ERT

IMPLEMENTING WIRELESS SECURITY ON VIPER GATEWAYS AND LINCS

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WIRELESS SECURITY ON VIPER GATEWAYS AND LINCS

The Viper Gateways are configured with an SSID of EPAERT1. By default, the EPAERT1 Wi-Fi network broadcasts as an "open" network (no security) and does not require devices to provide a password in order to connect. Also by default, LINCs are configured to connect to an "open" EPAERT1 network. However, there may be some instances when having an "open" Wi-Fi connection is undesirable. In those scenarios, Wireless Security Settings can be implemented on the EPAERT1 Gateway to secure the Wi-Fi network.

Important Information

The order in which wireless security should be configured is important!

- First, modify the LINCs to include a Wireless Security Passphrase.
- When all LINCs have been reconfigured, proceed to setting the Wireless Security Passphrase on the Gateway.
- Although the Gateway will be configured last, it is recommended that before changing the LINCs, verify that the Gateway Configuration Software (BC Commander) is installed, functioning properly and recognizes the Gateway. Issues that can arise include Java compatibility issues and Firmware Version issues. See Section 2 of this guide for additional information.
- Complete steps 1 through 5 in the "Gateway Configuration" section of this guide to verify that BC Commander is operational.

Overview of Steps

1. Make sure BC Commander software is installed and operational
2. Modify all LINCs
3. Modify the Gateway/s

Section 1 - Configuring a LINC for Wireless Security

The steps below will identify how to add a security passphrase to *each* LINC that will be connecting to the "security enabled" EPAERT1 Gateway.

Caution – this is an advanced task and could render a LINC unable to communicate with Standard EPA Gateways. It is important to label the LINC "Security Enabled" as to alert users that the LINC will no longer work with the default open EPAERT1 network.

Before beginning, connect a laptop to the EPAERT1 Wi-Fi network.

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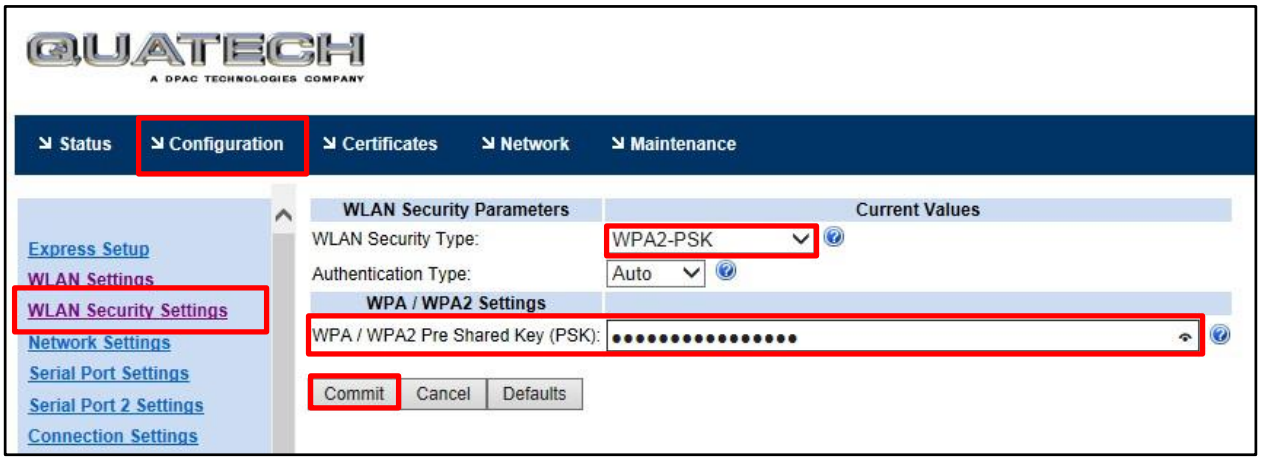
1. Verify that the laptop is connected to the Gateway Wi-Fi network (EPAERT1) and that the LINC is powered on
2. **Open an internet browser**
3. Login to the LINC by **Navigating to http://192.168.3.[LINC#]**
    a. [LINC#] will be the number labeled on the side of the LINC. So, to administer a LINC labeled #25, enter 192.168.3.25 in the address bar

4. Enter the **User Name** and **Password**

    Username: dpac

    Contact ertsupport@epa.gov to obtain the password



5. After Logging in to the LINC, select **Configuration** from the menu bar
6. Select **WLAN Security Settings** from the left navigation pane

7. Use the drop-down arrow next to WLAN Security Type to select **WPA2-PSK**
8. Under WPA/WPA2 Settings, **enter a passphrase between 8 and 64 characters** (16 characters are recommended**). Please contact ertsupport@epa.gov to obtain the password for EPA-Wide Viper Equipment consistency**. This will allow seamless integration of equipment when a Region needs to supplement their deployments with other Regional or ERT/SERAS equipment, as well as for troubleshooting purposes. This same passphrase will need to be added to all of the LINCs as well as the Gateway Wi-Fi router so record the passphrase for later use.
9. Click the **Commit** Button after entering a passphrase

10. Click the **Restart** button. When the connection to the LINC is lost (i.e., the browser is no longer logged in to the LINC), the settings have been applied. This may take a few minutes. After the settings are applied, the Wi-Fi light on the LINC will continue to blink until the same security settings have been configured on the Gateway.

11. Label the outside of the LINC "**Security Enabled**".

12. Continue configuring the remaining LINCs.

Section 2 – Configure Gateway with Wireless Security

Caution – this is an advanced task and could render a Gateway unable to communicate with Standard EPA LINCs. It is important to label the Gateway "Security Enabled", with the password/passphrase, to alert users that the Gateway will no longer work with the default un-secured LINC configurations.

BC Commander Software – Tips and Tricks

Rajant Radio Firmware v10 or v11

Gateways can have either Rajant firmware v10 or v11. Each firmware version uses a corresponding version of BC Commander Software – BC Commander v10 or v11. Both versions of the software are available for download from Response.EPA.Gov\Viper and there is no visible way to tell which firmware is installed on a Gateway. Basically, if the Gateway is recognized in BC Commander v10, it will have firmware V10. If a Gateway is recognized with BC Commander v11, it will have v11 firmware installed. You may have to install one version and if the Gateway is not recognized, install the other version.

After connecting to a Gateway in BC Commander, the exact firmware version will be displayed. After discovering which version firmware a Rajant radio is using, it is recommended to make note of it by adding a sticker somewhere in the Gateway.

Java Software

BC Commander requires Java. If Java is not installed or if a version of Java is installed that is not compatible with BC Commander, you will receive a Java error during installation. Often times, installing the latest version of Java will solve the problem. Earlier versions of Java are posted to Response.EPA.Gov\Viper. If the latest version of Java is not working, try one of the earlier versions posted there.

The instructions below assume that the software necessary to manage the Wi-Fi router in the Gateway (BC Commander Software) is installed and operational on the laptop being used to configure the Gateway. **If the software is not installed on the Laptop, it can be downloaded from the Documents section of response.epa.gov/viper.**

Rajant Firmware V10 (BC Commander v10)

The instructions and screenshots below were created on a Gateway with V10 Rajant Firmware and BC Commander v10 software. See the next section for examples from V11.

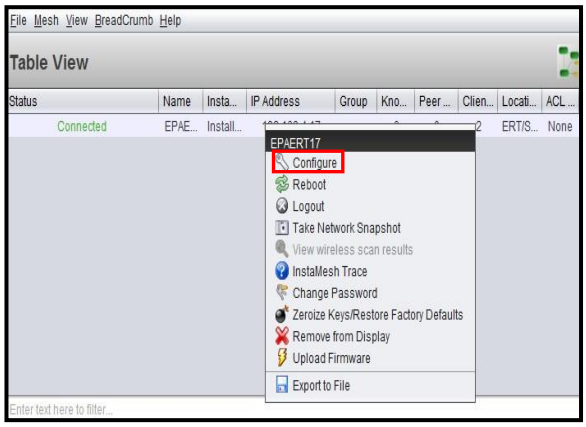
1. Verify your computer is connected to the Gateway's Wi-Fi network (EPAERT1)
   CAUTION: ***Remember to set security passphrase on the LINCs (Section 1) before setting security on the Gateway. Use the same passphrase as configured for the LINCs.***

2. Open **BC Commander**

3. Contact ertsupport@epa.gov to obtain the password
4. Close any version warning screen.

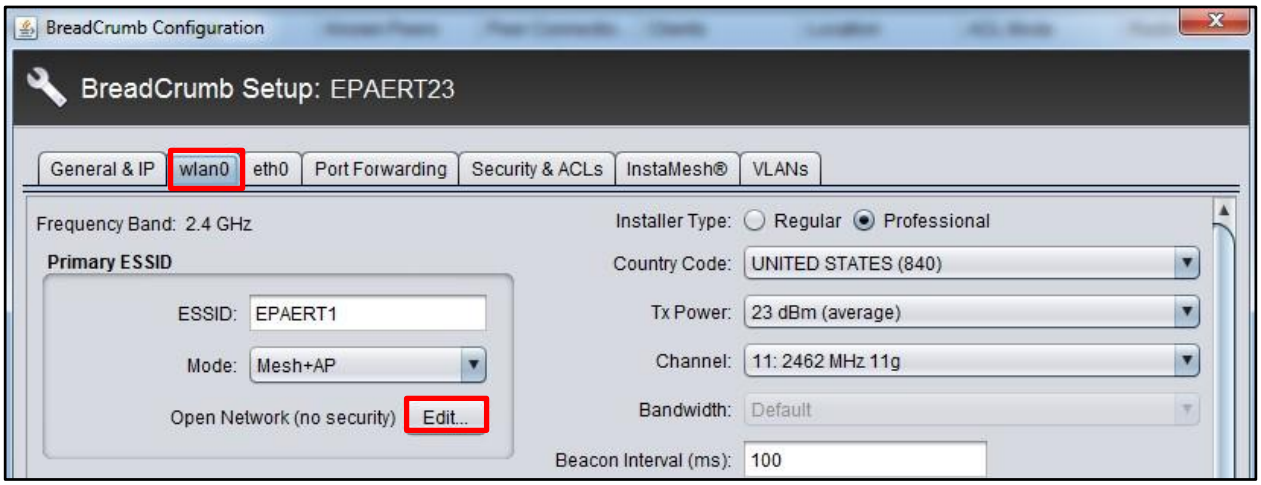
5. **Right-Click** on the Gateway and choose **Configure**.

   The Gateway should be listed in the Table View window. If the Gateway is not listed, it can be added manually by following the instructions in Section 3 of this guide.



6. Switch to the **wlan0** tab

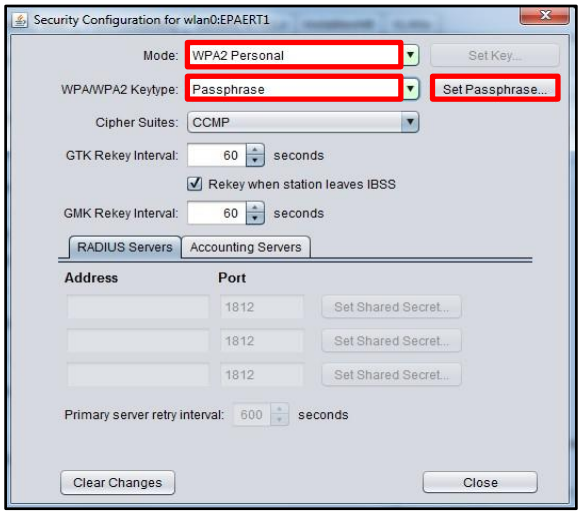
7. Under Primary ESSID, click **Edit**



8. Select **WPA2 Personal** from the Mode drop-down list

9. Select **Passphrase** from the WPA/WPA2 Keytype list

10. Click the **Set Passphrase** button



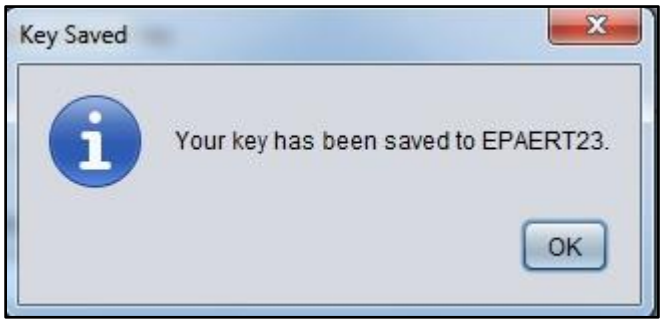
11. Select the option to **Enter a new key**

12. Contact ertsupport@epa.gov to obtain the password/passphrase
13. Enter the password/passphrase

14. In the Confirm Key field, **re-enter the password obtained**

15. Click the **Set Key Now** button

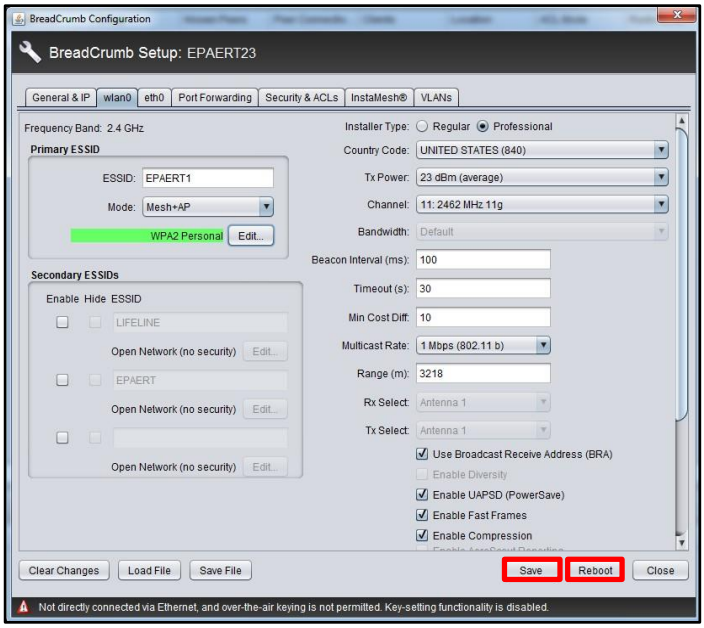
16. Click **OK** to close the Key Saved window



17. Click **Close** until you return to the main **wlan0** screen.

18. Click **Save**

19. Click **Reboot**



When the Gateway reboots, the laptop will be disconnected. You will have to re-connect to EPAERT1 using the Passphrase that you just configured. If you are not prompted for a passphrase when reconnecting your laptop to EPAERT1, the security settings were not applied to the Gateway. Repeat the steps above to apply the security settings.

When the Gateway is finished rebooting, the Wi-Fi lights on the LINCs will return to a solid state, indicating that they are connected to the Security Enabled EPAERT1 network.

20. Label the outside of the Gateway "**Security Enabled**" with the password/passphrase

Rajant Firmware V11 (BC Commander v11)

The instructions and screenshots below were created on a Gateway with V11 Rajant Firmware and BC Commander v11 software.

1. Open **BC Commander**

2. At the **User name and Password** prompt, enter the following information:

   User: **co (Crypto Officer)**

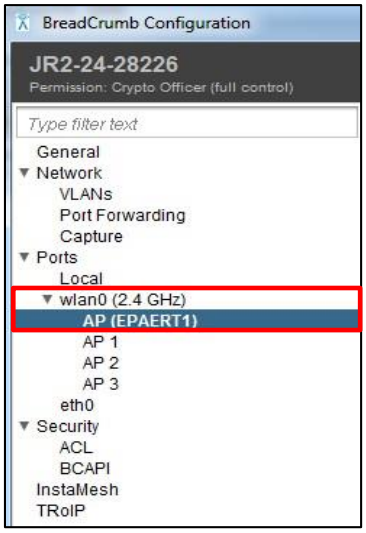
   Contact ertsupport@epa.gov to obtain the password

3. Close any version warning screen.

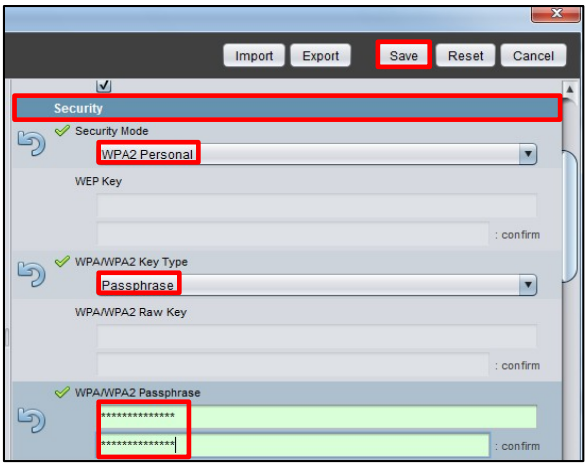
4. **Right-Click** on the Gateway and choose **Configure**.

The Gateway should be listed in the Table View window. If the Gateway is not listed, it can be added manually by following the instructions in Section 3 of this guide

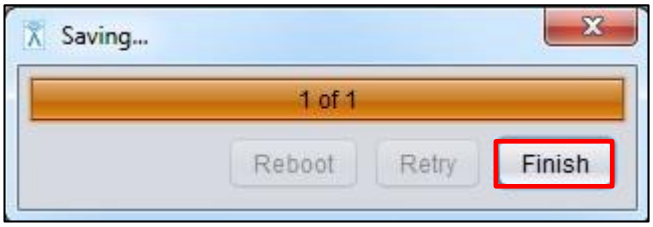
5. On the left side of the screen, select **AP (EPAERT1)** below the wlan0 (2.4 GHz) section



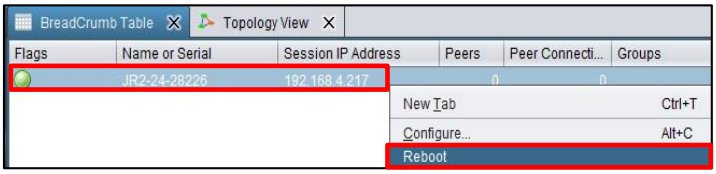
6. Scroll the right side of the screen until the **Security** section is displayed
   a. Select **WPA2 Personal** for the Security Mode
   b. Select **Passphrase** for the WPA/WPA2 Key Type
   c. Contact ertsupport@epa.gov to obtain the WPA/WPA2 Passphrase
   d. Enter the WPA/WPA2 Passphrase obtained
   e. Confirm the password in the line below.
   f. Click the **Save** button at the top of the window.



7. Click **Finish**



8. Right-Click on the Gateway and select **Reboot**



When the Gateway reboots, the laptop will be disconnected. You will have to re-connect to EPAERT1 using the Passphrase that you just configured. If you are not prompted for a passphrase when reconnecting your laptop to EPAERT1, the security settings were not applied to the Gateway. Repeat the steps above to apply the security settings.

When the Gateway is finished rebooting, the Wi-Fi lights on the LINCs will return to a solid state, indicating that they are connected to the Security Enabled EPAERT1 network.

9. Label the outside of the Gateway "**Security Enabled**" with the password/passphrase

Section 3 – Manually Add a Gateway to BC Commander – Version 10 Only

If BC Commander does not automatically find the Gateway, it can be manually added in BC Commander V10. If you need to manually add a Gateway in V11, please contact ERT Support for additional information.

1. Verify your computer is connected to the Gateway's Wi-Fi network (EPAERT1)

2. Open **BC Commander**

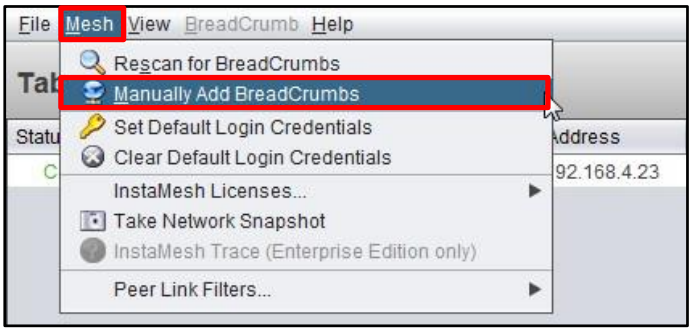
3. At the **User name and Password** prompt, enter the following information:

   User: co (Crypto Officer)

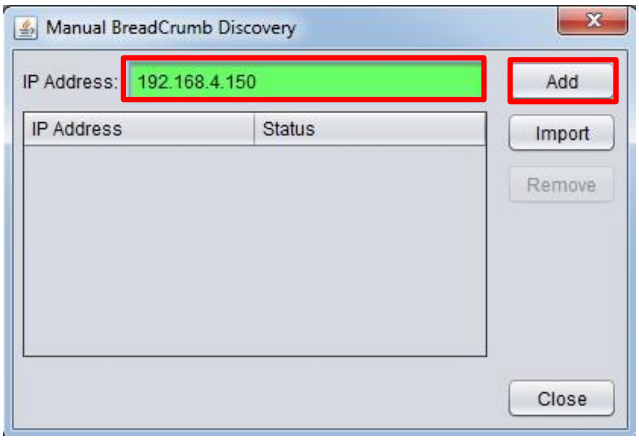
   Contact ertsupport@epa.gov to obtain the password

4. Select **Mesh** from the menu bar

5. Select **Manually Add BreadCrumbs** (FYI - a Gateway is a Breadcrumb)



6. Enter the IP Address of the Gateway. The IP Address will be 192.168.4.xxx. XXX represents the numbers in the Gateway name. For example Gateway EPAERT150 would have an IP Address of 192.168.4.150. Gateway EPAERT53 would have an IP Address of 192.168.4.53



7. If the Gateway is still not recognized, temporarily modify the IP Address of the computer running BC Commander to use a fixed IP Address in the same subnet as the Gateway. Any IP Address in the 192.168.4.xxx should work as long as it is not the same as the Gateway's IP Address. For additional information on changing the computer's IP Address, contact ERT Support.

8. If the Gateway is still not recognized in BC Commander using the steps above, it most likely has version 11 firmware that does not correspond to the version of BC Commander being used. In that case, uninstall the current version of BC Commander (in the steps above, BC Commander v10 is installed) and install Version 11.