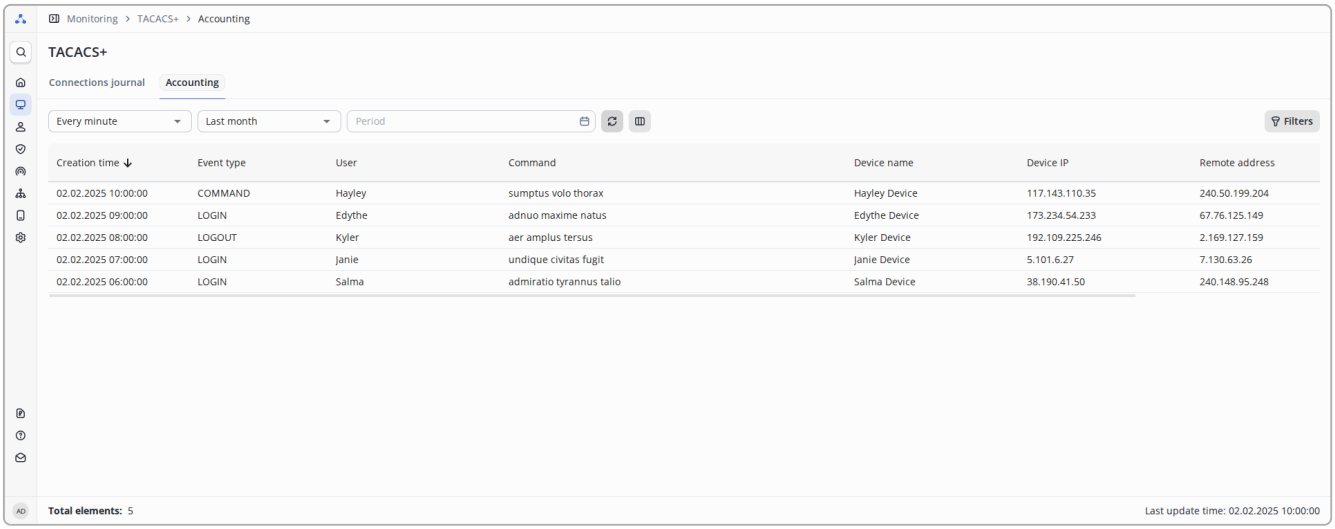


Figure 51. Table with TACACS+ command accounting list

The default table contains columns:

- `Creation time` - the time when a connection attempt was made.
- `Event type` - Depending on the event, it can take the following values: LOGIN - for login events, COMMAND - for command events, EXIT - for exit events.
- `User` - the identifier of administrator.
- `Command` - the name of the command on the network device that the administrator executed.
- `Device Name` - the name of the network device on which authorization took place.
- `Device IP` - the address of the device to which the connection was made.
- `Remote address` - the IP address of the device from which the administrator made the connection.
- `Session ID` - TACACS session identifier.

Additional columns are also available, configurable in  in the table header:

- `Privelege level` - values of the privilege level assigned to the administrator.
- `Port` - the name of the protocol used to connect to the device.
- `Authentication method` - the user authentication method by which the command was recorded.
- `Authentication service` - the name of the authentication service through which the command was recorded.
- `Authentication protocol` - the name of the authentication protocol by which the command was recorded.
- `Request arguments` - arguments of the request by which the command was taken into account.

Controls:

Figure 52. User activity display settings

- `Refresh rate` - setting the frequency of automatic re-reading of accounting events.
- `Show` - setting the number of records to display in the table.
- `Time span` - selection of the strict time period in which user session activity occurred for display.
- `Period` - select an arbitrary time interval in which activity occurred by sessions for display.
- - update the table data manually.
- - open the settings window for the displayed columns of the table.
- Filters - open the filtering settings window.

After scrolling the first 25 elements, the "Refresh rate" parameter switches to the "Disabled" state.
To return, you must either manually specify the update time or click the update button .

Filtering is configured in the following window:

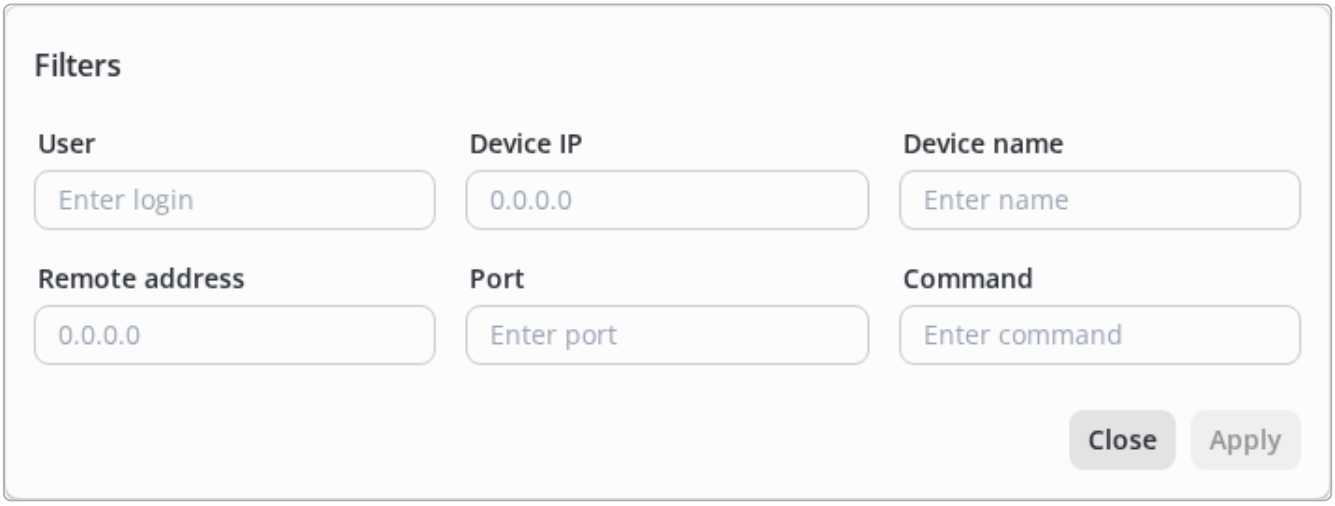


Figure 53. Window for filtering records

Filtering of records is available by the parameters "User", "Device IP", "Device name", "Remote address", "Port", "Command".

For device and remote user addresses, a partial match search is available for any octet/octets of the IP address.

The **Reset all** button is designed to reset the configured search parameters.

In the table settings you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

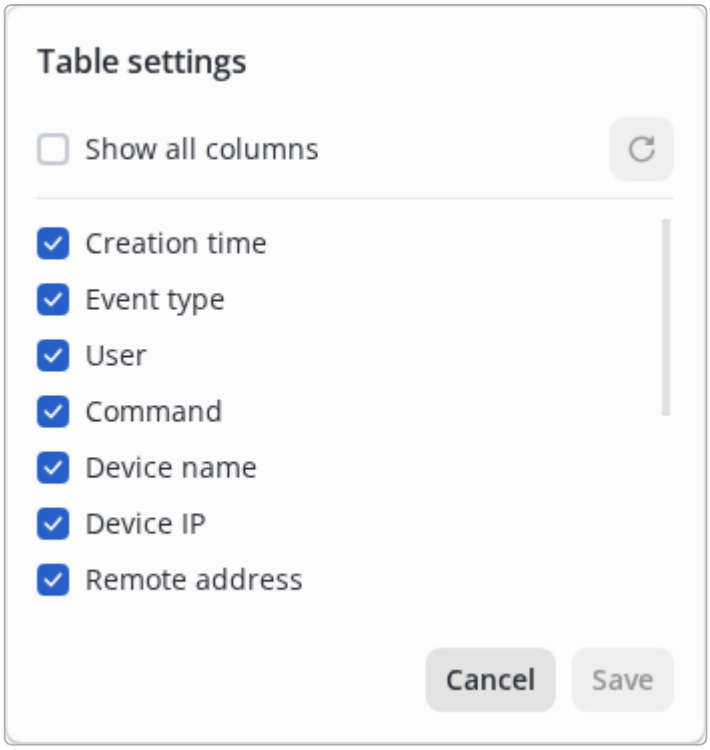


Figure 54. The window for configuring the displayed columns in the table

System

System events

Description

System Events displays information about events occurring in the system, such as license activation, user login/logout, creation and editing of various entities. The list of possible events can be found on the :system/list-events.html page.

For convenient event analysis, you can select the time period when events occurred, their severity level, the event group they belong to. Additionally, you can search for specific events by their message text.

Viewing system events

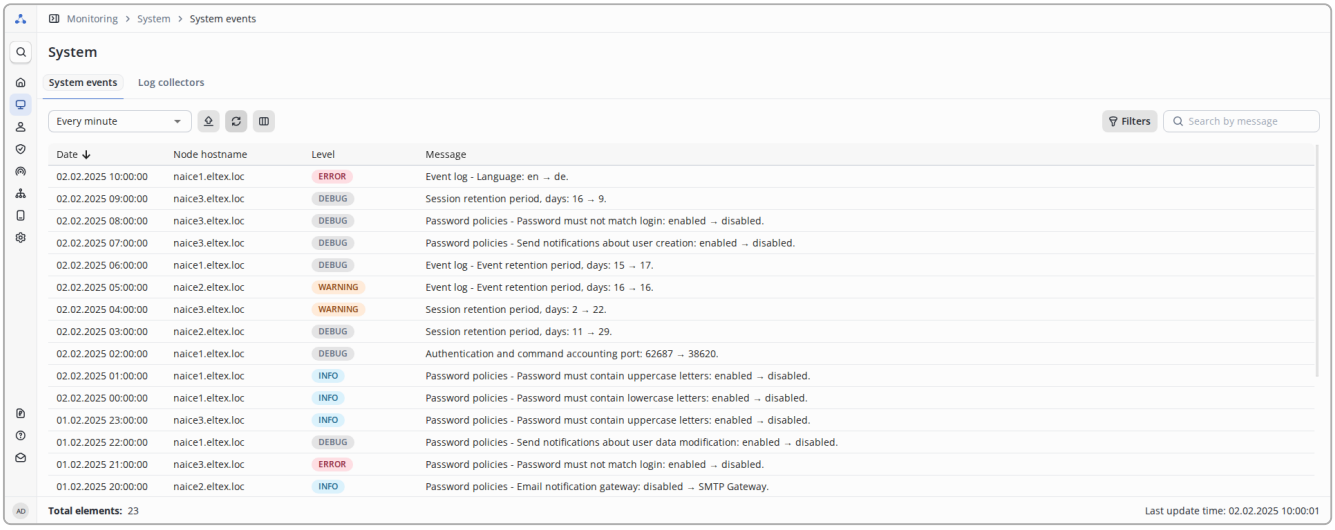


Figure 55. Table with a list of system events

The table contains default columns:

- `Date` - date and time of the event.
- `Node hostname` - name of the node that generated the event. Useful for cluster installation.
- `Level` - event logging level.
- `Message` - text description of the event.

Additional columns are also available, configurable in the table header:

- `IP` - the address of the host that caused the event to be created.
- `Group` - the group of the event. The list of possible event groups can also be found on the page :system/list-events.html.
- `Key` - result of performing actions reflected in the event.
- `Author` - caused this event the system user login. If the action was performed by the system displayed `system`.
- `Role` - the role of the user who caused the system event.

The `Date` and `Message` columns cannot be disabled.

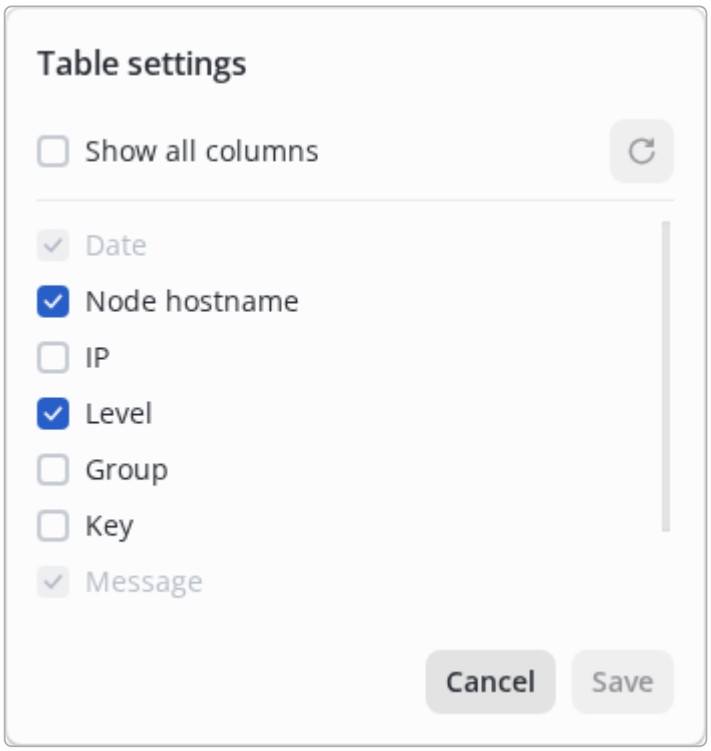


Figure 56. Configure system event table columns to display

To reset all settings use the button in the upper right corner of the selection window.

Control elements:

- Filters - Open the filter settings window.

- Open the window for customizing the displayed table columns.

- ↑ - Change the current sorting order. Sorting is available only by the `Date` column.
- - Refresh the table data manually.
- `Refresh frequency` - setting the frequency of automatic rereading of system events.

> When you scroll through the first 25 table items, the “Refresh Rate” parameter goes to the “Disabled” state.
> To return, you must either manually specify the refresh time or refresh the browser page.

- `Search by message` - case-independent search in the `Message` column.

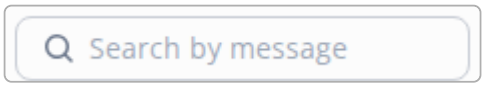


Figure 57. Search by message

> To reset the search expression, you must click `×` on the right side of the search form.
> The button is not displayed until a value is entered.

Filter is configured in the following window:

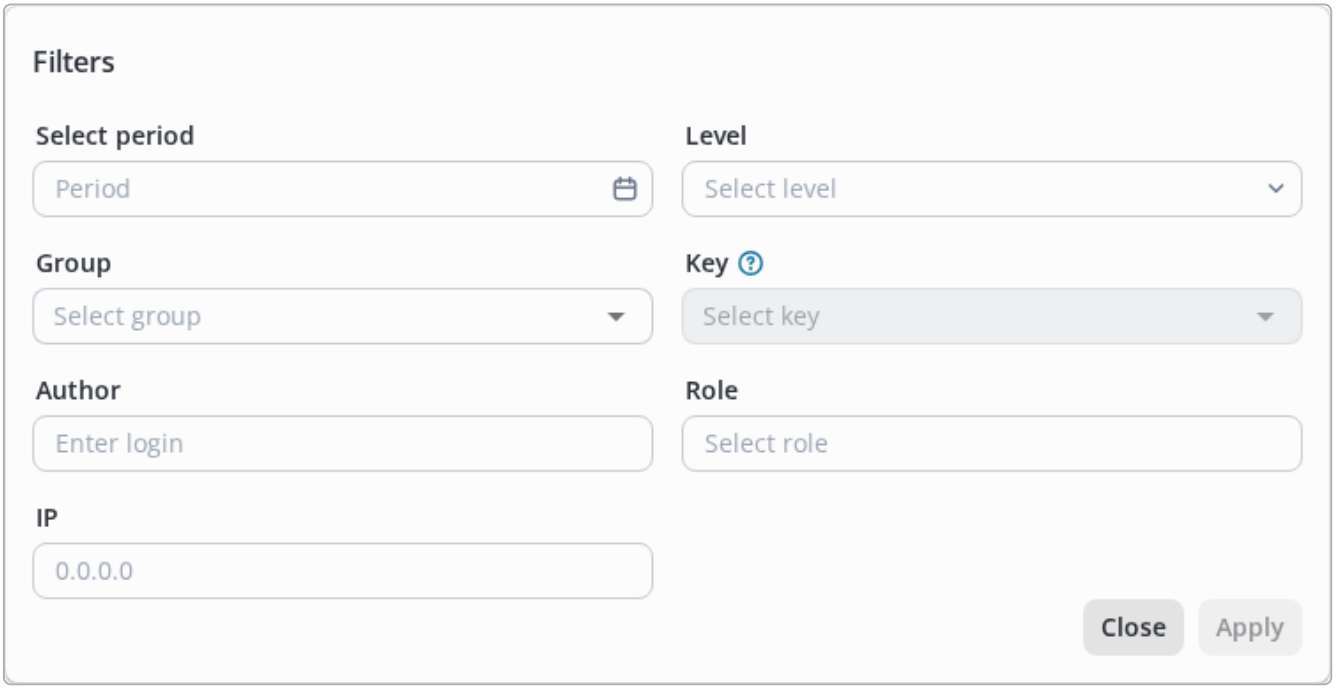


Figure 58. filter customization window

Filtering of records is available by parameters:

- `Select period` - allows to select the time period up to date and time.
- `Level` - allows to select the level of displayed events:
  - INFO - display events of `INFO`, `WARNING`, `ERROR` levels.
  - DEBUG - display events of all levels.

WARNING - display events of `WARNING`, `ERROR` level.

- ERROR - display events of `ERROR` level.

- `Group` - selection of the displayed group of events.
- `Key` - selection of the event type from a certain group. If the group is not selected, the key selection is not available.
- `Author` - filter by the user who initiated the events.
- `Role` - role of the system user associated with the event.
- `IP Address` - filter by the host address from which the event was initiated. A partial match search is available for any octet/octets of the IP address.

System Events List

The contents of the "Message" field for events is displayed according to the language specified at the `System language` setting in section Common settings

Some functional described on this page are only available with an extended license. These features are marked with special labels in the form of colored icons next to the name.

Events – Licensing

Event Name	Description	Level	Message	Source
`License activation`	License activation – successful communication with ELM or local PLR validation	INFO	The license `<productId>` successfully activated.	Gulo
`Upload file license`	License file upload	INFO	The `<fileType>` for `<productId>` on `<hostname>` successfully uploaded.	User / UI
`Demo mode`	Product running in demo mode	WARNING	Application is running in demo mode.	Gulo
`License applied`	License successfully applied (on services like Ovis, Aquila)	DEBUG	The license `<productId>` applied at `<service>`. Features: `<params>`.	Ovis / Aquila
`Functionality is limited`	Functionality is limited (for various reasons)	WARNING	The functionality is limited.	Ovis / Aquila
`License removed`	License removed	INFO	The license `<productId>` has been deleted.	User / UI
`License activation error`	License activation error	ERROR	Error while activate license `<productId>`: `<error>`.	Gulo

Event Name	Description	Level	Message	Source
`License upgrade status`	License upgraded to status (e.g., init - ready, manually - backup)	DEBUG	The license with `<productId>` has been upgraded to the status `<status>`.	Gulo
`License activation file create`	Activation file created (after call to EPG service)	INFO	Activation file successfully created with `<productId>`.	Gulo
`License activation file error`	Activation file creation failed (error contacting EPG service)	ERROR	Activation file creation error for `<productId>`: `<error>`.	Gulo
`License Pk file already exists`	PK file already exists	ERROR	PK file for `<hostname>` already exists.	Ursus
`Upload file license error`	License file upload error	ERROR	Failed to upload `<fileType>` for `<productId>` on `<hostname>`.	Gulo
`License activation cmd`	License activation cmd	INFO	Activates license `<productId>`.	Gavia
`License activation file create cmd`	License activation file create cmd	INFO	Creates an activation file for license `<productId>`.	Gavia
`License drop reason`	License drop occurred and the drop reason was provided	ERROR	License will be dropped. `<dropReason>`	Gulo
`License limit for guest endpoints is reached`	Guest endpoints limit exceeded in demo mode	WARNING	Demo mode limit of `<limit>` guest endpoints exceeded	Gulo

Event Name	Description	Level	Message	Source
`License recipient init error`	License initialization error in the recipient	ERROR	An error occurred in the service operation while applying the license	Gulo

Events – RADIUS Authentication

Event Name	Description	Level	Message	Source
`RADIUS session created`	New RADIUS session created	INFO	RADIUS session created.	Ovis
`RADIUS authentication successful`	RADIUS session successfully authenticated	INFO	RADIUS session authenticated.	Ovis
`RADIUS session expired`	RADIUS session expired	INFO	RADIUS session expired.	Ovis
`RADIUS session rejected`	RADIUS session rejected	WARNING	RADIUS session rejected.	Ovis
`RADIUS session stopped manually`	RADIUS session stopped by system user	INFO	RADIUS session for user `<identityUserName>` (mac `<userMAC>`, nasIp `<userIp>`) has been stopped by admin `<adminLogin>`	Gavia
`RADIUS session stopped automatic`	RADIUS active session stopped automatically	INFO	RADIUS session for user `<identityUserName>` (mac `<userMAC>`, nasIp `<userIp>`) has been stopped automatically	Ovis

Events – Update system users

Event Name	Description	Level	Message	Source
`System user created`	New system user created	INFO	System user with login `<login>` and role `<role>` created.	User / UI
`System user chandged`	System user data modified	INFO	System user with login `<login>` and role `<role>` modified.	User / UI
`System user deleted`	System users deleted	WARNING	System users with logins `<logins>` deleted.	User / UI
`Account settings have been updated by current user`	User modified their own account parameters	INFO	User with login `<login>` and role `<role>` modified their account parameters.	User / UI

Event Name	Description	Level	Message	Source
`Editing role`	RBAC role parameters edited	INFO	Role with name `<role>` edited.	User / UI
`Deleting role`	RBAC roles deleted	INFO	Roles with names `<roles>` were deleted.	User / UI
`External user saved`	System user from external source has been saved	INFO	User `<login>` from external source `<externalSourceName>` has been saved.	Lemmus
`External user updated`	System user from external source has been updated	INFO	User `<login>` from external source `<externalSourceName>` has been updated.	Lemmus

Events – Update network resources

Event Name	Description	Level	Message	Source
`Network device created`	New network device created	INFO	Network device `<deviceName>` was created.	User / UI
`Network device modified`	Network device parameters modified	INFO	Network device `<deviceName>` was modified.	User / UI
`Network devices deleted`	Network devices deleted	INFO	Network devices `<devicesNames>` were deleted.	User / UI
`Network group created`	New network group created	INFO	Network group `<groupName>` was created.	User / UI
`Network group modified`	Network group parameters modified	INFO	Network group `<groupName>` was modified.	User / UI
`Network groups deleted`	Network groups deleted	INFO	Network groups `<groupsNames>` were deleted.	User / UI
`Network profile created`	New network profile created	INFO	Network profile `<profileName>` was created.	User / UI
`Network profile modified`	Network profile parameters modified	INFO	Network profile `<profileName>` was modified.	User / UI
`Network profiles deleted`	Network profiles deleted	INFO	Network profiles `<profilesNames>` were deleted.	User / UI

Events – Update identity management elements

Event Name	Description	Level	Message	Source
`Network user created`	New network user created	INFO	Network user `<identityUserName>` was created.	User / UI
`Network user modified`	Network user parameters modified	INFO	Network user `<identityUserName>` was modified.	User / UI
`Network users deleted`	Network users deleted	INFO	Network users `<identityUsersNames>` were deleted.	User / UI
`Network user group created`	New network user group created	INFO	Network user group `<identityUsersGroupName>` was created.	User / UI
`Network user group modified`	Network user group parameters modified	INFO	Network user group `<identityUsersGroupName>` was modified.	User / UI
`Network user groups deleted`	Network user groups deleted	INFO	Network user groups `<identityUsersGroupsNames>` were deleted.	User / UI

Events – Update identity source sequence

Event Name	Description	Level	Message	Source
`Identity chain created`	New identity chain created	INFO	Identity chain `<identitySequenceName>` was created.	User / UI
`Identity chain modified`	Identity chain parameters modified	INFO	Identity chain `<identitySequenceName>` was modified.	User / UI
`Identity chains deleted`	Identity chains deleted	INFO	Identity chains `<identitySequencesNames>` were deleted.	User / UI

Events – Update external identity sources

Event Name	Description	Level	Message	Source
`External identity source created`	New external identity source created	INFO	External identity source `<externalSourceName>` was created.	User / UI

Event Name	Description	Level	Message	Source
External identity source modified	External identity source parameters modified	INFO	External identity source <externalSourceName> was modified.	User / UI
External identity sources deleted	External identity sources deleted	INFO	External identity sources <externalSourcesNames> were deleted.	User / UI
Domain computer's password has been successfully changed	Domain computer's password has been successfully changed	INFO	External source <externalSourceName> . Domain computer's <externalSourceComputerName> password has been auto-changed by system.	Ursus
Failed to change domain computer's password	Failed to change domain computer's password	ERROR	Failed to auto-change password by system for domain computer <externalSourceComputerName> in external source <externalSourceName>.	Ursus

Events – Update RADIUS policies

Event Name	Description	Level	Message	Source
RADIUS policy sets created	New RADIUS policy sets created	INFO	Policy sets <radiusPolicySetNames> created.	User / UI
RADIUS policy sets modified	RADIUS policy sets parameters modified	INFO	Policy sets <radiusPolicySetNames> modified.	User / UI
RADIUS policy sets deleted	RADIUS policy sets deleted	INFO	Policy sets <radiusPolicySetNames> deleted.	User / UI
RADIUS authorization profile created	New RADIUS authorization profile created	INFO	Authorization profile <radiusAuthProfileName> created.	User / UI
RADIUS authorization profile modified	RADIUS authorization profile parameters modified	INFO	Authorization profile <radiusAuthProfileName> modified.	User / UI

Event Name	Description	Level	Message	Source
`RADIUS authorization profiles deleted`	RADIUS authorization profiles deleted	INFO	Authorization profiles `<radiusAuthProfilesNames>` deleted.	User / UI
`RADIUS allowed protocols list created`	New RADIUS allowed protocols list created	INFO	Allowed protocols list `<radiusAllowedProtocolName>` created.	User / UI
`RADIUS allowed protocols list modified`	RADIUS allowed protocols list parameters modified	INFO	Allowed protocols list `<radiusAllowedProtocolName>` modified.	User / UI
`RADIUS allowed protocols lists deleted`	RADIUS allowed protocols lists deleted	INFO	Allowed protocols list `<radiusAllowedProtocolNames>` deleted.	User / UI
`RADIUS condition created`	New condition for RADIUS policies created	INFO	Condition `<radiusConditionName>` created.	User / UI
`RADIUS condition modified`	Condition for RADIUS policies parameters modified	INFO	Condition `<radiusConditionName>` modified.	User / UI
`RADIUS conditions deleted`	Conditions for RADIUS policies deleted	INFO	Conditions `<radiusConditionNames>` deleted.	User / UI

Events – Update profiling

Event Name	Description	Level	Message	Source
`Profiling policy created`	New profiling policy created	INFO	Profiling policy `<policyName>` was created.	User / UI
`Profiling policy modified`	Profiling policy parameters modified	INFO	Profiling policies `<policyName>` were modified.	User / UI
`Profiling policies deleted`	Profiling policies deleted	INFO	Profiling policies `<policiesNames>` were deleted.	User / UI
`Profiling condition created`	New profiling condition created	INFO	Profiling condition `<conditionName>` was created.	User / UI

Event Name	Description	Level	Message	Source
`Profiling condition modified`	Profiling condition parameters modified	INFO	Profiling condition `<conditionName>` was modified.	User / UI
`Profiling conditions deleted`	Profiling conditions deleted	INFO	Profiling conditions `<conditionsNames>` were deleted.	User / UI
`Logical profile created`	New logical profile created	INFO	Logical profile `<logicalProfileName>` was created.	User / UI
`Logical profile modified`	Logical profile parameters modified	INFO	Logical profile `<logicalProfileName>` was modified.	User / UI
`Logical profiles deleted`	Logical profiles deleted	INFO	Logical profiles `<logicalProfilesNames>` were deleted.	User / UI

Events – Update log collectors

Event Name	Description	Level	Message	Source
`Log collector created`	New log collector created	INFO	Log collector `<logCollectorName>` was created.	User / UI
`Log collector modified`	Log collector parameters modified	INFO	Log collector `<logCollectorName>` was modified.	User / UI
`Log collectors deleted`	Log collectors deleted	INFO	Log collectors `<logCollectorsNames>` were deleted.	User / UI
`User sent test event to log collector`	User sent test event to log collector.	INFO	User sent test event to log collector.	User / UI

Events – User Sessions

Event Name	Description	Level	Message	Source
`Creating user session`	The user is logged in into the system	INFO	User `<login>` sign in to system with role `<roleName>' from ip `<userIp>` through the source `<sourceName>`.	User / UI

Event Name	Description	Level	Message	Source
`Expired user session`	The user session has been expired.	INFO	User session `<login>` is authenticated via `<sourceName>` from ip `<userIp>` is expired.	User / UI
`Failed user session: wrong username`	Attempted authentication with an invalid login.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, wrong login.	User / UI
`Failed user session: wrong password`	Attempted authentication with an incorrect password.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, wrong password.	User / UI
`Failed user session: system user disabled`	Attempting to authenticate with a deactivated user.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, disabled account.	User / UI
`Failed user session: empty username`	Attempted authentication with empty login.	ERROR	Authentication attempt through `<externalSourceName>` source without login from ip `<userIp>`.	User / UI
`Failed user session: empty password`	Attempted authentication with empty password.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, empty password.	User / UI

Event Name	Description	Level	Message	Source
`Failed user session: role not found`	Attempted authentication with an inappropriate role.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, role not found.	User / UI
`Failed user session: external source is unavailable`	Attempted authentication with an unavailable external source.	WARNING	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, external source is unavailable.	User / UI
`User failed authentication from disallowed URI`	Authorization request for system access via a NAICE address that is not permitted by the access rules	WARNING	Attempted NAICE access from disallowed address '<redirectUri>' from IP-address '<userIp>'.	Lemmus
`User blocked by lockout policy during password authentication`	User blocked by lockout policy during password authentication	WARNING	User failed authentication with login '<login>' through '<externalSourceName>' source from ip '<userIp>', because he blocked by lockout policy	Lemmus
`A blocked user's login attempt`	A blocked user's login attempt	WARNING	An attempt to log in by a blocked user with the username '<login>' via the source '<externalSourceName>' with the ip address '<userIp>'	Lemmus
`User blocked by lockout policy during 2FA`	User blocked by lockout policy during 2FA	WARNING	User failed authentication with login '<username>' through '<sourceName>' source from ip '<userIp>', 2FA failed, because he blocked by lockout policy	Lemmus

Event Name	Description	Level	Message	Source
`2FA successfully completed with login through source from IP`	User successfully completed two-factor authentication	INFO	User with login `<username>` through `<sourceName>` source from ip `<userIp>` successfully completed 2FA.	Lemmus
`2FA failed, invalid code`	User failed 2FA due to invalid code	WARNING	User with login `<username>` through `<sourceName>` source from ip `<userIp>` failed 2FA, invalid `<twoFaMethod>` code.	Lemmus
`Account blocked due to backup code limit reached`	User account blocked by lockout policy due to backup code attempt limit reached	WARNING	User `<username>` has been blocked by lockout policy, backup code attempt limit reached.	Lemmus
`2FA settings reset for all users`	2FA settings of all users have been reset when policy changed to NONE	WARNING	2FA settings for all users have been reset. Policy changed to NONE.	Lemmus
`2FA failed, email not sent`	User failed 2FA because email was not sent	WARNING	User `<username>` failed 2FA with method `Email OTP`, email not sent to `<email>: <error>`.	Lemmus
`2FA failed, invalid backup code`	User failed 2FA due to invalid backup code	WARNING	User with login `<username>` through `<sourceName>` source from ip `<userIp>` failed 2FA, invalid backup code.	Lemmus

Event Name	Description	Level	Message	Source
`User failed authentication with error`	User failed authentication with error	ERROR	User failed authentication with login `<login>` through `<externalSourceName>` source from ip `<userIp>`, error: `<error>`.	Lemmus

Events – Update endpoints

Event Name	Description	Level	Message	Source
`Endpoint created`	New endpoint created	INFO	Endpoint `<endpointName>` was created.	User / UI
`Endpoints modified`	Endpoints parameters modified	INFO	Endpoints `<endpointsNames>` were modified.	User / UI
`Endpoints deleted`	Endpoints deleted	INFO	Endpoints `<endpointsNames>` were deleted.	User / UI
`Endpoint group created`	New endpoint group created	INFO	Endpoint group `<endpointsGroupName>` was created.	User / UI
`Endpoint group modified`	Endpoint group parameters modified	INFO	Endpoint group `<endpointsGroupName>` was modified.	User / UI
`Endpoint groups deleted`	Endpoint groups deleted	INFO	Endpoint groups `<endpointsGroupsNames>` were deleted.	User / UI

Events — Update system settings

Event Name	Description	Level	Message	Source
`Request to change services configuration`	Changing services configuration	DEBUG	A request was made to change the configuration of services:: • `<serviceName>` • `<serviceName>`.	Phoca
`Applying service configuration`	Service configuration applied	DEBUG	Configuration applied for service `<serviceName>`.	`<serviceName>`

Events — Email notification sending results

Event Name	Description	Level	Message	Source
`Error sending email notification`	Error while sending email	ERROR	Error while sending email to `<email>`: `<error>`	Bubo

Event Name	Description	Level	Message	Source
`2FA failed, email not sent`	User failed 2FA because email was not sent	WARNING	User `<username>` failed 2FA with method `Email OTP`, email not sent to `<email>: <error>`.	Lemmus
`2FA enroll failed, email not sent`	User failed 2FA enrollment because email was not sent	WARNING	User `<username>` failed enroll 2FA, email not sent to `<email>`: `<error>`.	Lemmus

Events — Update container configuration

Event Name	Description	Level	Message	Source
`Request to change containers configuration`	Changing containers configuration	DEBUG	A request was made to change the configuration of containers: • `<containerName>` • `<containerName>`.	Phoca
`Applying container configuration`	Container configuration applied	DEBUG	Configuration applied for container `<containerName>`.	`<containerName>`
`Applying system configuration`	Changing system configuration	INFO	The following parameters have been applied:: • Configuration 1: "Value 1" → "Value 2" • Configuration 2: Enabled → Disabled	User / UI

Events — Certificate Store

Event Name	Description	Level	Message	Source
`Trusted certificate created`	A trusted certificate has been created.	INFO	Trust certificate `<certName>` has been created.	User / UI
`Trusted certificate modified`	The trusted certificate has been modified.	INFO	Trust certificate `<certName>` has been modified.	User / UI
`Trusted certificate deleted`	The trusted certificate has been deleted.	INFO	Trust certificates `<certNames>` have been deleted.	User / UI
`Trusted certificate status changed`	The trusted certificate status has been changed.	WARNING	Status of trust certificate `<certName>` has been changed to `<status>`.	User / UI

Event Name	Description	Level	Message	Source
`Trusted certificate expiring soon`	The trusted certificate will expire soon.	WARNING	Trust certificate `<certificateName>` will expire on `<expirationDate>` (in `<daysLeft>` days).	Phoca
`Trusted certificate expired`	The trusted certificate has expired.	ERROR	Trust certificate `<certificateName>` expired on `<expirationDate>`.	Phoca
`Server certificate created`	A server certificate has been created.	INFO	Server certificate `<certName>` has been created.	User / UI
`Server certificate modified`	The server certificate has been modified.	INFO	Server certificate name `<oldCertName>` has been changed to `<newCertName>`.	User / UI
`Server certificate deleted`	The server certificate has been deleted.	INFO	Server certificates `<certNames>` have been deleted.	User / UI
`Server certificate expiring soon`	The server certificate will expire soon.	WARNING	Server certificate `<certificateName>` will expire on `<expirationDate>` (in `<daysLeft>` days).	Phoca
`Server certificate expired`	The server certificate has expired.	ERROR	Server certificate `<certificateName>` expired on `<expirationDate>`.	Phoca

ADVANCED Events – Guest Portal

Event Name	Description	Level	Message	Source
`Authentication service unavailable`	Portal service is unavailable.	ERROR	Authentication service <service> is unavailable.	Castor
`Portal send SMS error`	An error occurred while sending SMS during portal authorization.	ERROR	Error sending SMS to phone number <target> on portal <portalName>: <error>.	Castor

ADVANCED Events – SMS Notifications

Event Name	Description	Level	Message	Source
`Demo SMS Received`	SMS received from demo gateway.	INFO	Demo SMS received: <smsMessage>.	Bubo

ADVANCED Events – TACACS+ Authentication

Event Name	Description	Level	Message	Source
TACACS+ access authentication started	User started access authentication via TACACS+	INFO	User <suser> started authentication via <tacacsProtocol>.	Aquila
TACACS+ access authentication successful	User successfully passed access authentication via TACACS+	INFO	User <suser> passed authentication via <tacacsProtocol>.	Aquila
TACACS+ access authentication error	User failed access authentication via TACACS+	INFO	User <suser> failed authentication via <tacacsProtocol>.	Aquila
TACACS+ enable authentication started	User started authentication for privilege level change	INFO	User <suser> started privilege level change to <privilegeLevel> via <tacacsProtocol>.	Aquila
TACACS+ enable authentication successful	User successfully changed privilege level	INFO	User <suser> successfully changed privilege level to <privilegeLevel> via <tacacsProtocol>.	Aquila
TACACS+ enable authentication error	User failed to change privilege level	INFO	User <suser> failed privilege level change to <privilegeLevel> via <tacacsProtocol>.	Aquila

ADVANCED Events – TACACS+ Authorization

Event Name	Description	Level	Message	Source
TACACS+ access authorization successful	User successfully passed access authorization	INFO	User <suser> passed authorization via TACACS+.	Aquila
TACACS+ access authorization error	User failed access authorization	INFO	User <suser> failed authorization via TACACS+.	Aquila
TACACS+ command authorization successful	User authorized to execute command	INFO	User <suser> authorized to execute command <tacacsCommand>.	Aquila

Event Name	Description	Level	Message	Source
TACACS+ command authorization error	User not authorized to execute command	INFO	User <suser> failed authorization to execute command <tacacsCommand>.	Aquila

ADVANCED Events – TACACS+ Activity Accounting

Event Name	Description	Level	Message	Source
TACACS+ login	User logged into system	INFO	User <suser> logged in.	Aquila
TACACS+ logout	User logged out of system	INFO	User <suser> logged out.	Aquila
TACACS+ command execution	User executed command	INFO	User <suser> executed commands <tacacsCommand>.	Aquila
Unknown TACACS+ accounting event	Unknown accounting event	INFO	Unknown accounting event for user <suser>.	Aquila

ADVANCED Events – Update portal components

Event Name	Description	Level	Message	Source
Portal created	New portal created	INFO	Portal <portalName> was created.	User / UI
Portal modified	Portal parameters modified	INFO	Portal <portalName> was modified.	User / UI
Portal deleted	Portal deleted	INFO	Portal <portalName> was deleted.	User / UI

ADVANCED Events – Update TACACS+ policy

Event Name	Description	Level	Message	Source
TACACS+ policy set created	New TACACS+ policy set created	INFO	TACACS+ policy set <tacacsPolicySetName> was created.	User / UI
TACACS+ policy sets modified	TACACS+ policy sets parameters modified	INFO	TACACS+ policy sets <tacacsPolicySetsNames> were modified.	User / UI
TACACS+ policy sets deleted	TACACS+ policy sets deleted	INFO	TACACS+ policy sets <tacacsPolicySetsNames> were deleted.	User / UI
TACACS+ profile created	New TACACS+ profile created	INFO	TACACS+ profile <tacacsProfileName> was created.	User / UI

Event Name	Description	Level	Message	Source
TACACS+ profile modified	TACACS+ profile parameters modified	INFO	TACACS+ profile <tacacsProfileName> was modified.	User / UI
TACACS+ profiles deleted	TACACS+ profiles deleted	INFO	TACACS+ profiles <tacacsProfilesNames> were deleted.	User / UI
TACACS+ command set created	New TACACS+ command set created	INFO	TACACS+ command set <tacacsCommandName> was created.	User / UI
TACACS+ command set modified	TACACS+ command set parameters modified	INFO	TACACS+ command set <tacacsCommandName> was modified.	User / UI
TACACS+ command sets deleted	TACACS+ command sets deleted	INFO	TACACS+ command sets <tacacsCommandsNames> were deleted.	User / UI
TACACS+ condition created	New condition for TACACS+ policies created	INFO	TACACS+ condition <tacacsConditionName> was created.	User / UI
TACACS+ condition modified	Condition for TACACS+ policies parameters modified	INFO	TACACS+ condition <tacacsConditionName> was modified.	User / UI
TACACS+ conditions deleted	Conditions for TACACS+ policies deleted	INFO	TACACS+ conditions <tacacsConditionsName> were deleted.	User / UI

ADVANCED Events – Update notification gateways

Event Name	Description	Level	Message	Source
Notification gateway created	New notification gateway created	INFO	Notification gateway <notificationGateway> was created.	User / UI
Notification gateway modified	Notification gateway parameters modified	INFO	Notification gateway <notificationGateway> was modified.	User / UI

Event Name	Description	Level	Message	Source
`Notification gateways deleted`	Notification gateways deleted	INFO	Notification gateways `<notificationGateways>` were deleted.	User / UI

ADVANCED Events – Update guest users configuration

Event Name	Description	Level	Message	Source
`Portal user created`	New portal user created	INFO	Portal user `<portalUserName>` was created.	User / UI
`Portal user modified`	Portal user parameters modified	INFO	Portal user `<portalUserName>` was modified.	User / UI
`Portal users deleted`	Portal users deleted	INFO	Portal users `<portalUsersNames>` were deleted.	User / UI

Log Collectors

Description

Log Collectors allow configuring the collection and forwarding of system events by event groups to external centralized logging and monitoring systems — for example, SIEM systems or log collectors. This provides centralized event collection, analysis, and storage, simplifying diagnostics, auditing, and security control.

On the `Log Collectors` page, system users can view, add, edit, and delete log collector configurations for different event groups. Events are sent using UDP or TCP to the IP address and port specified in the collector configuration.

Viewing Log Collectors

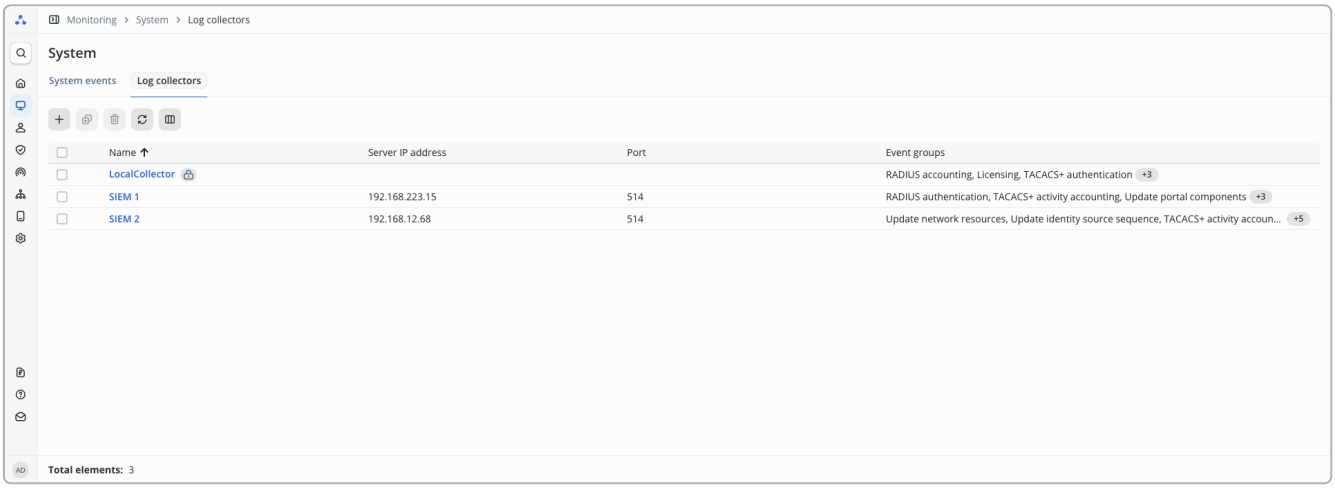


Figure 59. Table with a list of log collectors

The table contains the following columns:

- `Name` – Unique name of the log collector.
  - - This entity is system and cannot be deleted or edited.

Table column settings are configured using the additional menu available via the button:

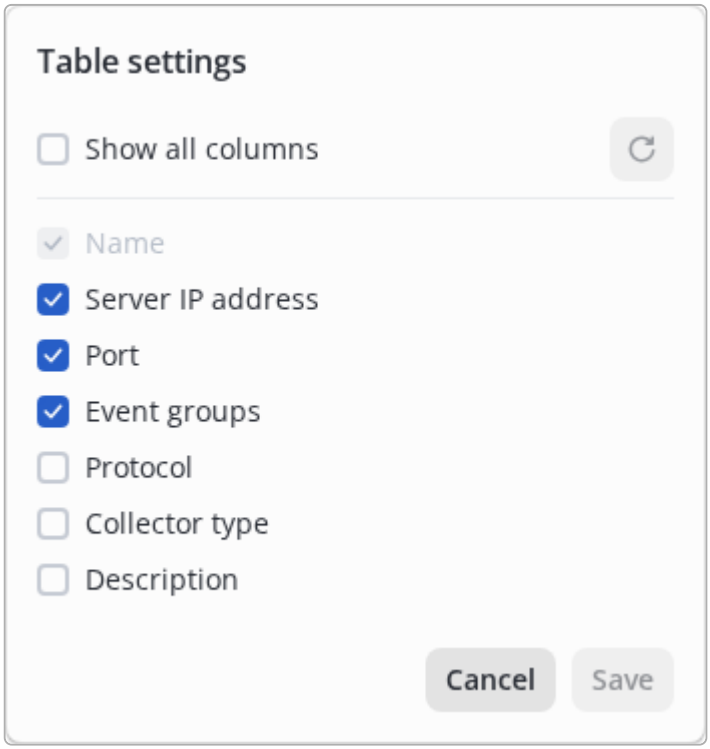


Figure 60. Table column settings

Full list of available table columns:

- `Name` – Unique name of the log collector.
- `Server IP address` – IP address of the server receiving events.
- `Port` – Network port used for event delivery.
- `Event groups` – List of event groups whose events are sent by this collector. A shortened list is displayed (for example, “Update network resources, Update external identity sources… +20”); hovering over the field shows the full list.
- `Protocol` – Data transfer protocol (UDP or TCP).
- `Collector type` – Type of the log collector. All collectors created by a system user have type `Custom`.
- `Description` – Optional description of the log collector.

The page includes the following controls:

- – Add a new log collector.
- – Duplicate the selected log collector (available only when exactly one item is selected).
- – Delete selected log collectors (inactive until at least one item is selected).
- – Refresh table data.
- – Change sorting order (available for columns “Name”, “Protocol”, “Collector type”).
- – Checkbox used to select log collectors for further actions.

At the bottom of the page, the total number of log collectors and the number of selected items are displayed.

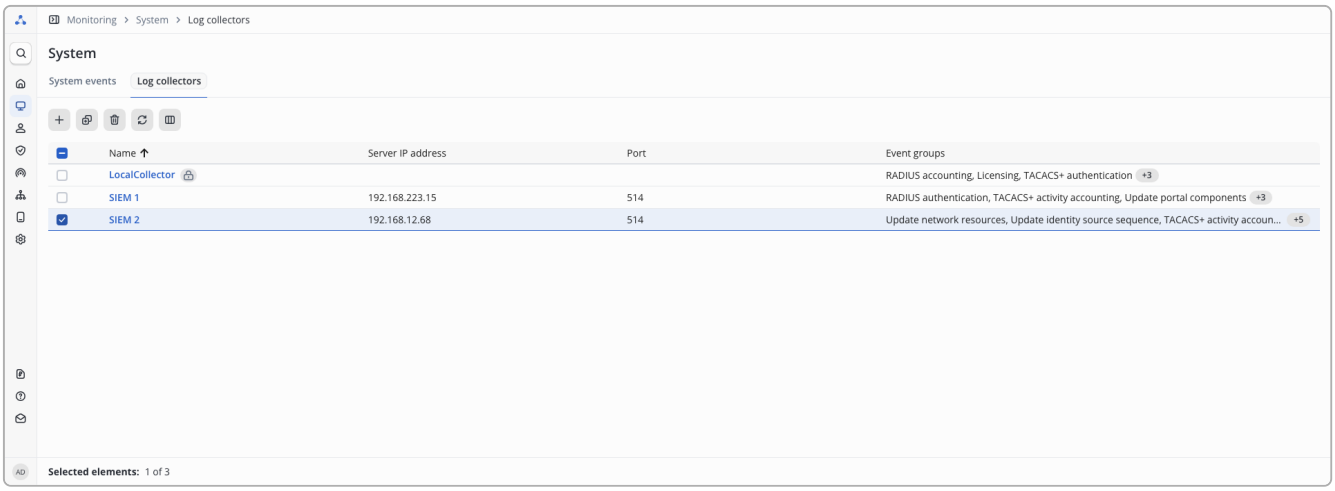


Figure 61. Log collector counter

System Log Collector

By default, the table contains a predefined system log collector `LocalCollector` with collector type `System collector`.

This log collector is used to collect internal NAICE system events and store them in the local database:

Figure 62. System log collector "LocalCollector"

The `LocalCollector` already includes mandatory event groups that are stored in the local database and displayed in the system event log. These groups are shown as locked and cannot be edited. Other groups may be enabled or disabled if required:

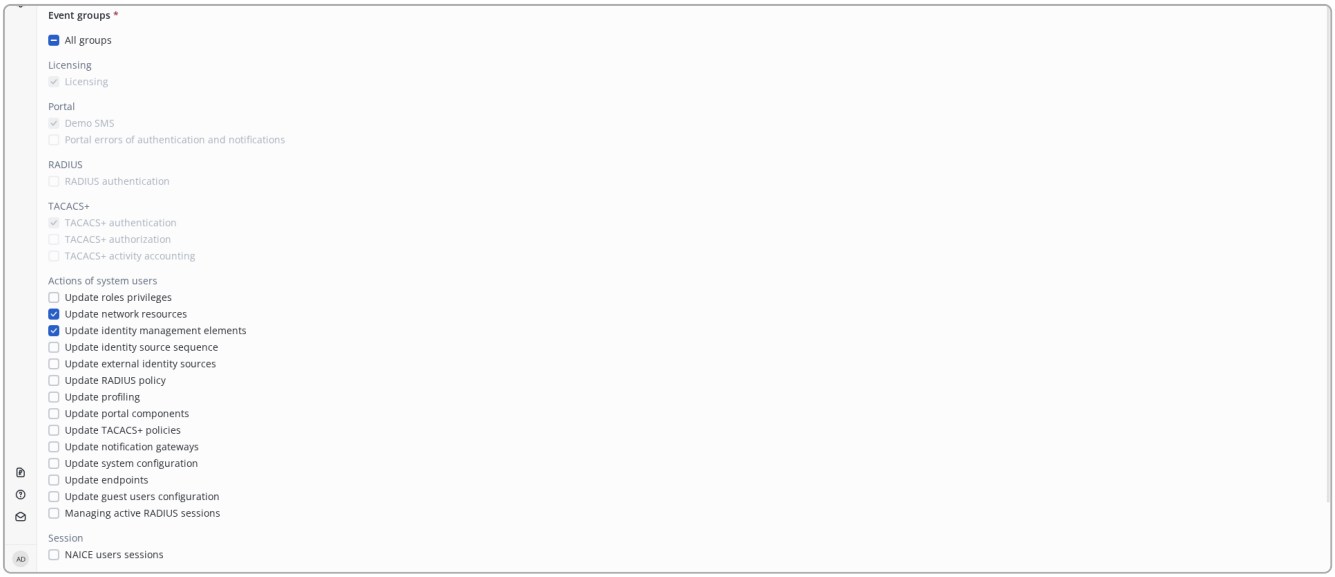


Figure 63. Event groups of the "LocalCollector"

Disabling editable event groups in the system collector results in those events not being stored in the local database and therefore not being displayed in the system event log.

Restrictions for the system log collector:

- The system log collector cannot be deleted.
- The `Name` and `Description` fields are not editable for the system log collector.
- Some event groups are mandatory and selected by default; they cannot be modified.
- New log collectors with type `System collector` cannot be created. All administrator-created collectors are automatically assigned type `Custom`.

Adding a Log Collector

To add a new log collector, click the button: 

In the opened form, fill in the following fields:

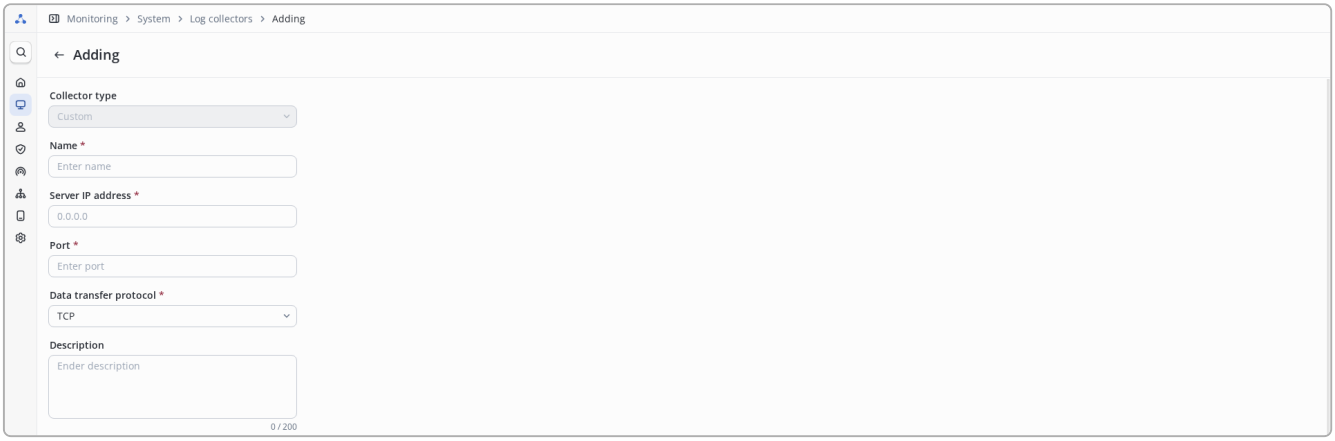


Figure 64. Adding a new log collector (basic settings)

- `Name` * – Unique name of the log collector.

`Server IP address` * – IP address of the external system receiving events.

- `Port` * – Network port on which the external system listens for events.
- `Data transfer protocol` * – Event transfer protocol. Available options: TCP and UDP.
- `Description` – Optional text description.

`Fields marked with * are mandatory.`

In the `Event groups` section, select the required groups:

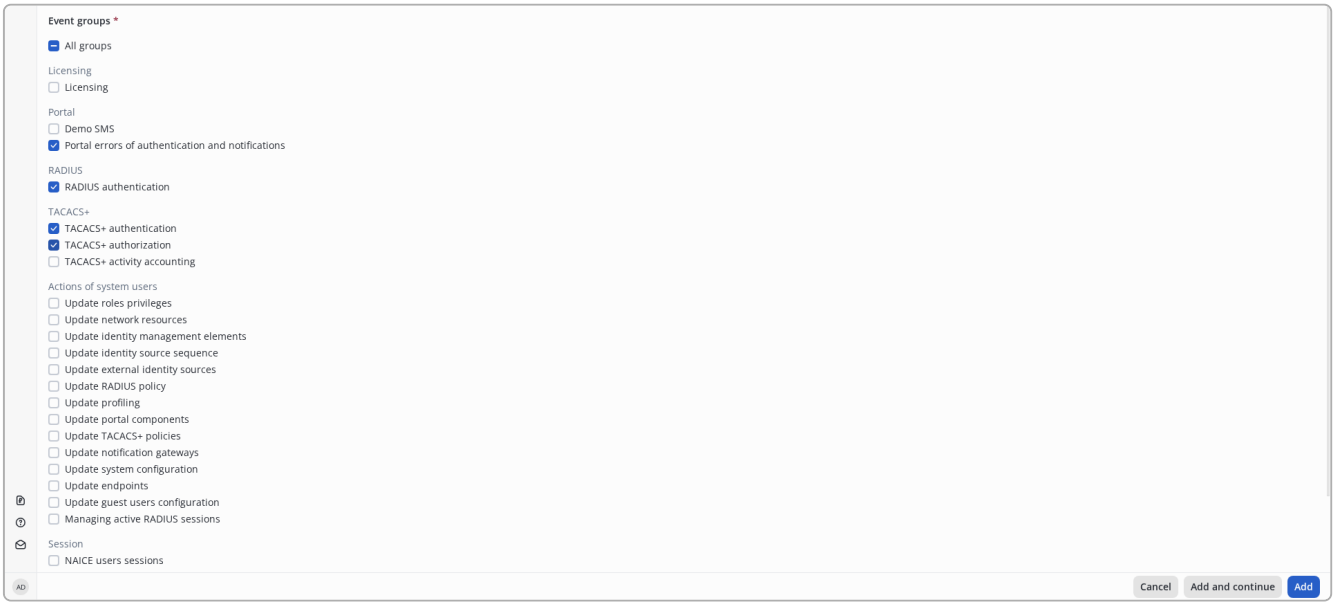


Figure 65. Adding a new log collector (event group selection)

Event group descriptions:

- `All groups` – Select all available event groups.
- `Licensing` – Events related to licensing.
- `Portal` – Events related to Demo SMS messages and portal authentication or notification errors.
- `RADIUS` – Events related to RADIUS authentication.
- `TACACS+` – Events related to TACACS+ authentication, authorization, and activity accounting.
- `Actions of system users` – Events related to updates of NAICE configuration entities (role privileges, network resources, identity sources, policy sets, etc.).
- `Session` – Events related to NAICE user sessions.

For adding an event route, the system provides two submit buttons that differ in their subsequent behavior:

- **"Add and continue"** — after clicking, the form does not close, and the **"Send test event"** button becomes available.
- **"Add"** — after clicking, the user is redirected to the event route list page.

Sending Test Events

The operation of a custom log collector can be verified by sending a test event to the external system. To do this, click the **"Send test event"** button.

The **"Send test event"** button is disabled until at least one event group is selected and the log collector is saved.

The result of sending a test event depends on the selected protocol. When using UDP, confirmation from the external system is not possible due to protocol limitations. When using TCP, delivery confirmation is available and displayed in the result window.

Possible results:

- `Test event successfully sent. Check the SIEM system` – Test event sent using UDP.
- `Test event successfully sent` – Test event sent using TCP.
- `Test event send timeout` – No response received from the external system when establishing the TCP connection.
- `SIEM system unavailable` – TCP connection could not be established (connection refused or failed).

Examples of test event result dialogs:

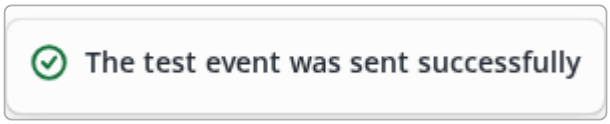


Figure 66. Non-redundant setup, test event sent successfully, TCP protocol

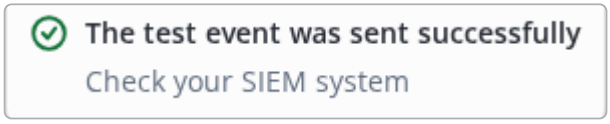


Figure 67. Non-redundant setup, test event sent, UDP protocol

When using a redundant deployment, test events are sent from both NAICE hosts, and two services are shown in the confirmation window.

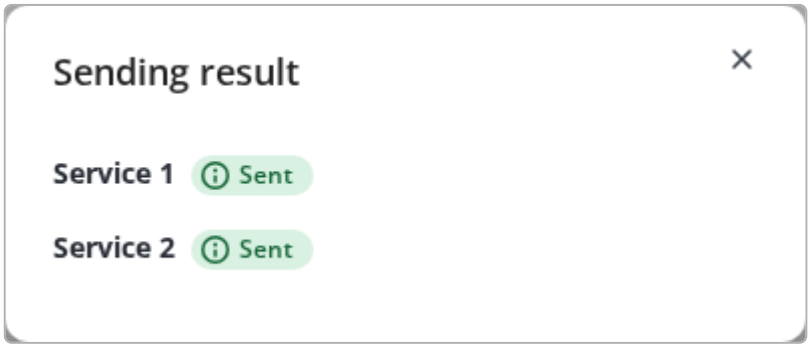


Figure 68. Redundant setup, test event sent successfully from both hosts, TCP protocol

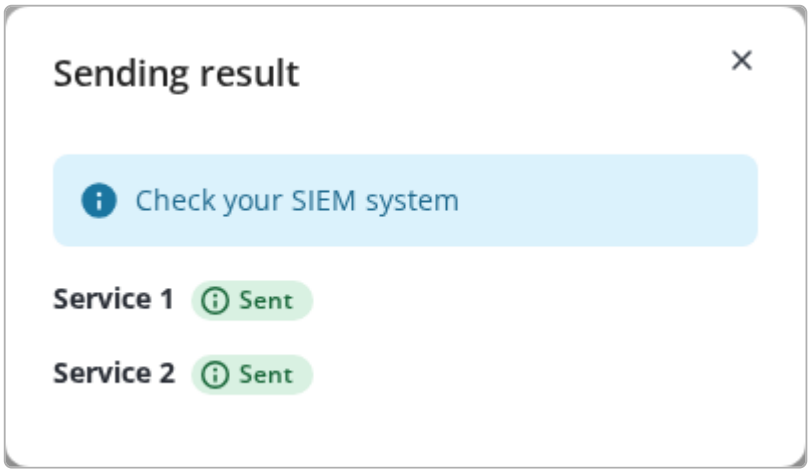


Figure 69. Redundant setup, test event sent from both hosts, UDP protocol

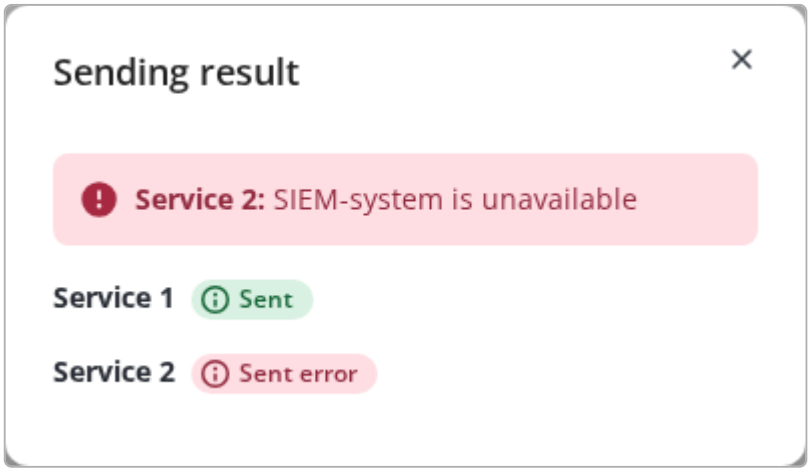


Figure 70. Redundant setup, test event failed on one host, TCP protocol

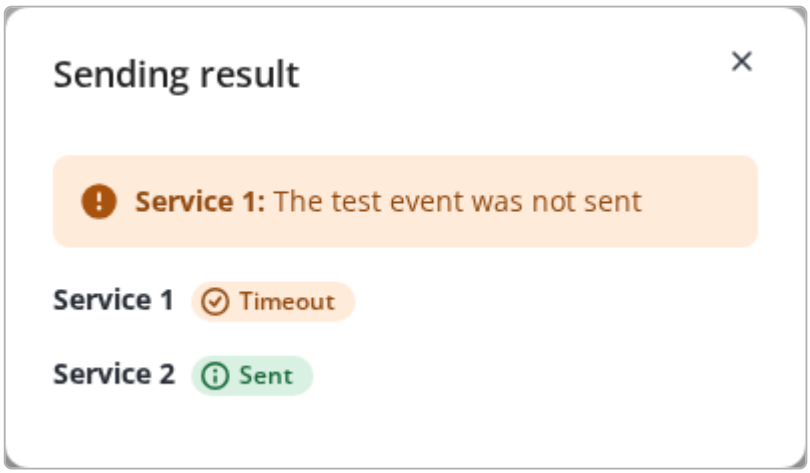


Figure 71. Redundant setup, test event timeout on one host, TCP protocol

Editing a Log Collector

To edit a log collector, on the `Log Collectors` page select the required collector and click its name in the `Name` column.

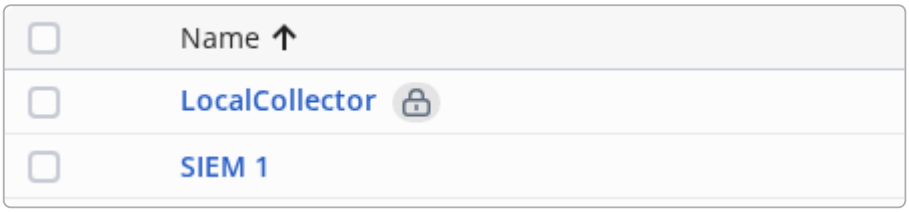


Figure 72. Link to the log collector editing page

The edit form is identical to the add log collector form.

When changes are made to the form, the **"Send test event"** button becomes unavailable. The button is reactivated only after the changes are saved.

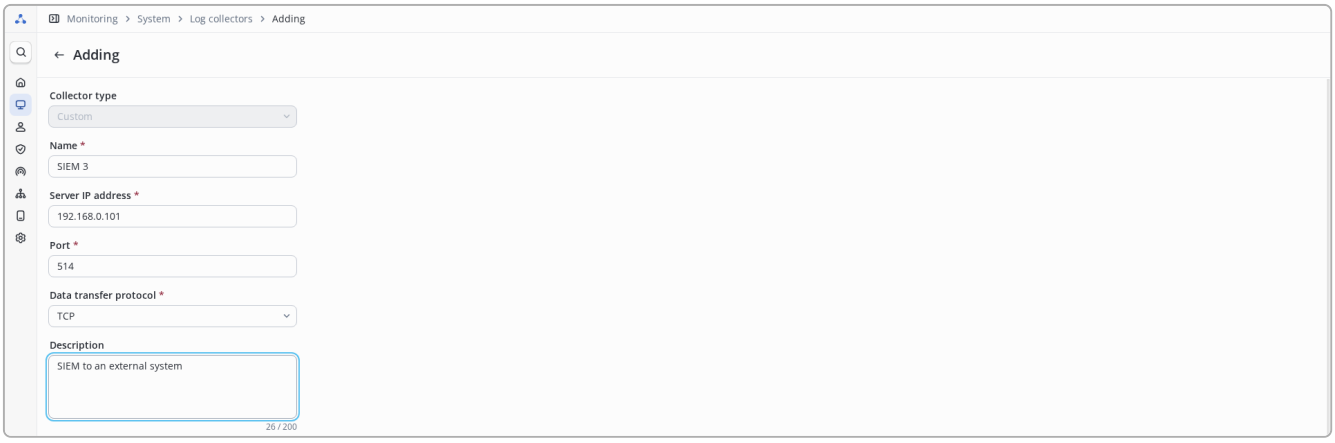


Figure 73. Editing log collector fields

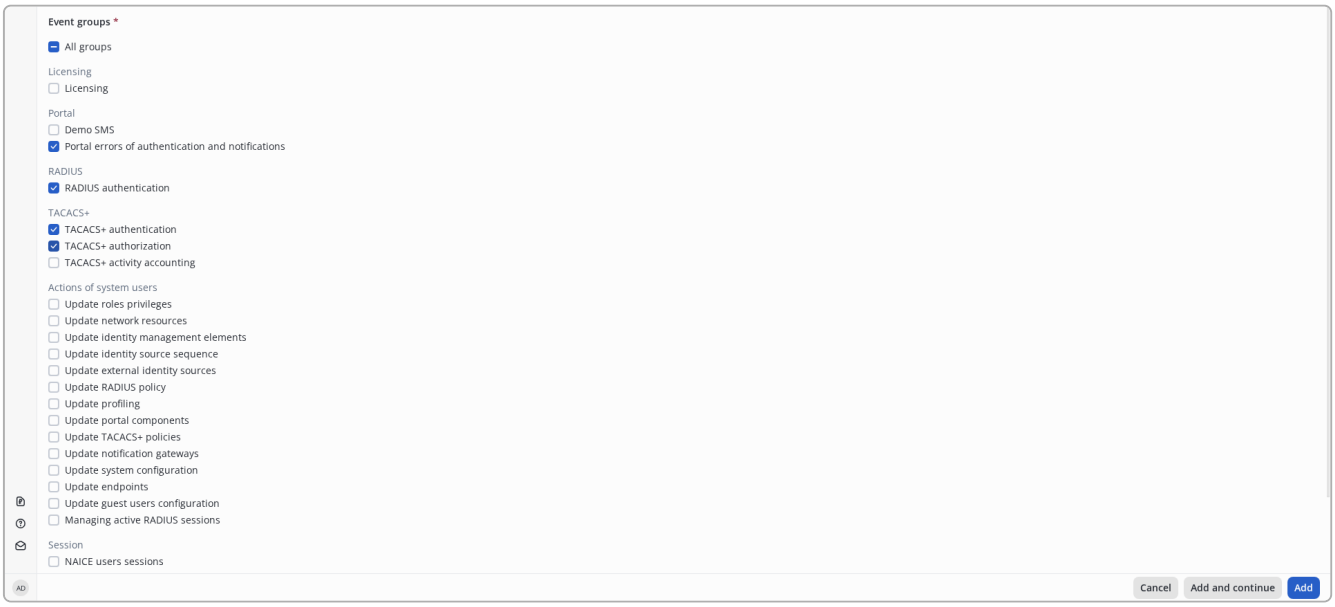


Figure 74. Editing log collector event groups

For saving an event route, the system provides two save buttons that differ in their subsequent behavior:

- **"Save and continue"** — after clicking, the form does not close, and the **"Send test event"** button becomes available again.
- **"Save"** — after clicking, the user is redirected to the event route list page.

Duplicating a Log Collector

To duplicate a log collector, select it using the checkbox on the left side of the table:

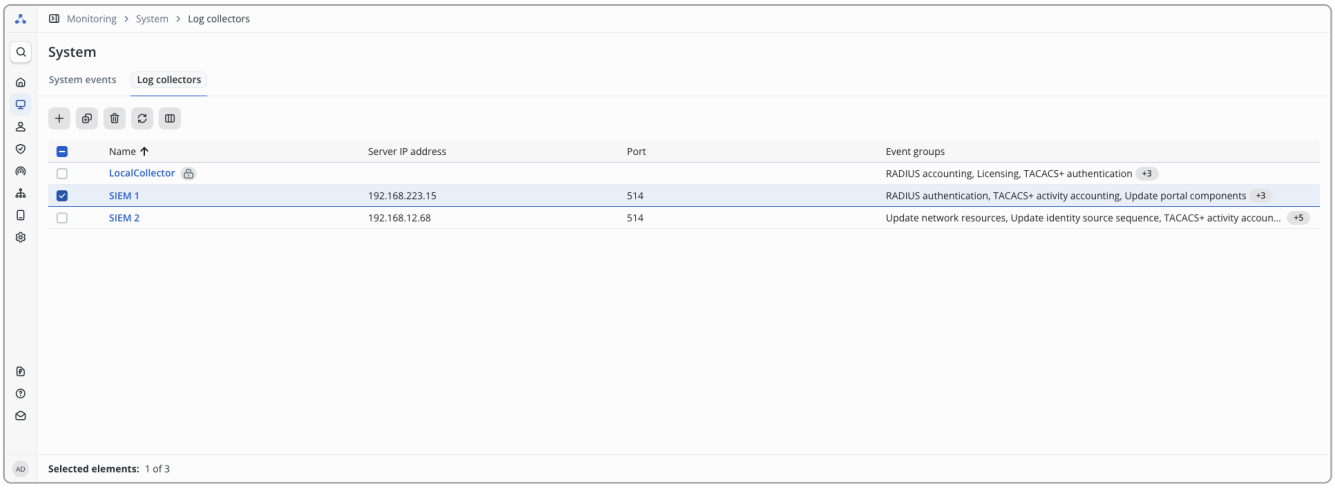


Figure 75. Selecting a log collector for duplication

Then click the button above the table.

A form will open, similar to the addition form, with all fields filled with values from the selected reference. By default, "_copy" is added to the value in the `Name` field. You can choose any other name that is not already used in the system.

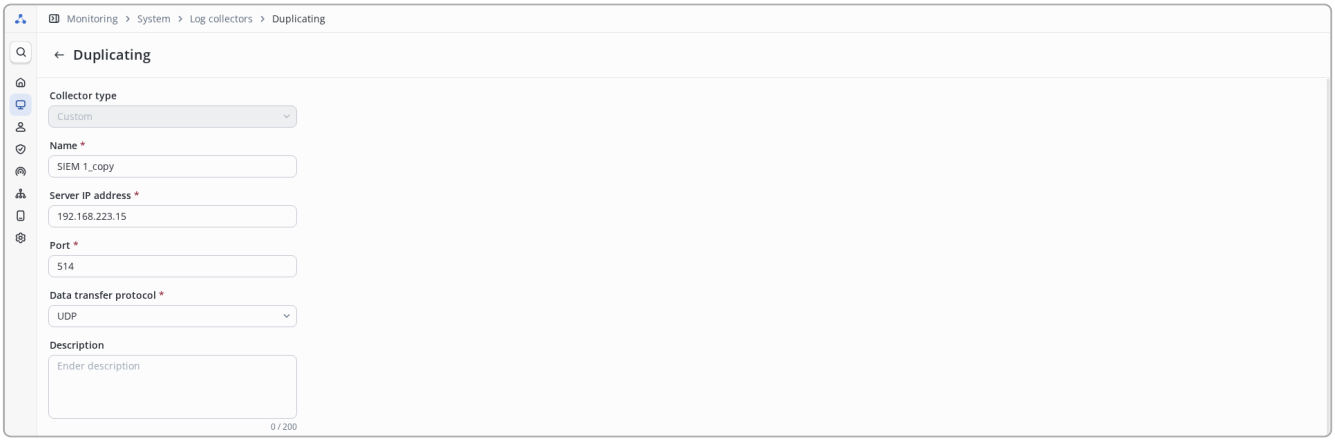


Figure 76. Duplicated log collector settings

If necessary, modify event groups:

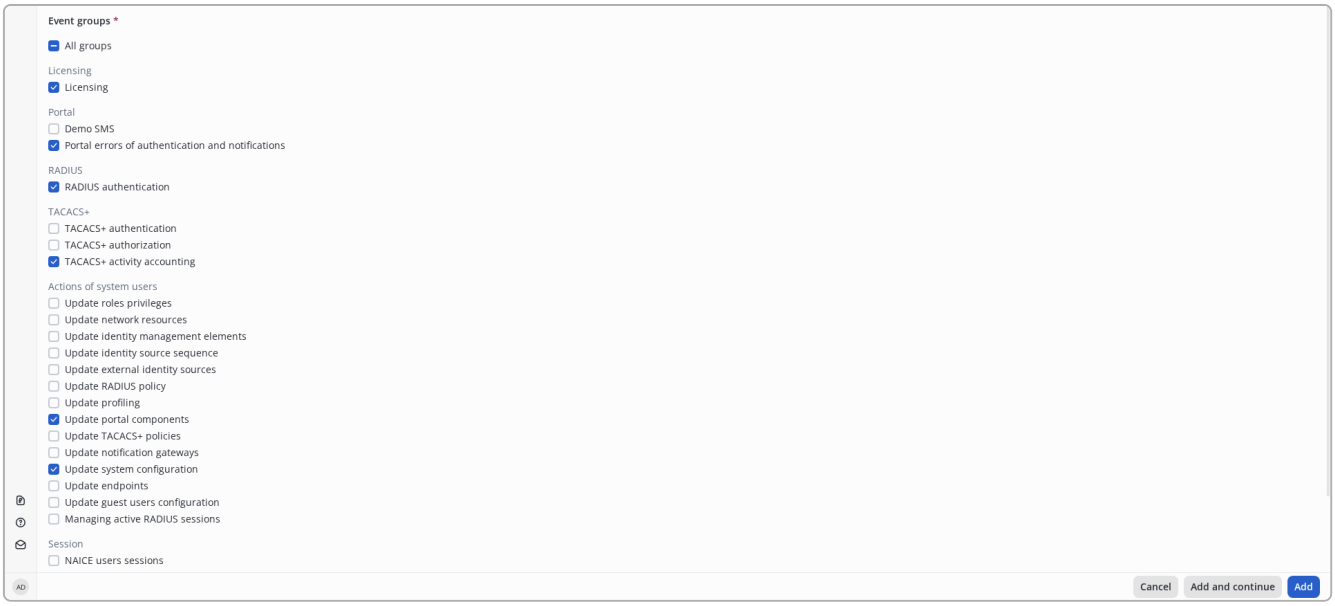


Figure 77. Event groups in the duplicated log collector

For adding an event route, the system provides two submit buttons that differ in their subsequent behavior:

- **"Add and continue"** — after clicking, the form does not close, and the **"Send test event"** button becomes available.
- **"Add"** — after clicking, the user is redirected to the event route list page.

Deleting a Log Collector

To delete one or more log collectors, select them using the checkboxes:

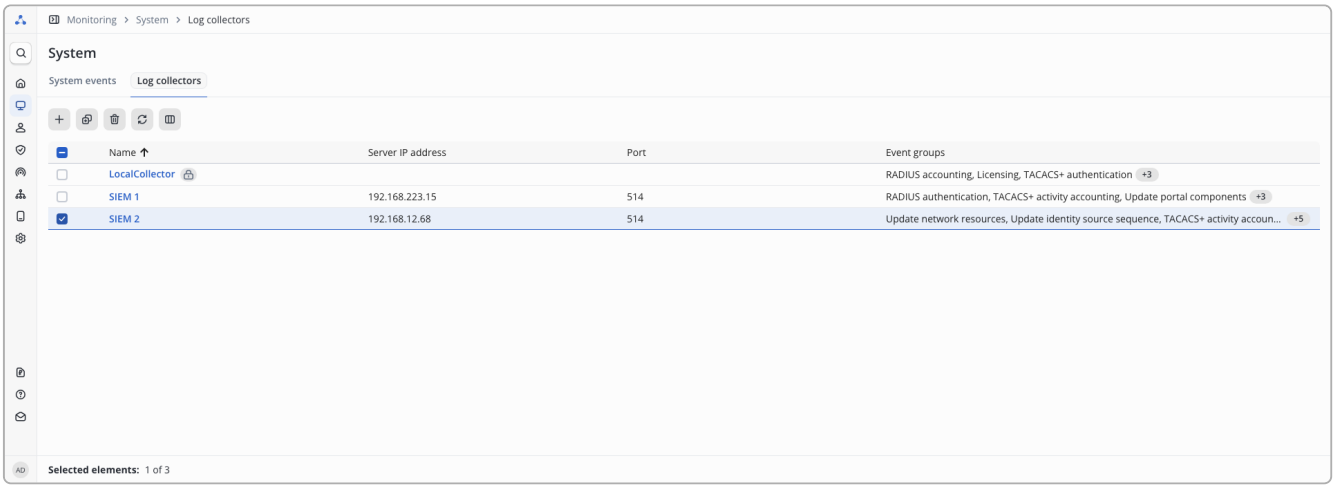


Figure 78. Selecting log collectors for deletion

Then click the button above the table.

After deletion, events will no longer be sent to the server specified in the log collector. The action can be confirmed or canceled in the confirmation dialog:

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

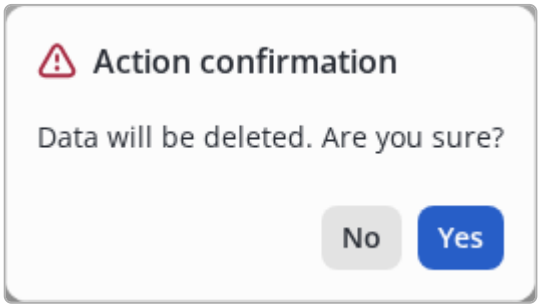


Figure 79. Modal dialog for confirmation

Users and devices

System users

Accounts

Description

This section is intended for managing the credentials of users of the NAICE system.

System user accounts are divided into two types:

- **Local** — created directly in the NAICE system (`Internal DB` source);
- **External** — created automatically upon first successful authentication through an external identity source.

Account settings of the current system user are available on any page by clicking on AD in the lower left corner of the window in the menu.

View all system user accounts

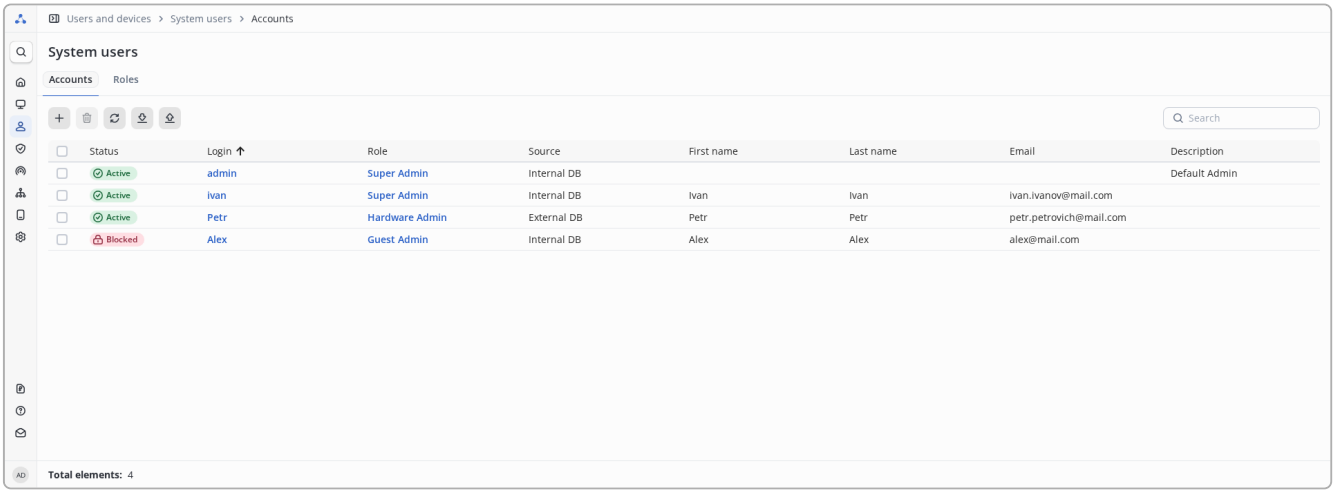


Figure 80. A table with a list of system user accounts on the viewing page

This page displays a table containing a list of all local and external system user accounts.

The table contains the following information about system users:

- `Status` — account state that determines authentication capability:
  - `Active` — the user can sign in to the system;
  - `Disabled` — the user cannot sign in to the system. An account disabling period and disabling reason can be specified;
  - `Blocked` — the user is temporarily blocked, for example, after exceeding the limit of unsuccessful sign-in attempts;
- `Login` — system user login (must be unique and contain no spaces);
- `Role` — the role of the system user. It is a hyperlink to the page for viewing/editing this role;

`Source` — indicates the origin of the account: `Internal DB` (created in the NAICE system) or the name of the external source (created automatically upon successful authentication through an external source);

- `First name` — system user first name;
- `Last name` — surname of the system user;
- `Email` — system user's email address;
- `Description` — arbitrary description.

Sorting in forward and reverse order across all columns of the table is allowed. By default, sorting is performed in direct (alphabetical) order by the "Login" column.

Hovering the mouse cursor over the account status in the table displays a tooltip with detailed information: the status validity period (start and end date and time) and the reason for its application.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Allows you to download data from a csv file.
- — Allows you to upload data to a csv file.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

External system user accounts

External accounts (their local copies) are created automatically in the system upon the user's first successful login through an external identity source.

To view an external system user account, click on the login on the list page. This will open the viewing page for the external system user account:

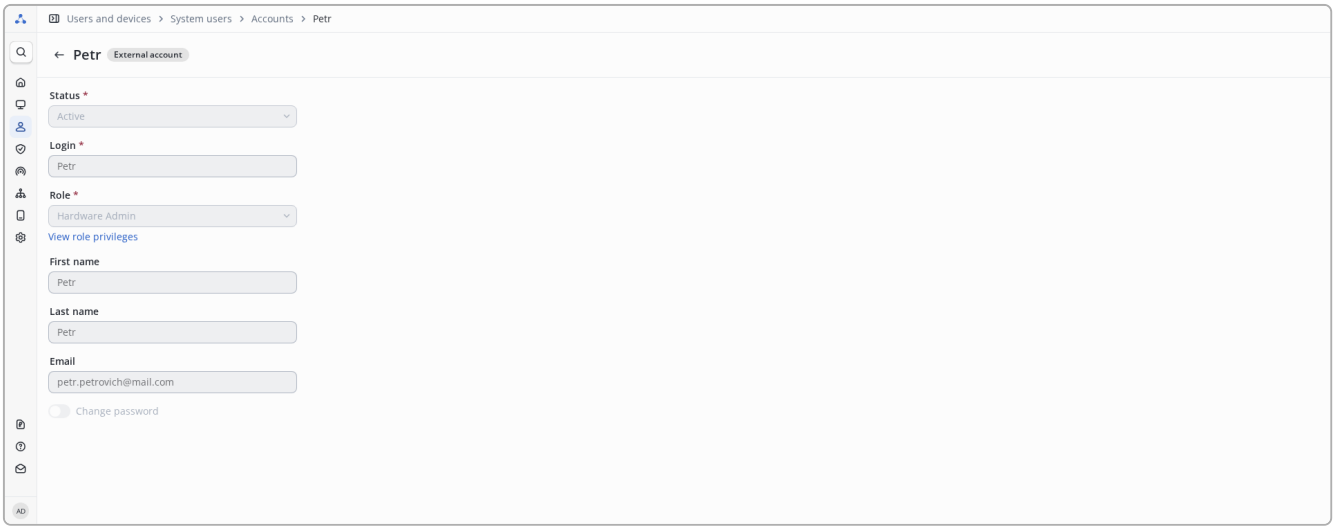


Figure 81. External system user account viewing form

The external account viewing form contains the following fields:

- `Status` — account state that determines authentication capability. For external accounts, the `Active` and `Disabled` statuses are inherited from the external identity source and cannot be changed in NAICE;
  - Exception: if the account has the `Blocked` status, the administrator can manually unblock it by changing the status to `Active`.
- `Login` — user identifier in the external system (must not exceed 100 characters):
  - For accounts from **Active Directory**, the login is always displayed in `UPN (User Principal Name)` format with the domain specified;
  - For accounts from **OpenLDAP**, the login corresponds to the attribute value specified in the `Subject name attribute` field when configuring the external source;
- `Role` — role of the external system user, automatically assigned based on the mapping of the user's groups to the groups specified in the NAICE external role settings. The role determines the level of access to the system functionality;
- `First name`, `Last name`, `Email` — user personal data. Populated with values from the corresponding attributes configured in the **"System user information mapping"** block when setting up the external source.

The button "View role privileges" opens a window with a table of privileges for the selected role:

- Names of privileges;
- Statuses of issued rights:
  - ✓ — the user has access,
  - — — access is not provided,
  - ✗ — the user does not have access.

Editing external accounts is prohibited. All changes must be made directly in the external identity source.

Exception: unblocking an account if it was blocked by the lockout policy.

With each subsequent login to the system, external account synchronization is performed:

- **attribute updates** (`Status`, `First name`, `Last name`, `Email`) in accordance with the current data from the external source;
- **role recalculation** based on the current group membership of the user in the external source.

Adding a system user account

To add a system user account, click + on the action bar located above the table.

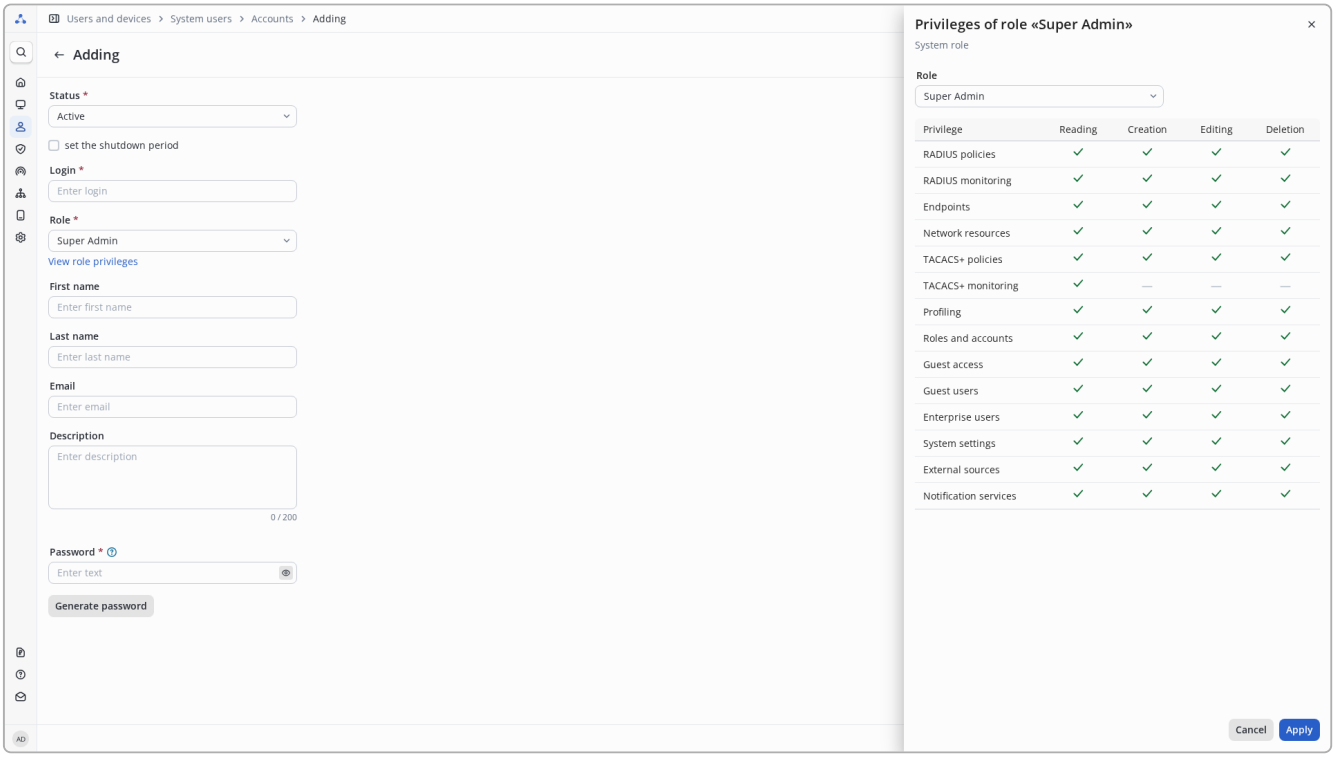


Figure 82. Add system user account page

The add system user form includes the following fields:

- `Status` * — defines the current state of the account. Allows you to allow or deny the user access to the system. The default value is `Active`;
- `Login` * (maximum length — 100 characters);
- `Role` * — select roles for the system user. The role determines the level of access to the system functionality;
- `First name` (maximum length — 100 characters);

`Last name` (maximum length — 100 characters);

- `Email` (maximum length — 200 characters);
- `Description` (maximum length — 200 characters);
- `Password` * (maximum length — 72 characters). By clicking on you can enable the display of the entered password; by default, the text is hidden. The password must match the current password policy.

* — fields that are required.

You cannot assign a role with higher rights than the current user.

After upgrading the license level, additional privilege settings may be required. Roles that require additional configuration are marked with a warning:

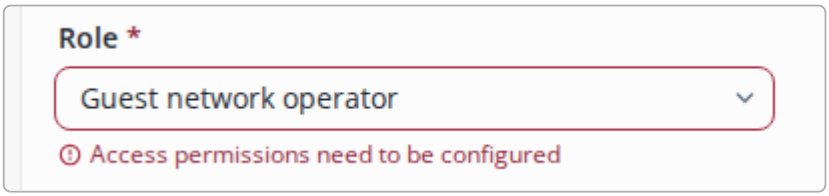


Figure 83. Warning "Access permissions need to be configured"

The button "View role privileges" opens a window with a table of privileges for the selected role:

- Names of privileges;
- Statuses of issued rights:
  - ✓ — the user has access,
  - — — access is not provided,
  - ✗ — the user does not have access.

In the window, using the **Role** drop-down list, you can view the access rights assigned to other roles. When you click the **"Apply"** button, the role will be re-selected in the account addition form.

The password for the system user can be generated by clicking on the **"Generate Password"** button, or you can enter it manually. The generated password is placed in the "New password" field; it can be copied by clicking on .

To create an account, click the **"Add"** button.

Editing the system user account

To edit a system user account, on the list page, click on its login:

Figure 84. Hyperlink to system user account edit page

This will open the system user account edit page, similar to the add page:

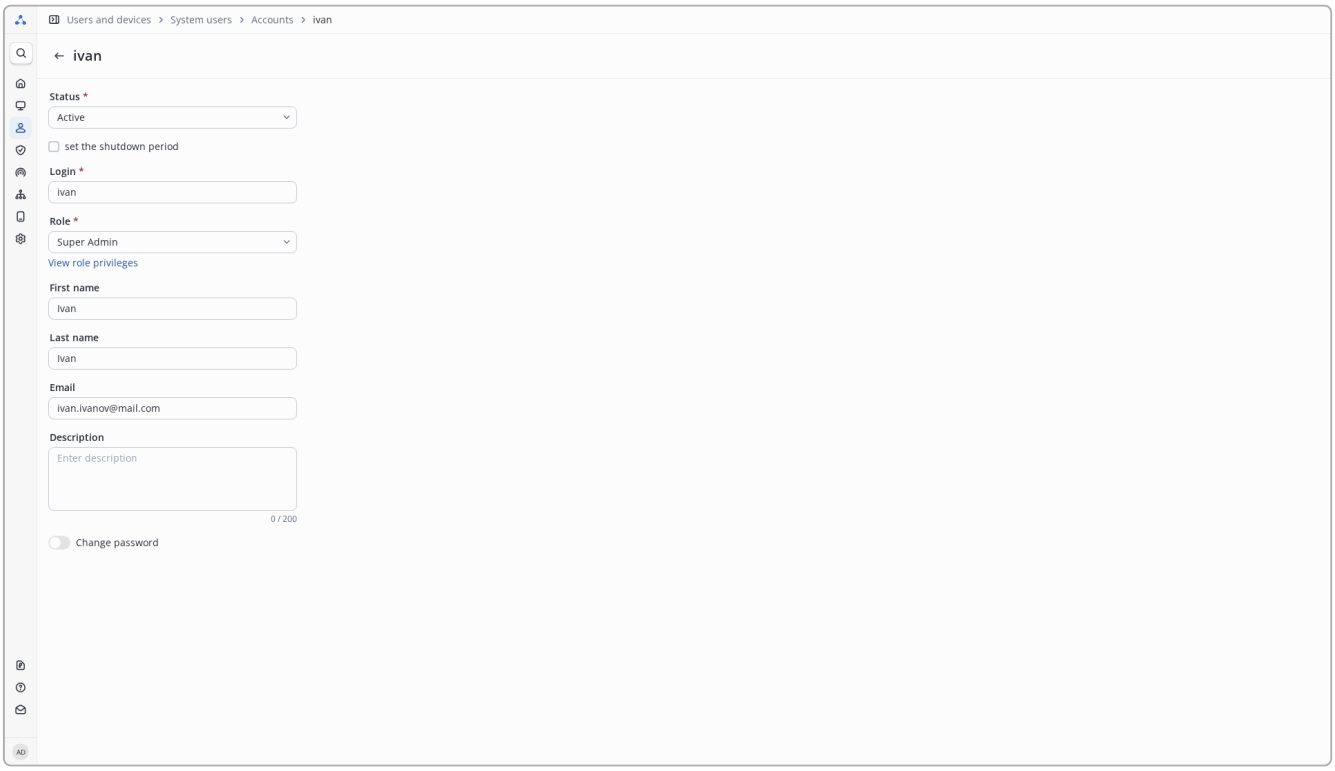


Figure 85. System user edit form

To change the system user password, you need to enable the **"Change password"** toggle, then enter the desired password in the appropriate fields.

After saving changes **for login, password, and/or role**, the session will be interrupted and re-authentication will be required.

WARNING: Editing your own account is prohibited. To change your account data, go to the Account settings section.

After making the changes, you need to click on the **"Save"** button. The button is hidden until at least one field is changed.

The **"Cancel"** button resets the changes made to their original state.

Managing account status

The `Status` field defines the state of the system user account.

The following values are available:

Status	Description
`Active`	The user can sign in to the system.
`Disabled`	The user cannot sign in to the system. When this status is selected, a disabling period and disabling reason can be specified.
`Blocked`	The user is temporarily blocked. This status is assigned automatically when the lockout policy is triggered and cannot be set manually.

To enable users to receive email notifications about changes to their account status (blocking, disabling, unblocking), notification delivery must be configured in the **System Settings** → **Security and access** → «Password policy» section.

Scheduled account disabling

For an active account, a disabling period can be specified in advance.

To set a disabling period, select the **"Specify disabling period"** checkbox.

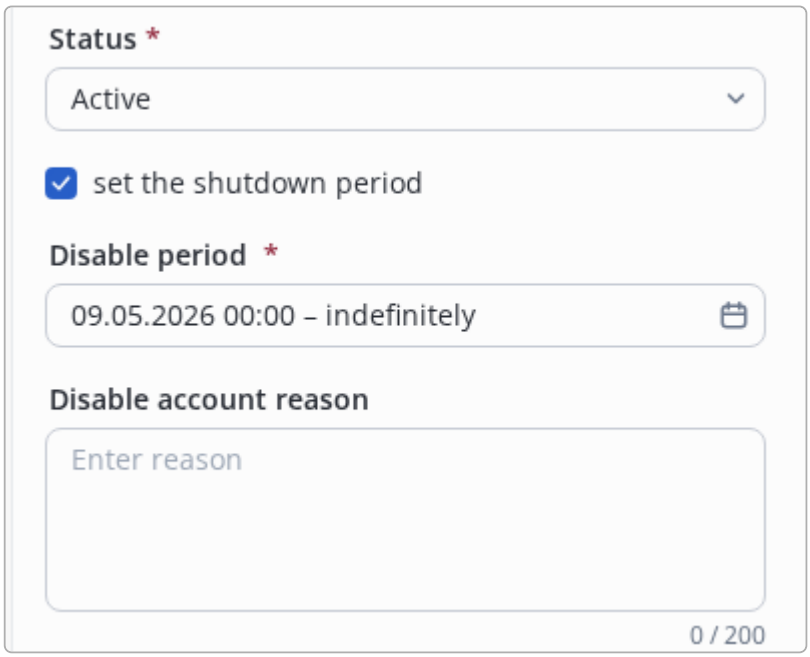


Figure 86. Account edit form with scheduled disabling

When scheduled disabling is activated, the following fields become available:

- `Account disabling period` — the interval during which the account will be unavailable.
  - `Start date and time` — from this moment the account will be disabled;
  - `End date and time` — after this moment access will be restored.
- `Disabling reason` — an explanation of why the account is being disabled.

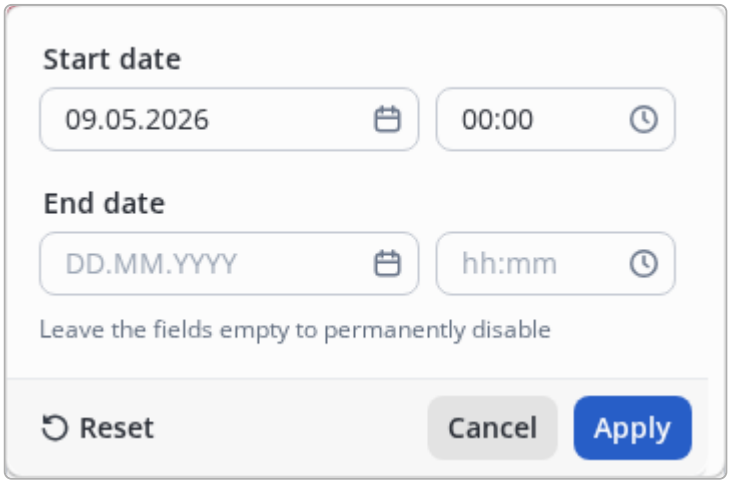


Figure 87. Account disabling period selection window

- The **start** date and time are required and must be later than the current moment.
- If the **end** date and time are not specified, the account will be disabled indefinitely.

Disabling an account

To prevent the user from signing in, change the `Status` field value to `Disabled`.

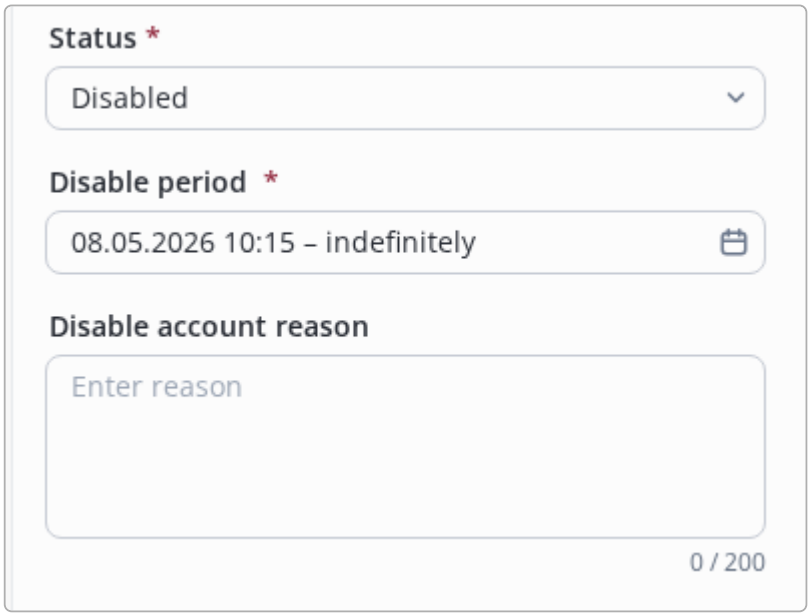


Figure 88. Disabling a local account

When an account is disabled, additional fields become available:

- `Account disabling period` — the interval during which the account will be unavailable. The start field is automatically filled with the current time (the moment the changes are saved);
- `Disabling reason` — an explanation of why the account is being disabled.

If the **end** date and time are not specified, the account will be disabled indefinitely.

Blocked account

Figure 89. Blocked account in the table

An account can be automatically blocked by the system when the lockout policy is triggered — for example, after exceeding the allowed number of unsuccessful sign-in attempts.

The `Blocked` status is assigned automatically and **cannot be set manually** through the edit form. The block can be removed in one of the following ways:

- automatically — after the lockout time specified in the policy expires;
- manually — the administrator can unblock the account by changing the status to `Active`.

Local account

For a local account, the edit form displays lockout details:

Figure 90. Blocked local account edit form

The following fields are available:

- `Account lockout period` — the time interval during which the account remains blocked;
- `Lockout reason` — the reason why the account was blocked (generated automatically by the system).

The administrator can change the state of a blocked account:

- to **unblock** the account, change the `Status` field value to `Active`;
- to **disable** the account (for example, to temporarily deny access), change the `Status` field value to `Disabled`.

After changing the status, save the changes by clicking the **"Save"** button.

External account

For an external account, lockout details are displayed in the viewing form:

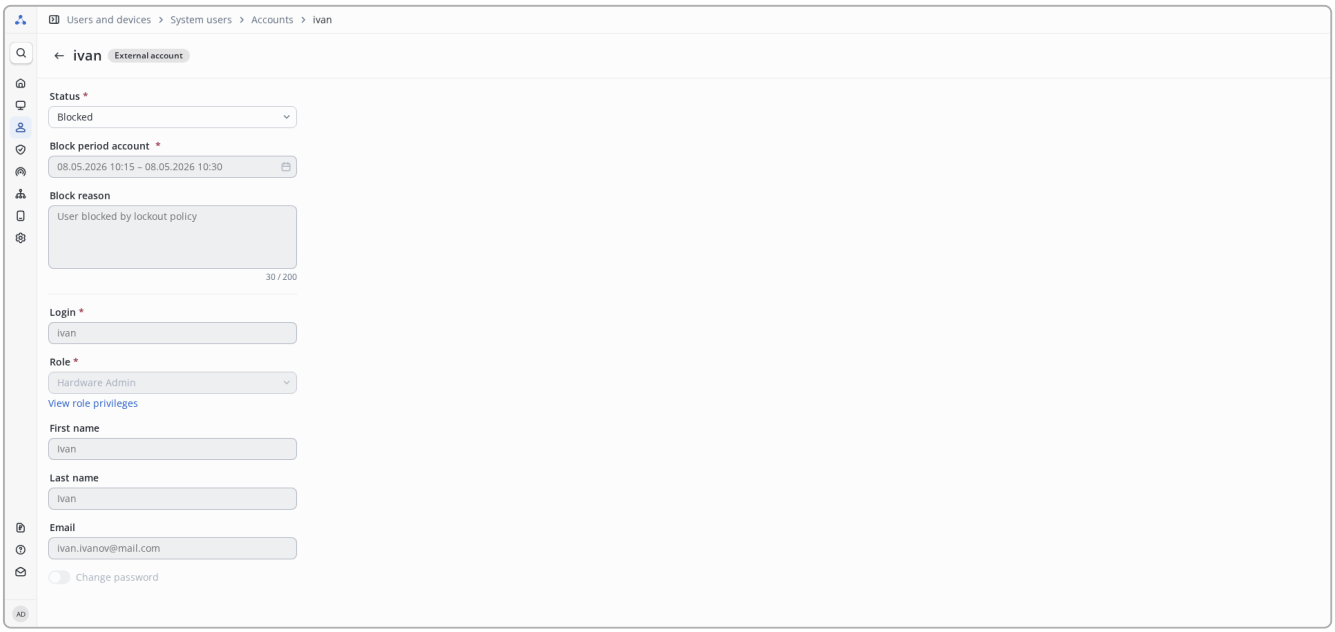


Figure 91. Blocked external account viewing form

The following fields are available for a blocked external account:

- `Account lockout period` — the time interval during which the account remains blocked;
- `Lockout reason` — the reason why the account was blocked (generated automatically by the system).

The administrator can change the state of a blocked external account by changing the `Status` field value to `Active`.

Resetting two-factor authentication settings

If a system user account has two-factor authentication configured, the **"Two-factor authentication"** block is displayed on the edit form.

The block displays the available two-factor authentication methods and their current statuses:

- **Backup codes**;
- **One-time code from the app (TOTP)**;
- **One-time code from email (Email OTP)**.

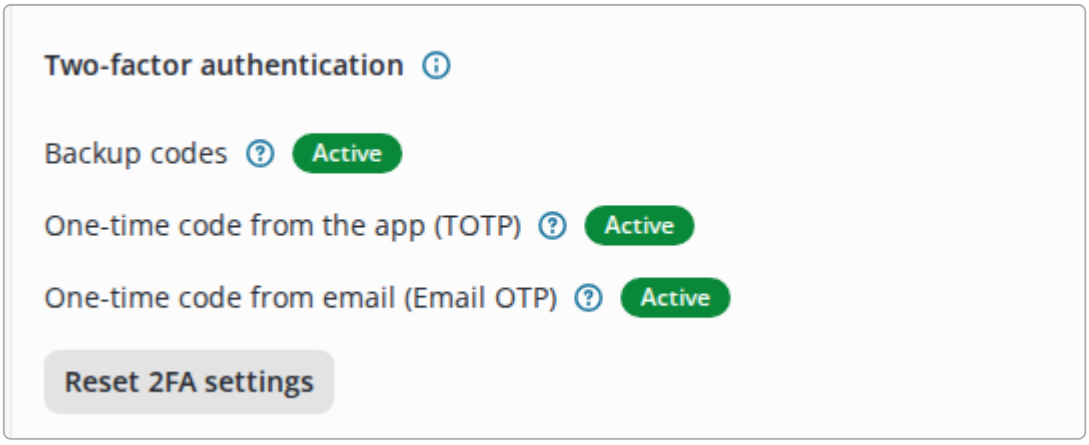


Figure 92. Active two-factor authentication methods in the account edit form

If the user has active 2FA settings, the administrator has access to the **"Reset 2FA settings"** button.

Resetting 2FA settings is available to users with permission to edit system user accounts (`Roles and Accounts` privilege with access level of at least 3). Additionally, the role of the administrator performing the reset must be at least equal to the role of the target user.

When resetting 2FA settings, the system performs the following actions:

- Deactivates all configured two-factor authentication methods for the user;
- Invalidates and deletes the user's current backup codes;
- Resets the user's two-factor authentication settings.

The consequences of the reset depend on the global 2FA policy:

- **Under the optional policy:** two-factor authentication is completely disabled for the account. On the next login, the user will be able to sign in using only the login and password.
- **Under the mandatory policy:** 2FA settings are reset, but the policy remains mandatory. On the next login, the user will be required to reconfigure the second factor.

Resetting 2FA for a local account

For a local account, resetting 2FA settings requires changing the user's password, which will result in terminating the user's active session.

To reset 2FA for a local account:

1. Open the user account edit page.
2. In the **"Two-factor authentication"** block, click **"Reset 2FA settings"**.
3. In the dialog that opens, specify the new user password or click **"Generate password"**. The password must comply with the current password policy.
4. Click **"Reset"**.

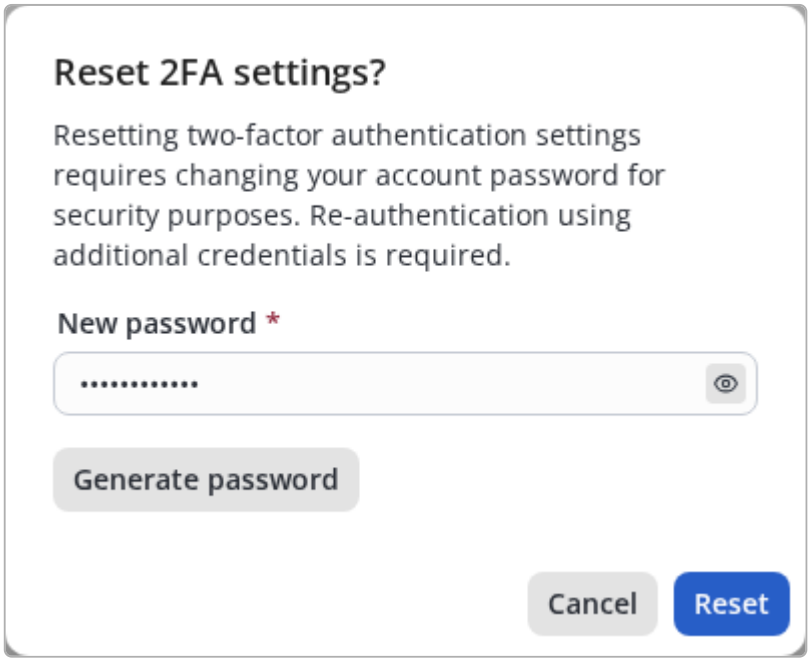


Figure 93. Reset 2FA settings dialog for a local account

After a successful reset, the system deactivates all 2FA methods for the selected account.

Resetting 2FA for an external account

For an external account, the password is not changed in NAICE, as credentials are stored in the external identity source.

To reset 2FA for an external account:

1. Open the external system user account view page.
2. In the **"Two-factor authentication"** block, click **"Reset 2FA settings"**.
3. In the confirmation dialog, click **"Reset"**.

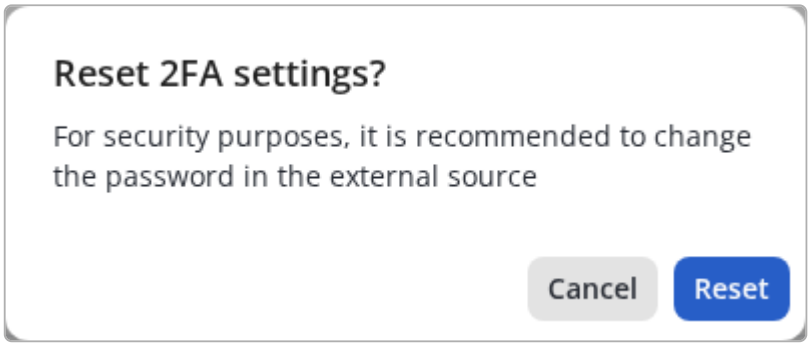


Figure 94. Reset 2FA settings dialog for an external account

After the reset, the system deactivates 2FA methods and displays a recommendation to change the account password in the external source.

For external accounts, the password must be changed in the external identity source, such as Active Directory or OpenLDAP. NAICE only displays a recommendation to change the password and does not modify the user's external password.

Changing email when Email OTP is active

If the user has the **"One-time code from email (Email OTP)"** method activated, changing the email in the account edit form will affect 2FA settings.

If the user has the **Email OTP** method activated, then after saving the new email, this method will be disabled.

- **If Email OTP was the only active 2FA method**, then:
  - The user's two-factor authentication settings will be completely reset.
  - Backup codes will be invalidated.
  - The user will lose access to the system (if the 2FA policy is mandatory) or 2FA will be disabled (if the policy is optional).
- **If the user has other active 2FA methods** (e.g., TOTP), they remain active.

To use Email OTP again, the user will need to re-activate this two-factor authentication method with the current email address.

Removing the system user account

To delete a system user account, in the table, select the checkbox to the left of the account to be deleted and click  on the action bar located above the table.

If the selected system user (both local and external) had a session open, it will terminate immediately.

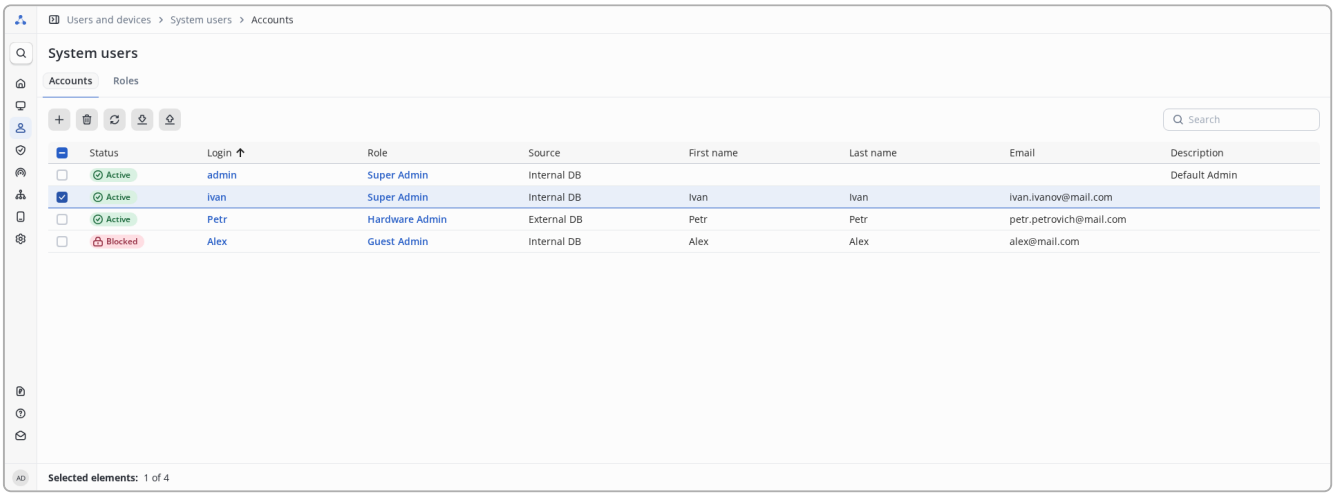


Figure 95. Selecting system user accounts in the table for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

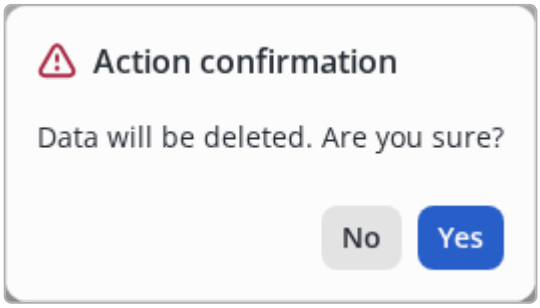


Figure 96. Modal dialog for confirmation

You cannot delete an account that is currently logged in.

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"\"Test command set\""	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

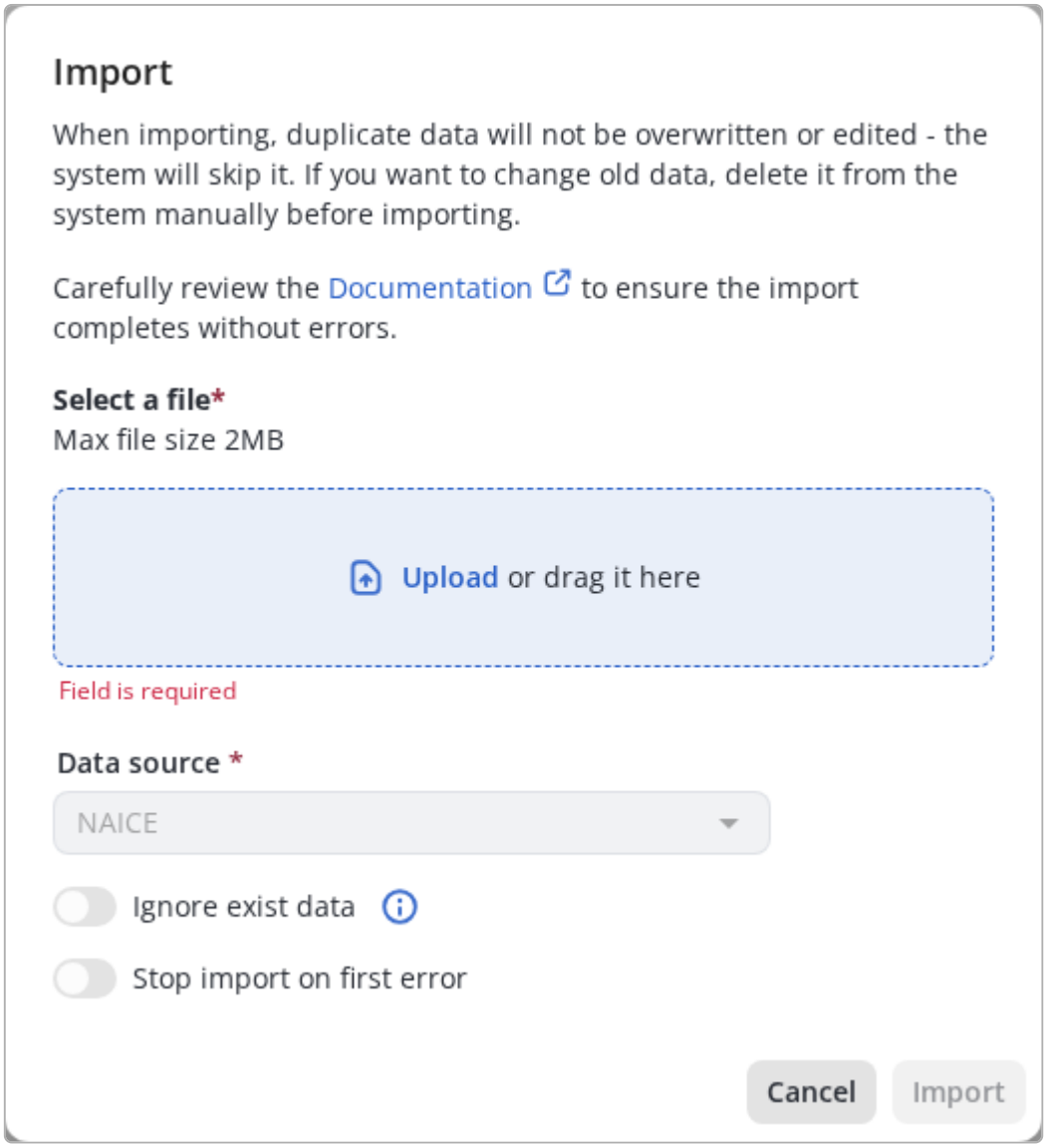


Figure 97. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.
   -

Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

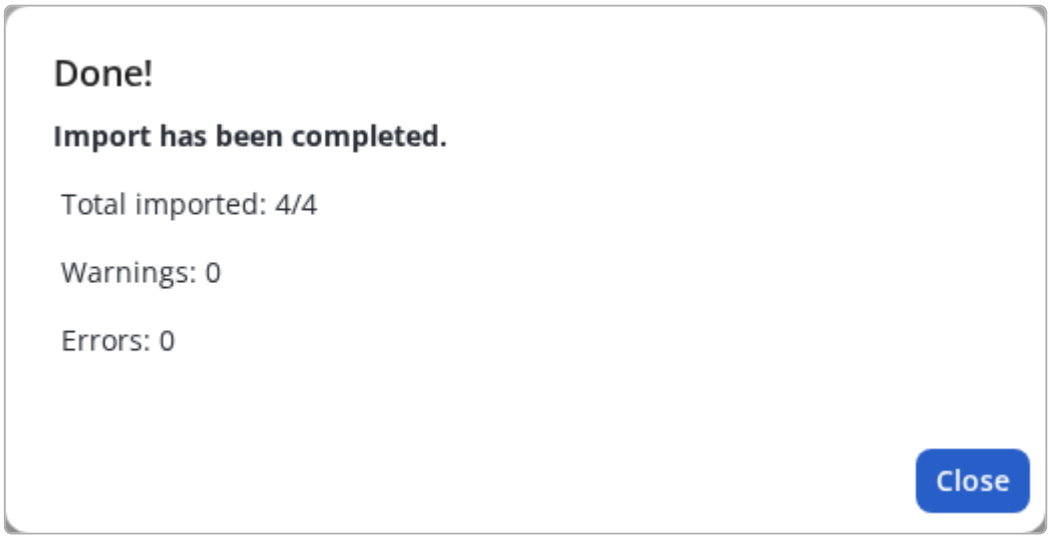


Figure 98. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

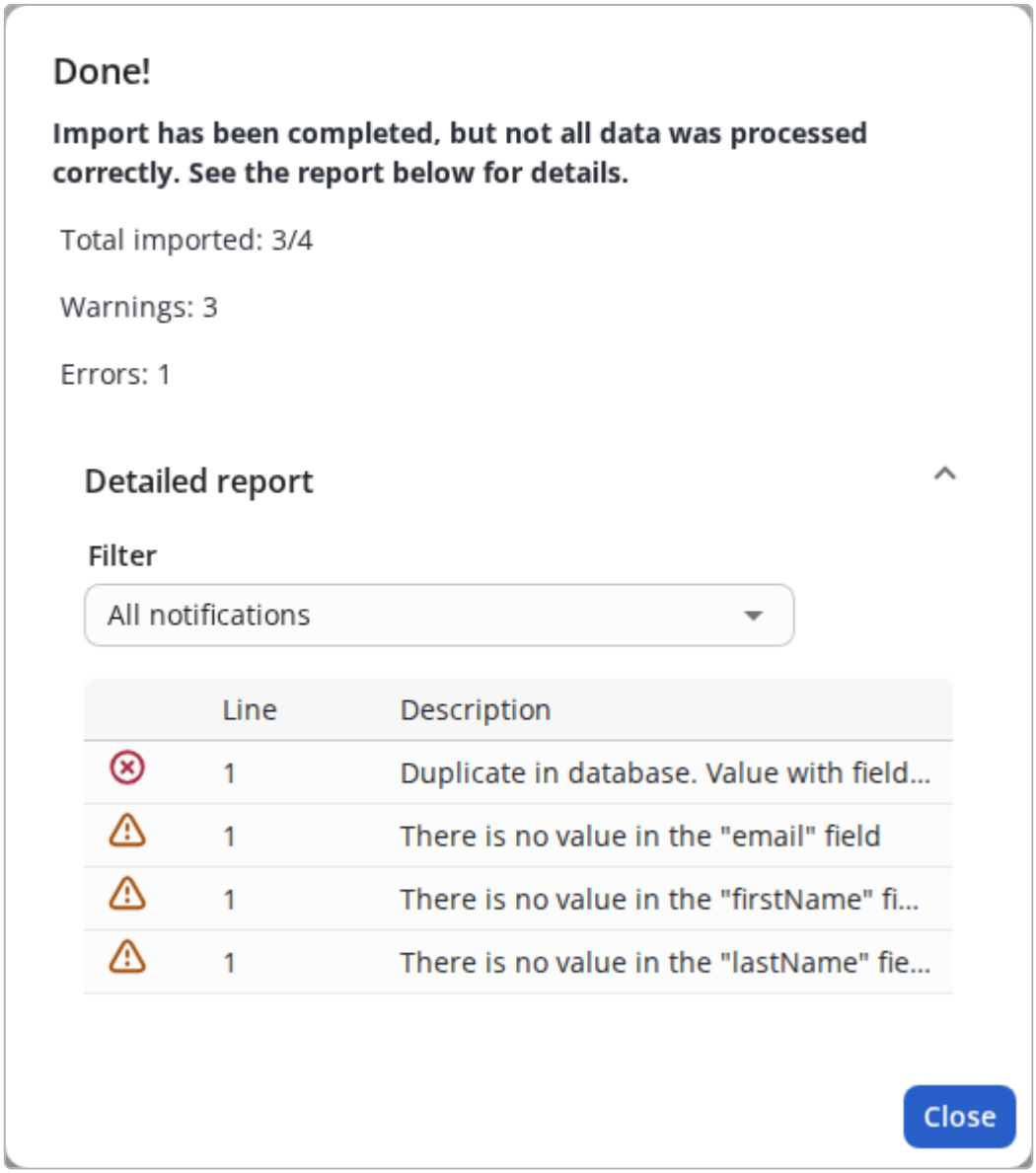


Figure 99. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for system user accounts

Only `NAICE` is supported as a data source for importing system user accounts.

Import of external accounts is not supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
login:Required	System user login	**Required** Maximum length — 100 characters Must be unique Spaces are not allowed
role:Required	System user role	**Required** **The role must exist in the system**
password:Required	System users password. Can be imported in either hashed or plain text format	**Required** Maximum length — 72 characters Must match the current password policy Symbols `№` and `` ` `` are not allowed
isEncrypted:Required	Password hashing flag. Indicates the format in which the password is transmitted	**Required** Possible values: - `true` — the transmitted password is hashed - `false` — the password is transmitted in plain text and will be hashed during import
status:Required	User status	**Required** Possible values: - `ENABLED` — user is enabled - `DISABLED` — user is disabled - `BLOCKED` — user is blocked
disableStartTime	Time from which the user is disabled	Time in `YYYY-MM-DDTHH:MM:SSZ` format Used if a disabling period is set for the user
disableEndTime	Time until which the user is disabled	Time in `YYYY-MM-DDTHH:MM:SSZ` format If no value is specified, the user will be disabled indefinitely
disableReason	User disabling reason	Maximum length - 200 characters
firstName	System user first name	Maximum length - 100 characters
lastName	Surname of the System user	Maximum length - 100 characters

Field	Description	Requirements
email	Email address	Maximum length - 200 characters Format: `admin123@gmail.com` Invalid characters: • cyrillic letters `(а-я)(А-Я)` • space • double quotes `"` • numero sign `№` • semicolon `;` • colon `:` • comma `,` • parentheses `( )` • square brackets `[ ]` • greater-than/less-than signs `< >` • backslash `\`
description	Arbitrary description	Maximum length - 200 characters
totpSeed	TOTP secret	TOTP secret encrypted with `AES-256-GCM`
activatedEmailOtp	Email OTP	Possible values: - `true` — method enabled - `false` — method disabled
backupCodes	Backup codes	Backup codes hashed with `Bcrypt` (no more than 10 codes)

When importing accounts with configured 2FA, the encryption master key (AES-256-GCM) for TOTP secrets must match on the source and target instances. Otherwise, TOTP will not work.

Example of a correctly formatted file:

"login:Required"	"role:Required"	"password:Required"	"isEncrypted:Required"	"status:Required"	"firstName"	"lastName"	"email"	"description"	"disableStartTime"	"disableEndTime"	"disableReason"	"totpSeed"	"activatedEmailOtp"	"backupCodes"
"administrator"	"SuperAdmin"	"password"	"false"	"ENABLED"	"Иван"	"Иванов"	"ivanov@test.ru"	"Default"	"2026-05-26T11:22:07Z"	"2026-05-26T13:00:00Z"	"Много наблюдал"	"/MccYJRAE4p6F..."	"true"	"$2a$10$gVJsW..."

Values containing double quotation marks `(")` or slashes `(/)` must be escaped using `\"`. Failure to escape these characters will result in incorrect data recognition.

All imported records receive the source `Internal DB` (NAICE system internal database).

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

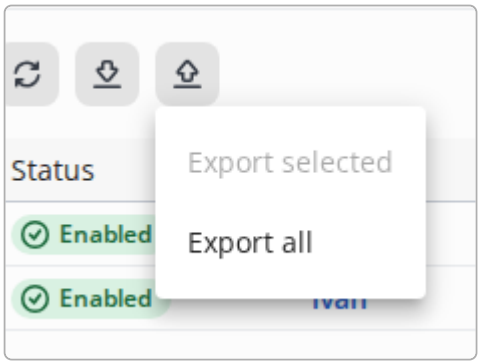


Figure 100. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

Figure 101. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click  and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

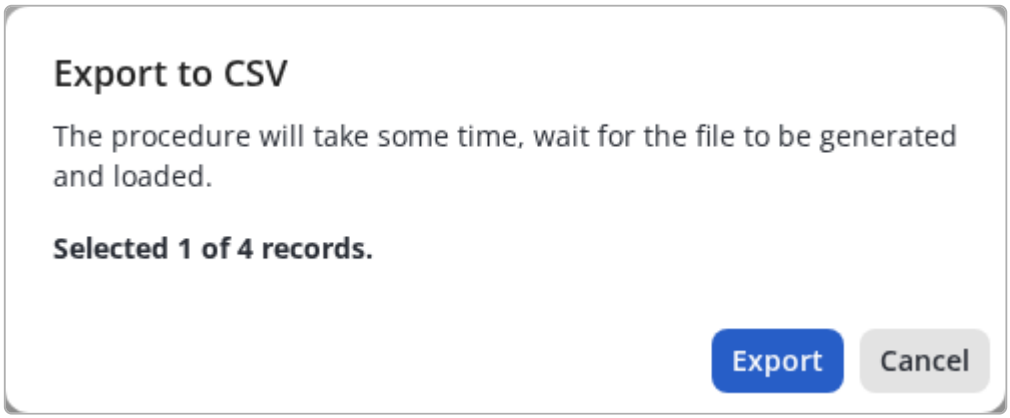


Figure 102. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for system user accounts

When exporting, consider the following features:

- **Passwords** are exported from the database in a hashed format (Bcrypt algorithm). Recovery of original passwords is not possible.
- **External accounts** are also included in the exported CSV file.

For correct import of external accounts into the target system, you must:

1. Pre-create the **external identity source** (AD, LDAP) in NAICE that corresponds to the exported records.
2. Configure **external roles** for group mapping.

If the external source or roles are missing, importing external accounts will be impossible.

The structure of the CSV file for system user accounts is described in the section "Import particularities for system user accounts".

Roles

Description

The "Roles" section is designed for managing access rights for NAICE system users.

NAICE provides two types of roles:

- **Internal roles** — assigned manually to local accounts.
- **External roles** — assigned automatically to external accounts based on user membership in groups within an external identity source.

Access levels

The system supports five access levels for each privilege:

Level	Description
0 (Disabled)	Access to functionality is absent. Associated sections are not displayed in the interface.
1 (Reading)	Viewing data and sections related to the privilege.
2 (Creation)	Creating new entities in addition to viewing.
3 (Editing)	Modifying existing entities in addition to viewing and creating.
4 (Deletion)	Full access, including entity deletion.

Each subsequent access level includes the capabilities of the previous one.

Some privileges (such as those related to monitoring) have a maximum access level of `1` (read-only).

Predefined roles

Deleting and editing preset roles is prohibited.

The system includes the following preset roles for typical usage scenarios:

- **Super Admin** — full access to all functionality.
- **Network Admin** — network access management.
- **Hardware Admin** — network device management.
- **System Admin** — system administrator.
- **Guest Admin** — guest network management.
- **Guest Operator** — guest network operator.
- **Monitor** — monitoring and data viewing.

Privilege levels for preset roles

Privilege	Super Admin	Network Admin	Hardware Admin	System Admin	Guest Admin	Guest Operator	Monitor
RADIUS policy	4	4	0	4	1	0	1
RADIUS monitoring	4	4	0	4	4	1	1
Endpoints	4	4	0	4	0	0	1
Network resources	4	4	4	4	1	0	1
TACACS+ policy	4	0	4	4	0	0	1
TACACS+ monitoring	1	0	1	1	0	0	1
Profiling	4	4	0	4	1	0	1
Roles and accounts	4	0	0	1	0	0	0
Guest access	4	1	0	4	4	1	1
Guest users	4	4	0	4	4	4	0
Enterprise users	4	4	4	4	0	0	0
System settings	4	0	0	4	0	0	0
External sources	4	1	1	4	0	0	1
Notification services	4	1	0	4	1	1	1

Privileges and system sections

This section provides a complete list of NAICE system privileges and their corresponding interface sections.

Sections not requiring privileges

The following sections are available to all authorized system users regardless of assigned roles:

Sections Not Requiring Privileges

Account settings — management of own credentials.

- **Documentation** — built-in help information.
- **Dashboard** — widget availability on the main page depends on assigned privileges.
- **System events** — availability of event groups is determined by user privileges.

Sections Managed by Privileges

Legend in the table:

- **– (dash)** in the `Access Restrictions` column means that standard access level rules apply for this privilege.

If text is specified in the column, there are additional conditions described in the cell.

Privilege	Section	Access Restrictions	License Level
`RADIUS policy`	Network access → Policy elements: → **Authorization profiles** → **Allowed protocols** → **Conditions** → **Dictionaries** → **RADIUS session limits**	**RADIUS session limits:** • Levels 1-3: only *Read* rights + • *Management* becomes available from level 4	BASIC
	Network access: → **RADIUS policies**	• Levels 1-3: only *Read* rights • *Full management*, `reset count` becomes available from level 4	BASIC
	Users and devices → Identity management: → **Identity sequences**	—	BASIC
`RADIUS monitoring`	Monitoring → RADIUS: → **Connections journal** → **Active sessions**	**Active sessions:** • Levels 1-3: only *Read* rights + • *End the session* becomes available from level 4	BASIC
`Endpoints`	Users and devices → Identity management: → **Endpoints** → **Endpoint groups**	**Endpoint groups:** • *Create/Delete* endpoint groups becomes available from level 2 • *Add/Remove* endpoints to/from groups becomes available from level 3	BASIC
`Network resources`	Users and devices → Network resources: → **Devices** → **Device groups** → **Device profiles**	—	BASIC

Privilege	Section	Access Restrictions	License Level
`TACACS+ policy`	Device access → Policy elements: → **Conditions** → **TACACS+ Command sets** → **TACACS+ Profiles** → **Dictionaries**	—	TACACS+ Module
	Device access: → **TACACS+ policies**	• Levels 1-3: only *Read* rights • *Full management,* `reset count` becomes available from level 4	TACACS+ Module
	Users and devices → Identity management: → **Identity sequences**	—	BASIC
`TACACS+ monitoring`	Monitoring → TACACS+: → **Connections journal** → **Accounting**	—	TACACS+ Module
`Profiling`	Policies → Profiling: → **Profiling conditions** → **Profiling policies** → **Logical profiles**	**Profiling policies:** • `Reset count` becomes available from level 4	BASIC
	Policies → Elements: → **Dictionaries**	—	BASIC
`Roles and accounts`	Users and devices → System users: → **Accounts** → **Roles**	—	BASIC
`Guest access`	Guest portals → Portal management: → **Portal Builder**	—	ADVANCED
	Users and devices → Identity management: → **Identity sequences**	—	BASIC
`Guest users`	Guest portals → Portal management: → **Guest endpoints** → **Portal users**	—	ADVANCED
`Enterprise Users`	Users and devices → Identity management: → **Network users** → **Network user groups**	**Network user groups:** • *Create/Delete* user groups becomes available from level 2 • *Add/Remove* users to/from groups becomes available from level 3	BASIC

Privilege	Section	Access Restrictions	License Level
`System settings`	Monitoring → System: → **Log collectors**	• `Send test event` becomes available from level 2	BASIC
	System settings	• Levels 1-3: only *Read* rights • Level 4: *Full management*	BASIC
	System settings → Certificate storage	• Level 1: only *Read* rights • Level 2: upload/download certificates • Level 3: edit certificate name/description • Level 4: *Full management*, including delete	BASIC
	Licensing	• Levels 0-3: only *Read* rights • Level 4: *Full management*	—
`External sources`	Users and devices → Identity management: → **External identification sources**	• `Check connection` available from level 1 • *Adding* groups and attributes becomes available from level 2 • *Deleting* groups and attributes becomes available from level 3	BASIC
`Notification services`	Notification gateways: → **Notification gateways management**	• `Send test SMS/email` becomes available from level 2	BASIC

Dependencies between privileges

For correct system operation, some privileges require the presence of other privileges. When assigning such privileges, the system **automatically activates the necessary related privileges at the read level**.

Privilege	Requires (at least read level)
`RADIUS policy`	`Network resources`, `Profiling`, `Guest access`
`TACACS+ policy`	`Network resources`
`Endpoints`	`Profiling`
`Roles and accounts`	`External sources`
`Guest users`	`Guest access`
`Guest access`	`Notification services`
`System Settings`	`External sources`, `Notification services`

Viewing the roles list

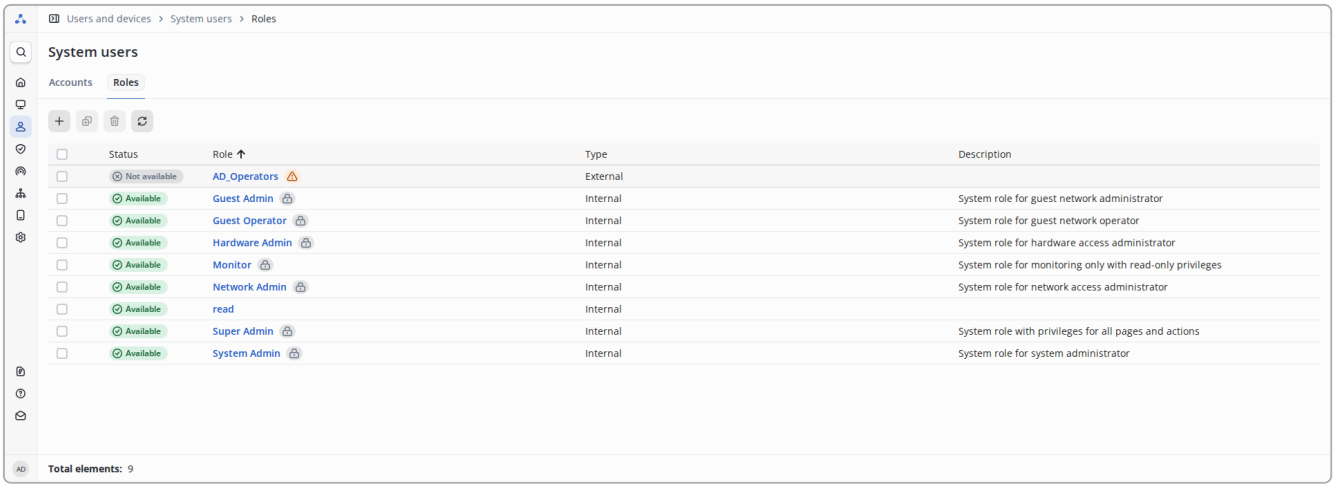


Figure 103. Table with list of roles

The page displays a table with all roles. The table contains the following columns:

- `Role` — role name.
  - — this entity is system and cannot be deleted or edited.
  - — warning: indicates an incorrect role configuration.
- `Type` — role type: **internal** (manually assigned) or **external** (automatically assigned based on groups from an external source).
- `Status` — role availability for assignment:
  - Available — role can be assigned to users;
  - Not available — external role with incorrect settings (for example, when switching from one external source to another or when disabling external authentication). Users cannot obtain this role until the configuration is fixed.
- `Description` — arbitrary description of the role.

Controls:

- — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.

Adding a role

To add a new role, click on the action panel above the table.

Adding an internal role

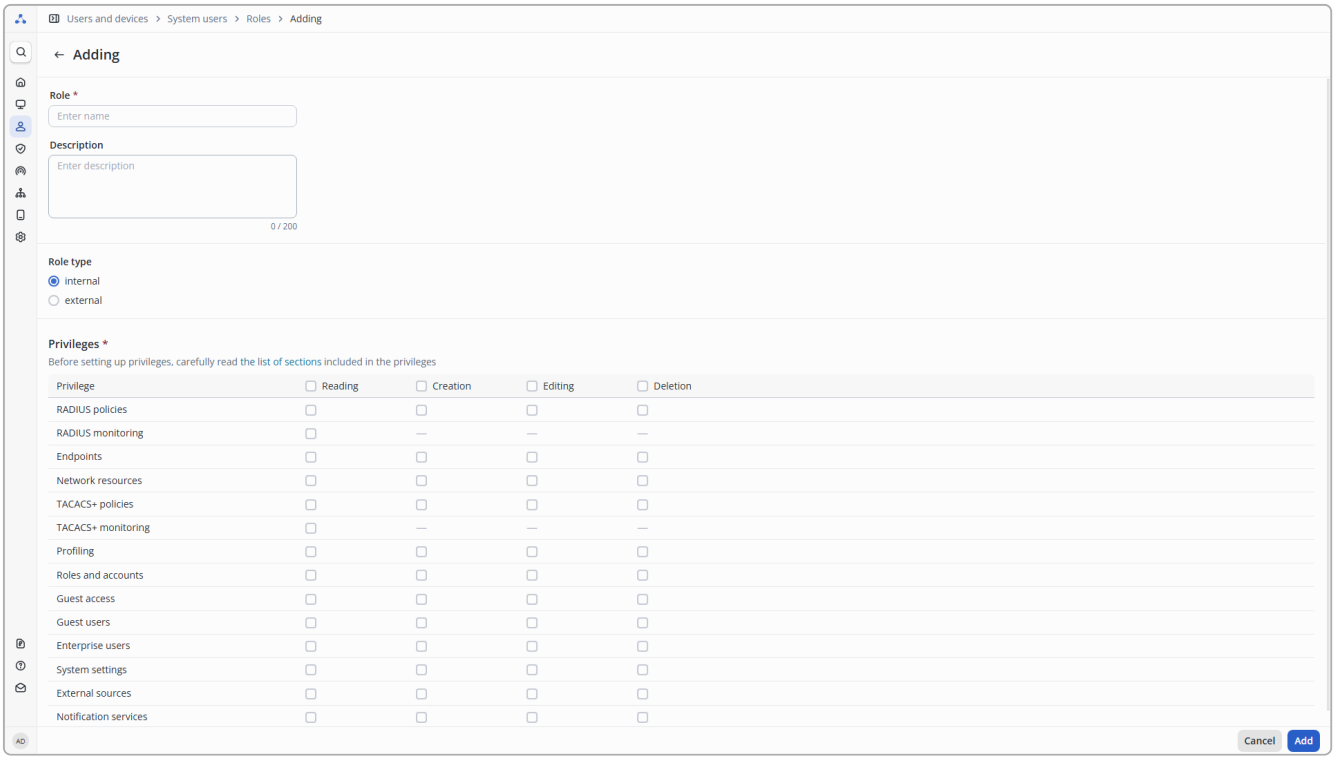


Figure 104. Internal role addition form

The form contains the following fields:

- `Role` * — role name.
- `Description` — arbitrary description (maximum length - 200 characters).
- `Role type` * — select **"internal"** value.
- `Privileges` * — access rights configuration table. You must select a level for at least one privilege.

* — required fields.

You cannot create a role with higher privileges than the current user.

To add a role, click the **"Add"** button.

Adding an external role

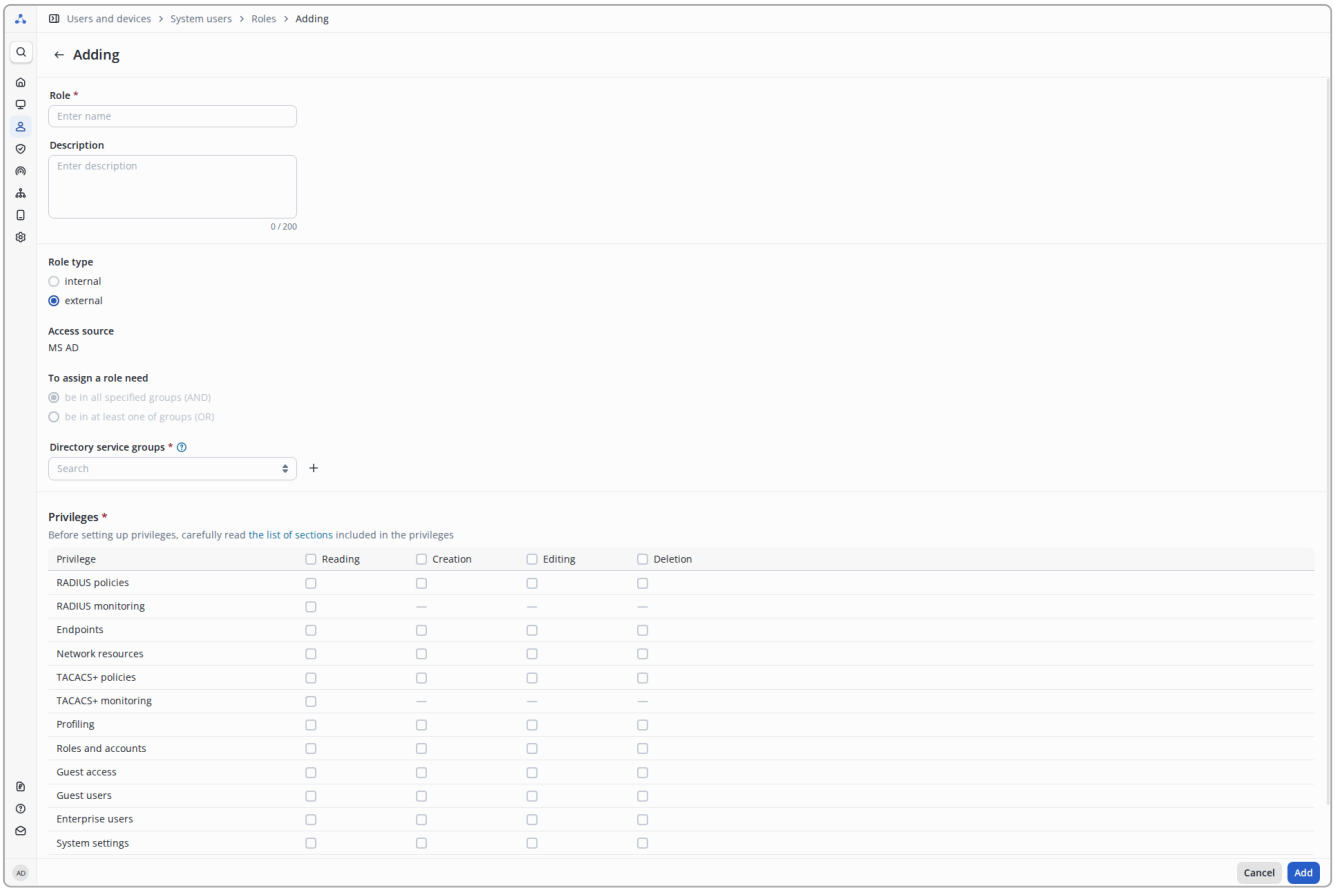


Figure 105. External role addition form

The form contains the following fields:

- `Role` * — role name.
- `Description` — arbitrary description (maximum length - 200 characters).
- `Role type` * — select **"external"** value.
- `Access source` — external identity source whose groups are used for mapping.

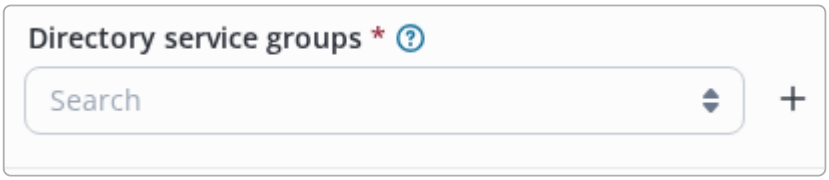
> The field is filled automatically based on the configuration in the System Log In section and does not require manual selection. The source specified in the `"Authentication source"` field when the `"Use external identity source as the main authentication source"` option is enabled is used as the value.

- `To assign a role need` — selecting a condition when checking whether users belong to groups from the directory service.
  - `be in all specified groups` (logical «AND») — the role is assigned only to users who are members of **all** selected groups simultaneously. This is the default value.
  - `be in at least one of groups` (logical «OR») — the role is assigned to users who are members of **at least one** of the selected groups. This option becomes available only when two or more groups are specified.

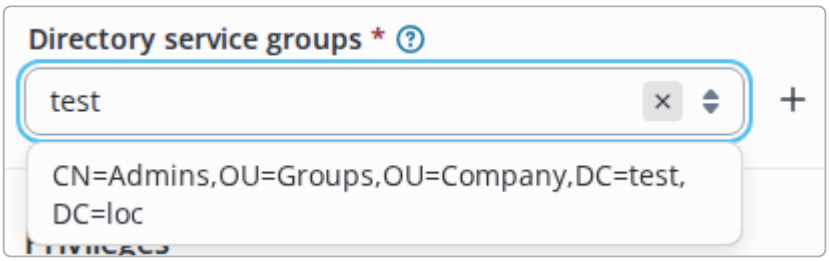
Rules for group and logic compatibility:

- Creating two or more roles with the same set of groups and the *same* logic is prohibited.
- Groups already used in any role with the «OR» logic cannot be reused in another role with the «OR» logic.
- Creating roles with the same set of groups but *different* logic («AND» and «OR») is allowed, **except when the set consists of a single group:**
  - A group that is the **only** group in a role with the «AND» logic cannot be used in a role with the «OR» logic.
  - A group already used **in any role with the «OR» logic** cannot be used as the **only** group in a role with the «AND» logic.

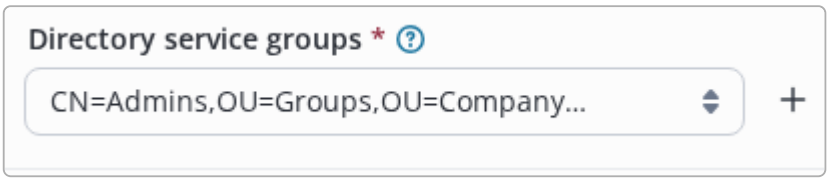
- `Directory service groups` * — groups that were added when setting up the corresponding external source (the “Groups” tab) are available for selection.



To see a list of groups from an external source, it is needed to click on the "Search" field and select the desired value in the drop-down list.



It is possible to filter groups selecting from an external source. Filtering is register-independent, displays all groups that have fallen under the filter.



It is necessary to add at least one group.

- `Privileges` * — access rights configuration table. You must select a level for at least one privilege.

* — required fields.

You cannot create a role with higher privileges than the current user.

To create a role, click the **"Add"** button.

Conditions for obtaining an external role

- The role must have status Available. Roles with status Not available are not assigned.
- The external source associated with the role must be **available** and correctly configured.
  - The user must satisfy the condition defined in the role settings:
    - with the «AND» logic — be a member of **all** groups listed in the role settings;
    - with the «OR» logic — be a member of **at least one** of the specified groups.

Role assignment is checked and recalculated **with each user login** based on the current group composition.

Role Selection in Case of Multiple Matches

If a user meets the conditions of several external roles, the assignment is performed according to the following algorithm:

1. **AND priority over OR**
   Roles with AND logic are considered first. If at least one matching AND role is found, roles with OR logic are not considered.
2. **Selection among AND roles**
   From all matching AND roles, the one that requires the largest number of groups is selected. If several roles have the same number of groups, priority is given to the role created earlier (with the smaller identifier).
3. **Selection among OR roles**
   If there are no matching AND roles, the system checks matching OR roles. If several OR roles match, priority is given to the role created earlier (with the smaller identifier).

Editing a role

To edit a role, click on the role name in the table on the list page.

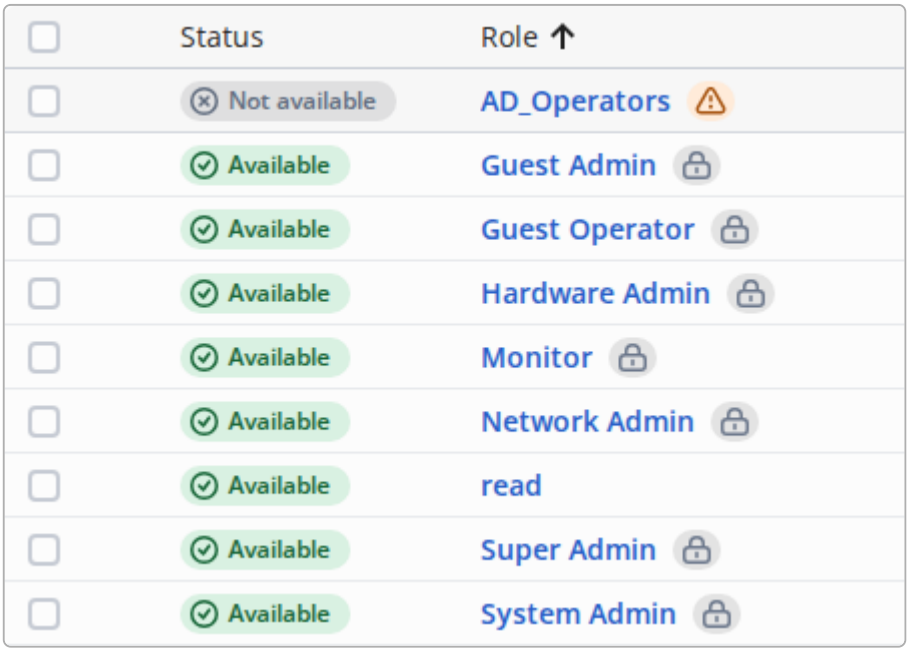


Figure 106. Hyperlink to role editing page

This will open the role editing page, similar to the addition page.

Changing the role type is prohibited if the role is assigned to at least one system user.

Editing an internal role

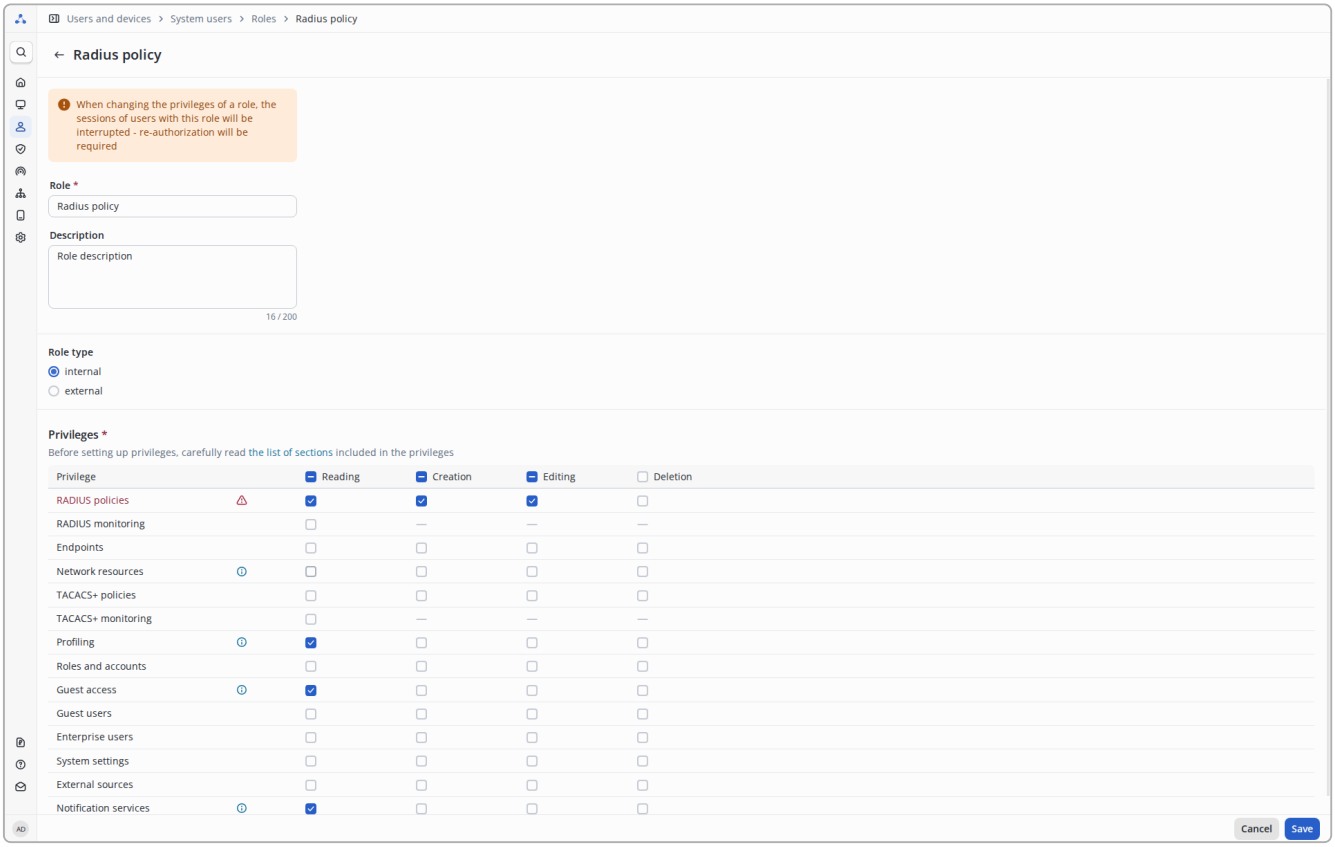


Figure 107. Internal role editing form

After saving changes **to role privileges**, all active sessions of users with this role will be terminated — re-authentication will be required.

After editing, click the **"Save"** button. The button becomes active when changes are present.

The **"Cancel"** button resets the changes made to their original state.

Editing an external role

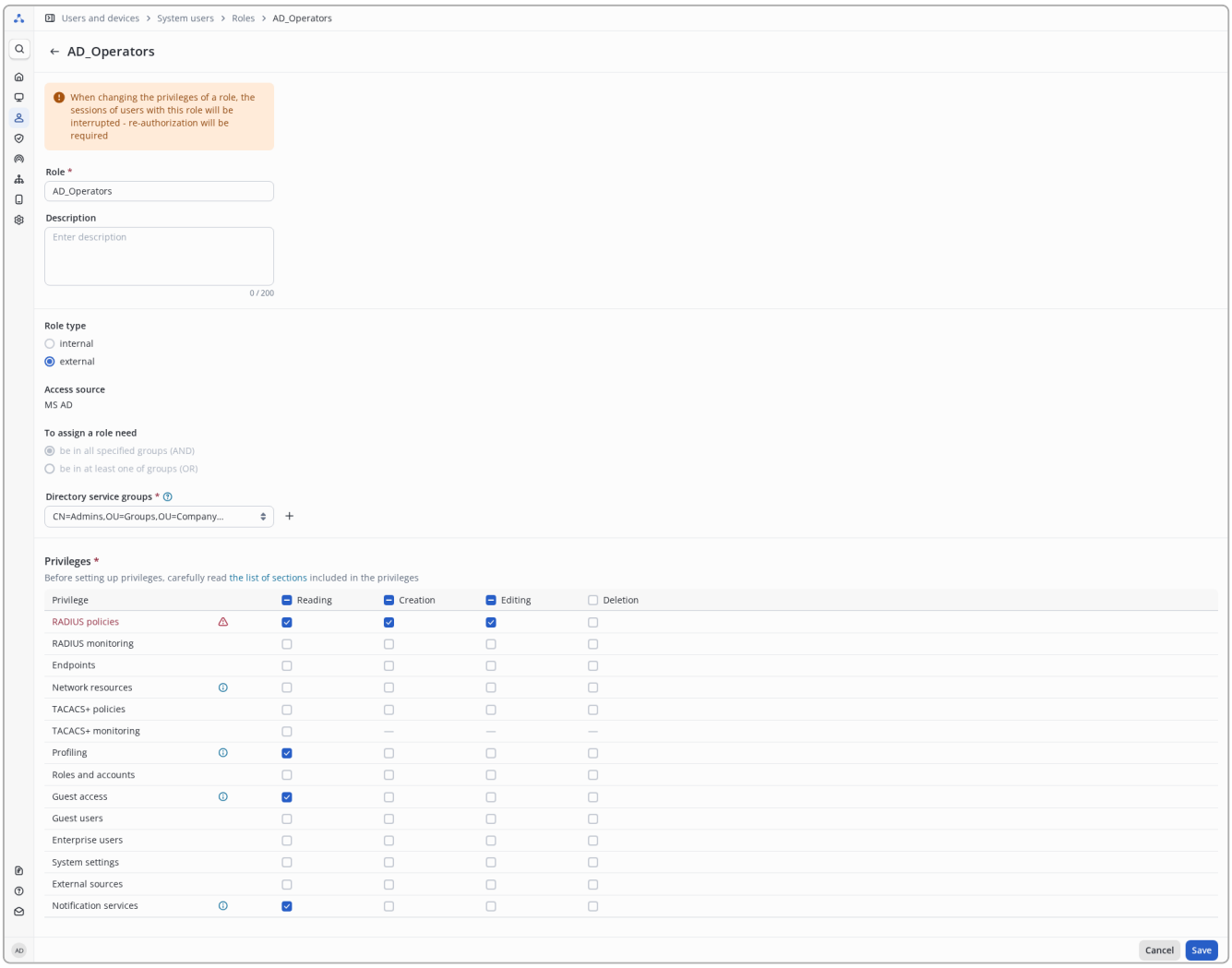


Figure 108. External role editing form

After saving changes **to role privileges** or **external source group composition**, all active sessions of users with this role will be immediately terminated — re-authentication will be required.

After editing, click the **"Save"** button. The button becomes active when changes are present.

The **"Cancel"** button resets the changes made to their original state.

Deleting roles

To delete, select the checkbox to the left of the roles to be deleted and click  on the action panel above the table.

You cannot delete a role that is assigned to a system user.

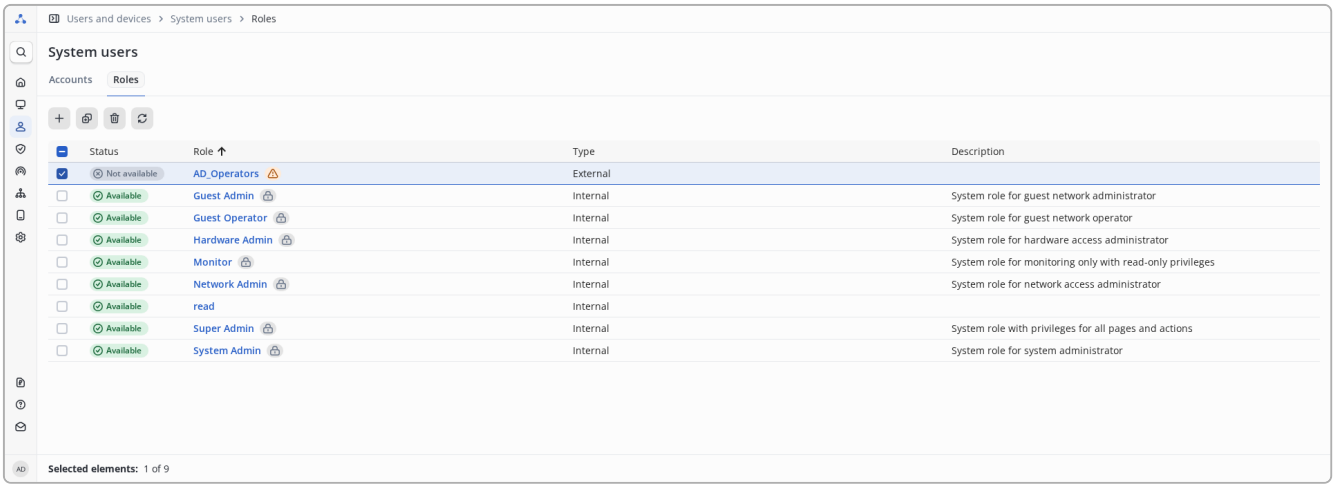


Figure 109. Selecting roles in table for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

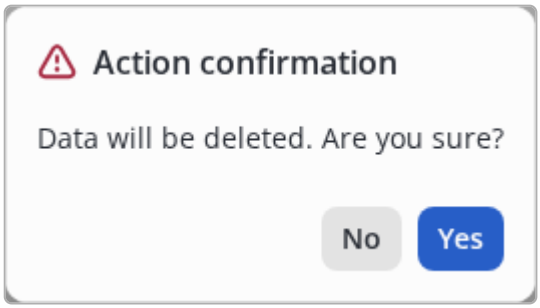


Figure 110. Modal dialog for confirmation

Specifics when changing an external source

When changing the system login configuration (System Log In section), all external roles associated with the **old source** automatically change to status Not available.

Figure 111. Warning about source change

Changing the primary authentication source

When switching from one external source to another (for example, from MS Active Directory to OpenLDAP), the unavailable external role form looks as follows:

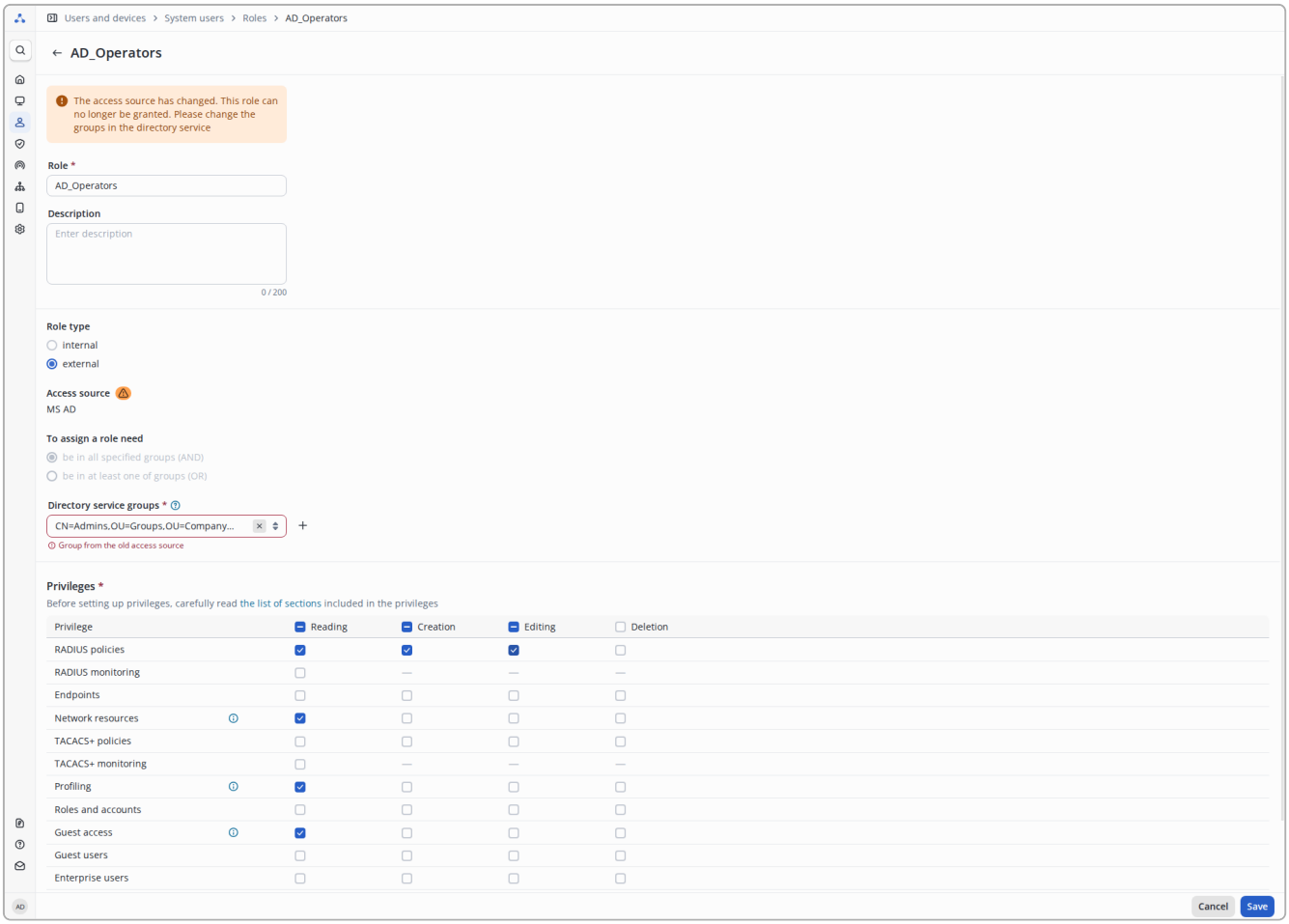


Figure 112. Unavailable external role editing form (Source Change)

- The **Authentication source** is automatically populated with the **current source** (the current main source from the login settings).
- Previously selected groups are highlighted as outdated.

Duplicating a role allows you to quickly create its copy with the current source. Groups from the old source are not transferred.

Disabling the use of an external source

When disabling the use of an external source (unchecking the `"Use external identity source as the main authentication source"` checkbox), the unavailable external role form looks as follows:

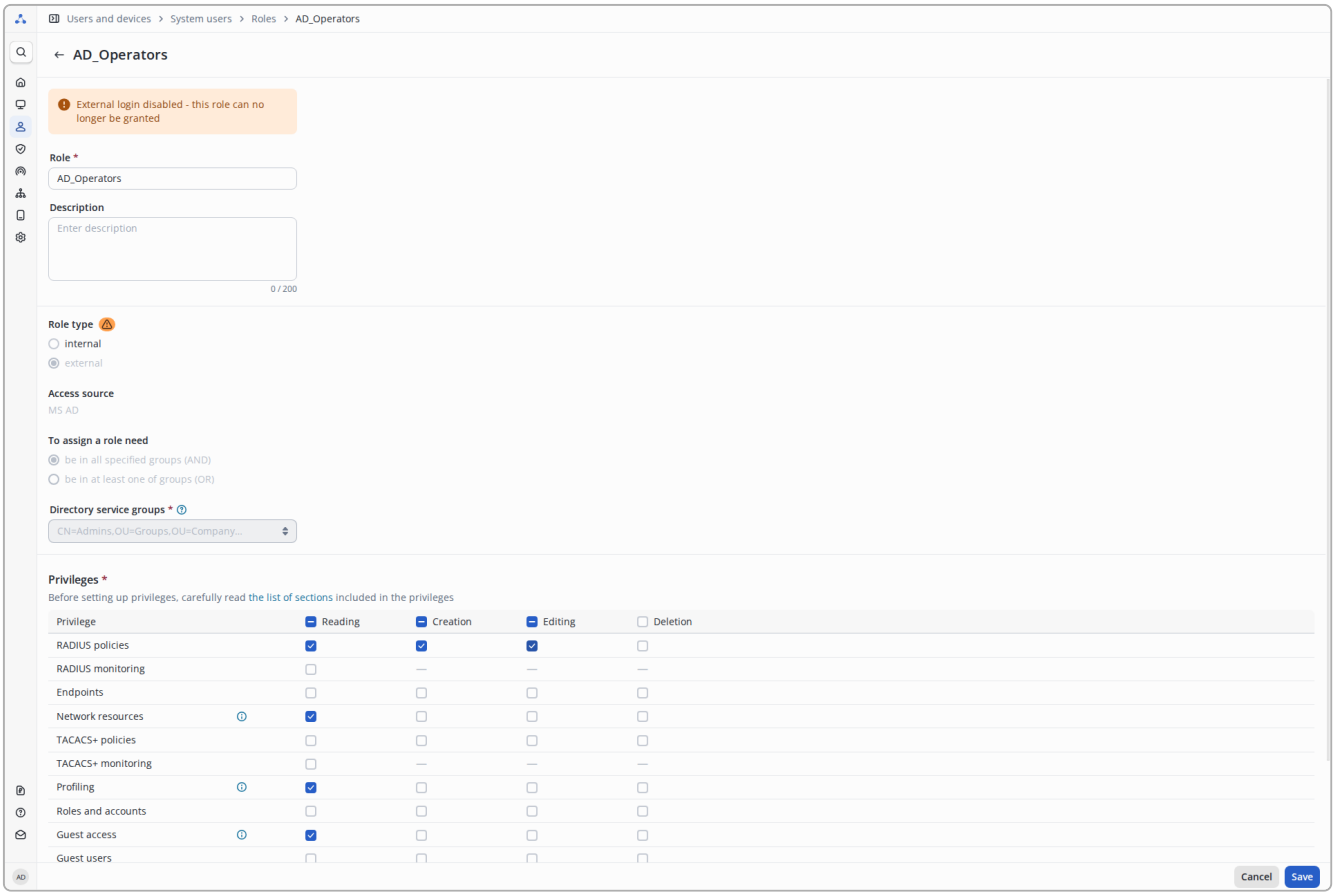


Figure 113. Unavailable external role editing form (External login disabled)

- In the **Role type** block, the **"external"** option is disabled — only the **"internal"** type can be selected.
- Blocks related to external authentication (**Authentication source** and **Groups from directory service**) are not available for editing.

Duplicating an unavailable external role requires changing the role type to **"internal"**.

Specifics When Changing License Level

License Upgrade

After upgrading the license level, additional configuration of privileges may be required. Roles that require additional configuration are marked with a warning:

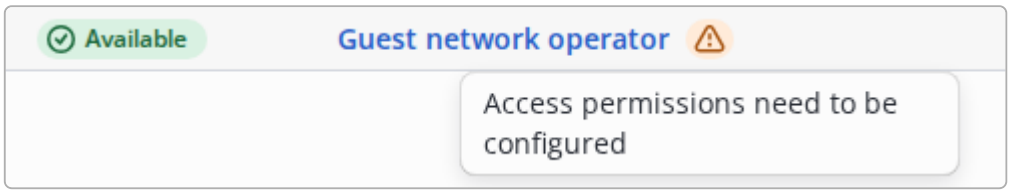


Figure 114. Warning about need for role reconfiguration

Users with such roles will see a system notification in the interface:

Figure 115. Notification in navigation menu "Role Configuration Required"

License Downgrade

When editing a role that has privileges not included in the current license, the rights to these privileges will be reset after confirmation of saving:

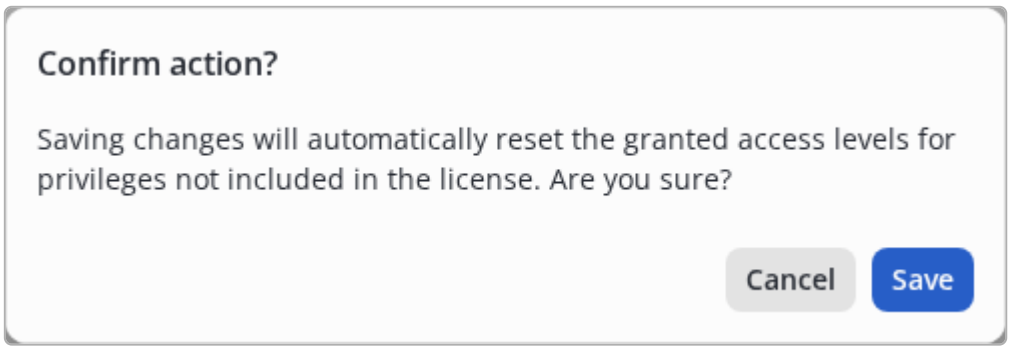


Figure 116. Confirmation of saving changes

Network resources

Network device (authenticator, NAS - Network Access Server) - a station device that connects client devices to the network and implements their authentication using the 802.1x protocol, MAB or portal authorization.

Network devices are managed in the *"Users and devices"* → *"Network resources"* menu.

Contains sections:

- Devices - section for settings for interaction with network devices;
- Device groups - section for setting group characteristics that can be used when configuring network devices;
- Device profiles - profiles that describe the features of interaction between network devices via the RADIUS and TACACS+ protocols.

Devices

Description

Network device (authenticator, NAS - Network Access Server) - a station device that connects client devices to the network and implements their authentication using the 802.1x protocol, MAB or other types of connections.

The "Devices" section is responsible for viewing, adding, deleting, editing network devices in the NAICE system.

If the device has not been added to the system, then the request for authorization via the RADIUS protocol from it will not be processed!

It is important to understand that creating a new device is impossible without the created device profile.

View a list of network devices

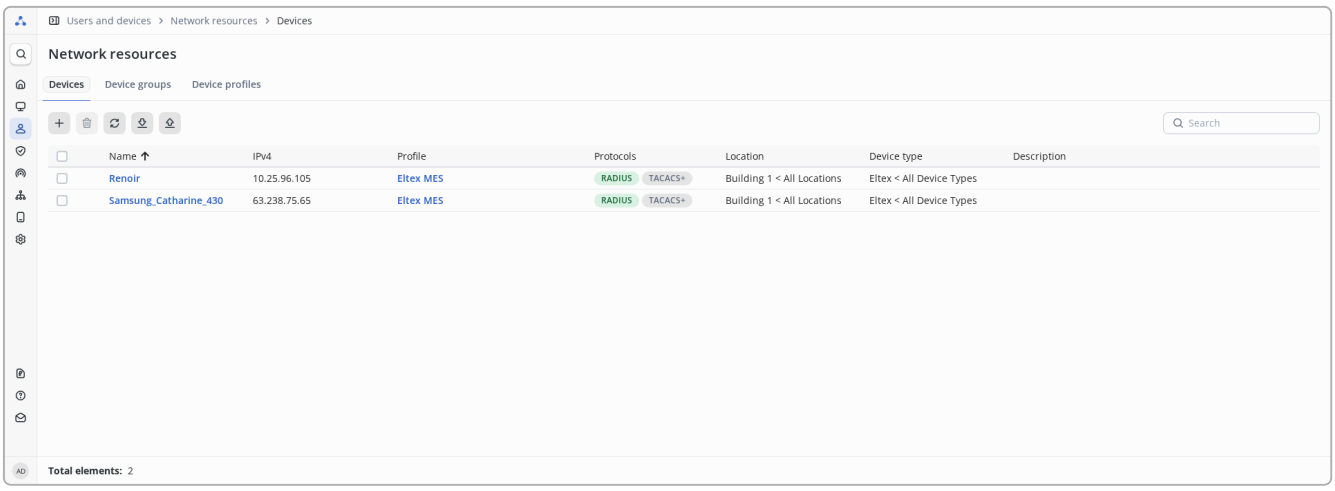


Figure 117. Table with a list of network devices on the viewing page

This page contains a table listing all network devices added to the system.

The table contains columns:

- `Name` – name of the network device.
- `IPv4` – IP address intended for interaction with the device (IPv4).
- `Profile` – assigned device profile. It is a hyperlink to the page for viewing/editing the settings of this device profile.
- `Protocols` — shows the configuration status of the RADIUS and TACACS protocols.
  - `Gray` status - the protocol is disabled in the selected profile;
  - `Red` status - the protocol is enabled in the selected profile, but the secret is not specified in the device settings.;
  - `Green` status - the protocol is enabled in the selected profile, the secret is specified in the device settings.
- `Location` – a group that defines the location of the device.
- `Device type` – a group that defines the device type.
- `Description` – arbitrary description of the device.

When you hover over the line with the profile you are interested in, a hint appears when you click on it, you can view the settings for this profile.

It is possible to sort in direct and reverse order by the columns “Name”, “IPv4”, “Profile”. By default, sorting is performed in direct alphabetical order by the "Name" column.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).

- — Refresh table data.
- — Allows you to download data from a csv file.
- — Allows you to upload data to a csv file.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

At the moment, IPv4 is the only sign by which the system determines which device it is working with.
Only a complete IP match is available, which means the addresses of all devices must be added to the system explicitly.

Adding a network device

To add a network device, click .

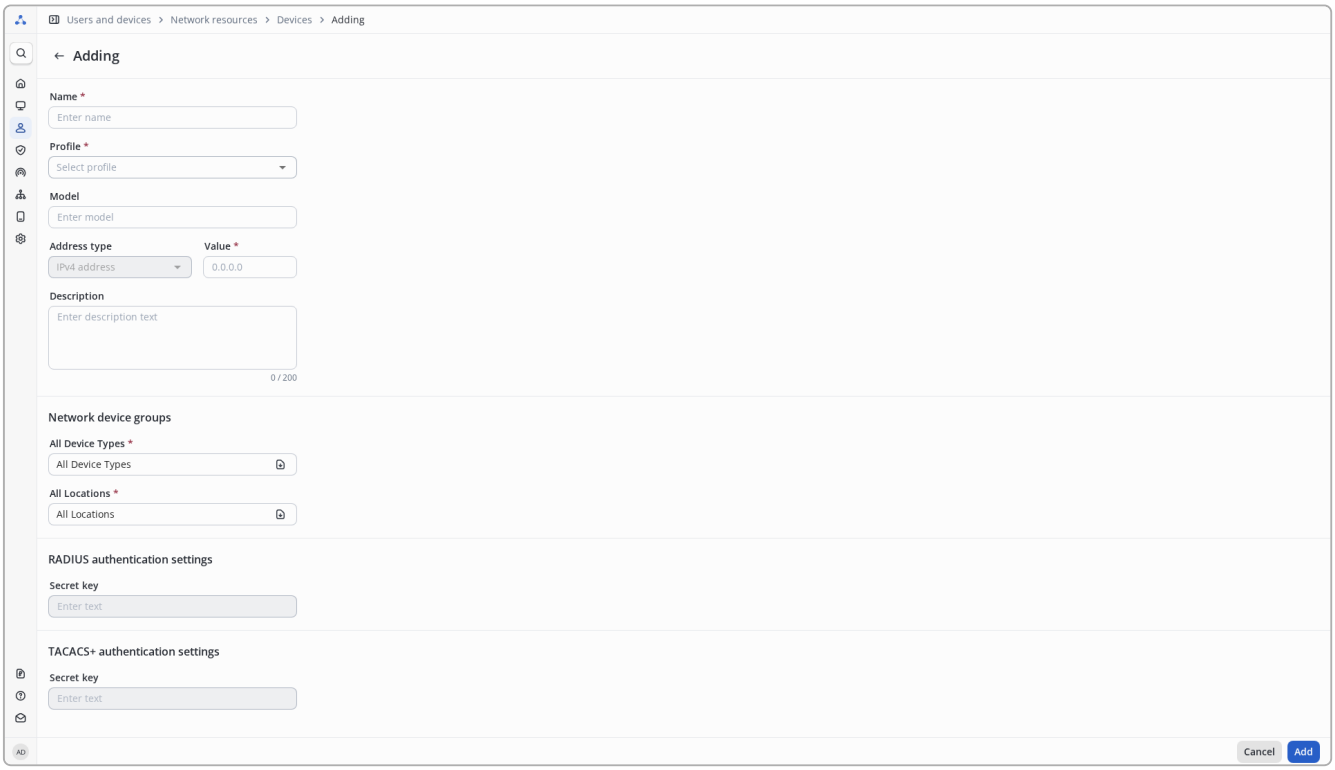


Figure 118. Add network device page

In the form that opens, you can fill in the following parameters:

- `Name` * – the name of the network device, must be unique within the list of network devices. Maximum length is 200 characters.
- `Profile` * – select a network device profile.
- `Model` – model of the network device. Maximum length is 100 characters.

`IPv4` * – IP address of the network device. Recorded as four numbers from 0 to 255, separated by dots.

- `Description` – arbitrary description. Maximum length is 200 characters.

Network device groups – select groups of network device type and location. If you do not make a choice, default groups (i.e. root) will be assigned.

When you create a new root group, as described in section Device groups, they will appear automatically in the *Network device groups* list.

RADIUS authentication settings contains:

- Secret key * for interaction with a network device using the RADIUS protocol. It is a required field if the RADIUS protocol is enabled in the selected profile. Length from 1 to 200 characters.

TACACS+ **TACACS+ authentication settings** contains:

- Secret key for interaction with a network device using the TACACS+ protocol. Length from 0 to 64 characters.

Parameters marked with an asterisk * are required.

After entering the required data, click the **"Save"** button.

Editing a network device

To edit a network device, on the list page, click its name.

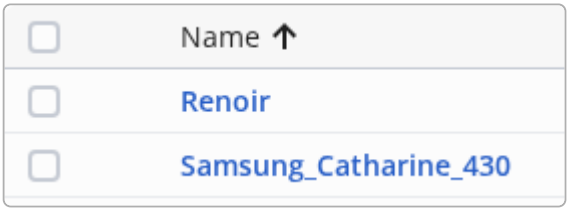


Figure 119. Hyperlink to the device editing page

After this, an editing window similar to the adding page will open.

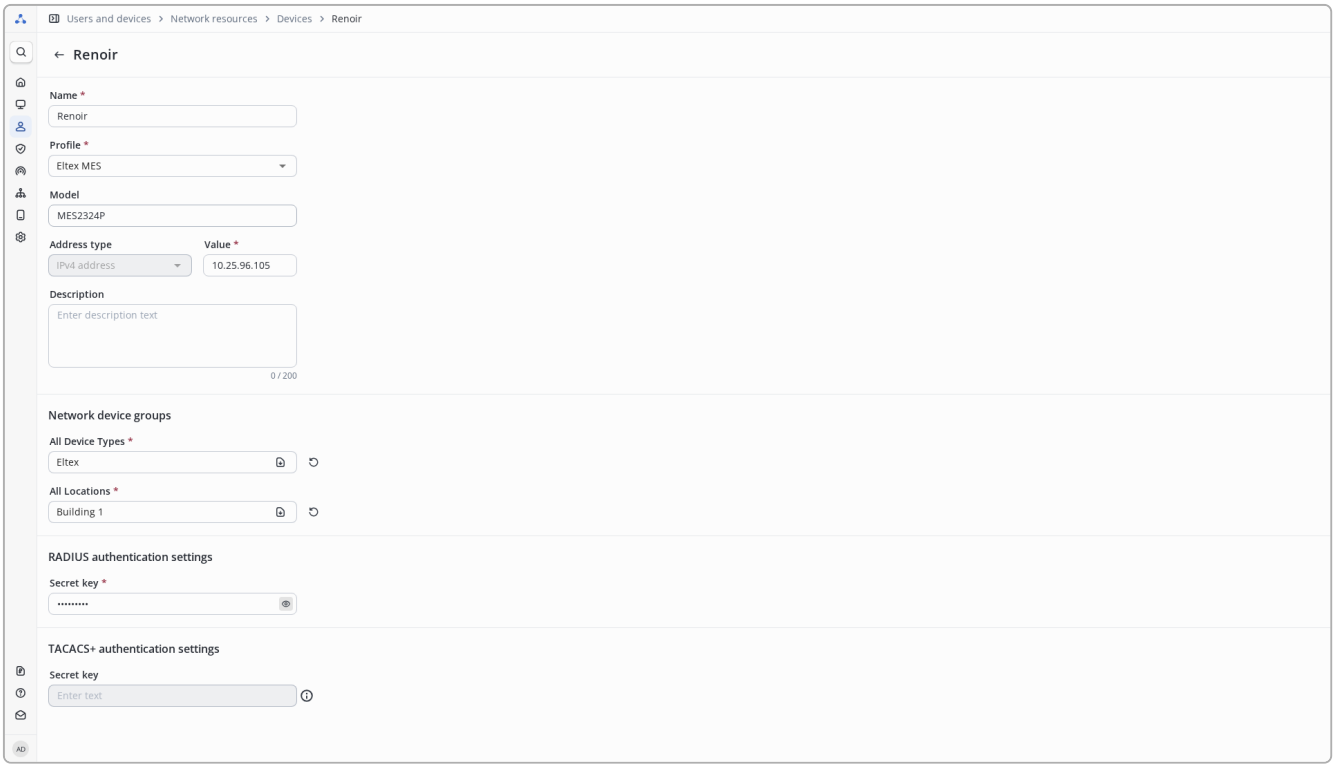


Figure 120. Device editing page

The RADIUS server included in NAICE caches network devices when they are added to the system. If there is an error when specifying a secret key and subsequent editing to the correct key, this data in the cache will not be updated. In this case, restart the naice-radius docker container to re-read the new data from the database.

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Removing a network device

To delete, in the list window, select the checkbox to the left of the name of the network devices that you want to delete, and click the button  at the top left.

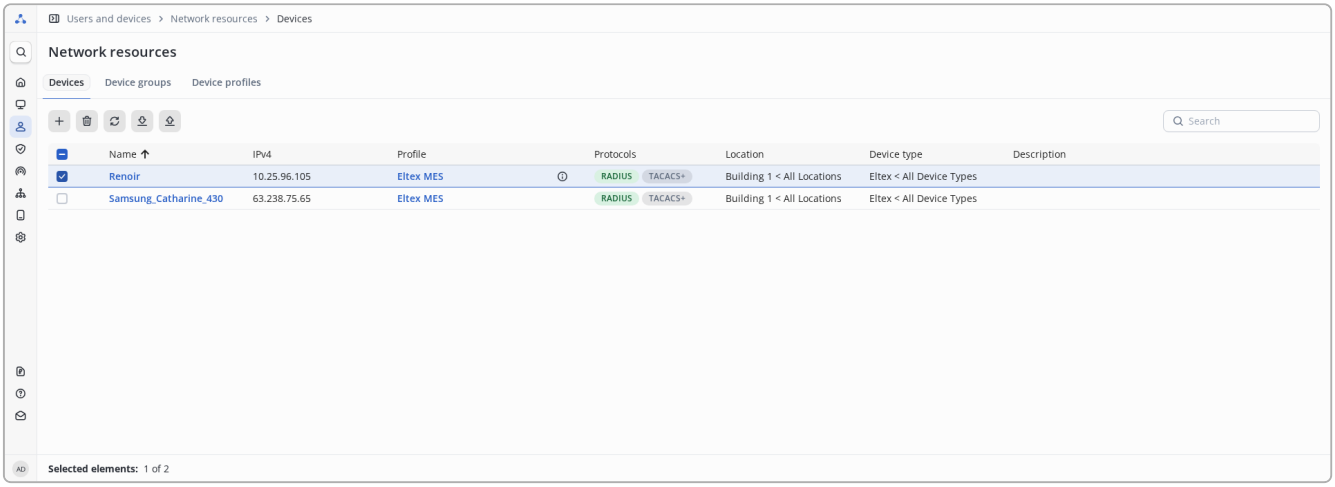


Figure 121. Selecting a device in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

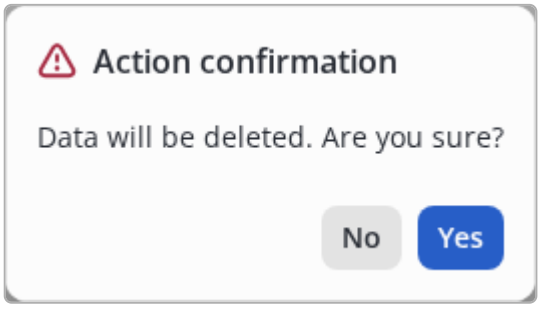


Figure 122. Modal dialog for confirmation

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

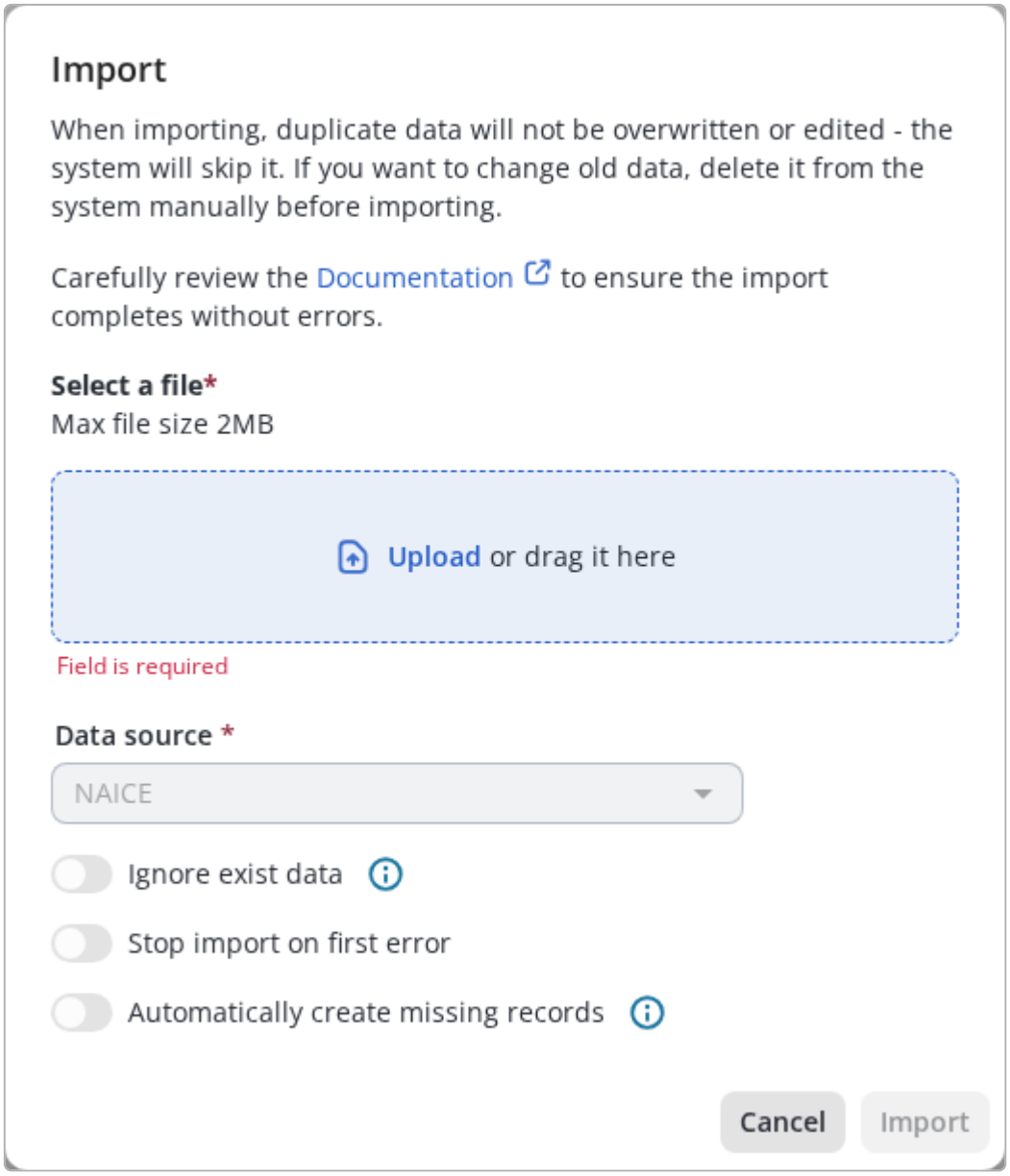


Figure 123. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.

- Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

Stop import on first error

- On: When importing, missing records will be filled in automatically. The list of auto-completed entries can be found by hovering over the tooltip to the right of the switch.
- Off: All required fields must be filled in manually.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

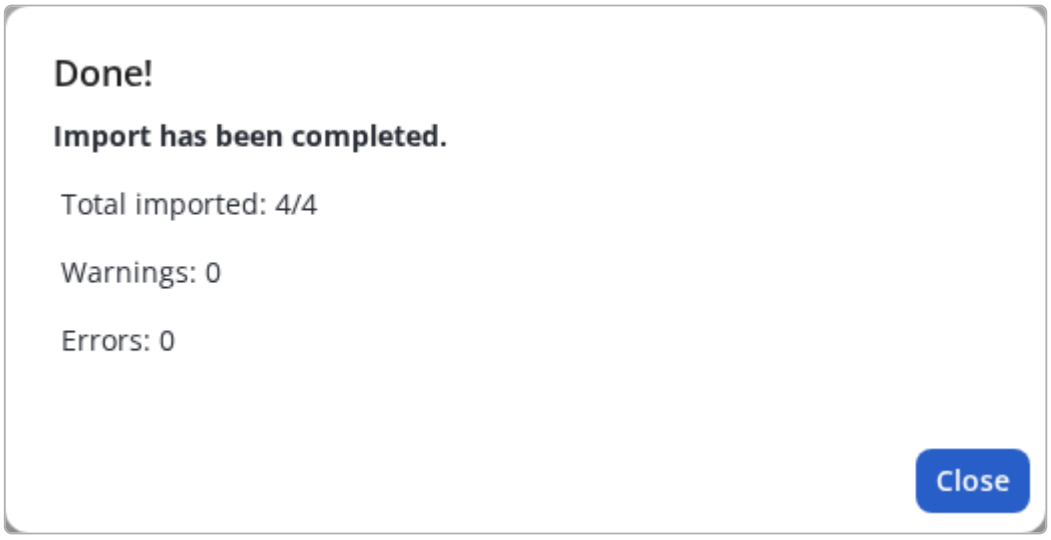


Figure 124. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

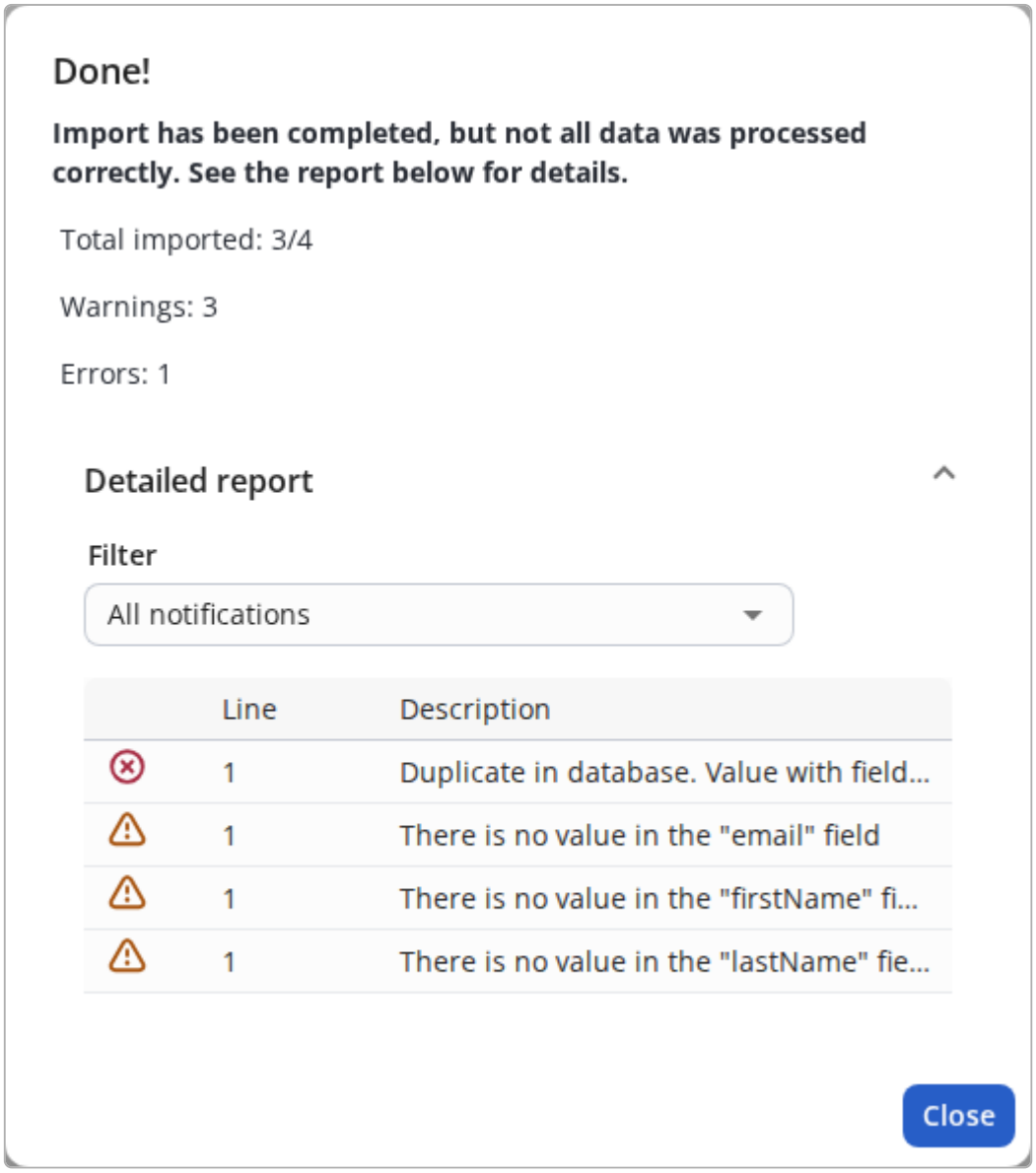


Figure 125. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Devices

For Network devices imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
name:Required	Name of the network device	**Required** Must be unique Maximum length - 100 characters
description	Free-form description of the device	Maximum length - 200 characters
ip_address:Required	IP address of the device (IPv4)	**Required** Must be unique Format: four numbers `0-255`, separated by dots
model_name	Model of the network device	Maximum length - 100 characters
network_device_profile:Required	Network device profile	**Required** **Profile must exist in the system**
network_device_groups	Groups to which the device will belong (full path specified)	**Groups must exist in the system** Format: `group#subgroup` Path separator: ;
radius_secret	RADIUS secret key	**Required when RADIUS is enabled in the profile** Length: 1-200 characters Spaces are not allowed
tacacs_secret	TACACS+ secret key	Maximum length - 64 characters Spaces are not allowed

If no groups are specified for the device in `network_device_groups` or groups are not found, root groups will be assigned to it.

Example of correctly formatted file content

"name:Required"	"description"	"ip_address:Required"	"model_name"	"network_device_profile:Required"	"network_device_groups"	"radius_secret"	"tacacs_secret"
"MES"	""	"10.25.96.105"	"MES2324P"	"Eltex MES"	"All Locations#Building 1;All Device Types#Eltex"	"secret123"	"secret123"

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

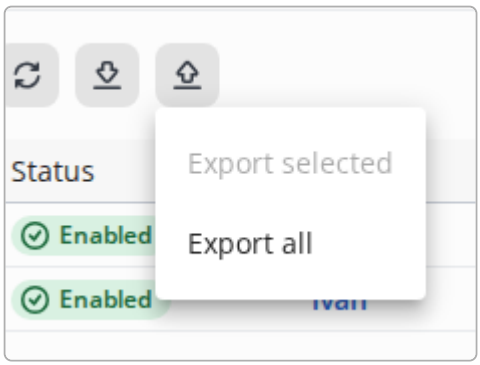


Figure 126. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

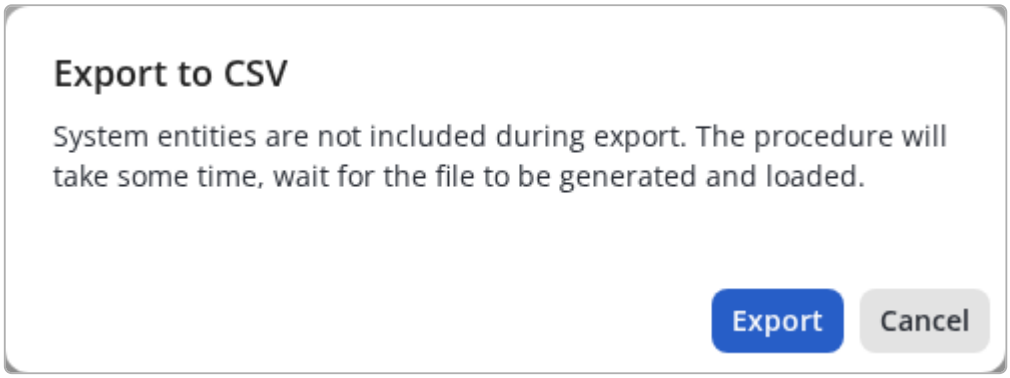


Figure 127. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

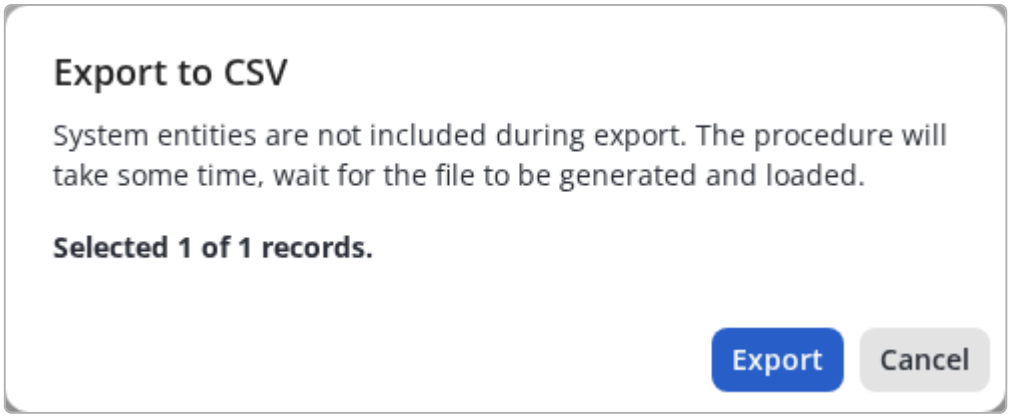


Figure 128. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for Devices

The full path to the subgroup that includes the device will be specified using the separator - `#`. Each individual path to a group will be separated using - `;`.

The structure of the CSV file for network devices is described in the section "Import particularities for Devices".

Device groups

Description

Device groups are intended for aggregation network devices according to various characteristics, with the further ability to define different authorization scenarios for different groups in RADIUS policies or Network devices policies.

View groups

This page contains a table listing all groups.

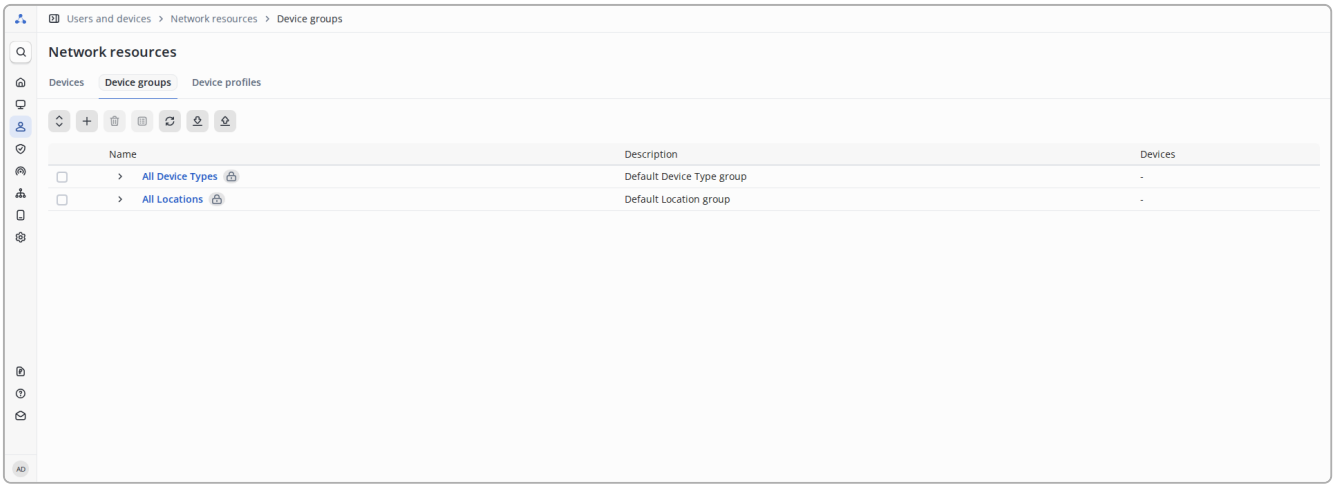


Figure 129. Group list view page

By default, there are two root groups:

- **All Device Types** — to form groups based on the type of network devices
- **All Locations** — to form groups based on the location of network devices.

These groups are system and cannot be deleted or changed.

If necessary, you can add new root groups. Thus, the system user can create any hierarchy of devices, grouping them according to any characteristics, where the *attribute* is included in the Name of the root group, and the *attribute values* are included in the Names of child groups.

The table contains columns:

- `Name` — name of the group
  - — This entity is system and cannot be deleted or edited.
- `Description` — arbitrary description of the group
- `Devices` — the number of devices in the group (for root groups the number of devices is not displayed)

Sorting is not provided.

Controls:

- — Expand all groups.
- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Show devices of the group and its subgroups (inactive until the group is selected).
- — Refresh table data.
- — Allows you to download data from a csv file.
- — Allows you to upload data to a csv file.
- — Expand the list of group subgroups.

- — Collapse the list of group subgroups.
- — Checkbox for selecting a group (you can select only one group).

Add a group

Adding a root group

To add a root group, click + at the top left of the group list when no group is selected.

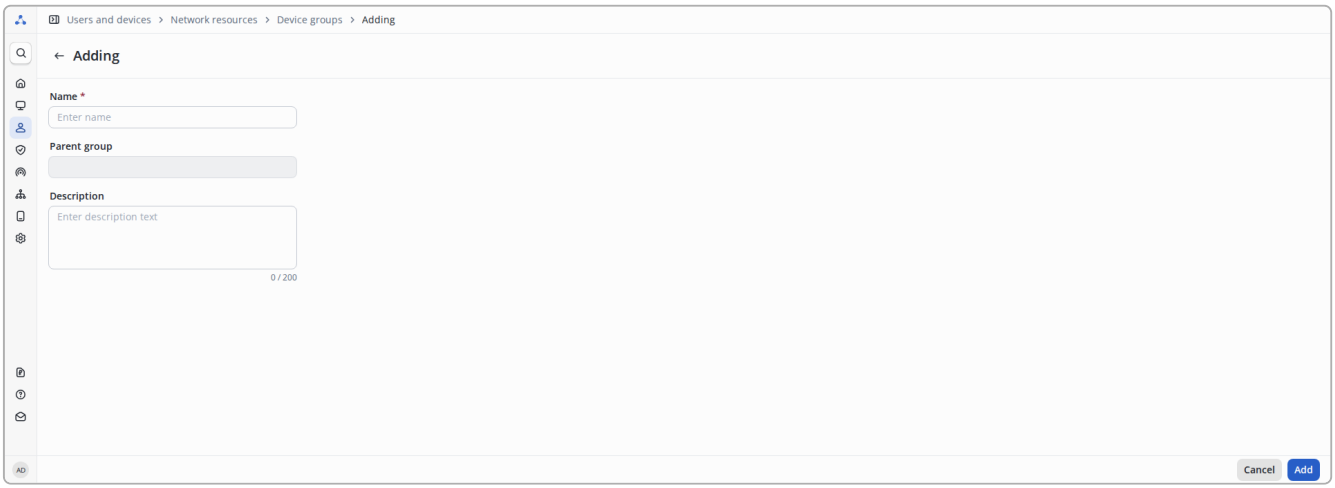


Figure 130. Page of add group

In the window that opens, you can fill in:

- `Name` * — name of the group. Maximum length is 100 characters.
- `Description` — description. Maximum length is 200 characters.
- `Parent group` — filled in automatically, the value is taken from the group for which the subgroup is being created. When creating a root group, the field will be empty.

Parameters marked with an asterisk * are required.

After entering the required data, click the **"Save"** button.

Add a subgroup to an existing group

To add a group to an existing group, select it using the checkbox to the left of its name and click +.

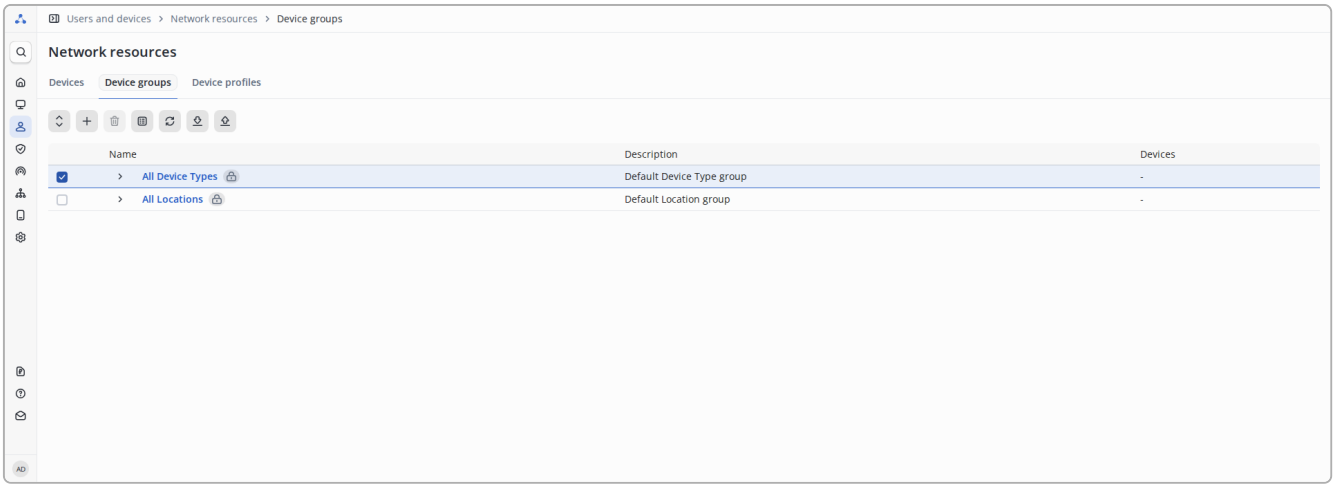


Figure 131. Page with selecting a root group to add a child group

When you add a subgroup, the "Parent group" field displays the name and ID of the parent group. This field cannot be changed.

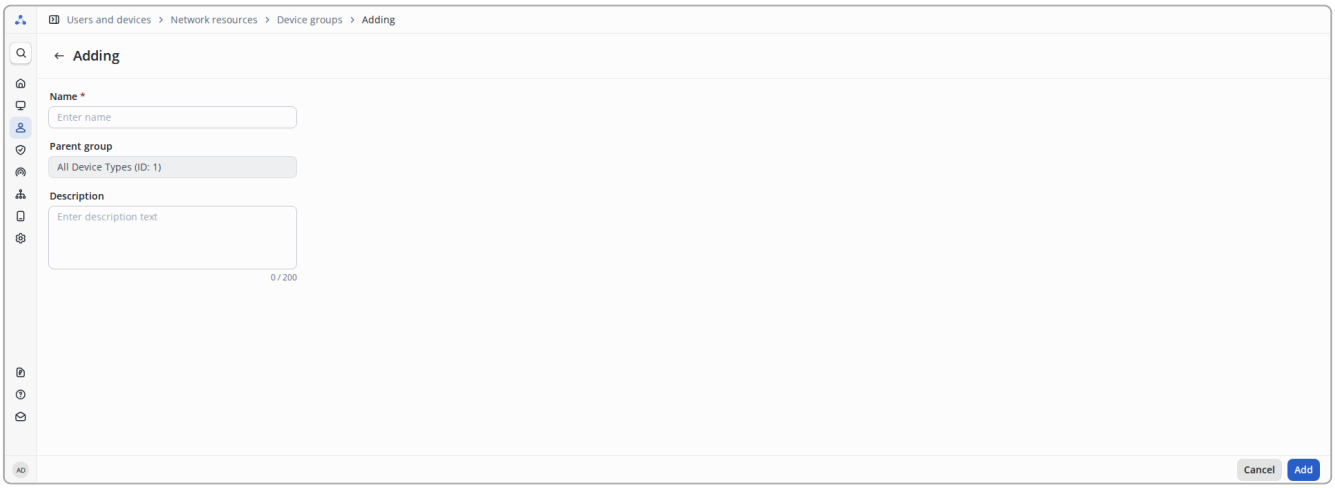


Figure 132. Page of added subgroup

Group editing

To edit a group, click on its name.

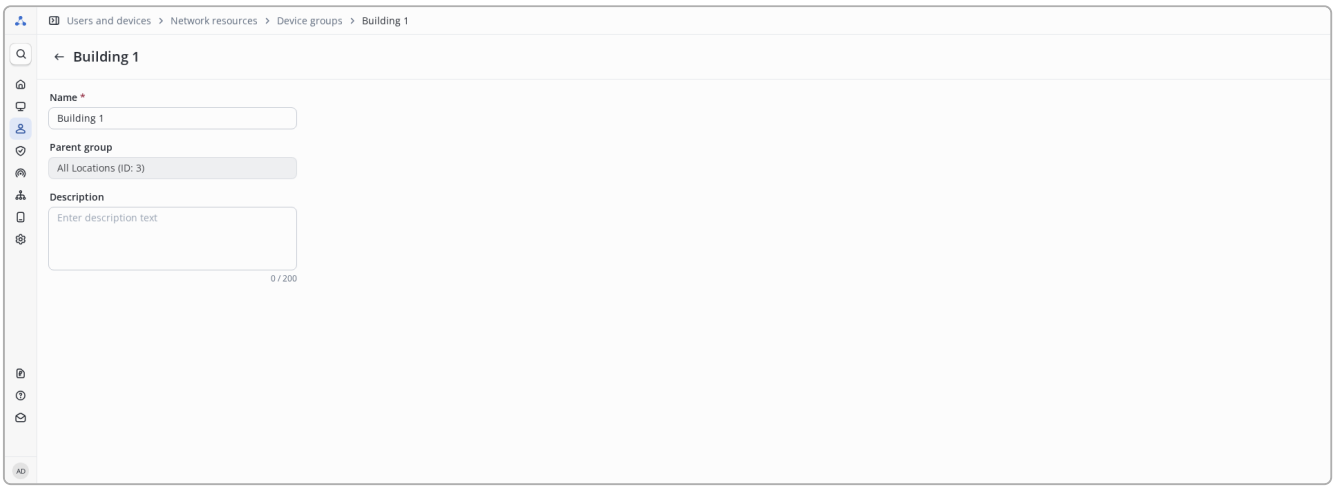


Figure 133. Group edit page

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

You cannot change the Parent Group. There is no procedure for moving a subgroup to another parent group. To change it, you need to delete the group and create it as a subgroup of another group.

Delete a group

To delete in the list window, select the checkbox to the left of the name and click the button  at the top left.

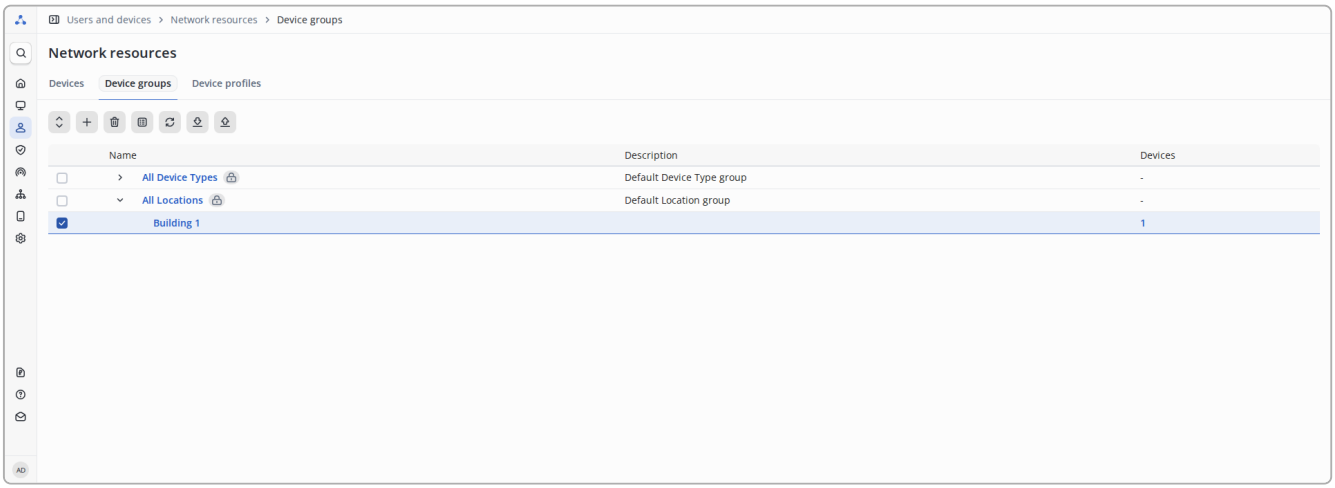


Figure 134. Page with a selected group for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

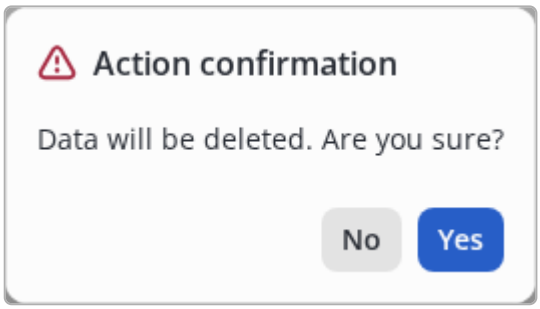


Figure 135. Modal dialog for confirmation

Restrictions:

- you cannot select and delete multiple groups;
- you cannot delete the "All Device Types" and "All Locations" system groups;
- you cannot delete a group containing subgroups;
- you cannot delete a group that is assigned to a network device.

View devices in a group

There are two ways to view devices in a group:

- viewing devices in a group and its subgroups by selecting a group and clicking on ;
- viewing devices of only this group by clicking on the counter opposite the group in the "Devices" column.

In both cases, a sidebar will open on the right side of the screen with a table of devices in the group.

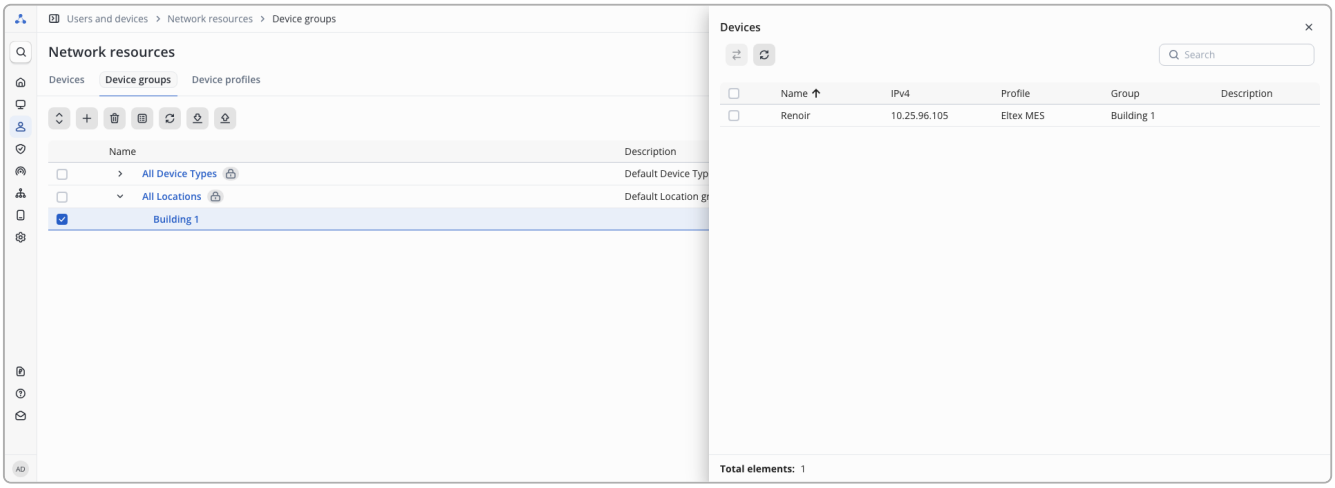


Figure 136. Panel for viewing devices in a group

The table contains columns:

- `Name` — device name;
- `IPv4` — IPv4 address of the device;
- `Profile` — device profile;
- `Group` — a subgroup of the device within this root group. Does not appear if the panel is open when clicking on the device counter.
- `Description` — arbitrary description of the device.

Sorting by "Name" and "IPv4" is available. By default, sorting is performed in direct (alphabetical) order by the "Name" field.

Controls:

- — move the devices selected by the checkbox to another group (inactive until at least one element is selected).
- — refresh table data.
- `Search` — performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.
- — checkbox, which is responsible for selecting network devices to perform further actions.
- — change the current sort order.

Move a device to another group

To move devices to another group, in the device list window, mark the devices that need to be moved with a checkbox on the left. After clicking on the device move button ⇄, a window will open with the selection of a group to move *within the same root group*.

Figure 137. Panel for moving devices to a group

The group is selected from the list that opens by clicking on .

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"\"Test command set\""	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

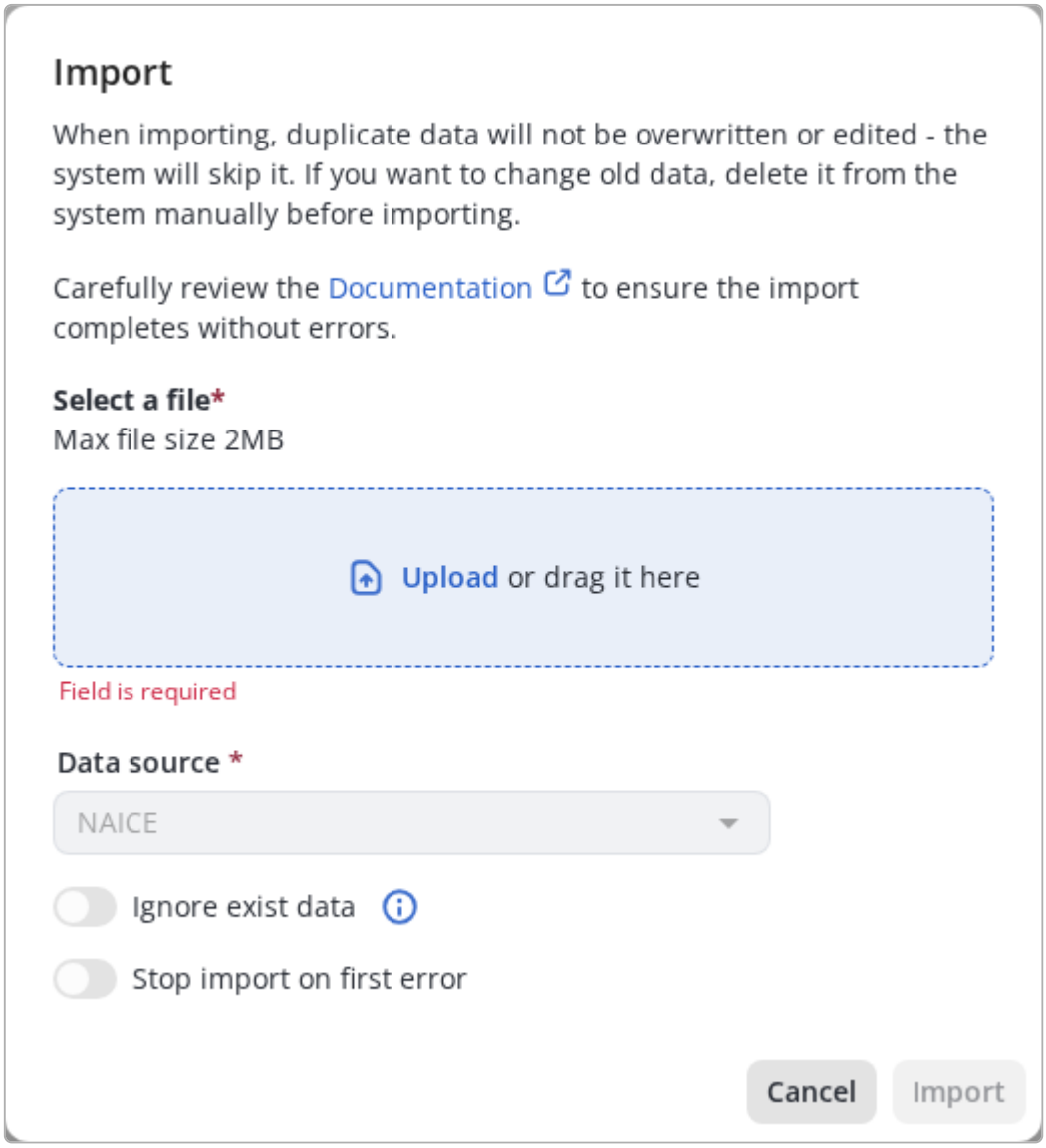


Figure 138. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.
   -

Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

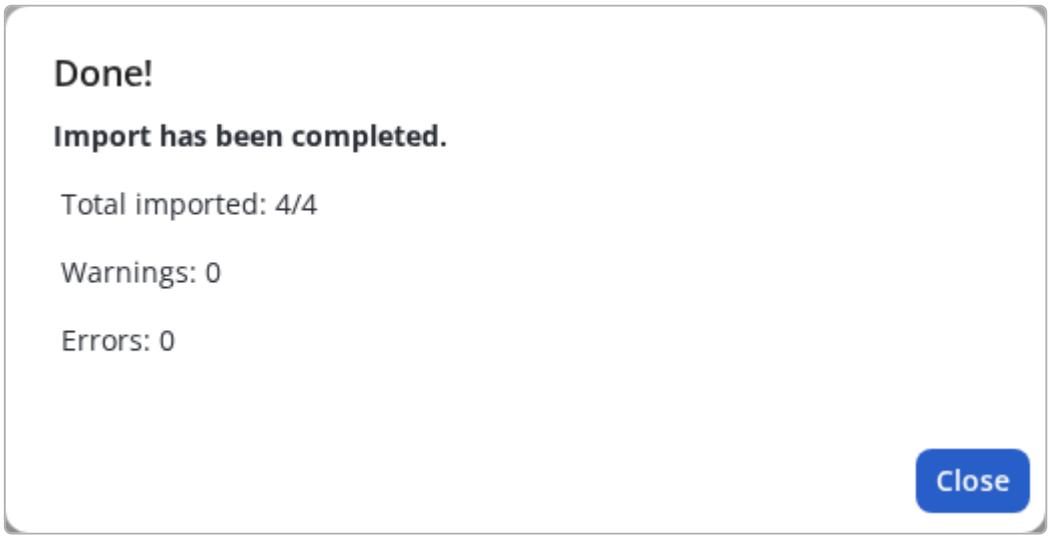


Figure 139. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

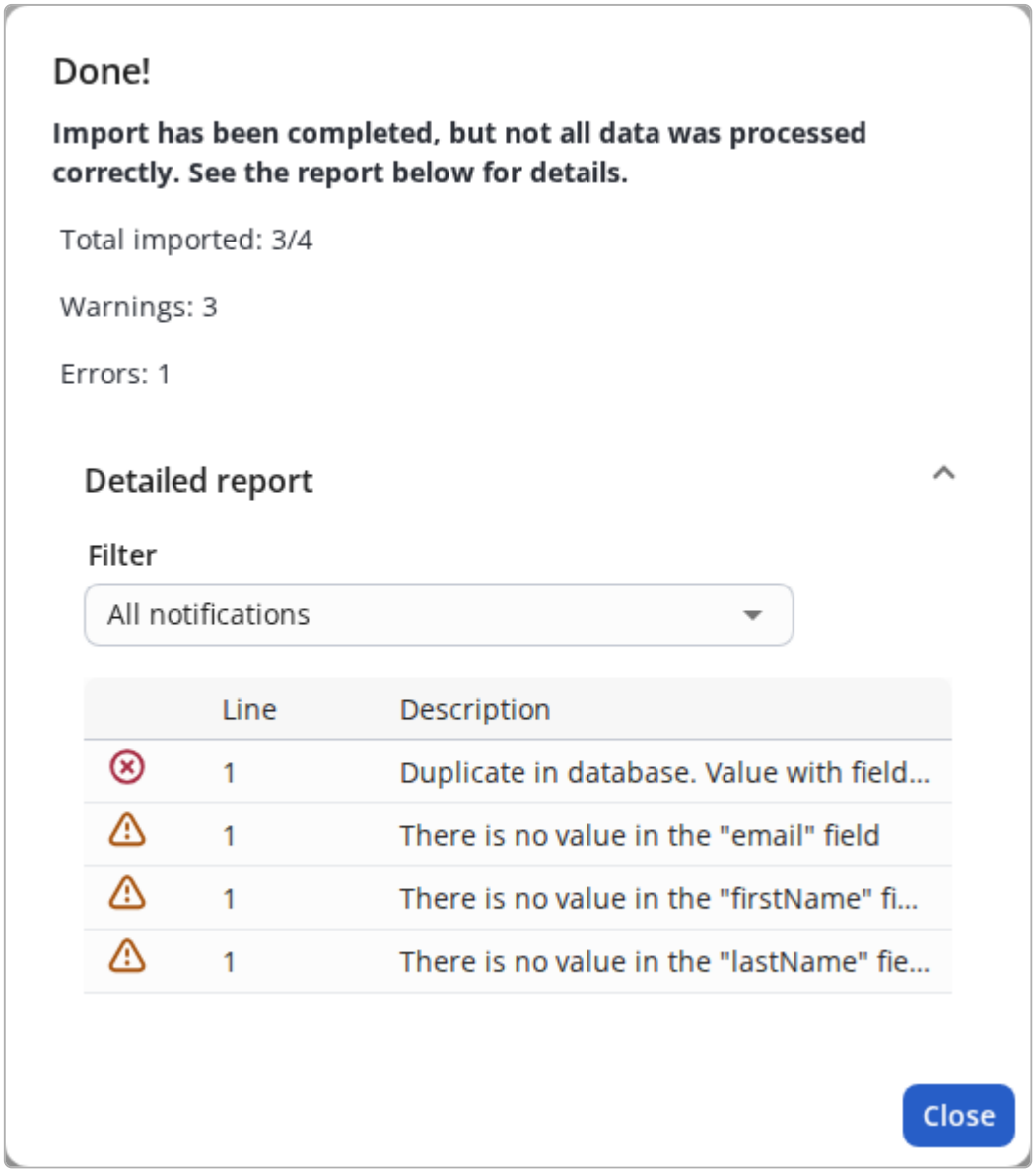


Figure 140. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Device groups

For Device groups imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
name:Required	Name of the group (full path must be specified)	**Required** Format: `group#subgroup`
description	Free-form description of the group	Maximum length - 200 characters

If there is no intermediate root/child group in the system, it will be created automatically.

Example of correctly formatted file content:

"name:Required"	"description"
"All Device Types#Switch"	""

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

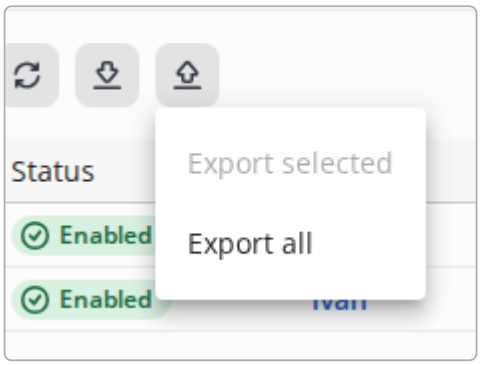


Figure 141. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

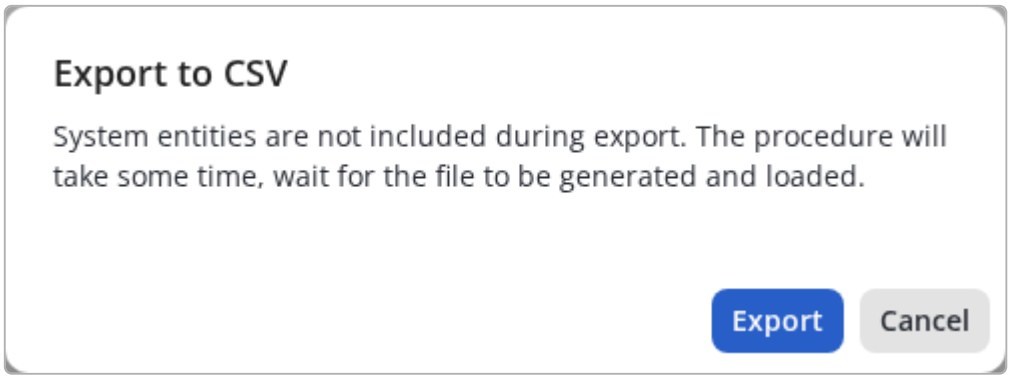


Figure 142. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

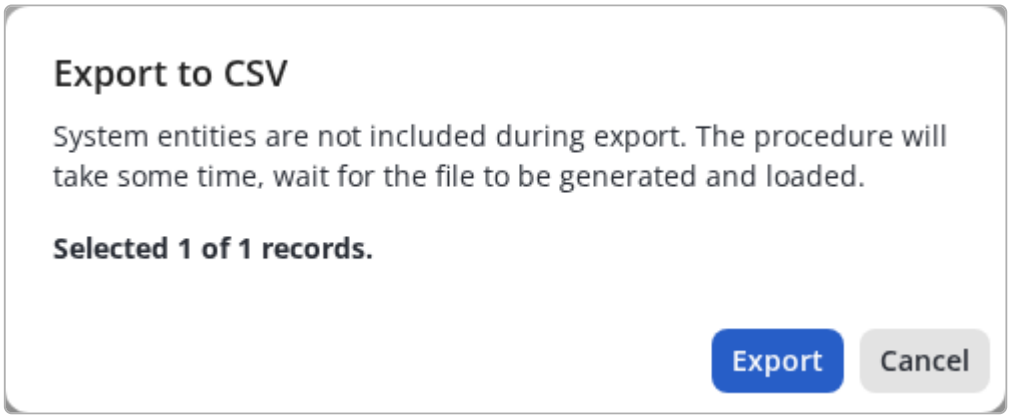


Figure 143. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for Device Groups

The name of the group will be specified in the format of the full path using the separator - `#`.

The structure of the CSV file for device groups is described in the section "Import particularities for Device groups".

Device profiles

Some functional described on this page are only available with an extended license. These features are marked with special labels in the form of colored icons next to the name.

Description

Device profiles are intended to summarize the settings of similar network devices. As a rule, devices from the same manufacturer and/or family have similar settings.

The main settings in device profiles are:

- *conditions for detecting the flow type* - upon receipt of which RADIUS attributes the user's connection will be determined, for example, as wired MAB or wireless 802.1x. Based on the connection type, you can configure access policies. For example, one VLAN can be assigned to a user connecting wired, and another VLAN for the same user connecting wirelessly.
- *process MAB* - the ability to authorize clients connected to this device via MAB and configure the features of this connection.
- *permissions* - configure the capability and RADIUS attributes for issuing VLANs and/or ACLs for clients connected to this device.
- *RADIUS CoA settings* - relevant if the device supports RADIUS CoA.
- ADVANCED *web redirection settings*.

View a list of device profiles

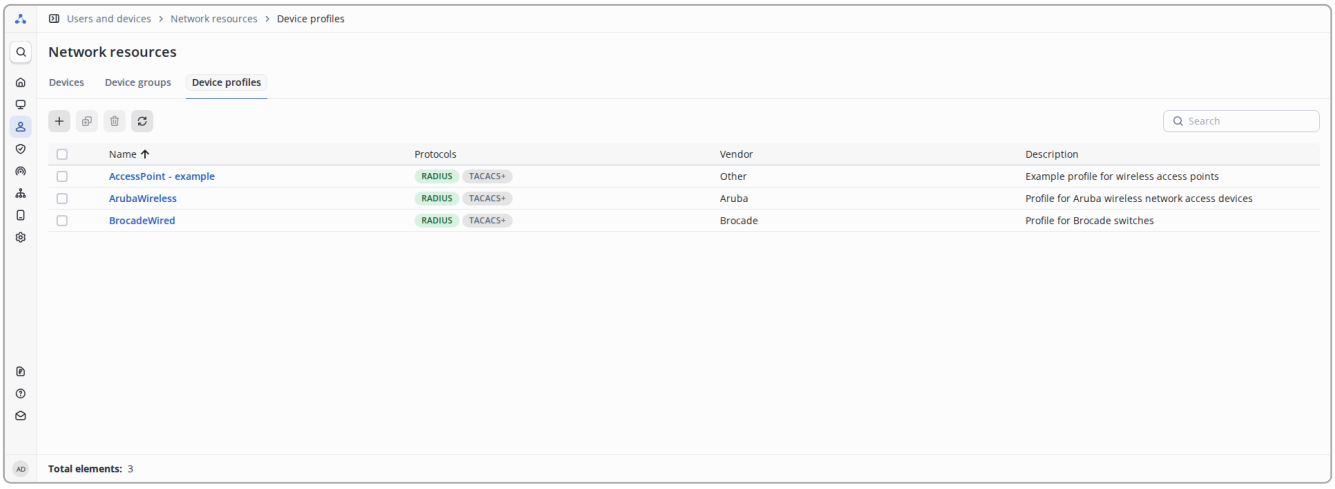


Figure 144. Table with a list of network device profiles

This page contains a table with a list of device profiles.

The table contains columns:

- `Name` - name of the profile;
- `Protocols` — shows the configuration status of the RADIUS and TACACS protocols.
  - `Gray` status - the protocol is disabled in the profile.
  - `Green` status - the protocol is enabled in the profile.
- `Vendor` - the name of the device vendor;
- `Description` - arbitrary description of the profile.

When you hover over the line with the profile you are interested in, a hint appears ⓘ when you click on it, you can view the settings for this profile.

Sorting by the columns `Name`, `Vendor` is available.

Controls:

- ＋ — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- ☐ — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- ↑ — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding a device profile

Page for adding a device network profile

To add a device profile, click +.

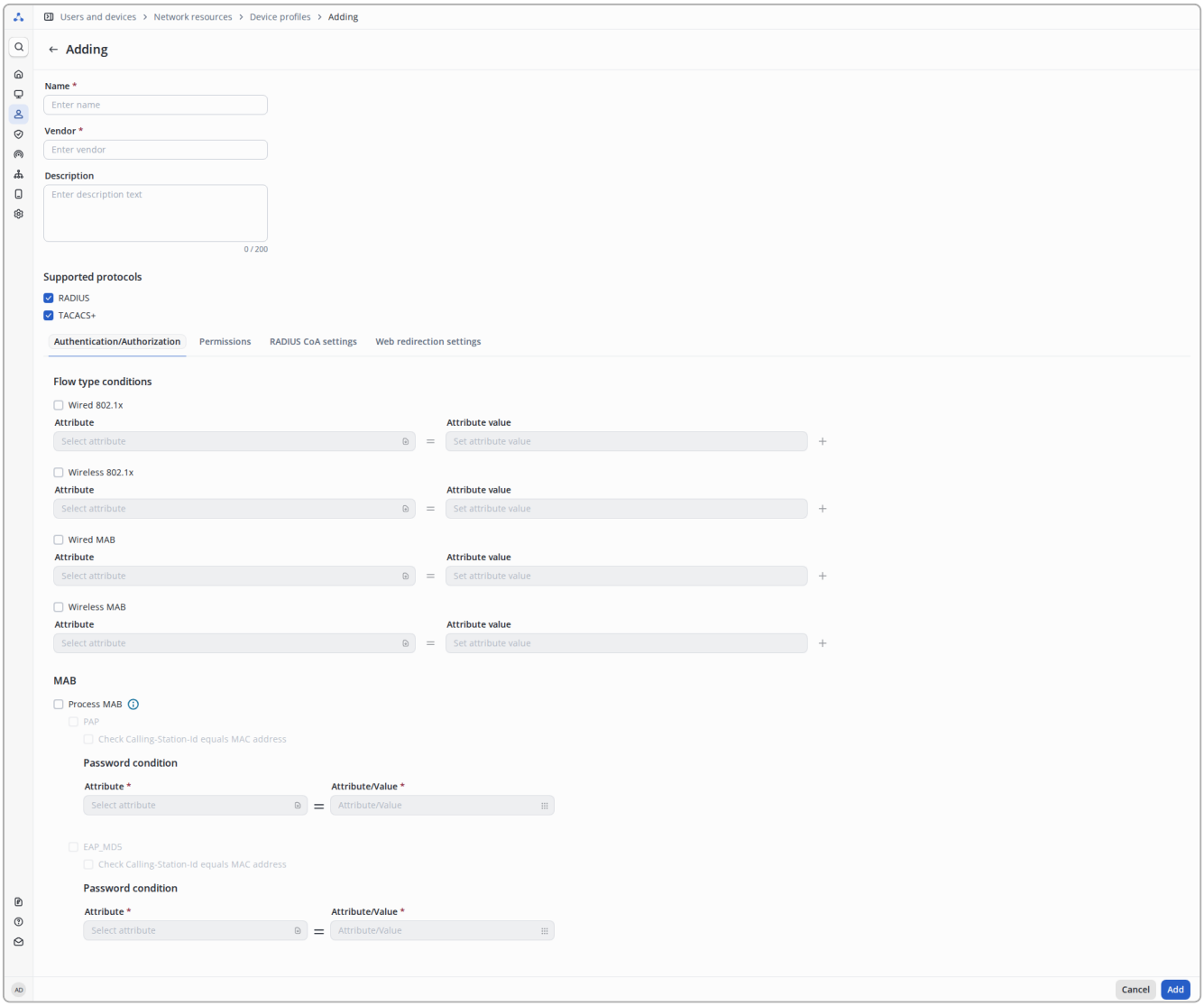


Figure 145. Page with filling device profile parameters. The Authentication/Authorization tab

In the window that opens, you must fill in the following parameters:

- `Name` * - name of the device profile. Maximum length is 100 characters.
- `Vendor` * - name of the network device vendor. Maximum length is 100 characters.
- `Description` : arbitrary description. Maximum length is 200 characters.
- `Supported protocols` - the protocols used to communicate with the network device. RADIUS and TACACS+ are enabled by default.

Authentication/Authorization - a setting block responsible for determining the flow type of endpoint.

- `Wired 802.1x / Wireless 802.1x / Wired MAB / Wireless MAB detected if the following condition(s) are met` - enable the setting for detecting one of the connection types.

ADVANCED Portal authorization requires `Wireless MAB` flow type detection to be enabled!

- `Attribute` - RADIUS attribute used in the condition.
- = means that the condition will be satisfied if the attribute is equal to the specified value. By clicking on the icon, you can change the condition to inequality.
- `Attribute value` - the value of the RADIUS attribute used in the condition.
-  - delete the condition.
-  - add a condition.

When enabling the detection of any connection type, the attributes will be set to default values. You can edit them or leave them unchanged.

This block is responsible for determining the connection type. If several RADIUS attributes are used in a condition, they are combined with a logical “AND”. If the connection type is not enabled or has not been defined, the user continues authorization, his connection type is considered undefined.

You can configure access policies based on the connection type. For example, one VLAN can be assigned to a user connecting wired, and another VLAN for the same user connecting wireless.

MAB - setting block responsible for resolving and configuring MAB authorization features.

ADVANCED Portal authorization requires MAB to be enabled and configured!

- `Process MAB` - enable MAB authorization permission on the device.
- `PAP / EAP_MD5` - enable MAB authorization permission for the specified protocols.
- `Check Calling-Station-Id and MAC address match` - Enables authorization only for devices whose RADIUS request’s Calling-Station-Id attribute matches the MAC address in the username. Requires the specified attribute to be present in the device’s RADIUS request.
- `Password condition` - the condition under which the password will be considered correct. By default, the condition is set to equal the password to the user login.

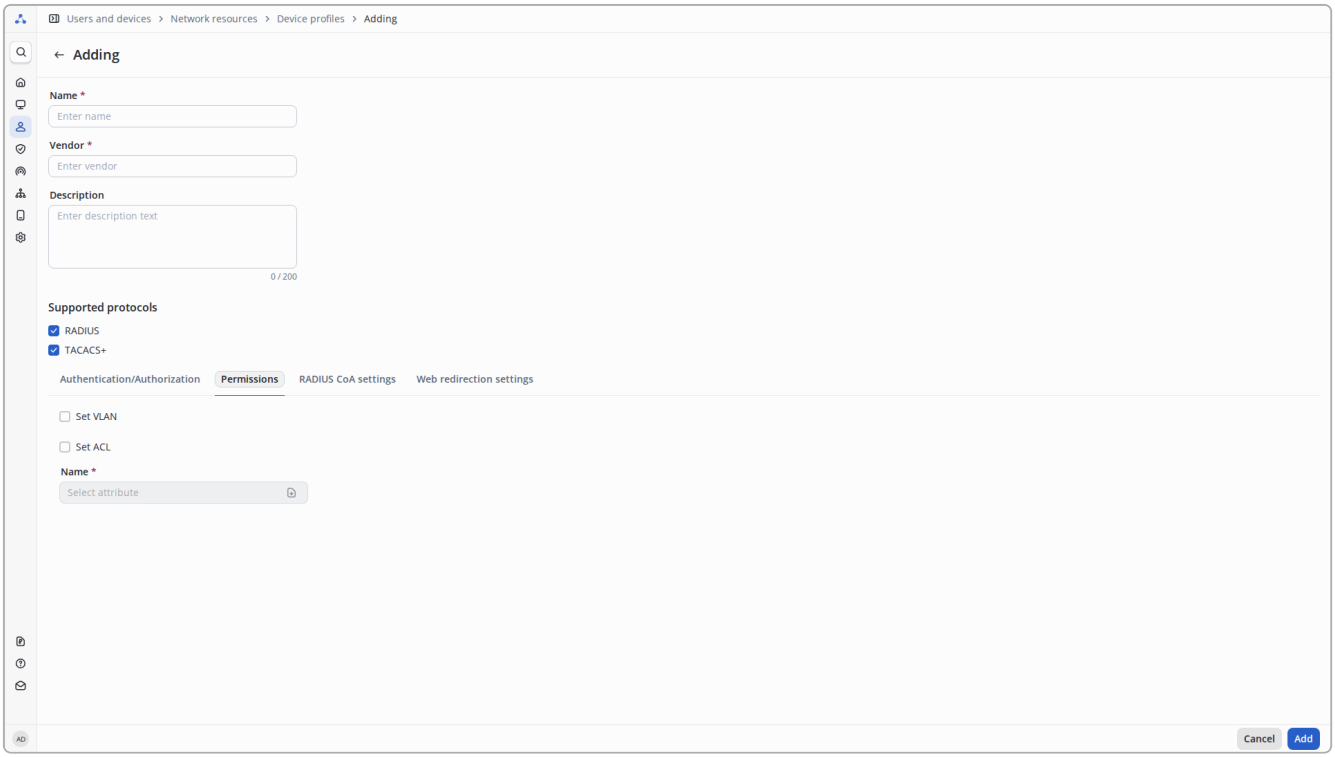


Figure 146. Page with filling device profile parameters. The Permissions tab

Permissions - a setting block that determines the possibility of simplified issuance of additional attributes to the user after authorization.

- `Set VLAN` - enable the possibility of simplified issuance of VLANs in RADIUS attributes.
  - `Default attributes` - use standard IETF RADIUS attributes for issuing VLANs.
  - `Unique attributes` - use vendor-specific RADIUS attributes to issue VLANs.
    - `ID` * is a vendor-specific RADIUS attribute for issuing a VLAN in the format of a number from 1-4094.
    - `Name` is a vendor-specific RADIUS attribute for issuing a VLAN in string format.
- `Set ACL` - enable the ability to simplify the issuance of the name of a static ACL in RADIUS attributes.
  - `Name` * is a vendor-specific RADIUS attribute for issuing the ACL name in string format.

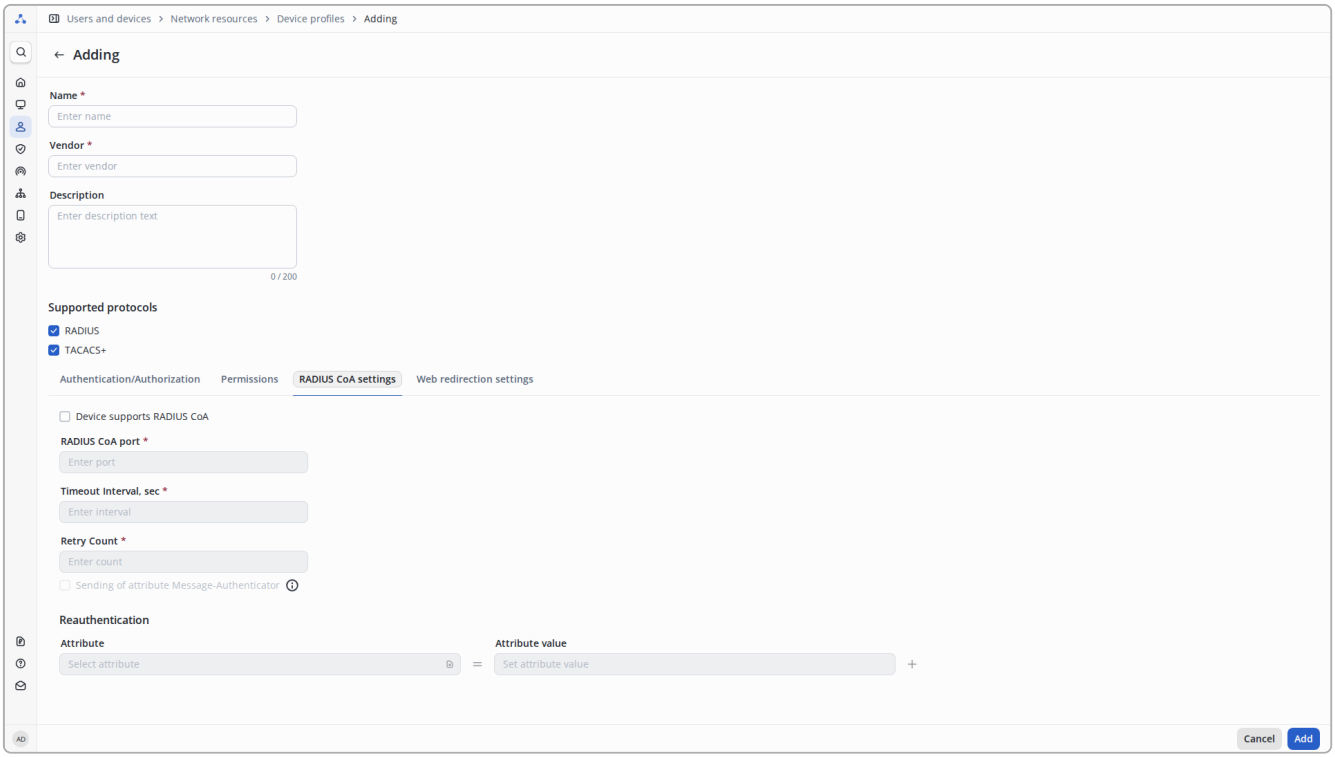


Figure 147. Page with filling device profile parameters. The RADIUS CoA settings tab

RADIUS CoA settings - a settings block that allows you to configure RADIUS CoA for dynamic management of user sessions via the RADIUS server.

- `Device supports RADIUS CoA` - enables the RADIUS CoA setting.
  - `RADIUS CoA port` * - The port for sending RADIUS CoA. This must match the port configured on the network device (the manufacturer-set value can be 1700 or 3799). If CoA is enabled, the default value in NAICE will be 1700.
  - `Timeout Interval, sec` * - The number of seconds during which a response is expected after sending the CoA.
  - `Retry Count` * - count of attempts to send a request if there is no response.
- `Sending of attribute Message-Authenticator` - The option adds an attribute for checking the authenticity and integrity of CoA and Disconnect packets.

The attribute value is formed based on the RADIUS secret key specified in the device settings. The packet recipient checks this value using the secret key known to it. If the values do not match, the packet is discarded, preventing the processing of forged packets.

- **Reauthentication** is the settings block responsible for re-verifying user credentials without disconnecting the connection.
  - `Attribute` - RADIUS attribute used in the condition.
  - `Attribute value` - the value of the RADIUS attribute used in the condition.

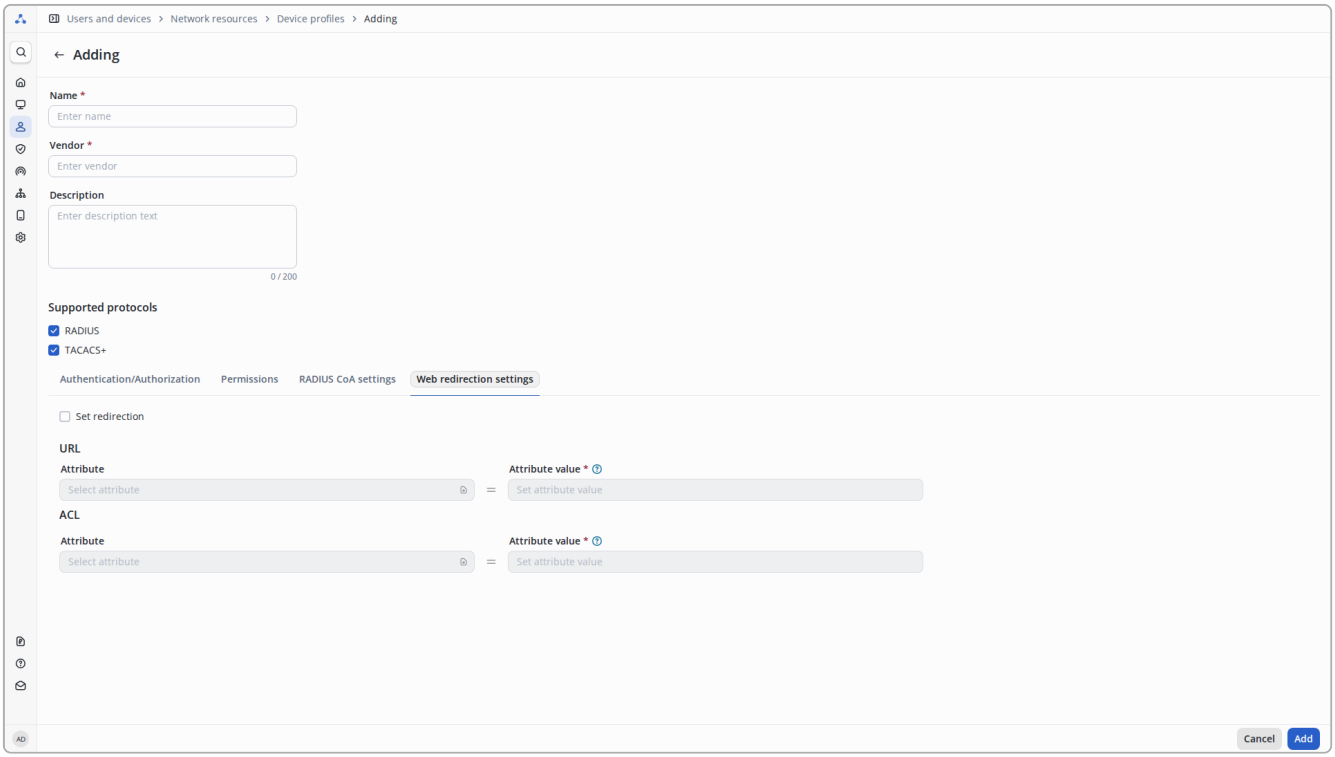


Figure 148. Page with filling device profile parameters. The Web redirection settings tab

ADVANCED **Web redirection settings** - a settings block responsible for automatically redirecting users to the web portal.

For portal authorization to work, you must enable WirelessMAB connection type detection!

- `Set redirection` - enables configuration of web portal redirect link parameters.
  - `URL` - parameters for passing the Guest Portal authorization page redirect link in the RADIUS packet.
    - `Attribute` * - RADIUS attribute used in the condition.
    - `Attribute value` * - RADIUS attribute value used in the condition.
  - `ACL` - parameters for passing the ACL in the RADIUS packet that will be assigned when redirecting to the portal.
    - `Attribute` * - RADIUS attribute used in the condition.
    - `Attribute value` * - RADIUS attribute value used in the condition

Parameters marked with an asterisk * are required.

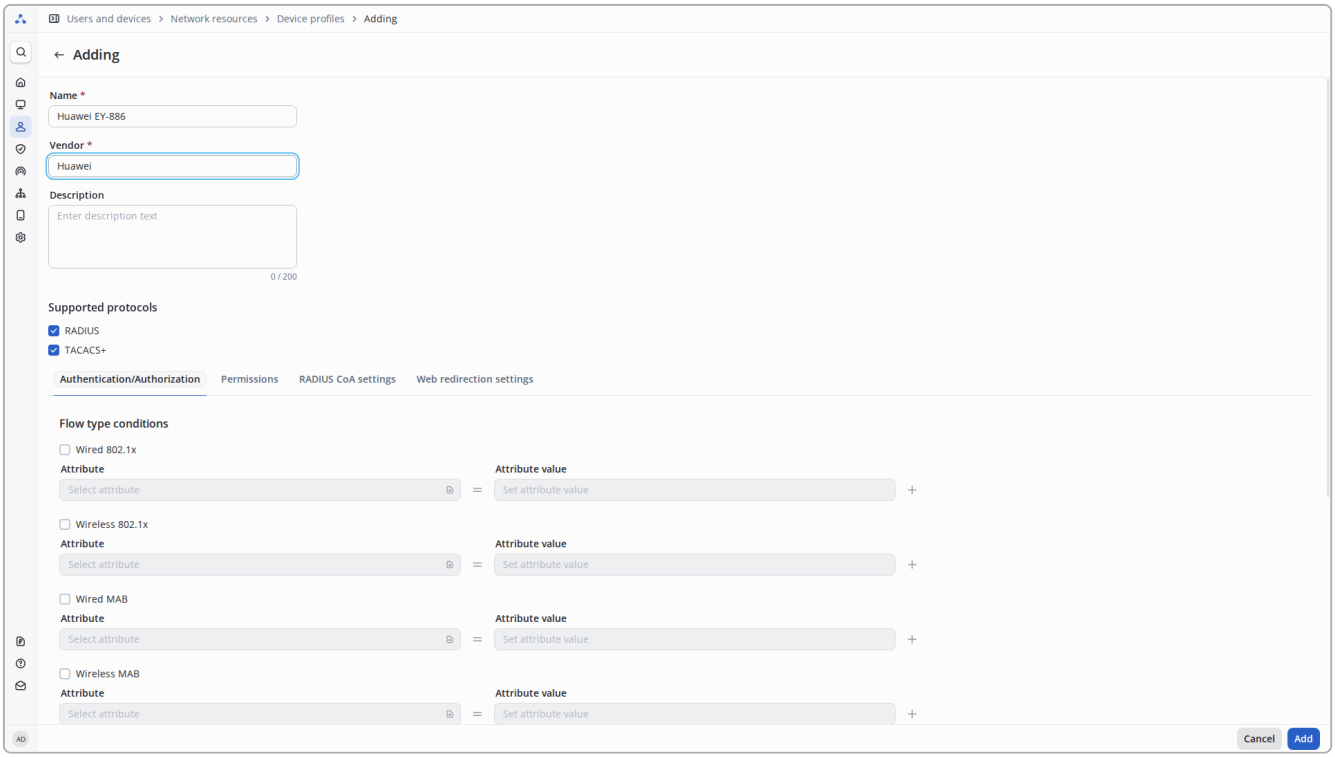


Figure 149. Page with filling device profile parameters

After entering the required data, click the **"Save"** button.

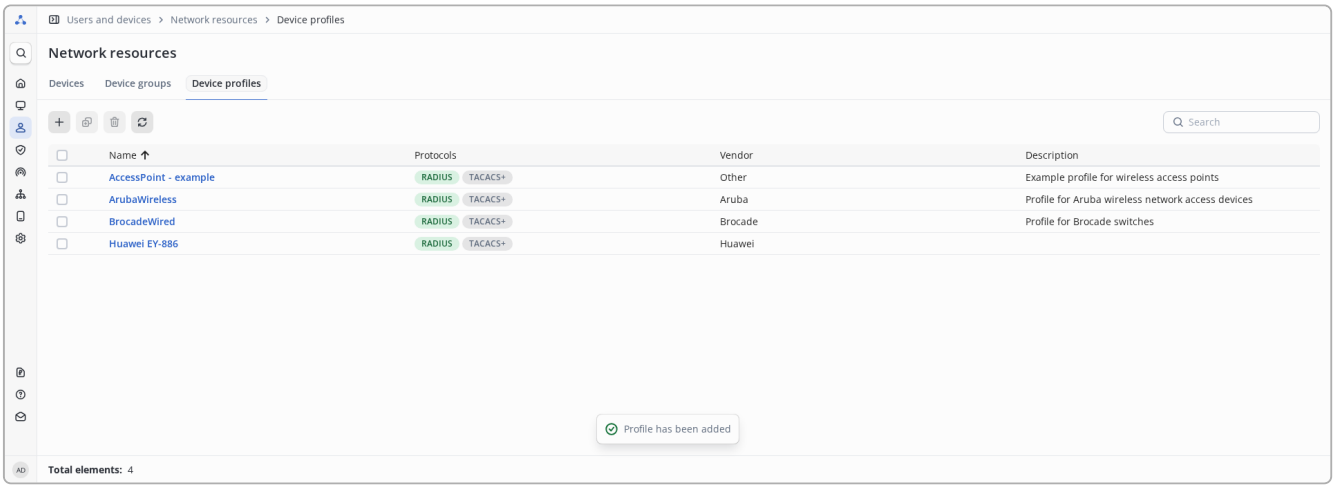


Figure 150. Network device profile creation success page

Editing a device profile

To edit a device profile, you need to click on its name on the list page, after which the editing window will open.

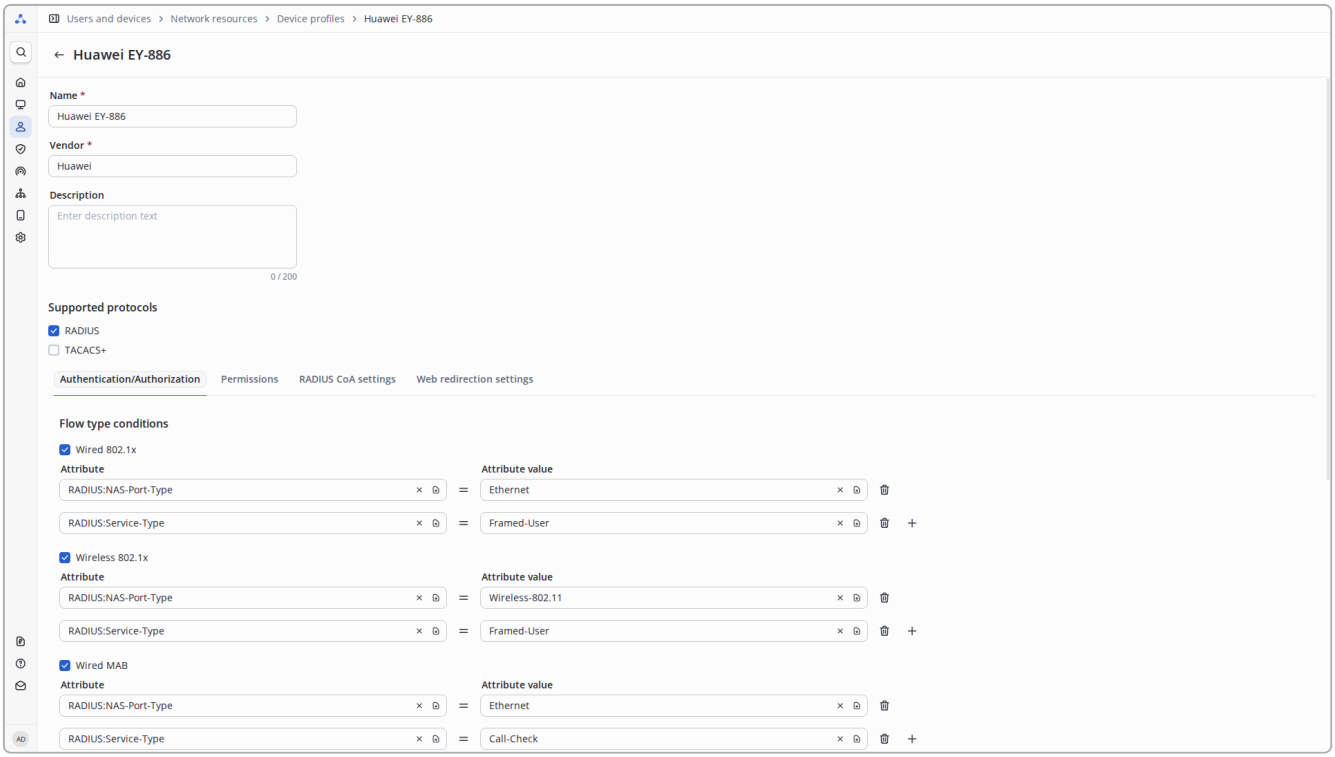


Figure 151. Network device profile editing page

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Deleting a device profile

To delete a profile, select it with the checkbox and click the button at the top left.

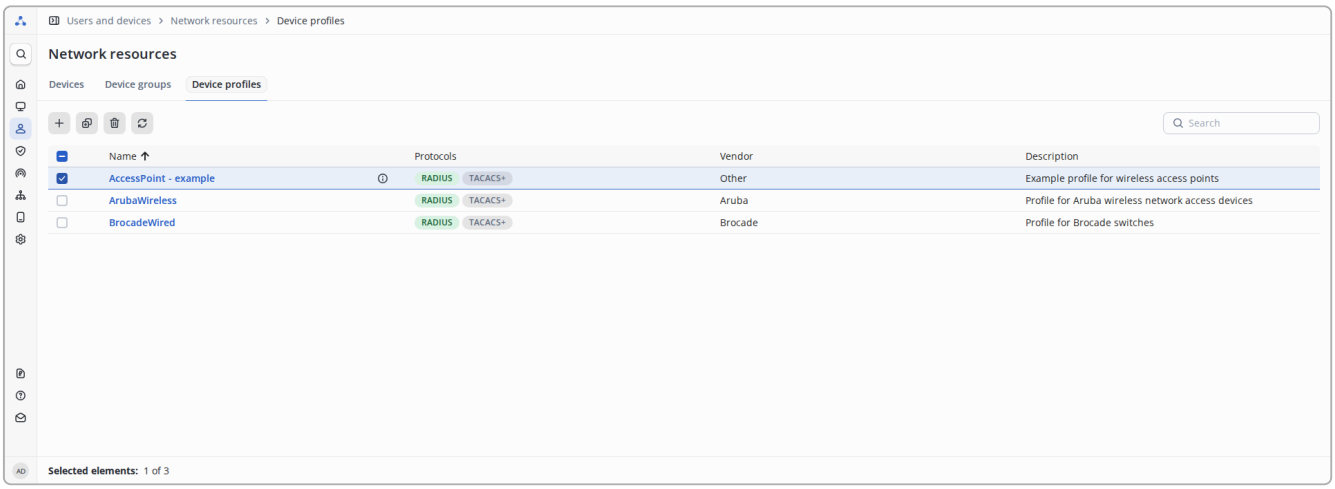


Figure 152. Page with the device profile selected for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

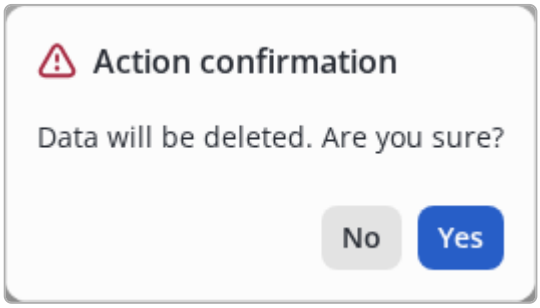


Figure 153. Modal dialog for confirmation

After deleting, you will be on the page for viewing the list of device profiles.

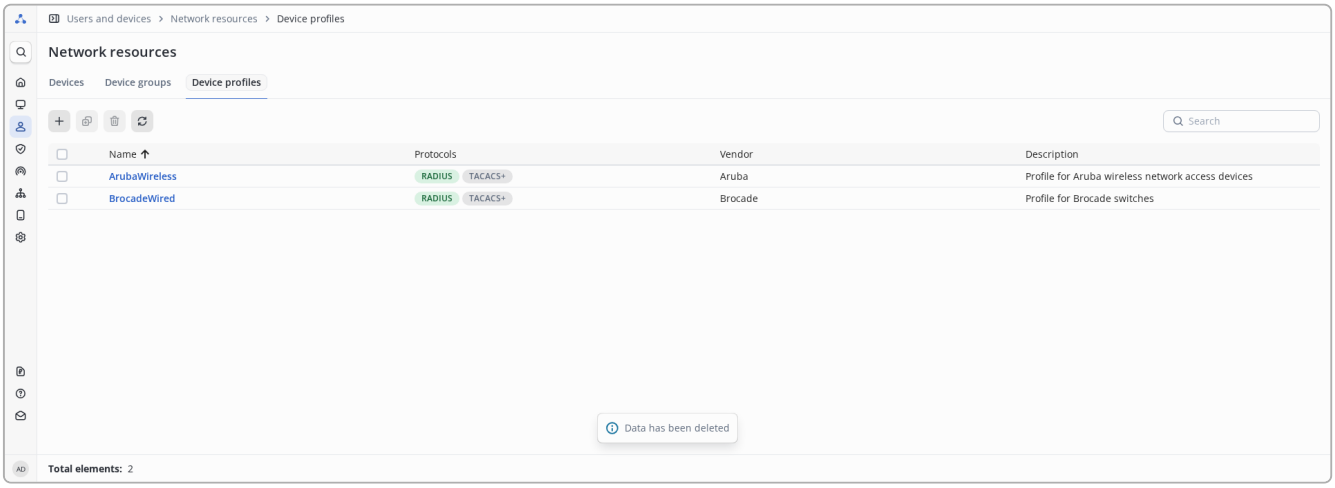


Figure 154. Page for viewing the list of device profiles after deletion

Restrictions:

- you cannot delete a profile that is already assigned to a device.
- you cannot delete a profile that is used in any authorization profile.

Identity management

Users (supplicants) are managed in the "Users and devices" → "Identity Management" menu.

The identity source used for user authentication can be an internal list of clients (their configuration is discussed in Network access users) and a connection to an external identity source such as Active Directory or LDAP.

Work with endpoints is also carried out here.

The menu contains sections:

- Network access users - section for managing the credentials of users with whom authorization on devices is performed.
- Network user groups - settings section that allows you to create entities for grouping users.
- Endpoints - section for working with a list of devices that connect to the network infrastructure.
- Endpoints groups - section for working with groups of endpoints.

External identity sources - section for managing external identity sources.

- Identity sequences - a settings section that allows you to create lists of sources of user credentials.

Network access users

Description

The *Network Users* section is designed for managing local user credentials used for authentication on devices. Such users are grouped into the *Internal DB* source.

View network users

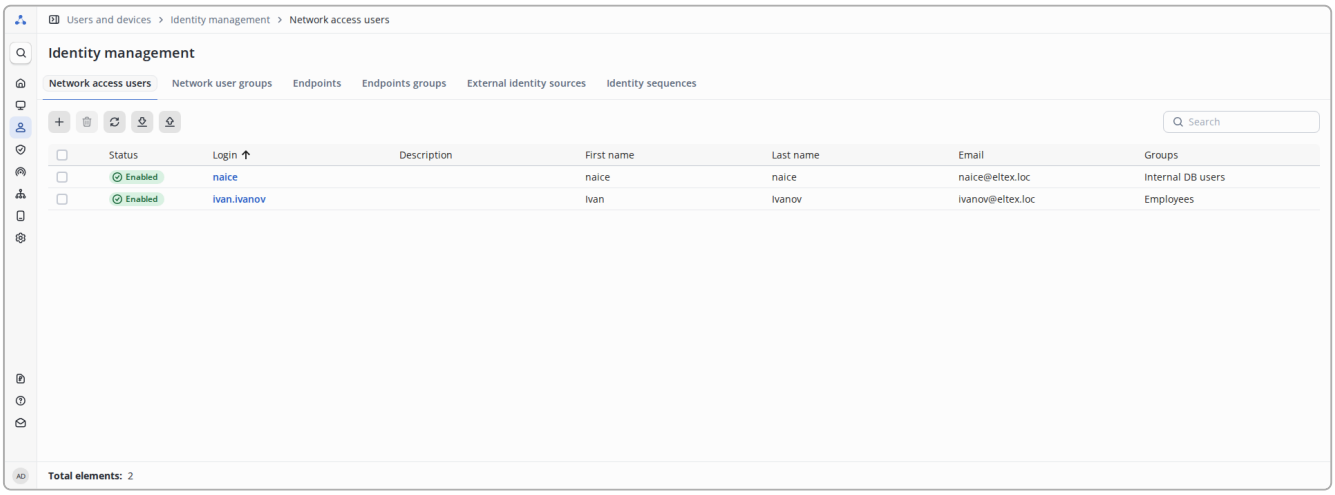


Figure 155. A table with a list of network users on the viewing page

This page contains a table listing user credentials.

The table contains columns:

- `Status` - user status (disabled or enabled);
- `Login` - user login (must be unique);
- `Description` - arbitrary description of the user;
- `First name` - user name;
- `Last name` - user surname;
- `Email` - user's email address;
- `Groups` - groups in which the user is a member.

It is possible to sort in direct and reverse order by the columns "Status", "Login", "Description", "First Name", "Last Name", "Email" (that is, by all columns except the "Groups" column). By default, sorting is performed in direct (alphabetical) order by the "Login" field.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.

- — Allows you to download data from a csv file.
- — Allows you to upload data to a csv file.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding a user

To add a user, click + on the left side of the field above the table.

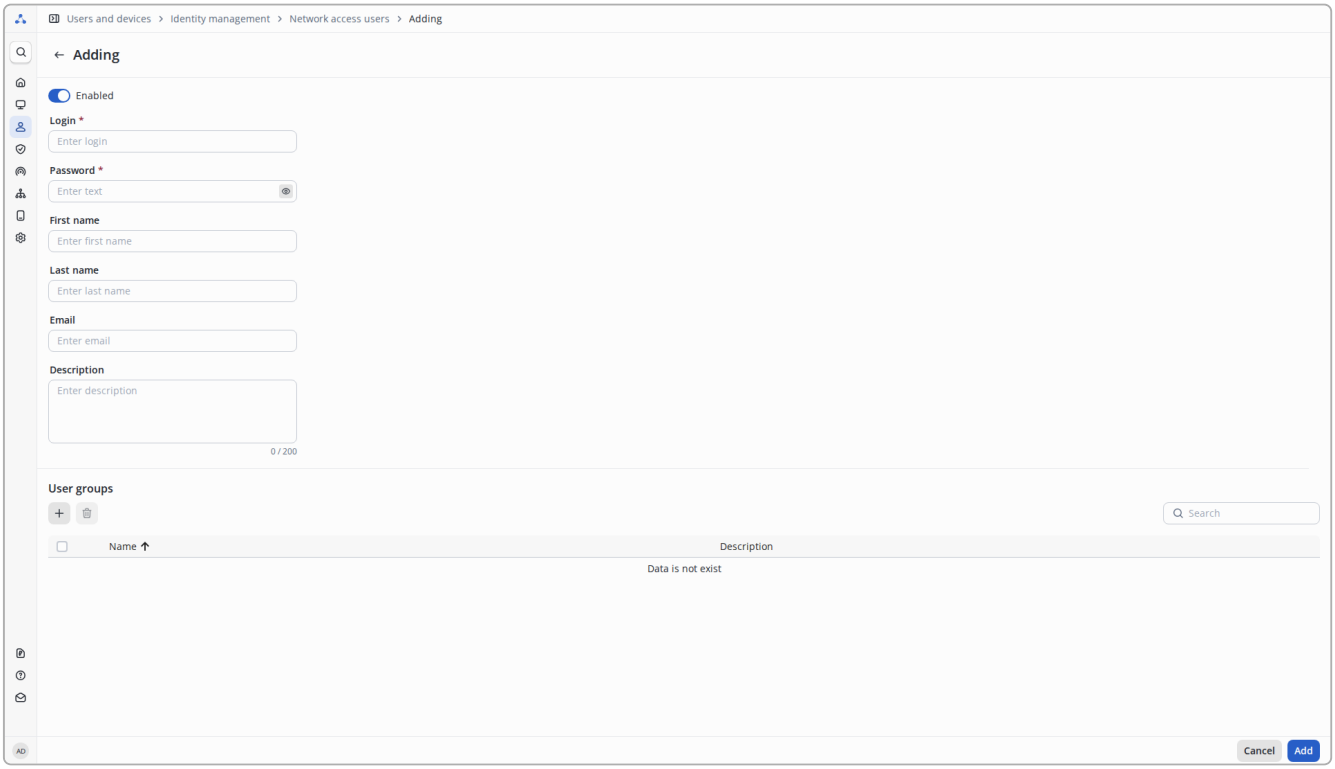


Figure 156. The page for adding a user

The page that opens presents the following parameters:

- - user status switch, can take the values “enabled” or “disabled”. Authentication using disabled credentials is prohibited.
- `Login` * - user login. The maximum login length is 100 characters.
- `Password` * - user password. The minimum password length is 8 characters, the maximum is 100 characters. By clicking on you can enable the display of the entered password, by default, the entered text is hidden. Password can be copied by clicking on .
- `First name` - user’s name. Maximum length is 100 characters.
- `Last name` - user’s last name. Maximum length is 100 characters.
-

`Email` - user's email address. Must follow a specific format (eg naice@eltex.loc) and not exceed 100 characters.

- `Description` - a custom description of the user. Maximum length is 200 characters.

Parameters marked with an asterisk * are required.

Also on this page there is a table **User groups**, which this user belongs to.

Controls:

- + - add the user to groups.
- 🗑 - delete the user from the groups selected by the checkbox (inactive until at least one group is selected).
- 🔍 `Search` - case-insensitive filtering for all columns: only records that satisfy the filtering condition are displayed.
- ↑ - change the current sort order.
- ☐ - a checkbox that is responsible for selecting groups to perform further actions (for example, removing a user from a group).

By clicking +, the **Adding user to groups** window appears, in which you need to select the groups where you want to add users.

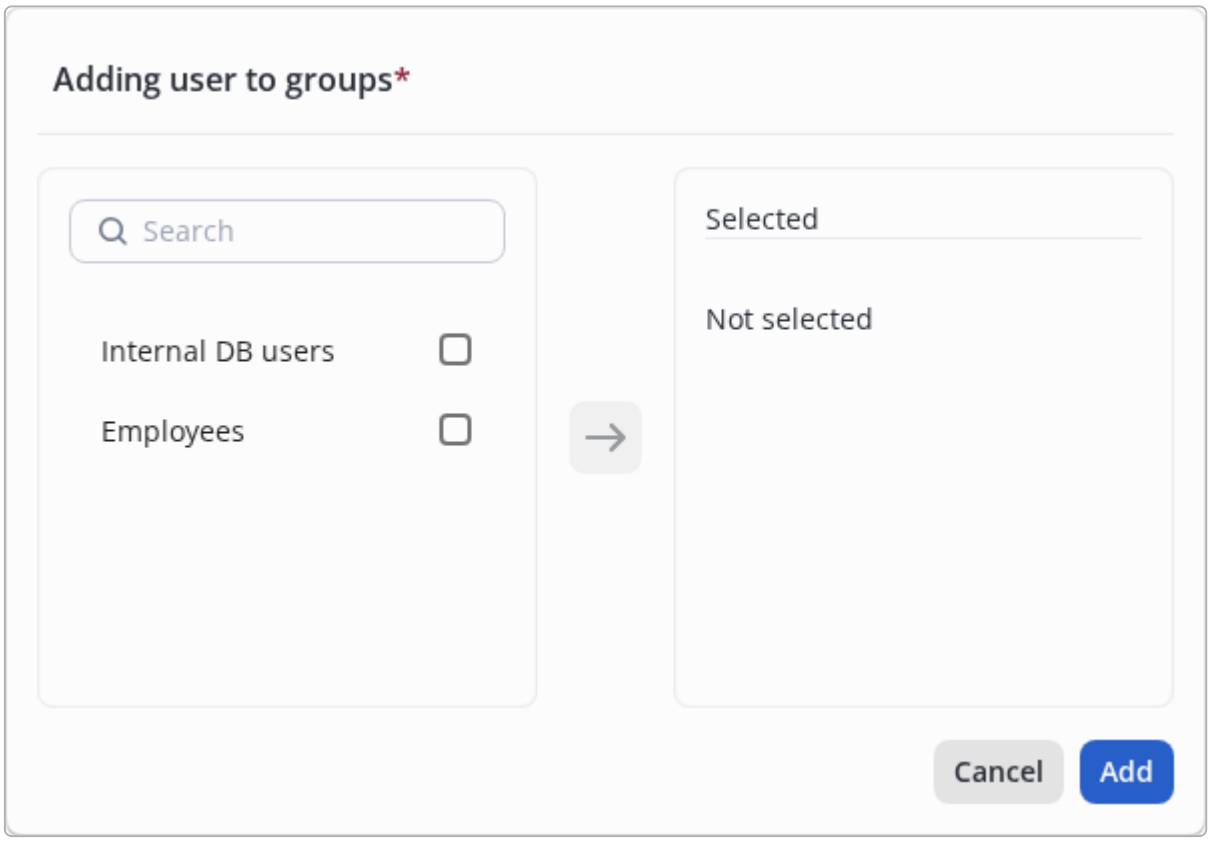


Figure 157. The page for adding a user to groups

Controls:

`Search` - case-insensitive search among user groups: only groups that satisfy the filtering condition are displayed.

- - a checkbox that is responsible for selecting groups to assign to the user (displayed only for available groups).
- → - assign selected groups to the user.
- × - delete a group from the list of those selected for assignment (displayed only for selected groups).
- `Add` - apply changes (active only if there are changes).
- `Cancel` - cancel changes.

To add a user to the user list, do not forget to click `Add`. To reset the changes and return to the viewing page, click on `Cancel`.

User editing

To edit a previously added user, on the user view page, click on the user login in the table.

Figure 158. Hyperlink to the user's edit page

The editing page will open.

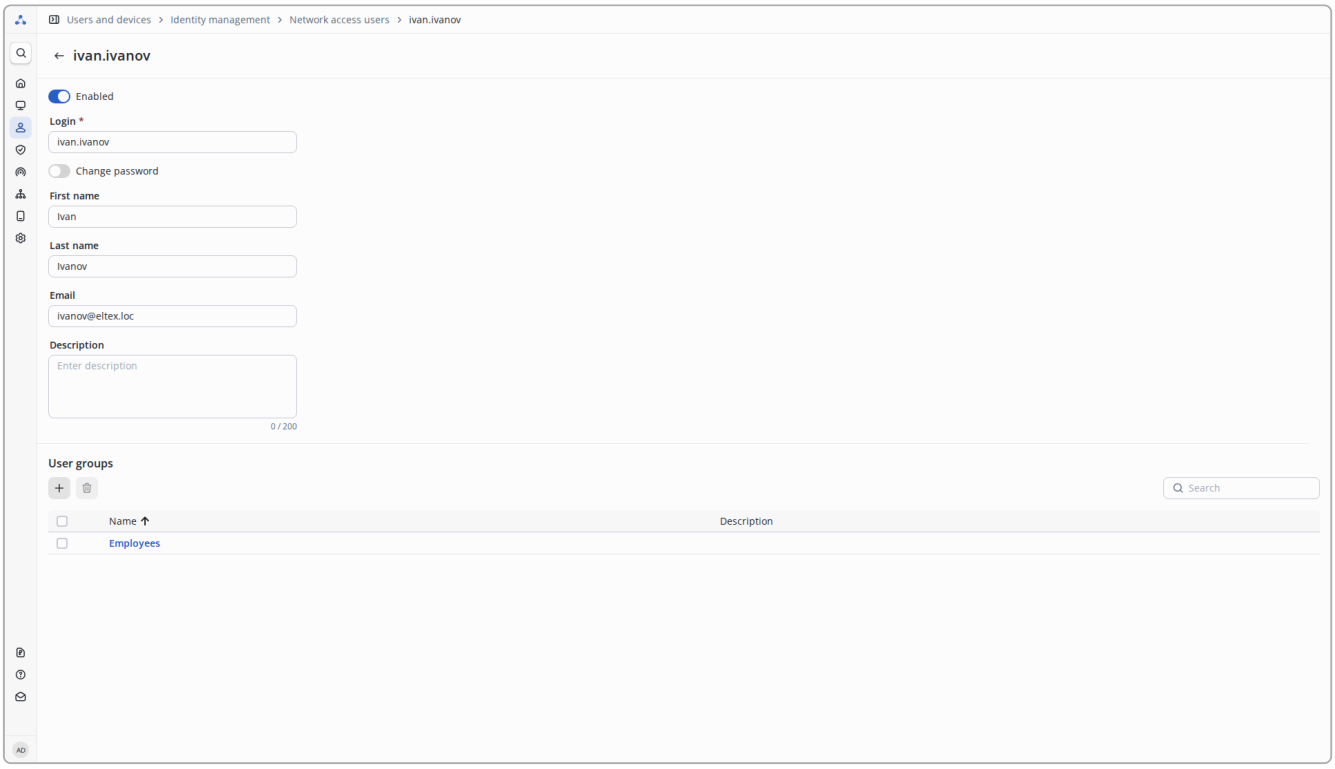


Figure 159. The user's edit page

The old user password is not displayed on the edit page!
To change password, toggle *Change password* and enter new password in the appearing field.

After editing, click on `Save`. The button will be inactive until at least one field is changed.

Deleting a user

To delete users, on the viewing page, using the checkbox , select the required users and in the upper left corner above the table click on .

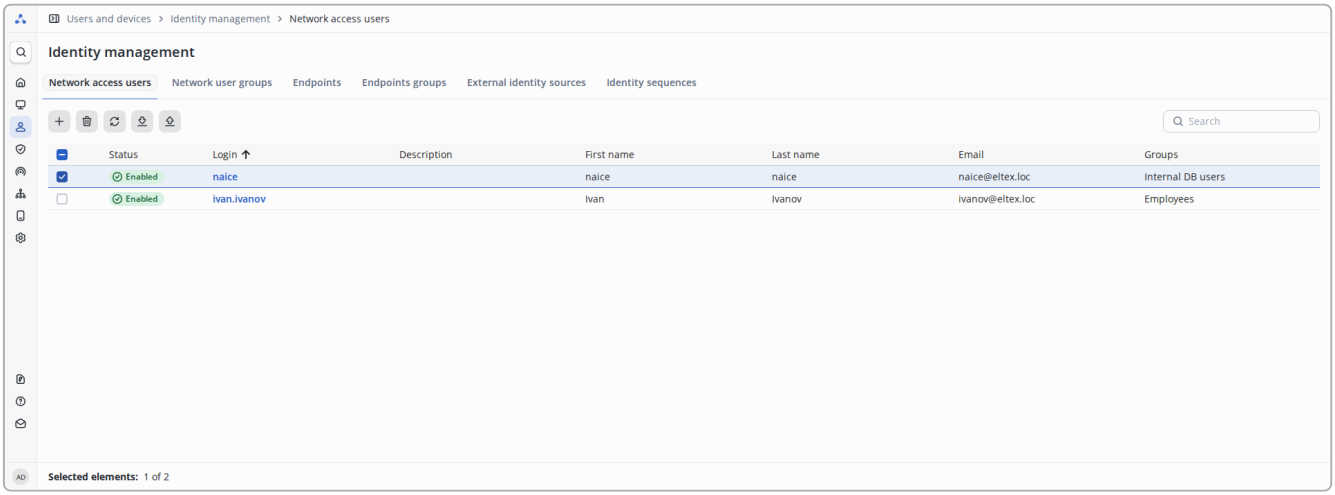


Figure 160. Selecting users in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

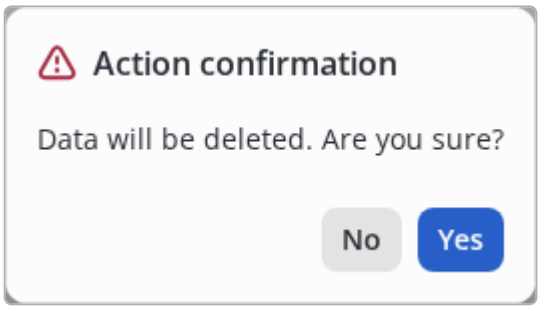


Figure 161. Modal dialog for confirmation

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:

Field delimiter: `comma (,)`

- String/text delimiter: `double quotation mark (")`

- Headers and values must be enclosed in double quotation marks `(")`
- Maximum file size is 2MB.

3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

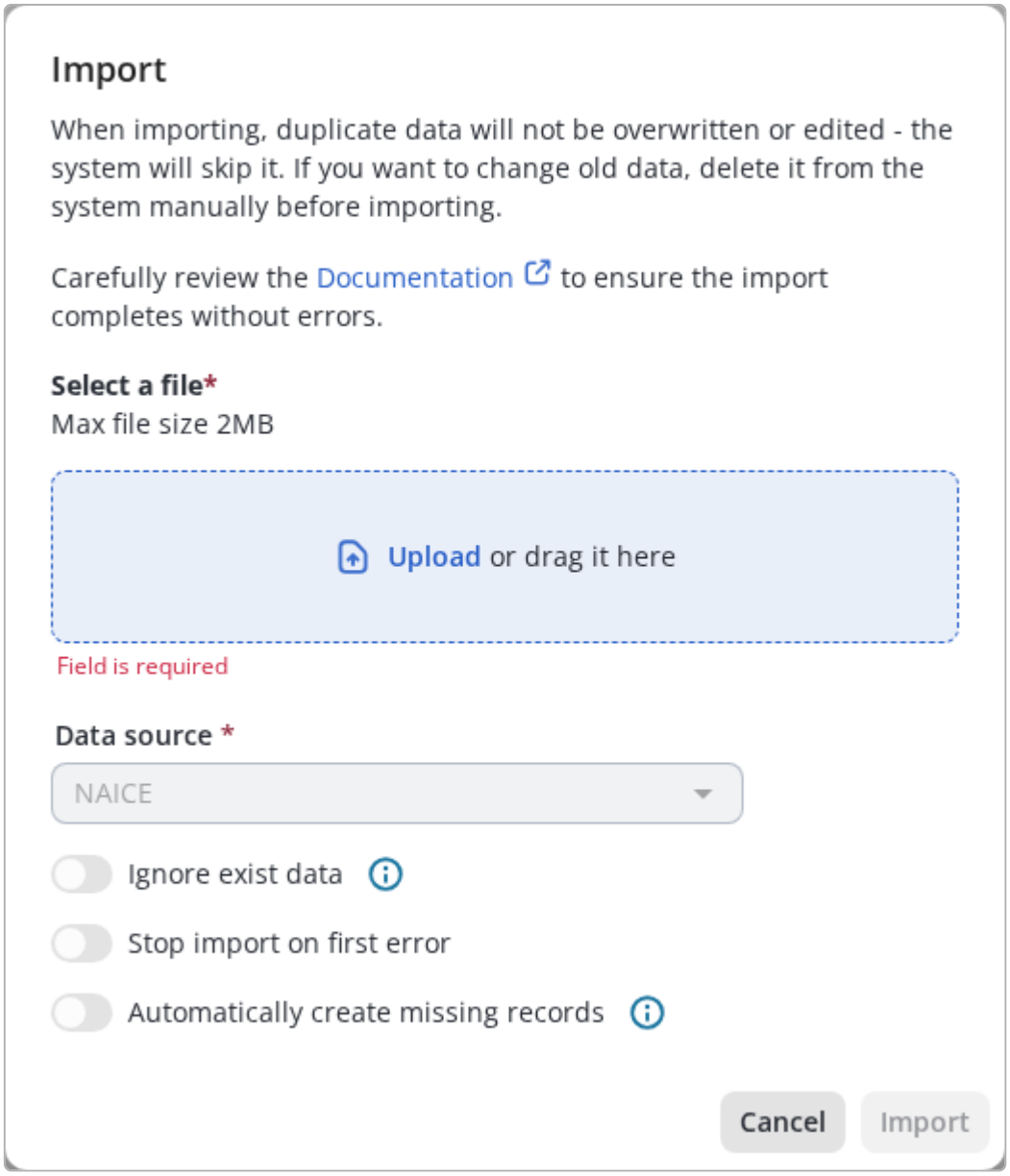


Figure 162. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.

- Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

Stop import on first error

- On: When importing, missing records will be filled in automatically. The list of auto-completed entries can be found by hovering over the tooltip to the right of the switch.
- Off: All required fields must be filled in manually.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

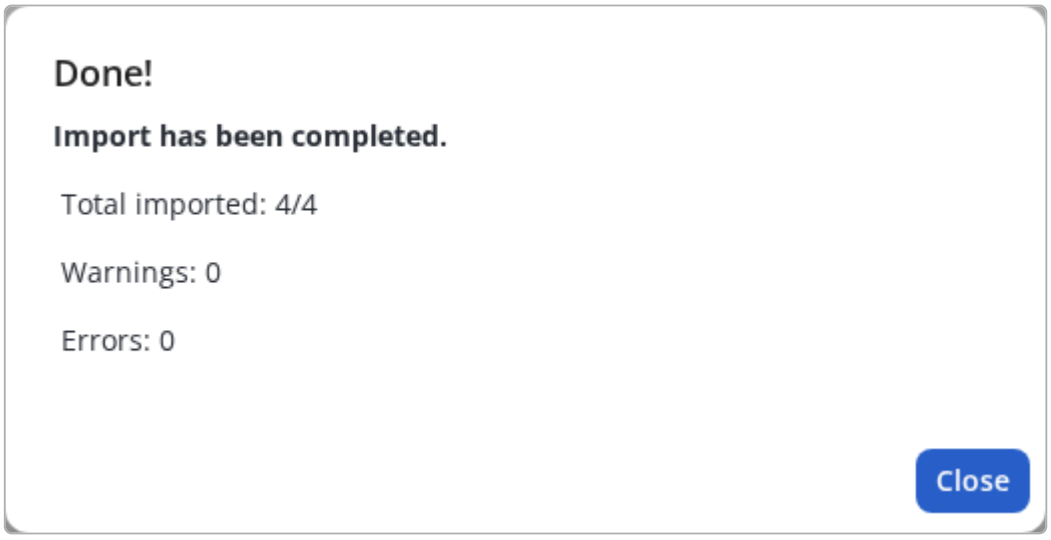


Figure 163. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

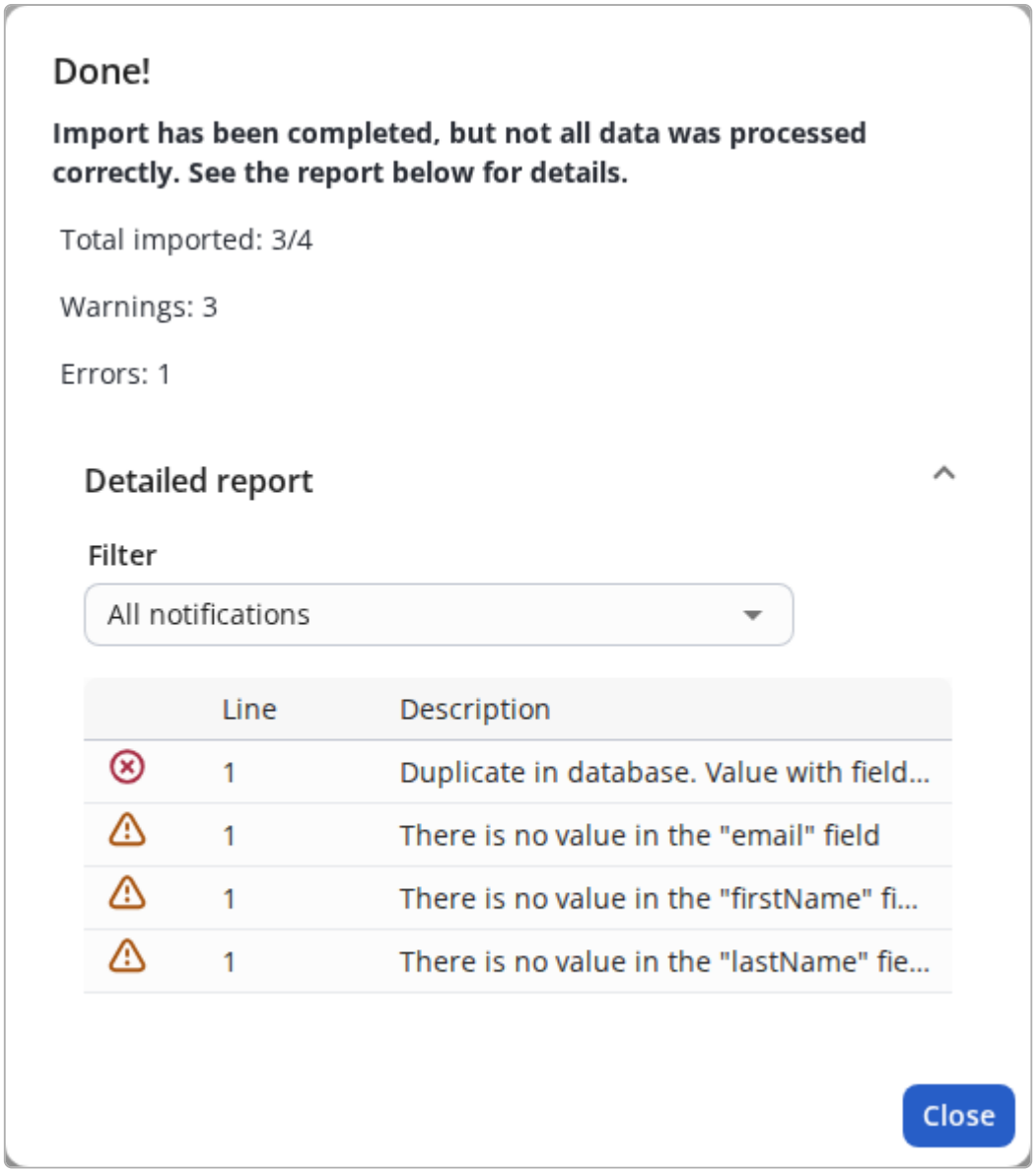


Figure 164. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Users

For Network user imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
login:Required	User login	**Required** Maximum length - 100 characters Must be unique Spaces are not allowed
password:Required	User password. Can be imported either in hashed or plain text format	**Required** Length: 8-100 characters Spaces are not allowed The symbol `№` cannot be used
isEncrypted:Required	Password hashing flag. Indicates the format in which the password is transmitted	**Required** Possible values: • `true` - the transmitted password is hashed • `false` - the password is transmitted in plain text and will be hashed during import
enabled:Required	Authorization capability	**Required** Possible values: • `true` - status "Enabled" • `false` - status "Disabled"
firstName	User name	Maximum length - 100 characters
lastName	User surname	Maximum length - 100 characters
email	User's email address	Maximum length - 200 characters Format: `admin123@gmail.com` Invalid characters: • cyrillic letters `(а-я)(А-Я)` • space • double quotes `"` • numero sign `№` • semicolon `;` • colon `:` • comma `,` • parentheses `( )` • square brackets `[ ]` • greater-than/less-than signs `< >` • backslash `\`
description	Free-form description	Maximum length - 200 characters
groups	Network user groups	**Groups must exist in the system** Separator between groups: `;`

Example of correctly formatted file content:

"login:Required"	"password:Required"	"isEncrypted:Required"	"enabled:Required"	"firstName"	"lastName"	"email"	"description"	"groups"
"user_1"	"password"	"false"	"true"	"Ivan"	"Ivanov"	"ivan@test.ru"	""	"Internal DB;Users"

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

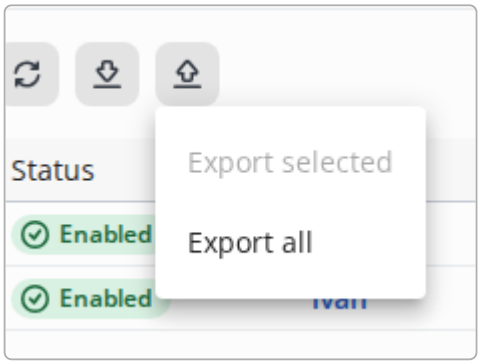


Figure 165. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click  and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

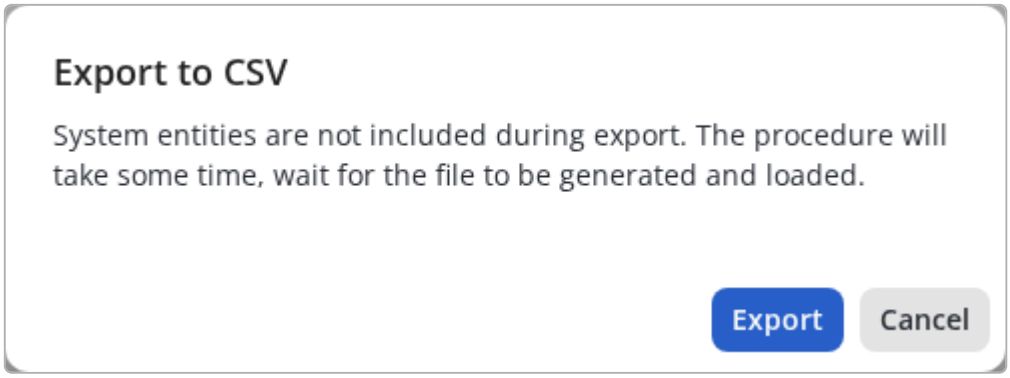


Figure 166. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

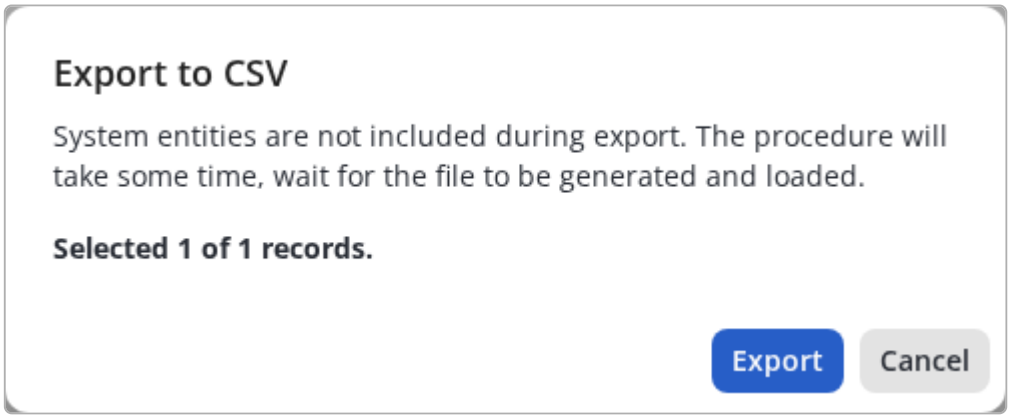


Figure 167. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for Users

User passwords will be exported from the database in a hashed format using ntHash.

The structure of the CSV file for users is described in the section "Import particularities for Users".

Network user groups

Description

It is possible to combine network users into *groups* and then use the sign of user membership in a group when setting up RADIUS policies or Network devices policies.

The "Network user groups" section is responsible for creating, editing, deleting and viewing these groups.

View network user groups

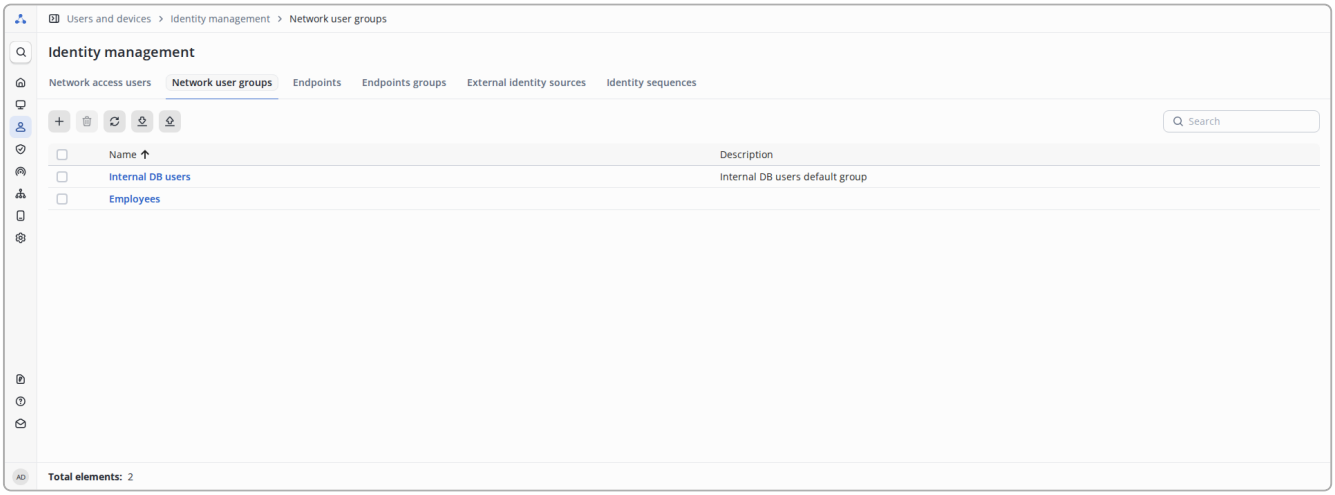


Figure 168. A table with a list of network user groups on the viewing page

This page contains a table listing all network user groups.

The table contains columns:

- `Name` - the name of the group.
- `Description` - arbitrary description of the group.

You can sort in forward and reverse order across all columns. By default, sorting is performed in direct (alphabetical) order by the `Name` field.

Controls:

-  - Add a new element.
-  - Delete selected elements (inactive until at least one element is selected).
-  - Refresh table data.
-  - Allows you to download data from a csv file.
-  - Allows you to upload data to a csv file.

- Search - Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.
- ↑ - Change the current sort order.
- ☐ - Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).

Adding a user group

To add a user group, click + on the left side of the field above the table, the **Add** page will open:

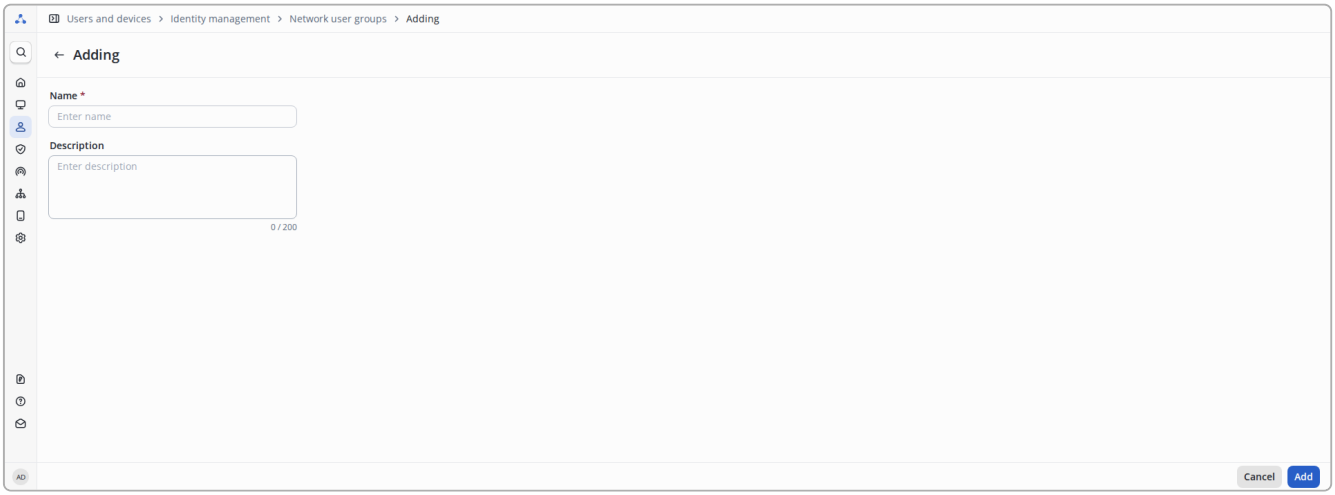


Figure 169. The page for adding a user group

The following parameters are available for filling:

- `Name` * - the name of the group. Maximum length is 100 characters.
- `Description` - arbitrary description of the group. Maximum length is 200 characters.

Parameters marked with an asterisk * are required.

Adding a user to a group is available on the edit page of a previously added group.
At the stage of creating a group, you cannot add users to it.

To add a group to the list of user groups, do not forget to click `Add`. To reset the changes and exit to the viewing page, click on `Cancel`.

Editing a user group

To edit a previously added group, on the user groups viewing page, click on the group name in the table.

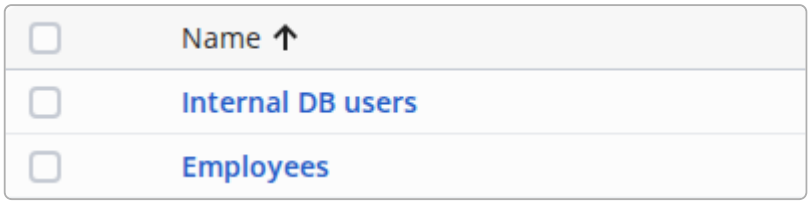


Figure 170. Hyperlink to the user group editing page

An edit page will open with the option to add users to the group.

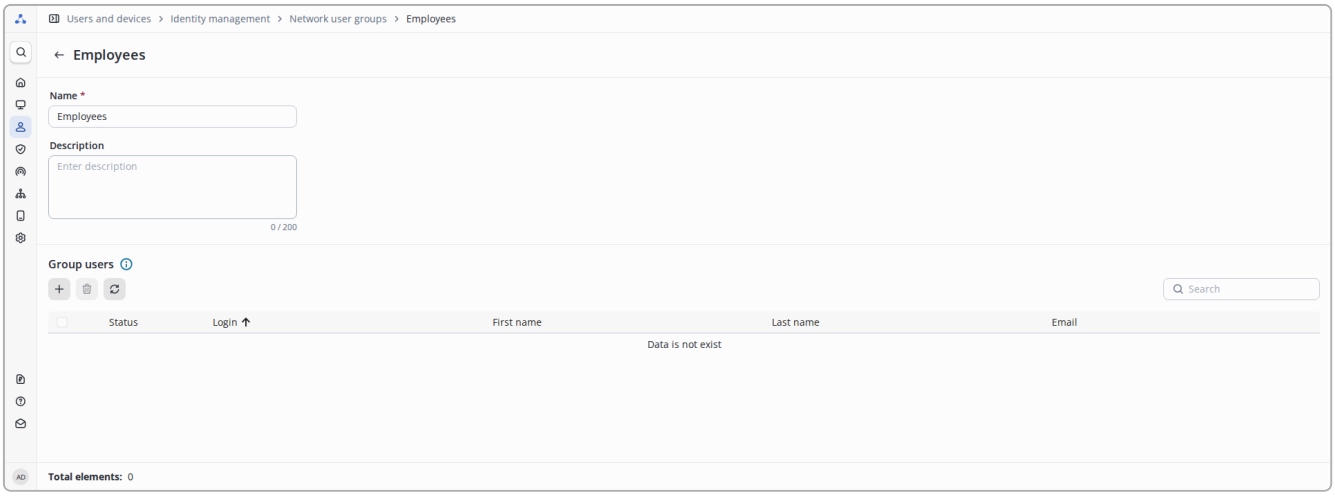


Figure 171. The user group edit page

Control elements in the **Group Users** table:

- `Search` - case-insensitive filtering for all columns: only records that satisfy the filtering condition are displayed.
- - delete users selected by the checkbox from the group (inactive until at least one user is selected).
- - change the current sort order.
- - a checkbox that is responsible for selecting users to perform further actions (for example, removing a user from a group).
- - add users to the group.

By clicking , the **Adding users to group** window appears, in which you must select users to add to the group.

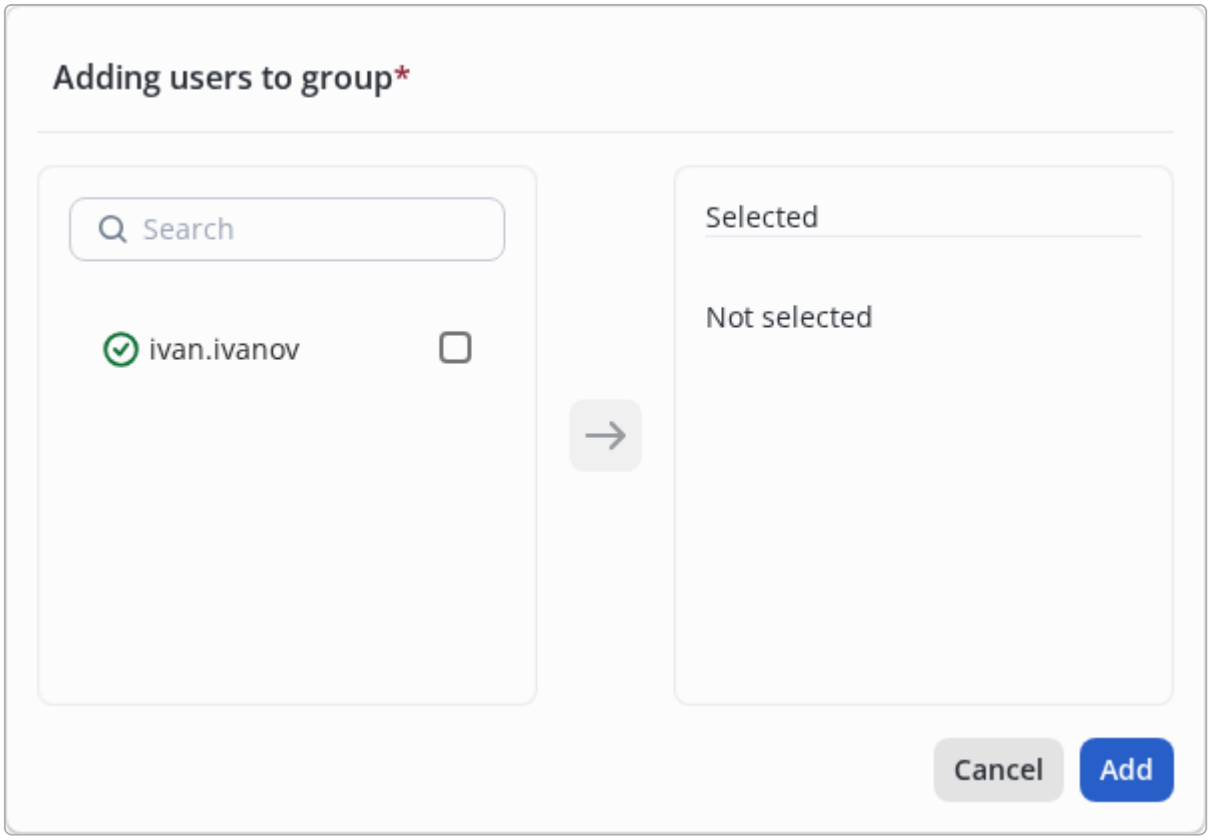


Figure 172. The window for adding users to a group

Controls:

- `Search` - case-insensitive search among users: only users that meet the filtering condition are displayed.
- ☐ - a checkbox that is responsible for selecting a user to add (displayed only in the left column).
- → - move users selected by the checkbox from the available ones to the selected list.
- 🗑 - delete a user from the selected list (displayed only in the right column).
- `Add` - apply changes (active only if there are changes).
- `Cancel` - cancel changes.

If, when editing a group, only users are changed (the name and description of the group remain the same), then the `Save` button will remain inactive, since changes in the list of group users are saved automatically.
Just exit the editing mode using the `Cancel` button.

Delete a user group

To delete groups, on the viewing page, using the checkbox ☐, select the required groups and in the upper left corner above the table click on 🗑.

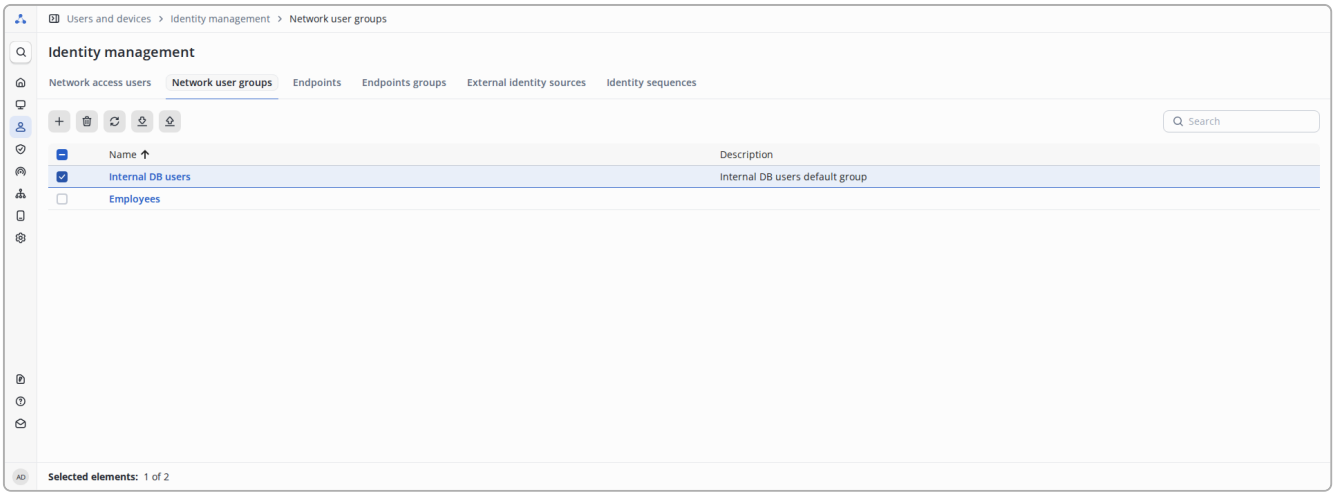


Figure 173. Selecting user groups in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

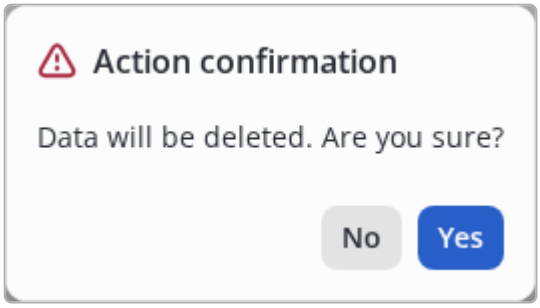


Figure 174. Modal dialog for confirmation

Restrictions:

- you cannot delete a group that users belong to. In this case, you must first remove all users from the group, then delete the empty group.
- you cannot delete a group that is used in any logical condition.

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`

Maximum file size is 2MB.

3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"\"Test command set\""	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

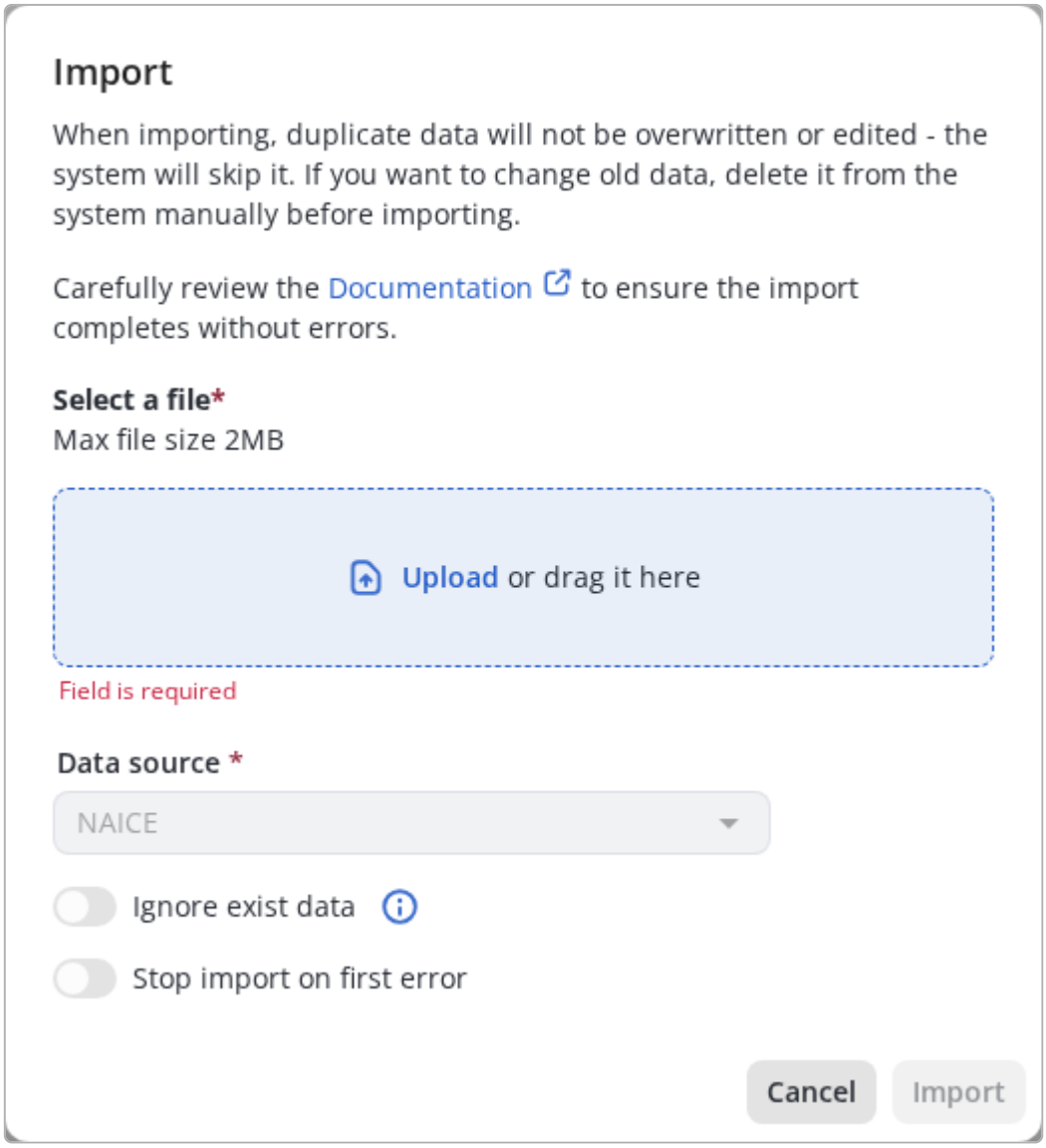


Figure 175. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.
   -

Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

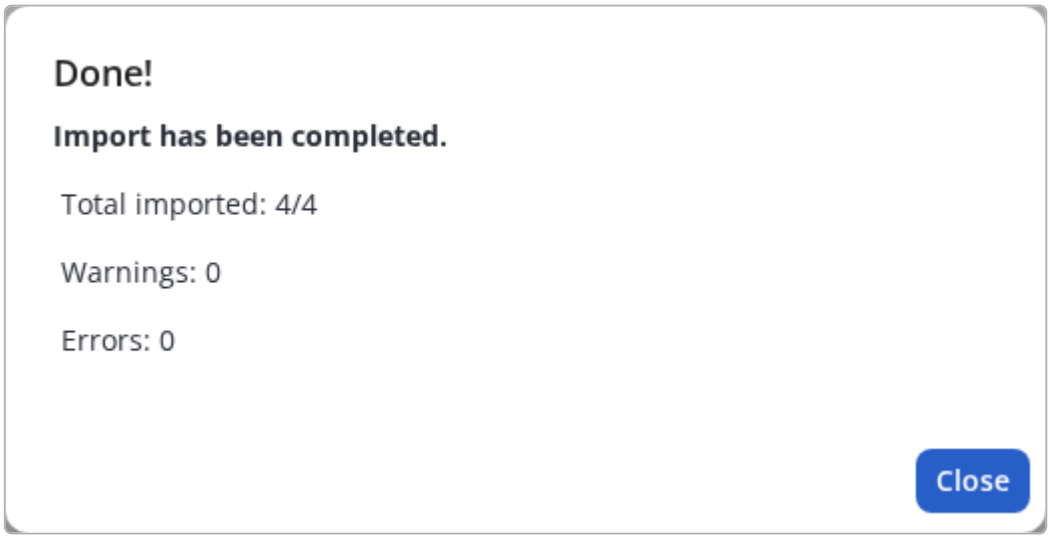


Figure 176. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

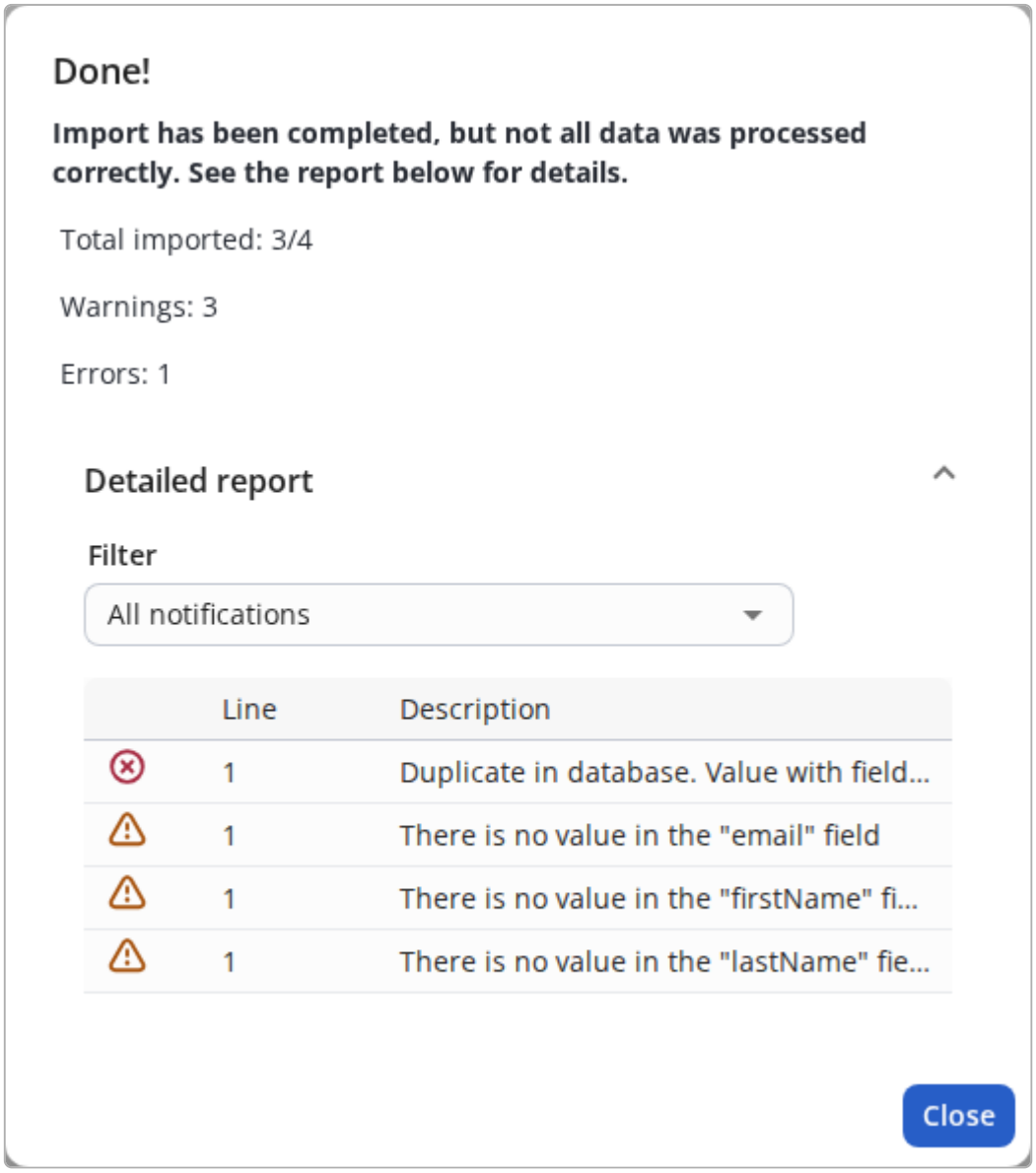


Figure 177. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Network user groups

For Network user groups imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
name:Required	Name of the group	**Required** Maximum length - 100 characters
description	Free-form description of the group	Maximum length - 200 characters

Example of correctly formatted file content:

"name:Required"	"description"
"Internal DB users"	"Internal DB users"

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

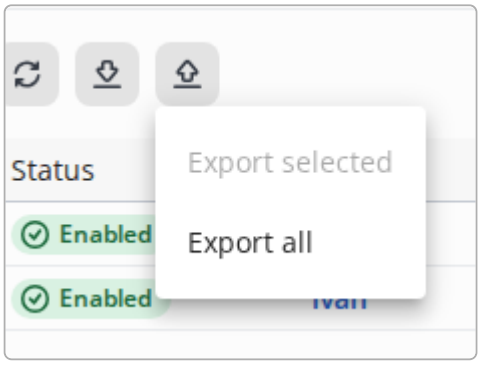


Figure 178. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

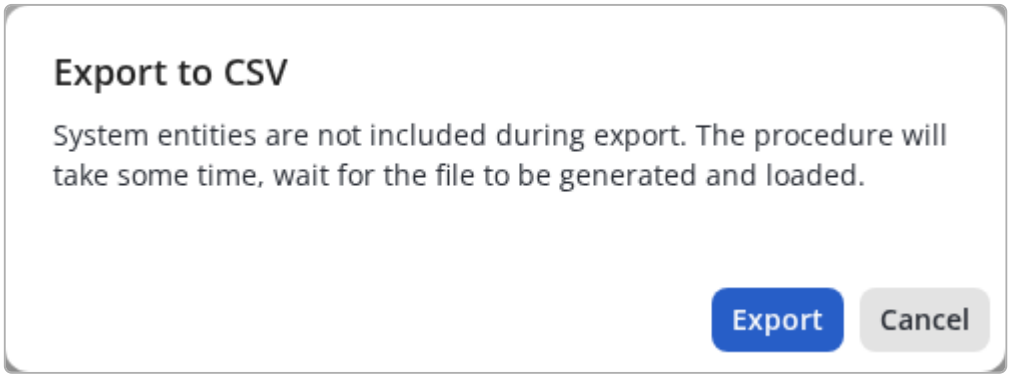


Figure 179. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

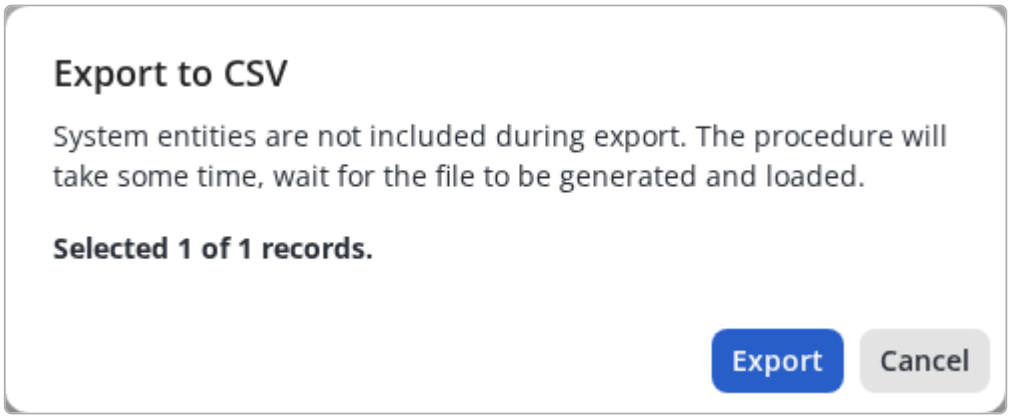


Figure 180. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for User Groups

The structure of the CSV file for user groups is described in the section "Import particularities for Network user groups".

Endpoints

Description

Endpoints are networking devices such as computers, mobile phones, IoT devices, and others that establish communication across the network through authenticator (like switch or access point) using 802.1x authentication or MAB.

The NAICE system allows you to track endpoints in the network, group them by certain characteristics automatically or manually, and allow or deny access to the network based on the parameters obtained during profiling and RADIUS policies.

Filling the endpoint table

The endpoint table is filled in automatically and manually mode.

- *in manual mode*: adding endpoints is performed by the system user in the same way as adding other entities.
- *in automatic mode*: endpoints are added when RADIUS requests are received from authenticators during client connections.

To determine the MAC address of the endpoint to be added, the value of the "Calling-Station-Id" attribute of the RADIUS request is used. If the attribute is missing in the RADIUS request or if it does not contain a MAC address, the endpoint will not be displayed in the table, but will be taken into account in the license limit.

Randomized MAC addresses will not be added as endpoints in automatic mode. Add endpoints with this type of MAC manually.

View endpoints

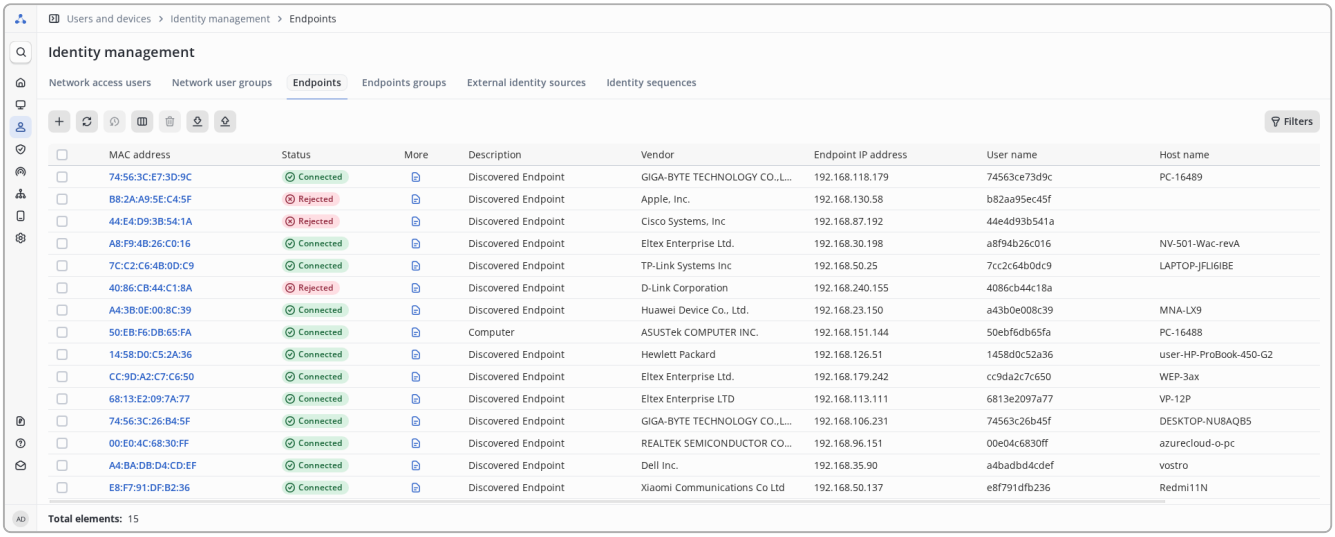


Figure 181. View endpoints list

This page contains a table with a list of all manually or automatically added endpoints.

The table contains the following columns by default:

- `MAC address` - MAC address of the endpoint in the format "XX:XX:XX:XX:XX:XX".
- `Status` - current endpoint connection status. The status is displayed after the first endpoint authentication attempt and can have the following values:
  - Connected - the device has successfully passed authentication and authorization and has gained access to the network;
  - Rejected - the device has not passed authentication and has not gained access to the network;
  - Disconnected - the device is disconnected from the network.
- `More` - go to the page with detailed information about the endpoint attributes and its latest authentication events.
- `Description` - arbitrary description.
- `Vendor` - the vendor of the endpoint device, determined by the first three octets of the MAC address (MAC OUI).
- `Endpoint IP address` - IP address of the endpoint, information about which was obtained during profiling. Profiling settings are required to obtain data.
- `User name` - username with which the endpoint was last authenticated.
- `Host name` - hostname of the endpoint, information about which was obtained during profiling. Profiling settings are required to obtain data.
- `Endpoint profile` - result of endpoint profiling.

Additionally, by clicking  , you can customize the display of the following columns:

- `Authentication failure reason` - the cause of the error during client connection.
- `Authentication policy` - the name of the authentication policy rule that was applied within this session;
- `Authorization policy` - the name of the authorization policy rule that was applied within this session;
- `Authentication Protocol` - the protocol by which authentication was performed (for example, PAP).
- `Flow Type` - the connection type that was determined based on the network device profile settings.
- `Endpoint Type` - the logical profile to which the device belongs as a result of profiling.
- `Last activity time`
- `Endpoint group` - the group to which the endpoint was automatically or manually added.
- `NAS name` - the name of the authenticator device.

You can sort in ascending or descending order by the columns `MAC address`, `Status`, `Description`, `Vendor`, `Endpoint IP address`, `User name`, `Endpoint profile`, `Last activity time` (by default), `Endpoint group`.

The page contain the following controls:

- Add a new element.
- - Delete selected elements (inactive until at least one element is selected).
- - Start updating profile of selected endpoints (inactive until at least one element is selected).
- - Refresh table data.
- - Allows you to download data from a csv file.
- - Allows you to upload data to a csv file.
- - Customize the display of table columns.
- - Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- - Change the current sort order.
- Filters - Open the data filtering settings window for the table.

Data filtering in the table is configured in the following window:

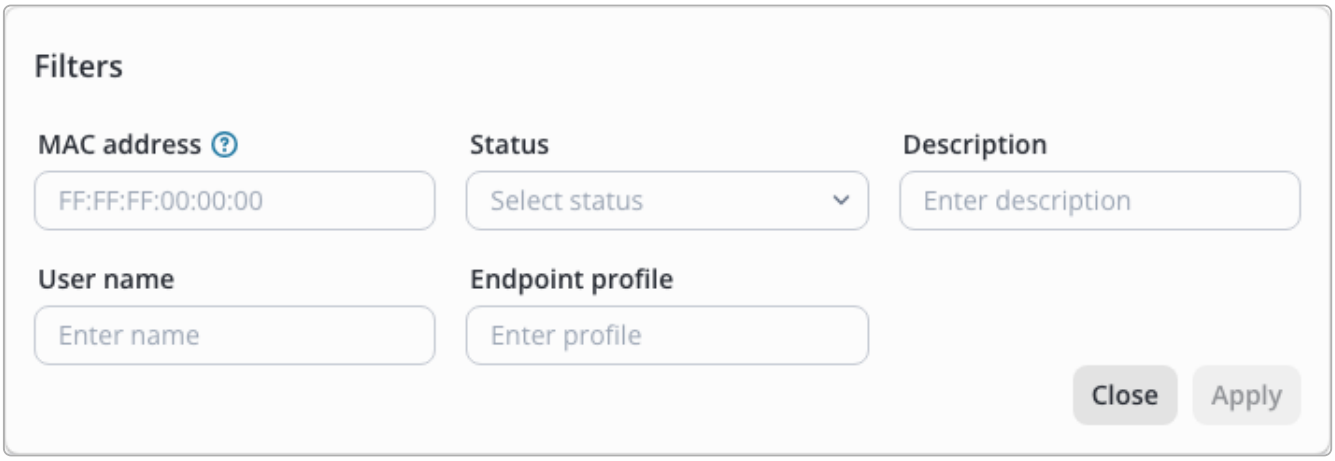


Figure 182. Configuring data filtering in the table

Filtering is available for the parameters `Endpoint profile`, `MAC address`, `Status`, `Description` and `User name`.

In the table settings you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

Adding an endpoint

Endpoints are automatically added to the system during authentication. An endpoint can be added manually. To add an endpoint, click on the left side of the field above the table.

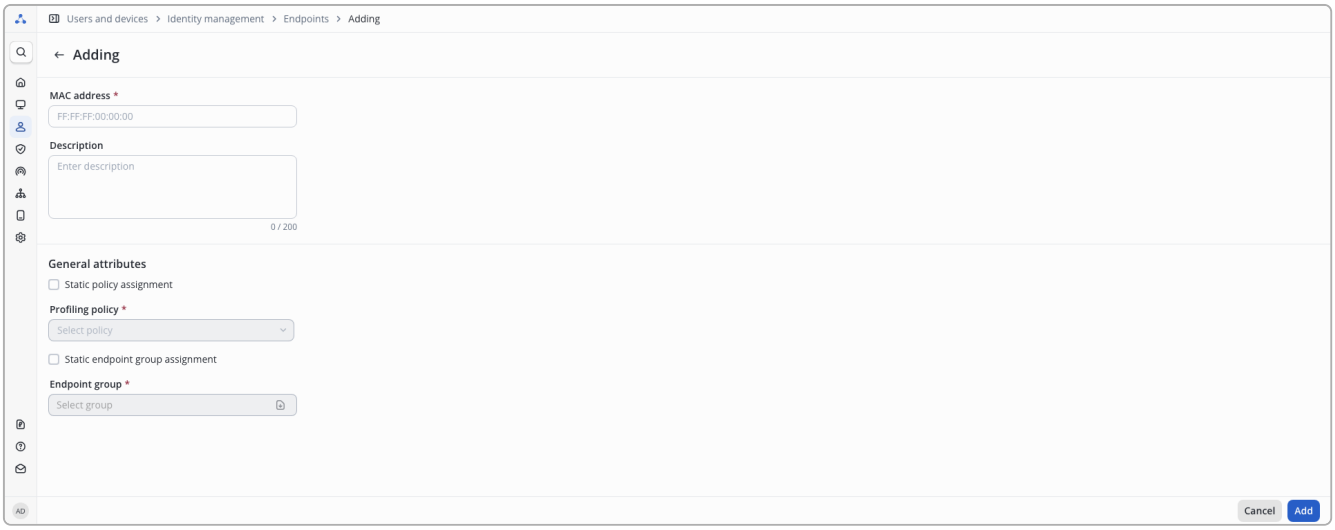


Figure 183. Adding an endpoint

The following parameters are presented on the page that opens:

- `MAC address` * - MAC address of the endpoint.
- `Description` - an arbitrary description up to 200 characters long.
- `Static policy assignment` - assign profiling policy to this endpoint manually. This value will not be overwritten by profiling.
- `Static endpoint group assignment` - assign group to this endpoint manually. This value will not be overwritten by profiling.

Parameters marked with * are required.

To add an endpoint to the list of endpoints, do not forget to click **Add**. To discard changes and return to the viewing page, click **Cancel**.

Editing an endpoint

To edit a previously added endpoint, on the view page, click on the endpoint's MAC address in the table.

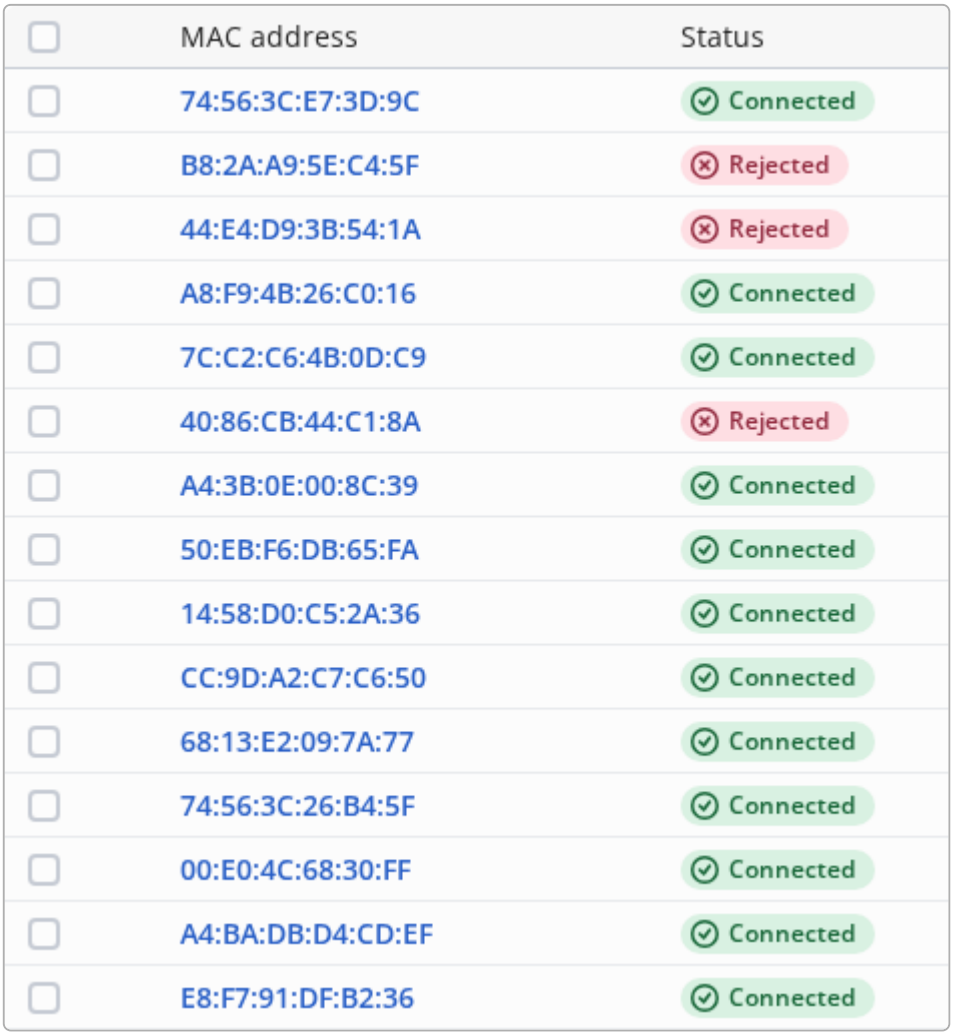


Figure 184. Hyperlink to the endpoint editing page

An editing page similar to the adding page will open.

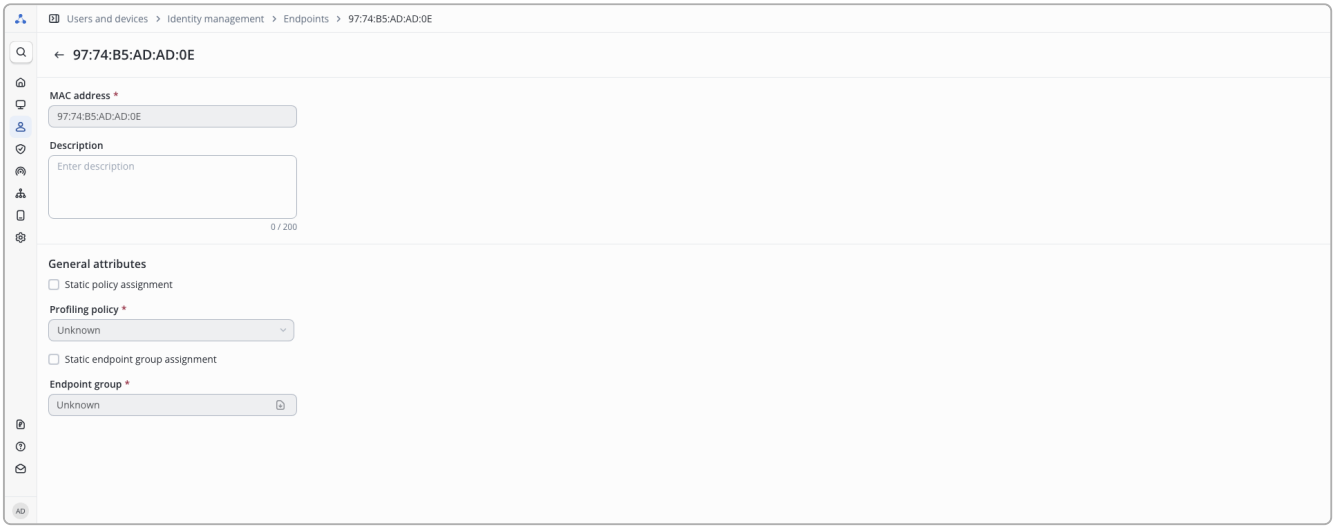


Figure 185. Editing an endpoint

Editing the endpoint's MAC address is not allowed.
If you need to edit the address, delete and create the endpoint again.

After editing, click **Save**. The button will remain inactive until at least one field is changed.

Viewing detailed information about an endpoint

To view detailed information about an endpoint, click on in the `More` column in the table. A new tab with the required page will be opened.

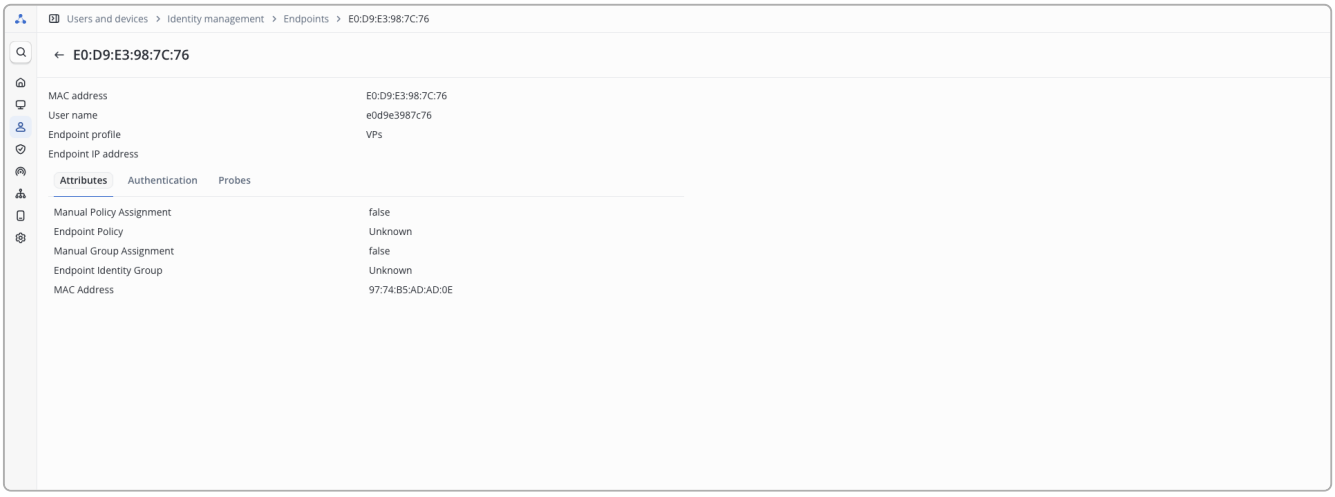


Figure 186. Viewing detailed information about an endpoint

The information on the page is divided into 4 blocks:

- Brief and most important information about the endpoint;
- **Attributes** - endpoint attributes that were obtained as a result of profiling or set by the system user;
- **Authentication** - information about the last authentication of the endpoint:
  - `Overview` - brief information about the results of the last endpoint connection, displayed only if there were connection attempts;
  - `Authentication details` - detailed information that can be useful for debugging;
  - `Other attributes` - the contents of the packet received by NAICE from the RADIUS server;
  - `Result` - a list of attributes that added in the client's response as a result of authorization (for example, attributes for issuing VLAN or ACL). If issuing additional attributes is not configured in the authorization profile, the list will be empty.
- **Probes** - data that can be used in profiling conditions.

Before the end of profiling and before the first authentication, the page may be almost empty. In this case, return to the page later.

Deleting an endpoint

The endpoint table is populated automatically during normal operation of NAICE then endpoints attempt to connect. If an endpoint has been deleted, it will be re-discovering the next time try to connect. Auto-discovering of endpoints can't be disabled.

To delete endpoints, on the viewing page, using the checkbox , select the required endpoints and in the upper left corner above the table click on .

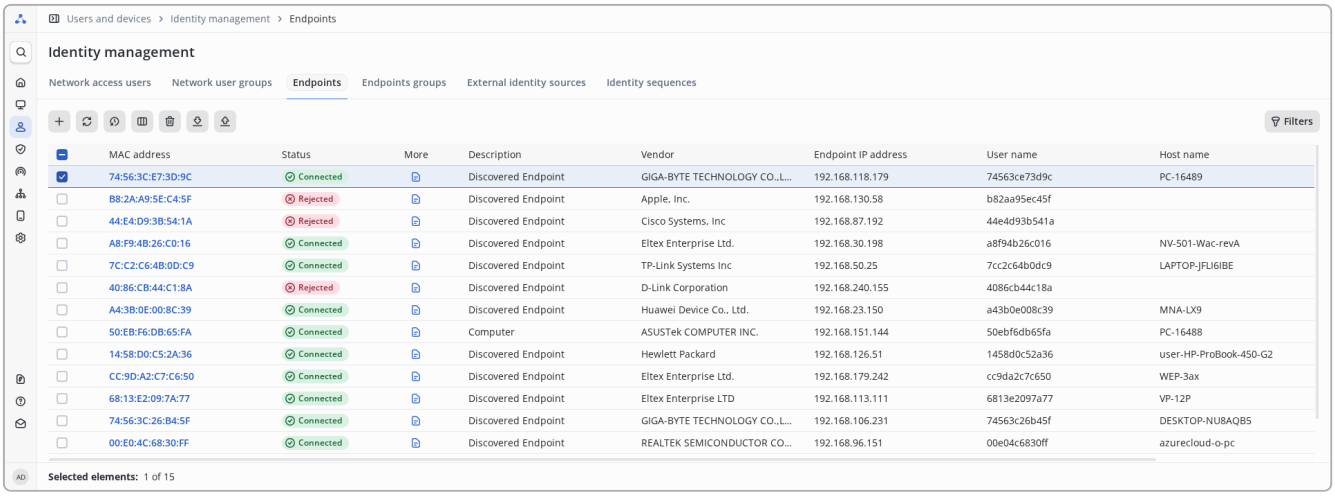


Figure 187. Selecting endpoints in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

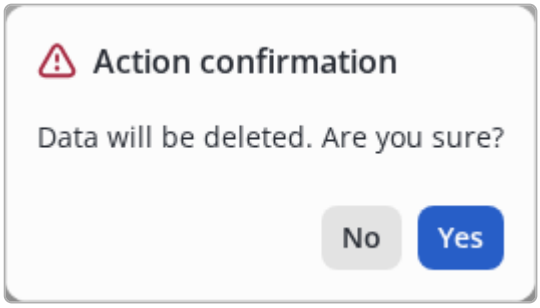


Figure 188. Modal dialog for confirmation

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`

Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

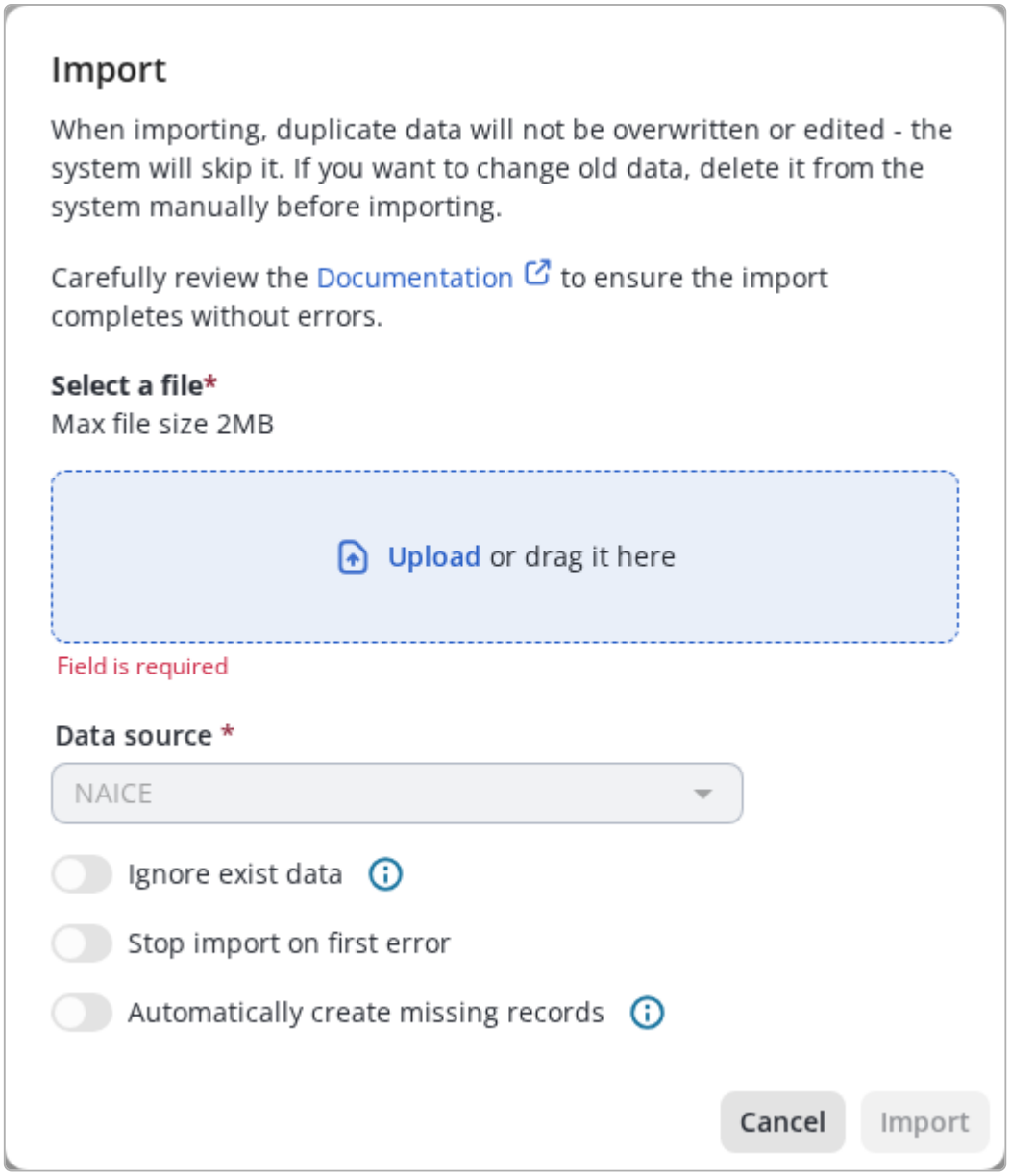


Figure 189. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.

- Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

Stop import on first error

- On: When importing, missing records will be filled in automatically. The list of auto-completed entries can be found by hovering over the tooltip to the right of the switch.
- Off: All required fields must be filled in manually.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

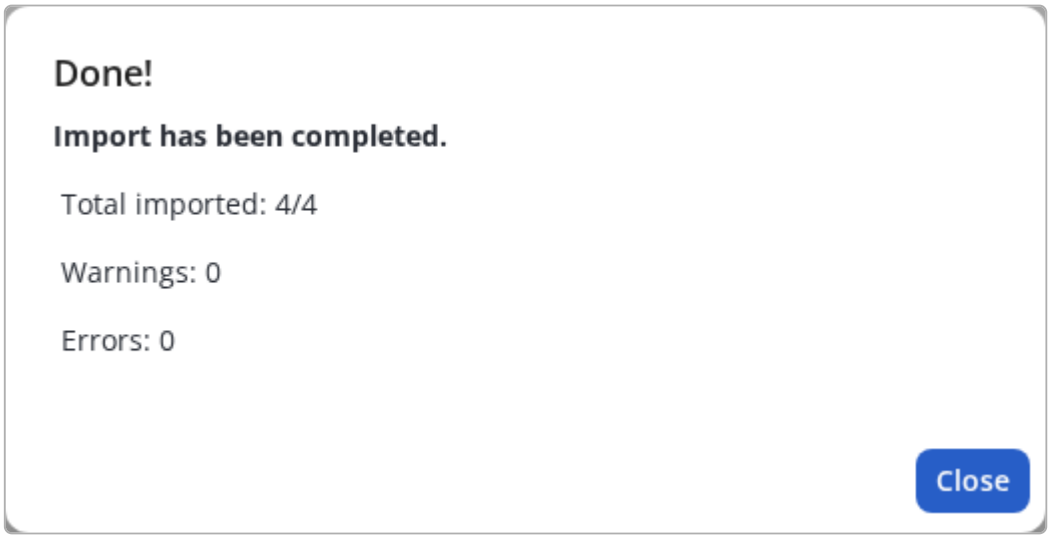


Figure 190. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

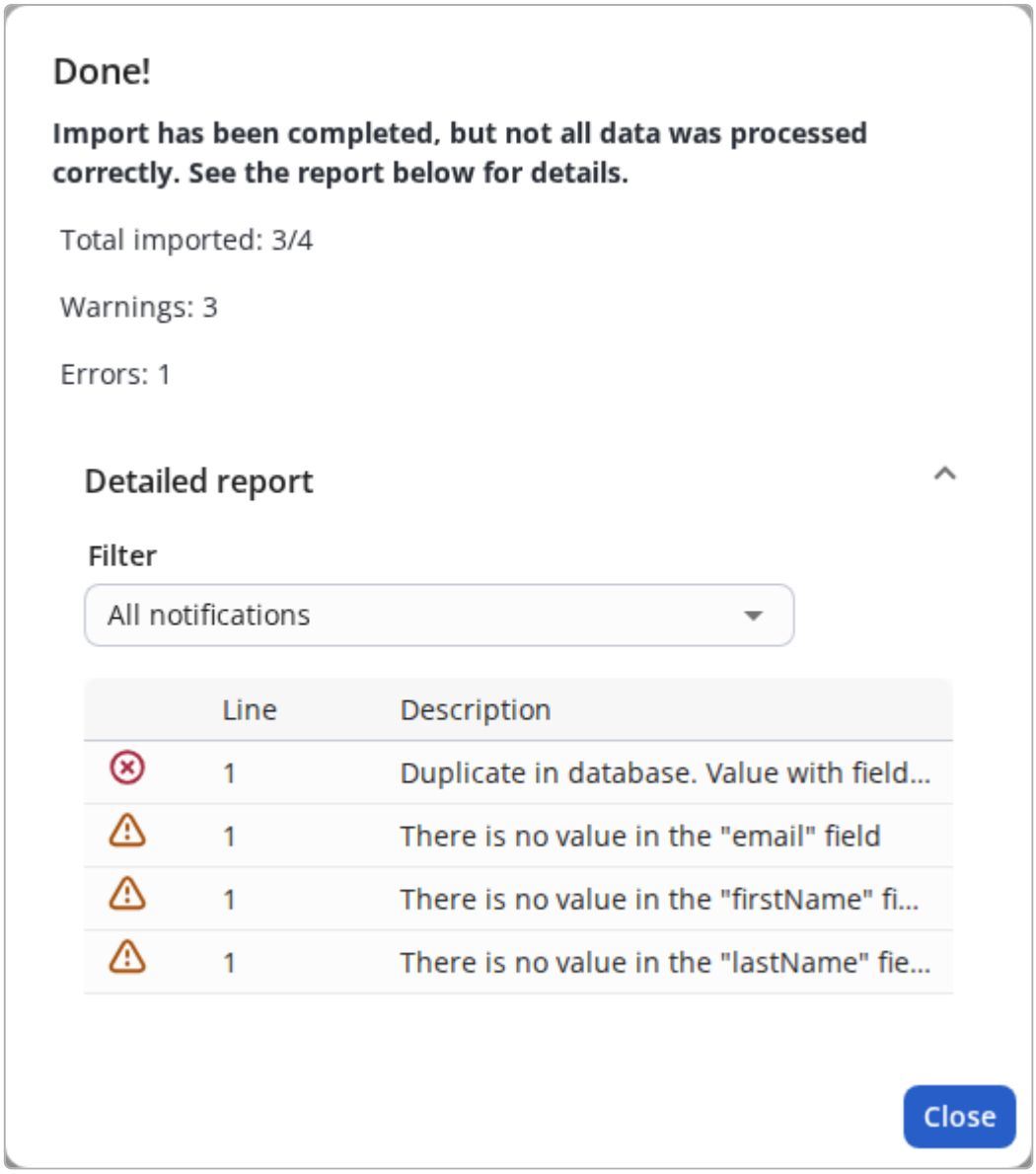


Figure 191. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Endpoints

For Endpoints imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
mac_address:Required	MAC address of the endpoint	**Required** The following MAC address formats are valid: - `XX:XX:XX:XX:XX:XX` - `XX-XX-XX-XX-XX-XX` - `XXXX.XXXX.XXXX` - `XXXXXXXXXXXX`
vendor	Manufacturer of the end device	**This field is ignored during import**
description	Free-form description	Maximum length - 200 characters
profiler_policy	Profiling policy to be assigned to the endpoint (full path required)	**Must exist in the NAICE system** Format: `parent_policy#policy`
endpoint_group	Group to be assigned to the endpoint (full path required)	**Must exist in the NAICE system** Format: `group#subgroup`
hostname	Hostname of the endpoint	Maximum length - 100 characters
username	Username	Maximum length - 100 characters
current_ip_address	IP address of the endpoint	Format: four numbers `0-255`, separated by dots

Logic for processing the fields `profiler_policy` and `endpoint_group`:

- If the value is found in the system — the policy/group is considered **manually assigned** and will not be overwritten as a result of future profiling.
- If the value is absent/not found — it is automatically assigned the value `Unknown`, which may be overwritten as a result of future profiling.

Example of correctly formatted file content:

"mac_address:Required"	"vendor"	"description"	"profiler_policy"	"endpoint_group"	"hostname"	"username"	"current_ip_address"
"85:BF:DA:B7:87:66"	""	""	"test#test_policy"	"test_group"	"test"	"tester"	"10.25.95.105"

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

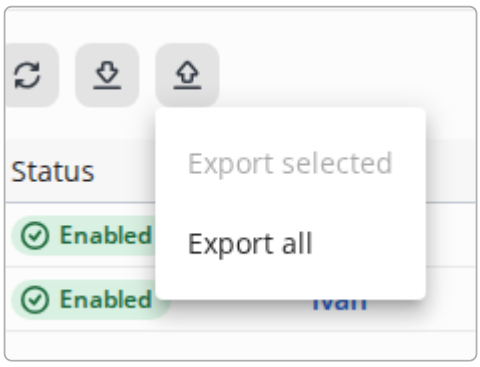


Figure 192. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click  and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

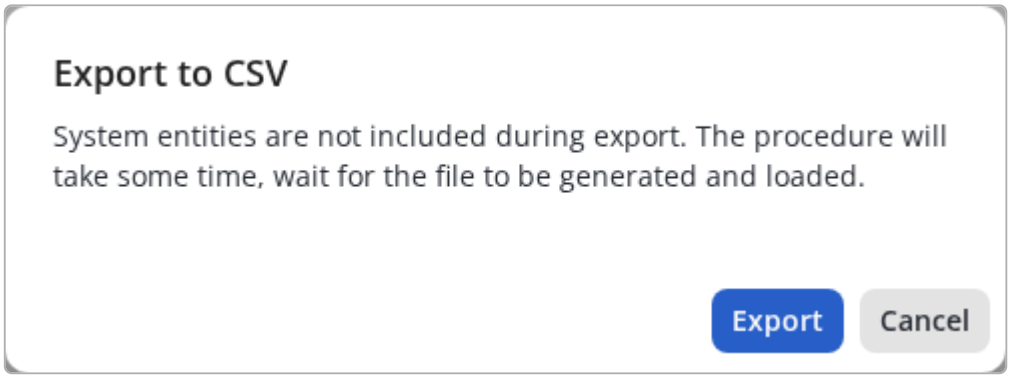


Figure 193. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click  and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

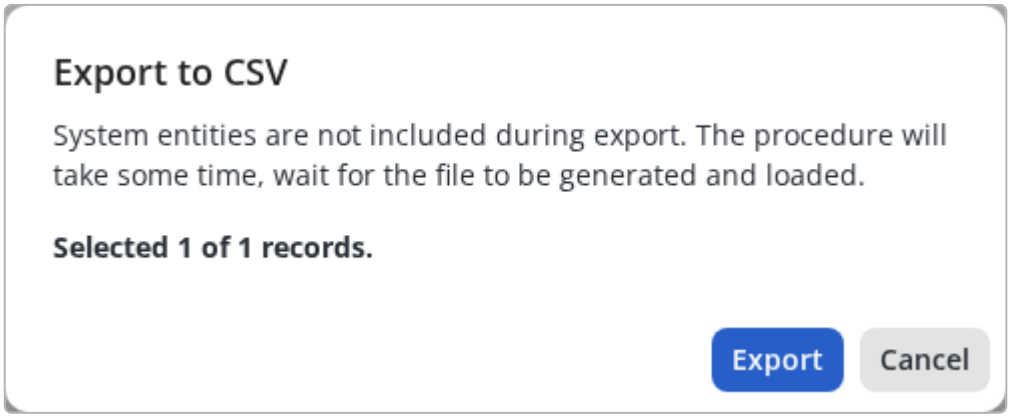


Figure 194. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for Endpoints

The exported file will include the vendor field — the manufacturer of the end device, determined by the first three octets of the MAC address (MAC OUI).

The policy/group for endpoints will be recorded in the format of its full path using the separator - `#`.

The structure of the CSV file for endpoints is described in the section "Import particularities for Endpoints".

Endpoints groups

Description

Endpoints groups - is a collection of "Endpoints" grouped together based on logical criteria.

The NAICE system allows you to monitor endpoints in the network, group them manually or automatically, based on the parameters obtained during the profiling process.

Viewing all groups

When you navigate to the "Endpoint Groups" tab, a panel for viewing all groups will open.

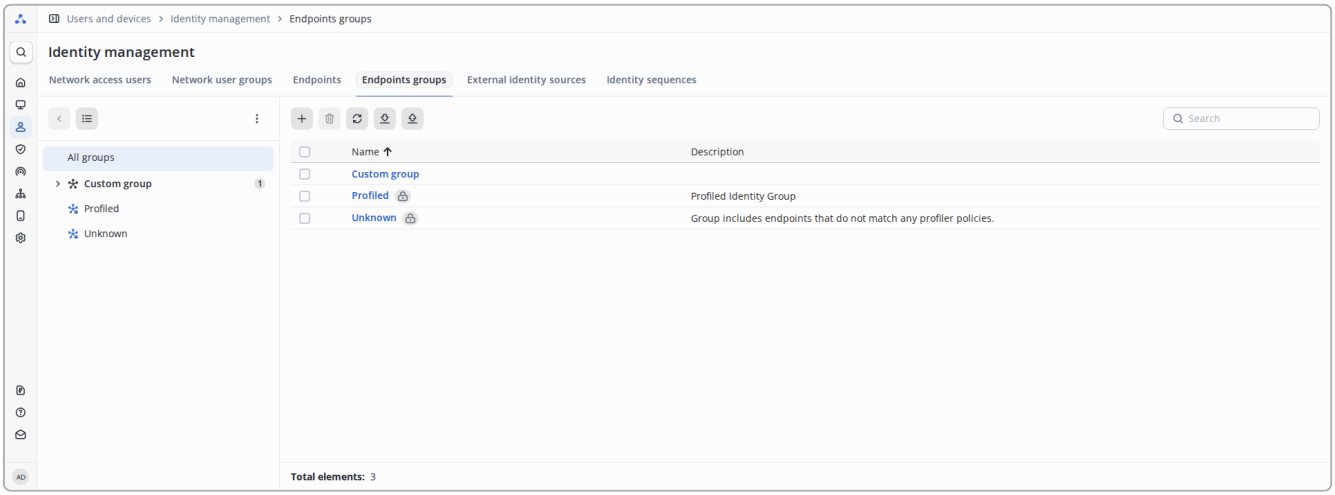


Figure 195. Viewing a list of endpoint groups

The table contains the following columns:

- `Name` - Group Name
  - - This entity is system and cannot be deleted or edited.
- `Description` - Full description of the group

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Allows you to download data from a csv file.
- — Allows you to upload data to a csv file.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

A quick view panel in the form of a tree or list is located on the left side.

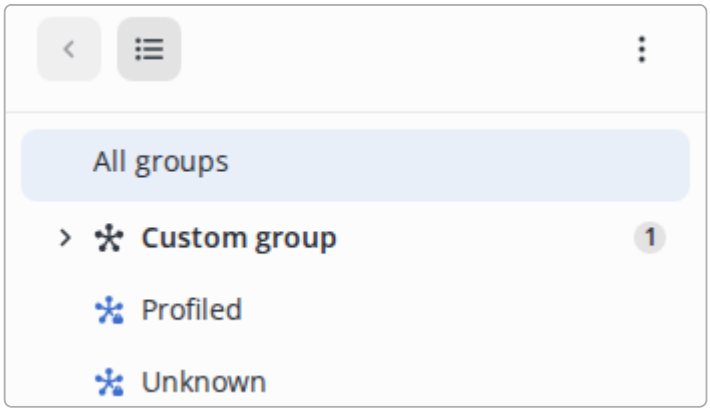


Figure 196. Menu for navigating the endpoint group tree

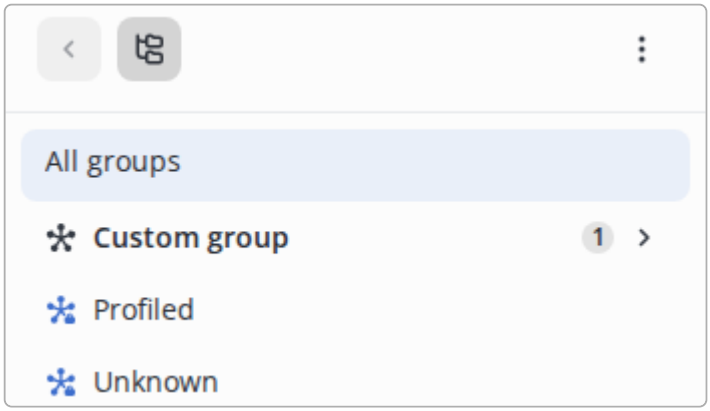


Figure 197. Menu for navigating in "list view mode"

The panel contains:

- `All Groups` - open the table for viewing and administering all groups
- ⋮ - Selection of available actions (depending on the selected item in the tree):
  - `Add root group`
  - `Add child group`
  - `Delete group`
- - tree view mode enabled
- - list view mode enabled
- ‹ - move to the next level (active only in list mode).
- › - In "tree view mode", it is displayed to the left of the name of groups that have child elements if the list is closed. In "list view mode", it is displayed to the right of the name of groups that have child elements.

Group creation:

To add a group, please click the "Add Group" button. + On the left side of the field above the table, the 'Add Group' page will open.

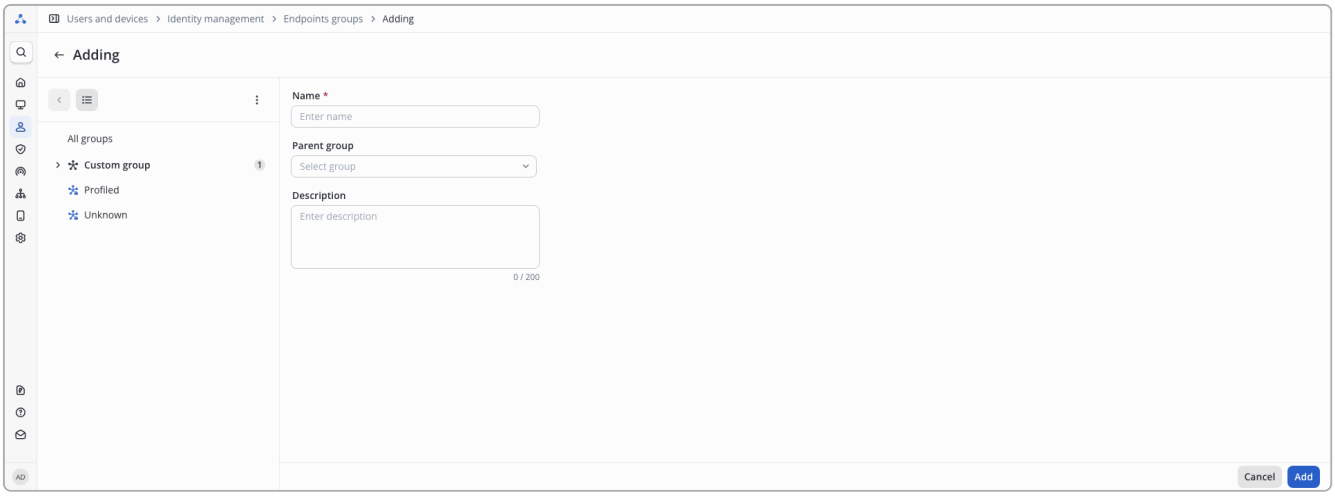


Figure 198. Endpoint group add form

The following parameters are available for filling in:

- `Name` * - the name of the group. Maximum length - 100 characters.
- `Parent Group` - selecting the parent group from the list. This available for editing only at the time of group creation using the button +.
- `Description` - a custom description of the group. Maximum length - 200 characters.

Parameters marked with a red asterisk * are required.

You can also create a group through the tree view panel by selecting the parent group and then clicking on `Add Child Group`.

Assigning a parent group cannot be changed later on.

Group editing

When you open a group record from the tree or table view, the group view/edit page will open.

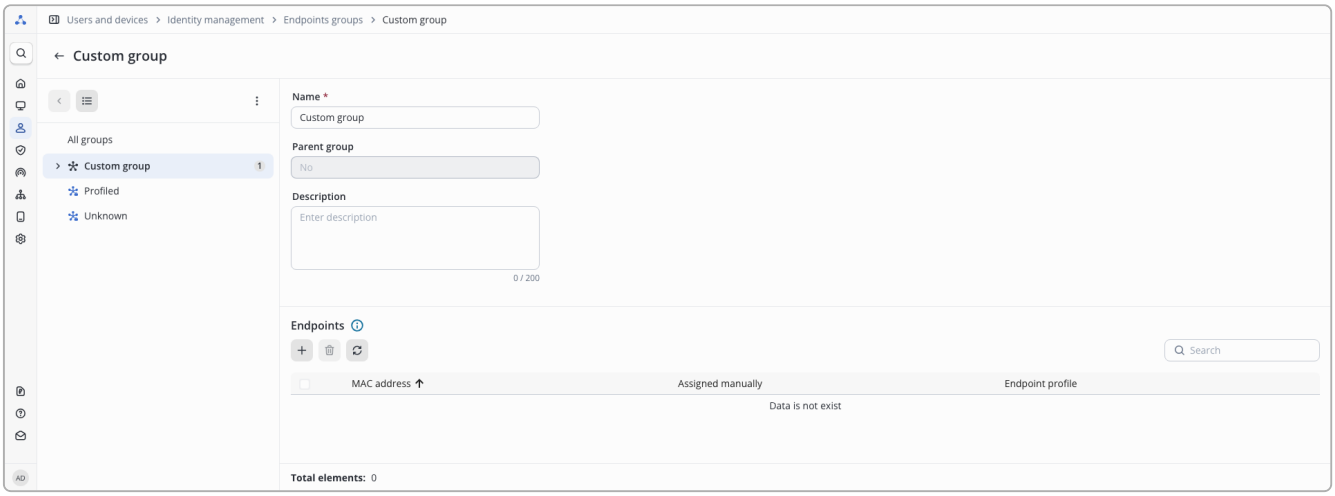


Figure 199. Endpoint group editing form

For editing, the following inputs are available:

`Name` * - the name of the group. Maximum length - 100 characters.

- `Description` - a custom description of the group. Maximum length - 200 characters.

By clicking on `Save`, the changes you made to the group record will be updated in the system.

Assigning Endpoints to a Group

When you open a group record from the tree or table view, the group view page will open

At the bottom of the page, there will be a table displaying the assigned endpoints of the group.

The table contains the following columns:

- `MAC address` - The MAC address of endpoint.
- `Assigned manually` - Whether it was added to the group manually.
- `Endpoint profile` - The profile assigned to this endpoint.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

When an endpoint is removed from a group, it is automatically assigned the **"Unknown"** group.

To add an endpoint to the group, click on . A window will open in which you need to select endpoints to add to the group using the checkboxes and move them to the “Selected” list using the button .

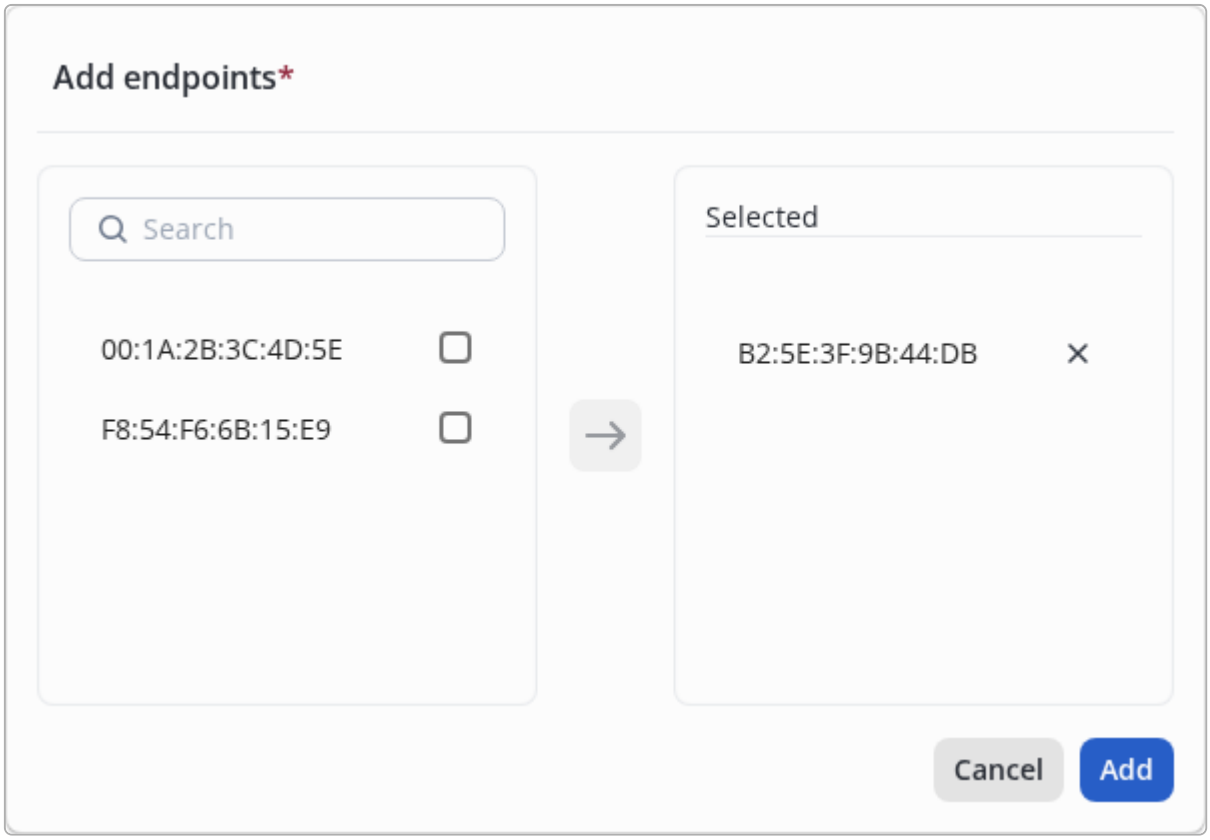


Figure 200. Modal dialog for adding endpoints

After adding all the required endpoints, click **Add**. The button will remain inactive until at least one endpoint is selected.

All changes in the **Endpoints** table are applied automatically and do not require pressing the **Save** button, the actions of which in this case apply only to the upper half of the panel.

Deleting a group

To delete groups, you need to go to the viewing page and use the checkbox. , select the required groups and in the upper left corner above the table, click on .

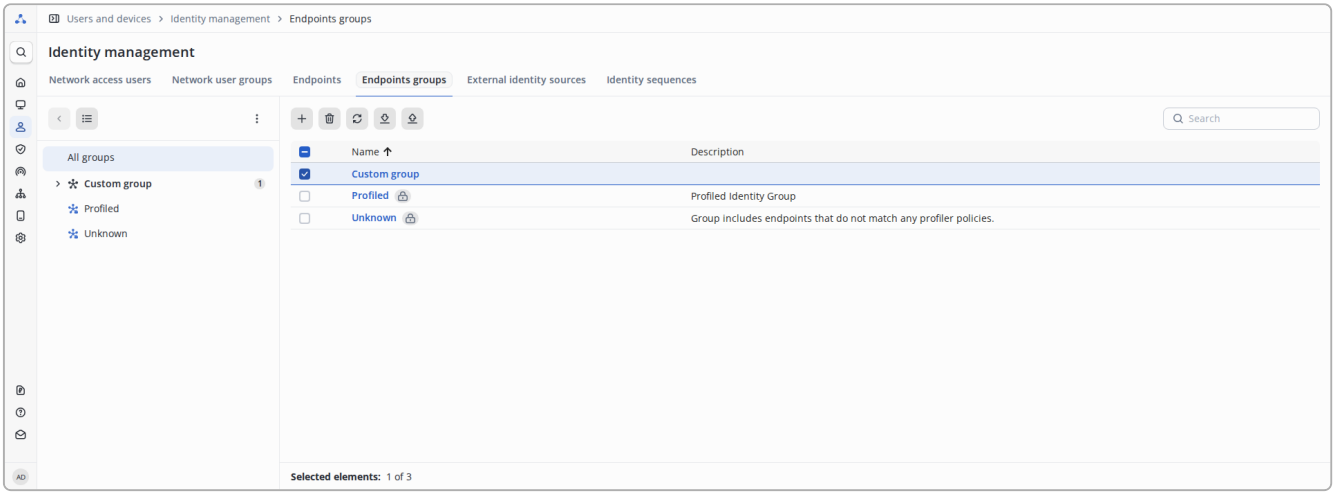


Figure 201. Select groups to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

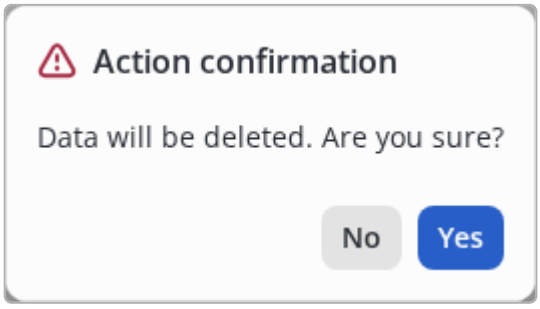


Figure 202. Modal dialog for confirmation

Restrictions:

- you cannot delete a group that has a child group;
- you cannot delete a group that contains endpoints;
- you cannot delete the Profiled and Unknown system groups.

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.
   - Values containing a double quotation mark `(")` are escaped using `\`
   - Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"\"Test command set\""	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

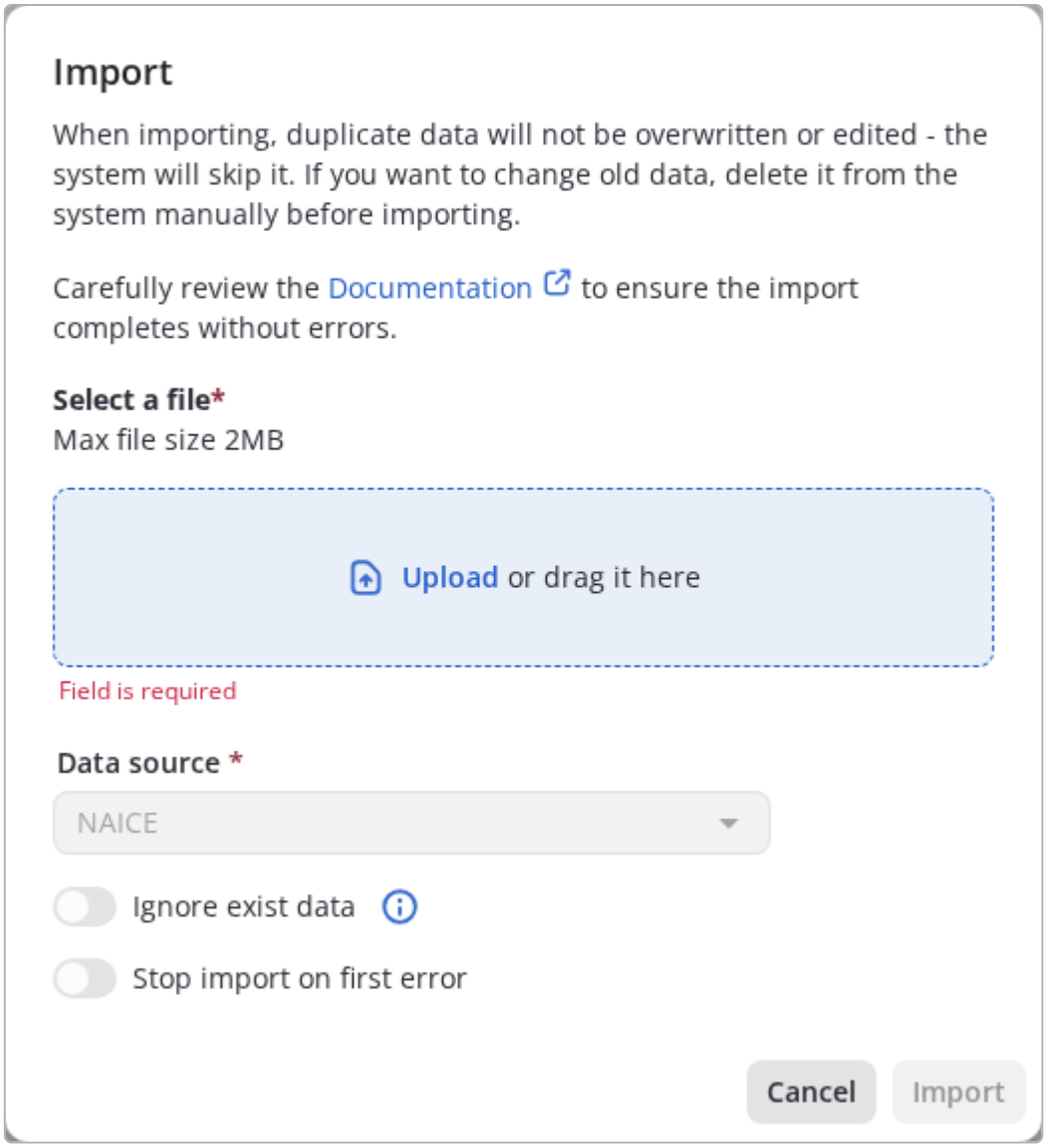


Figure 203. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.
   -

Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

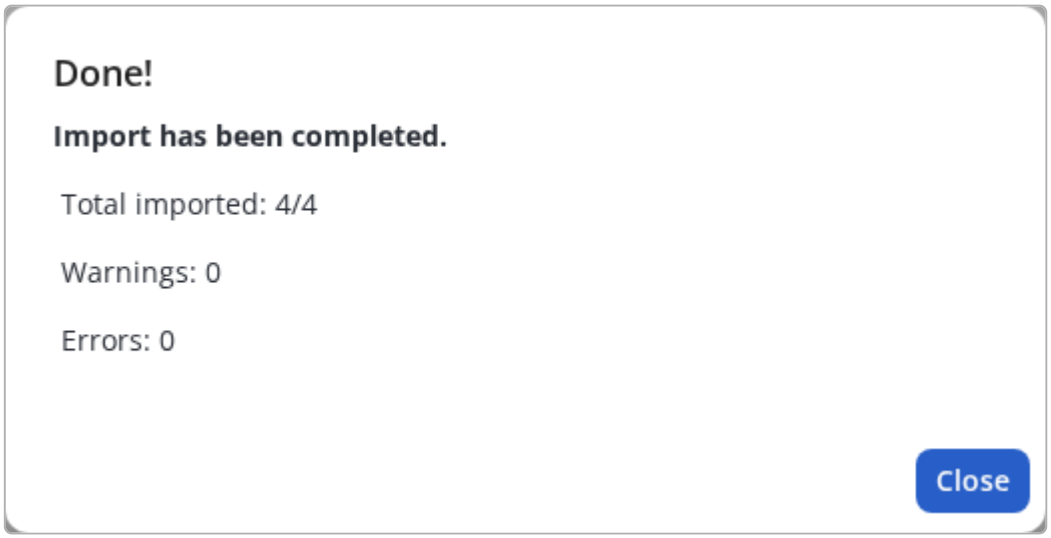


Figure 204. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

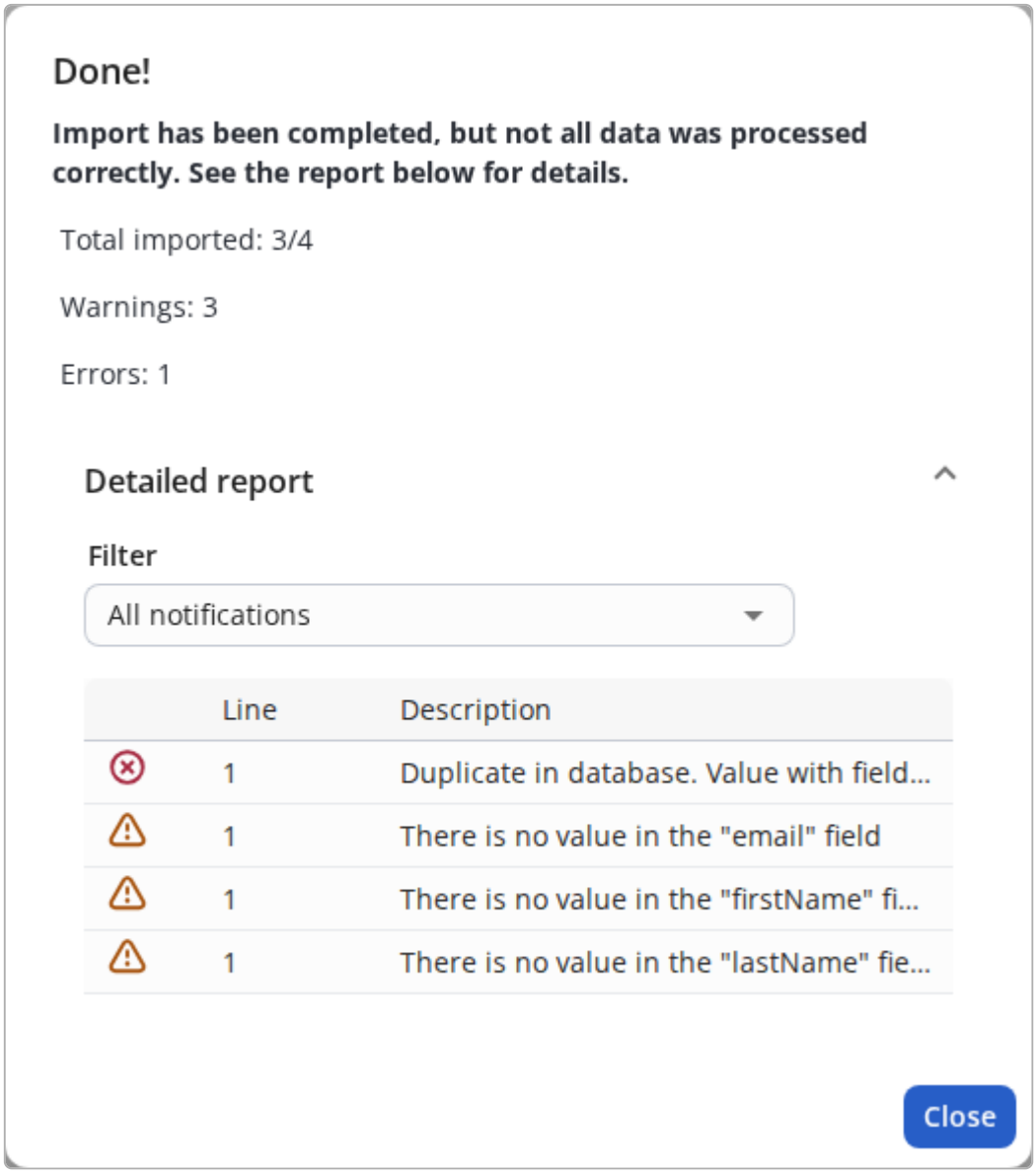


Figure 205. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for Endpoint groups

For Endpoint groups imports, only the `NAICE` data source is supported.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
name:Required	The name of the group in the format of its full path	**Required** Format: `group#subgroup`
description	Free-form description of the group	Maximum length - 200 characters

If there is no intermediate root/child group in the system, it will be created automatically.

Example of correctly formatted file content:

"name:Required"	"description"
"test#test_1"	""

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

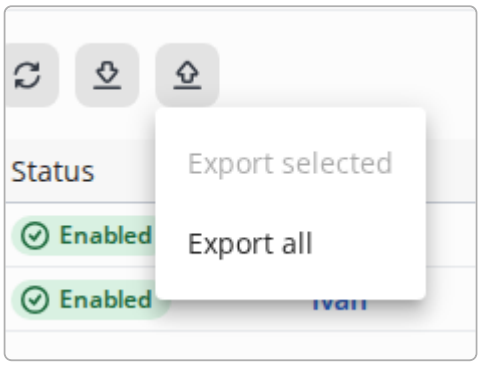


Figure 206. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

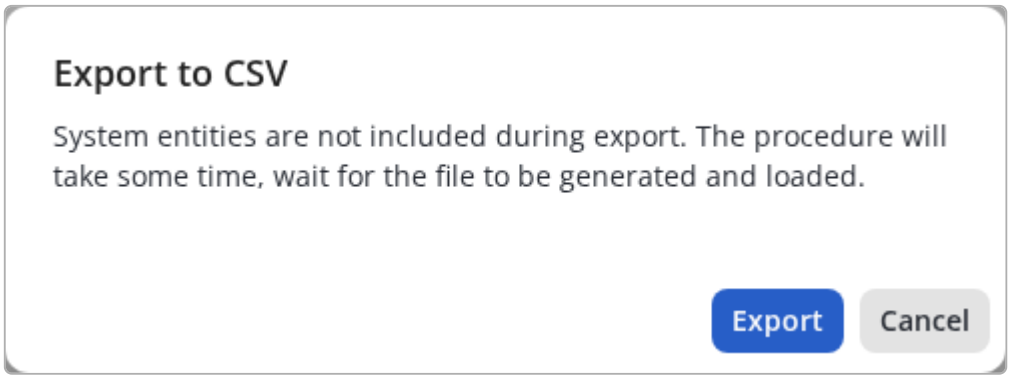


Figure 207. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

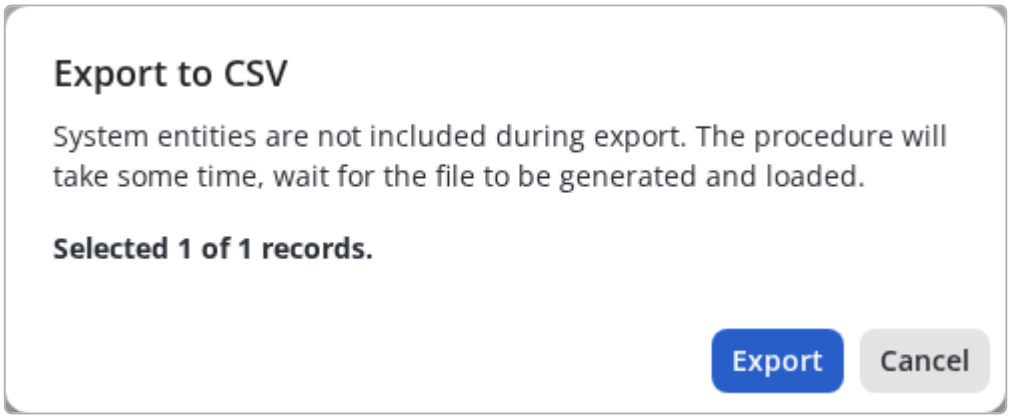


Figure 208. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for Endpoint Groups

The name of the endpoint group will be recorded in the format of its full path using the separator - `#`.

The structure of the CSV file for device groups is described in the section "Import particularities for Endpoint groups".

External identity sources

Description

As a data source used for user authentication, in addition to the internal user database, external sources of client data identification such as MS Active Directory, OpenLDAP, etc. can be used.

External identity sources can be used in NAICE:

- **For system user (administrator) authentication** - an external identity source can be configured **as the primary authentication source on the System Log In page**. System users will be able to log in to the NAICE web interface using their enterprise accounts, and their data (name, surname, email) will be automatically pulled from directory attributes.
- **For network user authentication** - an external source is used when configuring access policies. Users authenticate on network equipment through an external directory, and their attributes and groups can be used in conditions and authorization profiles.

In this section, you configure connections to external sources and add user groups and/or attributes that can later be used when configuring RADIUS policies, Network devices policies, and when configuring external roles.

View external identity sources

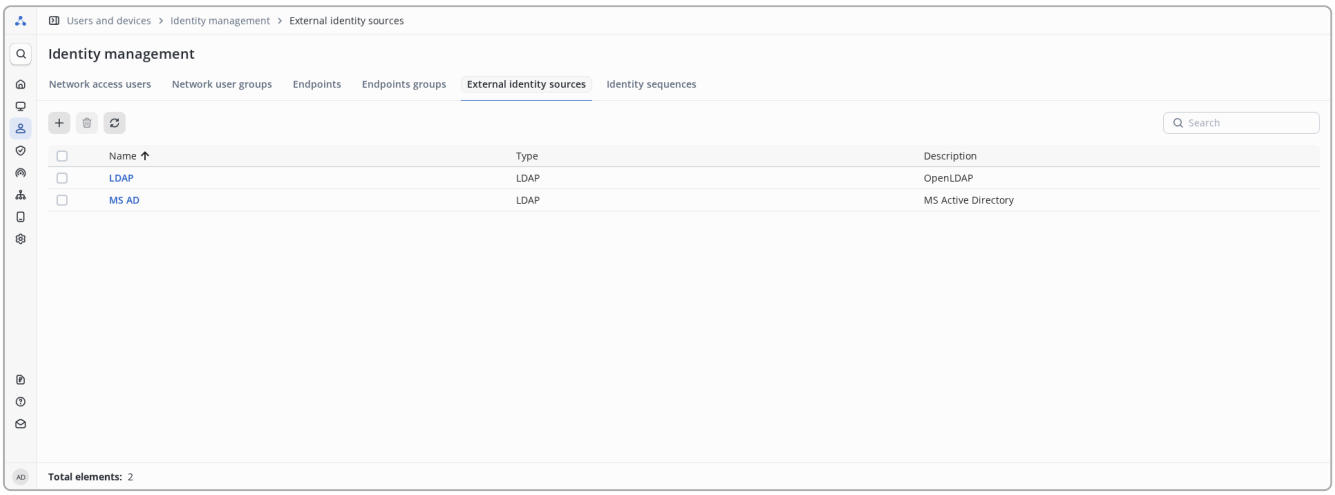


Figure 209. View external identity sources

This page contains a table with a list of external identification sources.

The table contains columns:

- `Name` - name of the source.
- `Type` - source type.
- `Description` - arbitrary description of the source.

It is possible to sort in direct and reverse order by the columns `Name`, `Description`. By default, sorting is performed in direct (alphabetical) order by the `Name` field.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Interaction with identification sources such as "MicroSoft Active Directory" and "OpenLDAP" is supported.
Each identity source has specific setup conditions and restrictions.

Setting up interaction with each type of identification source is discussed separately below.

Adding an Active Directory type identity source

Requirements

When integrating with a source of the MS Active Directory type, the following requirements must be met:

- The DNS server that are using by the Eltex-NAICE host must provide:
  - resolution of the full domain name (for example: EXAMPLE.ORG) in which Eltex-NAICE are operating;
  - resolution of the full name of the AD controllers (for example: SRV1.EXAMPLE.ORG) servicing the domain;
  - return a response to the DNS SRV query with a list of controllers servicing the domain.
- The minimum version of the Active Directory controller: Windows Server 2008 R2.
- The use of the NTLM protocol by the Active Directory controller on which user authorization is performed must be allowed.
- In the MS AD domain with which integration is performed, it is necessary to add computer and user accounts for interaction with NAICE.

- The user and computer accounts must have a password.

If redundant installation is used, a separate computer account must be added for each NAICE node for proper interaction with Active Directory. The service user account will be the same for all NAICE nodes.

You can set the password using the command in the PowerShell shell, which is part of Active Directory, launched with administrator rights:

```
Set-ADAccountPassword -Identity Computer-Name$ -Reset
```

- After the command is run, enter the password twice in the terminal.

If you need to specify the password explicitly in the command:

```
Set-ADAccountPassword   -Identity   Computer-name$   -Reset   -NewPassword
(ConvertTo-SecureString -AsPlainText "password" -Force)
```

The computer name must be specified without the domain part, ending in "$". WARNING: The password must meet the requirements configured in MS AD.

The user account must have the following rights:

- Perform a search in Active Directory
- Get information about all users and groups in the domain

Rights to write information to Active Directory are not required.

Also, in the user settings, you must disable the "require password change on first connection" option (enabled by default)

Eltex-NAICE accesses Active Directory using the following ports:

Protocol	Port	Appointment	Note
UDP	53	DNS	The server responsible for resolving domain names can be separate from the Active Directory server
TCP/UDP	389	LDAP	No encryption of transmitted data, searching within the specified local domain
TCP/UDP	636	LDAPS	Used for secure connection with encryption of transmitted data, searched within the specified local domain

TCP/UDP	3268	LDAP GC	No encryption of transmitted data, searched the entire Active Directory domain forest
TCP/UDP	3269	LDAPS GC	Used for secure connection with encryption of transmitted data, searched the entire Active Directory domain forest
TCP/UDP	49152-65535	RPC Dynamic Port Range	Used to verify user password during authentication in Active Directory, encryption of transmitted data is used

Implementation limitations

There are the following limitations to implementing Active Directory interoperability:

- Users, their attributes, and groups can only be searched within a single Active Directory global catalog.
- Within the local domain specified in the settings, the username on the client device can be entered in the following formats:
  - <login>, without specifying a domain (when accessing Active Directory, the domain will be added automatically).
  - UPN: <login>@<FQDN domain> or pre-Windows 2000 format: <DOMAIN NAME >\<login>.
- If the user belongs to a different Active Directory global catalog domain (than specified in the local domain settings), the username must be specified on the client device in UPN format: <user>@<FQDN domain>.
- If the username has a prefix other than Active Directory domain, only UPN format must be used: <login>@<domain prefix>.
- Only Latin characters, numbers, punctuation are allowed in usernames and passwords.
- It is allowed to use user groups that contain a user not directly, but through the inclusion of another group containing a user.
- A user group that is specified in Active Directory as `Primary Group` cannot be used because it is not returned in the list of user groups when searching for them in Active Directory.

Adding an identity source

To add an identification source, click + on the action bar above the table:

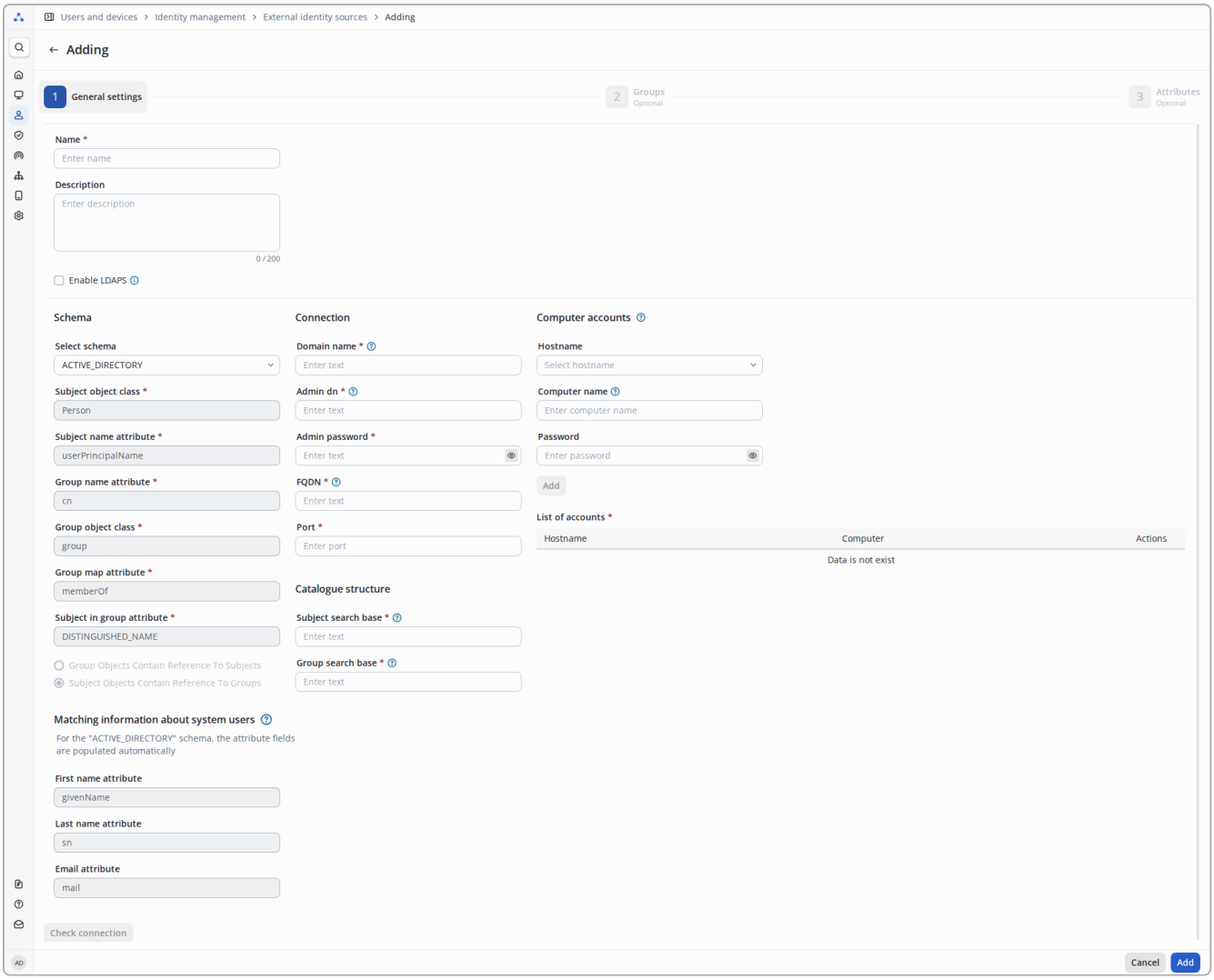


Figure 210. Window for adding identification source

This form provides the following parameters:

- Block **General settings**:
  - `Name` * - name of the identification source. The maximum field length is 63 characters.
  - `Description` - description. The maximum field length is 200 characters.
  - `Enable LDAPS` - Enables the use of a secure connection to the directory service via the LDAPS (LDAP over TLS) protocol, which ensures encryption of transmitted data and verification of the server certificate. Certificates of the service must be uploaded to the trusted certificates store. When this option is enabled, the additional option `Trust unknown sources` becomes available.
  - `Trust unknown sources` - Available only when `Enable LDAPS` is activated. Allows connection to the directory service via the LDAPS protocol using an **untrusted** or **unknown** certificate.

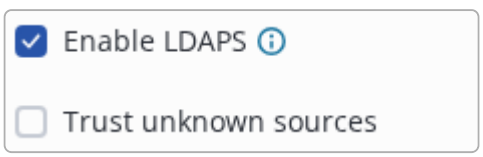


Figure 211. Enabling the "Enable LDAPS" option

- Block **Schema**:

- `Select schema` * - scheme of the identification source attributes. "ACTIVE_DIRECTORY" is selected by default, for this scheme the attribute values are preset and cannot be changed.

- Block **Connection**:
  - `Domain name` * - name of the Active Directory domain in which users will be authorized. It is necessary to specify only the short name of the domain in which users will be authorized. The field is available only for the "ACTIVE_DIRECTORY" scheme. The maximum field length is 63 characters.
  - `Admin dn` * - administrative user data for interaction with Active Directory. The user name must be specified in the UPN format: <user>@<domain> or in the pre-Windows 2000 format: <DOMAIN NAME>\<user>. The maximum field length is 200 characters.
  - `Admin password` * - password of the administrative user. Not displayed by default, to view it you need to click . The maximum field length is 200 characters.
  - `FQDN` * - the full domain name or the full name of the Active Directory domain controller preferred for requests. The maximum field length is 255 characters. If a domain controller is specified as the preferred one for performing requests, requests to it will be performed while it is available. If it is unavailable, requests will be performed to the next server from the list of servers for the domain, obtained from the DNS query of the SRV type.
  - `Port` * - the port for connecting to the domain controller(s) (usually TCP:389 is used).
- **Directory structure** block:
  - `Subject search base` * - context for searching for attributes of directory service records. The maximum field length is 200 characters.
  - `Group search base` * - context for searching for directory service groups. The maximum field length is 200 characters.

Both fields are in the format of a comma-separated attribute=value list, such as "dc=example,dc=org". If you want to limit the search to a specific department (ou), you must specify it, such as "ou=naice,dc=example,dc=org". If there are several nested departments, you must specify them all, starting with the one furthest from the root of the domain, such as "ou=test,ou=naice,dc=example,dc=org" - this will correspond to the structure:

```
(dc)org
       \-(dc)example
                    \-(ou)naice
                              \-(ou)test
```

More information about the format of the data entered in this field can be found by hovering over or in the tooltip below.

Valid characters when entering Subject search base and Group search base parameters:

- space,
- double quotes (""),
- equal sign (=),
- comma (,),
- hyphen (-),
- latin letters (a-z)(A-Z),
- cyrillic letters (а-я)(А-Я),
- numbers (0-9).

Entering other elements is prohibited.

When saving, the system automatically removes spaces near the equal sign (=) and comma (,), the value with a space is taken in double quotes. The attribute value entered to the left of the equal sign (=) is converted to lower case.

Example:

Entered value	Saved value
ou=naice test, dc = example ,dc = org	ou="naice test",dc=example,dc=org
ou="naice test",dc = example,dc=org	ou="naice test",dc=example,dc=org

- Block **Computer accounts** - available only for the "ACTIVE_DIRECTORY" scheme. This block configures computer accounts for interaction with Active Directory individually for each NAICE node. Computer names in the list must not be duplicated.
  - `Hostname` - dropdown list with available NAICE nodes. Select the node for which the computer account is being configured.
  - `Computer name` - the computer name that NAICE will use to connect to Active Directory. Allowed characters: Latin letters, numbers, hyphen. Maximum length: 63 characters. The name must be unique within the list.
  - `Password` - computer account password. Not displayed by default, to view it you need to click  . The maximum field length is 200 characters.

To add an entry, fill in the `Hostname`, `Computer name`, `Password` fields and click the **Add** button. The entry will appear in the **List of accounts** table.

The **List of accounts** table contains the following columns:

- `Hostname` - NAICE node name.
- `Computer` - computer account name.

`Actions` - account action menu, which opens by clicking on ⋮ :

- `Edit` - opens the account editing dialog. The hostname, computer name, and password of the computer account can be changed.
- `Delete` - removes the account from the list.

For the "ACTIVE_DIRECTORY" scheme, at least one computer account must be added.

- `Check connection` - check the correctness of the settings and connection to the Active Directory server.

Parameters marked with an asterisk * are required.

- Block **Matching information about system users** - configuration for mapping attributes from the external source to NAICE system user account fields:
  - `First name attribute` - attribute whose value will be inserted into the `Name` field of the external account.
  - `Last name attribute` - attribute whose value will be inserted into the `Last name` field.
  - `Email attribute` - attribute whose value will be inserted into the `Email` field.

For the "ACTIVE_DIRECTORY" schema, the attribute fields are populated automatically:

- Name attribute - givenName attribute.
- Last name attribute - sn attribute.
- Email attribute - mail attribute.

If attributes in the directory for a user are not populated, the corresponding account fields will remain empty.

If attributes are specified in the settings but are missing for a specific user in the directory, when checking the connection with the server, even if the connection to the server is successful, an error like this will be returned: Unable to find the "mail" field for the users.

After filling in all the necessary data, the **"Check connection"** button will become active.

The **"Add"** button becomes active if all parameters are added and does not depend on the success of the connection check with the server.

If the connection with the server is successfully checked, a message similar to the following will appear:

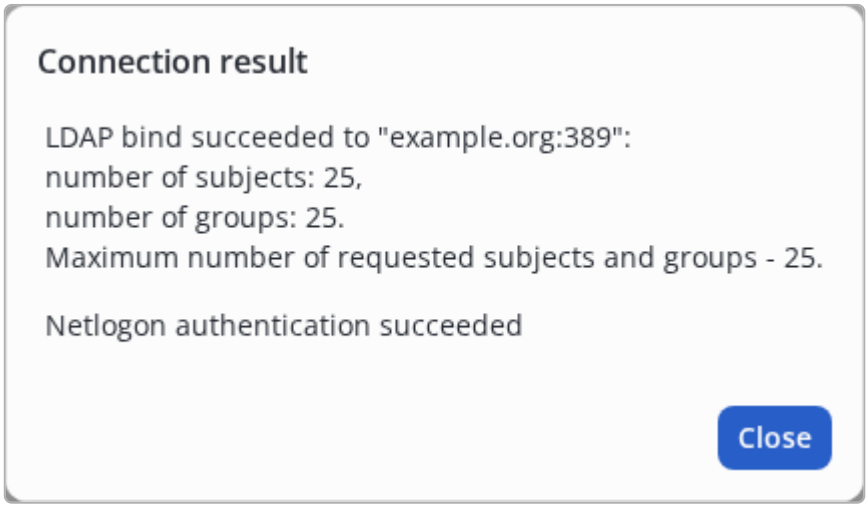


Figure 212. LDAP binding successful

A message like "Netlogon authentication succeeded" confirms that users can be authorized.

When checking a connection, no more than 25 items and groups are requested, so as not to cause unnecessary load on the server, so if the number "25" is shown more than real users or groups, this does not indicate a problem.

Adding user groups

For network user authentication through an external identity source, adding groups is not required.

Groups can be used in user authorization policies.

To use an external source for system user (administrator) authentication on the System Log In page, **adding groups is mandatory**.

Without groups, it is impossible to configure external roles. In the absence of external roles, system login is impossible - an error "You have no privileges" will be returned.

After adding an identification source, the **"Add"** button will change to **"Next"**. You can also make the transition by clicking on the inscription **(2) Groups**, the page will open:

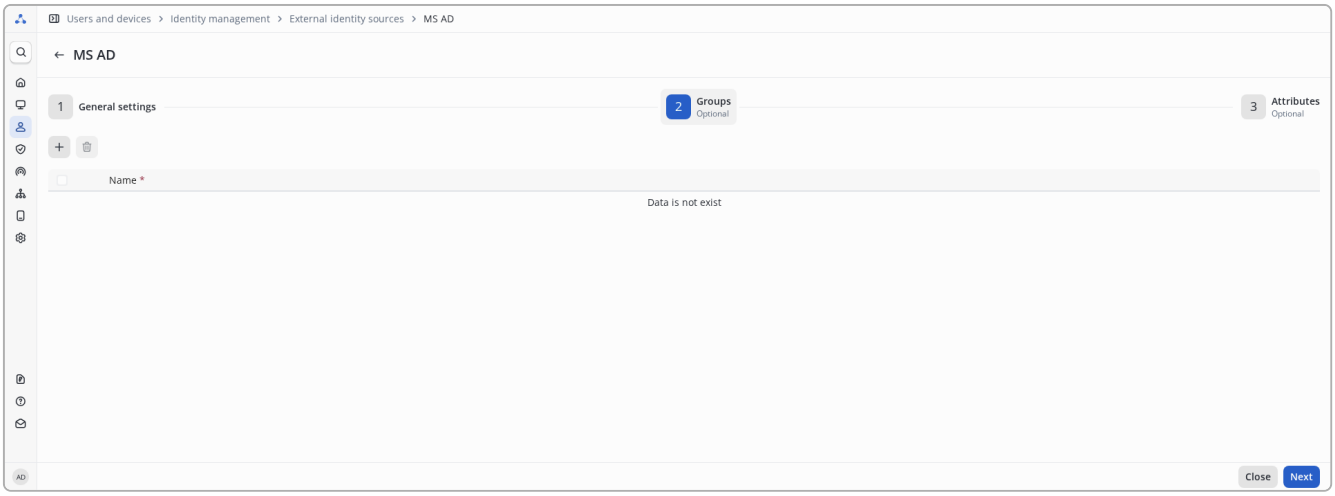


Figure 213. Empty group table

The table contains columns:

- `Name` * - group name.

Controls:

- + - add a group.
- 🗑 - delete groups selected by the checkbox (inactive until at least one group is selected).
- ✎ - edit a group (not displayed until at least one group has been added).
- 💾 - save the group after editing (not displayed until editing of the group has started).

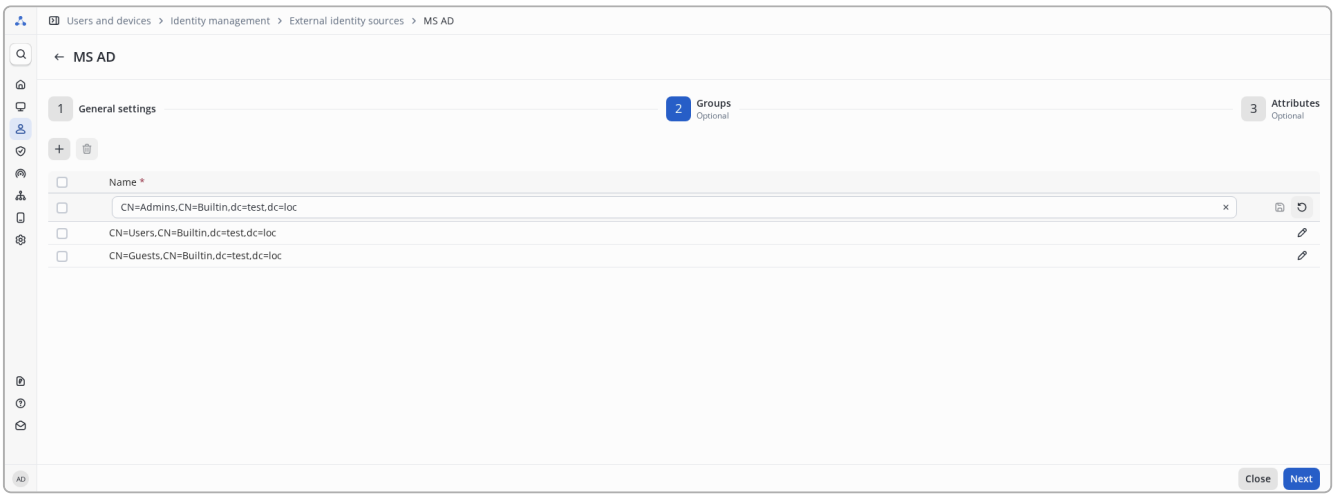


Figure 214. Group table in edit mode

After clicking on the button + a menu will open:

- `Add new group` - create a custom new group.
- `Select groups from directory` - add groups from the identification source.

Add new group

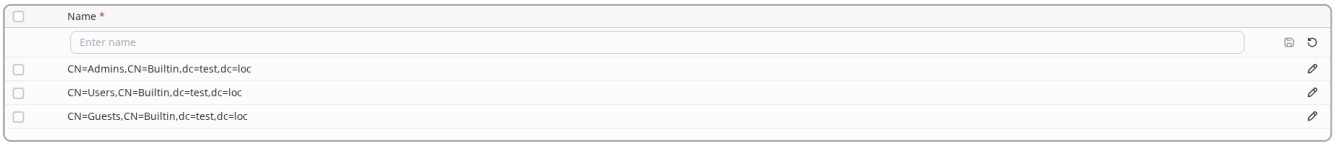


Figure 215. Add new group

In the line that appears, you need to specify a custom group name. After filling in the group name, the save button will become active. You need to click it to add a group.

Select groups from directory service

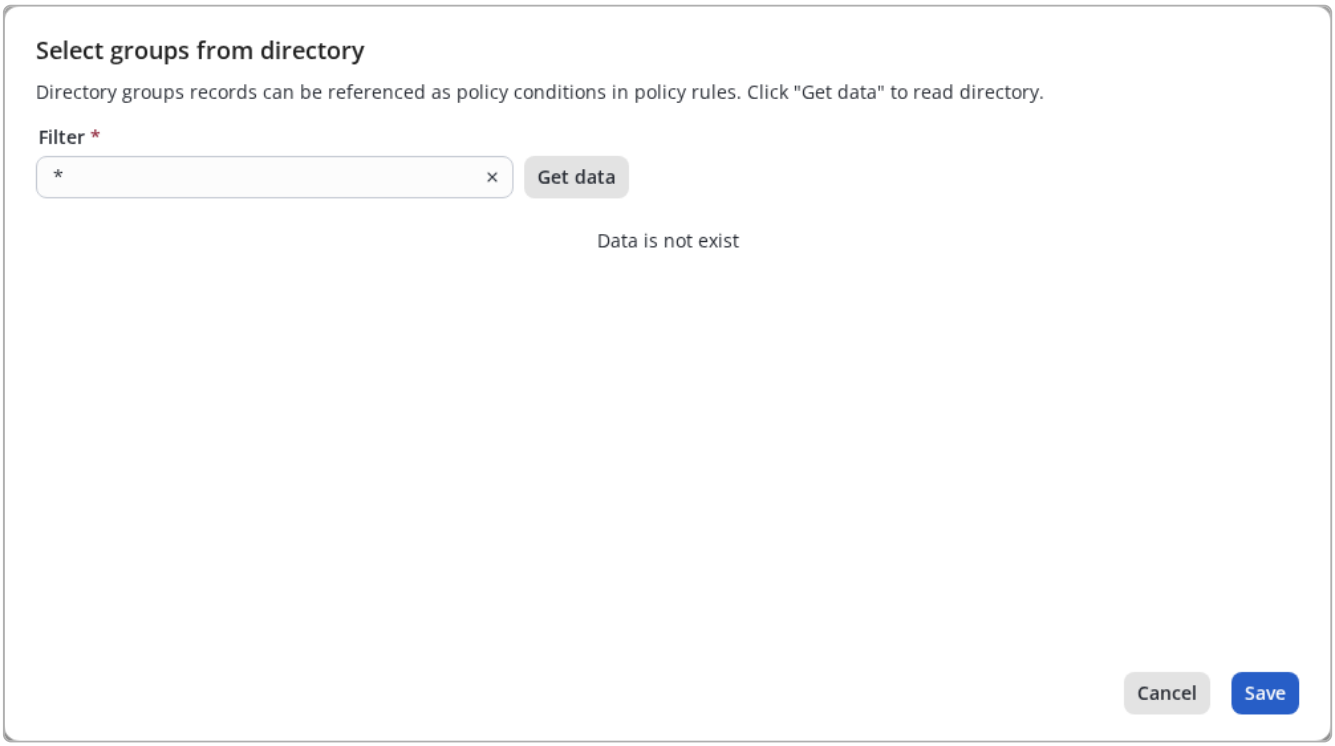


Figure 216. Group selection window

This window presents the following parameters:

- `Filter` * - filter for searching groups, default "*", you can enter the name of the group.
- `Get data` - get data taking into account the filter

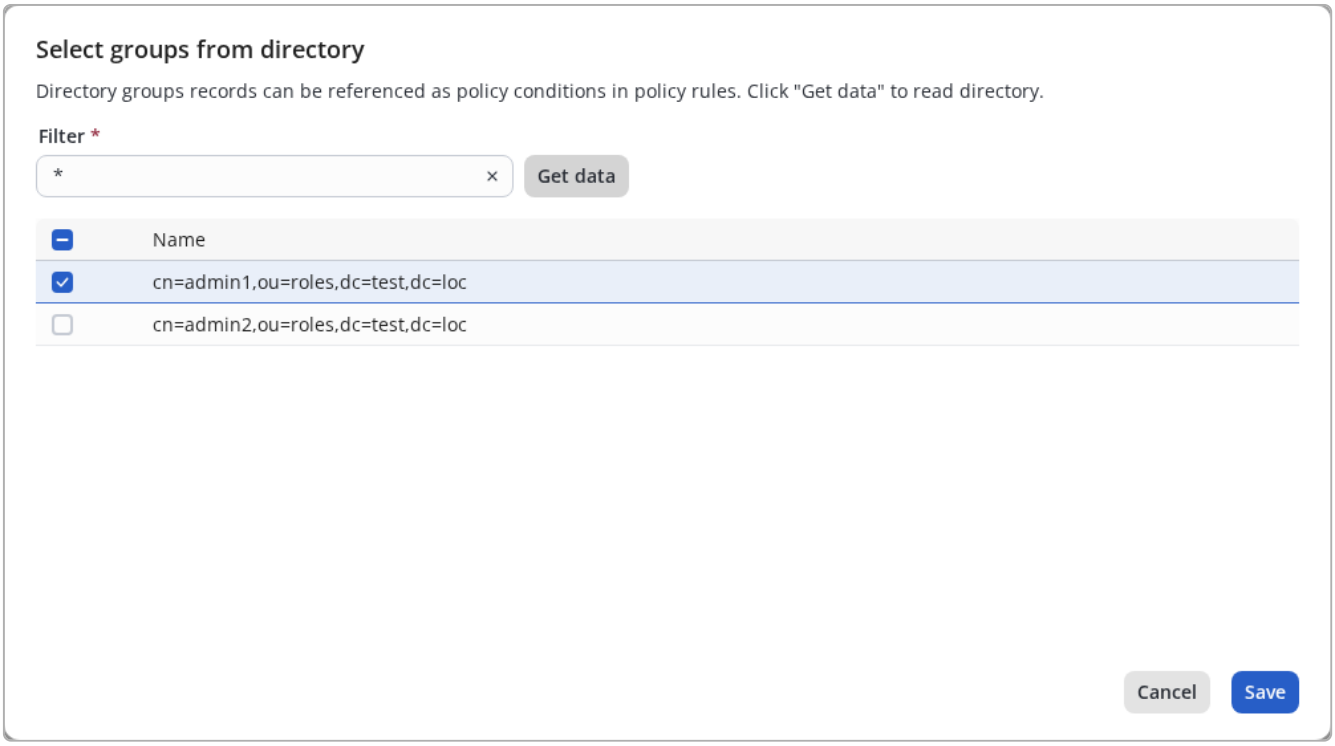


Figure 217. Group selection window after receiving data

You need to select the required groups using the ☐ checkbox on the left and click the **"Save"** button.

Previously saved groups that were not reselected in the search list will be deleted when resaving other selected groups!

Adding attributes

To be able to authenticate via an external identity source, adding attributes is optional. Attributes can be used in policies and user authorization profiles.

After adding groups, you can click the **"Next"** button at the bottom right of the screen. You can also make the transition by clicking on the inscription **(3) Attributes**, the page will open:

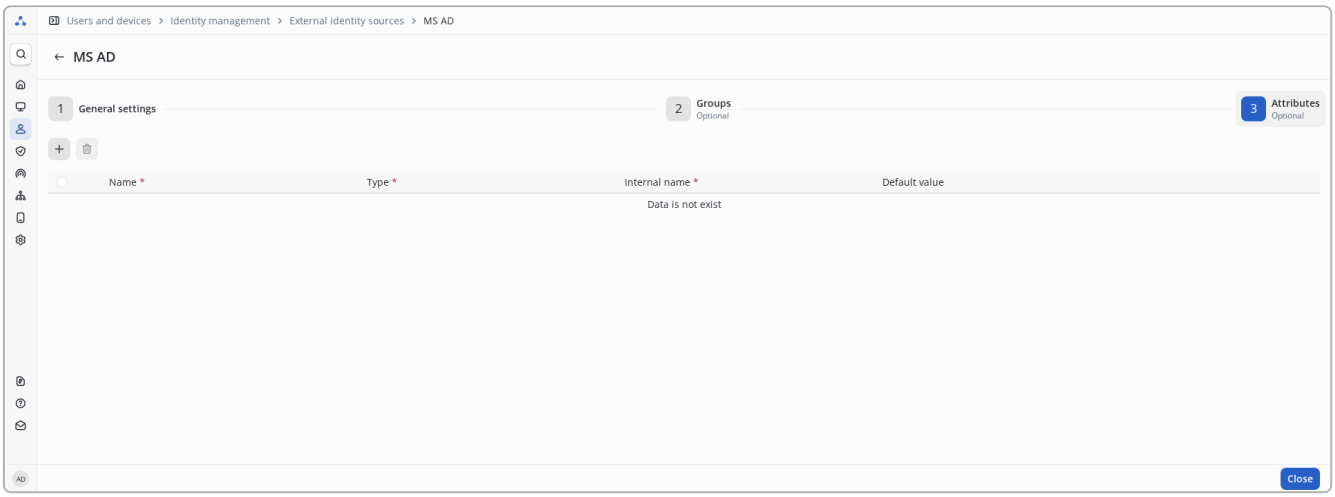


Figure 218. Adding attributes

The table contains columns:

`Name` * - the name of the attribute that will be displayed in the LDAP dictionary and used when setting up logical conditions and authorization profiles. You can specify an arbitrary one for ease of use.

- `Type` * - attribute type, possible values:
  - `INTEGER` - numeric,
  - `IP_4_ADDR` - IPv4 address,
  - `STRING` - string.
- `Internal name` * - the name of the attribute in the Active Directory schema.
- `Default value` - the attribute value that will be used if it is not obtained from Active Directory.

Controls:

-  - add attributes.
-  - delete the attributes selected by the checkbox (inactive until at least one attribute is selected).
-  - edit attributes (not displayed until at least one is added).
-  - save the attribute after editing (not displayed until editing has started).

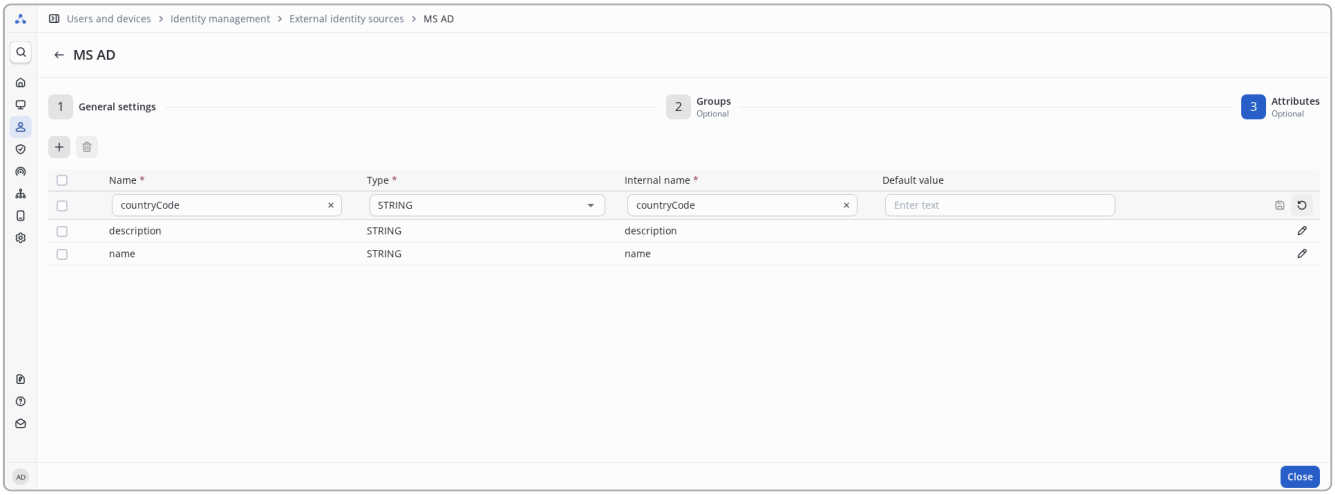


Figure 219. Attribute table in edit mode

After clicking on the button  a menu will open:

- `Add new attribute` - create an arbitrary new attribute.
- `Select attribute from directory` - add an attribute from the identification source.

Add new attribute

Figure 220. Add new attribute

The line that appears to add an attribute contains the following parameters:

`Name` * - arbitrary attribute name that will be displayed in the dictionary.

- `Type` * - attribute type. Possible values:
  - `INTEGER` - numeric,
  - `IP_4_ADDR` - IPv4 address,
  - `STRING` - string (default).
- `Internal name` * - attribute name from the identification source.
- `Default value` - the attribute value that will be used if it is not obtained from Active Directory.

Parameters marked with an asterisk * are required.

After filling in the required parameters, the save button will become active. You need to click it to add an attribute.

Select attribute from directory service

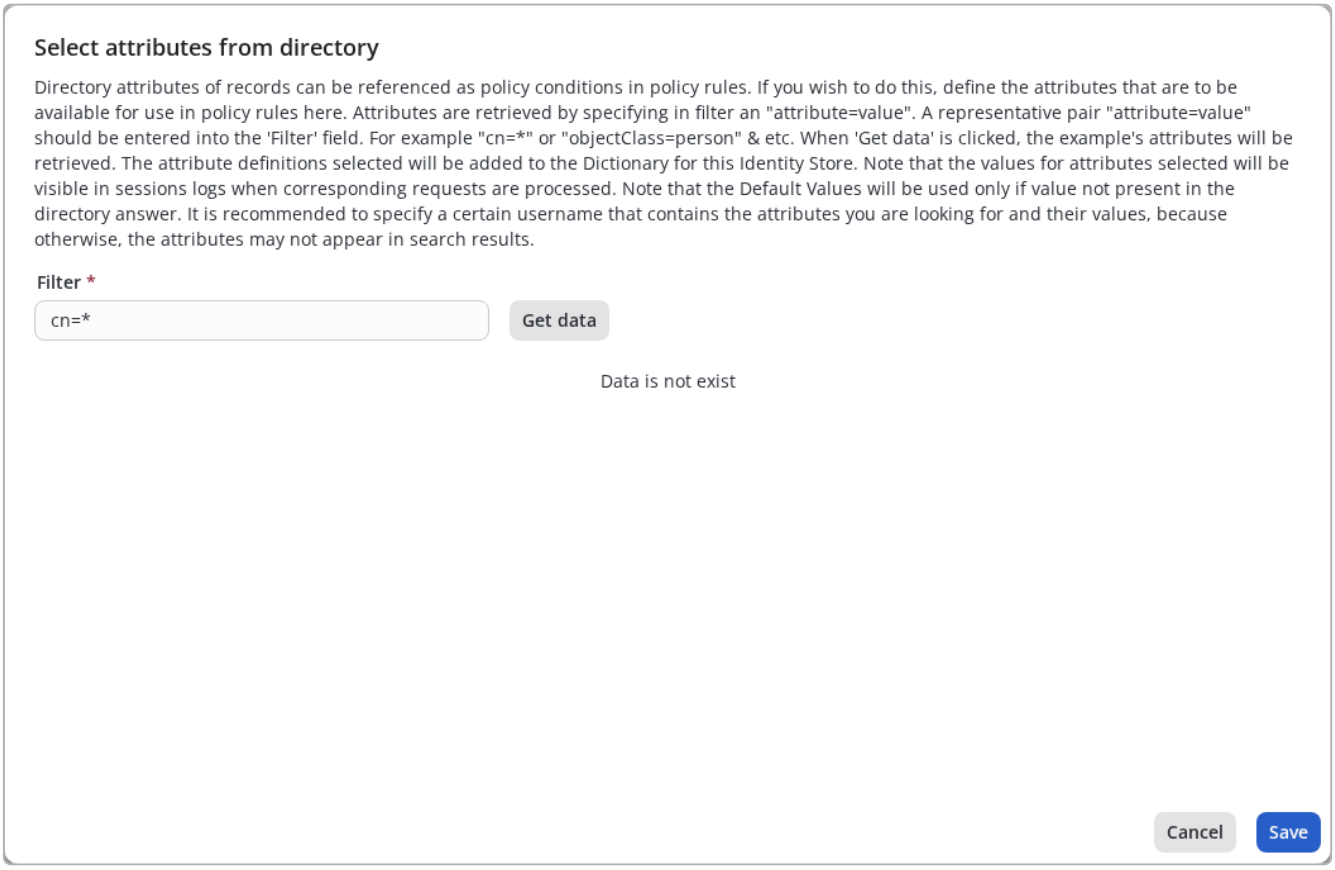


Figure 221. Selecting attributes from a directory service

This window presents the following parameters:

- `Filter` * - filter for searching attributes, default `cn=*`. You can use the expression `<Attribute>=<value>` as a filter; if the value is not important, you must specify `*`. If an attribute has multiple values, only the first one found is displayed.
- `Get data` - get data taking into account the filter.

In general, additional user attributes are added after they have been given values, and cannot be subtracted before that.

To select attributes from an Active Directory type source, it is recommended to use the `userPrincipalName` or `sAMAccountName` attribute, specifying a specific account that contains the entities being imported. For example:

```
userPrincipalName=ivan.ivanov@example.org

sAMAccountName=ivan.ivanov
```

To select attributes from an LDAP type source, it is recommended to use the attribute that is specified in the `Subject name attribute` schema setting.

After receiving attribute data:

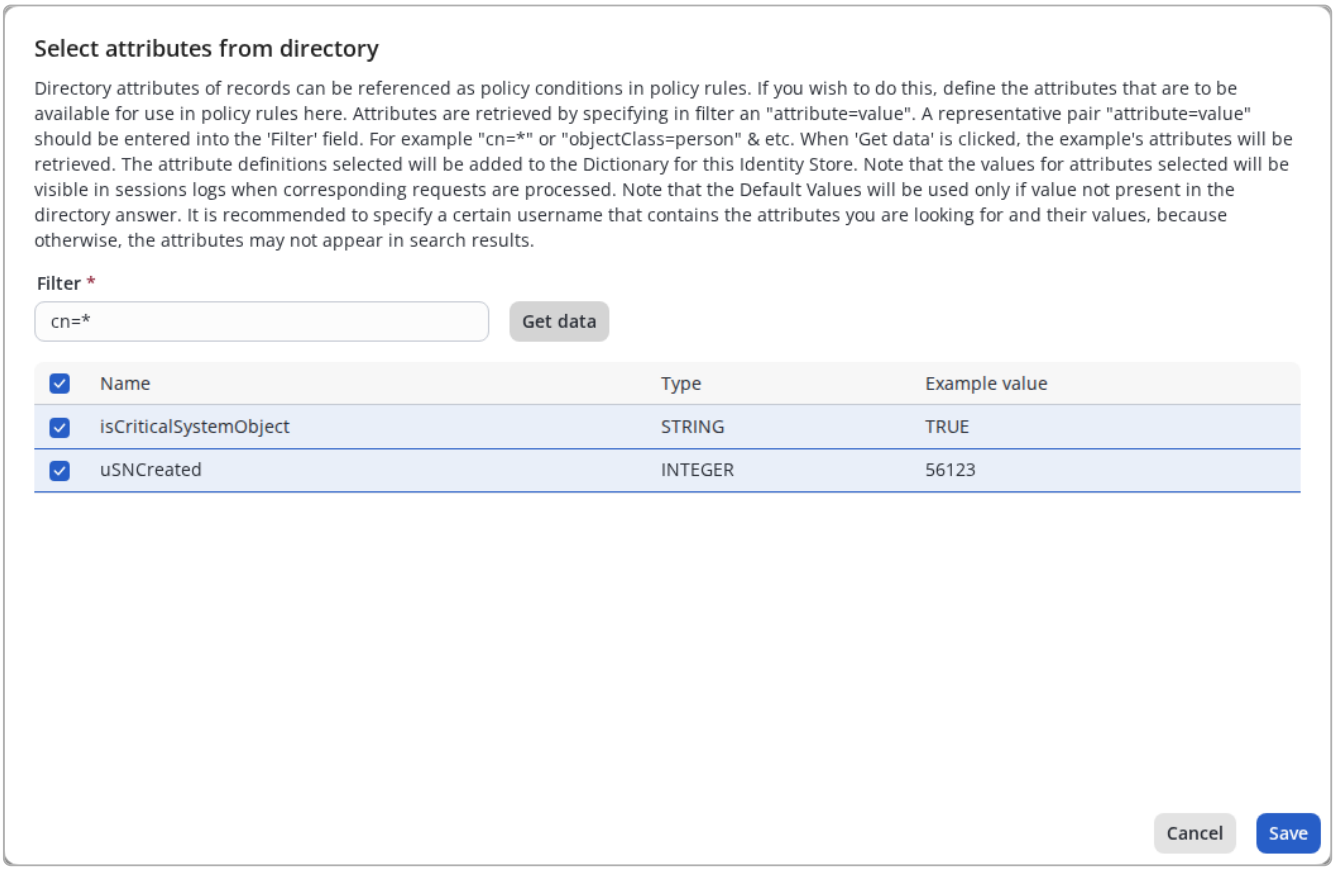


Figure 222. Attribute selection window after receiving data

You need to select the required attributes using the checkbox on the left and click the **"Save"** button.

Previously saved attributes that were not reselected in the search list will be deleted when resaving other selected attributes!

Adding a Custom identity source

This type of identification source is intended for integration with an LDAP server, which can have an arbitrary scheme.

Implementation restrictions

There are the following limitations to implementing interaction with LDAP:

- The user's password must be stored in ClearText.
- Only Latin characters, numbers, and punctuation marks are allowed in usernames and passwords.

Adding an identity source

To add an identification source, click on the action bar above the table, after which the following page will open, where you will need to select the `CUSTOM` scheme:

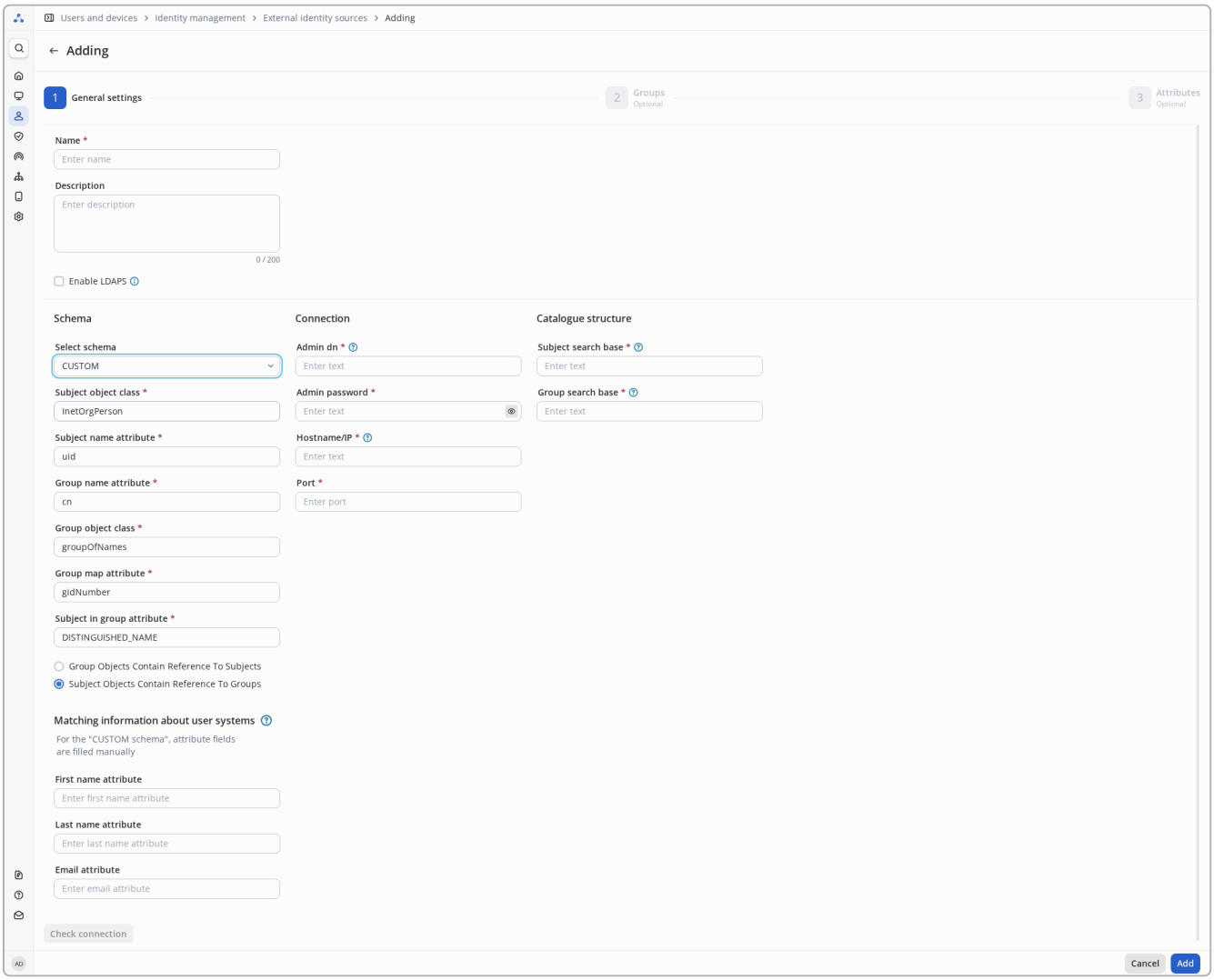


Figure 223. Window for adding identification source

This form provides the following parameters:

- Block **Basic settings**:
  - `Name` * - name of the identification source.
  - `Description` - description.
- Block **Schema**:
  - `Select schema` * - identification source attribute scheme. By default, `ACTIVE_DIRECTORY` is selected; you need to change it to `CUSTOM` to make the selection of schema attribute values available.

- `Subject object class` * - attribute defining the user class.
- `Subject name attribute` * - an attribute that defines the user name that he will use as a login on the client device.
- `Group name attribute` * - attribute defining the user group name.
- `Group object class` * - attribute defining the group class.
- `Group map attribute` * - attribute that determines membership in a group:
  - When **Groups contain users** is selected - this is a group attribute that contains references to its members.
  - When **Users contain groups** is selected - this is a user attribute that contains references to groups they belong to.
- `Subject in group attribute` * - specifies the format (attribute) in which users or groups are listed in the `Group map attribute`.
- `Groups contain users` * - select if the user's group membership attribute is in the group attributes.
- `Users contain groups` * - select if the user's group membership attribute is in the user attributes.

- Block **Connection**:
  - `Admin dn` * - administrative user data for interaction with LDAP (in the format "cn=admin,dc=example,dc=org").
  - `Admin password` * - administrative user password. Not displayed by default, to view you need to click  .
  - `Hostname/IP` * - IP address or domain name of the LDAP server.
  - `Port` * - connection port (the default port is 389 for an unsecured connection or 636 for a secure connection).
- Block **Catalogue structure**:
  - `Subject search base` * - context for searching users (subjects) in directory service.
  - `Group search base` * - context for searching groups in directory service.

Both fields have a comma-separated enumeration format attribute=value, for example dc=test,dc=loc or ou=naice test,dc=test,dc=loc.

Parameters marked with an asterisk * are required.

The maximum length of the `Name` field is 64 characters, the `Hostname/IP` field is 255 characters, and other fields are 200 characters.

Valid characters when entering Subject search base and Group search base parameters:

- space,
- double quotes (""),
- equal sign (=),
- comma (,),
- hyphen (-),
- latin letters (a-z)(A-Z),
- cyrillic letters (а-я)(А-Я),
- numbers (0-9).

Entering other elements is prohibited.

When saving, the system automatically removes spaces near the equal sign (=) and comma (,), the value with a space is taken in double quotes. The attribute value entered to the left of the equal sign (=) is converted to lower case.

Example:

Entered value	Saved value
ou=naice test, dc = test ,dc = loc	ou="naice test",dc=test,dc=loc
ou="naice test",dc = test,dc=loc	ou="naice test",dc=test,dc=loc

- Block **Matching information about system users** - configuration for mapping attributes from the external source to NAICE system user account fields:
  - `First name attribute` - attribute whose value will be inserted into the `Name` field of the external account.
  - `Last name attribute` - attribute whose value will be inserted into the `Last name` field.
  - `Email attribute` - attribute whose value will be inserted into the `Email` field.

Fields are **optional**. If attributes are not specified or are not populated in the directory for a user, the corresponding account fields will remain empty.

If attributes are specified in the settings, but they are missing from the directory for the found users, a warning similar to the following will be returned when checking the connection to the server: `Unable to find the "mail" field for the users`.

After filling in all the necessary data, the **"Check connection"** button will become active.

If the connection to the server is successfully checked, a message like this will appear:

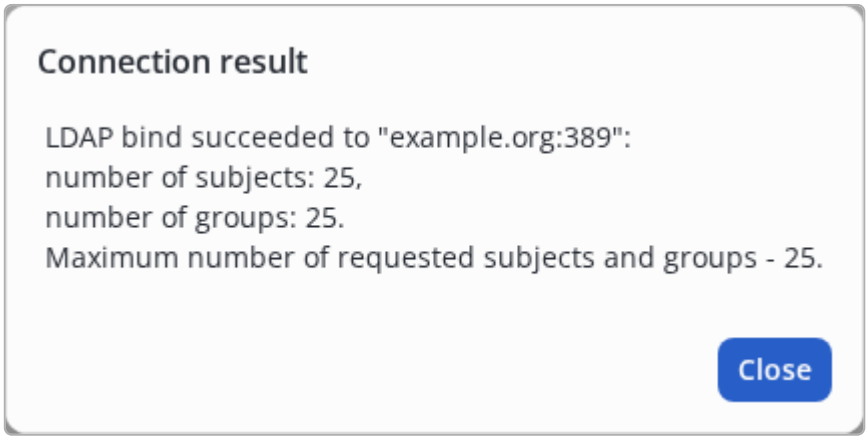


Figure 224. LDAP binding successful

When checking a connection, no more than 25 items and groups are requested, so as not to cause unnecessary load on the server, so if the number "25" is shown more than real users or groups, this does not indicate a problem.

Adding user groups

For network user authentication through an external identity source, adding groups is not required.

Groups can be used in user authorization policies.

When using an external source for system user (administrator) authentication on the System Log In page, **adding groups is mandatory**.

Without groups, it is impossible to configure external roles. In the absence of external roles, system login is impossible - an error "You have no privileges" will be returned.

After adding an identification source, the **"Add"** button will change to **"Next"**. You can also make the transition by clicking on the inscription **(2) Groups**, the page will open:

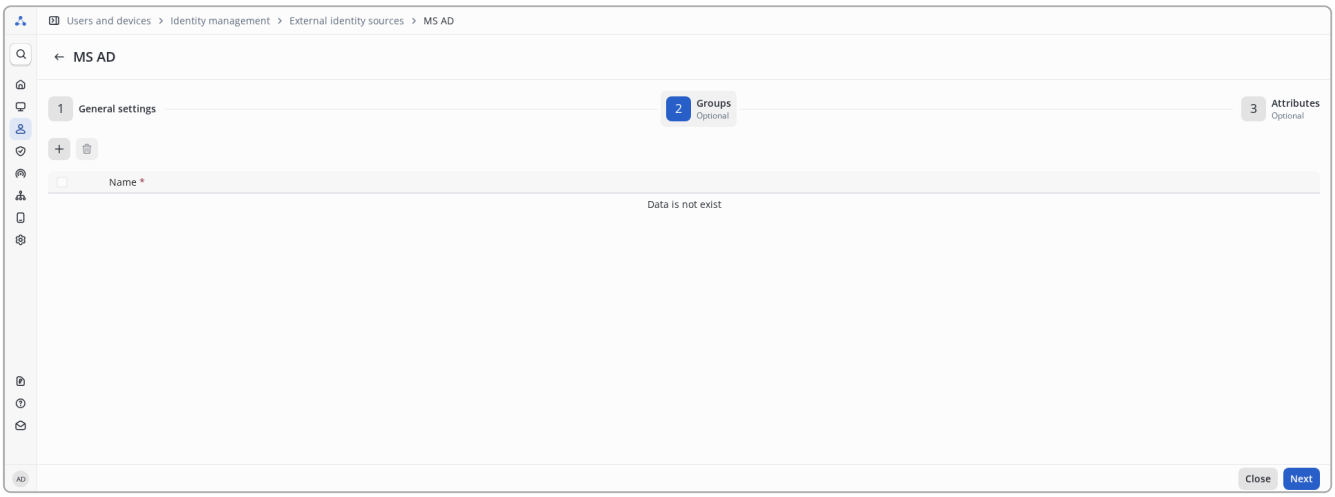


Figure 225. Empty group table

Controls:

- add a group.
- - delete groups selected by the checkbox (inactive until at least one group is selected).

After clicking on the button a menu will open:

- `Add new group` - create a custom new group.
- `Select groups from directory service` - add groups from the identification source.

Add new group

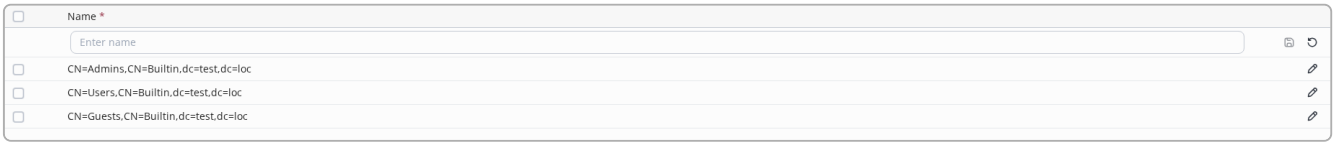


Figure 226. Add new group

In the line that appears, you need to specify a custom group name. After filling in the group name, the save button will become active. You need to click it to add a group.

Select groups from directory service

Group search is performed using the DN (Distinguished Name) attribute to differentiate groups with the same name in different branches of the directory service tree. If the schema uses a different attribute for the **Group name attribute**, the group search query may be executed incorrectly. In such a case, adding a new group should be performed manually.

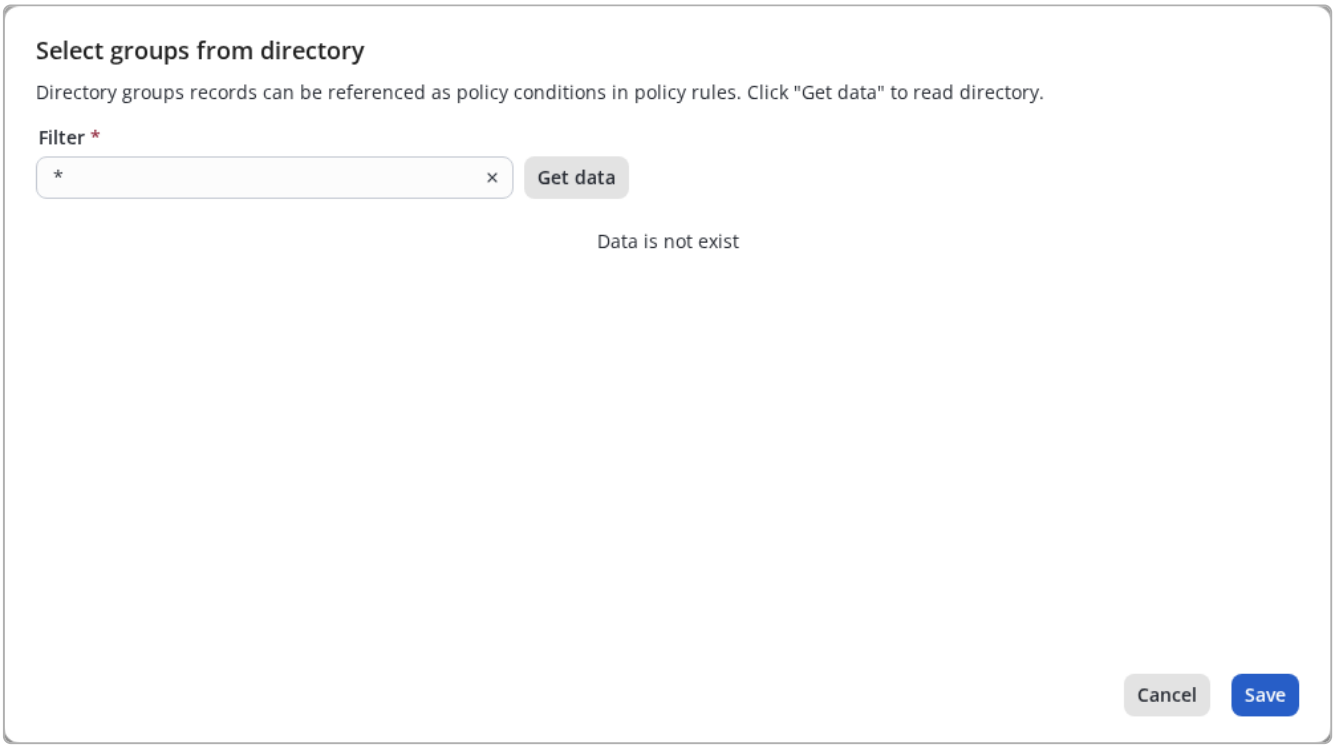


Figure 227. Group selection window

This window presents the following parameters:

- `Filter` * - filter for searching groups, by default *, you can enter the name of the group.

- `Get data` - get data taking into account the filter.

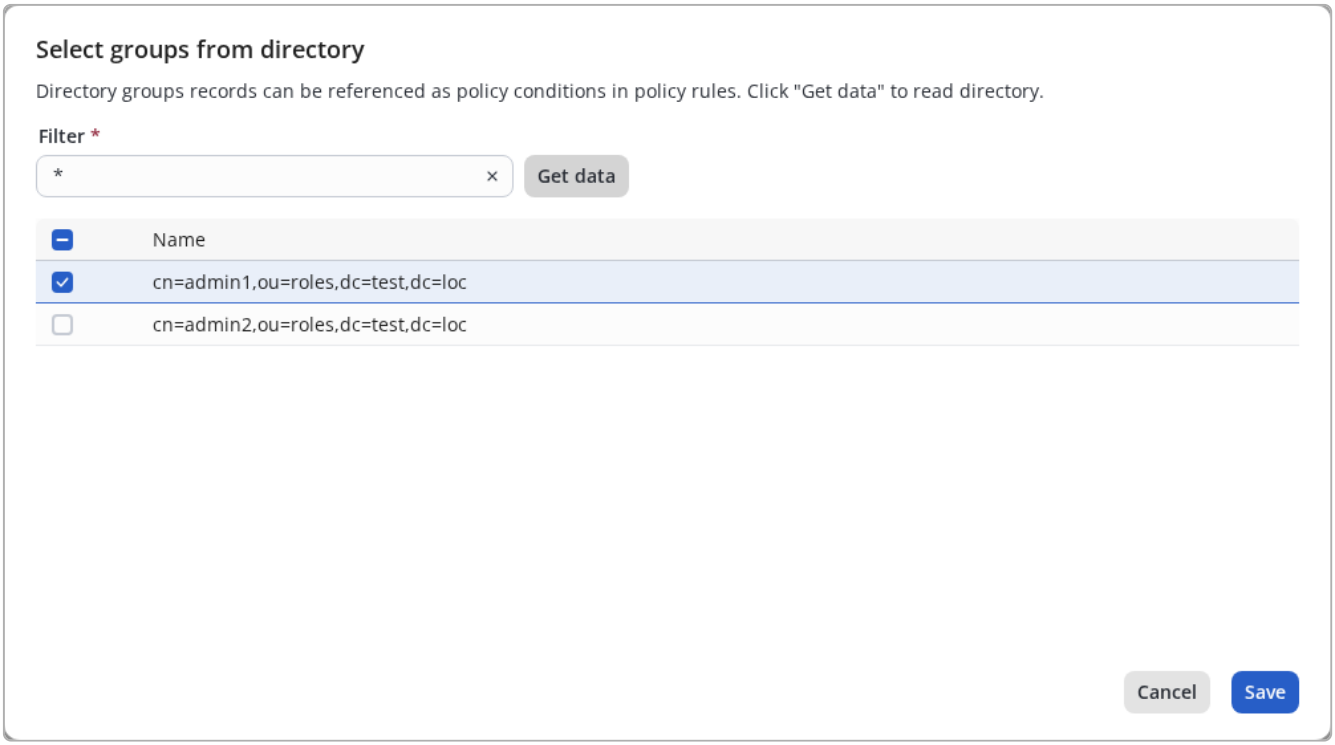


Figure 228. Group selection window after receiving data

You need to select the required groups using the ☐ checkbox on the left and click the **"Save"** button.

Previously saved groups that were not reselected in the search list will be deleted when resaving other selected groups!

Adding attributes

To be able to authenticate via an external identity source, adding attributes is optional. Attributes can be used in policies and user authorization profiles.

After adding groups, you can click the **Next** button at the bottom right of the screen. You can also make the transition by clicking on the inscription **(3) Attributes**, the page will open:

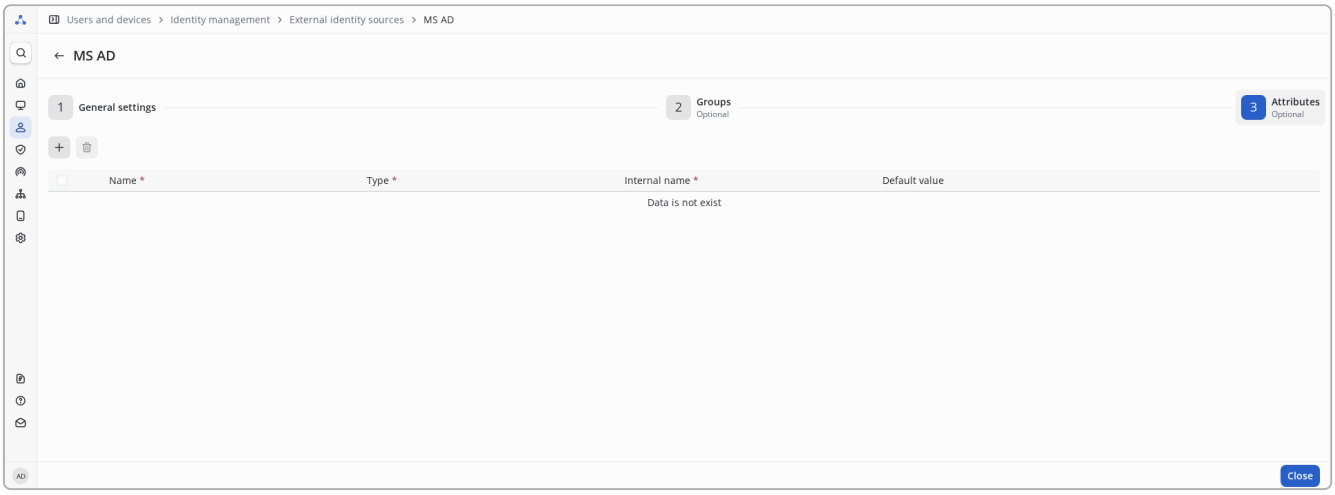


Figure 229. Adding attributes

Controls:

- + - add attributes.
- 🗑 - delete the attributes selected by the checkbox (inactive until at least one attribute is selected).

After clicking on the button + a menu will open:

- `Add new attribute` - create an arbitrary new attribute.
- `Select attribute from directory service` - add an attribute from the identification source.

Add new attribute

Figure 230. Add new attribute

The line that appears to add an attribute contains the following parameters:

- `Name` * - arbitrary attribute name that will be displayed in the dictionary.
- `Type` * - attribute type. Possible values:
  - `INTEGER` - numeric,
  - `IP_4_ADDR` - IPv4 address,
  - `STRING` - string (default).
- `Internal name` * - attribute name from the identification source.
- `Default value` - the attribute value that will be used if it is not obtained from Active Directory.

Parameters marked with an asterisk * are required.

After filling in the required parameters, the save button will become active. You need to click it to add an attribute.

Select attribute from directory service

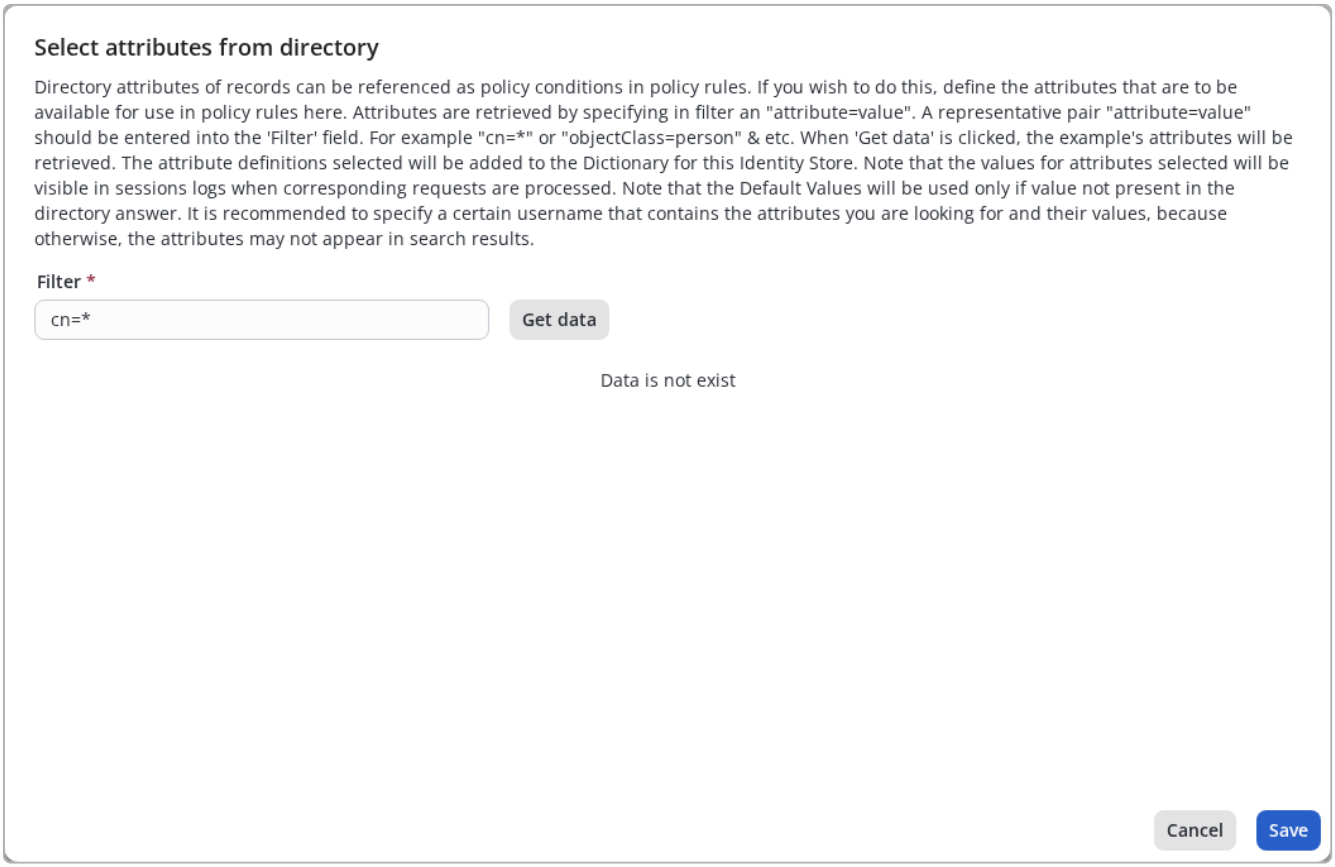


Figure 231. Selecting attributes from a directory service

This window presents the following parameters:

- `Filter` * - filter for searching attributes, default `cn=*`. You can use the expression `<Attribute>=<value>` as a filter; if the value is not important, you must specify `*`. If an attribute has multiple values, only the first one found is displayed. When performing an LDAP search, you can typically specify `uid=*` or `givenName=*`.
- `Get data` - get data taking into account the filter.

After receiving attribute data:

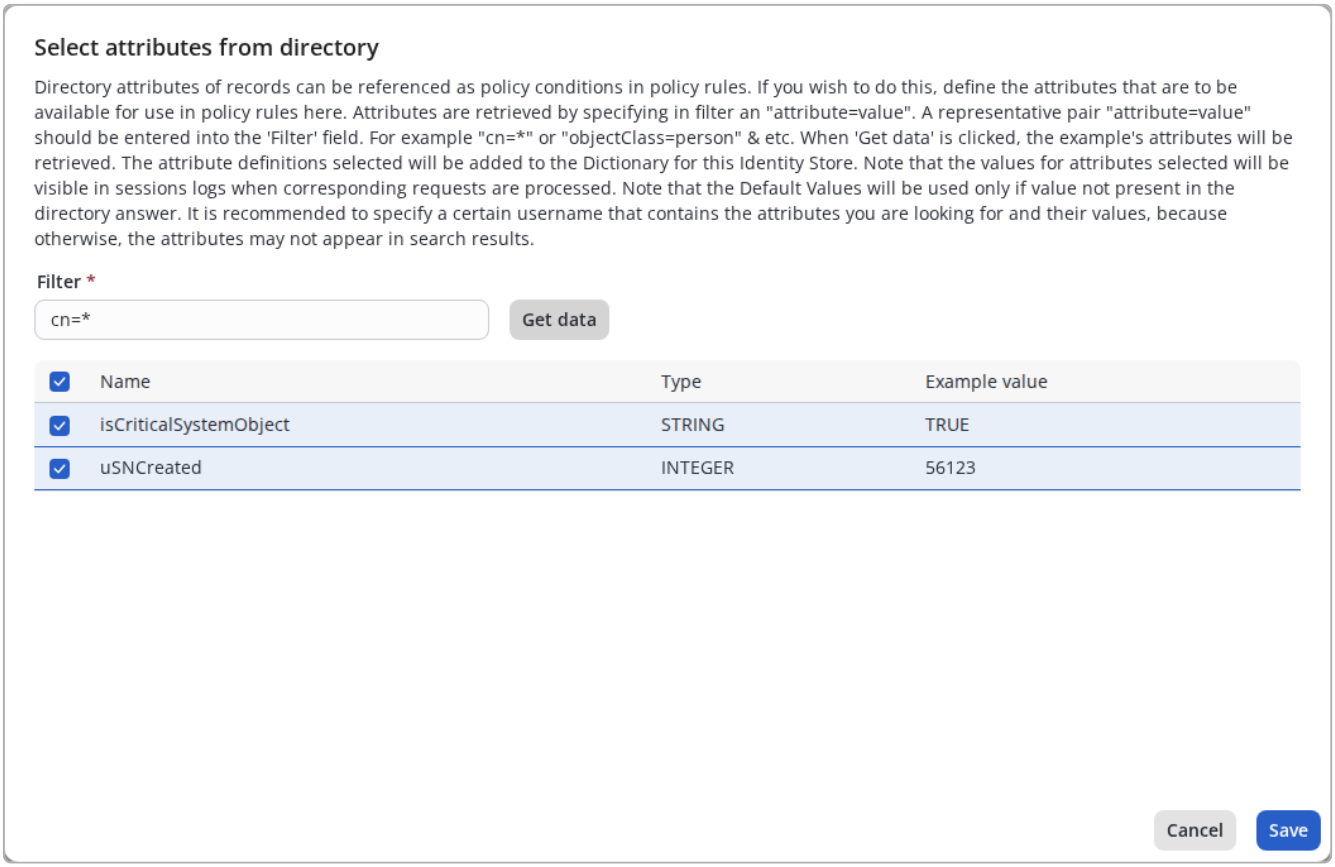


Figure 232. Attribute selection window after receiving data

You need to select the required attributes using the checkbox on the left and click the **"Save"** button.

Previously saved attributes that were not reselected in the search list will be deleted when resaving other selected attributes!

Editing Identity Source

To edit a previously added identification source, on the viewing page, click on the name of the source in the table.

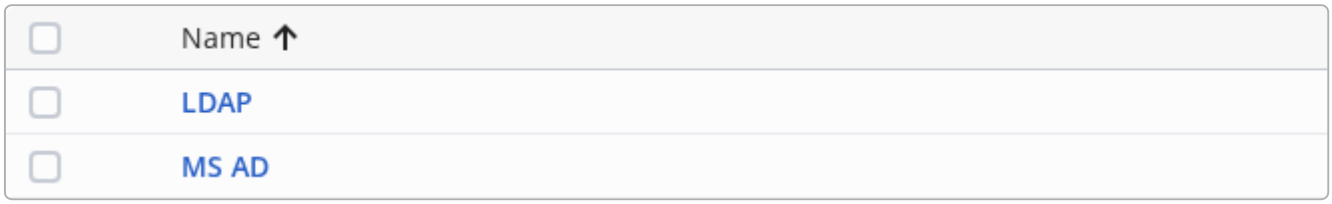


Figure 233. Hyperlink to external identity source edit page

The editing page will open, similar to the add page:

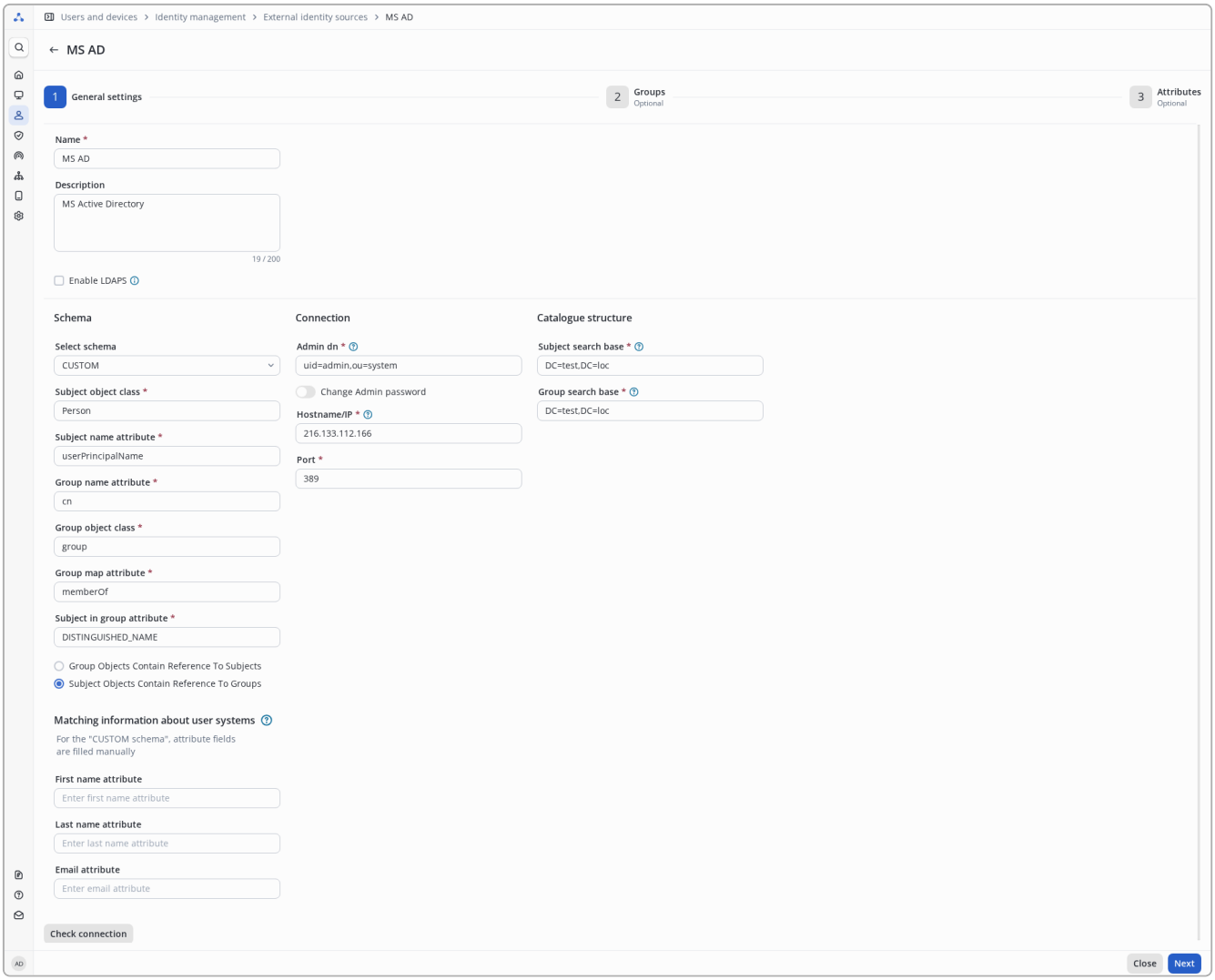


Figure 234. Identity source editing page

To change the `Admin password`, activate the toggle **"Change Admin password"**, and then enter the desired password in the appropriate field. To change the computer account password, click **Edit** in the **Actions** column of the **List of accounts** table, activate the **Change password** toggle, and enter the new password.

After editing, click the **"Save"** button. The button will be inactive until at least one field is changed.

The **"Cancel"** button resets the changes made to their original state.

Removing an identity source

To delete one or more identification sources, you need to select the required sources on the viewing page using the checkbox and click on on the action bar above the table.

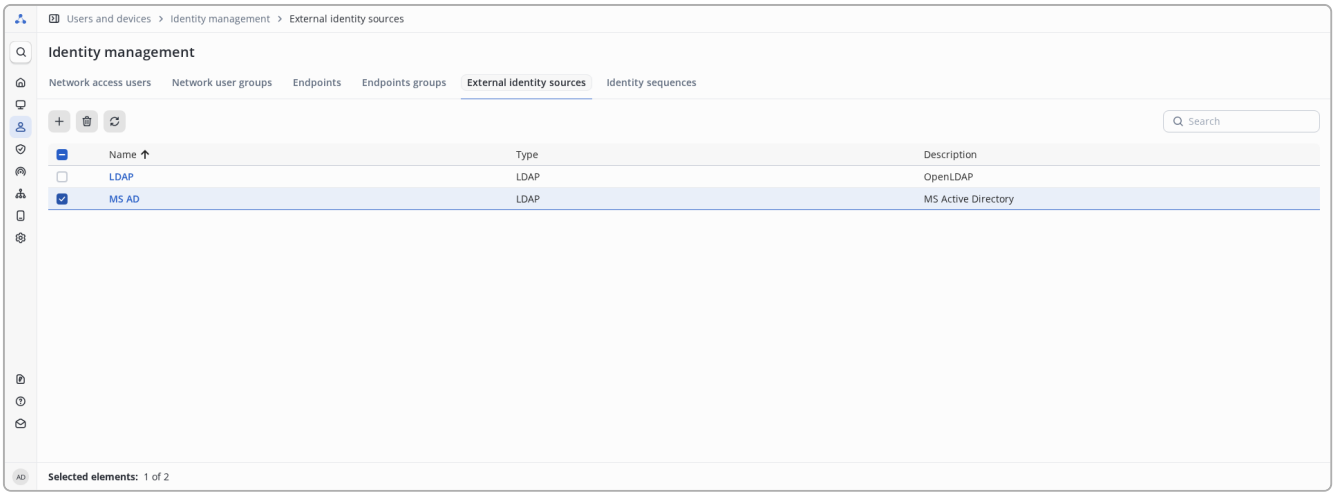


Figure 235. Selecting sources to delete

When deleting an external source, all external user accounts obtained from this source will also be deleted.

Deleting an external source requires confirmation:

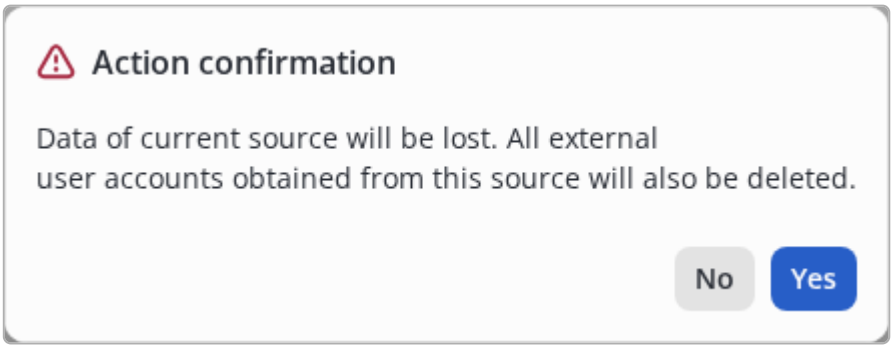


Figure 236. External source deletion confirmation

Identity sequences

Some functional described on this page are only available with an extended license. These features are marked with special labels in the form of colored icons next to the name.

Description

Identity sequences (identity source chains) are used in authentication policies when configuring RADIUS policies and Network devices policies. They define in which sources and in what order to search for users during authentication.

Supported identity sources include the internal user database and external identity sources, such as MS AD and OpenLDAP.

ADVANCED For portal authorization, Portal and Guest endpoint sources are additionally used as identity sources.

View identity sequences

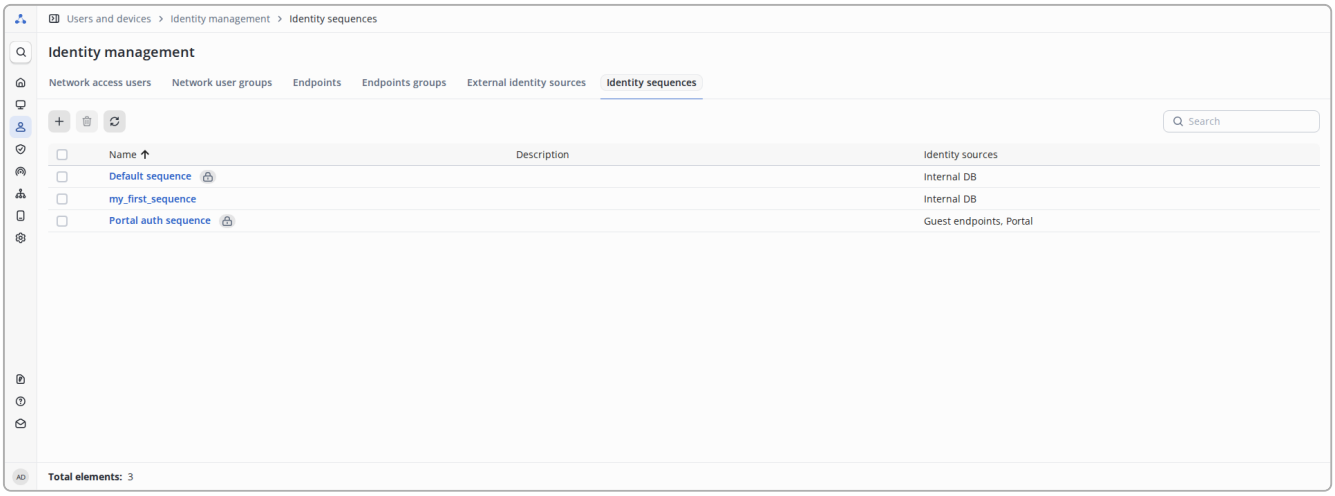


Figure 237. View identification sequences

This page contains a table listing all identity sources.

The table contains columns:

- `Name` - the name of the sequence.
  - - This entity is system and cannot be deleted or edited.
- `Type` - type of the identification chain. The possible value is "Created by admin" or "System".
- `Description` - arbitrary description of the sequence.
- `Identity sources` - a list of user credential sources that are configured in this sequence.

It is possible to sort in forward and reverse order by the columns `Name` and `Description`. By default, sorting is performed in direct (alphabetical) order by the `Name` field.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

> Identity sequences "[Default sequence, Portal auth sequence]" are system, so you can't rename or remove them

Adding an identity sequence

To add an identity sequence + on the left side of the field above the table of the view page, the following page will open:

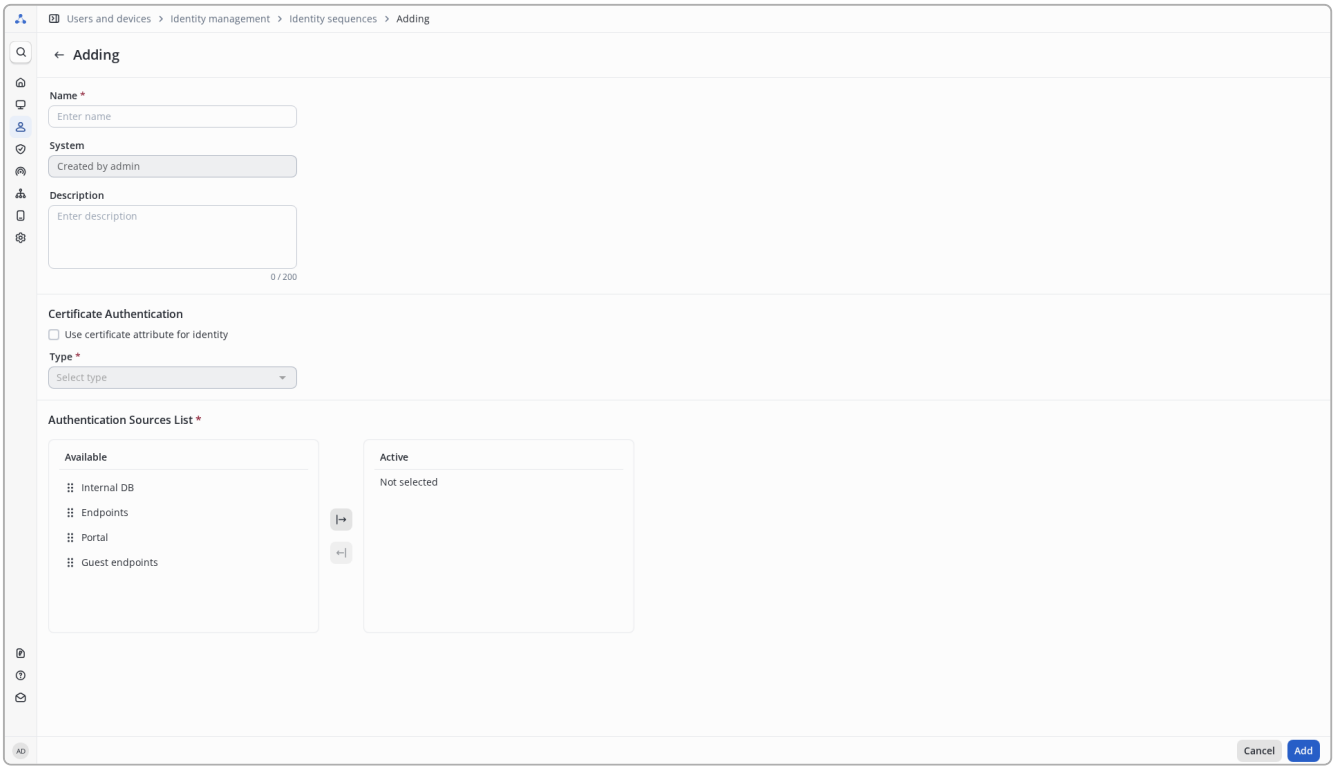


Figure 238. Add sequence page

The following parameters are available for filling:

- `Name` * - name of the sequence. Maximum length is 100 characters.
- `Type` - type of the identification chain. All manually created identification chains are set to "Created by an administrator" and cannot be changed.
- `Description` - arbitrary description of the sequence. Maximum length is 200 characters.

Parameters marked with an asterisk * are required.

Certificate Authentication

This setting can only be used when authenticating a user using the EAP-TLS protocol.

In this section, the validation of a selected certificate field against an identification source attribute is configured. The chosen attribute value from the user's certificate is compared with the attribute specified in the "Subject Name Attribute" field within the external identification source.When using an internal identification source (Internal DB), the comparison is made with the value specified in the user's "Login" field.

`Use certificate attribute for identity` - enables the option to select an attribute to be used as the username for authentication. If this setting is disabled, the User-Name attribute from the RADIUS authentication request will be used instead.

After enabling the setting, the `Attribute` field will become available.

- `Attribute` - a field in the certificate containing data for user identification.

The field can take the following values:

- `Subject - Common Name`
- `Subject - Serial Number`
- `Subject`
- `Subject Alternative Name - Email`
- `Subject Alternative Name - DNS`
- `Subject Alternative Name - UPN`

Authentication Sources List

In this section, you select the authentication sources to be used.

Some sources may not be available depending on your current license type.

- `Available` - list of all sources available for selection.
- `Active` - list of sources that will be applied for authentication.

To select a user credential source, grab it by the image field  and drag it from the "Available" column on the left to the "Active" column on the right.

Controls:

- `|→` - select all available authentication sources.
- `←|` - delete all selected authentication sources.

A search for a user by login is performed in all available sources specified in Active. The search is performed from top to bottom in the list. The search ends as soon as a matching user login is found in the source.

Editing the identity sequence

To edit, click on the name of the identification sequence in the table.

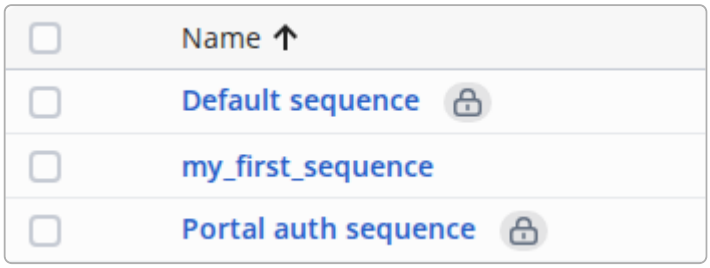


Figure 239. Column Title

The editing page will open.

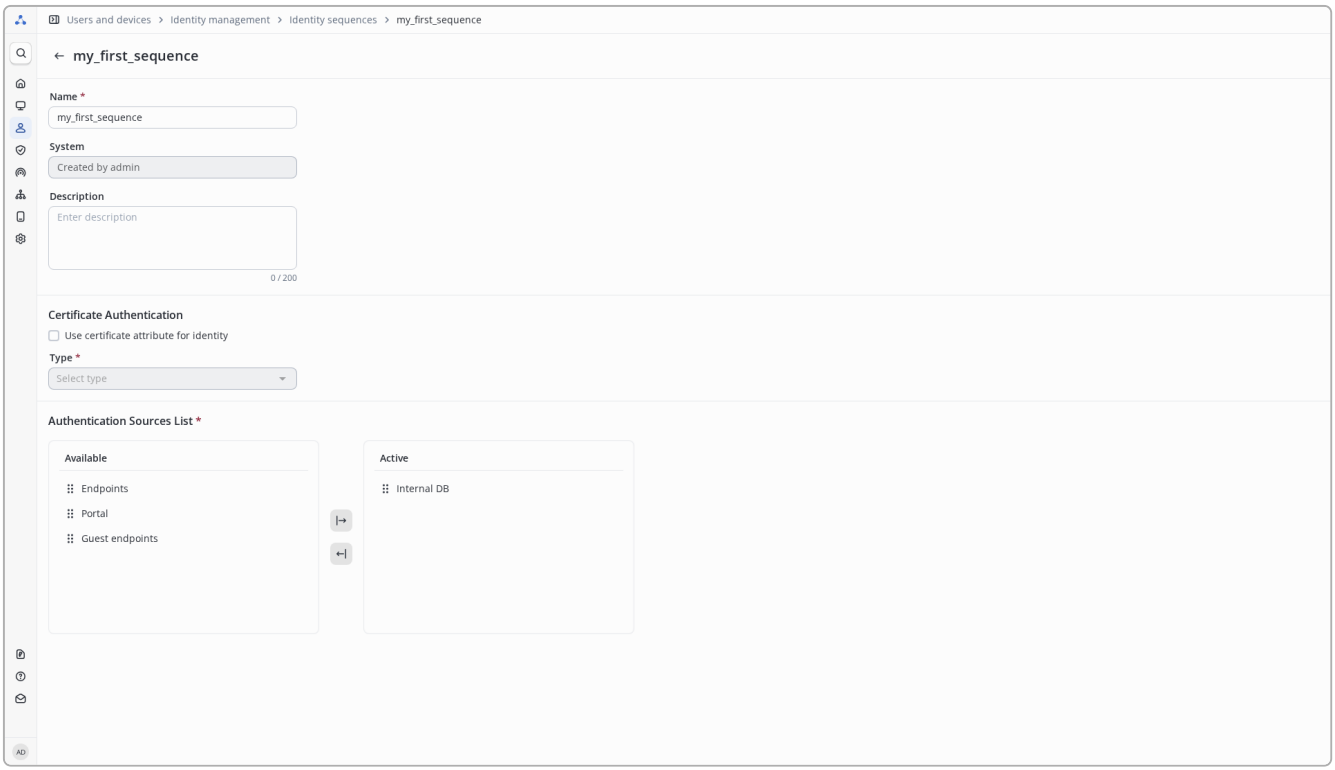


Figure 240. sequence editing panel

After editing, click **Save**. The button will be inactive until at least one change is made.

Deleting an identity sequence

To delete one or more identification sequences, you need to select them through the checkbox and in the upper left corner above the table click on .

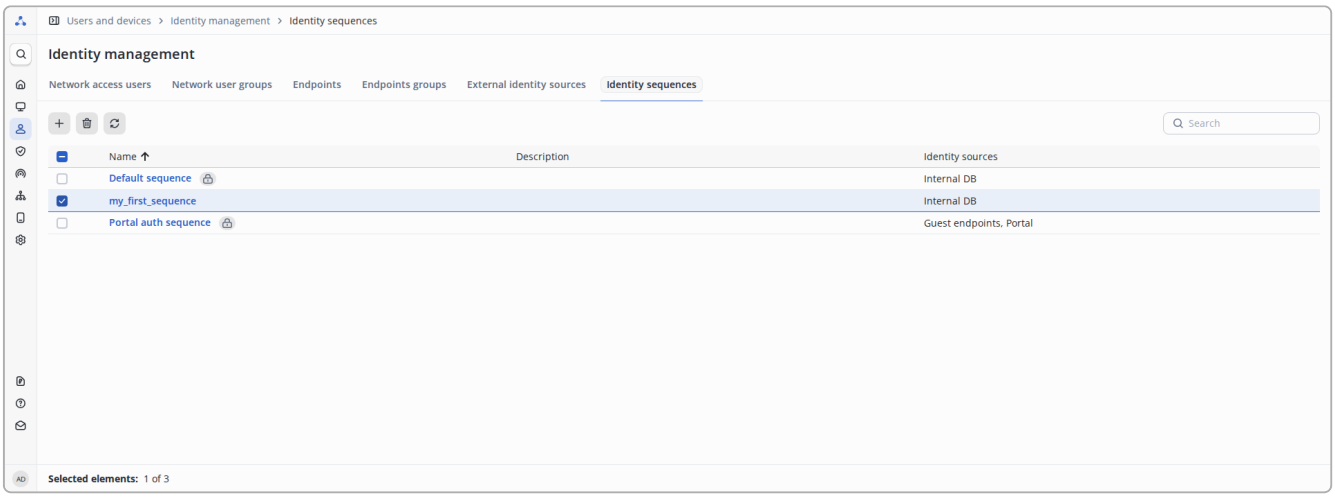


Figure 241. Selecting sequences to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

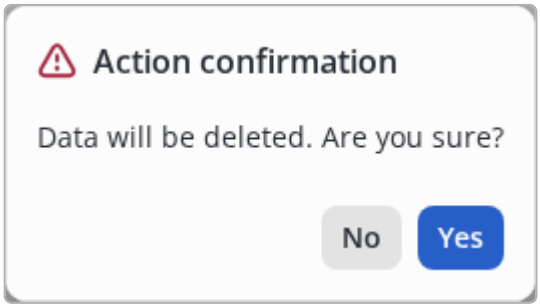


Figure 242. Modal dialog for confirmation

You will not be able to delete a sequence that is used in the authentication policies of any policy set.
To delete a sequence, you must first remove it from the authentication policy, and then delete the sequence itself.

Network access

Policy elements

Authorization profiles

Some functional described on this page are only available with an extended license. These features are marked with special labels in the form of colored icons next to the name.

Description

Authorization profiles allow you to define actions that need to be performed after a user is authenticated. Both access permission (ACCESS-ACCEPT) and access denial (ACCESS_REJECT) are available.

It is supported to add the following attributes to the ACCESS-ACCEPT response after client authentication:

- Dynamically assigned client VLAN, using standard IETF attributes (Tunnel-Medium-Type: IEEE-802, Tunnel-Type: VLAN, Tunnel-Private-Group-Id: <VLAN ID>) or attributes configured in the device profile.
- The name of the ACL that needs to be assigned to the client (an ACL with this name must be configured on the network equipment).
- Web redirection URL and pre-auth ACL.
- Another RADIUS attributes via Advanced Attribute Settings

Viewing a list of available authorization profiles

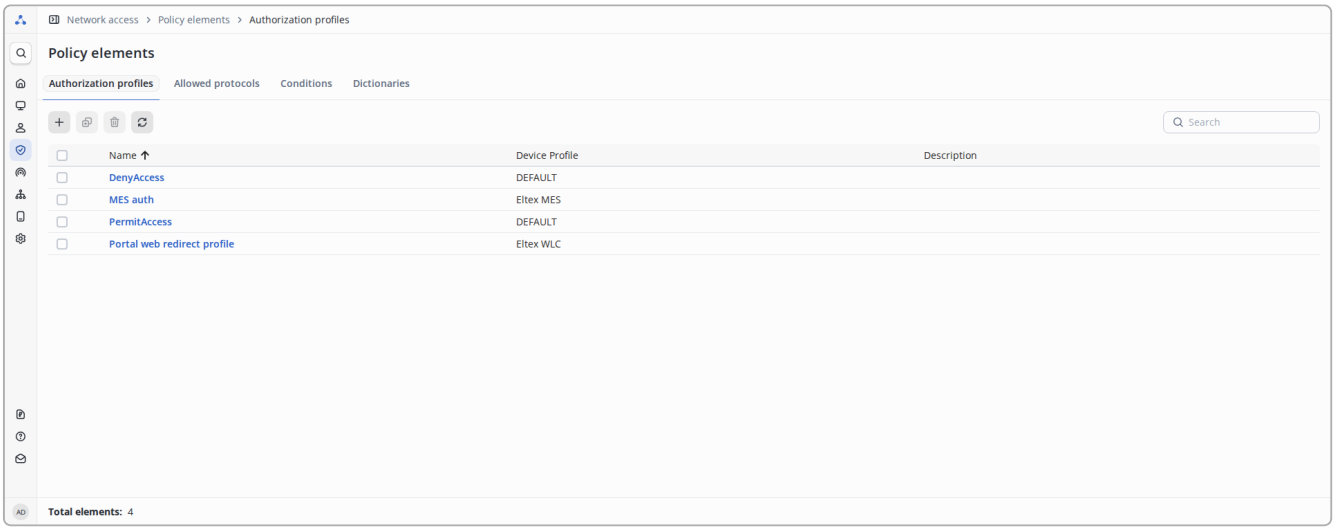


Figure 243. A table with a list of authorization profiles on the viewing page

On the bottom is a list table that contains the following columns:

- `Name` - name of the authorization profile.
- `Network device profile` - selected network device profile.
- `Description` - arbitrary description.

You can sort in forward and reverse order by any column. By default, sorting is performed in direct (alphabetical) order by the "Name" column.

Controls:

- — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding an authorization profile

To add an authorization profile, click , the window for adding an authorization profile will open.

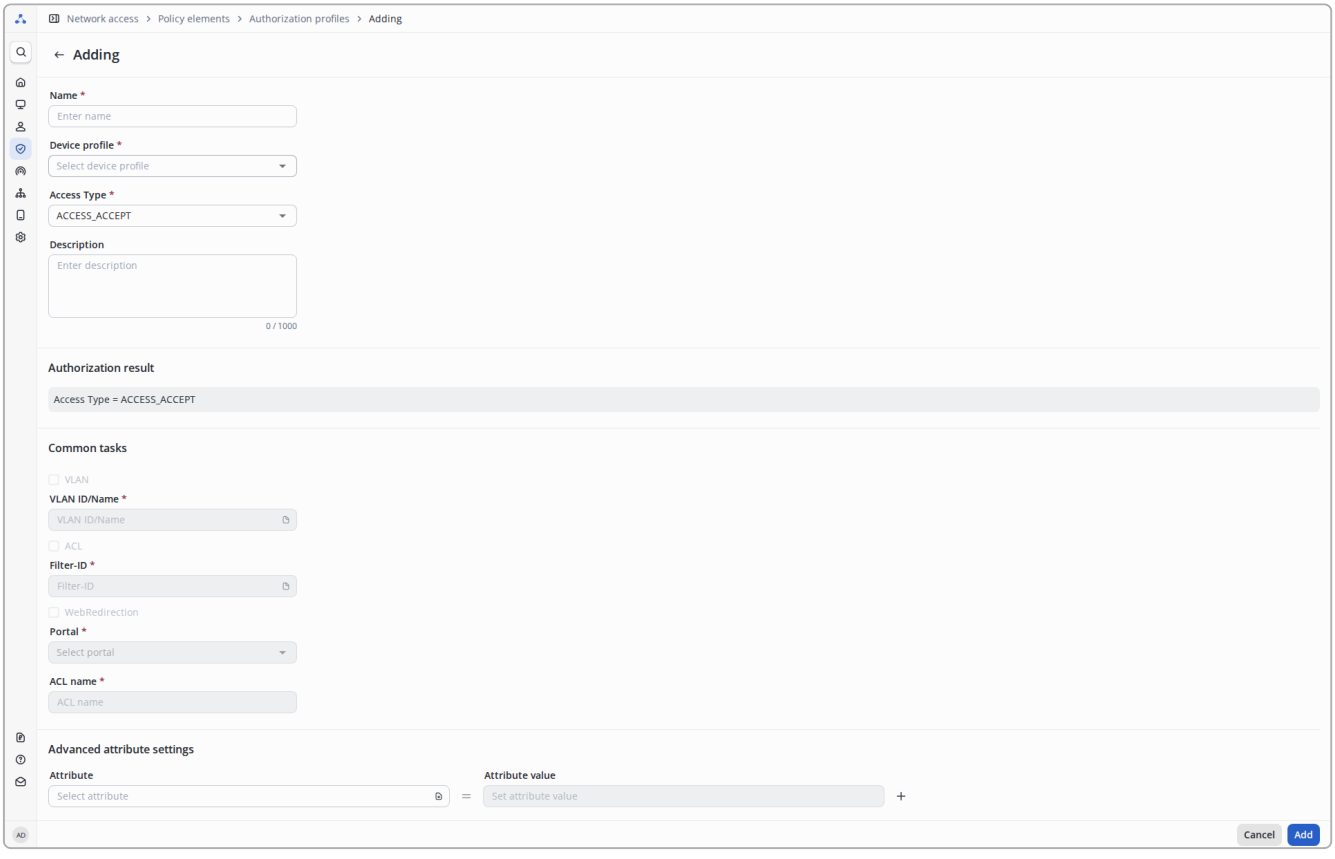


Figure 244. The window for adding an authorization profile

- `Name` * - name, must be unique. Maximum length is 100 characters.
- `Profile` * - network device profile. In the network device profile, you configure permission to issue a client VLAN and ACL, as well as which RADIUS attributes to use for this.

`Access type` * - the access type for which the authorization profile will be applied. A drop-down list of two elements: `ACCESS_ACCEPT` (by default) and `ACCESS_REJECT`.

- `Description` - arbitrary description. Maximum length is 200 characters.
- `Authorization result` - visualization of attributes in the resulting RADIUS packet based on the settings of "Access type", "General tasks" and "Advanced attribute settings".
- `Common tasks` - enable and configure common scenarios during user authorization. Scenarios combine one or more attributes, configure in device profile. By default, all scripts are disabled.
  - `VLAN` - enable dynamic assignment of VLAN to the user.
    - `VLAN ID/Name` - VLAN number or name, issued in the "Tunnel-Private-Group-Id" attribute or other attribute configured in the device profile.
  - `ACL` - enable issuance of the access list name to the user.
    - `Filter-ID` - the name of the access list assigned to the user. Must be configured with the appropriate name on the network equipment to which the user connects.
  - **ADVANCED** `WebRedirection` - enable redirect for the specified portal.
    - `Portal` - a portal to which the user will be redirected when connected to the network.
    - `ACL name` - name of the ACL that will be assigned when redirecting to the portal. ACL must be pre-configured on the network device.
- `Advanced attribute settings` - manual configuration of the issuance of RADIUS attributes. It is recommended only if a script from the `Common tasks` list is not available for a certain authorization result.

* - required fields.

To assign a dynamic VLAN and ACL to a user during authorization, these actions must be enabled in the network device profile that is used in the authorization profile. Otherwise, their configuration will not be available.

After entering the required data and selecting the available protocols, click the "Add" button.

Editing an authorization profile

To edit the authorization profile, you need to click on its name on the list page.

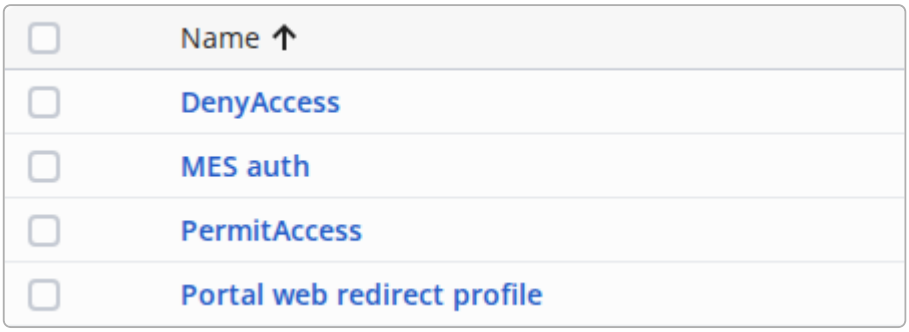


Figure 245. Hyperlink to the authorization profile editing page

After that, the editing window will open.

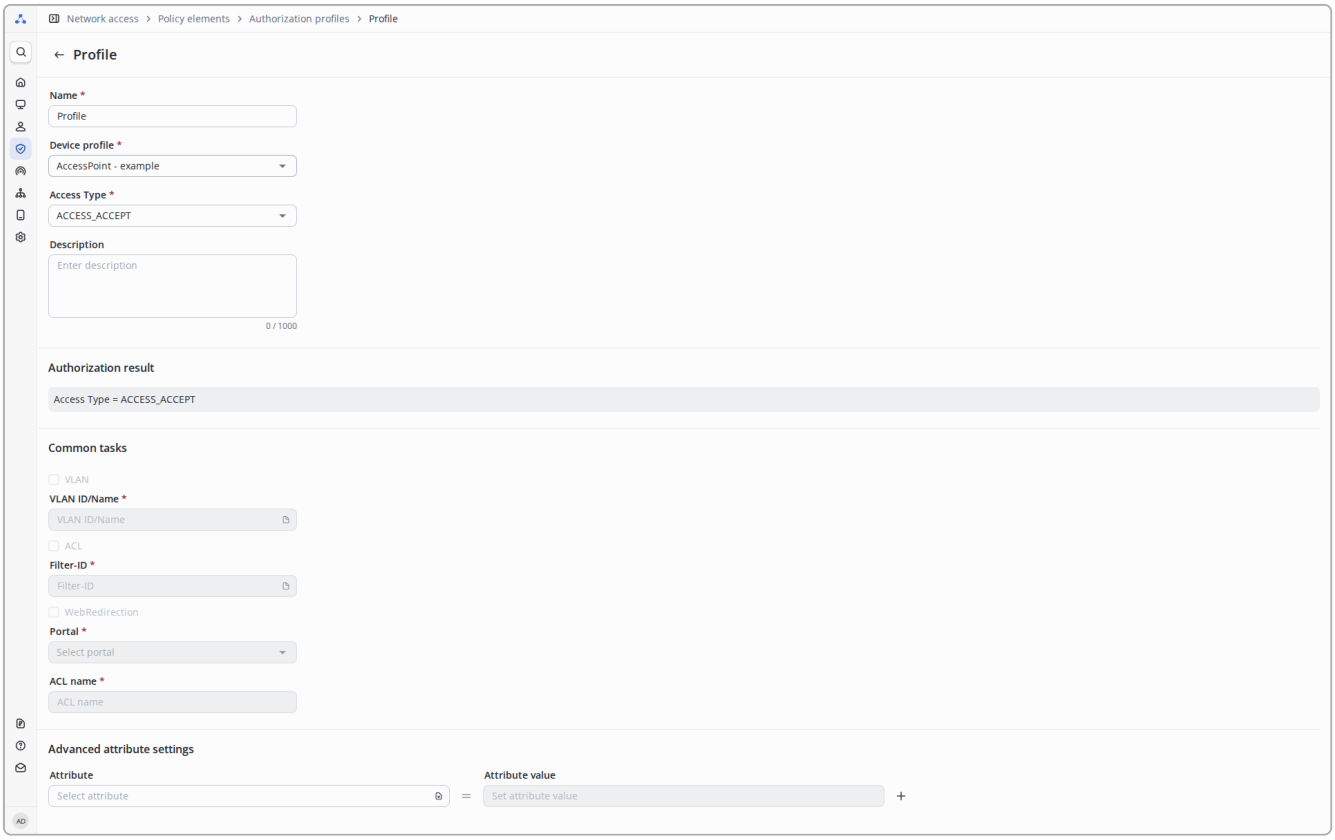


Figure 246. Authorization profile editing window

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Duplicating an authorization profile

A new profile can be created based on an existing one. To do this, select the profile to be copied using the checkbox, and then click the button .

A form will open, similar to the addition form, with all fields filled with values from the selected reference. By default, "_copy" is added to the value in the `Name` field. You can choose any other name that is not already used in the system.

Deleting

To delete, in the list window, select the checkbox to the left of the authorization profiles that you want to delete, and click the button at the top left.

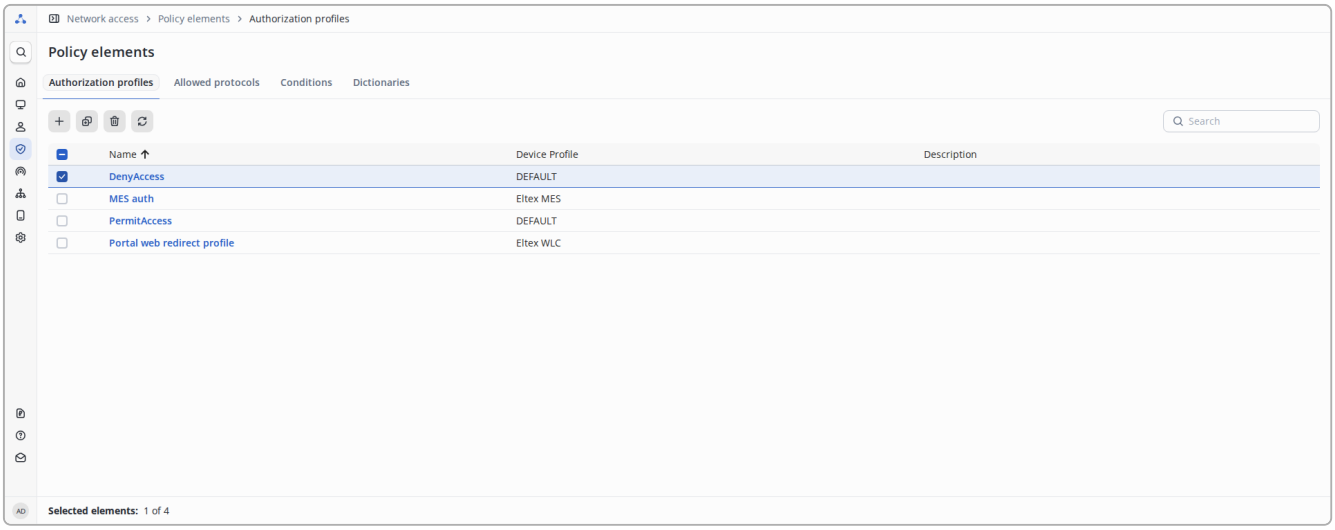


Figure 247. Selecting the authorization profile in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

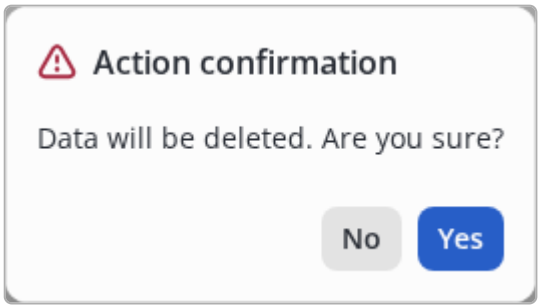


Figure 248. Modal dialog for confirmation

Restrictions:

- You cannot delete an authorization profile that is used in any authorization policy.

Allowed Protocols

Description

Authentication protocol management allows you to allow or deny the use of specific protocols or authorization methods when authenticating a endpoint. It is possible to configure multiple lists of allowed protocols, which allows you to flexibly configure the allowed protocols in RADIUS policy sets for each user scenario.

The following protocols are currently supported: PAP, MS-CHAPv2, EAP-PEAP, EAP-TLS, EAP-TTLS.

You can configure to enable or disable MAB authorization.

View a list of allowed protocols

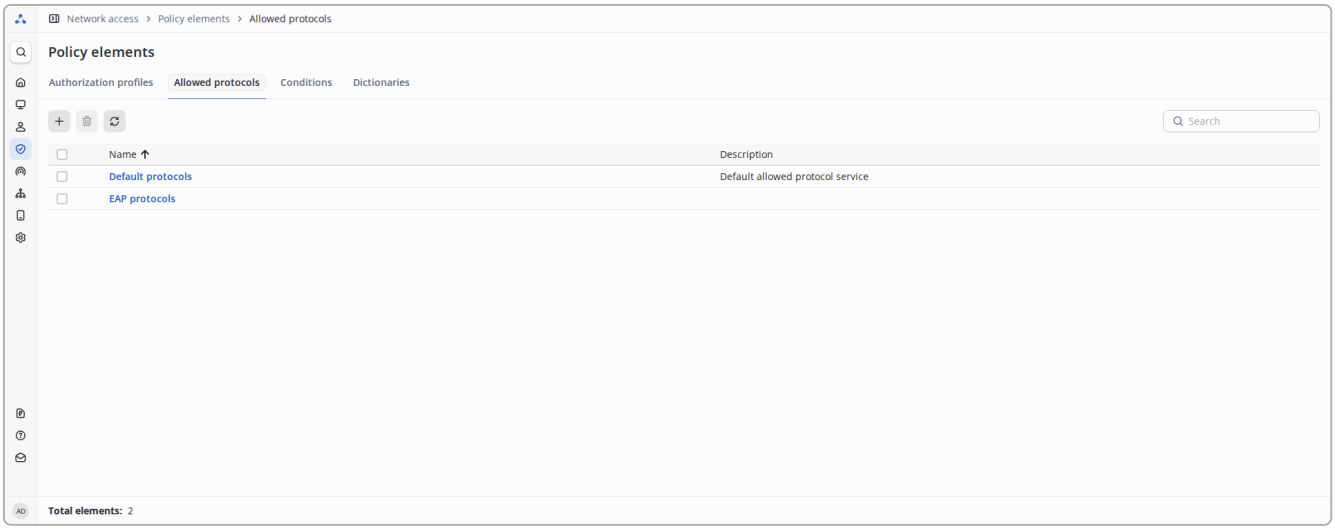


Figure 249. A table with a list of allowed protocol services on the viewing page

On the bottom is a list table that contains the following columns:

- `Name` - the name of allowed protocols services.
- `Description` - arbitrary description.

You can sort in forward and reverse order by any column. By default, sorting is performed in direct (alphabetical) order by the "Name" column.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding allowed protocols service

To add a allowed protocols service, click , and a window will open

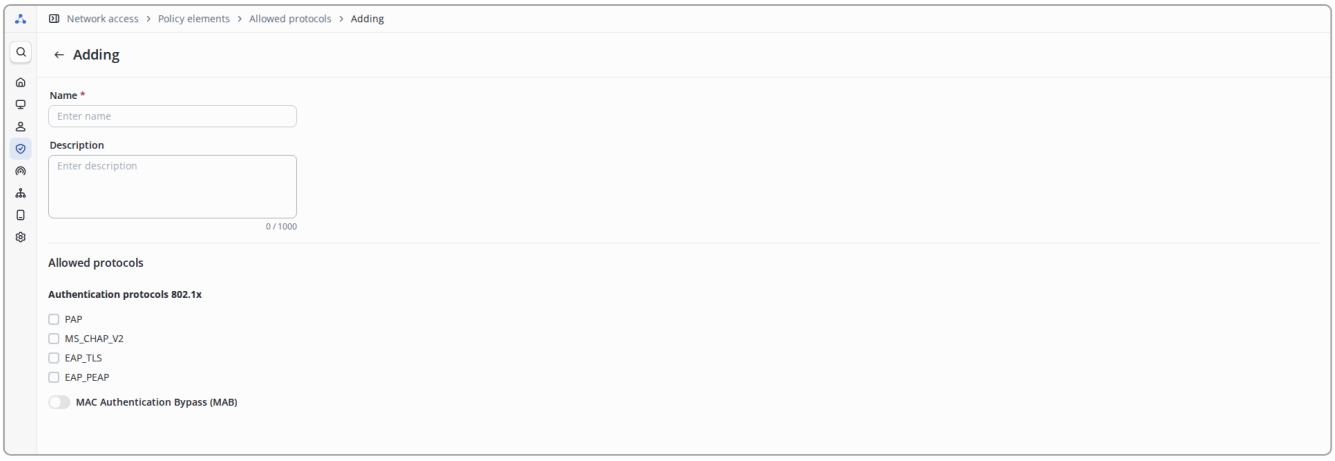


Figure 250. Window for adding a list of allowed protocols

- `Service name` `*` - name, must be unique. Maximum length is 100 characters.
- `Description` - arbitrary description. Maximum length is 1000 characters.
- `Available protocols` - select available authentication protocols. By default, all protocols are disabled.
  - `PAP` - select the PAP protocol (password authentication protocol), which provides for sending the login and password to the authentication server in clear text.
  - `MS_CHAP_V2` - select the MS-CHAPv2 protocol (Microsoft challenge handshake authentication protocol version 2).
  - `EAP_TLS` - select the EAP-TLS protocol (Extensible Authentication Protocol Transport Layer Security)
  - `EAP_PEAP` - select the EAP-PEAP (Protected Extensible Authentication Protocol), which encapsulates EAP (Extensible Authentication Protocol) inside the TLS tunnel (Transport Layer Security).
  - `EAP_TTLS` - select the EAP-TTLS (Tunneled TLS) - a more flexible analogue of PEAP, which can carry not only modern EAP methods, but also old password verification protocols (such a PAP).
  - `MAC Authentication Bypass (MAB)` - allow authentication of endpoint by MAC address.

`*` - required fields.

After entering the required data and selecting the available protocols, click the **"Add"** button.

Editing the allowed protocols service

To edit the allowed protocols service, on the page with the list, click on its name.

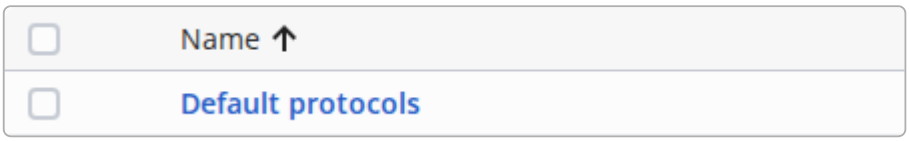


Figure 251. Hyperlink to the page for editing the list of allowed protocols

After this, the editing window will open.

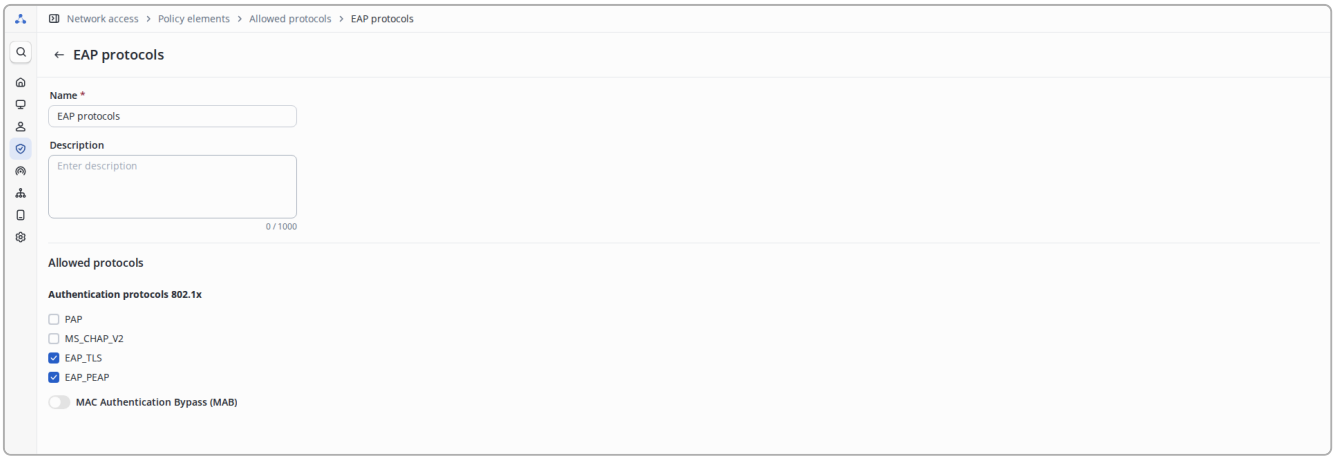


Figure 252. The window for editing the list of allowed protocols

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Removing the allowed protocols service

To delete, in the list window, select the checkbox to the left of the allowed protocols services that you want to delete, and click the button at the top left.

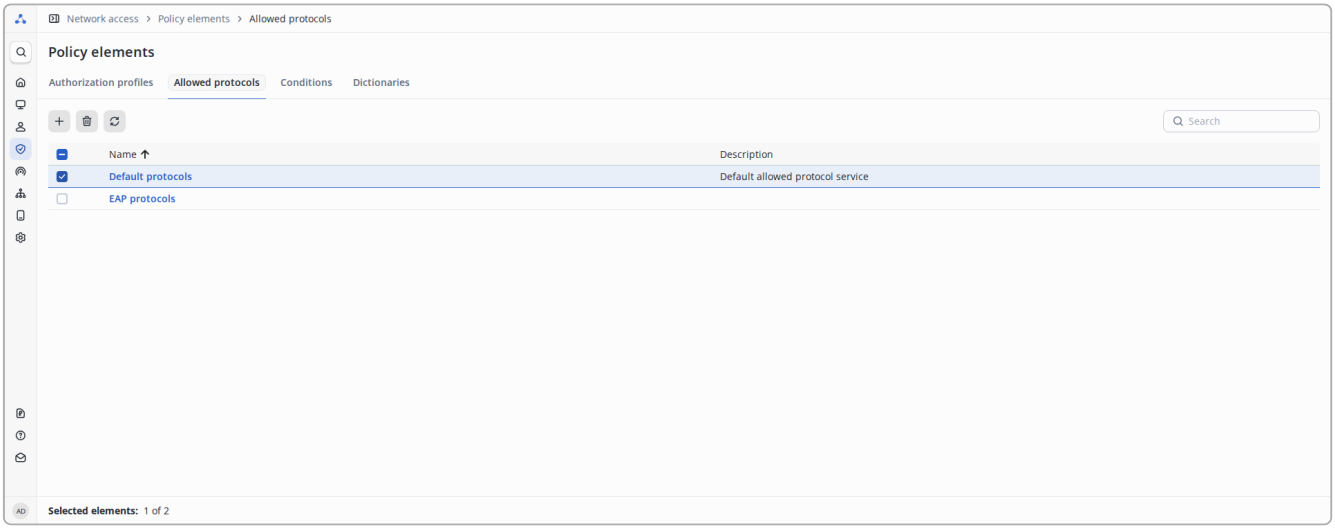


Figure 253. Selecting allowed protocol services in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

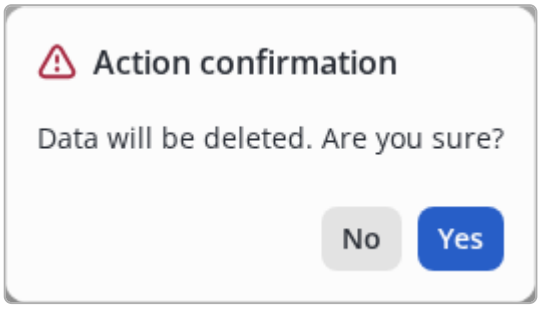


Figure 254. Modal dialog for confirmation

Restrictions:

- you cannot delete the Allowed Protocols service that is used in any policy sets.

Dictionaries

Description

The basic element when setting up logical condition are attributes grouped into dictionaries. In addition to basic and vendor-specific RADIUS attributes, NAICE allows the use of Non-RADIUS attributes, such as network device parameters (DEVICE dictionary) or user parameters (IDENTITY dictionary).

Dictionaries and attributes are available for viewing on a separate page. Adding new dictionaries or editing existing ones is not available.

If the dictionary you need is not added to the system, contact us using the "Make a wish" button, accessible from the navigation menu or the ✉ in the lower left part of the navigation menu.

View dictionaries

On the left side (with the heading "Dictionaries") there is a list of available dictionaries, on the right side - the contents of the selected dictionary (by default - the contents of the RADIUS dictionary):

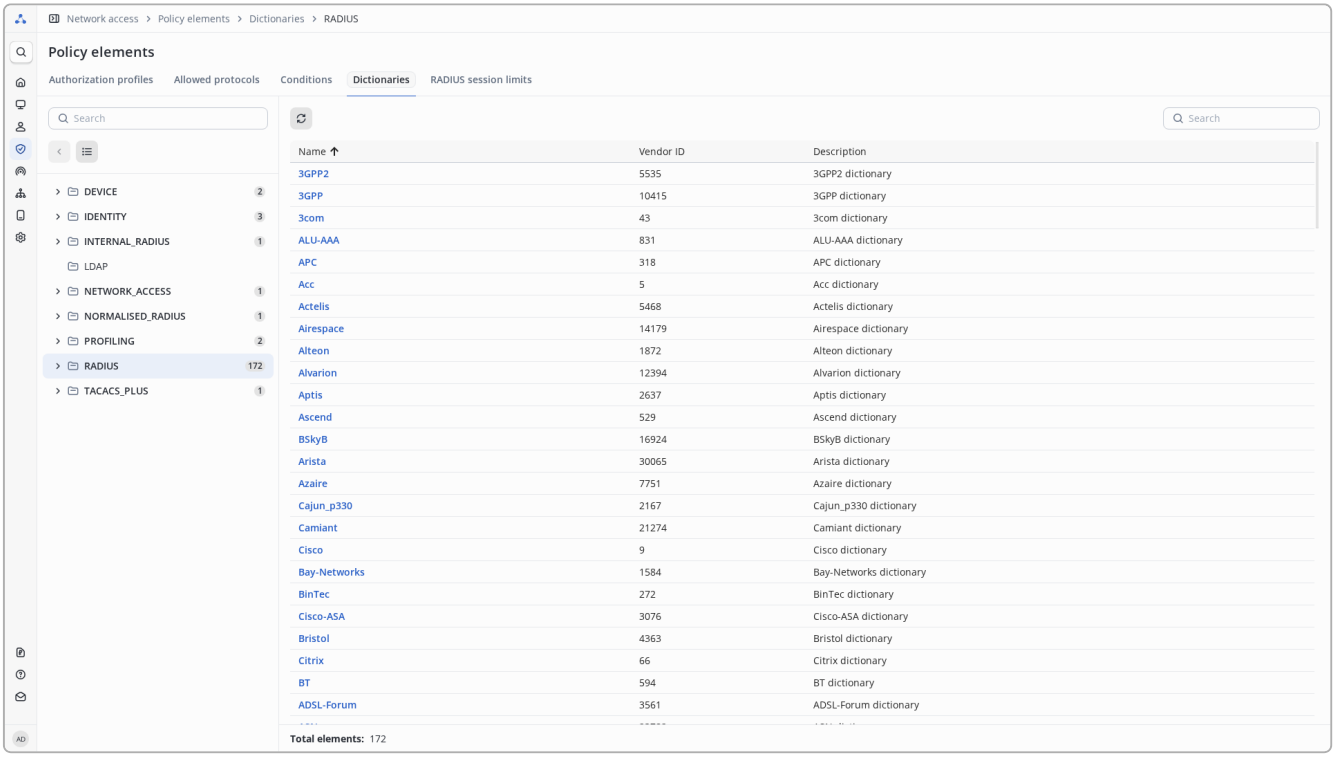


Figure 255. View dictionaries

Controls:

- › - Expand the list of nested dictionaries.
- `"Dictionaries. Search"` - Filtering by dictionary name.
- `"RADIUS. Search"` - Filtering by nested dictionaries and attributes.

- Update the data

- - Switch the display option for the dictionary navigation menu.

View nested dictionaries and attributes

To view information about an attribute, click on the attribute name in the attribute list:

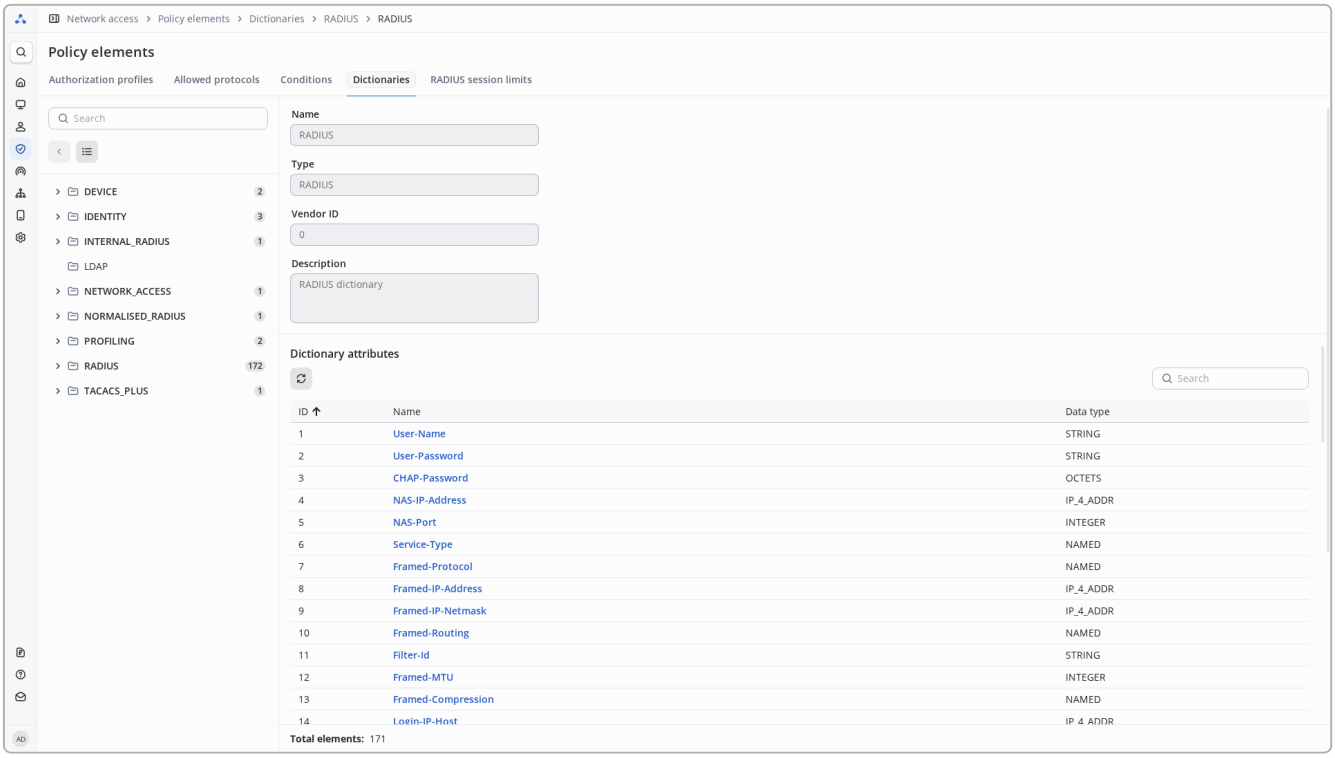


Figure 256. View attributes

To view information about an attribute, click its name:

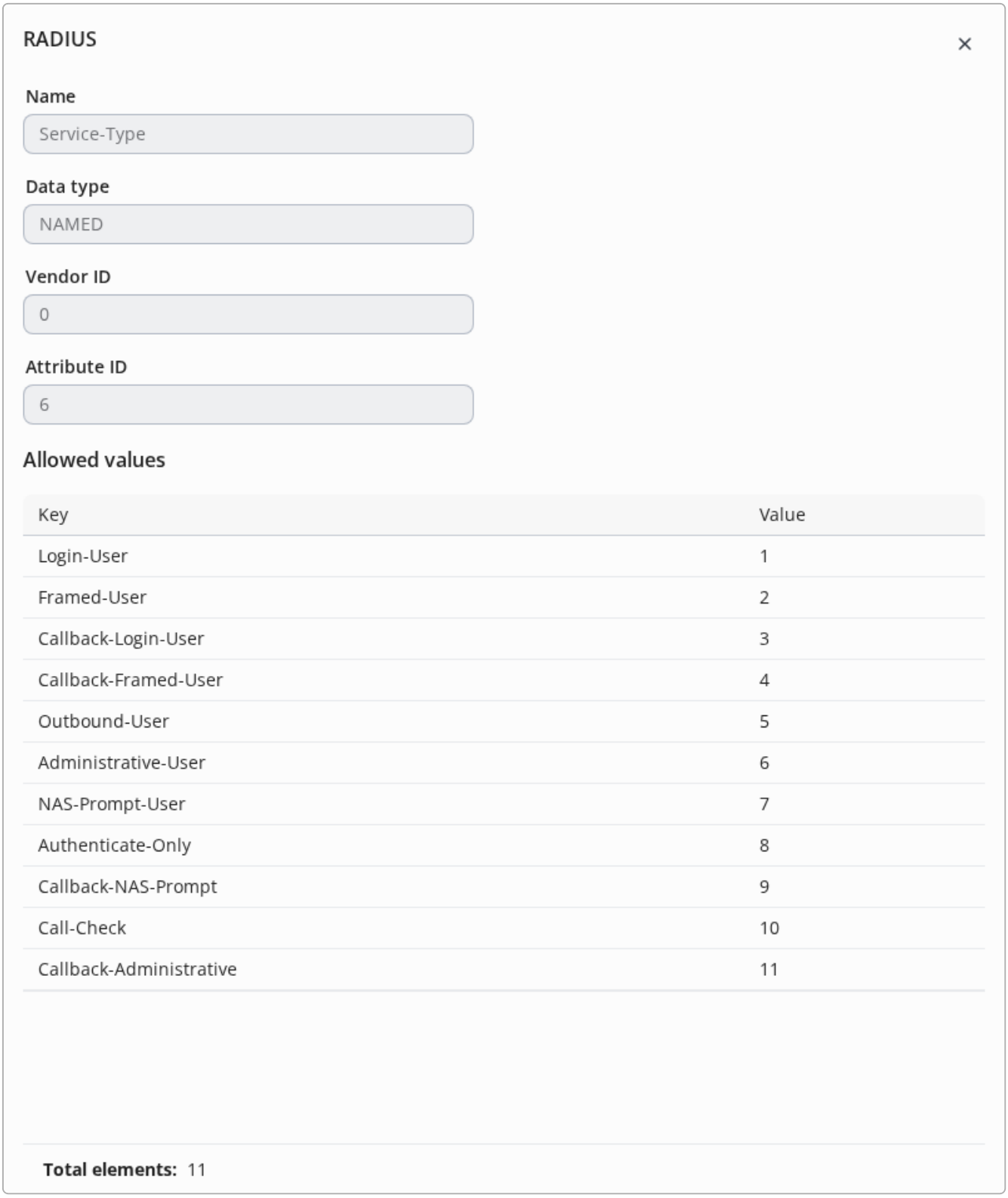


Figure 257. View information about an attribute

For attributes that have a finite list of valid values, this page will list a list of those values.

Conditions

Description

Logical conditions are the main element of authentication and authorization policies, which are responsible for generating criteria that allow determining whether a user can pass authentication and what actions should be applied to him when authorizing.

The algebra of logic is the basis for creating and processing a logical condition. The result of the condition is "True" or "False". The result may be inverted. The condition can be simple or complex. In a simple condition, only one attribute acts as a verification criterion. In a complex condition, you can use several different attributes, combining them with the "AND"/"OR" logical operations.

View a list of logical conditions

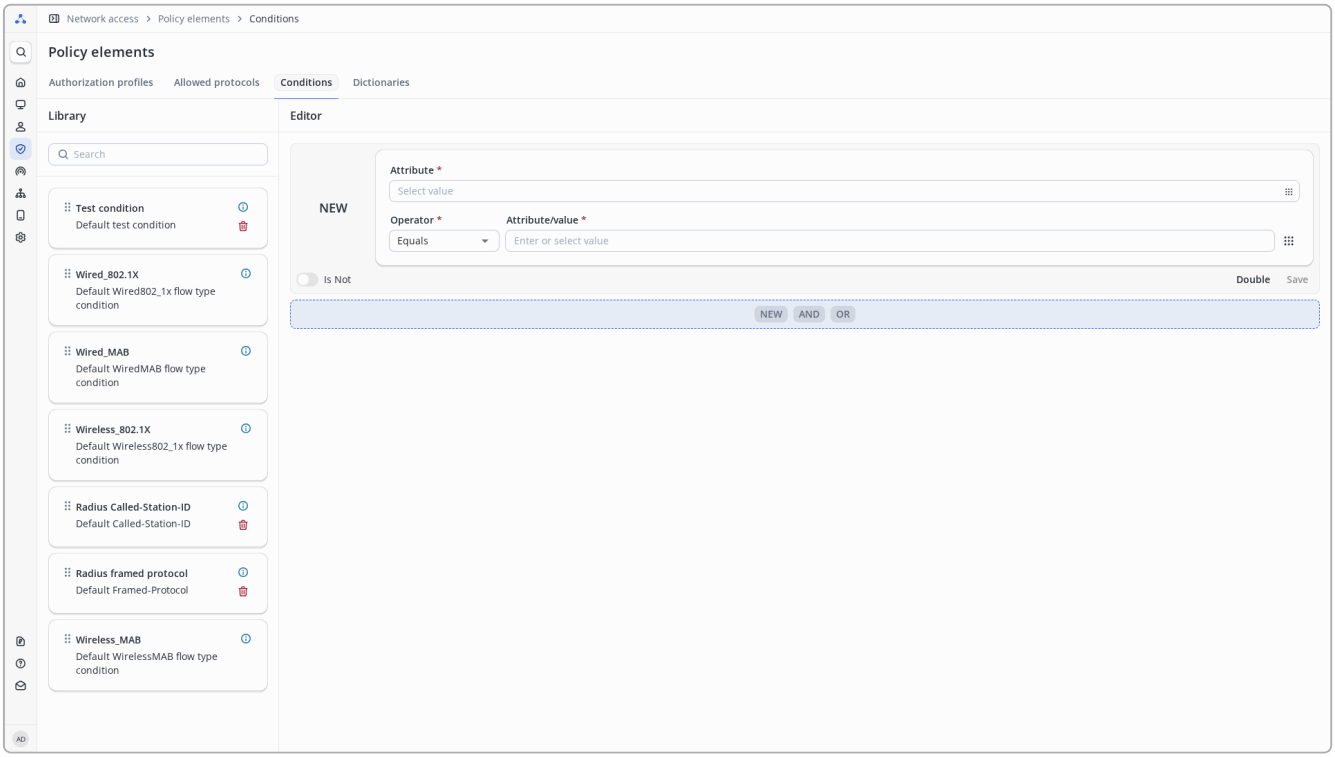


Figure 258. Library of logical conditions

On the left is a **Library** of logical conditions.

On the right is the logical condition **Editor**:

- `Attribute` * - attribute of a logical condition.
- `Operator` * - the selected logical condition operator. Can take values (depending on the attribute value type):
  - `More or equal` / `Less or equal`
  - `More than` / `Less than`
  - `Equals` / `Not equal`
  - `Equal to NULL` / `Not equal to NULL`
  - `Starts with` / `Doesn’t start with`
  - "Ends with" / `Does not end with`
  - `Contains` / `Does not contain`
  - `Match` (*full* string match, case sensitive, there is also support for regular expressions)
  - `IP range`
  - `IP net mask`

`Empty value`

- `Attribute/value` * - attribute/value that is used to match the logical condition attribute in accordance with the selected operator. For an attribute that assumes predefined values, the value is selected from the list.
- `Is Not` - choice of inverting the result of the condition (by default the condition is "Complied", when the setting is enabled, the condition will be considered "Not Complied")
- `NEW` - adding a new logical condition to the existing hierarchy at the same level as the current one.
- `AND` - adding a new logical condition as a "child" for an existing one with the logical operator "AND".
- `OR` - adding a new logical condition as a "child" for an existing one with the logical operator "OR".

* - required fields.

Controls:

- `"Search"` - Performs case-insensitive filtering based on the library of logical conditions.
-  - Preview the contents of the logical condition.
-  - Deleting a logical condition.
-  - Open the dictionary to add an element.
-  - Remove an element from the editor. Action depends on location:
  - clicking to the right of the "Attribute" field will clear the corresponding field;
  - clicking to the right of the Attribute/Value field will clear the corresponding field;
  - clicking to the right of a logical condition will remove that condition.
- `"Save"` - Save the corresponding logical condition.

Attribute selection menu

To select an attribute to be used in the condition, click  - the attribute selection menu will open.

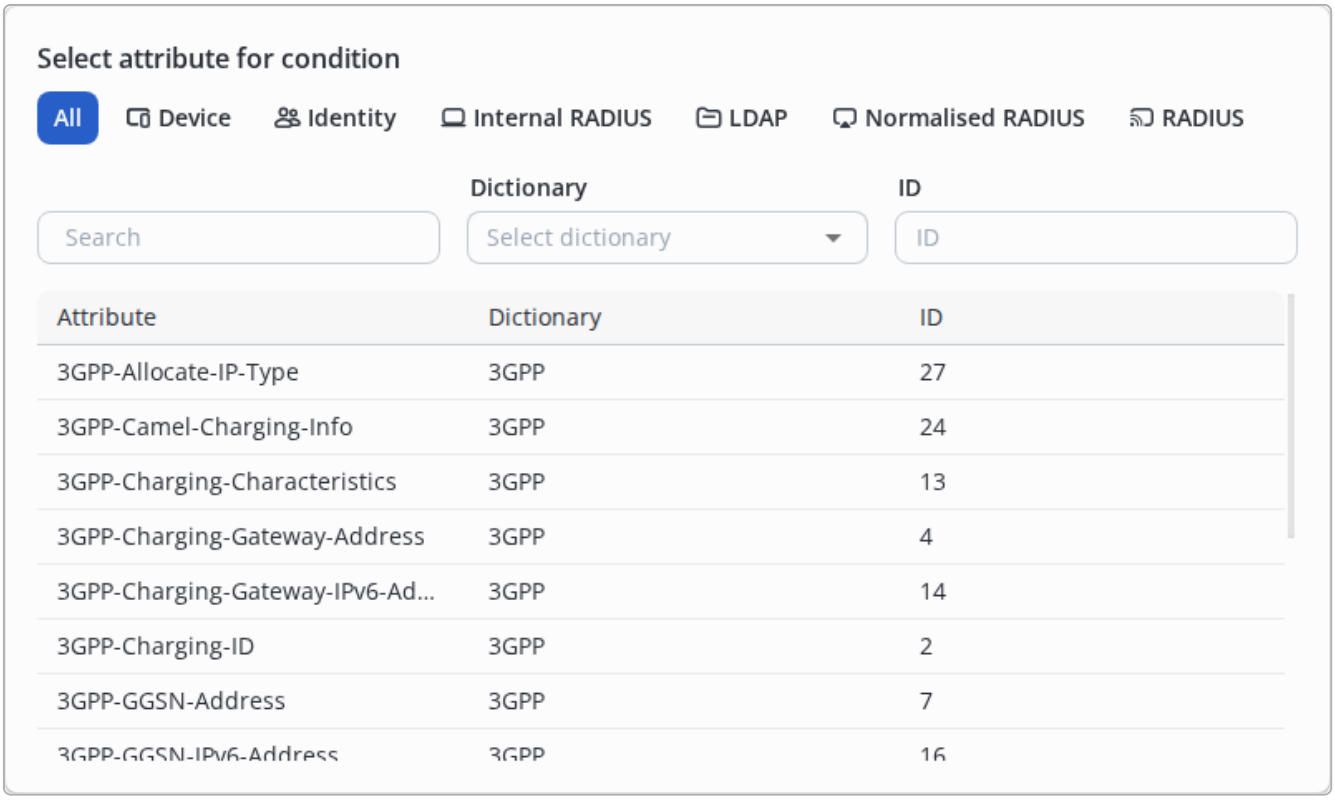


Figure 259. Attribute selection menu

At the top there is a list that allows you to filter by dictionary type. Only one type can be selected.

Types of dictionaries:

- `RADIUS` - dictionaries of RADIUS attributes, including vendor-specific.
- `NORMALISED_RADIUS` - system radius attributes calculated by the system.
- `INTERNAL_RADIUS` - service dictionary with system attributes is usually not used.
- `DEVICE` - device attributes.
- `IDENTITY` - users and endpoints attributes.
- `LDAP` - attributes of external identity sources.

Below are attribute filtering columns.

- "Attribute" - case-insensitive filtering by attribute name.
- "Dictionary" - menu for selecting a dictionary. A dictionary type must be selected to use it.
- "ID" - filtering by attribute number.

Creating logical conditions

Creating a simple logical condition

You can create logical conditions at **Editor**.

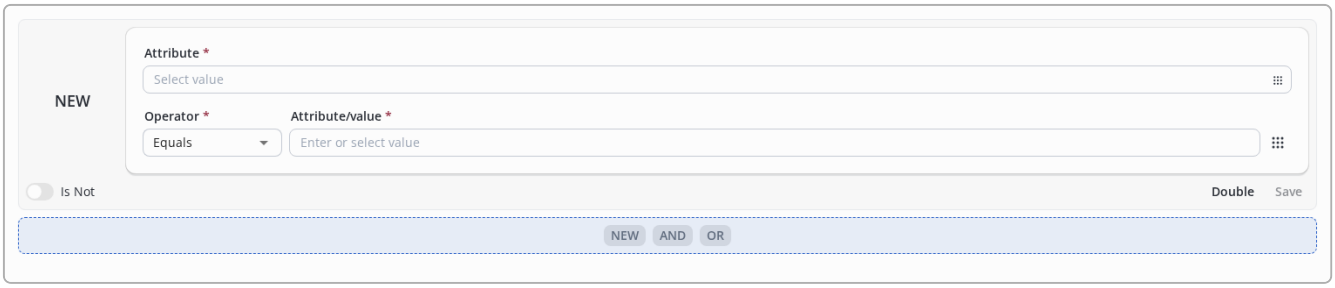


Figure 260. Initial state of Editor

After clicking on in the right side of the “Attribute” field, the dictionary will open.

To find the required attribute, you can use filtering by attribute name. Or select the type of dictionary and select the required dictionary by scrolling the drop-down list to determine the required attribute.

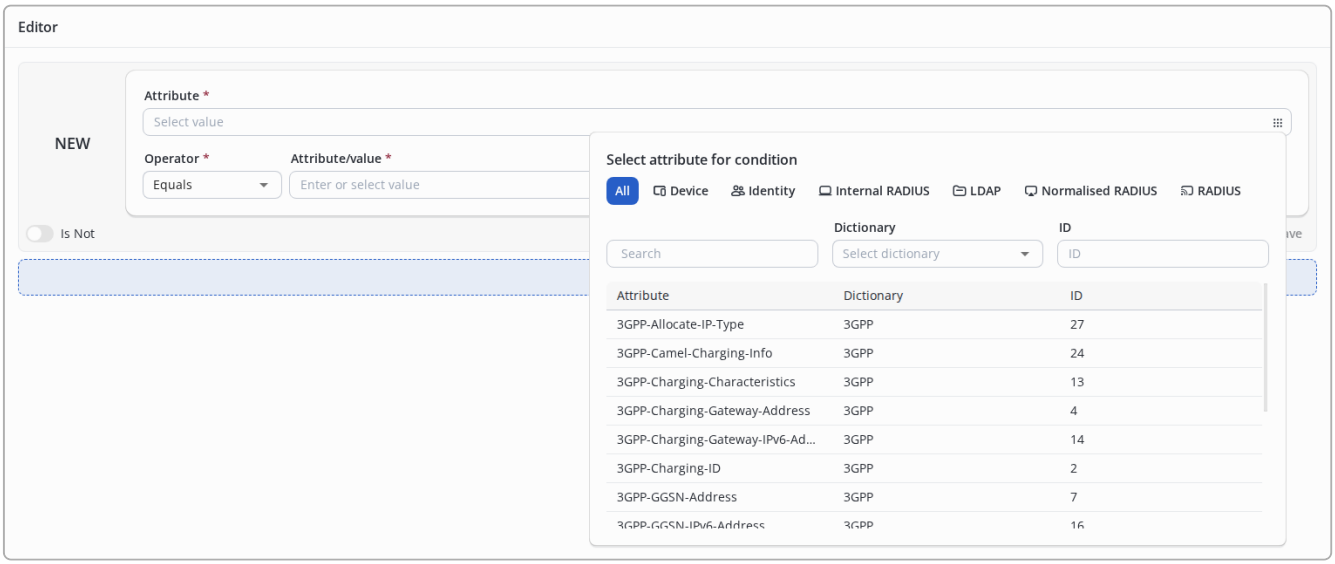


Figure 261. Attribute selection

After selecting an attribute, click on it, and it will be placed in the “Attribute” field.

Select the operator (by default, “Equal” is substituted). The operator selection list depends on the type of data that can be used in the value of the selected attribute.

Attribute data type	Supported operators
String	Matches, Ends with, Does not end with, Starts with, Does not begin with, Contains, Does not contain, Equal to, Not equal to, Equal to NULL, Not equal to NULL, Empty value
Number	Greater than or equal to, Greater than, Less than or equal to, Less than, Equal to, Not equal to, Equal to NULL, Not equal to NULL, Empty value
IPv4 address	Equal to, Not equal to, Equal to NULL, Not equal to NULL, IP range, IP net mask, Empty value

Attribute data type	Supported operators
MAC address	Equal to, Not equal to, Equal to NULL, Not equal to NULL, Starts with, Does not start with, Ends with, Does not end with, Contains, Does not contain, Empty value
Name	Equal to, Not equal to, Equal to NULL, Not equal to NULL
Byte sequence	Equal to NULL, Not equal to NULL

Select an attribute in the Attribute/value field or enter its value.

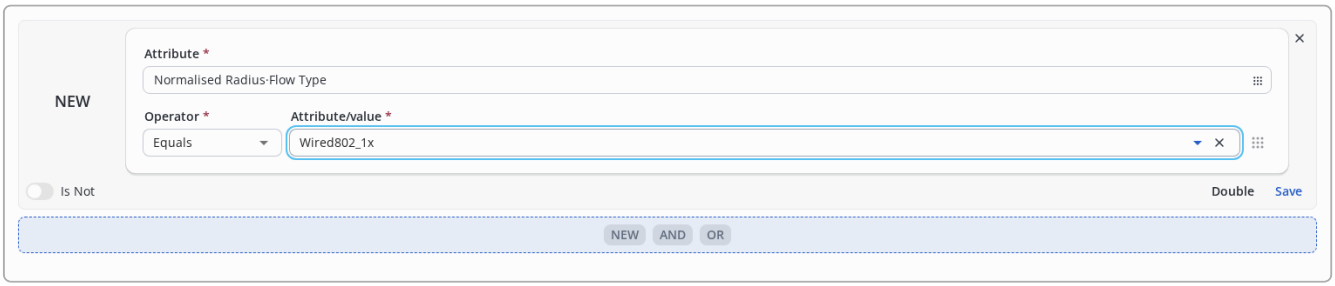


Figure 262. A condition in which all parameters are filled in

Then click the “Save” button. You can replace an existing condition in the library or save a new one.

By default, the action assumes saving the new condition:

- `Name` * - name of the condition. Maximum length is 100 characters.
- `Description` - arbitrary description. Maximum length is 200 characters.

* - required fields.

Then click the “Save” button.

Save and replace an existing condition in the library. To do this, select "Replace an existing condition in the library" and select a condition from the drop-down list. If necessary, you can filter by name by entering the appropriate text in the field in front of the list.

Then click the “Save” button.

The "Save" button is always active to be able to save an existing condition under a different name.

Creating a complex logical condition

To create a complex logical condition, use the panel under the logical condition.

Figure 264. Panel to create an additional logical condition

- `New` - add a logical condition at the same level as the existing one.
- `AND` - add a child condition with logical "AND".
- `OR` - add a child condition with a logical "OR".

When you click "New", an additional rule will appear in the editor on the same level as the existing one, combined with a logical "AND".

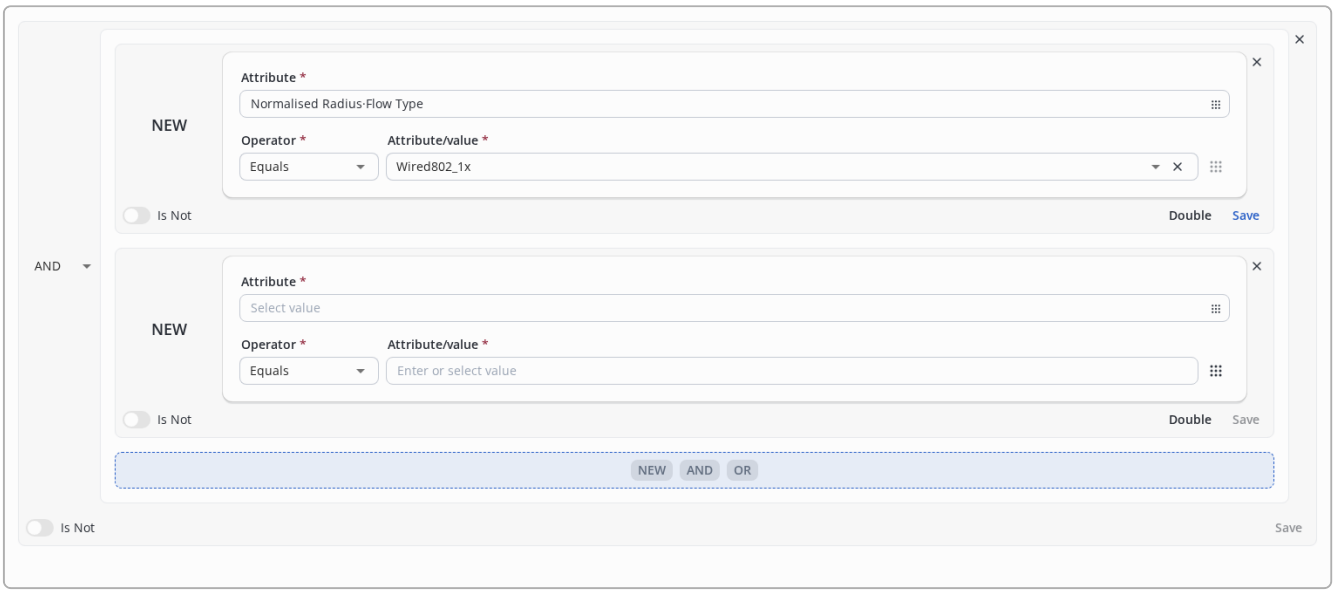


Figure 265. Condition consisting of two conditions combined by a logical "AND"

Logical "AND" combining rules can be changed to "OR".

- It is possible to save each condition separately using the “Save” button in its window or all together using the “Save” button at the bottom.
- To delete a condition, click on ✕ at the top right in the condition window.
- To completely clear all conditions in the editor, click ✕ at the top right of the editor, located behind the windows of individual conditions.

When you press "AND"/"OR", a new window will appear in which a new menu will be available, then you can add conditions at a new level or create child conditions. There is no restriction on the nesting of conditions.

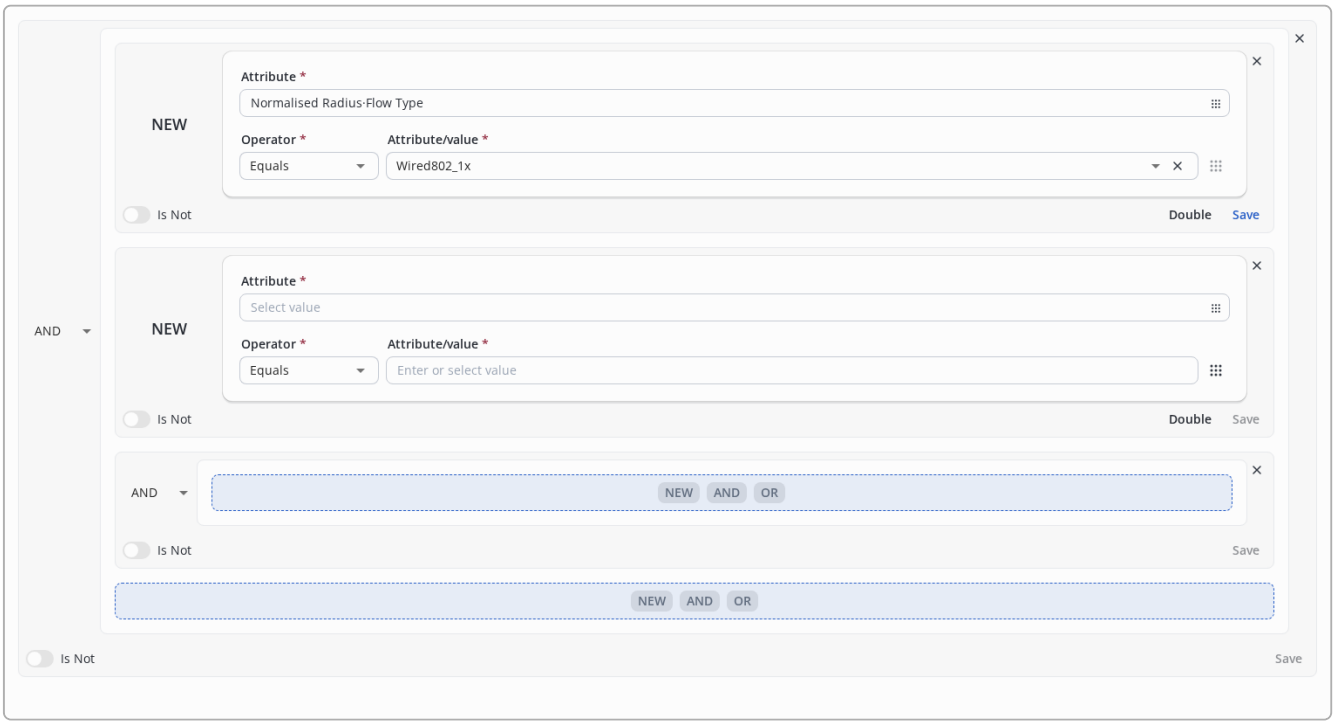


Figure 266. Condition containing nested rules

To save all conditions, click the "Save" button in the lower right corner.

Using regular expressions

Regular expressions can be used when adding a condition to a policy set for attributes with the `matches` operator. This allows you to specify a "pattern" that can match multiple values using just one line.

Example 1. Using regular expressions in logical conditions

Task: You need to apply a policy set to all connections from devices whose names start with the `MES` prefix.

Possible Solution:
In order to select only connections from certain devices, you can use the `RADIUS NAS-Identifier` attribute in the condition. Note that it usually requires configuration on the NAS device to send it.
In order to avoid creating separate `RADIUS NAS-Identifier equals MES1` etc. conditions for each device, you can create one `RADIUS NAS-Identifier matches MES.*` condition.
The `.*` construct means "any number of any characters" after `MES`.

You can also use a more strict expression if, for example, you want `MES` to always be followed by 4 digits and one letter: `MES\d{4}[A-Z]`.
Here:

`\d{4}` — four digits;

`[A-Z]` — one uppercase letter.

Short list of frequently used metacharacters

- characters:
  - `.` - any character
  - `\d` - any digit
  - `\w` - any letter in any case
  - `\s' is a space character
  - `\` - any special character escape.
- grouping:
  - `[abc]` - one of the characters listed in brackets (or a, or b, or c)
  - `[a-z]` - one of the characters listed in the range
  - `(abc)` - combining characters in the specified order into one group
- quantifiers:
  - `a? ` - 0 or 1 occurrence of a character
  - `a*` - 0 or more occurrences of a character
  - `a+` - 1 or more occurrences of a character
  - `a{n}` - occurrence of the symbol n times
  - `a{n,}` - occurrence of the character n or more times
  - `a{n,m}` - occurrence of a symbol from n to m times
- logical operations:
  - `^a` - negation
  - `a|b` - one of two specified characters (OR)
- useful combinations:
  - `.*` - any character any number of times
  - `\w+` - any word
  - `(word1)|(word2)` - one of the specified words.

Editing a logical condition

To edit a logical condition, you need to grab it with the cursor in the library and move it to the editor field.

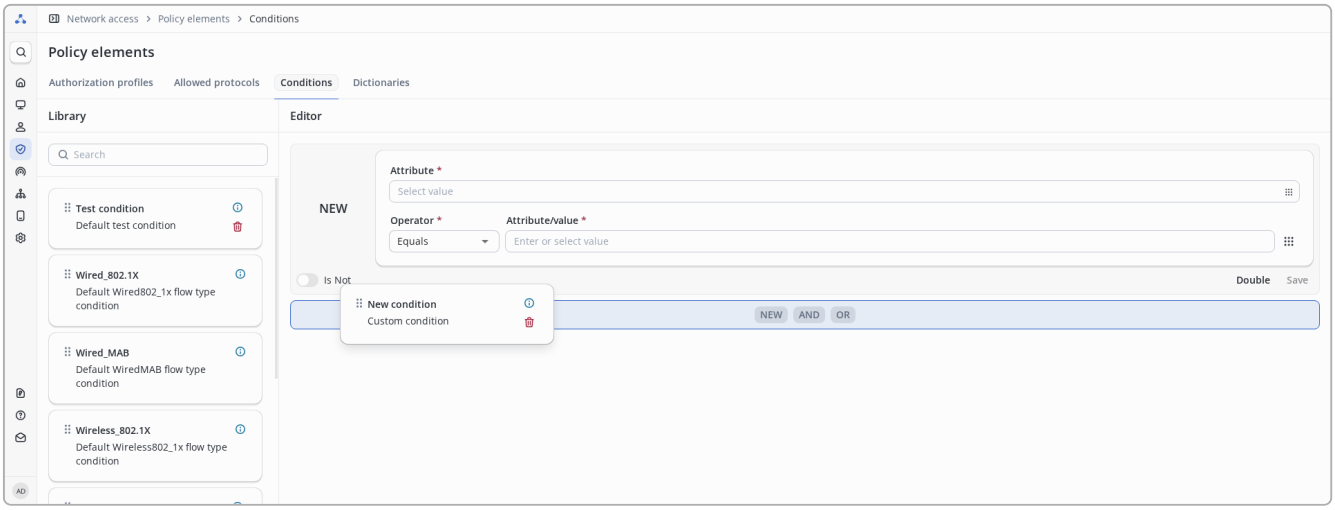


Figure 267. Selecting a logical condition

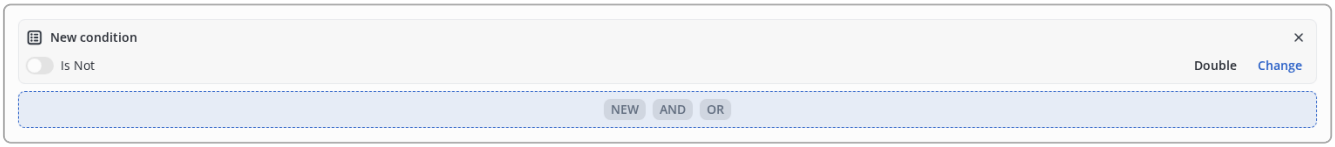


Figure 268. Editing a logical condition

To edit the condition, click the "Edit" button. After editing, click the "Save" button. Since the condition was previously saved in the library, by default it will be proposed to save it with the same name. If necessary, you can select another condition to be overwritten or select "Save to library as new condition." Click the "Save" button.

Also, during editing, you can drag conditions from the library into the child condition editor field.

Delete a logical condition

To delete a logical condition you need to find it in the library and click the button at the right of the condition name.

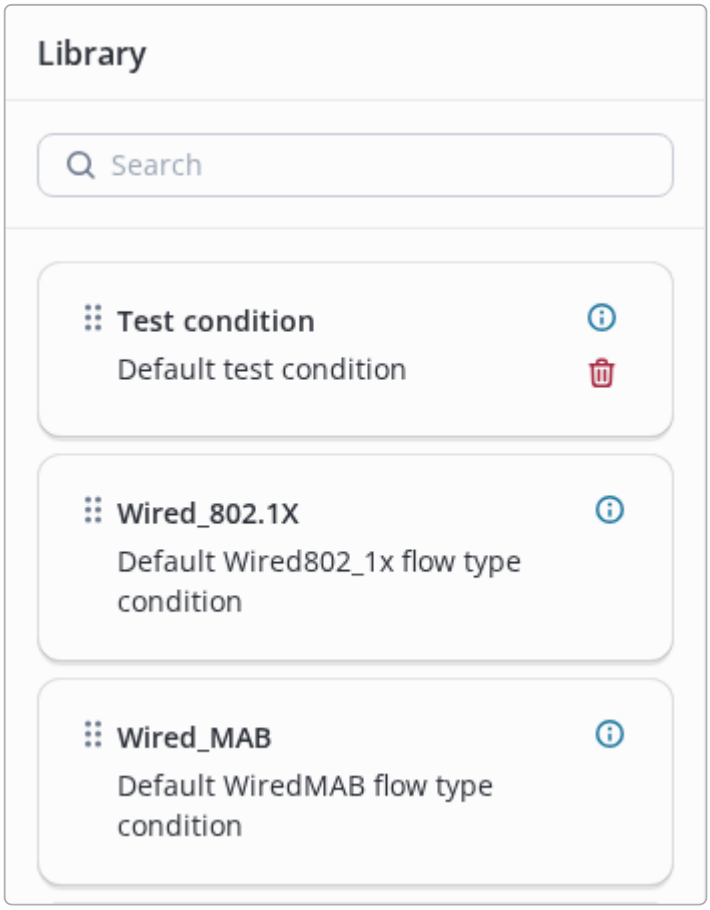


Figure 269. Selecting a condition to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

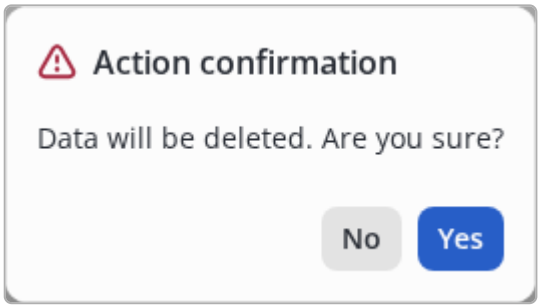


Figure 270. Modal dialog for confirmation

Restrictions:

- some system logical conditions cannot be deleted or edited;
- you cannot delete logical conditions that are used in other complex logical conditions;
- You cannot delete logical conditions that are used in any set of policies.

RADIUS Session Limits

Description

The simultaneous RADIUS session limiting functionality allows you to control the use of user accounts when connecting to the network. The mechanism limits the number of simultaneously active user sessions and

prevents unauthorized sharing of credentials.

The limit is applied to all identity sources except guest endpoints. Portal redirect sessions are not counted in the limit. The limit is not applied to MAB authentication.

This section is only available when RADIUS Accounting processing is enabled (System Settings → Services → RADIUS).

Configuring RADIUS Session Limits

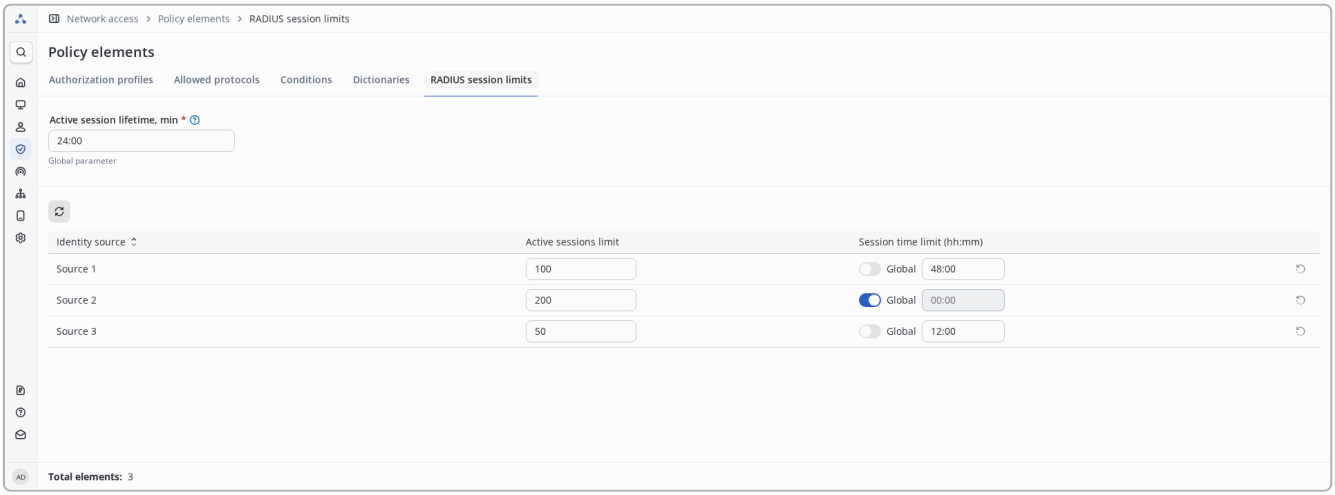


Figure 271. RADIUS session limits configuration page

At the top of the page is the global parameter:

- `Active session lifetime` * - the maximum lifetime of an active session since its last update. If no events confirming its relevance are received during the specified period, the system considers the session hung and automatically terminates it. Automatic termination frees the quota set for the source for new connections.

  The value is specified in `hours:minutes` format and must be greater than `00:00`.

The global session lifetime is applied to identity sources that have the *Global* toggle enabled in the time settings.

Below the global setting is the identity sources table. In the table, you can configure the following parameters for each source:

- `Active session limit` - the maximum number of simultaneously active sessions of one user within this source.
  - `0` - limit is disabled. The system does not check the number of active sessions.
  - `N > 0` - when the limit is reached, the system returns an `Access-Reject` response, and the user does not gain network access.
- `Session time limit` - the active session lifetime for this source, specified in `hours:minutes` format.
  - `Global` - toggle for applying the global session lifetime.
    - Enabled - the global lifetime setting is applied to sessions of this source.

- Disabled - a custom lifetime value is specified for this source, independent of the global setting.

When the `Global` toggle is disabled, specifying the session time limit is required.

How Simultaneous RADIUS Session Limit Works

Active Session Count

The NAICE system tracks sessions based on RADIUS Accounting attributes. The number of active sessions for a given user is determined sequentially using the following attribute combinations:

1. **Class-25** - determining connection uniqueness based on an attribute containing a unique connection identifier.
2. **NAS IP** + **Session-ID** - determining connection uniqueness by the combination of the network device IP address and session identifier.
3. **Identity source** + **NAS IP** + **MAC address** + **Username** - determining connection uniqueness when the authentication source is known. MAC address is not a required attribute.
4. **NAS IP** + **MAC address** - determining connection uniqueness for portal users.
5. **NAS IP** + **MAC address** + **Username** - determining connection uniqueness when none of the above attribute combinations were sent by the network device. MAC address is not a required attribute.

The NAICE system uses the first matching attribute combination from the list.

Authentication Check

When authenticating a user, the system identifies them by the combination "*Identity Source* + *Username*" and checks the number of active RADIUS sessions:

- If the number of active sessions is less than the set limit - access is granted.
- If the number of active sessions exceeds the set limit - the system returns Access-Reject. The reason for rejection is recorded in the event log: simultaneous session limit exceeded.

A session is considered active until a *RADIUS Accounting Stop* packet is received or the session is terminated by timeout. Manual session termination by the administrator also frees the active RADIUS session quota.

RADIUS policies

Description

Authentication and authorization policies define the actions that must be taken when receiving requests for user authentication from network devices via the RADIUS protocol and the actions when authorizing users.

Request processing order

The order of processing authentication/authorization requests from users transmitted by network devices is as follows:

Initial check of network device data:

- Incoming RADIUS requests are analyzed for the presence of a `NAS-IP-Address` attribute - if missing, the packet is dropped and no response is returned.
- The received `NAS-IP-Address` searched among records about ref:users-and-devices:network-resources/devices.adoc[network devices] - if missing, the packet is discarded and no response is returned.
- The correctness of the secret in the RADIUS request is checked - if the secret is incorrect, `ACCESS-REJECT` is returned.

2. Processing in the policy table.
   - The RADIUS packet is checked for compliance with the logical conditions used in the policies.
   - The check is performed sequentially from top to bottom.
   - RADIUS policies set to `Status` **Disabled** do not using in the check, the counter in the `Hits count` column does not increase.
   - RADIUS policies set to `Status` **Condition Check** do not using in the check, but the counter in the `Hits count` column increases when the policy is matched.
   - When a suitable policy is found, further search stops and checking continues within the framework of this policy.
   - If a policy with a suitable condition is not found, a response will be sent to the network device within the Default policy. By default, in this set of policies, the **DenyAccess** authorization profile is configured in the authorization policy, according to which ACCESS_REJECT will be sent to the network device. This behavior can be changed by editing the policies in Default.
3. Processing within the framework of the found policy:
   - The authentication protocol used in the RADIUS request is checked and compared with those available in the selected list of protocols. If no matches are found, an `ACCESS-REJECT` will be sent to the network device.
   - Authentication policies are checked from top to bottom until a matching condition are found. If no suitable authentication policy is found with a matching condition it will be matched to Default authentication policy at the end of list and identity sequence from this authentication policy will be used to authenticate user.
   - A search is performed for the user in the selected list of identity sequences. If no user login will be found in the list of identity sequence the `ACCESS-REJECT` will be sent to the network device.
   - Authorization policies are checked from top to bottom until a matching condition are found. If no suitable authorization policy is found with a matching condition, an `ACCESS-REJECT` will be sent to the network device using the Default authorization policy at the end of list. The default behavior can be overridden.
   - After defining the authorization policy, the user's password is checked. If it does not match, an `ACCESS-REJECT` will be sent to the network device.
   - After successful verification of the user's login/password, the attributes expected from the used authorization profile will be added to the response and the response will be sent to the network

device. Both `ACCESS-ACCEPT` and `ACCESS-REJECT` responses can be configured in the authorization profile.

View a list of policy sets

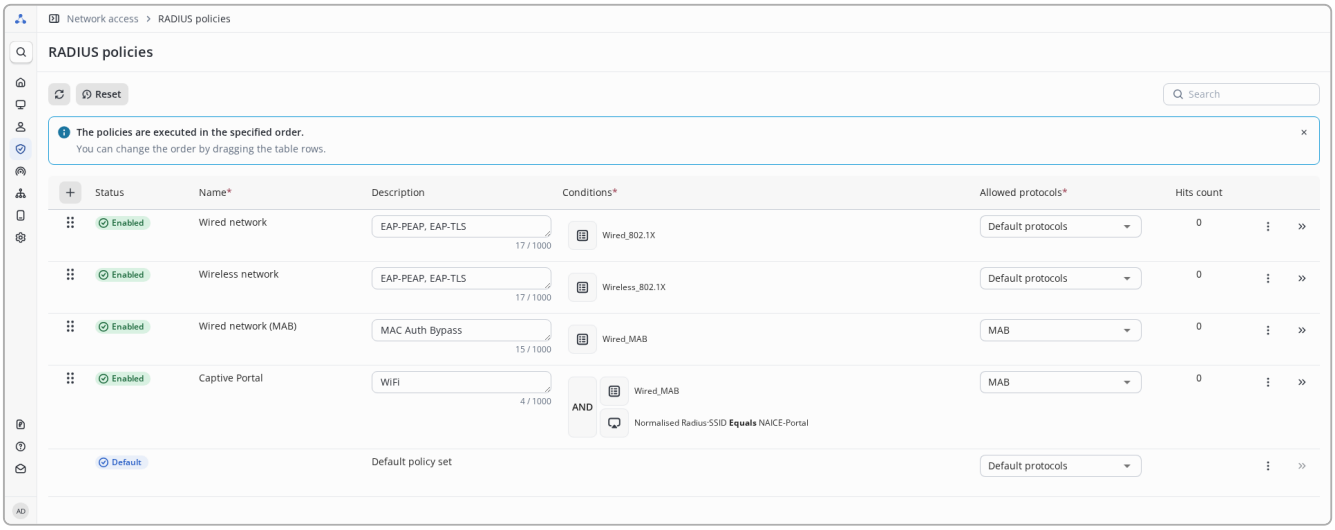


Figure 272. View all policy sets

The table displays RADIUS policies in accordance with which authentication/authorization requests are processed.

The last policy named `Default` cannot be deleted, nor can its name or condition be changed.
It will always be the last one in the list, below which other policies cannot be placed.

Description of table columns:

- `Status` - status of the policy set (enabled / disabled / default).
- `Name` * - the name of the set of policies. Maximum length - 200 characters.
- `Description` - arbitrary description. Maximum length - 1000 characters.
- `Conditions` * - used logical conditions. If a library condition is used, its name is displayed. If a non-library condition is used, its structure is displayed.
- `Allowed protocols` * - selected list of allowed protocols.
- `Hits count` - count of authorization attempts that fall under the specified Conditions.
- `Actions` - actions to add/remove a set of policies.
- `Setting` - switch to viewing and editing authentication/authorization policies of the selected set of policies.

Parameters marked with an asterisk * are required.

Controls:

- `Search` - case insensitive search by the name of a set of policies (found matches will be highlighted).
-  - refresh data.

Reset - reset the counters of RADIUS packets that were processed under this policy set for all policy sets.

- + - add a policy (the policy will be added first in the list).
- `Hits count` - displays a counter of RADIUS packets that were processed according to this set of policies. By clicking on the counter value, the **Reset** button opens to reset the packet counters one at a time for the selected set of policies.
- ⋮ - actions:
  - `Add on top` - add a set of policies *Before* the selected one;
  - `Add below` - add a set of policies *After* the selected one;
  - `Delete` - delete the selected set of policies.
- » - go to managing the authentication/authorization policies of the current set of policies.
- `Save` - save changes.
- `Cancel` - cancel changes.

All RADIUS policies are checked in order, as shown on the screen - from top to bottom. RADIUS policies are always displayed on the page fully: `Search` does not hide entries from the list, but only highlight them.

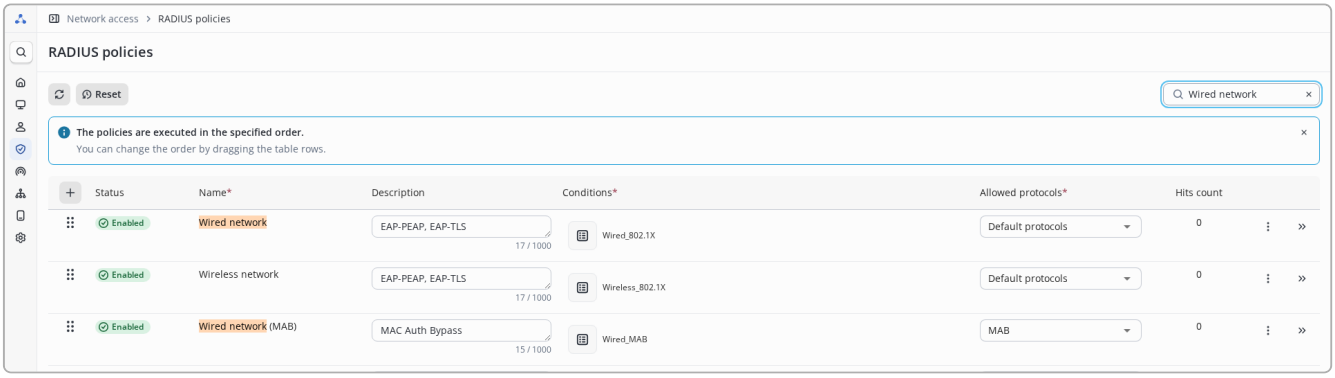


Figure 273. Search for policy set

To change the order, drag the policy by the ⠿ in the + column.

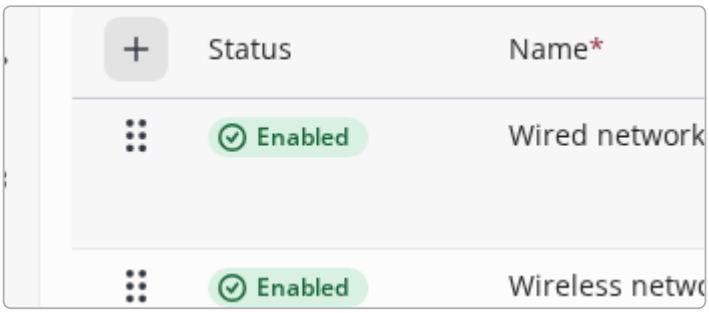


Figure 274. Change policy set order. Drag and drop action

After changing the order of policies, do not forget to click the `Save` button, otherwise the changes will not take effect.

To view the list of authentication and authorization policies, in the `Setting` column, click » to the right of the selected set of policies.

Editing a set of policies

To add a policy in the list of RADIUS policies it is demanded to click the + button at the top left - the new policy will be added first in the list.

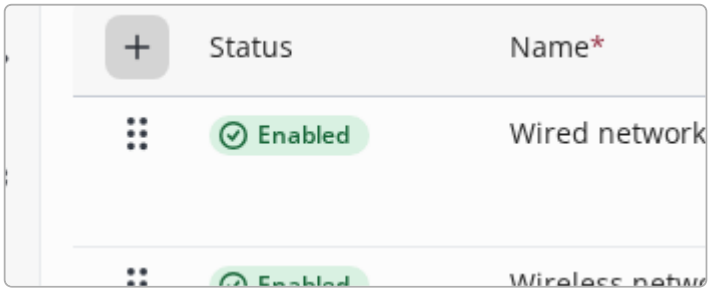


Figure 275. Display new policy. Add action

If it is necessary to add policy to an arbitrary location in list it is demanded to click on the button ⋮ to the right of the selected policy of RADIUS policies list and select `Add on top` or `Add on bottom` in the drop-down menu.

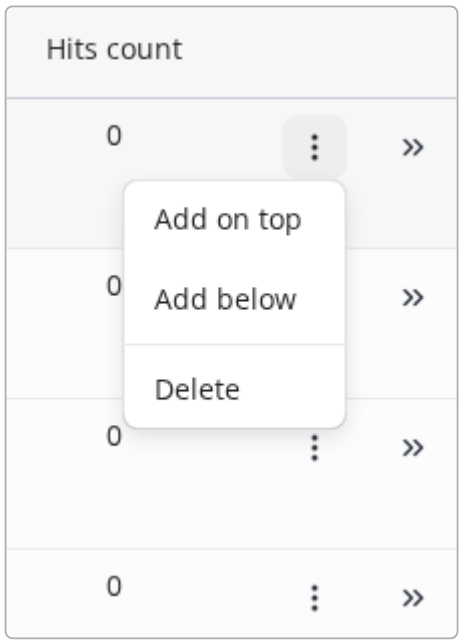


Figure 276. Display policy. Drop-down menus with actions

Information on `Status`:

- Enabled – Allows processing requests;
- Disabled – Excludes from processing, does not check the Condition, and does not handle requests;
- Condition check – Allows checking the Condition (and increments the trigger counter) but does not process requests;
- Default – Used only for the default policy.

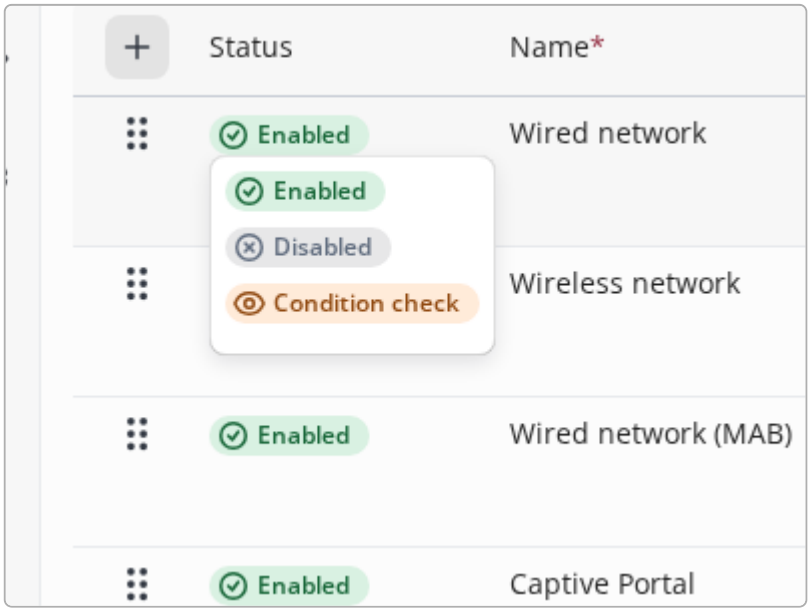


Figure 277. Change policy status

In the newly created policy set, in the `Name` field, enter the name of the policy set or leave the automatically generated name unchanged.

Figure 278. Displaying the new policy entry. Elements are required

To edit a condition, click + Add and the condition editor will open.

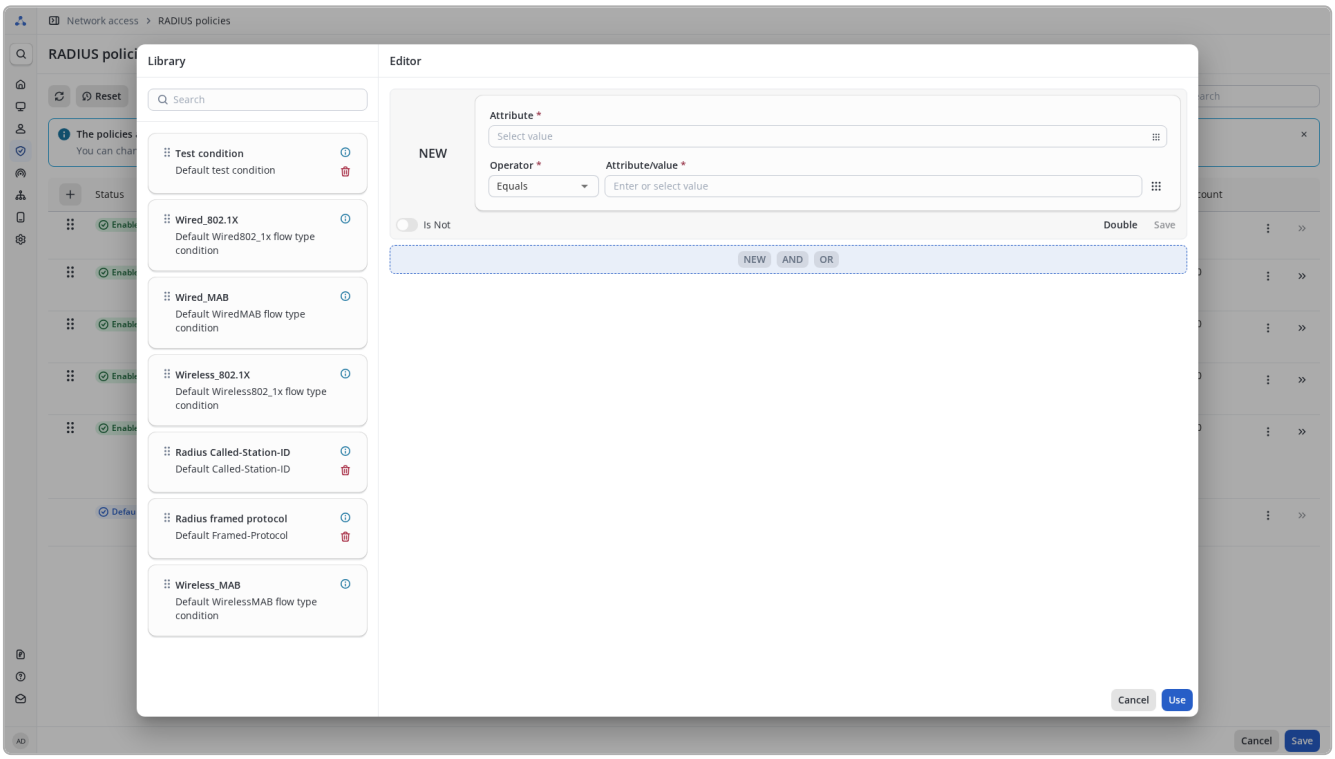


Figure 279. Conditions editor

Editing conditions is done in the same way as described in conditions.

When setting up a policy, there is a limitation on the types of dictionaries used. You can use dictionaries: `DEVICE`, `RADIUS`, `NORMALISED_RADIUS`, `INTERNAL_RADIUS`. This is due to what information about the client connection can be obtained by the time the policy set is checked, and what information has not yet been obtained.

When editing conditions directly in the policy, the ability to use the configured condition without saving it in the **Library** is added. To do this, after setting, without saving the condition, click the `Use` button.

After that, in the `Available protocols` column, select the required list.

By clicking the **Save** button the files will be saved.

After creating a new policy, you must configure authentication and authorization policies for it; without this, all attempts to connect users that fall under the logical condition of this policy will be rejected!
To configure, go to Authentication and authorization policies.

Deleting a policy set

To delete policy set click on the ⋮ button and select the **Delete** action.

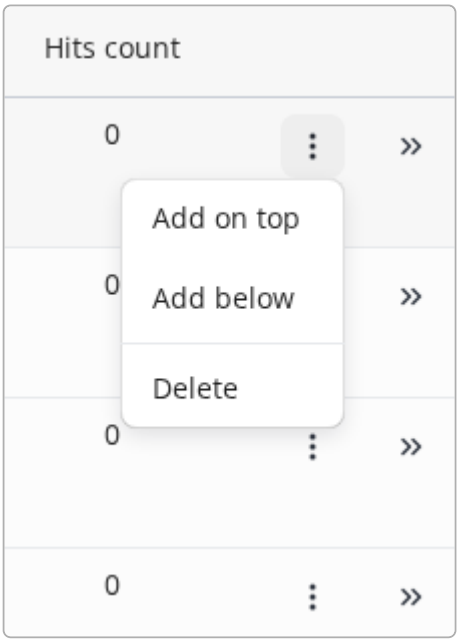


Figure 280. Drop-down menu for deletion of policy set

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

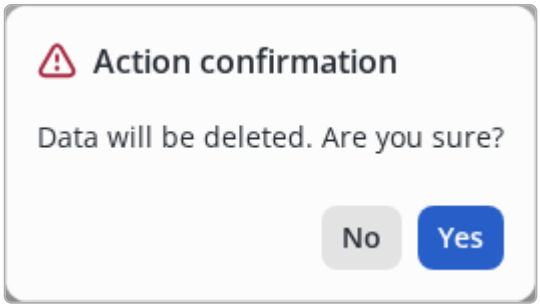


Figure 281. Modal dialog for confirmation

Policy hits count

The counters in the `Hits count` column show how many attempts were processed using this policy. Value changes indicate that the Condition is triggering.

Using the Condition check status and observing the trigger counters, you can first fine-tune and debug the condition, and only then put the policy into operation by switching it to the Enabled status.

The trigger counters for all policy sets can be reset by clicking on Reset. To reset the counter for a specific set, click the number in the `Hits Count` column, click the `Reset` button, and confirm the action.

Authentication and authorization policies

View a list of authentication and authorization policies for the selected policy set

To view the list of authentication and authorization policies, in the `View` column, click » to the right of the selected policy set.

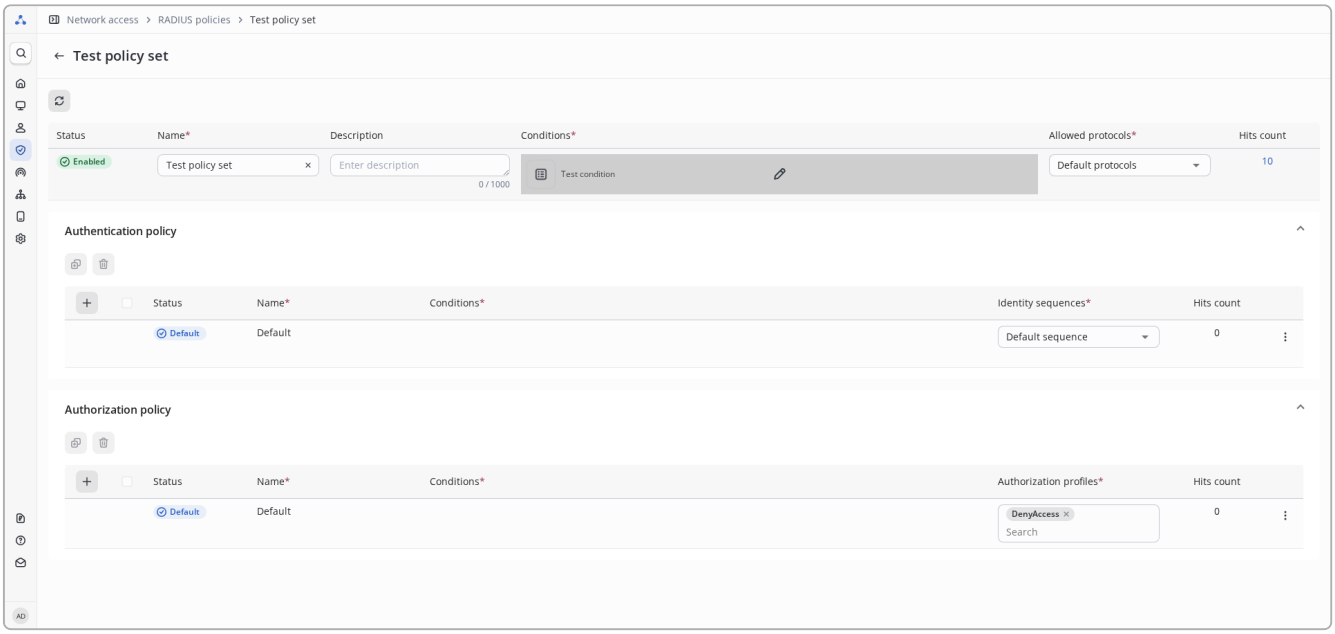


Figure 282. Policy et view and edition page

The latest authentication and authorization policy rules named `Default` cannot be renamed or their trigger condition changed.
They will always be last in the list; other rules cannot be placed lower.
They will always "match" if none of the policies above are suitable.

The form for viewing a separate set of policies is divided into blocks:

- A block responsible for managing a set of policies, which displays the contents of the selected set of policies in a format similar to that used in RADIUS policies.
- **Authentication policy** - manages user authentication.
- **Authorization policy** - user authorization management.

Controls:

-  - request the current number of policies hits from the set.
- `Status` - enable, disable or monitor the policy.
- `Name` * - name of the policy.
- `Description` - arbitrary description.
- `Conditions` * - used logical conditions. If a library condition is used, its name is displayed. If a non-library condition is used, its structure is displayed.
- `Allowed protocols` * - selected list of allowed protocols.
- `Identity sequences` * - selected identity sequence.
- `Authorization profiles` * - selection of available authorization profiles.
- `Hits count` - the count of authorization attempts that fall under the specified Conditions. By clicking on the number of operations the counter can be **Reset**.
- - actions:
  - `Add above` - add a new policy rule *BEFORE* the selected one;
  - `Add below` - add a new policy rule *AFTER* the selected one;
  - `Duplicate` - add a new policy rule, similar to the selected one, before the duplicated rule;
  - `Delete` - delete the selected rule.
- `Save` - save changes.
- `Cancel` - cancel changes.

Parameters marked with an asterisk * are required.

To change the order of the Authentication and Authorization Policies, drag the policy by the  element in the + column similar to the RADIUS policies section.

Editing authentication and authorization policies

To edit, click » to the right of the selected set of policies.

You must configure at least one authentication policy and one authorization policy for a client to successfully connect using this set of policies, otherwise the default deny rule will be applied.

The `Default` policy can be edited to set a different behavior, but for security it is recommended to configure your own rules with a narrower scope and leave the default behavior as deny.

Authentication Policy

Figure 283. "Authentication" policies panel

To configure the authentication policy in the **Authentication Policy** block, you must click the button `+`. A new rule will appear.

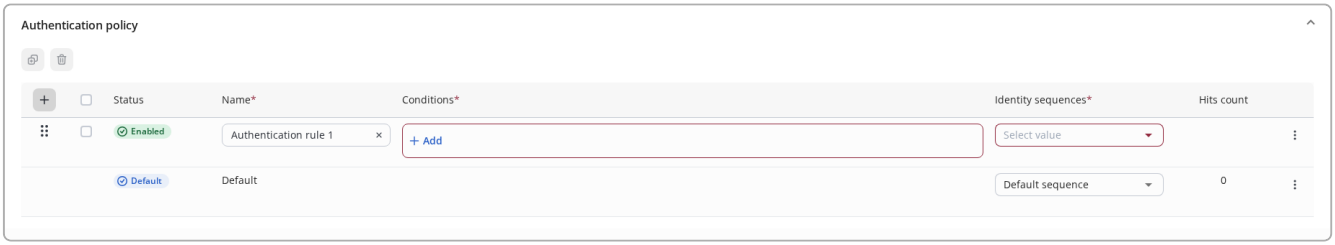


Figure 284. New "Authentication" policy

In the `Name` field, enter the name of the policy rule.

To edit a condition, click + Add - the condition editor will open. Editing conditions is performed in the same way as described in Conditions.

When setting up an authentication policy, there is a limitation on the types of dictionaries used. You can use dictionaries: `DEVICE`, `RADIUS`, `NORMALISED_RADIUS`, `INTERNAL_RADIUS`.

When editing conditions directly in the policy, the ability to use the configured condition without saving it in the library is added. To do this, after setting, without saving the condition, click the `Use` button.

In the `Identity sequences` drop-down menu, select the identity sequence.

A new policy rule can also be created from an existing one by duplicating it. To do this, select the desired rule/rules via ☐, and then click above the table. A new rule will be created above the selected one with similar settings and a name ending with "_copy".

Using the ⋮ button to the right of the policy, you can add a new one above or below, duplicate or delete the current one.

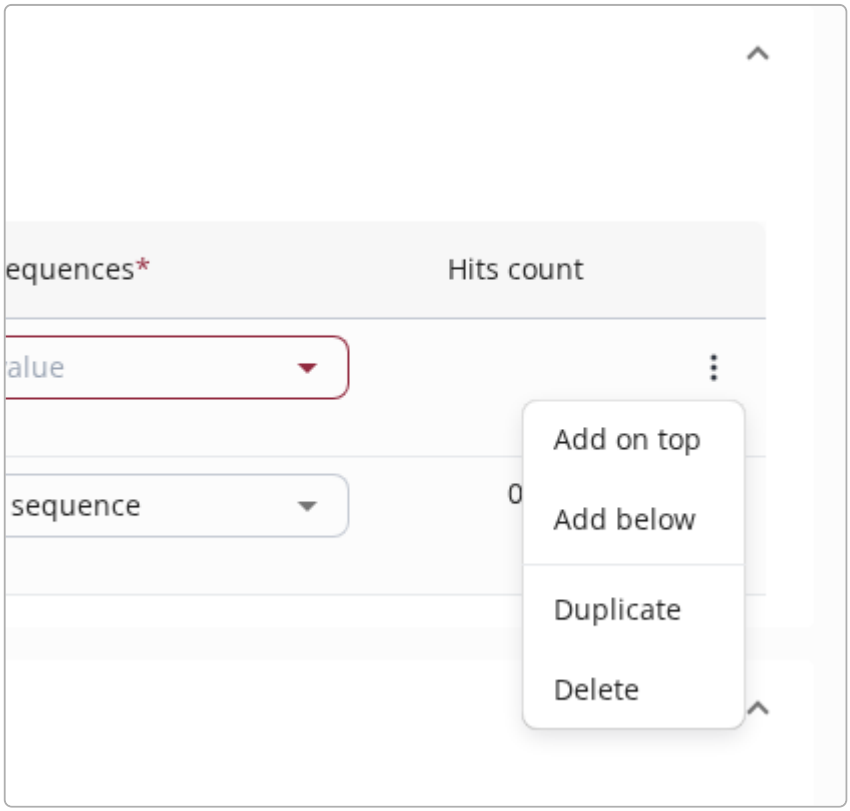


Figure 285. Authentication Policy. Dropdown Menus. Actions

We can also change the policy status.

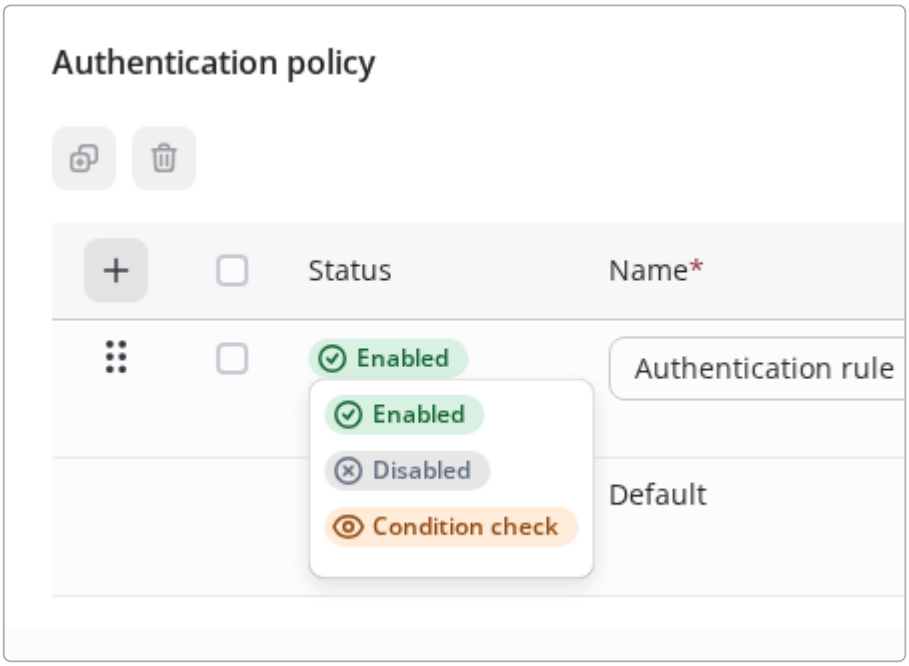


Figure 286. Authentication Policy. Change policy status

Authorization Policy

Figure 287. Policy panel "Authorizations"

To configure an authorization policy rule in the **Authorization Policies** block, click +. A new rule will appear.

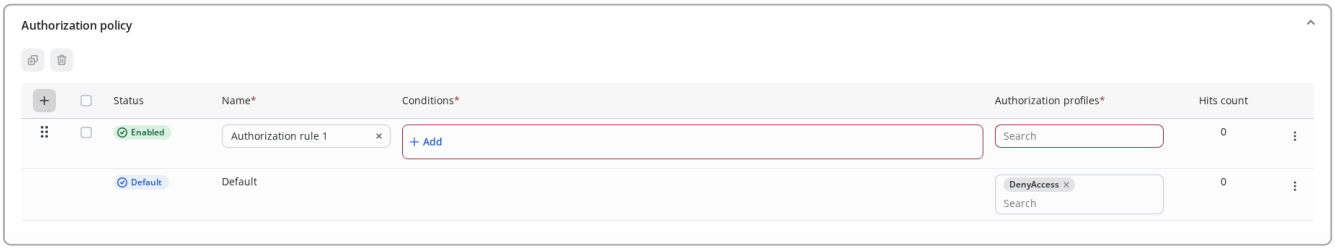


Figure 288. New "Authorization" policy

In the `Name` field, enter the name of the policy.

To edit a condition, click + Add - the condition editor will open. Editing conditions is performed in the same way as described in Conditions. When setting up an authorization policy, you can use all types of dictionaries without restrictions.

When editing conditions directly in the policy, the ability to use the configured condition without saving it in the library is added. To do this, after setting, without saving the condition, click the `Use` button.

Select the required profile in the **Authorization profiles** drop-down menu. If necessary, you can add several profiles; their non-conflicting settings will be summed up.

Several Authorization Profiles can be linked to one Authorization Policy.
However, only those that match the current Device Profile will be considered when processing the request.

A new policy rule can also be created from an existing one by duplicating it. To do this, select the desired rule/rules via ☐, and then click above the table. A new rule will be created above the selected one with similar settings and a name ending with "_copy".

Using the ⋮ button to the right of the policy, you can add a new one above or below, duplicate or delete the current one.

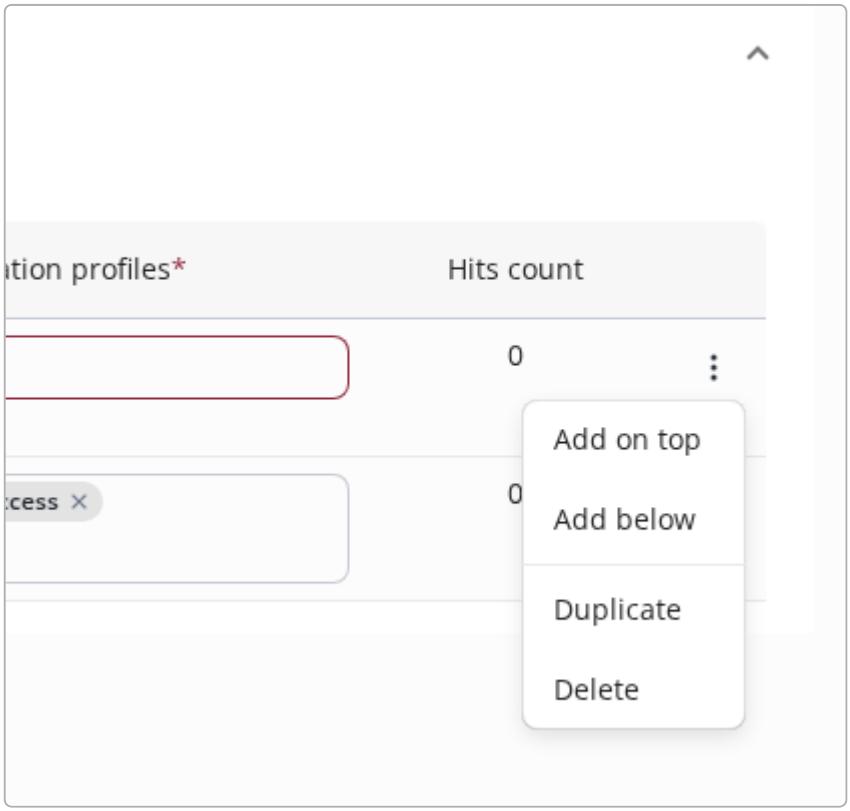


Figure 289. Authorization Policy. Dropdown Menus. Actions

You can also change the status of a policy in a similar way to the statuses in policy sets.

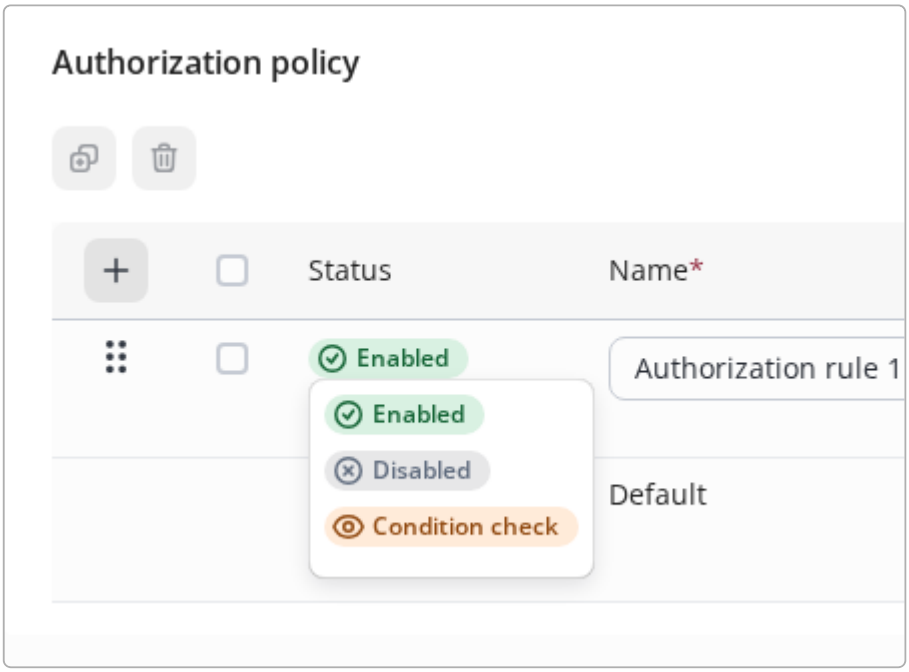


Figure 290. Authorization Policy. Change policy status

The `Save` button will become available only after adding at least one fully configured authentication policy and authorization policy.

Click the `Save` button.

Editing policies

Policies are edited by clicking on the corresponding setting field.

After this, you need to click the `Save` button.

Deleting policies

To delete one policy rule click on the ⋮ button and select the **Delete** action.

To delete multiple rules, select them using ☐ and then click 🗑 above the table of rules.

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

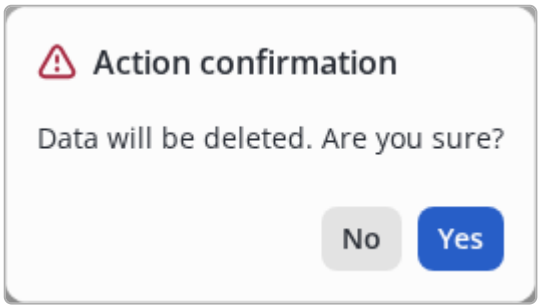


Figure 291. Modal dialog for confirmation

Profiling

Profiling is the process of dynamically detecting and classifying endpoints based on attributes obtained from various sources (probes). During profiling, collected attributes are matched to pre-created or user-defined conditions, which are then matched to profiles to assign them to an endpoint.

Contains sections:

- Profiling conditions - conditions defining how the collected attributes should be interpreted to classify the endpoint;
- Profiling policies - a set of rules that are used to automatically classify and control access to endpoints based on profiling results;
- Logical profiles - - combining certain profiling policies into a logical group for more convenient use in policy sets.

Profiling conditions

Description

Logical _profiling conditions _are the main elements used in profiling policies. They determine whether endpoint matches a certain attribute, based on which its type, model, manufacturer, operating system, and other attributes can be inferred.

The algebra of logic underlies the creation and processing of logical profiling conditions. The result of the condition is "True" or "False". Each profiling condition can contain only one attribute.

View a list of profiling conditions

This page contains a table listing all profiling conditions.

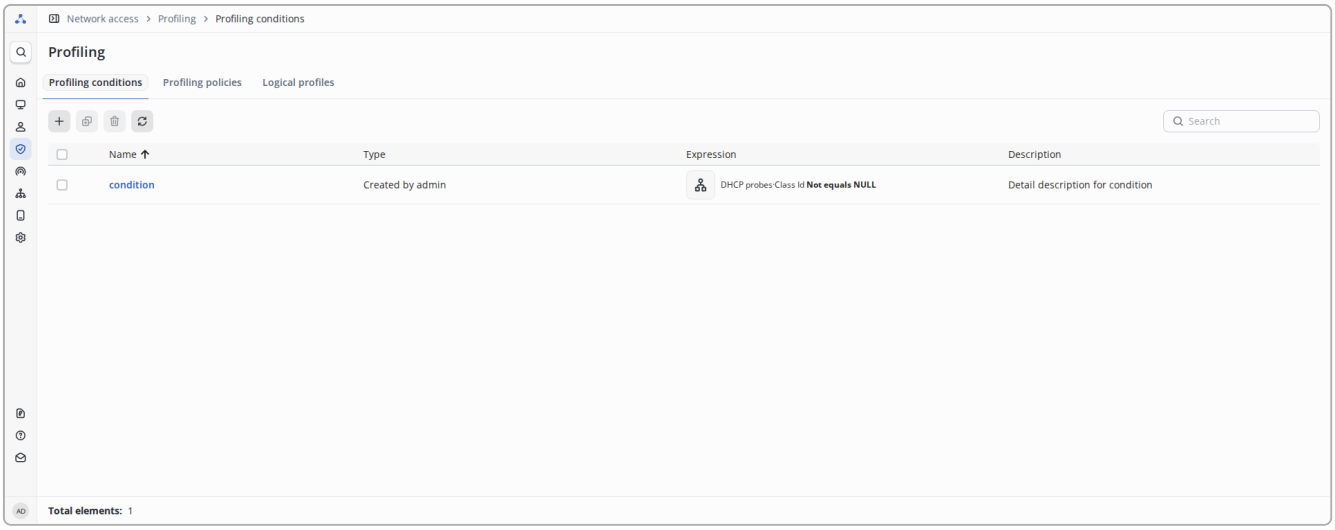


Figure 292. Profiling conditions table

The table contains columns:

- `Name` - name of profiling condition.
- `Type` - profiling condition type. Can be "System" or "Created by admin". System conditions are preset and cannot be deleted or changed.
- `Expression` - logical condition describing the criterion by which profiling will be performed.
- `Description` - arbitrary description of the profiling condition.

Sorting is only possible for the "Name" field in forward and reverse order. By default, sorting is performed in direct (alphabetical) order.

Controls:

- — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding a Profiling Condition

To add a profiling condition, click in the upper left part of the field above the table.

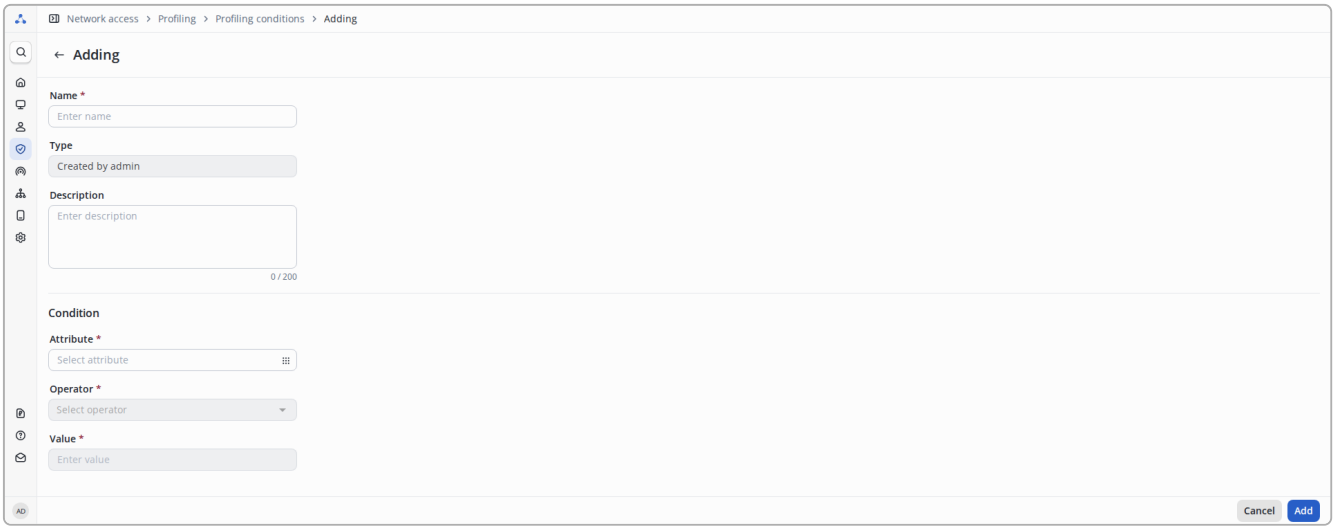


Figure 293. Profiling condition addition page

The page that opens contains the following parameters:

- `Name` * - Name of the profiling condition. Maximum login length is 100 characters.
- `Type` - Profiling condition type. Cannot be set and is always set to "Created by admin".
- `Description` - arbitrary description of the profiling condition. Maximum length - 200 characters.

Condition - block responsible for setting the profiling condition.

- `Attribute` * - at the click of a button a dictionary for adding an attribute will open in the left field.
- `Operator` * - selected logical condition operator. Can take values (depending on the attribute value type):
  - "Contains" / "Not contains"
  - "Ends with" / "Not ends with"
  - "Starts with" / "Not starts with"
  - "Equals" / "Not equals"
  - "Equals NULL" / "Not equals NULL"
  - "Matches" (*full* string match, case sensitive)
- `Value` * - value that is used to match the logical condition attribute in accordance with the selected operator. For an attribute that assumes predefined values, the value is selected from the list

Parametres marked with * is required.

Attribute selection menu

To select the attribute that will be used in the condition, click - the attribute selection menu will open.

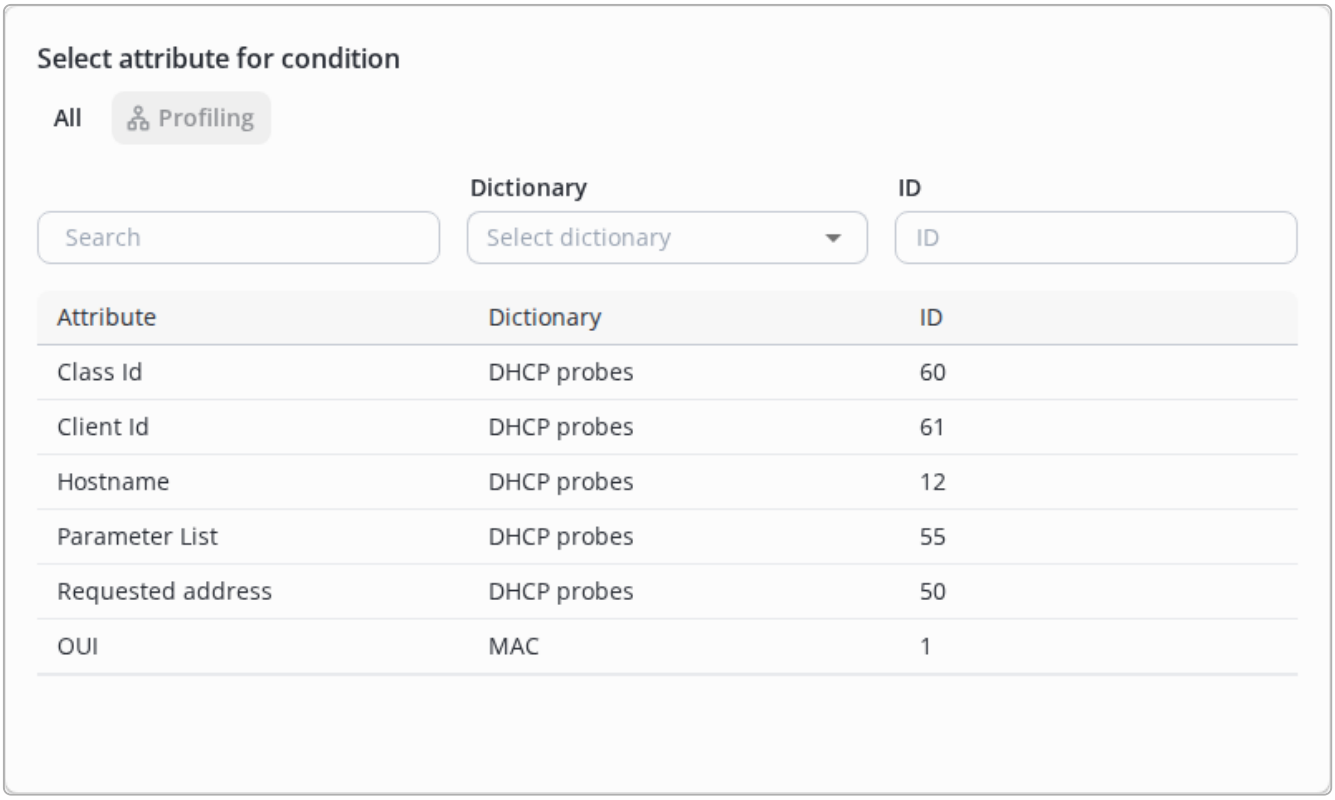


Figure 294. Attribute selection menu

Only attributes of dictionaries of the "PROFILING" type are available for selection. This type of dictionary is indicated by an icon .

At the top there is a list that allows you to filter attributes:

- `Attribute` - attribute name.
- `Dictionary` - the name of the dictionary, made in the form of a drop-down list. The "DHCP probes" and "MAC" dictionaries are available for selection. Also, available for selecting "Not selected" if you want to refuse filtering.
- `ID` - attribute ID (numeric value).

Editing a profiling condition

To edit a profiling condition, click on its name on the list page.

Figure 295. Hyperlink to profiling condition edition page

After this, the editing page will open.

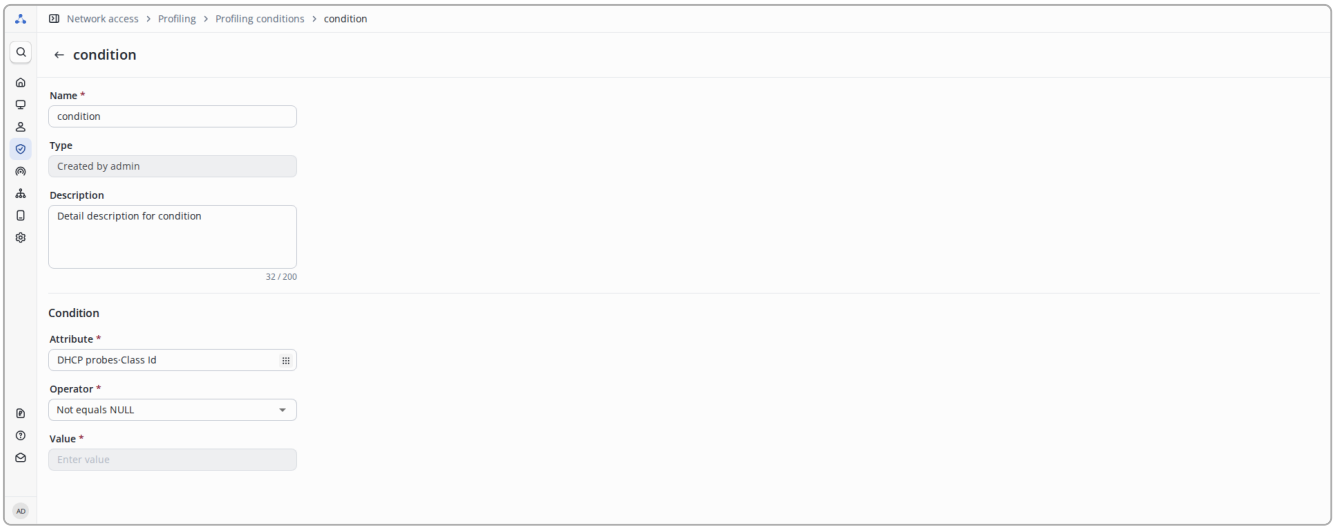


Figure 296. Profiling condition edition page

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Copy profiling condition

A new profiling condition can be created based on an existing one.

To do this, select one of the existing conditions using the checkbox and click on . In the window for adding a condition that opens, all fields are filled with values from the selected condition. By default, "_copy" is added to the value in the `Name` field. You can choose any other name that is not already used in the system.

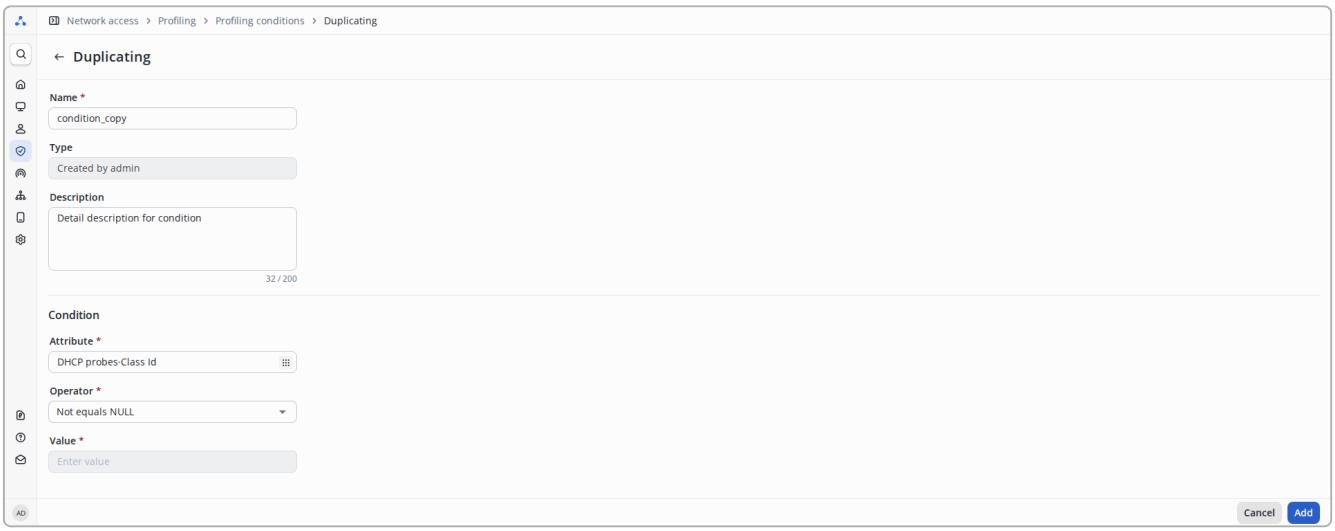


Figure 297. Profiling condition copy page

Once copied, the condition has no relation with the original condition. These conditions exist and work independently of each other. This is just filling out the fields at the time of adding.

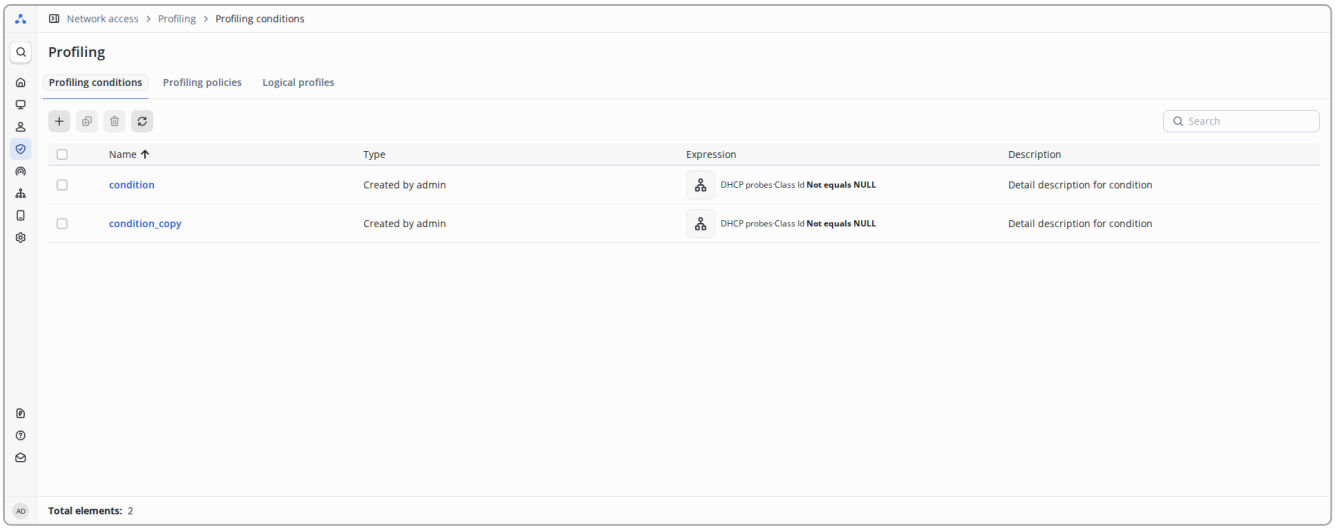


Figure 298. Profiling conditions table after condition copied

Deleting Profiling Conditions

To delete, in the list window, select the checkbox to the left of the name of the profiling conditions that you want to delete and click the button top left.

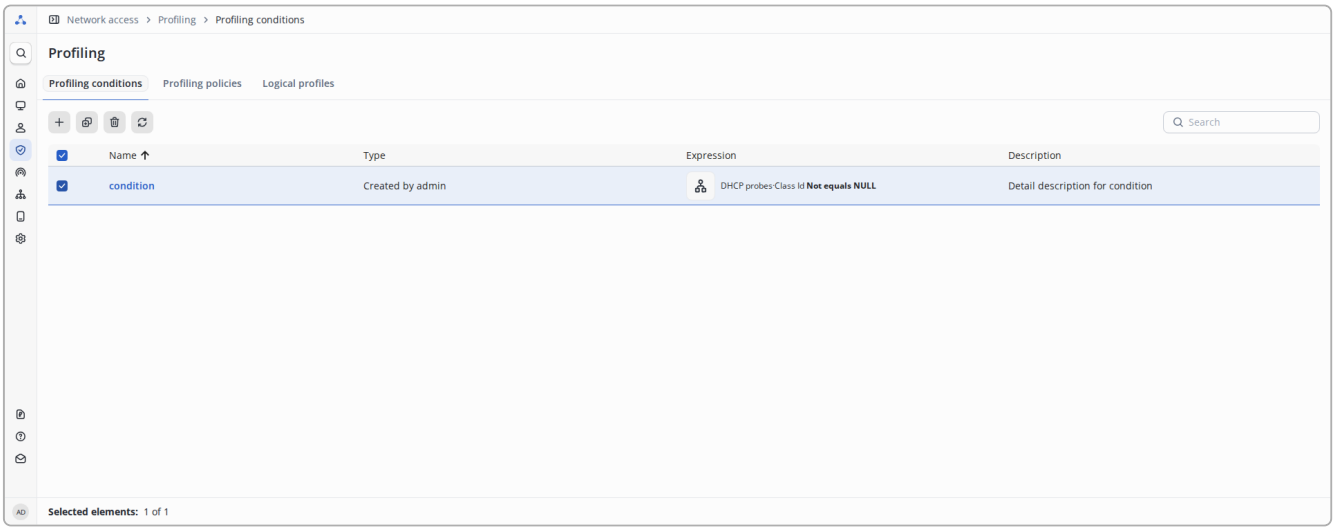


Figure 299. Selecting conditions for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

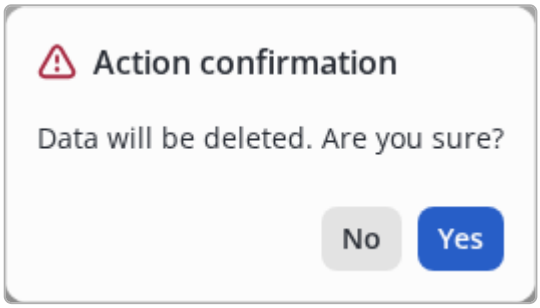


Figure 300. Modal dialog for confirmation

Restrictions:

You cannot delete a profiling condition that is already assigned to a profiling policy.

Profiling policies

Description

Profiling policies are designed to dynamically classify new and existing endpoints connected to the network. For classification, profiling conditions are used, based on which a profiling policy is defined and assigned to an endpoint. It can be used in authorization policy conditions to grant access in accordance with a specific policy. Also, based on the profiling policy, an endpoint is placed in a selected group of endpoints.

For example, based on profiling conditions, you can define an endpoint as a device of a certain type and manufacturer (for example, an Eltex IP phone), and configure an authorization policy to issue specific VLANs and ACLs to these devices.

The process of defining and assigning a profiling policy to an endpoint according to the conditions defined for it in the policy is called "Endpoint Profiling".

For endpoints that have a manually assigned “Profiling Policy” or “Endpoint Group” these values cannot be changed based on the results of profiling.

View profiling policies

This page allows you to view and manage profiling policies. Profiling policies have a hierarchical structure, which is necessary for grouping endpoints.

The left part of the window contains a tree of profiling policies, in which you can select a policy to view or edit.

The right part of the window displays a form for creating/editing a profiling policy. If the `All policies` item is selected in the tree, a table with a list of all profiling policies is displayed in the right part of the window.

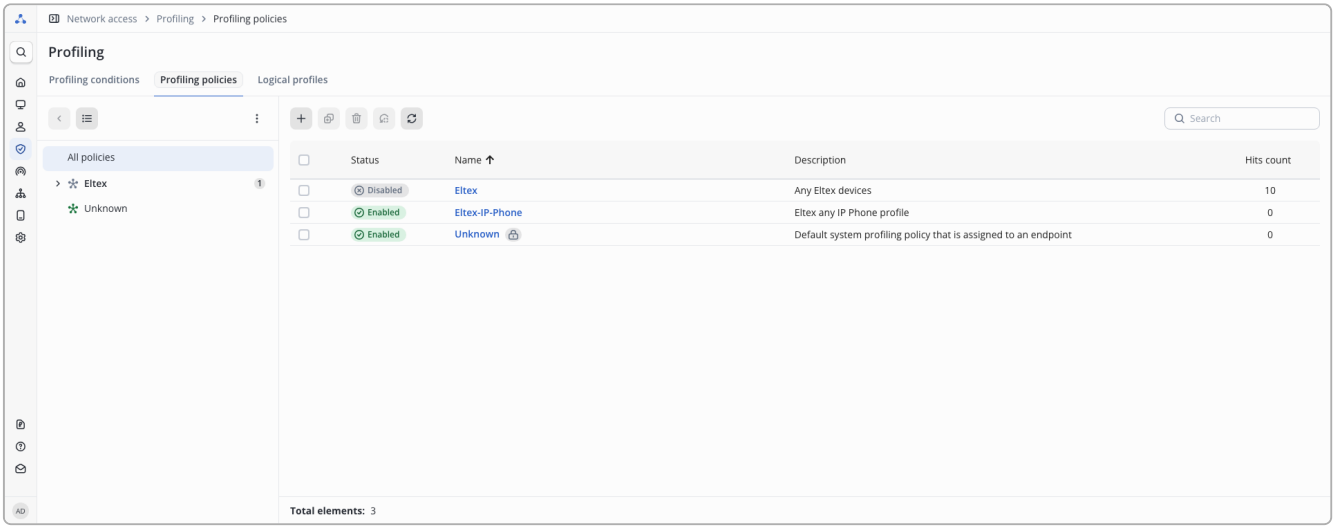


Figure 301. View profiling policies

View a tree or list of profiling policies

The profiling policy tree is located on the left side and displays a list of profiling policies in the form of a tree structure or as a list of child profiling policies of the selected node - the display method can be switched, the default display is in the form of a tree structure.

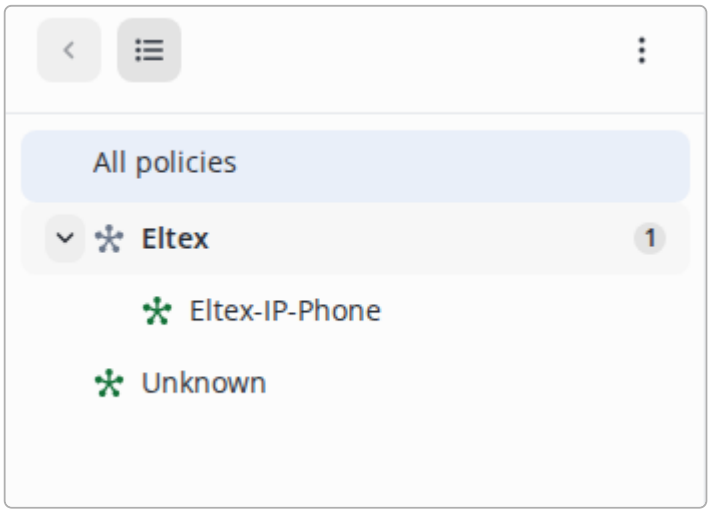


Figure 302. Tree of profiling policies

Contains the following control elements:

- - display mode in the form of a tree structure of profiling policies (to switch the mode to the opposite, click on the icon).
- - display mode in the form of a list of child profiling policies (to switch the mode to the opposite, click on the icon).
- - adding/duplicating/deleting a policy. The selection of available actions depends on the selected item in the policy tree.
- - moving to a higher level from the current policy (active only in the list of child policies mode, when you are in a child policy).
- - in tree structure mode, displayed to the left of the profiling policy name if the list is closed. Inactive if there are no child elements. In list mode, displayed to the right of the profiling policy name that has child elements.
- - in tree structure mode it is displayed to the left of the name of policies that have child elements, if list is expanded.
- - element for designating a profiling policy.

`All policies` - title of the list of policies. When you select this element, a “flat” list of all profiling policies will be displayed on the right side of the window. Selected by default when you go to the profiling policies page.

`Unknown` is a system profiling policy that is used to profile endpoints that are not covered by other profiling policies. Cannot be edited. You also cannot create child policies for it.

View a list of profiling policies

A list of all profiling policies is displayed on the right side of the page in the form of a table if the "All policies" item is selected in the profiling policies tree.

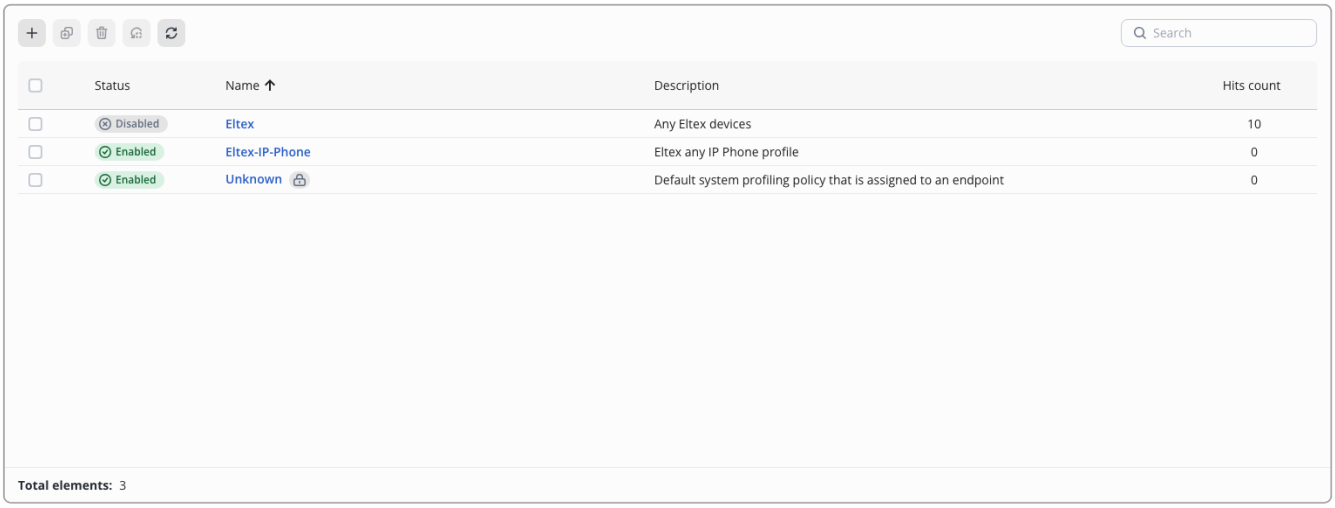


Figure 303. Table listing all profiling policies

The table contains columns:

- `Status` - current status of the profiling policy can take the values Enabled or Disabled.
- `Name` - name of the profiling policy.
  - - This entity is system and cannot be deleted or edited.
- `Type` - type of profiling policy. The possible value is "Created by admin" or "System".
- `Description` - description of the profiling policy.
- `Hits count` - the count of checks for endpoint compliance with the profiling policy.

Sorting is possible only for the “Status” and “Name” fields in forward and reverse order. By default, sorting is performed in direct (alphabetical) order by the "Name" field.

Controls:

- — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.
-

- Reset the counter of hits in the profiling policy. Becomes active if at least one item in the list is selected and the count of hits under the policy is greater than 0.

Adding a profiling policy

There are two ways to add a profiling policy:

- via the profiling policy tree: click the icon ⋮ above the tree and select "Add root policy" if the "All policies" item is selected, or "Add child policy" if a profiling policy is selected.

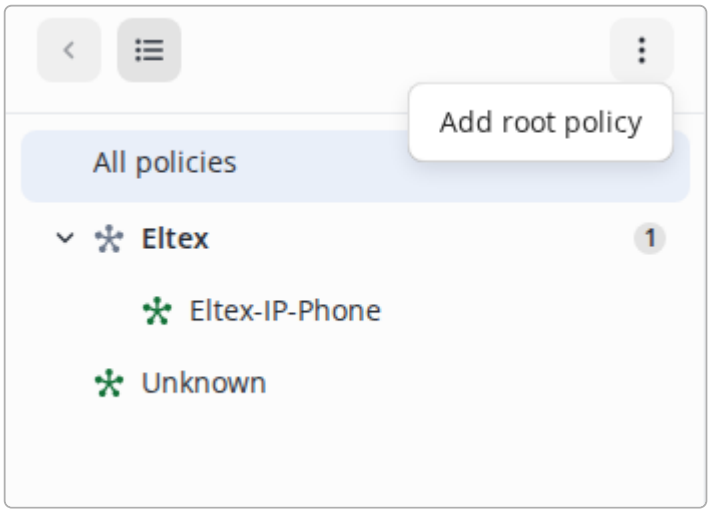


Figure 304. Adding a profiling policy. Actions

- via the profiling policy table: click the icon + in the upper left part of the field above the table.

If you select a policy using the checkbox and then click the create icon, it will become the parent of the new policy.

For the system profiling policy "Unknown", adding child policies is prohibited.

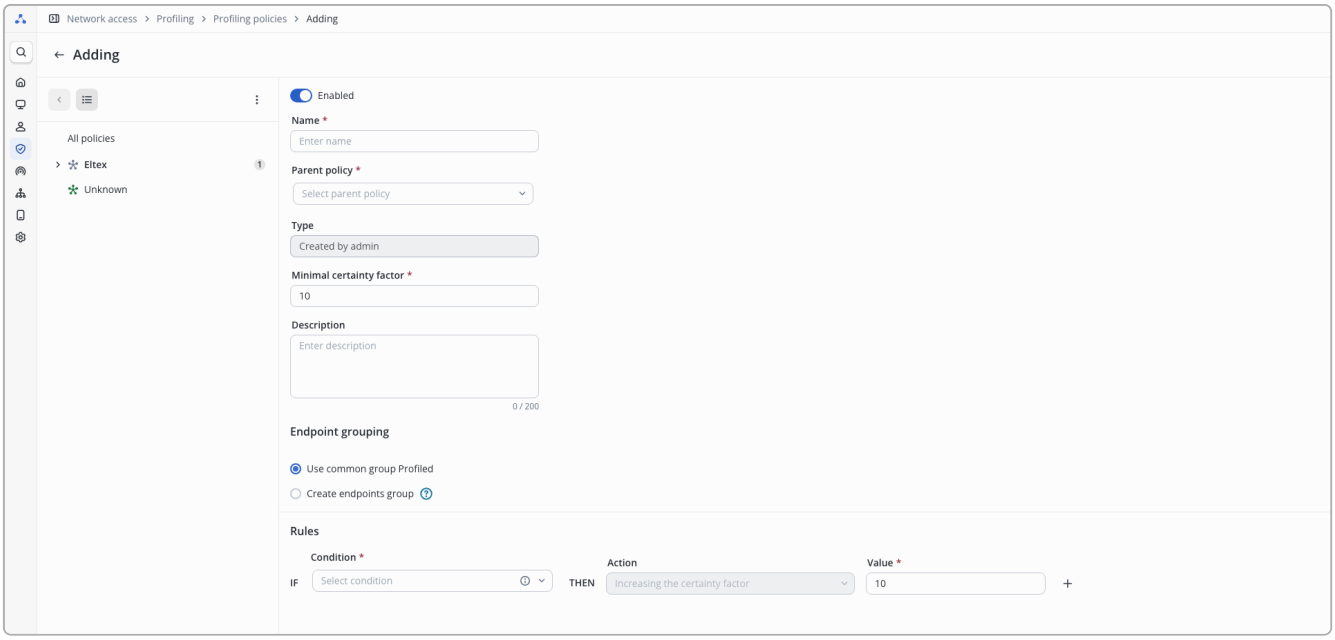


Figure 305. Adding a profiling policy

As a result, the policy editing section will open on the right side of the page, containing the following parameters:

- `Status` - status of profiling policies. Can take the values "Enabled" and "Disabled". The default value is "Enabled".
- `Type` - type of profiling policy. All manually created profiling policies are set to "Created by an administrator" and cannot be changed.
- `Name` * - name of the profiling policy. Maximum length is 100 characters.
- `Parent policy` - parental profiling policy. You can select a parent profiling policy from the drop-down list or select nothing to create a root profiling policy. When creating a profiling policy from the policy tree by selecting "Add child policy", the profiling policy selected in the tree will be automatically substituted, which can be changed if necessary.
- `Minimal certainty factor` * - the minimum number of points that must be achieved in the rules for a policy to be considered suitable. Cannot be greater than the sum of the values of all trust levels configured in the Rules section. Can take values from 1 to 65535.
- `Description` - arbitrary description of the profiling policy condition. Maximum length is 200 characters.
- **Endpoint grouping** - section that defines the principle of grouping endpoints.
  The following values can be selected:
  - `Use common group Profiled` - this choice is available and displayed only for the root profiling policy. Endpoints classified as belonging to this profiling policy will be placed in the "Profiled" system endpoint group.
  - `Use parent policy endpoint group` - this choice is available and displayed only for child profiling policies. Endpoints classified as belonging to this profiling policy will be placed in the group specified in the parent policy. If no groups are specified for parent policies, the endpoints will be placed in the "Profiled" group.
  -

`Create endpoints group` - automatically create a group of endpoints using the name of the profiling policy. Endpoints classified as belonging to a given profiling policy will be placed in this group.

- **Rules** - section of the rules responsible for setting up the classification of endpoints using profiling conditions. Contains parameters:
  - `Condition` * - menu for selecting profiling conditions.
  - `Value` * - the value of points that will be assigned to the endpoint if the profiling condition matches.
  - `+` - the icon is located to the right of the profiling condition. Clicking this icon below will add a new profiling condition.

Figure 306. Adding rules to a profiling policy

Parameters marked with an asterisk * are required.

A profiling policy must contain at least one rule.

Multiple rules can be added for one profiling policy.

Adding the same rule several times is meaningless and therefore prohibited.

To add a policy, click the `Add` button. The button will become active after all required fields of the profiling policy are filled in.

Editing a profiling policy

Editing the profiling policy is possible in two ways:

- Select a profiling policy in the policy tree on the left and click on it - an editing form will open on the right side.
- In the list of all policies in the “Name” column, click on the name of the policy - you will be taken to the form for editing this policy.

After a profiling policy is added, the `Policy hits count` field and the `Reset count` control are added inside its detail information.

- `Policy hits count` - the count of checks for endpoint compliance with the profiling policy.
- - reset the counter of profiling policy hits. Becomes active if the count of hits under the policy is greater than 0.

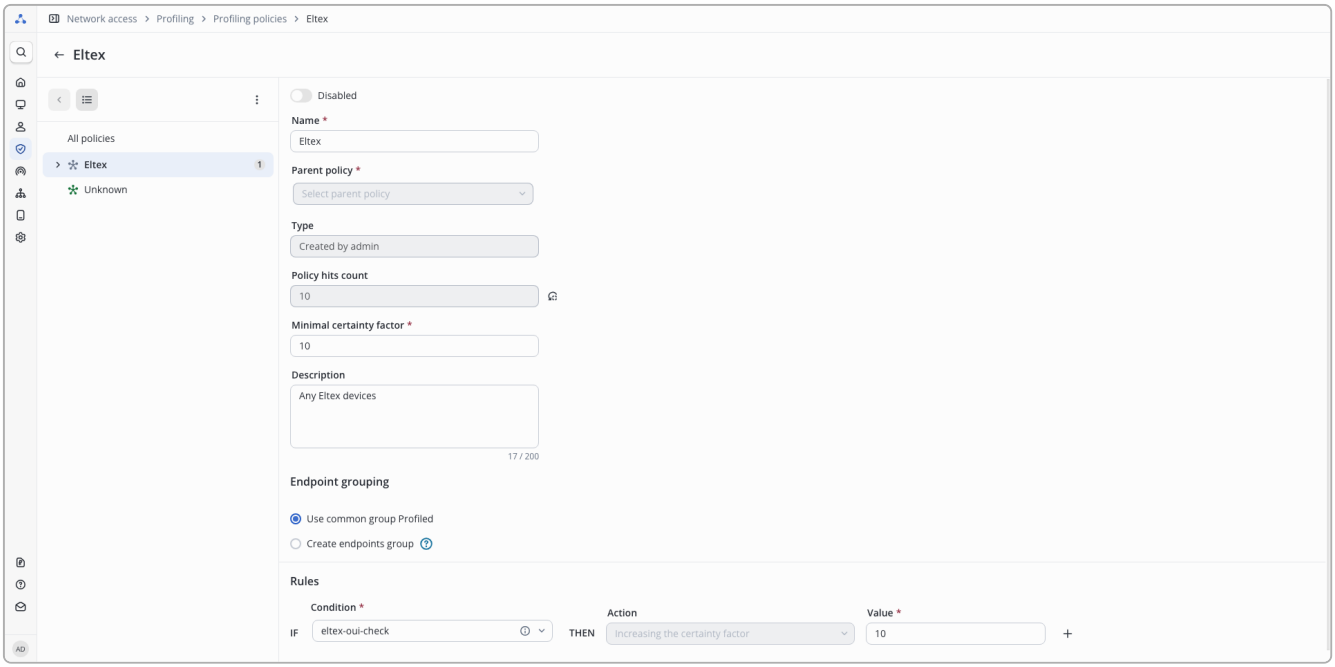


Figure 307. Editing a profiling policy

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Copying profiling policies

A new profiling policy can be created based on an existing one. This can be done in two ways:

- In the policy tree, select one of the existing profiling policies and click the icon ⋮. In the list of available actions, select menu "Duplicate policy".
- In the list of all policies, select one of the existing profiling policies and click the icon .

> The action is not available if more than one policy or "Unknown" is selected.

In the added policies tab that opens, all fields will be filled with values from the selected policy. By default, "_copy" is added to the value in the `Name` field. You can choose any other name that is not already used in the system.

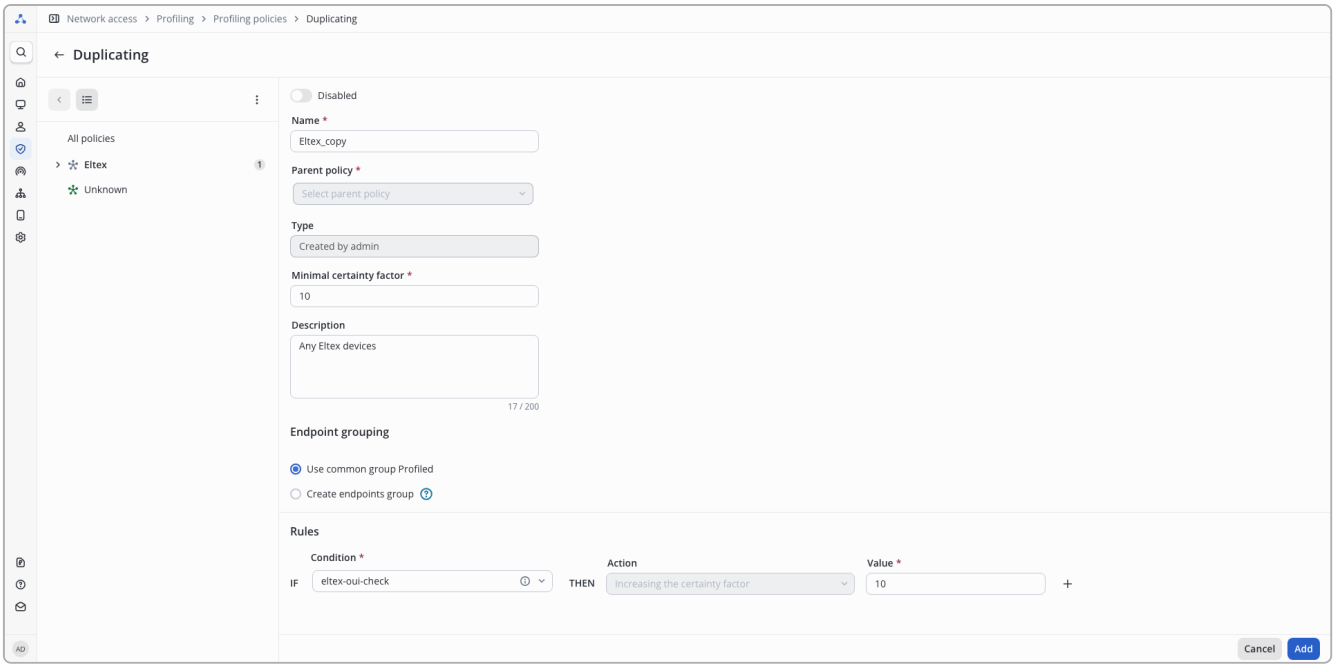


Figure 308. Copying profiling policy

Once copied, the profiling policy has no connection with the original one. These profiling policies exist and work independently of each other - the original one is used to fill in the fields of the new one at the time of adding.

Removing profiling policies

Deleting profiling policies is possible in the policy tree on the left and in the list of all policies on the right.

- To delete profiling policies in the tree, you need to select the policy and click on the icon ⋮. In the list of available actions, select "Delete policy". In the policy tree, you can delete only one profiling policy.
- To delete in the window with a list of all policies, select the checkbox to the left of the name of the profiling policies that you want to delete, and click the button 🗑 at the top left. You can select multiple profiling policies for deletion.

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

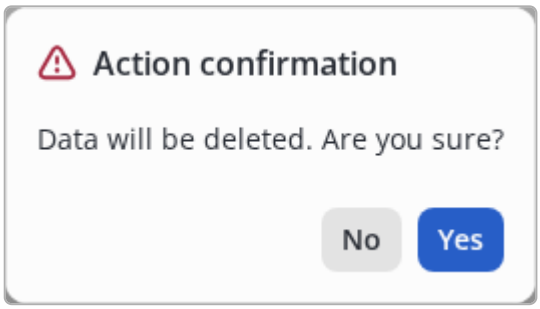


Figure 309. Modal dialog for confirmation

Restrictions:

- You cannot delete a profiling policy that is used in any logical profile.
- You cannot delete a profiling policy that is used in any logical condition or authorization policy condition.
- The system profiling policy "Unknown" cannot be deleted.

Description of the profiling process

How the certainty factor works

The profiling policy checks whether the conditions added to the `Rules` section match the existing endpoint profiling data:

- For the MAC OUI profiling condition, the vendor MAC name and the value specified in the settings are determined (according to the operator selected). If the check is successful, the endpoint certainty increase the value specified in the `Value` column (10 by default).
- For DHCP profiling conditions, the presence of the corresponding DHCP attribute and its compliance with the specified in the profiling condition are checked. If the check is successful, the endpoint certainty level is increased by the value specified in the `Value` column (default 10).
- After checking all the rules configured in the profiling policy, the value of the endpoint certainty level is generated. This certainty level is the sum of all values specified in the profiling conditions to which the checking endpoint samples match.
- The obtained endpoint certainty level is compared with the value specified in the `Minimal certainty factor` value of the profiling policy.
- If the minimum certainty level of a profiling policy is less than or equal to the certainty level obtained from the endpoint check, the endpoint is considered to be compliant with the policy and is assigned the profiling policy and the endpoint group specified in profiling policy settings.

The certainty level is identified only within one profiling policy, for which the endpoint compliance check is performed. No values from other policies are used!

How the endpoint is checked against profiling policies

An endpoint profiling process contains:

- The root level of profiling policies looks for a suitable profiling policy endpoint from the added by the system user.
- If the endpoint does not match under any profiling policy added by the system user or they are not configured: the default profiling policy * Unknown * is assigned and the endpoint is placed in the * Unknown * group, after that the profiling process ends there.
- If a suitable profiling policy added by the system user is found, it checks if it has child profiling policies - if its do not exist, the endpoint is assigned the found profiling policy and the group specified in its `Endpoint grouping` setting. If the root policy is set to 'use common group Profiled', the endpoint is placed in the * Profiled * system group. The profiling process ends there.
-

If the profiling policy has child policies, the endpoint matches the child policies. If the endpoint does not match any of the child policies, the check stops, the parent policy is assigned to the endpoint, and the group from the parent policy settings.

- If an endpoint matches someone child policy, it is assigned this profiling policy and a group from the settings of this policy. If the `Use parent policy endpoint group` setting is selected in the child policy, the group is assigned according to the parent policy settings.

Restrictions of profiling policy settings

There are the following limitations to consider when configuring profiling policies:

- Multiple policies that an endpoint can match cannot be configured at the same level of root or child profiling policies! In such a situation, it is necessary to change the settings of the profiling policies in order to ensure that only one of them can profiling each endpoint at level! To more detail profiling endpoints, use child policies.
- Within one profiling policy, the minimum trust level cannot be greater (but can be less than or equal to) than the sum of all trust levels specified in its rules.
- After disabling a profiling policy, its child policies are also no longer used for profiling, even if they are enabled.
- The default **Unknown** policy cannot be deleted or changed. Child policies cannot be created for it.
- If the endpoint does not match the requirements of any configured profiling policies, it is considered to comply with the default policy * Unknown *.
- If an endpoint has manually assigned a profiling policy or an endpoint group, those setting cannot be changed based on the results of profiling. To resume auto-profiling disable manual policy assignment or manual group assignment.

Logical profiles

Description

Logical profiles combine core profiling policy into a form that can be used as the basis for authorization policy, allowing for a simpler structure and fewer rules in view. For example, the logical profile "Printers" may contain profiling policies "HP Printers", "Xerox Printers" and "Canon Printers". A single profiling policy can consist of several different logical profiles.

Viewing Logical Profiles

This page contains a table listing all logical profiles.

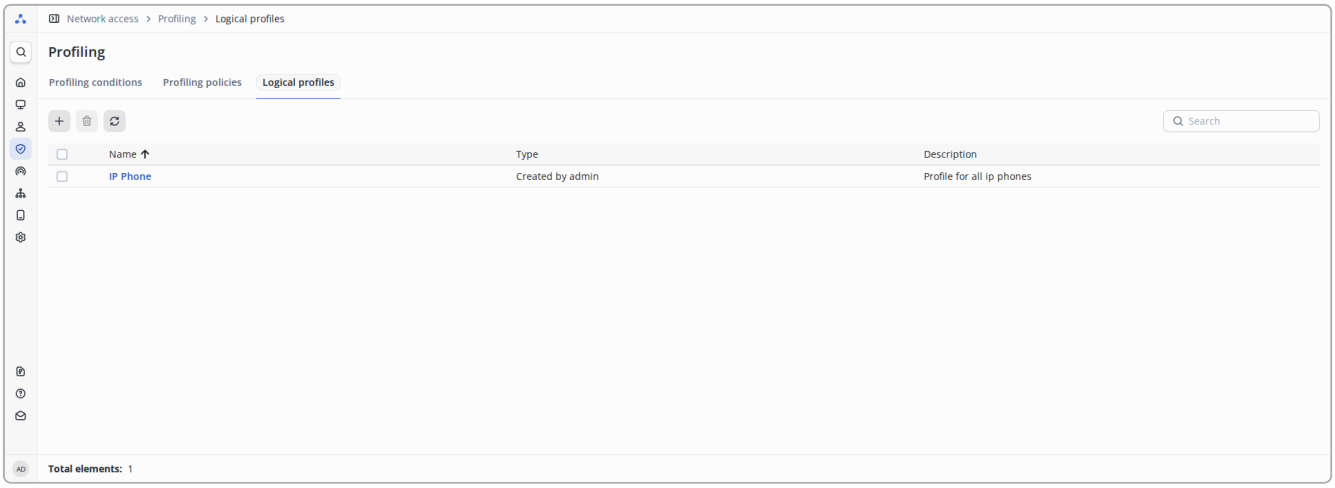


Figure 310. Logical profiles table

The table contains columns:

- `Name` - name of the logical profile.
- `Type` - type of logical profile. Can be "System" or "Created by admin". System conditions are preset and cannot be deleted or changed.
- `Description` - arbitrary description of the logical profile.

Sorting is only possible for the "Name" field in forward and reverse order. By default, sorting is performed in direct (alphabetical) order.

Controls:

- — Add a new element.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).
- — Change the current sort order.
- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding a logical profile

To add a logical profile, click in the upper left part of the field above the table.

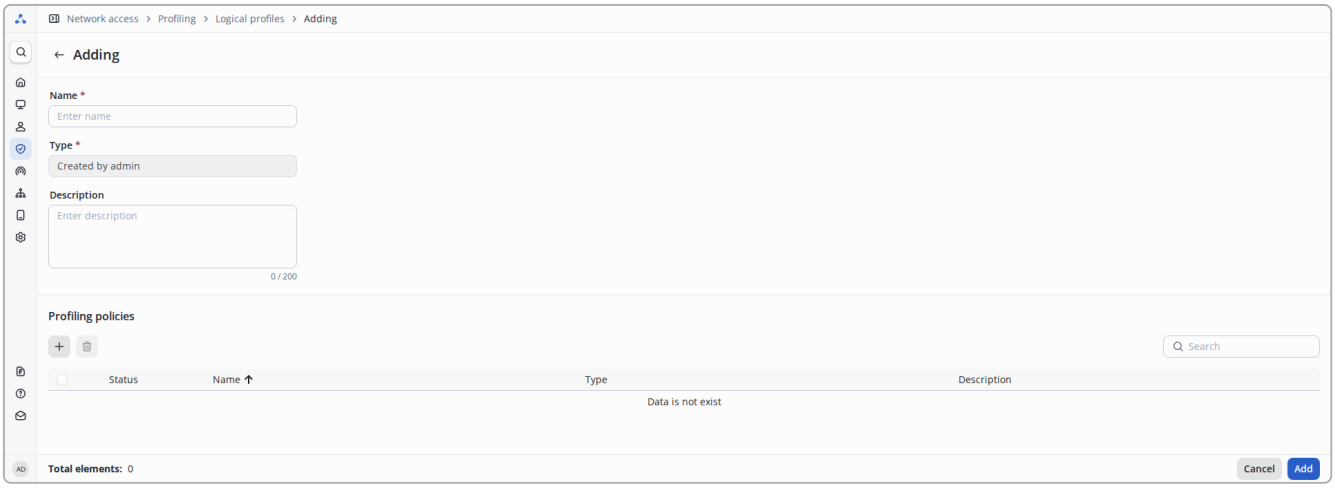


Figure 311. Logical profile addition page

The page that opens presents the following parameters:

- `Name` * - Name of the profiling condition. The maximum login length is 100 characters.
- `Type` - Type of profiling condition. Cannot be set and is always set to "Created by Admin".
- `Description` - arbitrary description of the profiling condition. Maximum length is 200 characters.

Profiling Policies - block responsible for adding/removing profiling policies. For ease of configuration, a list of assigned profiling policies is displayed below in tabular form. The table contains columns:

- `Search` - Performs case-insensitive filtering using the `Name` and `Description` columns: only records that satisfy the filtering condition are displayed.
- + - Add a new element.
- 🗑 - Delete selected elements (inactive until at least one element is selected).
- ↑ - Change the current sort order.
- ☐ - Checkbox, which is responsible for selecting elements to perform further actions (for example, deleting).

Parameters marked with an asterisk * are required.

After adding the required policies, the logical profile can be saved.

A logical profile must contain at least one profiling policy. The "Save" button will be inactive while the list of profiling policies is empty or other required parameters are not filled in.

Add profiling policies to a logical profile

To add profiling policies to a logical profile, click on the icon + at the top left above the table in the **Profiling Policies** section.

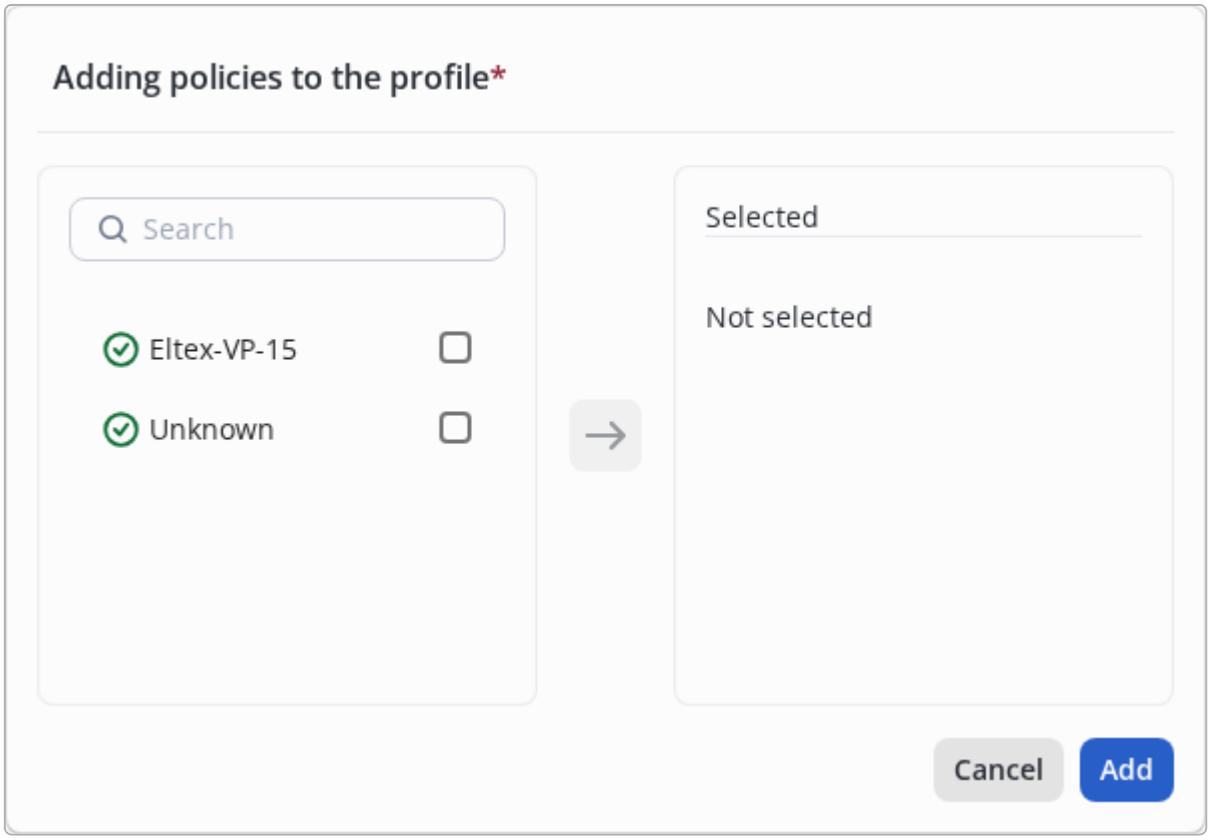


Figure 312. Modal dialog for adding profiling policies

In the left part of the modal window that opens, select the checkbox for the profiling policies that need to be added to the profile. To search for the desired policy, you can enter its name in the `Search` line.

After selecting the desired policies, click the icon →. Profiling policies marked with a checkbox will move to the right side of the modal window. If necessary, the profiling policy on the right side of the modal window can be deleted by clicking on the icon to the right of the name. Once all the desired policies are selected, click the `Add` button to apply the changes.

Added profiling policies will begin to be displayed in the table in the **Profiling Policies** section. The order of the policies does not matter. They are all checked independently of each other.

The `Unknown` system profiling policy cannot be used in a logical profile.

Editing a logical profile

To edit a logical profile, click on its name on the list page.

After this, the editing window will open.

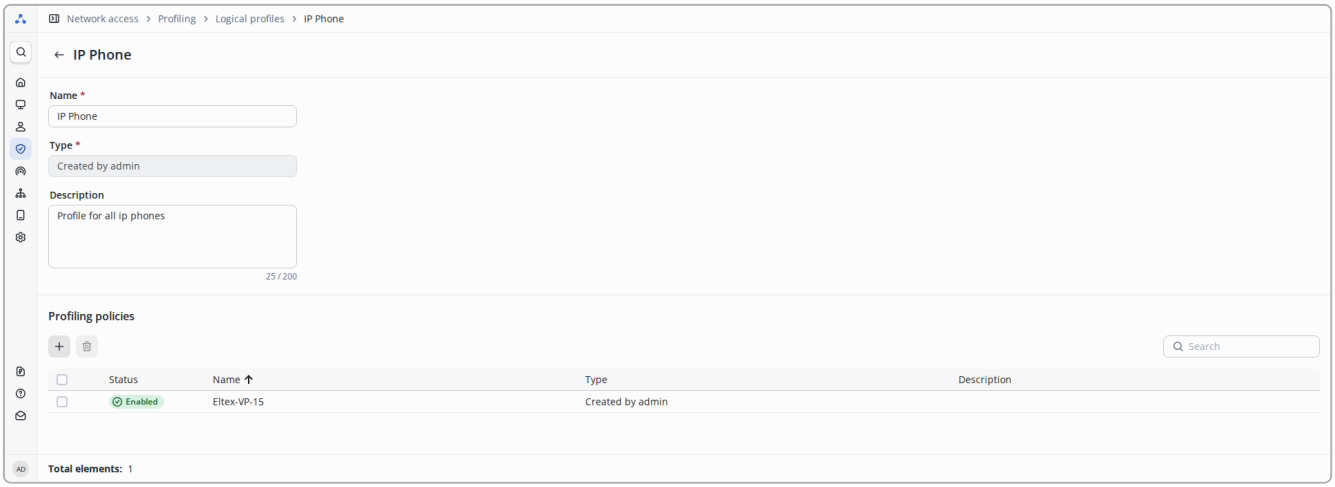


Figure 313. Logical profile edition page

After editing, click the **"Save"** button. The button is hidden until at least one field is changed or the profiling policy set is changed.

The **"Cancel"** button resets the changes made to their original state.

Deleting a logical profile

To delete, in the list window, select the checkbox to the left of the name of the logical profiles that you want to delete, and click the button  at the top left.

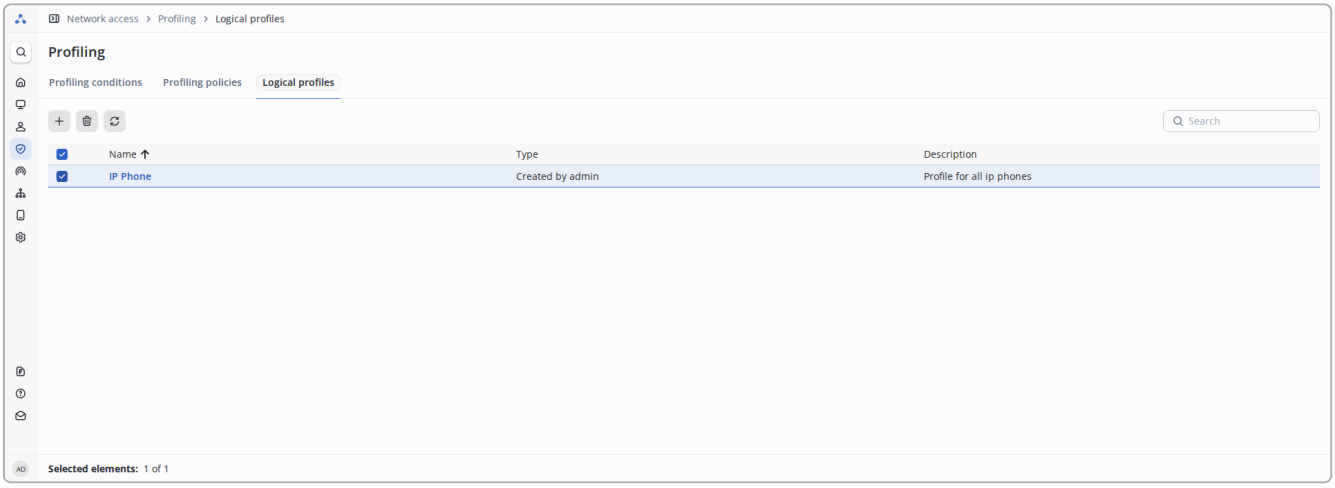


Figure 314. Selecting profiles for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

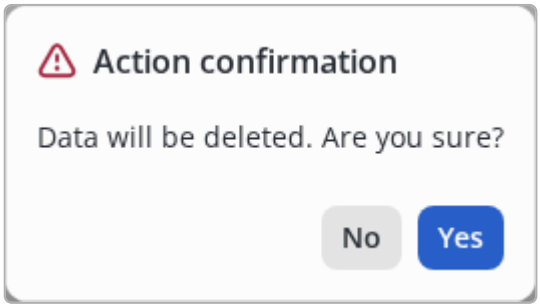


Figure 315. Modal dialog for confirmation

Restrictions:

- You cannot delete a logical profile that is used in any authorization policy.

Guest portals

Guest endpoints

This section provides information about functionality available with the **ADVANCED** level license. To purchase this functionality, contact your manager or write to the e-mail address eltex@eltex-co.ru.

Description

Guest endpoints are endpoints that have passed portal authorization in NAICE. Such endpoints are automatically added to the system and stored for the duration specified in the settings of the portal through which the user connected. If an endpoint is in the list, the corresponding user can connect to the network without portal authorization (authorization will be performed via MAC Authentication Bypass, or MAB).

A guest endpoint's uniqueness is determined by the combination of the client device's MAC address and the SSID (wireless network identifier) through which the device connects. In practice, this means that when the same user connects from different devices, multiple guest endpoints are created — one for each device. Similarly, multiple guest endpoints are added when the same device connects to several different wireless networks.

Unlike common endpoints, guest endpoints with randomly generated MAC addresses are automatically added to the system.

Manual addition or editing of existing guest endpoints is not available.

Viewing the Endpoint List

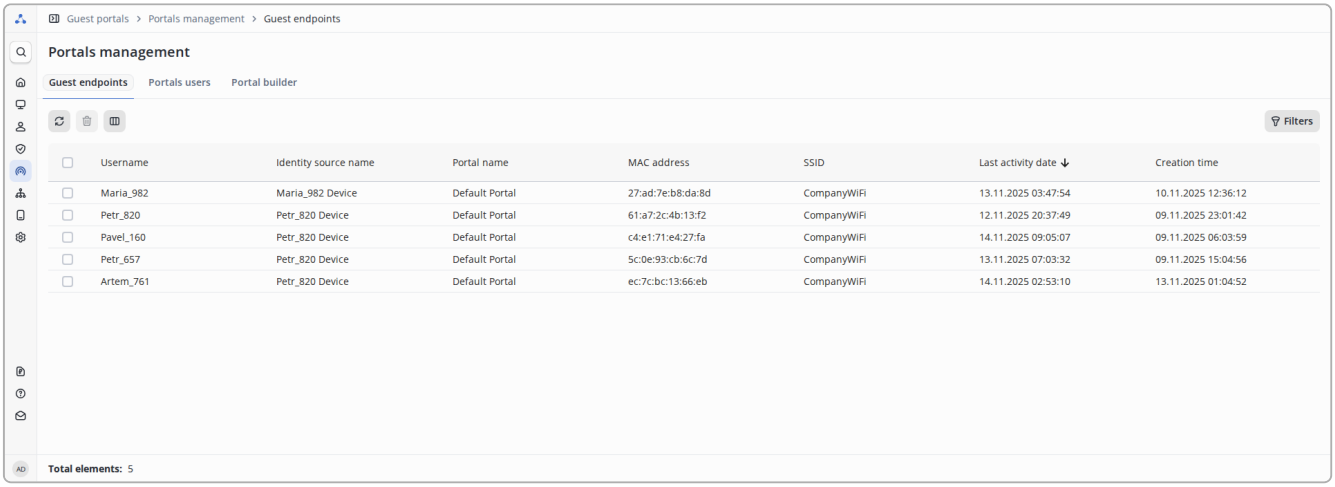


Figure 316. Viewing the Endpoint List

This page contains a table listing all guest endpoints.

By default, the table includes the following columns:

- `Username` – The username with which the endpoint last authenticated.
- `Identity source name` – The source where the user was found during authentication.
- `Portal name` – The portal where the user authenticated.

`MAC address` – The endpoint's MAC address in the format "XX:XX:XX:XX:XX:XX".

- `SSID` – The name of the wireless network to which the user connected during portal authorization.

The network name is obtained from the RADIUS attribute Called-Station-Id, which is expected in the format `<AP MAC address>:<SSID>`, for example: `ec-b1-e0-2b-02-b0:naice-guest-portal-test`.

- `Last activity date` – The time of the endpoint's last authorization or reauthorization.
- `Creation time` – The time of the endpoint's first portal authorization.

Sorting is available in ascending and descending order for all columns except MAC Address. By default, sorting is applied in ascending order by the `Last activity date` column.

The page includes the following controls:

- – Refresh the table data.
- – Configure the table columns' visibility.
- – Delete selected items (disabled until at least one item is selected).
- – Toggle the current sorting order.
- – Checkbox for selecting items to perform further actions (e.g., deletion).
- Filters – Open the filtering settings window for the table data.

Data filtering in the table is configured in the following window:

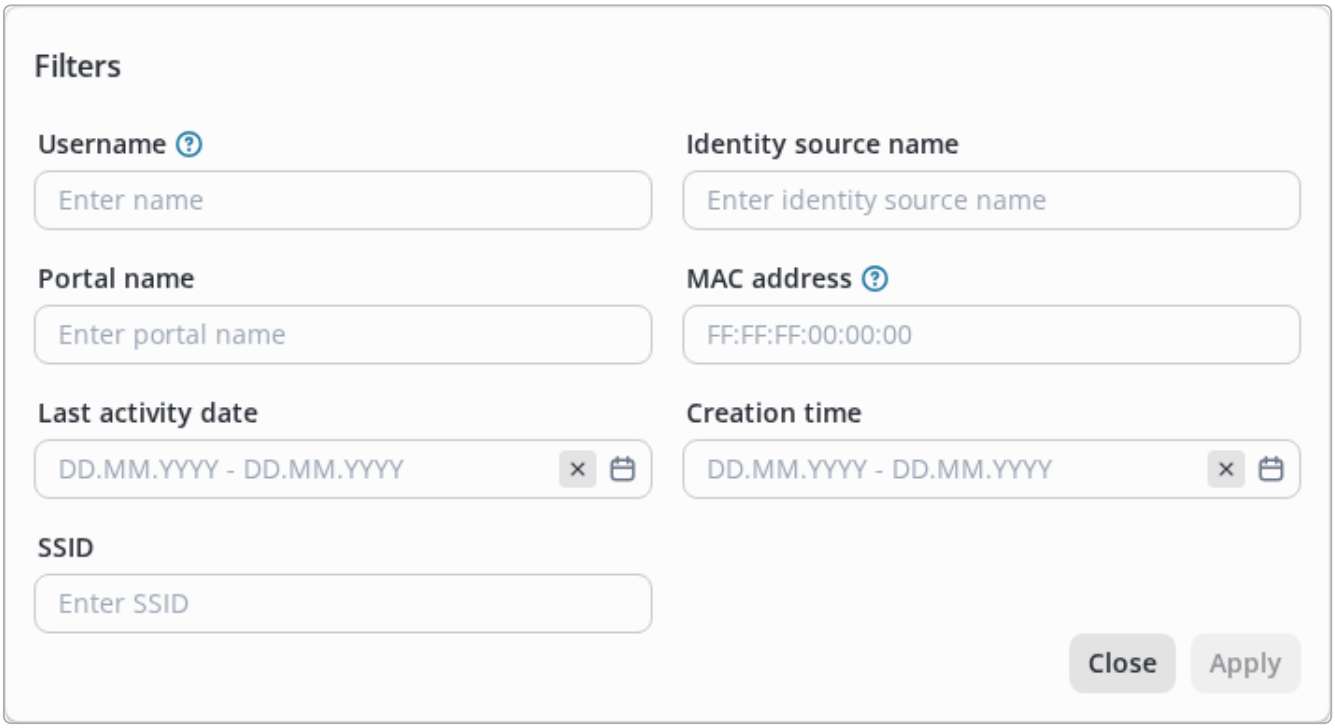


Figure 317. Configuring Table Data Filtering

Filtering is available for all guest endpoint parameters.

In the table settings you can change the set of the displayed columns.

The **Reset all** button is reset displayed columns to their default state.

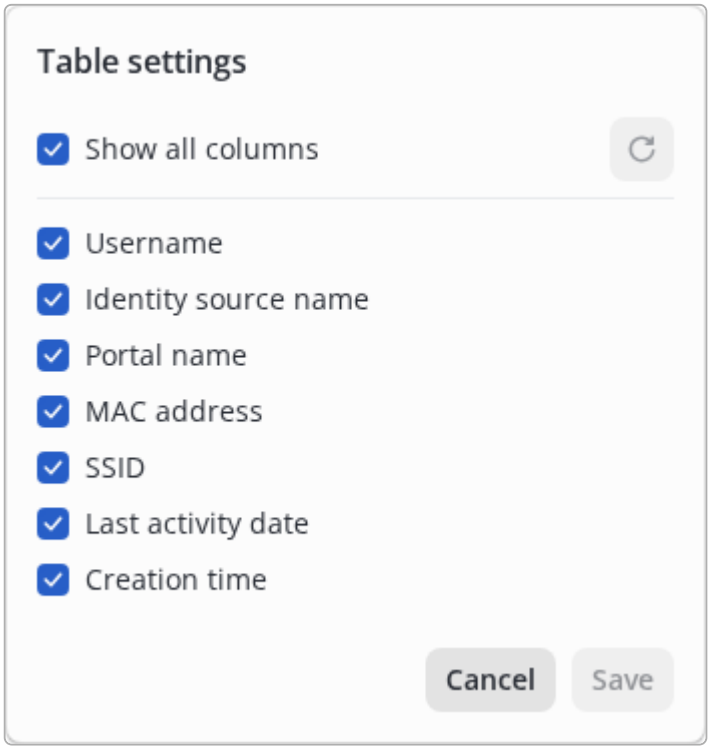


Figure 318. Configuring Visible Table Columns

Deleting an Endpoint

The guest endpoint table is automatically populated during normal NAICE operation as part of endpoint portal authorizations. If an endpoint is deleted, it will be rediscovered upon the next connection attempt. Disabling automatic endpoint learning is not possible.

Deleting a guest endpoint will require the client to reauthorize on the portal upon their next network connection.

To delete an endpoint, go to the viewing page, use the checkbox to select the desired endpoints, and then click in the upper-left corner above the table.

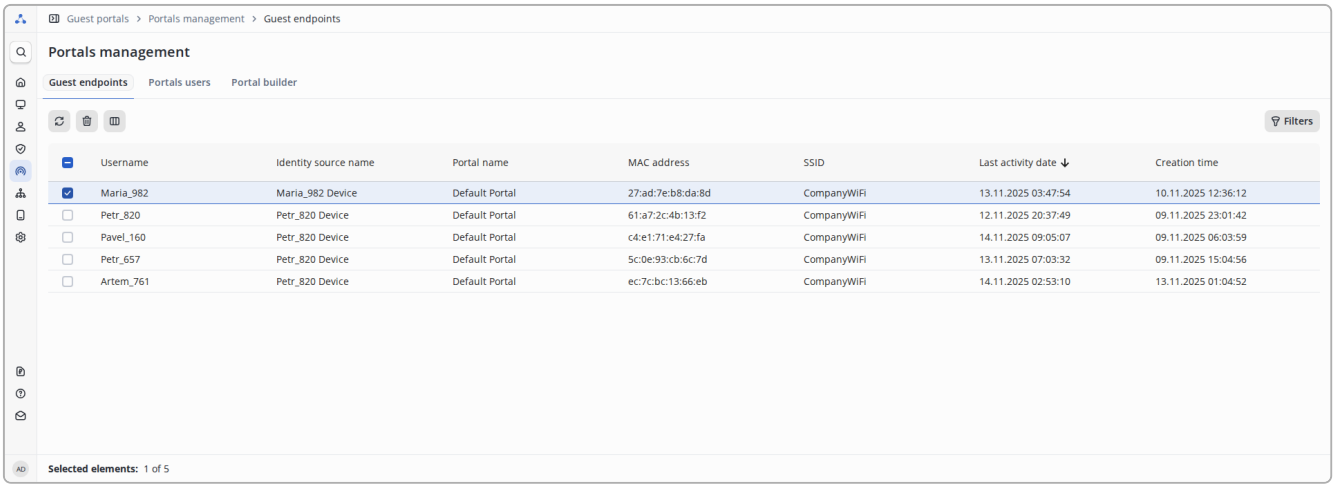


Figure 319. Selecting Endpoints in the Table for Deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

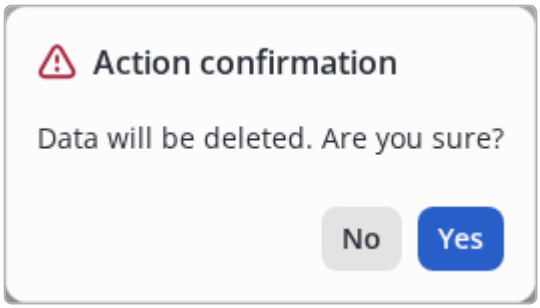


Figure 320. Modal dialog for confirmation

Portal users

This section provides information about functionality available with the **ADVANCED** level license. To purchase this functionality, contact your manager or write to the e-mail address eltex@eltex-co.ru.

Description

Portal users - an internal user source used for portal authentication. When configuring the identity sequence, it appears under the name *Portal*. This source serves as a directory of all guest users regardless of connection success. A user present in this directory can authorize on the network via the specified portal using the provided username and password.

A key feature of portal users is the **self-registration** mechanism - users who log in via phone number using an SMS code (when this method is enabled in portal settings) are automatically added to this list. All account parameters are automatically filled for them. Besides self-registration, portal users can also be added manually.

Portal users are linked to the portal where they logged in or will log in later.

To enable authorization on different portals, a user with the same username and password must be added for each portal.

It is assumed that one portal is used for one wireless network ("**1 portal** = **1 SSID**"). If the same portal is used in multiple wireless networks, a guest user who successfully authenticates on one SSID will be able to authorize on all SSIDs using this portal.
To prevent this, use an additional condition in policy:
`Normalised Radius·SSID Equals <SSID name>`.

System users can view the list of registered portal users, delete individual entries, manually add new accounts, or edit existing ones.

Viewing Users

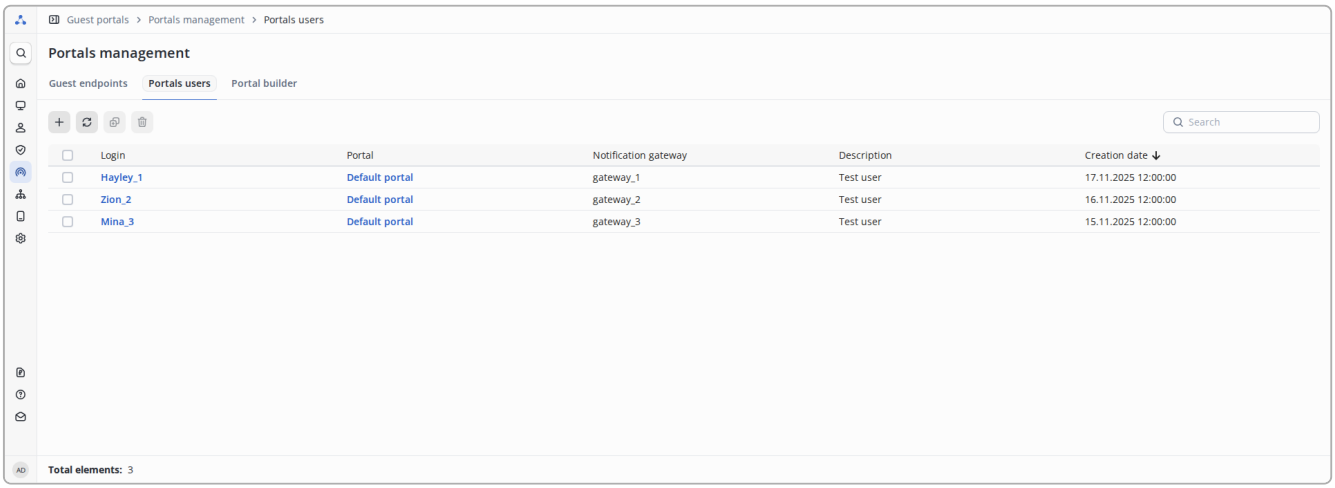


Figure 321. Table of guest users

This page contains a table listing portal user credentials.

The table includes columns:

- `Login` - username (must be unique for the specified portal);
- `Portal` - portal the user is linked to;
- `Notification gateway` - which notification gateway was used for self-registration;
- `Description` - optional user description;
- `Creation date` - automatically populated field with time of self-registration or manual user addition.

Sorting (ascending/descending) is available for the `Creation date` column. By default, sorting is in descending order.

Controls:

- — Add a new element.
- — Duplicate chosen element. Becomes active if only one element in the list is selected.
- — Delete selected elements (inactive until at least one element is selected).
- — Refresh table data.
- — Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).

— Change the current sort order.

- `Search` — Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

Adding Users

To pre-create an account for portal authentication via username/password, click + in the left field above the table.

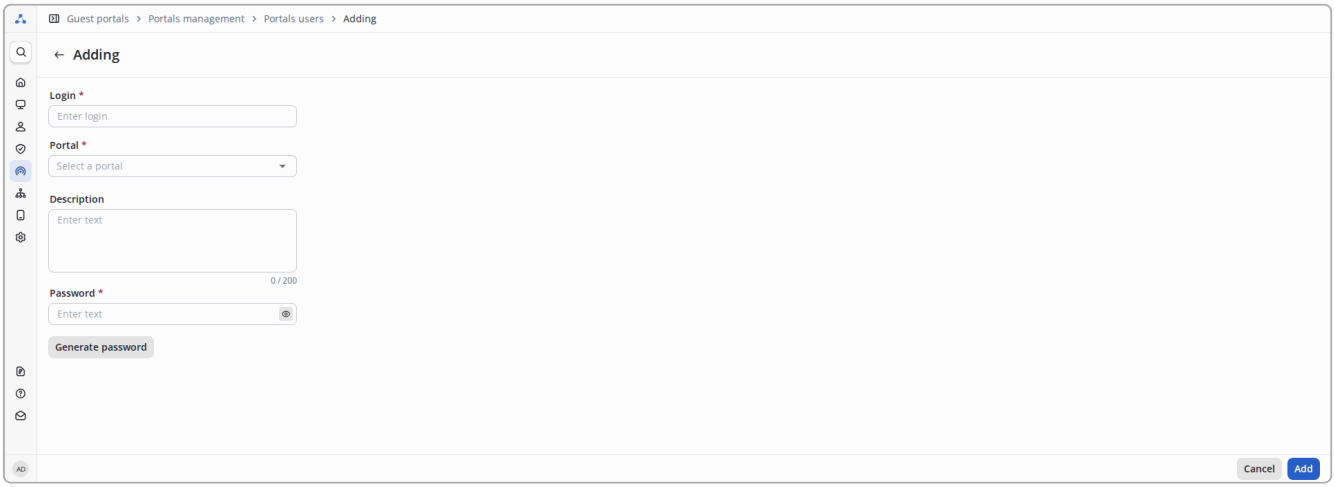


Figure 322. User addition page

The page contains these parameters:

- `Login` * - username. Must be unique per portal. Maximum length: 100 chars.
- `Portal` * - portal the user is linked to. Credentials only work for authorization on wireless networks using this portal.
- `Description` - optional description. Maximum length: 200 chars.
- `Password` * - user's password. Minimum length: 4 chars, maximum: 100 chars. Click to toggle password visibility (hidden by default). Random password can be generated via *Generate Password* button and copied via

Fields marked with * are required.

To add the user, click **Add**. To cancel and return to view page, click **Cancel**.

Editing Users

To edit an existing user, click their username in the table on view page.

An editing page will open, similar to addition page.

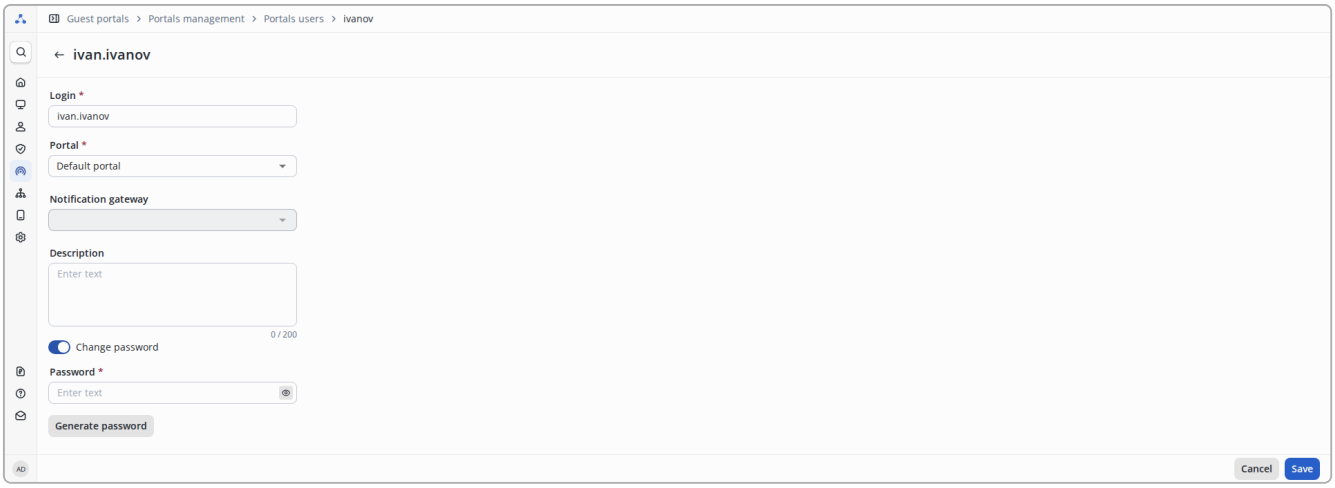


Figure 323. User editing page

When editing a guest user, the `Notification gateway` parameter - the gateway used for SMS registration - is shown for reference but cannot be edited.

To change password, toggle *Change password* and enter new password in the appearing field.

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Duplicating Users

A new portal user can be created based on existing one. Select user to copy using checkbox, then click .

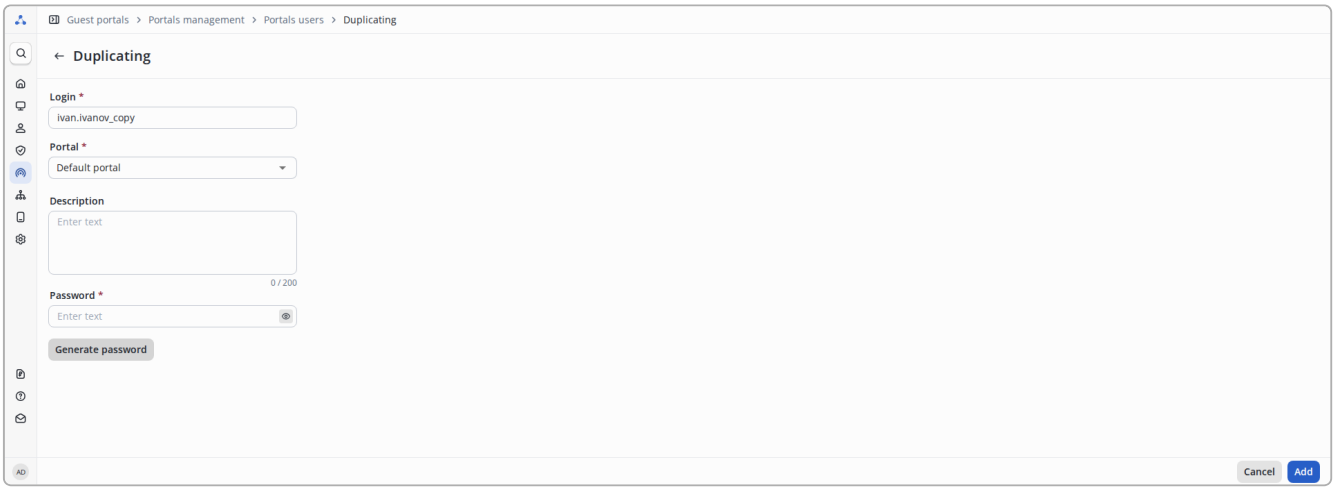


Figure 324. Duplicating a user

A form similar to addition page will open with all fields pre-filled from selected reference. By default "_copy" is appended to `Login` field. Any unused username can be chosen. Password must be specified.

Deleting Users

To delete users, select desired users using checkbox on view page, then click in upper-left corner above table.

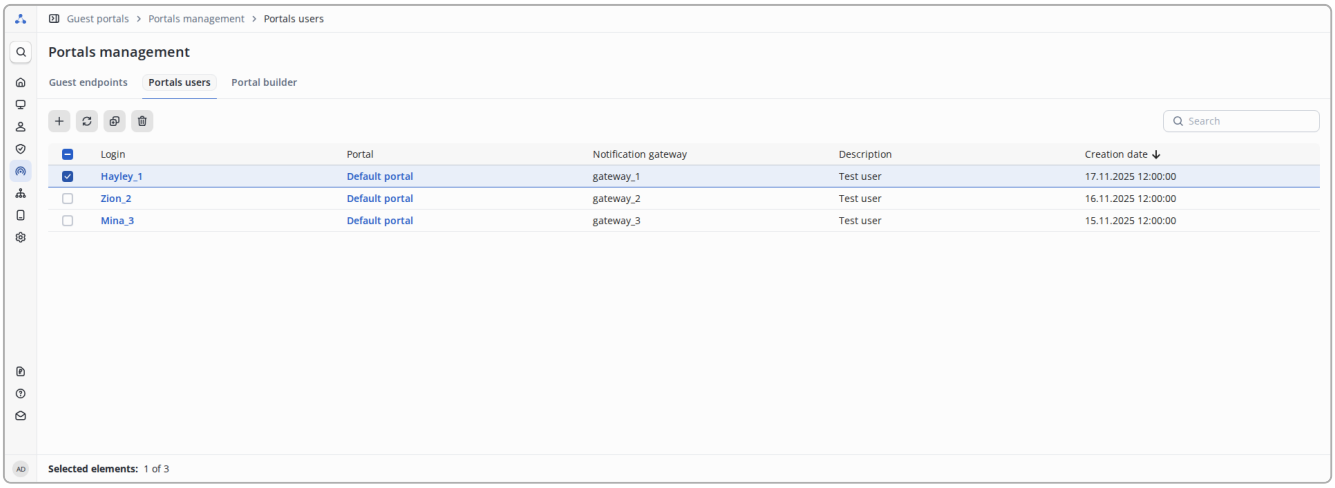


Figure 325. Selecting users for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

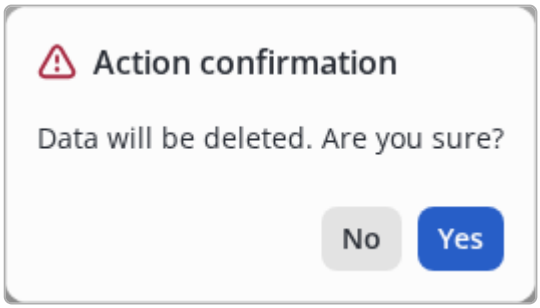


Figure 326. Modal dialog for confirmation

After deleting guest user, previously connected clients may still reconnect via MAB until associated guest endpoint is removed. Guest endpoint is automatically deleted after period configured in portal expires or can be manually removed anytime.

Portal builder

This section provides information about functionality available with the **ADVANCED** level license. To purchase this functionality, contact your manager or write to the e-mail address eltex@eltex-co.ru.

Description

The NAICE system includes a WEB portal as one of its components, which implements a hotspot client authorization model. An unknown user can freely connect to the access point (without obtaining a login and password in advance), but when attempting to access the internet via a browser, the user is redirected to the WEB portal page. Here, they can choose to either go through the authorization process or self-registration (e.g., via SMS). During the authorization procedures, the client navigates through various portal pages, the appearance of which can be customized to meet the needs of the wireless network operator.

For customization, the *Portal Builder* is used, allowing system users to configure the workflow and appearance of the portals. System users can create and delete portals, choose their background and content (text, images, color scheme), set up various authorization methods for each portal, and define post-login behavior.

Viewing the Portal List

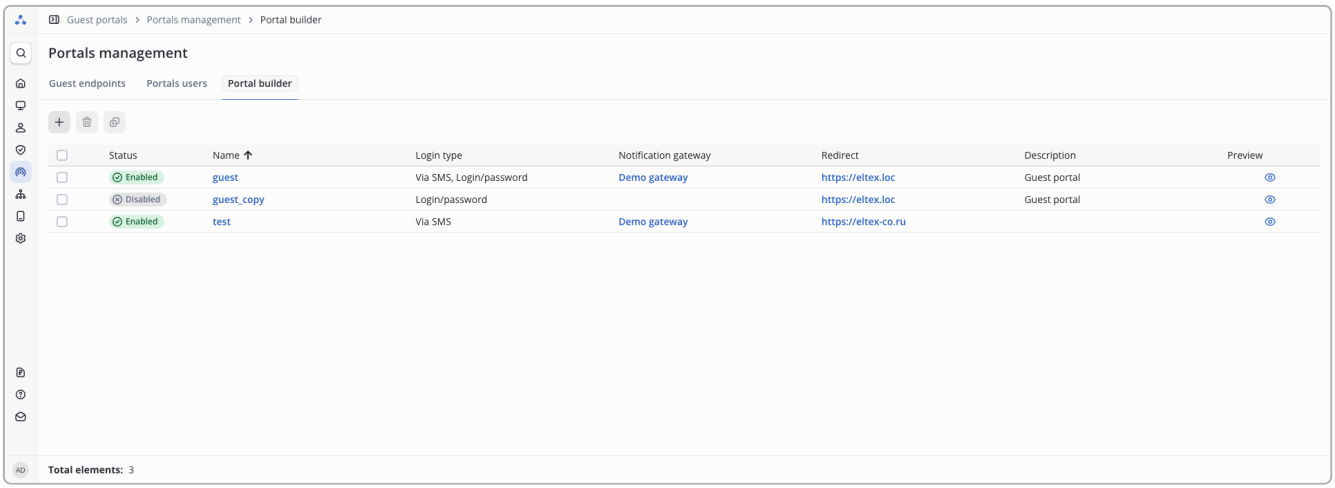


Figure 327. Viewing the Portal List

This page contains a table listing all portals.

The table includes the following columns:

- `Status` — the current activation state of the portal: Enabled or Disabled.
- `Name` — the portal's name.
- `Login type` — the authorization methods configured for the portal.
- `Notification Gateway` — the gateway used if SMS-based login is enabled.
- `Redirect` — the final redirect URL for successfully connected users.
- `Description` — an optional description of the portal.
- `Preview` — opens a preview of the portal in a new tab when clicking .

Sorting (ascending/descending) is available for the `Status` and `Name` columns. By default, sorting is applied in ascending order by portal name.

The page includes the following controls:

- — Add a new item.
- — Delete selected items (inactive until at least one item is selected).
- — Duplicate the selected item (becomes active only if a single item is selected).
- — Change the current sorting order.
- — Checkbox for selecting items for further actions (e.g., deletion).

Adding a Portal

To add a new portal, click in the left part of the field above the table on the portal list page. The following page will open:

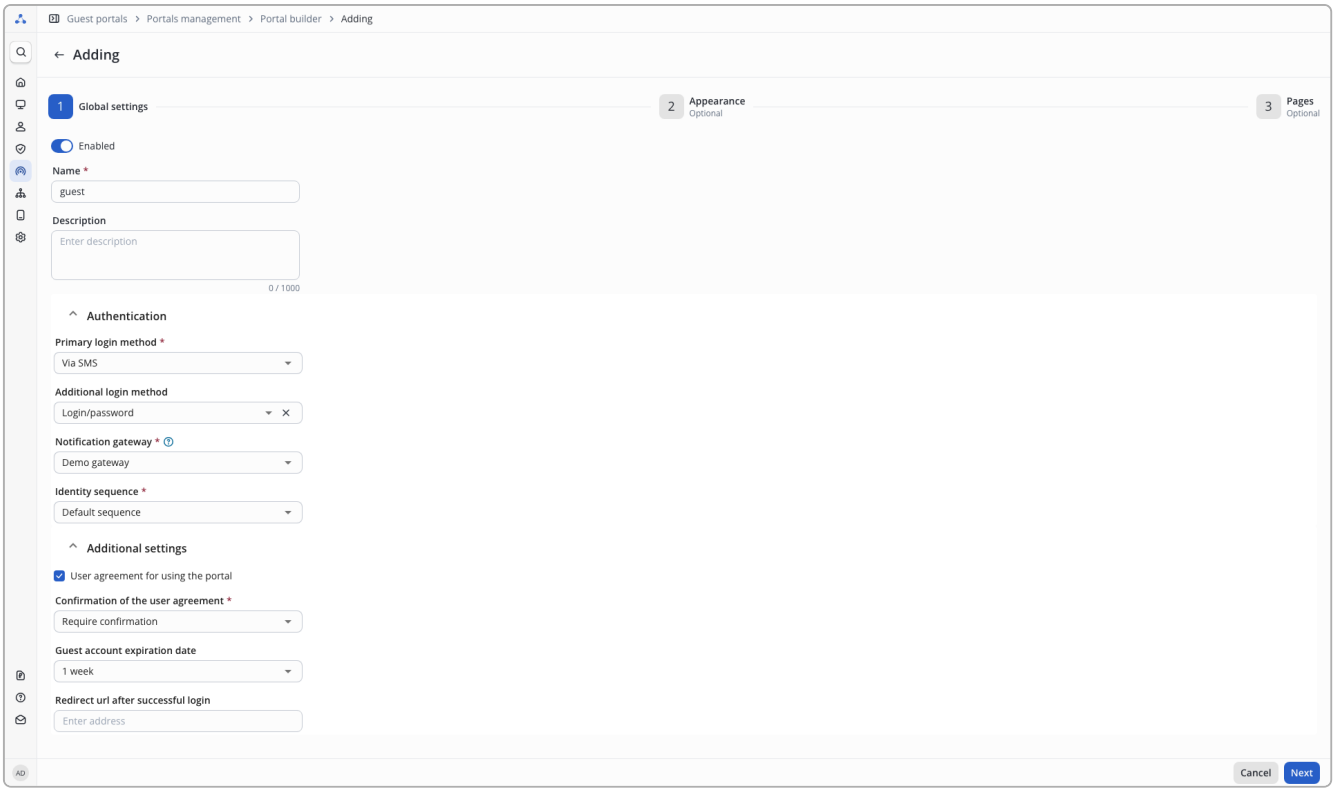


Figure 328. Portal Global Settings Page

Portal configuration occurs in 3 stages: global settings, appearance settings, and page settings. Only the first stage is mandatory; the remaining two can be skipped. In this case, the portal's appearance and content will remain as per the default settings.

Global Settings

The following parameters are available for configuration:

- **General Parameters**
  - `Status` — the current activation state of the portal: Enabled or Disabled. Authorization is unavailable on disabled portals.
  - `Name` * — the portal's name.
  - `Description` — an optional description of the portal.
- **Authentication**
  - `Primary login method` * — the authentication method displayed to the user first.
  - `Additional login method` — an alternative authentication method.
  - `Notification gateway` * — the gateway used if SMS-based login is enabled.
  - `Identity sequence` * — the list and order of sources where user credentials will be searched when using login/password authentication.

    Identity sources can include both dedicated guest users and regular users or users from external sources.
- **Additional Settings**

`User agreement for using the portal` — enabling this setting adds a "User agreement" page.

- `Confirmation of the user agreement` * — requires the user to agree to the User agreement.
- `Guest account expiration date` — the time after which guest endpoints associated with this portal will be automatically deleted. Once deleted, the user will need to go through portal authorization again.
- `Redirect URL after successful login` — the final redirect URL for successfully connected users.

> ⚠ Different client devices may exhibit varying behavior after successful authorization. Some devices may automatically close the pop-up window upon detecting internet access, preventing the user from seeing the final redirect page.

Parameters marked with an asterisk * are mandatory.

After completing the configuration, click **Next** or select the next stage from the top of the page.

Appearance

This stage focuses on configuring the portal's visual parameters, such as color scheme and displayed images.

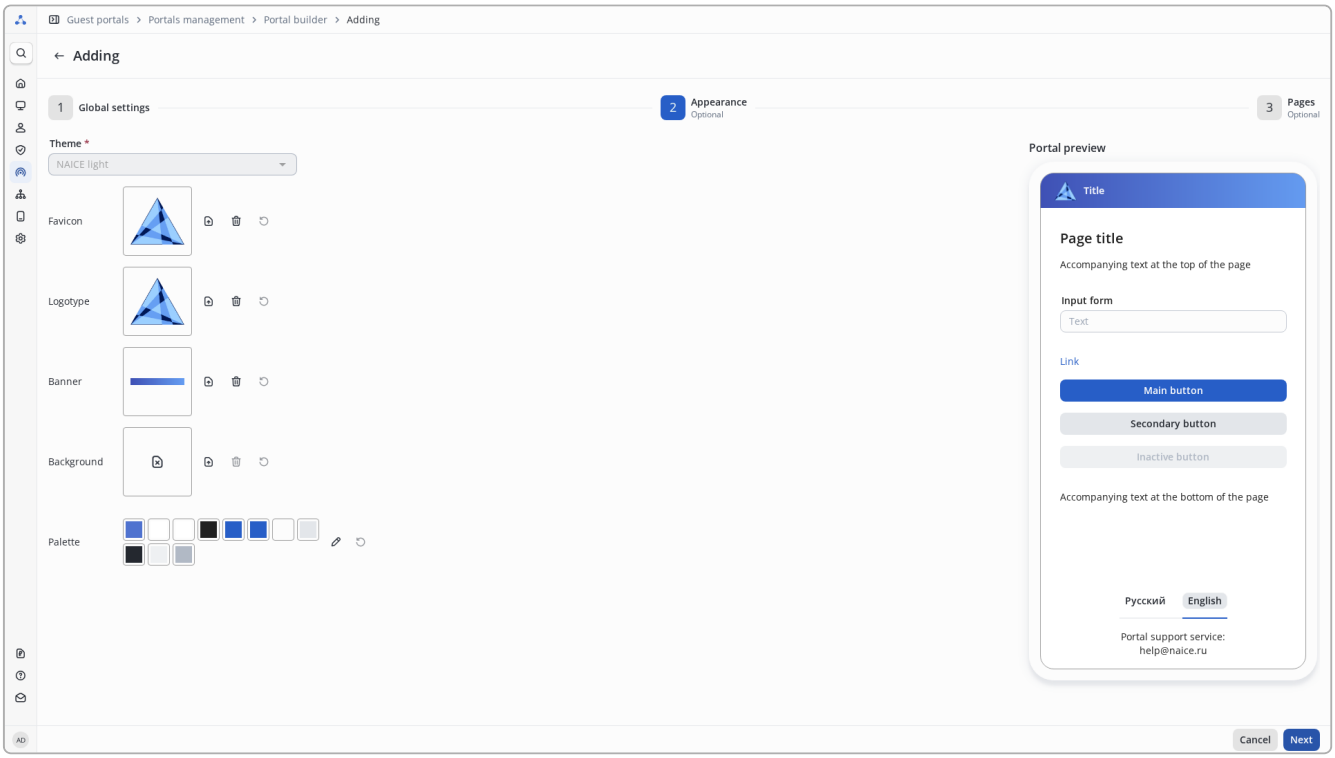


Figure 329. Portal Appearance Settings Page

The following parameters are available for configuration:

- `Favicon` — the icon displayed in the browser tab next to the page title, as well as in other places like bookmarks or search results.
- `Logotype` — the icon displayed in the header at the top of the page.
- `Banner` — the background of the header at the top of the page.
- `Background` — the image displayed as the page background below the header.
- `Palette` — the color scheme settings.

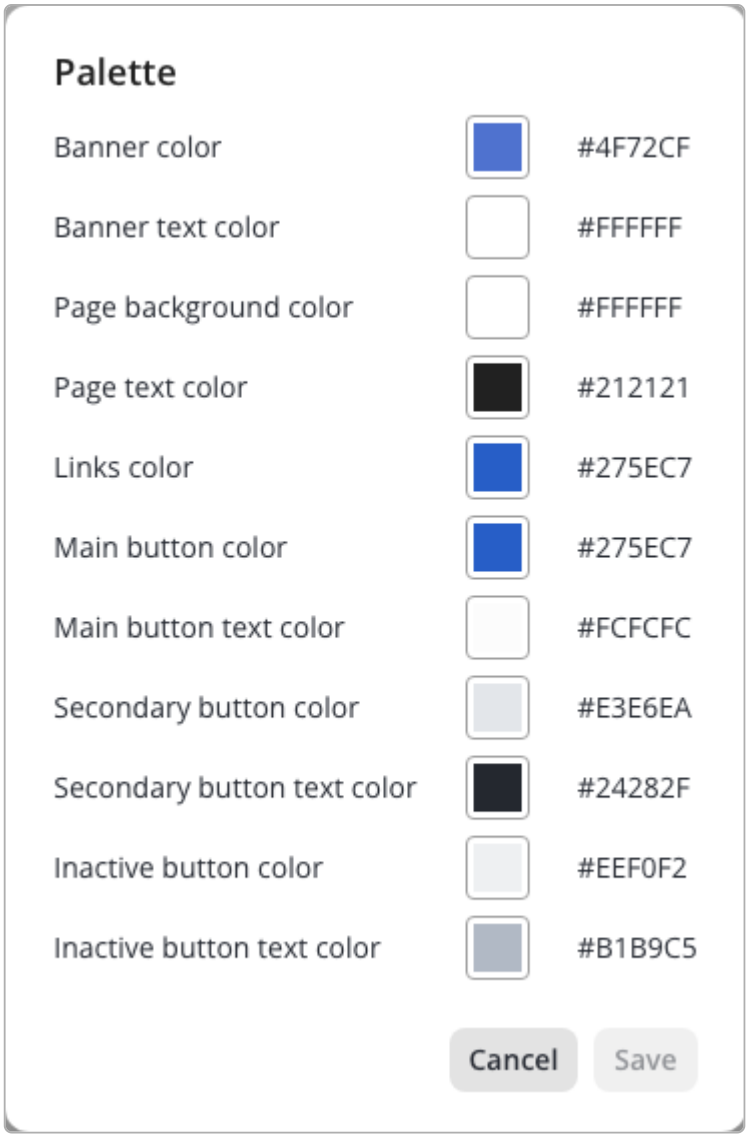


Figure 330. Palette

Banner and background images take precedence over color settings and are displayed on top.

The following controls are used:

- — upload an image file;
- — delete an image (it will no longer be displayed);
- — reset the setting to default;
- — edit the palette.

By default, the "NAICE light" theme is selected, and its parameters cannot be edited. To configure a custom theme, modify one of the above parameters.

Changes can be previewed in real-time using the preview panel on the right side of the page.

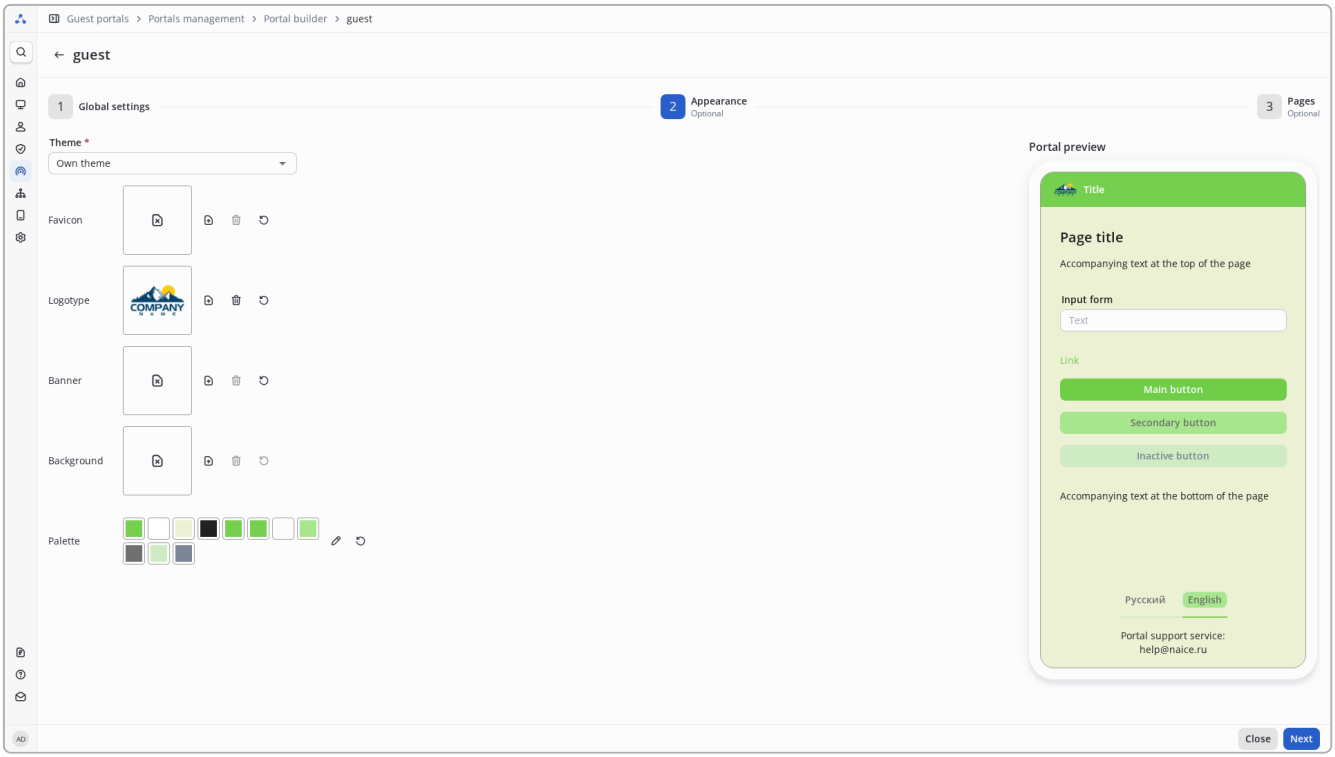


Figure 331. Custom Theme

Pages

This stage defines the text displayed on various portal pages in key functional elements—buttons, headers, info blocks, etc. The layout of these elements is not configurable.

It is important to note that the functionality of elements like buttons is predefined and does not change based on the configured text. For example, changing the text on the "Login" button will not alter its function—it will still trigger an authorization attempt.

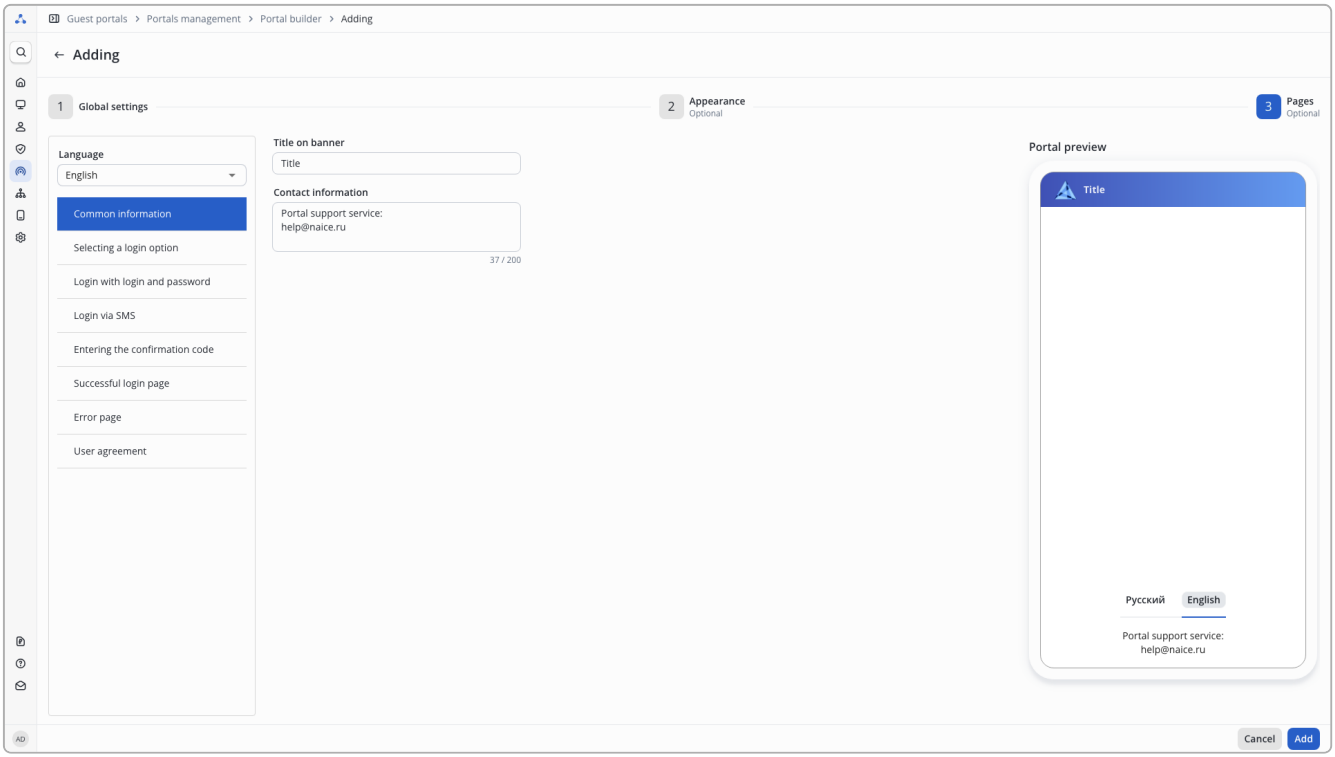


Figure 332. Configuring Page Content

The list of available pages depends on the settings configured in the Global Settings stage.

- `Common information` — configures the header banner text and footer text on all other pages;
- `Selecting a login option`
- `Login with login and password`
- `Login via SMS` — available only if SMS login is enabled; besides configuring page elements, it also sets the SMS message template sent to the user;
- `Entering the confirmation code`
- `Successful login page`
- `Error page`
- `User agreement` — available only if enabled in global settings; includes a text editor for formatting the terms of use.

Text can be configured separately for each supported language.

Changes can be previewed in real-time using the preview panel on the right side of the page.

After completing the configuration, click **Add**.

CAPTCHA difficulty settings

When configuring the `Login via SMS` section, an important part of the process is setting the CAPTCHA difficulty.

CAPTCHA is a user verification mechanism that requires entering a code from an image distorted by added noise (lines, dots, and high-contrast geometric shapes), the difficulty of which varies depending on the

selected level.

The difficulty level is configured on the `Login via SMS` page in the corresponding tab:

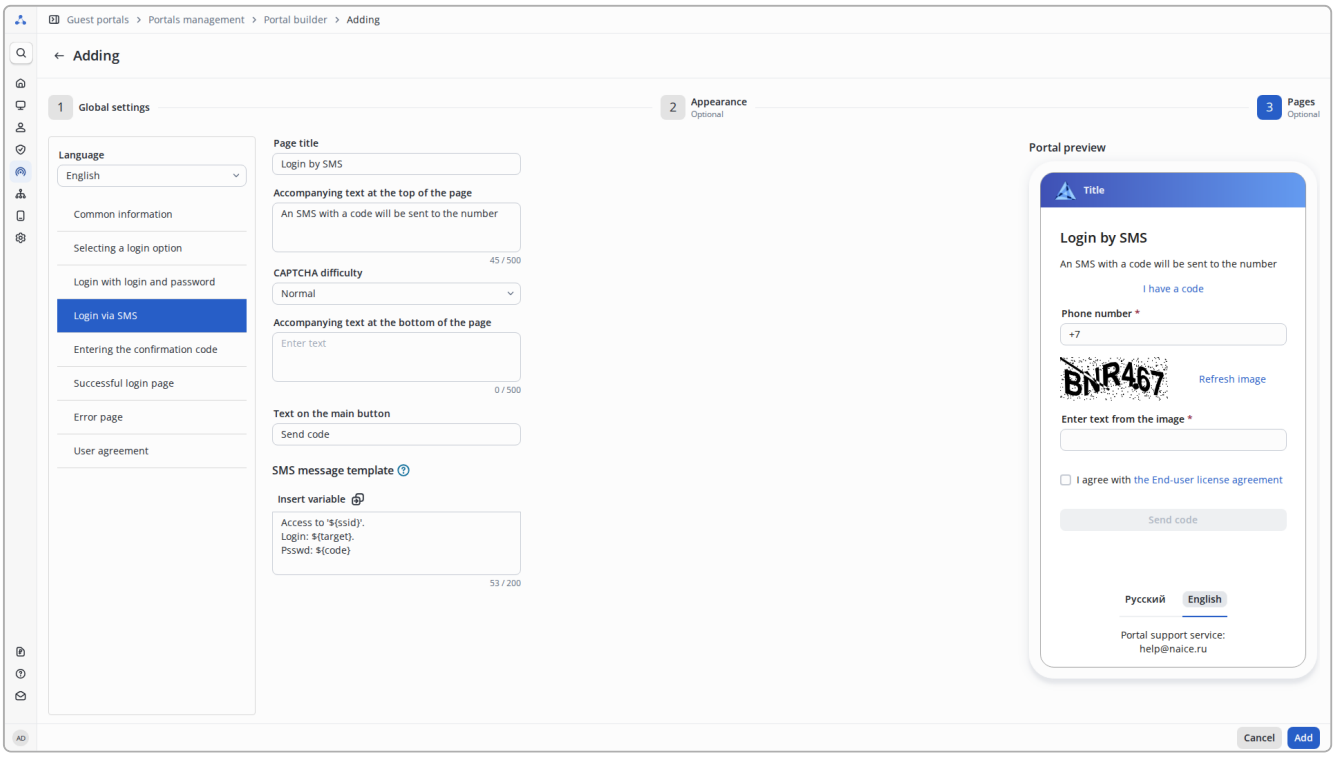


Figure 333. Login via SMS Page

There are four CAPTCHA complexity levels:

- `Off` — CAPTCHA is not used during user authorization.
- `Simple` — Minor changes; the code is distorted by a wave effect without additional geometric noise. Readability is high.

Figure 334. Simple CAPTCHA

- `Normal` — Wave distortion is combined with noise in the form of overlapping contrast dots, lines, and geometric shapes. Readability is medium.

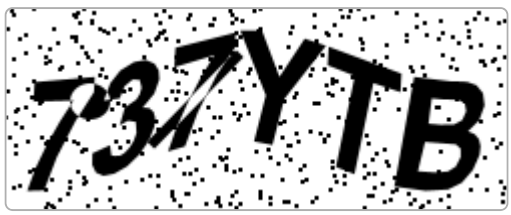


Figure 335. Normal CAPTCHA

-

`Hard` — A larger number of dots is added; high-contrast geometric shapes occupy a larger portion of the code image. Readability is low.

Figure 336. Hard CAPTCHA

Examples of images corresponding to the currently selected level are also displayed in the preview window.

Editing a Portal

To edit an existing portal, click its name in the table on the portal list page.

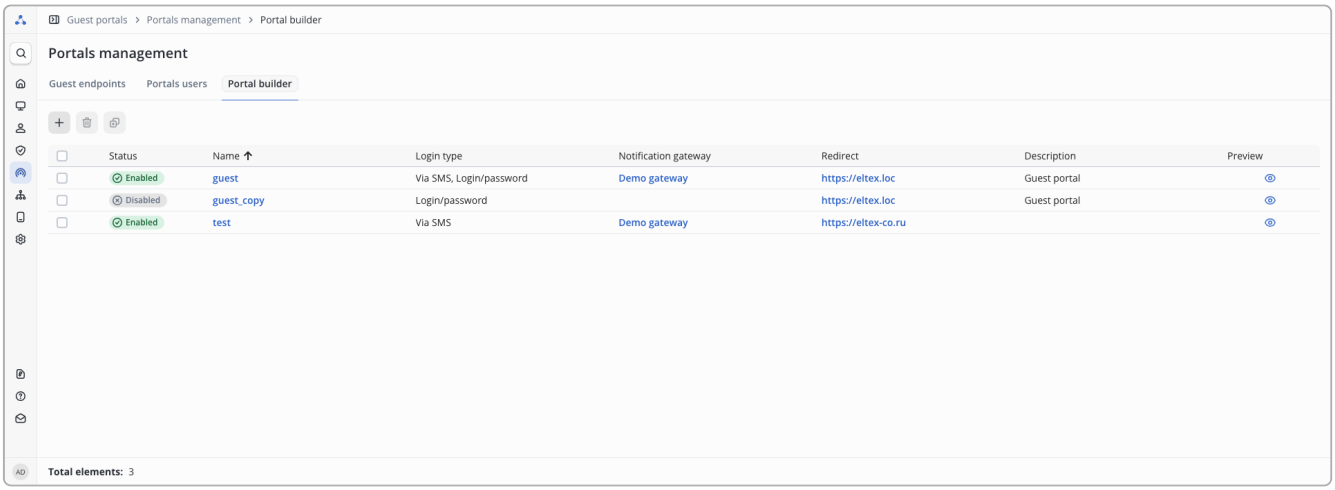


Figure 337. Viewing the Portal List

The editing page will open, which is identical to the portal addition page.

All three configuration stages are immediately available for making changes.

System Behavior When Disabling a Previously Active Portal

- When a portal is disabled, previously connected clients retain the ability to reconnect via MAB until the associated guest endpoint is deleted. Guest endpoints are automatically deleted after the configured expiration period or can be manually deleted at any time.
- Guest endpoints will be deleted even if the portal is disabled. The current account expiration setting is applied, not the one at the time of portal deactivation.

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Duplicating a Portal

A new portal can be created based on an existing one. To do this, select the portal to copy using the checkbox, then click  .

A form identical to the portal addition form will open, with all fields pre-filled from the selected reference. By default, "_copy" is appended to the `Name` field. You can choose any other name not already in use.

Deleting a Portal

To delete portals, select them using the checkbox on the portal list page, then click  in the top-left corner above the table.

Deleting a portal will also automatically delete associated guest users and guest endpoints. This will require reauthorization for previously connected clients.

Device access

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

The Network Device Control section contains entities for configuring access to network devices using the TACACS+ protocol.

TACACS+ is an evolution of the TACACS (Terminal Access Controller Access Control System) protocol and is designed for centralized authentication and authorization of network device administrators. The protocol allows for the authorization of each command executed on a network device, as well as sending records of executed commands (accounting). NAICE can be a TACACS+ authorization server.

This section includes the following pages:

- Conditions – managing conditions used in network device policies to determine whether a current connection matches one of the policies;
- TACACS+ Command sets – managing command sets that define allowed and restricted commands for administrators to execute on devices.
- TACACS+ profiles – managing TACACS+ profiles, which define privilege levels and other additional attributes for authorized users.
- Network devices policies – managing network device policies, which are the core element of access control and define the logic for processing and responding to TACACS+ authentication and authorization requests.

Policy elements

Conditions

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

Logical conditions are the main element of authentication and authorization policies, which are responsible for generating criteria that allow determining whether a user can pass authentication and what actions should be applied to him when authorizing.

The algebra of logic is the basis for creating and processing a logical condition. The result of the condition is "True" or "False". The result may be inverted. The condition can be simple or complex. In a simple condition, only one attribute acts as a verification criterion. In a complex condition, you can use several different attributes, combining them with the "AND"/"OR" logical operations.

This section is similar to Network access - Policy elements - Conditions, but only attributes that can be used in :policy-sets/index.html are available for creating conditions.

View a list of logical conditions

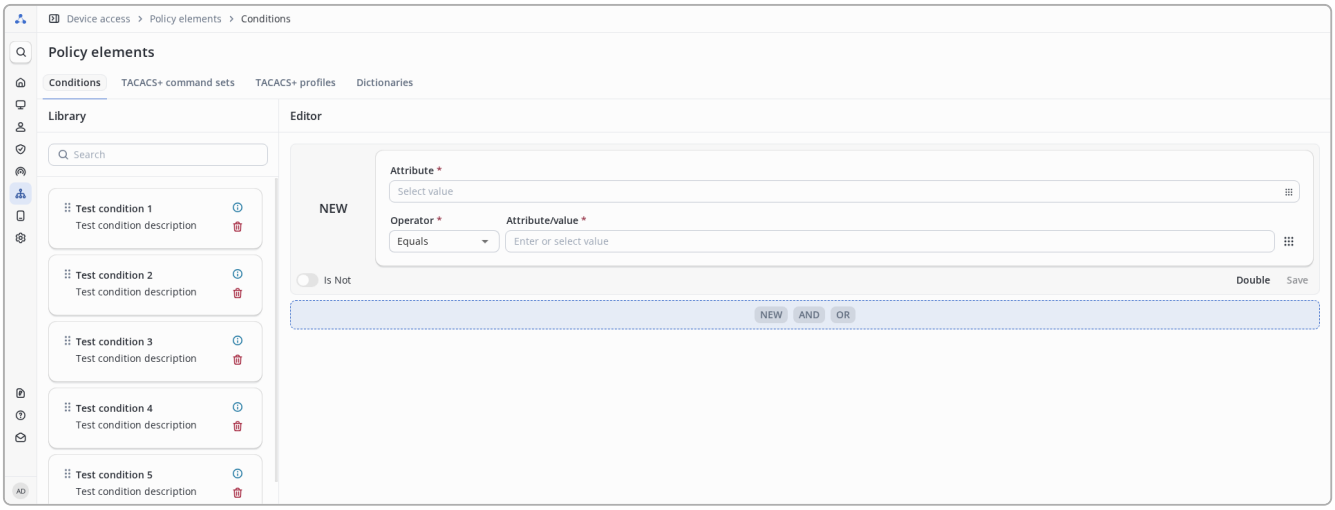


Figure 338. Library of logical conditions

On the left is a **Library** of logical conditions.

On the right is the logical condition **Editor**:

- `Attribute` * - attribute of a logical condition.
- `Operator` * - the selected logical condition operator. Can take values (depending on the attribute value type):
  - "More or equal" / "Less or equal"
  - "More than" / "Less than"
  - "Equals" / "Not equal"
  - "Equal to NULL" / "Not equal to NULL"
  - "Starts with" / "Doesn't start with"
  - "Ends with" / "Does not end with"
  - "Contains" / "Does not contain"
  - "Match" (*full* string match, case sensitive, there is also support for regular expressions)
  - "IP range"
  - "IP net mask"
  - "Empty value"
- `Attribute/value` * - attribute/value that is used to match the logical condition attribute in accordance with the selected operator. For an attribute that assumes predefined values, the value is selected from the list.
- `Is Not` - choice of inverting the result of the condition (by default the condition is "Complied", when the setting is enabled, the condition will be considered "Not Complied")
- `NEW` - adding a new logical condition to the existing hierarchy at the same level as the current one.
- `AND` - adding a new logical condition as a "child" for an existing one with the logical operator "AND".

- `OR` - adding a new logical condition as a "child" for an existing one with the logical operator "OR".

* - required fields.

Controls:

- `"Search"` - Performs case-insensitive filtering based on the library of logical conditions.
- - Preview the contents of the logical condition.
- - Deleting a logical condition.
- - Open the dictionary to add an element.
- - Remove an element from the editor. Action depends on location:
  - clicking to the right of the "Attribute" field will clear the corresponding field;
  - clicking to the right of the Attribute/Value field will clear the corresponding field;
  - clicking to the right of a logical condition will remove that condition.
- `"Save"` - Save the corresponding logical condition.

Attribute selection menu

To select an attribute to be used in the condition, click - the attribute selection menu will open.

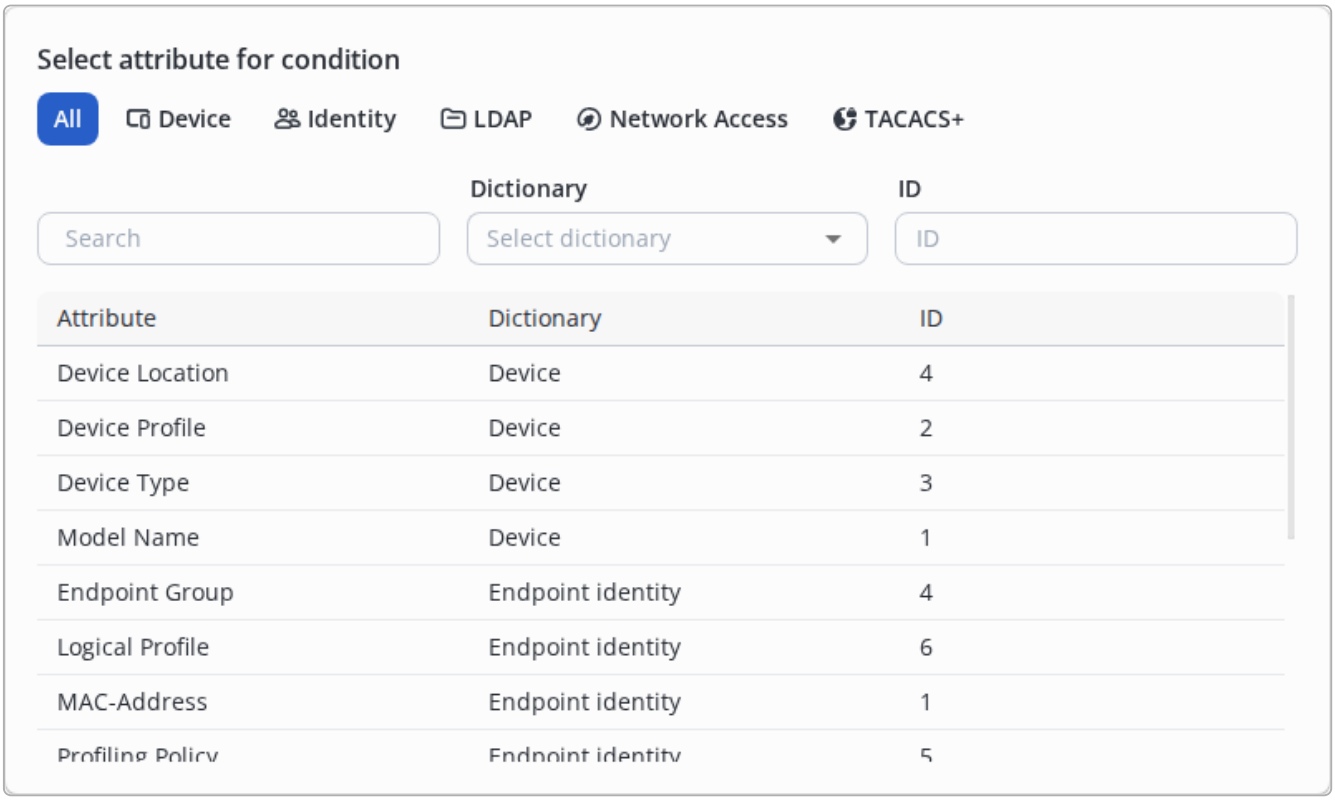


Figure 339. Attribute selection menu

At the top there is a list that allows you to filter by dictionary type. Only one type can be selected.

Types of dictionaries:

-

- `DEVICE` - device attributes.
- `IDENTITY` - users and endpoints attributes.
- `LDAP` - attributes of external identity sources.
- `NETWORK_ACCESS` - contains the IP-address of the device that the administrator uses to connect.
- `TACACS_PLUS` - TACACS+ attributes dictionary.

Below are attribute filtering columns.

- `Attribute` - case-insensitive filtering by attribute name.
- `Dictionary` - menu for selecting a dictionary. A dictionary type must be selected to use it.
- `ID` - filtering by attribute number.

Creating logical conditions

Creating a simple logical condition

You can create logical conditions at **Editor**.

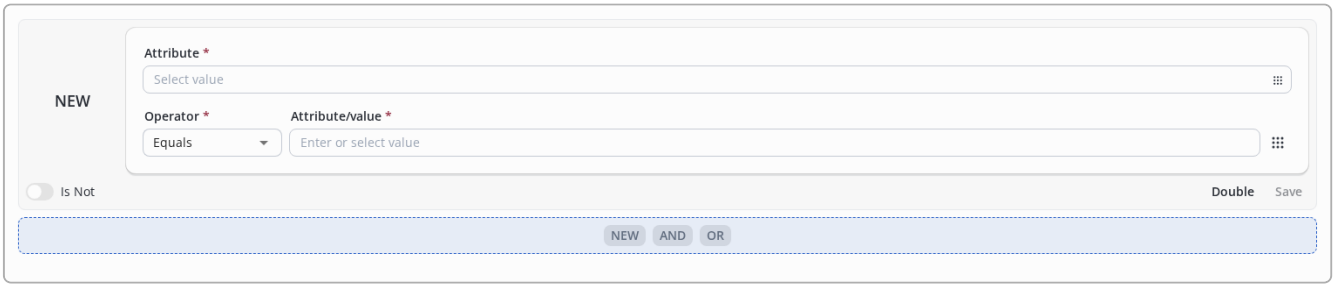


Figure 340. Initial state of Editor

After clicking on in the right side of the “Attribute” field, the dictionary will open.

To find the required attribute, you can use filtering by attribute name. Or select the type of dictionary and select the required dictionary by scrolling the drop-down list to determine the required attribute.

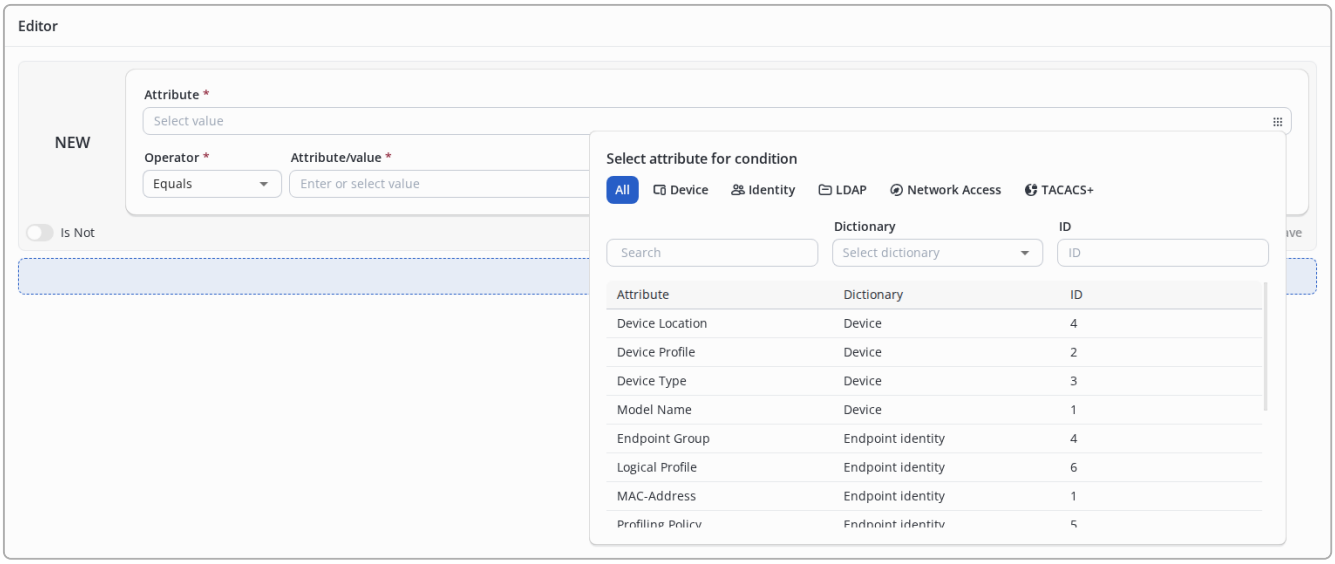


Figure 341. Attribute selection

After selecting an attribute, click on it, and it will be placed in the “Attribute” field.

Select the operator (by default, “Equal” is substituted). The operator selection list depends on the type of data that can be used in the value of the selected attribute.

Attribute data type	**Supported operators**
String	Matches, Ends with, Does not end with, Starts with, Does not begin with, Contains, Does not contain, Equal to, Not equal to, Equal to NULL, Not equal to NULL, Empty value
Number	Greater than or equal to, Greater than, Less than or equal to, Less than, Equal to, Not equal to, Equal to NULL, Not equal to NULL, Empty value
IPv4 address	Equal to, Not equal to, Equal to NULL, Not equal to NULL, IP range, IP net mask, Empty value
MAC address	Equal to, Not equal to, Equal to NULL, Not equal to NULL, Starts with, Does not start with, Ends with, Does not end with, Contains, Does not contain, Empty value
Name	Equal to, Not equal to, Equal to NULL, Not equal to NULL
Byte sequence	Equal to NULL, Not equal to NULL

Select an attribute in the Attribute/value field or enter its value.

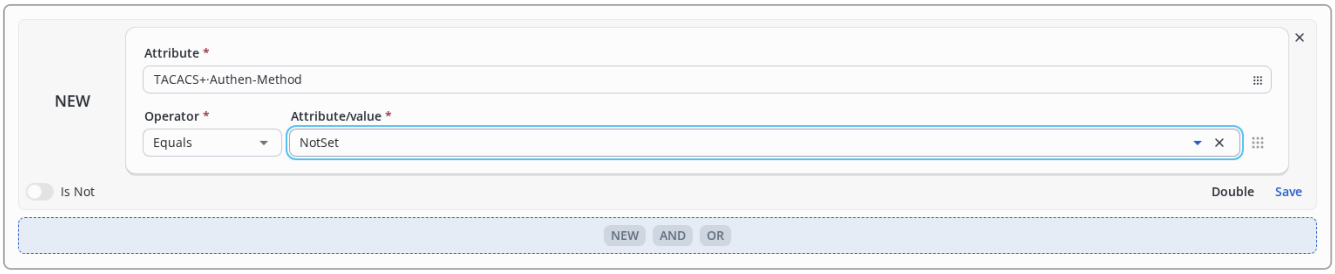


Figure 342. A condition in which all parameters are filled in

Then click the “Save” button. You can replace an existing condition in the library or save a new one.

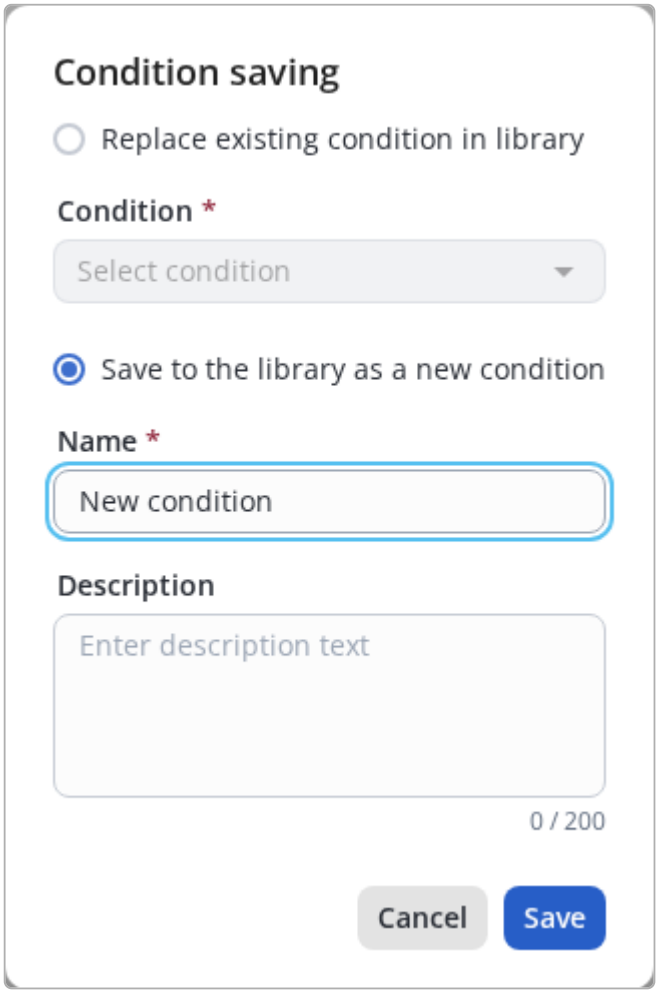


Figure 343. Condition saving modal dialog

By default, the action assumes saving the new condition:

- `Name` * - name of the condition. Maximum length is 100 characters.
- `Description` - arbitrary description. Maximum length is 200 characters.

* - required fields.

Then click the “Save” button.

Save and replace an existing condition in the library. To do this, select "Replace an existing condition in the library" and select a condition from the drop-down list. If necessary, you can filter by name by entering the appropriate text in the field in front of the list.

Then click the “Save” button.

The "Save" button is always active to be able to save an existing condition under a different name.

Creating a complex logical condition

To create a complex logical condition, use the panel under the logical condition.

Figure 344. Panel to create an additional logical condition

- `New` - add a logical condition at the same level as the existing one.
- `AND` - add a child condition with logical "AND".
- `OR` - add a child condition with a logical "OR".

When you click "New", an additional rule will appear in the editor on the same level as the existing one, combined with a logical "AND".

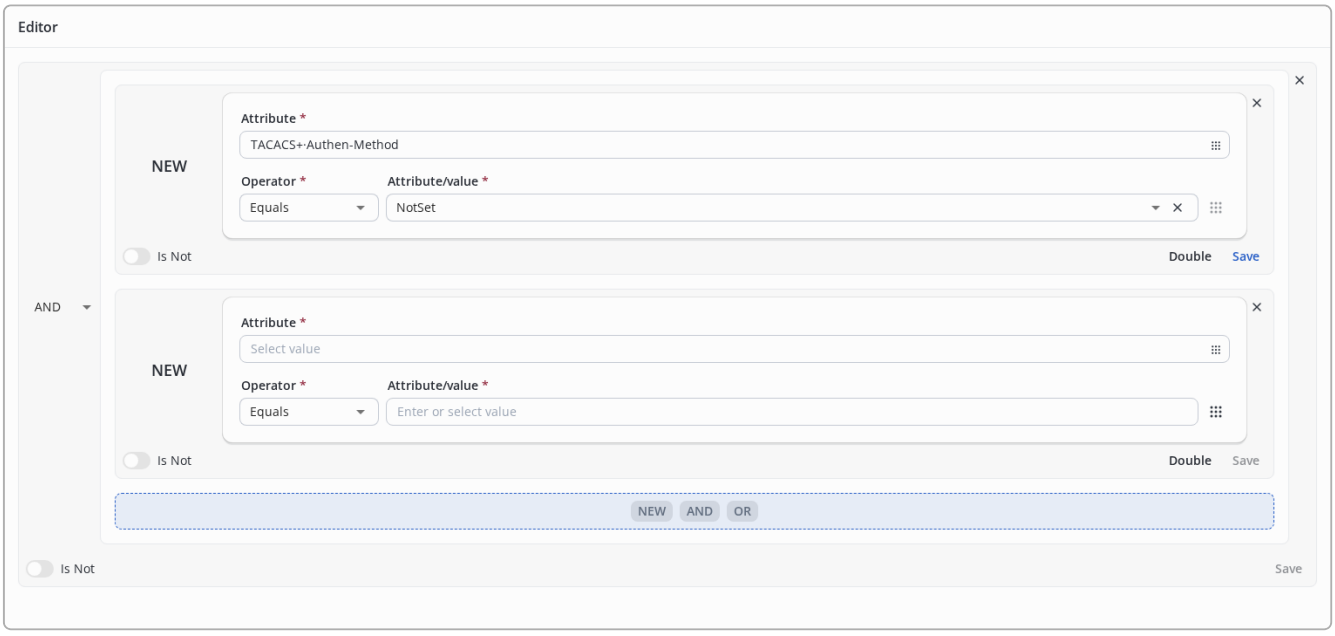


Figure 345. Condition consisting of two conditions combined by a logical "AND"

- Logical "AND" combining rules can be changed to "OR".
- It is possible to save each condition separately using the “Save” button in its window or all together using the “Save” button at the bottom.
- To delete a condition, click on ✕ at the top right in the condition window.
- To completely clear all conditions in the editor, click ✕ at the top right of the editor, located behind the windows of individual conditions.

When you press "AND"/"OR", a new window will appear in which a new menu will be available, then you can add conditions at a new level or create child conditions. There is no restriction on the nesting of conditions.

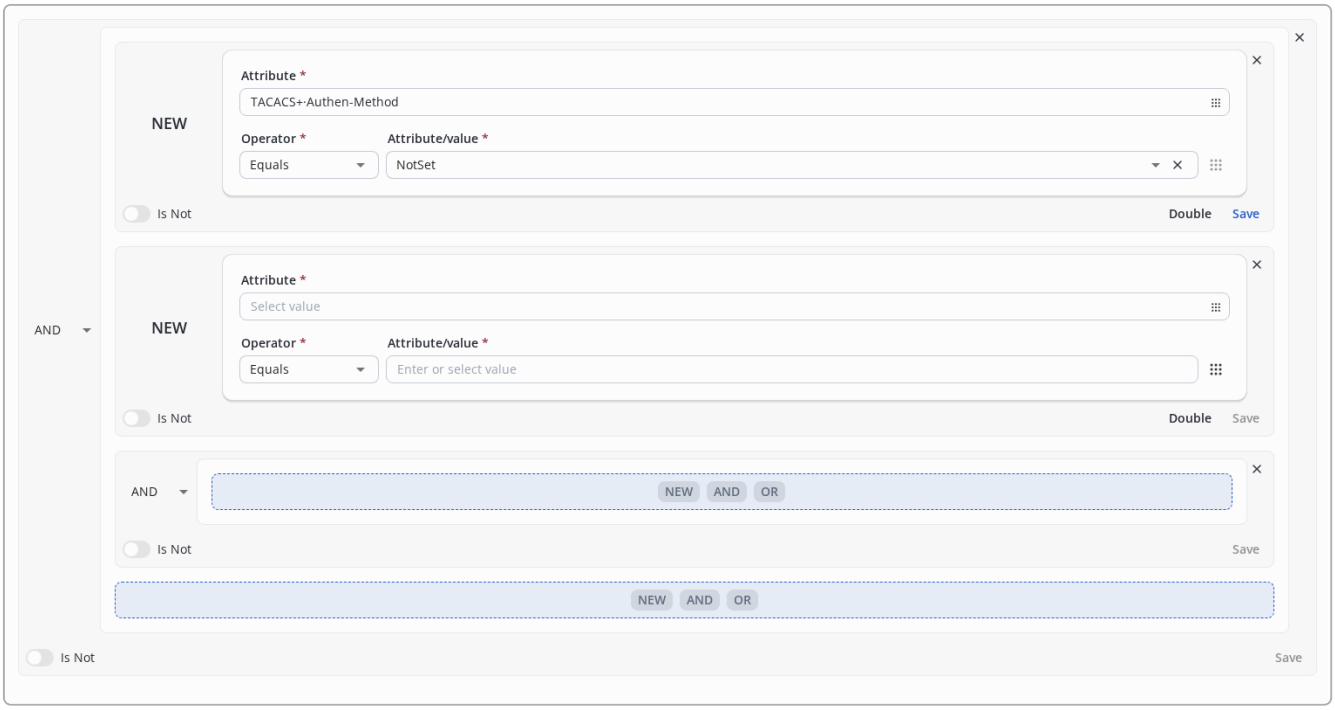


Figure 346. Condition containing nested rules

To save all conditions, click the "Save" button in the lower right corner.

Using regular expressions

Regular expressions can be used when adding a condition to a policy set for attributes with the `matches` operator. This allows you to specify a "pattern" that can match multiple values using just one line.

Example 2. Using regular expressions in logical conditions

Task: You need to apply a policy set to all connections from devices whose names start with the `MES` prefix.

Possible Solution:
In order to select only connections from certain devices, you can use the `RADIUS NAS-Identifier` attribute in the condition. Note that it usually requires configuration on the NAS device to send it.
In order to avoid creating separate `RADIUS NAS-Identifier equals MES1` etc. conditions for each device, you can create one `RADIUS NAS-Identifier matches MES.*` condition.
The `.*` construct means "any number of any characters" after `MES`.

You can also use a more strict expression if, for example, you want `MES` to always be followed by 4 digits and one letter: `MES\d{4}[A-Z]`.
Here:

`\d{4}` — four digits;

`[A-Z]` — one uppercase letter.

Short list of frequently used metacharacters

- characters:
  - `.` - any character
  - `\d` - any digit
  - `\w` - any letter in any case
  - `\s' is a space character
  - `\` - any special character escape.
- grouping:
  - `[abc]` - one of the characters listed in brackets (or a, or b, or c)
  - `[a-z]` - one of the characters listed in the range
  - `(abc)` - combining characters in the specified order into one group
- quantifiers:
  - `a? ` - 0 or 1 occurrence of a character
  - `a*` - 0 or more occurrences of a character
  - `a+` - 1 or more occurrences of a character
  - `a{n}` - occurrence of the symbol n times
  - `a{n,}` - occurrence of the character n or more times
  - `a{n,m}` - occurrence of a symbol from n to m times
- logical operations:
  - `^a` - negation
  - `a|b` - one of two specified characters (OR)
- useful combinations:
  - `.*` - any character any number of times
  - `\w+` - any word
  - `(word1)|(word2)` - one of the specified words.

Editing a logical condition

To edit a logical condition, you need to grab it with the cursor in the library and move it to the editor field.

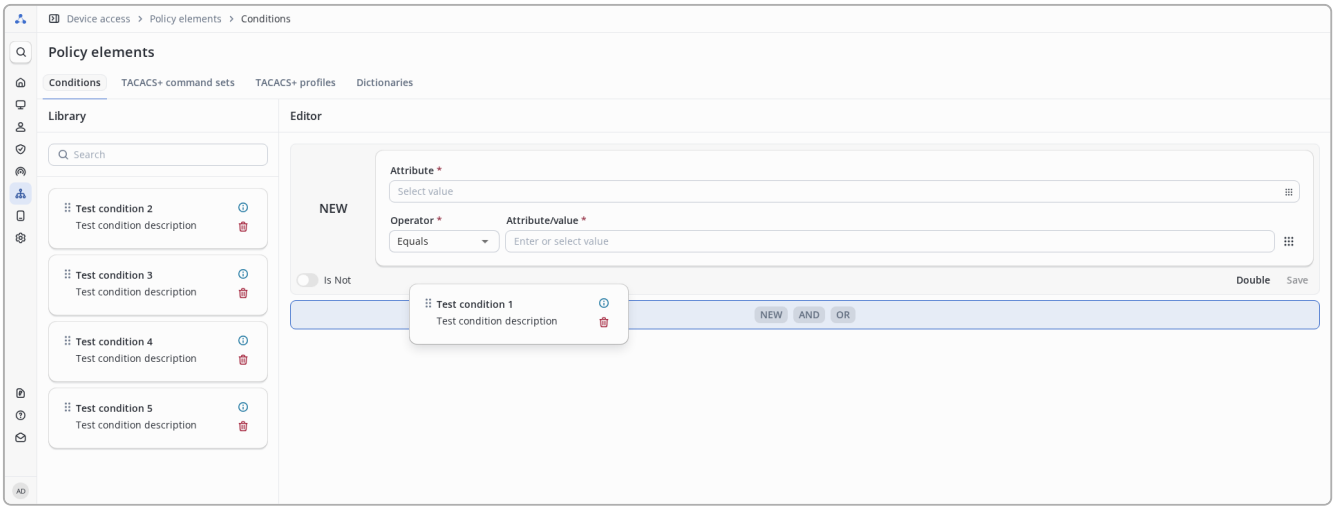


Figure 347. Selecting a logical condition

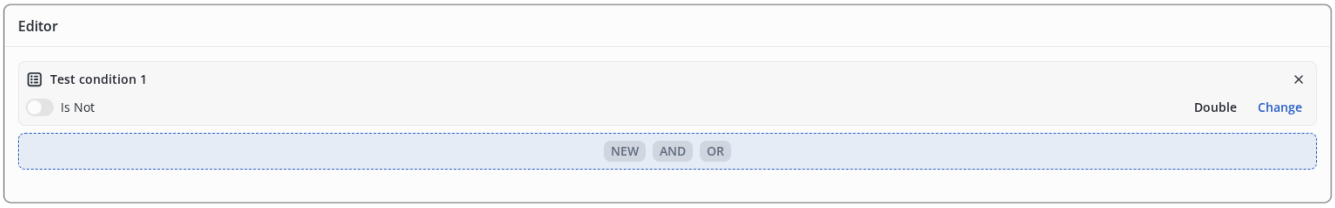


Figure 348. Editing a logical condition

To edit the condition, click the "Edit" button. After editing, click the "Save" button. Since the condition was previously saved in the library, by default it will be proposed to save it with the same name. If necessary, you can select another condition to be overwritten or select "Save to library as new condition." Click the "Save" button.

Also, during editing, you can drag conditions from the library into the child condition editor field.

Delete a logical condition

To delete a logical condition you need to find it in the library and click the button at the right of the condition name.

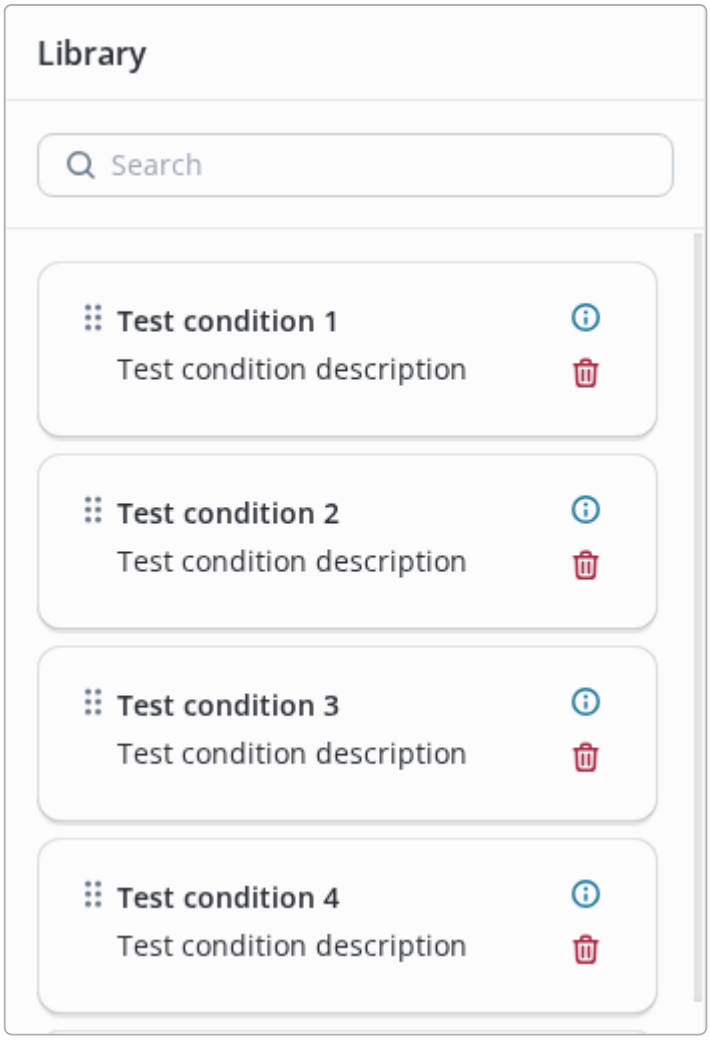


Figure 349. Selecting a condition to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

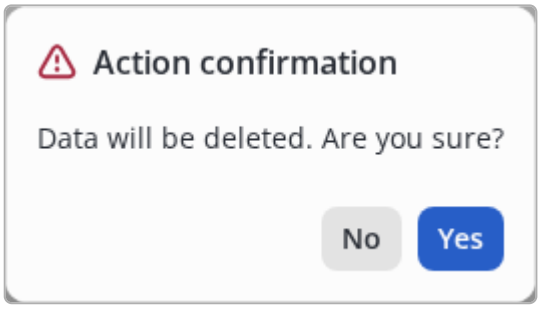


Figure 350. Modal dialog for confirmation

Restrictions:

- some system logical conditions cannot be deleted or edited;
- you cannot delete logical conditions that are used in other complex logical conditions;
- You cannot delete logical conditions that are used in any set of policies.

TACACS+ Command sets

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

TACACS+ command sets are used to define a list of commands that are allowed or denied to be executed on a device when using command authorization on a TACACS+ server. These command sets are further used in :policy-sets/index.html when configuring the authorization policy.

Viewing TACACS+ Command Sets

This page contains a table listing all TACACS+ command sets.

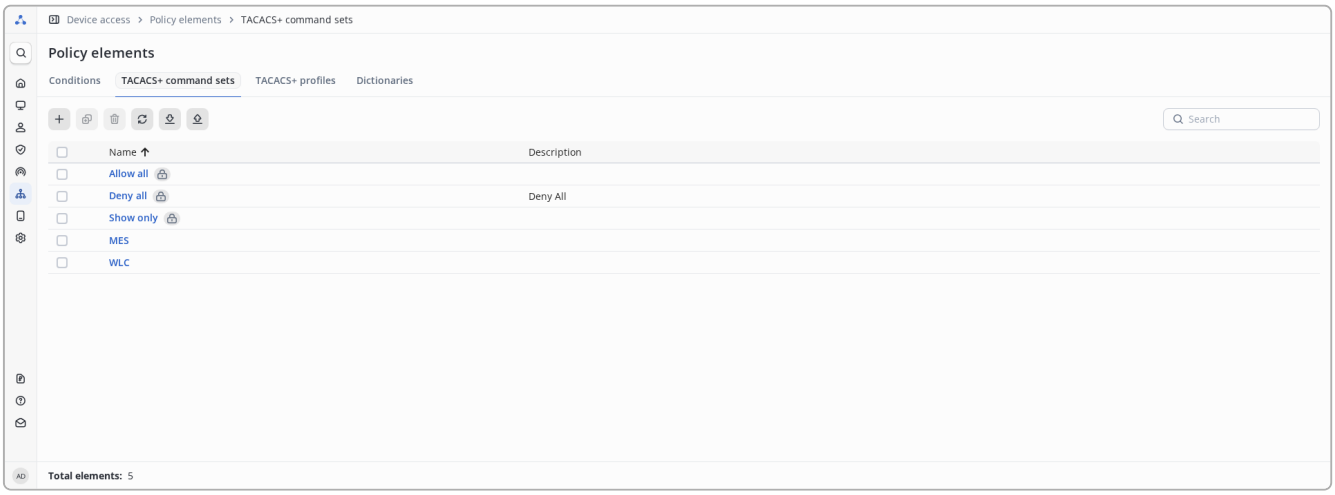


Figure 351. Table with a list of TACACS+ command sets on the view page

The table contains columns:

- `Name` - the name of the command set.
  - - This entity is system and cannot be deleted or edited.
- `Description` - arbitrary description.

Sorting is possible only by the field `Name` in the forward and reverse order. By default, sorting is performed in the forward (alphabetical) order.

Controls:

- - Refresh table data.
- - Add a new element.
- - Duplicate the command set selected by the checkbox.
- - Delete selected elements (inactive until at least one element is selected).
- - Allows you to download data from a csv file.
- - Allows you to upload data to a csv file.
-

Search - Performs case-insensitive filtering across all columns: only records that satisfy the filtering condition are displayed.

- - Change the current sort order.
- - Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).

Adding a new command set

To add a command set, click + on the top left above the table.

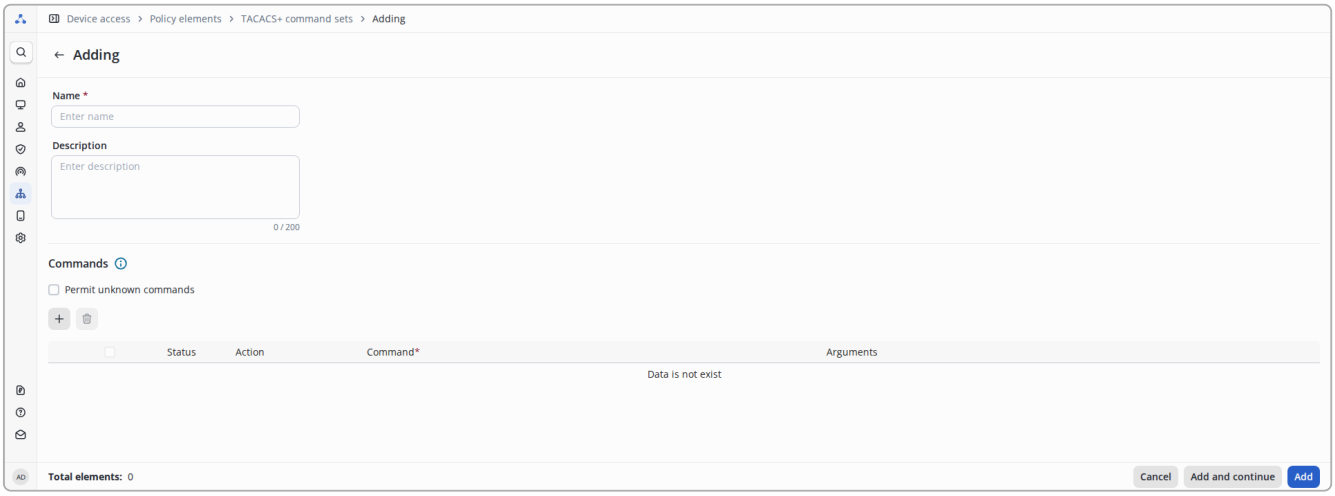


Figure 352. Form for adding a command set

The page that opens presents the following parameters:

- `Name` * - the name of the profiling condition. The maximum length is 100 characters.
- `Description` - arbitrary description of the profiling condition. Maximum length - 200 symbols.

Parameters marked with * are mandatory.

Command - a settings block for defining the commands allowed and denied for authorization. For the comfort configuration the commands are defined in the table, which contains the following columns:

- - contains buttons, by dragging which you can change the order of rows in the table.

> The command order is important because the matching of the authorization command with the commands in the table is going on **top-down to the first match**.

- - contains checkboxes to select items for further actions (e.g. delete).
- `Status` - can take the values Enabled or Disabled. Disabled commands do not participate iin the process of checking the authorized command. Disabling a command instead of deleting can be useful for debugging.
- `Action` - what action to perform when the comparing commands: allow or deny authorization of the command.
- `Command` * - the command for which authorization needs to be allowed or denied. Regular expressions can be used when specifying a command, see Using regular expressions in command sets.

- `Arguments` - allowed or denied arguments for the specified command. If no arguments are specified, then any arguments for the command fall under the `Action` specified in the rule. Regular expressions may be used when specifying arguments, see Using regular expressions in command sets.

Only commands containing **exactly** those attributes specified in the attribute row are allowed/denied. If a command attribute is followed by another attribute that is not specified in the command set, then such a command is considered to be unmatched and will be processed accordingly.

Example. The authorized command is `show running-config interface GigabitEthernet0/1`.

The command set is:

Action	Command	Arguments
Allowed	show	running-config

In this case, the command being authorized **does not match** the specified rules and authorization will be **denied** according to the default behavior.

To allow any arguments after the specified arguments, you can use the `.*` regular expression (any character is expected any time) or any other suitable expression:

Action	Command	Arguments
Allowed	show	running-config .*

By default, any commands that are not listed are disallowed. This behavior can be changed with the setting `Permit unknown commands`.

To add a new command to the table, the + button is used. The command will be added to the top of the table (i.e. the new command will be the highest-priority if its order is not changed using ⋮⋮).

To save the created command set, you should click **Save**, or cancel the creation with **Cancel**.

Editing a command set

To edit a TACACS+ Command Set, click on its name on the list page.

Figure 353. Hyperlink to the command set editing page

This will open the edit page.

The command set editing form is similar to the creation form, except for a few handy features that allow you to edit the command set table without leaving the page via the save button:

- - reset changes
- `Apply` - save changes in the command table without leaving the editing page. Can be useful for debugging.

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Using regular expressions in command sets

When specifying a command or its arguments in a command set, regular expressions can be used. This allows you to specify a “pattern” that can be matched by multiple commands with just one line.

Example 3. Using regular expressions when specifying a command

Task: RADIUS server settings must be allowed to be configured on the device, with 2 commands possible on the device - `radius` to configure the server on the device and `radius-server` to configure an external server. Both commands must be allowed to the administrator.

Possible solutions:
To avoid specifying both commands in full form, you can use the regular expression: `radius.*`.
The symbol `.` here means any character, and `\*` means its repetition in the expression any number of times (including 0 times).

You can also make a stricter regular expression: `radius-?\w*`.
The `-?` construction means that a hyphen can occur 0 or 1 times, and `\w*` means 0 or more occurrences of any letter.

Example 4. Using regular expressions when specifying command arguments

Task: Restrict the `show` command to only allow output of information about configured RADIUS and TACACS+ servers.

Possible solutions:
The simplest and most linear solution is to specify two commands with appropriate arguments:

Command	Arguments
`show`	`radius-servers`
`show`	`tacacs`

But a shorter solution is to specify the arguments with `|` (or):

Command	Arguments
`show`	`(radius-servers)|(tacacs)`

Short list of frequently used metacharacters

- characters:
  - `.` - any character
  - `\d` - any digit
  - `\w` - any letter in any case
  - `\s' is a space character
  - `\` - any special character escape.
- grouping:
  - `[abc]` - one of the characters listed in brackets (or a, or b, or c)
  - `[a-z]` - one of the characters listed in the range
  - `(abc)` - combining characters in the specified order into one group
- quantifiers:
  - `a? ` - 0 or 1 occurrence of a character
  - `a*` - 0 or more occurrences of a character
  - `a+` - 1 or more occurrences of a character
  - `a{n}` - occurrence of the symbol n times
  - `a{n,}` - occurrence of the character n or more times
  - `a{n,m}` - occurrence of a symbol from n to m times
- logical operations:
  - `^a` - negation
  - `a|b` - one of two specified characters (OR)
- useful combinations:
  - `.*` - any character any number of times
  - `\w+` - any word
  - `(word1)|(word2)` - one of the specified words.

Deleting command sets

To delete command sets on the view page, select the checkbox to the left of the sets you want to delete and click  at the top left.

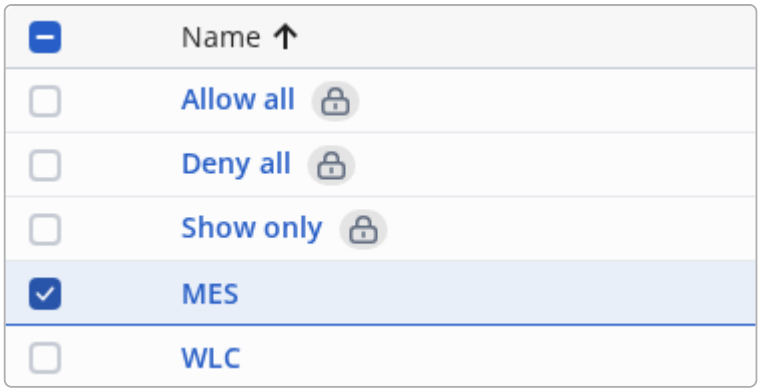


Figure 354. Select the set of commands in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

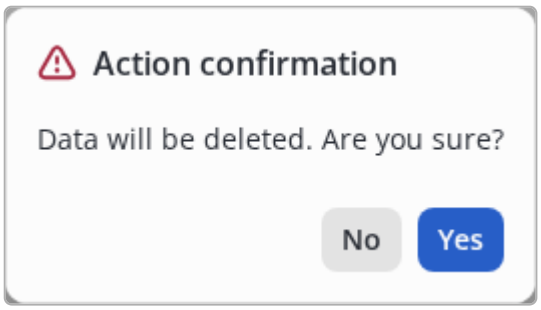


Figure 355. Modal dialog for confirmation

Restrictions:

- you cannot delete command sets that are used in any TACACS+ policy.
- you cannot delete system command sets `Allow all`, `Deny all`, and `Show only`.

Import

NAICE supports importing data from CSV files.

Preliminary preparation before Import

1. Create or verify the existence of necessary related entities (e.g., device profile).
2. Review the CSV file requirements:
   - Encoding must be UTF-8;
   - Delimiters:
     - Field delimiter: `comma (,)`
     - String/text delimiter: `double quotation mark (")`
   - Headers and values must be enclosed in double quotation marks `(")`
   - Maximum file size is 2MB.
3. Check the file content for extraneous quotation marks before importing;
4. Check that the values containing the double quotation mark `(")` or the slash `(/)` are correctly escaped.

- Values containing a double quotation mark `(")` are escaped using `\`
- Values containing the slash `(/)` are escaped using `\"`

Correct spelling of values (with escaping using `\"`) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"\"Test command set\""	"false"	"PERMIT/\"show/vlan|1|2|\"/true"

Incorrect spelling of values (without escaping) using the example of the contents of the file for importing the TACACS Command set

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/show/vlan|1|2|/true"

Failure to escape these characters will lead to incorrect data recognition.

Import procedure

To import data from a CSV file, click on  in the action panel located above the table. This will open the import window:

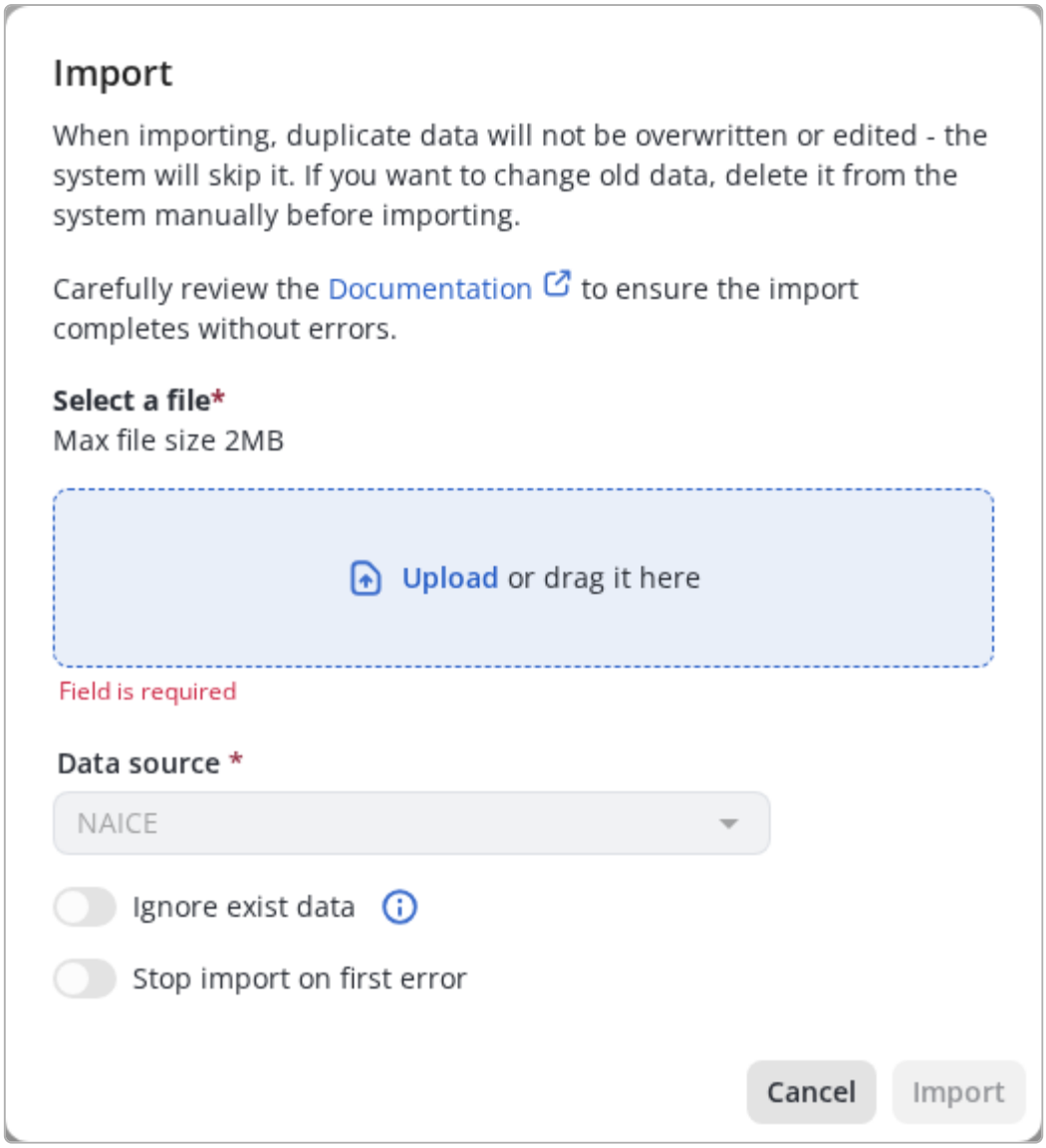


Figure 356. Window Import

Data import proceeds through several steps:

1. Select the required CSV file by dragging it into the upload area or by selecting it through the file explorer by clicking the **"Upload"**;

   To apply changes, you must re-upload an updated CSV file.

2. Select the data source (if not predefined);
3. Configure import flags (if needed):

   Ignore exist data

   - On: Duplicate records trigger warnings.
   - Off: Duplicates are treated as errors.

   Stop import on first error

   - On: Import halts at the first error. Only records that were successfully processed before it occurred will be imported.
   -

Off: Erroneous lines are skipped, and the import continues to the end. Only valid records will be imported.

4. To start the import, click the **"Import"**.

When importing, duplicate data will not be overwritten or edited - the system will skip it. If you want to change old data, delete it from the system manually before importing.

Viewing the Import report

An import report window opens immediately after file processing.

If all records in the file were processed correctly, you will see the following window:

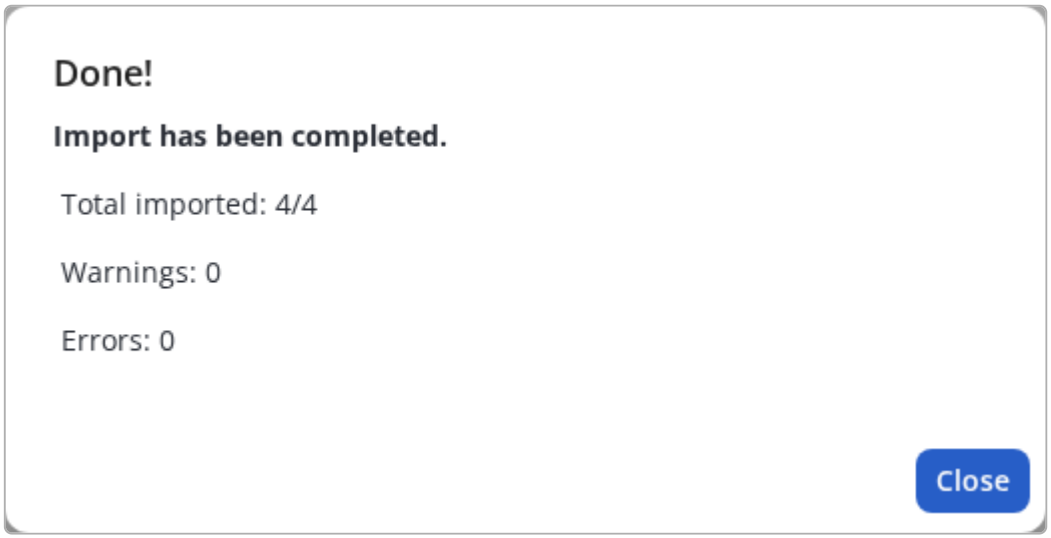


Figure 357. Window Import report (all entries were processed correctly)

The summary block contains:

- `Total Imported` - Counter of records imported (vs. total rows processed);
- `Warnings` - Number of warnings that occurred;
- `Errors` - Number of errors that occurred.

If not all records were processed correctly, you will see the following window:

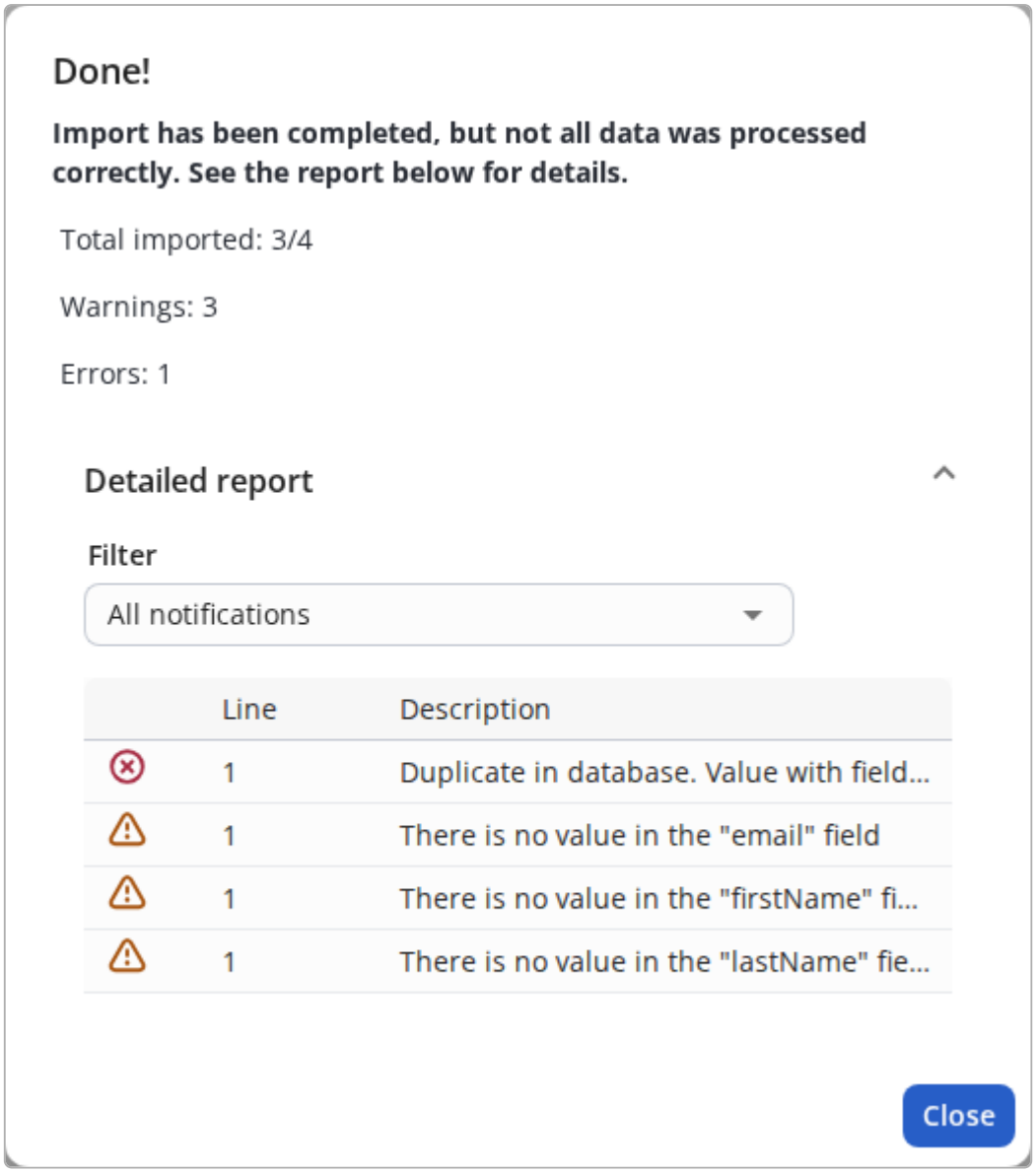


Figure 358. Window Import report (entries processed with errors/warnings)

Detailed report contains the following information:

- `Filter` - Dropdown list allowing you to select which notifications to display (`All notifications` , `Only errors` , or `Only warnings`)

The notification table contains columns:

- `Line` - The line number in the CSV file where an error or warning was detected;
- `Description` - Detailed text explanation of the error or warning.

Hover your cursor over a row in the Description column to view the full error/warning message in a tooltip.

Import particularities for TACACS+ Command sets

For TACACS+ Command sets imports support `NAICE` and `CISCO` data sources.

The table below lists the fields, their requirements, descriptions, and requirements:

Field	Description	Requirements
name:Required	Name of the command set	**Required** Maximum length - 100 characters Must be unique Spaces are not allowed
description	Free-form description	Maximum length - 200 characters
permit_unmatched(true/false)	Permission to execute commands not listed in the `commands` table	Possible values: • `true` - status "Enabled" • `false` - status "Disabled"
commands(Grant/command/arguments/enabled;...)	Configuration block that defines allowed and denied authorization commands	Command separator: ; The requirements for each field will be discussed separately

The column `commands(Grant/command/arguments/enabled;…)` contains the fields `Grant`, `command`, `arguments`, and `enabled`.

The list of fields, their requirements, descriptions, and requirements for the `commands(Grant/command/arguments/enabled;…)` column:

Field	Description	Requirements
Grant	Action performed upon matching compared commands	**Required** Possible values: • `PERMIT` • `DENY`
command	Command	**Required** Maximum length - 200 characters
arguments	Arguments for the command	Maximum length - 200 characters
enabled	Permission to execute (Status)	Possible values: • `true` - status "Enabled" • `false` - status "Disabled"

If a value for the `permit_unmatched(true/false)` field is not found or is incorrect, the default value `false` will be assigned.

If a value for the `commands(enabled)` field is not found or is incorrect, the default value `true` will be assigned.

Example of correctly formatted file content:

"name:Required"	"description"	"permit_unmatched(true/false)"	"commands(Grant/command/arguments/enabled;...)"
"command_set"	"Test command set"	"false"	"PERMIT/\"show/vlan|1|2|\"/true;PERMIT/tacacs-server//true"

As shown in the example, values containing slashes `(/)` must be escaped with `\"`. Failure to escape will result in incorrect data recognition.

Instructions for obtaining a CSV template file are described later in the **"Export"** section.

Export

NAICE supports exporting data in CSV format. Values and headings are framed by `double quotes`, the field separator is `comma (,)`.

Export procedure

Two export modes are available:

- `Export all` - Exports all records from the current section. System entities are not included during export.
- `Export selected` - Exports only checked records.

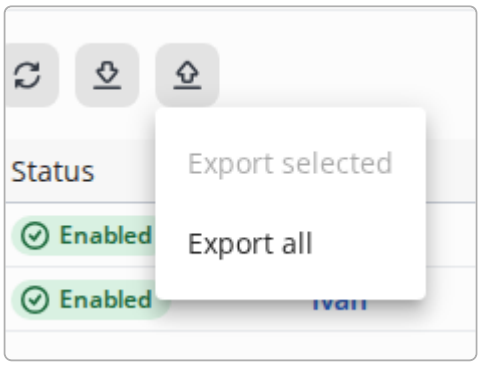


Figure 359. Window export menu

Values containing double quotation marks `(")` or slashes `(/)` will be escaped using `\"`.

Export all

On the action panel above the table, click  and select the **"Export all"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

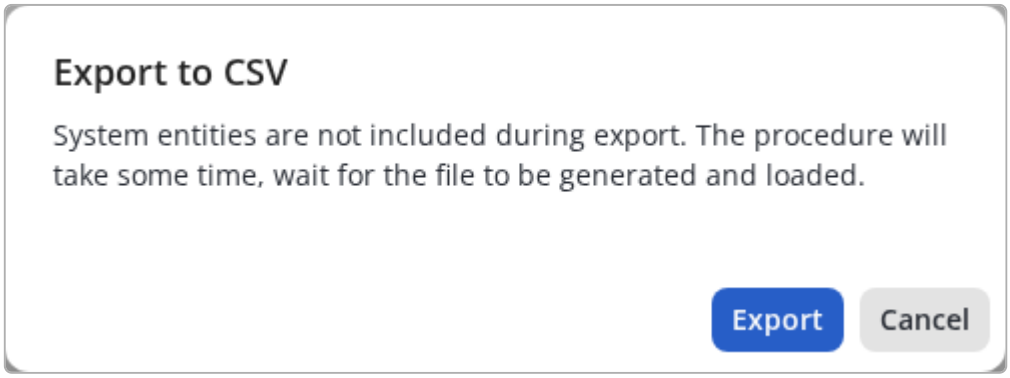


Figure 360. Export all

After clicking the **"Export"**, a file containing all records from the current section will be downloaded to your device.

Export selected

On the action panel above the table, click and select the **"Export selected"** mode. In the window that opens, confirm the action by clicking the **"Export"**:

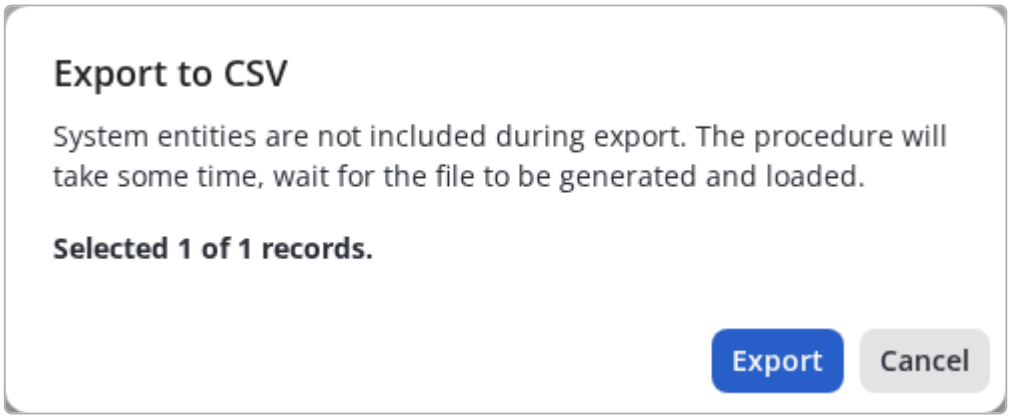


Figure 361. Export selected

After clicking the **"Export"**, a file containing only the checked records will be downloaded to your device.

When **opening** CSV files, `always` use a **comma (,)** as the field delimiter. **Double quotation marks (")** or **empty values** may be used as string/text delimiters.

When **saving** CSV files, `always` use a **comma (,)** as the field delimiter, with an **empty value** as the string/text delimiter.

If a double quotation mark `(")` was used as the line delimiter when opening the file, values containing double quotation marks `(")` or slashes `(/)`, escaped as `\"`, may receive an extra quotation mark `(")` upon saving. Please check the file in a text editor and remove any extra quotation marks if they appear.

Template

If there are no records in the table (or only system entities are present), selecting the **"Export all"** mode will generate a CSV file containing only the column headers. This file can be used as a **template** for preparing data prior to import.

Export particularities for TACACS+ Command sets

Values containing a double quote `(")` or the slash `(/)`, will be escaped using `\"`.

The structure of the csv file for TACACS+ command sets is described in the section "Import particularities for TACACS+ Command sets".

TACACS+ profiles

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

TACACS+ profiles are designed to consolidate granular network device access privilege level configurations into distinct entities assigned to network administrators who have successfully authenticated and been authorized via the TACACS+ protocol.

The main settings in device profiles are:

- Privilege levels assigned within the profile (default level and maximum level).
- User attributes.

View TACACS+ profiles table

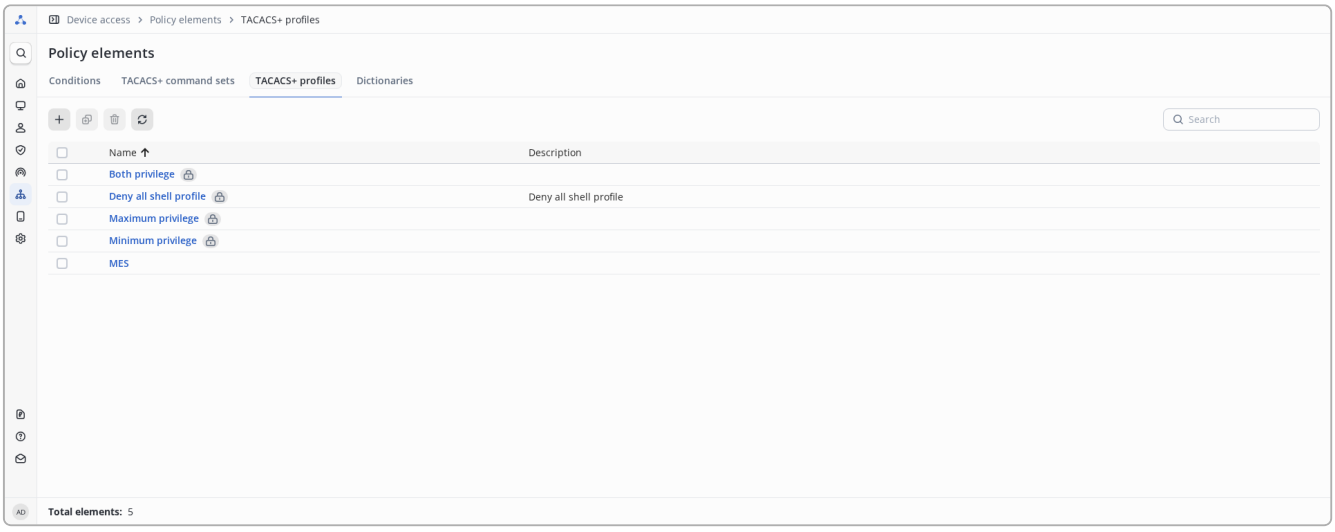


Figure 362. TACACS+ profile summary table

This page contains a table listing TACACS+ profiles.

The table contains the following columns:

- `Name` - Profile name.
  - - This entity is system and cannot be deleted or edited.
- `Description` - Profile description.

The table can be sorted by the `Name` column.

Elements of control:

-  - Add TACACS+ profile.
-  - Duplicate TACACS+ profile.
-  - Delete selected (checked) TACACS+ profile.
-  - Refresh profiles table.

Add TACACS+ profile

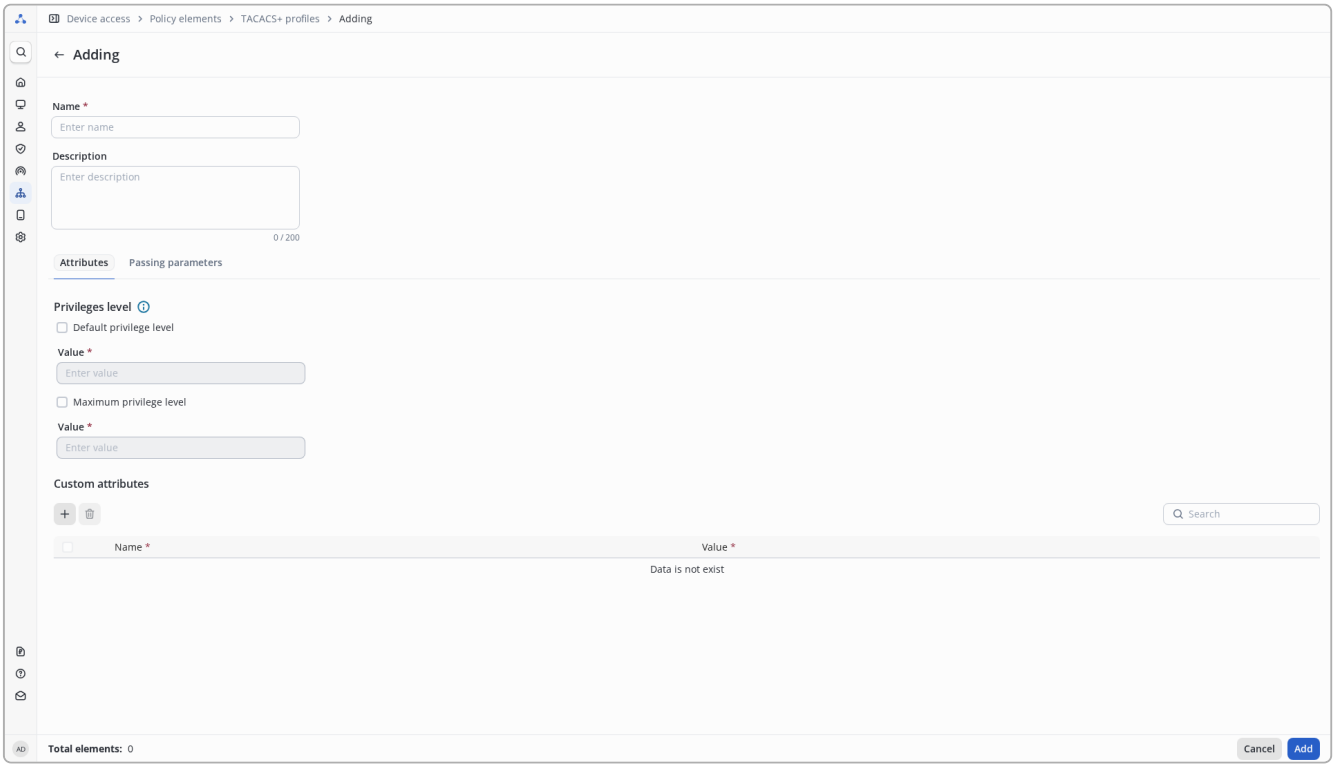


Figure 363. TACACS+ Profile Add Page

To add a TACACS+ profile, click  .

fill in the following parameters in new window:

- `Name` * - Profile name.
- `Description` - Description of the profile in any form (Will be displayed in the list of profiles).
- `Default privilege level` - The privilege level available to the authorized administrator immediately after authorization.
- `Maximum privilege level` - The privilege level that can be increased by an authorized administrator (the user can enable this level using authorized commands, for example during the configuration of a network device).

Parameters marked with * are required.

If the `Default Privilege Level` and `Maximum Privilege Level` options are unchecked, the authorized administrator account will be assigned the only available default privilege level of "1".

`User attributes` or otherwise **Attribute-Value pairs** - attributes that define the parameters of authorization, accounts and sessions within the TACACS+ protocol.

Use the following controls to add and remove custom attributes:

- + - Add attribute.
- 🗑 - Delete the selected (checked) attribute.

When adding an attribute, fields marked with * are required.

After completing the profile setup, click `Add` to add the created profile.

Editing a TACACS+ profile

To edit a TACACS+ profile, click on its name on the list page.

Figure 364. Hyperlink to the TACACS+ profile editing page

Restriction:

- you cannot edit system profiles TACACS+ (🔒).

This will open the edit page.

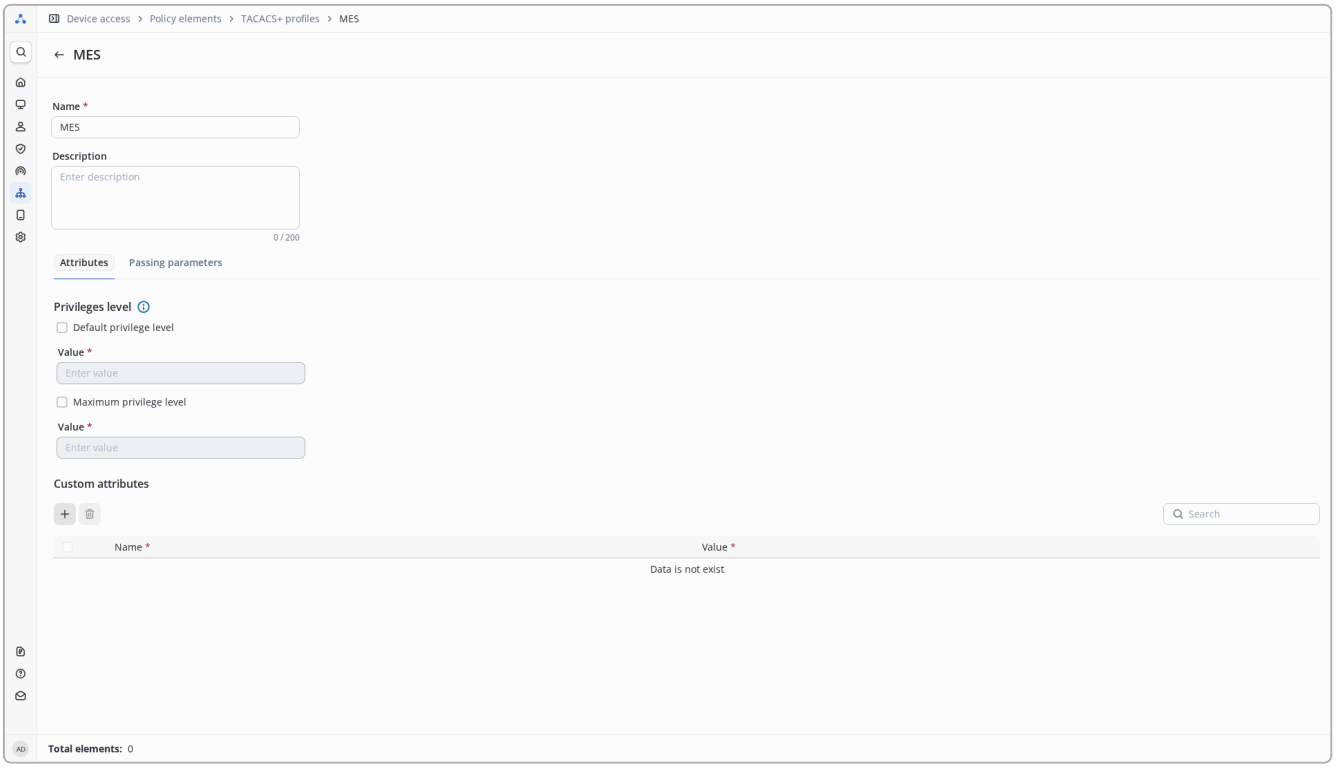


Figure 365. TACACS+ profile editing page

After editing, click the **"Save"** button. The button is hidden until at least one change is made.

The **"Cancel"** button resets the changes made to their original state.

Deleting a TACACS+ profile

To delete profile TACACS+ on the view page, select the checkbox to the left of the sets you want to delete and click at the top left.

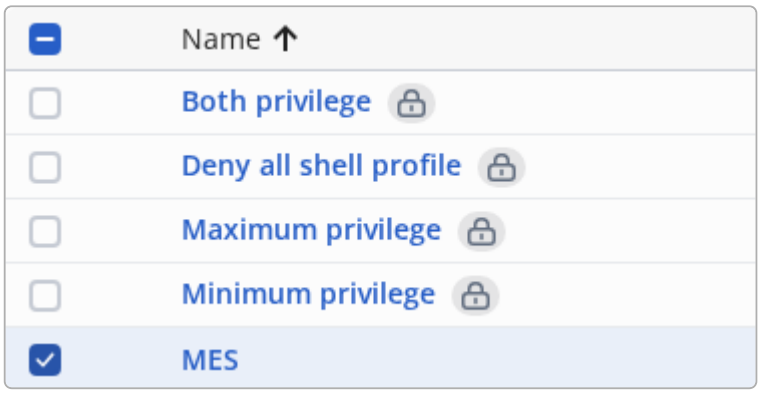


Figure 366. Selecting a TACACS+ profile in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

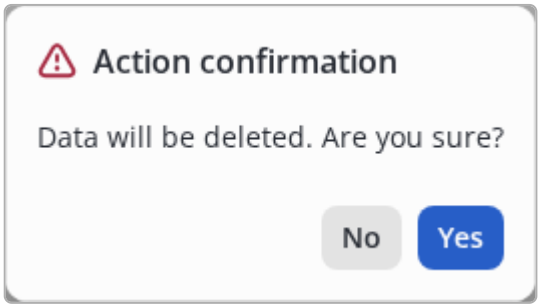


Figure 367. Modal dialog for confirmation

Restriction:

- You cannot delete system profiles TACACS+ ( ).

TACACS+ profiles available by default.

After enabling the TACACS+ functionality, several pre-installed basic TACACS+ profiles are already available to the system administrator:

- `Both privilege` - Authorized accounts that fall under this profile will be assigned a default privilege level of "1" and will be able to be elevated to a maximum privilege level of "15".
- `Deny all shell profile` - Authorized accounts that fall under this profile will be denied authorization.
- `Maximum privilege` - Authorized accounts that fall under this profile will be assigned the default privilege level of "15".
- `Minimum privilege` - Authorized accounts that fall under this profile will be assigned the privilege level by default, "1".

The listed profiles are system ( ) and cannot be edited or deleted.

Network devices policies

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Description

Network device policies define the actions to be performed when processing authentication and authorization requests from network device administrators via the TACACS+ protocol.

Processing Order

1. Processing in the policies table:
   - The authentication or authorization request is checked for compliance with the logical conditions used in the TACACS+ policies.
   - The verification is performed sequentially from top to bottom. Disabled policies are not evaluated and skipped. For policies with the status "Condition Check", the policy hit counter is incremented, but no request processing is performed — the search for a matching policy continues further.

Once a matching policy is found, further policy evaluation stops, and processing continues inside that policy.

- If no policy with a matching condition is found, the request will be processed according to the default policy `Default`. This policy is always last in the sequence, cannot be deleted, and its condition cannot be edited. By default, this policy uses the **Deny all shell profile** in `TACACS+ Profile settings`, which will reject connections to the network device. This behavior can be modified by adding or editing authentication and authorization policies in the default `Default` policy.

2. Processing Within the Matched Policy:
   - Check for compliance with the authentication policy conditions is first performed.
   - After determining the authentication policy, a user search is performed within the identity sequence selected for this policy. If the user is not found or their password is incorrect, the connection is rejected, and the request processing ends at this step.
   - For requests from successfully authenticated users, the system verifies compliance with authorization policy conditions.
   - After the authorization policy is determined, the following actions are performed based on the request type:
     - Privilege level authorization request post-authentication: The system retrieves the "Default Privilege Level" value from the TACACS+ authorization profile assigned to the policy in `TACACS+ Profile` setting. If no value is specified, privilege level 1 is automatically assigned.
     - Privilege escalation request: The system retrieves the "Maximum Privilege Level" value from the TACACS+ authorization profile assigned to the policy and compares it with the requested privilege level - If the requested level less or equal to the configured maximum: escalation is granted. If the requested level greater than configured maximum: escalation is denied. If no maximum level is specified in the assigned profile: the privilege escalation request is automatically denied.
     - The system verifies whether the command is permitted in the `TACACS+ Command set` assigned to the authorization policy. Command execution is allowed if allowed in the permitted command set, otherwise denied.

When the default "Deny all shell profile" authorization profile is selected in the policy settings - All authentication and authorization requests matching this profile will be rejected. This applies even to successfully authenticated users.

View Policy Sets

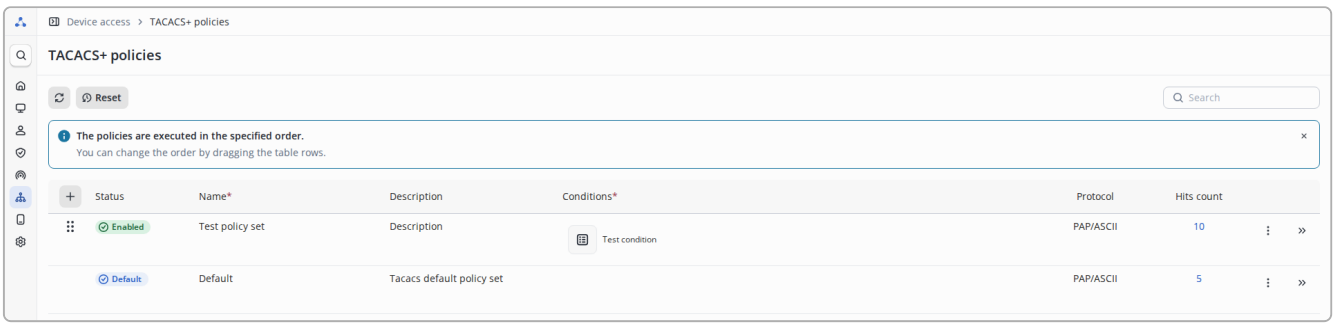


Figure 368. View all Policies.

Table Column Descriptions:

- `Status` – Policy status.
- `Name` * – Policy name.
- `Description` – Arbitrary description.
- `Conditions` * – Logical conditions used. If a library condition is applied, its name is displayed. If a non-library condition is used, its structure is shown.
- `Protocol` * – Always `PAP/ASCII`.
- `Hits count` – Number of authorization attempts matching the specified Conditions.

Elements of Control:

- – refresh data.
- Reset – delete counters for failed attempts on all policies (attempt counts).
- `Search` – a registered search by name (search results will be highlighted).
- – add TACACS+ policy (policy will be added first in the list).
- - element for change policy set order in list by dragging.
- `Hits count` – counter for successful logins under specified conditions.
- – actions:
  - `Add Top` – add policy *before* selected one.
  - `Add Bottom` – add policy *after* selected one.
  - `Delete` – remove selected policy.
- – go to `control` of selected policy.
- `Save` – save changes.
- `Cancel` – cancel changes.

All policies are evaluated in their displayed order: top to bottom. For this reason, all policies remain visible on the page at all times. Search terms entered in the Search field highlight matching policies without removing any policies from the list.

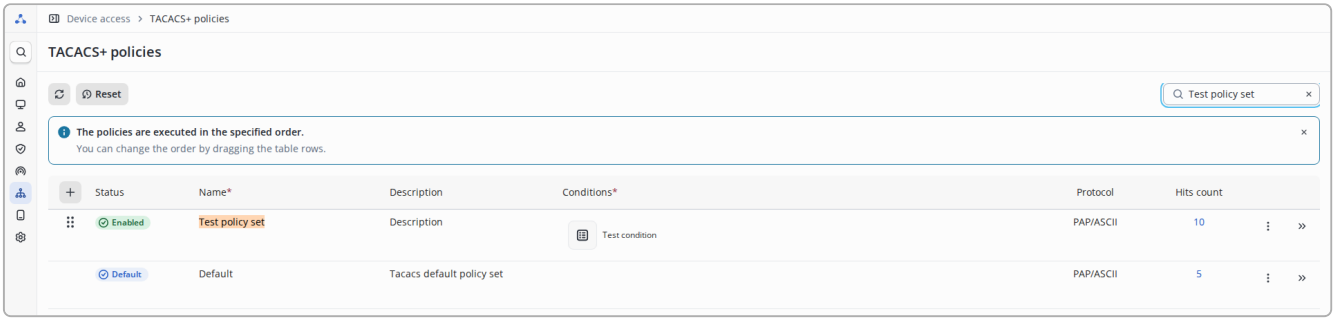


Figure 369. Search Policies.

To change the order, drag a policy by the ⠿ in the + column.

After reordering policies, remember to click the Save button; otherwise, the changes will not take effect.

To view the list of authentication and authorization policies, click » to the right of the selected policy set.

Editing Policy sets list

Add Policy set

To add a policy in the policy list window, click the + button in the top-left corner—the new policy will be added at the top of the list.

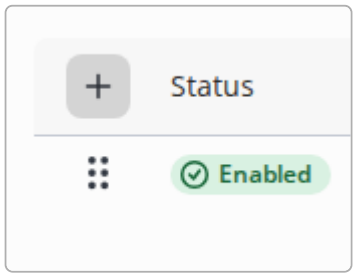


Figure 370. Add Policy icon.

If you need to insert a policy in a specific location, click the ⋮ button to the right of the selected policy and choose Add Above or Add Below from the dropdown menu.

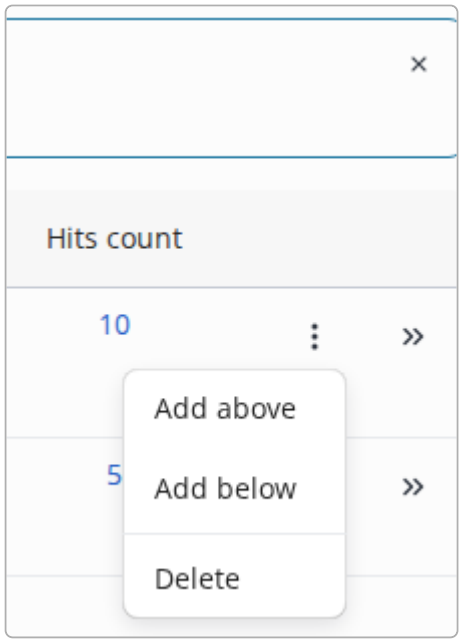


Figure 371. Dropdown Action Menu.

Status Information:

- Enabled – Allows processing requests;
- Disabled – Excludes from processing, does not check the Condition, and does not handle requests;
- Condition check – Allows checking the Condition (and increments the trigger counter) but does not process requests;

- Default – Used only for the default policy.

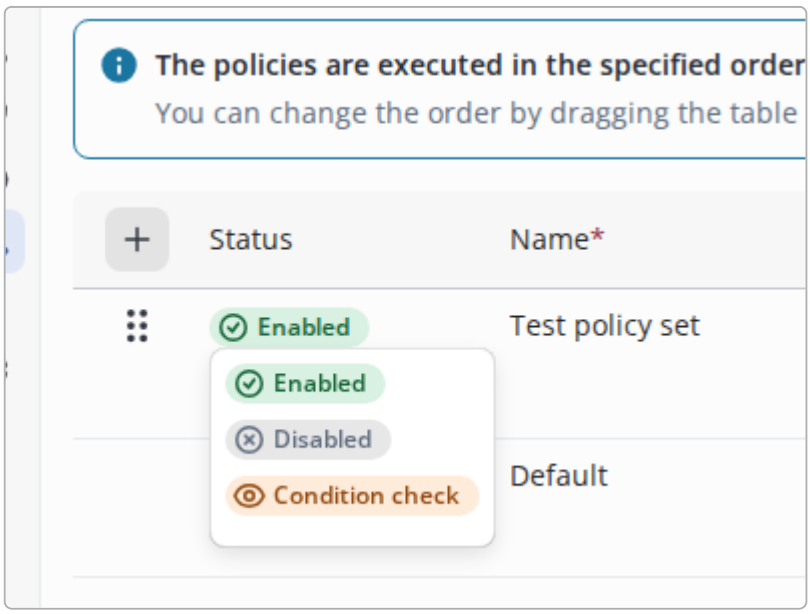


Figure 372. Policy status change.

In a newly created policy set, enter a readable name in the `Name` field or leave the auto-generated name unchanged.

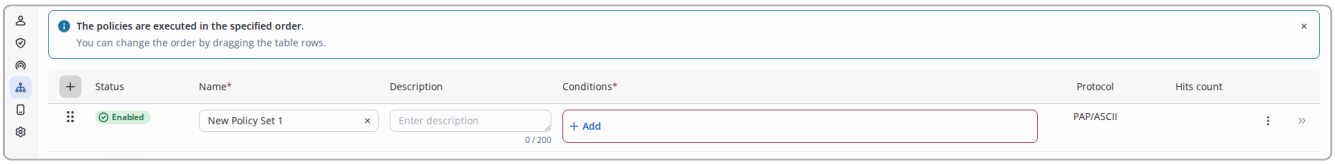


Figure 373. New Policy entry display. Required fields.

To edit a condition, click + Add , and the Condition Editor will open.

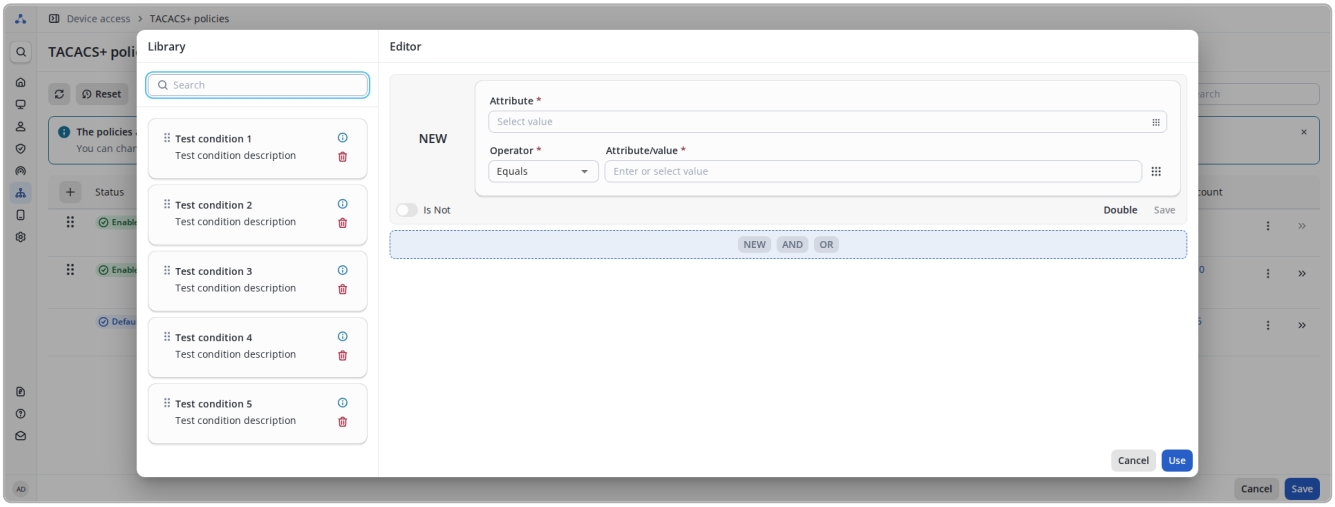


Figure 374. Condition Editor.

Editing conditions follows the same method described in Conditions.

When configuring a policy set condition, there are restrictions on the types of dictionaries that can be used. The following dictionaries are allowed: `NETWORK_ACCESS`, `TACACS_PLUS`, `DEVICE`.

When editing conditions directly in the policy, you can use the configured condition without saving it to the Library. To do this, after setting up the condition (without saving it), click the `Use` button.

Clicking the **Save** button will apply all changes.

After creating a new policy, you must configure its authentication and authorization policies. Otherwise, all connection attempts matching this policy's logical conditions will be rejected according to the default Default policy rules!

Policy set named `Default` also can be edited.

Policy set deletion

Policy set deletion is available in the `Actions` menu. Only one policy set can be deleted at a time.

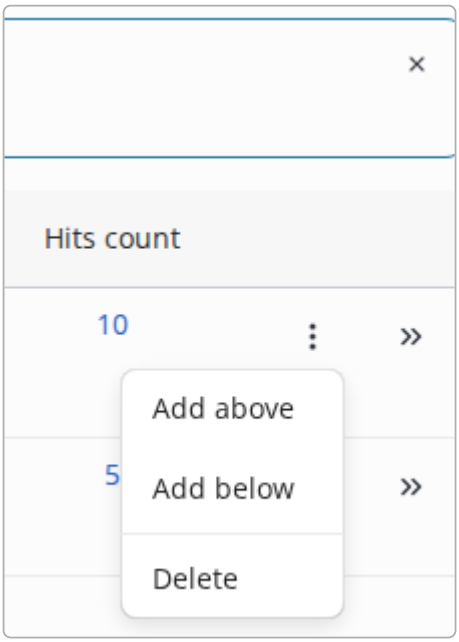


Figure 375. Policy deletion dropdown menu.

Policy hit count

The counters in the `Hits count` column show how many attempts were processed using this policy. Value changes indicate that the Condition is triggering.

Using the Condition check status and observing the trigger counters, you can first fine-tune and debug the condition, and only then put the policy into operation by switching it to the Enabled status.

The trigger counters for all policy sets can be reset by clicking on Reset. To reset the counter for a specific set, click the number in the `Hits Count` column, click the `Reset` button, and confirm the action.

TACACS+ policy configuration

This section contains information about functionality that is available as part of the additional **NAICE-TACACS+** license option. To purchase this functionality, please contact your manager or email eltex@eltex-co.ru.

Viewing the policies in the selected policy set

To view the list of TACACS authentication and authorization policies: In the `View` column, click the » icon next to the selected policy set. The detailed page for editing authentication and authorization policy rules will open.

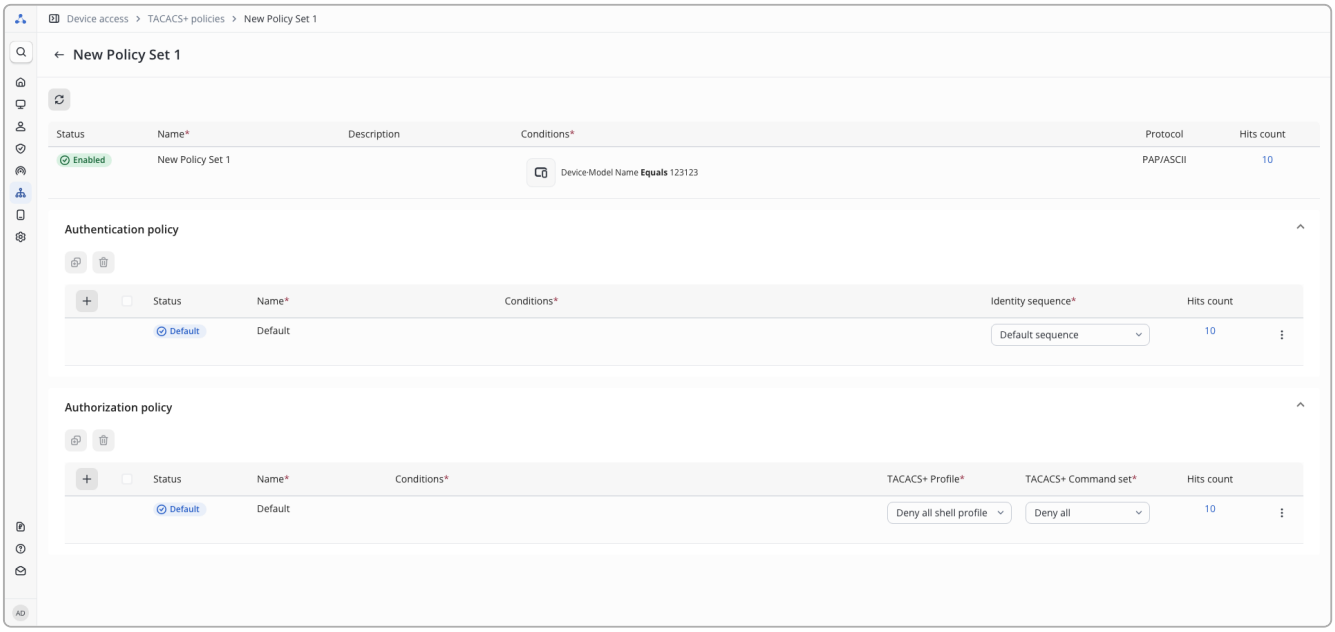


Figure 376. Policy set view & Edit page

The final authentication and authorization policy rules named `Default` cannot be renamed or have their trigger conditions modified. They will always appear last in the list, no other rules can be placed below them. These rules define the default behavior when no other policies match.

The policy set view form is organized into sections:

- Policy Set Management Section - Displays the contents of the selected policy set in a format consistent with the page :policy-sets/index.html
- Authentication Policy - Manages user authentication processes.
- Authorization Policy - Controls User authorization for privilege level and profile access and lists of permitted commands.

Control Elements:

- - Requests current policy trigger counts
- `Status` - Enable/disable/monitor the corresponding policy
- `Name` * - Policy name (required field)
- `Description` - Custom description (optional)

`Conditions` * - Logical conditions. Displays the library condition name (if used). Shows condition structure (for non-library conditions).

- `Protocol` * - Always `PAP/ASCII`.
- `Identity sequence` * - Selected identity source chain
- `TACACS Profile` * - Available TACACS profiles selection
- `TACACS Command Set` * - Available command sets selection
- ⋮ - Actions menu:
  - `Add Above` - Insert policy rule *before* selected one
  - `Add Below` - Insert policy rule *after* selected one
  - `Duplicate` - Insert duplicated policy rule
  - `Delete` - Remove selected policy rule
- `Hits count` - Authorization attempts matching the Conditions. Click the counter to Reset it.
- `Save` - Apply changes
- `Cancel` - Discard changes

Parameters marked with an asterisk * are mandatory.

To change the order of Authentication and Authorization Policies, drag a policy using the ⠿ handle in the + column (visible on hover) - similar to the functionality described in :policy-sets/index.html.

Editing policies

To edit policies, click » next to the selected policy set.

You must configure at least one authentication policy and one authorization policy rule for successful client connections using this TACACS policy. Alternatively, reconfigure the default **Deny** rule `Default`.

The `Default` policy can be modified to change its behavior. However, for security best practices: Configure custom rules for your specific needs, and keep the default policy behavior as **Deny**.

Authentication policy

Figure 377. Authentication policy panel.

To configure an authentication policy in the Authentication Policy section: click the + button, and new rule will be created.

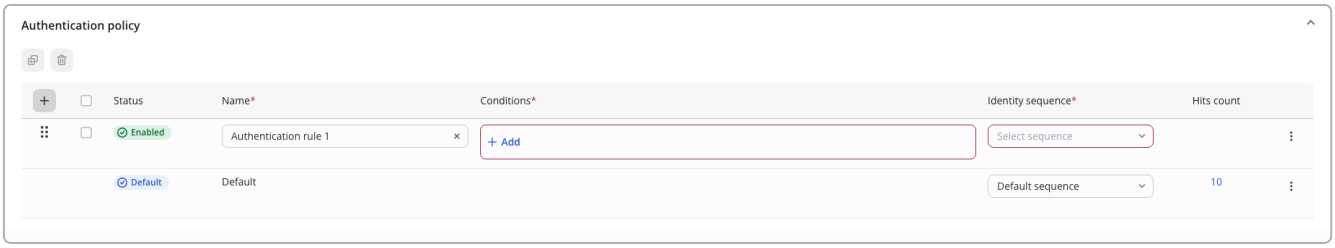


Figure 378. New authentication policy.

Input the policy name in the `Name` field.

Editing the conditions is performed the same way that described in Conditions.

When configuring a policy condition, there are restrictions on the types of dictionaries that can be used. Only the following dictionaries are allowed: NETWORK_ACCESS, TACACS_PLUS, DEVICE.

When editing conditions in a policy, you can apply the configured condition without saving it to the **Library**. Just click `Use` after setup instead of saving.

In the dropdown menu **Identity sequence**, select the required chain.

A new policy rule can also be created from an existing one by duplicating it. To do this, select the desired rule/rules via ☐, and then click ⧉ above the table. A new rule will be created above the selected one with similar settings and a name ending with "_copy".

Use the ⋮ button to the right of the policy to add a new rule above or below, to duplicate or delete the current one.

Click the `Save` button to save your changes.

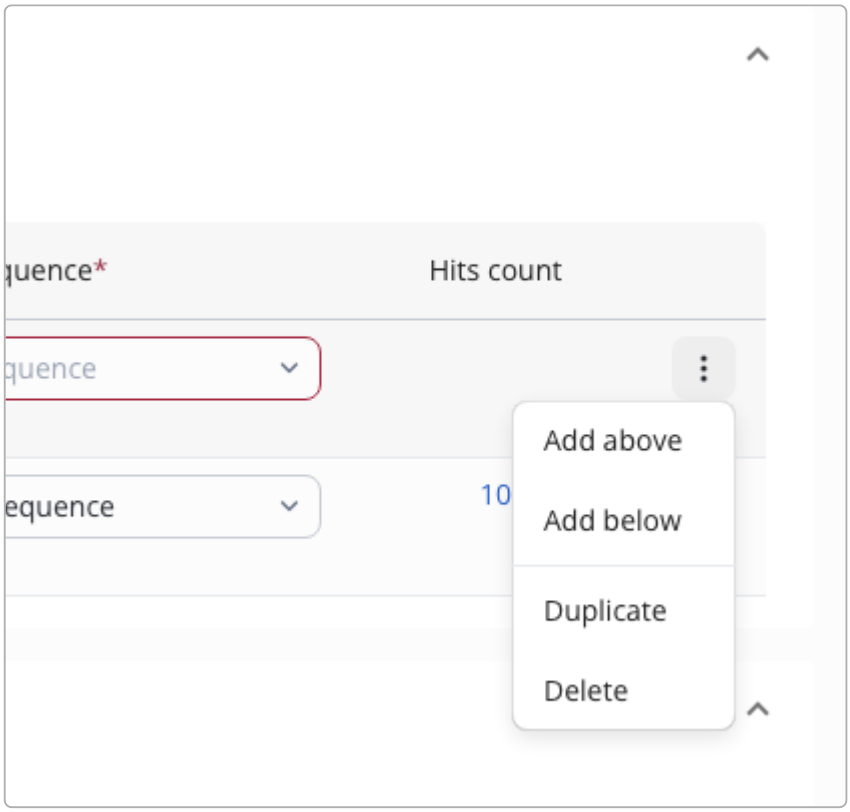


Figure 379. Authentication policy. Dropdown menu - Actions.

You can also change the policy status, similar to how statuses work in policy sets.

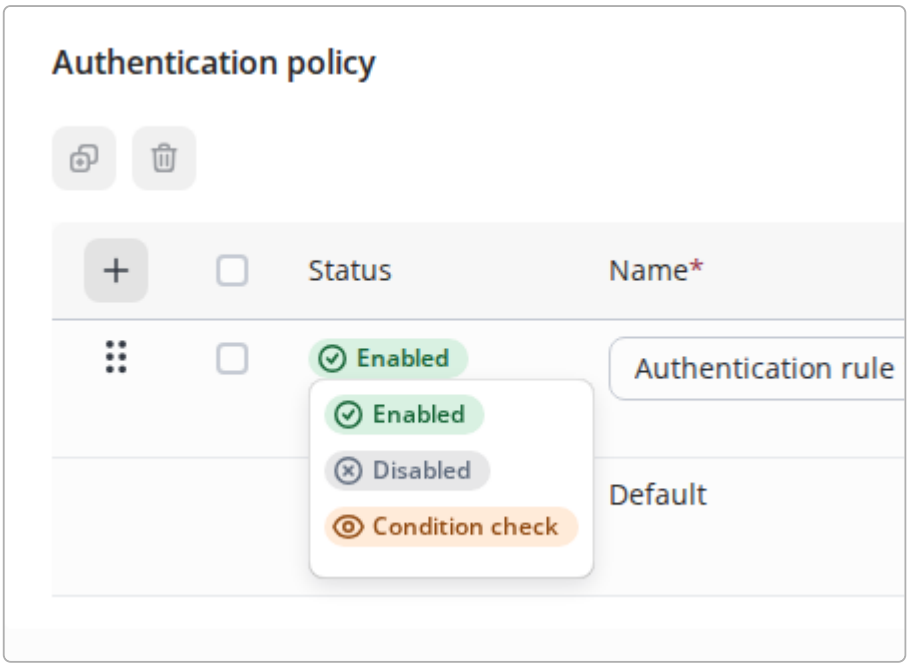


Figure 380. Authentication policy. Status Modification.

Authorization policy

Figure 381. Authorization policies panel.

To configure an authorization policy rule, click + in the Authorization Policies section. A new rule will appear.

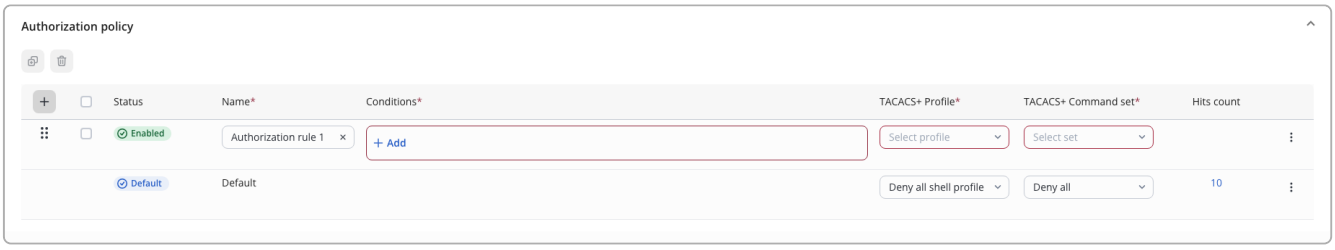


Figure 382. New Authorization policy.

In the `Name` field, enter the policy rule name.

To edit the condition, click + Add - the condition editor will open. Conditions are edited in the same way as described in Conditions.

When configuring an authorization policy, you can use the following dictionaries: `LDAP`, `NETWORK_ACCESS`, `TACACS+`, `IDENTITY, DEVICE`.

When editing conditions directly within a policy, you can use the configured condition without saving it to the Library. To do this, set up the condition and click `Use` without saving it first.

In the **TACACS Profile** dropdown menu, select the required TACACS profile.

In the **TACACS Command Set** dropdown menu, select the required TACACS command set.

A new policy rule can also be created from an existing one by duplicating it. To do this, select the desired rule/rules via ☐, and then click above the table. A new rule will be created above the selected one with similar settings and a name ending with "_copy".

Using the ⋮ button to the right of a policy, you can: Add a new rule above the current one, add a new rule below the current one, duplicate or delete the current rule.

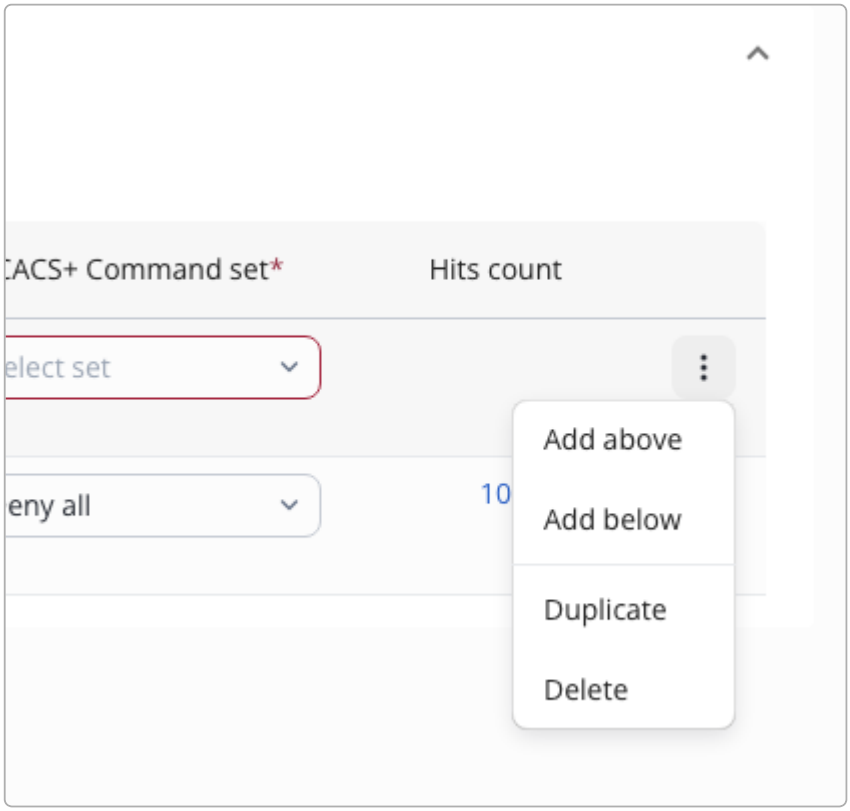


Figure 383. Authorization Policy. Dropdown menu - Actions.

Policy status can also be modified using the same status controls available in policy sets.

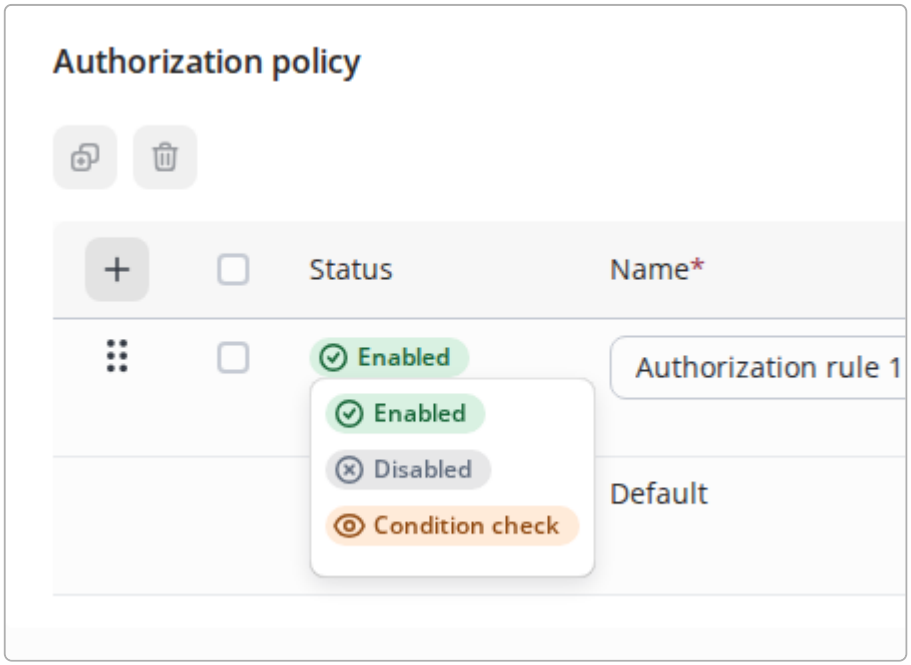


Figure 384. Authorization policy. Status Modification.

To delete multiple rules, select them using ☐ and then click 🗑 above the table of rules.

The `Save` button will only become available after: Adding at least one fully configured authentication policy and adding at least one fully configured authorization policy.

Click the `Save` button.

Notification gateways

Notification gateways management

Description

Gateway management allows you to create, configure, and use integrations with SMS sending services for portal authorization and mail servers for setting up notifications about the creation and editing of system users. It is possible to configure multiple SMS gateways, which allows for flexible integration settings for each Guest portal.

Currently, integration is only implemented via HTTP/HTTPS protocols for the Guest portal and SMTP for password policies.

View a list of notification gateways

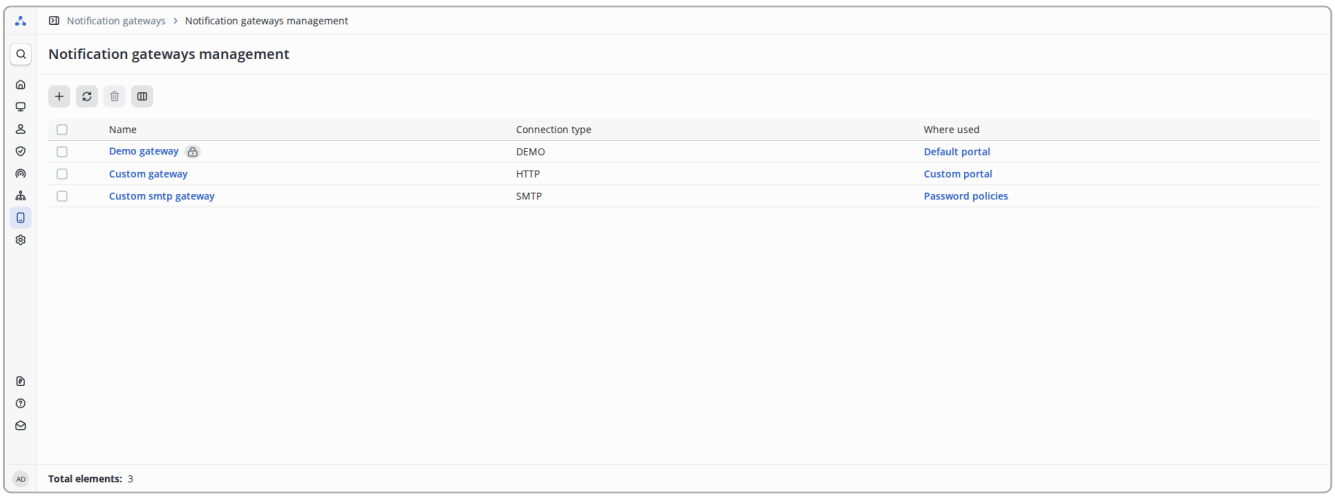


Figure 385. Table with a list of notification gateways

Below is a table with a list, which contains columns:

- `Name` - The name of the SMS gateway.
  - - This entity is system and cannot be deleted or edited.
- `Connection type` - Gateway connection type. Can take values: DEMO, HTTP, SMTP
- `Where used` - A list of entities in which this gateway is used.

Additional columns are also available, configurable in in the table header:

- `Description` - Description of the notification gateway.
- `Additional info` - Contains additional data about the existing integration.

Controls:

- - Add a new element.
- - Refresh table data.

- Delete selected elements (inactive until at least one element is selected)

- - Open the settings window for the displayed columns of the table.
- - Checkbox, which is responsible for selecting elements to perform further actions (for example, deletion).

Adding notification gateway

To add a notification gateway, click .

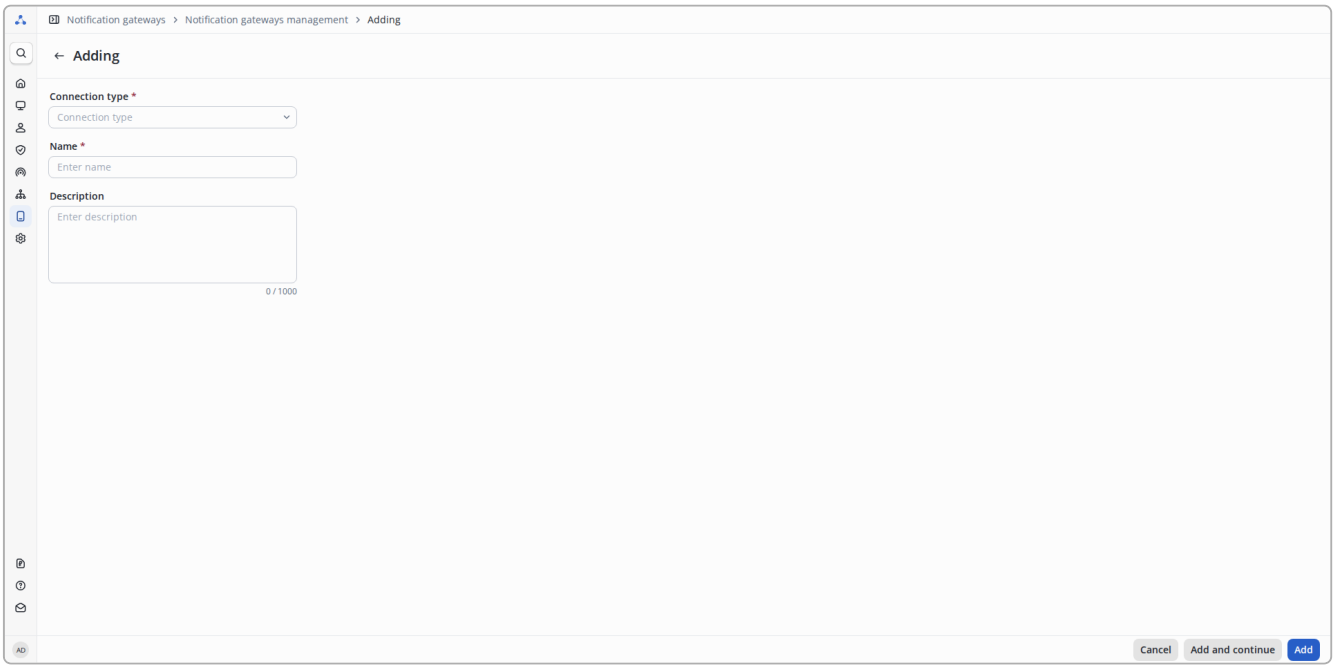


Figure 386. Notification gateway Add Page

In the form that opens, you can fill in the following parameters:

- `Connection type` * - Gateway connection type. Can take values: DEMO, HTTP, SMTP
- `Name` * - Notification gateway name; must be unique within the gateway list. Maximum length is 200 characters.
- `Description` - Notification gateway description. Maximum length - 1000 characters.

Parameters marked with an asterisk * are required.

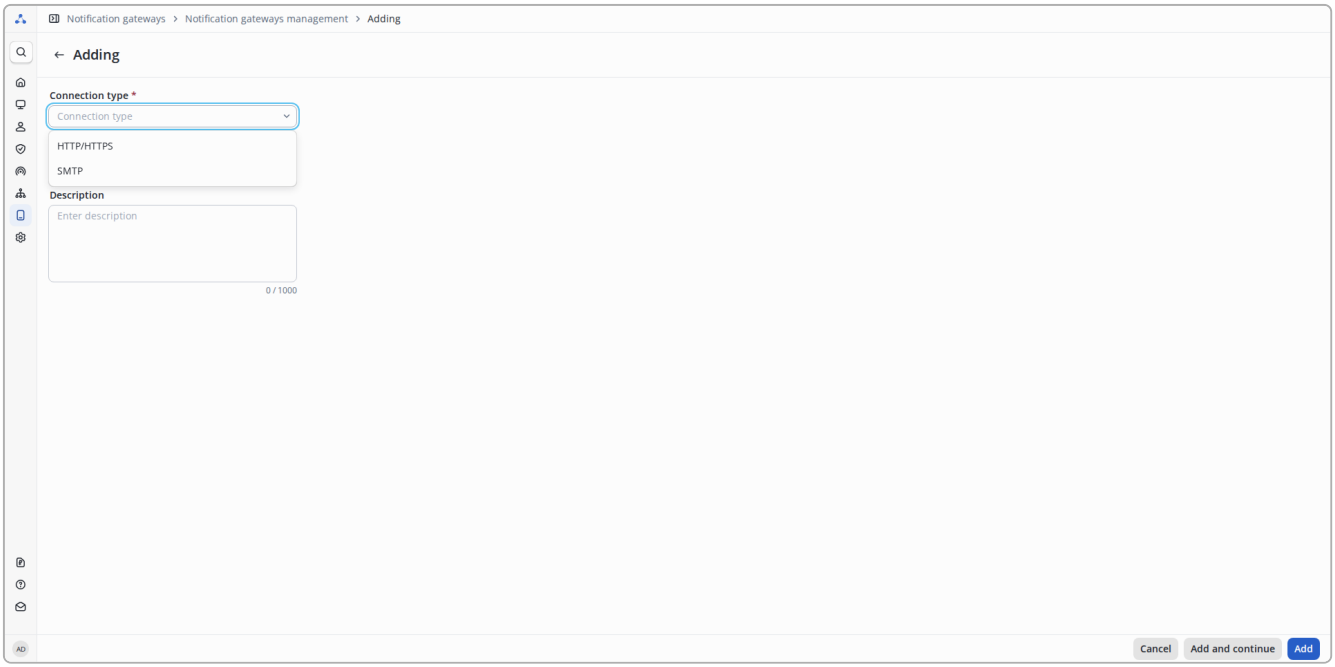


Figure 387. The page for adding a notification gateway with connection type selection

Further gateway configuration depends on the selected connection type. For more information on configuring the HTTP/HTTPS and SMTP gateways, see the relevant sections.

For adding a gateway, the system provides two submit buttons that differ in their subsequent behavior:

- **"Add and continue"** — after clicking, the form does not close, and the **"Send test SMS/email"** button becomes available.
- **"Add"** — after clicking, the user is redirected to the notification gateways list page.

Editing notification Gateway

To edit a notification gateway, on the list page, click its name.

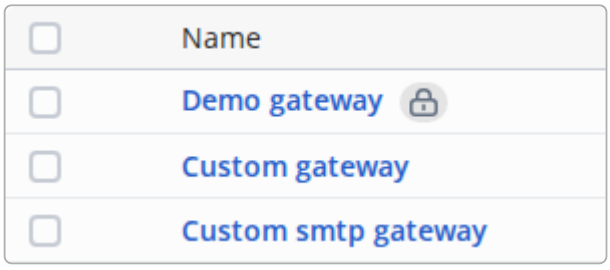


Figure 388. Hyperlink to the notification gateway editing page

After this, an editing window similar to the adding page will open.

When changes are made to the form, the **"Send test SMS/email"** button becomes unavailable. The button is reactivated only after the changes are saved.

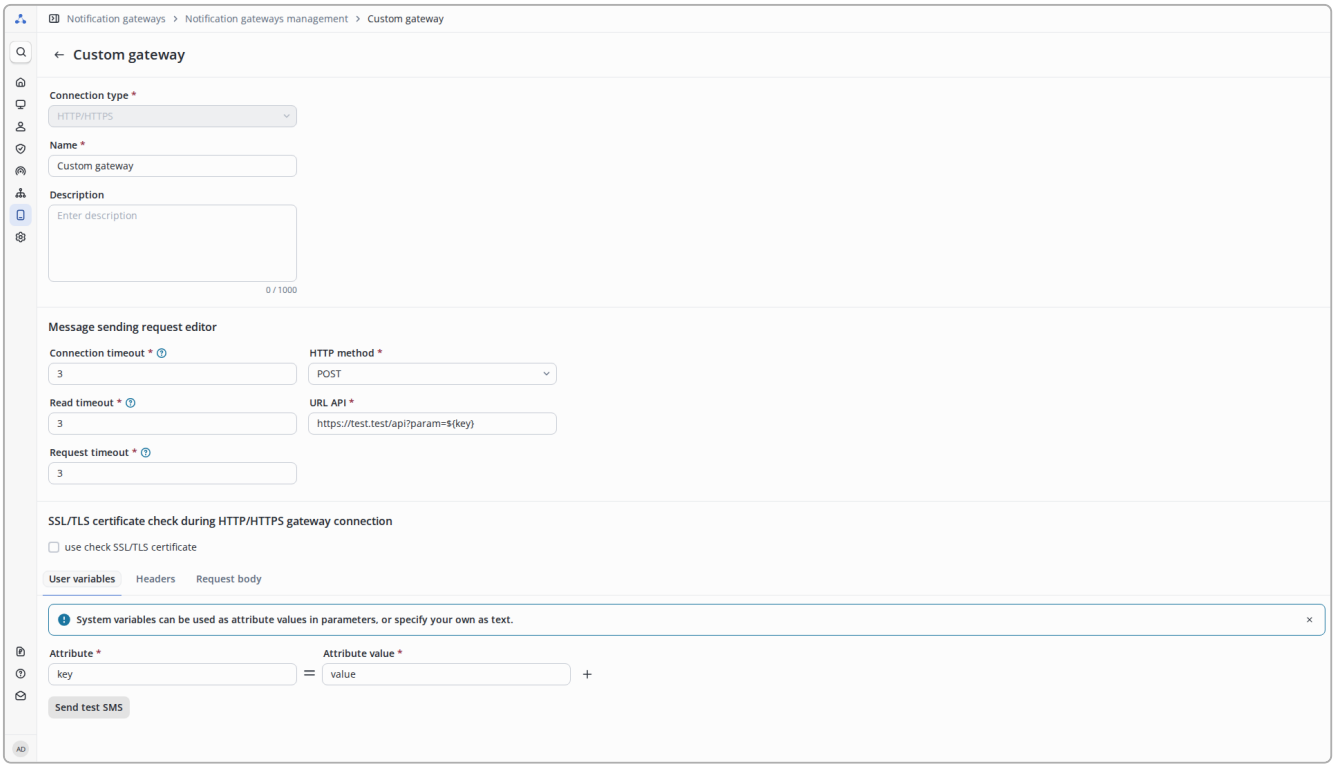


Figure 389. HTTP/HTTPS gateway editing page

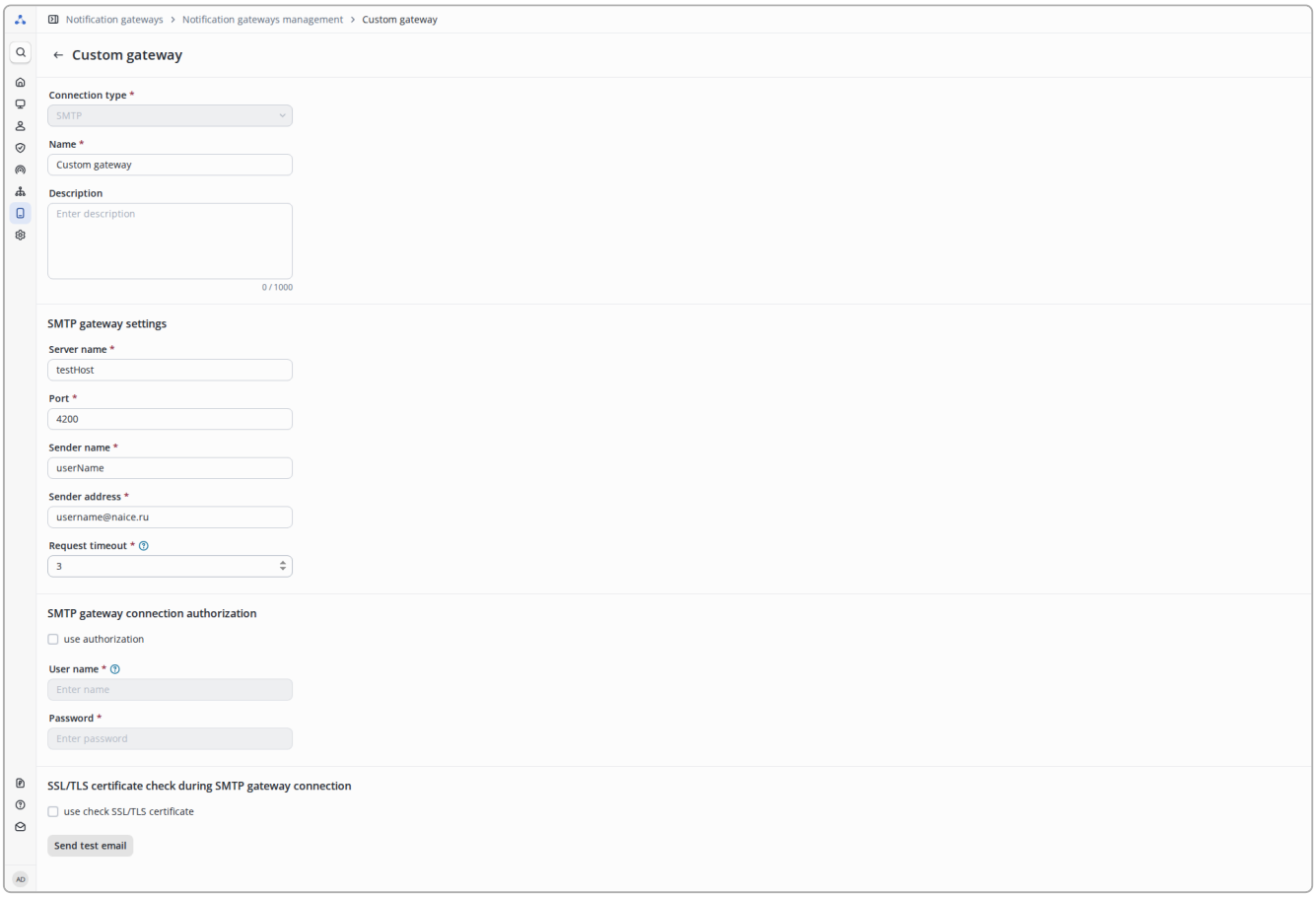


Figure 390. SMTP gateway editing page

For saving changes, the system provides two buttons that differ in their subsequent behavior:

- **"Save and continue"** — after clicking, the form does not close, and the **"Send test SMS/email"** button becomes available again.

- **"Save"** — after clicking, the user is redirected to the notification gateways list page.

The **"Cancel"** button resets the changes made to their original state.

Removing a notification gateway

To delete, in the list window, select the checkbox to the left of the name of the gateways that you want to delete, and click the button  at the top left.

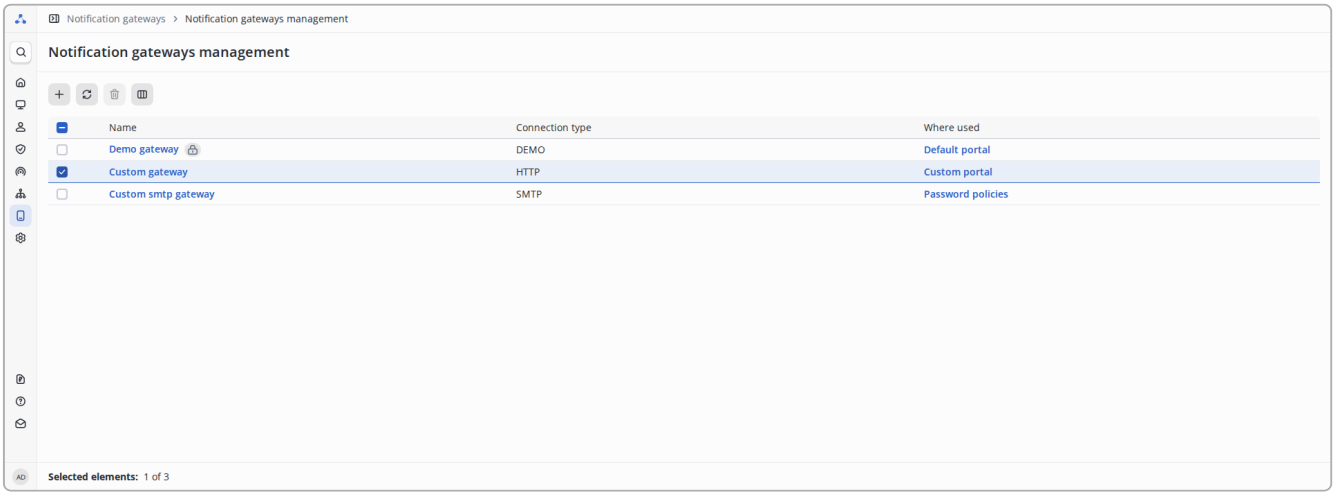


Figure 391. Selecting a gateway in the table to delete

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

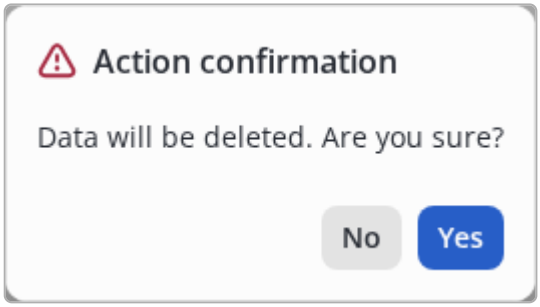


Figure 392. Modal dialog for confirmation

HTTP/HTTPS

Send message request editor

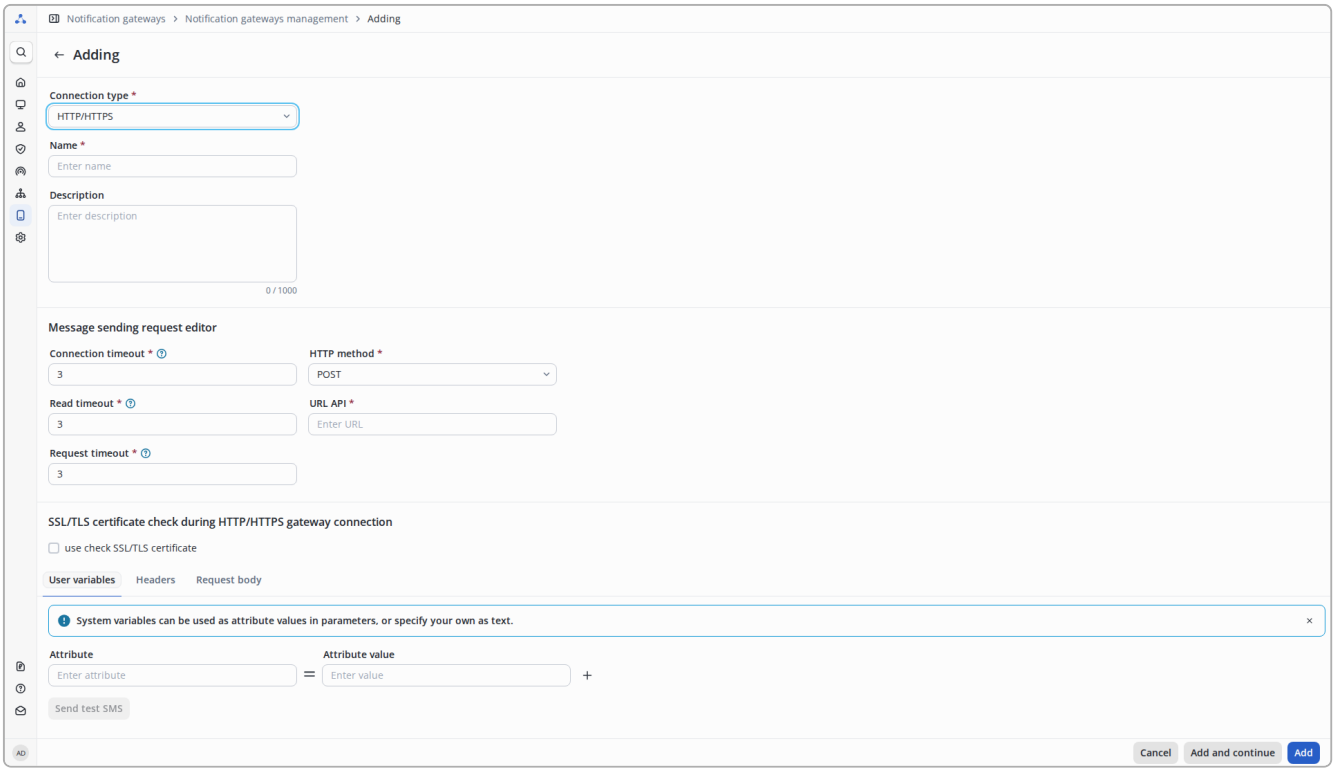


Figure 393. HTTP/HTTPS gateway creation page

When you select the HTTP/HTTPS connection type in the gateway creation form, the following options become available:

- `Connection timeout` * -maximum wait time for connection to the server(sec.).The default is 3 seconds.
- `Read timeout` * - maximum wait time for response from the server(sec.).The default is 3 seconds.
- `Request timeout` * - maximum wait time for data from the server(sec.).The default is 3 seconds.
- `HTTP method` * - A drop-down list for selecting the HTTP method for integration. Available options are: GET, POST, and PUT. The default is POST.
- `URL API` * - The address to which the request to send a message within the integration will be executed.

Within the framework of creating SMS integration, flexible configuration of the request for sending a message is available. On the SMS gateway creation page, 3 sections are available for editing the request:

- `User variables` - section for creating user-defined variables required to create a request (for example: login/password/API-key for integration). To create a variable, you must specify its name in the "Attribute" column and its value in the "Attribute value" column. Adding a new variable is done using the + button, and deleting it is done using the button.
- `Headers` - section for creating HTTP headers for a request by the user. To create a header, you must specify its name in the "Attribute" column and its value in the "Attribute Value" column. The value can also be a variable. To select a variable, click Similar to the section with user variables, adding a new header is done using the + button, and deleting it is done using the button.
-

`Request body` - section for editing the request body. Data can be recorded in JSON format. In this section, the use of variables as a value is also allowed.

Working with variables

For flexible configuration of SMS integration, it is assumed that user and system variables will be used when composing a request. The system variables are "Message text" and "Phone number". All variables can be used to substitute values into URL, headers, and request body. In addition to user-configurable variables, there are system variables `${msg}` and `${target}`, which represent the message text and phone number, respectively.

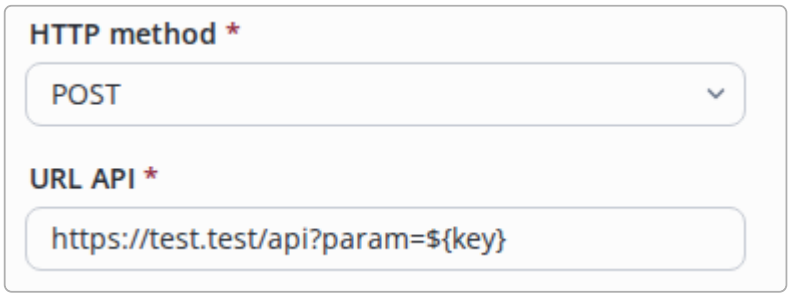


Figure 394. Example of adding a variable to a request URL

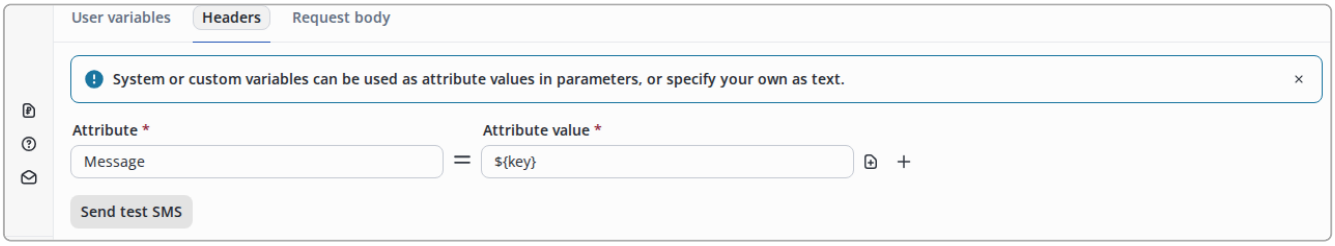


Figure 395. Example of adding a variable to a request header

Figure 396. Example of adding a variable to a request body

SSL/TLS certificate check during HTTP/HTTPS gateway connection

Figure 397. The setting responsible for certificate validation

If you need to verify the server's certificate when establishing a connection with the HTTP/HTTPS server, you must enable the 'use check SSL/TLS certificate' checkbox. More details can be found in the documentation section for trusted certificates.

Sending a test message

After adding the gateway, the **"Send test SMS"** button becomes available. Clicking it opens a verification window for the created integration, which includes a phone number input field.

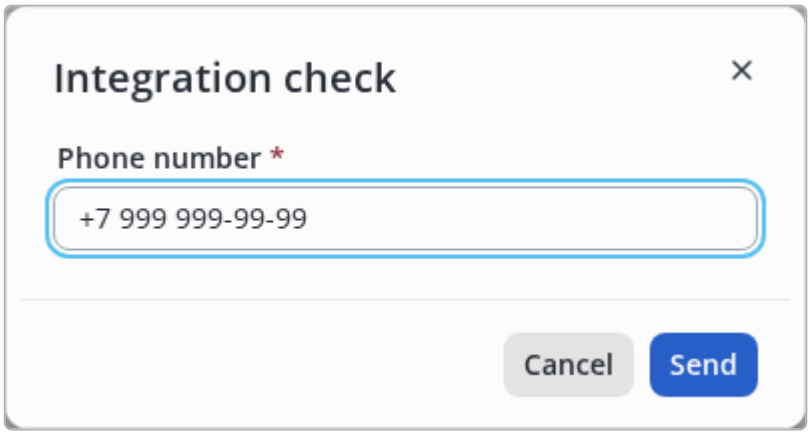


Figure 398. Window for checking the created SMS integration

After filling in the phone number and sending an SMS, a window with the verification result will open for the user.

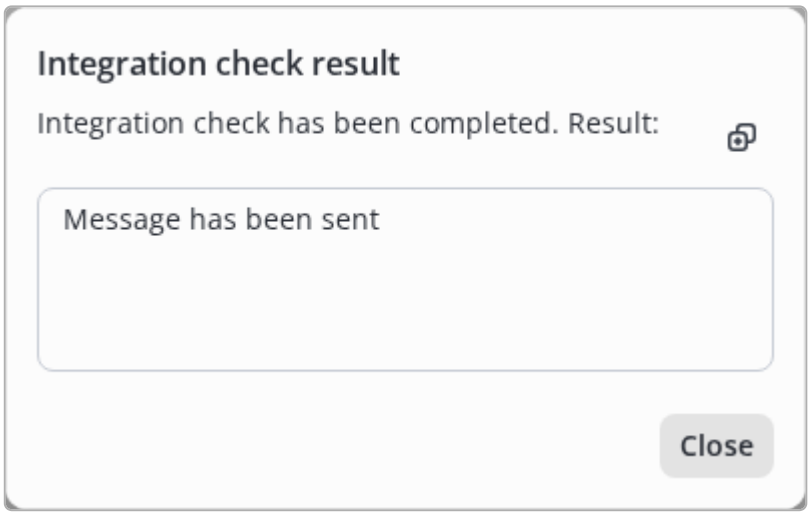


Figure 399. Result window of checking the created SMS integration

SMTP

SMTP gateway settings

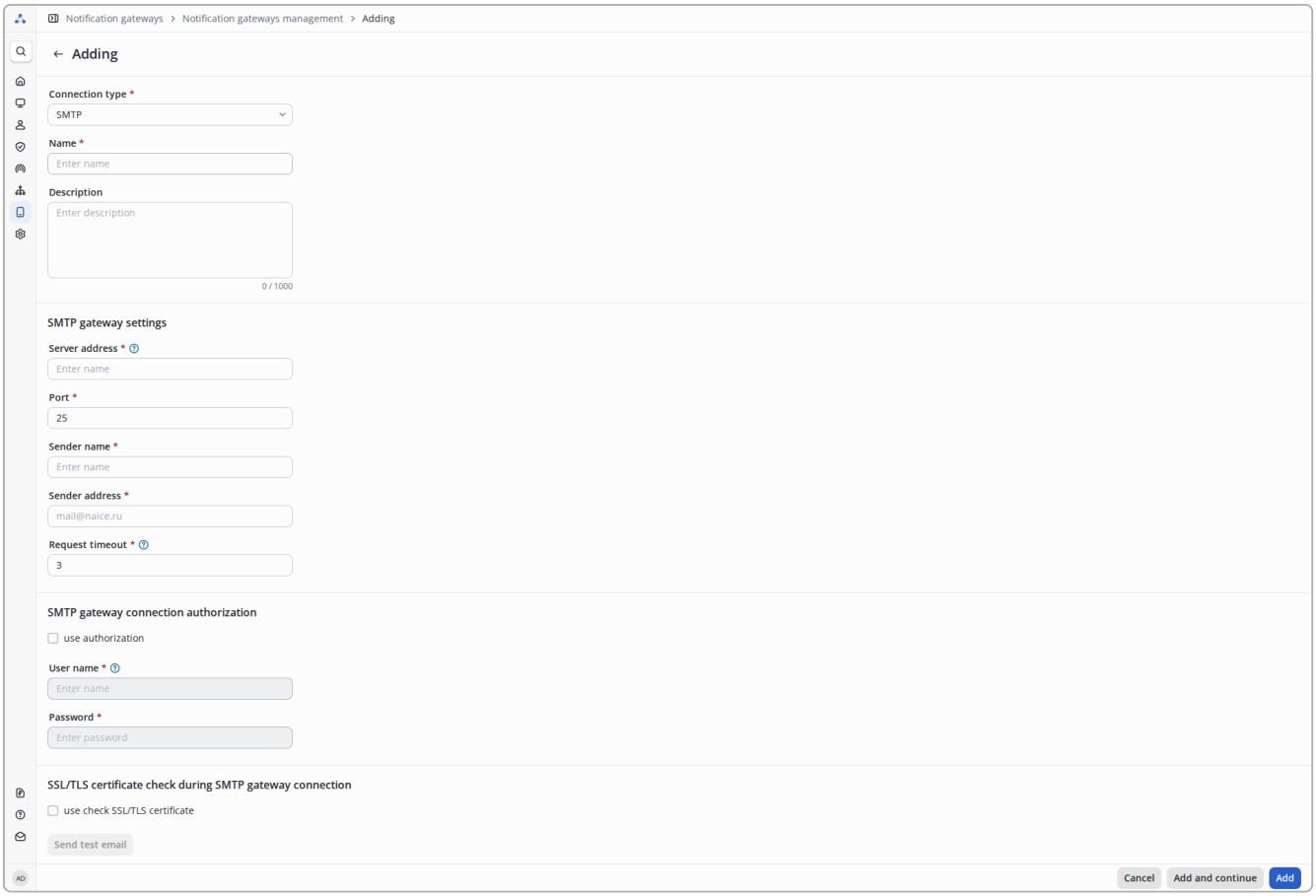


Figure 400. SMTP gateway creation page

When you select the SMTP connection type in the gateway creation form, the following parameters become available:

- `Server name` * - the IP address or domain name of the mail server to be connected.
- `Port` * - SMTP server port to which the request will be made. The default is 25 port.
- `Sender name` * - the sender's name, which will appear in the letter.
- `Sender address` * - the sender's email, which will appear in the letter.
- `Request timeout` * - maximum wait time for data from the server(sec.). The default is 3 seconds.

SMTP gateway connection authorization

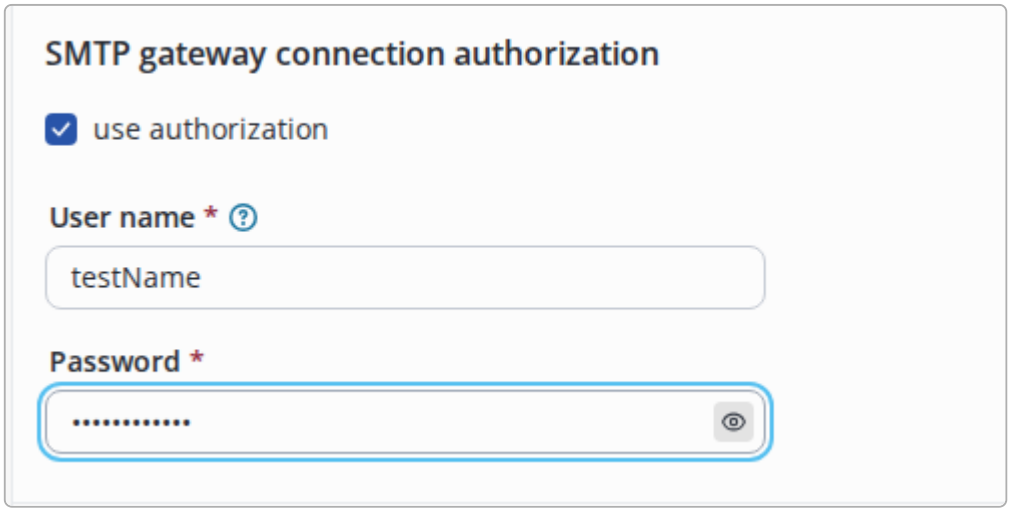


Figure 401. The setting responsible for user authorization on the SMTP server

If the mail server requires authorization of the user to send a message, then you must enable the 'use authorization' checkbox, after which two more parameters will become available for editing:

- `User name` * - the email address or username that will be used for authorization on the SMTP server.
- `Password` * - the user password that will be used for authorization on the SMTP server.

SSL/TLS certificate check during SMTP gateway connection

Figure 402. The setting responsible for certificate validation

If you need to verify the server's certificate when establishing a connection with the SMTP server, you must enable the 'use check SSL/TLS certificate' checkbox. More details can be found in the documentation section for trusted certificates.

Send test email

After adding the gateway, the **"Send test email"** button becomes available. Clicking it will open a window for testing the created integration, complete with an email address entry field.

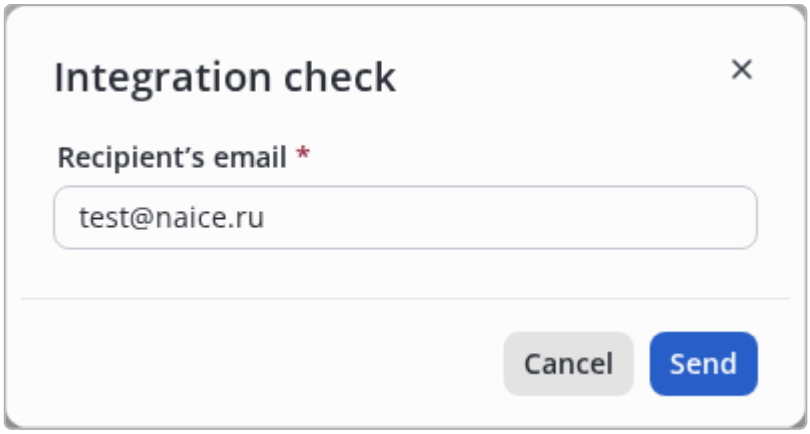


Figure 403. Window for checking the created SMTP integration

After filling in the email address and sending the letter, the user will see a message with the sending status.

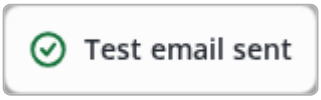


Figure 404. The result window of checking the created SMTP integration

System settings

System

Common settings

The `Common settings` section includes system settings that affect the overall operation of NAICE.

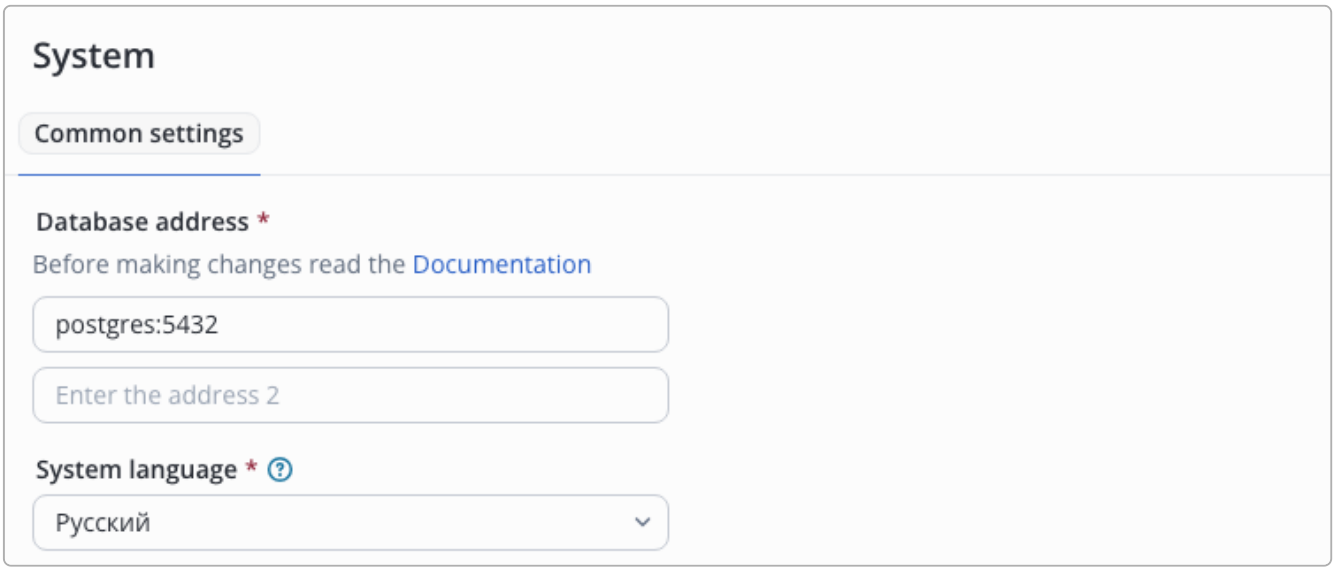


Figure 405. Common settings

Database address

This group of settings allows you to specify one (in the case of a non-redundant installation) or two (in the case of a cluster) PostgreSQL database addresses.

The correct operation of the entire system depends on the correctness of the specified database address/addresses. Specifying an incorrect address may lead to a **complete** loss of access to NAICE.

After deploying NAICE, the settings will be populated with default values, depending on the installation scheme:

- single-host installation without redundancy - `naice-postgres:5432` (the address of the DB docker container in the docker network will be obtained automatically)
- cluster - both addresses will be filled with the values `IPv4-node-address:5432`

Requirements for the specified address

- The address must be specified in the format `domain-name:port` or `IPv4-address:port`.
- If the specified domain name is not a container name in the docker network, resolution of this name must be ensured.
- PostgreSQL with a schema actual for this version of NAICE must be available at the specified address.

Before saving the settings, an attempt is made to read data from the phoca database at the specified address. If only the phoca database is present in PostgreSQL and other databases are absent, the check will pass with a false positive result and the settings will be saved.

Address saving mechanism

1. When the naice-phoca service starts, the database address is read from the environment variables file.
2. When editing the address, the new address is changed in the environment variables file and in PostgreSQL at both the old and new addresses.

Applying the settings will cause the naice-radius service to restart, which will lead to a brief interruption in all types of authorization.

Cluster configuration specifics

When changing database addresses in a redundant installation scheme, it is required that only one node is in the primary state. If both nodes are in the read-only (standby) state, access to NAICE will be lost.

System language

The language used by some services to determine the text localization for the user. This setting affects:

- the default language for new system users (both local and from external sources)
- the language of system events in the System events section
- the language of email notification texts sent by SMTP-type notification gateways

The language of the message that is sent to the user during captive portal authorization depends on the portal language selected by the user.

The interface localization for each system user is configured on the page Account settings.+

Services

RADIUS

This page configures the operation of the RADIUS server as part of NAICE.

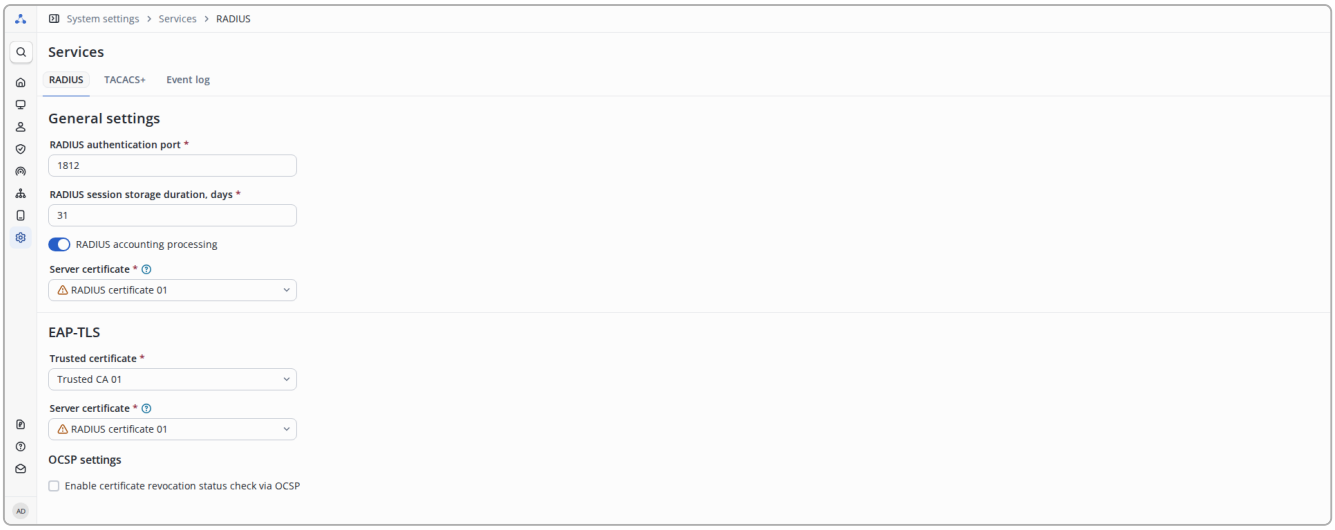


Figure 406. Overall view of the RADIUS settings page

General Settings

The "General settings" section configures basic RADIUS server parameters: authentication port, accounting processing, session storage duration, and server certificate.

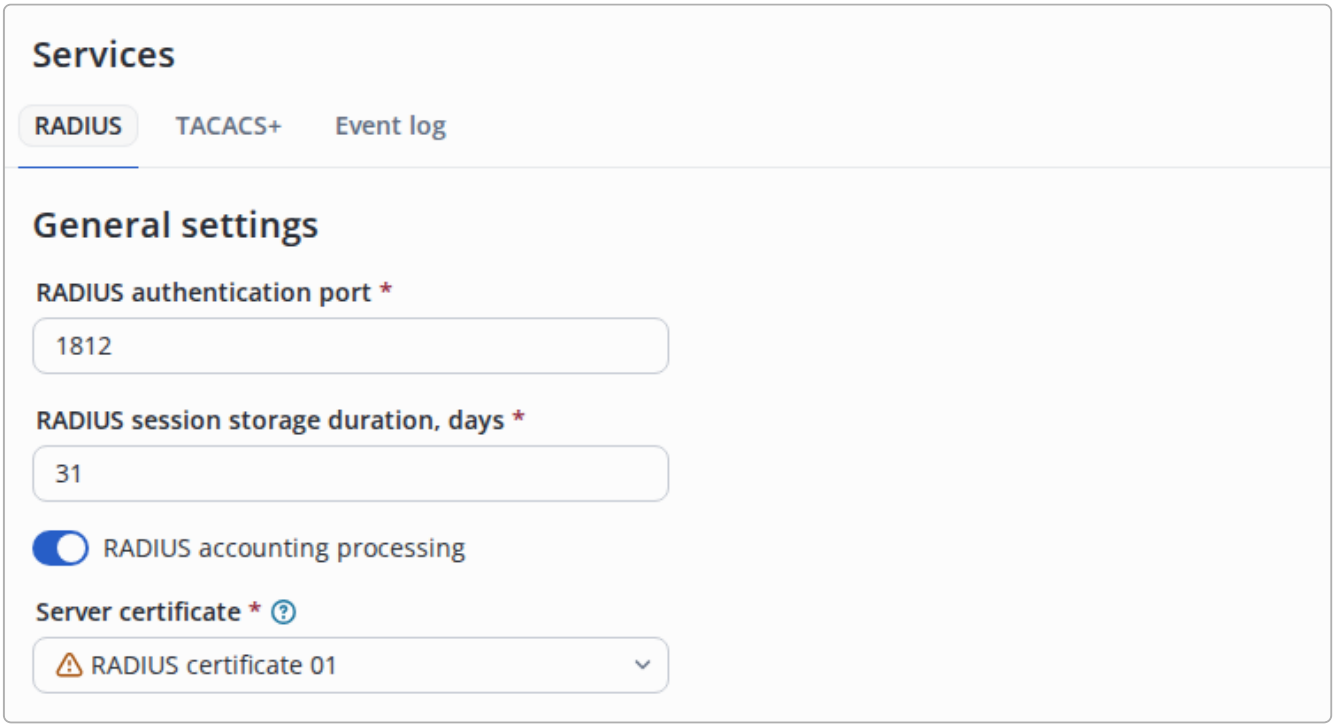


Figure 407. General RADIUS Settings

The following parameters are available:

- `RADIUS authentication port` — the UDP port on which the RADIUS server listens for RADIUS requests. Default value — 1812.

When saving the configuration, a check is performed only for UDP ports that are used by Docker containers. Ports used by services or applications installed directly on the host machine (outside Docker) are not checked. To avoid conflicts, it is strongly recommended to manually verify, before saving, that the selected port is not in use by other processes on the server.

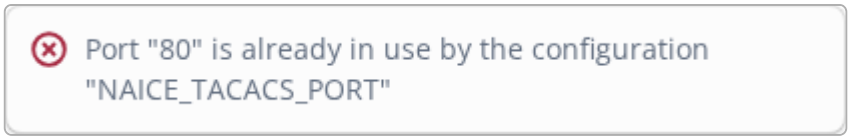


Figure 408. Port conflict error

- `RADIUS session storage duration, days` — the number of full days from the RADIUS session creation date during which sessions are stored in the database. After this period expires, sessions are deleted. Default value — 31.

  Sessions are periodically checked for expiration and deleted according to a schedule.

- `RADIUS accounting processing` - a flag to enable/disable RADIUS Accounting packet processing. Enabled by default.
  - If processing is enabled: the system accepts and processes Accounting packets, updates the state of active sessions, and terminates them by timeout.
  - If processing is disabled: the system continues to accept packets and responds with correct RADIUS Accounting-Response, but does not perform processing of the received packets.

  When RADIUS accounting processing is disabled, the RADIUS Session Limits section is hidden.

- `Server certificate` — a dropdown list of server certificates of type RADIUS for securing RADIUS server connections. The certificate is applied globally across all nodes and is used for all authentication protocols except EAP-TLS. By default, a system-generated certificate is used.

  Selecting a system-generated (default) certificate is accompanied by a warning. Using system certificates is not recommended for security reasons.

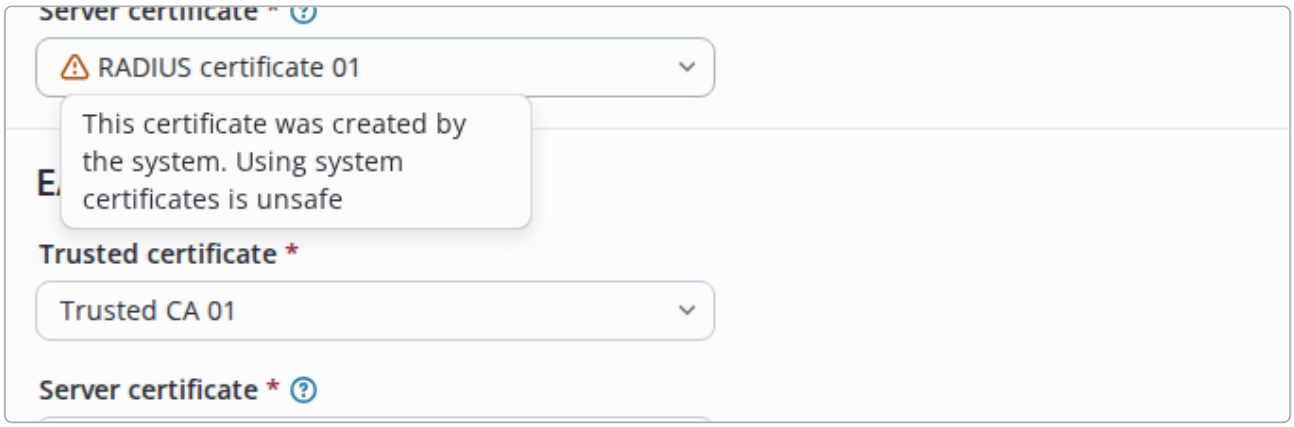


Figure 409. System Certificate Warning

EAP-TLS

The "EAP-TLS" section configures EAP-TLS authentication parameters: trusted certificate, server certificate, and OCSP settings.

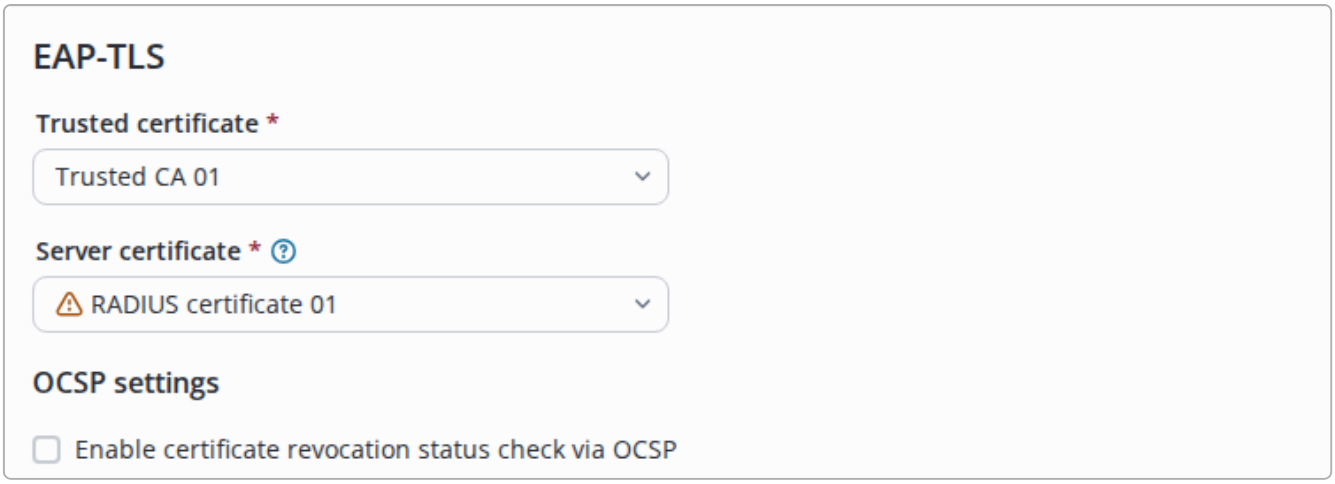


Figure 410. EAP-TLS Settings

The following parameters are available:

- `Trusted certificate` — a dropdown list of trusted certificates. Used as a root (CA) certificate to verify signatures in the EAP-TLS chain. By default, a system-generated certificate is used.
- `Server certificate` — a dropdown list of server certificates of type RADIUS for the EAP-TLS authentication protocol. The certificate is applied globally across all nodes. By default, a system-generated certificate is used.

> Selecting a system-generated (default) certificate is accompanied by a warning. Using system certificates is not recommended for security reasons.

OCSP Settings

OCSP (Online Certificate Status Protocol) is a protocol that allows checking whether a certificate has been revoked before its expiration date. Configuring OCSP in RADIUS provides additional security by preventing the use of revoked certificates during authentication.

The "OCSP settings" subsection configures certificate revocation status checking via the OCSP protocol.

OCSP Server Requirements

- Interoperability with OCSP server implementation MS Windows Server or OpenSSL OCSP Server is supported.
- Only HTTP mode is supported (without TLS encryption).
- The client certificate status can only be checked when using EAP-TLS authentication.

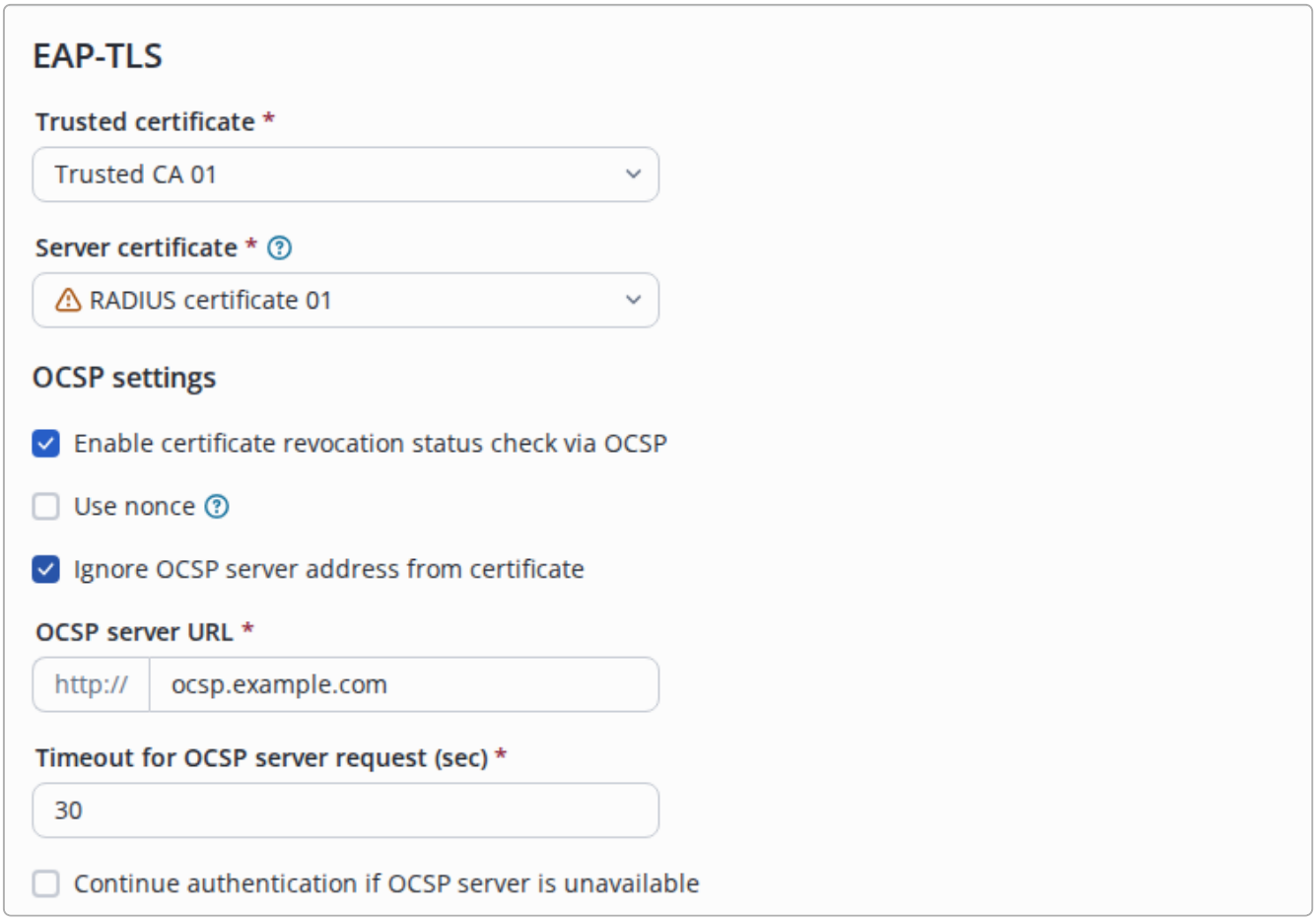


Figure 411. OCSP Settings

The following parameters are available:

- `Enable certificate revocation status check via OCSP` — a checkbox that enables or disables OCSP checking. When enabled, additional settings become available.
- `Use nonce` — a checkbox that enables the use of nonce to ensure the freshness of the certificate status response (as described in RFC 8954).

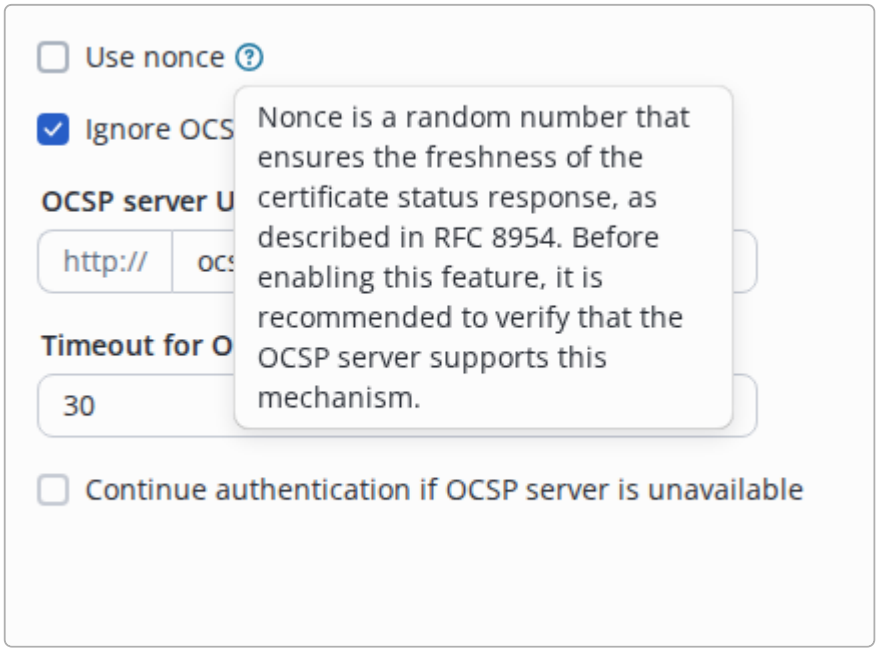


Figure 412. Nonce Parameter Hint

- `Ignore OCSP server address from certificate` — a checkbox that allows specifying a custom OCSP server address, ignoring the address embedded in the certificate. When enabled, the address input field becomes available.
- `OCSP server URL` — the OCSP server address. Enter without `http://` prefix, it is added automatically. OCSP Server Requirements.
- `Timeout for OCSP server request (sec)` — the maximum wait time for a response from the OCSP server in seconds.
- `Continue authentication if OCSP server is unavailable` — a checkbox that enables soft-fail mode. When enabled, authentication will proceed even if the OCSP server is unavailable.

Saving Settings

To apply changes, click the **"Save"** button.

When changing settings that affect the RADIUS server operation (port, certificates, OCSP), a confirmation dialog will appear warning about a temporary authentication interruption.

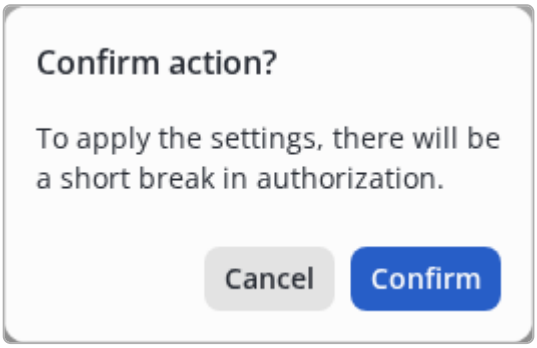


Figure 413. Configuration Application Confirmation Dialog

To apply the settings, the RADIUS server will be restarted, resulting in a temporary interruption of RADIUS request processing.

To cancel changes, click the **"Cancel"** button.

TACACS+

This page configures the operation of the TACACS server as part of NAICE.

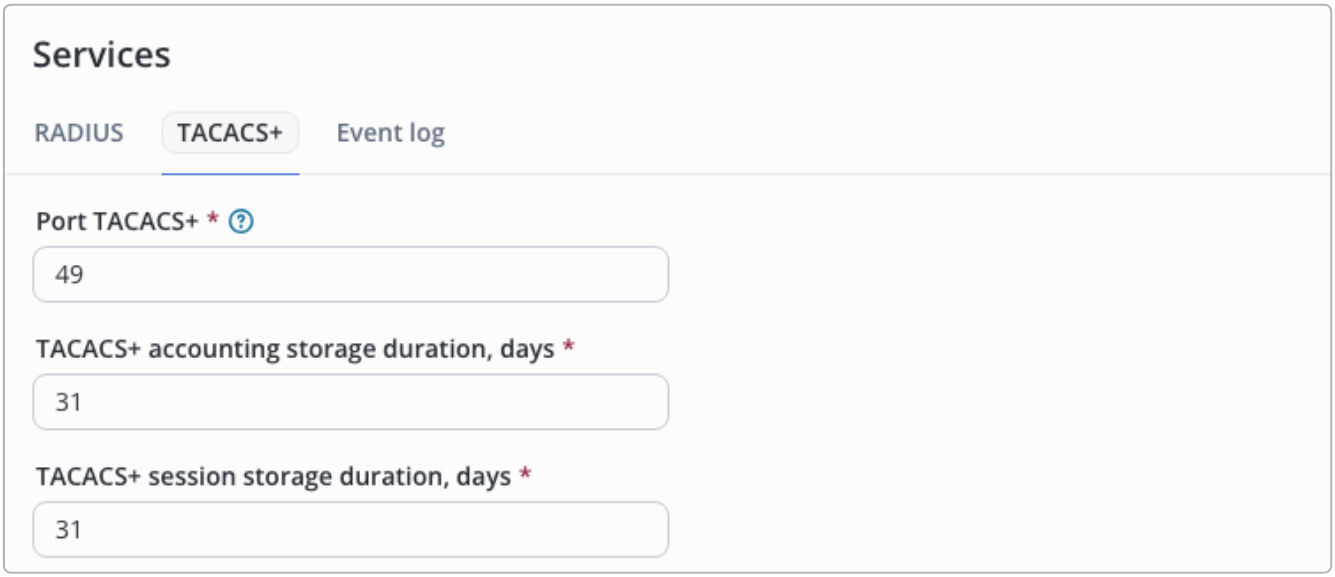


Figure 414. Configuring the TACACS service

The following parameters are available for configuration:

- `Port TACACS+` - the TCP-port on which the TACACS server listens for authentication, authorization, and accounting requests via the TACACS+ protocol. Default value - 49.

  When saving the configuration, a check is performed only for TCP ports that are used by Docker containers. Ports used by services or applications installed directly on the host machine (outside Docker) are not checked. To avoid conflicts, it is strongly recommended to manually verify, before saving, that the selected port is not in use by other processes on the server.

  To apply the setting, the naice-aquila service will be restarted, which will lead to a short interruption in the processing of TACACS+ requests.

- `TACACS+ accounting storage duration, days` - the number of full days from the TACACS accounting session creation date during which they are stored in the database. After this period expires, sessions are deleted. Default value - 31.

- `TACACS+ session storage duration, days` - the number of full days from the TACACS session creation date during which they are stored in the database. After this period expires, sessions are deleted. Default value - 31.

  Sessions are periodically checked for expiration and deleted according to a schedule.

Event log

This page configures the operating parameters of the System events log.

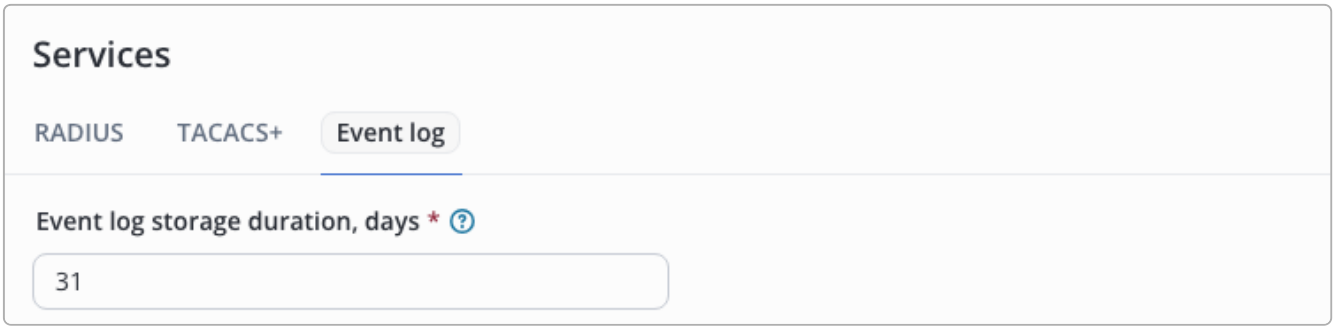


Figure 415. Configuring event log parameters

The following parameters are available for configuration:

- `Event log storage duration, days` - the number of full days from the event creation date during which events are stored in the database. After this period expires, events are deleted. Default value - 31.

Events are periodically checked for expiration and deleted according to a schedule.

Licensing

Connection to ELM

This page configures the NAICE connection parameters to the ELM (Eltex License Manager) license server when licensing through a license server.

For `ELM` type licenses, when changing licensing related settings, the current active license is reset and its status switches to Backup. This causes the licensed functionality (RADIUS, TACACS+, portal authorization, etc.) paused until the license is reactivated on the Licensing page.

Go to licensing settings

Configuring ELM server address

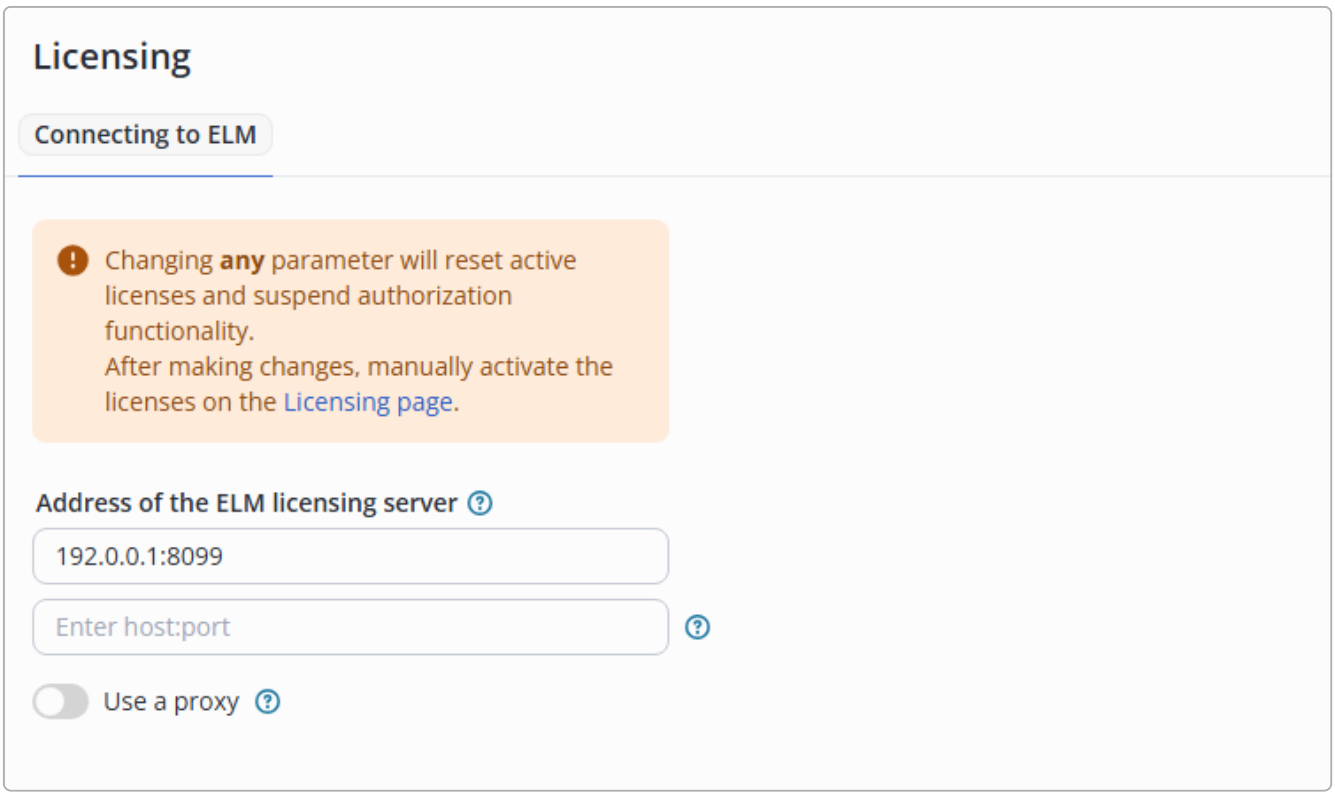


Figure 416. Configuring connection to ELM without proxy

The ELM server address is configured in the format `domain-name:port` or `IPv4-address:port`, without specifying the protocol used (without "https://"). In the absence of an explicit port specification, port 8099 is automatically applied by the system.

When providing redundant access to the license server, it is possible to specify the address of a second ELM server. If redundancy is not required, configuring a second address is unnecessary.

Using HTTP Proxy

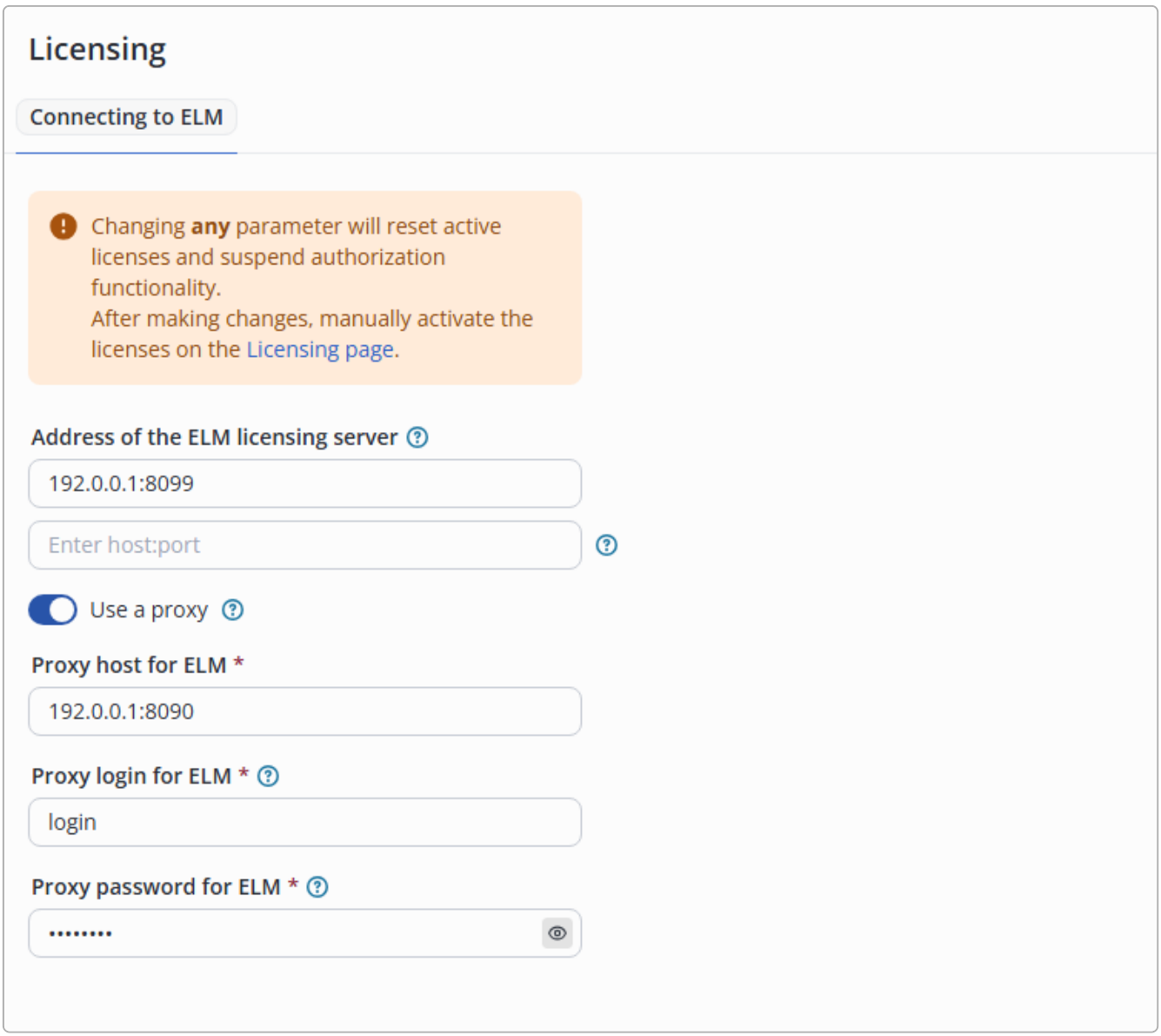


Figure 417. Configuring connection to ELM via HTTP proxy

HTTPS proxy is not supported!

Access to the ELM server via HTTP proxy is supported.

- `Proxy host for ELM` - the proxy server address in the format `domain-name:port` or `IPv4-address:port`, without specifying the protocol used.
- `Proxy login for ELM` - filled in if authentication is required to work with the proxy server.
- `Proxy password for ELM` - filled in if authentication is required to work with the proxy server.

Security and access

System Log In

Description

The "System Log In" page is used to configure access settings for the NAICE web interface.

Here you can configure:

- **External source** — using an external identity source (OpenLDAP, MS Active Directory, etc.) as the primary authentication source. By default, login is performed only using **local accounts**.

  Authentication via local accounts always remains available.

- **Management addresses** — configuring a list of addresses that are allowed to access the NAICE management interface. By default, access is allowed from any IPv4 address or server domain name on port 443.

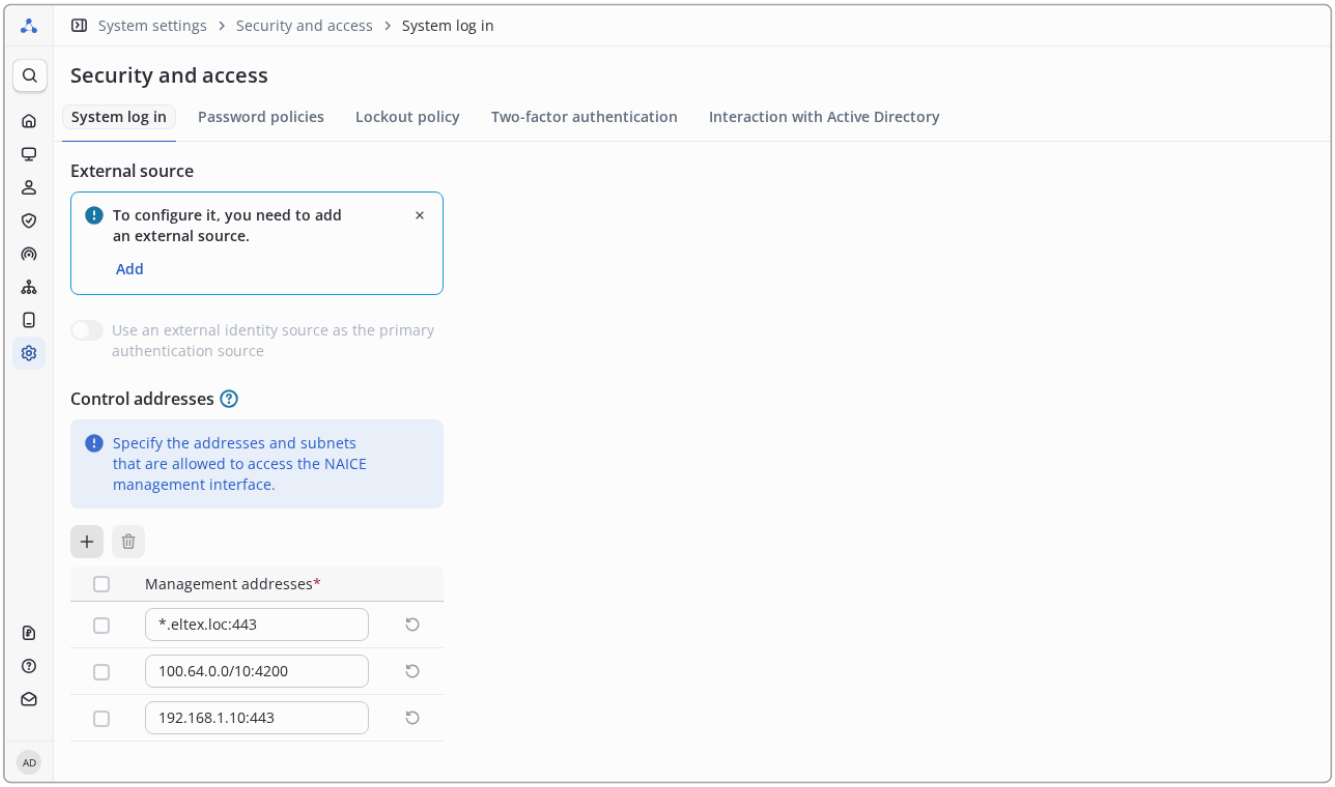


Figure 418. Overall view of the "System Log In" page

External account login configuration

To allow users to log in using enterprise accounts from external sources (OpenLDAP, MS Active Directory, etc.), you must first configure an external source in the "External identity sources" section.

If there are no configured external sources in the system, the source selection option is unavailable. Only login via local accounts is available.

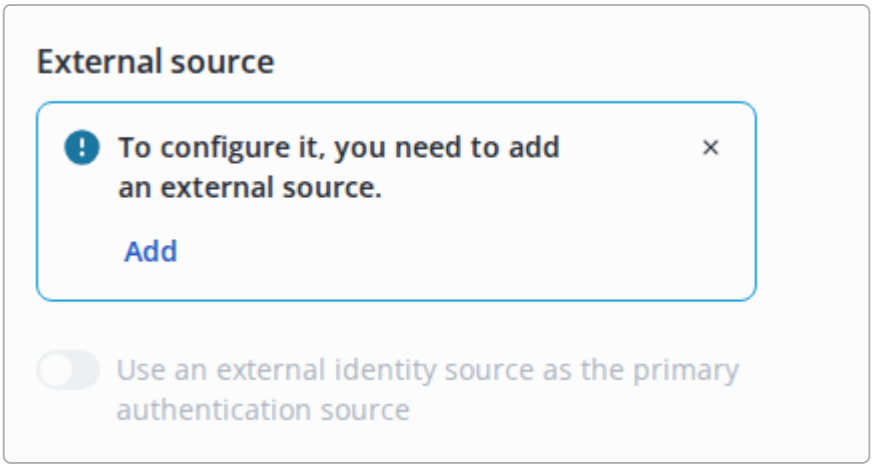


Figure 419. Login configuration form when no external sources are present

To configure external identity sources, the user role must include the "External sources" privilege with an access level not lower than "Create" (2).

Selecting an external source as the primary authentication source

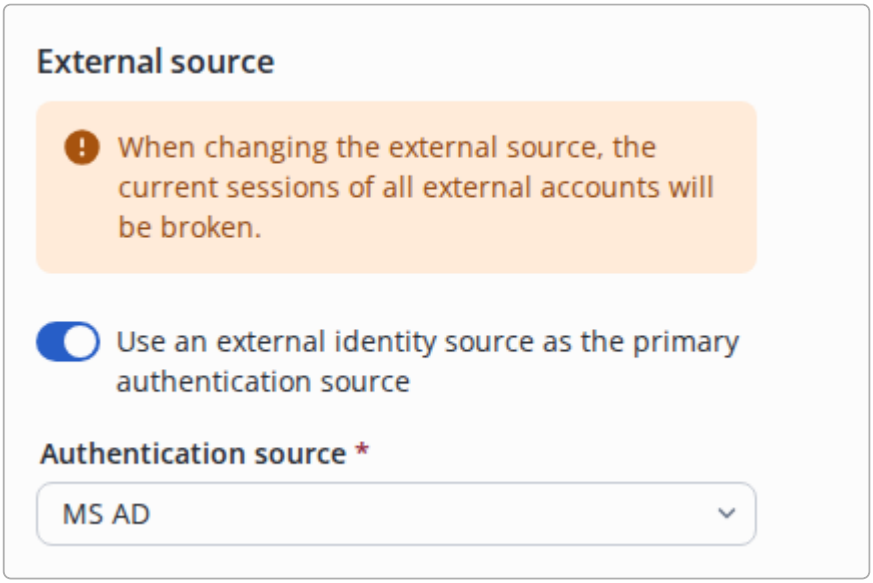


Figure 420. Login configuration form when external sources are present

The following parameters are available in the form:

- `Use an external identity source as the primary authentication source` — a toggle that enables or disables the use of an external source. When enabled, the `Authentication source` field becomes available:
- `Authentication source` — selection of an external source from the list added to the system. User credentials will be verified against this source.

To apply the settings, click the **"Save"** button.

After successful saving, the **"Enterprise account"** tab appears on the login page for logging in with external accounts:

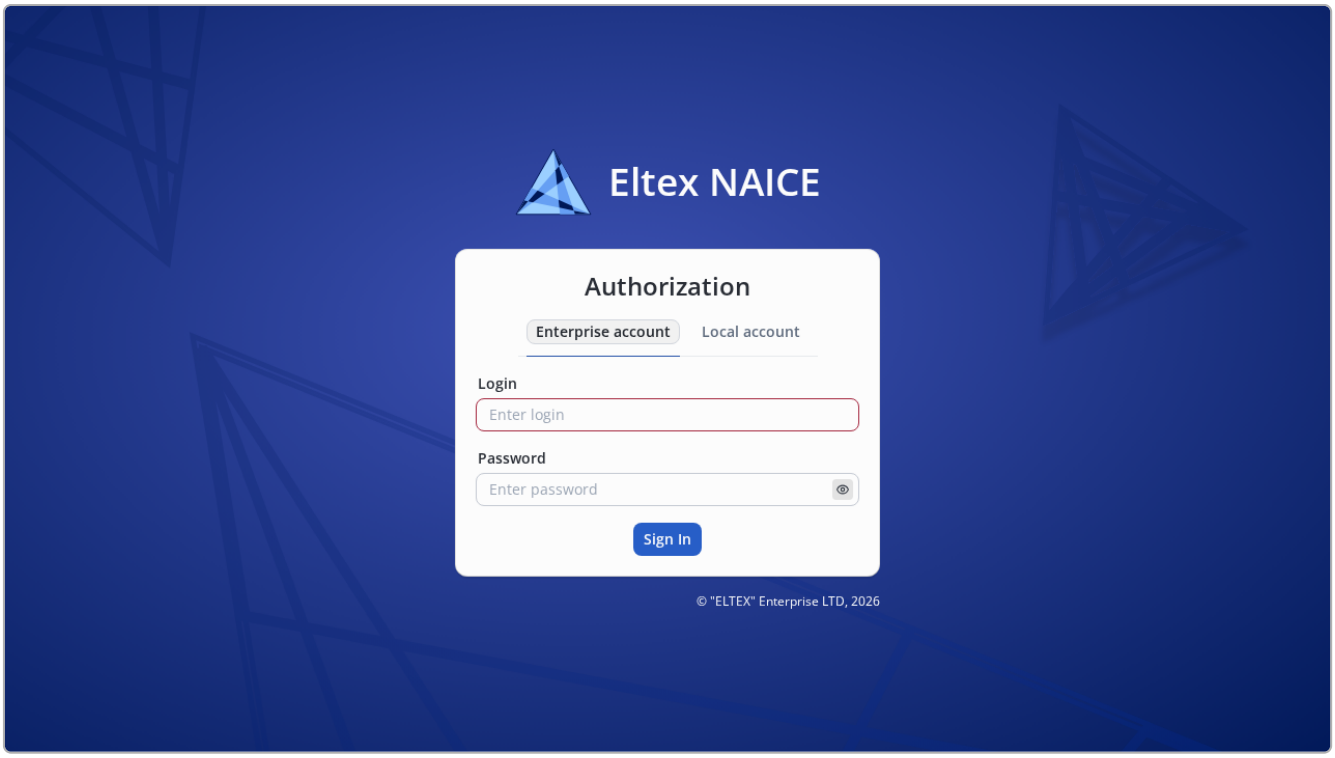


Figure 421. "Enterprise account" tab on the login page

The enterprise account login must not exceed 100 characters.

The **"Local account"** tab always remains available for authentication using local accounts.

Changing Login Configuration

Any change to the login configuration related to external sources leads to **immediate termination of all active sessions of users authenticated through the old external source**:

- when changing from one external source to another;
- when disabling external authentication (when unchecking the checkbox).

After saving changes, users will need to re-authenticate.

Applying changes to system login settings (changing one external source to another or disabling the use of external authentication) requires confirmation:

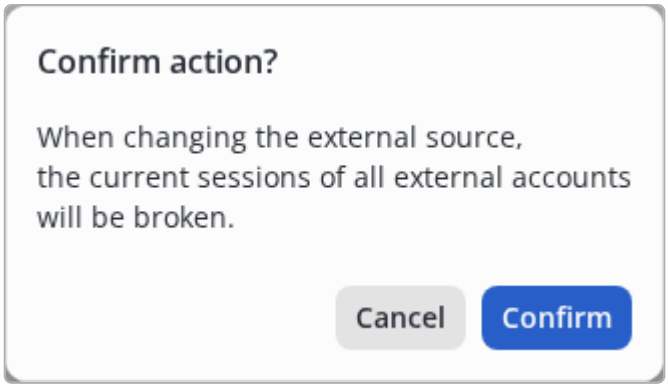


Figure 422. Login configuration change confirmation

Management addresses

The "Management addresses" section allows you to configure a list of IPv4 addresses, subnets, domain names, and wildcard domain patterns **to which** access to the NAICE management web interface is allowed. Any access attempt to an address not listed will be blocked, see Error "Access to the system from this address is restricted by rules".

The setting does **not** affect the addresses *from* which the connection attempt is made.

Incorrectly configured addresses can lead to **complete loss of access** to the web interface. Make sure at least one address in the list correctly points to an active device interface.

By default, access is allowed from any IPv4 address or server domain name on port 443.

Adding addresses

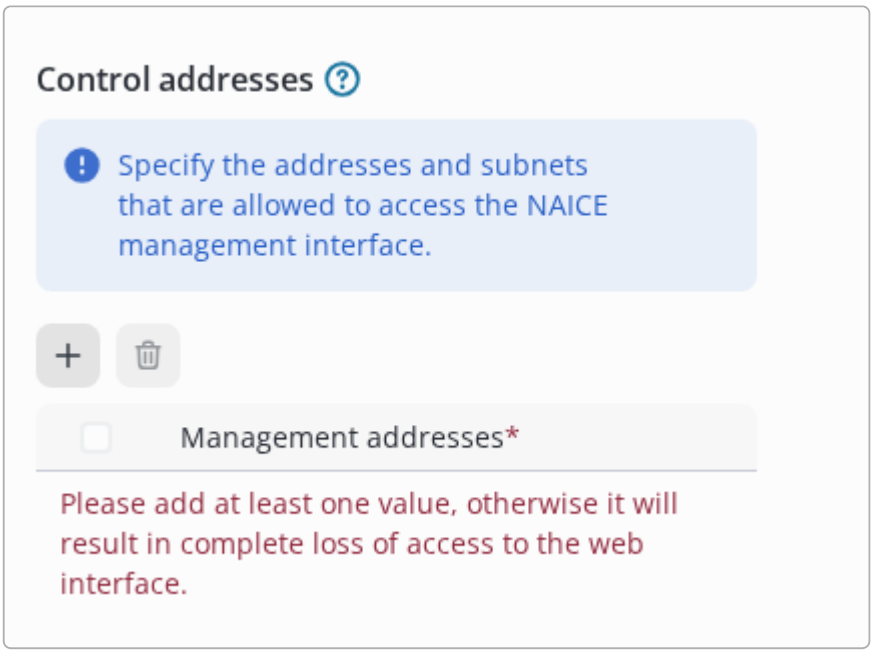


Figure 423. Management addresses table without entries

To add a new entry, click the + button. An empty input field will appear where you need to enter a domain name or IPv4 address with a *mandatory* port specification.

You can check the value format by clicking the question mark icon next to the section title:

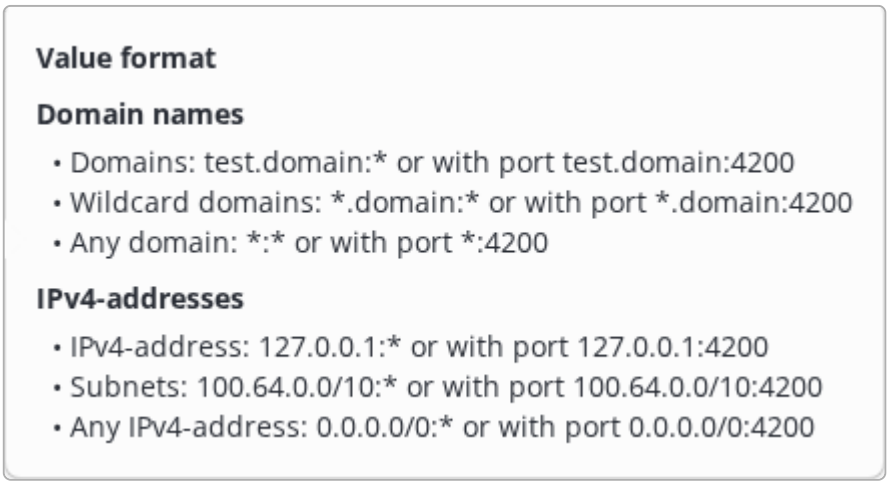


Figure 424. Management addresses value format

If a value does not match the specified format, the field will be highlighted in red. Such settings cannot be saved.

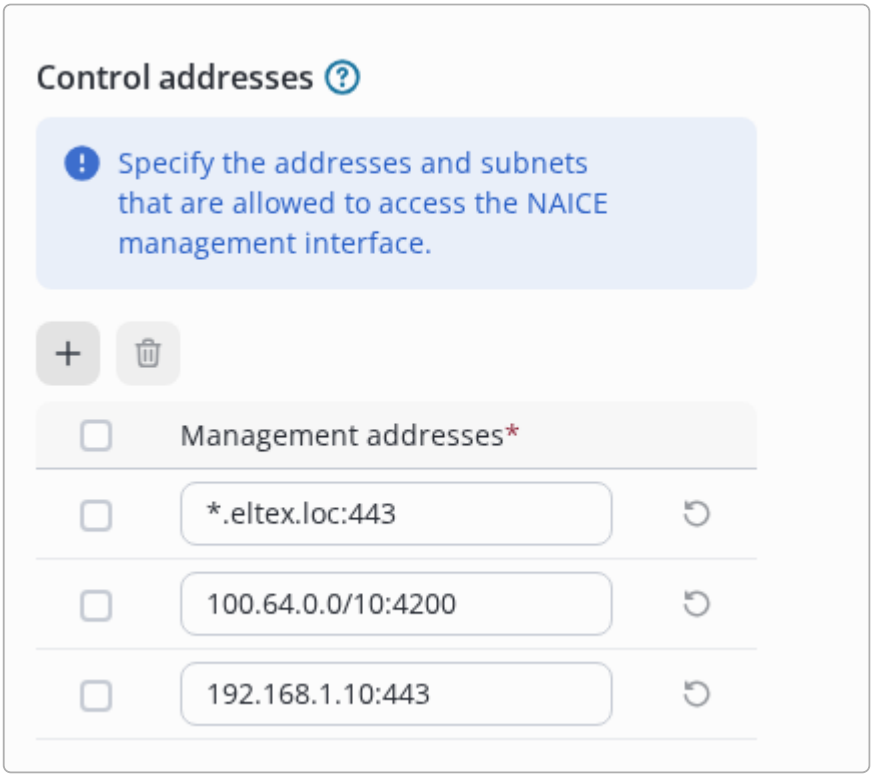


Figure 425. Management addresses table with entries filled

Managing entries

Each entry in the list has the following controls:

- ☐ — selects entries for deletion.
- `Input field` — edits the address.
- ↺ — reverts the changed value to the last saved state.

When entries are selected, the delete button 🗑 in the section header becomes active:

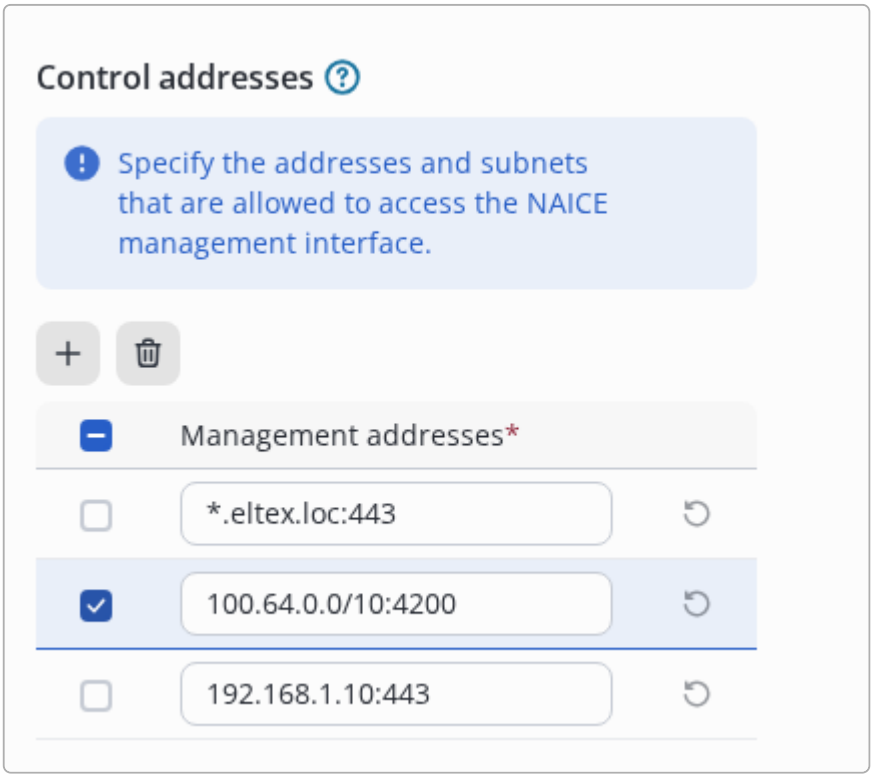


Figure 426. Selected entry in the address list

If necessary, you can delete the entry.

The order of addresses in the list does not matter.

Saving the address list

When saving the adjusted list of addresses, a confirmation dialog appears:

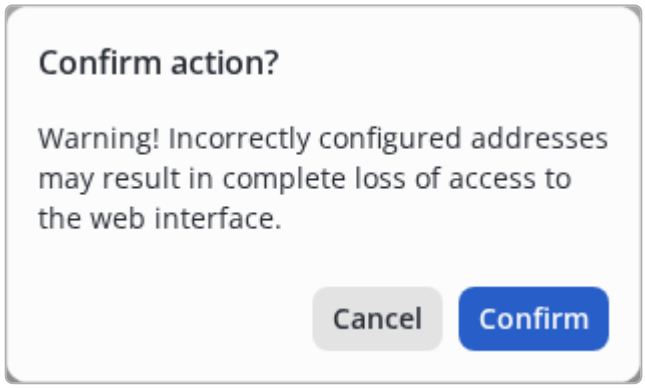


Figure 427. Management address save confirmation

To apply the changes, click **"Confirm"**. To cancel, click **"Cancel"**.

Restoring web interface access

If access to the web interface is lost due to management address settings, you need to run the `restore-default-mgmt-address-rules.yml` Ansible playbook, which is supplied together with the NAICE installation files. The playbook will write the values `0.0.0.0/0:443` and `*:443` to the database, meaning access from any IPv4 address or server domain name on port 443.

Running the playbook for a standalone installation:

```
ansible-playbook -i inventory/hosts.yml restore_default_mgmt_address_rules.yml
```

Running the playbook for a clustered installation:

- with VRRP:

  ```
  ansible-playbook -i inventory/hosts-cluster.yml restore_default_mgmt_address_rules.yml -
  e "working_host=node_primary"
  ```

- without VRRP:

  ```
  ansible-playbook -i inventory/hosts-geo.yml restore_default_mgmt_address_rules.yml -e
  "working_host=node_primary"
  ```

The write must be performed on the host that is currently the PostgreSQL primary. Make sure that the `node_primary` host in the inventory file specifies the address of the current primary in the PostgreSQL cluster.

Error handling

When problems occur with logging into the system, corresponding error messages are displayed.

Error "You have no privileges"

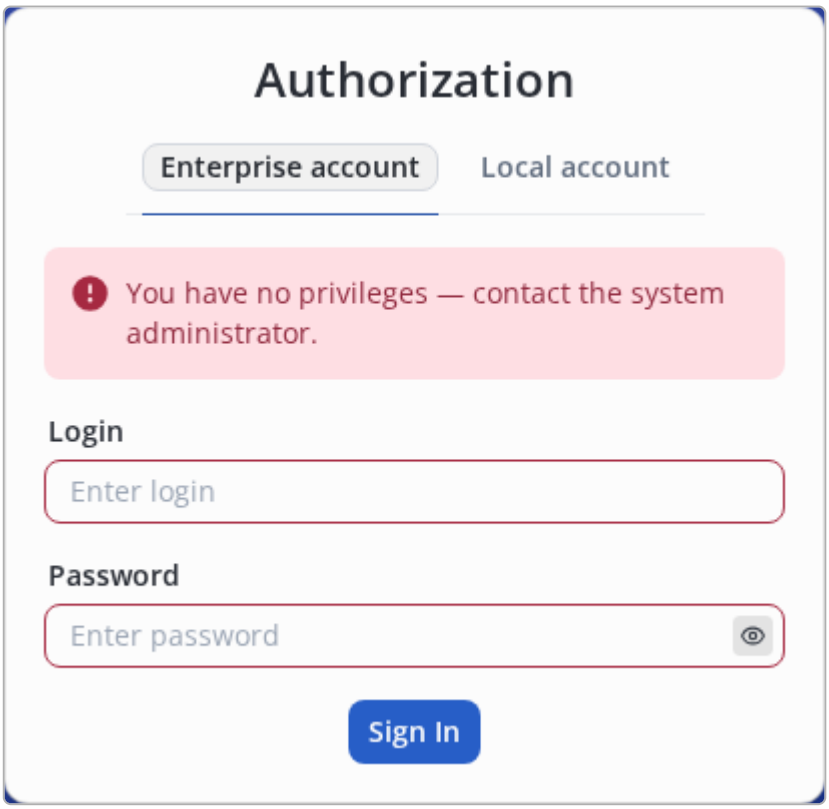


Figure 428. Error when no suitable role is available

Possible reasons:

- No external role matching the user's groups has been configured for the user.
-

The configured role has status Not available (for example, after changing or disabling the external source).

- User groups are not being read from the external source (issues with attribute configuration).

When using the `CUSTOM` schema for an external source, a situation may occur where groups are not read due to incorrect attribute configuration. This makes group mapping impossible and, consequently, prevents role assignment.

Error "External source is unavailable"

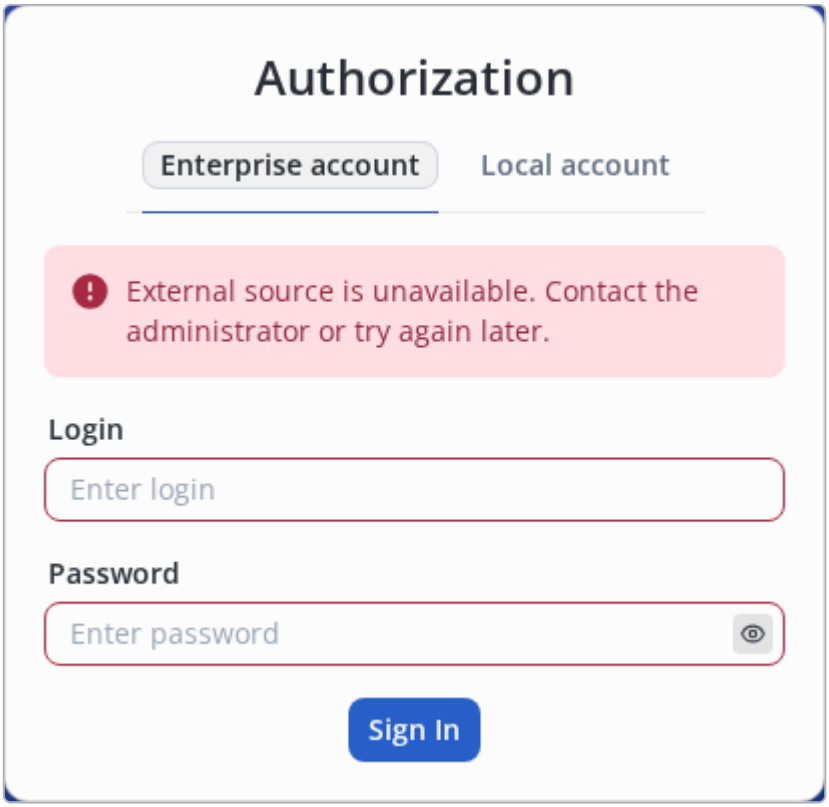


Figure 429. Error when external source is unavailable

Occurs when there is no response from the external source or its configuration is incorrect. Requires checking:

- external source server availability;
- correctness of connection parameters in the source settings;
- network communication between NAICE and the external server.

Error "Access to the system from this address is restricted by rules"

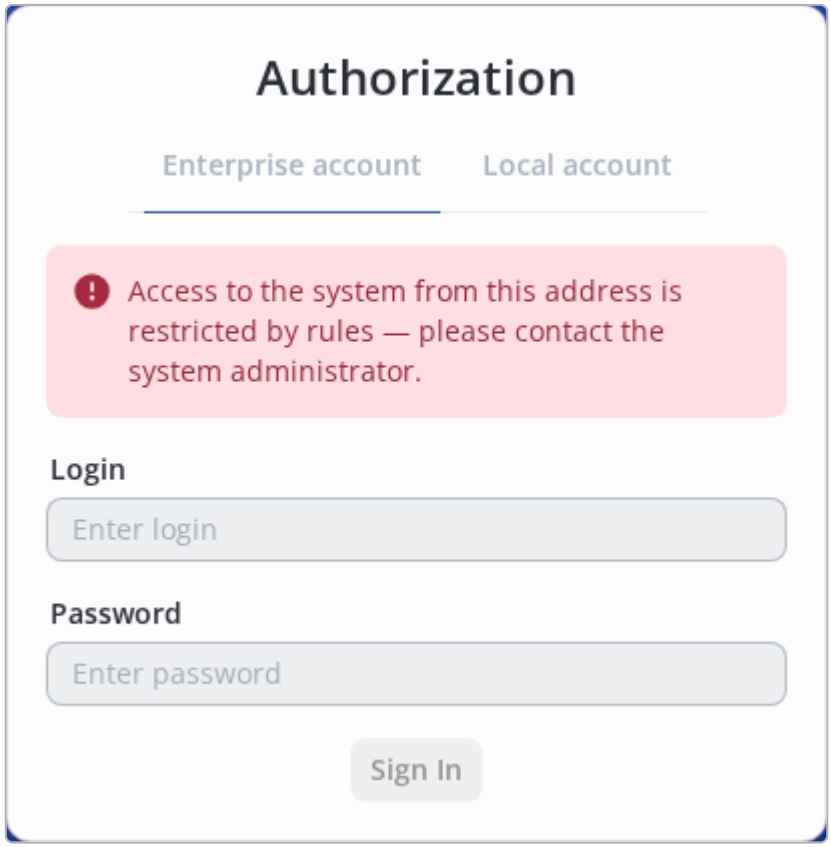


Figure 430. Access restricted by address error

Occurs when a user attempts to access the system from an address not included in the configured management address list. The system blocks the login and recommends contacting the administrator.

Requires checking:

- that the address is present in the «Management addresses» list;
- the correctness of the entry formats (address with port specified);
- that the port in the address matches the port being used for access.

Error "Session expired"

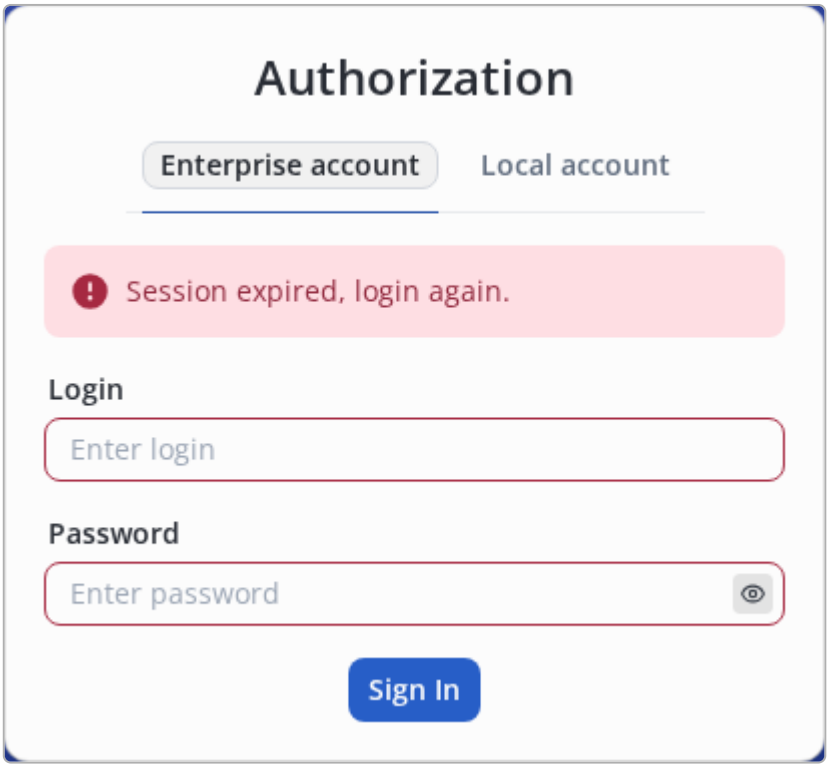


Figure 431. Session expired error

Displayed when attempting to use an expired session. The user must re-authenticate.

Occurs in the following cases:

- the session has expired due to user inactivity;
- the session was terminated by an administrator;
- the system login configuration was changed (external source changed, external authentication disabled).

General authentication error

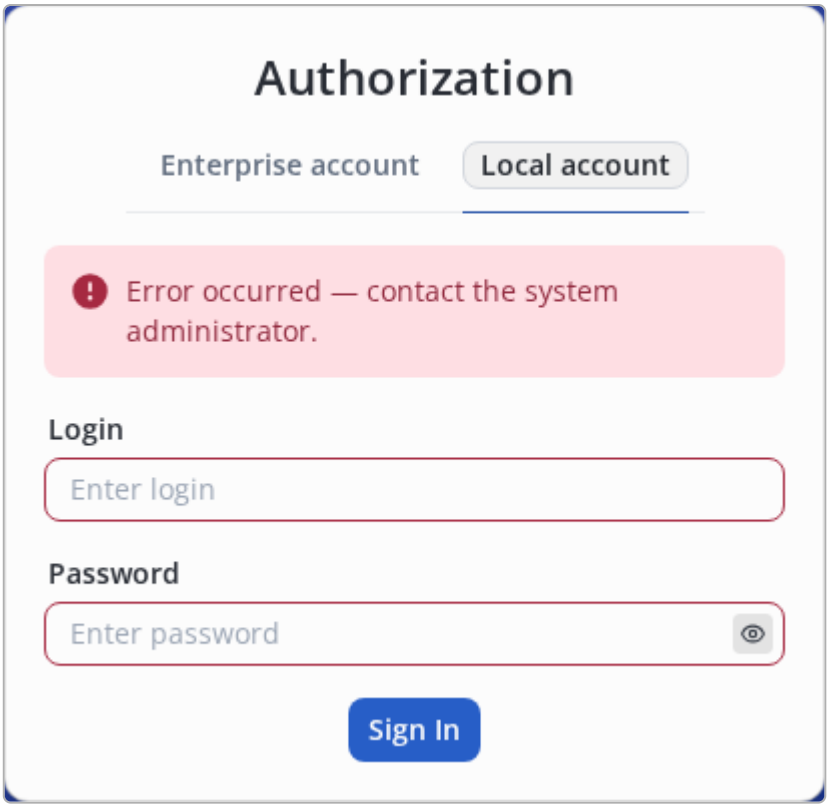


Figure 432. General error when login problems occur

Displayed for other authentication errors not related to the external source or management address configuration.

Troubleshooting

Detailed information about the causes of authentication errors is available on the "System events" page. The event table records:

- user login attempts;
- role assignment errors;
- connection problems to external sources;
- changes to system login configuration.

Password policies

On this page, you can configure password requirements for system users, as well as notifications regarding system user account actions.

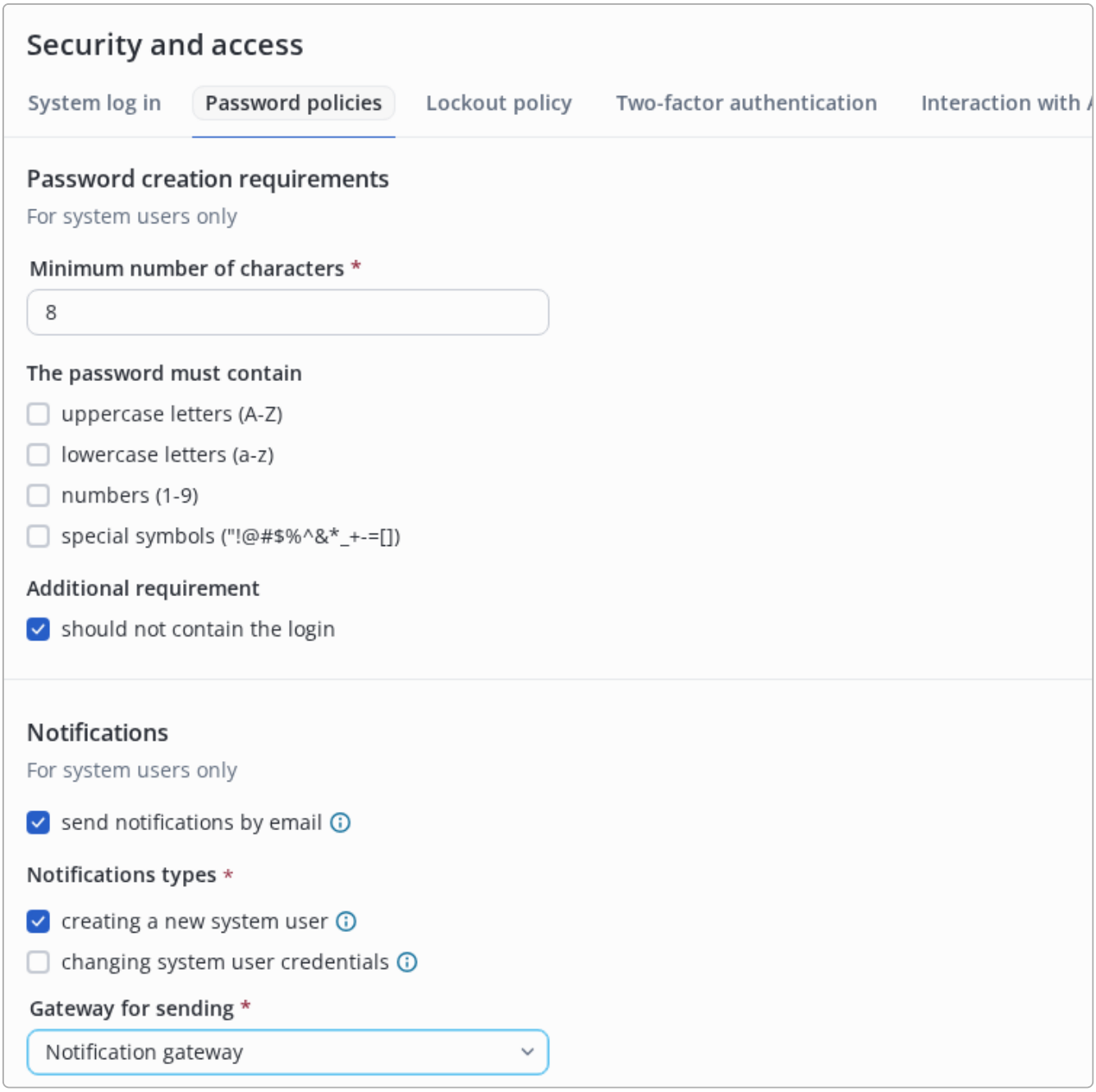


Figure 433. Password policy configuration

Password Creation Requirements

- `Minimum number of characters` - the system user's password cannot be shorter than the specified number of characters. The maximum number of characters in a password is 72.
- `Password must contain` - enabling/disabling requirements for the presence of uppercase/lowercase letters, numbers, and special symbols in the password.
- `Additional requirement` - enabling/disabling the requirement that the password should not contain the user's login.

The requirements apply to passwords of newly created users or when changing a user's password. Modifying the password policy does not require previously created users' passwords to be brought into compliance.

Notifications

Settings are displayed only if at least one notification gateway with an SMTP connection type is configured.

- `send notifications to email` - send emails with the selected notification types to the system user's email address specified in their account.

  If the email address is not provided, emails will not be sent.

- `Notification types`:
  - `creating a new system user` - an email with their account credentials will be sent to the new system user's email address.
  - `changing system user credentials` - notification to the system user about changes to their account.

    Configuring email templates is currently unavailable.
    The language of the text in emails is configured on the :system/common-settings.html page, "system language" setting.

- `Gateway for sending` - select one of the existing SMTP gateways in the system through which you plan to send emails.

Lockout policy

The **"Lockout policy"** section is used to configure automatic temporary lockout of system user accounts when the allowed number of unsuccessful sign-in attempts is exceeded.

The lockout policy applies only to system user accounts (administrators).

Configuring the lockout policy

In the **"Account Lockout"** block, the parameters used by the system to determine whether a user account must be temporarily locked can be configured.

To enable the policy, switch the toggle to **Enabled**.

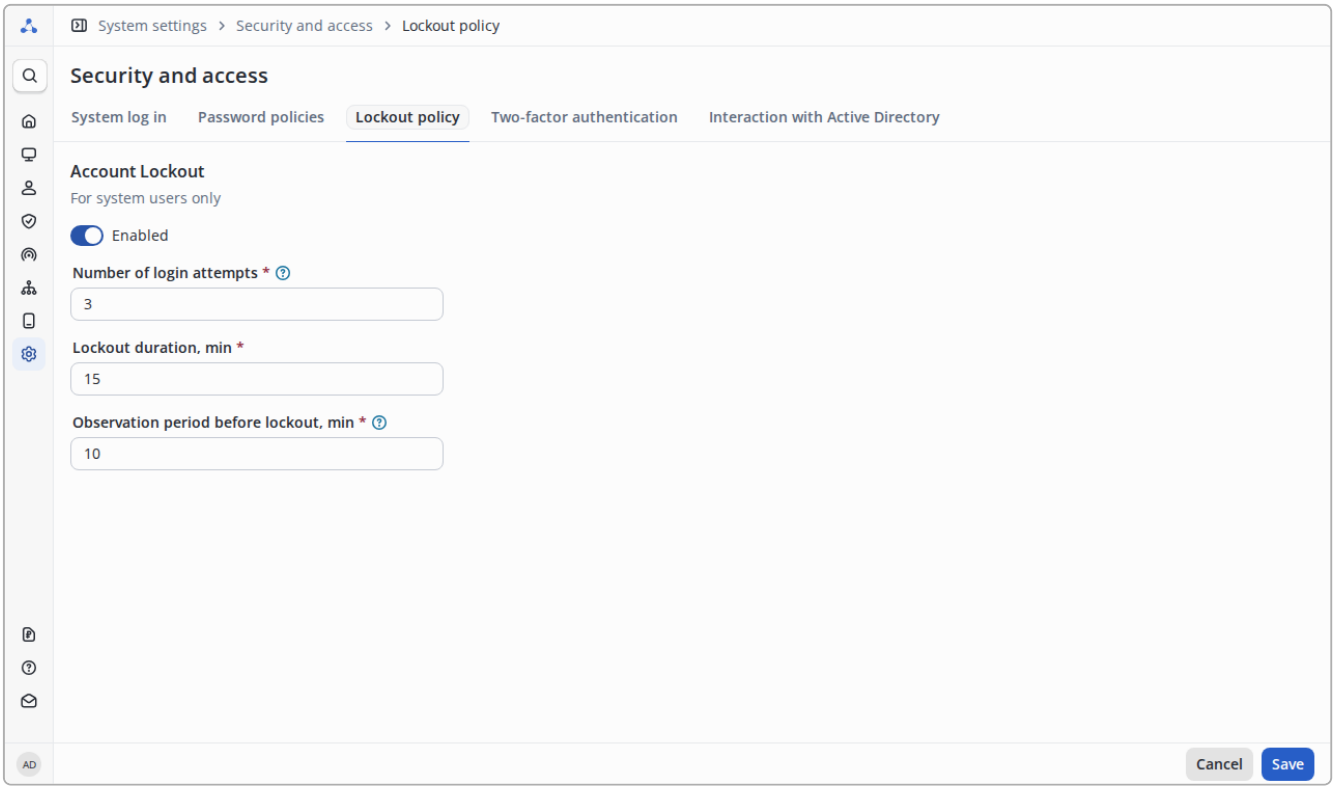


Figure 434. Configuring the lockout policy for system users

If the policy is enabled, the following parameters are available:

Parameter	Description
Number of login attempts	The maximum number of unsuccessful attempts to enter a password or two-factor authentication codes, after which the account will be temporarily locked. The counter is maintained separately for each factor (password, TOTP, Email OTP, backup codes).
Lockout duration, min	The period of time (in minutes) for which the user account is locked. After this time expires, the lockout is automatically removed, and the user can attempt to sign in again.
Observation period before lockout, min	The period of time (in minutes) during which the system counts unsuccessful sign-in attempts. If the number of attempts exceeds the specified threshold within this window, the account is locked.

After changing the lockout policy parameters, save the settings by clicking the **"Save"** button.

The new rules apply to subsequent user sign-in attempts.

Changing the lockout policy does not terminate currently active user sessions. All new rules take effect from the next sign-in attempt.

How the lockout policy works

The lockout policy protects user accounts from password and two-factor authentication code brute-force attacks. The system records all unsuccessful sign-in attempts, including:

incorrect password;

- incorrect one-time TOTP code;
- incorrect Email OTP code;
- incorrect backup code.

The account is locked if, during the specified **observation period before lockout**, the number of unsuccessful attempts reaches the value specified in the **Number of login attempts** field.

After the lockout, the user cannot sign in to the system until one of the following conditions is met:

- the specified **lockout duration** expires;
- an administrator manually unlocks the account through the **"Accounts"** section (see "Blocked account").

Example 5. Example of how the lockout policy works

If the following values are specified:

- **Number of login attempts** — `3`;
- **Lockout duration** — `15` minutes;
- **Observation period before lockout** — `10` minutes,

then the account will be locked for 15 minutes if the user makes 3 unsuccessful sign-in attempts (entering the password or 2FA codes) within any 10-minute period.

In order for users to receive email notifications about account blocking or unblocking, you need to configure notification delivery in the **System Settings** → **Security and access** → Password policy section.

Disabling the lockout policy

To disable the lockout policy, switch the toggle to **Disabled** and save the settings.

After the policy is disabled:

- automatic account lockout is **stopped**;
- already locked accounts **remain in the "Blocked" status** until the lockout duration expires or an administrator manually unlocks them;
- unsuccessful attempt counters are **not reset**, but are no longer counted until the policy is re-enabled.

Disabling the lockout policy reduces the level of protection against brute-force attacks. It is recommended to use this function only for diagnostics or in exceptional cases.

Two-factor authentication

This section is intended for configuring the two-factor authentication (2FA) policy for users of the NAICE system (administrators).

Two-factor authentication enhances account security: after successfully entering a login and password, the user additionally confirms the login with a one-time code.

Configuring the 2FA policy

The **2FA policy configuration** block sets the two-factor authentication mode for system users.

The **2FA policy** field can take the following values:

Value	Description
Not used	Two-factor authentication is disabled. After successfully entering a login and password, the user immediately gains access to the NAICE web interface without additional confirmation.
Optional for everyone	Users can enable two-factor authentication independently in their account settings. At least one of the available primary methods must be activated.
Mandatory for everyone	All system users are required to configure and use two-factor authentication. After successfully entering a login and password, the user will not be able to access the NAICE web interface until they complete the second factor setup.

By default, two-factor authentication is disabled ("Not used").

Selecting two-factor authentication methods

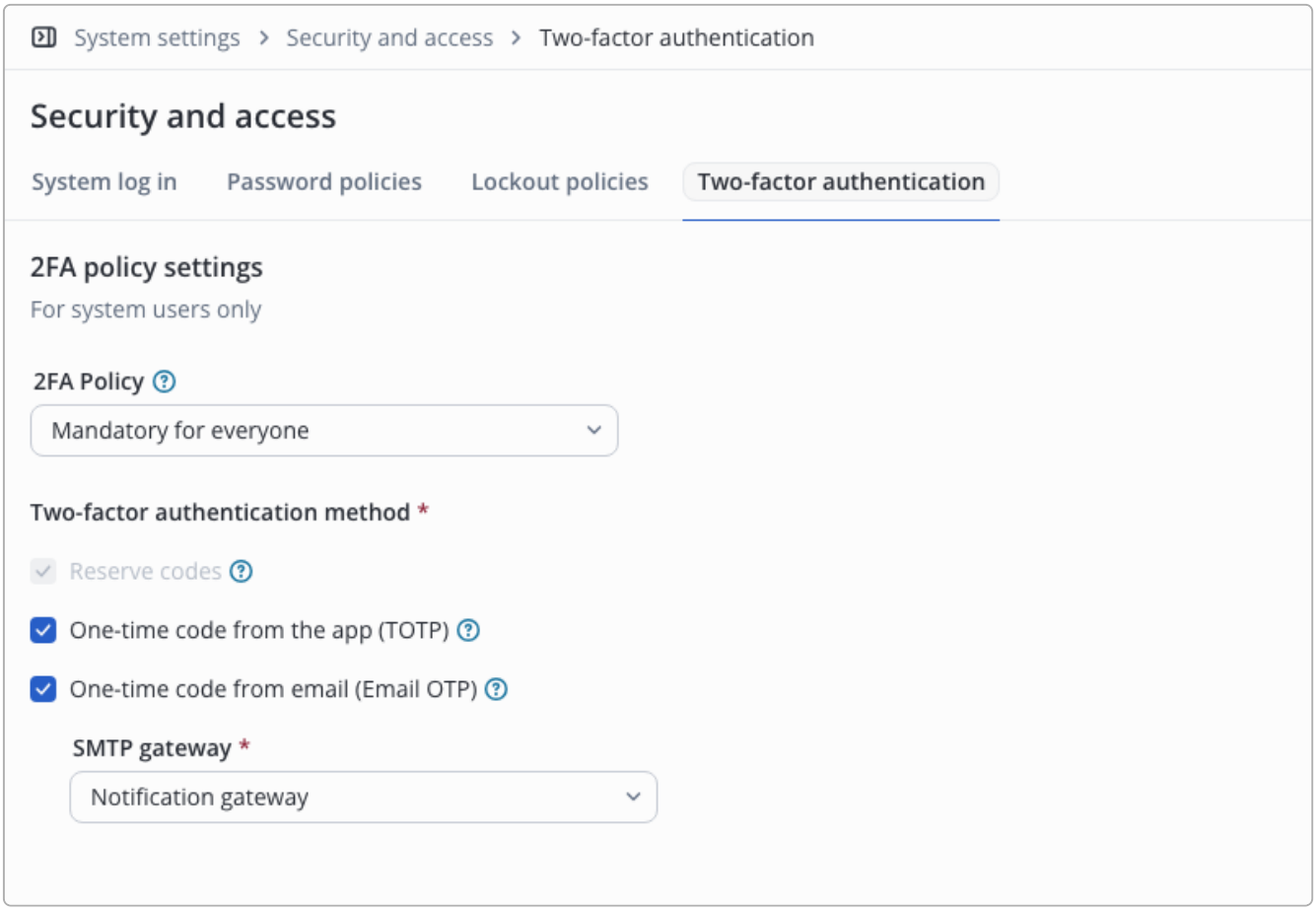


Figure 435. Example of configuring mandatory two-factor authentication

After selecting the **"Optional for everyone"** or **"Mandatory for everyone"** policy, the **Two-factor authentication methods** block is displayed on the page.

In this block, the methods that will be available to users for configuring the second factor are selected.

The following methods are available:

Method	Description
Backup codes	One-time codes for restoring access to the system if the primary verification method is unavailable. This method is always enabled and cannot be disabled. A total of 10 codes are generated, each 6 characters long in numeric format (0–9).
One-time code from the app (TOTP)	A one-time code generated in an authenticator application, such as Yandex Key, Google Authenticator, Microsoft Authenticator, or similar. The code consists of 6 characters and is refreshed every 30 seconds.
One-time code from email (Email OTP)	A one-time code sent to the user's email address. The code consists of 6 characters and remains valid for 5 minutes.

When disabling a method, its settings will be reset for all users of the system for whom it was activated.

Features of the "Backup codes" method

The **"Backup codes"** method is designed to restore access to the NAICE web interface.

Backup codes:

- are always enabled and cannot be disabled;
- are generated automatically after the successful configuration of the first primary 2FA method;
- if necessary, the user can independently generate a new set of codes.

When confirming two-factor authentication, a backup code can be entered in the same fields intended for **Email OTP** or **TOTP**.

Configuring Email OTP

The **Email OTP** method is only available if an SMTP gateway is configured.

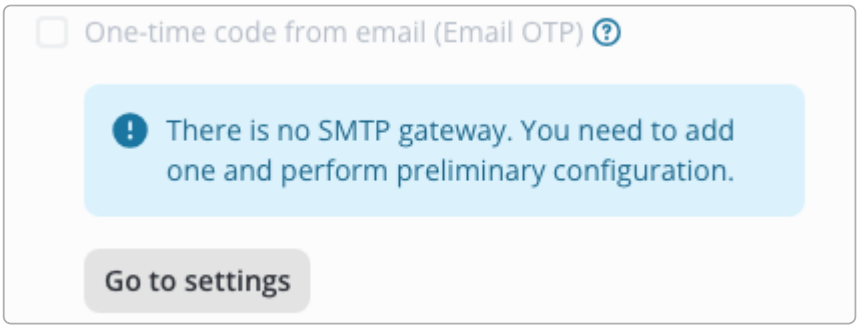


Figure 436. Missing SMTP gateway

If an SMTP gateway is missing, the method is unavailable for selection.

To proceed to SMTP gateway configuration, click the **"Go to settings"** button.

Applying settings

After changing the 2FA policy and selecting available methods, save the settings by clicking the **"Save"** button.

New rules take effect upon the user's next login. Current active user sessions are not terminated.

- If the policy is changed to **"Mandatory for everyone"**, users will be redirected to configure two-factor authentication upon their next login and will not be able to access other sections of the NAICE web interface until configuration is complete.
- If the policy is changed to **"Optional for everyone"**, users can configure two-factor authentication independently in the **Account settings** section if they wish.

Disabling the 2FA policy

If the **"Optional for everyone"** or **"Mandatory for everyone"** policy was previously configured in the system, and then the **2FA policy** field is changed to **"Not used"**, two-factor authentication ceases to apply when users log in to the system.

After disabling the 2FA policy:

- access to the system is performed only with a login and password;
- previously configured 2FA methods for users are reset;
- current active user sessions are not terminated automatically.

Interaction with Active Directory

Description

The *Interaction with Active Directory* page configures periodic automatic password changes for computer accounts used to interact with Active Directory. This setting applies to all computer accounts configured in all identity sources using the Active Directory schema.

Configuring Password Change Schedule

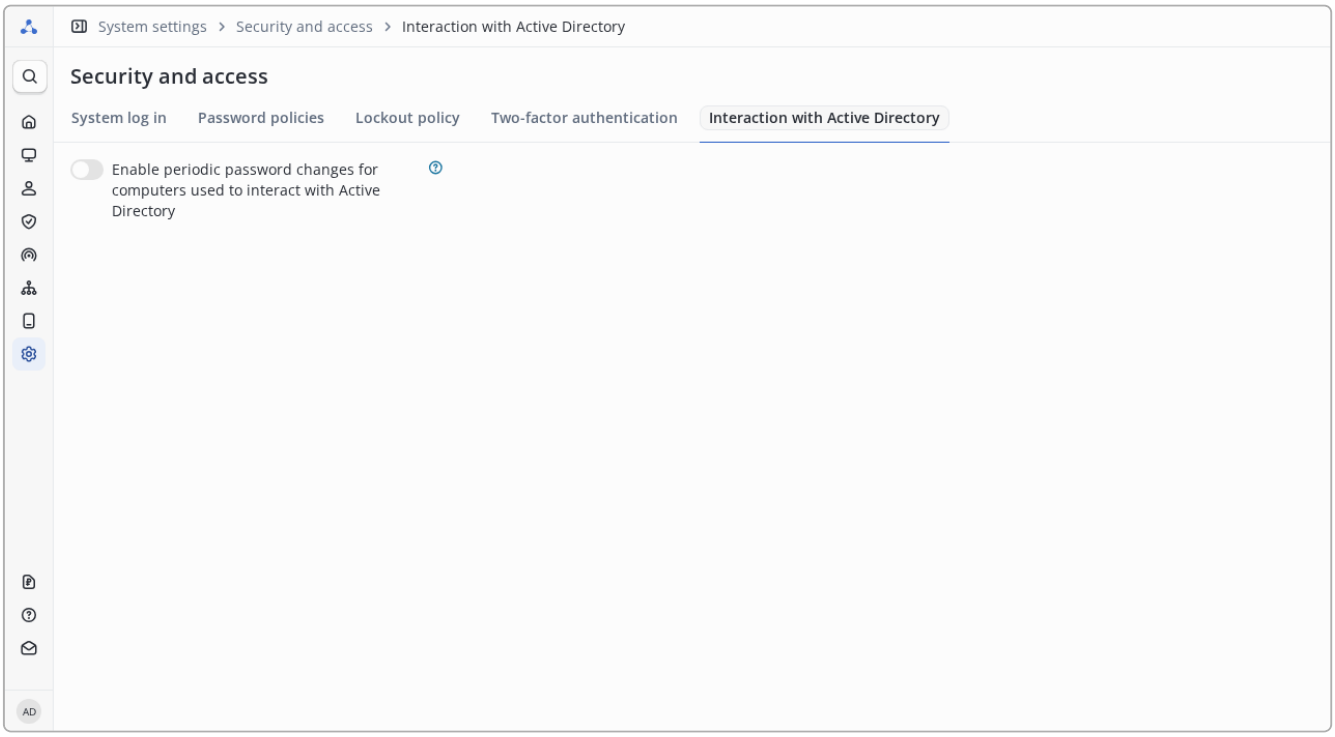


Figure 437. Interaction with Active Directory - disabled

At the top of the page is the toggle:

- `Enable periodic password changes for computers used to interact with Active Directory` - enables/disables automatic password changes for all computer accounts in all Active Directory identity sources. Hovering over shows a description of this setting.

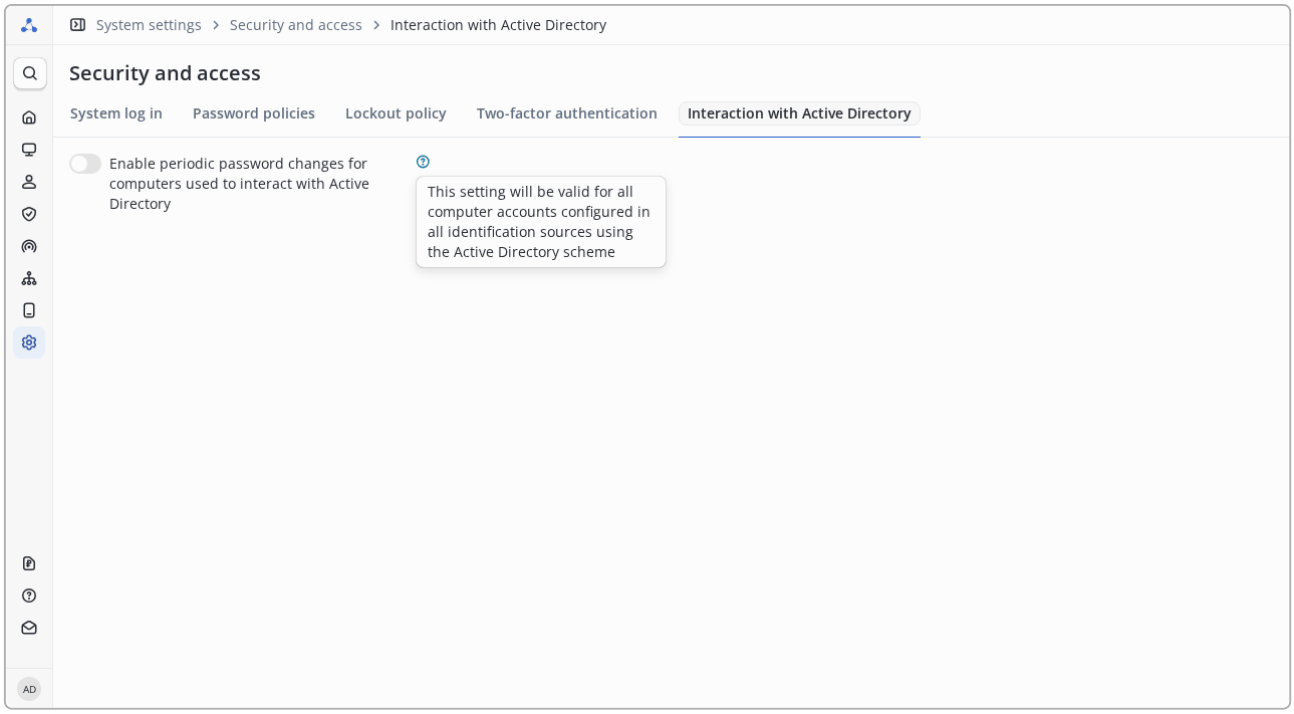


Figure 438. Setting description

When the toggle is enabled, the **Password change schedule** block opens:

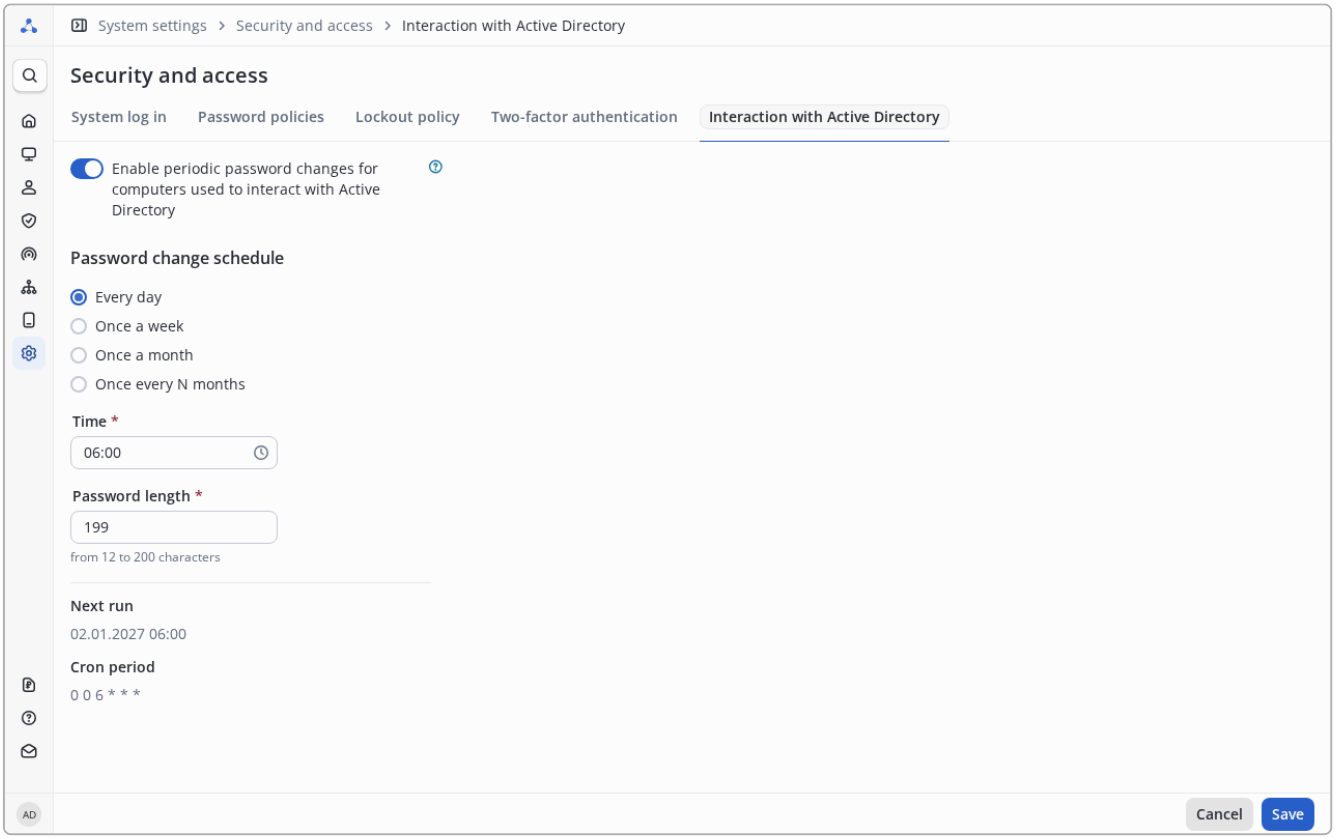


Figure 439. Password change schedule

The schedule block contains the following parameters:

- `Schedule type` - one of the following options:
  - `Every day` - password change is performed daily at the specified time.

- `Once a week` - an additional `Day of week` * field appears.

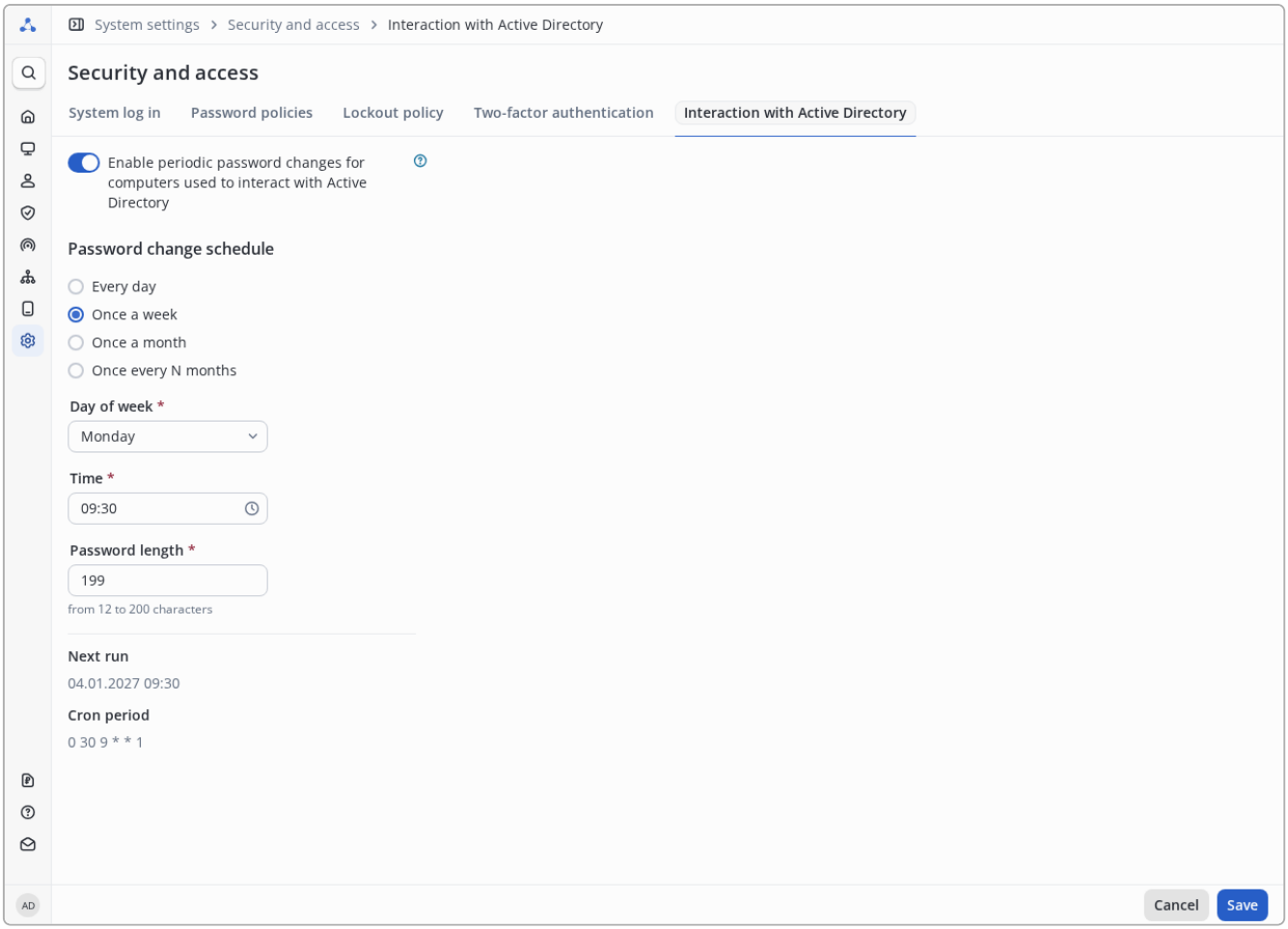


Figure 440. Password change schedule - weekly

- `Once a month` - an additional `Day of month` * field appears.

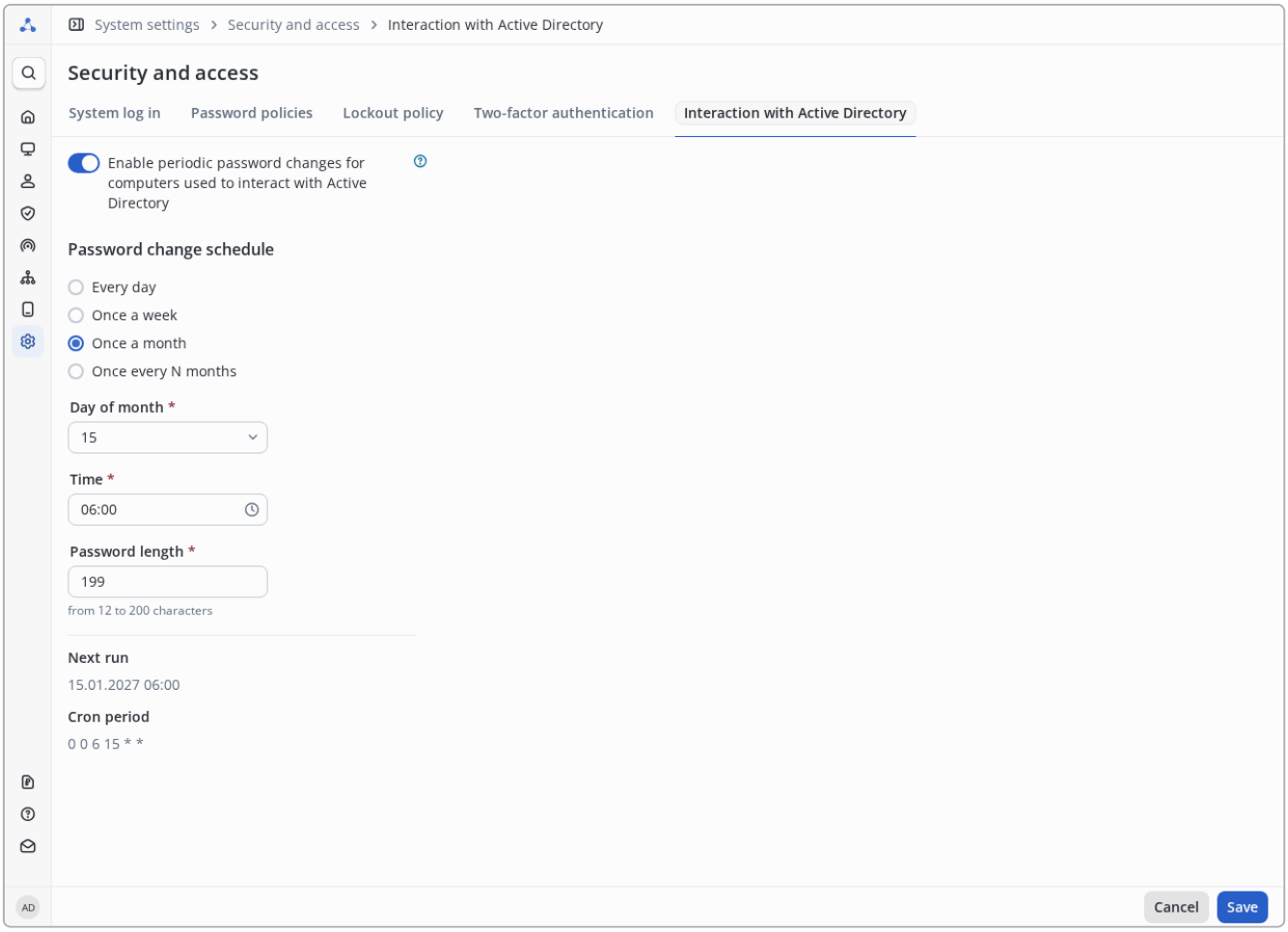


Figure 441. Password change schedule - monthly

- `Once every N months` - `Shift period N` * and `Day of month` * fields appear.

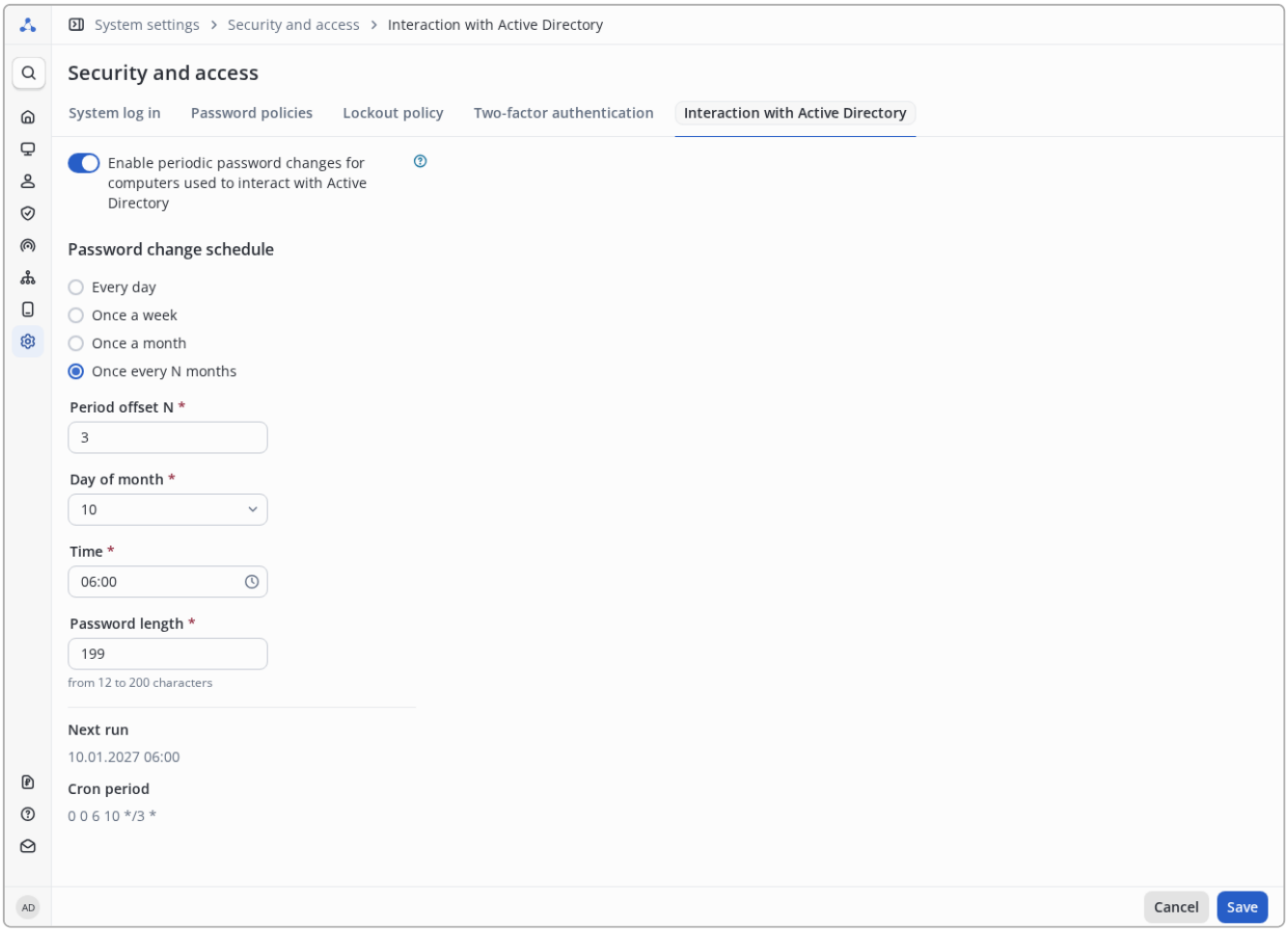


Figure 442. Password change schedule - every N months

- `Time` * - time to perform the password change in `hh:mm` format.
- `Password length` * - length of the new password. Valid range: from 12 to 200 characters.

Parameters marked with * are required.

At the bottom of the page, additional information is displayed:

- `Next run` - calculated date and time of the next automatic password change.
- `Cron period` - generated Cron expression for the schedule.

If the required parameters are not filled in completely, the value *Unknown* is displayed.

To apply the changes, click the **Save** button. To cancel - click the **Cancel** button.

Certificate store

Trusted Certificates

Description

The `Trusted Certificates` section is intended for managing certificates that the NAICE system trusts when establishing secure connections, for example when connecting to external services.

Added certificates form a trusted list used by the system to verify the authenticity of a remote node certificate. The section provides the following operations for working with certificates: viewing, editing, downloading, and deleting.

Controls

Controls in this section are standard and are used similarly to other sections of the system.

- - Add a new certificate.
- - Delete selected certificates (inactive until no certificate is selected).
- - Refresh table data.
- - Checkbox for selecting elements to perform further actions, for example, deletion.
- - Change the current sorting order.
- - Download a previously uploaded certificate.
- - Indicator signaling that the certificate will expire soon.
- - Indicator signaling that the certificate has expired.

Viewing the list of trusted certificates

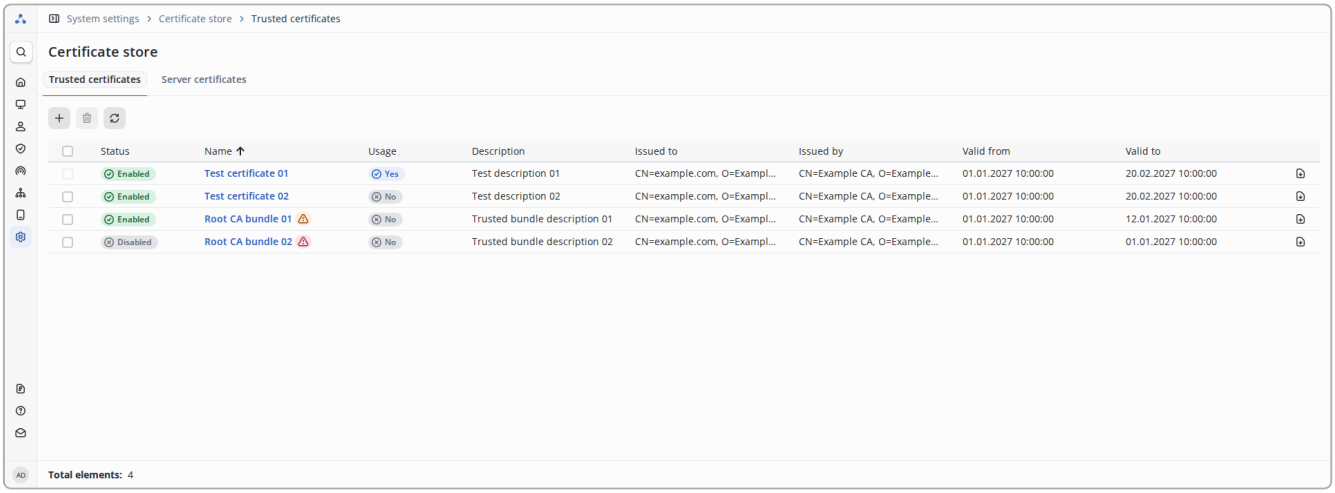


Figure 443. Table of trusted certificates

The page displays a table with a list of trusted certificates added to the system by the user.

The table contains the following columns:

- `Status` - the current state of the certificate ("Enabled" or "Disabled").
- `Name` - the unique certificate name in the system.
- `Usage` — indicates whether the certificate is used in the current system configuration. If the certificate is in use, a `Yes` badge is displayed. If not in use — `No`.
- `Description` - an arbitrary description assigned to the certificate by the user.
- `Issued to` – value from the certificate **Subject** field (certificate owner, the entity to which the certificate was issued).

`Issued by` – value from the certificate **Issuer** field (certificate issuer).

- `Valid from` - value from the certificate **Not Before** field (start of the certificate validity period).
- `Valid to` - value from the certificate **Not After** field (end of the certificate validity period).
- `Usage` — indicates whether the certificate is used in the current system configuration. If the certificate is in use, a `Yes` badge is displayed. If not in use — `No`.

The table also displays visual certificate status indicators:

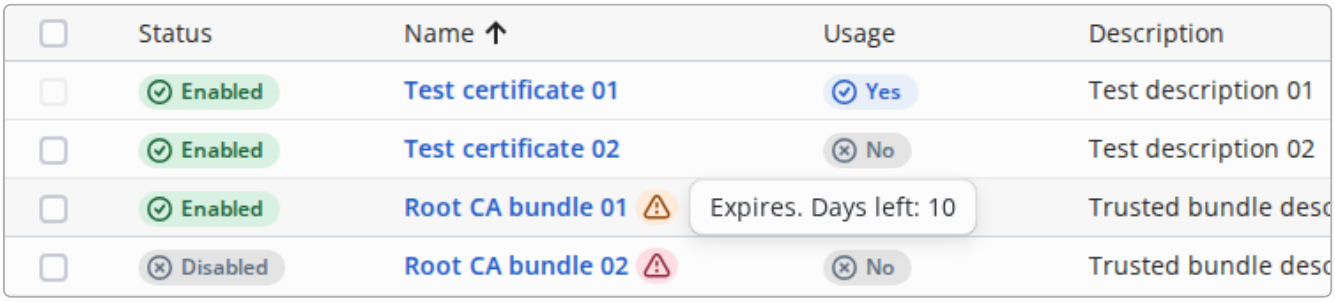


Figure 444. Expiring certificate in the table

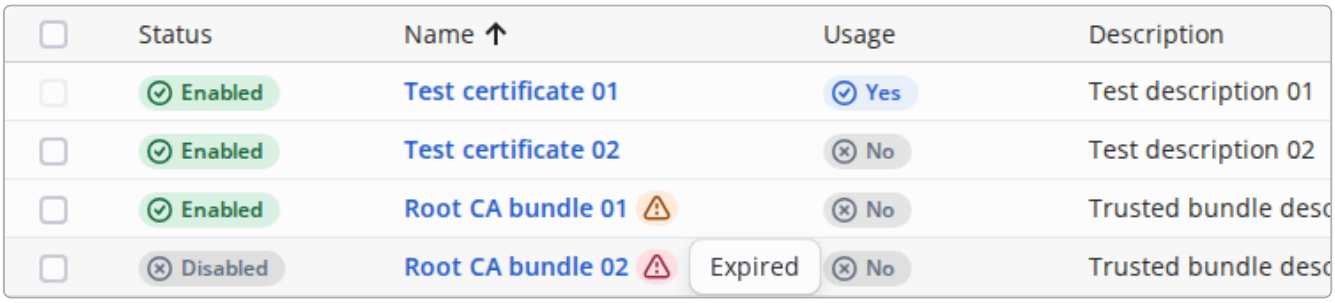


Figure 445. Expired certificate in the table

The table also displays visual certificate status indicators:

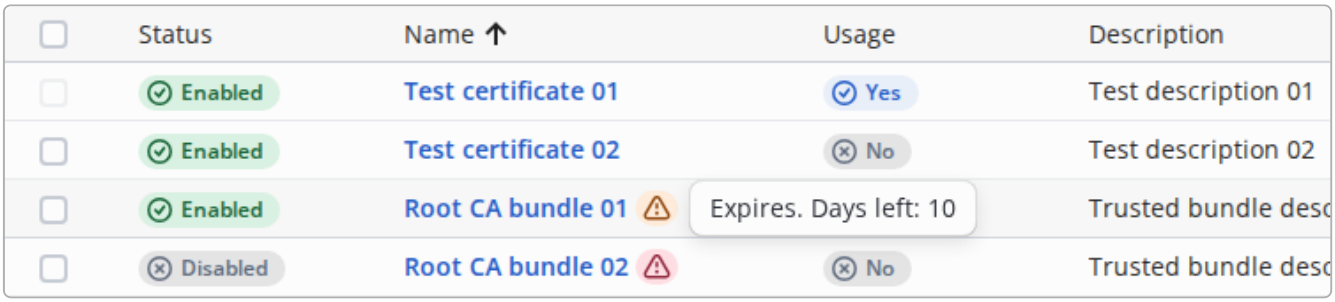


Figure 446. Expiring certificate in the table

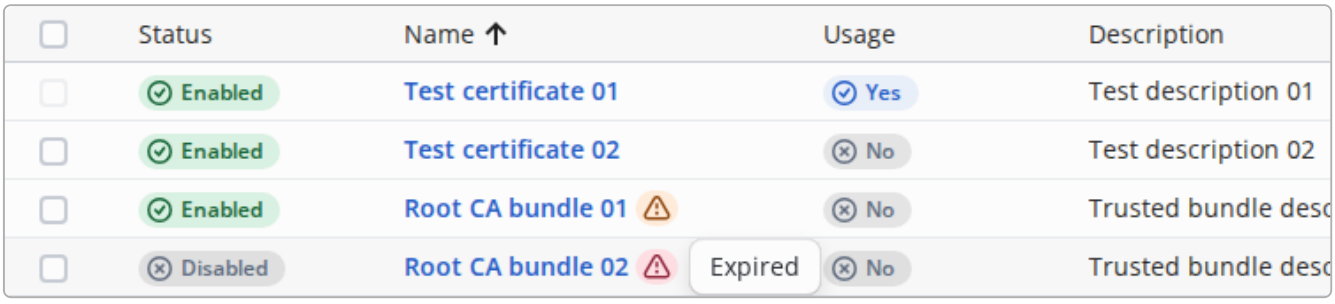


Figure 447. Expired certificate in the table

Adding a trusted certificate

To add a new certificate, click +.

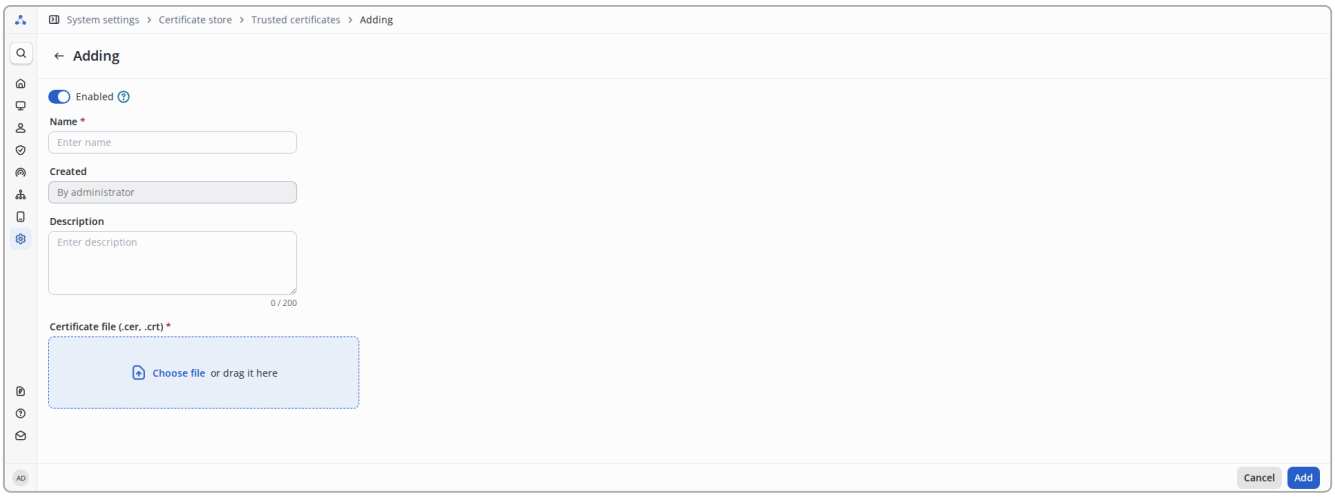


Figure 448. Add trusted certificate window

The add page contains the following parameters:

- `Status` - Determines whether the certificate will be enabled immediately after being added.
- `Name` * - Used to identify the certificate in the interface and events.
- `Created` - Indicates who added the certificate: by system or by administrator. Pre-set to administrator.
- `Description` - An arbitrary description of the certificate.
- `Certificate file` * - Field for adding a certificate file. Drag-and-drop into the designated area is supported.

Figure 449. Certificate file upload area

`Parameters marked with an asterisk * are required.`

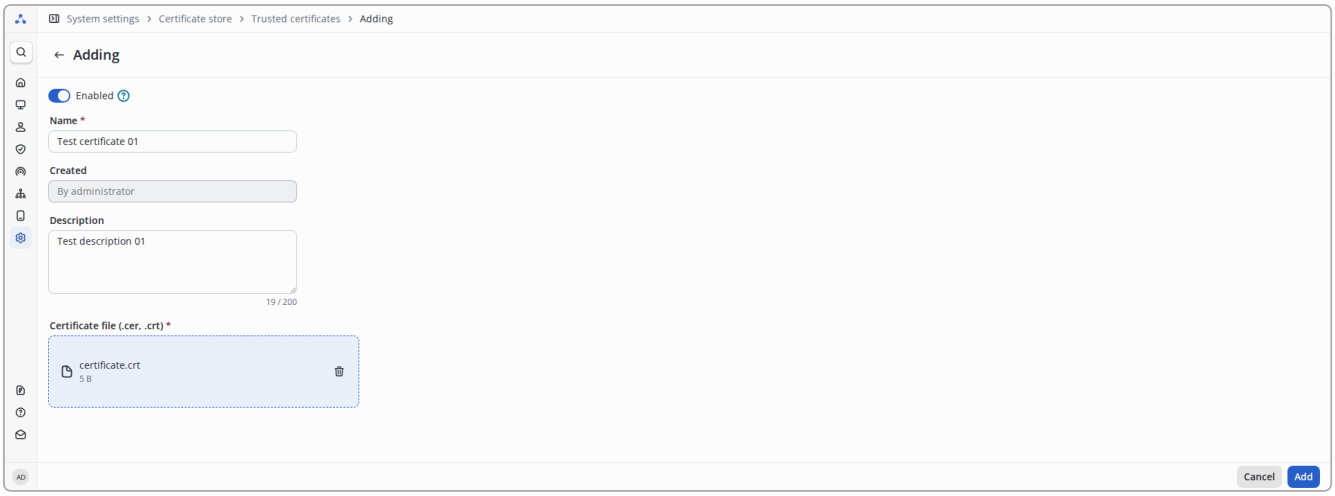


Figure 450. Filled certificate add form

The actual name and extension of the uploaded certificate are also displayed on this page.

Certificate requirements:

- Certificates in `.cer` and `.crt` formats that comply with the `X.509` standard are supported. Certificates in `.pem` format are not supported.
- Private keys do not need to be uploaded to the system.
- Only files containing a single certificate are allowed. Uploading files containing a certificate chain (for example `Root CA` and `Intermediate CA`) or multiple arbitrary certificates is not allowed.
- A certificate for secure LDAP connection must contain a SAN (Subject Alternative Name) field specifying the `domain name` (example `DNS:ldap.example.org`) or `IP address` (example `IP Address:192.168.0.10`) of the host.

Possible errors when uploading certificates to the system

Below are the main errors that may occur when uploading trusted certificates, as well as their causes.

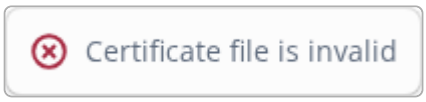


Figure 451. Certificate file is invalid

Reason: The certificate may have an incompatible structure, or the certificate file contains corrupted or incomplete data.

Figure 452. Unsupported certificate format

Reason: The selected file is not a certificate, or an invalid extension was assigned during naming (for example, `docx`).

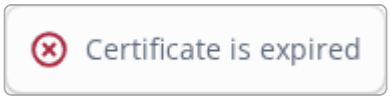


Figure 453. Certificate validity period has expired

Reason: The certificate validity period has expired.

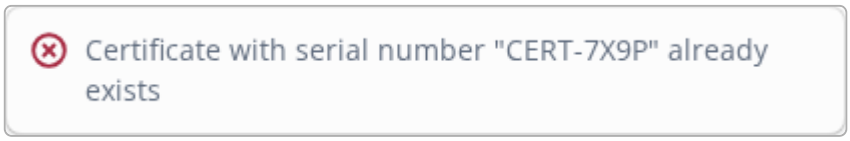


Figure 454. A certificate with the specified serial number already exists

Reason: Attempt to upload a certificate that already exists in the system.

Downloading a certificate from the system

To download a certificate, click  in the table displaying all certificates.

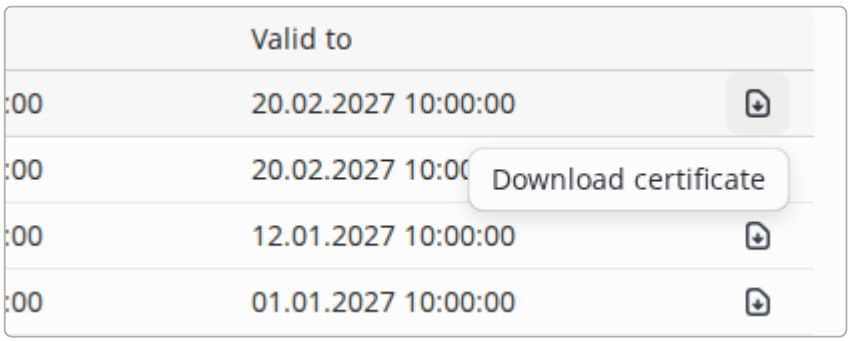


Figure 455. Downloading a certificate from the system

Viewing a certificate

To view detailed information about a certificate, click its name in the table.

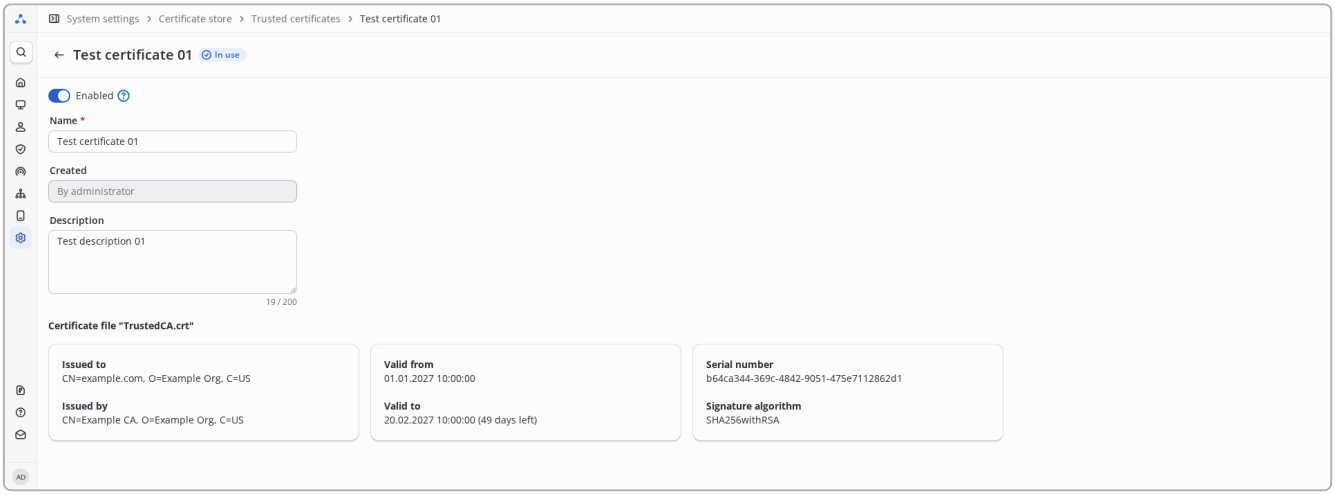


Figure 456. Trusted certificate view page

The following parameters are displayed on the view page:

Main fields

- `Status` - Determines the state of the certificate ("Enabled" or "Disabled").

- `Name` * - Certificate name used for identification in the NAICE system.
- `Created` - Indicates who added the certificate: by system or by administrator.
- `Description` - An arbitrary description of the certificate created by a NAICE system user.
- `File name` - Name of the uploaded certificate file.

Certificate identification

- `Issued to` – value from the certificate **Subject** field (certificate owner, the entity to which the certificate was issued).
- `Issued by` – value from the certificate **Issuer** field (certificate issuer).
- `Valid from` - value from the certificate **Not Before** field (start of the validity period).
- `Valid to` - value from the certificate **Not After** field (end of the validity period).
- `Serial number` - unique certificate identifier **Serial Number**, assigned by the issuer (CA).
- `Public key algorithm` - algorithm used to sign the certificate - **Signature Algorithm**.

Certificate state indication

Next to the certificate name in the page header, state badges are displayed:

- `In use` / `Not in use` — indicates whether the certificate is applied in the current system configuration (for example, in the RADIUS settings).

`Expiring` – the certificate validity period is nearing its end and will expire soon. This state is displayed if less than 30 days remain before the certificate expires. In this case, if necessary, the certificate should be replaced in advance to avoid errors when establishing secure connections.

Figure 457. Certificate is expiring

`Expired` – the current date and time exceed the certificate expiration date. Such a certificate should be replaced immediately with a valid one.

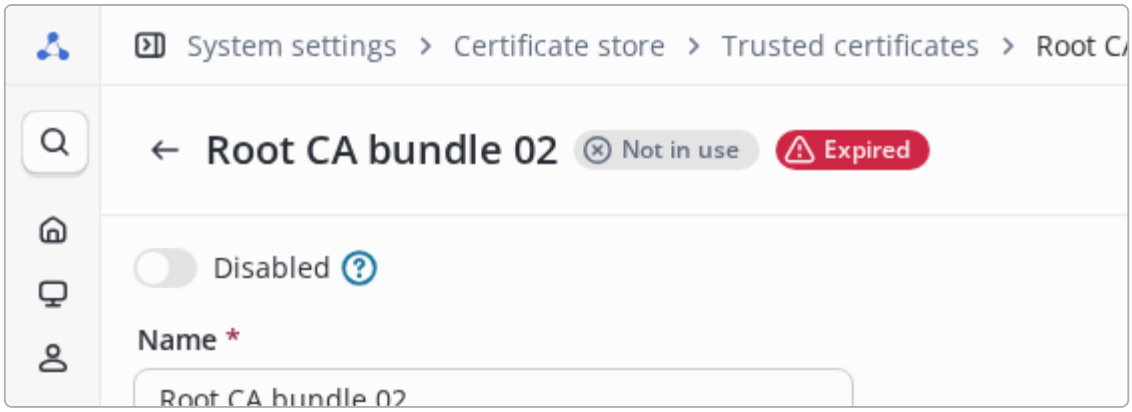


Figure 458. Certificate has expired

Expired certificates can still be used to verify the authenticity of external services while they remain in the "Enabled" state, if this is allowed by the service itself.

Editing a certificate

Editing a selected certificate is performed on its view page, which can be accessed by clicking the certificate name.

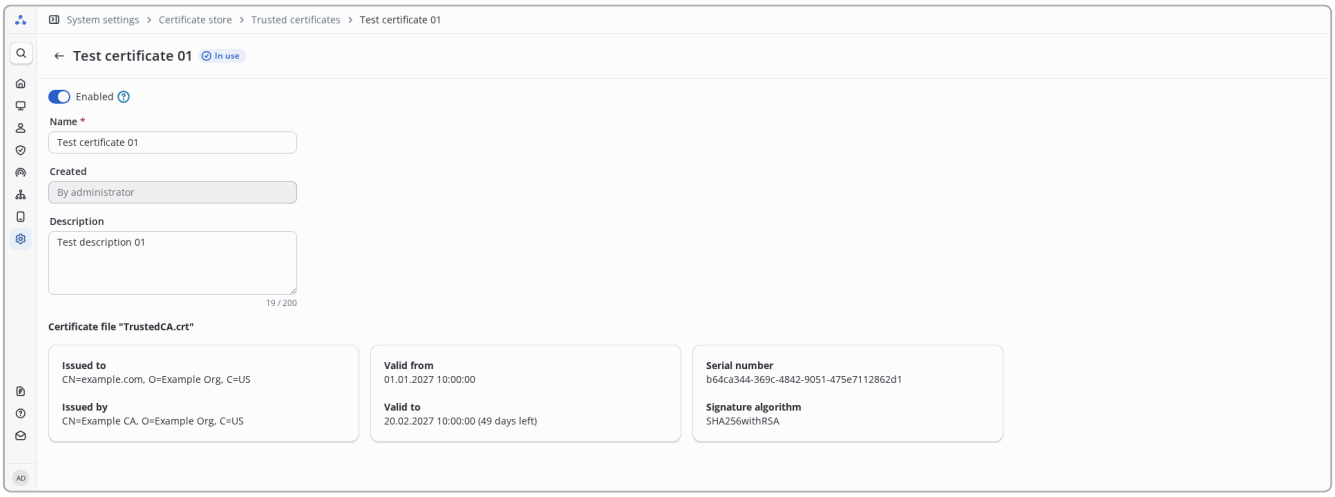


Figure 459. Editing certificate parameters

The following certificate parameters can be changed:

- `Name`
- `Description`
- `Status`

Replacing the certificate file during editing is not supported. To change the certificate contents, delete the entry and upload the certificate again.

Enabling and disabling a certificate

Certificate usage can be suspended without removing it from the system. To do this, change the `Status` field to "Disabled" in the edit form and save the changes.

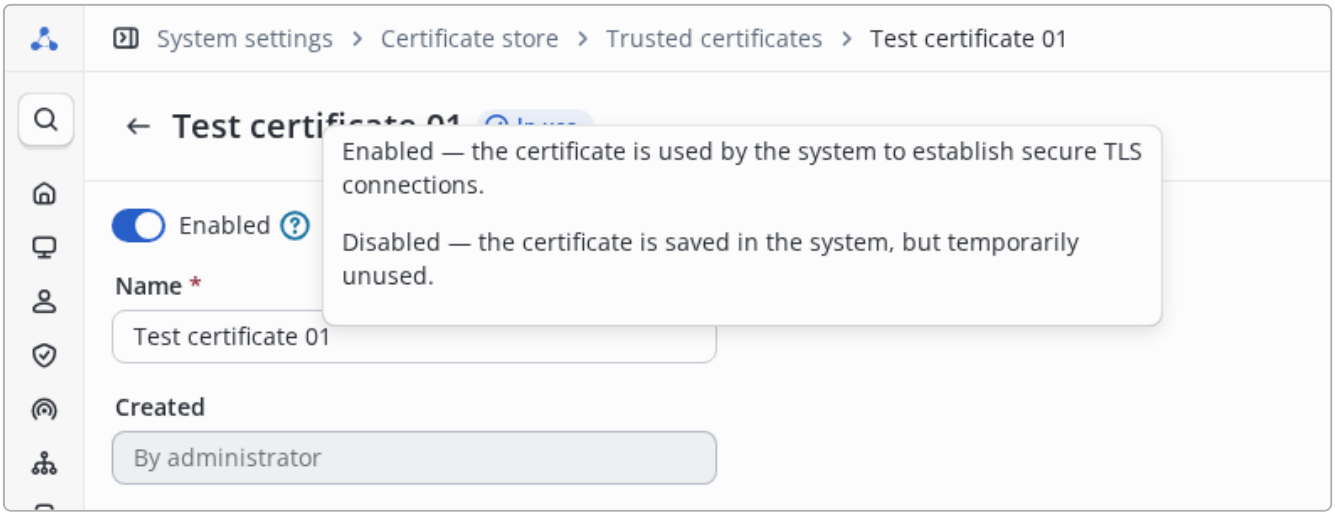


Figure 460. Enabling and disabling a certificate

A disabled certificate:

- Remains in the list;
- Appears in system events;
- Is not used by the system when establishing TLS connections.

Deleting trusted certificates

To delete, select one or more certificates using ☐ and click 🗑. The delete button is inactive until a certificate is selected. You cannot select a certificate that is in use for deletion.

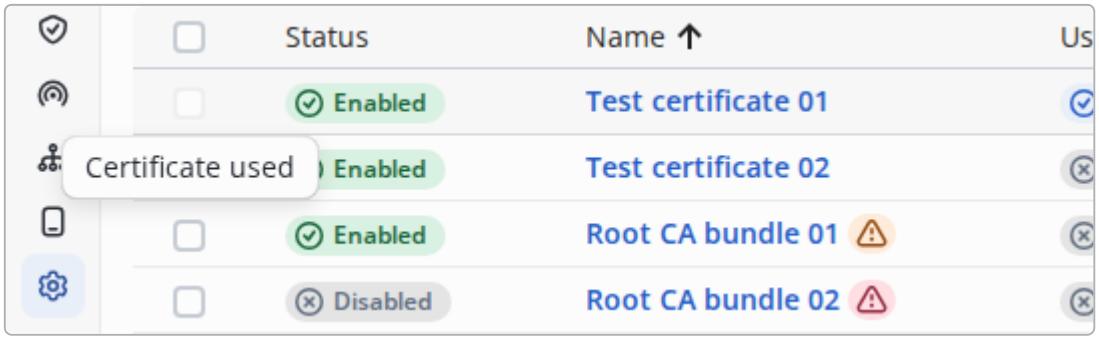


Figure 461. You cannot select a certificate that is in use

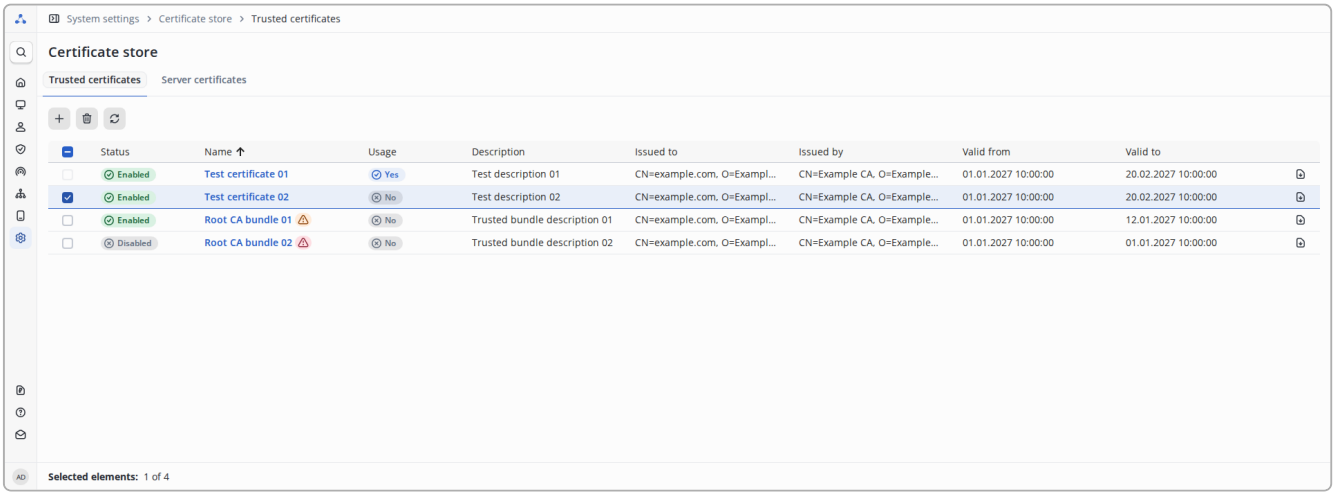


Figure 462. Certificates selected for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

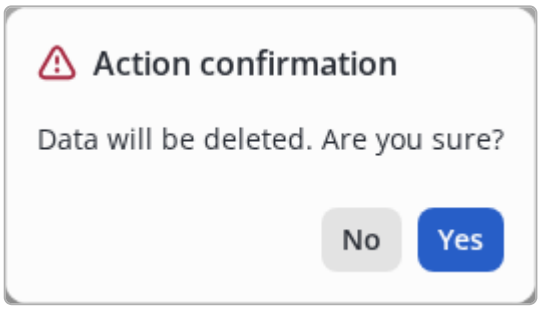


Figure 463. Modal dialog for confirmation

Deleting a certificate is an irreversible operation. Before deletion, make sure that the certificate is not used implicitly in the active system configuration, for example, in external identity sources.

Events related to certificates

Operations with trusted certificates are recorded in the system event log.

The following actions are recorded:

- Adding a certificate.
- Editing the certificate name and description.

Changing the status (enable/disable).

- Deleting certificates.
- Warning about upcoming certificate expiration.
- Warning about certificate expiration.

Warnings about certificate expiration or upcoming expiration in the system event log are recorded only for certificates in the "Enabled" state. For certificates in the "Disabled" state, such events are not recorded.

Server Certificates

Description

The `Server Certificates` section is intended for managing certificates used by the NAICE system to authenticate the server when establishing secure connections. Server certificates are used by the following services:

- **HTTPS** — the NAICE web interface and the built-in captive portal.
- **RADIUS** — RADIUS server authentication in EAP-TLS and similar protocols.

For each certificate, you must provide a certificate file and a matching private key. The section provides the following operations for working with certificates: adding, viewing, editing the name, downloading, and deleting.

Controls

Controls in this section are standard and are used similarly to other sections of the system.

-  - Add a new certificate.
-  - Delete selected certificates (inactive until no certificate is selected).
-  - Refresh table data.
- - Checkbox for selecting elements to perform further actions, for example, deletion.
-  - Change the current sorting order.
-  - Download a previously uploaded certificate.
-  - Indicator signaling that the certificate will expire soon.
-  - Indicator signaling that the certificate has expired.

Viewing the list of server certificates

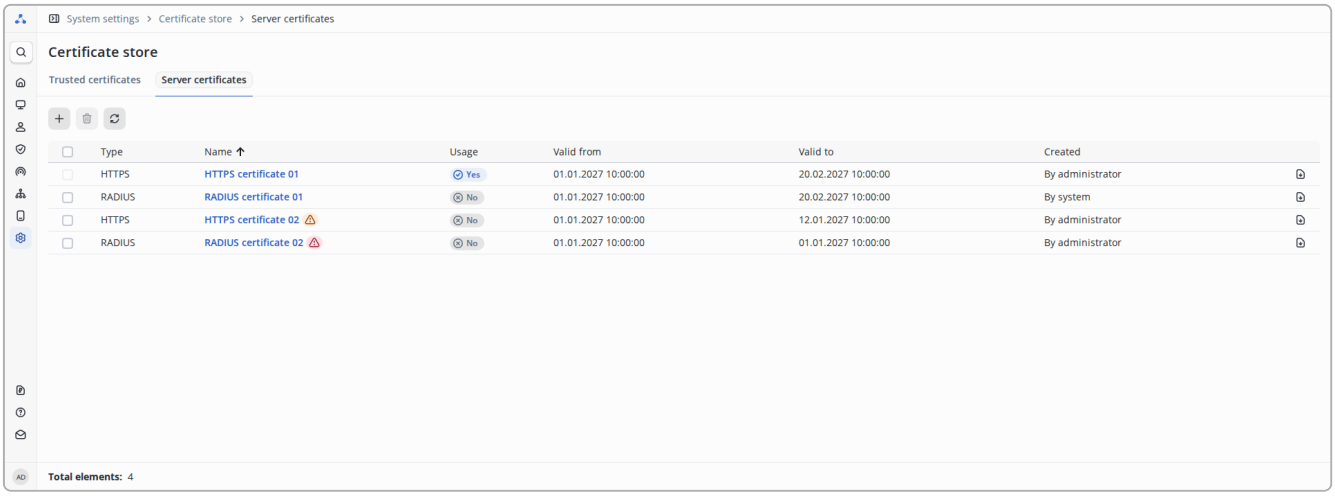


Figure 464. Table of server certificates

The page displays a table with a list of server certificates.

The table contains the following columns:

- `Type` — the usage type of the certificate: `HTTPS` or `RADIUS`.
- `Name` — the unique certificate name in the system. Link to the certificate view page.
- `Usage` — indicates whether the certificate is used in the current system configuration. If the certificate is in use, a `Yes` badge is displayed. If not in use — `No`.
- `Valid from` — value from the certificate **Not Before** field (start of the certificate validity period).
- `Valid to` — value from the certificate **Not After** field (end of the certificate validity period).
- `Created` — indicates who created the certificate: `By system` or `By administrator`.

The table also displays visual certificate status indicators:

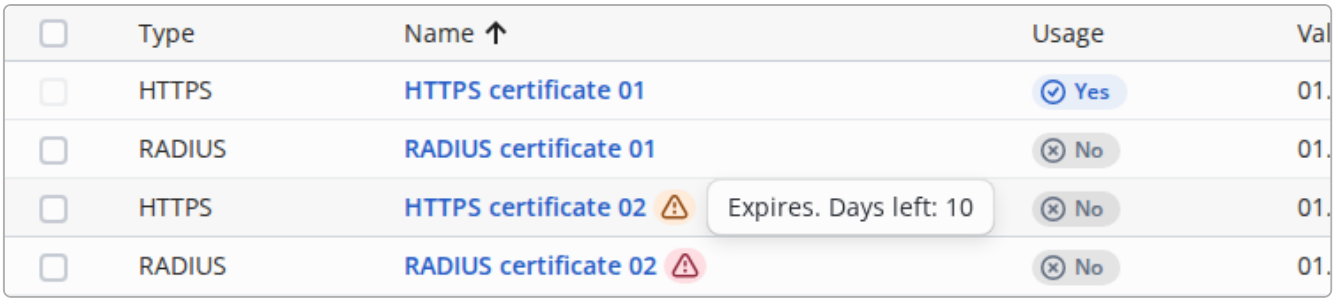


Figure 465. Expiring certificate in the table

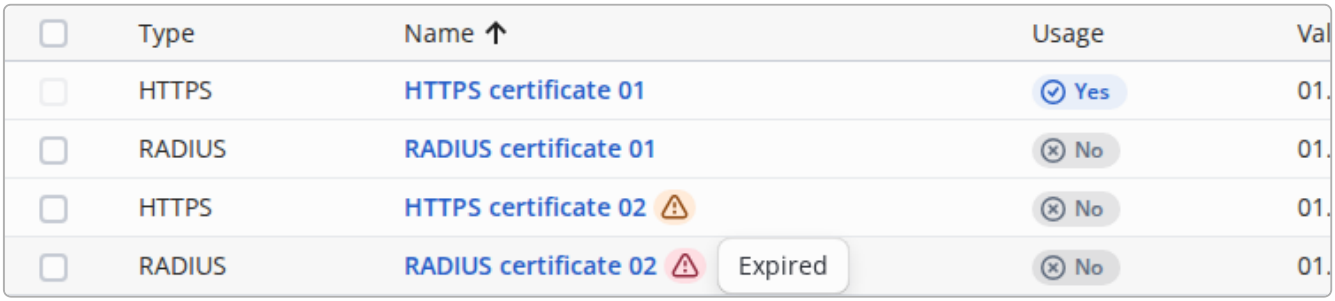


Figure 466. Expired certificate in the table

Adding a server certificate

To add a new certificate, click +.

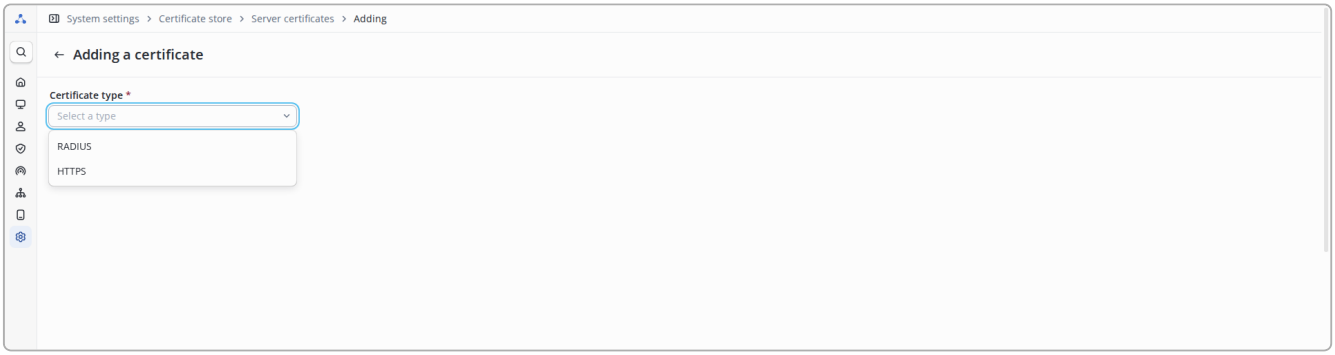


Figure 467. Certificate type selection

The add page contains the following parameters:

- `Certificate type` * — determines which service the certificate will be used for. Available options: `HTTPS` and `RADIUS`.

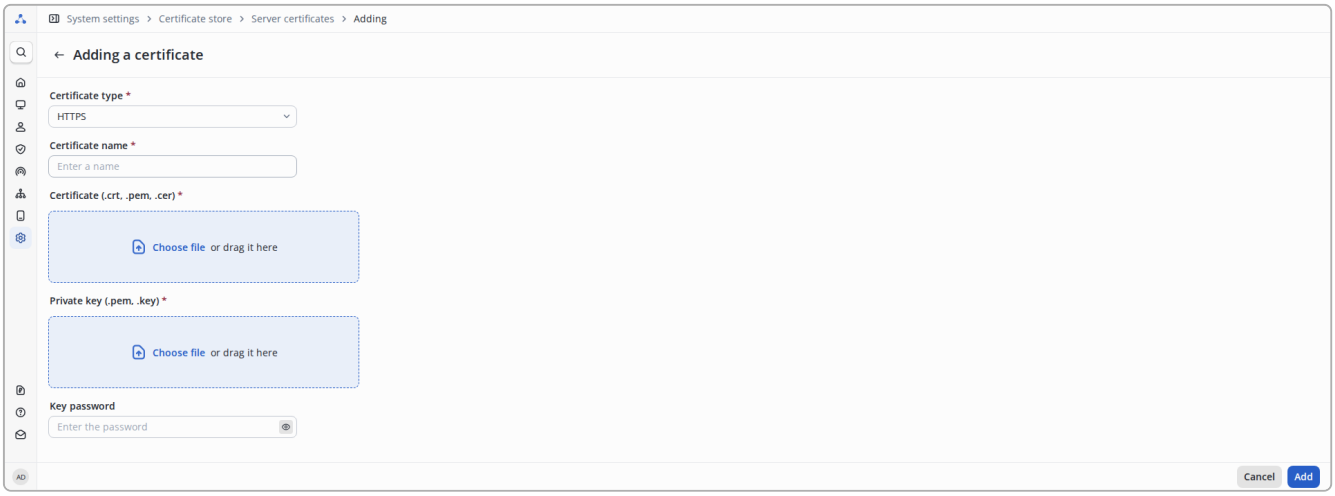


Figure 468. Selected type — HTTPS

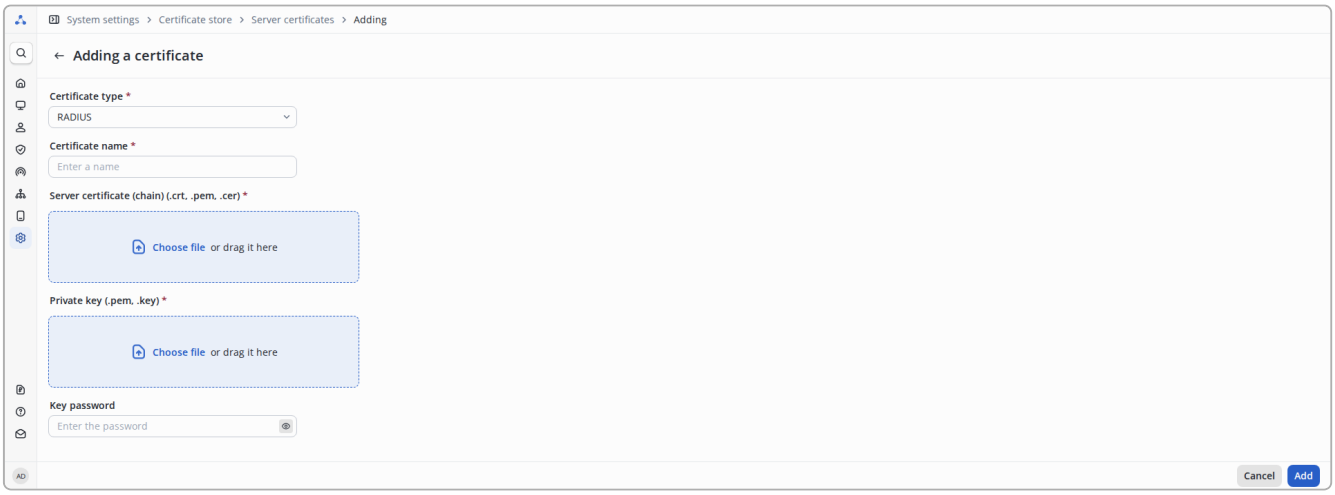


Figure 469. Selected type — RADIUS

- `Certificate name` * — used to identify the certificate in the interface and events.
- `Server certificate (chain)` * — field for adding a certificate file. Supported formats: `.crt`, `.cer`, `.pem`.

Figure 470. Certificate file upload area

- `Private key` * — field for adding a private key file that matches the certificate. Supported formats: `.pem`, `.key`.

Figure 471. Private key upload area

- `Key password` — private key password. Fill in if the key is encrypted.

`Parameters marked with an asterisk * are required.`

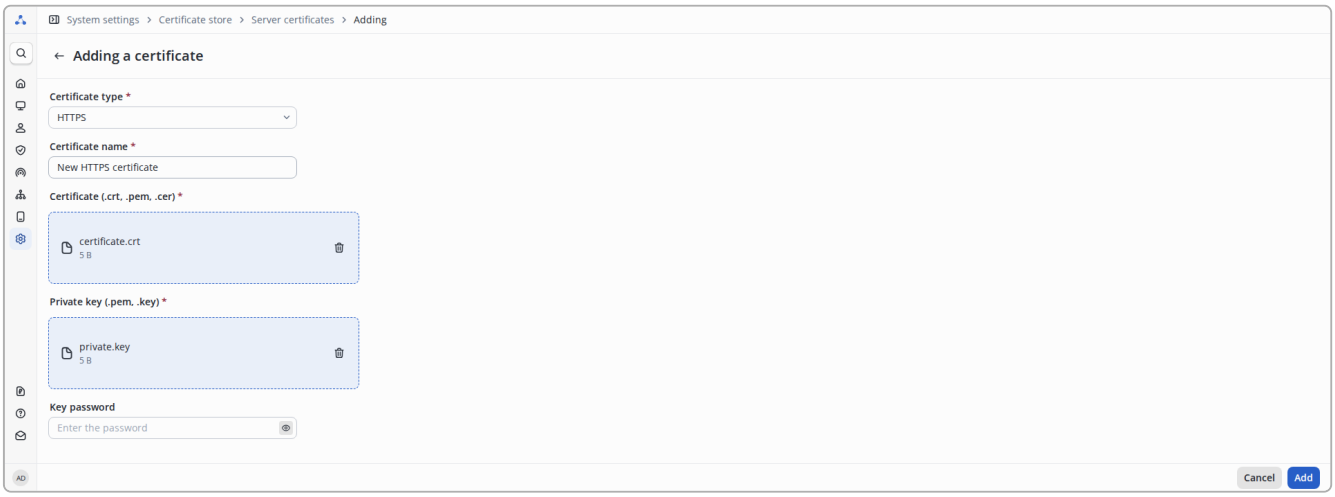


Figure 472. Filled certificate add form (HTTPS)

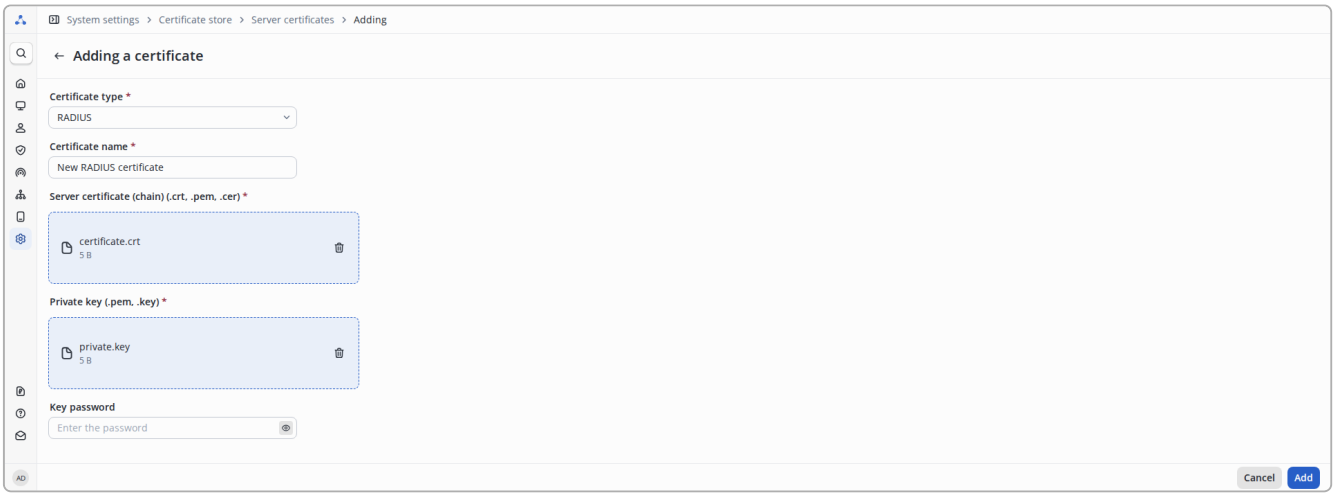


Figure 473. Filled certificate add form (RADIUS)

Certificate requirements:

- The certificate file must have the extension `.crt`, `.cer` or `.pem`.
- The certificate must be encoded in BASE64 format. DER encoding is not supported.
- The private key file must have the extension `.pem` or `.key`.
- The key must be encoded in PKCS #1 or PKCS #8 BASE64 format.
- The key must be encrypted by AES cipher or not been encrypted.
- The certificate and private key must be provided in separate files (certificate container is not supported).
- The private key password must not contain the following characters: `$`, `'`, `"`, `` ` ``, parentheses `()[]{}`, or spaces.

- Certificates using GOST encryption are not supported.
- For `HTTPS` type, a single certificate is uploaded. Publisher certificate does not require uploading.
- For `RADIUS` type, a certificate chain is allowed (required if the RADIUS certificate issuer is not the root CA).
- The certificate must contain the following attributes:
  - `Subject`: CN;
  - `X509v3 Key Usage`: Digital Signature, Key Encipherment;
  - `X509v3 Extended Key Usage`: TLS Web Server Authentication, TLS Web Client Authentication.
- The `HTTPS` certificate must contain a SAN (Subject Alternative Name) attribute with the server's `DNS name` or `IP address`. When using high availability without VRRP, the SAN attribute must include the DNS name or IP address of each NAICE server.

Possible errors when uploading certificates to the system

Below are the main errors that may occur when uploading server certificates, as well as their causes.

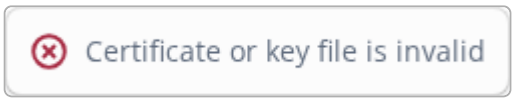


Figure 474. Certificate or key file is invalid

Reason: The certificate or private key file has an incompatible structure, corrupted/incomplete data, or cannot be read correctly.

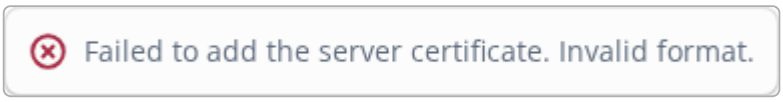


Figure 475. Unsupported certificate format

Reason: The selected file is not a certificate, or an invalid extension was assigned during naming.

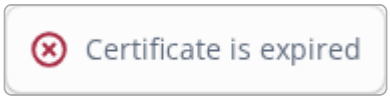


Figure 476. Certificate validity period has expired

Reason: The certificate validity period has expired.

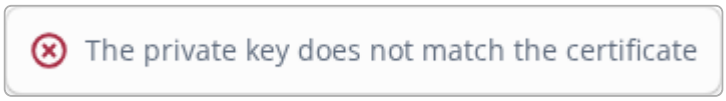


Figure 477. Private key does not match certificate

Reason: The uploaded private key does not match the uploaded certificate. Make sure the key and certificate form a pair.

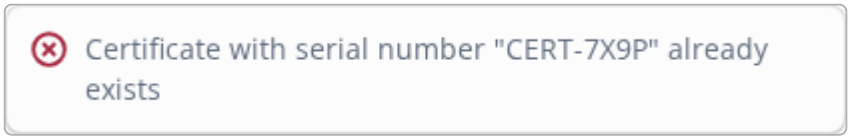


Figure 478. A certificate with the specified serial number already exists

Reason: Attempt to upload a certificate that already exists in the system.

Downloading a certificate from the system

To download a certificate, click  in the table displaying all certificates.

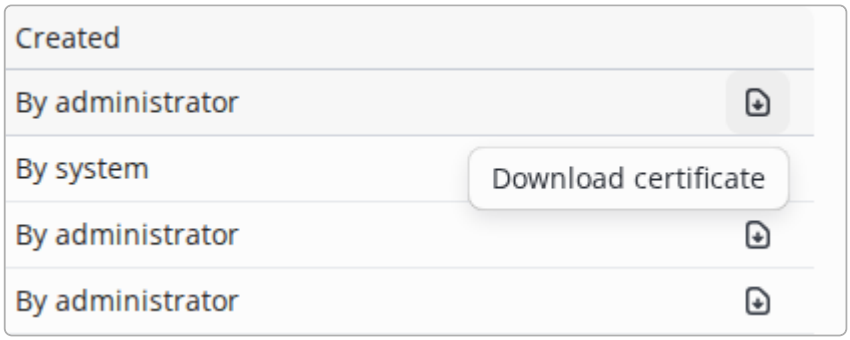


Figure 479. Downloading a certificate from the system

Viewing a certificate

To view detailed information about a certificate, click its name in the table.

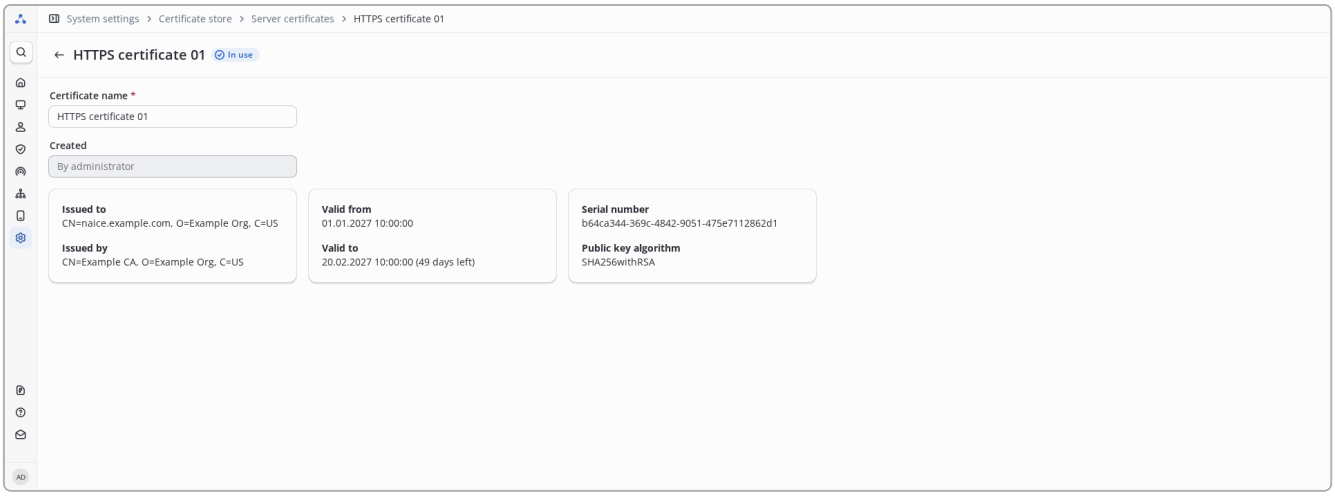


Figure 480. RADIUS certificate view page

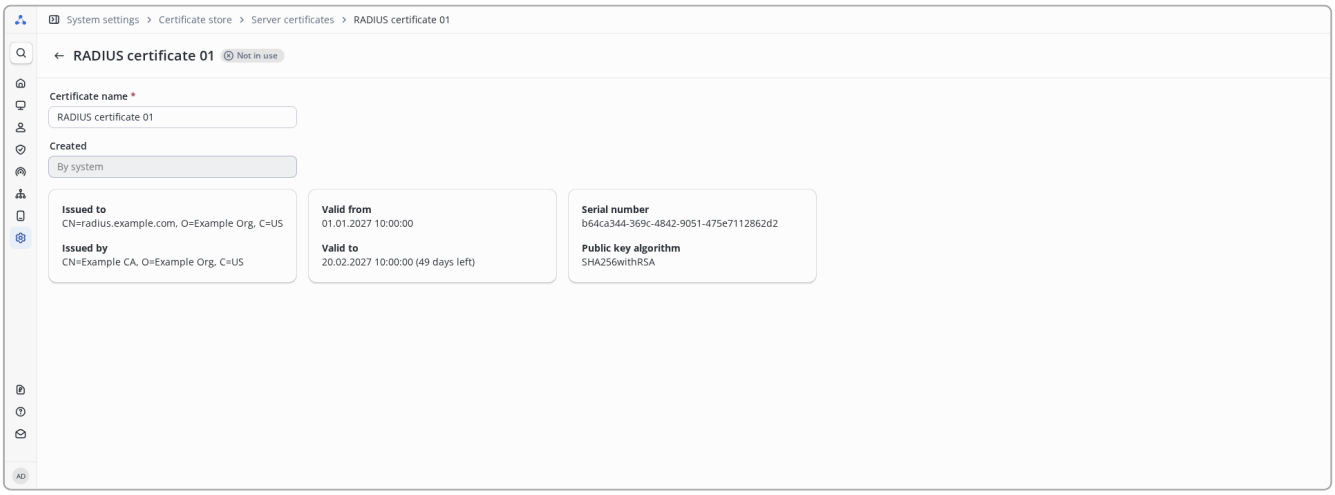


Figure 481. HTTPS certificate view page

The following parameters are displayed on the view page:

Main fields

- `Name` * — certificate name used for identification in the NAICE system.
- `Created` — indicates who created the certificate: `By system` or `By administrator`. Read-only field.

Certificate information

The page displays cards with detailed certificate information:

- `Issued to` — value from the certificate **Subject** field (certificate owner).
- `Issued by` — value from the certificate **Issuer** field (certificate issuer).
- `Valid from` — value from the certificate **Not Before** field (start of the validity period).
- `Valid to` — value from the certificate **Not After** field (end of the validity period). Also displays the number of days remaining until expiration.
- `Serial number` — unique certificate identifier **Serial Number**, assigned by the issuer (CA).
- `Public key algorithm` — algorithm used to sign the certificate — **Signature Algorithm**.

Certificate status indicators

Badges are displayed next to the certificate name in the page header:

- `In use` / `Not in use` — indicates whether the certificate is used in the current system configuration (for example, in RADIUS or HTTPS settings).
- `Expires` — the certificate validity period is nearing its end (less than 30 days remaining).
- `Expired` — the current date and time exceed the certificate expiration date.

Editing a certificate

Editing a selected certificate is performed on its view page, which can be accessed by clicking the certificate name.

Only the certificate name can be edited.

Replacing the certificate file, private key, or certificate type during editing is not supported. To change the certificate contents, delete the entry and upload the certificate again.

Deleting server certificates

To delete, select one or more certificates using and click  . The delete button is inactive until a certificate is selected. You cannot select a certificate that is in use for deletion.

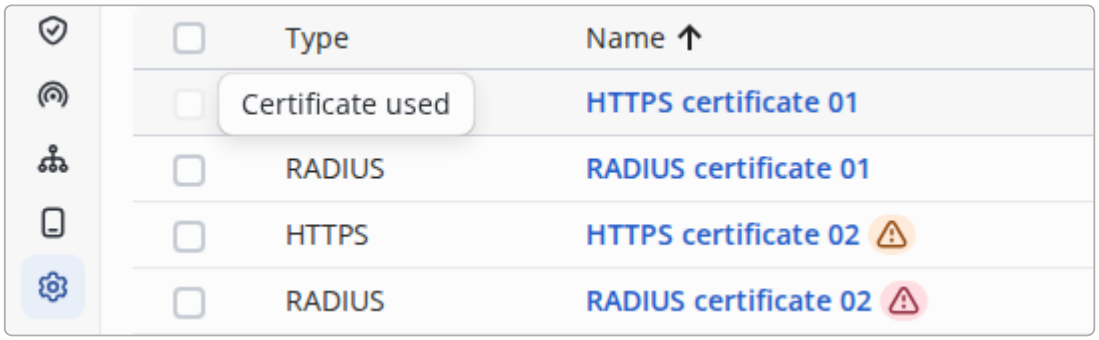


Figure 482. You cannot select a certificate that is in use

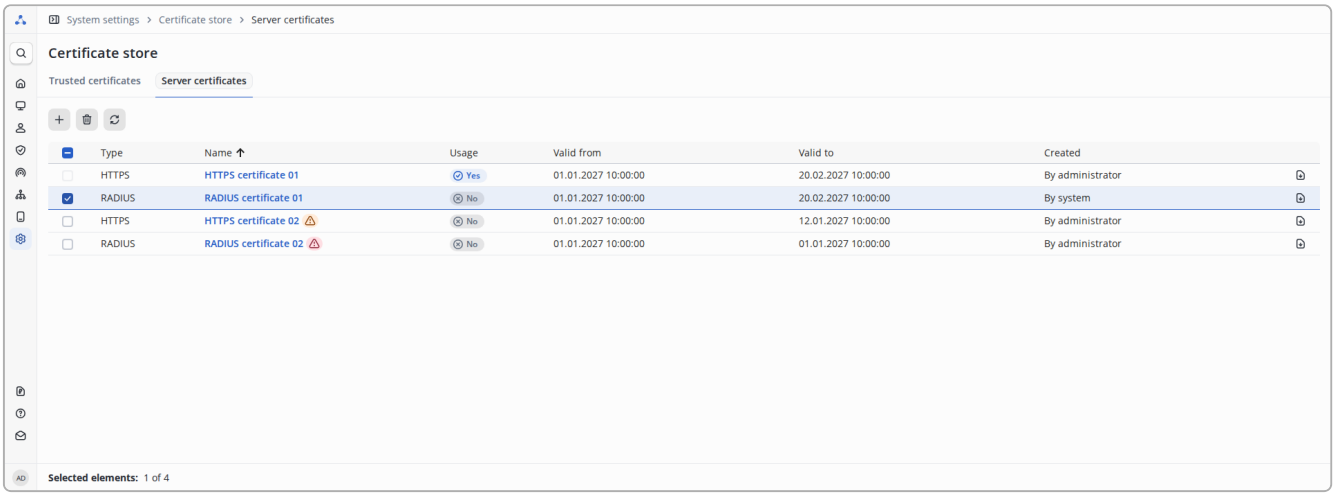


Figure 483. Certificates selected for deletion

Deleting items requires confirmation in the modal window.
The selected items will be deleted only after explicit confirmation of the operation.

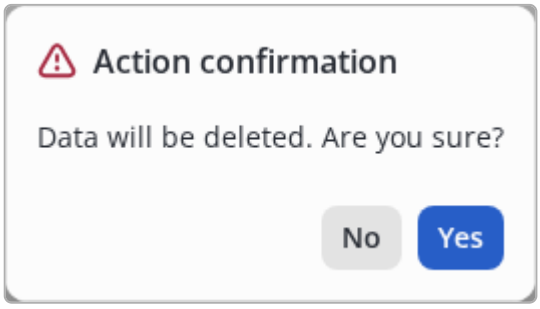


Figure 484. Modal dialog for confirmation

Deleting a certificate is an irreversible operation.

Deleting a certificate that is used in the system configuration (for example, as a server certificate for RADIUS or HTTPS) is blocked.

Events related to certificates

Operations with server certificates are recorded in the system event log.

The following actions are recorded:

- Adding a certificate.
- Editing the certificate name.
- Deleting certificates.
- Warning about upcoming certificate expiration.
- Warning about certificate expiration.

Troubleshooting

Logs

This page configures the logging level for NAICE services.

It is important to consider that a higher logging level leads to a greater number of generated logs, and consequently, to more frequent log rotation.
Log rotation parameters are specified during NAICE installation.

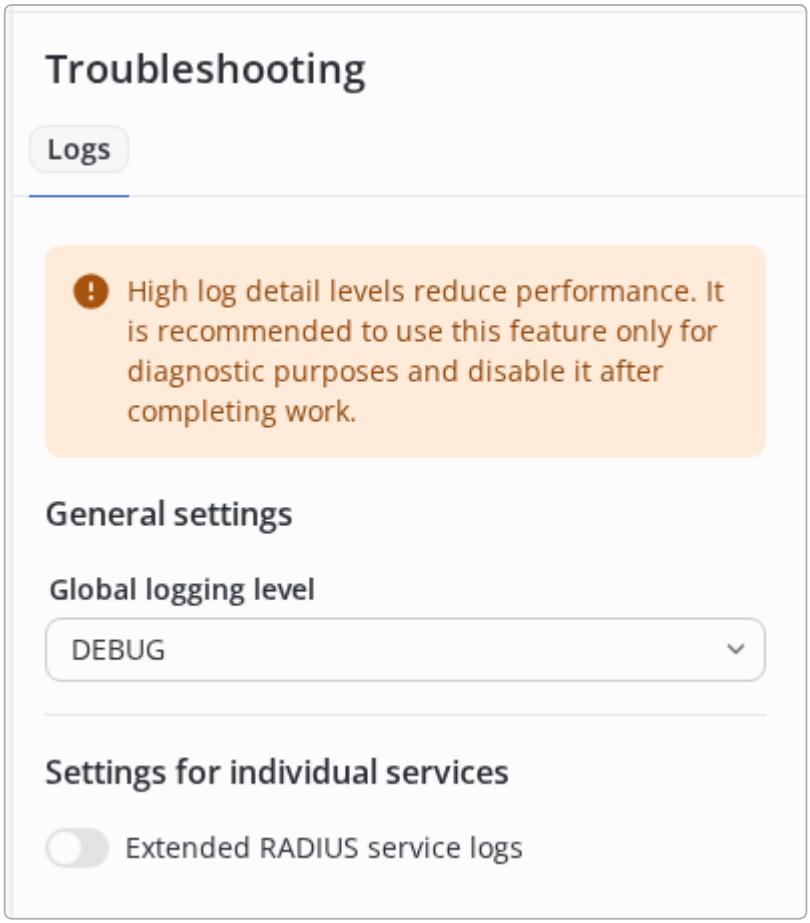


Figure 485. Logging Level Configuration

General settings

The setting "Global logging level" is applied to all services simultaneously excepting RADIUS; it is not possible to set a different log level for one service compared to the others.

Applying this setting does not require a restart of NAICE services, so changing the value does not cause service interruption.

NAICE services have 6 logging levels. Each subsequent level includes logs from the previous levels, as well as logs specific to that level.

The list of levels in ascending order:

- `FATAL` - Includes only incidents that lead to the stoppage of NAICE services. **Not recommended for configuration**, as the cause of a stop is usually found at the following levels. Minimum number of generated logs.
- `ERROR` - Includes incidents that lead to errors in providing NAICE's core functionality.
- `WARN` - Includes unexpected/suspicious incidents that do not directly lead to a stop in core functionality but could potentially lead to errors.
- `INFO` (default) - Includes both negative and major positive incidents, the tracking of which is planned.
- `DEBUG` - Includes detailed logs necessary for diagnosing problems that arise during NAICE operation. The required log level for problem analysis by technical support.

`TRACE` - The most detailed log level, used for deep diagnostics of complex problems. **Not recommended for configuration** without a direct instruction from a technical support employee, as it leads to the generation of a huge volume of logs.

Settings for individual services

In this section, it is possible to enable "Extended RADIUS service logs". Extended logs allow you to obtain more detailed data about the user connection process and any issues that arise during it, as well as to get debugging information about errors that occur when starting the service.

Applying this setting will restart the RADIUS service, which may result in a brief service interruption.

In this mode, an increased number of logs is generated and the load on the service increases, so it is not recommended to keep it enabled permanently.

Nodes

This section is used to configure system parameters that differ for each node in a multi-node NAICE deployment.

Some functional described on this page are only available with an extended license. These features are marked with special labels in the form of colored icons next to the name.

Nodes Table

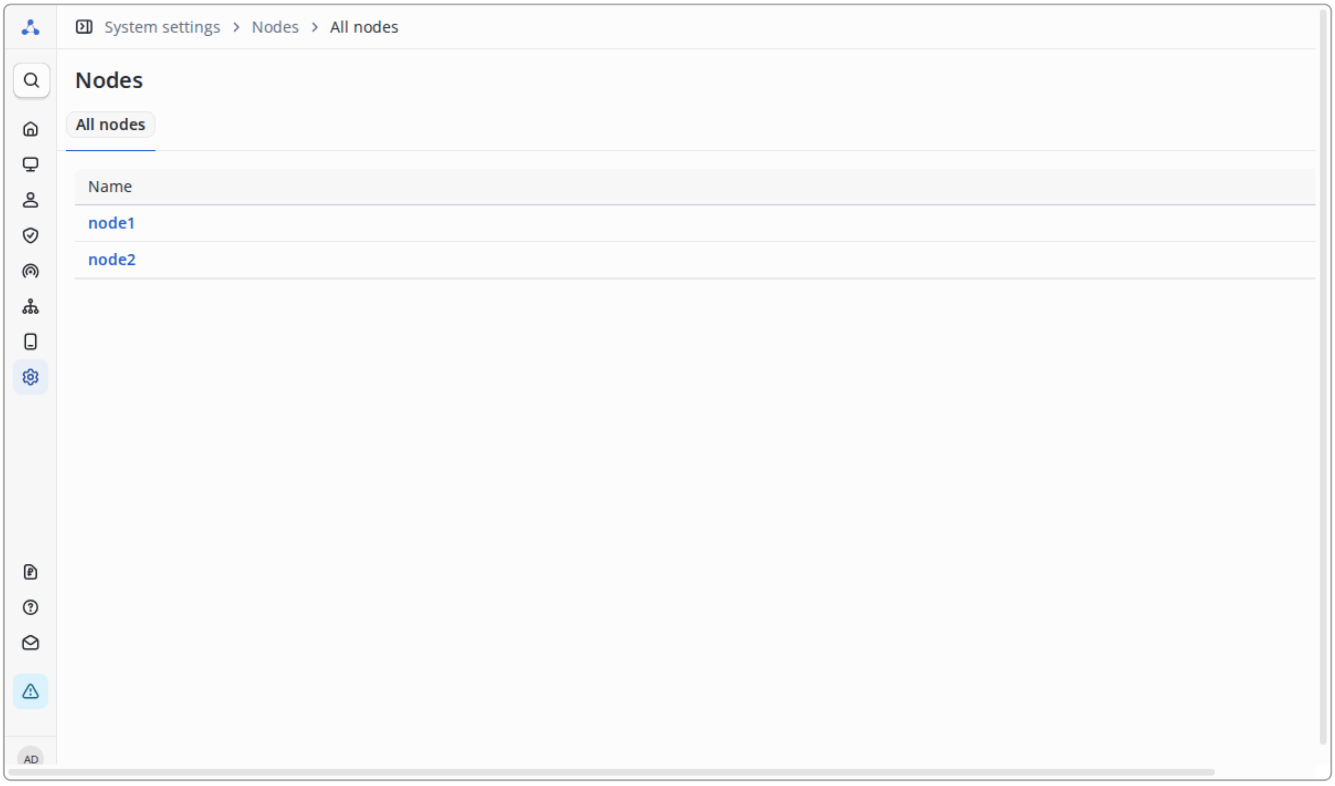


Figure 486. Nodes Table

The page displays a table with a list of all nodes. The list of nodes is formed during system installation. Nodes cannot be created, edited, or deleted on this page.

The `Name` column contains hostnames. Each entry is a link: clicking on a hostname opens the settings page for that specific node.

Node Configuration

Clicking on a node's hostname opens its configuration form.

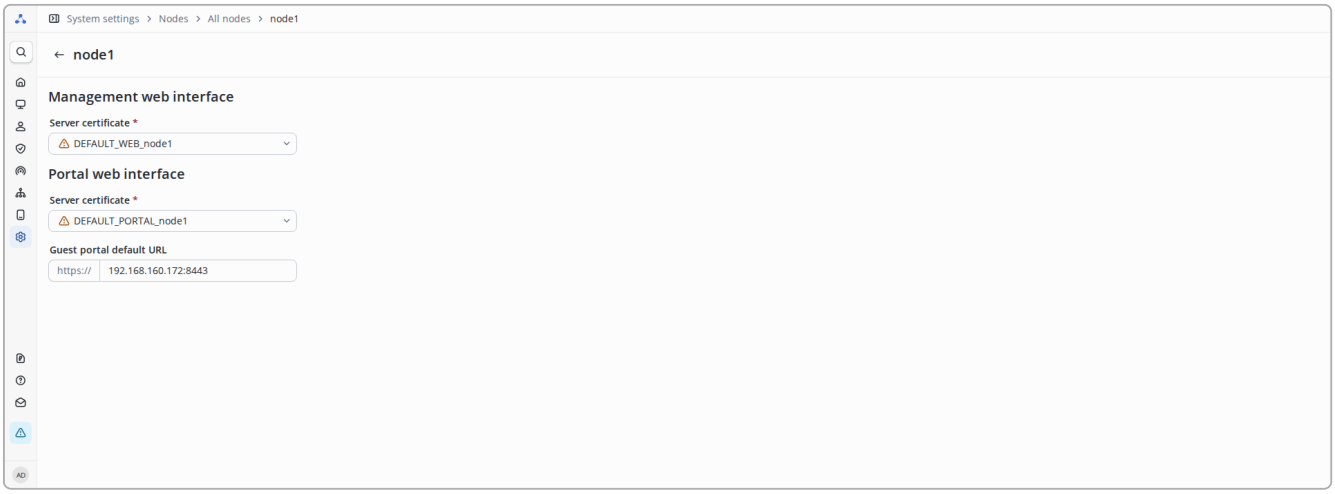


Figure 487. Node Configuration Form

Management Web Interface

In the "Management web interface" section, select an HTTPS certificate for the NAICE management web interface on this node.

Figure 488. Management Web Interface Certificate

The `Server certificate` field provides a dropdown list of server certificates of type HTTPS added to the system. The selected certificate will be used to secure connections to the management web interface of this node. For each node, you can select either different or the same certificates. By default, certificates generated by the system individually for each node are used.

Selecting a system-generated (default) certificate is accompanied by a warning. Using system certificates is not recommended for security reasons.

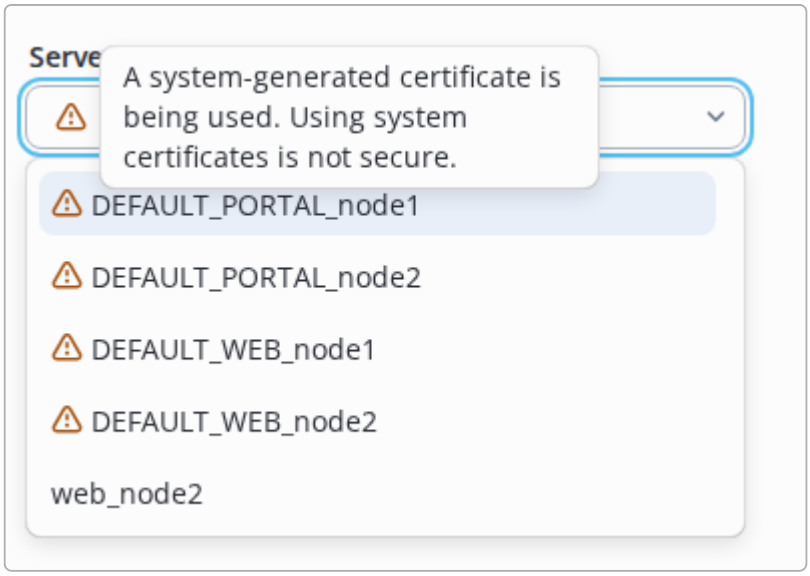


Figure 489. System Certificate Warning

ADVANCED Portal Web Interface

In the "Portal web interface" section, configure the HTTPS certificate for the guest portal and the default URL for redirecting to the guest portal of this node.

Portal web interface settings are only available with an `ADVANCED` level license or higher. With a `BASIC` license, the section is locked and parameters are set to default values for the system to function properly.

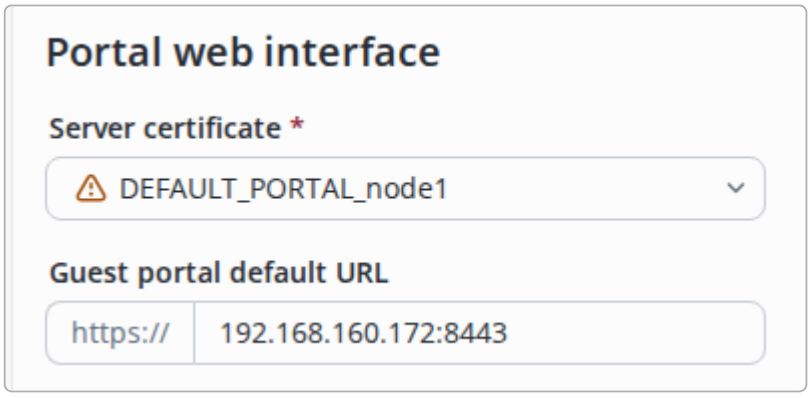


Figure 490. Portal Web Interface Certificate and URL

The following parameters are available:

- `Server certificate` — dropdown list of server certificates of type HTTPS for securing connections to the guest portal on this node. For each node, you can select either different or the same certificates. By default, certificates generated by the system individually for each node are used.

  Selecting a system-generated (default) certificate is accompanied by a warning. Using system certificates is not recommended for security reasons.

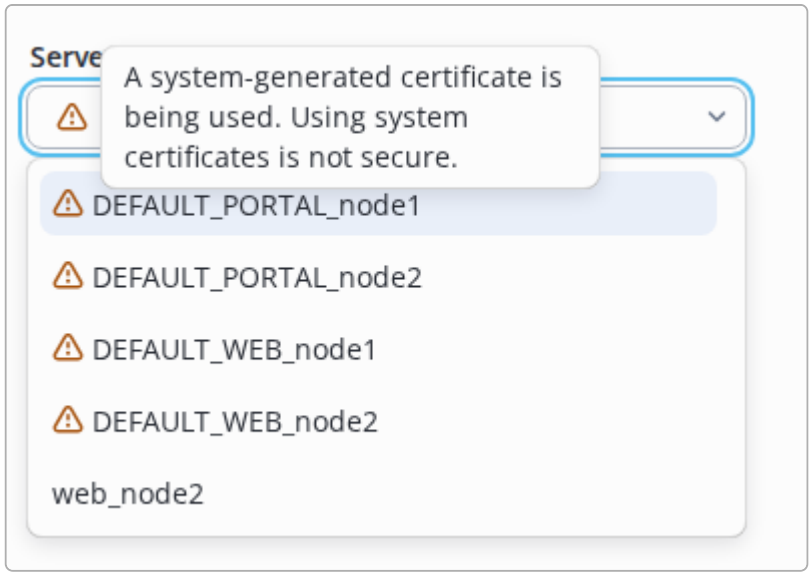


Figure 491. System Certificate Warning

- `Guest portal default URL` — the address to which users will be redirected when connecting to the guest portal. Enter in the format `domain-name[:port]` or `IPv4-address[:port]` (the `https://` prefix is added automatically).

Saving Settings

To apply changes, click the **"Save"** button.

When changing the management web interface certificate, a dialog will appear warning about the possible loss of access to the web interface. Make sure the selected certificate is correct and matches the address used to access the system.

After confirmation, the page will automatically reload.

When changing the portal certificate, a standard warning about temporary portal unavailability will appear.

To cancel changes, click the **"Cancel"** button — the form will revert to its previous state, and you will be redirected to the nodes table.

Node-Related Events

Changes to node configuration are logged in the system events log. The event message includes the name of the node whose configuration was changed.

Licensing

Description

The NAICE network access control system is distributed under a commercial license. This means that in order to access the functionality, you must purchase and activate a license.

Licensing can be carried out according to one of the following schemes:

- Using the **Eltex License Manager** license server (hereinafter referred to as **ELM**), which performs the function of licensing software and hardware products of the Eltex company. It assumes a periodic request to the license server. You can use:
  - the Eltex license server (hereinafter referred to as Online ELM), available at https://elm.eltex-co.ru:8099;
  - an ELM server installed in the customer's infrastructure (hereinafter referred to as Offline ELM).

  In both cases, the ELM server address is specified in the system settings under Connection to ELM and must be accessible at the moment of license activation. The ability to work with the ELM server via an HTTP proxy server (with or without username/password authentication) is supported.
- File licensing (hereinafter referred to as **PLR**, permanent license request) is licensing with reference to the physical parameters of the host on which NAICE is installed. When changing the host parameters, re-activation is required.

After installation, NICE is in **demo mode** with limited functionality. The limitations of the demo mode are specified by link:index.html#*demonstration* mode[next].

When you purchase access to a product with a certain licensing type, a **product key file** is generated, unique for each NAICE instance. To unlock the NAICE functionality corresponding to this license, the file must be downloaded and activated on the *licensing* page.

License types and licensed functionality

The current version supports 2 license types - **BASIC** and **ADVANCED**. Each subsequent type includes all features of the previous one and adds support for extended functionality.

Licenses for any type can be issued for 1, 3, or 5 years.

For license inquiries, please contact us at eltex@eltex-co.ru.

BASIC License Type

The **BASIC** type provides access to the core service - RADIUS authorization of endpoints. The licensed parameter is **the number of successfully authorized unique endpoints per day**. This quantity is agreed upon during license purchase and depends on the number of client devices in the network.

An example of calculating the number of end devices in a network

Organization A has 1,000 employees, each of whom has a laptop for work. Employees of company "A" do not connect from personal devices. The company also has 10 cameras, 5 printers and 2 TVs connected to the network. All these devices must be authorized in the NAC system.

Calculation of the number of unique endpoints in the network: 1000 * 1 (number of devices of 1 employee) + 10 (cameras) + 5 (printers) + 2 (televisions) = 1,017 pcs. – unique devices in the company.

It is recommended to purchase licenses for more endpoints than are designed for unique devices.

If necessary, the number of endpoints in the license can be increased. To do this, contact your manager or send a request to our email address. eltex@eltex-co.ru .

ADVANCED License Type

At this license type, the functionality required for configuring and operating portal authorization is activated. For any license of this type, the number of guest endpoints is unlimited, meaning authorization is available for any number of guests.

Additional Modules

The **NAICE-TACACS** add-on module is also available for purchase, which activates the TACACS server within NAICE. Modules are purchased as add-ons to the main license of any type.

Demo mode

After installation, NAICE is in demo mode. In this mode, all functionality corresponding to the maximum license type and with all additional modules is available, but with the following restrictions:

- the maximum number of devices added to the system is 15;
- the maximum number of successfully authorized unique endpoints per day is 15;
- the maximum number of guest endpoints is 15.

The demo mode is unlimited in time, but it is only available **until the first successful activation of the license**. After activating the license, the demo mode will be disabled without the possibility of recovery.

A corresponding warning in the lower left part of the navigation menu indicates that the system is in demo mode.

Figure 492. Warning about demo mode

Clicking on the warning will take you to the *licensing* page, which contains the current parameters and limits of the demo mode, as well as controls for downloading and administering licenses.

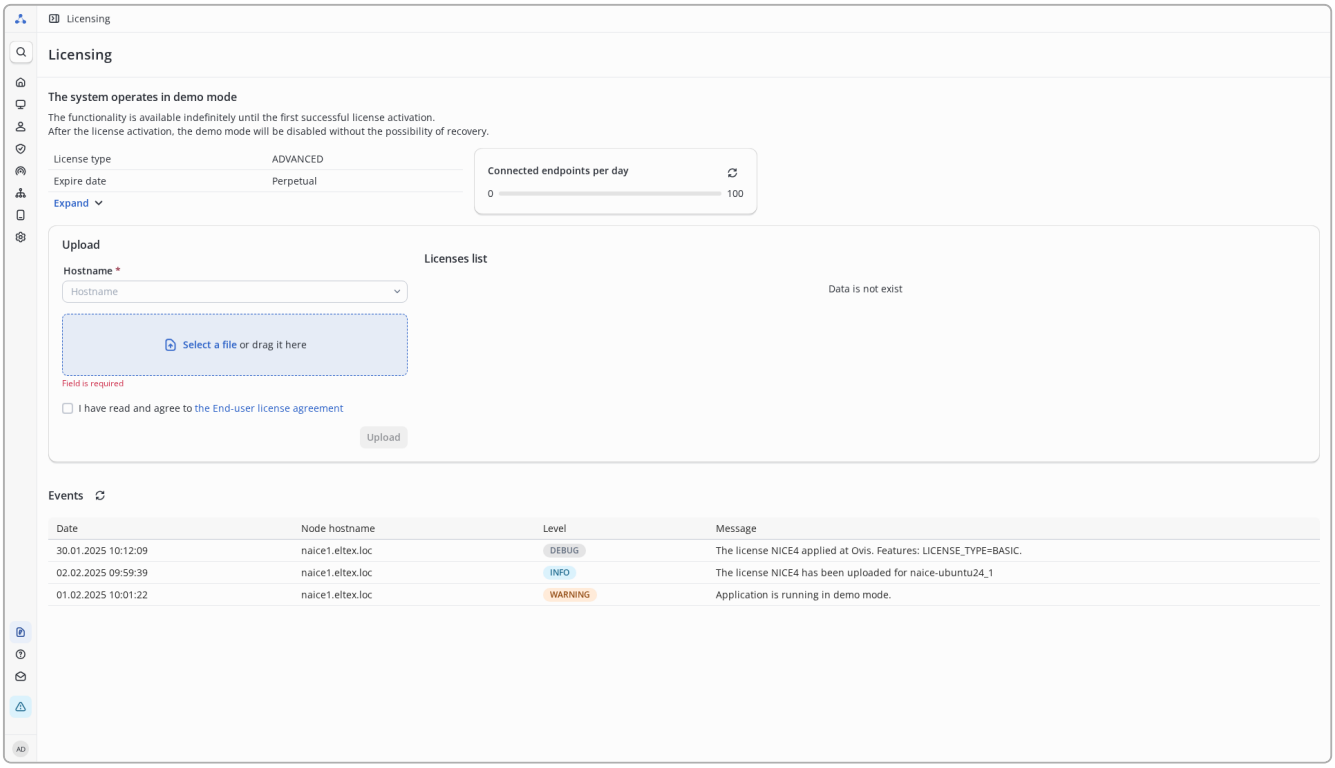


Figure 493. The Licensing in demo mode page

Actions to activate the license

The license is activated on the *licensing* page, the image of which is shown above.

In addition to the current parameters of the demo mode or license, the page contains the following controls:

- the "Upload" block - elements for loading licensed files;
- the "Licenses List" block - management of loaded licenses;
- the "Events" block - system events related to licensing.

Uploading the product key

To activate the license, you must have the *product key file* received from your manager when purchasing the system. The product key file contains the *Product ID*, which is the serial number that identifies one copy of the software, and the *Product Key* that identifies the license owner.

The format of the product key file name is **NICENNNNNNN.txt** for an ELM license (for example - NICE1111111.txt) and **FNICENNNNNNN.txt** for a PLR license (for example - FNICE1111111.txt).

A valid product key file cannot be empty or have a size of more than 1 MB.

Product ID can only be linked to one host. Attempts to load the *Product ID*, which is already present in the table, are prohibited by the system. The restriction is not lifted even if the *Product ID* is in the `Backup` state. All uploaded *Product ID* must be from the same license (have the same *License Key*). Attempts to download *Product ID* from different *License key* are prohibited by the system.

The load of the product key is performed in the "Upload" block in several steps:

1. **Hostname** to load the license from the list by its hostname. With a standard installation, the hostname matches the name of the host on which NAICE is deployed.
2. **Select a file** by dragging it into the load field or selecting it through the Explorer when clicking on "*Select file*". If necessary, before clicking on the `Upload` button, the file can be replaced by clicking on on the right side of the upload field.
3. Review and confirm **agreement with** **User Agreement**.
4. Click on the `Upload' button.

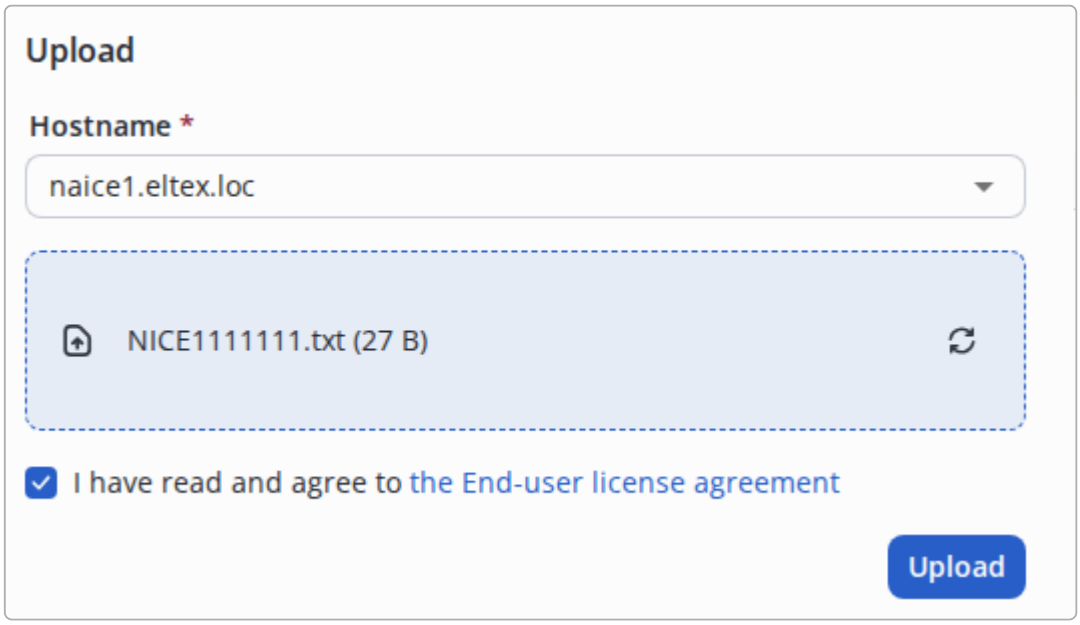


Figure 494. Uploading a product key file

When using NAICE in a cluster, you need to upload your product key for each NAICE host.

After downloading the product key file, the license will be added to the license table in the "Licenses List" block.

License activation

The activation mechanisms for ELM and PLR licenses differ significantly.

ELM

The ELM license is activated automatically by connecting to an Online or Offline ELM server. Upon successful activation, the license acquires the status of **Active** in the list of licenses, and the functionality becomes available according to the license parameters. The parameters of the active license are displayed in the upper "License Information" block.

Figure 495. Activation of the ELM license

PLR

The PLR mode is activated by downloading the product key, which is supplied as a file. This file is being released based on a request from Eltex company.

After downloading the PLR license product key, it will appear in the "Licenses list" table with the **Init** status. This status means that the license has been initialized and the *license activation file* has been generated. The file, among other things, contains a cast of the host machine's environment parameters, to which the license is attached.

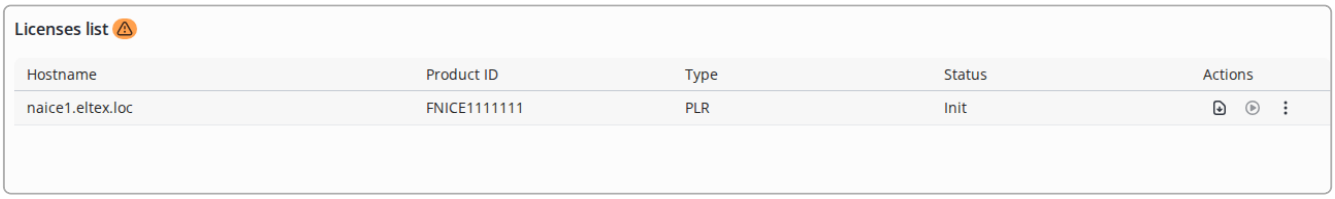


Figure 496. PLR license after downloading the product key

The license activation file must be downloaded and sent to Eltex company to release the license file, which is the final file containing the parameters of the purchased license with their activation linked only in a specific environment. For this:

1. Click on  in the "List of licenses" table in the Actions column and select `Download activation file`.

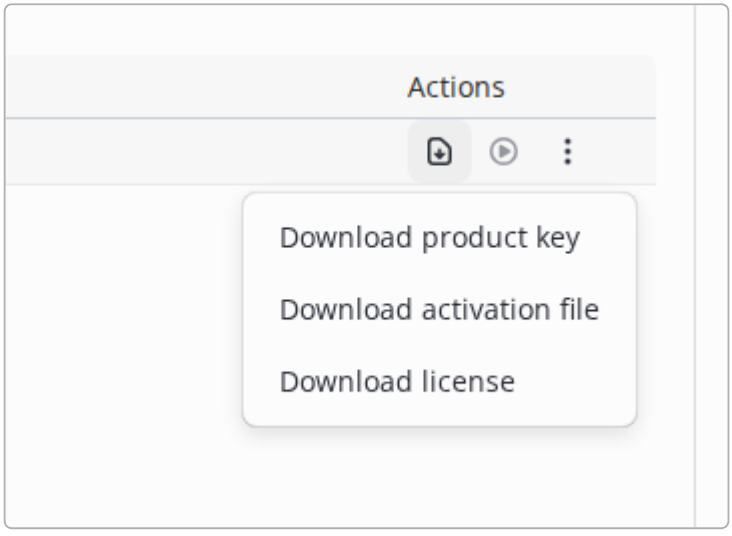


Figure 497. Download menu for licensed files

Activation file name format **request-<YYYY-MM-DD>-<Product ID>-<NAICE Version>.txt**, for example - **request-2026-06-17-FNICE1111111-1.2.0.txt**.

2. Send the activation file to the Eltex company to issue a file license corresponding to the provided activation file.

3. Get the license file from the Eltex company.
4. Upload the license file to the system in the same way as Uploading the product key. Upon successful download and verification of the file, an attempt will be made to automatically activate the license. If there are no errors, the license acquires the status of **Active** in the list of licenses, and the functionality becomes available according to the license parameters. The parameters of the active license are displayed in the upper "About License" block.

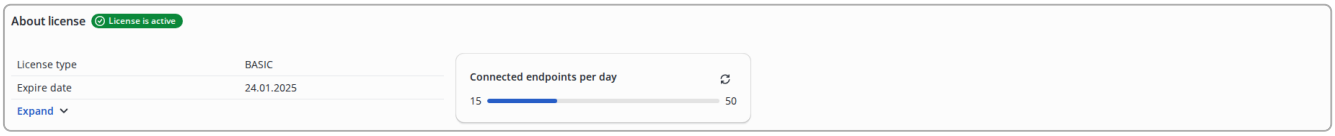


Figure 498. Information about the active license

License activation errors

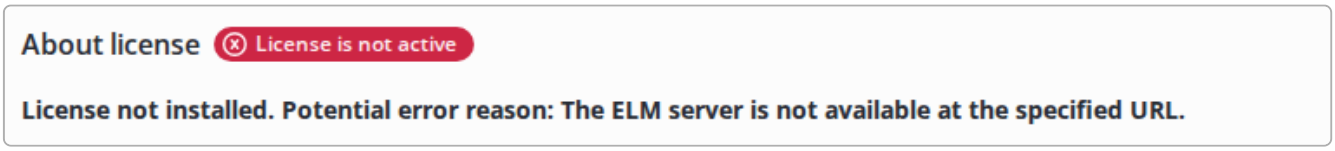


Figure 499. Error when activating the license

If license activation errors occur, the error that occurred during the activation process will be displayed on the page under the license status. The error message is also displayed in its original form in Events. In this case, the license itself acquires the status of **Invalid**.

Usually errors during license activation are related to:

- When interacting with the ELM server: problems with access to the server (incorrect ELM address in the NAICE configuration, lack of network connectivity) or with errors in the license itself (the license has not expired or expired).
- When using PLR licensing: changing the environment settings after creating the license activation file or with errors in the license itself.

To activate the license, you must first fix the initial error, and then click on ▶ next to the desired license in the "Licenses list" table in the "Actions" column.

In case of problems with the automatic activation of the license, it remains in the **Ready** status. In this case, you must manually activate the license by clicking on ▶ next to the desired license in the "Licenses list" table in the Actions column.

Figure 500. The license has the Ready status

License is revoked

Figure 501. License is revoked

The "License is revoked" error occurs if the activated PLR license is not included in the list of actual PLR licenses.This may happen when the license is revoked by Eltex due to receiving information about its mass distribution on public resources. Older versions of reactivated or renewed licenses are also subject to revocation.

If you believe your license was revoked by mistake, please contact your manager, Eltex technical support, or send a request to our email address eltex@eltex-co.ru.

License management and monitoring

After successful activation of the licenses, their status can continue to be monitored on the *Licensing* page.

Figure 502. The Licensing item in the navigation menu

Information about the active license

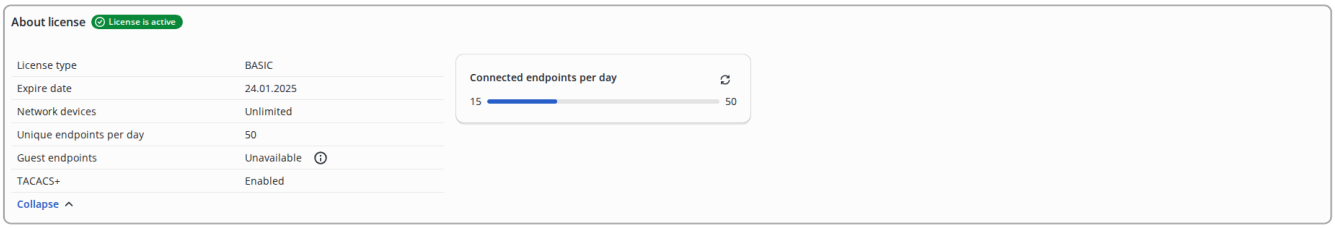


Figure 503. License information

The page contains the following elements:

- License is active - current license status.
- License parameters:
  - `License type` defines the NAICE functionality available for configuration and use, see License types and licensed functionality
  - `Expire date` is the date on which the current fixed-term license expires.

    Upon expiration of the license, the licensed NAICE functionality will be blocked, **including authorization of end devices**. Renew the license in advance when you see link:index.html#_revention_to reach the limits[warnings] to avoid such situations.

  - `Network devices' - the limit on the number of network devices added to the system.
  -

`Unique endpoints per day' - the limit on the number of connected endpoints per day stipulated by the license.

When the limit on the number of connected endpoints per day is reached, end devices will not be authorized beyond this limit. Devices that were previously authorized in the last 24 hours will be successfully reauthorized.

  - `Guest endpoints` - the limit of the number of guest endpoints.
  - `TACACS+` - the presence or absence of the additional NAICE-TACACS module in the license.
- A counter for the current number of connected endpoints per day. It is automatically updated every 5 minutes.
-  - manual counter update.

Features of counting the number of connected devices per day

- The connected endpoint counter increases only when a unique endpoint is connected, i.e. an endpoint that has not been successfully authorized by NAICE in the last 24 hours.
- The `Calling-station-id` attribute is used to determine endpoint uniqueness.
- If the specified attribute is missing, indirect determination use the following attributes:
  - `User-Name` - This attribute must be present in the RADIUS request.
  - `NAS-IP-Address` or `NAS-Identifier` - At least one of the specified attributes must be present.
  - `NAS-Port` - This attribute is optional.
  - `NAS-Port-Type` - This attribute is optional.
- Portal-authorized endpoints (guest endpoints) are excluded from the count.
- The device is considered connected for exactly 24 hours from the last successful connection. Upon successful re-authorization, the 24-hour countdown is renewing.

  Example.

  The endpoint was authorized on June 10 at 13:31:10. The endpoint will "free up space" in the licensed limit on June 11 at 13:31:11.

  If the end device was successfully re-authorized on June 10 at 20:20:10, the time will be shifted to June 11 at 20:20:11.

Management of downloaded licenses

All licenses that are uploaded to NAICE are displayed in the "Licenses list" table.

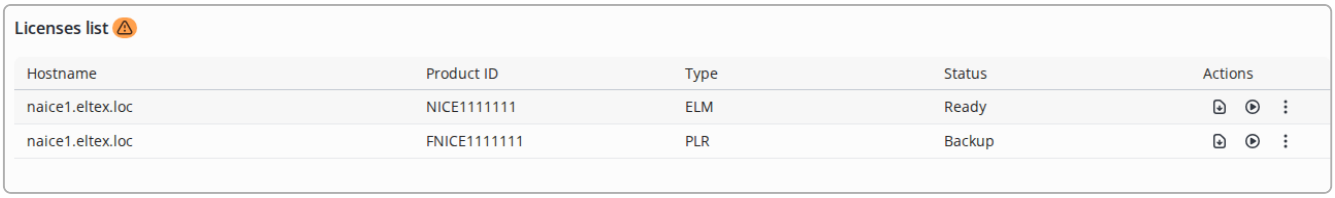


Figure 504. License list

The table contains columns:

- `Hostname` - which host is this license downloaded for;
- `Product ID` is a unique identifier of the software in the licensing system;
- `Type` - license type: regular (ELM) or file-based (PLR);
- `Status` - current license status, which can take one of the following values:
  - **Init** _ (for PLR only)_ - the product key is loaded, the environment parameters are collected, the license activation file is generated;
  - **Ready** - the license is ready for activation, there is a product key and a PLR license file in case of file licensing.;
  - **Active** - the license has been activated, its parameters have been applied on the specified host;
  - **Invalid** - the product key (or file license) was not activated.
  - **Mismatched** *(for PLR only)* - received an event about a mismatch of environment parameters;
  - **Revoked** *(for PLR only)* - the license has been revoked by the Eltex company;
  - **Expired** - the license has expired;
  - **Backup** is an inactive license that is currently disabled from licensing; it can be activated if necessary.

The system allows you to leave any number of *Product ID* in the `Backup` state in the database. In case of switching between ELM-PLR types, it is not necessary to delete records of the unused *Product ID*. They can be stored in the database for quick recovery of work "according to a different scheme".

- `Actions' - available actions with a license, including:

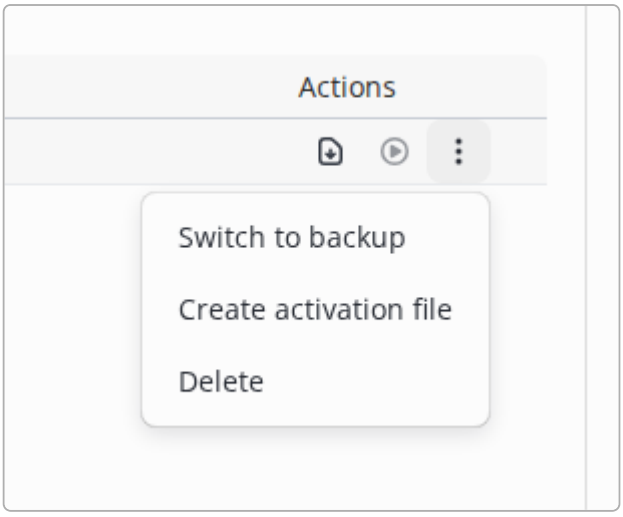


Figure 505. License actions

-  - download of licensed files of various types;
-  - activating an inactive license / updating the parameters of an active license;
- - additional actions:
  - `Switch to backup` - set the license status to **Backup**;
  - `Create activation file` *(for PLR only)* - manual request for problems with automatic generation of the activation file, as well as for Reactivation of the PLR license;
  - `Delete` - delete the license from the downloaded list, as well as all related license files.

In order to provide the service continuously, the transfer to the **Backup** status and the deletion of active licenses (licenses with the **Active** status) does not occur instantly. The license that was deleted or transferred to **Backup** will be reset to the "Unlicensed" state only if you restart the NAICE services. Until then, you should activate another license, otherwise the licensed functionality will be disabled.

Events

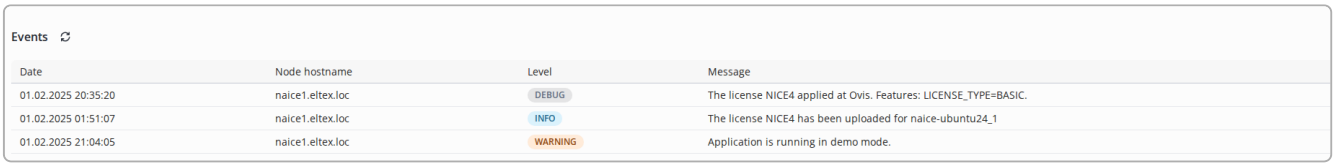


Figure 506. Licensing system events

The Events block is an analog of the System events

The table contains the following columns:

- `Date' - the time when the event was recorded in the database; the time is displayed based on the time zone specified in the account settings;
- `Node hostname` - the name of the host associated with the event;
- `Level' - the importance of the event, can take one of the following values:
  - `INFO` - information events, usually about the success of completed actions;

- `WARNING` - events that are worth paying attention to;
- `ERROR` - important events with license errors;
- `DEBUG' - debugging events.

- `Message' - the content of the event.

Filtering and changing the sorting order are not available. The frequency of auto-updating of the event list is once every 5 seconds. A manual update of the event list is available by clicking 

When scrolling through the first 25 elements of the table, auto-updating of the list of events is disabled.
To enable it, you must manually update by clicking  .

Warnings

Warnings about reaching limits

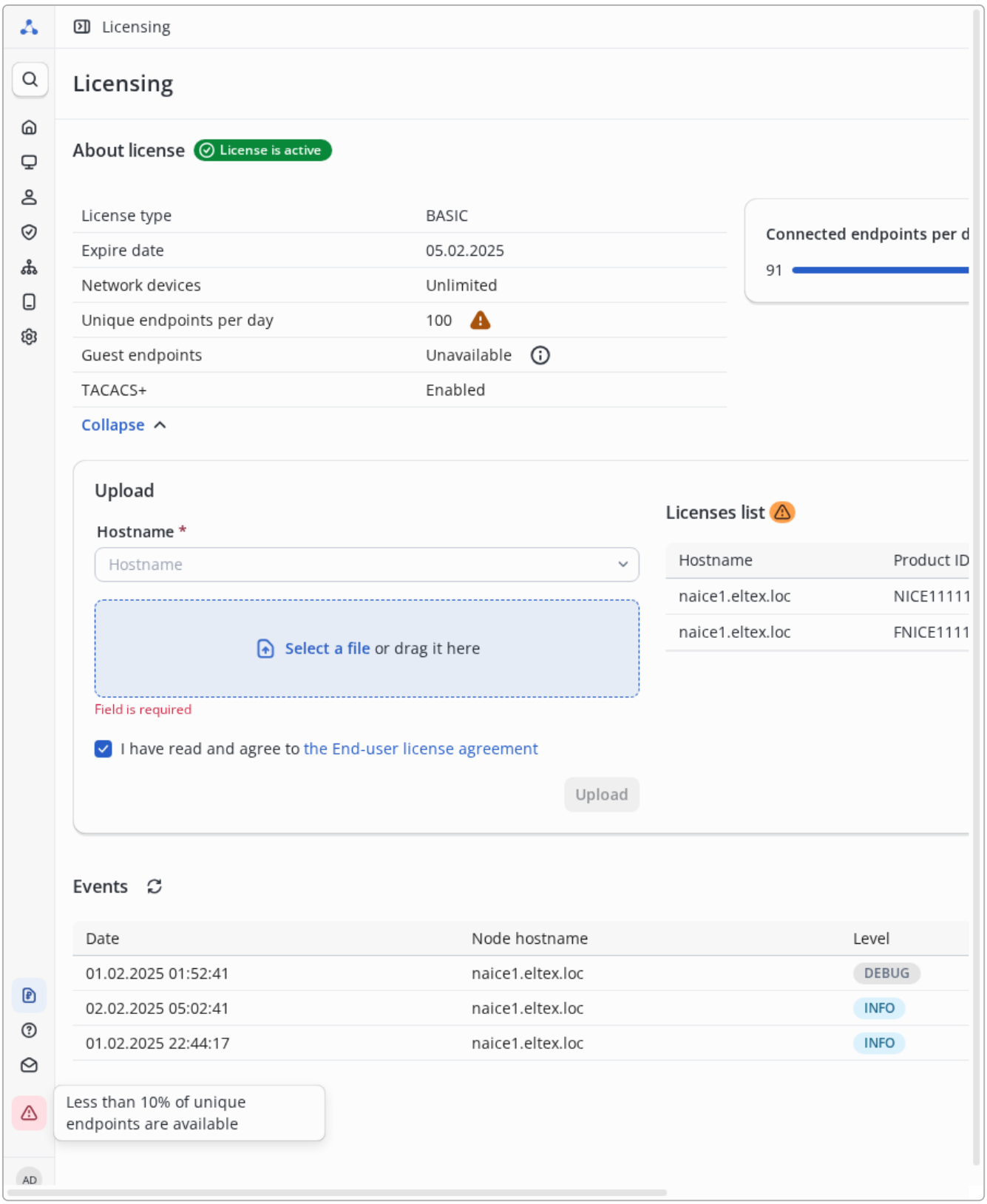


Figure 507. Warnings about reaching limits

When approaching the license or demo mode limit in terms of the number of enabled endpoints, or when approaching the license expiration date, warnings about approaching or reaching the limits will be displayed in the upper-right part of any NAICE page. Clicking on the warning takes you to the *licensing* page.

A warning about the endpoint limit starts to be displayed when the counter reaches a value of 90% of the licensed limit.

A warning about the approaching expiration date of the license starts to be displayed 90 days before that date.

In addition to being displayed at the top of the pages, these warnings are displayed on the Licensing page opposite the corresponding parameter in the form of .

Unavailability of the ELM server

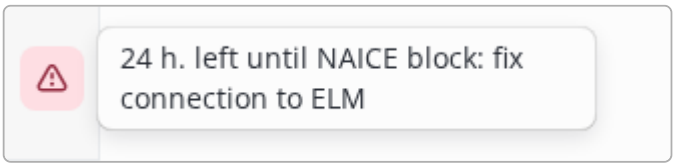


Figure 508. Warning about the unavailability of ELM

NAICE must periodically update the parameters of the current ELM license on the ELM server. If NAICE could not receive the parameters during the next update, the countdown to NAICE lock starts from that time. The countdown is displayed in the lower left part of the navigation menu, similar to warnings about reaching the limits.

If access to ELM is not restored within **72 hours**, the licensed NAICE functionality will be blocked and the license will be reset. After resetting the license, you will need to reactivate it.

To check the availability of the ELM server, you can use the following command:

```
$ curl -k https://<ELM IP address>:<ELM port>/elm/Hello
```

If the ELM server is available, the output of the command will look like:

```
{"server-info":
{"version":"1.4","build":"10","root":true,"serverType":"elm","daemonMode":"server","serverMode":"r
type":"elm","protocol-supported":2,"protocol-actual":4},"status":2,"result":"OK"}
```

Unavailability of the EPG service

The continuous operation of the epg-service container is necessary for the smooth operation of the file license. In case of disconnection or loss of connection with this container, the license will be reset after 12 hours. The epg-service container is included in NAICE by default and works together with other containers.

Changing environment settings

If the total time spent working with the license on the current server configuration is less than 30 days, then if the server environment settings are changed, the license will be forcibly reset after 14 days.

If the total time spent working with the license on the current server configuration is more than 30 days, then if the server environment settings are changed, the license will be forcibly reset after 30 days.

Licensing Scenarios

License transfer to another host

It is possible to edit the hostname of the downloaded license. This may be required when using a NAICE cluster, when license files have been mistakenly uploaded to another host.

To edit the hostname of the downloaded license, you need to set the license to the **Backup** status, and then hover the cursor over the hostname value of the selected license. The icon will appear to the right of the hostname value.

Figure 509. Editing the hostname

After clicking on the icon, a new host for the license will be selected. Save your choice.

If necessary, activate the new license by clicking on in the Action column.

Changing the license composition

If you need to change the composition of the license - to increase the number of endpoints, to enable the TACACS+ functionality - you need to contact the Eltex company.

Online connection to the ELM server

If you use an online connection to the public licensing server of Eltex, after making changes to the license, the update will occur automatically, within 1 hour.

If you need to perform a compulsory license update:

1. Switch the current license to the **Backup** status.
2. Reactivate the license

Connecting to Offline ELM

If you use an Offline ELM server, you will need to obtain a new bundle license file with a modified license composition from Eltex and install it in Offline ELM.

After downloading the new license bundle, the update will happen automatically, within 1 hour. The forced updating of the license parameters is performed in the same way as for an online connection.

PLR license

If you use a PLR license, you will need to obtain a new license file from Eltex company with a modified license structure.

After you receive the new license file, you must reactivate the license according to Reactivation of the PLR license.

Full license replacement

If it is necessary to replace one license with another, the general algorithm of actions is as follows:

1. Transfer the current license to the status **Backup**.
2. Load the product key of the new license according to the Uploading the product key.
3. Activate the new license according to License activation.
4. If desired, delete the previous license.

Reactivation of the PLR license

License reactivation is the reactivation of a file license when changing the environment settings to which the license is linked.

Reactivation may be required in the following cases:

- Cloning a virtual machine image.
- Change the configuration of disks, RAM and processor.
- Reinstallation of the system running the software.

It is allowed to increase the RAM and the number of processor cores without the need for reactivation.

The reactivation procedure is similar to the procedure for License activation, except that the product key has already been uploaded. The following steps must be performed:

1. Re-generate the license activation file for the changed environment by selecting the corresponding additional action in the "License List" table for the required license.
2. Send the new activation file to the Eltex company.

If one of the collected environment parameters is changed *after* sending the activation file, the generated license will no longer match the host machine. In this case, you will need to download a new activation file and attach it to the application. It is better not to allow this.

3. Get a new license file.
4. Upload the license file to the system in the same way as Uploading the product key.

Renewal of the PLR license

Due to the specifics of the implementation of file licensing, periodic regular renewal of the PLR license is required.

The renewal procedure is similar to the procedure of Reactivation of the PLR license.

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4. This Agreement automatically terminates without notice from ELTEX if the user breaches any provision or condition of this Agreement.
5. Upon termination of this Agreement, the user shall immediately cease using the Software and delete (i) the Software, (ii) any other application provided to the user on behalf of ELTEX for interaction with the Software, and (iii) any object obtained as a result of using the Software.
6. The user may terminate this Agreement by ceasing all use of the Software and deleting the Software from their devices.
7. Subject to the user's compliance with the terms of this Agreement, ELTEX grants the user a limited, revocable, non-exclusive, non-sublicensable license to use the Software during the Term solely for the user's internal purposes (not for further transfer of rights to the Software to third parties, not for sale), and for Software supplied with ELTEX equipment, solely for the purpose of supporting ELTEX equipment.
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18. The user acknowledges and agrees that ELTEX may, in accordance with the law, create records of aggregated data using anonymized personal data.

19. The user acknowledges and agrees that ELTEX may, in accordance with the law, use records of aggregated data to improve the Software, develop new software or services, understand industry trends, create and publish technical documentation, reports or databases summarizing the foregoing, for research purposes and to assist in resolving and/or preventing actual or potential illegal activities and, in general, for any lawful purpose related to ELTEX's commercial activities, and also retain anonymized personal data upon deletion of the Software.

20. Written consent to ELTEX's offer to replace the software usage agreement and, accordingly, approval of such replacement may be given by clicking a button presented in the replacement agreement, or by using the Software after the replacement agreement is presented.

21. Third-party resources that may be linked to or accessible through the Software are not considered part of the Software, and ELTEX may, at its discretion, disable the integration of a third-party resource or the compatibility of the Software with a third-party resource.

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24. In no event shall ELTEX be liable to the user or any third party for damages incurred in connection with the use of or access to any component of the software or the inability to use or access any component of the software, including, but not limited to, damages arising from errors, omissions, interruptions, defects, delays in operation or transmission, computer viruses, and any other direct, indirect, actual, incidental, punitive, or consequential damages, even if ELTEX has been advised of the possibility thereof. Notwithstanding the foregoing, ELTEX's aggregate liability for all losses, damages, causes of action, including under contract, tort, or other liability, arising out of the use of the software or in connection with any provisions of this agreement, shall not exceed the fair market value of that component of the software.
25. The foregoing limitations, exclusions, and disclaimers of liability in this agreement apply to the maximum extent permitted by applicable law, even if the applied remedy fails its essential purpose.
26. In the event of a breach by the user of any provision of this Agreement, ELTEX shall be entitled to recover monetary compensation for the damages incurred from the user.
27. This Agreement is governed by the laws of the Russian Federation.

Account settings

Description

On this page, you can:

- view and edit the current user's account data;
- managing personal two-factor authentication (2FA) settings;
- change the interface language and time zone.

If logged in with an account from an external source (AD/LDAP), editing the "First name", "Last name", "Email", "Password" fields is not available. The user can only change "Language", "Timezone", and 2FA settings.

Setting the timezone affects the displayed time of the last endpoint activity in connection monitoring, the time in exported file names, and the time in dashboard widgets.

Viewing and editing system user accaunts

The account settings of the current system user are available on any page by clicking the IV icon in the lower left corner of the menu.

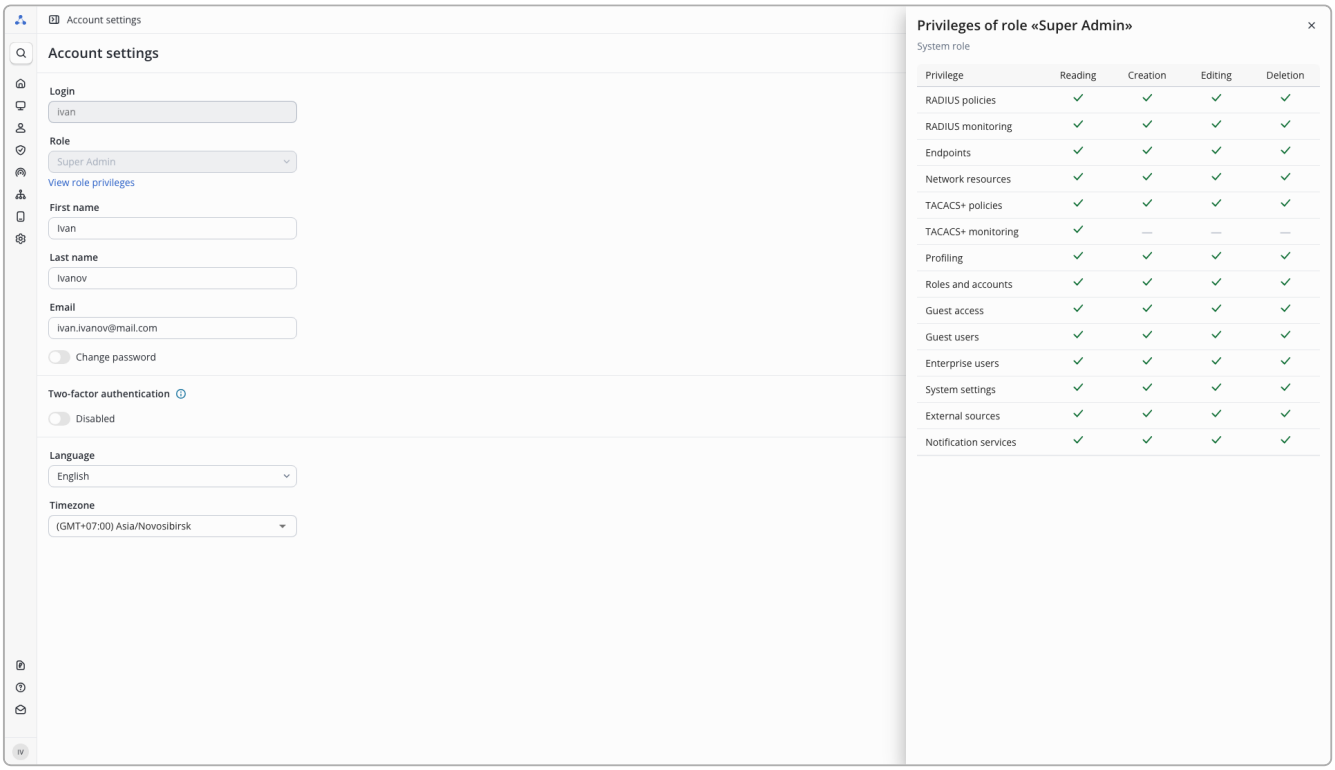

Figure 510. Setting up the account of the current system user

The system user account editing form includes the following fields:

- `Login` — The login of the current system user;
- `Role` — The level of access to the system functionality, which determines the system user's rights;

`First name` — The system user's personal name (maximum length - 100 characters);

- `Last name` — Last name of the system user (maximum length - 100 characters);
- `Email` — Email address (maximum length - 200 characters);
- `Two-factor authentication` — Settings for an additional sign-in confirmation method for the current system user;
- `Language` — The language of the system interface (Russian and English are supported);
- `Timezone` — The time zone for displaying the time in the system.

Using the "View role privileges" button, you can open a window with a table of privileges and the rights levels assigned to them for the selected role.

The table for viewing privileges and levels of rights includes:

- `Privilege` — the name of the privilege;
- `Reading, Creation, Editing, Deletion` — access levels;
- `Statuses of granted rights`:
  - ✓ — the user has access,
  - — — access is not provided,
  - ✗ — the user does not have access.

Changing the password

To change the password of the current system user, turn on the switch **"Change password"**, and then enter the current and desired password in the appropriate fields. The password must match the current password policy.

- `Current password` * — the password used for the current login to the system;
- `New password` * (maximum length - 72 characters). By clicking the 👁 icon, you can enable the display of the entered password; the text is hidden by default;
- `New password confirmation` * (maximum length - 72 characters).

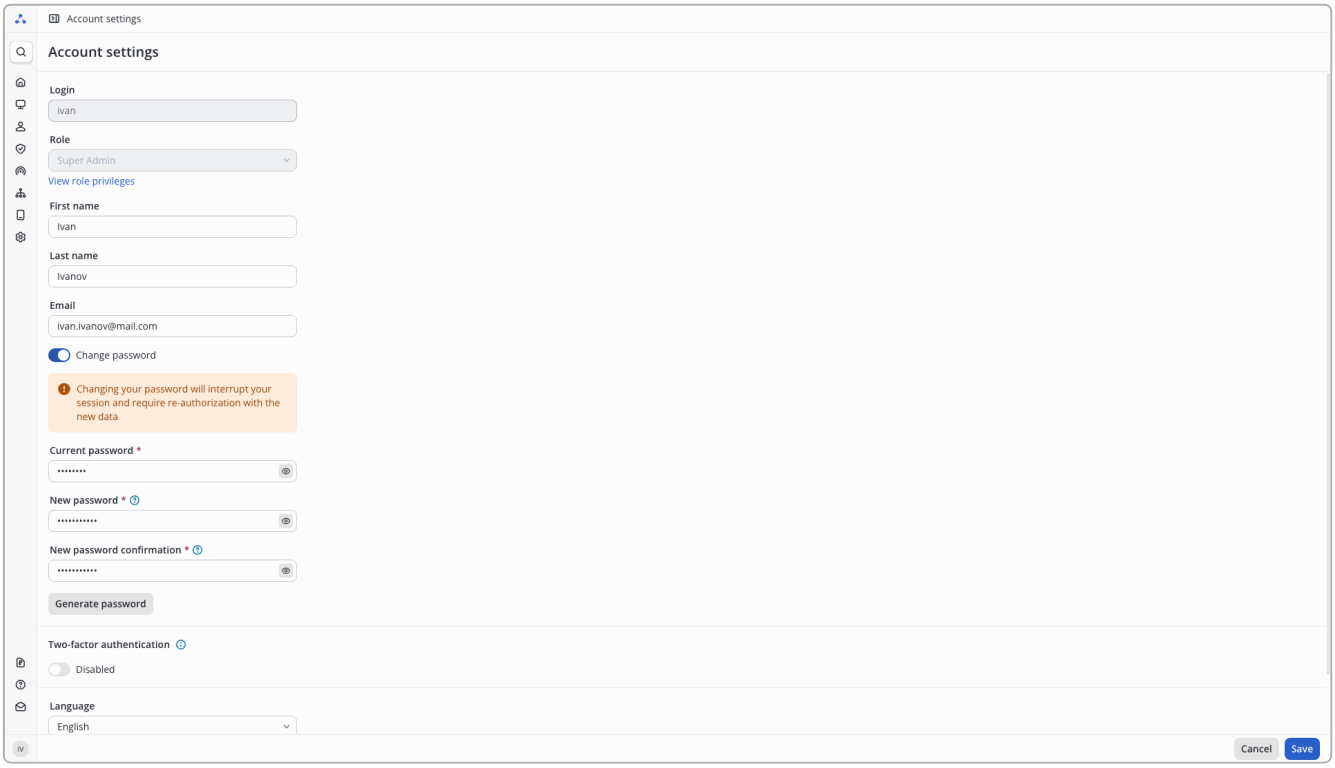

Figure 511. Changing the password for the current system user

After saving a new password, the current session will be terminated – re-authentication will be required.

After making changes, click the **"Save"** button. The button is hidden until at least one field is changed. The **"Cancel"** button discards all changes and restores the original state.

Managing two-factor authentication

The **"Two-factor authentication"** block is available only if the system administrator has enabled the global 2FA policy (optional or mandatory).

The global 2FA policy and the list of available methods are configured in **System settings → Security and access →** "Two-factor authentication".

Available authentication methods (depend on system settings):

- Backup codes;
- One-time code from the app (TOTP);
- One-time code from email (Email OTP).

The statuses of 2FA methods can be:

Status	Description	Note
Disabled	The method is available for configuration but has not been activated yet.	—

Status	Description	Note
Active	The method is configured and can be used for sign-in.	—
Exhausted	All 10 backup codes have been used.	Only for the "Backup codes" method

Mandatory 2FA

Under the global policy **"Mandatory for everyone"**, each user **must** configure at least one primary 2FA method. Until configuration is complete, access to other system sections is prohibited.

If the user has no configured 2FA methods, a modal window is displayed upon login **in a new session** requiring them to set up two-factor authentication.

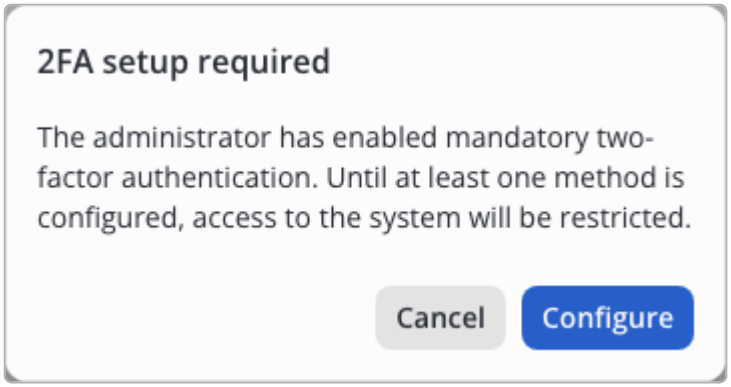

Figure 512. 2FA setup required

- `Configure` – proceed to 2FA setup.
- `Cancel` – logout of the system.

The **"Two-factor authentication"** block displays an informational message that the administrator has enabled mandatory 2FA. It also shows the available authentication methods and their current statuses.

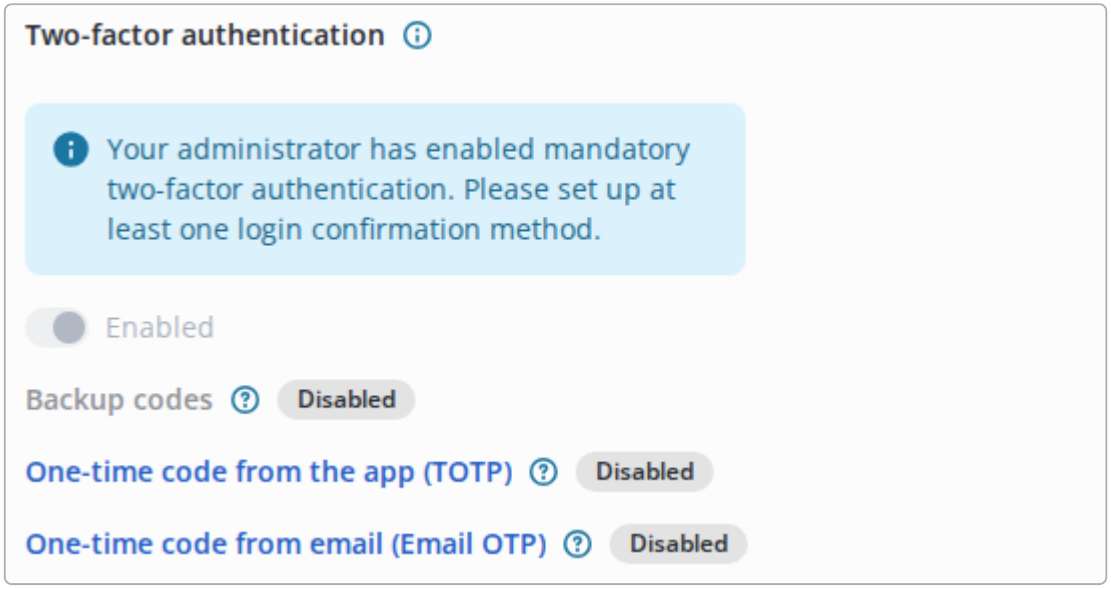

Figure 513. Mandatory 2FA. No active methods

Select one of the available authentication methods and complete its activation. Until at least one 2FA method is configured, access to the system will be restricted.

Optional 2FA

Under the global policy **"Optional for everyone"**, the user can decide whether to use 2FA for their account or not.

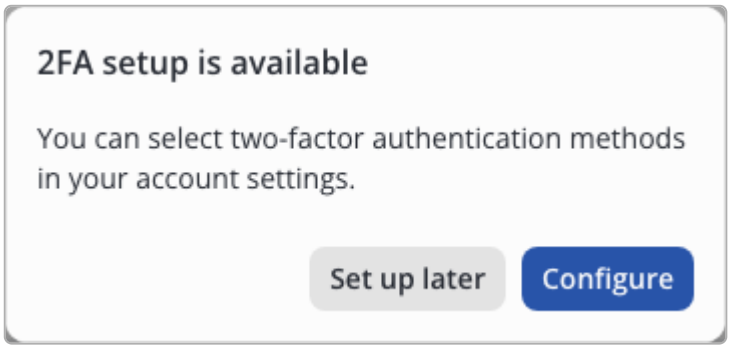

Figure 514. 2FA setup available

- `Configure` – proceed to 2FA setup;
- `Set up later` – the 2FA status for the account is set to "postponed".

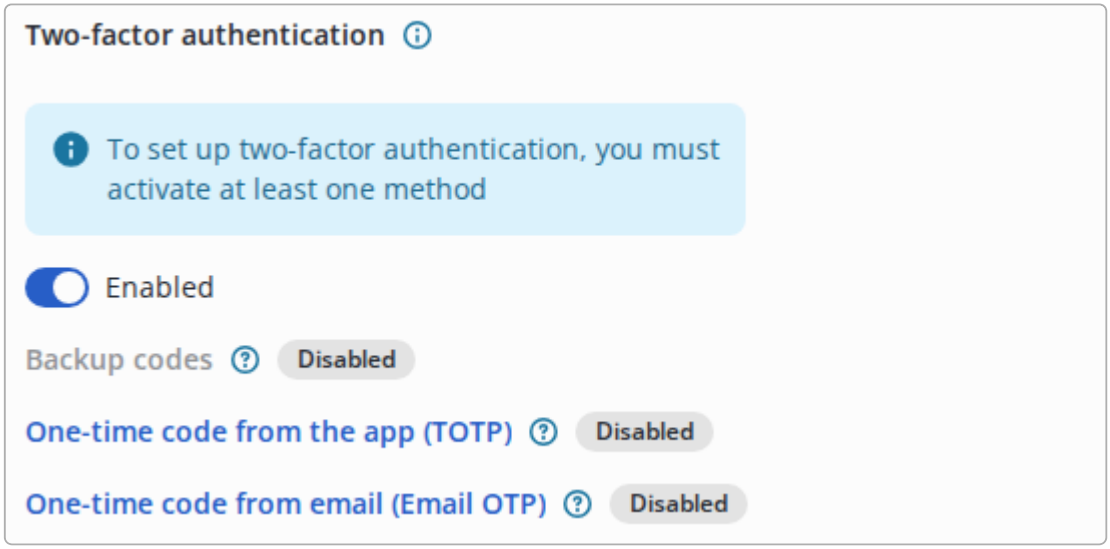

Figure 515. Optional 2FA. No active methods

After turning the switch to **"Enabled"**, select one of the available authentication methods and complete its activation.

Configuring TOTP

The **"One-time code from an application (TOTP)"** method is used to confirm sign-in with an authenticator application.

To configure TOTP, click the **"One-time code from an application (TOTP)"** row.

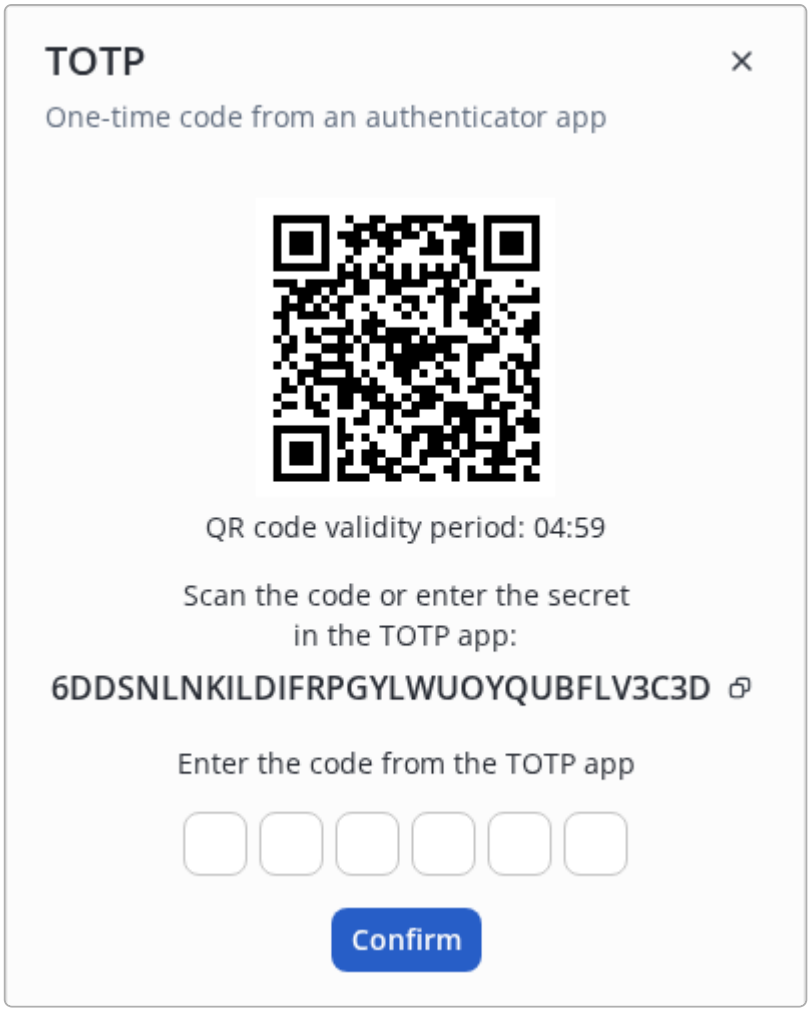

Figure 516. TOTP configuration window

The opened window displays:

- QR code for adding the account to the authenticator app;
- QR code validity period (10 minutes);
- Secret key for manual entry into the authenticator app;
- Field for entering the 6-digit code from the app.

To activate the method:

1. Open the authenticator app.
2. Scan the QR code or manually enter the secret key.
3. Enter the one-time code generated by the app into the confirmation field.
4. Click **"Confirm"**.

After successful activation, the TOTP method will receive **"Active"** status and can be used for sign-in.

The QR code (secret) has a limited validity period. If it expires, you must obtain a new QR code by clicking the icon to start over.

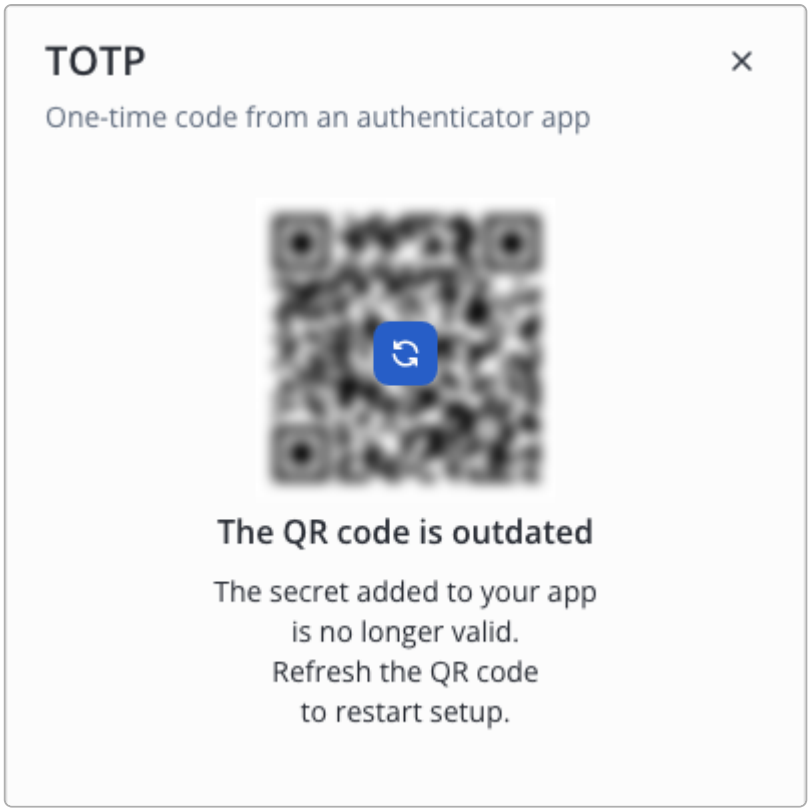

Figure 517. QR code validity period expired

Configuring Email OTP

The **"One-time code from an email (Email OTP)"** method is used to confirm sign-in with a one-time code sent to the user's email address.

To configure Email OTP, click the **"One-time code from an email (Email OTP)"** row.

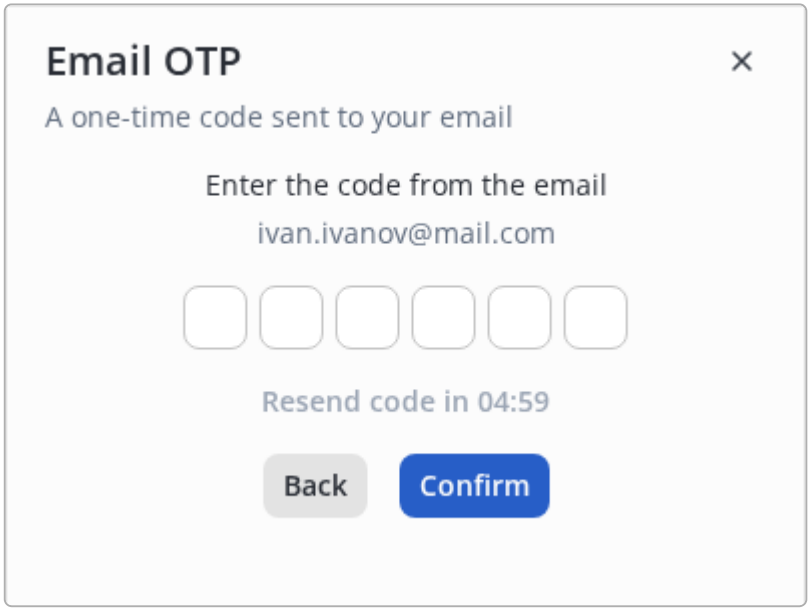

Figure 518. Email OTP configuration window

Behavior when email is missing:

- **If the 2FA policy is optional:**

A local user must enter the email in the `Email` field on the main account settings form, save the changes, and then return to configuring Email OTP.

- **If the 2FA policy is mandatory (and the configuration is being performed for the first time):**
  - If no email is present, an input field is displayed directly in the Email OTP configuration window. The user can specify an email, after which the **"Send code"** button becomes available. The entered email will be saved to the profile after successful method activation.
  - If an email is already specified in the profile, it can be edited directly in the Email OTP configuration window by clicking the icon. The changes will be saved after the method is activated.

If the user belongs to an external account source and the email is missing, it cannot be changed in the account settings. The email must be specified in the external source. After the next login, the data will be synchronized, and Email OTP configuration will become available.

To activate the method:

1. Click **"Send code"**.
2. A 6-digit code will be sent to the specified email address.
3. Enter the received code in the field.
4. Click **"Confirm"**.

After successful confirmation, Email OTP receives **"Active"** status and can be used for sign-in.

The code is valid for 5 minutes. The **"Resend code"** button becomes active only after this time expires. When resent, a new code is generated, and the old one becomes invalid.

Backup codes after 2FA activation

After the first successful activation of **any** primary 2FA method (Email OTP or TOTP), a window with 10 backup codes is displayed.

Backup codes are intended for logging in to the system when the primary method is unavailable. **Backup codes cannot be disabled** – they are a mandatory recovery mechanism. A total of 10 codes are generated, each 6 characters long in numeric format (0–9).

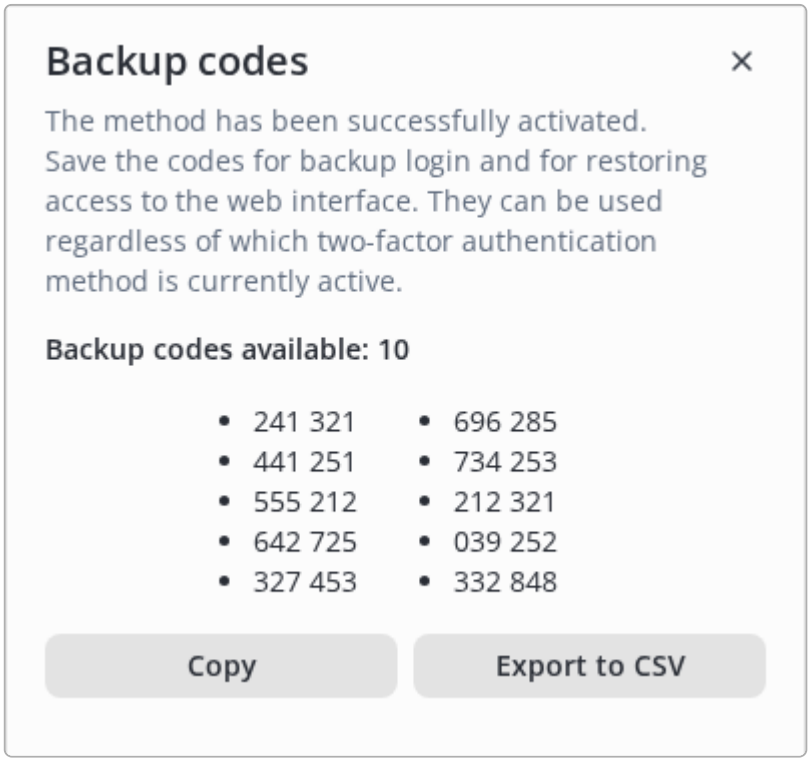

Figure 519. Backup codes after activating a 2FA method

The window displays:

- number of available backup codes;
- list of generated codes;
- **"Copy"** button;
- **"Export to CSV"** button.

Backup codes are shown **only once**. If you try to close the window, the system will ask for confirmation. Do not close the window until the codes have been saved in a safe place.

Managing backup codes

To view information about backup codes, click the **"Backup codes"** row.

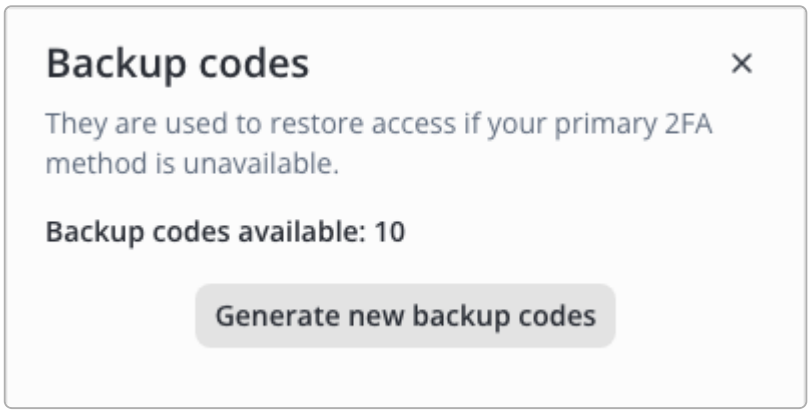

Figure 520. Managing backup codes

The window displays:

number of remaining backup codes;

- **"Generate new backup codes"** button.

After receiving new backup codes, you must save them. Old backup codes become invalid.

If all 10 backup codes have been used, a warning will appear in the main menu: **"Backup codes exhausted"**.

Generating new codes is only possible if at least one active primary 2FA method (TOTP or Email OTP) exists.

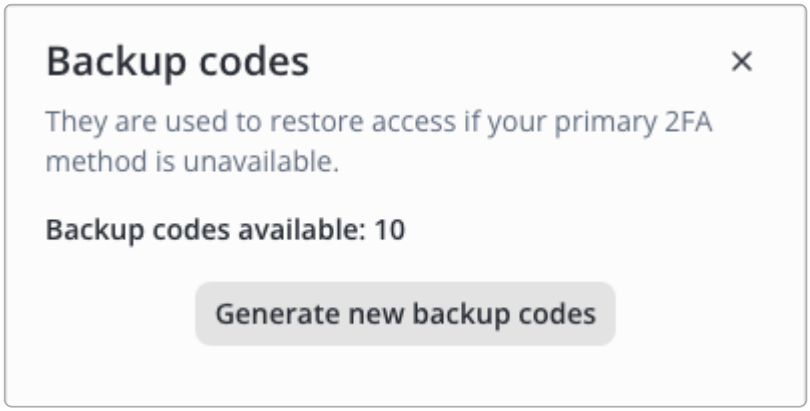

Figure 521. Backup codes exhausted

Viewing an active TOTP or Email OTP method

If a TOTP or Email OTP method is already configured, opening its settings displays the **"Method activated"** status and a **"Disable method"** button.

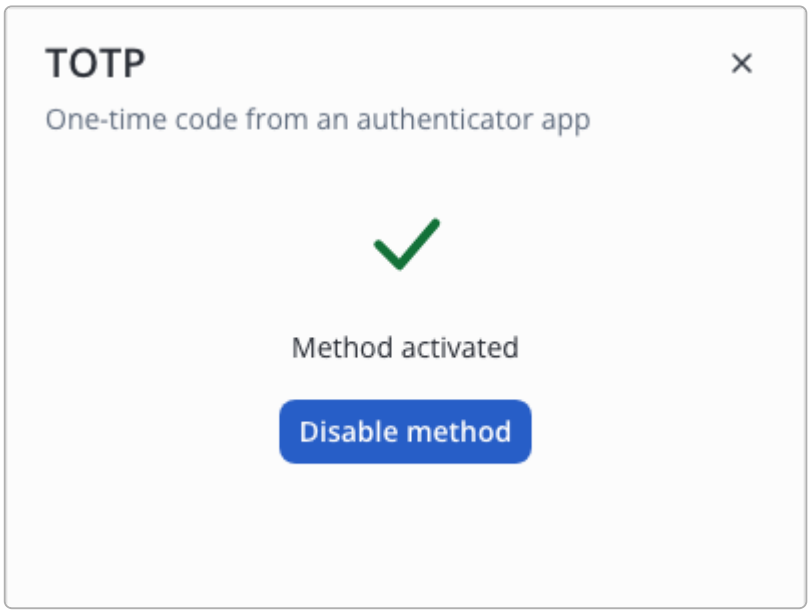

Figure 522. Example of an activated TOTP method

Clicking **"Disable method"** opens a modal window with a warning about the consequences (depending on the current global 2FA policy). After confirmation, the method is deactivated.

Consequences of deactivation:

- If at least one active primary method remains after disabling – 2FA continues to work.
- If the **last** active method is disabled:
  - **Under optional policy:** 2FA is completely disabled, backup codes are invalidated, and two-factor authentication for the account becomes postponed. The prompt to configure 2FA will not be shown on the next login.
  - **Under mandatory policy:** the user **immediately loses access** to all system sections. Mandatory reconfiguration of 2FA will be required.

Disabling two-factor authentication

Only available under the global policy "Optional for everyone".

Under the optional policy, the user can completely disable 2FA for their account. To do this, switch the toggle from **"Enabled"** to **"Disabled"** and save the changes.

After disabling 2FA:

- all active authentication methods will be reset and will no longer be used for sign-in confirmation;
- all backup codes will be invalidated;
- sign-in to the system will be performed using only the login and password.

Under the global policy **"Required for everyone"**, the 2FA toggle is locked and always displayed in the **"Enabled"** position. The user cannot disable two-factor authentication independently.

Disabling the only active 2FA method under the mandatory policy results in immediate loss of access to the system until the second factor is reconfigured.

Global disabling of a method by the administrator

If the system administrator disables a 2FA method in the global settings (e.g., TOTP), then:

- For users who had this method activated, it is automatically deactivated.
- If the disabled method was the only active primary method, **backup codes remain active** for the user.
- On the next login attempt, the user will only be able to use a **backup code** to access the system.
- After successful login, the user **must configure at least one primary 2FA method** (TOTP or Email OTP). Otherwise, subsequent login attempts will only be possible using backup codes (which may be exhausted).

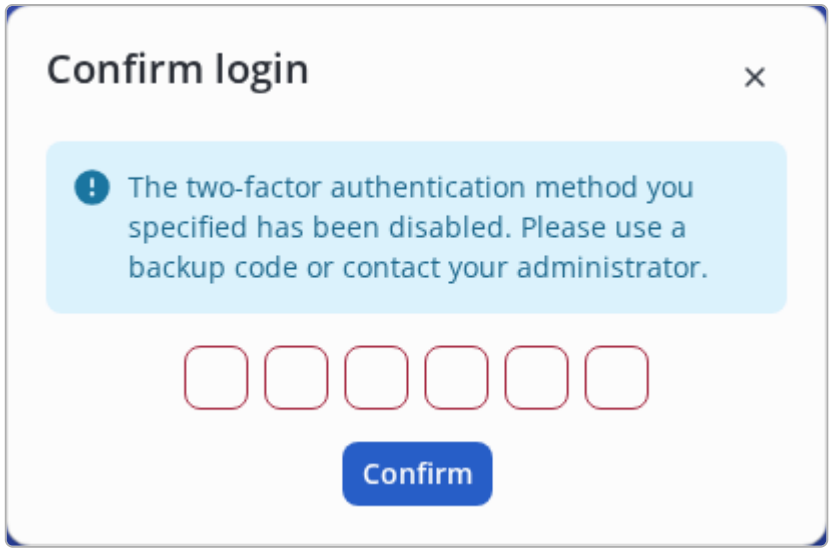

Figure 523. Login is only possible using a backup code

Special considerations when changing email (for Email OTP)

If a user has the Email OTP method activated and changes the email address, then:

- When saving the new email, a modal window appears warning that the Email OTP method will be automatically deactivated.
- After confirmation, the Email OTP method is disabled.
- If Email OTP was the **only** active 2FA method:
  - **Under optional policy** – 2FA is completely disabled (the 2FA status changes to "skipped").
  - **Under mandatory policy** – the user will lose access to the system and will need to reconfigure 2FA.

For external users (AD/LDAP), the email can only be changed in the external source. On the next login, the Email OTP method will be deactivated automatically.

Changing the current system user (logout)

To log out on any page, click the profile icon  in the lower left corner and select **"Logout"**.

Then confirm the logout by clicking the **"Logout"** button.