SCIM Client

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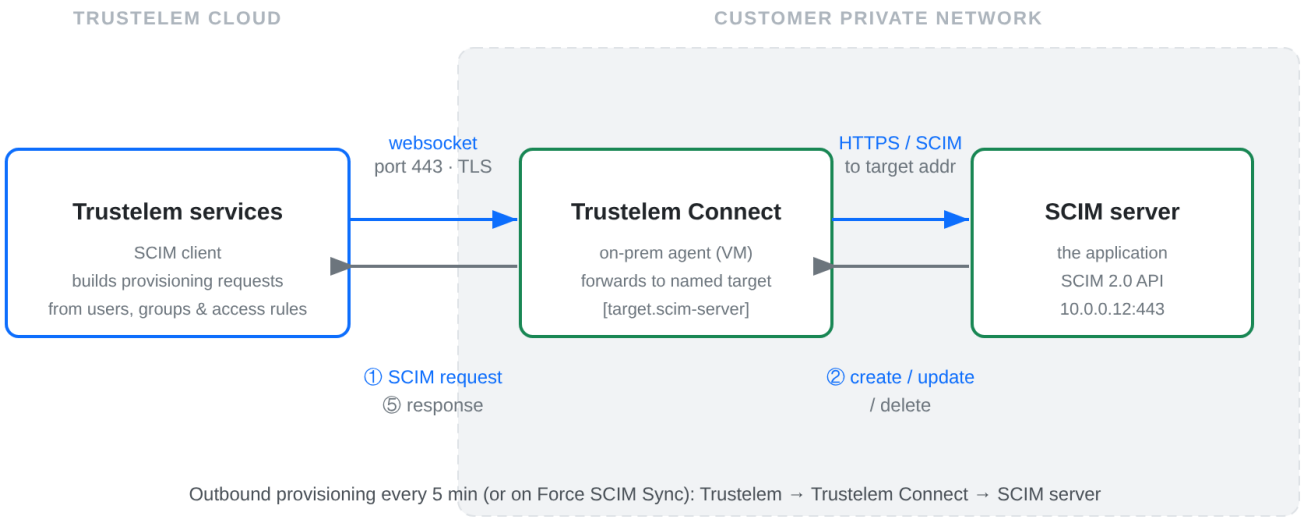
How does it work?

The goal is to use the Trustelem to **provision users and groups** into an application that exposes a **SCIM 2.0** API. The connector is what lets Trustelem reach a SCIM server that is **only accessible from the customer's private network**, but it can just as well forward to a SCIM server reachable from outside the network.

To do so, a connector, **Trustelem Connect**, is installed on a local customer server. Unlike the LDAP / Radius use case where Trustelem Connect *receives* requests, here Trustelem is the **SCIM client**: it builds the provisioning requests and **Trustelem Connect forwards them** to the SCIM server (typically one that lives on the private network, but any reachable SCIM server works).



1/ During the setup, **Trustelem Connect** opens a **websocket** to **Trustelem services** using **port 443**.
Note: with the websocket, information is encrypted by TLS protocol and with an additional symmetric encryption.
On the local machine, **Trustelem Connect** is also configured with one or more **targets**. A target is a named destination (a `host:port`) that the agent is allowed to dial — here, your **SCIM server**.
*For instance, I made the setup of Trustelem Connect and declared a target named **scim-server** pointing at **10.0.0.12:443***

2/ On a regular schedule (every **5 minutes**), or when an administrator clicks **Force SCIM Sync**, Trustelem computes the **users and groups** that should exist on the application, based on its **access rules**, and prepares the corresponding SCIM requests (create / update / delete).

3/ **Trustelem** sends each SCIM request to **Trustelem Connect** through the **websocket**, naming the **target** to use.

4/ **Trustelem Connect** opens the connection to the **SCIM server** (in TLS if the base URL is `https://`) and forwards the request to the address configured for that target.
Note: the generic agent only dials targets it has been explicitly configured with, so a request to an undeclared target is refused — it will never dial an arbitrary address.

5/ **Trustelem Connect** forwards the SCIM server's answer back to **Trustelem** through the **websocket**, and Trustelem records the result of the synchronization.

With the previous example:

- *If a user gains a **SCIM access-rule** for the application, Trustelem **creates** (or updates) the user on the SCIM server.*
- *If a user loses the access-rule, Trustelem **deletes** (or deactivates) the user on the SCIM server.*

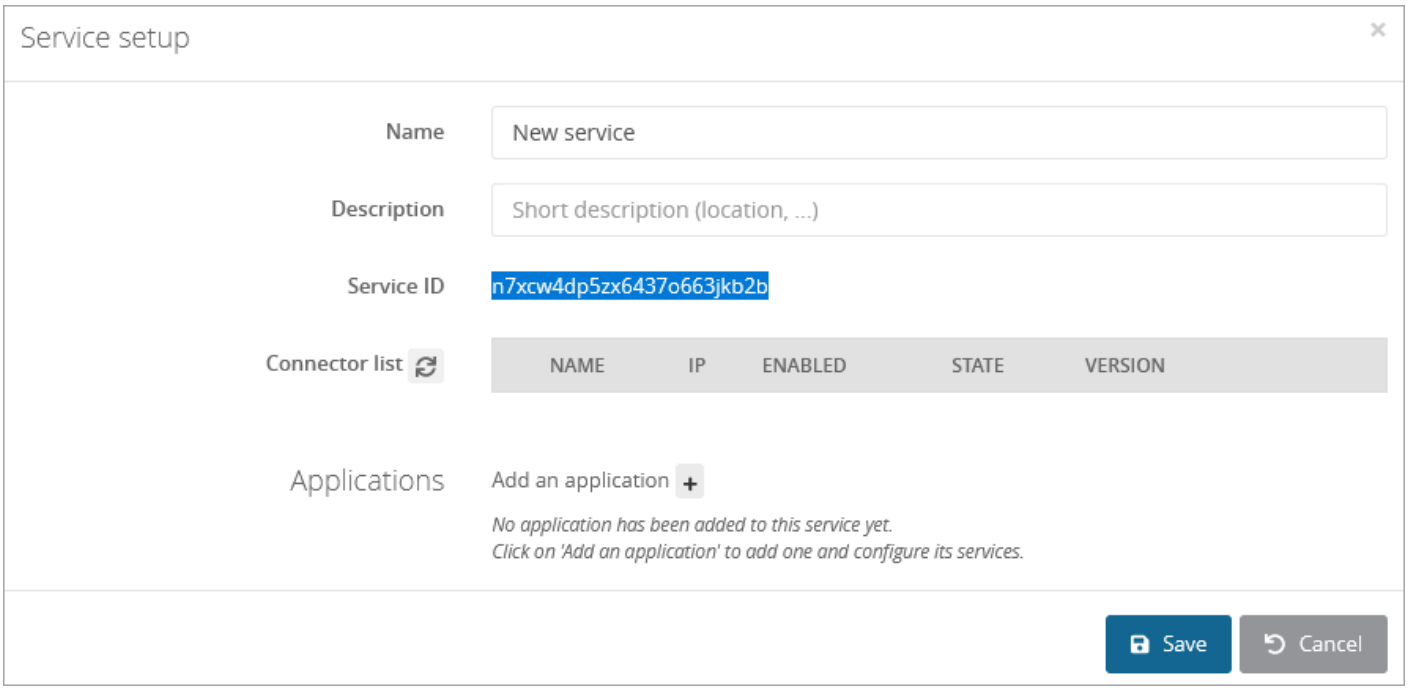
Prerequisites

- Prepare a VM, Windows Server or Linux, with minimal resources for the OS
  - If you already have a VM for Trustelem ADConnect or for a LDAP / Radius connector, you can use the same
  - If you have only one VM which is down, the provisioning is down too..
  - The recommendation is 2 VM at least, to have a failover system
- Download Trustelem Connect on the VM (.exe or .tgz depending of the OS)
  - https://dl.trustelem.com/connect/
  - the download buttons (Windows / Linux) are also available directly on the **service** page in your administration interface
- The flow from the VM to the **SCIM server** should be opened for the IP / port the SCIM API listens on
  - usually tcp port 443 (https) or 8080
- The flow from the VM to the **Trustelem production servers and relay** (**https://admin.trustelem.com**) should be opened, on **tcp port 443**, towards the following IPs:
  - Current production servers: **185.4.44.22**, **185.4.46.20**, **185.4.46.21**, **185.4.46.22**
  - New production servers (replacement): **185.4.44.114**, **185.4.44.117**
  - Relay endpoints: **98.66.169.89** (relay-fr-01.wallix.com), **20.39.241.157** (relay-fr-02.wallix.com)
- The **SCIM credentials** of the application (a **bearer token**, or a **username / password** for Basic authentication) and the **base URL** of its SCIM API

Setup TrustelemConnect on a Windows machine

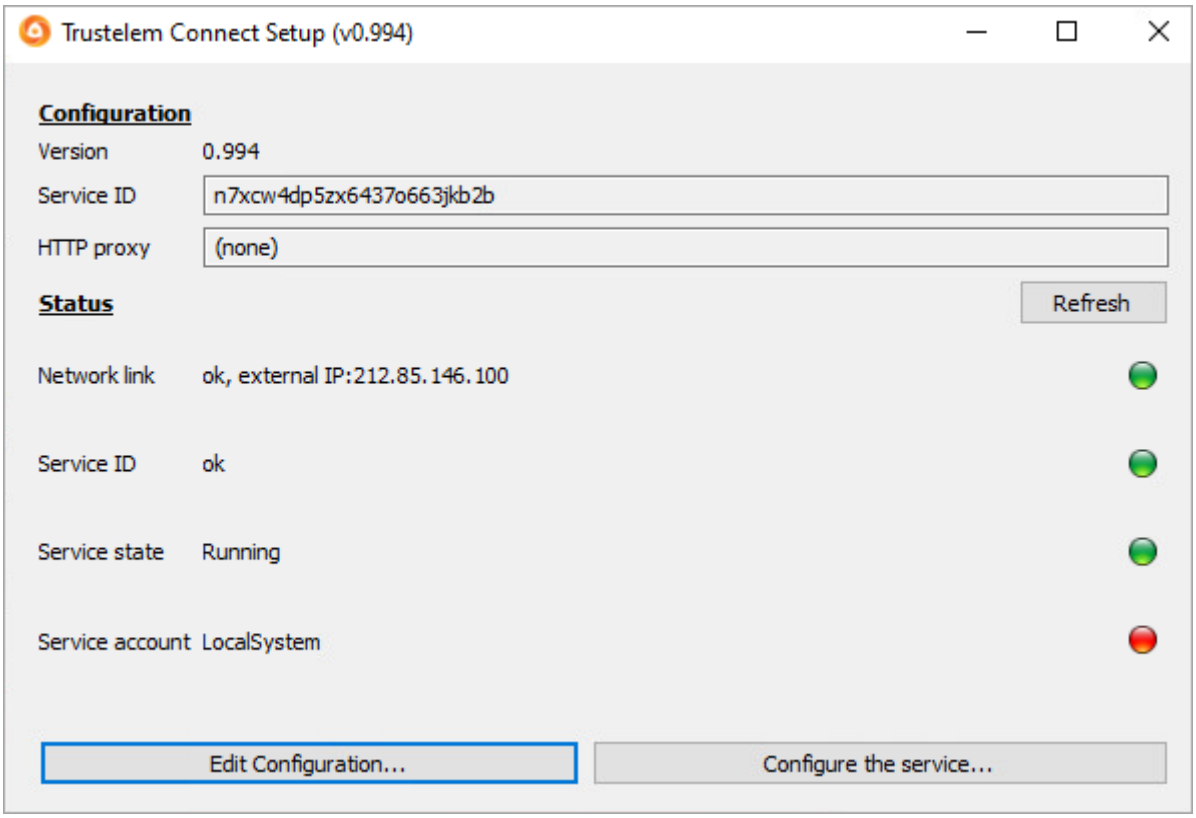
In your Trustelem administration page:

- Go to the **Services** tab.
- Click on the button **+ Create a service** and copy the **service ID**.



On your server:

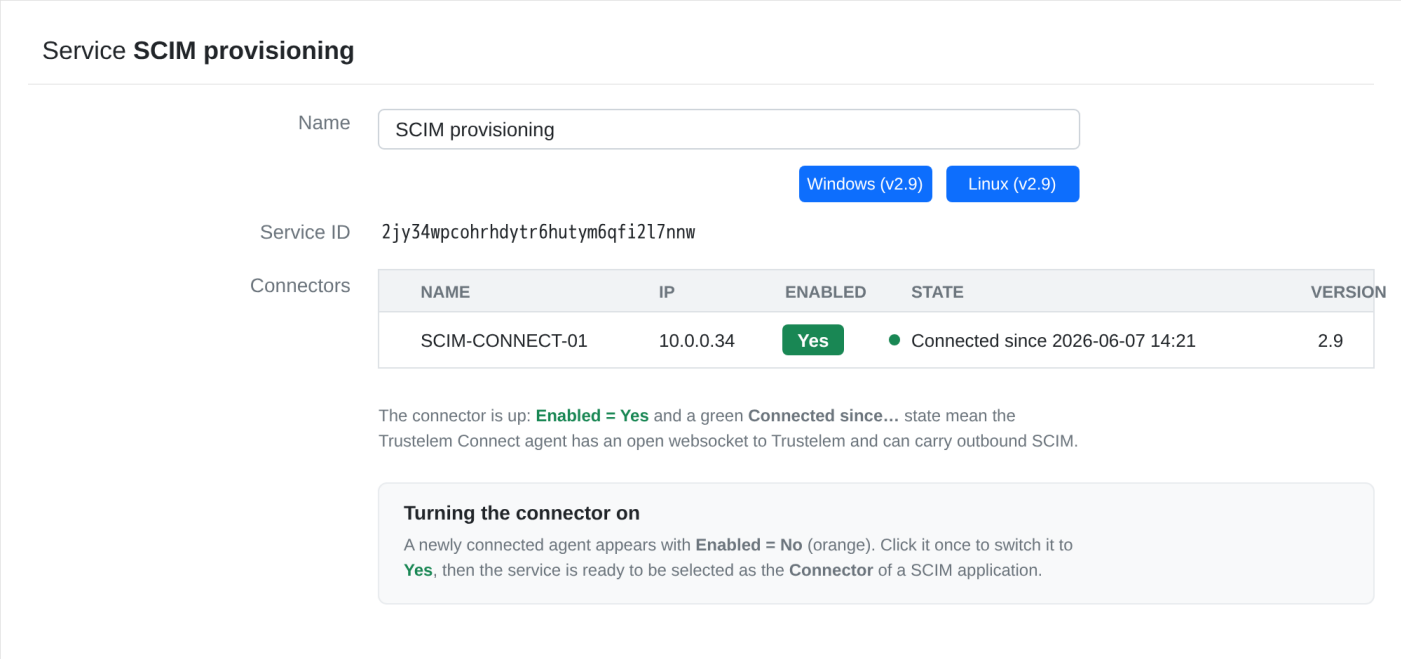
- Start the setup (Trustelem Connect.exe), and paste your **service ID**.
- If you have a proxy, complete the field **HTTP Proxy** with the value: https://username:password@proxy_IP:proxy_port
- Click on **Validate the Configuration**



- Start the service.

In your Trustelem administration page

- Refresh your **Services** page.
- Turn on the service by clicking on **No**.

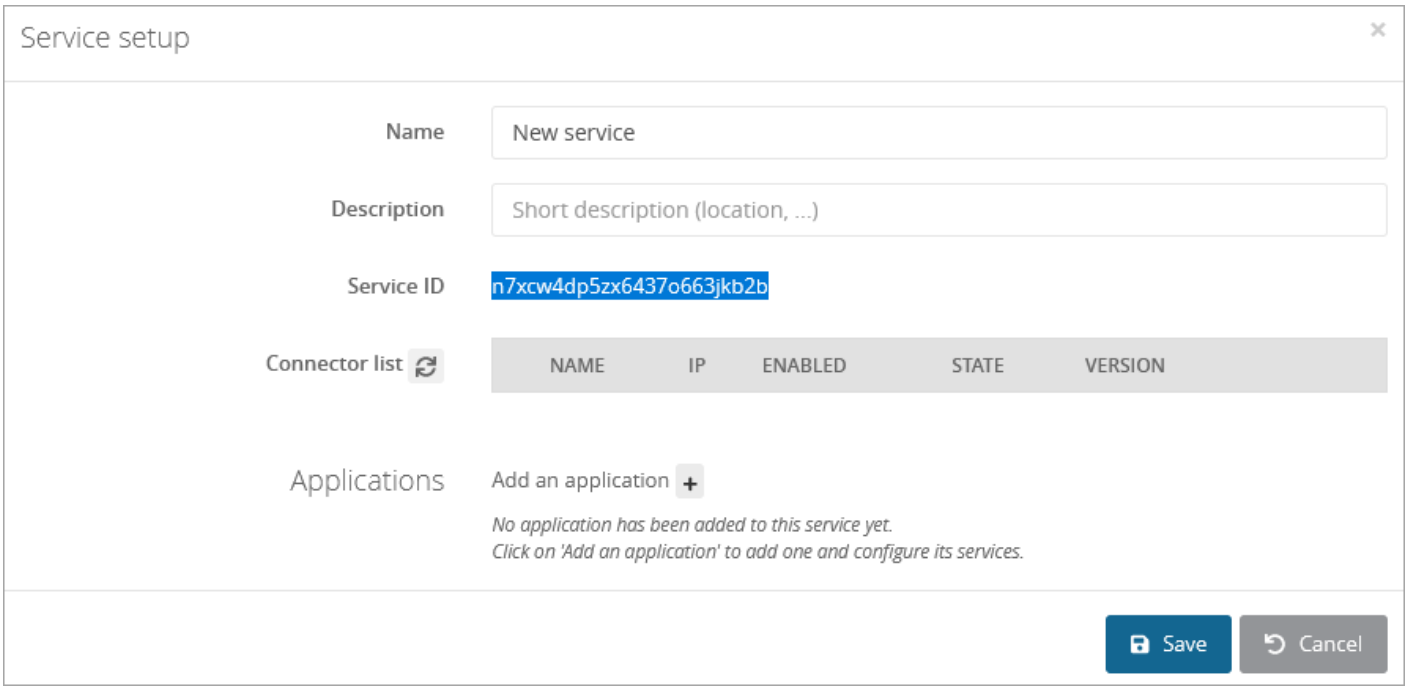


You now have a functional connector.

Setup Trustelem Connect on a Linux machine

In your Trustelem administration page:

- Go to the **Services** tab.
- Click on the button **+ Create a service** and copy the **service ID**.



On your server:

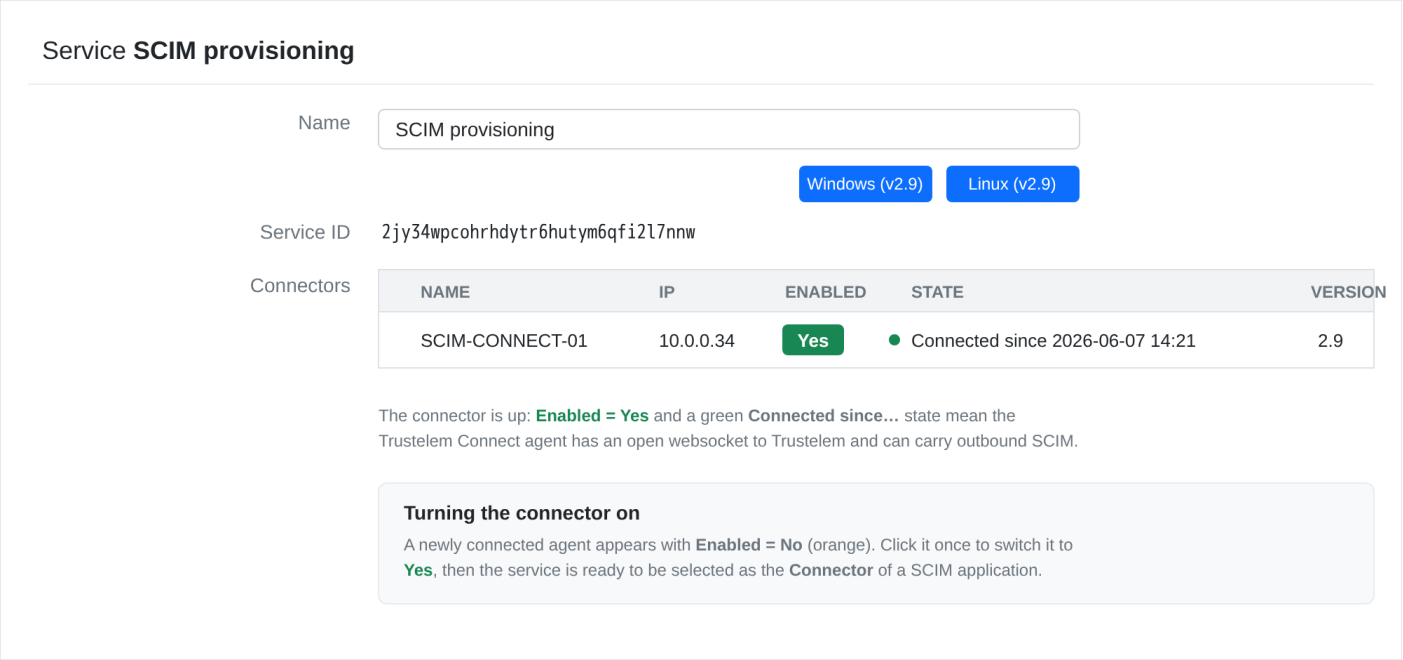
- Install the connector as a service with the **setup.sh** script launch with **root privilege**.
- To complete the configuration, edit /opt/wallix/trustelem-connect/config.ini file containing the synchronization id.
- A sample minimal config.ini would be:

```
service_id = 2jy34wpcohrhdytr6hutym6qfi2l7nnw
state_dir = run/
# if there is a proxy
proxy = https://username:password@proxy_IP:proxy_port
```

- The run folder must have read write rights for the trustelem user.
- After that, you can start the service with: **systemctl start trustelem-connect.service**
- The service will run with the user trustelem

In your Trustelem administration page

- Refresh your **Services** page.
- Turn on the service by clicking on **No**.



You now have a functional connector.

Declare the SCIM server as a connector target

Outbound SCIM never dials the remote directly: Trustelem Connect forwards the request to a **named target**. You declare that target on the machine running the connector with the **set-target** command, then you reference it by name in the application setup.

On your server, from the Trustelem Connect folder:

```
./TrustelemConnect set-target <name> <host:port>
```

With the previous example:

```
./TrustelemConnect set-target scim-server 10.0.0.12:443
```

- **<name>** is a free label — you will type the exact same value in the application setup (field **Connector target name**).
- **<host:port>** is the address of the **SCIM server** as seen from the connector machine.
- The command writes a `[target.<name>]` section in **config.ini** and enables outgoing connections; on Linux you can also edit config.ini directly:

```
outgoing_allowed = "true"
[target.scim-server]
addr  = 10.0.0.12:443
```

- Useful options:
  - `-always-tls` / `-no-tls` to force or disable TLS regardless of the base URL scheme

    - `-insecure-allow-skip-tls-check` to accept a self-signed certificate (must be combined with **Skip TLS certificate check** in the application setup)
    - `-override` to clear an existing target before re-applying it
- Restart the service so the new target is advertised to Trustelem.

Setup an application to provision through SCIM

On your Trustelem administration page:

- Go to the **Apps** tab.
- Either **open an existing application** to add SCIM provisioning to it, or click on **+ Add an application** to create a new one.
- If you create a new application, choose either a pre-integrated application or a generic model depending on your need.
- Turn on **SCIM**, then fill the SCIM section:

- **Base Url for SCIM provisioning**: the base URL of the application's SCIM 2.0 API (e.g. `https://scim.myapp.local/v2`). Its scheme decides whether the connector opens the connection in TLS.

- **Authentication Mode**: **Bearer Token** or **Basic**
    - For **Bearer Token**: paste the token in the **Bearer Token** field (the `Bearer` prefix is added automatically if you omit it).
    - For **Basic**: fill **Username** and **Password**.

- **Connector**: select the **service** you created and turned on above. The outbound SCIM traffic is tunnelled through this connector.
  ./TrustelemCli>**Connector target name**: type the exact **<name>** you used with `./TrustelemConnect set-target` (e.g. **scim-server**).
- **Skip TLS certificate check**: leave **disabled** unless the SCIM server uses a self-signed certificate. It only takes effect if the connector target was also declared with `-insecure-allow-skip-tls-check`.

- Click on **Save**.

Settings for SCIM provisioning (doc)

Name: SCIM provisioning (doc)

Icon: SCIM provisioning (doc)

State: (•) Enabled ( ) Disabled

URL: https://www.myapp.exemple.com/login?user={email}

Home or login page of the application

LDAP: ( ) Enabled (•) Disabled

Radius: ( ) Enabled (•) Disabled

SCIM: (•) Enabled ( ) Disabled

Base Url for SCIM provisioning: https://scim.myapp.example/v2

Authentication Mode: (•) Bearer Token ( ) Basic

Choose the authorization scheme used for SCIM calls.

Bearer Token: ••••••••••••••••••••••••••••••••

Last Sync

Connector: SCIM provisioning

Outbound SCIM is tunnelled through the connector of this service endpoint, so a Trustelem Connect agent can reach a SCIM server on your private network.

Connector target name: scim-server

Name of the target configured on the connect agent (connect set-target <name> <host:port>) that points at the SCIM server.

Skip TLS certificate check: ( ) Enabled (•) Disabled

Disable TLS certificate verification when the connector dials the SCIM server. Only takes effect if the agent target also allows it; leave disabled unless the server uses a self-signed certificate.

Force SCIM Sync

Save

Of course, **you need to create the access rules** to define which users will be provisioned to the application

https://trustelem-doc.wallix.com/books/trustelem-administration/page/access-rules

Trustelem is now ready to provision users and groups to the application through **Trustelem Connect**.

Force a synchronization

By default, Trustelem pushes the SCIM updates **every 5 minutes**. To apply your configuration immediately:

- Open the application, in the SCIM section click on **Force SCIM Sync**.
- A full synchronization runs: Trustelem lists the resources already present on the SCIM server, reconciles them with the users and groups granted by the access rules, and applies the create / update / delete operations.
- The result is reported in the **Last Sync** field and, in case of error, as a message describing the most actionable cause (authentication failure, endpoint not found, no connector available, network error…).

Debug

The connector doesn't appear in the setup page on the admin page

- ping **admin.trustelem.com** on the machine running the connector to verify the outgoing flows
- verify the synchronization ID (service ID)
- verify the proxy setup
- if the VM is a Windows machine, verify that you clicked on **Validate** on Trustelem Connect program

The SCIM synchronization is not working

- Read the **Last Sync** message and your **Trustelem Logs page**:
  - **no connector available** → the service is not turned on, no agent is connected, or the connector does not advertise the configured target. Verify the ./TrustelemCervice is **On**, that an agent is **Connected**, and that the **Connector target name** matches a `./TrustelemConnect set-target` declared on the agent.
  - **authentication failed (401) / forbidden (403)** → check the **Authentication Mode** and the bearer token or username / password.
  - **endpoint not found (404)** → check the **Base Url for SCIM provisioning** (path and version, e.g. `/v2`).
  - **network error** → the connector cannot reach the SCIM server: check the target `host:port`, the flow from the connector VM to the SCIM server, and the TLS settings.
- If the SCIM server uses a **self-signed certificate**, declare the target with `-insecure-allow-skip-tls-check` **and** enable **Skip TLS certificate check** in the application; otherwise the TLS handshake fails.

- Verify if the flow from the connector VM to the SCIM server is opened. If you have a doubt, use **Wireshark** on Windows or **tcpdump** on Linux on the connector machine.
  /! tcpdump displays the flow received, before applying local firewall rules. So if you are on Linux and see the requests, you should verify if there is a local firewall.

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