



SEVIO

User Guide

Legal Information

The content of this document is provided "as-is". No warranties of any kind related to the content of this document are provided. Sevio reserves the right to review this document or withdraw it at any time without any notice.

Under no circumstances shall Sevio be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Sevio can be found at the following Internet address: <https://sevio.it/>.

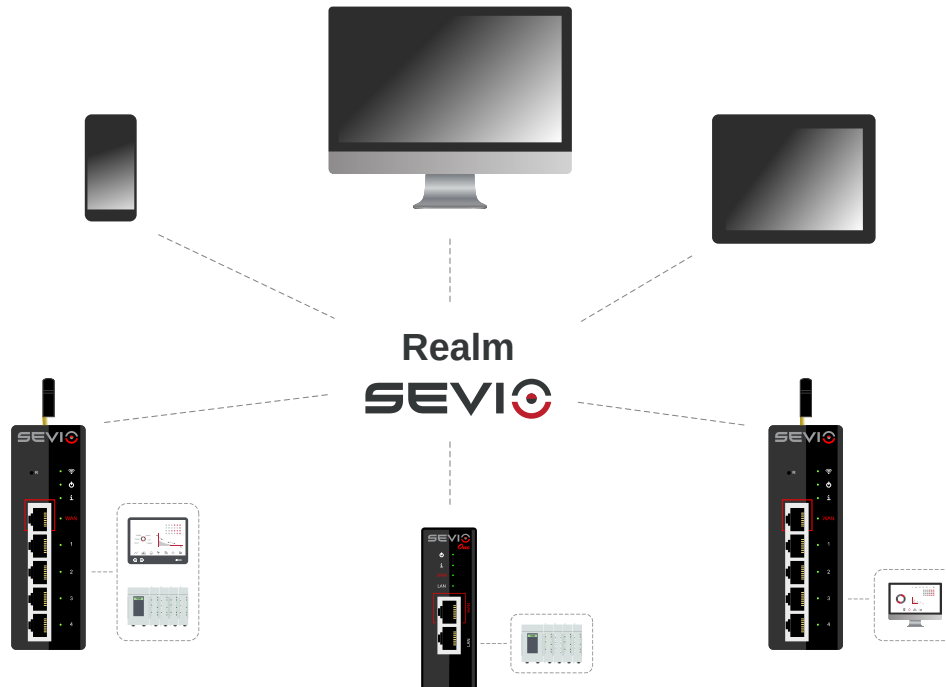
Version History

Revision	Date	Description
15_01	01/01/2015	Emission
17_05	01/05/2017	First revision
21_05	01/05/2021	Second revision
21_12	01/12/2021	Third revision
23_01	01/01/2023	Fourth revision
23_06	01/06/2023	Fifth revision
24_04	01/04/2024	Sixth revision

Table of contents

Legal Information.....	2
Version History.....	2
General Description.....	5
Using Sevio System.....	8
Sevio Portal Registration.....	9
Access to Sevio Portal.....	10
Recovering Operator's Password.....	11
Personal area.....	12
Workstations.....	14
Simultaneous usage with multiple Workstations.....	14
Workstations Certificates.....	15
Realms.....	16
Enabling Multi-Factor Authentication (MFA) on Realm.....	17
Realm's Events.....	18
Operators.....	19
Roles.....	19
Invite new Operator.....	20
Edit Operator.....	21
Devices List.....	22
New Sevio Router Association.....	24
Sevio Router Configuration.....	25
Online Sevio Router Configuration.....	25
Offline Sevio Router Configuration.....	25
Sevio Router Configuration Parameters.....	26
Sevio Router main data.....	28
WAN: Internet access using wired network.....	29
Wi-Fi: Internet access using wireless network.....	30
Mobile: Internet access using Sevio M100 Cellular adapter.....	32
Proxy.....	32
LAN: automation devices network.....	33
Wi-Fi: Access-Point on automation network.....	35
Secure Local Access.....	36
IP Forwarding.....	38
Tags.....	41
Firewall.....	42
Accesses.....	42
Devices.....	42
Intra-LAN communication between remote devices.....	43
Router's Events.....	44

General Description



The Sevio System provides simultaneous access to independent and geographically distributed networks to the customer, keeping them unaltered.

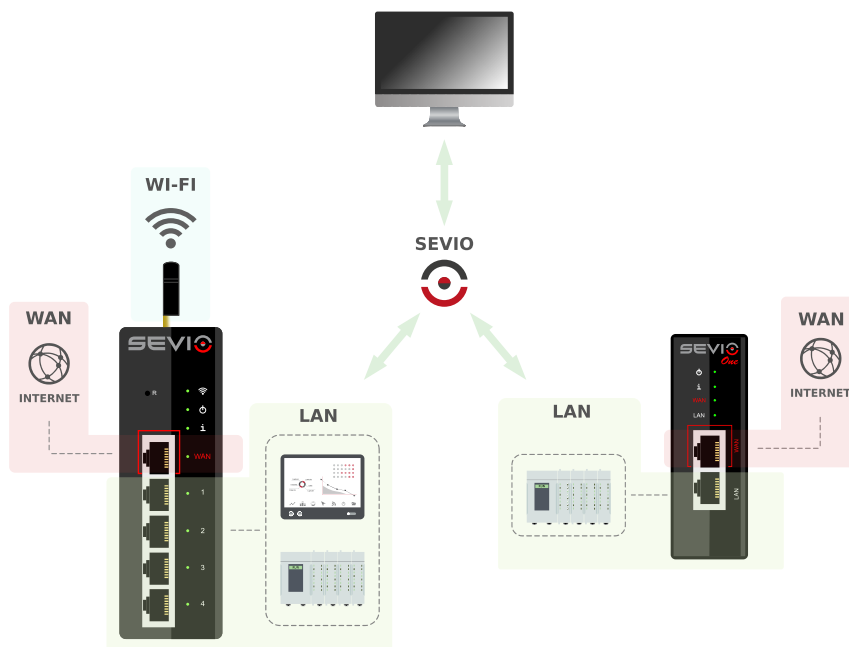
The remote networks and **Workstations** set (PC, tablet, smartphone) represent the **Realm**.

Operators can manage Realms and access remote networks by using Workstations which, after being properly, authenticated can access remote devices.

Sevio Routers are installed where remote control and / or access to the automation infrastructure is required, and offer several capabilities including:

- to isolate Automation network to/from other networks, in the installation site;
- to provide a secure connection between Automation network and Workstations;
- to manage the configuration automatically by using the remote **Sevio Portal**.

The picture below shows the networks already in place and networks managed by Sevio Router:



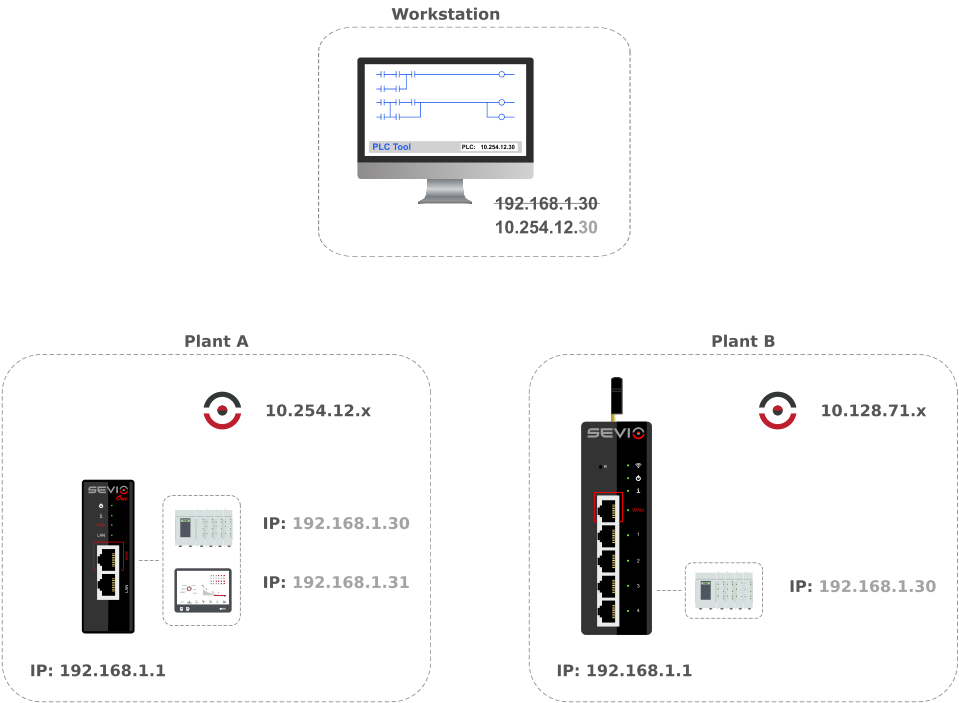
WAN Network: public network available in the installation site, used by Sevio Router to obtain Internet access and to use remote interconnection services.

LAN Network: private network where all authentication devices are connected.

Wi-Fi Network: available in both Access Point (to reach automation devices via Wireless local connection), or in Client mode (to let the Sevio Router connect to an installation site Access Point, instead of using a wired WAN network).

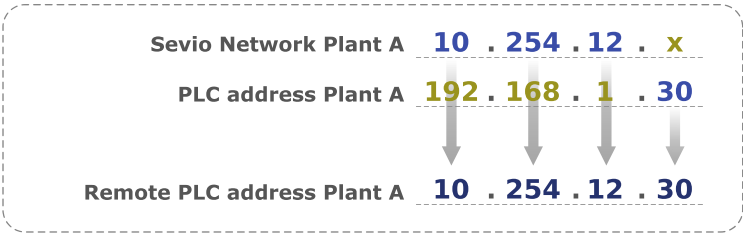
Sevio Network: used for remote access: this network allows to connect Workstations in the same Realm to devices connected to the LAN Network.

Using Sevio System



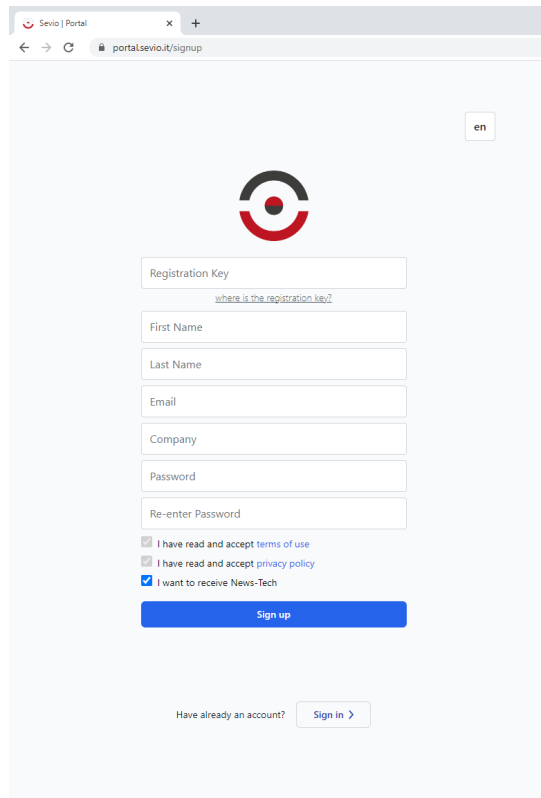
Each Sevio Router provides a specific Sevio network. In the above example, Plant A Sevio network is 10.254.12.x, whilst Plant B Sevio network is 10.128.71.x.

To access Plant A PLC from the Workstation, the Operator should combine first three bytes of Sevio Network with fourth byte assigned to PLC device:



Sevio Portal Registration

Registration to Sevio Portal is dedicated to Operators who access Sevio System **for the first time**.



The screenshot shows the Sevio Portal registration page in a web browser. The page has a light gray background with the Sevio logo at the top center. Below the logo is a registration form with the following fields: 'Registration Key' (with a hint 'where is the registration key?'), 'First Name', 'Last Name', 'Email', 'Company', 'Password', and 'Re-enter Password'. There are three checkboxes: 'I have read and accept terms of use', 'I have read and accept privacy policy', and 'I want to receive News-Tech' (which is checked). A blue 'Sign up' button is at the bottom of the form. Below the button, there is a link 'Have already an account? Sign in >'. A language selector 'en' is in the top right corner.

For a new registration, it's needed:

- a Sevio Router not yet associated with a Realm and the corresponding Registration Sheet (delivered in the purchase package) where you can find the Registration Key needed to complete the registration;
- the Operator's email which has been not yet associated with a Realm. Such email associated with the password, constitute the Operator's credentials and are used to access Sevio Portal and to configure [Workstations](#). By accepting the [Terms of use](#) and the [Sevio Policy](#), the Operator accepts the conditions of use of the Sevio System and agrees to the processing of personal data: email, first name and last name.

By pressing the **Sign up** button, the Operator will confirm/complete:

- the creation of a Realm (with name correspondent to the Company field);
- the creation of a personal account;
- Sevio Router association.

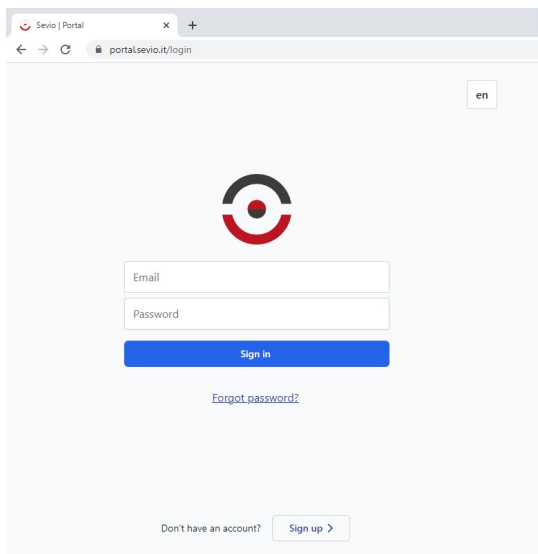
After completing and submitting this, the new Operator will receive a confirmation email to his address. Operator will be able to change it by using the appropriate [Edit password](#) function in the personal area Profile section.

Note: Sevio Portal access and use of VPN clients, allows the Operator to gain access to remote devices and to interact with system configurations. For such reasons it is very important to adopt proper safeguards on all access privileges, keeping credentials securely, modifying them whenever there is any doubt of system vulnerability and changing passwords in systematically, following all security best practices in such topic. To add an extra layer of security, it is advisable to enable the Multi-Factor Authentication (MFA) method.

Access to Sevio Portal

By using Sevio Portal (Sevio System Web-App), customers can manage all Sevio Routers associated with the Realm, set-up access of specific Operators and activate new personal Workstations.

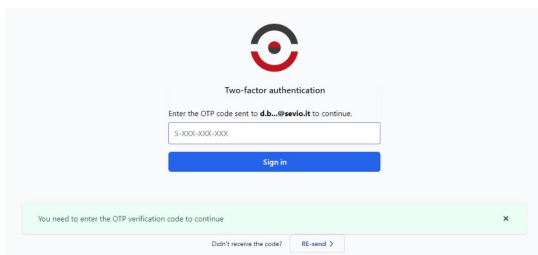
Customers will not need to install any software, simply click on Sevio Portal button located in the main site <https://sevio.it/> or, alternatively, by using the URL <https://portal.sevio.it/>.



The image shows the login page of the Sevio Portal. At the top, there is a browser tab labeled 'Sevio | Portal' and the address bar shows 'portal.sevio.it/login'. The page features the Sevio logo (a red and black circular icon) in the center. Below the logo are two input fields: 'Email' and 'Password'. A blue 'Sign in' button is positioned below the password field. A link for 'Forgot password?' is located below the 'Sign in' button. At the bottom left, there is a link 'Don't have an account?' and a 'Sign up >' button. A language selector 'en' is in the top right corner.

From this section, will be possible to:

- to register a new Realm (for Operators using for the first time the Sevio System) by clicking on **Sign up** button;
- to sign into the Sevio System (for already registered Operators) by typing personal email and password, then **Sign in**;
- to reset the Operator's password (if it has been lost) by using **Forgot password**.

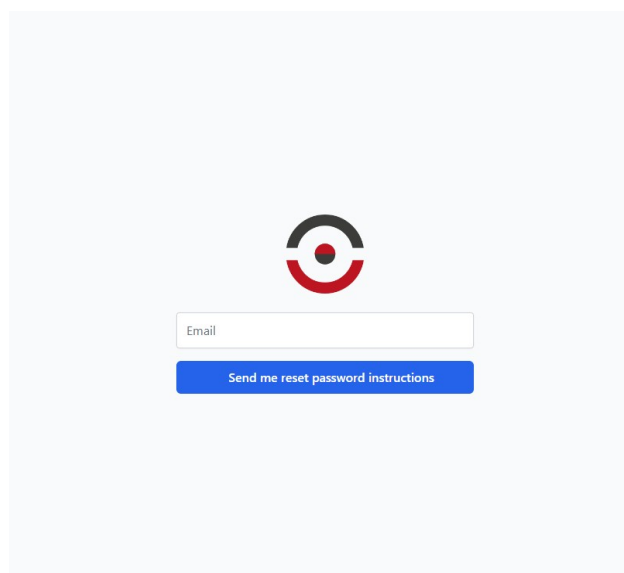


The image shows the two-factor authentication page. It features the Sevio logo at the top. Below the logo, the text 'Two-factor authentication' is displayed. A message states: 'Enter the OTP code sent to d.b...@sevio.it to continue.' Below this message is an input field for the OTP code, which contains the placeholder '5-XXXX-XXXX-XXXX'. A blue 'Sign in' button is located below the input field. At the bottom, there is a green notification bar that says 'You need to enter the OTP verification code to continue'. Below the notification bar, there is a link 'Don't receive the code?' and a 'RE-send >' button.

If the Multi-Factor Authentication (MFA) method is enabled on the Personal Profile or established by Realm, during the Login procedure confirm your identity through the OTP code received via email. Refer to the Profile section of this manual for details.

Recovering Operator's Password

Operator's password is used to access Sevio Portal and to configure the VPN client on the Workstations. If the password is forgotten, Sevio Portal allows the Operator to reset it with a new password. It is up to the Operator to restore the password set in the VPN clients with the new generated one.

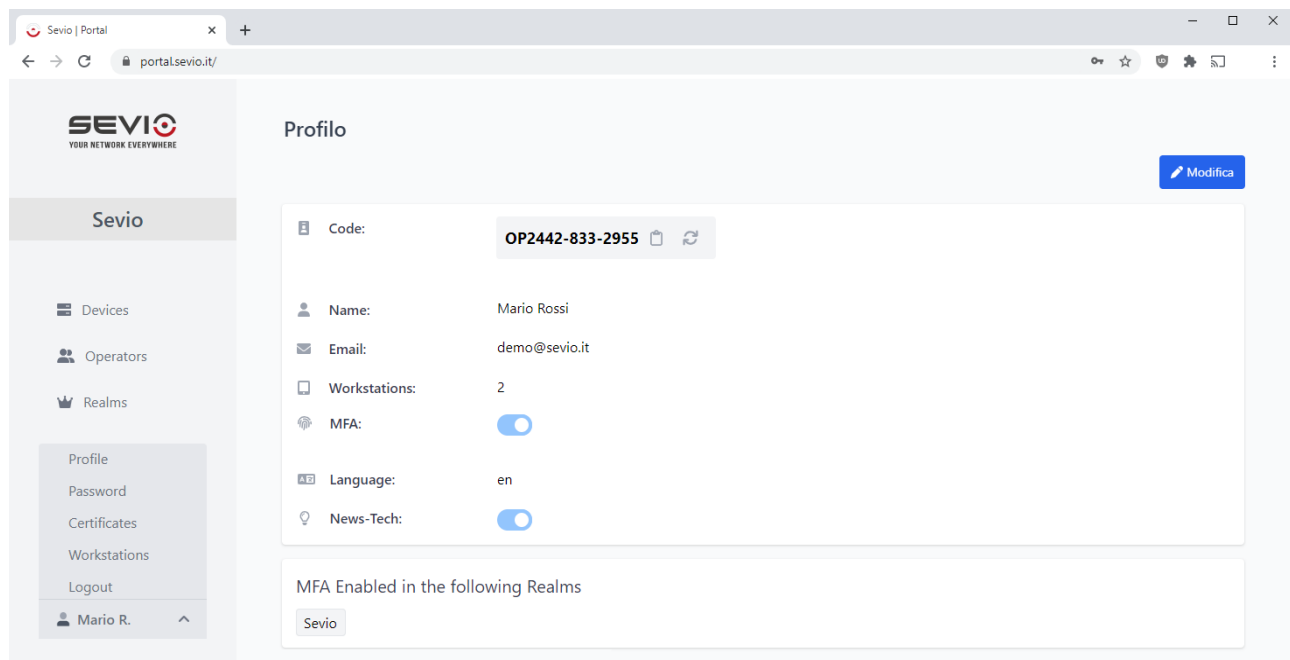
A screenshot of the Sevio Portal password recovery interface. At the top center is the Sevio logo, a stylized 'C' with a red dot in the center. Below the logo is a text input field labeled 'Email'. Underneath the input field is a blue button with the text 'Send me reset password instructions'.

By pressing the **Forgot password** button, the Operator will receive a link via email to be used to generate a new password to access to Sevio Portal.

Note: Sevio Portal access and use of VPN clients, allows the Operator to gain access to remote devices and to interact with system configurations. For such reasons it is very important to adopt proper safeguards on all access privileges, keeping credentials securely, modifying them whenever there is any doubt of system vulnerability and changing passwords in systematically, following all security best practices in such topic. To add an extra layer of security, it is advisable to enable the Multi-Factor Authentication (MFA) method.

Personal area

The Operator's menu is visible by accessing the Sevio Portal reserved area, will be possible to access to the following sections:



1. **Profile** - Personal settings section:

- a) Code – ID number to communicate via email to Sevio Support, to perform tests impersonating the Operator.
- b) Personal Data - First and Last name editing section.
- c) MFA - Multi-Factor Authentication: Enabling and disabling the two-factor authentication method of your account, for accessing Sevio Portal and using the VPN Client. After enabling the MFA method, for accessing Sevio Portal and using the VPN, you will be asked to confirm your identity via OTP codes, which will be sent to the email Indicated in this section.

Sevio Portal supports multi-Realm management, i.e., the ability by the Operator to participate in multiple Realms. Through the MFA panel, it is possible to identify which Realms have adopted the MFA method on a mandatory basis, extending the obligation to use it to all users, regardless of personal setting.

- d) Language - Sevio Portal language selection.
- e) News-Tech - Enable/Disable receiving section of technical communication.

Note: In case the Operator password has been forgotten, please refer to the [Recovering Operator's Password](#) section.

Note: Sevio Portal access and use of VPN clients allows the Customer to gain access to remote devices and to interact with system configurations. For such reasons it is very important to adopt proper safeguards on all access privileges, keeping credentials securely, modifying them whenever there is any doubt of system vulnerability and changing passwords in systematically, following all security best practices in such topic. To add an extra layer of security, it is advisable to enable the Multi-Factor Authentication (MFA) method.

2. **Password** – Dedicated section to changing the current Password.
3. **Certificates** - Certificates download section, used to configure remote and Secure Local Access OpenVPN clients.
4. **Workstations** - Workstations credential management.
5. **Logout** - Logout from Sevio Portal reserved area.

Select **Edit** button, after making configuration changes, save with the **Update** button.

By pressing the **Cancel** button all the fields will be reset to the previous value.

Workstations

Workstations are all personal devices (PCs, tablets, smartphones ...) that Operators can use to access remote devices connected through Sevio networks. Workstations do not require any specific software and can be equipped with any operating system. The Sevio System supports and allows to use standard VPN profiles natively supported on widely used operating systems using out-of-the-box integrated features, such as SSTP protocol. It is also possible to use other VPN supported clients.

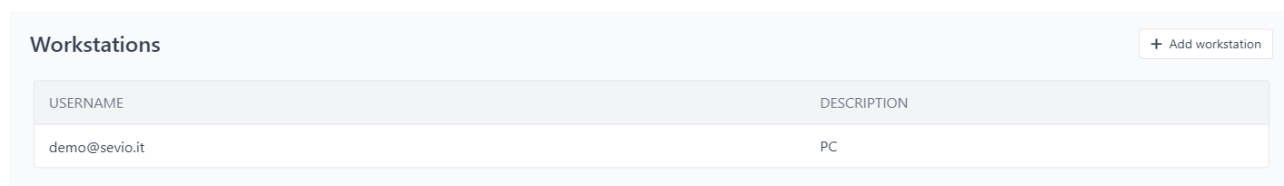
All parameters needed to configure Workstations are:

- Server name or address: vpn.sevio.it;
- Username and Password: email and password used to access to Sevio Portal.

Configuration of Workstations VPN clients may vary depending on operating system used (for detailed procedures please refer to the [Workstations](#) manual).

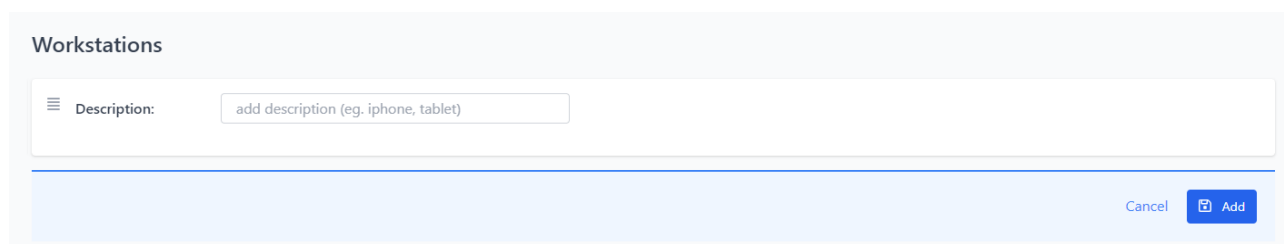
Simultaneous usage with multiple Workstations

To allow simultaneous access from multiple Operator's PCs, tablets or smartphones, it is only necessary to create additional credentials associated with the new Workstations. This can be done easily from Sevio Portal in the personal area, Workstations section, please refer to the below.



USERNAME	DESCRIPTION
demo@sevio.it	PC

From the Workstations section press **Add workstation**.



Description:




Cancel Add

Operator, can add (optionally) a description to identify the new Workstation. By pressing the **Add** button the object will be created.

Note: 7 workstations max can be added.

Workstations		+ Add workstation
USERNAME	DESCRIPTION	
demo@sevio.it	PC	
demo@sevio.it-1	Smartphone	

The generated Username must be used to configure the new Workstation (in the example above, the Username for the first workstation is **demo@sevio.it**, for the second one will be **demo@sevio.it-1**). In both cases, the password will be the same used for the Operator account.

Workstation: demo@sevio.it-1		< List	Delete	Edit
 Username:	demo@sevio.it-1			
 Created at:	May 19, 2022 12:54			
 Description:	Smartphone			

From the Workstations list, it is possible to select a specific Workstation, to change description or to delete it, pressing Delete button .

Workstations Certificates

In this section operators can download certificates to be used with specific OpenVPN client.

Certificates	
NAME	FILE
Remote access	sevio.ovpn
Secure local access	sevio_servicetag.ovpn

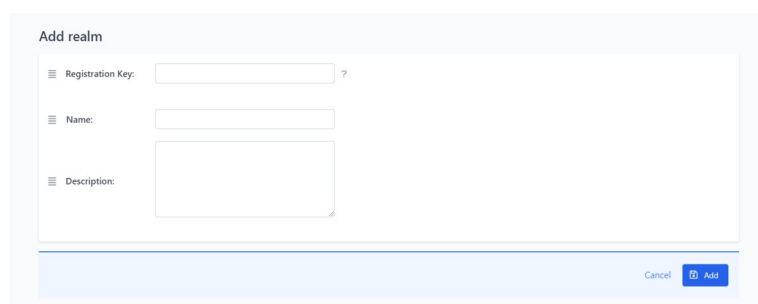
The configuration of the Workstations VPN clients may vary according to the operating system installed, (for all detailed procedures please refer to [Workstations](#) manual).

Realms

The Realm is made up by the whole set of Sevio Routers associated with it together with all Workstations associated to authorized Operators.

During [Sevio Portal registration](#), the first Realm is automatically created and the first Sevio Router and Operator are associated with it.

Sevio Portal supports multi Realm management – This will give to Operators the possibility to join multiple Realms and being able to create additional ones.



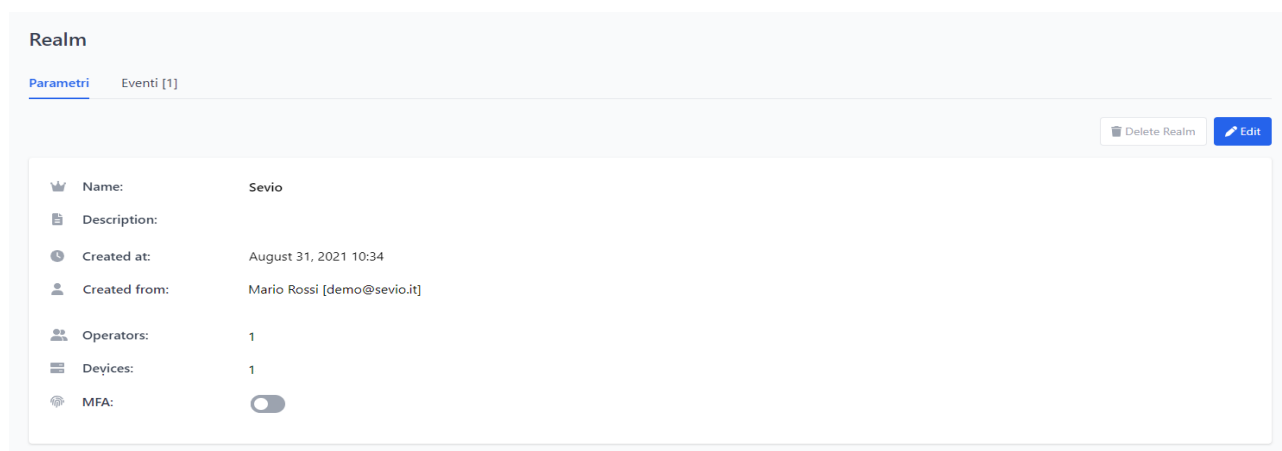
The 'Add realm' form contains three input fields: 'Registration Key' with a question mark icon, 'Name', and 'Description' with a larger text area. At the bottom right, there are 'Cancel' and 'Add' buttons.

By using the **Add realm** button, the Operator will be able to add a new Realm, fill in the Registration Key of the new sevio router. Operator will be allowed to associate new Sevio Routers (please see the corresponding section: [New Sevio Router Association](#)), additional Operators (please see [Operators](#) section) to it and add a public description visible from all admins.

The Realm section: shows **all Realms list** which the Operator is allowed to access and permissions depending on assigned roles. By enabling a Realm, the list of devices associated with it will be shown, selecting the **Devices** button.

Select the specific Realm, only for Owner and Admin roles, will be shown the parameters set and will be possible to rename it.

Note: a Realm without registered Devices, can only be deleted by the Owner.



The 'Realm' details form shows a table with the following information:

Name:	Sevio
Description:	
Created at:	August 31, 2021 10:34
Created from:	Mario Rossi [demo@sevio.it]
Operators:	1
Devices:	1
MFA:	<input type="checkbox"/>

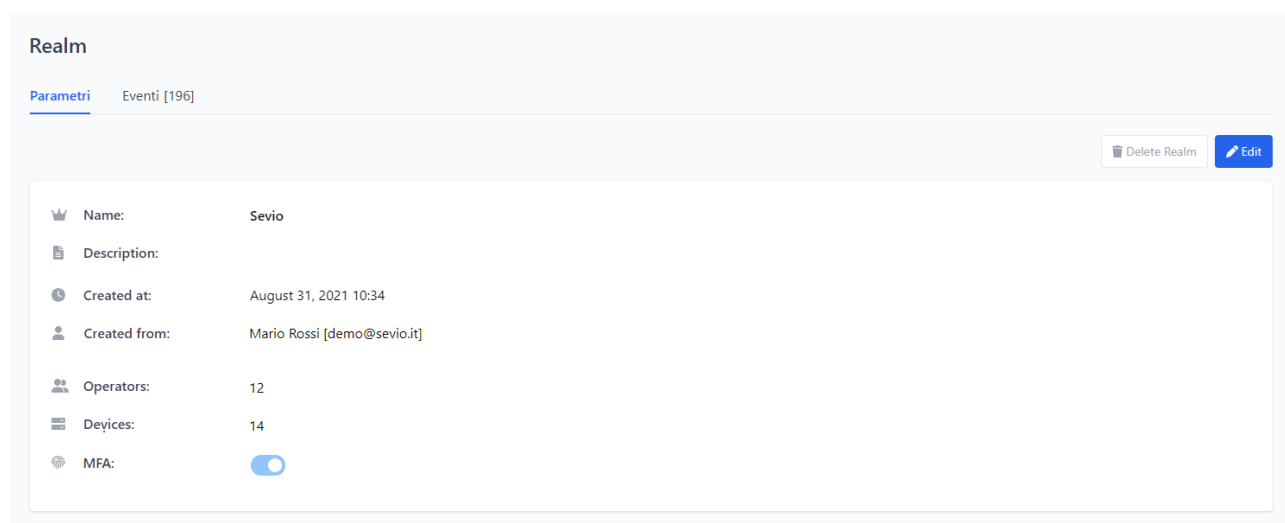
At the top right, there are 'Delete Realm' and 'Edit' buttons.

Enabling Multi-Factor Authentication (MFA) on Realm

The Realm Owner can set the MFA method, as the mandatory access to the Sevio System, **all** Realm Operators, will then have to use MFA authentication to access Sevio Portal and use the VPN Client.

To enable the MFA method on the whole Realm:

- access to the Realm section;
- press once to enter specific Realm parameters;
- select Edit then enable the MFA method and Save.



Realm

Parametri Eventi [196]

Delete Realm Edit

Name:	Sevio
Description:	
Created at:	August 31, 2021 10:34
Created from:	Mario Rossi [demo@sevio.it]
Operators:	12
Devices:	14
MFA:	<input checked="" type="checkbox"/>

Note: the MFA method for Multi-Realm Operators, (Operators who can select multiple Realms) will be applied to every access to Sevio Portal and every use of the VPN Client.

Note: in the personal Profile of Multi-Realms Operators will be viewed all the Realms that adopt this authentication mode.

Realm's Events

In this section is possible to monitoring all Realm activities:

Realm events

parameters events [8]

Q search...

OPERATION	STATE	USER	CREATED AT
add operator	Executed	Andrea Gialli	September 26, 2022 18:07
remove router	Executed	—	September 22, 2022 15:34
add router	Executed	Marco Verdi	August 11, 2022 18:03
remove router	Executed	—	August 09, 2022 14:25
add router	Executed	Mario Rossi	August 09, 2022 13:00
add router	Executed	Mario Rossi	August 09, 2022 11:55
add operator	Executed	Mario Rossi	May 16, 2022 11:05
update realm data	Executed	Mario Rossi	May 13, 2022 17:56

< Prev 1 Next >

- Operators Addition/modification/removal
- Router Addition
- Router Removal (only by Owner role) and permits to use again the Registration Key.
- Realm parameters Modification

Realm events

parameters events [8]

▶ Operation:

add router

👤 Managed by:

Mario Rossi

📱 Device:

R7CKQ11

🕒 Managed at:

August 09, 2022 13:00

Executed

Back

Operators

In the Operators area, Owner and Admin may invite other Operators and grant access privileges: a Operator invited as an Admin will be able to access all Sevio Routers belonging to the Realm, an external system integrator or an end customer invited as a Super User or User will have access only to established router.

Below are shown the privileges for each role:

Roles

	Owner	Admin	Super User	User
Enabling MFA on Realm	Yes	No	No	No
Enabling MFA on personal Account	Yes	Yes	Yes	Yes
Remove router from Realm	Yes	No	No	No
Sevio Portal Access	Yes	Yes	Yes	Yes
Change personal data and account password	Yes	Yes	Yes	Yes
Access to Workstations	Yes	Yes	Yes	Yes
Access to Operators	Yes	Yes	No	No
Access to Firewall	Yes	Yes	No	No
List of Sevio Router belonging to Realms	All	All	Only Authorized Sevio Routers	Only Authorized Sevio Routers
Access to Router Service Configuration	Read & Write	Read & Write	Read & Write	Read
Remote Access to Sevio Network	All	All	Only Authorized Sevio Routers	Only Authorized Sevio Routers

Note: It is possible define only one Owner per Realm.

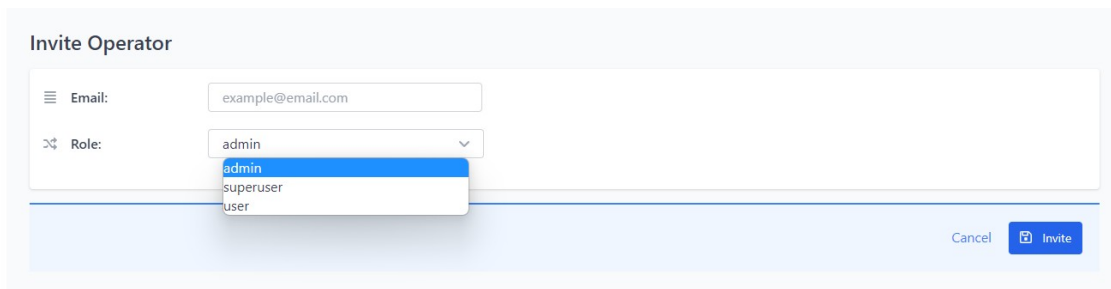
Note: The Owner role is obtained by changing the Admin role in the Operators section.

Note: Only the Owner can change his role in Admin.

Invite new Operator

The Sevio System allows an unlimited Operator invitations.

Below the procedure for inviting a new Operator and assigning the role, for all specifications refer to the [Roles](#) section.



- Fill in the new Operator's email to be invite into using Realm;
- select the role (Admin, Super User or User) to be assigned to the new Operator, the role can be changed at any time as shown in the [Edit Operator](#);
- click on **Invite**;
- the new Operator will automatically receive an email message with all instructions needed to complete the registration procedure and define the password;
- the status of invitation will remain pending until the new Operator will be accept;
- the invited Operator has the right to decline the invitation.

Note: The Owner and Admin Operators will have access to all current and future Sevio Routers associated with the selected Realm, the Super User and User Operators will only have access to the Sevio Routers associated/enabled authorized by an Admin, in the Operators section [Edit Operator](#) or in the [Accesses](#) section of a specific Sevio Router.

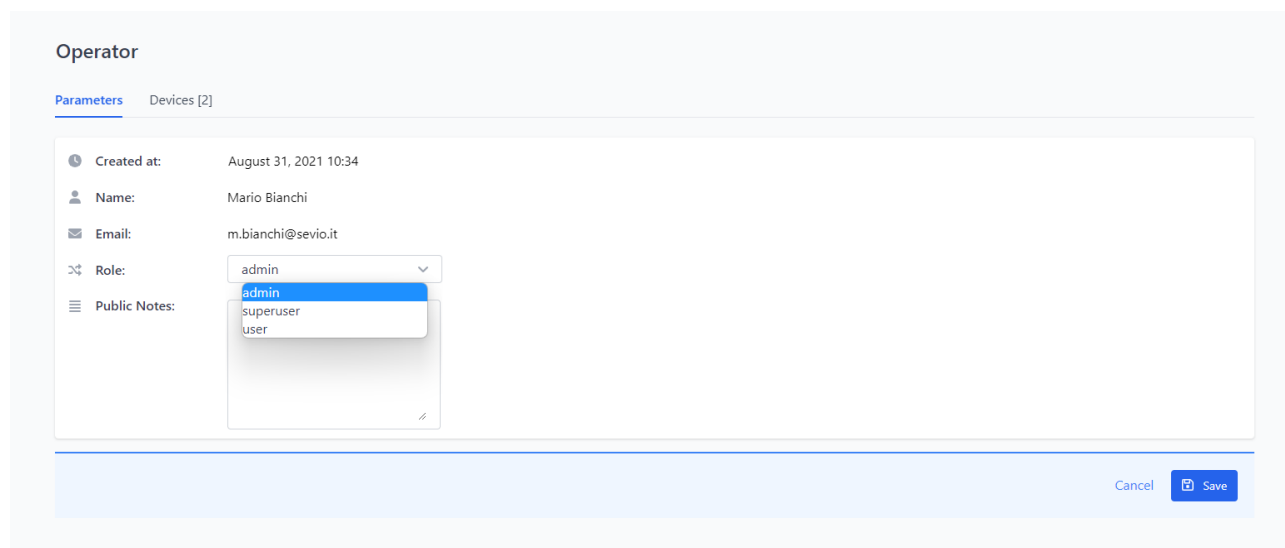
Edit Operator

Selecting the Operator, is possible remove it form the current Realm, by **Remove Operator** button.

In the **Parameters** section, selecting **Edit** button, will be possible to:

- edit current Operator's role and add optional public notes.

Note: please read carefully [Roles](#) section, before selecting Owner role.



Operator

Parameters Devices [2]

Created at: August 31, 2021 10:34

Name: Mario Bianchi

Email: m.bianchi@sevio.it

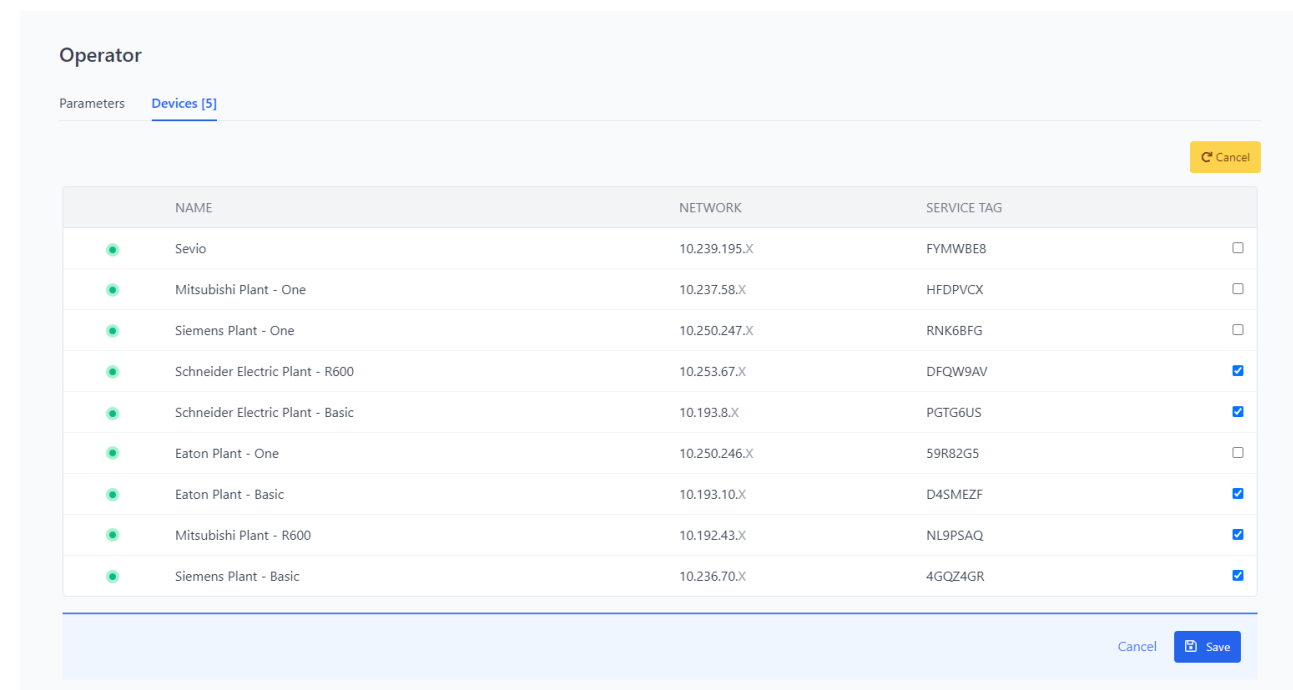
Role: admin (dropdown menu open showing: admin, superuser, user)

Public Notes:

Cancel Save

In the **Devices** section, selecting **Edit** button, will be possible to:

- grant access to specific Sevio Router to the Operator.



Operator

Parameters Devices [5]

Cancel

	NAME	NETWORK	SERVICE TAG	
<input checked="" type="checkbox"/>	Sevio	10.239.195.X	FYMWBE8	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Mitsubishi Plant - One	10.237.58.X	HFDPCVX	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Siemens Plant - One	10.250.247.X	RNK6BFG	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Schneider Electric Plant - R600	10.253.67.X	DFQW9AV	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Schneider Electric Plant - Basic	10.193.8.X	PGTG6US	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Eaton Plant - One	10.250.246.X	59R82G5	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Eaton Plant - Basic	10.193.10.X	D4SMEZF	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Mitsubishi Plant - R600	10.192.43.X	NL9PSAQ	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Siemens Plant - Basic	10.236.70.X	4GQZ4GR	<input checked="" type="checkbox"/>

Cancel Save

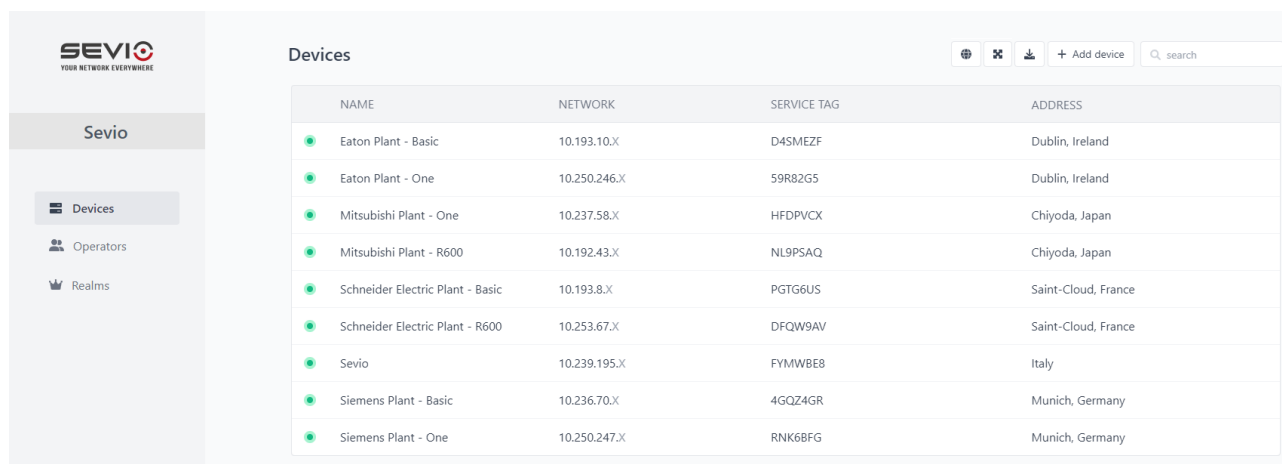
Devices

The Realm is the set of all Sevio Routers associated with it together with the authorized Operators and related Workstations.

During the [Sevio Portal Registration](#), the first Realm is automatically created and the first Sevio Router and Operator are associated with it. The first Operator will have Admin privileges.

From this section will be possible to manage Sevio Routers and Operators belonging to current Realm.

To view items belonging to another Realm, refer to the [Realms](#) section.




NAME	NETWORK	SERVICE TAG	ADDRESS
Eaton Plant - Basic	10.193.10.X	D4SMEZF	Dublin, Ireland
Eaton Plant - One	10.250.246.X	59R82G5	Dublin, Ireland
Mitsubishi Plant - One	10.237.58.X	HFDPCVX	Chiyoda, Japan
Mitsubishi Plant - R600	10.192.43.X	NL9PSAQ	Chiyoda, Japan
Schneider Electric Plant - Basic	10.193.8.X	PGTG6US	Saint-Cloud, France
Schneider Electric Plant - R600	10.253.67.X	DFQW9AV	Saint-Cloud, France
Sevio	10.239.195.X	FYMWBE8	Italy
Siemens Plant - Basic	10.236.70.X	4GQZ4GR	Munich, Germany
Siemens Plant - One	10.250.247.X	RNK6BFG	Munich, Germany

1. **Devices** - List and management of all devices associated with selected Realm.
2. **View Map button** - Enable or disable the map-view of the devices list (if set as a Address parameter in the specific Router).
3. **Zoom devices** - Zoom out on map.
4. **Download devices button** - Allows to download devices in .csv format.
5. **Add device button** - Associate a new Sevio Router to current (selected) Realm.
6. **Search field** - Allows to search the devices through Name, Network, Service TAG, Location, Tags.

Note: All columns can be sorted in “ascending” or “descending” order.

Devices List

The devices list shows the whole set of Sevio Routers associated to the current (selected) Realm or, in the case the logged-in Operator has a Super User or User role, of the only Sevio Routers of the Realm and granted to him for access.






Sevio

Devices

Operators

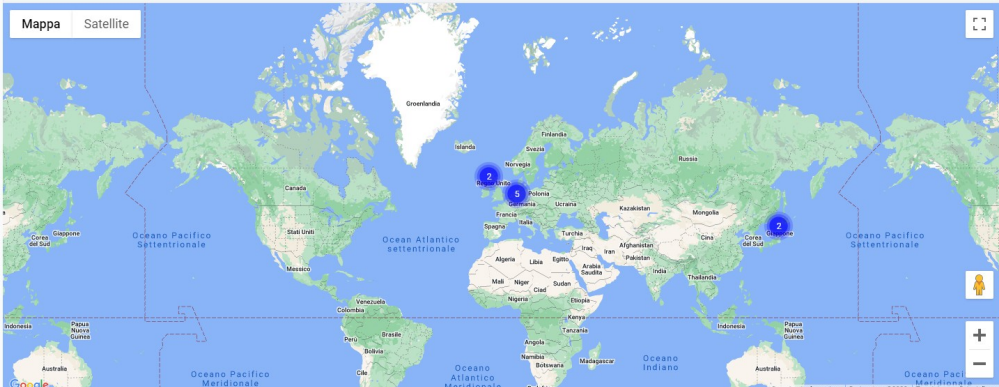
Realms

Devices




+ Add device

NAME	NETWORK	SERVICE TAG	ADDRESS
Eaton Plant - Basic	10.193.10.X	D4SMEZF	Dublin, Ireland
Eaton Plant - One	10.250.246.X	59R82G5	Dublin, Ireland
Mitsubishi Plant - One	10.237.58.X	HFDPVX	Chiyoda, Japan
Mitsubishi Plant - R600	10.192.43.X	NL9PSAQ	Chiyoda, Japan
Schneider Electric Plant - Basic	10.193.8.X	PGTG6US	Saint-Cloud, France
Schneider Electric Plant - R600	10.253.67.X	DFQW9AV	Saint-Cloud, France
Sevio	10.239.195.X	FYMWBE8	Italy
Siemens Plant - Basic	10.236.70.X	4GQZ4GR	Munich, Germany
Siemens Plant - One	10.250.247.X	RNK6BFG	Munich, Germany

Mappa Satellite



In this section, will be shown:

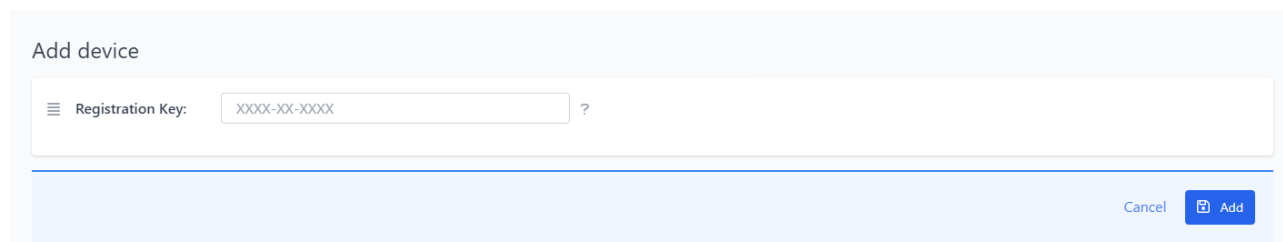
1. **Status** - Sevio Router Status, green - online (connected and reachable), red - offline (disconnected or unreachable).
2. **Name** - Name associated by the Operator ([Sevio Router main data](#) section of Sevio Router) to facilitate system identification.
3. **Network** – The Sevio Network: the private IP that was pre-assigned to Sevio Router, used to reach the remote device (see [Using Sevio System](#) section).
4. **Service TAG** - Sevio Router alphanumeric unique identification code.
5. **Address** - Installation site (optional) assigned by the Operator ([Devices List](#) section) to facilitate the identification of the system and define its position on the map.

It is possible to access to Sevio Router parameters, by clicking on it.

New Sevio Router Association

During the registration phase in Sevio Portal, the first Sevio Router is associated with the Realm that is being created.

To add more Sevio Routers to the Realm, the following steps are required:



Add device

Registration Key: ?

Cancel Add

1. Select the **Add device** button;
2. Type the new Sevio Router Registration Key not yet associated with another Realm. The Registration Key can be found on the Registration Sheet present in the package;
3. Click on **Add** button.

Note: if the Operator can access more than one Realm, particular attention will be needed on selecting the correct/desired Realm, as the Sevio Router will be associated with the selected one.

Sevio Router Configuration

All parameters saved in the Sevio Portal are pushed real time to Sevio Routers belonging to an online state. If the Sevio Router cannot be reached (offline status), it is possible to transfer the configuration parameters using the offline device modification procedure.

Online Sevio Router Configuration

To change configuration parameters, press the **Edit** button, change the content of fields and confirm with the **Save** button. By pressing the **Cancel** button all parameters will be restored to previous values.

Note: The modification of any configuration parameter in Sevio Portal will result in a modification of the Sevio Router configuration. It is therefore possible that, for few seconds, the connectivity with the Sevio network will be lost and remote control will not be working. On Sevio Routers equipped with switches, L2 connectivity and packet-forwarding between all the ports will be not affected and, in any case, functional.

Offline Sevio Router Configuration

If the Sevio Router cannot be reached (due to an offline status), please change a connectivity-related parameter (WAN, Wi-Fi or Mobile) and after saving in Sevio Portal, please proceed with the following steps:

1. click on **Offline configuration** button. A configuration file will be saved on your computer;
2. transfer the configuration file to the supplied USB drive/key (or to an empty USB key formatted with FAT32 file-system);
3. connect the USB drive/key in the dedicated port of the powered Sevio Router;
4. wait for the Sevio Basic acoustic signal or the Sevio One visual signal (flashing of LED i) indicating successful loading.

Sevio Router Configuration Parameters

This section shows the main parameters dedicated to Sevio Router configuration and status/analysis:

Eaton Plant - Basic

Parameters

Accesses [0]

Devices [0]

Events [35]

Beep

Restart

Offline configuration

Registration sheet

Remove

Edit

Model:

basic

Network:

10.193.10.0

Service tag:

D4SMEZF

Address:

Pembroke Rd_30_Dublin_IE

WAN MAC addr:

6C3B6B584B02

WLAN MAC addr:

6C3B6B584B07

Firmware:

3.1.2

WAN

DHCP client:

IP address:

192.168.1.240/24

Proxy

IP address:

—

LAN

DHCP server:

VPN Masquerade:

IP address:

192.168.0.1/24

Internet:

Secure Local Access

Enabled:

IP Forwarding WAN to LAN

Enabled:

IP Forwarding LAN to WAN

Enabled:

Wi-Fi

Enabled:

Status:

Mode:

Access Point

Country:

Italy

Frequency:

Auto

SSID:

Eaton Plant

WPA:

Mobile

Enabled:

Tags

Ireland

Basic

Public notes

1. **Beep** button - Acoustic signal button (Sevio Basic), by pressing it the selected Online Sevio Router emits a sound.
2. **Restart** button - Online Sevio Router reboot.
3. **Offline configuration** button - Download of Sevio Router configuration file for the Offline configuration. (For further details please see [Offline Sevio Router Configuration](#) section).
4. **Registration sheet** button - Registration Sheet document download, showing all main parameters, currently setted on the device.
5. **Remove** button – Allow, only Owner role, to remove the Sevio router from the Realm.

Note: router parameters will **not** be restored to default values.

6. **Data** - Sevio Router main data.
7. **WAN** - Installation Site wired network, used to Internet access.
8. **LAN** - Automation devices network.
9. **Wi-Fi** - Wi-Fi network usable in both Access-Point to access to the automation network or Client mode to provide an access to the Internet (only available on Sevio Basic).
10. **Mobile** - Data SIM Card configuration, to enable Internet access via Sevio M100 Cellular adapter.
11. **Secure Local Access** - Local access to automation devices configuration via the Customer network (WAN/WLAN) via local encrypted connection.
12. **IP Forwarding WAN to LAN** - Automation device from installation site network (WAN) access, via IP forwarding configuration (only for wired connection).
13. **IP Forwarding LAN to WAN** - Working facilities device access from Automation network (LAN) via IP forwarding configuration (only for wired connection).
14. **Proxy** - Proxy address configuration to enable VPN connection via installation site HTTP/HTTPS Proxy (optional) in transparent mode.
15. **Tags** - Allows to fill in, up to 4 tags for each router.
16. **Public notes** - Available field to store and share information for specific device installation.

Note: edit and action buttons are disabled for the User role.

Sevio Router main data

● plant A			
Model:	basic	WAN MAC addr:	6C:3B:6B:58:4B:02
Network:	10.193.10.0	WLAN MAC addr:	6C:3B:6B:58:4B:07
Service tag:	D4SMEZF	Firmware:	3.1.2
Address:	Pembroke Rd. 30, Dublin, IE		

Status - Sevio Router Status, green - online (connected and reachable), red - offline (disconnected or unreachable).

Name - Name associated by the Operator (Parameters section of Sevio Router) to facilitate system identification.

Model - Sevio Router model, this can affect other parameters availability.

Network - Sevio Router unique & pre-assigned network, used to reach remote devices connected to the Sevio Router's LAN network. For further information please refer to the [Using Sevio System](#) section.

Service tag - Sevio Router alphanumeric unique identification code. In case of technical assistance request, this unique code will be requested.

WAN MAC address - WAN Interface physical address. WAN MAC Address may be requested during installation of Sevio Router via wired connection on installation network from IT support of the end customer / installation site.

WLAN MAC address - WLAN Interface physical address (only for router Basic). WLAN MAC Address may be requested during installation of Sevio Router via wired connection on installation network from IT support of the end customer / installation site.

Firmware - When possible the update of the Sevio Router is performed automatically, except in particular cases where an update requires a device restart. In such cases, the update process is manual. If specific capabilities will not be available anymore due to incompatible firmware, please contact Sevio technical support via support@sevio.it.

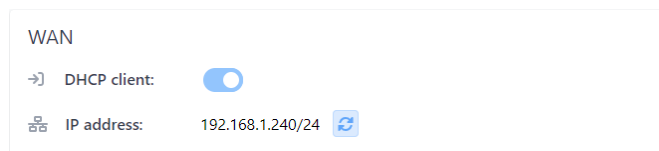
Address - Installation site assigned by the Operator to facilitate the identification of the system and define its position in the map. The position will appear in the device list for easier identification. To change position, please enter the new data and select one of the item suggested in the list.

Note: setting the address parameter correctly, allows Sevio infrastructure to determine the concentrator closest to the installation site, to optimize performance.

WAN: Internet access using wired network


Installing Sevio Router does not require changes to installation site network: when operating as a network client (to get access to the public network), the device behaves like a common PC connected to the Internet.

Please note the WAN network is used by Sevio Router only to reach Internet gateway. The WAN network and the automation network (LAN) are isolated.



WAN

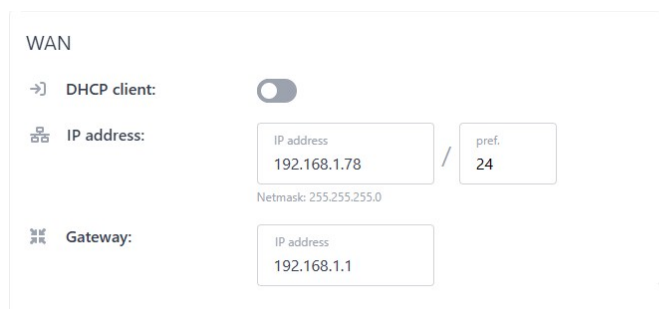
→ DHCP client: ☒

IP address: 192.168.1.240/24 

DHCP Client

IP address, Netmask and Gateway of Sevio Router's WAN interface are automatically assigned by installation site's network DHCP Server (eg. 192.168.1.240)

Note: the address assigned by DHCP Server (gateway/router operating in the installation site, if present) to the WAN interface will be displayed. Using the **Refresh** button, Sevio Router can be queried about any status change.



WAN

→ DHCP client: ☐

IP address: /
Netmask: 255.255.255.0

Gateway:

Static IP

IP address, Netmask and Gateway belonging to the WAN interface of Sevio Router must be set manually by the Operator.

IP Address - Manually assigned IP address based on installation site network setup.

Note: the IP address assigned (or acquired via DHCP) in the WAN interface should never coincide with the IP address of a device in the automation network.

Note: If the Sevio Router is connected to the same network in both with wired (WAN) and Wireless (Client mode Wi-Fi) connection, please be careful to not manually set two identical static addresses to interfaces.

Pref. - Length of network prefix in CIDR notation. Netmask parameter will be automatically populated accordingly to let the Operator properly double-check the configuration.

Netmask - Network size, will be automatically populated accordingly to network prefix field (please see Pref. Parameter above).

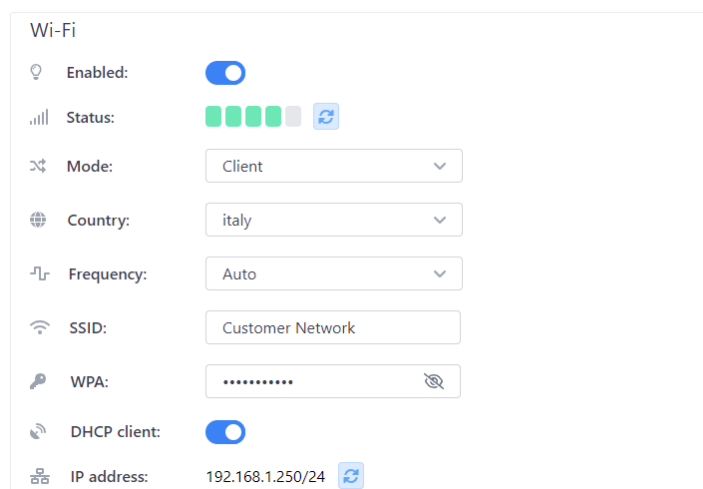
Gateway - Installation site's router IP address, used to forward traffic to the Internet (default-gateway).

Wi-Fi: Internet access using wireless network

By using WiFi it is possible to identify two distinct scenarios, based on setup/usage:

- the Access Point mode, allows access to Sevio Router's LAN network (automation network) from any device equipped with a wireless card, like a PC used for automation devices programming, tablets and smartphones for testing automation plant operations. To configure Access Point mode, please refer to the Wi-Fi section: [Wi-Fi: Access-Point on automation network](#).
- the Client mode allows the Sevio Router to be connected directly to a Wi-Fi network in the installation site, such connection should be the one providing Internet access. This access mode can also be provided by using a mobile hotspot enabled on a common smartphone.

Note: Sevio Routers equipped with the Wi-Fi interface can be connected to 2.4 GHz Access-Points supporting WPA or WPA2 security protocols with Pre-Shared-Key (authentication key or password for network access). WEP encryption, due to its obsolete and no longer secure nature, is not supported by Sevio Router.



The screenshot shows the Wi-Fi configuration page. It includes a toggle for 'Enabled' (checked), a 'Status' indicator with four green bars and a refresh icon, a 'Mode' dropdown set to 'Client', a 'Country' dropdown set to 'italy', a 'Frequency' dropdown set to 'Auto', an 'SSID' text field with 'Customer Network', a 'WPA' password field with masked characters and a visibility toggle, a 'DHCP client' toggle (checked), and an 'IP address' field showing '192.168.1.250/24' with a refresh icon.

Enable the Wi-Fi interface by using the **Enabled** button and selecting **Client** mode. After completing the configuration, it is possible to check the connection status and if the connection has been established, the signal strength. Using the **Refresh** button, Sevio Router can be queried about any status change (Eg. 192.168.1.250).

Country - Installation site reference, required to set dependent Wi-Fi network parameters in compliance with local regulations.

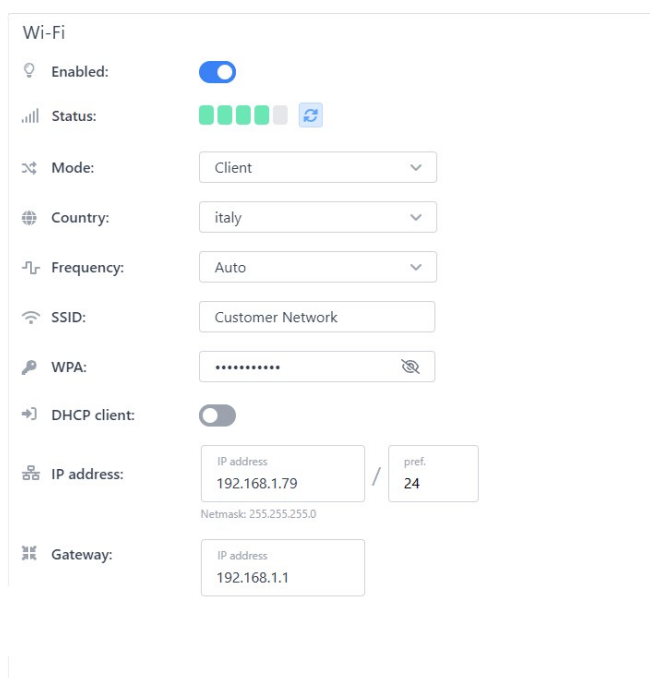
Frequency - Frequency/channel used for Wi-Fi network. By setting the parameter in **Auto** mode, Sevio Router will set the frequency to the one used in the connected Access Point. When using and saving the Auto mode, the field will be displayed empty.

SSID - Wi-Fi network name to which the Sevio Router connects.

WPA - WPA2 / WPA Password used to allow Sevio Router to connect to the Access Point running on installation site.

DHCP Client - IP address, Netmask and Gateway of Sevio Router's WLAN interface are automatically assigned by the DHCP Server running on installation site network.

Note: the IP address assigned by DHCP Server (by the router running in the installation site) to the Wi-Fi interface will be displayed.



Wi-Fi

Enabled: ☒

Status: ●●●●● ↻

Mode: Client

Country: italy

Frequency: Auto

SSID: Customer Network

WPA: ●●●●●●●● 🔒

DHCP client: ☐

IP address: IP address
192.168.1.79 / pref.
24
Netmask: 255.255.255.0

Gateway: IP address
192.168.1.1

Static IP

IP address, Netmask and Gateway of Sevio Router's Wi-Fi interface must be set manually by the Operator.

IP Address - Manually assigned IP address based on installation site network setup.

Note: If the Sevio Router is connected to the same network in both with wired (WAN) and Wireless (Client mode Wi-Fi) connection, please be careful to not manually set two identical static addresses to interfaces.

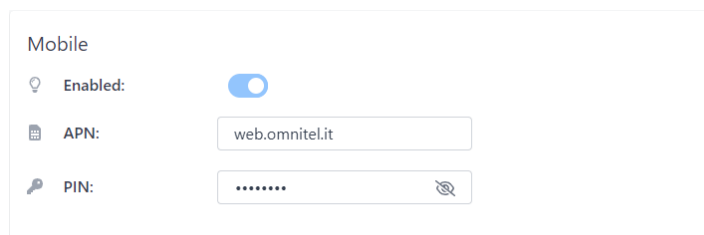
Pref. - Length of network prefix in CIDR notation. Netmask parameter will be automatically populated accordingly to let the Operator properly double-check the configuration..

Netmask - Network size, will be automatically populated accordingly to network prefix field (please see Pref. Parameter below).

Gateway - Installation site's router IP address, used to forward traffic to the Internet (default-gateway).

Mobile: Internet access using Sevio M100 Cellular adapter

If Internet connectivity in the installation site is not available, it is possible to use Sevio M100 USB Cellular Adapter (optional) and a data SIM card (not included). For more information, please refer to the [Installation Guide - M100](#).

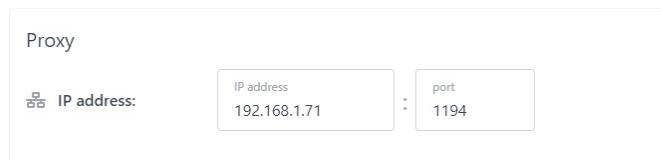


Enable the Mobile interface using the **Enabled** button, set the **APN** of the mobile operator used and SIM card **PIN**.

Note: Even if Sevio system supports PIN management, it is recommended to keep maximum caution to **avoid blocking the SIM card**. If the PIN is not present, please leave the configuration field blank. In case of SIM block, it will not be possible to recover the SIM using the PUK code from the configuration panel, it will be necessary to remove SIM card and unlock it in by using an external mobile device.

Proxy

Sevio Router supports configuration of HTTP / HTTPS Proxy to allow establishment of SSTP VPN using a proxy for outgoing traffic, in transparent mode, without proxy-client authentication.



Set the Proxy **IP address** and **Port** as provided by local network administrator and required by proxy server configuration.

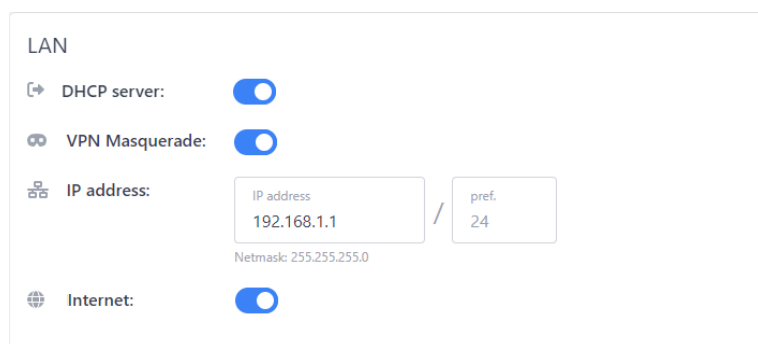
Note: In case of automation hardware on LAN Network, needing an Internet connection, they will need to have the same Proxy IP address and port set up.

LAN: automation devices network

Sevio Router LAN network is the one used to connect all automation devices.

All devices connected to LAN are reachable remotely through the Sevio infrastructure and provided with Internet connectivity.

It is possible to connect/stack one or more switches on LAN network, in order to expand the number of ports and devices in compliance with the Ethernet standard, up to obtaining a maximum configuration of 253 IP devices.



LAN

↔ DHCP server: ☒

🌐 VPN Masquerade: ☒

📄 IP address: /
Netmask: 255.255.255.0

🌐 Internet: ☒

DHCP Server - By enabling this setting Sevio Router can automatically assign the IP address, Netmask and Gateway to devices connected to its LAN. By disabling the DHCP Server, all devices connected to LAN interface must have a static IP.

Note: The DHCP server assigns IP addresses starting from *.249 decreasing progressively up to address *.128.

VPN Masquerade - By enabling this feature, will be possible to remotely access the automation devices even if the Gateway address has not been set.

Note: When VPN Masquerade is active, the Intra-LAN functions will be disabled and communication between devices belonging to different Sevio networks will not be possible (for further details please refer to the [Intra-LAN communication between remote devices](#) chapter).

IP Address - Sevio Router LAN network IP address can be changed by the Operator after verifying that such IP complies with the network configuration of connected devices.

Note: In order to let automation devices being visible remotely, please set private (non-public) IP addresses, for Operator's convenience the table below shows a list of not-usable network IP spaces:

	from	to
0.0.0.0/8	0.0.0.0	0.255.255.255
127.0.0.0/8	127.0.0.0	127.255.255.255
224.0.0.0/4	224.0.0.0	239.255.255.255
240.0.0.0/4	240.0.0.0	255..255.255.255

Note: The address set in LAN field is the physical address of the Sevio Router on the automation network and operates as a gateway. If this address is already in use by another device, please change it to a free one in the same network.

Note: If the WAN IP Address is the same used in the LAN automation network, the Sevio Router WAN IP must not be assigned to any device connected to the LAN network.

Note: If the devices connected to the LAN are configured with a static IP, please set the Sevio Router LAN IP address as their gateway address.

Internet Mode - Using this parameter, the Operator can determine how devices belonging to the automation network will access the Internet:



- **Disabled** - No Internet connectivity.
- **Enabled** - Internet connectivity via installation site network (WAN or WLAN) Gateway.

Note: While using the “Enabled” mode, please check that the installation site network is not using public IP addresses, in such case the isolation between LAN and WAN network is not guaranteed and security issues may occur.

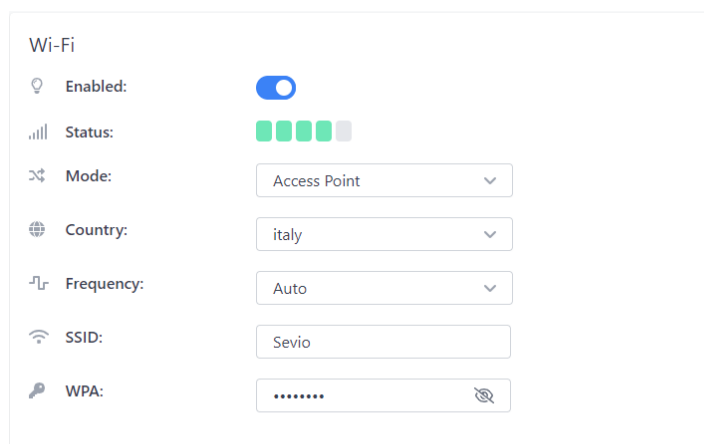
Note: While using the “Disabled” mode, the remote communications to automation devices and the Intra-LAN communications are always active.

Wi-Fi: Access-Point on automation network

By using Wi-Fi it is possible to identify two distinct scenarios, based on setup/usage:

- the Client mode allows the Sevio Router to be connected directly to a Wi-Fi network in the installation site, such connection should be the one providing Internet access. This access mode can also be provided by using a mobile hotspot enabled on a common smartphone. To configure Client mode, please refer to the Wi-Fi section: [Wi-Fi: Internet access using wireless network](#).
- the Access-Point mode, allows access to Sevio Router's LAN network (automation network) from any device equipped with a wireless card, like a PC used for automation devices programming, tablets and smartphones for testing automation plant operations.

Note: Sevio Routers equipped with the Wi-Fi interface can be connected to 2.4 GHz Access-Points supporting WPA or WPA2 security protocols with Pre-Shared-Key (authentication key or password for network access).



Enable the Wi-Fi interface using the **Enabled** button and selecting the Access Point mode.

Country - Installation site reference, required to set dependent Wi-Fi network parameters in compliance with local regulations.

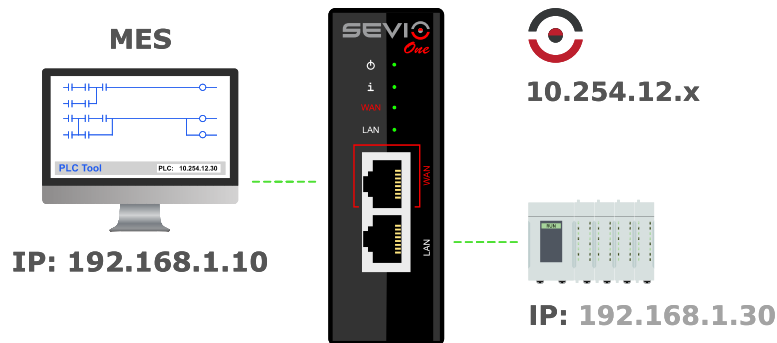
Frequency - Allows to select one the Wi-Fi channel that will be used for connecting the devices to the Sevio Router. The identification of the best available frequency can be done by Sevio Router by using Auto mode. Sevio Router and the connected devices must have the same frequency set in order to be able to connect. When in Auto mode, the field will appear empty after saving the configuration preference.

SSID - Wi-Fi network name generated by Sevio Router. By connecting a device to Sevio Router with the specified SSID, all the automation devices belonging to LAN network will be accessible.

WPA - Pre-Shared-Key / password to be set on wireless devices that will connect to the Sevio Wi-Fi.

Note: The connected device can be configured as a DHCP Client (obtain IP automatically) only if the DHCP Server parameter in the LAN network settings is enabled. Alternatively, the IP of the connected device must be set accordingly to LAN network specifications.

Secure Local Access



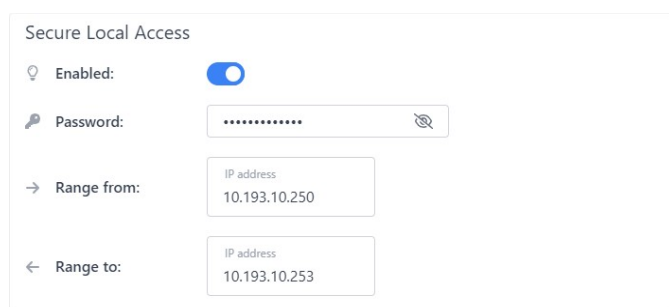
Sevio Router is equipped with a Firewall isolating LAN network (automation network) from WAN network (installation site network), that achieves the following advantages:

- Network segmentation: isolation between WAN network and LAN network with possibility of keeping the automation network (LAN) independent from devices in the automation area (WAN);
- to preserve protection of automation network from unauthorized access to IP resources and OEM know-how preservation;
- to guarantee privacy of installation site network locally and remotely, providing access to the LAN network only for authorized persons and devices.

However, in case it will be necessary to access automation (LAN) network from installation site (WAN) network, for example to get production data stored in a PLC or operator panel, Sevio Router provides the proper and secure solution.

Secure Local Access is one of the Sevio solutions to locally manage the interaction between company IT systems and production systems for the Industry 4.0 model, or to give access to one or more Local Workstations connected to the installation site network (WAN) to devices in the automation network (LAN).

The main configuration settings to configure Secure Local Access are described below. Regarding the configuration of the Workstations using Secure Local Access, please refer to the [Secure Local Access](#) manual.



Secure Local Access

Enabled: ☒

Password:

Range from:

Range to:

Enable the Secure Local Access function by using the **Enabled** button. The **Password** set in the corresponding field will be used later in the Workstation to grant authorization.

IP Range - IP range for Local Workstations, each Workstation will use one of such IPs on the Sevio network.

Please pay attention to the following points:

- The range indicates the number of local Workstations that can simultaneously access the LAN network from the WAN network, therefore the range can vary from 1 workstation (e.g. from xxx.250 to xxx.250) to a maximum of 4 workstations (e.g. from xxx.250 to xxx.253).
- The first three octets set must coincide with the Sevio network, (in the example 10.201.97.x).
- The range must not overlap the remote addresses of automation devices that can be reached (eg. If the remote PLC address is 10.201.97.250, the range must be set from 10.201.97.251 to 10.201.97.254).

Note: Please write down the address of the Sevio Router on the WAN network, as it will be necessary to set up the configuration of Workstation (**name** or **server address**).

IP Forwarding

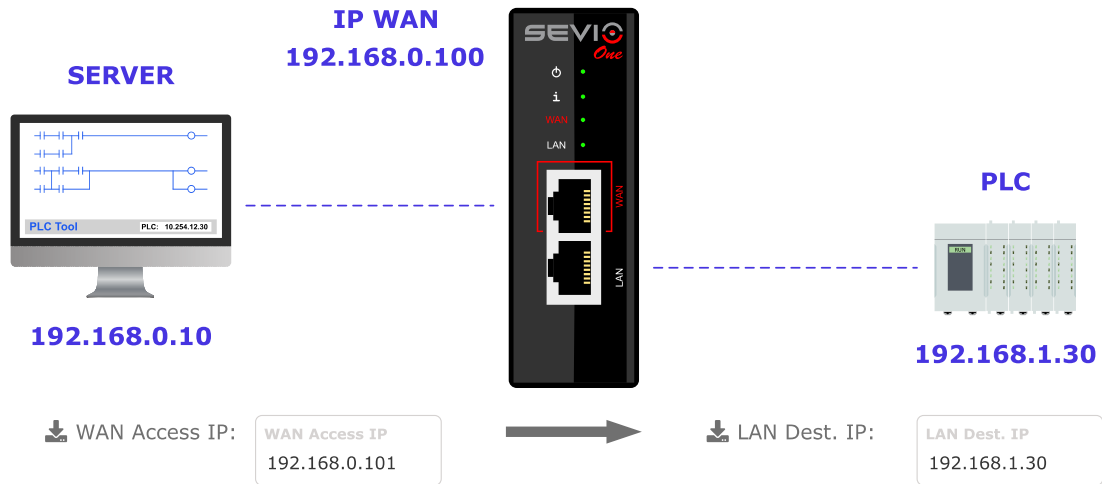
Any Sevio Router is equipped with a Firewall isolating LAN network (automation network) from WAN network (installation site network), providing the following advantages:

- Network segmentation: independence between WAN and LAN network, with use of the same IP networks without conflicts;
- protection of automation network from unauthorized IP accesses and OEM know-how preservation;
- installation network privacy safeguard, for both local and remote connections, allowing access to LAN network only to authorized persons and devices.

Sometimes, however, access the automation network from the WAN network is necessary, for example in order to access production data stored in a PLC, or in an operator panel or when a device belonging to the automation network should have ability to get data from a workstation belonging to the installation site network.

Such kind of operation is possible by using the IP forwarding function, without needs to install additional tools and without modifying any pre-existing configuration.

IP Forwarding WAN to LAN



By using this feature, it is possible to access a device of the installation site (WAN) from the network of the automation network (LAN) .

IP Forwarding WAN to LAN

Enabled:
☒

WAN Access IP:

WAN Access IP
192.168.0.101

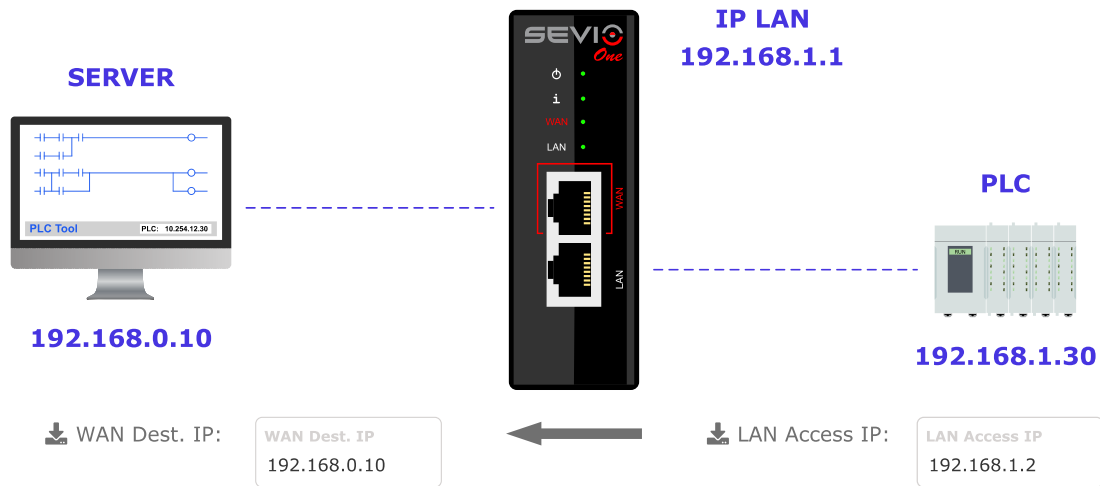
LAN Dest. IP:

LAN Dest. IP
192.168.1.30

Enable the feature by using the **Enabled** button. Please set an available and dedicated IP address of the WAN network, assigned by IT Manager in the **WAN IP Access** field. Please also set the IP address of the automation device in the **LAN IP Destination** field.

Note: By enabling the IP-Forwarding function, the devices of the automation network will be exposed in the the installation site network (or vice-versa). **This feature should therefore necessarily be used taking into account the change of security perimeter/delimitation in the installation place.**

IP Forwarding LAN to WAN



By using this feature, it is possible to access a device of the automation network (LAN) from the network of the installation site (WAN).

IP Forwarding LAN to WAN

Enabled:
☒

LAN Access IP:

LAN Access IP
192.168.1.2

WAN Dest. IP:

WAN Dest. IP
192.168.0.10

Please enable the feature via the **Enabled** button. Please set an available and dedicated IP address of the LAN network in **LAN IP Access**. Please also set the IP address of the device belonging to the installation site network in **WAN IP Destination**.

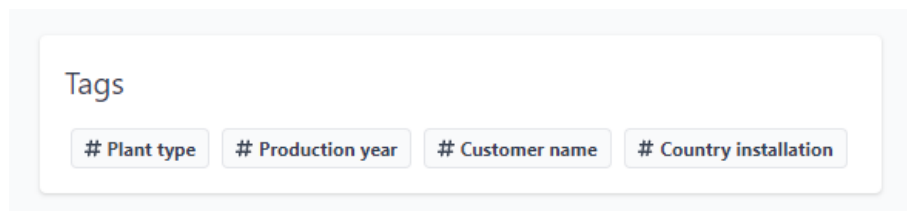
Note: The configured IP addresses should be dedicated exclusively to the device configured for LAN-WAN access, please note that, by enabling this feature/configuration, the Sevio Router will perform a **1:1 mapping of the configured IP addresses**.

Note: By enabling the IP-Forwarding function, the devices of the automation network will be exposed in the the installation site network (or vice-versa). **This feature should therefore necessarily be used taking into account the change of security perimeter/delimitation in the installation place.**

Tags

This function allows to characterize each router with 4 tags max, chosen to optimized searches and analyzes on Sevio Routers.

For example:



The screenshot shows a user interface for selecting tags. It features a light gray background with a white rounded rectangle containing the title 'Tags' in a dark blue font. Below the title, there are four light gray buttons with rounded corners, each containing a hash symbol followed by a tag name: '# Plant type', '# Production year', '# Customer name', and '# Country installation'.

Firewall

Accesses

In this Firewall section is possible viewing and reporting which Operators will be able to access to LAN network of the selected Sevio Router.

Mitsubishi Plant - One

Parameters Accesses Devices Events [3]

[Edit](#)

FIRST NAME	LAST NAME	EMAIL	ROLE	
Mario	Bianchi	m.bianchi@sevio.it	owner	<input checked="" type="checkbox"/>
Mario	Rossi	m.rossi@sevio.it	admin	<input checked="" type="checkbox"/>
Andrea	Gialli	a.gialli@sevio.it	superuser	<input checked="" type="checkbox"/>
Marco	Verdi	m.verdi@sevio.it	user	<input checked="" type="checkbox"/>

In the **Accesses** section, the Owner and Admin Operators can grant access to the specific LAN network of the selected Sevio Router. When the modified Operator has a Super User or User role, it will display only specific Sevio Router(s) in the list of Realm routers.

It is possible to perform the same configuration in the Operators section, setting the Sevio Router the Operator will have access to.

Devices

In the Firewall **Devices** section, it is possible to set which devices will be able to access to the LAN network of the selected Sevio Router, such devices will be allowed to establish connections between remote installation sites/plants. For example if it is required to enable communication between two PLCs of two geographically distinct (far) plants. For further information refer to the [communication between remote devices](#) section.

Mitsubishi Plant - One

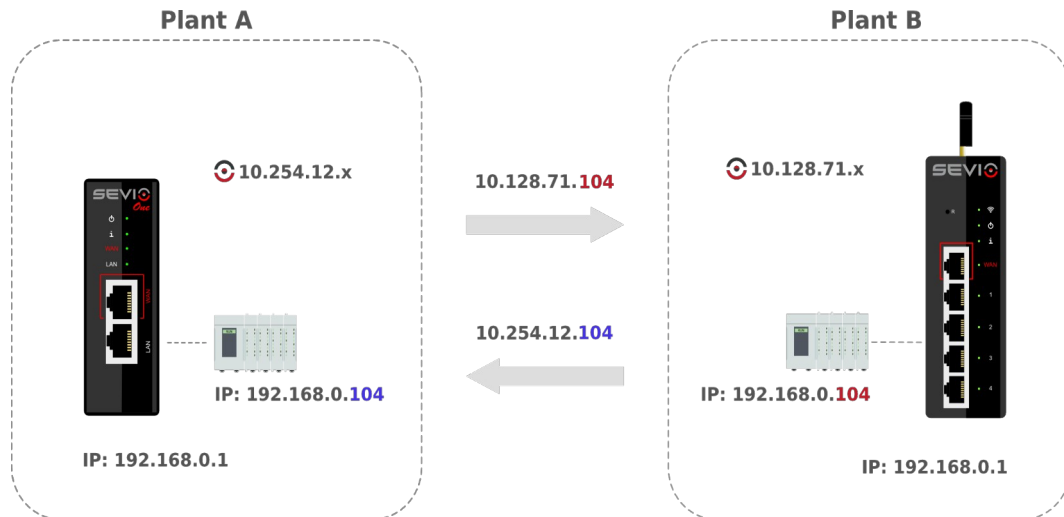
Parameters Accesses Devices Events [3]

[Edit](#)

	NAME	NETWORK	SERVICE TAG	
<input checked="" type="checkbox"/>	Siemens Plant - One	10.250.247.X	RNK6BFG	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Schneider Electric Plant - R600	10.253.67.X	DFQW9AV	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Schneider Electric Plant - Basic	10.193.8.X	PGTG6US	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Eaton Plant - One	10.250.246.X	59R82G5	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Mitsubishi Plant - R600	10.192.43.X	NL9PSAQ	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Siemens Plant - Basic	10.236.70.X	4GQZ4GR	<input type="checkbox"/>

Intra-LAN communication between remote devices

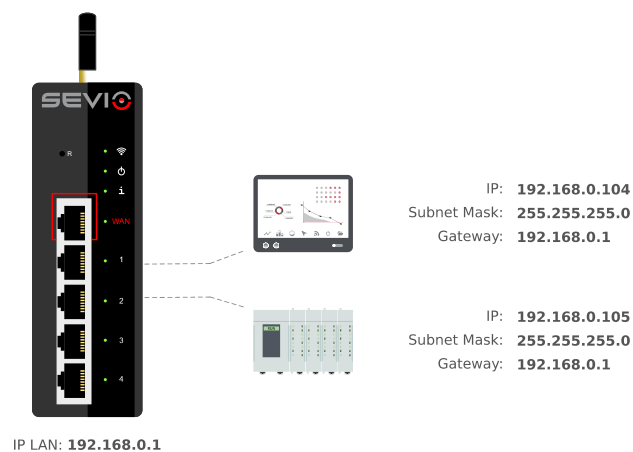
One of the most distinctive features of Sevio System is the Intra-LAN capability, eg. allowing communication between devices of different Sevio networks/plants, part of the same Realm.



In order to being able to use this feature, it is necessary that all automation devices are configured with IP address and gateway address (LAN address of the Sevio Router to which they are connected). Firewalls on all Sevio Routers must be enabled.

Remote connection will be allowed using Sevio Networks on each site.

Note: Sevio Routers must have the same firmware installed.



Router's Events

In this section is possible to monitoring all specific Router activities:

Parameters
Accesses [5]
Devices [0]
Events [9]

Operation:
Managed by:
Managed at:

update configuration
Mario Rossi
January 08, 2023 13:45

Executed

WAN

DHCP client	false
IP address	192.168.1.240/24
Gateway	192.168.1.1

Wi-Fi

Enabled	true
Mode	ap
Country	italy
Frequency	
SSID	Sevio
WPA	0_amJhy_hGt73i%
DHCP client	
WAN enabled	false

Mobile

Enabled	true
APN	web.omnitel.it
PIN	

LAN

DHCP server	true
VPN Masquerade	true
IP address	192.168.1.10/24

Internet

Mode	LOCAL
------	-------

Secure Local Access

Enabled	true
---------	------

IP Forwarding WAN to LAN

Enabled	true
WAN IP Access	192.168.1.239
LAN IP Dest.	192.168.1.6

IP Forwarding LAN to WAN

Enabled	true
LAN IP Access	192.168.1.100
WAN IP Dest.	192.168.1.236

Sevio Srl – Via della Pusterla, 36 20826 Misinto (MB) - IT

Ph. +39 02 97070785

Customer service: support@sevio.it

Sales department: sales@sevio.it

<https://sevio.it/>