



ERT

USER MANUAL
for

SPM FLEX SETUP



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CONFIGURING THE SPM FLEX, CRADLEPOINT FIREWALL RULES AND METERAPP SETTINGS FOR USE IN VIPER

Background

In order for the SPM Flex instrument(s) to work with Viper, specific networking within the instrument itself, as well as within the Cradlepoint Gateway and the SPM Flex MeterApp need to be configured. When configuring the instrument, you will need a dedicated LINC to be paired up with an SPM Flex instrument.

The following guide addresses how to navigate through the SPM Flex Menu and how to configure the IP Address, Subnet and Gateway within the Instrument, as well as configuring the Cradlepoint Gateway Firewall Rules and the SPM Flex MeterApp for either Wifi or Cellular mode.



Complete SPM Flex Setup (LINC, RJ45 cable and Instrument)



Navigating the SPM Flex Menu

All SPM Flex menus are navigated by the four buttons as shown below. Pressing either of the arrows or the Accept/Select button will access the menu from the main display screen. The arrows are used to scroll up and down through lists of options. The Accept/Select button is used to select a highlighted option. During navigation, the Power/Cancel button will cancel a command or, when pressed for more than 3 seconds, it will exit to the main display.





SPM FLEX CONFIGURATION

IP Address Configuration

The IP address on the SPM Flex must match the IP Address of the Linc that is attached to the Instrument. To enter the IP Address:

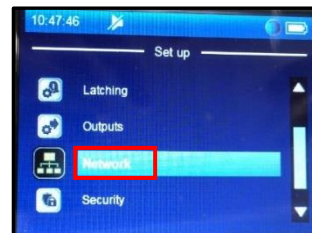
1. Turn the instrument on. Press the arrow down button ↓ until you come to the Main Menu.



2. Arrow down ↓ to Setup.

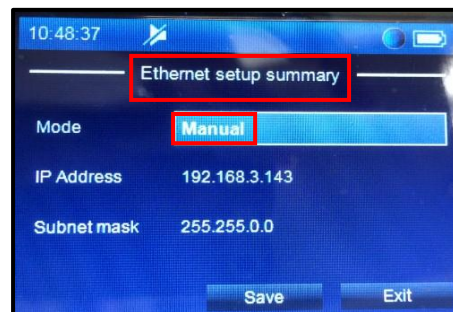


3. Arrow down ↓ to Network



4. Press the checkmark ✓ on Network .

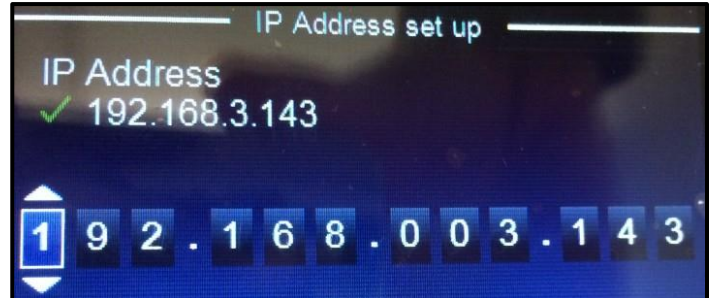
5. Arrow down ↓ to Ethernet. **NOTE: Make it is set to Manual (not automatic).**



sure



6. Arrow down ↓ To IP Address.
7. Press the checkmark ✓ to select.
8. To change the IP Address, use the up ↑ & down ↓ Arrows to change the #'s. Use the checkmark ✓ to move from # to #.

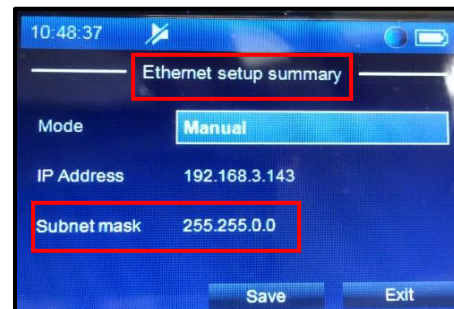


9. Enter the IP Address as follows: 192.168.003.XXX (XXX=Linc #). **Note: It will appear as 192.168.3.xxx (xxx represents the Linc #) on the Ethernet Setup Summary as described above.**
10. Once you have successfully entered the IP Address, click the power button once to return to the Ethernet Setup Summary. Follow the steps below to configure the Subnet.

Configuring the Subnet Mask

To configure the Subnet Mask:

1. On the Ethernet Setup Summary, arrow down ↓ To Subnet Mask.
2. Press the checkmark ✓ to select.
3. As described in #8 above, use the up ↑ & down ↓ Arrows to change the #'s. Use the checkmark ✓ to move from # to #.



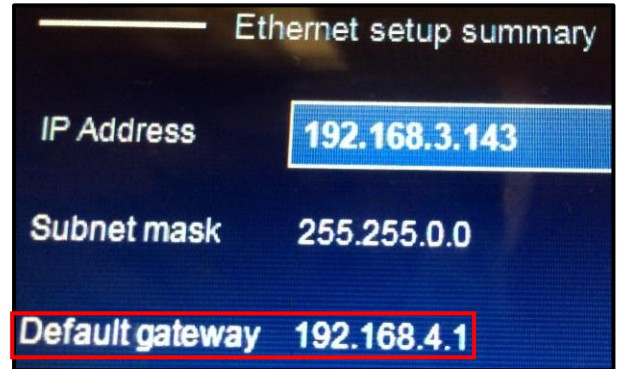
4. Enter the Subnet Address as follows: 255.255.000.000. **Note: It will appear as 255.255.0.0 on the Ethernet Setup Summary as described above.**
5. Once you have successfully entered the Subnet Mask Address, click on the power button once. You will be brought back to the Ethernet Setup Summary. You are now ready to configure the Default Gateway.



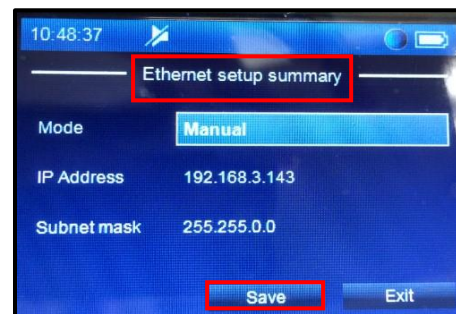
Configuring the Default Gateway

To configure the Default Gateway:

1. On the Ethernet Setup Summary, arrow down ↓ To Gateway.
2. Press the checkmark ✓ to select.
3. As described in #8 above, use the up ↑ & down ↓ Arrows to change the #'s. Use the checkmark ✓ to move from # to #.



4. Enter the Gateway Address as follows: 192.168.004.001. **Note: It will appear as 192.168.4.1 on the Ethernet Setup Summary as described above.**
5. Once you have successfully entered the Gateway Address, arrow down ↓ to Save and press the checkmark ✓ to Save. Your Ethernet Setup Summary should look like this:



6. Push the Power Button 4 times to get back to Main Menu.

IMPORTANT: Label the SPM Flex with the IP Address you assigned it.

192.168.3.143



CRADLEPOINT GATEWAY CONFIGURATION

Firewall Rules for an SPM Flex LINC are slightly different than those for a standard Viper LINC. Follow the steps below to enter the Firewall Rules for an SPM Flex LINC.

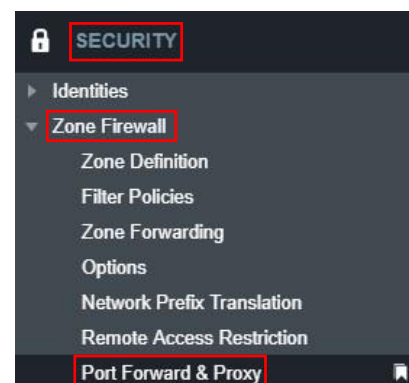
The steps below are based on Cradlepoint Firmware version 6.x or higher. The screens and menus may be different for older firmware versions. For additional information or support please call ERT Support at 1-800-999-6990.

Entering SPM Flex Firewall Rules v6.x or higher

To configure your firewall rules from scratch:

1. Power on the Gateway. Connect your computer to EPAERT1.
2. Open an internet browser and type <http://EPAERTxx.safeenv2.com:8080> (xx=Gateway number) and hit enter.
3. Contact ertsupport@epa.gov to obtain the password.
4. Click LOGIN.
5. Navigate to SECURITY | Zone Firewall | Port Forward & Proxy.

The screenshot shows the Cradlepoint NetCloud OS LOGIN page. It has a dark header with the 'cradlepoint NetCloud OS' logo. Below the header is a 'LOGIN' section with the instruction 'Please enter the administrator password to access settings and options.' There are two input fields: 'User Name:' with 'admin' entered, and 'Password:' which is empty. A red box highlights the password field. At the bottom right is a 'Login' button, also highlighted with a red box.





- Click Add to add a LINC to the Port Forwarding Rules table.

Port Forwarding Rules

+ Add Edit Remove

The example below depicts adding LINC# 145 to the firewall rule table.

Add the Data rule

- Name = LINC# and d (145d)
- Enabled = checked
- Internet Port(s) = 9 and LINC # (9145)
- Local Computer = the IP Address of the LINC (192.168.3.145)
- Local Ports = 502
- Protocol = TCP & UDP
- Save when completed

Edit 145d

Name: 145d

Enable: ☒

Internet Port(s): 9145 -> 9145

Local Computer: 192.168.3.145

Local Port(s): 502 -> 502

Protocol: TCP & UDP

Cancel Save

Add the Telnet rule

- Name = LINC# and t(145t)
- Enabled = checked
- Internet Port = 10 and LINC #(10145)
- Local Computer = LINC IP Address (192.168.2.145)
- Local Port = 23
- Protocol = TCP & UDP
- Save when completed

Edit 145t

Name: 145t

Enable: ☒

Internet Port(s): 10145 -> 10145

Local Computer: 192.168.2.145

Local Port(s): 23 -> 23

Protocol: TCP & UDP

Cancel Save



Add the GPS rule

- **Name** = LINC# and g (**145g**)
- **Enabled** = checked
- **Internet Port** = 11 and LINC # (**11145**)
- **Local Computer** = LINC IP Address (192.168.2.145)
- **Local Port** = 8024
- **Protocol** = TCP & UDP
- **Save** when completed

Edit 145g

Name: 145g

Enable: ☒

Internet Port(s): 11145 -> 11145

Local Computer: 192.168.2.145

Local Port(s): 8024 -> 8024

Protocol: TCP & UDP

Cancel Save

- Repeat all rules for all LINC#s

*NOTE: LINC #s are always considered 3 digits when adding rules. If a 2-digit LINC needs to be added to the Firewall table, include a leading 0 for the LINC# in the **Internet Port** field for each rule. For example LINC# 23, Internet Port for Data would be 9023, Telnet 10023 and GPS 11023.*

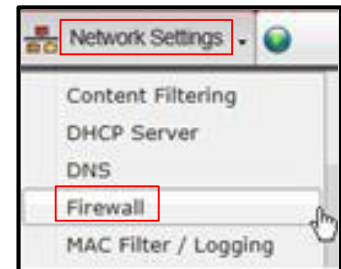


The steps below are based on Cradlepoint Firmware version 5.4.2 or lower. The screens and menus may be different for newer firmware versions. For additional information or support please call ERT Support at 1-800-999-6990.

Entering SPM Flex Firewall Rules v5.4.2 or Lower

To configure your firewall rules from scratch:

1. Power on the Gateway. Connect your computer to EPAERT1.
2. Open an internet browser and type <http://EPAERTxx.safeenv2.com:8080> (xx=Gateway number) and hit enter.
3. Contact ertsupport@epa.gov to obtain the password.
4. Click LOGIN.
5. Navigate to Network Settings – Firewall.
6. Click Add to add a LINC to the firewall table.





The example below depicts adding LINC# 145 to the firewall rule table.

Add the Data rule

- **Name** = LINC# and d (**145d**)
- **Enabled** = checked
- **Internet Port** = 9 and LINC # (**9145**)
- **Local Computer** = the IP Address of the LINC (**192.168.3.145**)
- **Local Ports** = 502
- **Protocol** = TPC & UPD
- **Submit** when completed

The screenshot shows the 'Add/Edit Port Forwarding Rule' dialog box. The 'Name' field is set to '145d'. The 'Enabled' checkbox is checked. The 'Use Port Range' checkbox is unchecked. The 'Internet Port(s)' field is set to '9145'. The 'Local Computer' dropdown menu is set to '192.168.3.145'. The 'Local Port(s)' field is set to '502'. The 'Protocol' dropdown menu is set to 'TCP & UDP'. At the bottom, there are 'Submit' and 'Cancel' buttons, and a status bar showing 'TCP & UDP' and 'Yes'.

Add the Telnet rule

- **Name** = LINC# and t (**145t**)
- **Enabled** = checked
- **Internet Port** = 10 and LINC # (**10145**)
- **Local Computer** = LINC IP Address (**192.168.2.145**)
- **Local Port** = 23
- **Protocol** = TCP & UDP
- **Submit** when completed

The screenshot shows the 'Add/Edit Port Forwarding Rule' dialog box. The 'Name' field is set to '145t'. The 'Enabled' checkbox is checked. The 'Use Port Range' checkbox is unchecked. The 'Internet Port(s)' field is set to '10145'. The 'Local Computer' dropdown menu is set to '192.168.2.145'. The 'Local Port(s)' field is set to '23'. The 'Protocol' dropdown menu is set to 'TCP & UDP'. At the bottom, there are 'Submit' and 'Cancel' buttons, and a status bar showing 'TCP & UDP' and 'Yes'.



Add the GPS rule

- **Name** = LINC# and g (145g)
- **Enabled** = checked
- **Internet Port** = 11 and LINC # (11145)
- **Local Computer** = LINC IP Address
(192.168.2.145)
- **Local Port** = 8024
- **Protocol** = TCP & UDP
- **Submit** when completed
- Repeat all rules for all LINC#s

Add/Edit Port Forwarding Rule

Name: 145g

Enabled: ☒

Use Port Range: ☐

Internet Port(s): 11145

Local Computer: 192.168.2.145

Local Port(s): 8024

Protocol: TCP & UDP

Submit Cancel

*NOTE: LINC #s are always considered 3 digits when adding rules. If a 2-digit LINC needs to be added to the Firewall table, include a leading 0 for the LINC# in the **Internet Port** field for each rule. For example LINC# 23, Internet Port for Data would be 9023, Telnet 10023 and GPS 11023.*



METERAPP CONFIGURATION

WiFi Mode Configuration

Once your SPM Flex has been configured and the Firewall rules have been updated in the Cradlepoint Router, you must configure the SPM Flex MeterApp so data can flow properly to Viper Survey Controller.

1. Start a Run in Survey Controller.
2. Once the run is started and the MeterApp appears in the task tray, click on the MeterApp to launch it full screen (may take a few moments to appear in the tray). **NOTE: The SPM Flex MeterApp does not launch full screen. It remains in the task tray.**

3. Unlock the MeterApp (using Password Generator)
4. Click on the Data Input Settings tab
5. Under LINC Settings | Meter's IP Address should be 192.168.3.xxx (xxx=Linc #)
6. Port must be 502 in WiFi Mode. **NOTE: Port 502 is used only in WiFi Mode. See Cellular Mode Configuration for different Port settings.**
7. Separate LINC IP can have information or leave it blank
8. GPS Default TCP IP must be changed to 192.168.2.xxx (xxx=Linc#)
9. Port = 8024
10. Make sure there is a checkmark ✓ in Get GPS and a checkmark ✓ in ChkBatVolt
11. Click Save Settings



12. Click Configure

13. Close down the MeterApp. Wait until it appears in the task tray and re-launch.

NOTE: Until the display on the instrument sees a value, Survey Controller won't turn green. This may take up to 3-6 minutes based on the compound sweep time. 0.00 is often the value that will initially be displayed.



Cellular Mode Configuration

1. Start a Run in Survey Controller.
 2. Once the run is started and the MeterApp appears in the task tray, click on the MeterApp to launch (may take a few moments to appear in the tray). **NOTE: The SPM Flex MeterApp does not launch full screen. It remains in the task tray.**
 3. Unlock the MeterApp (using Password Generator).
 4. Click on Data Input Settings
 5. MeterApp IP Address should be EPAERTxxx.safeenv2.com (xxx=Gateway #)
 6. Port = 9xxx (xxx=LINC #)
 7. Separate Linc IP: EPAERTxxx.safeenv2.com (xxx-Gateway #)
 8. BatPort = 10xxx (xxx = LINC #)
 9. GPS Default TCP IP: EPAERTxxx.safeenv2.com (xxx=Gateway #)
 10. Port = 11xxx (xxx=LINC#)
 11. Make sure there is a checkmark ✓ in Get GPS and a checkmark ✓ in ChkBatVolt
 12. Click Save Settings
 13. Click Configure
- Close down the MeterApp. Wait until it appears in the task tray and re-launch.

NOTE: Until the display on the instrument sees a value, Survey Controller won't turn green. This may take up to 3-6 minutes based on the compound sweep time. 0.00 is often the value that will initially be displayed.



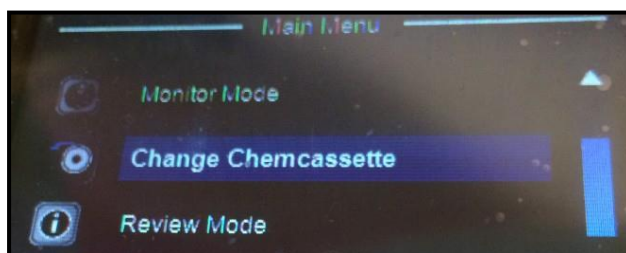
CHEMCASSETTE CARTRIDGES

SPM Flex instruments come with different Chemcassette Cartridges for monitoring different types of gas. If a Chemcassette Cartridge has been loaded in the SPM Flex previously, it will automatically be recognized by the instrument. Below are instructions on loading a new (first time loaded in the instrument)Chemcassette Cartridge and instructions on how a previously loaded Chemcassette Cartridge is recognized in the SPM Flex.

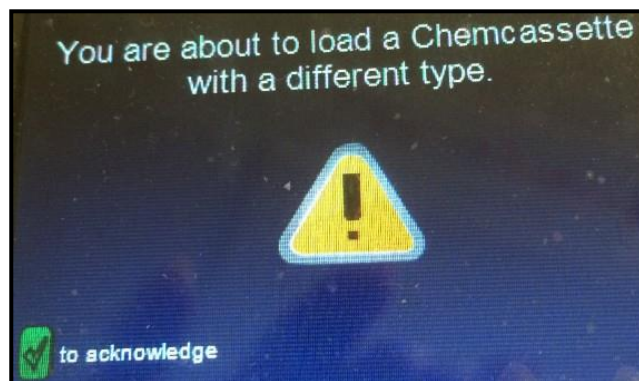
NOTE: Each Chemcassette Cartridge has a different gas library so make sure you are using the correct Cassette for your sampling event. There are also ChemCassette Cartridges that are specific to certain types of gases (i.e., HCN, SO₂, CO, Cl₂).

Loading a New ChemCassete

1. On the Main Menu, arrow down ↓ to Change Chemcassette Cartridge. Click on checkmark ✓.



2. Open the gate and insert the new Chemcassette Cartridge. Close the Gate. Press ✓ to continue. You will receive a prompt to acknowledge you are loading a Chemcassette with a different type. Press the checkmark ✓ to acknowledge.



3. Instrument will read it and prompt you to accept it. If it is the correct Chemcassette, Current Gas and Alarms, press the down arrow ↓ to Save. Press the checkmark ✓.
4. Arrow down ↓ to Save. Press checkmark ✓ to store the selected gas.

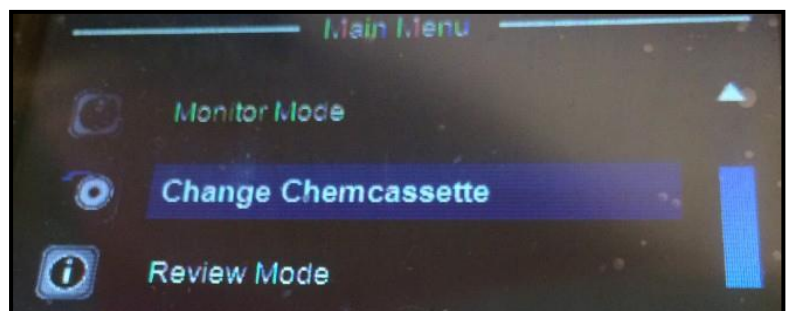


5. Return to the Main Menu and select Monitor Mode.



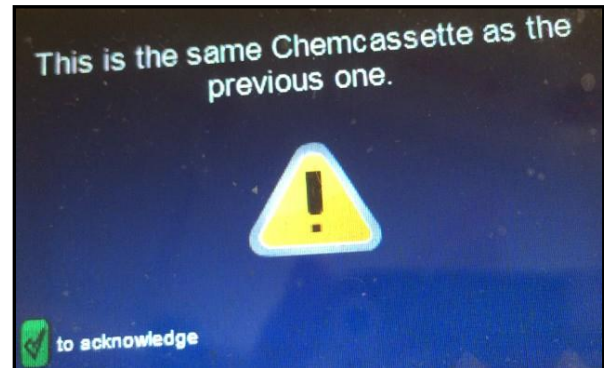
Loading a Previously Loaded ChemCassette

1. On the Main Menu, arrow down ↓ to Change Chemcassette. Click on the checkmark ✓.

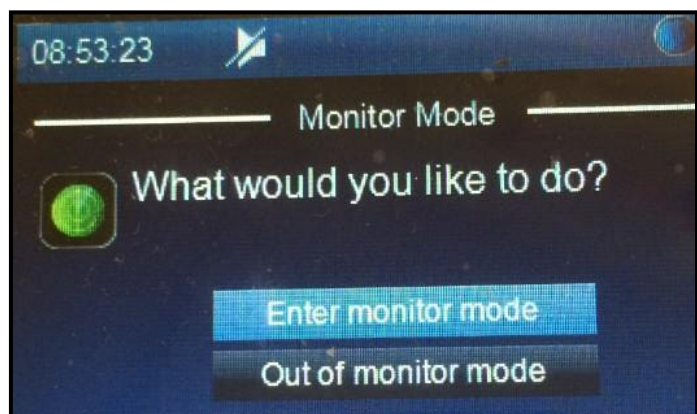




2. Open the gate, insert the Chemcassette Cartridge. Close the Gate. Press ✓ to continue. Instrument will read it and prompt you to accept acknowledge if it is the proper cassette. If it is the correct Chemcassette Cartridge, press the checkmark ✓ to continue.



3. Return to the Main Menu, scroll to Monitor Mode. Enter monitor mode.





FACTORY RESETTNG SPMFLEX LINC

Background

The ERT Viper LINC

s that we refer to in this guide are the ones manufactured by Safe Environment Engineering. The LINC is the wireless device that communicates with your instrument and the Gateway.

If a LINC fails to connect to your Gateway, the LINC will need to be reset and reconfigured to remedy the problem.

- Check the Wi-Fi (WAN) light on the top of the LINC - If the Wi-Fi light repeats the pattern of flashing every so often and going dark (light never stays solid) and a Gateway is within range, resetting the LINC and reapplying the LINC configuration will most likely remedy the problem.

Why does this happen?

- Perhaps the LINC has been set to connect to a non-standard Wi-Fi network name – i.e. something other than EPAERT1
- Perhaps an incorrect passphrase was entered on a LINC that was configured for Wi-Fi security.

Prepare to Reset LINC

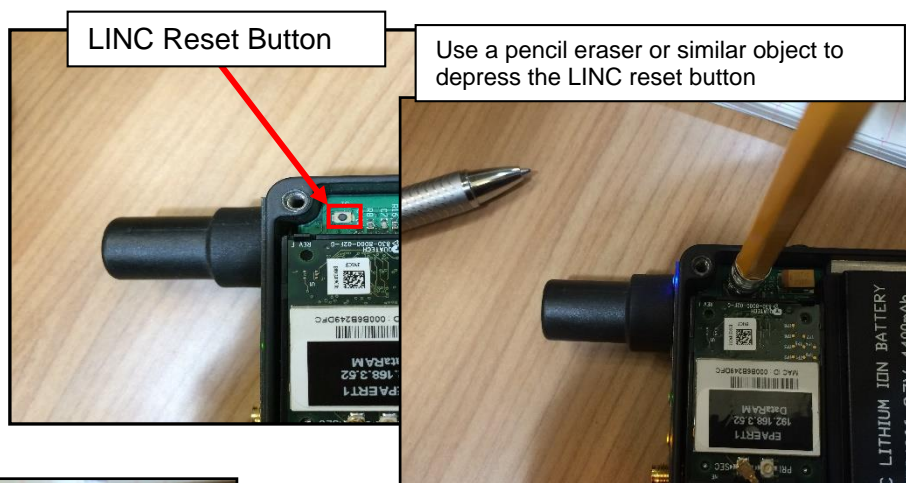
- Remove the back cover from the LINC and have a pencil with an eraser handy to help press down the reset button on the board inside the LINC.
- Have an *unsecured* (Open) Gateway ready. LINC will only connect to a Wi-Fi network that does not have security enabled. Temporarily disable security on the Gateway if it has been enabled.
- If multiple LINC need to be reset, work through each one individually – *do not reset all of the LINC*s *at the same time*. If multiple LINC are reset at the same time, it will be difficult to determine the new IP Address of each LINC.
- Follow the sections below fully and carefully for each LINC.



Section 1 – Factory Reset LINC

This Section refers only to resetting **SPMFlex** lincs. For resetting non SPMFlex lincs, please refer to the Factory Resetting Viper Lincs Guide that can be found at the www.response.epa.gov/viper website.

1. With the LINC powered off, **press and hold down the reset button** (shown below). A pencil eraser serves as a good tool to hold the reset button. While keeping the reset button depressed, **press the LINC power button**. Release the power button when the power light illuminates but continue to hold down the LINC reset button until the LINC has either 2 or 4 solid LED lights illuminated. When the lights are solid, release the reset button.



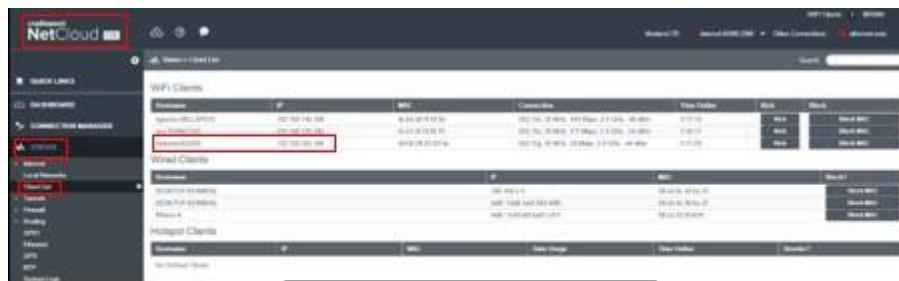
When either 2 or 4 solid lights illuminate, it is OK to release the reset button.



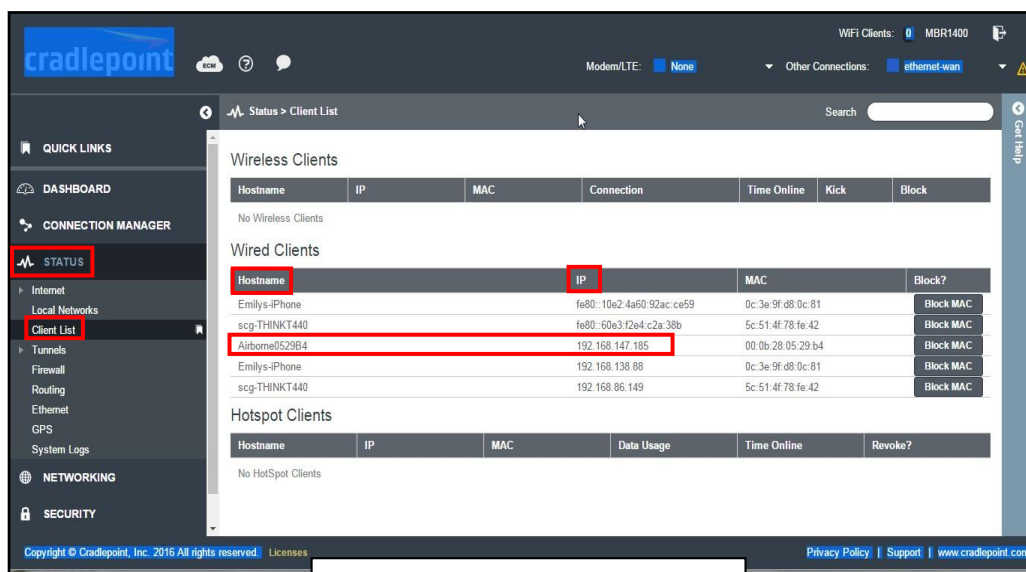
Section 2 – Find the IP Address of the Factory Reset LINC

Once the LINC has been factory reset, it will **automatically** connect to the first **unsecure/unencrypted** wireless network it can find. We recommend that you have an **unsecured/unencrypted** Viper Gateway powered on. **Do not be** in the vicinity of any other unsecure wireless networks. Below are instructions on the easiest and recommended way to find the IP address of the LINC that was just reset.

1. Connect your laptop/computer to the unsecured **EPAERT1** Wi-Fi network.
2. Open a browser and enter 192.168.4.1 in the browser address bar to navigate to the Cradlepoint Gateway Administrator Login Page. *NOTE: Username is Admin. Contact ertsupport@epa.gov to obtain the password.*
3. Under **Status | Client List** you will see an 'Airborne' device listed in the Wired Clients Hostname list.



Example 1 -- SMARTGATEWAY
Firmware v6.5.0



Example 1B- Firmware v6.1.0



Example 1A – Firmware v5.2.4

Hostname	IP	MAC	Connection	Time Onl...
android-e04a04f9c32ff3ef	fe80::9218:7cff:fe1a:b5...	90:18:7c:1a:b5:da		Block MAC
	fe80::15:6dff:fe9d:1cc8	02:15:6d:9d:1c:c8		Block MAC
	fe80::215:6dff:fe9d:1cc8	00:15:6d:9d:1c:c8		Block MAC
scg-THINKT440	fe80::60e3:f2e4:c2a:38b	5c:51:4f:78:fe:42		Block MAC
scg-THINKT440	192.168.86.149	5c:51:4f:78:fe:42		Block MAC
android-e04a04f9c32ff3ef	192.168.169.121	90:18:7c:1a:b5:da		Block MAC
Airborne052A12	192.168.147.85	00:0b:28:05:2a:12		Block MAC

4. Write down the IP address – this is the new IP Address assigned to the LINC after the reset.
NOTE: When resetting multiple LINC's, keep a list of each LINC's IP address. This will be the only way to distinguish additional LINC's as they are reset. This list will include each LINC as they are reset. You may see previous LINC resets in the list. Make sure you write down the correct one (see Example 2 below).

Example 2
Multiple reset LINC's Firmware v6.1.0

Hostname	IP	MAC
Emilys-iPhone	fe80::10e2:4a60:92ac:ce59	0c:3e:9f:d8:0c:81
scg-THINKT440	fe80::60e3:f2e4:c2a:38b	5c:51:4f:78:fe:42
Airborne0529B4	192.168.147.185	00:0b:28:05:29:b4
Emilys-iPhone	192.168.138.88	0c:3e:9f:d8:0c:81
scg-THINKT440	192.168.86.149	5c:51:4f:78:fe:42
Airborne249DFC	192.168.94.251	00:0b:6b:24:9d:fc

NOTE: Keep a list of the IP addresses for each LINC as you go so you can identify the new LINC from a previous LINC



Section 3 – Apply Configuration Settings to a Factory Reset LINC

This section addresses how to apply the LINC configuration settings to a LINC that has been factory reset.

1. Connect your computer to the EPAERT1 Wi-Fi network.
2. Open a Browser and navigate to the IP address from the previous section (i.e., 192.168.147.185). Login to the LINC.
Username: dpac
Contact ertsupport@epa.gov to obtain the password

Authentication Required

http://192.168.94.251 requires a username and password.
Your connection to this site is not private.

User Name:

Password:

3. Under **Configuration** | **WLAN** Settings make sure the SSID is **EPAERT1**.
4. Click '**Commit**' when done.

B&B ELECTRONICS

▼ Status **▼ Configuration** ▼ Certificates ▼ Network ▼ Maintenance

[Express Setup](#)
[WLAN Settings](#)
[WLAN Security Settings](#)
[Network Settings](#)
[Serial Port Settings](#)
[Serial Port 2 Settings](#)
[Connection Settings](#)
[Ethernet Settings](#)
[Event Settings](#)
[Advanced Settings](#)
[Upload Configuration File](#)
[List Configuration Files](#)
[Delete Configuration File](#)

WLAN Parameters	Current Values
Radio Startup Mode:	On
WLAN Connection Type:	Infrastructure
SSID:	EPAERT1
WLAN TX Power (dBm):	15 dBm
Maximum Wireless Data Rate:	Auto
Specify Specific Data Rates:	0x00000000
Use Fixed Data Rate:	Disabled
WLAN Region:	United States (US)
Preferred Radio Band:	Auto
WLAN Maximum Retries:	13
WLAN RTS Threshold:	0



5. Under **Configuration | WLAN Security | WLAN Security Parameters**, in the WLAN Security Type, click on the dropdown list and select **WPA2-PSK**.
6. Under the WPA/WPA2 Settings, enter a Pre Shared Key. Contact ertsupport@epa.gov to obtain the password. Click 'Commit' when done.

The screenshot shows the B&B Electronics configuration interface. The 'Configuration' tab is selected. Under 'WLAN Security Parameters', the 'WLAN Security Type' is set to 'WPA2-PSK'. The 'WPA / WPA2 Settings' section is highlighted with a red box, and the 'Commit' button is also highlighted with a red box.

7. Under **Configuration | Network Settings**, the following settings need to be changed:

- WLAN DHCP – Disabled
- WLAN Static IP Address – 192.168.3.xxx (xxx represents the LINC #. Use the number labeled on the outside of the LINC)
- Subnet Mask - 255.255.0.0
- WLAN Gateway IP Address: 192.168.4.1

The screenshot shows the B&B Electronics configuration interface. The 'Configuration' tab is selected. Under 'Network Parameters', the 'WLAN DHCP' is set to 'Disabled'. The 'WLAN Static IP Address' is set to '192.168.3.155'. The 'WLAN Subnet Mask' is set to '255.255.0.0'. The 'WLAN Gateway IP Address' is set to '192.168.4.1'. The 'Commit' button is highlighted with a red box.



Scroll down to **Ethernet Specific Settings**

- Ethernet DHCP – Disabled
- Ethernet Status IP Address – 192.168.2.xxx (xxx represents the LINC #). Use the number labeled on the outside of the LINC)
- Ethernet Subnet Mask – 255.255.0.0
- Ethernet Gateway IP Address: 192.168.4.1
- Click '**Commit**'

8. Under **Configuration | Serial Port Settings**, the following Parameters need to be changed:

- Serial CLI Default Mode: **Listen**
- Serial Port Bit Rate: Set to instrument specific baud rate (see Viper User Guide)
- Click '**Commit**'



9. Under **Configuration | Serial Port 2 Settings**, the following Parameter needs to be changed:

- Serial CLI Default Mode: **Listen**
- Click '**Commit**'

The screenshot shows the B&B Electronics configuration interface. The 'Configuration' tab is selected. In the left sidebar, 'Serial Port 2 Settings' is highlighted. The main panel displays 'Serial Port Parameters' with the following values:

Serial Port Parameters	Current Values
Serial CLI Default Mode:	Listen
Serial Port Bit Rate:	9600
Parity:	None
Data Bits:	8
Stop Bits:	1
Flow Control:	None
Input Buffer Flush Size:	1460
Serial Escape Mode:	On
Network CLI Escape Mode:	On
Escape String:	7E7E7E6473
Serial Interface Type:	RS-232

The 'Commit' button is highlighted in red.

10. Under **Configuration | Connection Settings | Serial Port 1 Connection Settings**, the following settings need to be changed:

- TCP Timeout: Set at **5**
- Tunnel Enabled: **Enabled**

The screenshot shows the B&B Electronics configuration interface. The 'Configuration' tab is selected. In the left sidebar, 'Connection Settings' is highlighted. The main panel displays 'Connection Parameters' with the following values:

Connection Parameters	Current Values
Serial Port 1 Connection Settings	
Outbound Transmit Type:	TCP
Primary TCP Target Server IP Address:	0.0.0.0
Secondary TCP Target Server IP Address:	0.0.0.0
TCP Port:	2571
TCP Timeout:	5
TCP Retry Time:	60
Tunnel Enabled:	Enabled
Tunnel Port:	8023
Tunnel Mode:	TCP

The 'TCP Timeout' and 'Tunnel Enabled' fields are highlighted in red.



Scroll down to Serial Port 2 Connection Settings:

- TCP Timeout – Serial Port 2: Set at **5**
- Tunnel Enabled – Serial Port 2: **Enabled**

The screenshot shows the 'Serial Port 2 Connection Settings' page. The left sidebar contains links: Express Setup, WLAN Settings, WLAN Security Settings, Network Settings, Serial Port Settings, Serial Port 2 Settings, Connection Settings (highlighted), Ethernet Settings, Event Settings, and Advanced Settings. The main content area has the following settings:

Serial Port 2 Connection Settings	
Outbound Transmit Type - Serial Port 2:	TCP
Primary TCP Target Server IP - Serial Port 2:	0.0.0.0
Secondary TCP Target Server IP - Serial Port 2:	0.0.0.0
TCP Port - Serial Port 2:	2571
TCP Timeout - Serial Port 2:	5
TCP Retry Time - Serial Port 2:	60
Tunnel Enabled - Serial Port 2:	Enabled
Tunnel Port - Serial Port 2:	8024
Tunnel Mode - Serial Port 2:	TCP

11. There should be no changes to the **Port Settings** after the factory reset.

The screenshot shows the 'Port Settings' page. The left sidebar contains links: Ethernet Settings, Event Settings, Advanced Settings, Upload Configuration File, List Configuration Files, Delete Configuration File, Active Configuration, User Configuration, OEM Configuration, and Factory Configuration. The main content area has the following settings:

Port Settings	
HTTP Port Accessible via Wireless:	Enabled
Web Server Port:	80
Default Web Page:	index.html
Telnet Port Accessible via Wireless:	Enabled
Telnet Port:	23
Telnet Timeout:	0
Internal FTP Server Enabled:	Enabled
Internal FTP Server Listen Port:	21
SSH Port Accessible via Wireless:	Enabled
Secure Shell Server Port:	22

12. There should be no changes to the **Common Settings** after the factory reset.

13. Click '**Commit**'

The screenshot shows the 'Common Settings' page. The left sidebar contains links: Ethernet Settings, Event Settings, Advanced Settings, Upload Configuration File, List Configuration Files, Delete Configuration File, Active Configuration, User Configuration, OEM Configuration, and Factory Configuration. The main content area has the following settings:

Common Settings	
Connect LED Mode:	TCP
TCP Max Retries:	15
Wireless UDAP Discovery Enabled:	Enabled
Ethernet UDAP Discovery Enabled:	Enabled
TCP Tunnel Timeout Mode:	Retry
TCP Tunnel Message Type:	1

At the bottom, there are three buttons: **Commit**, Cancel, and Defaults.



14. Under **Configuration | Ethernet Settings**, the following setting needs to be changed:

- Ethernet Role – set to **Bridge**
- Click '**Commit**'

Ethernet Parameters	Current Values
Ethernet Role:	Bridge
MAC Cloning:	Disable
Ethernet Client MAC Address:	000000000000
Ethernet Port Speed/Duplex:	Autonegotiate
Bridge Set Broadcast Flag for DHCP:	Enable

Commit Cancel Defaults

15. Under **Configuration | Event Settings | Event Parameters**, all the values should be set to '**Disable**'

16. Under **Configuration | Event Settings | Timer 1 through Timer 8** – No Changes

Event Parameters	Current Values
At Device Startup, Run Script:	[Disable]
When a Configuration is Applied, Run Script:	[Disable]
When the Radio Link Goes Down, Run Script:	[Disable]
When the Radio Link Comes Up, Run Script:	[Disable]
When the Ethernet Link Goes Down, Run Script:	[Disable]
When the Ethernet Link Comes Up, Run Script:	[Disable]

Timer 1	Current Values
Timer 1 Initial Delay:	0
Timer 1 Period:	0
When Timer 1 Triggers, Run Script:	[Disable]
Timer 1 Enable:	[Clear]

Timer 2	Current Values
Timer 2 Initial Delay:	0
Timer 2 Period:	0
When Timer 2 Triggers, Run Script:	[Disable]
Timer 2 Enable:	[Clear]

Timer 3	Current Values
Timer 3 Initial Delay:	0
Timer 3 Period:	0
When Timer 3 Triggers, Run Script:	[Disable]
Timer 3 Enable:	[Clear]



17. Under Configuration | Advanced Settings -- No Changes to:

- Advanced Parameters
- Authorization Level Settings
- SSH Settings
- HTTP Settings
- Power Save Settings
- FTP Settings
- Line Printer Settings
- System Time Settings

The screenshot displays the B&B Electronics configuration web interface. The 'Configuration' tab is selected, and the 'Advanced Settings' section is highlighted in the left sidebar. The main content area shows several configuration sections, each with a red box highlighting its title:

- Advanced Parameters**: Includes fields for OEM Defined Version String, Discovery Manufacturer Device Name, Discovery OEM Device Name, Discovery Device Name, Administrator Password, Manufacturing User Name, Manufacturing Password, OEM User Name, OEM Password, CFG User Name, CFG Password, Regular User Name, Regular User Password, Encrypt Wireless Keys, Protect the OEM Configuration, and Protect the Configuration From HTTP.
- Authorization Level Settings**: Includes fields for Minimum Authorization Level for Reset To Factory Defaults, Minimum Authorization Level for Radio Off, and Minimum Authorization Level for Radio On.
- SSH Settings**: Includes fields for SSH Default User Name, SSH Default Password, and SSH Keysize.
- HTTPS Settings**: Includes a field for HTTPS Enable.
- Power Save Settings**: Includes fields for Module Power Save Mode, Serial Port 1 Inactivity Timer, Serial Port 2 Inactivity Timer, and Radio Startup Mode.
- FTP Settings**: Includes fields for FTP Server IP Address or Name, FTP User Name, FTP Password, FTP Server Path, and FTP File Name.
- Line Printer Daemon Settings**: Includes fields for LPD Enable, LPD Port, LPD Serial Port, and WLAN DHCP Vendor Class ID String.
- System Time Settings**: Includes fields for Timezone Name, Timezone Offset, Daylight Saving Time Adjustment, Daylight Saving Time Name, Daylight Saving Time Offset, Daylight Saving Time Starting Week, Daylight Saving Time Starting Day, Daylight Saving Time Starting Month, Daylight Saving Time Ending Week, Daylight Saving Time Ending Day, Daylight Saving Time Ending Month, NTP Server IP Address or Name, NTP Sync at Startup, and NTP Refresh Interval.



18. Under **Configuration | Advanced Settings** scroll down to the **WLAN Specific Settings** and make the following change:

- Use Directed Probes: **Enabled**

The screenshot shows the BSB Electronics configuration interface. The 'Configuration' tab is selected, and the 'WLAN Specific Settings' section is expanded. The 'Use Directed Probes' option is highlighted with a red box and set to 'Enabled'. Other settings include Antenna Mode (Antenna 2 Only), Speedlink Roaming (Enabled), Beacons Missed Before Roaming (6), Association Retry Count (3), Association Backoff Time (msec) (10000), ARP Timeout Time (120), ARP Reachable Time (120), and Lost Association Link Timeout (1). The 'Startup Options' section shows Startup Message Mode (Disabled) and Startup Message Text (Ready). The 'DHCP Vendor Class ID Strings' section shows WLAN DHCP Vendor Class ID String, Ethernet DHCP Vendor Class ID String, and Request Custom DHCP Option 225 (Disabled).

20. Under Configuration | Advanced Settings -- **No** changes to:

- Startup Options
- DHCP Vendor Class ID Strings

The screenshot shows the BSB Electronics configuration interface. The 'Startup Options' section shows Startup Message Mode (Disabled) and Startup Message Text (Ready). The 'DHCP Vendor Class ID Strings' section shows WLAN DHCP Vendor Class ID String, Ethernet DHCP Vendor Class ID String, and Request Custom DHCP Option 225 (Disabled). No changes are made to these sections.

21. Scroll down the **Advanced Settings** to **LED / GPIO Settings**, and make the following changes:

- I/O Port F Bit Direction: change to **0xF2**
- All **LEDs** should be set to Disabled
- Click '**Commit**'

The screenshot shows the BSB Electronics configuration interface. The 'LED / GPIO Settings' section is expanded. The 'I/O Port F Bit Direction' is highlighted with a red box and set to '0xF2'. Other settings include I/O Port F Internal Pullup Resistor (0xFF), I/O Port G Bit Direction (0xFF), I/O Port G Internal Pullup Resistor (0xFF), Enable LED Signal Strength Meter (Disabled), Enable POST LED (Disabled), Enable RF_LINK LED (Disabled), Enable WLAN_CFG LED (Disabled), and Enable COMN LED (Disabled). The 'Other Advanced Settings' section shows Enable Echo for Telnet Sessions (Enabled) and UDP Server Ping (Disabled). The 'Commit' button is highlighted with a red box.



22. You are now ready to Restart the newly configured LINC.

Configuration changes committed successfully

Reload

Restart

Logging into the LINC

From this point forward, the LINC can be accessed via the IP address (192.168.2.XXX).