Digi 5400-RM

Cellular Remote Manager

User Guide

Revision history 90002393

Revision	Date	Decription
A	April 2020	Initial release the updated *Digi 5400-RM Cellular Remote Manager User Guide* for firmware release 20.2: ■ With firmware release 20.2, Active Recovery has been renamed to Digi SureLink™. ■ After upgrading to firmware release 20.2, if a configuration erase is performed, the Digi 5400-RM will default to Digi Remote Manager rather than to aView. See Important information about upgrading to firmware version 20.2.x for further information.

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Warranty

To view product warranty information, go to the following website:

www.digi.com/howtobuy/terms

Customer support

Gather support information: Before contacting Digi technical support for help, gather the following information:

- Product name and model
- Product serial number (s)
- Firmware version
- Operating system/browser (if applicable)
- Logs (from time of reported issue)

- Trace (if possible)
- Description of issue
- Steps to reproduce

Contact Digi technical support: Digi offers multiple technical support plans and service packages. Contact us at +1 952.912.3444 or visit us at www.digi.com/support.

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Include the document title and part number (Digi 5400-RM Cellular Remote Manager User Guide, 90002393 A) in the subject line of your email.

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Package contents

Item	Description
	Digi 5400-RM unit
	Cellular antennas (2x)
	Power supply
	Interchangeable power plug tips

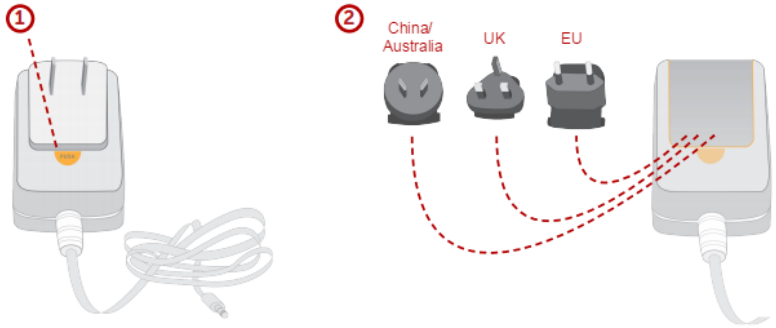
Exchanging power tips

The Digi 5400-RM may include four interchangeable plug tips that allow the Power Supply Unit (PSU) to operate in most countries. The PSU comes with the United States style plug installed.

To change the plug tip:

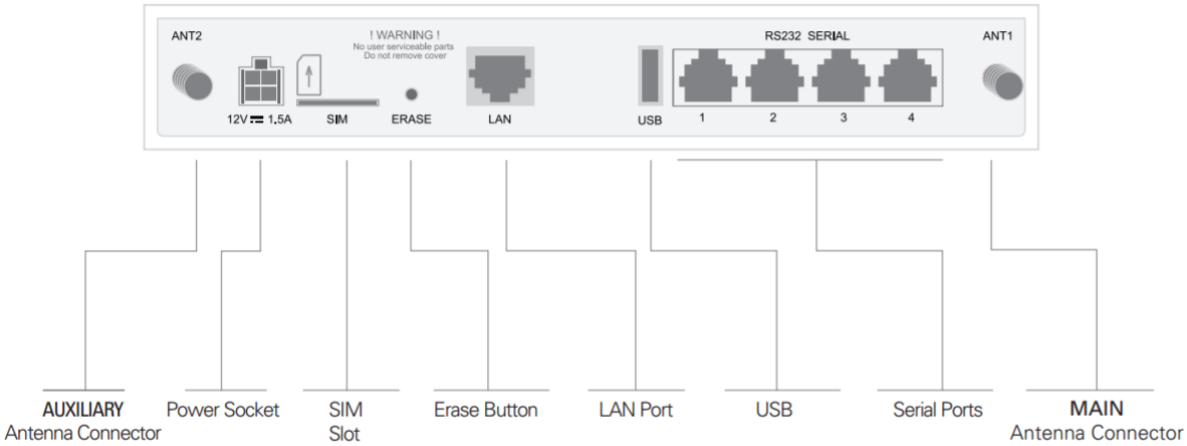
1. While holding down the **PUSH** button, slide the current plug tip forward.
2. Pull off the attached plug tip.

3. Slide the new tip down into place until it clicks.

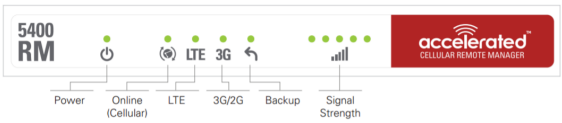


Note For more information regarding power-tip compatibility with global deployments, visit www.worldstandards.eu/electricity/plugs-and-sockets/.

Ports and connectors



Device status



Name	Function
Power	Indicates unit is powered up. Hardwired to power input.

Name	Function
Online (Cellular)	*Flashing* – Unit is attempting to establish a cellular network connection OR the backup connection is in use. *Solid* – A cellular network connection has been established.
LTE	Indicates a 4G/ LTE connection.
3G/ 2G	Indicates a 2G or 3G cellular connection.
Backup	*Flashing* – Unit is attempting to establish a network connection on the LAN. *Solid* – A network connection has been established on the LAN.
Signal Strength	Standard 5-bar signal strength indication; a minimum of two bars is suggested for reliable use.

Signal strength indicators

Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

The ***weighted dBm*** measurements are negative numbers, meaning the smaller negative values denote a larger number. So, for example, a **-85** is a better signal than **-90**.

Note For more information regarding how signal strength is calculated and subsequently displayed via the LED indicators, refer to Signal bars explained.

Signal bars explained

The LTE signal status bars are calculated using various algorithms based on the network type it is connected to. For 4G LTE, the RSRP, SNR, and RSSI values are all factored in to determine the reported signal strength bars. For 3G networks (including HSPA+) and 2G networks, the signal strength bars are determined by the RSSI value.

4G LTE algorithm

Determine RSRP, SNR, and RSSI values separately, using the following

```
RSRP > -85, rsrp_bars=5
-95 < RSRP <= -85, rsrp_bars=4
-105 < RSRP <= -95, rsrp_bars=3
-115 < RSRP <= -105, rsrp_bars=2
-199 < RSRP <= -115, if we're connected to the cellular network, rsrp_bars=1,
if not rsrp_bars=0
```

If RSRP <= -199, then use RSSI as the value and run it through the same algorithm described above.

```
SNR >= 13, snr_bars=5
4.5 <= SNR < 13, snr_bars=4
1 <= SNR < 4, snr_bars=3
-3 < SNR < 1, snr_bars=2
-99 < SNR <= -3, if we're connected to the cellular network, snr_bars=1, if not
snr_bars=0
```

Once the snr_bars and rsrp_bars are determined, use the lesser of the two. That is the reported signal strength bars.

3G algorithm

Determine RSSI signal strength.

```
RSSI > -80, bars=5
-90 < RSSI <= -80, bars=4
-100 < RSSI <= -90, bars=3
-106 < RSSI <= -100, bars=2
RSSI <= -106, if we're connected to the cellular network, bars=1, if not bars=0
```

bars is then reported as the signal strength bars.

2G algorithm

Determine RSSI signal strength.

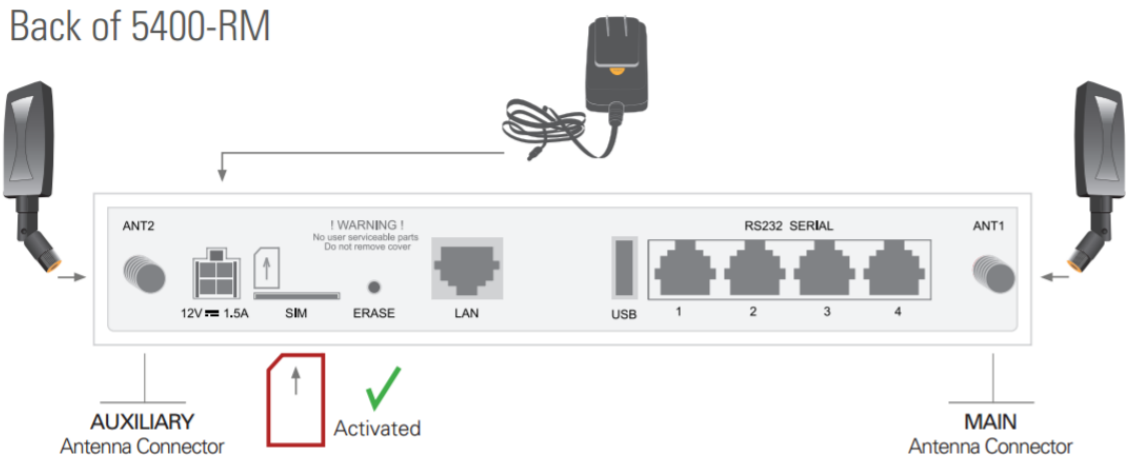
```
RSSI > -80, bars=5
-89 < RSSI <= -80, bars=4
-98 < RSSI <= -89, bars=3
-104 < RSSI <= -98, bars=2
RSSI <= -104, if we're connected to the cellular network, bars=1, if not bars=0
```

bars is then reported as the signal strength bars.

Initial setup

1. Insert your activated SIM card provided by your cellular network operator. The metal contacts should be facing down. You will hear a click once the SIM is completely inserted.
2. For maximum performance, attach both of the included antennas. While gripping the metal connector section with your thumb and forefinger, tighten until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. Connect the power supply unit to the device.

4. Verify the signal strength indicator on the front of the Digi 5400-RM shows two or more bars for proper operation.



Important information about upgrading to firmware version 20.2.*x*

Device defaults to Digi Remote Manager after configuration erase

With firmware version 20.2.*x*, the default cloud-based management service for the Digi 5400-RM device is Digi Remote Manager.

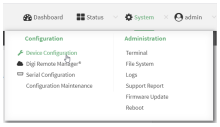
Digi 5400-RM devices upgraded from a firmware version prior to 20.2.*x* to firmware version 20.2.*x* or greater will retain their central management configuration. Therefore, if the device was previously configured to use aView for central management, it will continue to use aView after upgrading to 20.2.*x* or greater.

However, if you erase the configuration of a device that was upgraded from a firmware version prior to 20.2.*x*, it will default to using Digi Remote Manager for cloud-based central device management. You must reset the cloud configuration to use aView after a configuration erase.

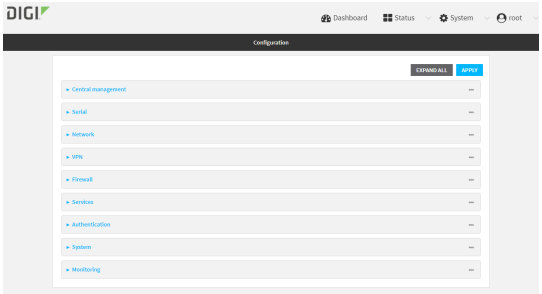
Reset the cloud-based management service to aView

To the cloud-based management service to aView:

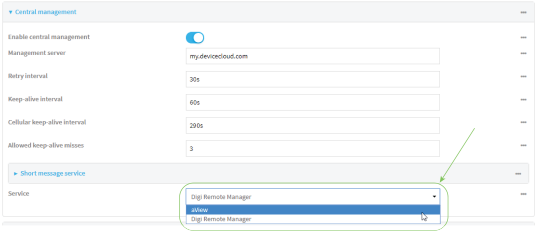
1. Log into the Digi 5400-RM WebUI as a user with full Admin access rights.
2. On the menu, click **System**. Under **Configuration**, click **Device Configuration**.



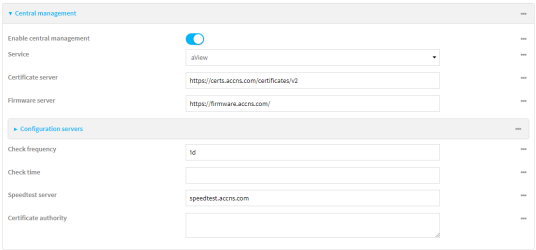
The **Configuration** window is displayed.



3. Click **Central Management**.
4. Click **Enable central management**, if it central management is not already enabled.
5. For **Service**, select **aView**.



The Central management pane refreshes with the default aView configuration.



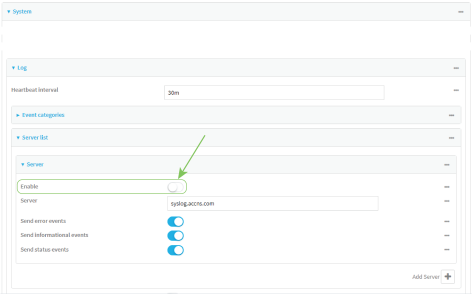
Review the default configuration. Generally, the default configuration should not be changed.

6. Enable the syslog server.

   If the syslog server is not enabled and set to syslog.accns.com, the device will be able to connect to aView and receive configuration updates, but unless the aView configuration updates set the syslog server, the device will not be able to send any metrics or logs to aView.

   a. Click **System** > **Log** > **Server list** > **Server**.

   b. Click **Enable**.



   c. Verify that **Server** is set to **syslog.accns.com**.

   d. (Optional) Select the event types to be sent to aView.

7. Click **Apply** to save the configuration and apply the change.

   The **Apply** button is located at the top of the WebUI page. You may need to scroll to the top of the page to locate it.

Default SureLink configuration

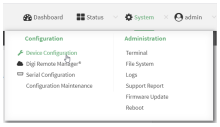
With firmware version 20.2.*x*, Active Recovery has been renamed to SureLink. After upgrading from a firmware version prior to 20.2.*x* to firmware version 20.2.*x* or greater, your existing Active Recovery configuration will remain in place. The only change will be that the feature is renamed from Active Recovery to SureLink.

However, if you erase the configuration of a device that was upgraded from a firmware version prior to 20.2.*x*, it will use the default SureLink settings. The default SureLink settings are:

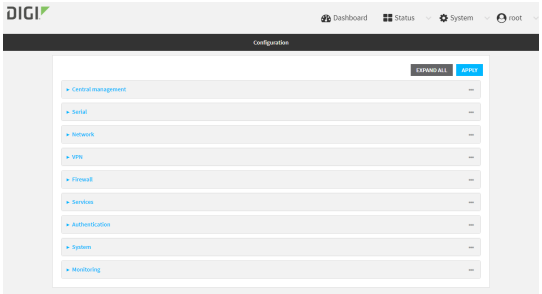
Interface	Status	Action
Default wireless WANs (Modem)		
IPv4	Enabled	Restart interface
IPv6	Disabled	
Default WANs		
IPv4	Enabled	Restart interface
IPv6	Disabled	

If the device is configured to synch with aView, it should get the correct SureLink configuration from aView. If not, you can configure SureLink by using the local WebUI:

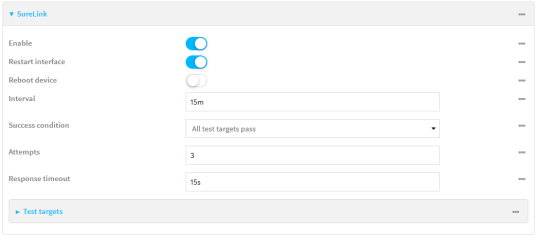
1. Log into the Digi 5400-RM WebUI as a user with full Admin access rights.
2. On the menu, click **System**. Under **Configuration**, click **Device Configuration**.



The **Configuration** window is displayed.

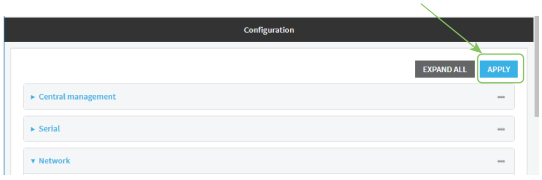


3. Click **Network** > **Interfaces**.
4. Click to expand a WAN or WWAN (Modem).
5. After creating or selecting the WAN or WWAN, click **IPv4** (or **IPv6**) > **SureLink**.



6. Make any necessary configuration changes.
7. Click **Apply** to save the configuration and apply the change.

   The **Apply** button is located at the top of the WebUI page. You may need to scroll to the top of the page to locate it.



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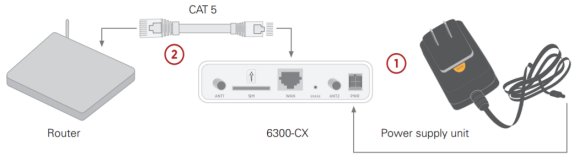
Default settings

Option	Default settings
Interface priorities	■ LAN set at a metric of 1. ■ Modem (cellular) at a metric of 3.
Network settings	■ LAN port configured as primary Internet interface. ■ LAN port configured to obtain IP address via DHCP. ■ Cellular modem configured as backup Internet interface. ■ Source NAT enabled (outbound traffic).
Modem settings	■ Carrier SmartSelect enabled. ■ Passthrough mode disabled. ■ APN fallback enabled.
Central management settings	■ Central Management using aView enabled. The following servers will be contacted for a central configuration: • aview.accns.com • armt.att.com • av-wob.gcsc.att.com
Security policies	■ Packet Filtering set to block all inbound traffic. ■ Local SSH, Web Admin, and Local GUI access enabled at the 192.168.210.1 IP address. See Local configuration for details on accessing the Digi 5400-RM via its default 192.168.210.1 IP.
Serial ports	■ All four serial ports enabled with the same default settings: • Baud rate: 9600 • Data bits: 8 • Parity: none • Stop bits: 1 • Flow control: none

Connecting to the site network

To use your wired network as an alternative network to access the devices connected to the Digi 5400-RM serial ports, connect the LAN port on the Digi 5400-RM to your site Gateway. By default, a DHCP request will be sent to the local Ethernet network.



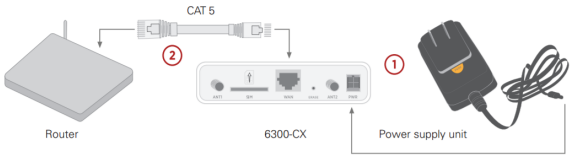
1. Plug the power supply unit into an AC power outlet and connect to the 12V DC lead (4 pin connector) cable.
2. Using a customer-provided CAT5 cable, connect to your site gateway and the LAN port of the Digi 5400-RM.

Connecting the serial ports

The four serial ports on the Digi 5400-RM provide console access to connected critical equipment through the cellular network, and optionally through a connected Ethernet LAN.

You must use a cable with an RJ45 connector to connect to the Digi 5400-RM with a RJ45, DB9F or DB9M connector, as determined by your device type, to terminate to your device. Consult the user guide for the device you are connecting to the Digi 5400-RM to determine the connector type, cable type, and pinout positions for your specific device.

The serial ports are enabled by default. The network devices connected to the serial ports may be accessed using the aView terminal window, the local device GUI, TCP, telnet, or SSH connections. TCP, telnet and SSH connections to serial ports are disabled by default and must be enabled by a device specific configuration. Connect up to four of your network devices to the Digi 5400-RM serial ports by using the pinout information described in Serial port pinout and use.



1. Plug the power supply unit into an AC power outlet and connect to the 12V DC lead (4 pin connector) cable.
2. Using a customer-provided CAT5 cable, connect to your site gateway and the LAN port of the Digi 5400-RM.

Serial port pinout and use

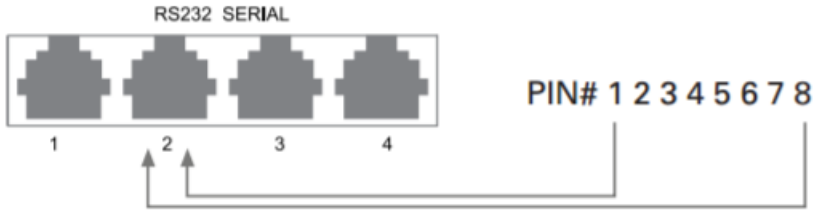
The RS232 standard requires support for baud rates up to 9600 baud on shielded multicore cable up to 50 feet (15 meters) long. For the Digi 5400-RM, the use of standard CAT 5 cables enables serial communication at all baud rates up to 50 feet. CAT5 unshielded twisted pair cable lengths much longer than 50 feet have been verified at 9600 baud but are non-standard and are not guaranteed.

The Digi 5400-RM RS232 serial port is DTE and has the following pin configuration.

Pin 1	RTS	Request to send	Output from Digi 5400-RM
Pin 2	DCD	Data carrier detect	Output from Digi 5400-RM
Pin 3	RXD	Receive data	Input to Digi 5400-RM
Pin 4/5	—	Ground	Signal ground
Pin 6	TXD	Transmit data	Output from Digi 5400-RM
Pin 7	DTR	Data terminal ready	Input to Digi 5400-RM
Pin 8	CTS	Clear to send	Input to Digi 5400-RM

Note Ring indicate (RI) and data set ready (DSR) are not implemented.

The serial ports use a female RJ45 jack to enable connection using UTP Ethernet cabling.



Configuring the Digi 5400-RM device

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Network managed configuration

Your Digi 5400-RM device has the capability to automatically sync and receive all settings from aView, a centralized cloud management portal.

The aView management portal provides the following capabilities for your Accelerated 5400-RM:

- Monitoring details including signal strength, network connectivity details (RSRP, CNTI, RSRQ, Ec/Io, etc.), SIM card details (IMEI, IMSI, ESN, etc.), data transmitted/received, and more.
- Email notifications based on connectivity, device firmware, and signal strength.
- Remote control.
- Out of band SMS recovery.

Devices using the aView management portal typically require no additional configuration or set-up.

See Advanced configuration with aView for more information about using aView for network managed configuration.

Local configuration

If your Digi 5400-RM device is not provisioned in the management portal, it will use a default local configuration profile which will enable basic cellular connectivity (primary or backup) to your router. Your device will operate as a transparent bridge and all traffic on all ports is passed directly to and from the client device connected to the device's Ethernet port.

The following the aView management portal actions are typically only performed by your network administrator.

Note Using the aView management portal to centrally manage your device is recommended. If you are not using the management portal, you must manage and configure your device using the local interface.

Connecting to the Device

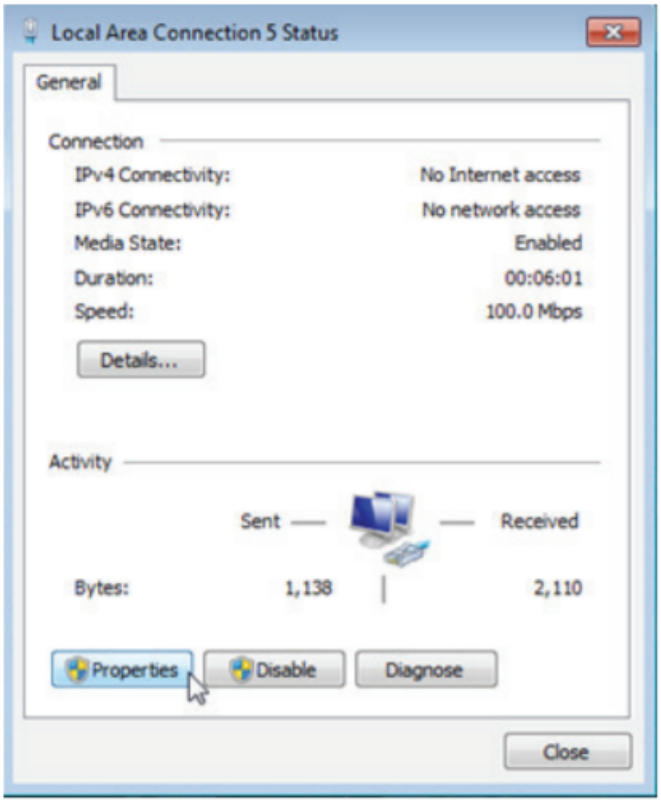
Communication with the device is typically via its Ethernet port. By default, you can connect to the device via its Ethernet port, at the IP address 192.168.210.1. You can access the device via this default IP address using a PC connected to its Ethernet port.

When connected to your site network, your Digi 5400-RM device will attempt to use DHCP to establish a connection and obtain an IP address. If a DHCP server is operating on the site network then the device will receive an IP address configuration from the local network. You can also access the device using the IP address provided in the DHCP connection.

Manually Configuring PC to Connect to Device

To manually connect to the device, you must manually set an IP address on your PC to be able to communicate with the Digi 5400-RM device.

1. Select the Properties of the relevant network connection on the Windows PC.



2. Click the Internet Protocol Version 4 (TCP/IPv4) parameter and select Properties and configure with the following details.

Logging into the Digi 5400-RM device

1. Connect your PC to the WAN Ethernet port of the Digi 5400-RM device.
2. Open a web browser on the PC type the IP address of the Digi 5400-RM, 192.168.210.1, in the URL text field. Press Enter.

   Note If the Digi 5400-RM device does not give your PC an IP address via DHCP, you may need to configure your PC manually set an IP address on your PC to be able to communicate with the Digi 5400-RM, as described in Manually Configuring PC to Connect to Device.

3. Log into the Digi 5400-RM device as a user with admin privileges.

   The default username and password are:

   Username: **root**
   Password: **default**

Use local configuration to upgrade firmware

1. Download the appropriate firmware file from the Digi website.
2. Connect your PC to the WAN Ethernet port of the Digi 5400-RM device.

3. Open a web browser on the PC type the IP address of the Digi 5400-RM, 192.168.210.1, in the URL text field. Press Enter.

   Note If the Digi 5400-RM device does not give your PC an IP address via DHCP, you may need to configure your PC manually set an IP address on your PC to be able to communicate with the Digi 5400-RM, as described in Manually Configuring PC to Connect to Device.

4. Log into the Digi 5400-RM device as a user with admin privileges.
5. Select the System tab on the left side of the page.
6. Select the Browse button next to the Firmware image section.
7. Browse for and select the downloaded firmware file.
8. Click the Update Firmware button.

Do not turn off or unplug the device while it is upgrading its firmware. The upgrade process should take less than one minute.

Use local configuration to define a custom APN

1. Connect your PC to the WAN Ethernet port of the Digi 5400-RM device.
2. Open a web browser on the PC type the IP address of the Digi 5400-RM, 192.168.210.1, in the URL text field. Press Enter.

   Note If the Digi 5400-RM device does not give your PC an IP address via DHCP, you may need to configure your PC manually set an IP address on your PC to be able to communicate with the Digi 5400-RM, as described in Manually Configuring PC to Connect to Device.

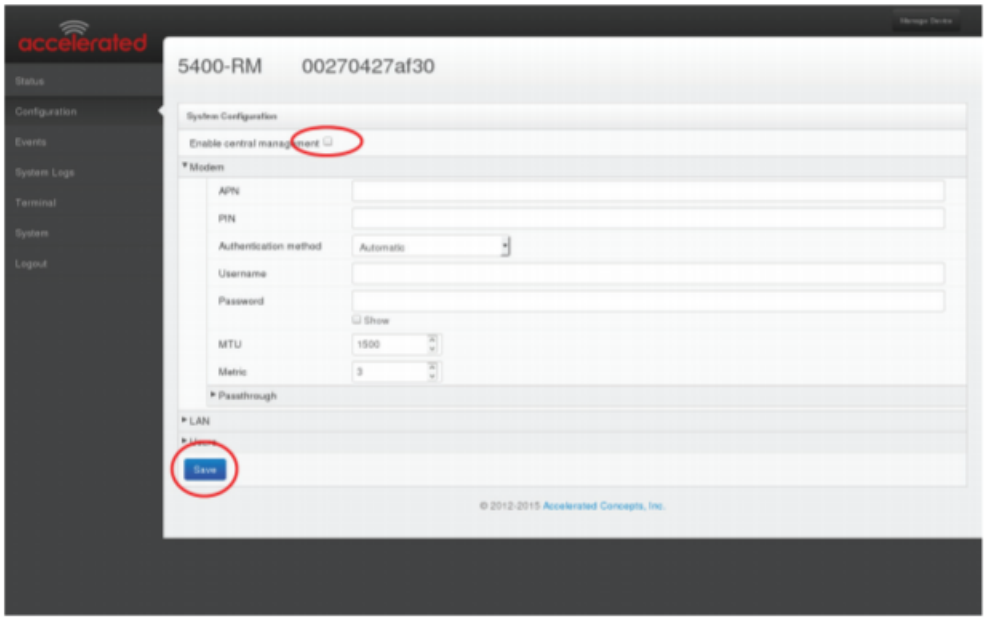
3. Log into the Digi 5400-RM device as a user with admin privileges.
4. Select the Configuration tab on the left side of the page.
5. Type in the custom APN into the APN entry located in the modem section of the configuration.
6. Optional: If the custom APN requires a specific username and password, please input those into the Username and Password entries.
7. Click the Save button.

Advanced Local Configuration

Once logged in via the local web interface you must enable local management of the device to modify settings for the Cellular and Ethernet interfaces.

1. Uncheck box next to "**Enable central management**."
2. Click **Save**.

After saving the profile, the device will no longer attempt to sync with the management portal and a full range of available configuration options will be visible. Hovering your mouse over the name for a configuration option will display a pop-up providing help details about that option, including any default values.



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Viewing group configurations

To access the configuration of your device in aView:

1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. Select the MAC address of your Digi 5400-RM device and bring up its **Details** page.
4. Select **View Configuration** in the Configuration section.
5. Select the Edit pencil icon at the top right of the page to make changes.

The Digi 5400-RM device will automatically support configuration updates after the next daily sync around 1AM UTC. To apply changes sooner than the next scheduled sync refer to the Using remote commands section for details on how to send a remote command.

Use aView to upgrade firmware

1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. Click on the **Settings** tab, then select the **View Configuration** link in the **Configuration** section of the page.
4. Once viewing the configuration profile, select the Edit pencil icon at the top right of the page.
5. Select the appropriate firmware version from the Firmware drop-down list.
6. Click the **Update** button.

Use aView to define a custom APN

Note If your Digi 5400-RM device is unable to sync with the management portal because the device cannot establish a cellular connection without a custom APN, refer to Use local configuration to define a custom APN.

To define a custom APN from within aView:

1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. Select **View Configuration** in the **Configuration** section of the page.
4. Once viewing the configuration profile, select the Edit pencil icon at the top right of the page.

5. Type in the custom APN into the APN entry located in the **Modem** section of the configuration.
6. Optional: If the custom APN requires a specific username and password, input those into the **Username** and **Password** entries located in the Modem section of the configuration.
7. Click the **Update** button.

Using remote commands

The aView management portal maintains a connection to all online client devices registered with the service. Using this tunnel, network administrators can send a specific set of remote commands that will be received immediately as opposed to waiting to check in and apply any changes propagated from the cloud. The following remote commands are available:

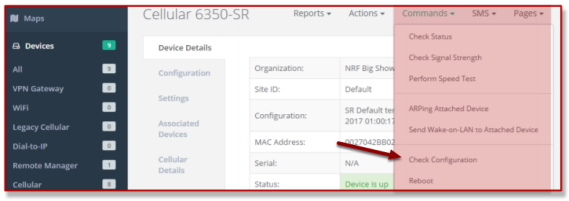
- Check Status
- Check Signal Strength
- Perform Speed Test
- ARPing Attached Device
- Send Wake-on-LAN to Attached Device
- Check Configuration
- Reboot

Remote commands must be sent to each device separately.

1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. Select the **Commands** drop-down list at the top-right of the page.



Note Select the **Check Configuration** menu option to update a device immediately.

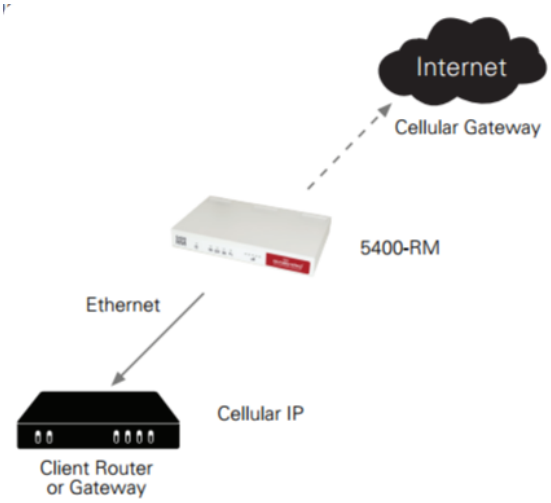
Establishing WAN connectivity via Ethernet port

In order to provide a cellular connection to client devices, the Digi 5400-RM device can be configured either in the default passthrough (or bridge) mode, or in DHCP server/router mode.

Passthrough/bridge mode

In this default mode, the device operates as a transparent bridge and all traffic on all ports is passed directly to and from the client device connected to the device's Ethernet port. In Passthrough mode, a

single IP address will be available through the device's Ethernet port. Only one client device can be connected to the Digi 5400-RM through its Ethernet port at a time.



1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. Select the **View Configuration** link in the **Configuration** section of the page.
4. Once viewing the configuration profile, select the **Edit** pencil icon at the top right of the page.
5. Open **Network > Interfaces > LAN**
6. Check **Enabled**.
7. For **Interface type**, select **IP Passthrough**.
8. If **Device** is set to a bridge:
   a. Click the **Device** drop-down.
   b. Select a specific LAN Ethernet port that the client device will be connected to in order to receive the passthrough IP.

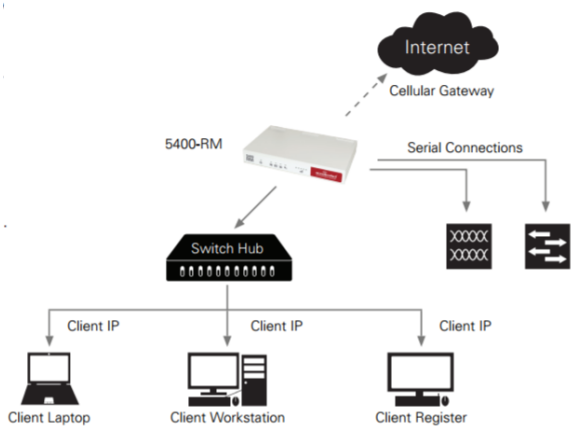
      When passthrough mode is enabled for an interface, it will only provide one DHCP IP address to the client device connected to that port. This means only one client device can be connected to the LAN port of the DAL device at a time, because it will only have one passthrough IP to provide at any given point.
9. Select the interface(s) that will provide the IP address to the client device connected to the LAN port:
   a. Click to expand **Source interfaces**.
   b. Click **Add**.
   c. For **Interface**, select an appropriate interface.

      Typically, this will be the **Modem** interface, but additional interfaces (such as the WAN interface) could be included.
   d. Repeat to add additional interfaces.

10. **Save** and apply the new configuration settings to the device.

Router mode

In this mode, the device operates as a standard DHCP router. The device will be configured to hand out a range of LAN IP addresses to client devices connected on its Ethernet port. Standard router options are available in the device's configuration, including DHCP lease options, DNS options, firewall options, and port forwarding rules.



The following list of steps details how to setup a simple DHCP server on the device in router mode.

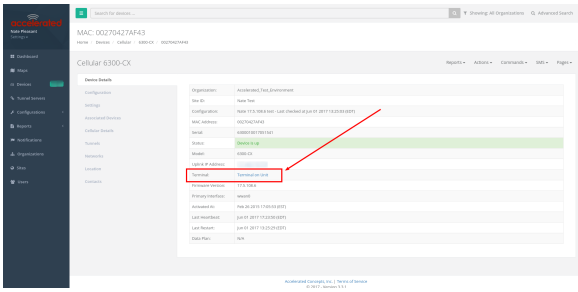
1. Click to expand **Network -> Interfaces -> LAN.**
2. Select the **Enabled** checkbox.
3. For **Interface type**, select **Ethernet**.
4. Set the IP address for the device:
    a. Click to expand **IPv4**.
    b. For **Type**, select **Static IP Address**.
    c. For **Address**, type the IP address you wish to assign to the device for its LAN DHCP network (that is, the gateway IP for the DHCP network).
5. Enable the device's DHCP server:
    a. Click to expand **DHCP server**.
    b. Click **Enable**.
6. **Save** and apply the new configuration settings to the device.

Terminal on unit

Goal

To access the console of the Digi 5400-RM using the **Terminal on Unit** link presented in aView for the device.

Note **Terminal on Unit** leverages the management tunnel established between the Digi 5400-RM and aView. For details on the monthly data usage for this access, see Data usage estimates.



Setup

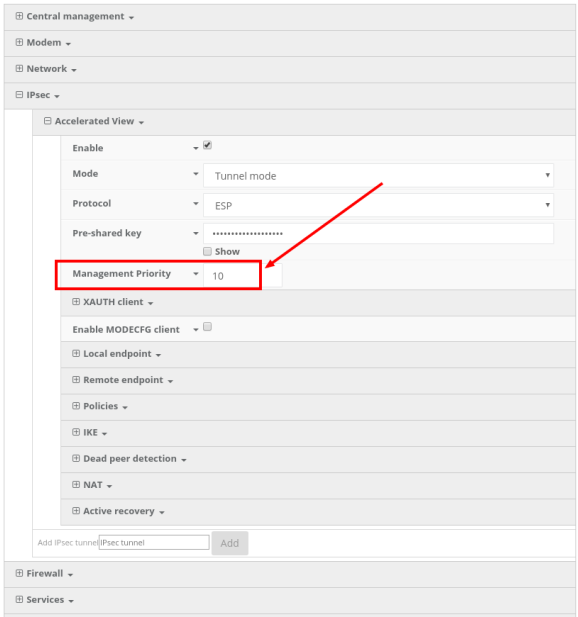
For this setup, you need access to aView and a Digi 5400-RM online and syncing with aView. If you see the Digi 5400-RM listed as up (green status) in aView, you are good to go.

Details

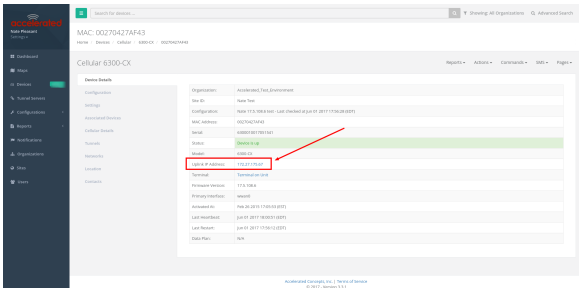
Note aView uses the IPSec tunnel the Digi 5400-RM establishes to **remote.accns.com** to provide terminal access to the console of the Digi 5400-RM. For details on the monthly data usage for this access, see Data usage estimates.

The following configuration sets up the Digi 5400-RM to report its IPSec tunnel local IP address as the management IP that aView can then use to access its console.

Open the configuration profile for the Digi 5400-RM. Under **IPSec -> aView**, set the **Management priority** to **10**. This gives the aView IPSec tunnel the highest priority management interface, which it then reports to aView as the IP that can be used to access its console.

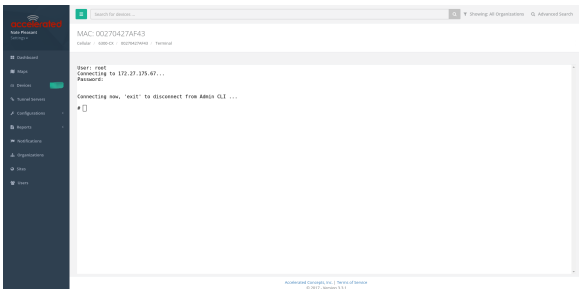


Once you apply the new configuration to the Digi 5400-RM, reboot the device so it rebuilds the IPSec tunnel and reports the new IPSec local IP address to aView. You can verify that aView is using the IPSec local IP as the management IP by looking at the **Uplink IP address** on the **Device Details** tab. This value should be set to a **172.x.x.x** IP address.



Using Terminal on Unit link

Once the correct management IP is reported from the Digi 5400-RM to aView, click the **Terminal on Unit** to open a page on aView that provides access to the Digi 5400-RM console. Log in as a user that has admin access.



Note There is a known issue where the predictive/auto-correct feature of the Google keyboard renders it incompatible with the Terminal page. If you access the above Terminal with an Android phone or tablet, you will need to use a keyboard other than the native Google keyboard.

Local user management

Goal

To create a new user or change the password of the default user.

Details

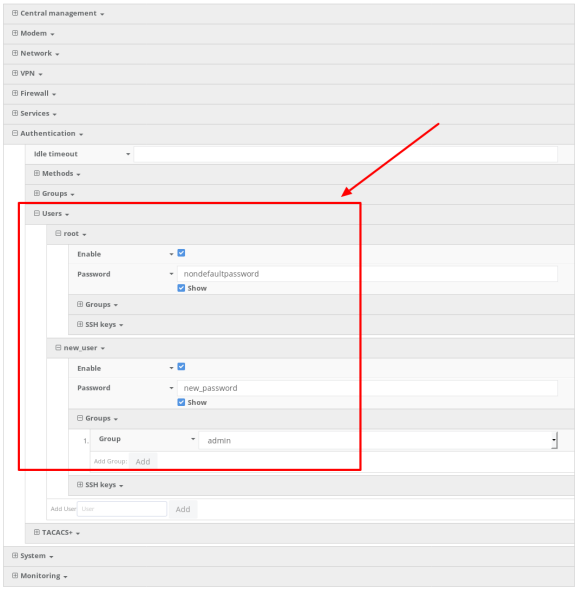
1. Log into the aView management portal and use the search bar to filter devices by **MAC address**.

   Note The device MAC address is on its bottom label.

2. Click the MAC address of your Digi 5400-RM device to bring up its **Details** page.
3. To update the default user password, enter in the new password in the in the **Authentication -> Users -> admin > Password** or **Authentication > Users -> root -> Password** option.

4. To create a new local admin user:
    a. Under **Authentication -> Users -> Add User**, enter in the new username and click **Add**.
    b. Enter in the password for the new user
    c. Under **Groups** for the new user, select the default admin group. You can create a new group, or edit the admin group privileges through the **Authentication -> Groups** section of the configuration profile.
5. Click **Save** or **Update** to apply the changes.

Note After saving a user's password in Accelerated View, it is stored as a salted hash for security purposes. Clicking show prior to committing the password will reveal the true value; clicking show after that password has been saved reveals the salted hash.



Learn more

Details on using aView can be found in the aView User Guide.

Troubleshooting

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Out-of-band SMS commands 33
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Resetting your device

Note While the settings are reset, the device's firmware version remains the same.

To reset the device to factory default settings, press and release the **ERASE** button when the device is switched on. This will erase all device-specific settings (excluding any automatically generated keys/certificates) to their original state, and it will automatically reboot.

Out-of-band SMS commands

Note This feature is only available via aView.

A set of emergency remote commands can be sent via SMS to the device to provide Out-Of Band (OOB) recovery for the device. These SMS commands allow you to perform actions such as factory resets, reboot the device, and restore to the backup firmware partition, all without requiring the device to have an active IP (WAN) connection. Similar to the standard remote commands, these can be used to provide control over the device without any on-site interaction. To utilize this feature, SMS must be enabled for the SIM card used by the device. The complete list of SMS commands is defined in the aView User Manual.

Support report

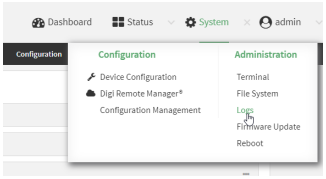
Often times, it is beneficial to download a support report from the device to provide to technical support. This report is a zipfile that contains all of the current details for the device's state and a full record of the system logs from the device.

To obtain a support report from the device, login to the device's local web UI. To access the local web UI, the user must have a PC/laptop connected to one of the LAN Ethernet ports of the Digi 5400-RM. They should receive an IP address via DHCP from the Digi 5400-RM in the 192.168.2.100-250 range. If they do not receive a DHCP address, they can configure a static IP on the PC/laptop of 192.168.210.2/24 with a gateway of 192.168.210.1. Once the PC/laptop has an IP address, open the following URL in a browser on the PC:

https://192.168.210.1

For firmware version 19.11.x or newer:

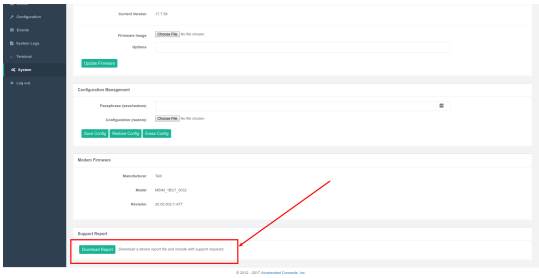
1. On the main menu, click **System** > **Logs**.



2. Collapse the system log viewer by click ▼ **System Logs**, or scroll down to **Support Report**.
3. Click to expand ▶ **Support Report**.
4. Click ⬇ to generate and download the support report.

For firmware version 19.8.x or older:

1. On the main menu, click **System**.
2. In the **Support Report** section at the bottom of the page, click **Download Report**.



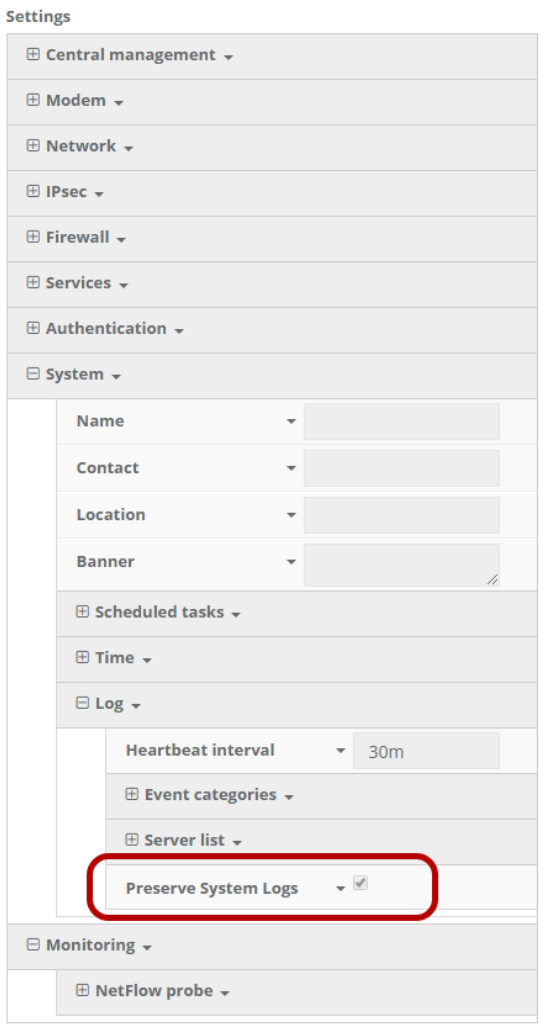
You may need to scroll down to locate the **Support Report** section .

Persistent system logs

As of December 6th, 2017, the default behavior for all Digi 5400-RMs is to have persistent system logs disabled. Information logged on the device will be erased when the Digi 5400-RM is powered off or rebooted.

Logging can be configured to persist between power cycles by enabling the **Preserve System Logs** checkbox nested under the **System > Log** menu option.

Note Logging across reboots should be enabled only to debug issues and then disabled ASAP to avoid unnecessary wear to the flash memory.



AT command access

To gain AT command access through the Digi 5400-RM, the tester must have a PC/laptop connected to one of the LAN Ethernet ports of the Digi 5400-RM. They should receive an IP address via DHCP from the Digi 5400-RM in the 192.168.0.100-250 range. If they do not receive a DHCP address, they can configure a static IP on the PC/laptop of 192.168.0.2/24 with a gateway of 192.168.0.1

1. Open a SSH session to the Digi 5400-RM.
2. Log into the device console as a user with admin access.

   Depending on the device configuration, you may be presented with an additional menu. Type **a** for the Admin CLI.
3. Type **atcmd** and press **Enter**. Type **n** if you want exclusive access. This allows you to send AT commands to the device while still allowing the device to connect, disconnect, and/or reconnect to the Sprint network.

Example AT command access below:

```
$ ssh admin@192.168.0.1
Password:

Access selection menu:

a: Admin CLI
s: Shell
q: Quit

Select access or quit [admin] : a

Connecting now, 'exit' to disconnect from Admin CLI ...

> atcmd

Do you want exclusive access to the modem? (y/n) [y]: n
Starting terminal access to modem AT commands.
Note that the modem is still in operation.

To quit enter '~.' ('~~.' if using an ssh client) and press ENTER

Connected
ati
Manufacturer: Sierra Wireless, Incorporated
Model: MC7455
Revision: SWI9X30C_02.24.03.00 r6978 CARMD-EV-FRMWR2 2017/03/02 13:36:45
MEID: 35907206045169
IMEI: 359072060451693
IMEI SV: 9
FSN: LQ650551070110
+GCAP: +CGSM
OK
```

Data usage estimates

The Digi 5400-RM is sensitive to the data usage on a customer's wireless data plan. Careful consideration was applied to add reporting, alerting, and remote control features through the best-of-breed aView cloud management system. Please note that even though the service was designed with standard reporting/ control intervals these values can be adjusted downward to obtain near-zero data utilization or, conversely, remote services can be tuned up for more aggressive monitoring at the expense of additional data utilization. The current aView architecture requires that all devices have a minimum of 1 publicly reachable IP address to access cloud-based features (see below).

Note These values are estimates to be used for planning purposes—the actual carrier data measurement may vary.

Data Consumption for aView Services

Service/function	Status/interval	Usage	Notes
Cloud-based Reporting/ Configuration	Standard (every 30 min)	3MB (per month)	Includes one startup sequence
Remote Control (IPSec tunnel)	Central management is enabled by default	25MB (per month)	Minimum keep-alive traffic

Note For deployments with heightened sensitivity toward data usage, the IPSec remote control tunnel can be disabled. Cloud-based reporting and configuration can still be accomplished via SMS commands that are not subject usage metering on mobile data plans. Please consult with support for more information before leveraging this approach, "Option 2" in the table below.

Note Charges for SMS messages may apply. Please consult your cellular carrier for billing details.

Service/function	Status/interval	Usage	Notes
Option 2 (Contact Digi for help)	IPSec disabled	2MB	Uses SMS on demand

Itemized Breakdown of Services via aView

Service/function	Status/interval	Usage	Notes	Protocol/port used
Syslog check-in	Every 30 minutes	1KB	Used for reporting and alerts	UDP 514 (syslog)
Configuration check-in	Once nightly -- 1am (UTC)	12KB	Recommended for remote management	TCP 443 (HTTPS)
Boot-up sequence	Each device reboot	24KB	Used for reporting and remote management	UDP 123 (NTP) UDP 514 (syslog)
Device firmware upgrade	As needed (~8 releases per year)	10MB	Updates device firmware upon new release	TCP 443 (HTTPS)
Modem firmware upgrade	As needed (less frequent than device firmware updates)	60MB	Updates firmware on the embedded cellular modem	TCP 443 (HTTPS)
Remote control tunnel	Always-on, if enabled	25MB per month	Minimum keep-alive traffic	UDP 500 and 4500 (IPSec)

FAQs

How do I factory reset the Digi 5400-RM?

1. Ensure that the device has been powered on for at least 30 seconds.
2. Briefly press the Erase button located on the back of the device.

What IP address does the Digi 5400-RM use?

By default, the Digi 5400-RM will use **192.168.210.1**. You can access the device through its WAN Ethernet port using this IP address.

What size SIM card does the Digi 5400-RM use?

Standard mini-SIMs (2FF).

How do I insert a SIM into the Digi 5400-RM?

With the power disconnected, the SIM card should be inserted notch-end first with the gold contacts face down. The SIM slot is located on the back of the Digi 5400-RM between the power connector and the USB port. The SIM will click into place when fully inserted.

Does the Digi 5400-RM fail back to 3G?

Yes, if the Digi 5400-RM doesn't recognize a 4G/LTE network available, the device will automatically fallback to the highest available 3G network. Supported networks include DC-HSPA+, HSPA+, HSPA, EDGE, GPRS, GSM and CDMA.

Does the Digi 5400-RM support IPv6?

Yes. In passthrough mode, when the Digi 5400-RM receives an IPv6 prefix from the cellular network, it uses SLAAC to pass the prefix to the client device connected to its Ethernet port. The Digi 5400-RM will also pass the IPv6 DNS server using the SLAAC RDNSS option and stateless DHCPv6.

Regulatory guide

FCC

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS A DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE. INDUSTRY CANADA - CAN ICES-3(A)/NMB-3(A) THIS PRODUCT IS INTENDED FOR OPERATION IN A COMMERCIAL OR INDUSTRIAL ENVIRONMENT AND SHOULD NOT BE USED IN A RESIDENTIAL ENVIRONMENT. THIS PRODUCT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE REQUIREMENTS OF: ICES-003 - INFORMATION TECHNOLOGY EQUIPMENT - LIMITS AND METHODS OF MEASUREMENT ISSUE 5, AUGUST 2012.

European Union

THIS PRODUCT MAY CAUSE INTERFERENCE IF USED IN RESIDENTIAL AREAS. SUCH USE MUST BE AVOIDED UNLESS THE USER TAKES SPECIAL MEASURES TO REDUCE ELECTROMAGNETIC EMISSIONS TO PREVENT INTERFERENCE TO THE RECEPTION OF RADIO AND TELEVISION BROADCASTS.

Supported Countries

FOR A FULL LIST OF CERTIFIED COUNTRIES GO VISIT: www.digi.com/legal/terms

End user license agreement

To view the end user license agreement, visit: www.digi.com/legal/terms

Accessing Admin CLI

Goal

To show how to access Admin CLI using Terminal on Unit or SSH.

Setup

For Terminal on Unit, you will need either:

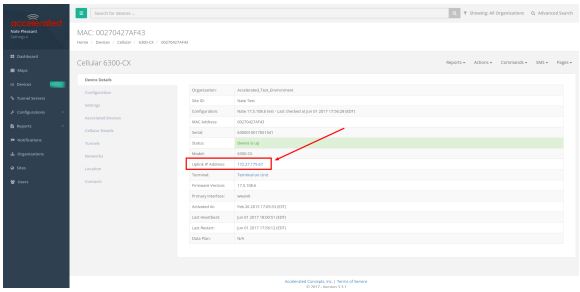
- Direct SSH access to the Digi 5400-RM device.
- Access to the aView management portal, and a Digi 5400-RM device online and syncing with aView. The device should be listed in aView as up (green status).

Details

aView uses the IPSec tunnel the Digi 5400-RM device establishes to ipsec.accns.com (or remote.accns.com) to provide terminal access to the console of the device.

Note For details on the monthly data usage for this access, refer to the following article: Data usage estimates.

If a new configuration is applied to a Digi 5400-RM device , reboot the device so that it rebuilds the IPSec tunnel and reports the new IPSec local IP address to aView. You can verify that aView is using the IPSec local IP as the management IP by looking at the **Uplink IP Address** on the **Device Details** tab. This value should be set to a 192.x.x.x IP address when using ipsec.accns.com, or 172.x.x.x fo r remote.accns.com.



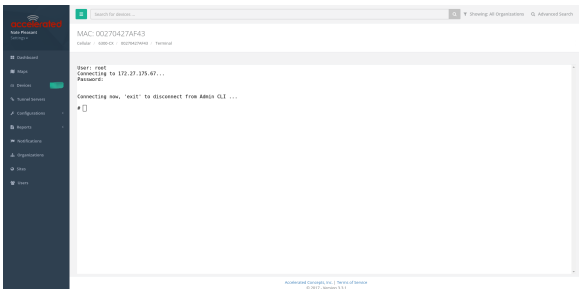
Using the Terminal on a Unit link

1. Once the correct management IP is reported from the Digi 5400-RM device to aView, click **Terminal on Unit** to open a page on aView that provides access to the console of the device.

2. Log into the device console as a user with admin access.

   Depending on the device configuration, you may be presented with an additional menu. Type **a** for the Admin CLI.

3. At the Admin CLI prompt, press TAB to view available commands. The same is true for typing one of the commands followed by a space then hitting TAB. This will show the available options within that command. (See Command breakdown.)



Direct ssh access

SSH access can be gained through a local connection to the Digi 5400-RM device. You can access the Digi 5400-RM device on its LAN IP address (default 192.168.2.1) or its default 192.168.210.1 IP address. Below is an example SSH login process.

1. SSH to the ACL device at its LAN IP address (default 192.168.2.1) or its default 192.168.210.1 IP address.
2. Log into the device console as a user with admin access.

   Depending on the device configuration, you may be presented with an additional menu. Type **a** for the Admin CLI.

3. At the Admin CLI prompt, press TAB to view available commands. The same is true for typing one of the commands followed by a space then hitting TAB. This will show the available options within that command. (See Command breakdown.)

```
$ ssh admin@192.168.2.1
$ password
Access selection menu:

a: Admin CLI
s: Shell
q: Quit

Select access or quit [admin] : a

Connecting now, 'exit' to disconnect from Admin CLI ...
#
```

Command breakdown

- **atcmd**—Run AT commands to cellular modem in the device
- **config**—Make config changes on the device, one at a time
- **exit**—Exit from the Admin CLI console

- **ping**—Ping an IP address or domain (Ctrl+c to stop)
- **reboot**—Reboot the device
- **show**—Display network or device version details
- **traceroute**—Perform traceroute to an IP address or domain