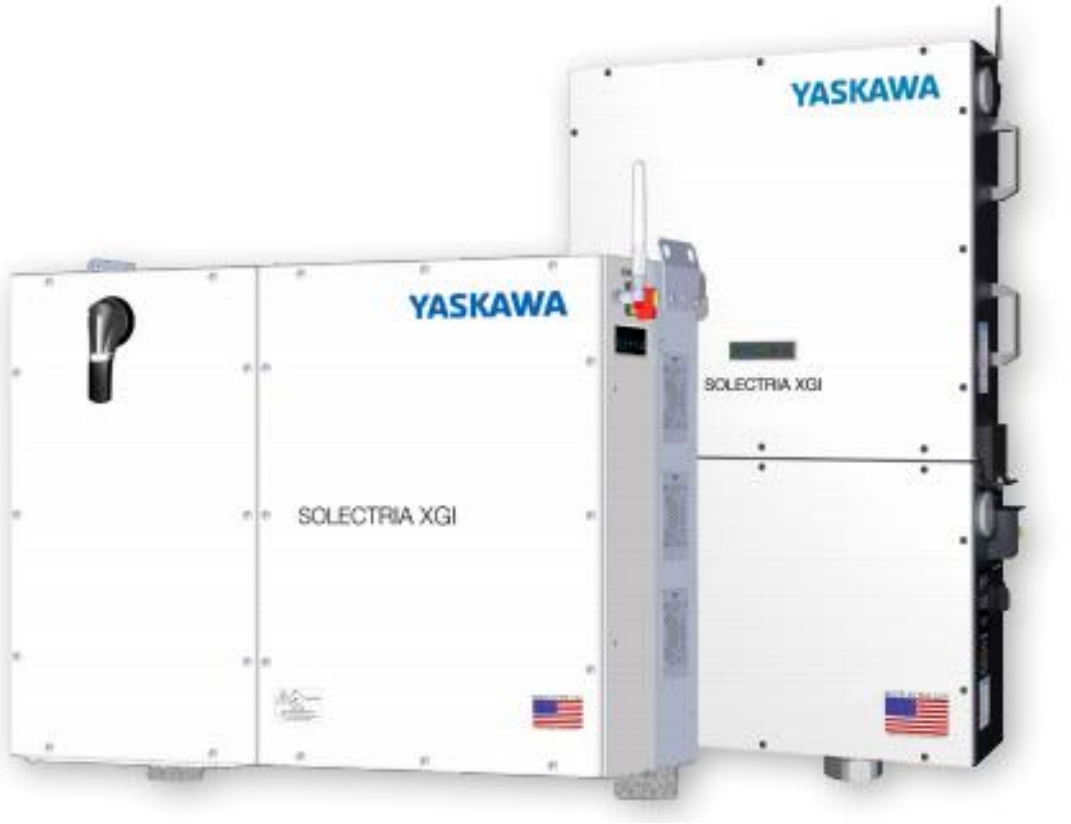
YASKAWA SOLECTRIA SOLAR

Advanced Inverter Controls

Remote Access Portal™ RAP

Administrator Operations Manual

Models: All XGI 1000 and XGI 1500 Inverters



SAVE THESE INSTRUCTIONS

This manual contains important instructions for models:

1. Introduction – Solectria Remote Access Portal (RAP)

Solectria Remote Access Portal (RAP) provides easy and secure remote access to Solectria XGI inverters. With a single internet based web portal, multiple users can access the entire inverter fleet simultaneously in a secure, easy to use, IoT solution.

With the RAP, users can access inverters in the same manner they would onsite, with complete control of their fleet from anywhere in the world. With the ability to remotely change settings, perform diagnostics, update firmware, and restart inverters, the RAP makes the Solectria XGI smart inverters truly smart.

The RAP setup is flexible allowing customers the autonomy to add, delete, and manage users independently, without the need to contact Yaskawa Solectria Support. Users can be assigned permissions to access the entire inverter fleet or only a single inverter, providing the highest level of security.

2. RAP, First Time Setup

Review the XGI Inverter Installation and Operations manual for detailed instruction on how to install and commission the XGI communication network. It is important to complete the onsite communication commissioning process before attempting to connect inverters to the RAP.

2.1 RAP, Tenant Administrators

Solectria RAP is accessed using any popular web browser, by logging in at https://remote.solar. The web portal interface is configured according to the privileges or *Roles* assigned to a particular user. ***Roles*** are assigned and controlled by one or more ***Tenant Administrators.***

INFO ✓

Tenant Administrator: A user with full administrative rights. Has the ability to:

- Create users
- Delete users
- Edit user accounts
- Assign Roles
- Assign Privileges

Roles: Used to group a set of privileges, Roles can only be created by Yaskawa Solectria Technical Support.

For first time setup, Yaskawa Solectria Technical Support will identify one or more Tenant Administrators within a group of RAP users. One Tenant is assigned to each organization or company. The designated Tenant Administrators then have the ability to generate additional users and assign Roles to them.

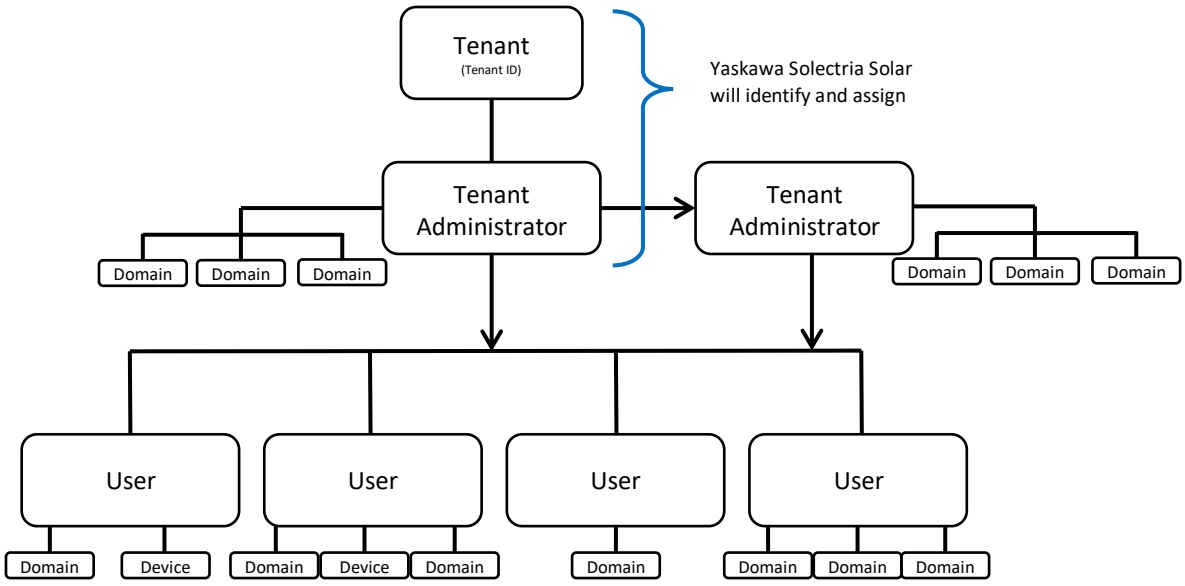


Figure 2-1 RAP Access Levels and Roles

2.1.1 First Time Login

When a new user is created, either by Yaskawa Solectria Technical Support, or by a Tenant Administrator an email notification will be sent to the new user according to the email provided. The email contains a link which is used to login for the first time and establish a password. Users must setup a password before they are able to access the RAP.

Enter the assigned **Username,** type the desired **New Password**, and then re-enter or, **Verify password**. Click on ***Set new password,*** the user is then prompted to login.

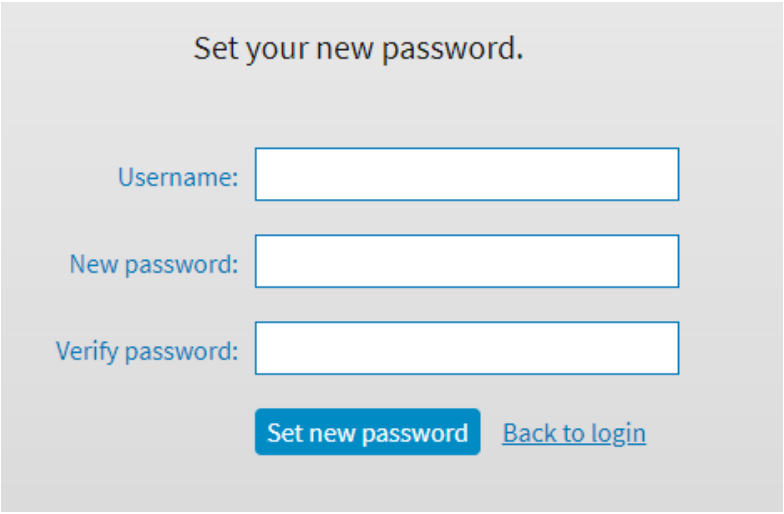


Figure 2-2, First time login

INFO ✓

- If you have not received an email link, contact your ***Tenant Administrator*** or the Yaskawa Solectria Technical Support team.
- Passwords for individual users are not accessible by administrators or Yaskawa Solectria Technical Support, use the ***Forgot password?*** function on the login page to reset a password.
- Users are only able to login if they have been granted access to a ***Device*** or ***Domain*** and their user profile has been granted appropriate privileges.

2.1.2 Creating a User

Tenant Administrators have the privileges to create new RAP users as well as manage the access to specific devices within their XGI fleet. This allows the Tenant Administrators to control the access that specific users have down to the inverter level. Users are not able to access the RAP unless they have been given access to at least one ***Device*** or ***Domain***.

INFO ✓

Device: A "Device" in the RAP is an individual inverter. Access to devices can be assigned to any user, simply select Device in the Type column, and enter the inverter Serial Number (all alphabetical characters must be lower case.)

Domain: A "Domain" in the RAP represents a Cluster of inverters. The Domain of a Cluster is the Serial Number of the Gateway inverter (all alphabetical characters must be lower case.) Access to Domains can be assigned to any user, simply select Domain in the Type column, and enter the serial number of the gateway inverter. When providing access to a Cluster, the user will have access to all inverters within the cluster.

To create a new User, login as a Tenant Administrator and navigate to the ***Users*** tab, click on ***Create user.***

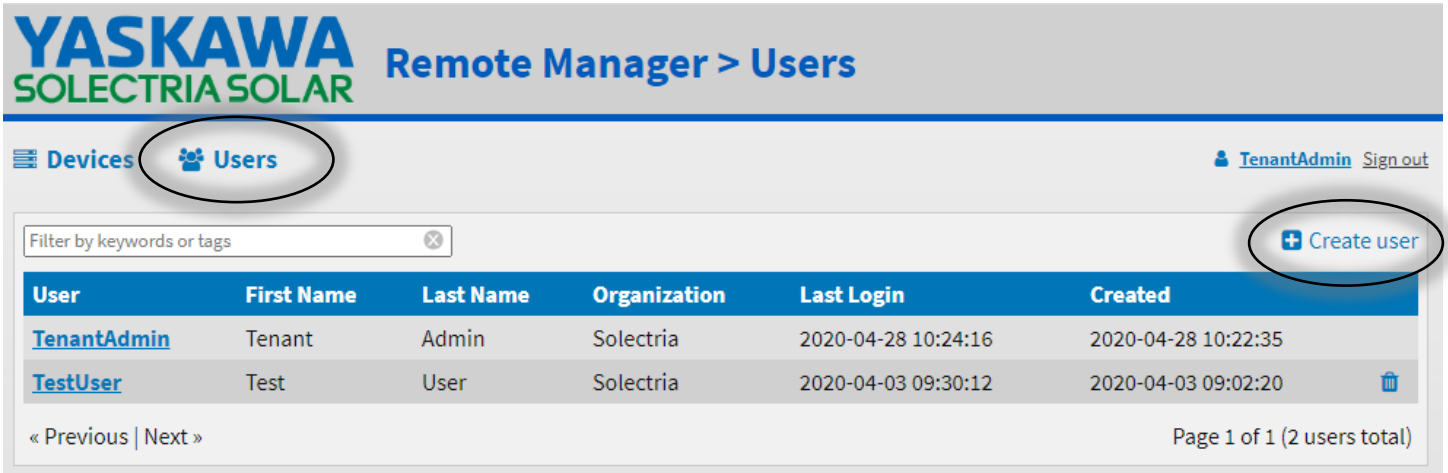


Figure 2-3, creating a new user

Enter the desired **Username** and **Email Address**. We encourage Usernames to be the leading portion of the users email address. For example if the users email is "newuser@solar_company.com" the username should be "newuser". Leave

the **Send Invite Email** check box selected and click **Create user.** An email notification will be sent to the email address provided, prompting the user to setup a password.

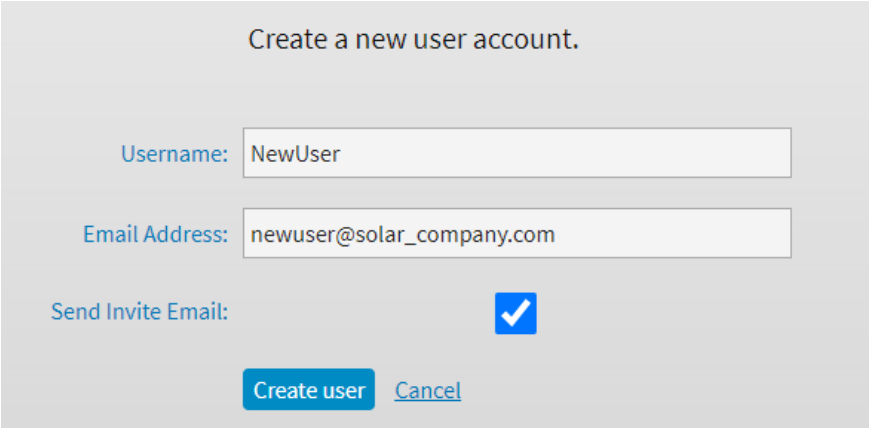


Figure 2-4, creating a new user cont.

A role must be assigned to the new user to complete the process, for more information see Section 2.1.3.2. Select **User** for User assignment, or both **User** and **TenantAdmin** to create a new Tenant Administrator.

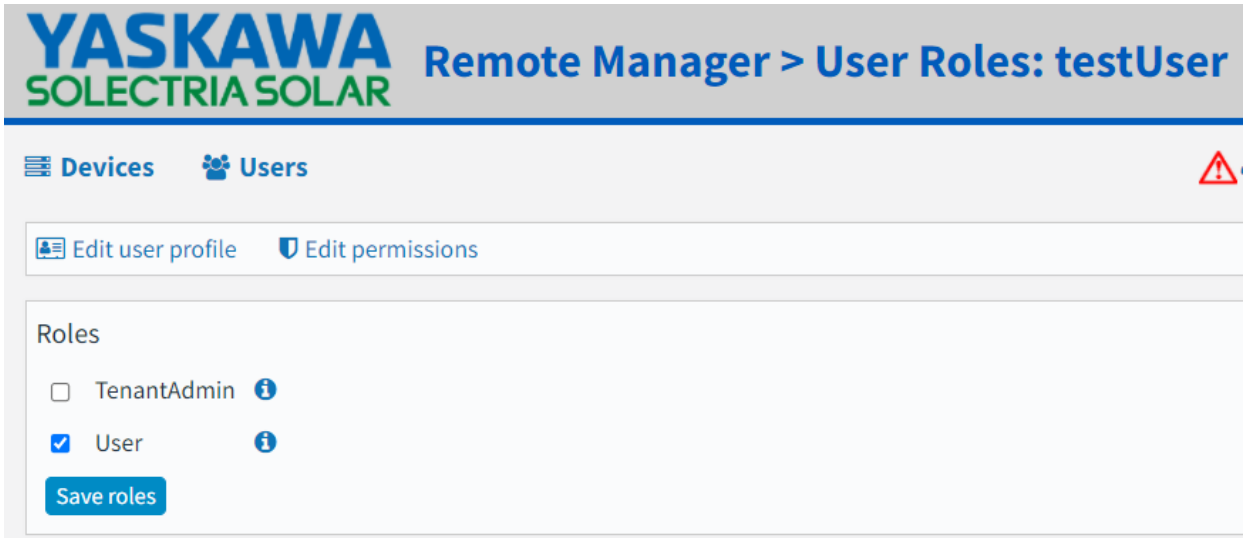


Figure 2-5 Assign new user a role.

IMPORTANT ✓
• Before the newly created user can successfully login, a role must be assigned, see Section 2.1.3.2 User Roles.

2.1.3 Managing Existing Users

Tenant Administrators can manage ***permissions, roles,*** *and* ***users profiles***, as well as delete existing users. All of these actions are performed in the **User** tab of the RAP.

2.1.3.1 Assigning Permissions

All users must be assigned ***permissions*** in order to access the RAP and view ***devices***. Access to inverters can be assigned individually (per inverter) or as a group by the Cluster or ***Domain***. All permissions are granted to each user individually, by selecting the user from the list on the **User** tab.

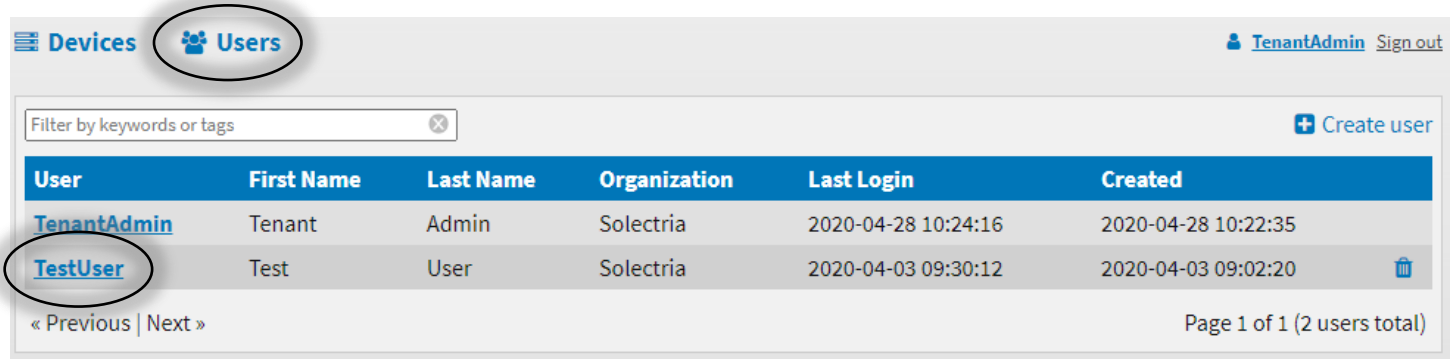


Figure 2-6 Users tab

To grant users access to inverter clusters or individual inverters, add permissions to each User. From the User tab, select the desired User and click on **Edit Permissions**.

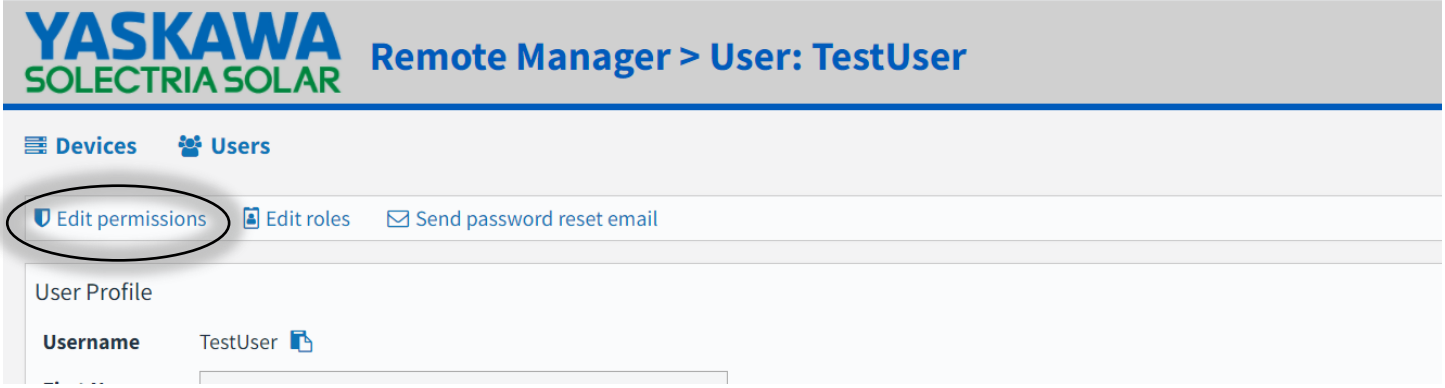


Figure 2-7 Edit permissions link

Select the **Type** from the dropdown menu choose either **Device** or **Domain** and enter the desired Serial Number or select the Serial Number from the dropdown menu.

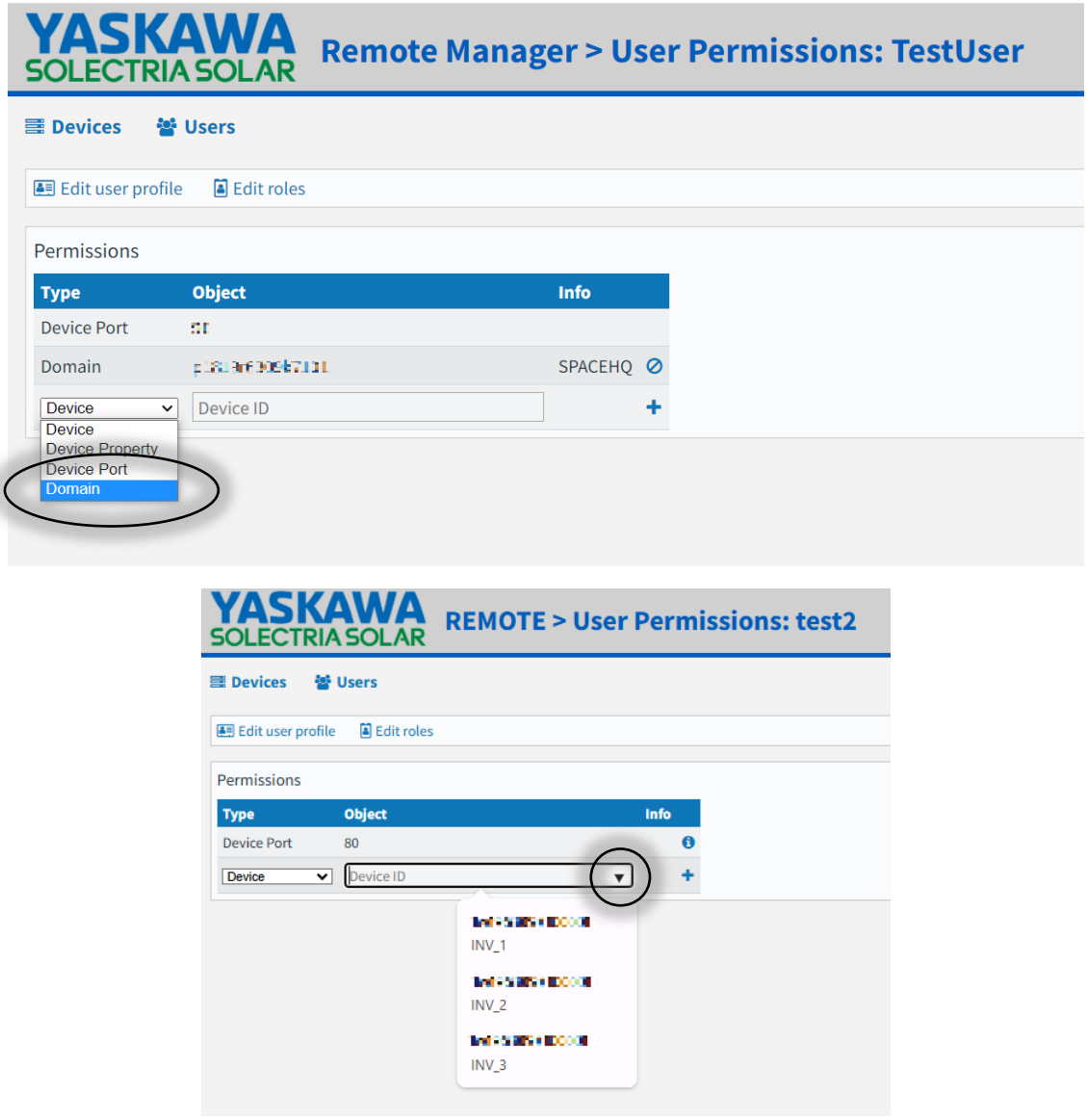


Figure 2-8 Permissions tab

IMPORTANT ✓
When entering a Serial Number, all alphabetical characters must be entered in lowercase "1w…" not "1W…"

2.1.3.2 User Roles

Roles are used in the RAP to assign a set of permissions to a specific user. To add or remove a Role from a user, navigate to the User tab, select the user and click on **Edit Roles.** Assign Roles by selecting the check box next to the desired Role.

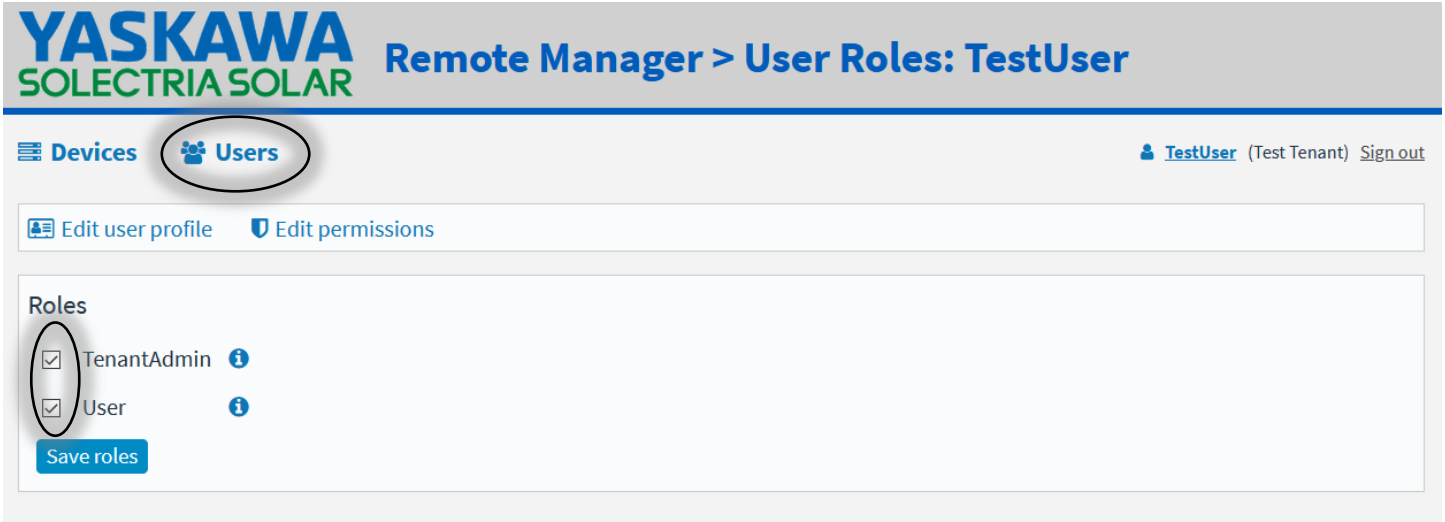


Figure 2-9 Edit Roles tab

Tenant Administrators are able to assign Roles to others, only if they are assigned those Roles. Most Tenant Administrators will be able to assign the following Roles; **User**, and **TentantAdmin.** Assigning roles will also automatically update certain permissions.

Roles	Permissions	Description
User	reflector.device.port:80	Allows access to the webpages of the inverters.
TenantAdmin	tenantAdmin	Allows the user to administer the Tenant.
	reflector.user.*	Allows the user to modify user accounts of the Tenant.

2.1.3.3 User Profiles

All User Profiles can be edited by a Tenant Administrator. Navigate to the User tab, by default the User Profile will be appear, otherwise select **Edit user profile**.

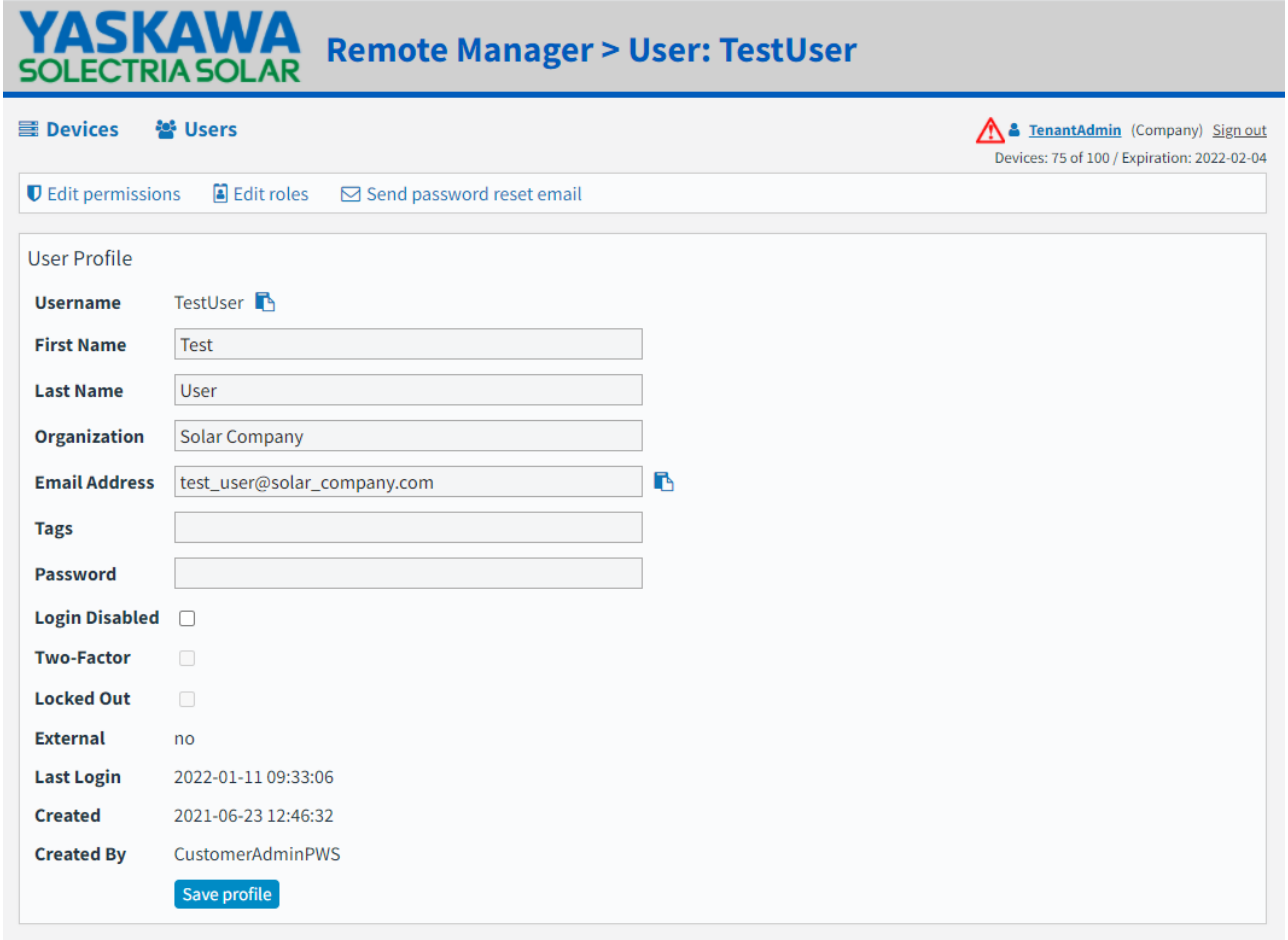


Figure 2-10, Edit user profile

The following fields can be edited:

- First Name: Text field, first name of user, searchable keyword.
- Last Name: Text field, surname of user, searchable keyword.
- Organization: Text field, searchable keyword.
- Email Address: Email address used for password reset and other notifications
- Tags: Text field, generic field to add additional searchable keywords.
- Password: Left blank, managed by the individual user through email on while logged into to the RAP.
- Login Disabled: Check box to disable a specified user

2.1.3.4 Resetting User Passwords

Tenant Administrators do not have access to other Users passwords, however, they are able to initiate a password reset. To start the password reset process, login as a Tenant Administrator and navigate to the User tab. Select the desired

user, and click on **Send password reset email.** An email will be sent using the email specified in the User Profile with a link to reset the password.

INFO ✓
Check SPAM! If the email to reset a password is not being received, check the spam folder. Some email servers may send these notifications to SPAM or JUNK.

2.2 RAP, Users

General users must first be given an account from a Tenant Administrator. Typically they receive an invitation email with a link to set up their password. The username given to them by the Tenant Administrator is specified in the login email.

Once logged in, a user account is fully functional. There are several fields that can be edited if desired.

To self-modify a user profile, login to the RAP using your username and password. Navigate to the **Account** tab, by clicking on the blue user icon with your username.

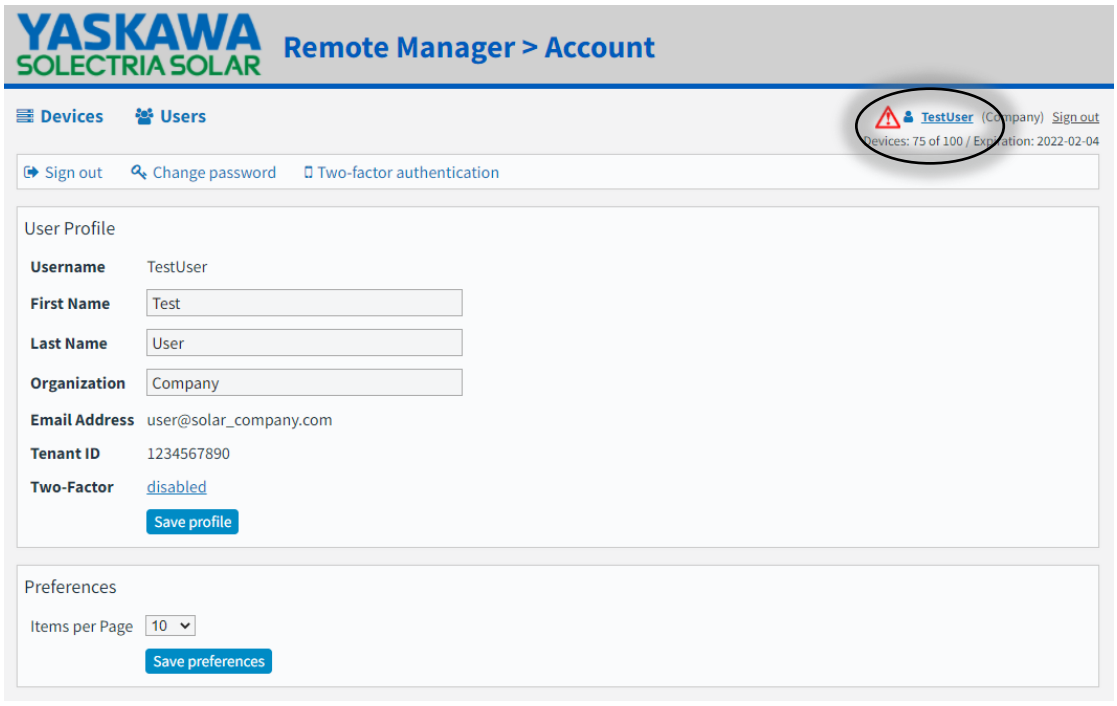


Figure 2-11, Edit user account profile and preferences

The user has several options, including the ability to **Change password**, **Sign out**, edit the associated **name** and **organization**, and adjust the number of **Items** [devices] **per Page**. For any of these changes to take place, they must be saved.

2.2.1 Two-Factor Authentication

Two-Factor Authentication must be enabled by the individual user.

Figure 2-12 Warning Two-Factor authentication not enabled

User administrator accounts cannot enable it for other users. They will need to install an authenticator app on their phone. Google Authenticator is used in this example.

The user can enable Two-Factor authentication by going to their user profile page and clicking the "disabled" link.

On the next screen, they would need to click to the "Enable two-factor authentication" button.

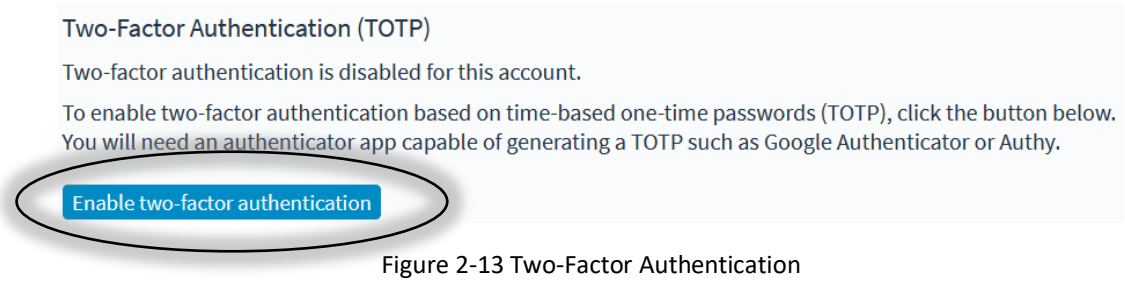


Figure 2-13 Two-Factor Authentication

Next, the user will need to enter their account password again to confirm activation.

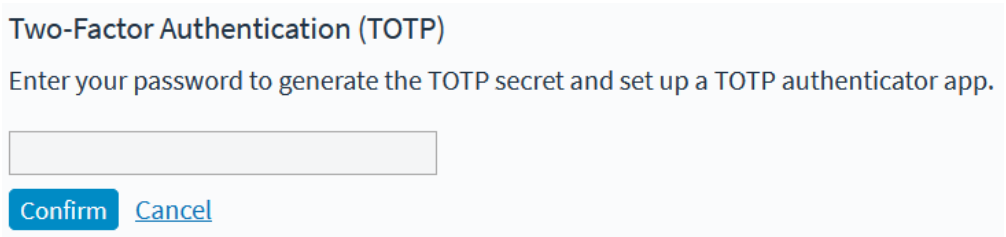


Figure 2-14 User password page to generate TOTP secret

The user will then need to use their authenticator app to either scan in the QR code or manually enter in the setup key. The authenticator app will then provide a password for the user to enter. After this, setup is complete.

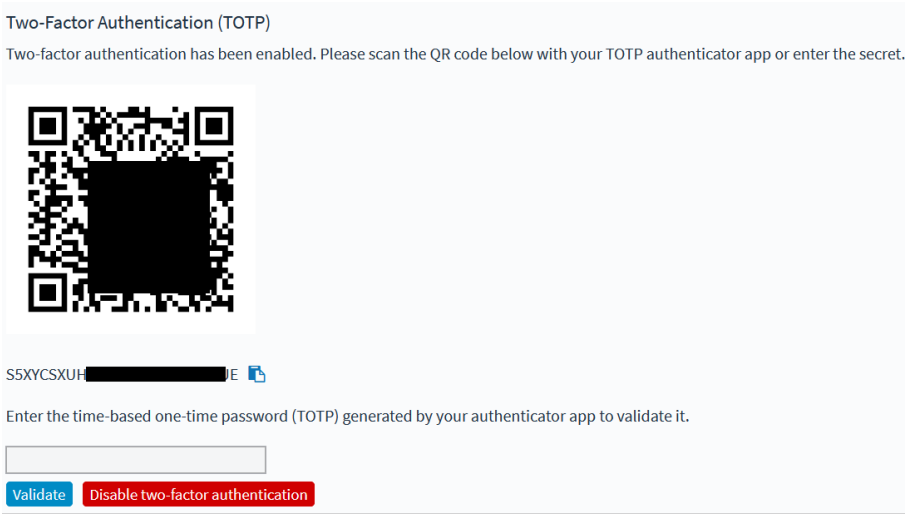


Figure 2-15 Final step enter the password from authenticator app

3. Utilizing the RAP

The RAP is an advanced, secure, easy way for solar owners and operators to access and interact with all of their Solectria XGI inverters. For the RAP to function the inverters must be connected to the internet.

3.1 Accessing an Inverter/Cluster

All inverters are accessed by selecting them from the Device tab, the default display when logging into the RAP. Devices can be filtered according to their connection Status; Online, Offline, or All Devices. A keyword search is also provided to quickly search for devices. The number of devices online and total number of devices licensed is displayed under the username along with the license expiration date.

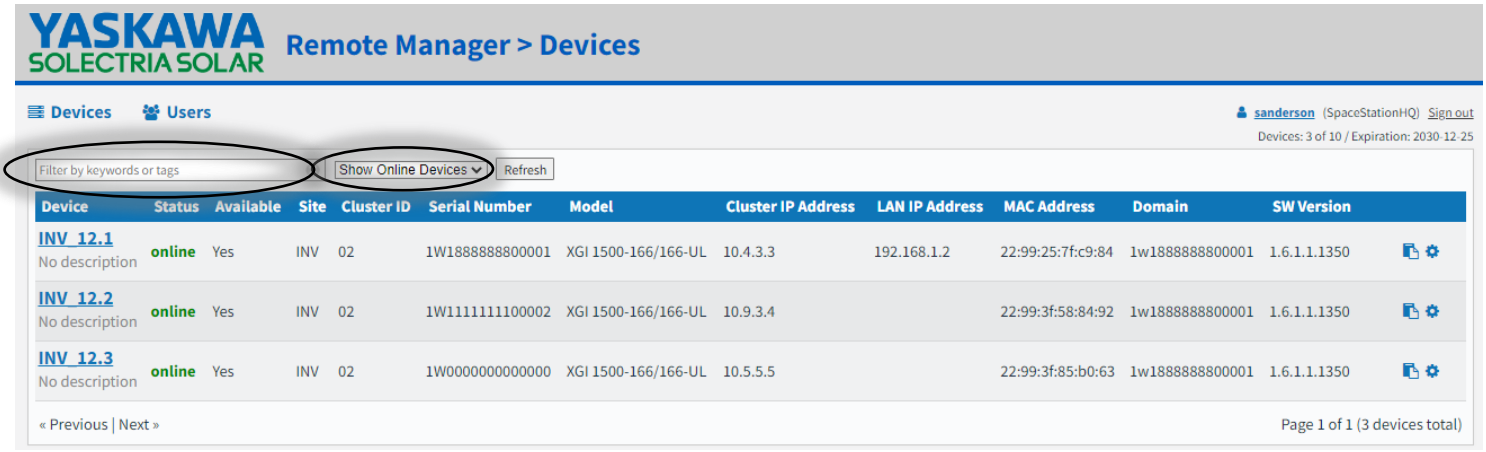


Figure 3-1 Searching for Inverter/Cluster

Each device has several columns that displays important information regarding the inverters. A description of each column is provided in Table 3-1.

Table 3-1, Device tab column descriptions

COLUMN NAME	DESCRIPTION
DEVICE	The Name of the inverter, programmed into the inverter at commissioning, extracted directly from the inverter and displayed in the RAP.
STATUS	The connection status of the device, Online or Offline. This does not indicate the operational status of the inverter, only the connection status
SITE	Site Name, programmed into the inverter at commissioning, extracted directly from the inverter and displayed in the RAP. This is the first portion of the WIFI SSID, **SITE**-XX-XXX
CLUSTER	Cluster Number, programmed into the inverter at commissioning, extracted directly from the inverter and displayed in the RAP. This is the second portion of the WIFI SSID, XXX-**01**-XXX
SERIAL NUMBER	The Serial Number of the inverter, extracted directly from the inverter and displayed in the RAP.
MODEL	The Model of the inverter, extracted directly from the inverter and displayed in the RAP.
LOCAL IP ADDRESS	The IP address of the inverter, extracted directly from the inverter and displayed in the RAP.
MAC ADDRESS	The MAC address of the inverter, extracted directly from the inverter and displayed in the RAP.
DOMAIN	The Serial Number of the Gateway Inverter, used to specify permissions of inverters to users.

To interact with an inverter, simply click on the device. Your web browser will be redirected to the XGI GUI of the device selected. Depending on the user privileges, the user can then access other inverters within that Cluster by navigating within the GUI.

The user experience once connected to the GUI is identical to that when connected over Ethernet or WiFi onsite.

4. Configuring XGI Inverters for use with the RAP

For the RAP to function properly it is important to ensure the inverters are properly installed, and the network configuration is designed appropriately. For more details on the installation and network requirements of the XGI Inverters please see the XGI 1000 and XGI 1500 Installation and Operations Manuals. This section details important steps required specifically for use with the RAP.

4.1 Supported Network Topologies

The XGI inverters support several different network topologies including; Daisy Chain, Mixed Networks, and Multi-Cluster configurations.

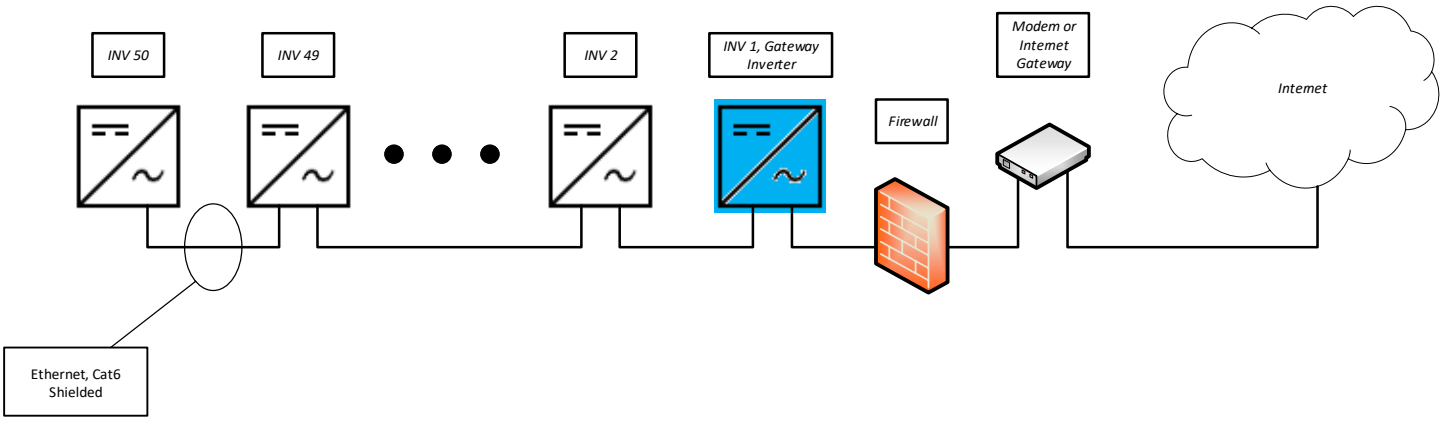


Figure 4-1 Daisy Chain

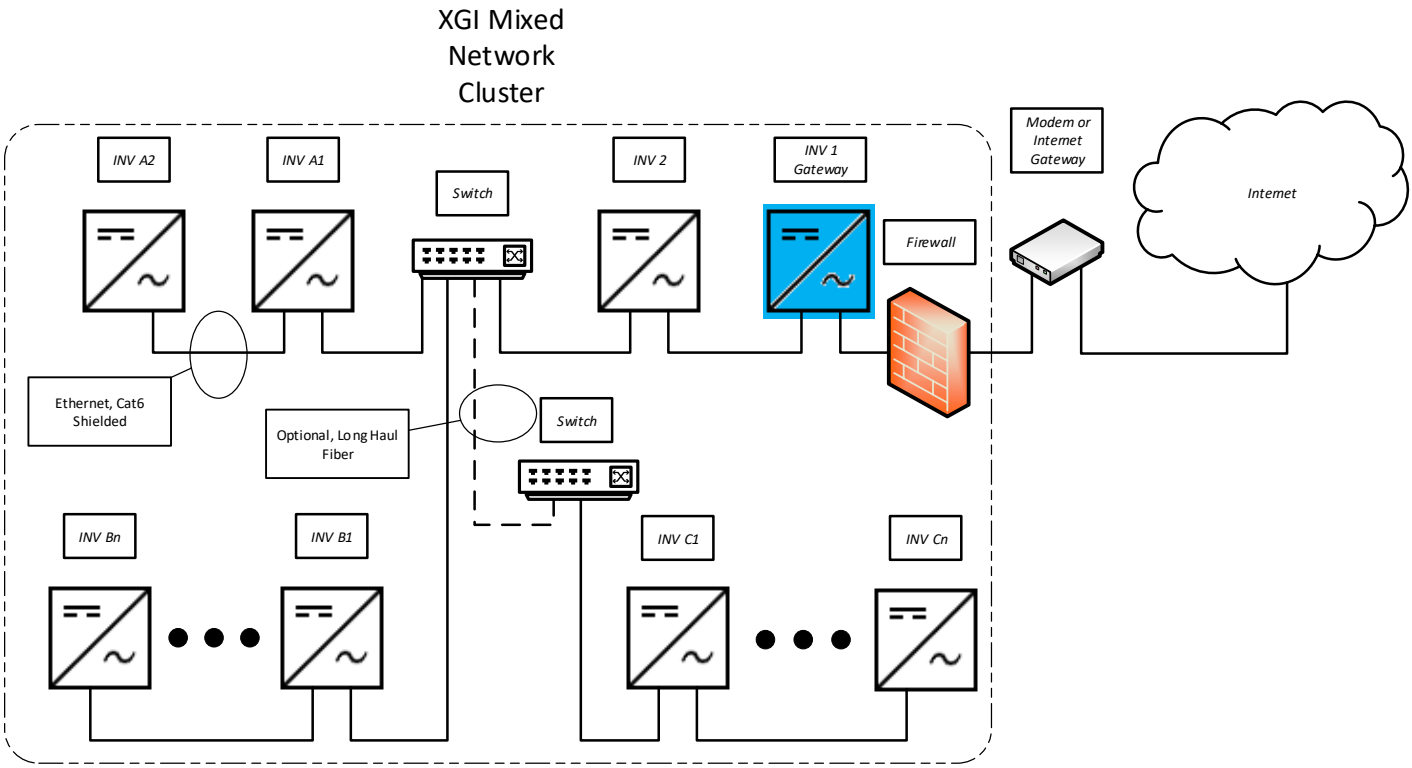


Figure 4-2 Mixed Network Cluster

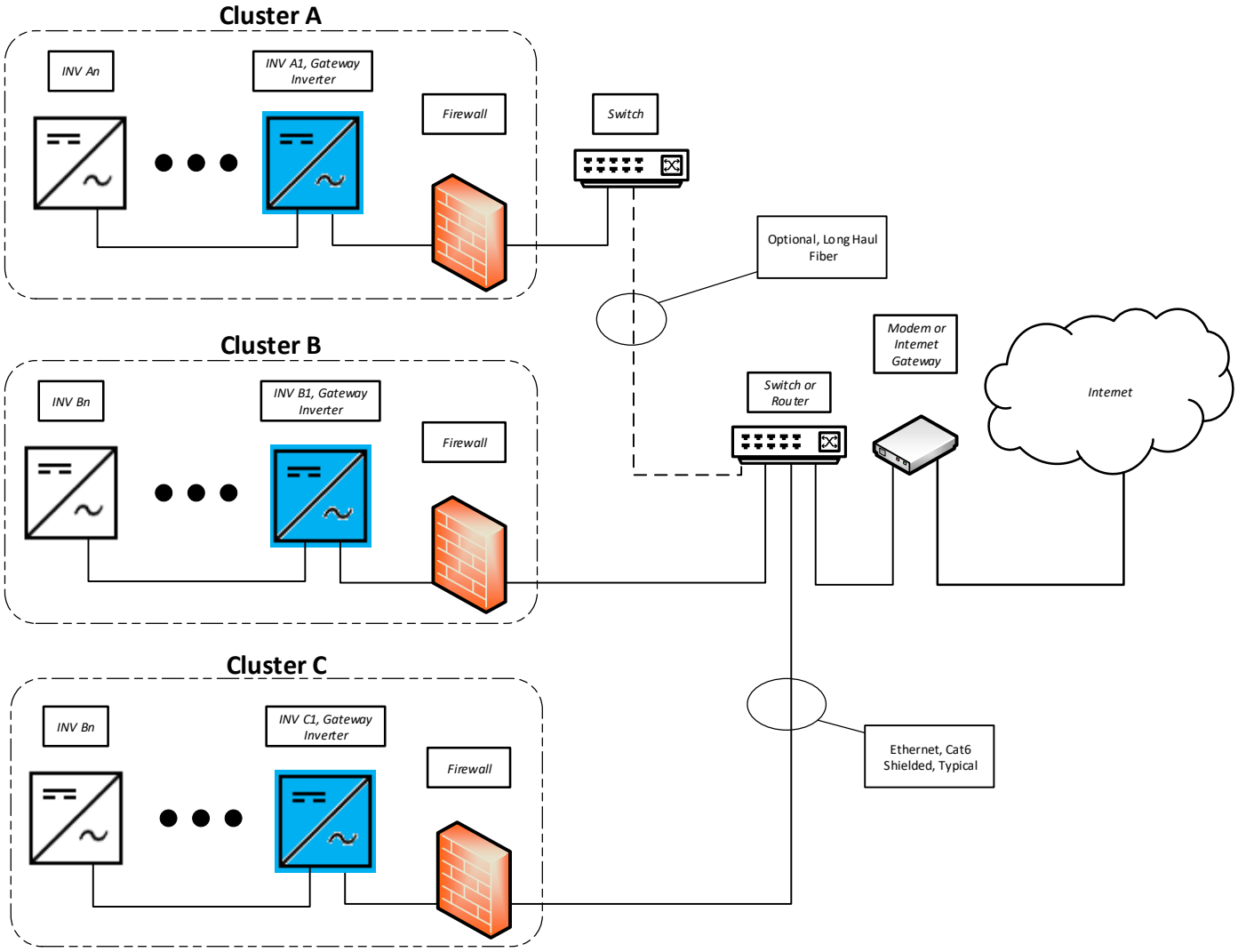


Figure 4-3 Multi-Cluster Configuration

4.2 Registering an Inverter/Cluster in the RAP

All new XGI Clusters need to be registered to a Tenant Administrator, this is done by entering the Tenant ID into the Gateway Inverter's Remote Access Configuration page (See Section 5.2). Once the devices are registered the Tenant Administrator can assign privileges to their users.

5. Licensing

5.1 New Customer

When a new customer is acquired or an existing customer wants to use the RAP, a Tenant ID should be created for them. See Figure 2-1.

5.2 New Customer Site

Every time a new customer site is brought online, the commissioning team should set the Tenant ID in the GUI of the gateway inverter.

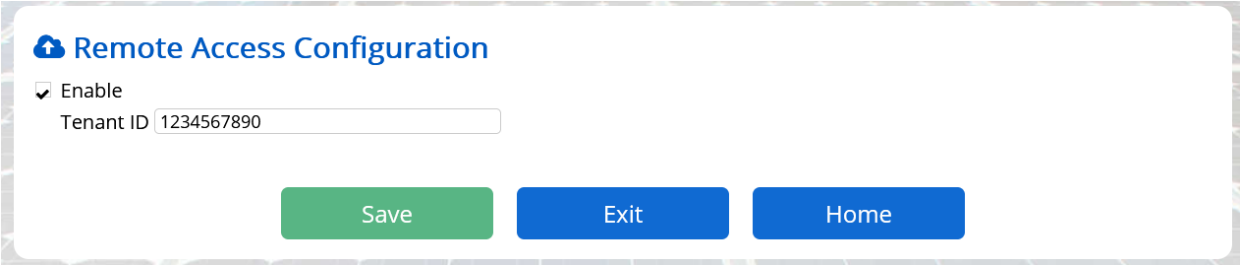


Figure 5-1 Enter Tenant ID in the Remote Access Configuration in the Inverter UI

INFO ✓
• After saving, allow 15-30 minutes for server to update the permissions/access.

The commissioning team will be responsible for entering the information The Tenant ID is displayed in the User Profile, which can be accessed by clicking on the username link.

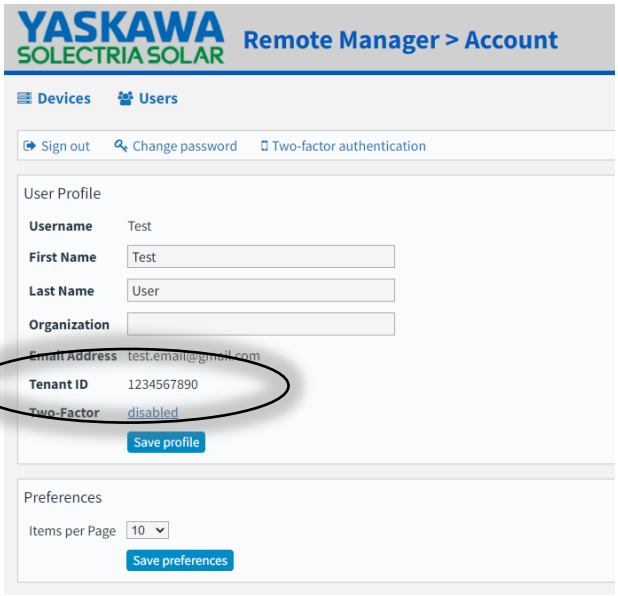


Figure 5-2 Tenant ID under the Tenant Admin's User Profile

5.3 Expiration of License

When the Remote Access Portal License expires, a notification appears during sign-in and redirects the user to SolrenPay, where payment details can be entered to renew the Remote Access Portal License.

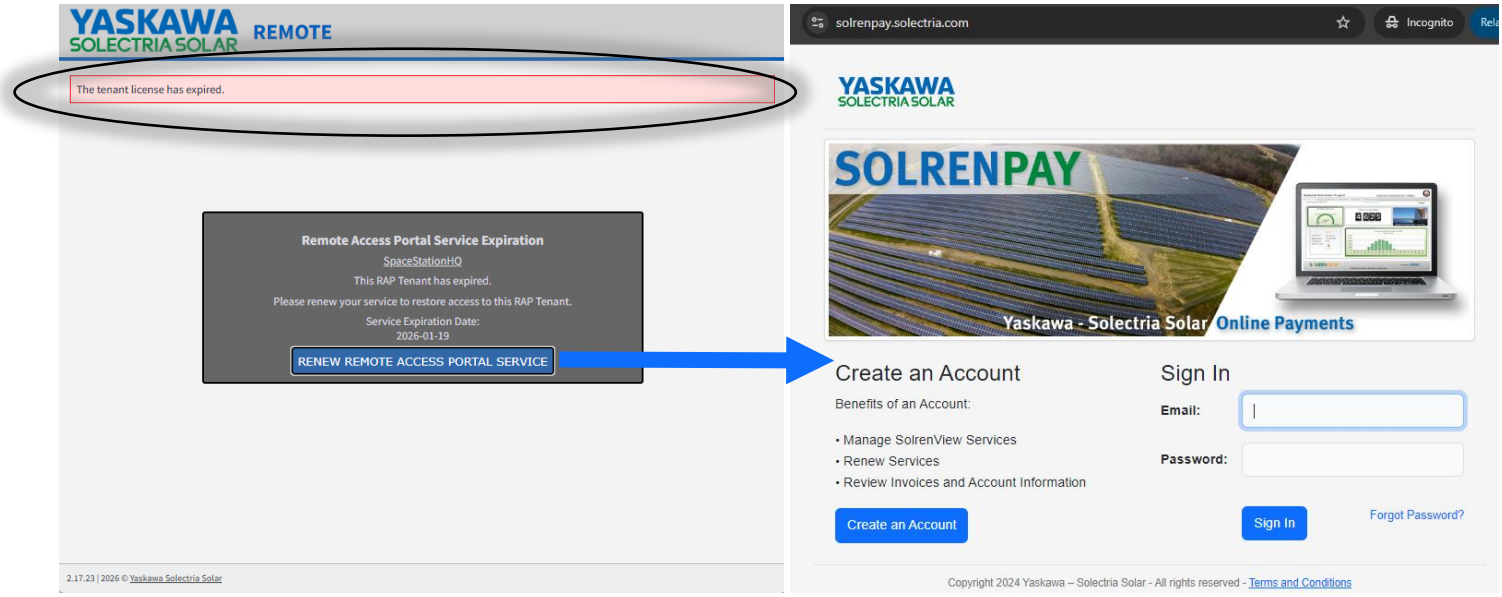


Figure 5-3 Log-in attempt after RAP License Expires

To request an upgrade or downgrade of the license, contact the Technical Support team to have the license updated.

6. Appendix

6.1 Contact Information

Table 6-1 Contact Information

TELEPHONE	**978.683.9700**
FAX	978.683.9702
SALES SUPPORT	inverters@solectria.com
TECHNICAL SUPPORT & SERVICE	978.683.9700x2
WEBSITE	www.solectria.com