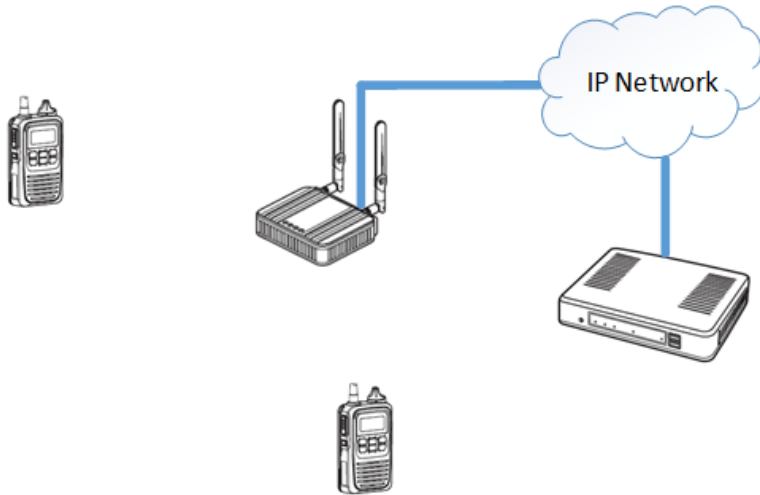


Quick Guide for a Stand-Alone IP Advanced Radio System

This application describes the programming required to configure a working IP Advanced Radio System that is being directly connected to WLAN Access Points. The procedures assume that the system is not being connected to an existing IP network. This IP System is composed of an VE-PG4 controller, multiple IP100H radios, and Access Point devices.

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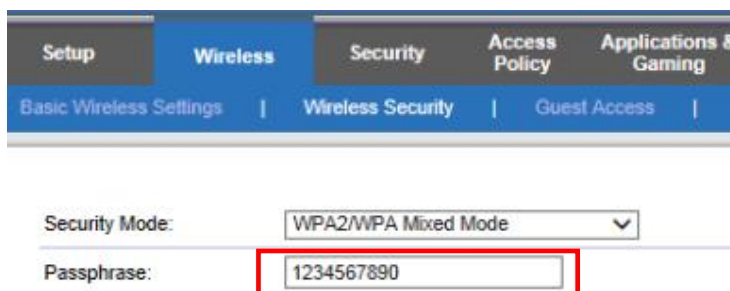
What You Will Need

- 1 VE-PG4 controller unit
- Several IP100H radios
- Access point(s) Either customer or Icom Dealer supplied (Linksys Access Point used in this guide)
- CS-IP100H cloning software, OPC-478UC (USB only) and the OPC2144 adapter
- Computer with IP100H software and USB drivers installed
- One CAT-5 LAN cable for programming the VE-PG4 controller and Access Point
- CAT-5 LAN cable for programming the VE-PG4 controller and for hard connection of the VE-PG4 to the network.

Setting up the Wireless LAN Access Point (Wi-Fi Router)

Access Points are available at many price levels and with many capabilities. If multiple Access Points are going to be used on a regular basis, Icom strongly recommends using higher-end Access Point devices. A quality enterprise level WLAN router, recommended by your IP professional, will have the capability to act as a “Controller” or “Master” for the other WLAN devices in the system. These capabilities enable proper radio handoffs when moving from one Access Point to another, thus ensuring that the handoffs are faster. If lower cost devices are used, gaps in audio may be apparent when radios move from one Access Point to another.

1. Connect your PC to the Access Point Router with a CAT-5 cable.
2. Log into your Access Point and *change* the *IP Address* on your Wi-Fi router (Access point). Set it to 192.168.1.1. This new IP address will become the new login IP address for the Access Point Router. *Please look at your manufacturers Access point manual for any additional instructions.*
3. The Access Point DHCP Server function should be enabled. The *Access Point* will assign all IP addresses to all the Radios, other Access Points, and the VE-PG4.
4. A New Network **SSID** needs to be created that will refer to all devices on the IP Radio System. This SSID is designated to Icom IP Radio Systems only. We are using “Cisco80915” as the SSID in our example because it is the default SSID in many Cisco routers. SSID selection is the programmer’s decision.
5. **SSID Broadcast** should be enabled for the Access Point SSID.
6. Add a password for the IP Advanced Radio System SSID (the following example uses 1234567890). Set Security to **WPA2/WPA mode**.



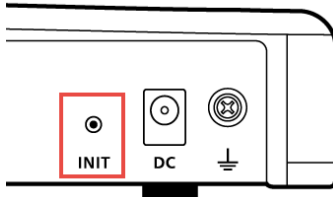
The screenshot shows the 'Wireless Security' configuration page. The 'Security Mode' is set to 'WPA2/WPA Mixed Mode'. The 'Passphrase' field is highlighted with a red rectangle and contains the text '1234567890'.

Note: The password entered here must match the PSK setting (WLAN Setting window) in the IP-100H cloning software as explained below.

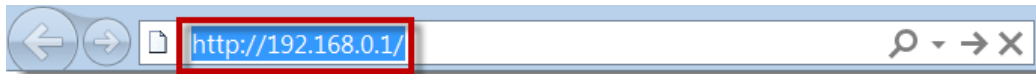
Logging into the VE-PG4 Controller

The VE-PG4 is programmed through a web interface.

1. Before you begin programming the VE-PG4, press and hold the INIT button on the rear case for 10 seconds (you will need a thin tool to access the button). This resets the IP address to default.



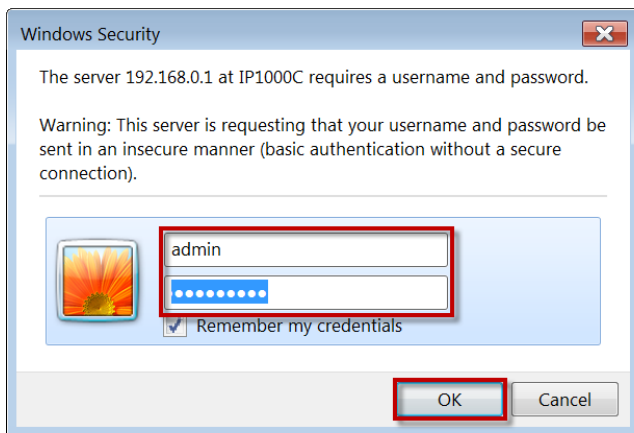
2. Connect the VE-PG4 to your computer with a CAT-5 cable.
3. Open your internet browser and type the VE-PG4 IP address: 192.168.0.1 (default) in the address bar. Your computer IP should be 192.168.0.X (not 0.1).



4. Enter the following:

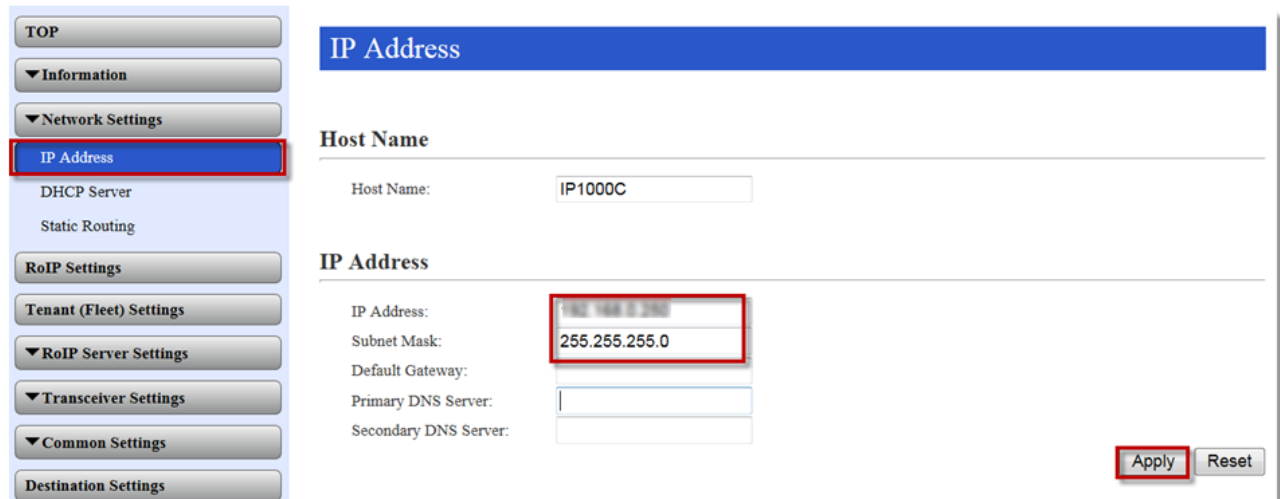
Username – **admin**

Password – **admin**

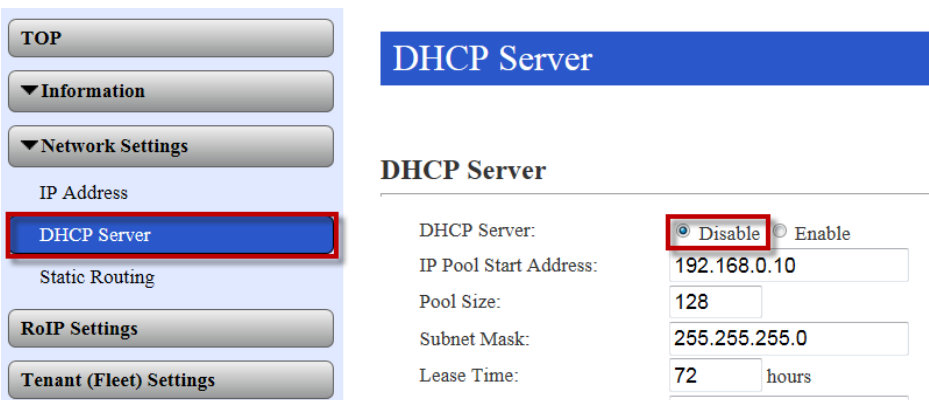


Configuring Network settings in the VE-PG4 Web Interface

1. Go to **Network Settings** and click the **IP Address** tab.
2. Change the default IP address for the VE-PG4 to 192.168.1.250. This new IP address will become the new login IP address for the VE-PG4.



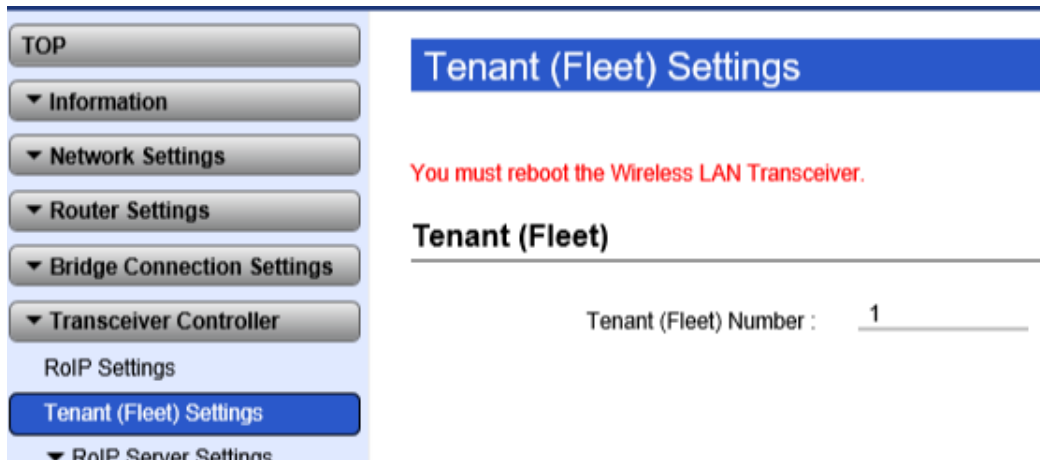
3. Click **Apply**. You will be asked to reboot the application.
4. Click the **DHCP Server** tab and set it to **Disable** (The WiFi router will be acting as the DHCP Server). Note that this choice makes all other settings in the VE-PG4's *DHCP* screen unnecessary.



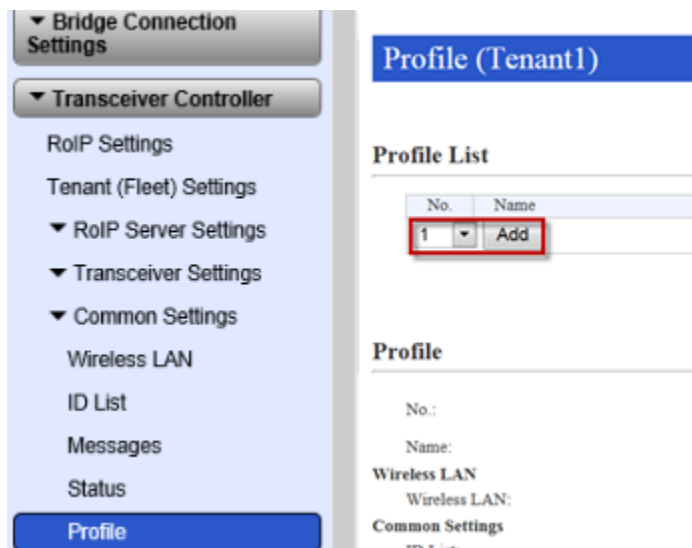
5. Click **Apply**.
6. Connect the VE-PG4 controller and your PC to the Access Point Router (using Cat-5 cables). Check that you can log into the VE-PG4 and the Access Point Router web settings screen.

Creating the Tenant (Fleet) Number and Profile.

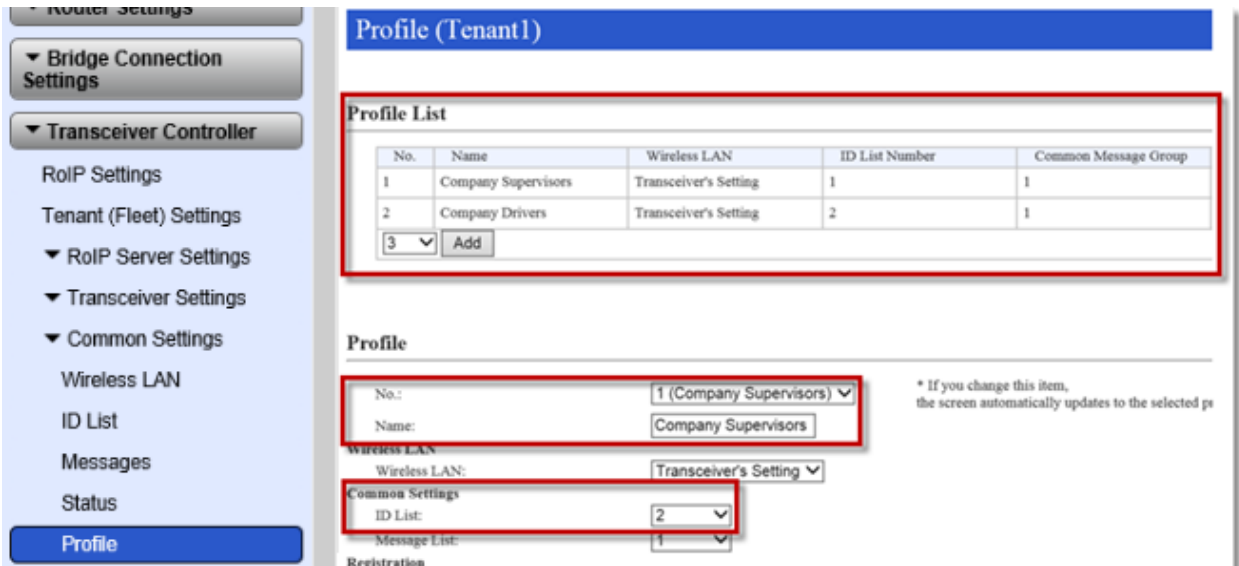
1. Go to **Tenant (Fleet) Settings** and select a Tenant Number and give it a text name. This Tenant number represents the Fleet for this group of radios. If other, separate companies are added to the VE-PG4 system, Tenants 2, 3, etc., would be added here.



2. Click **Apply**.
3. Go to **Common Settings** and select **Profile**.
4. In **Profile List**, select a Profile number and click **Add** to create a profile number for your radios. By creating a Profile, the administrator can assign various timers, tones, and display characteristics for a group of radios. Once this profile is enabled, radio ID information can be programmed.



5. In **Profile List/Name**, enter in an identifying name for this profile.
6. In **Profile/Common Settings/ID List**, select the ID List number (to be configured later in this document) that this profile will use.



Router Settings

- ▼ Bridge Connection Settings
- ▼ Transceiver Controller
 - RoIP Settings
 - Tenant (Fleet) Settings
 - ▼ RoIP Server Settings
 - ▼ Transceiver Settings
 - ▼ Common Settings
 - Wireless LAN
 - ID List
 - Messages
 - Status
 - Profile**

Profile (Tenant1)

Profile List

No.	Name	Wireless LAN	ID List Number	Common Message Group
1	Company Supervisors	Transceiver's Setting	1	1
2	Company Drivers	Transceiver's Setting	2	1

3 ▼ Add

Profile

No.: 1 (Company Supervisors) ▼

Name: Company Supervisors

Wireless LAN: Transceiver's Setting ▼

Common Settings

ID List: 2 ▼

Message List: 1 ▼

Registration

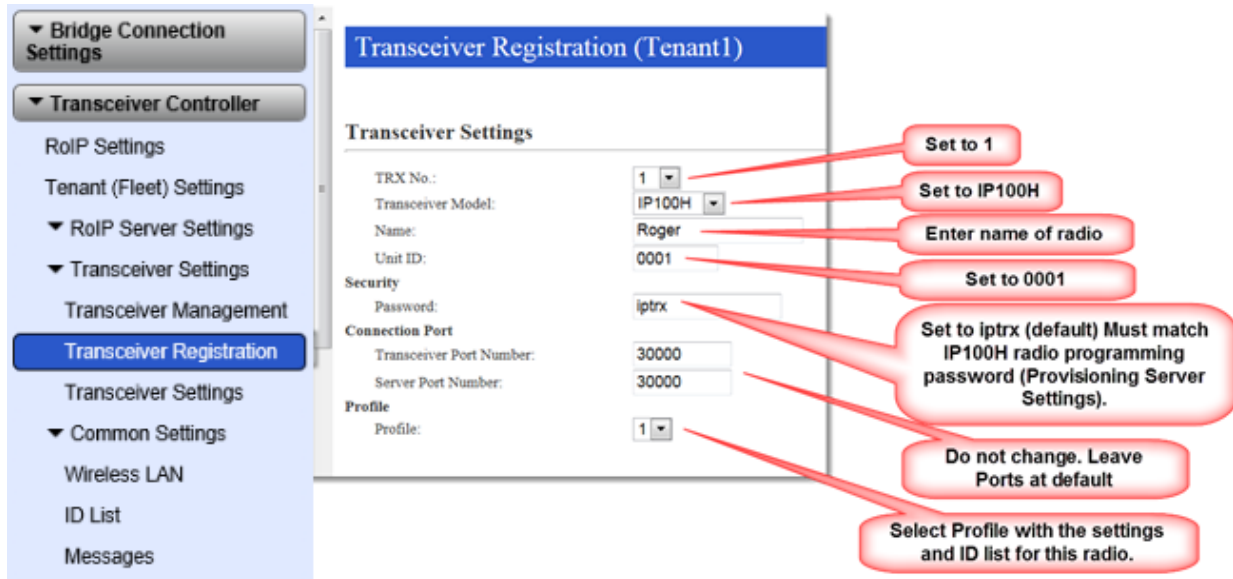
* If you change this item, the screen automatically updates to the selected profile.

For example: 1 Tenant (Fleet) has more than one profile to allow the Supervisor group to use a different ID list than the Driver group.

Creating *Unit IDs* in the VE-PG4 Web Interface

These paragraphs describe how to enter IP100H Radio information for three radios in the following examples.

1. Go to **Transceiver Controller** and select **Transceiver Registration**. The Transceiver Registration window is where *all radio ID's* in the fleet will be entered.
2. Enter the Transceiver Trx 1 Radio Information as follows.



Transceiver Registration (Tenant1)

Transceiver Settings

TRX No.: 1 (Set to 1)

Transceiver Model: IP100H (Set to IP100H)

Name: Roger (Enter name of radio)

Unit ID: 0001 (Set to 0001)

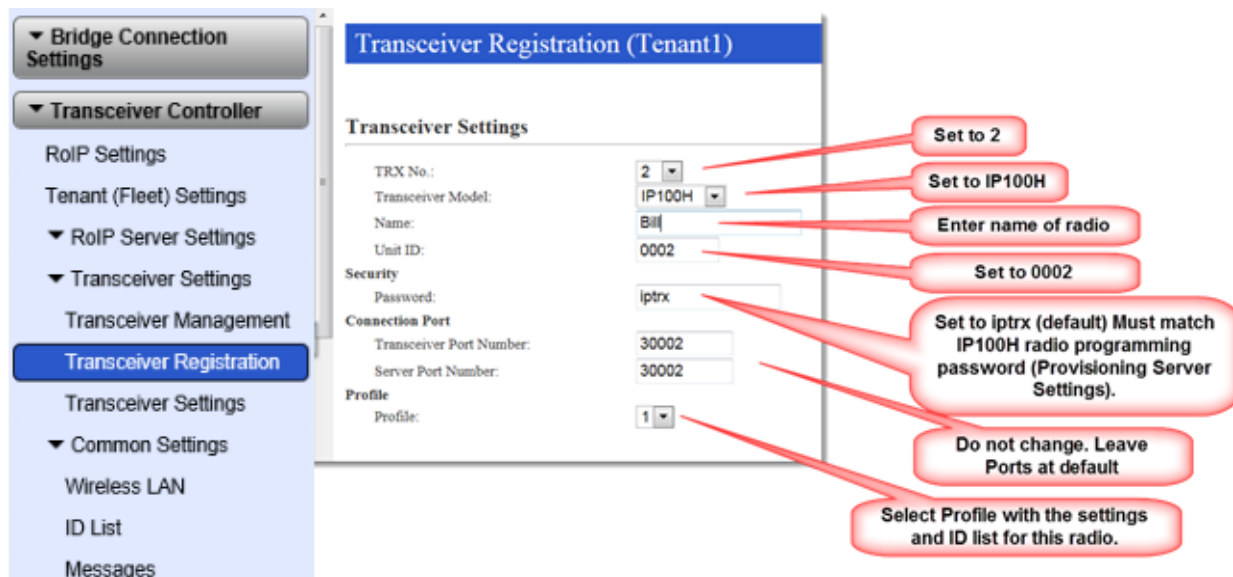
Security Password: iptrx (Set to iptrx (default) Must match IP100H radio programming password (Provisioning Server Settings).)

Connection Port Transceiver Port Number: 30000 (Do not change. Leave Ports at default)

Server Port Number: 30000

Profile Profile: 1 (Select Profile with the settings and ID list for this radio.)

3. Click **Add**.
4. Enter the Transceiver 2 Radio Information as follows.



Transceiver Registration (Tenant1)

Transceiver Settings

TRX No.: 2 (Set to 2)

Transceiver Model: IP100H (Set to IP100H)

Name: Bill (Enter name of radio)

Unit ID: 0002 (Set to 0002)

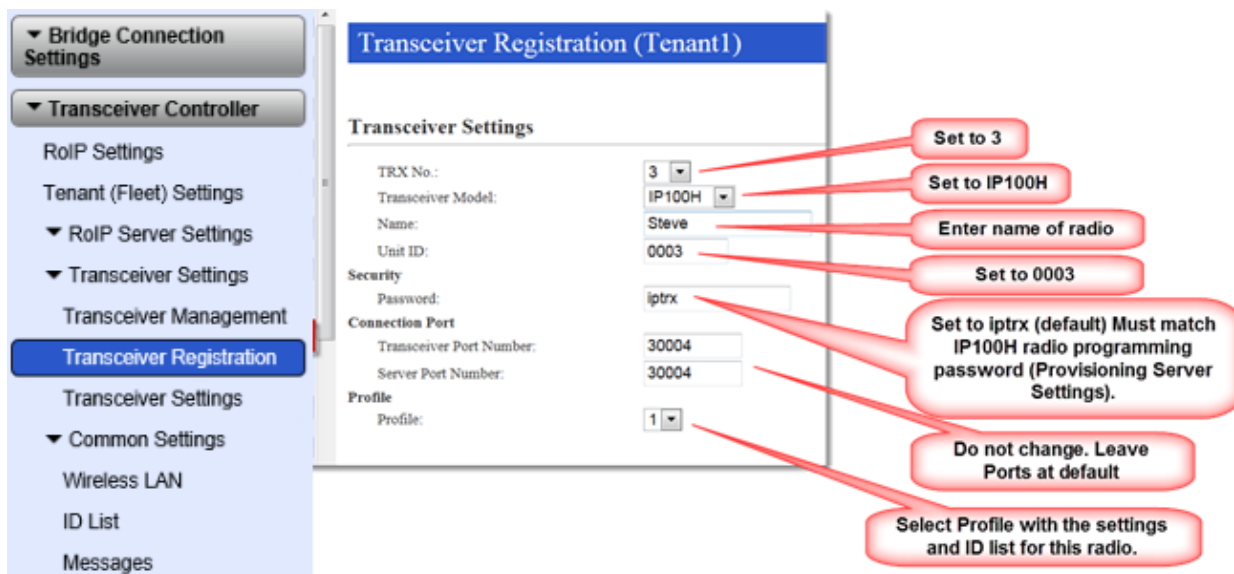
Security Password: iptrx (Set to iptrx (default) Must match IP100H radio programming password (Provisioning Server Settings).)

Connection Port Transceiver Port Number: 30002 (Do not change. Leave Ports at default)

Server Port Number: 30002

Profile Profile: 1 (Select Profile with the settings and ID list for this radio.)

5. Click **Add**.
6. Enter Transceiver 3 Radio Information as follows.



Transceiver Registration (Tenant1)

Transceiver Settings

TRX No.: 3
 Transceiver Model: IP100H
 Name: Steve
 Unit ID: 0003
 Security: Password: iptrx
 Connection Port: Transceiver Port Number: 30004
 Server Port Number: 30004
 Profile: 1

Annotations:

- Set to 3
- Set to IP100H
- Enter name of radio
- Set to 0003
- Set to iptrx (default) Must match IP100H radio programming password (Provisioning Server Settings).
- Do not change. Leave Ports at default
- Select Profile with the settings and ID list for this radio.

7. Click **Add**.
8. Confirm that all transceivers entered appear under the **Transceiver Setting Entry List**.



Transceiver Setting Entry List

	TRX No.	Transceiver Model	Name	Unit ID	Password	Connection Port		Profile
						Transceiver	Server	
☒	1	IP100H	Roger	0001	iptrx	30000	30000	1
☒	2	IP100H	Bill	0002	iptrx	30002	30002	1
☒	3	IP100H	Steve	0003	iptrx	30004	30004	1

9. Set up any other Transceivers similarly. After adding each radio, verify that they appear in the **Transceiver Setting Entry List**.

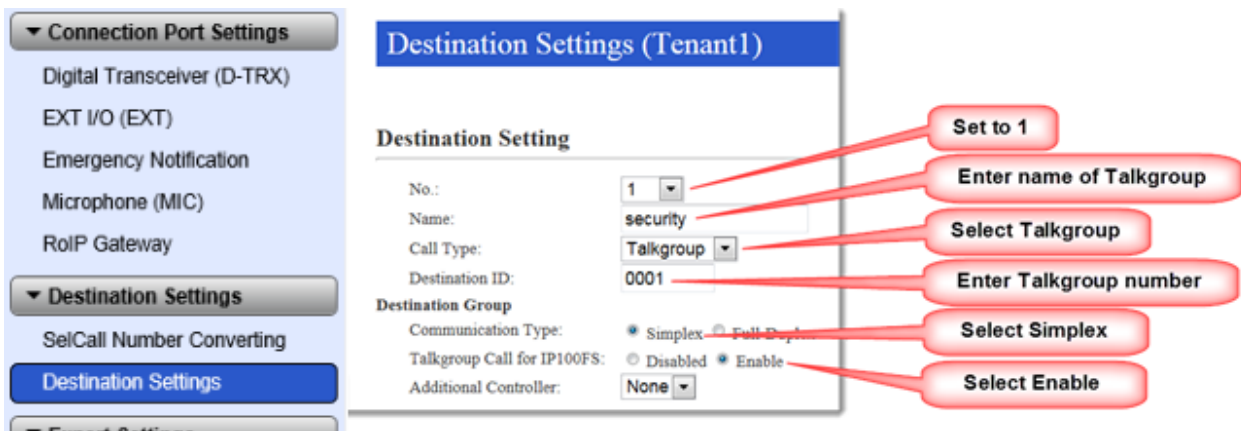
Creating *Talkgroups* in the VE-PG4 Web Interface

The IP100/VE-PG4 system has two different methods of calling multiple radios at one time:

- **Talkgroup calling**- This type of calling allows the radio user to select a Talkgroup on his display, and operate on that specific Talkgroup (both transmit and receive) until he physically chooses another Talkgroup on the display to operate on.
- **Group calling**- This type of calling allows the user to operate on the Group that is programmed as the default or primary Group, but gives him the ability to select another Group to call *temporarily*. After making the choice to call another Group, the radio switches back to the default or primary group after a programmed period of time.

Because the Talkgroup method gives the radio user more predictability in knowing what Talkgroup they are on, this guide describes the Talkgroup feature. The following explains how to create Talkgroups as programmed in the **Destination Settings** window. The **Destination Settings** are where you add all call types, not just Talkgroups.

1. Go to **Destination Settings** and create a **Talkgroup** as follows.



Destination Settings (Tenant1)

Destination Setting

No.: 1 (Set to 1)

Name: security (Enter name of Talkgroup)

Call Type: Talkgroup (Select Talkgroup)

Destination ID: 0001 (Enter Talkgroup number)

Destination Group

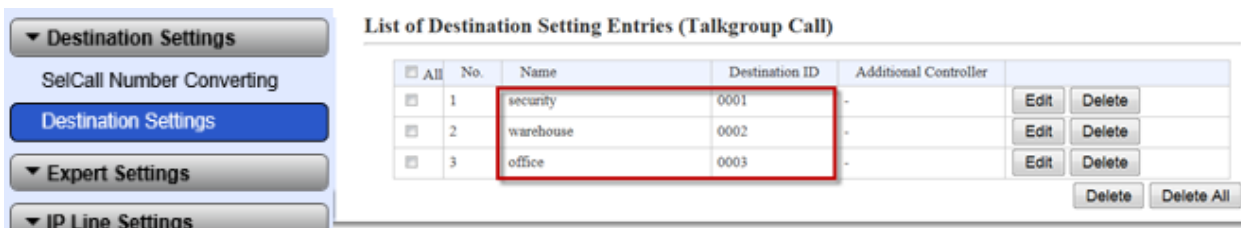
Communication Type: ☒ Simplex ☐ Full Duplex (Select Simplex)

Talkgroup Call for IP100FS: ☐ Disabled ☒ Enable (Select Enable)

Additional Controller: None

2. Click **Apply**. Repeat steps 1 and 2 for additional talkgroups.

3. Verify the List of Destination Setting Entries shows all talkgroups.



List of Destination Setting Entries (Talkgroup Call)

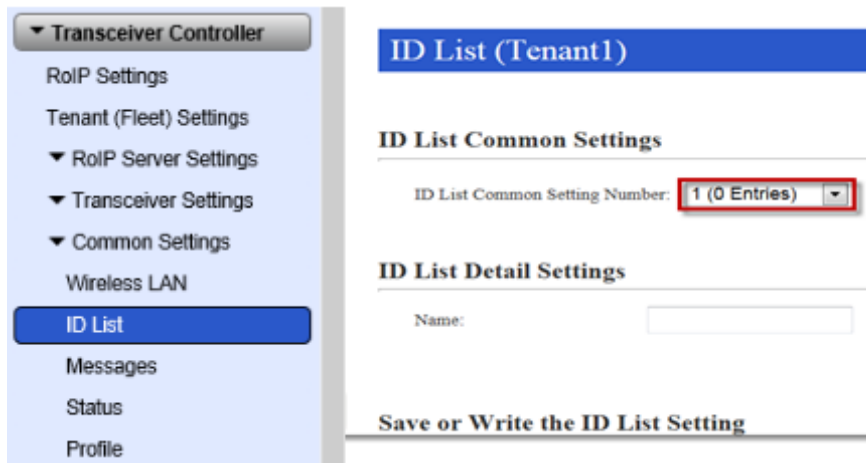
☐ All	No.	Name	Destination ID	Additional Controller	Edit	Delete
☒	1	security	0001		Edit	Delete
☒	2	warehouse	0002		Edit	Delete
☒	3	office	0003		Edit	Delete

Buttons: Delete, Delete All

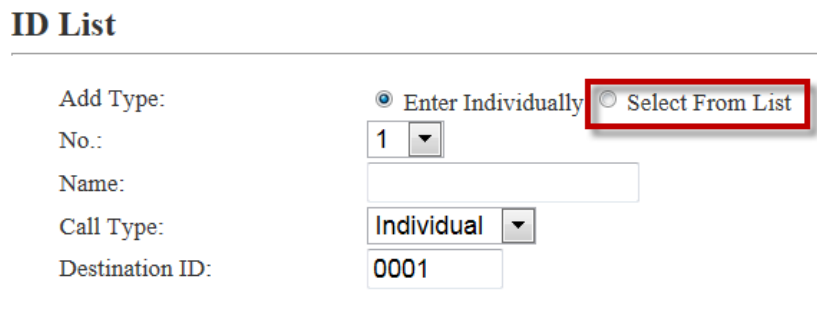
Creating ID Calling List's for Downloading into Subscribers

The ID List that is downloaded into a specific radio determines what ID's, either Individual, Group, or Talkgroup, this radio can call. In a single Tenant (Fleet) it is possible that different radios require different ID Lists. The VE-PG4 allows for multiple ID Lists, which can be added to different Profiles, so that all radios in a fleet don't have to have the same ID or Calling list.

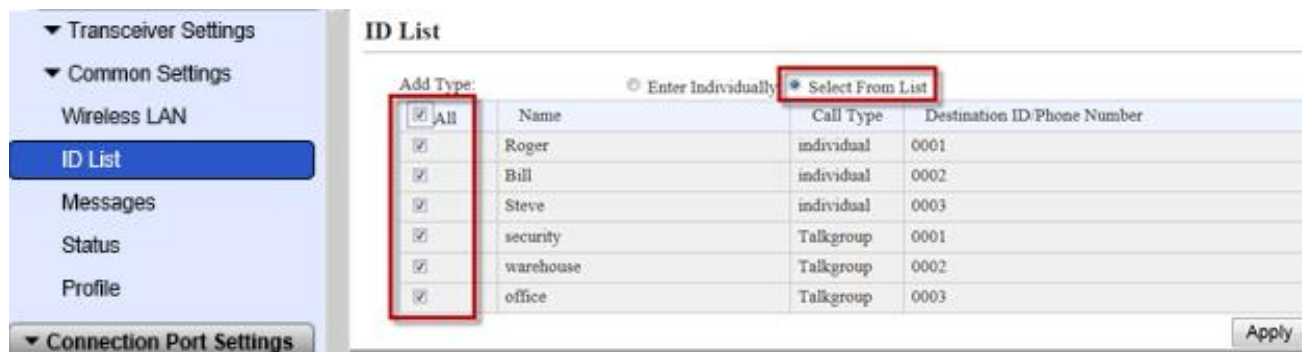
1. Go to **Common Settings-ID List**. In the Select **ID List Common Setting** field, select **1** for ID List number 1.



2. Scroll down to **ID List** and choose **Select from List** to populate the previously entered ID's.



- Click the desired checkboxes in the **Add Type** column (or click **All**, if desired).

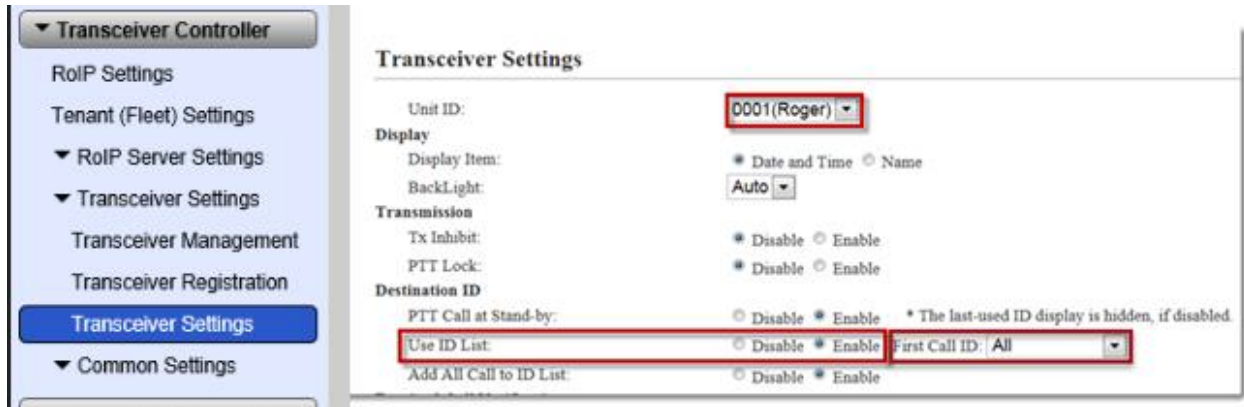


Add Type:	Name	Call Type	Destination ID/Phone Number
☒ All			
☒	Roger	individual	0001
☒	Bill	individual	0002
☒	Steve	individual	0003
☒	security	Talkgroup	0001
☒	warehouse	Talkgroup	0002
☒	office	Talkgroup	0003

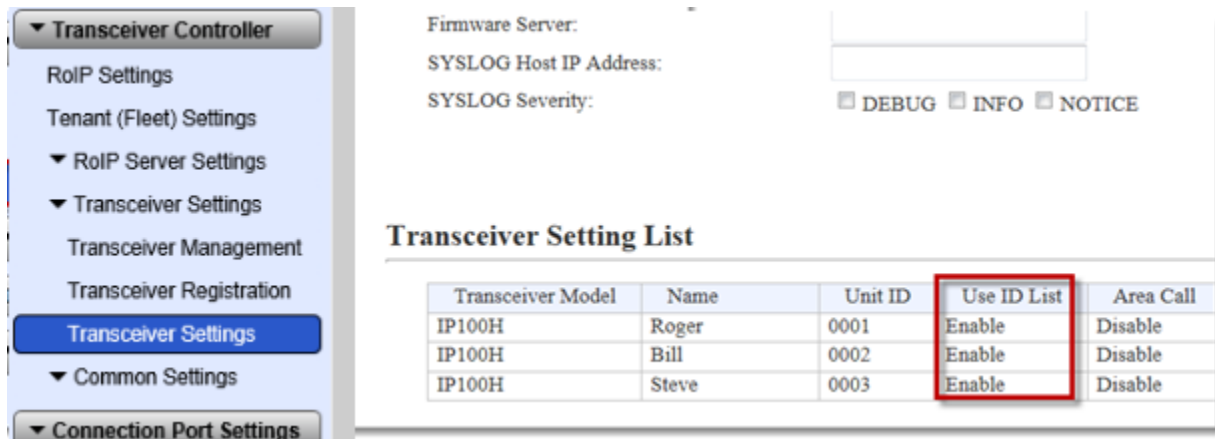
- Click **Apply** to add these Individual ID's and TG ID's ID to List 1.
- If more ID Lists are needed, return to Steps 1 through 4 to configure.
- The ID Lists created in this procedure is defaulted to Profile 1 in Profiles.

Enabling the ability to download ID List's to Radios in the VE-PG4 Web Interface

1. Go to **Transceiver Settings/Transceiver Settings**-Select a radio for ID List Enabling. This needs to be done for each Unit ID (for IP100H radios).



2. At **Destination ID/Use ID List**, select **Enable** for that radio.
3. At **First Call ID**, select the Talkgroup ID that you want set on the radio as default when you first turn on the radio. Choosing ALL means the radio will be in All Call mode at power-on.
4. Click **Apply**. Repeat steps 1, 2 and 3 for each radio.
5. Verify the radios have been enabled in the **Transceiver Setting List** at the bottom of the page.

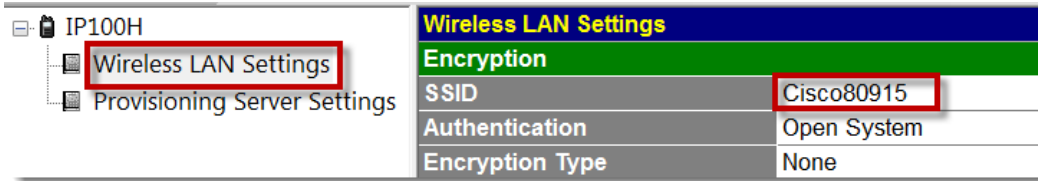


Transceiver Model	Name	Unit ID	Use ID List	Area Call
IP100H	Roger	0001	Enable	Disable
IP100H	Bill	0002	Enable	Disable
IP100H	Steve	0003	Enable	Disable

Once a radio is “enabled” to “Use ID List”, it can have its list, as programmed in the **Profile** window and the **Transceiver Settings** window, downloaded into it upon affiliation to the WLAN.

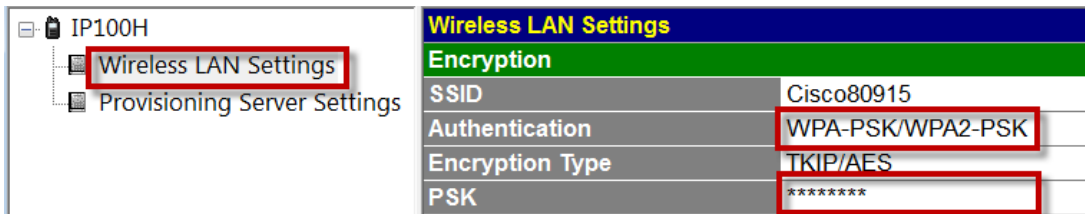
Programming the IP100H Radios with the CS-IP100H Cloning Software

1. Open the CS-IP100H cloning software and connect your IP100H radio using the OPC-478UC cloning cable and the OPC-2144 plug adapter.
2. Click **Wireless LAN settings** on the left side on the screen.
3. Enter the SSID in the SSID field (note: this SSID must be enabled in the customer's WLAN system).



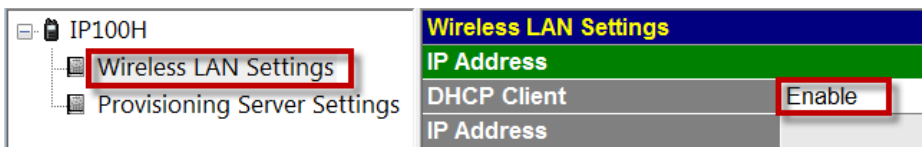
Wireless LAN Settings	
Encryption	
SSID	Cisco80915
Authentication	Open System
Encryption Type	None

4. Select the desired encryption method out of the supplied choices in the Authentication field. This is the encryption level. No other choices are available at this time.
5. Enter the Wireless LAN PSK (pre-shared key or password) for the customer's Access Points in the PSK field. In this example, we are using "1234567890" as shown above in Customer's IP parameters settings.



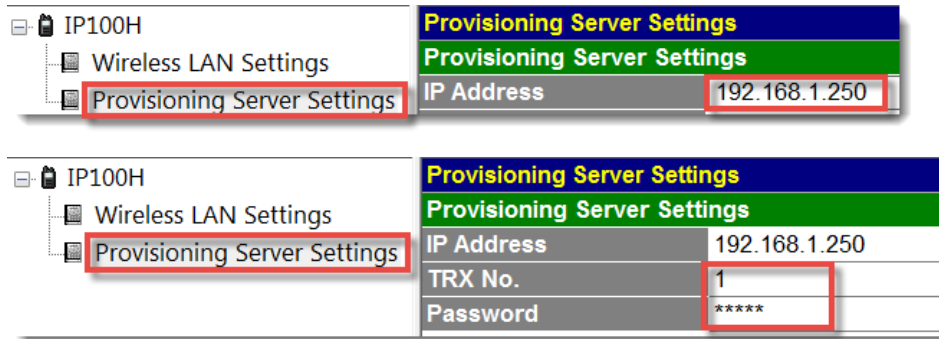
Wireless LAN Settings	
Encryption	
SSID	Cisco80915
Authentication	WPA-PSK/WPA2-PSK
Encryption Type	TKIP/AES
PSK	1234567890

6. Verify that the DHCP Client setting is set to **Enable**. This will allow the Customer's controller to assign IP address to the IP100H radio automatically.



Wireless LAN Settings	
IP Address	
DHCP Client	Enable
IP Address	

- Click **Provisioning Server Settings** and enter your VE-PG4 IP address in the IP address field (192.168.1.250). This setting allows radio to find the VE-PG4 on the network.



Provisioning Server Settings	
IP Address	192.168.1.250
TRX No.	1
Password	*****

- Programming Radio no. 1: Enter "1" in **TRX No.** Box for Transceiver No. 1. Note: TRX No. is not the radio ID, but is actually a reference number pointing to the TRX No. /Radio ID in the *Transceiver Setting Entry List* in the VE-PG4 programming.
- Enter **Password** (iptrx) same as setup in the VE-PG4 for Unit ID. This allows the radio to be accepted as an authorized device on the VE-PG4 controller. Note: This is not the previously mentioned PSK for the WLAN system.

Note: This password is required for authentication by the VE-PG4 controller. The PSK (Pre Shared Key) mentioned earlier, is a different password and is for authentication by the customers WLAN system (routers and controllers).

- Programming Radio no. 2: Enter "2" in **TRX No.** Box for Transceiver No. 2.
- Enter **Password** (iptrx), same as setup in the VE-PG4 for Unit ID 2.



Provisioning Server Settings	
IP Address	192.168.1.250
TRX No.	2
Password	*****

- Click **Clone** and **Write** to upload the file into the Radio.

Repeat these steps for any additional radios.

After rebooting your IP100H radios, the VE-PG4 will download all information to the radio and allow it to register.

If they do not connect to the network and show "Setting up" or "Failed", read through the previous steps and verify the information.

Making a Talkgroup Call from your IP100H Radio

1. Press the FUNC key to enter the Talkgroup mode.
2. Press the Up/Down arrows to select a Talkgroup.
3. Press CLR or the PTT to select the Talkgroup.
4. Press CLR or the PTT again to leave the selected Talkgroup and return to the original Talkgroup.