6300-CX

Table of Contents

User Manual

Configuration Examples

Solution Guides

Supplemental Information

Antenna Notes and Solutions

Package Contents

6300-CX Unit

Cellular Antennas (2x)

Ethernet Cable

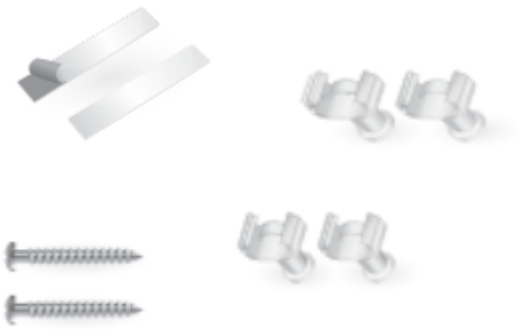
Power Supply Unit

Power-over-Ethernet (PoE) Injector

Temporary Battery Pack

Mounting Bracket

Mounting Accessories

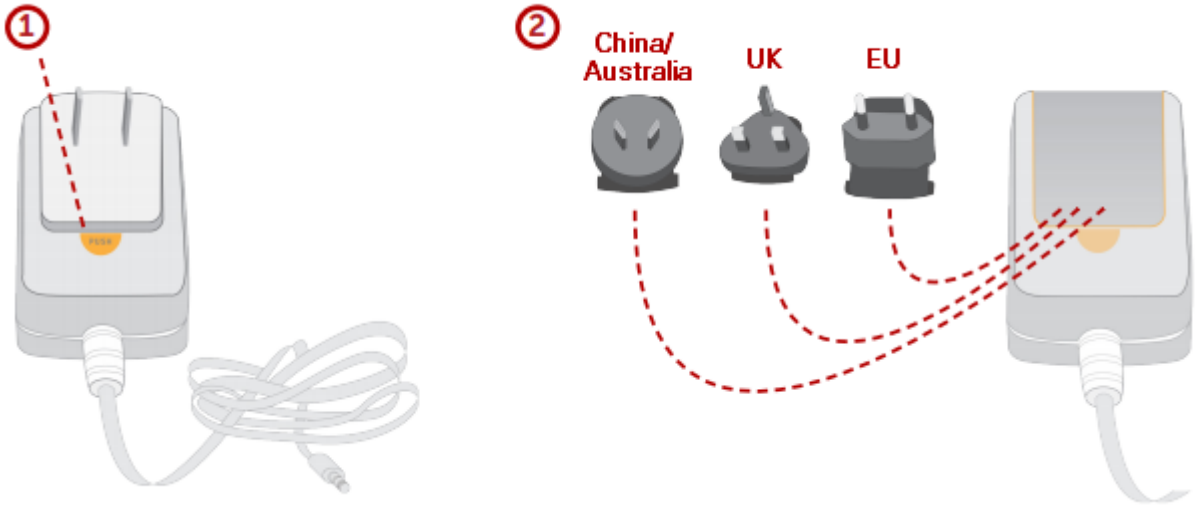


Exchanging Power Tips

The 6300-CX router may include four interchangeable plug tips that allows 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:

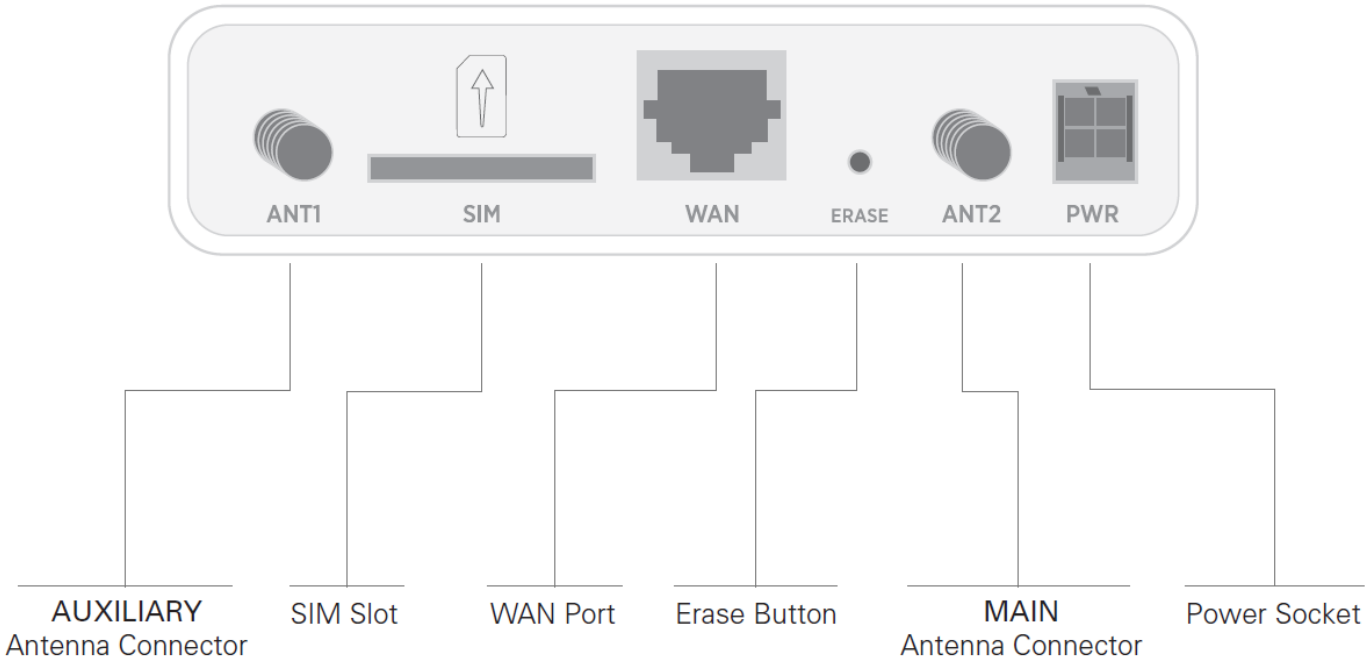
- While holding down the "PUSH" button, slide the current plug tip forward.
- Pull off the attached plug tip.
- Slide the new tip down into place until it clicks.



NOTE: For more information regarding power-tip compatibility with global deployments, please click here.

Ports and Connectors

Back of 6300-CX



LTE Signal Status

Once powered on with its plug-in modem connected (including the activated SIM card), the 6300-CX will boot up and attempt to join its cellular network. Initialization may take 30-60 seconds.

LEDs on the **Signal Strength Indicator** show the quality of cellular reception.

The **Network Status LED** displays the cellular network connection's status (i.e. whether it is on a 3G or 4G connection, or unable to connect to either).

Please refer to the following tables for more information:

Network Status LED

Solid Yellow Initializing or starting up.	**Solid Green** Connected to 2G or 3G and also has a device linked to a LAN port.
Flashing Yellow In the process of connecting to the cellular network and to any device on its LAN port(s).	**Flashing Blue** Connected to 4G LTE and in the process of connecting to a device on its LAN port(s).
Flashing White Established LAN connection(s) and is in the process of connecting to the cellular network.	**Solid Blue** Connected to 4G LTE and also has a LAN connection.
Flashing Green Connected to 2G or 3G and is in the process of connecting to any device on its LAN port(s), or nothing is connected to the port.	**Alternating Red/ Yellow** Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Signal Strength LEDs

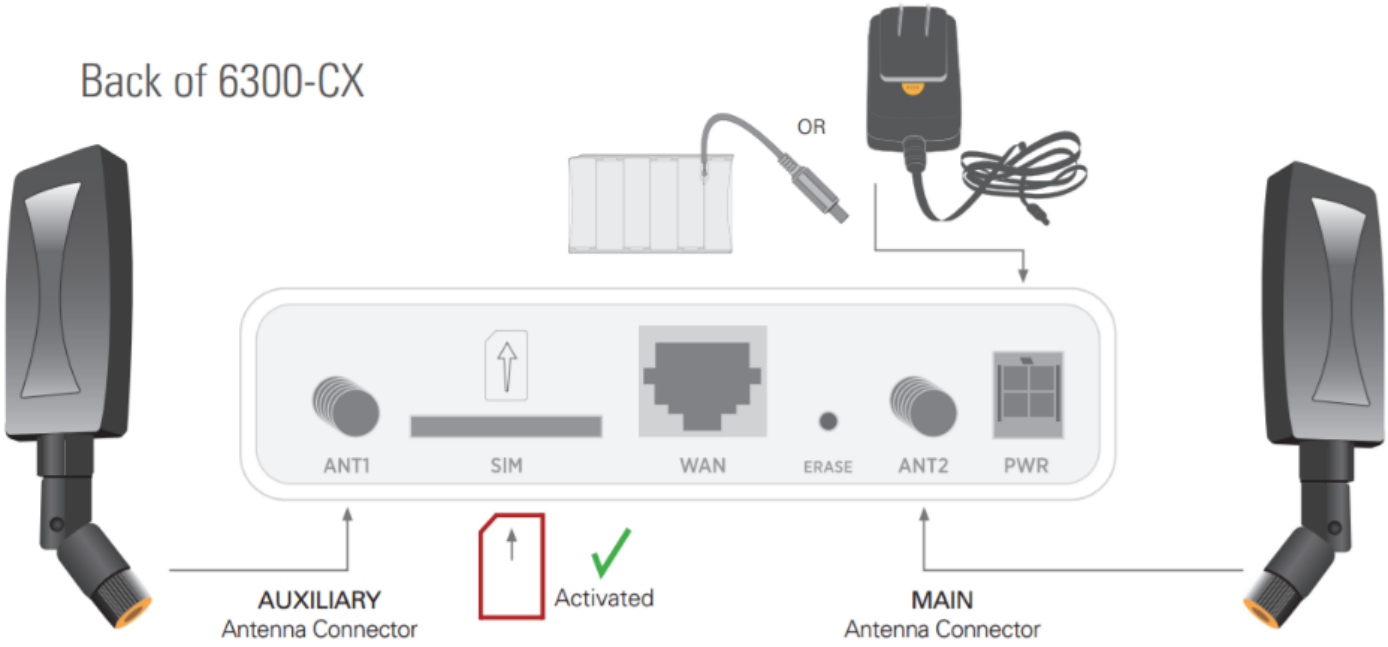
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

These 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 this explanation.

Initial Setup

1. Insert your activated SIM card provided by your cellular network operator. The metal contacts should be facing down. You should hear a click sound 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 the antenna is secure. Do not tighten the antenna by holding any part of the plastic housing.
3. Connect the power supply unit or Ethernet cable (for PoE), or if doing a site survey, attach the temporary battery pack and follow the instructions in the Site Survey section.

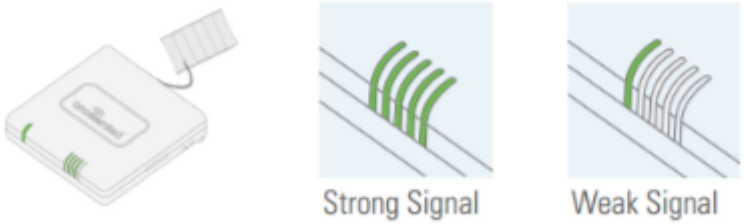


* If a single antenna solution is required, it must be attached to the main antenna port labeled 'ANT2'

Site Survey

A cellular site survey is not necessary if your anticipated installation location is known to have strong cellular signal strength. If you are unsure of available cellular signal strength or are choosing between several installation locations, follow the below instructions to perform a site survey to determine your best possible installation location. After the optimal location has been determined, setup the 6300-CX with either the power supply unit or the POE injector cable.

1. Follow the steps in the “Initial Setup” section above. During a site survey it is useful to use the included battery pack instead of the power supply unit to power the Accelerated 6300-CX. The battery pack will power your device for approximately two hours while you perform your site survey. The battery pack is not rechargeable and should be properly disposed of after use.
2. Move the Accelerated 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to wait at each location for 1 minute while observing the signal strength indicator on the front of the device. Minimum cellular signal strength for proper operation is 2 bars.
3. After the optimal location has been determined, remove the battery pack and connect either the main power supply unit or POE injector cable (see section labeled Using Remote Power for more information).



After the optimal location has been determined, setup the 6300-CX with either the power supply unit or the POE injector cable.

Site Survey Troubleshooting

If you are unable to verify a location with a strong cellular signal:

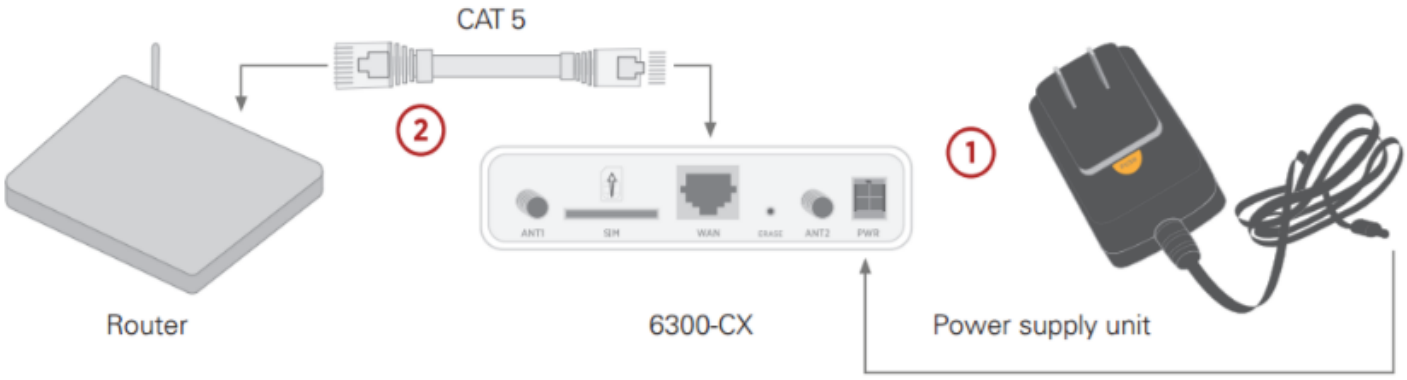
- Verify your SIM has been activated with your cellular operator.
- If cellular signal isn’t indicated on the Accelerated 6300-CX indoors, then take the device outdoors to verify that your cellular network operator has coverage in your location.

- If the outdoor cellular signal strength is less than 2 bars, it may be necessary to connect using a different cellular network operator. This requires an activated SIM from the alternate cellular network operator.
- Try the device/antennas in different orientations and away from other nearby electronic equipment at each test location. Note: LTE requires the use of both antennas & antennas will usually give better performance when vertical.
- Refer to the Device Status section to use Accelerated 6300-CX indicator lights to aid in diagnosis.

Physical Installation

Connecting to the Site Network with Local Power

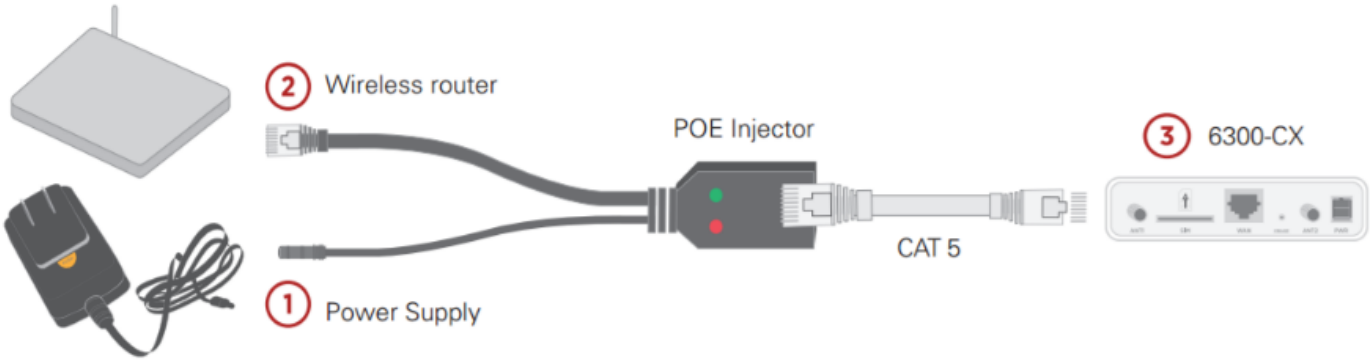
Using an Ethernet cable, connect the WAN port on the Accelerated 6300-CX to your site Gateway. By default a DHCP request will be sent to the WAN Ethernet network.



1. Plug the power supply unit into an AC power outlet and connect to the 12V DC lead (4 pin connector) of the POE injector cable.
2. Using the include CAT5 cable or a customer provided CAT5 cable connect to your site router or gateway and the WAN port of the 6300-CX.

Connecting to the Site Network with Remote Power

If your device needs to be positioned some distance from either the nearest AC power outlet or site network equipment/router using the included passive Power-Over-Ethernet (POE) injector cable will usually simplify the installation cabling and allow for improved cellular signal strength. The POE injector cable allows the DC power and Ethernet connection to be run to the Accelerated 6300-CX via the Ethernet connection only.



1. Plug the power supply unit into an AC power outlet and connect to the 12V DC lead (4 pin connector) of the POE injector cable.

2. Connect the male RJ45 connector plug of the POE injector cable to the site network equipment/router.
3. Connect a standard Ethernet cable from the RJ45 socket/jack on the POE injector cable, (marked 'DC OUT'), to the Ethernet port of the device

Remote Power Trouble Shooting

On the end of the POE injector cable (see diagram) there are two LEDs. The Red LED marked DC IN will be

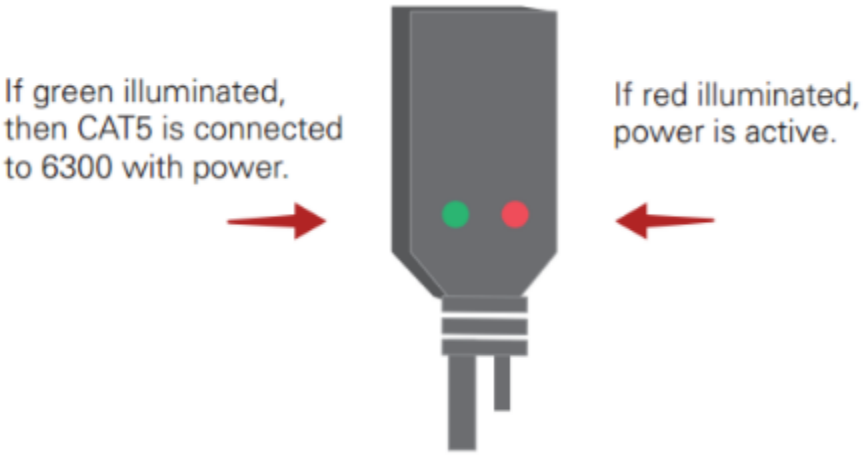
illuminated if the 6300-CX Power Supply Unit (PSU) in plugged into an AC power outlet and plugged into the POE Injector Cable. If the red LED is not illuminated check the following:

- Ensure that the PSU is plugged into an AC power outlet and is receiving power.
- Ensure that the PSU's power plug is correctly connected to the POE injector cable power input socket. The proper orientation is for the lock tab and clip to align. (See picture below)

Correct power supply connection

The Red LED marked DC IN and the Green LED marked DC OUT will both be illuminated on the POE injector cable (see diagram) if you have properly connected the PSU and you have connect a length of CAT5 cable properly to the POE injector cable and the 6300-CX. If the red LED is illuminated and the Green LED not illuminated check the following:

- Ensure that you have a good connection at both the ends of you CAT5 cable.
- Check your CAT5 cable.


If green illuminated,
then CAT5 is connected
to 6300 with power.
If red illuminated,
power is active.

Configuring Device

Network Managed Configuration

Your Accelerated 6300-CX has the capability to automatically sync and receive all settings from a centralized cloud management tool, Accelerated View™.

The Accelerated View management portal provides the following capabilities for your Accelerated 6300-CX.

- 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 Accelerated View typically require no additional configuration or set-up.

Local Configuration

If your Accelerated 6300-CX is not provisioned in Accelerated View, 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.

To change any default settings for an Accelerated 6300-CX not provisioned in Accelerated View refer to Managing Device Locally section.

Troubleshooting

Resetting Your Device

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 switch once on the rear of the device when the device is switched on. This will erase all device-specific settings (excluding the automatically generated keys/certificates) to their original state, and it will automatically reboot.

Establishing Backup Connectivity via Ethernet Port

If the device cannot connect using a cellular connection, use the following steps to use the Ethernet WAN connection:

1. Restore the device to its factory default settings.
2. Connect the Ethernet port of the device to the site network equipment/router. This may be done either directly with an Ethernet cable or via the POE injector cable (6). Refer to the section "Using the Passive POE Injector Cable" above. Check for solid LINK and flashing ACTIVITY LEDs on the device WAN Ethernet port.
3. Ensure the router connected to the Ethernet port of the device is configured with an IP address of 192.168.210.254/24. The device will try to use this as its gateway IP address for backup connectivity.
4. Observe the Status Indication LEDs & Signal Strength sections to aid in diagnosis.

Note: Backup Connectivity via Ethernet Port and WAN connectivity via Ethernet Port features cannot be used at the same time. If you use the steps listed here to set the device's Ethernet port as a backup connection for itself, the 6300-CX will not be able to provide WAN connectivity to client device(s).

Out of Band SMS Commands

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 cellular connection. Similar to the standard remote commands, these can be used to provide control over the device without any onsite 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 Accelerated View™ User's Guide. (https://aview-docs.accns.com)

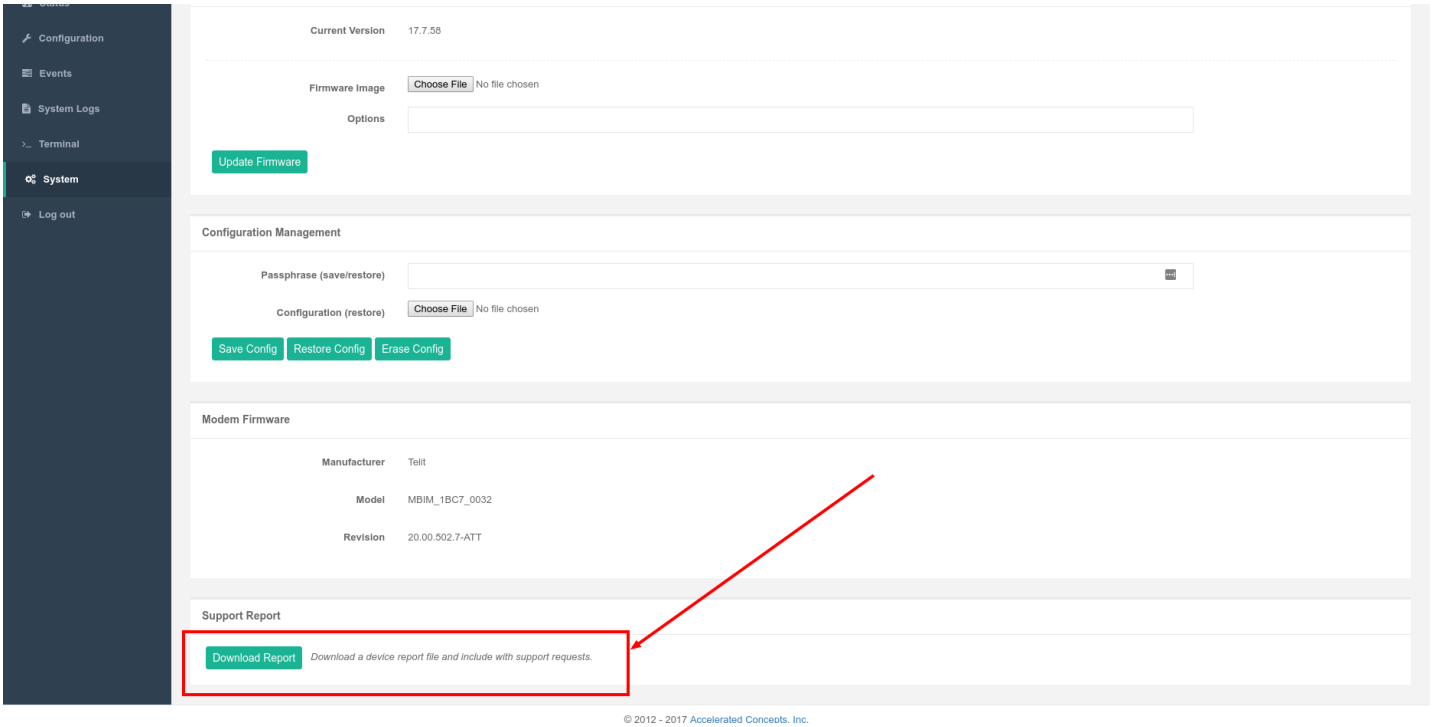
Support Report

Often times, it is beneficial to download a support report from the device to provide to technical support. This report is a zip file 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 the LAN Ethernet port of the 6300-CX and set the interface for a static IP per the instructions here. Once the PC/laptop has an IP address, open the following URL in a browser on the PC:

https://192.168.210.1

Next, go to the *System* page, then click the *Download Report* button at the bottom of the page.

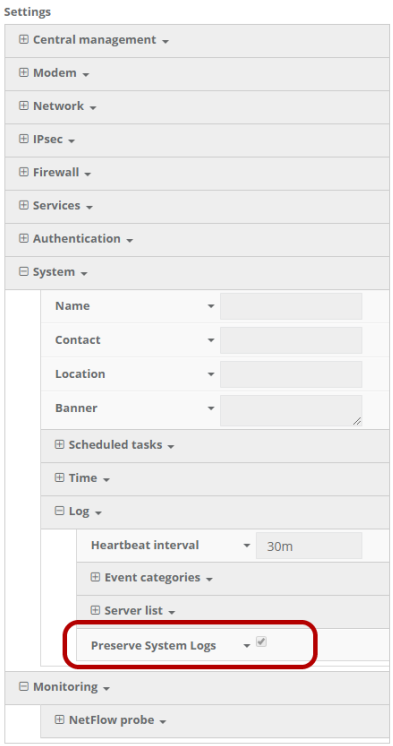


Persistent System Logs

As of December 6th, 2017, the default behavior for all Accelerated Routers is to have persistent system logs disabled. Information logged on the device will be erased when the router is powered off/ rebooted.

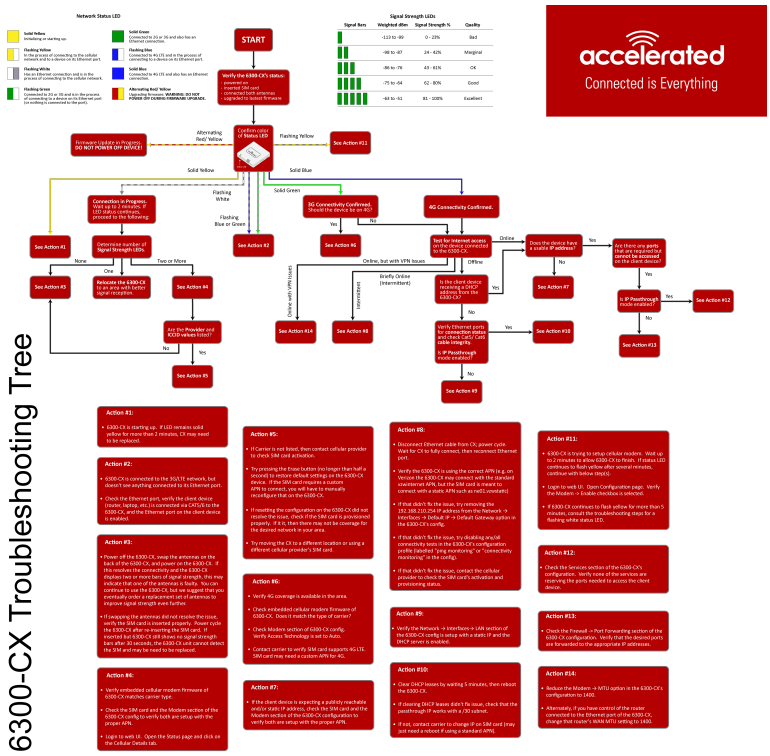
Logging can be configured to persist between power cycles by enabling the **Preserve System Logs** checkbox nested under the **System** → **Log** menu option.

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



LTE Troubleshooting Tree

6300-CX_Troubleshooting_Flowchart.pdf



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to any device on its LAN port(s).

Flashing White
Established LAN connection(s) and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to any device on its LAN port(s), or nothing is connected to the port.

Solid Green
Connected to 2G or 3G and also has a device linked to a LAN port.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its LAN port(s).

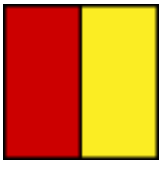
Solid Blue
Connected to 4G LTE and also has a LAN connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Signal Strength LEDs

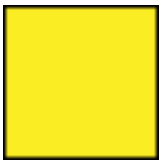
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

Alternating Red/ Yellow



Firmware Update in Progress: DO NOT POWER OFF DEVICE!

Solid Yellow



6300-CX is starting up.

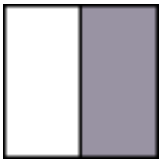
If LED remains solid yellow for more than 2 minutes, CX may need to be replaced.

Flashing Yellow

6300-CX is trying to setup cellular modem. Wait up to 2 minutes to allow the process to finish. If status LED continues to flash yellow after several minutes, continue with below step(s):

1. Login to web UI. Open Configuration page. Verify the Modem -> Enable check box is selected.
2. If the 6300-CX continues to flash yellow for more than 5 minutes, consult the troubleshooting steps for a flashing white status LED.

Flashing White



Ethernet link detected, connection is in progress.

Wait up to 2 minutes. If LED status continues, determine the number of Signal Strength LEDs:

None

- Power off the 6300-CX, swap the antennas on the back of the 6300-CX, and power on the 6300-CX. If this resolves the connectivity and the 6300-CX displays two or more bars of signal strength, this may indicate that one of the antennas is faulty. You can continue to use the 6300-CX, but we suggest that you eventually order a replacement set of antennas to improve signal strength even further.
- If swapping the antennas did not resolve the issue, verify the SIM card is inserted properly. Power cycle the 6300-CX after re-insterting the SIM card. Wait 30 to 60 seconds. If the problem persists, the 6300-CX unit cannot detect the SIM and the router may need to be replaced.

One

Relocate the 6300-CX to an area with better signal reception.

Two or More

Verify that the embedded cellular modem firmware of the 6300-CX matches carrier type.

Check the SIM card and the Modem section of the 6300-CX config to verify both are setup with the proper APN.

Login to the web UI. Open the Status page and click on the Cellular Details Tab. Are the **Provider** and **ICCID** values listed?

No

- If the proper Carrier is not listed, contact the cellular provider to verify SIM card activation.
- Try pressing the Erase button (no longer than half a second) to restore default settings on the 6300-CX device. If the SIM card requires a custom APN to connect, you will have to manually reconfigure that on the 6300-CX
- If resetting the configuration on the CX did not resolve the issue, check if the SIM card is provisioned properly. If it is, then there may not be coverage for the desired network in your area.
- Try moving the CX to a different location or using a different cellular provider's SIM card.

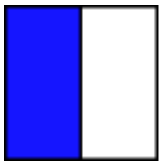
Yes

- Power off the 6300-CX, swap the antennas on the back of the 6300-CX, and power on the 6300-CX. If this resolves the connectivity and the 6300-CX displays two or more bars of signal strength, this may indicate that one of the antennas is faulty. You can continue to use the

6300-CX, but we suggest that you eventually order a replacement set of antennas to improve signal strength even further.

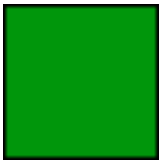
- If swapping the antennas did not resolve the issue, verify the SIM card is inserted properly. Power cycle the 6300-CX after re-insterting the SIM card. Wait 30 to 60 seconds. If the problem persists, the 6300-CX unit cannot detect the SIM and the router may need to be replaced.

Flashing Blue or Green



6300-CX is connected to the 3G/LTE network, but doesn't see anything connected to its Ethernet port. Check the Ethernet port, verify the client device (router, laptop, etc.) is connected via CAT5/6 to the 6300-CX, and the Ethernet port on the client device is enabled

Solid Green



3G connectivity confirmed

Should the device be on 4G?

Yes

- Verify 4G coverage is available in the area.
- Check embedded cellular modem firmware of 6300-CX. Does it match the type of carrier?
- Check Modem section of 6300-CX config. Verify Access Technology is set to Auto.
- Contact carrier to verify SIM card supports 4G LTE. SIM card may need a custom APN for 4G.

No

Test for Internet access on the device connected to the 6300-CX.

Online

Does the device has a usable IP Address?

- If no, see if the client device is expecting a publicly reachable and/or static IP address, check the SIM card and the Modem section of the 6300-CX configuration to verify both are setup with the proper APN.

Are there any ports that are required but cannot be accessed on the client device? Also check if the IP Passthrough has been enabled.

- If yes, check the Services section of the 6300-CX's configuration. Verify none of the services are reserving the ports needed to access the client device.
- If no, check the Firewall -> Port Forwarding section of the 6300-CX configuration. Verify that the desired ports are forwarded to the appropriate IP addresses.

Offline

Is the client device receiving a DHCP address from the 6300-CX?

- If yes, check if the IP Passthrough has been enabled.
  - If yes, are there any ports that are required but cannot be accessed on the client device? Also check if the IP Passthrough has been enabled.
    - If yes, check the Services section of the 6300-CX's configuration. Verify none of the services are reserving the ports needed to access the client device.
    - If no, check the Firewall -> Port Forwarding section of the 6300-CX configuration. Verify that the desired ports are forwarded to the appropriate IP addresses.
  - If no, see if the client device is expecting a publicly reachable and/or static IP address, check the SIM card and the Modem section of the 6300-CX configuration to verify both are setup with the proper APN.
- If no, verify Ethernet ports for connection status and check Cat5/ Cat6 cable integrity. Is IP Passthrough mode enabled?
  - If yes, clear DHCP leases by waiting 5 minutes, then reboot the 6300-CX. If clearing DHCP leases didn't fix issue, check that the passthrough IP works with a /30 subnet. If not, contact carrier to change IP on SIM card (may just need a reboot if using a standard APN).
  - If no, verify the Network → Interfaces→ LAN section of the 6300-CX config is setup with a static IP and the DHCP server is enabled.

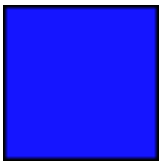
Online, but with VPN issues

Reduce the Modem → MTU option in the 6300-CX's configuration to 1400. Alternately, if you have control of the router connected to the Ethernet port of the 6300-CX, change that router's WAN MTU seting to 1400.

Briefly Online

1. Disconnect Ethernet cable from CX; power cycle. Wait for CX to fully connect, then reconnect Ethernet port.
2. Verify the 6300-CX is using the correct APN (e.g. on Verizon the 6300-CX may connect with the standard vzwinternet APN, but the SIM card is meant to connect with a static APN such as ne01.vzwstatic)
3. If that didn't fix the issue, try removing the 192.168.210.254 IP address from the Network → Interfaces → Default IP → Default Gateway option in the 6300-CX's config.
4. If that didn't fix the issue, try disabling any/all connectivity tests in the 6300-CX's configuration profile (labelled "ping monitoring" or "connectivity monitoring" in the config).
5. If that didn't fix the issue, contact the cellular provider to check the SIM card's activation and provisioning status.

Solid Blue



4G connectivity Confirmed

Test for Internet access on the device connected to the 6300-CX.

Online

Does the device has a usable IP Address?

- If no, see if the client device is expecting a publicly reachable and/or static IP address, check the SIM card and the Modem section of the 6300-CX configuration to verify both are setup with the proper APN.

Are there any ports that are required but cannot be accessed on the client device? Also check if the IP Passthrough has been enabled.

- If yes, check the Services section of the 6300-CX's configuration. Verify none of the services are reserving the ports needed to access the client device.
- If no, check the Firewall -> Port Forwarding section of the 6300-CX configuration. Verify that the desired ports are forwarded to the appropriate IP addresses.

Offline

Is the client device receiving a DHCP address from the 6300-CX?

- *If yes*, check if the IP Passthrough has been enabled.
  - If yes, are there any ports that are required but cannot be accessed on the client device? Also check if the IP Passthrough has been enabled.
    - *If yes*, check the Services section of the 6300-CX's configuration. Verify none of the services are reserving the ports needed to access the client device.
    - *If no*, check the Firewall -> Port Forwarding section of the 6300-CX configuration. Verify that the desired ports are forwarded to the appropriate IP addresses.
  - If no, see if the client device is expecting a publicly reachable and/or static IP address, check the SIM card and the Modem section of the 6300-CX configuration to verify both are setup with the proper APN.
- *If no*, verify Ethernet ports for connection status and check Cat5/ Cat6 cable integrity. Is IP Passthrough mode enabled?
  - If yes, clear DHCP leases by waiting 5 minutes, then reboot the 6300-CX. If clearing DHCP leases didn't fix issue, check that the passthrough IP works with a /30 subnet. If not, contact carrier to change IP on SIM card (may just need a reboot if using a standard APN).
  - If no, verify the Network → Interfaces→ LAN section of the 6300-CX config is setup with a static IP and the DHCP server is enabled.

Online, but with VPN issues

Reduce the Modem → MTU option in the 6300-CX's configuration to 1400. Alternately, if you have control of the router connected to the Ethernet port of the 6300-CX, change that router's WAN MTU seting to 1400.

Briefly Online

1. Disconnect Ethernet cable from CX; power cycle. Wait for CX to fully connect, then reconnect Ethernet port.
2. Verify the 6300-CX is using the correct APN (e.g. on Verizon the 6300-CX may connect with the standard vzwinternet APN, but the SIM card is meant to connect with a static APN such as ne01.vzwstatic)
3. If that didn't fix the issue, try removing the 192.168.210.254 IP address from the Network → Interfaces → Default IP → Default Gateway option in the 6300-CX's config.

4. If that didn't fix the issue, try disabling any/all connectivity tests in the 6300-CX's configuration profile (labelled "ping monitoring" or "connectivity monitoring" in the config).
5. If that didn't fix the issue, contact the cellular provider to check the SIM card's activation and provisioning status.

Advanced Configuration Using Accelerated View™

The following Accelerated View actions are typically only performed by your network administrator.

Using Accelerated View to centrally manage your device is recommended. If you are not using Accelerated View, you must manage and configure your device using the local interface. Refer to **Managing Device Locally** section for more information.

Viewing & Editing Configuration

To access the configuration for your device:

1. Login to Accelerated View and use the Search tool to search by MAC address.
2. Select the MAC address of your 6300-CX to bring up its Details page.
3. Select View Configuration in the Configuration section.
4. Select the Edit pencil icon at the top right of the page to make changes.

The 6300-CX 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 **Remote Commands** section for details on how to send a remote command.

Upgrading Firmware

To upgrade the firmware on your device:

1. Login to Accelerated View and use the Search tool to find the device by searching for its MAC address.
2. Select the MAC address of the 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.

Defining a Custom APN

If your device is unable to sync with Accelerated View because the device **cannot** establish a cellular connection without a custom APN refer to **Managing Device Locally** section.

1. Login to Accelerated View and use the Search tool to find the 6300-CX by searching for its MAC address.
2. Select the MAC address of the 6300-CX 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. 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 located in the Modem section of the configuration.
7. Click the Update button.

Using Remote Commands

The Accelerated View management portal allows you to send a specific set of remote commands to the device to provide control over the device without requiring any onsite interaction. These remote commands allow you to perform actions such as rebooting the device, triggering a configuration sync with Accelerated View, perform network speed tests, immediately probing the device for a real-time status, and more.

To send a remote command to an Accelerated 6300-CX:

1. Login to Accelerated View and use the Search tool to find the device by searching for its MAC address.
2. Select the MAC address of the device to bring up its details page.
3. Select the **Commands** drop-down list at the top-right of the page.

Immediately Update Device

1. Select Remote Commands.
2. Select Check Configuration option from the Commands drop-down.

Establishing WAN connectivity via Ethernet Port

In order to provide a cellular connection to client devices, the Accelerated 6300-CX can be configured either in the default Passthrough (i.e. bridge) mode or 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 Accelerated 6300-CX through its Ethernet port at a time.

1. Login to Accelerated View and use the Search tool to find the device by searching for its MAC address.

2. Select the MAC address of the 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. Under the **Modem** section of the configuration, open the Passthrough section and set the following options inside that section:

a. Check **Enable**.

b. Change **Device** to **LAN**.

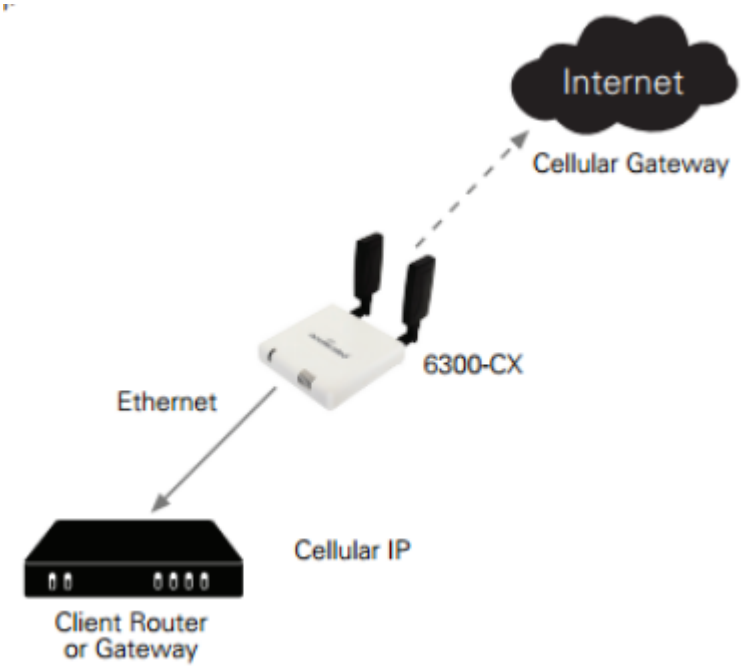
c. Change **Zone** to **Internal.**

6. Change the Interface Type under the **LAN** network section from **DHCP** to **Static IP Address**.

7. In the **Address**, enter in the IP address you wish to assign to the device for its LAN DHCP network (i.e. the gateway IP for the DHCP network).

8. Open the **DHCP Server** section and select **Disable**.

9. Click **Save** to apply the configuration changes.



Sample Diagram showing Passthrough Mode

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. Login to Accelerated View and use the Search tool to find the device by searching for its MAC address.

2. Select the MAC address of the 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 green Edit pencil icon at the top right of the page.

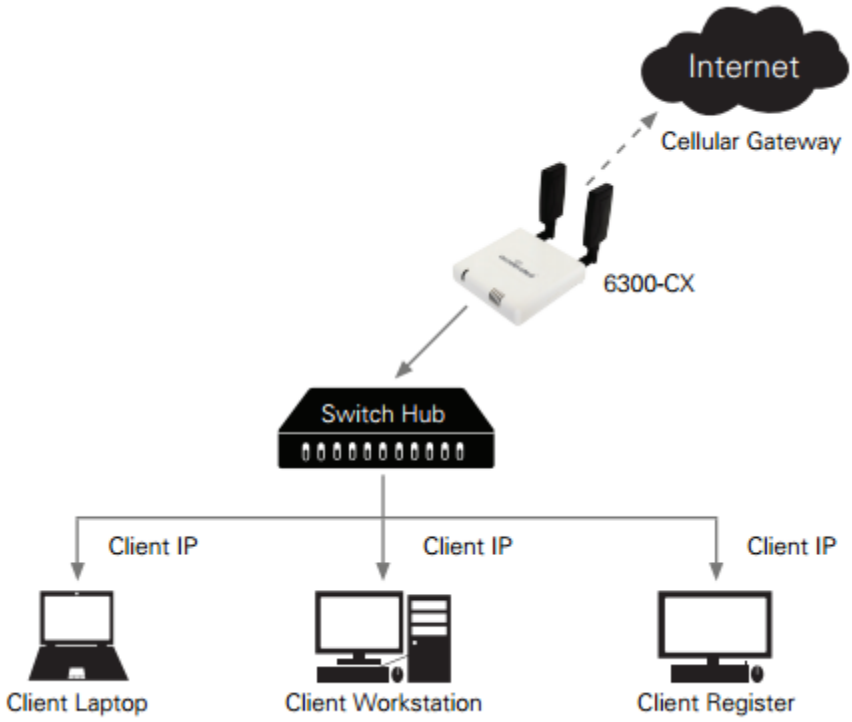
5. Open the **Modem** -> **Passthrough** section, de-select the **Enable** checkbox.

6. Change the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Interface Type** option from **DHCP** to **Static IP Address**.

7. In the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Address** option, enter in the IP address you wish to assign to the device for its LAN DHCP network (i.e. the gateway IP for the DHCP network).

8. Open the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Address** -> **DHCP Server** section and select **Enable**.

9. Click **Save** to apply the configuration changes.



Sample Diagram showing Router Mode

Learning More

In depth details on using Accelerated View can be found in the Accelerated View User's Guide.

AT Command Access

To gain AT command access through the 6300-CX, the tester must have a PC/laptop connected the LAN Ethernet port of the 6300-CX. They will need to configure a static IP on the PC/laptop of 192.168.210.2/24 with a gateway of 192.168.210.1

- Open a SSH session to the 6300-CX at 192.168.210.1. Default login credentials are:
  - *username:* root
  - *password:* default
- Select **a** to access the Admin CLI. If the SSH session immediately gives you the # prompt, you are already in the Admin CLI.
- Type **atcmd** and press Enter. Type **n** when the SR prompts you 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 root@192.168.210.1
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: MC7354
Revision: SWI9X15C_05.05.16.02 r21040 carmd-fwbuild1 2014/03/17 23:49:48
MEID: 35922505082765
ESN: 12803341918, 8032FE5E
IMEI: 359225050827658
```

```
IMEI SV: 11
FSN: J8513103240310
+GCAP:
```

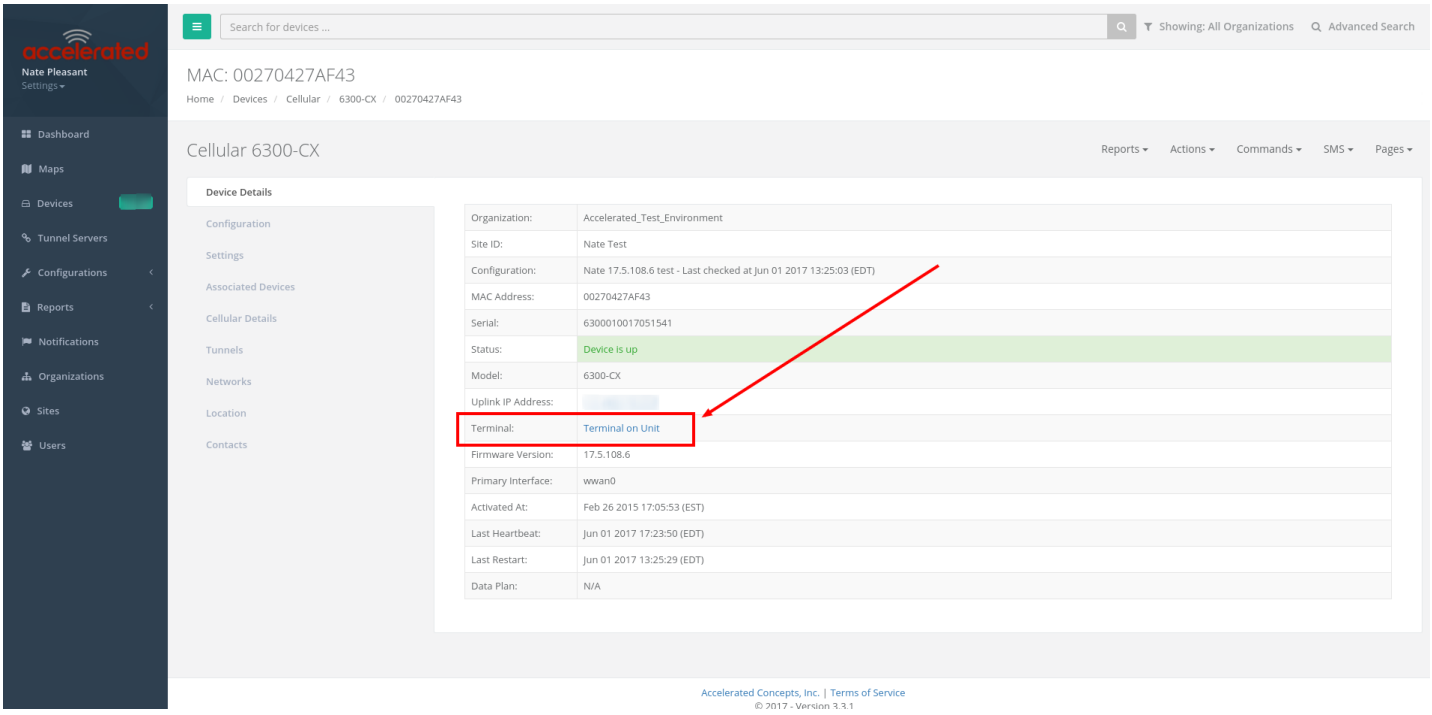
Terminal on Unit

Skill level: *Intermediate*

Goal

To access the console of an Accelerated LTE router using the *Terminal on Unit* link presented in Accelerated View for the device.

> The *Terminal on Unit* access leverages the management tunnel established between the 63xx-series router and Accelerated View. For details on the monthly data usage for this access, refer to the following article:
>
> Data Usage Estimates



Setup

For this setup, you will need access to Accelerated View, and a 63xx-series router online and syncing with Accelerated View. If you see the 63xx-series router listed as up (green status) in Accelerated View, you are good to go.

Details

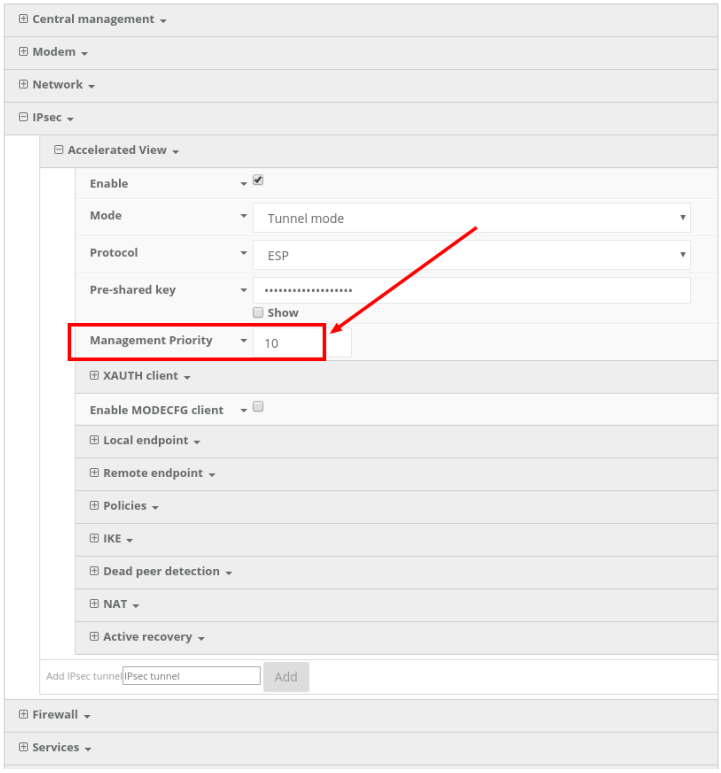
Accelerated View utilizes the IPSec tunnel the 63xx-series router establishes to remote.accns.com to provide terminal access to the console of the router.

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

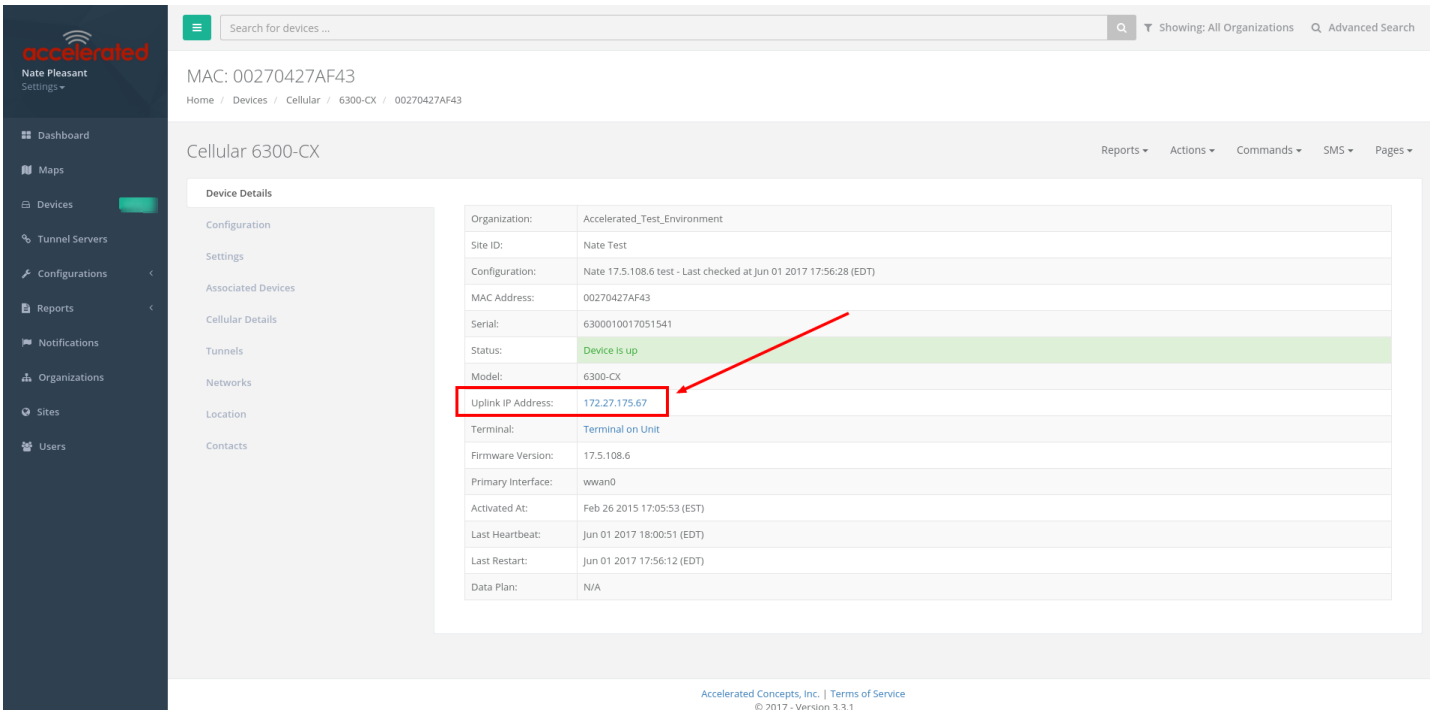
Data Usage Estimates

The following configuration settings will setup the 6300-CX to report its IPSec tunnel local IP address as the management IP that Accelerated View can then use to access its console.

Open the configuration profile for the 63xx-series router. Under *IPSec -> Accelerated View*, set the *Management priority* to *10*. This will tell the 63xx-series router to treat the AView IPSec tunnel as the highest priority management interface, which it then reports to Accelerated View as the IP that can be used to access its console.



Once you apply the new configuration to the 63xx-series router, reboot the 63xx-series device so it rebuilds the IPSec tunnel and reports the new IPSec local IP address to Accelerated View. You can verify that Accelerated View 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.



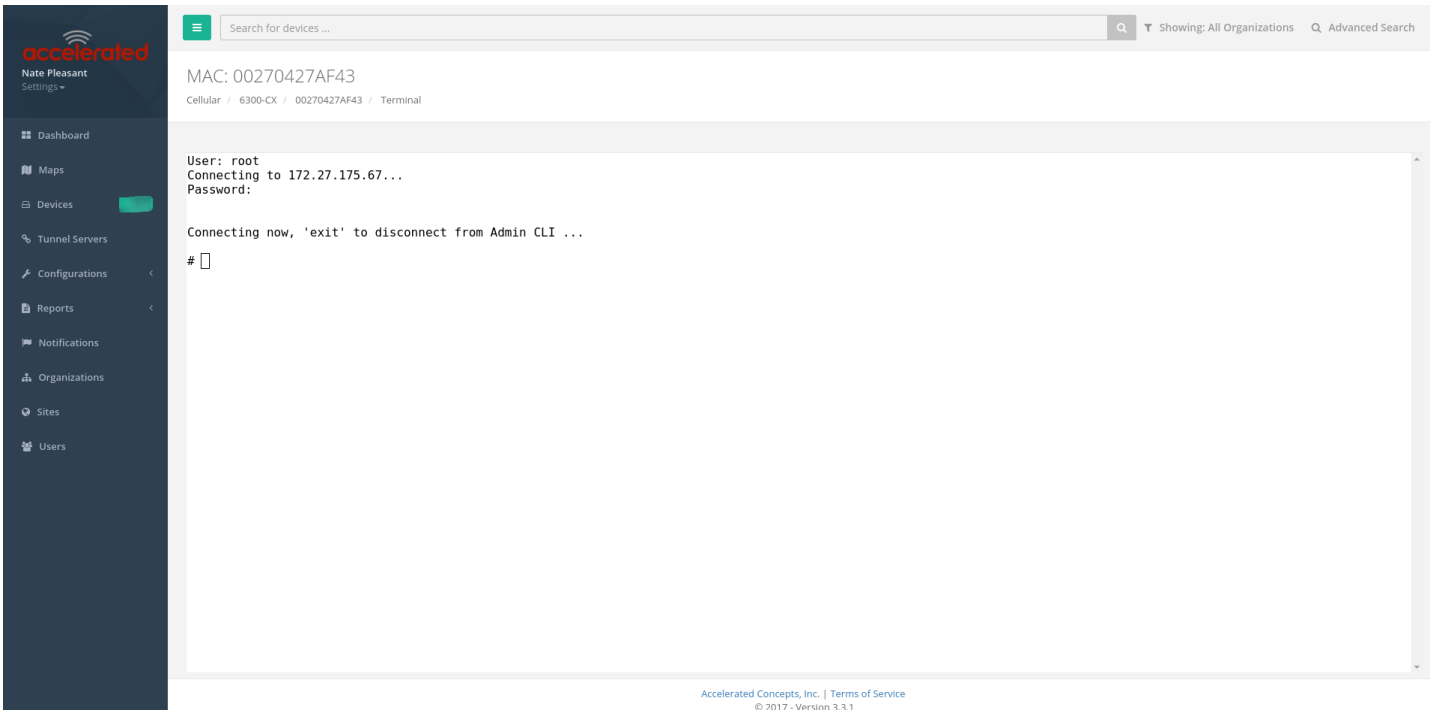
Using the Terminal on Unit link

Once the correct management IP is reported from the 63xx-series router to Accelerated View, clicking the *Terminal on Unit* will open a page on Accelerated View to provide the user access to the console of the 63xx-series router. Default login credentials are below.

User: root

Password: default

To create a different user or change the root user's password, refer to this article.



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

Managing Device Locally

The following Accelerated View actions are typically only performed by your network administrator. Note: Using Accelerated View to centrally manage your device is recommended. If you are not using Accelerated View, you must manage and configure your device using the local interface.

Connecting to the Device

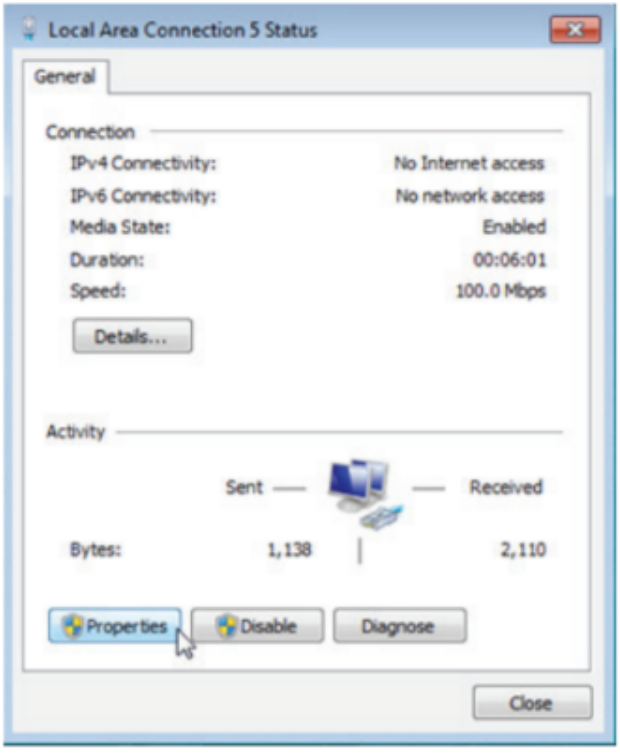
Communication with the device is typically via its Ethernet port. By default, you can connect to the device via its Ethernet port, at the IP address 192.168.210.1. You can access the device via this default IP address using a PC connected to its Ethernet port.

When connected to your site network, your Accelerated 6300-CX 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 Accelerated 6300-CX.

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

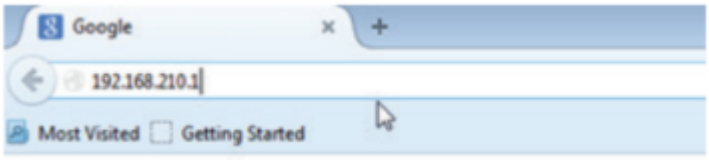


2. Click the Internet Protocol Version 4 (TCP/IPv4) parameter and select Properties and configure with the following details.

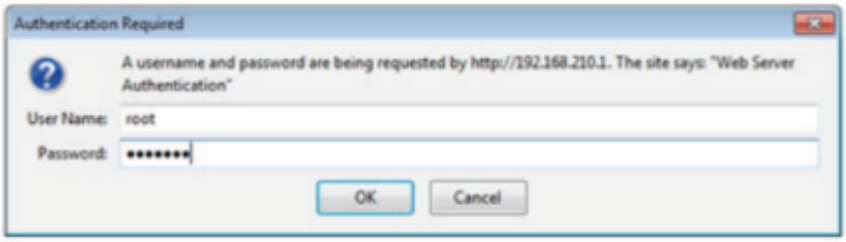
Logging into Device

To manually connect to the device, you must manually set an IP address on your PC to be able to communicate with the Accelerated 6300-CX.

1. Open the web browser on the PC and type in the address bar, the IP address of the Accelerated 6300-CX (192.168.210.1) and hit Enter.



2. When prompted Enter - User Name: **root** Password: **default**.



3. The Accelerated 6300-CX default web user interface will be shown.

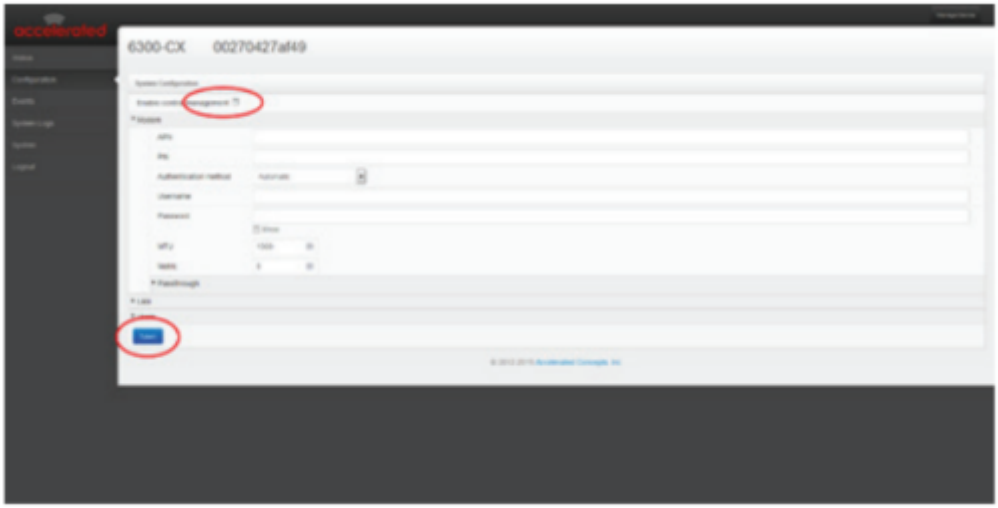
Advanced Local Configuration

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 Accelerated View 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.



Upgrading Firmware

1. Download the appropriate firmware file from Accelerated.
2. Connect to the device's web UI by connecting your PC to the WAN Ethernet port of the device and then going to http://192.168.210.1.
3. Select the System tab on the left side of the page.
4. Select the Browse button next to the Firmware image section.
5. Browse for and select the downloaded firmware file.

6. 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.

Defining a Custom APN

1. Connect to the device's web UI by connecting your PC to the WAN Ethernet port of the device and then going to http://192.168.210.1. If the device does not give your PC an IP address via DHCP, you may need to configure your PC with the following static IP settings. IP address for PC: 192.168.210.2 Subnet: 255.255.255.0 Gateway: 192.168.210.1
2. Select the Configuration tab on the left side of the page.
3. Type in the custom APN into the APN entry located in the modem section of the configuration.
4. Optional: If the custom APN requires a specific username and password, please input those into the Username and Password entries.
5. Click the Save button.

FAQS

How do I factory reset the Accelerated 6300-CX?

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 Accelerated 6300-CX use?

By default, the Accelerated 6300-CX 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 Accelerated 6300-CX use?

The Accelerated 6300-CX supports standard mini-SIMs (2FF).

How do I insert a SIM into the Accelerated 6300-CX?

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 Accelerated 6300-CX between the power connector and the USB port. The SIM will click into place when fully inserted.

Does the Accelerated 6300-CX fail back to 3G?

Yes, if the Accelerated 6300-CX 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 Accelerated 6300-CX support IPv6?

Yes. In passthrough mode, when the 6300-CX 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 6300-CX 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 TO: WWW.ACCELERATED.COM/COUNTRIES/6300-CX

End User Agreement

ACCELERATED CONCEPTS, INC. END USER AGREEMENT (v20160613.01)

USE OF THIS PRODUCT IS YOUR ACCEPTANCE TO THE ACCELERATED CONCEPTS, INC. END USER AGREEMENT FOUND AT: HTTPS://ACCELERATED.COM/ENDUSERAGREEMENT

LIMITED WARRANTY

Accelerated Concepts, Inc. (“ACI”) provides the Limited Warranty set forth herein on ACI’s VPN and Cellular products (“Product” or “Products”) to the original purchaser (hereinafter referred to as the “End User”) who purchased Products directly from ACI or one of its authorized resellers. This Limited Warranty does not apply to Products purchased from third-parties who falsely claim to be ACI resellers. Please visit our web site if you have questions about authorized resellers.

This Limited Warranty becomes invalid once the End User no longer owns the Product, if the Product or its serial number is altered in any manner, or if any repair or modification to the Product is made by anyone other than an ACI approved agent.

This Limited Warranty covers the Product against defects in materials and workmanship encountered in normal use of the Product as set forth in the Product’s Users Guide for one (1) year from the date of purchase. This Limited Warranty is not intended to include damage relating to shipping, delivery, installation, applications and uses for which the Product was not intended; cosmetic damage or damage to the Product’s exterior finish; damages resulting from accidents, abuse, neglect, fire, water, lighting or other acts of nature; damage resulting from equipment, systems, utilities, services, parts, supplies, accessories, wiring, or software applications not provided by ACI for use with the Product; damage cause by incorrect electrical line voltage, fluctuations, surges; customer adjustments, improper cleaning or maintenance, or a failure to follow any instruction provided in the Product’s Users Guide. This list is not intended to cover every possible limitation to this Limited Warranty. ACI does not warrant against totally uninterrupted or error-free operation of its Products.

In order to obtain warranty service under this Limited Warranty during the Limited Warranty period as set forth above, you must submit a valid claim through ACI’s return merchandise authorization (“RMA”) process as follows:

End User must request an RMA number either from Accelerated support or by sending an e-mail to RMA@accelerated.com with the following information:

1. Your name, address and e-mail address
2. The Product model number and serial number
3. A copy of your receipt
4. A description of the problem

ACI will review your request and e-mail you either an RMA number and shipping instructions or a reason why your request was rejected. Properly pack and ship the Product to ACI with the RMA number written on the outside of each package. ACI will not accept any returned Products which are not accompanied by an RMA number. ACI will use commercially reasonable efforts to ship a replacement device within ten (10) working days after receipt of the Product. Actual delivery times may vary depending on shipment location. Products returned to ACI must conform in quantity and serial number to the RMA request. End User will be notified by e-mail by ACI in the event of any incomplete RMA shipments.

Products presented for repair under this Limited Warranty may be replaced by refurbished goods of the same type rather than being repaired. Refurbished or used parts may be used to repair a Product covered by this Limited Warranty. If ACI, by its sole determination, is unable to replace a Product covered by this Limited Warranty, it will refund the depreciated purchase price of the Product.

LIMITED LIABILITY

EXCEPT AS PROVIDED IN THE LIMITED WARRANTY AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, UNDER NO CIRCUMSTANCES WILL ACI BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, COMPENSATION, REIMBURSEMENT OR DAMAGES ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS, EXPENDITURES, INVESTMENTS OR COMMITMENTS, WHETHER MADE IN THE ESTABLISHMENT, DEVELOPMENT OR MAINTENANCE OF BUSINESS REPUTATION OR GOODWILL, FOR LOSS OR DAMAGE OF RECORDS OR DATA, COST OF SUBSTITUTE PRODUCTS, COST OF CAPITAL, THE CLAIMS OF ANY THIRDPARTY, OR FOR ANY OTHER REASON WHATSOEVER.

ACI'S LIABILITY, IF ANY, AND THE END USER'S SOLE AND EXCLUSIVE REMEDY FOR DAMAGES FOR ANY CLAIM OF ANY KIND WHATSOEVER REGARDLESS OF THE LEGAL THEORY, SHALL NOT BE GREATER THAN THE PRODUCT'S ACTUAL PURCHASE PRICE.

THIS LIMITATION OF LIABILITY IS APPLICABLE EVEN IF ACI IS INFORMED IN ADVANCE OF THE POSSIBILITY OF DAMAGES BEYOND THE PRODUCT'S ACTUAL PURCHASE PRICE.

SOFTWARE LICENSE

ACI software is copyrighted and is licensed to the End User solely for use with the Product.

Some software components are licensed under the GNU General Public License, version 2. Please visit http://www.gnu.org/licenses/old-licenses/gpl-2.0.en. html for more details regarding GNU GPL version 2.

These GNU General Public License, version 2 software components are available as a CD or download. The CD may be obtained for an administration fee by contacting Accelerated support at support@accelerated.com.

Accessing Admin CLI

Skill level: *Beginner*

Goal

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

Setup

For *Terminal on Unit*, you will need either:

a) Direct SSH access to the ACL router

b) Access to Accelerated View, and an Accelerated cellular router online and syncing with Accelerated View. If you see the Accelerated cellular router listed as up (green status) in Accelerated View, you are good to go.

For more information on how to access *Terminal on Unit or SSH*, please see the below link.

Remote_Access

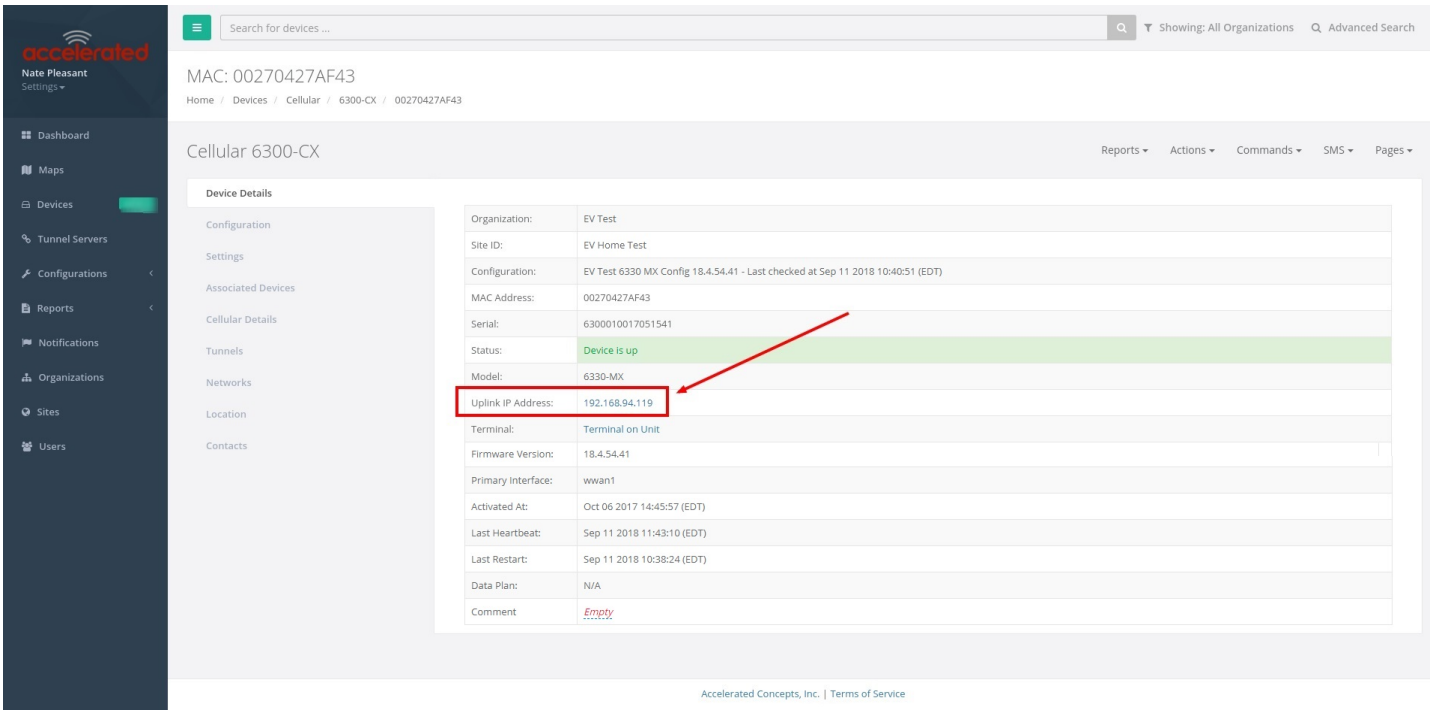
Details

Accelerated View utilizes the IPSec tunnel the Accelerated cellular router establishes to ipsec.accns.com (or remote.accns.com) to provide terminal access to the console of the router.

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

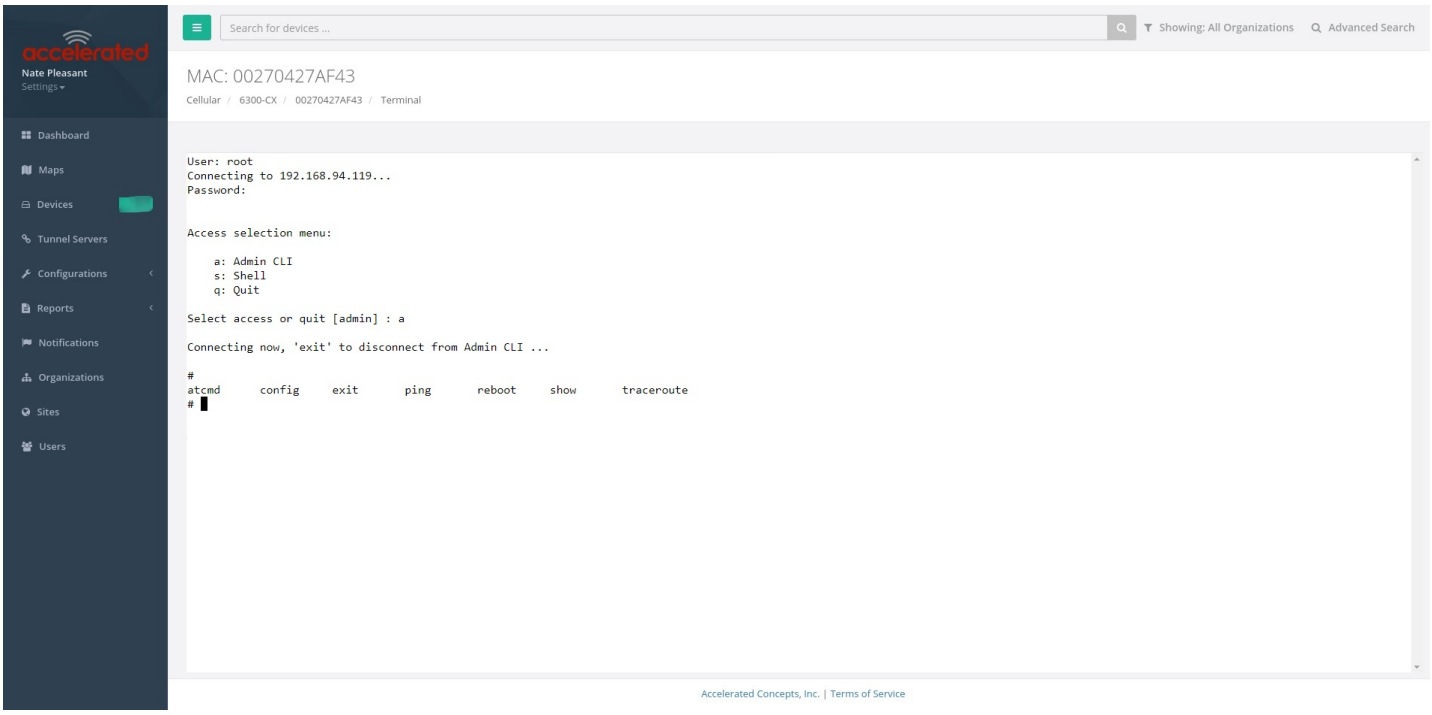
Data Usage Estimates

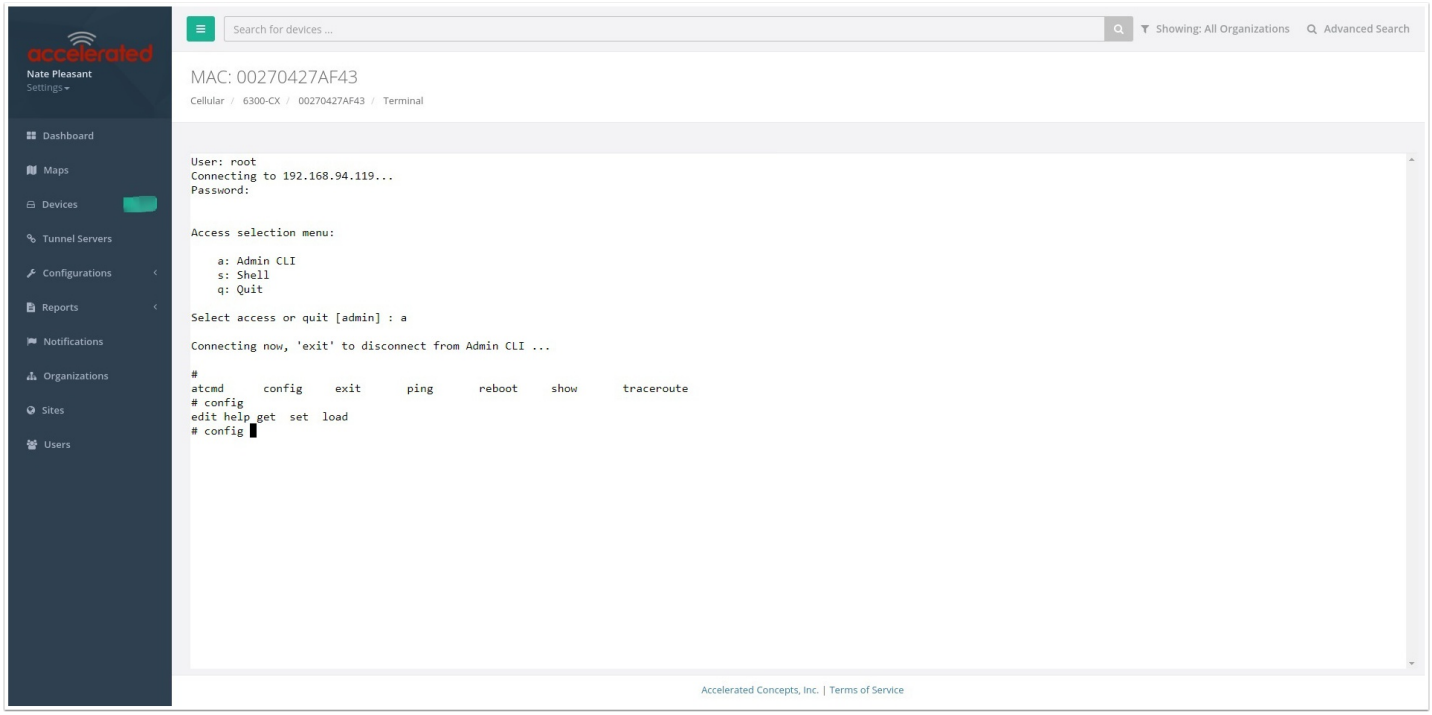
If a new configuration is applied to an Accelerated cellular router, reboot the Accelerated cellular device so it rebuilds the IPSec tunnel and reports the new IPSec local IP address to Accelerated View. You can verify that Accelerated View is using the IPSec local IP as the management IP by looking 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 for remote.accns.com).



Using the Terminal on Unit link

1. Once the correct management IP is reported from the Accelerated cellular router to Accelerated View, clicking *Terminal on Unit* will open a page on Accelerated View to provide the user access to the console of the 63xx-series router.
2. Type in the *User* and *Password* for the device and hit enter.
3. At the prompt, type *a* for *Admin CLI* and hit enter. (If typing in the user and password brings you directly to the *# prompt*, you are already in the *Admin CLI*.)
4. At the *# prompt,* hit tab and the possible commands will be presented. 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 break down below)





Direct SSH access

SSH access can be gained through a local connection to the ACL router. You can access the router 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 router at its LAN IP address (default 192.168.2.1) or its default 192.168.210.1 IP address.

2. Type in the *User* and *Password* for the device and hit enter.
3. At the prompt, type *a* for *Admin CLI* and hit enter. (If typing in the user and password brings you directly to the *# prompt*, you are already in the *Admin CLI*.)
4. At the *# prompt,* hit tab and the possible commands will be presented. 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 break down below)

```
$ ssh root@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

1. *atcmd* - run AT commands to cellular modem in the device
2. *config* - make config changes on the device, one at a time
3. *exit* - exit from the *Admin CLI* console
4. *ping* - ping an IP address or domain (Ctrl+c to stop)
5. *reboot* - reboot the device
6. *show* - display network or device version details
7. *traceroute* - perform traceroute to an IP address or domain

VPN Access with IPSec tunnels

Skill level: *Expert* (requires knowledge of IPSec tunnel setup)

Goal

To build an IPSec tunnel through the 63xx router's WAN internet connection, and use that IPSec tunnel to access endpoints inside a VPN.

Setup

For this setup, the 63xx series router will need an active WAN internet connection (cellular for the 6300-series, cellular or Ethernet for the 635x-SR series).

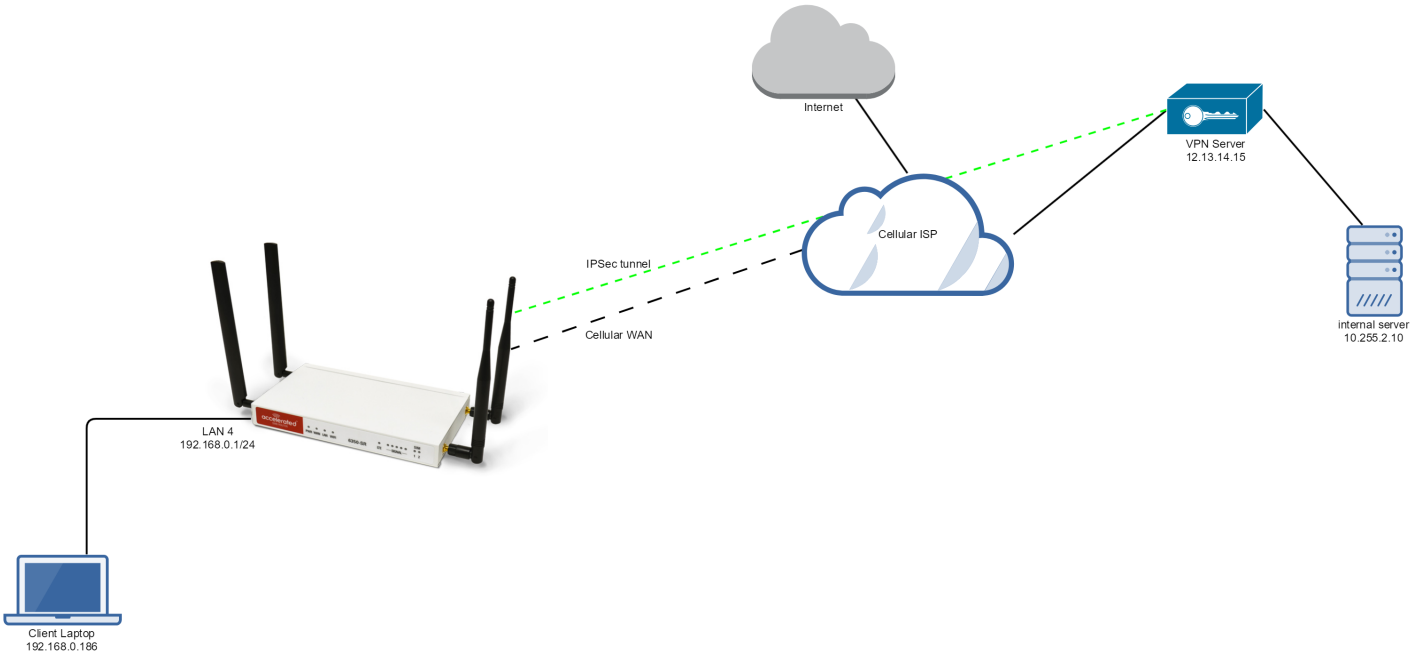
You will also need to know the IPSec credentials and settings needed to build a tunnel to the IPSec endpoint.

NOTE: the 63xx series of routers support building IPSec tunnels to the following endpoints:

- SonicWall routers
- strongswan IPSec servers
- OpenVPN IPSec servers
- other 63xx series routers. See the site-to-site tunnel article for an example.

Sample

The sample configuration below shows a 6350-SR building a tunnel to a VPN server at 12.13.14.15 through it's cellular modem. The client laptop connected to the LAN Ethernet port of the 6350-SR can then use that IPSec tunnel to access any IP address in the 10.255.0.0/16 range behind the IPSec server. Any traffic not destined for 10.255.0.0/16 will instead go through the cellular modem straight to the Internet.



Sample Configuration

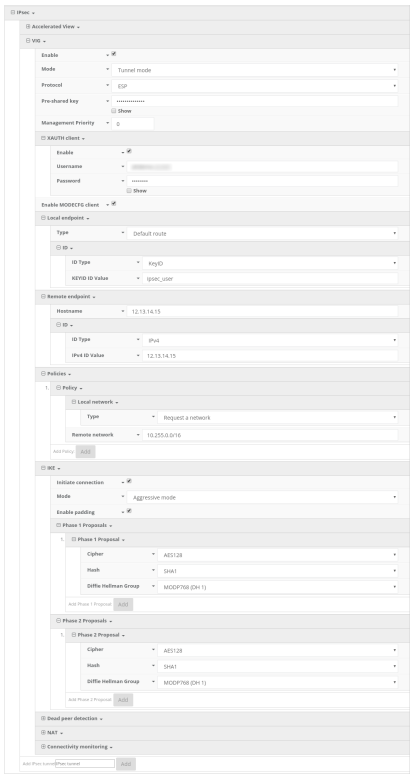
Open the configuration profile for the 6350-SR. Under ***IPSec***, create a new entry titled ***Tunnel***, and add your IPSec settings to the new entry. The following settings reflect the sample setup in the diagram above.

1. Enter in the PSK into the ***Pre-shared key***.
2. (o*ptional*) In ***XAUTH client***, check the ***Enable*** box and enter in the account, username, and password.
3. Check the ***Enable MODECFG client*** box.
4. Change ***Local endpoint -> ID -> ID type*** to ***KeyID***
5. Set the local ID in ***Local endpoint -> ID -> KEYID ID Value***
6. *(optional)* Set ***Local endpoint -> type*** to ***Interface***,and set ***Local endpoint -> Interface*** to ***Modem.*** This configures the 63xx-series router to only build the tunnel through the cellular modem WAN interface. Leaving ***Local endpoint -> type*** to ***Interface*** as ***Default route*** will allow the tunnel to be built through any available WAN interface.
7. Change ***Remote endpoint -> ID -> ID type*** to ***IPv4***
8. Set the IP address of the IPSec server in ***Remote endpoint -> Hostname*** and ***Remote endpoint -> ID -> IPv4 ID Value***. In the example, this is 12.13.14.15
9. Set ***IKE -> Mode*** to ***Aggressive mode***.
10. Set ***IKE -> Phase 1 Proposals*** and ***IKE -> Phase 2 Proposals*** to match the IKE settings required by the IPSec server. In this example, both proposals are set to AES128, SHA1, MOD768.

Under ***Policies***, click ***Add*** to create a new policy, and enter the following settings:

1. Set ***Policy -> Local network -> Type*** to ***Request a network.***
2. Set ***Policy -> Remote network*** to the IPv4 network you wish to access through the tunnel. In the sample, this is 10.255.0.0/16

   (alternative) If you would instead like to have all outbound traffic go through this tunnel, set ***Policy -> Remote network*** to ***0.0.0.0/0***


IPsec
Accelerated View
VIG
Enable
Mode
Tunnel mode
Protocol
ESP
Pre-shared key
Show
Management Priority
0
XAUTH client
Enable
Username
Password
Show
Enable MODECFG client
Local endpoint
Type
Default route
ID
ID Type
KeyID
KEYID ID Value
ipsec_user
Remote endpoint
Hostname
12.13.14.15
ID
ID Type
IPv4
IPv4 ID Value
12.13.14.15
Policies
1
Policy
Local network
Type
Request a network
Remote network
10.255.0.0/16
Add Policy
Add
IKE
Initiate connection
Mode
Aggressive mode
Enable padding
Phase 1 Proposals
1
Phase 1 Proposal
Cipher
AES128
Hash
SHA1
Diffie Hellman Group
MODP768 (DH 1)
Add Phase 1 Proposal
Add
Phase 2 Proposals
1
Phase 2 Proposal
Cipher
AES128
Hash
SHA1
Diffie Hellman Group
MODP768 (DH 1)
Add Phase 2 Proposal
Add
Dead peer detection
NAT
Connectivity monitoring
Add IPsec tunnel
IPsec tunnel
Add

VLAN Trunking

Skill level: *Moderate*

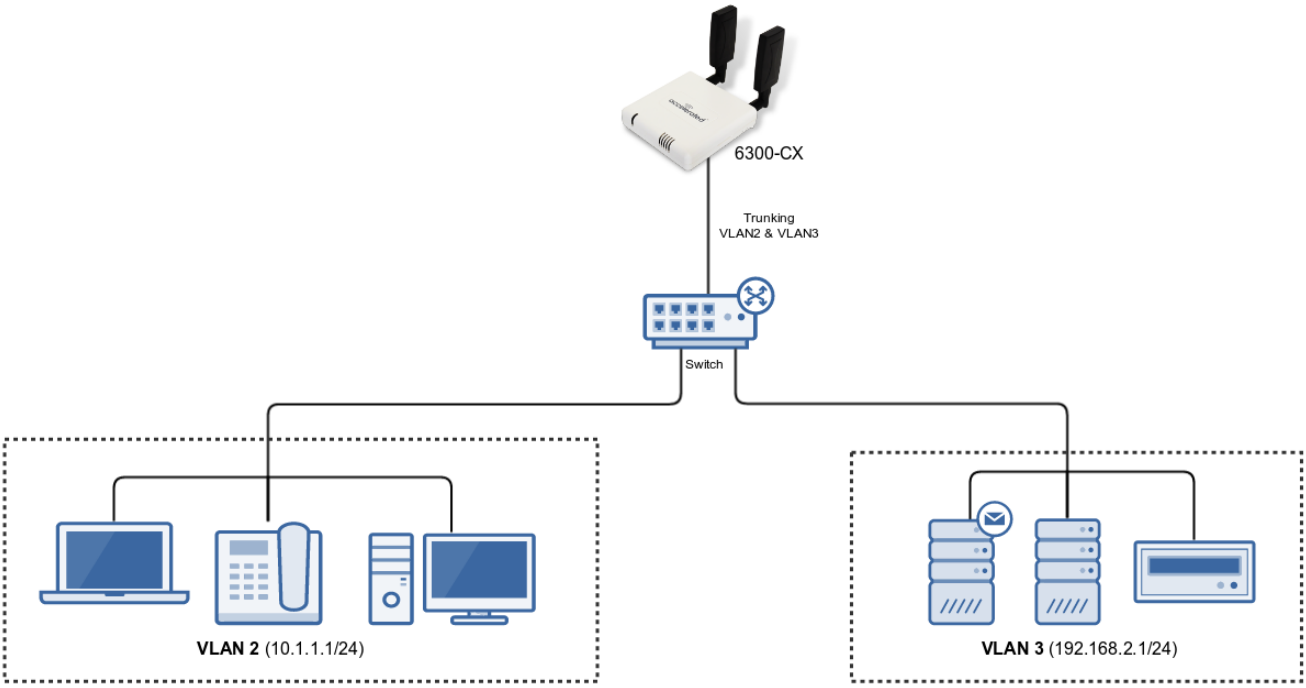
Goal

The primary benefit of the VLAN features on the 6300-CX is to provide multiple LAN networks on a single Ethernet port. This allows users to create a segmented network, where certain devices are sectioned off in their own network, for increased performance, improved manageability, simplified software configurations, and increased security options.

Technical Details

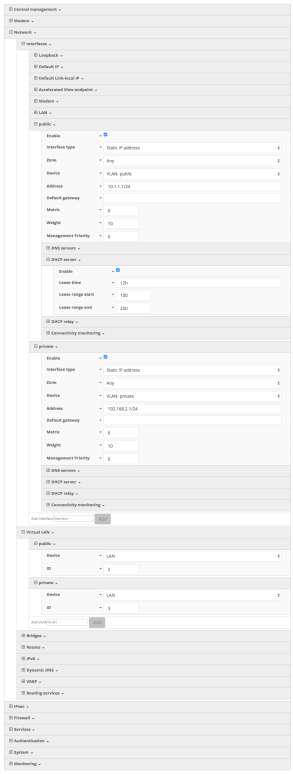
What the 6300-CX and 6300-LX supports is closest to a trunked VLAN behavior. That is, the 6300-CX supports multiple VLANs per Ethernet port, the packets arrive with tags already, and it doesn't add tags to the incoming packets. The difference is that since the 6300-CX acts as a router, we can't forward the tag on. The Ethernet header and VLAN tag are stripped before the packet enters the IP stack. So to the IP stack, it appears as the packet appeared on a virtual interface called "eth0.%d", and it needs to decide how to route the packet based on that. There's no concept of a trunk interface that sends and receives all VLAN tags. The outgoing packet will then only have a VLAN tag if it is being routed out one of these virtual interfaces, and this VLAN tag doesn't have to be the same as the VLAN tag on the incoming packet.

Example Setup



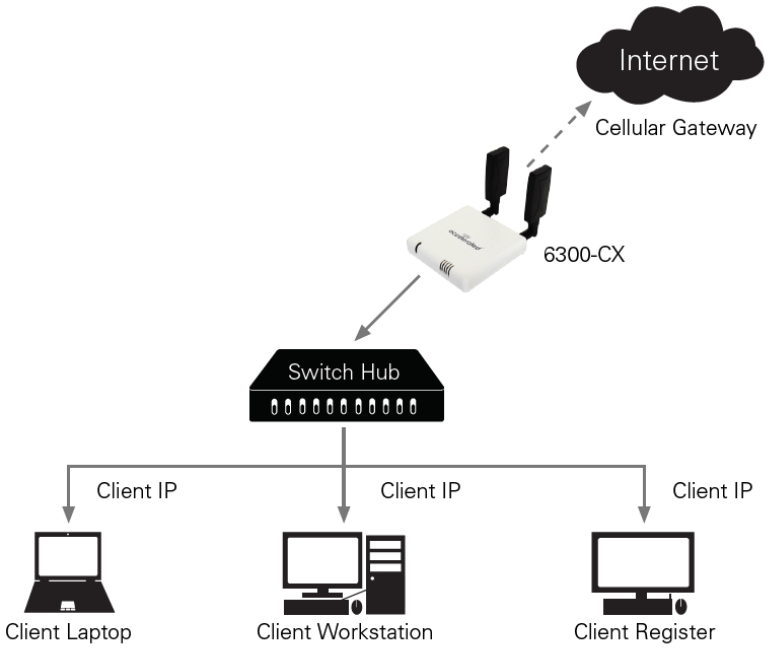
Sample Configuration

The following configuration reflects the VLAN trunking setup in the diagram, where we have two trunked VLAN interfaces on the 6300-CX's LAN Ethernet port. Also, please ensure that the **Modem** → *Passthrouth* → **Enabled** option is un-checked, as enabling passthrough mode will override any VLAN settings.


Central management
Modem
Network
Interfaces
Loopback
Default IP
Default Link-local IP
Accelerated View endpoint
Modem
LAN
public
Enable
Interface type
Static IP address
Zone
Any
Device
VLAN: public
Address
10.1.1.1/24
Default gateway
Metric
0
Weight
10
Management Priority
0
DNS servers
DHCP server
Enable
Lease time
12h
Lease range start
100
Lease range end
250
DHCP relay
Connectivity monitoring
private
Enable
Interface type
Static IP address
Zone
Any
Device
VLAN: private
Address
192.168.2.1/24
Default gateway
Metric
0
Weight
10
Management Priority
0
DNS servers
DHCP server
DHCP relay
Connectivity monitoring
Add interface
Add
Virtual LAN
public
Device
LAN
ID
2
private
Device
LAN
ID
3
Add VLAN/VLAN
Add
Bridges
Routes
IPv6
Dynamic DNS
VRRP
Routing services
IPsec
Firewall
Services
Authentication
System
Monitoring

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. Login to Accelerated View and use the Search tool to find the device by searching for its MAC address.
2. Select the MAC address of the 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 green Edit pencil icon at the top right of the page.
5. Open the **Modem** -> **Passthrough** section, de-select the **Enable** checkbox.
6. Open the **Network** -> **Interfaces** -> **LAN** section and select the **Enable** checkbox.
7. Change the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Interface Type** option from **DHCP** to **Static IP Address**.
8. In the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Address** option, enter in the IP address you wish to assign to the device for its LAN DHCP network (i.e. the gateway IP for the DHCP network).
9. Open the **Network** -> **Interfaces** -> **LAN** -> **IPv4** -> **Address** -> **DHCP Server** section and select **Enable**.

10. Click **Save** to apply the configuration changes.

Site-to-Site VPN Access with two 63xx Series Routers

Skill level: *Expert* (requires knowledge of IPSec tunnel setup)

Goal

To build an IPSec tunnel through the 63xx router's cellular WAN Internet connection to another 63xx, and use that IPSec tunnel to access endpoints inside a VPN.

Setup

For this setup, you will need two 63xx series routers. Both 63xx routers must be on firmware version 17.5.108.6 or higher. The 63xx series routers will need an active WAN Internet connection.

The main site's 63xx series router will need a publicly reachable IP address, so the remote 63xx series router can reach the IP and build a tunnel.

You will also need to decide on the IPSec credentials and settings needed to build a tunnel between the 63xx series routers.

If configuring a 6300-CX for Site-to-Site VPN Access, it must be in router mode.

Sample

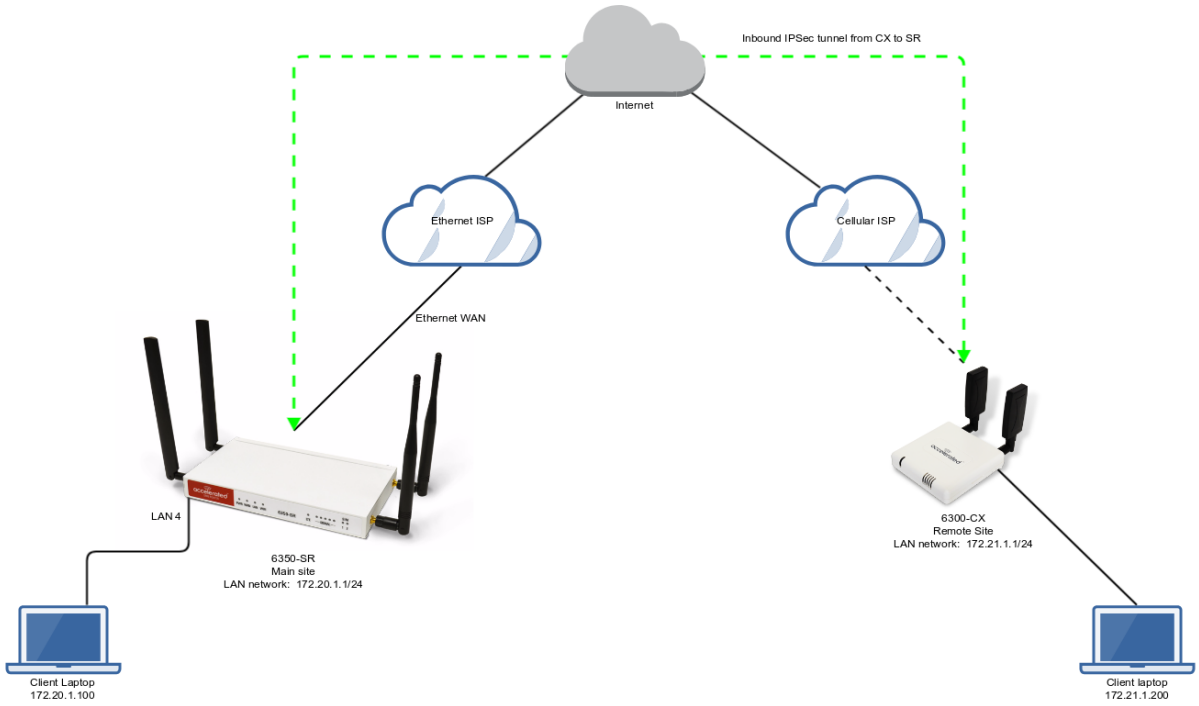
The sample configuration below shows a 6300-CX building a tunnel to a 6350-SR through its cellular modem. The client laptop connected to the LAN Ethernet port of the 6300-CX can then use that IPSec tunnel to access any IP address in the 172.20.1.1/24 range behind the 6350-SR. Any traffic not destined for 172.20.1.1/24 will instead go through the cellular modem straight to the Internet.

This tunnel will also allow the client laptop connected to the LAN 4 port of the 6350-SR to access any IP address in the 172.21.1.1/24 range behind the 6300-CX. Any traffic not destined for 172.20.1.1/24 will instead go through the Ethernet WAN of the 6350-SR straight to the Internet.

Both the 6350-SR and 6300-CX will need to be configured with a new IPSec tunnel, using matching authentication settings, in order for the 6300-CX to build the tunnel to the 6350-SR. Sample configuration settings for both devices are listed below.

Additional 63xx series routers can build IPSec tunnels to this 6350-SR. Each 63xx series router will need a unique local address range (e.g. 172.21.2.1/24 or 172.21.100.1/24) so the various remote sites do not conflict with each other. Also, the ***remote network*** and ***NAT*** settings of the main site's 6350-SR will need to be expanded to account for the additional ranges (e.g. 172.21.1.1/16).

NOTE: Be sure a value greater than 0 is specified for the local address ranges' fourth octet (i.e. X.X.X.1/24 is valid, X.X.X.0/24 is not).



6350-SR Sample Configuration

Open the configuration profile for the 6350-SR. Under ***IPSec***, create a new entry titled ***N6300*** (the name is arbitrary), and add your IPSec settings to the new entry. The following settings reflect the sample setup in the diagram above.

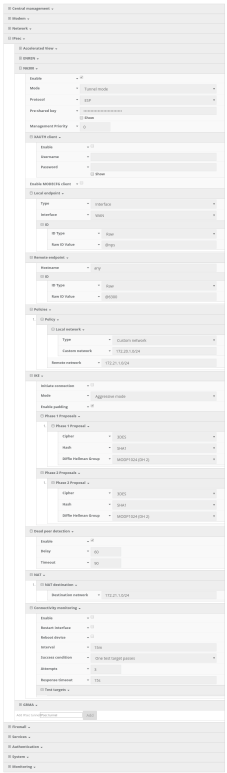
1. Enter in the PSK into the ***Pre-shared key***.
2. Change ***Local endpoint -> ID -> ID type*** to ***Raw***
3. Set the local ID in ***Local endpoint -> ID -> Raw ID Value***, e.g. *@nps*
4. Set ***Local endpoint -> type*** to ***Interface***,and set ***Local endpoint -> Interface*** to ***WAN***, or whichever interface you want to allow the inbound tunnel to connect through.
5. Change ***Remote endpoint -> ID -> ID type*** to ***Raw***
6. Set the remote ID in ***Remote endpoint -> ID -> Raw ID Value***, e.g. *@6300*.
7. Set the ***Remote endpoint -> Hostname*** to ***any***. This allows the 6300-CX to have any IP address. If you know the public IP address of the 6350-CX and wish to lock down the

6350-SR's settings so it only allows inbound tunnels from that IP, input the 6300-CX's public IP address here.

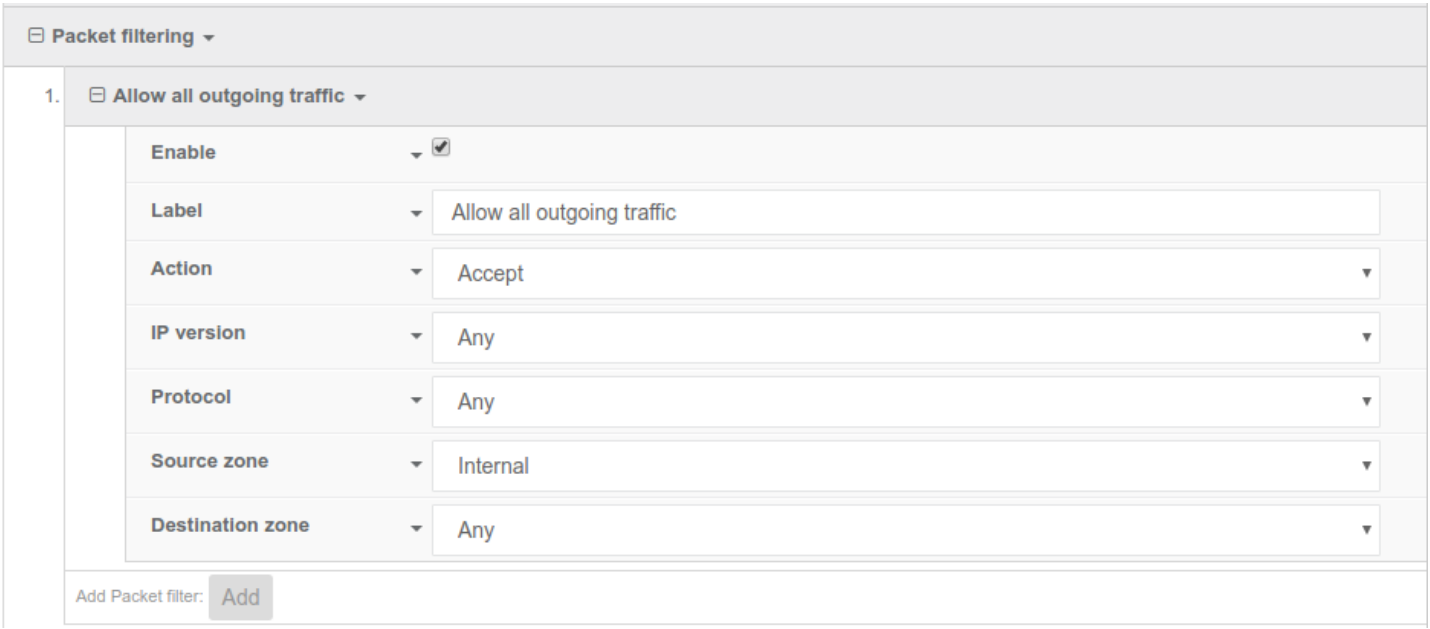
8. Set *IKE -> Mode* to *Aggressive mode*.
9. Uncheck the *IKE -> Initiate connection* option.
10. Set *IKE -> Phase 1 Proposals* and *IKE -> Phase 2 Proposals*. In this example, both proposals are set to 3DES, SHA1, MODP1024.
11. Under NAT, add a destination that corresponds to the local address range of the *remote* device. (In this example, it'd be 172.21.1.1/24.)

Under *Policies*, click *Add* to create a new policy, and enter the following settings:

1. Set *Policy -> Local network -> Type* to *Custom network.*
2. Set *Policy -> Local network -> Custom network* to the IPv4 network you wish to have on the LAN side of the 6300-CX. In the sample, this is 172.20.1.1/24
3. Set *Policy -> Remote network* to the IPv4 network you wish to access through the tunnel. (In the sample, this is 172.21.1.1/24)



Under *Firewall*, click *Packet Filtering* to ensure *Allow all outgoing traffic* item exists and enabled.



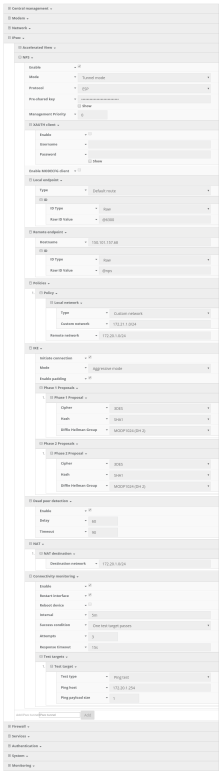
6300-CX Sample Configuration

Open the configuration profile for the 6350-SR. Under *IPSec*, create a new entry titled *NPS* (the name is arbitrary), and add your IPSec settings to the new entry. The following settings reflect the sample setup in the diagram above.

1. Enter in the PSK into the *Pre-shared key*.
2. Change *Local endpoint -> ID -> ID type* to *Raw*
3. Set the local ID in *Local endpoint -> ID -> Raw ID Value*, e.g. *@6300.*
4. *(optional)* Set *Local endpoint -> type* to *Interface*,and set *Local endpoint -> Interface* to *Modem.* This configures the 63xx-series router to only build the tunnel through the cellular modem WAN interface. Leaving *Local endpoint -> type* to *Interface* as *Default route* will allow the tunnel to be built through any available WAN interface.
5. Change *Remote endpoint -> ID -> ID type* to *Raw*
6. Set the remote ID in *Remote endpoint -> ID -> Raw ID Value*, e.g. *@nps*.
7. Set the *Remote endpoint -> Hostname* to the public IP address of the 6350-SR's WAN Ethernet.
8. Set *IKE -> Mode* to *Aggressive mode*.
9. Set *IKE -> Phase 1 Proposals* and *IKE -> Phase 2 Proposals* to match the IKE settings required by the 6350-SR. In this example, both proposals are set to 3DES, SHA1, MODP1024.

Under *Policies*, click *Add* to create a new policy, and enter the following settings:

1. Set *Policy -> Local network -> Type* to *Custom network.*
2. Set *Policy -> Local network -> Custom network* to the IPv4 network you wish to have on the LAN side of the 6300-CX. In the sample, this is 172.21.1.0/24
3. Set *Policy -> Remote network* to the IPv4 network you wish to access through the tunnel. In the sample, this is 172.20.1.0/24



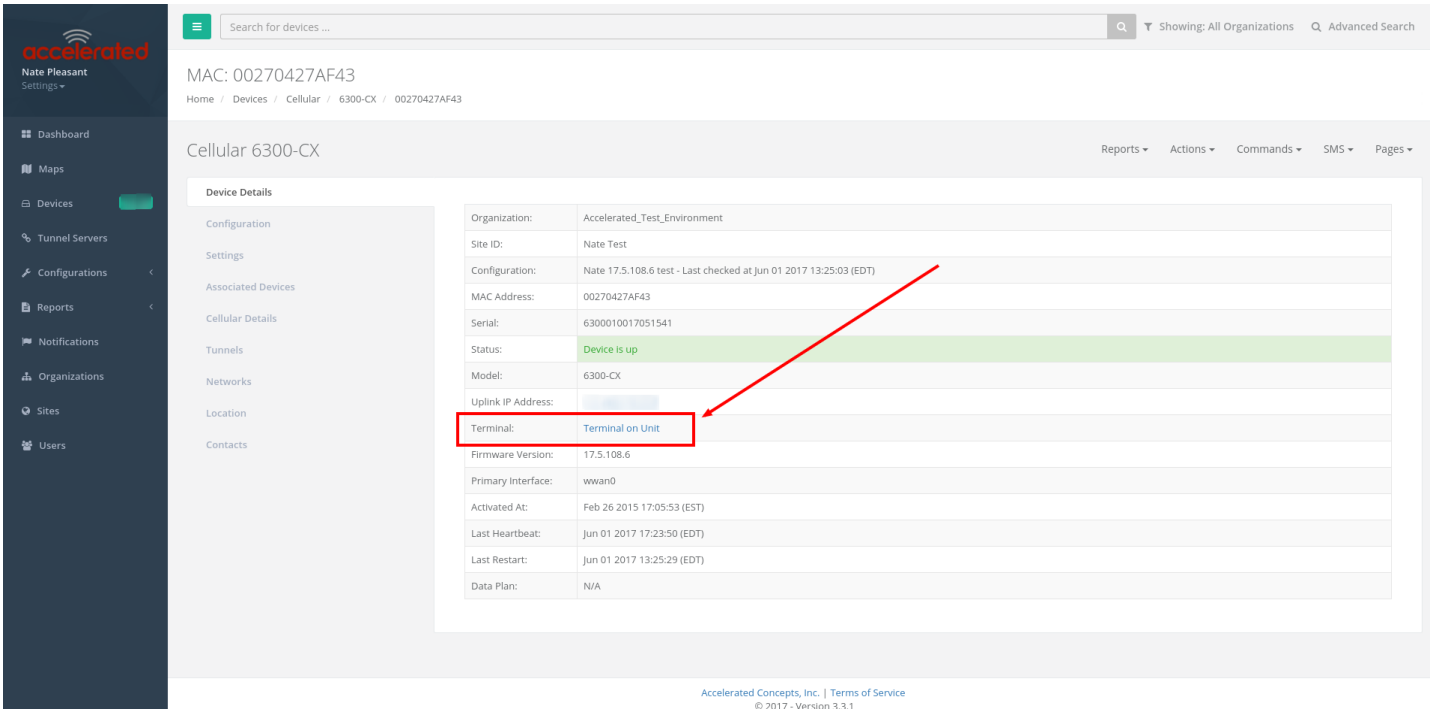
Terminal on Unit

Skill level: *Intermediate*

Goal

To access the console of an Accelerated LTE router using the *Terminal on Unit* link presented in Accelerated View for the device.

> The *Terminal on Unit* access leverages the management tunnel established between the 63xx-series router and Accelerated View. For details on the monthly data usage for this access, refer to the following article:
>
> Data Usage Estimates



Setup

For this setup, you will need access to Accelerated View, and a 63xx-series router online and syncing with Accelerated View. If you see the 63xx-series router listed as up (green status) in Accelerated View, you are good to go.

Details

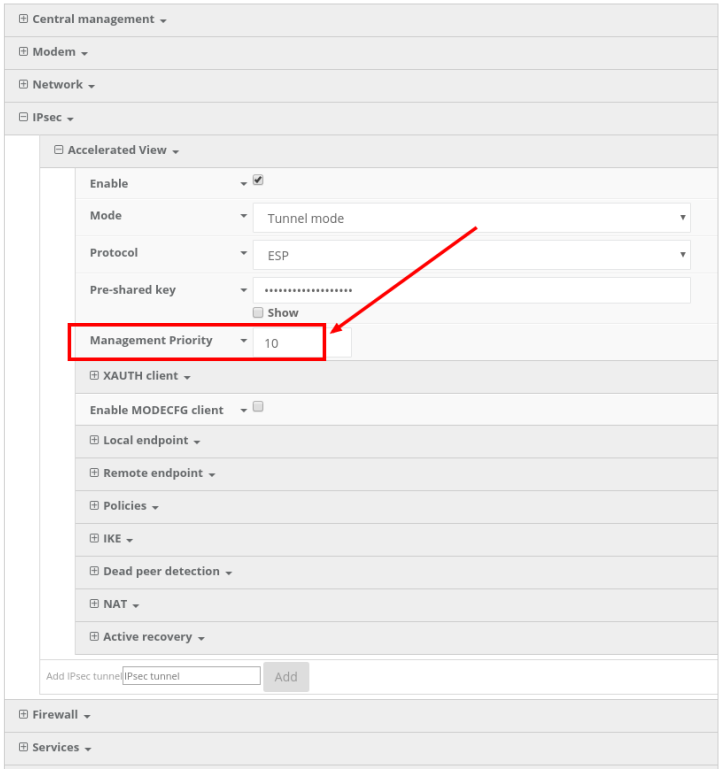
Accelerated View utilizes the IPSec tunnel the 63xx-series router establishes to remote.accns.com to provide terminal access to the console of the router.

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

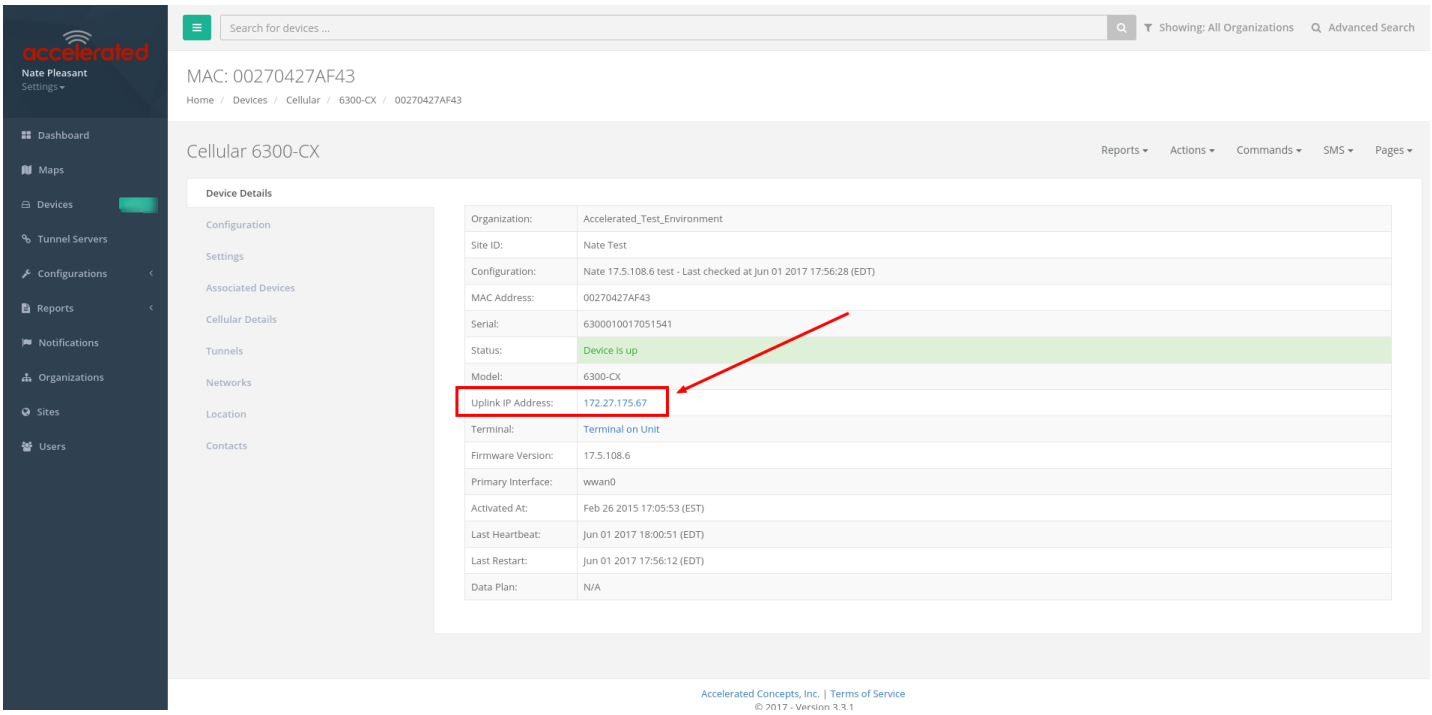
Data Usage Estimates

The following configuration settings will setup the 6300-CX to report its IPSec tunnel local IP address as the management IP that Accelerated View can then use to access its console.

Open the configuration profile for the 63xx-series router. Under *IPSec -> Accelerated View*, set the *Management priority* to *10*. This will tell the 63xx-series router to treat the AView IPSec tunnel as the highest priority management interface, which it then reports to Accelerated View as the IP that can be used to access its console.



Once you apply the new configuration to the 63xx-series router, reboot the 63xx-series device so it rebuilds the IPSec tunnel and reports the new IPSec local IP address to Accelerated View. You can verify that Accelerated View 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.



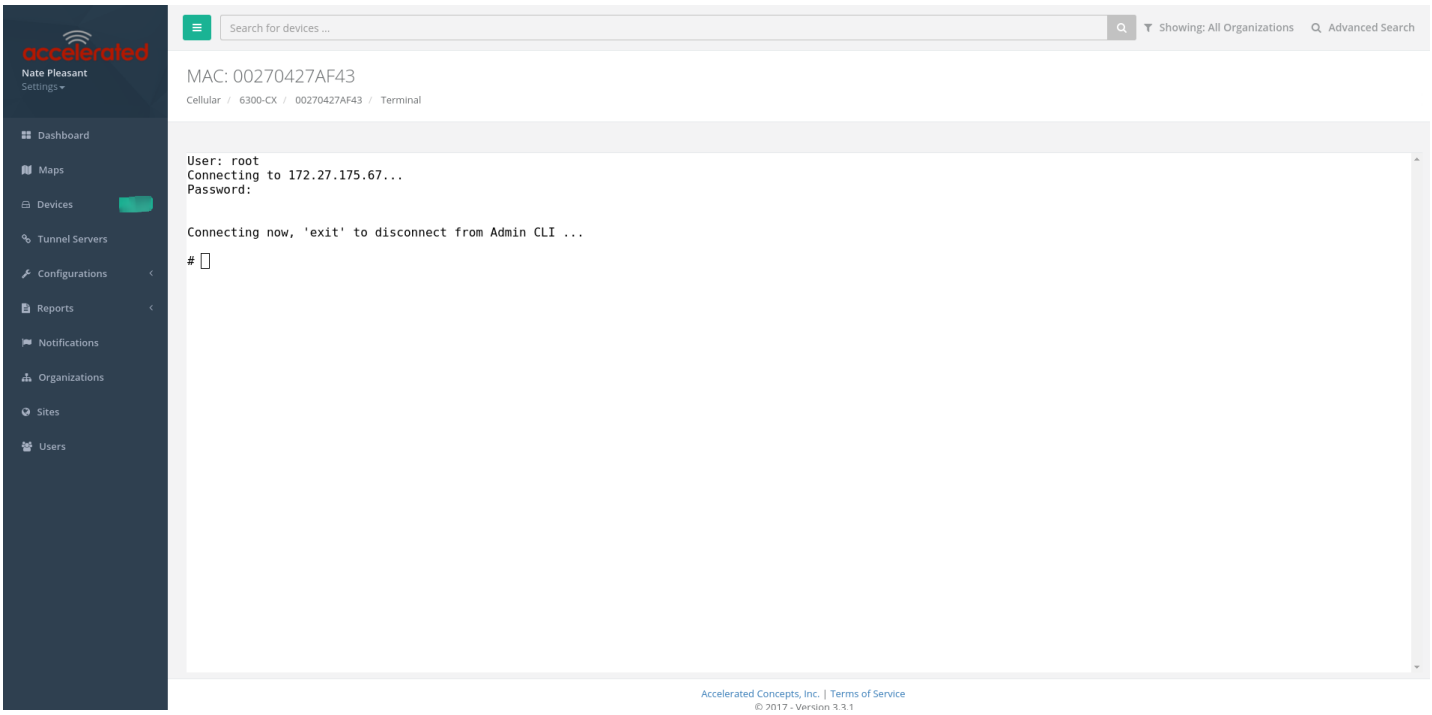
Using the Terminal on Unit link

Once the correct management IP is reported from the 63xx-series router to Accelerated View, clicking the *Terminal on Unit* will open a page on Accelerated View to provide the user access to the console of the 63xx-series router. Default login credentials are below.

User: root

Password: default

To create a different user or change the root user's password, refer to this article.



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

Custom Speed Test Server

Skill level: *Intermediate*

Goal

To setup a custom speed test server and have your Accelerated 63xx-series router perform speed tests to it.

The *Speed test* command leverages the management tunnel established between the 63xx-series router and Accelerated View. For details on the monthly data usage for this access, refer to the following article:

Data Usage Estimates

Setup

For this setup, you will need access to Accelerated View, and a 63xx-series router online and syncing with Accelerated View. If you see the 63xx-series router listed as up (green status) in Accelerated View, you are good to go.

Details

Accelerated View utilizes the IPSec tunnel the 63xx-series router establishes to remote.accns.com to send remote commands to the device. One of the available commands a user can run is the *Perform Speed Test* command. This will trigger the 63xx-series router to perform a speed test to the speedtest server specified in its configuration settings. The default speed test server is speedtest.accns.com.

Note: In order to minimize the speed test's impact on cellular data consumption, the results are an estimation of the available throughput of the device, and may not represent the full network speed available.

This article will detail setting up a separate speed test server that a 63xx-series router can use as an alternative to the default speed test server.

Speed Test server setup

The speed test server utilizes the nuttcp tool in Linux. This setup was tested using nuttcp version 6.1.2 on an Ubuntu 16.04 server with 1GB of RAM and a 30GB hard drive. The nuttcp tool used approximately 150kB of disk space, and consumed an average of 100MB of RAM.

Run the following command to install the nuttcp package.

```
sudo apt-get install nuttcp
```

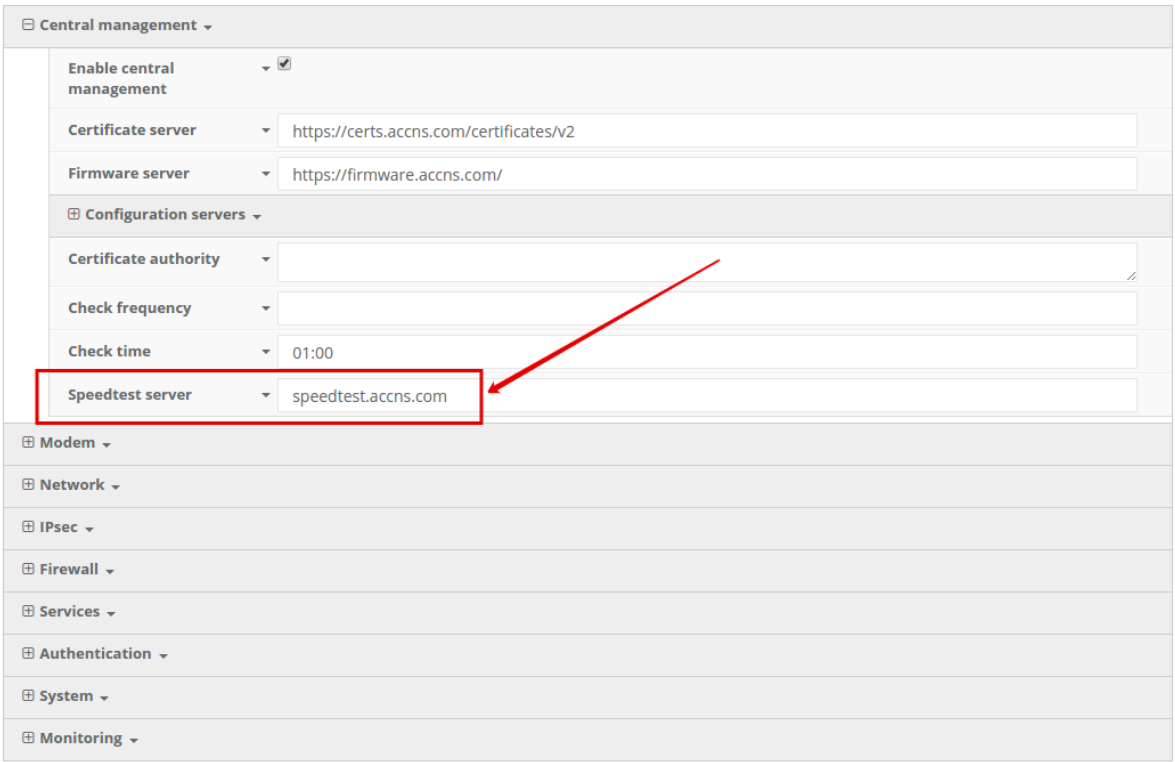
Then start the nuttcp speed test server with the following command:

```
nuttcp -S
```

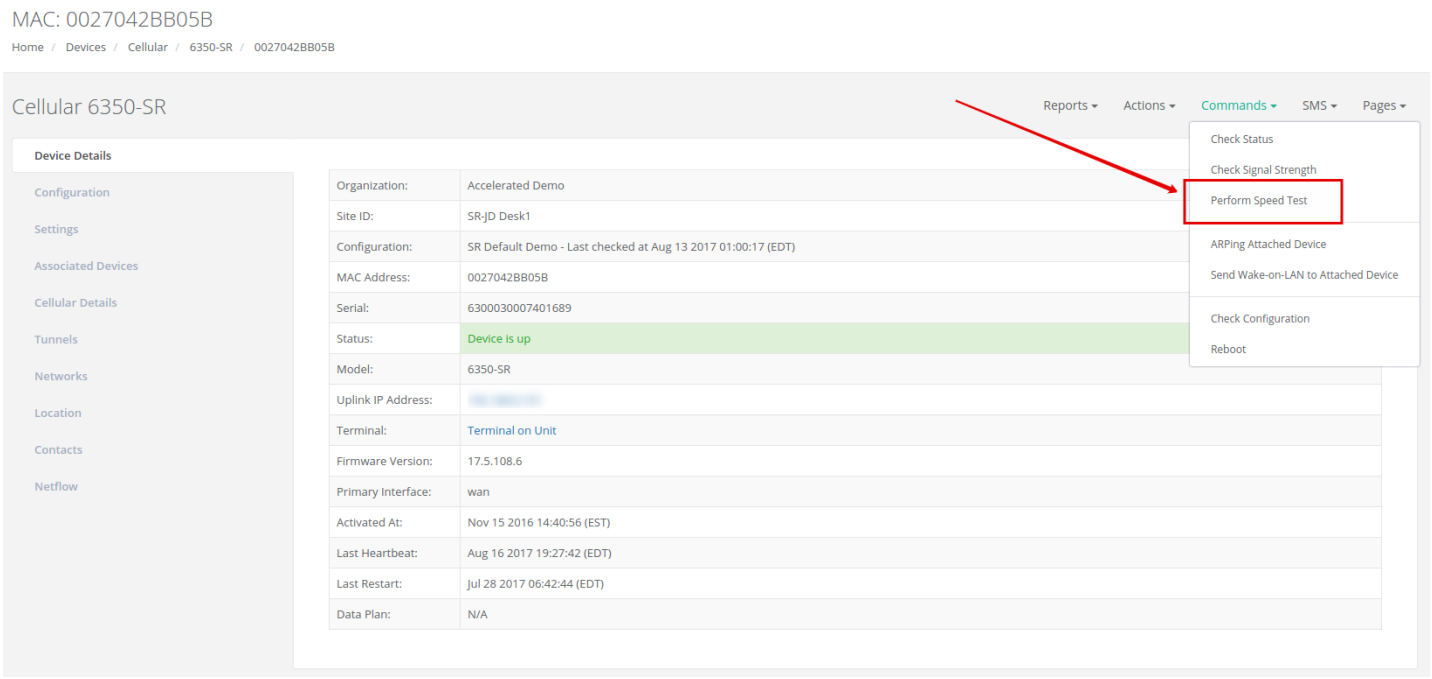
The 63xx-series router will need access to this server on UDP ports 5000 and 5001. Please ensure proper firewalls are opened to allow access to the IP address of the speed test server and its respective ports.

Using the new speed test server

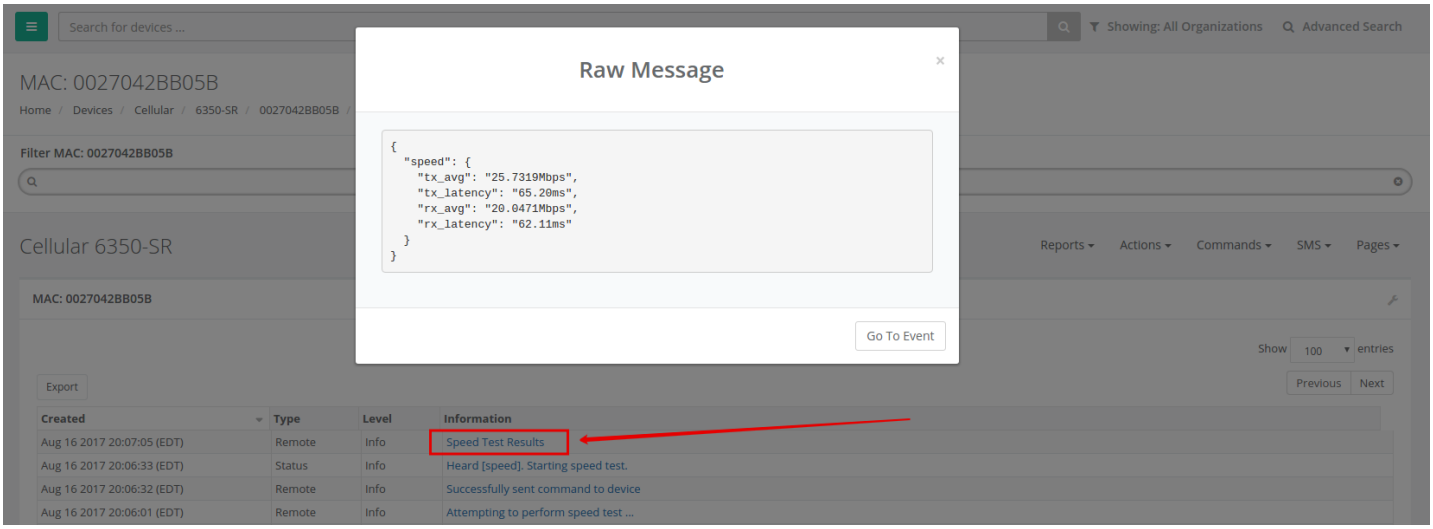
Once the new speed test server is running, add the IP address to the 63xx-series router's configuration profile under *Central management -> speedtest server* and apply the configuration to the device.



To run a speed test, select the *Perform Speed Test* option under the *Commands* drop-down listed on the device's details page in Accelerated View.



The 63xx-series router will acknowledge the request to perform the speed test, and will send another event to Accelerated View once the speed test completes. Clicking on the speed test results will display a window with the upload and downloads speeds observed in the test.



Remote Access

Skill Level: *Moderate* (assumes familiarity with SSH sessions)

Goal

To SSH into an Accelerated device remotely, using the terminal available via Accelerated View and a publicly reachable IP address.

If your device does not have a publicly reachable IP address, you can still leverage the Terminal on Unit via the Accelerated View IPSec Tunnel.

Setup

Devices can be managed over SSH so long as the external zone is enabled for remote SSH and web UI access.

The default credentials are:

Username: *root*

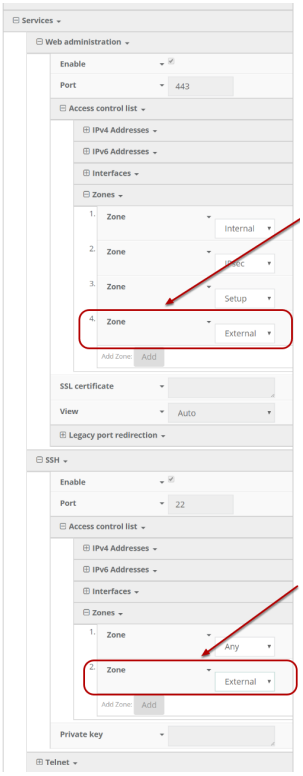
Password: *default*

NOTE: The configuration steps outlined below will open external access to your Accelerated device. It is imperative that the default password is changed to a more secure key to prevent intrusions.

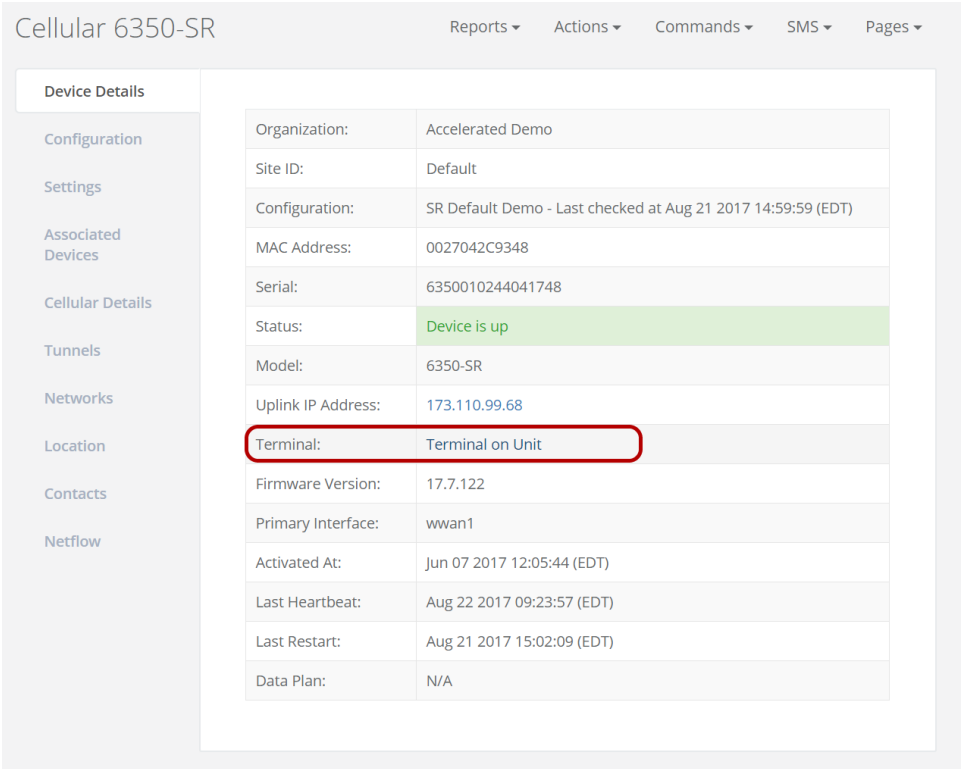
Sample Configuration

Open the configuration profile of the device and expand *Services*. Under *Web Administration*, expand *Access Control List* and *Zones* to create a new entry for "External." Repeat this process for the *Zones* associated with the *Access Control List* under the *SSH* menu heading. The following steps reflect the sample setup indicated in the screenshot below:

1. Under *Services -> Web Administration -> Access Control List*, expand *Zones*.
2. Add a new entry for "External."
3. Under *Services -> SSH -> Access Control List*, expand *Zones*.
4. Add a new entry for "External."



Once the configuration has been updated, click the *Terminal on Unit* hyperlink available from the *Device Details* screen.



Enabling intelliFlow

Difficulty level: *Beginner*

Goal

To enable Accelerated intelliFlow feature in compatible devices to allow the monitoring of system resource information and network traffic flow in the local management interface (WebUI)'s Dashboard page.

Note: enabling Intelliflow will add an estimated 50MB of data usage on the 63xx-series router's Internet connection, as these Intelliflow metrics are reported to the Accelerated View portal.

Setup

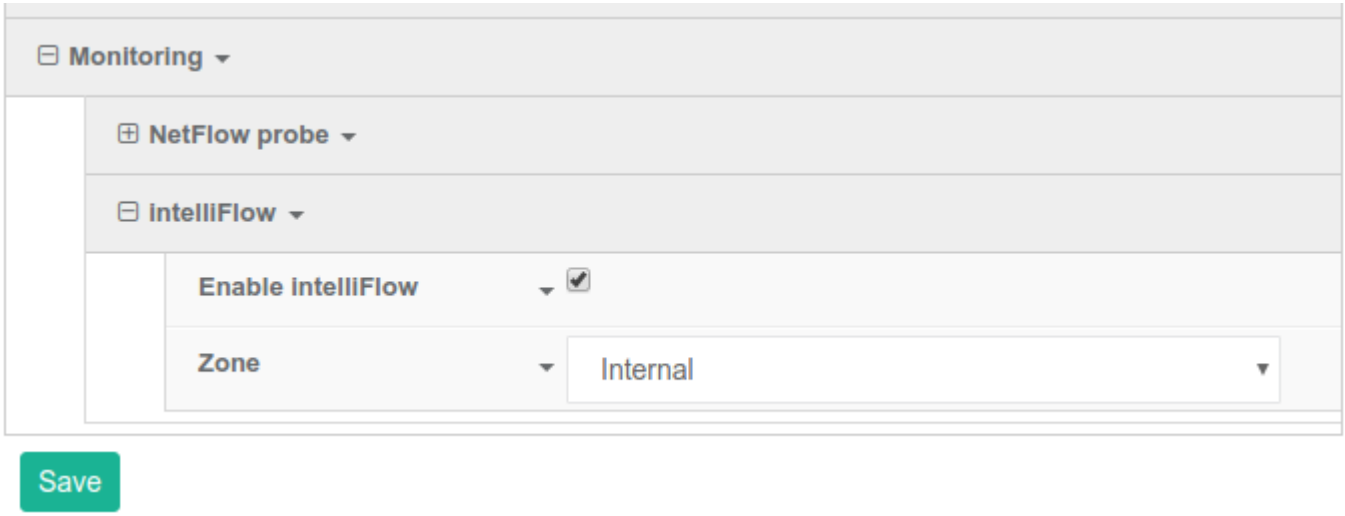
The purpose of intelliFlow is to keep track of the network data usage and traffic information, therefore the only requirement is that the device is powered on, and the local WebUI is accessible.

The comprehensive explanation of the Dashboard can be found in the User manual.

Sample Configuration

Open the configuration profile for the router device and make the following changes.

1. Under *Monitoring* > *intelliFlow,* check *Enable intelliFlow*.
2. Click *Save*.
3. To view intelliFlow data, select *Dashboard*. Once intelliFlow data is collected, relevant information will display in the Dashboard.


Monitoring
NetFlow probe
intelliFlow
Enable intelliFlow
Zone
Internal
Save

Enabling Shell Access

Difficulty: *Beginner*

Goal

To enable shell access to an Accelerated User Equipment (UE) via the SSH protocol.

Setup

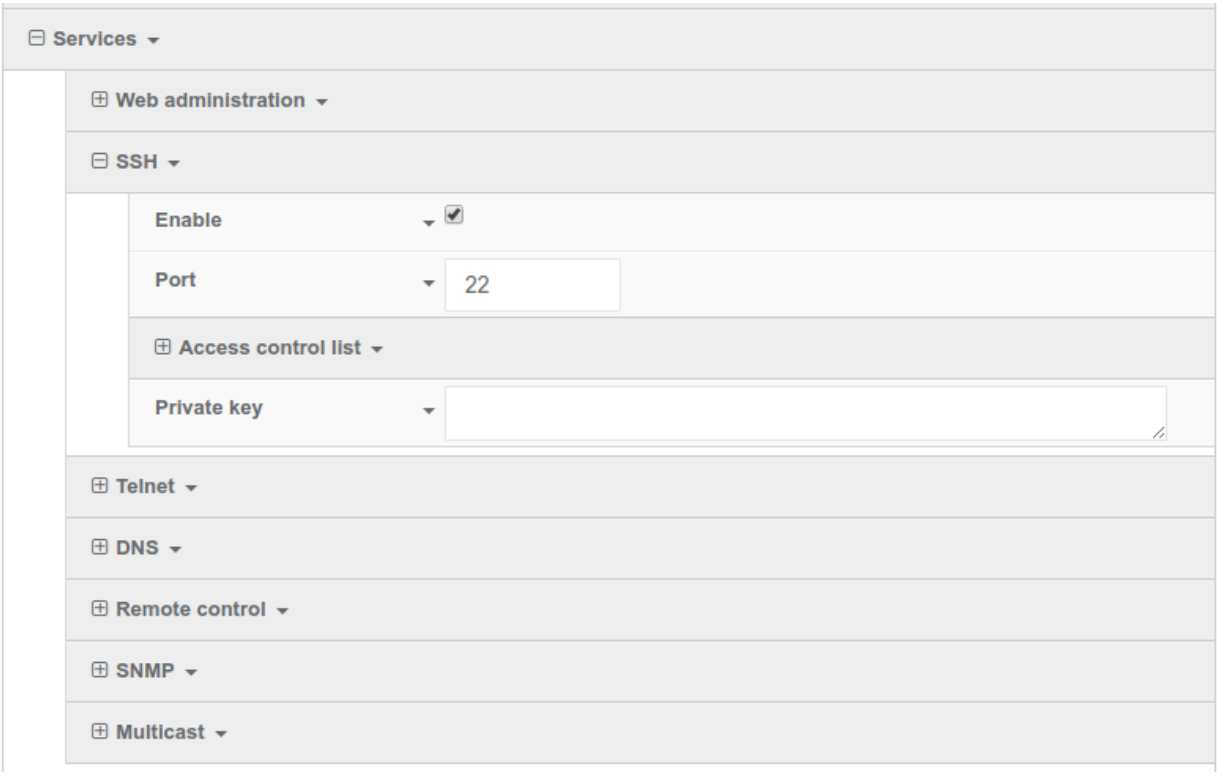
This article assumes the UE is running default configuration with the root password assignment, and central management disabled. Similar procedures apply if shell access is to be enabled in central management.

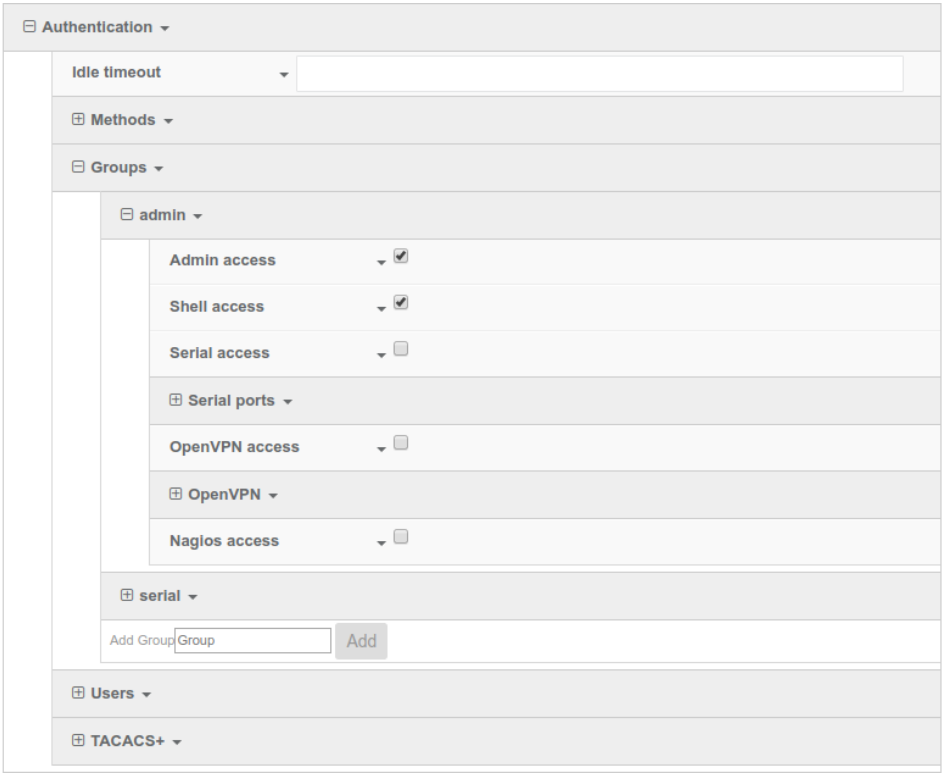
Configuration Steps

This configuration enables the local shell access for an existing root user. This procedure is applicable to any other users on the UE just the same.

Open the configuration page for the UE and make the following changes.

1. Ensure *Service -> SSH -> Enable* is checked.
2. Check the box under *Authentication -> Groups -> admin -> Shell access*.
3. Click *Save* to update configurations.





Once the configurations have been successfully saved, the UE's shell can be accessed via SSH. Below is an example shell login process:

```
$ ssh root@192.168.2.1
$ password
```

```
Access selection menu:

    a: Admin CLI
    s: Shell
    q: Quit

Select access or quit [admin] : s

Connecting now, 'exit' to disconnect from shell ...

#
```

Local User Management

Skill level: *Beginner*

Goal

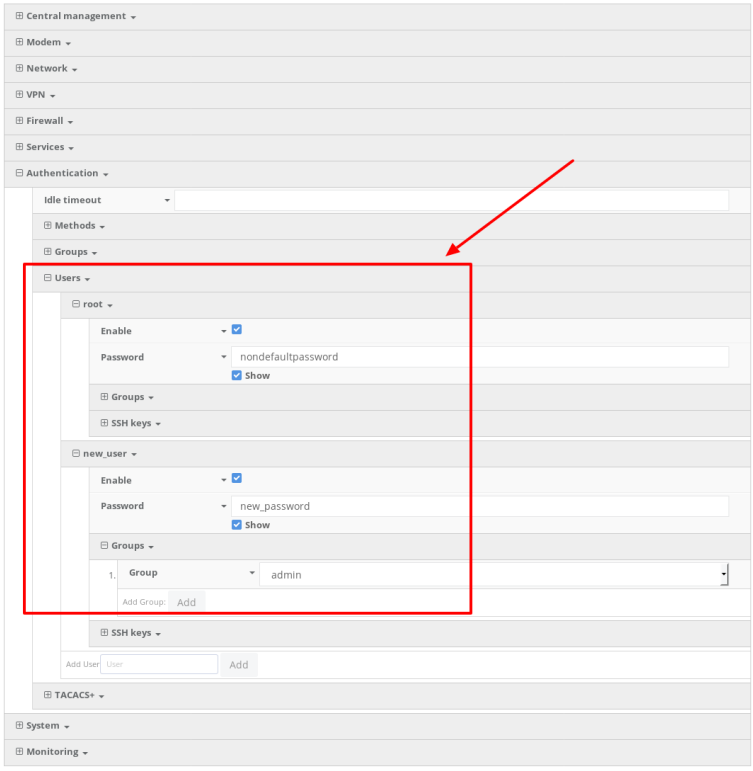
To create a new user and/or change the password of the default root user.

Details

Open the configuration profile for the 63xx-series router and make the following changes:

1. To update the root user password, enter in the new password in the in the *Authentication -> Users -> root -> Password* option.
2. To create a new local admin user:
    1. Under *Authentication -> Users -> Add User*, enter in the new username and click *Add*.
    2. Enter in the password for the new user
    3. Under *Groups* for the new user, select the default *admin* group. You can create a new group, or edit the admin group's priviledges through the *Authentication -> Groups* section of the configuration profile.
3. 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.*


Central management
Modem
Network
VPN
Firewall
Services
Authentication
Idle timeout
Methods
Groups
Users
root
Enable
Password
nondefaultpassword
Show
Groups
SSH keys
new_user
Enable
Password
new_password
Show
Groups
1.
Group
admin
Add Group:
Add
SSH keys
Add User
User
Add
TACACS+
System
Monitoring

Framed Routing in Passthrough Mode

Skill level*: Beginner*

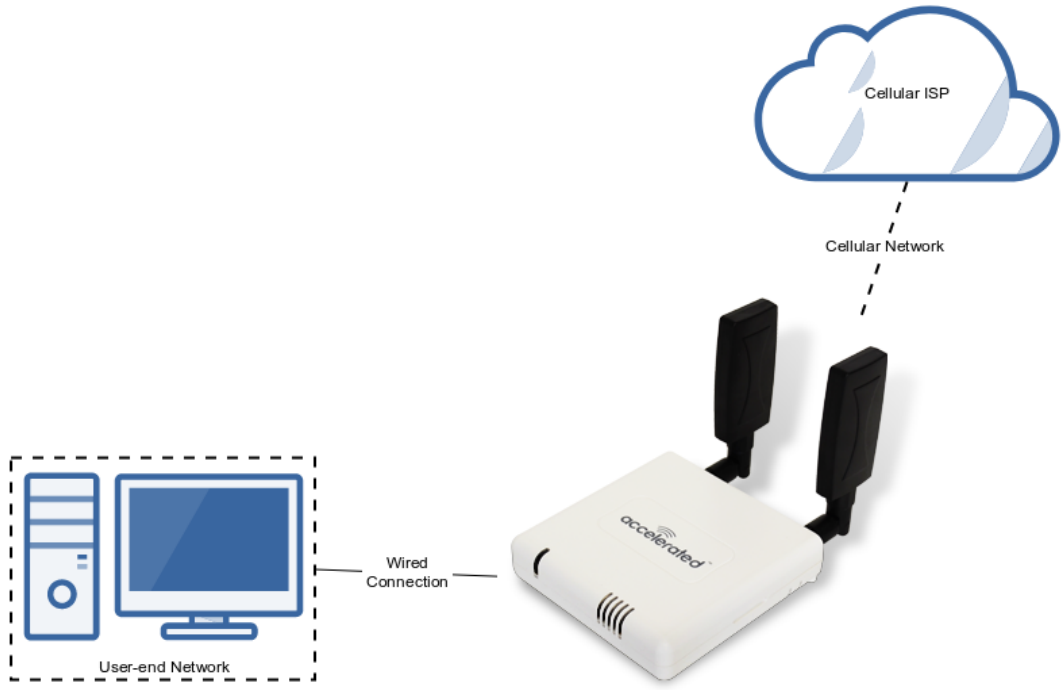
Goal

To configure the User Equipment (UE) so that it supports framed routing in passthrough mode.

Setup

This setup example assumes that you are running firmware version 18.1.29.10, although versions other than this may have similar set up procedure. The configuration is also assumed to be factory default with central management disabled.

The hardware set up requires a computer to be physically connected to the blue LAN port of the UE, and an active SIM with the appropriate plans and permissions to establish framed routing. This example uses the cellular information of a hypothetical "MyISP" network.

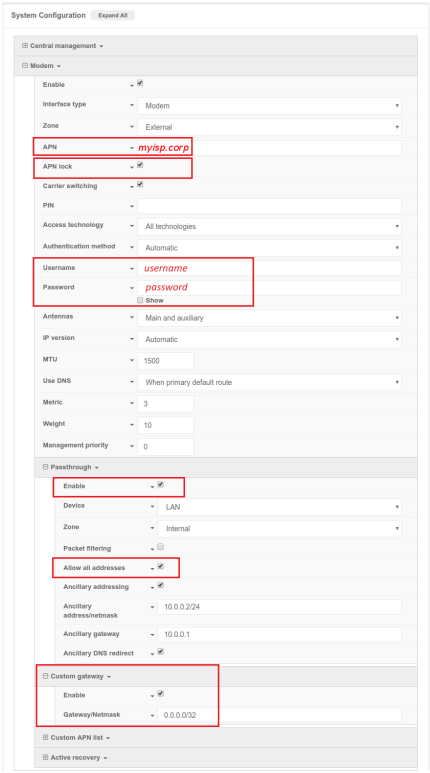


Sample Configuration

Once the UE is physically connected to a computer and central management is disabled, navigate to the WebUI via *192.168.210.1* and go to *Configuration* page > *Modem*.

1. Enter the *APN* used for the framed routing service: *myisp.corp.*

2. Check *APN Lock* to always lock onto the APN entered previously.
3. Insert your account *username* and *password* into their respective fields.
4. In the *Passthrough* section, ensure it is *Enabled.*
5. Check *Allow all addresses* to enable forwarding between the cellular network and any network/addresses via this UE.
6. In the *Custom gateway* section, check *Enable* and insert Gateway/Netmask: *0.0.0.0/32*.
7. Click *Save* at the bottom of the web page to save and enable the configurations.



Carrier-Specific APN List (firmware 18.4 and later)

Goal

To configure a customized APN list that will connect an Accelerated router to non-standard APNs based off of the cellular carrier associated with the SIM card.

NOTE: For a list of APNs automatically programmed into Accelerated's firmware settings, click here. The APNs on that list don't typically need to be programmed manually.

Setup

This article assumes that the the APN(s) being programmed in have been validated as the correct APN associated with an active SIM card. To create carrier-specific APN lists for multiple carriers, a new modem interface must be added and associated with the particular carrier.

The configuration steps described below covers how to assign a custom APN list to a configuration template in Accelerated View. It is important to keep in mind that the router connecting over a custom APN may require an alternative Internet connection (via its Ethernet WAN port) or a local configuration change before coming online to sync with its cloud template. Click here for more information about staging a device for initial connectivity.

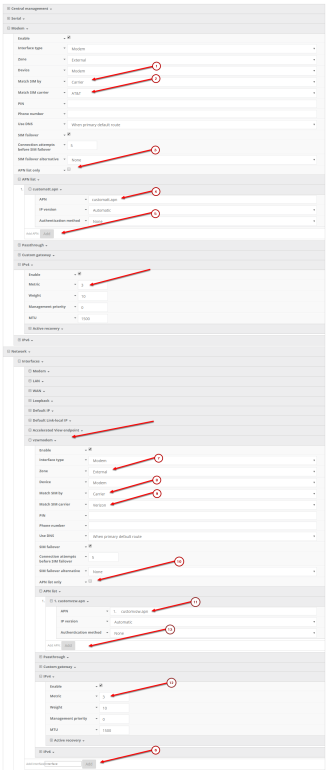
Sample

The sample configuration outlined below shows how to associate the default modem entry with one carrier (AT&T), and how to then create an additional modem interface associated with another carrier (Verizon). The custom APNs for each carrier are to be nested under the corresponding modem entry. While this example uses carrier detection to delineate between different APN lists, modem interfaces (and their associated APN lists) can instead be configured to specific SIM slots as needed.

Sample Configuration

NOTE: *You will need to know the custom APN for each SIM and/or Carrier. This is a sample configuration specifically utilizing AT&T and Verizon SIMs. Any other carrier SIM cards will not match this connection and will need to be configured with the corresponding Carriers and APNs.*

1. Under **Modem** > **Match SIM by,** choose "Carrier."
2. Under **Modem** > **Match SIM carrier,** choose the carrier matching the SIM card being inserted into the 1002-CM. In this example, it's "AT&T."
3. (Optional) Under **Modem** > **APN list only** can be checked to force the device to only try the APNs included in the list.
4. Under **Modem** > **APN list** > **APN**, type the APN. In this example, it's "customatt.apn." This will need to match the custom APN for the carrier specific SIM.
5. If an additional APN needs to be added, under **Modem** > **APN list** > add the additional APN by clicking **add** and type the additonal APN.
6. If multiple SIMs utilizing different carriers will be utilized, a second modem interface will need to be created under **Network** > **Interfaces** > **Add Interface**. In this example, it is "vzwmodem."
7. Under **Network** > **Interfaces** > **vzwmodem** > **Zone,** choose "External."
8. Under **Network** > **Interfaces** > **vzwmodem** > **Match SIM by,** choose "Carrier."
9. Under **Network** > **Interfaces** > **vzwmodem** > **Match SIM carrier,** choose the carrier matching the SIM card being inserted into the 1002-CM. In this example, it's "Verizon."
10. (Optional) Under **Network** > **Interfaces** > **vzwmodem** > **APN list only** can be checked to force the device to only try the APNs listed in the "APN list."
11. Under **Network** > **Interfaces** > **vzwmodem** > **APN list** > **APN**, type the APN. In this example, it's "customvzw.apn." This will need to match the custom APN for the carrier specific SIM.
12. Under **Network** > **Interfaces** > **vzwmodem** > **IPv4** > **Metric,** change the **Metric** to match the metric from **Modem** > **IPv4.** In this case, it is "3." (Repeat this for **IPv6** if **IPv6** is being utilized)
13. If an additional APN needs to be added, under **Network** > **Interfaces** > **vzwmodem** > **APN list** > add the additional APN by clicking **add** and type the additional APN.



Dual Modem Setup

Goal

To configure an additional cellular WAN interface on an Accelerated router using an external USB modem.

NOTE: *Accelerated's SR- and MX-series routers have USB ports.*

Setup

This article assumes the USB-driven connection will serve as the primary WAN, and that the Accelerated router will fail over to the cellular connection provided by the 1002-CM module if the primary means of Internet access goes out. To learn more about configuring failover between WAN interfaces, click here.

For this setup, you will need an active Internet connection on both the Accelerated router and a supported USB modem. Ethernet WAN interfaces may be added to, or swapped in place of, failover prioritization between cellular WAN interfaces, if available.

NOTE: *Accelerated routers only support the following USB modems:*

Officially Supported:

- Sierra Wireless 340u (AT&T Beam)
- Sierra Wireless 313u (AT&T Momentum)
- Sierra Wireless 313u (T-mobile Unlocked Momentum)
- Aircard 320u (Telstra 4G)
- Novatel U620L (Verizon)
- Pantech UML290 (Verizon)
- Pantech UML295 (Verizon)

Sierra Wireless 340u note: The Beam is officially supported but under certain signal strength conditions we recommend they use the included USB extension cable that comes with the Beam Air Card

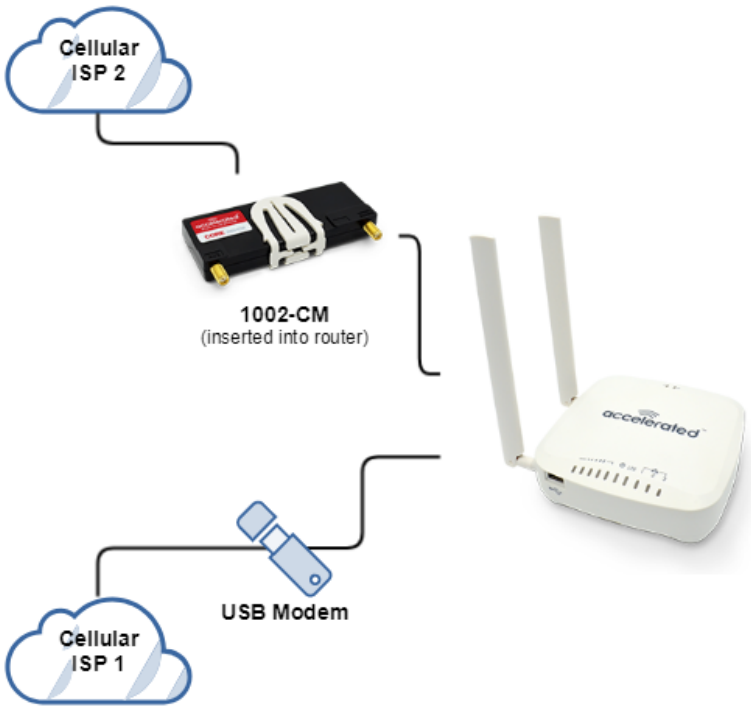
Supported, Modem Configuration Required*:

Netgear 341u (Sprint)

*Refer to our FAQ for More Information

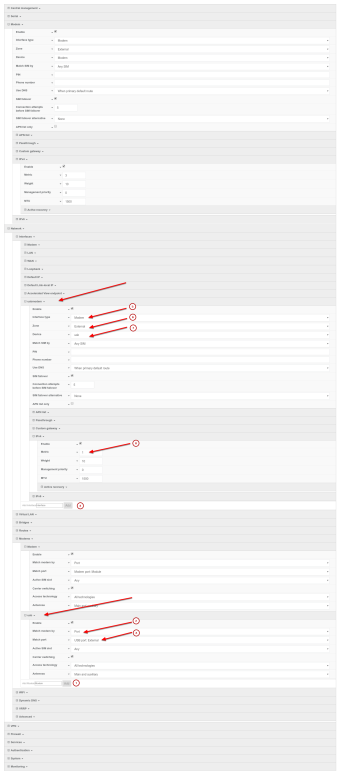
Sample

The sample configuration below shows an Accelerated router with two cellular Internet connections: one using the 1002-CM module and the other using a supported USB modem. Failover is set to assume the USB modem (ISP 1) is the primary connection, with the 1002-CM (ISP 2) serving as the backup that will step in should the primary line fail, though this can be adjusted as needed by altering the ***Metric*** value for each interface. Accelerated routers support both failover and load balancing between available Internet connections.

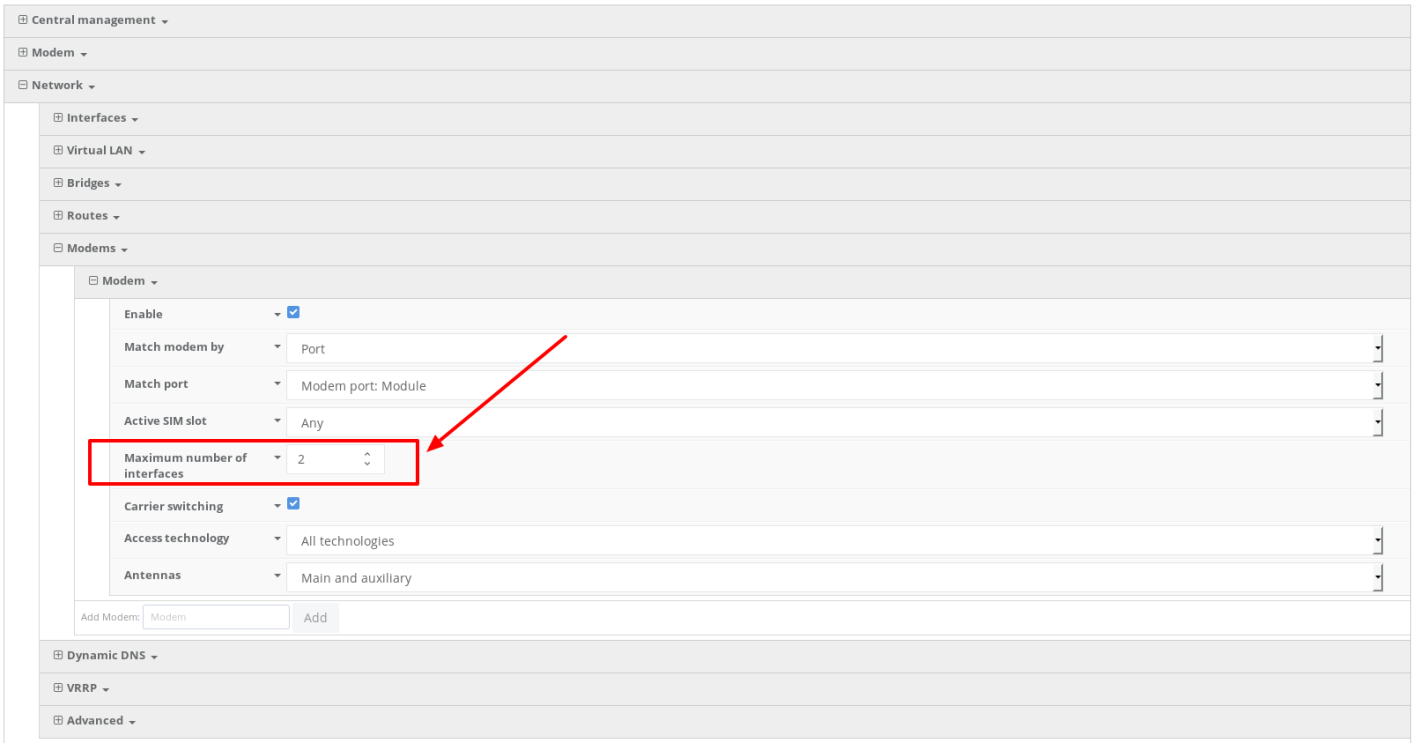


Sample Dual Modem aView Configuration

1. Under **Network** > **Modems** > **Add Modem**, create a new entry named "usb." The name can be different if desired.
2. Change the **Match modem by** to "Port."
3. Change the **Match port** to "USB port: External."
4. Under **Network** > **Interfaces**, create a new entry named "usbmodem." The name can be different if desired.
5. Change the **Interface type** to "Modem."
6. Change the **Zone** to "External."
7. Change the **Device** to "usb" (the modem entry we created in Step 1 above).
8. Under **Network** > **Interfaces** > **usbmodem** > **IPv4,** change the **Metric** to "1" (this sets the external USB modem as the primary modem).
9. Click **Save.**



NOTE: on firmware versions 18.8 or higher, you will also need to increase the *Maximum number of interfaces* from 1 to 2 under the *Network -> Modems -> Modem* section of the configuration. This enables the device to allow more than one active cellular connection at a time.



Single USB Modem Setup

Goal

To configure a cellular WAN interface on an Accelerated router using an external USB modem.

NOTE: *Accelerated's SR- and MX-series routers have USB ports.*

Setup

This article assumes the USB-driven connection will serve as the only WAN.

For this setup, you will need an active Internet connection on the supported USB modem.

NOTE: *Accelerated routers only support the following USB modems:*

Officially Supported:

- Sierra Wireless 340u (AT&T Beam)
- Sierra Wireless 313u (AT&T Momentum)
- Sierra Wireless 313u (T-mobile Unlocked Momentum)
- Aircard 320u (Telstra 4G)
- Novatel U620L (Verizon)
- Pantech UML290 (Verizon)
- Pantech UML295 (Verizon)

Sierra Wireless 340u note: The Beam is officially supported but under certain signal strength conditions we recommend they use the included USB extension cable that comes with the Beam Air Card

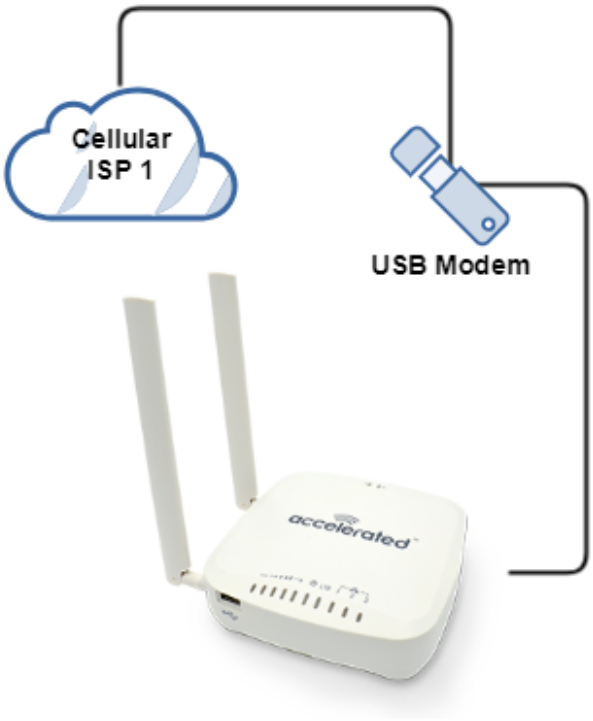
Supported, Modem Configuration Required*:

Netgear 341u (Sprint)

*Refer to our FAQ for More Information

Sample

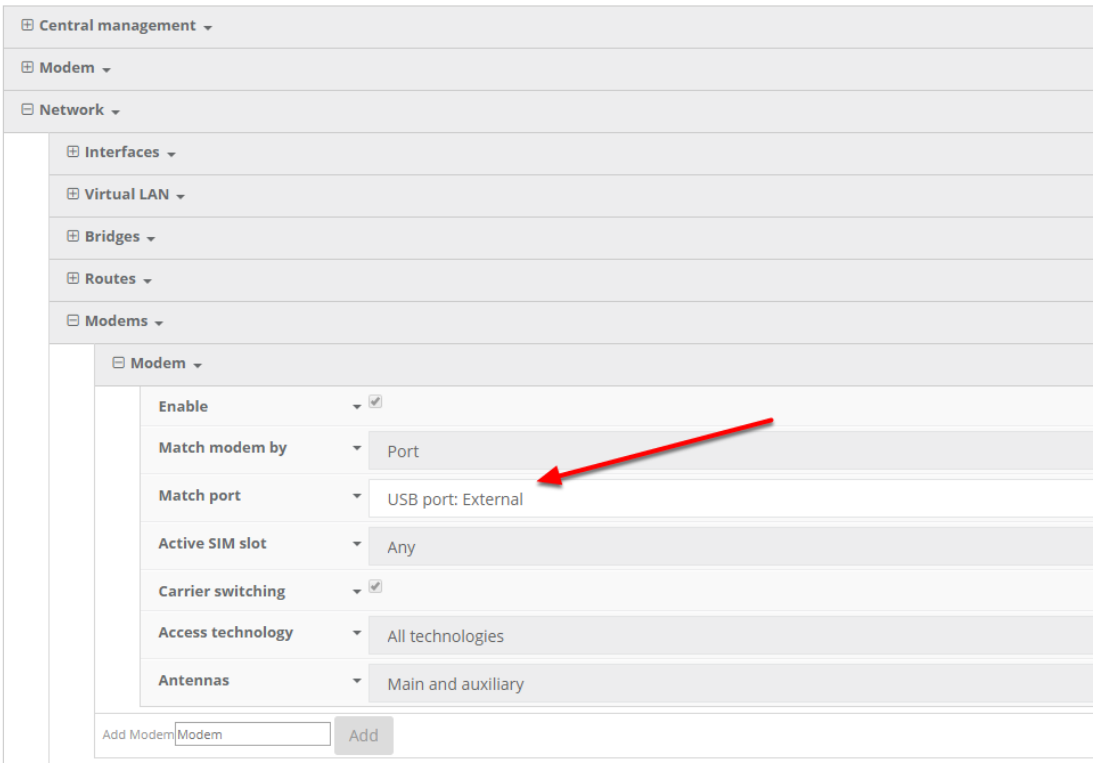
The sample configuration below shows an Accelerated router with a single cellular Internet connection using a supported USB modem.



Sample Single USB Modem aView Configuration

This sample single USB modem aView configuration sets the external USB as the primary modem. The internal 1002-CM modem will not be utilized.

1. Under **Network** > **Modems** > **Modem** > **Match port** > Choose "USB port: External."
2. Click **Save.**


Central management
Modem
Network
Interfaces
Virtual LAN
Bridges
Routes
Modems
Modem
Enable
Match modem by
Port
Match port
USB port: External
Active SIM slot
Any
Carrier switching
Access technology
All technologies
Antennas
Main and auxiliary
Add Modem
Modem
Add

Carrier-Specific APN List (firmware 18.1 and prior)

Goal

To configure a customized APN list that will connect an Accelerated router to non-standard APNs based off of the cellular carrier associated with the SIM card.

NOTE: For a list of APNs automatically programmed into Accelerated's firmware settings, click here. The APNs on that list don't typically need to be programmed manually.

Setup

This article assumes that the the APN(s) being programmed in have been validated as the correct APN associated with an active SIM card.

The configuration steps described below covers how to assign a custom APN list to a configuration template in Accelerated View. It is important to keep in mind that the router connecting over a custom APN may require an alternative Internet connection (via its Ethernet WAN port) or a local configuration change before coming online to sync with its cloud template. Click here for more information about staging a device for initial connectivity.

Sample

The sample configuration outlined below shows how to associate the default modem entry with one carrier (AT&T), and how to then create an additional modem interface associated with another carrier (Verizon). The custom APNs for each carrier are to be nested under the corresponding modem entry.

Sample Configuration

NOTE: *You will need to know the custom APN for each SIM and/or Carrier. This is a sample configuration specifically utilizing AT&T and Verizon SIMs. Any other carrier SIM cards will not match this connection and will need to be configured with the corresponding Carriers and APNs.*

1. Under *Modem > Custom APN list*, select the checkbox next to *Enable*.

2. (Optional) Selecting *Override*, also nested under **Modem > APN list**, sets the device to *exclusively* attempt to connect using the APNs specified per the custom list. If left unselected, the custom APNs will be added to the start of the standard list of APNs referenced previously in this document (under the "Goals" section above).
3. Click the *Add* button to create a new APN entry for the list.
4. Enter a designation for the entry using the *Label* field. This does not have to match the APN
5. Specify the intended *APN*.
6. Select the *Carrier* from the corresponding pull-down menu.
7. Create additional APN/ Carrier associations as necessary.
8. Click *Save* to finalize the changes.

Configuration for SonicWall TZ Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. For these reasons SonicWall and Accelerated Concepts have teamed up to offer comprehensive security and flexibility for small businesses, retail, government, remote sites, and branch offices.

SonicWall's TZ Series of firewalls consolidates enterprise security measures into a single Unified Threat Management (UTM) device. It optimizes and fortifies networked environments thanks to a robust suite of administrative utilities ranging from content filtering to malware and intrusion prevention though this functionality hinges upon an active WAN connection. A TZ-Series UTM Firewall paired with the Accelerated 6300-CX LTE Router will ensure your enterprise network

remains secure and operational should its primary ISP go offline. Running a cellular backup via an Ethernet cable preserves the full security functionality of the TZ-Series device (DPI-SSL inspection), which isn't the case for USB-connected Aircards.

For additional information, please refer to SonicWall's TZ-Series datasheet and the SonicOS Administration guide.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	SonicOS Release	6300-CX Firmware
10/2016	5.9.X & 6.2.X	16.10.13

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a primary WAN Ethernet cable is plugged into the X1 port on the SonicWall device. Connect the 6300-CX's backup Ethernet cable to port X2 and proceed to the configuration described herein. (Compatible with all Gen 6 Firewalls, including TZ, NSA, and SuperMassive series.)

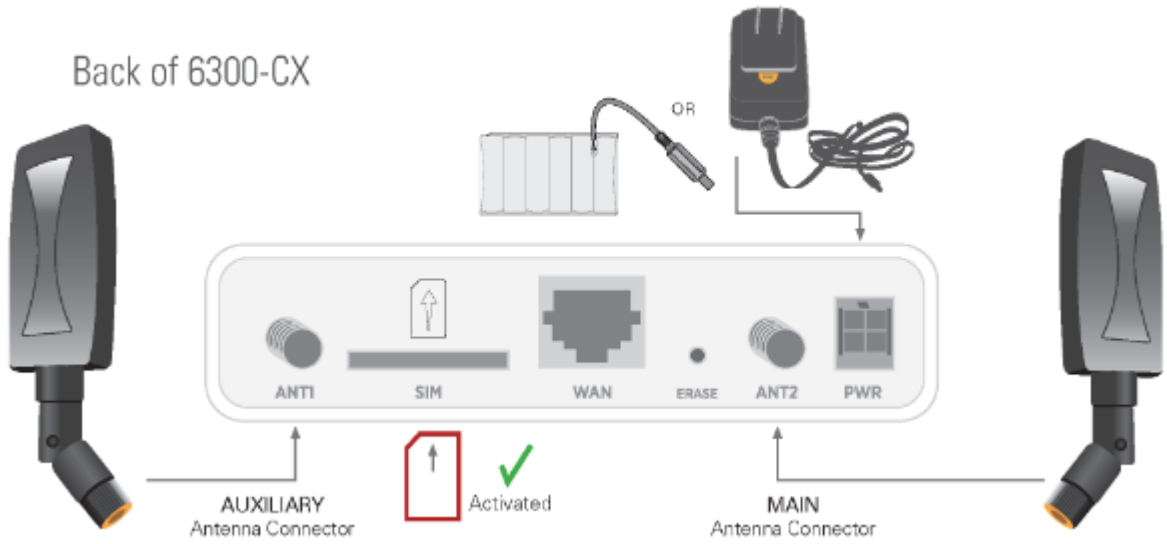
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.

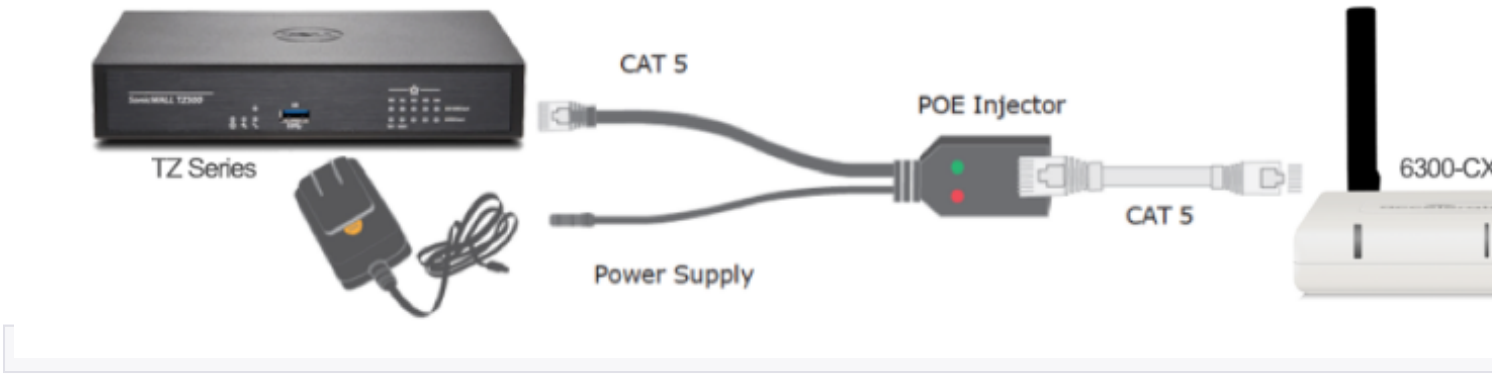
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator on the front of the device.** Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Power Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the SonicWall.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of t 6300-CX. (See diagram.)

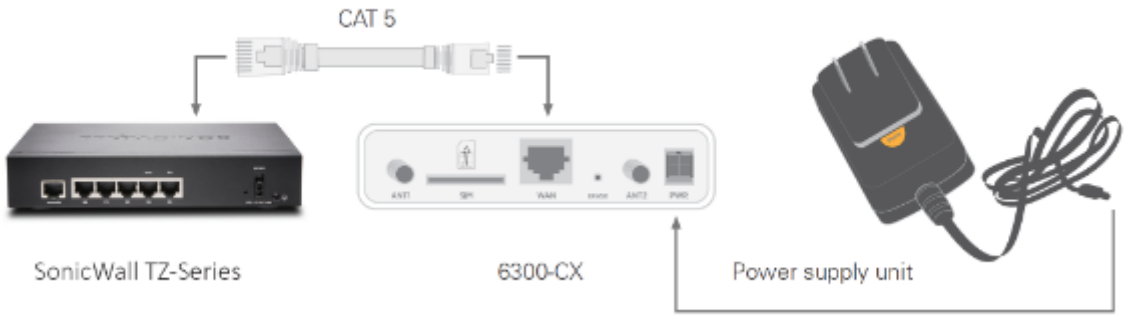


Direct Power Installation – Power Option #2

If you plan to collocate the 6300-CX with the MX device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

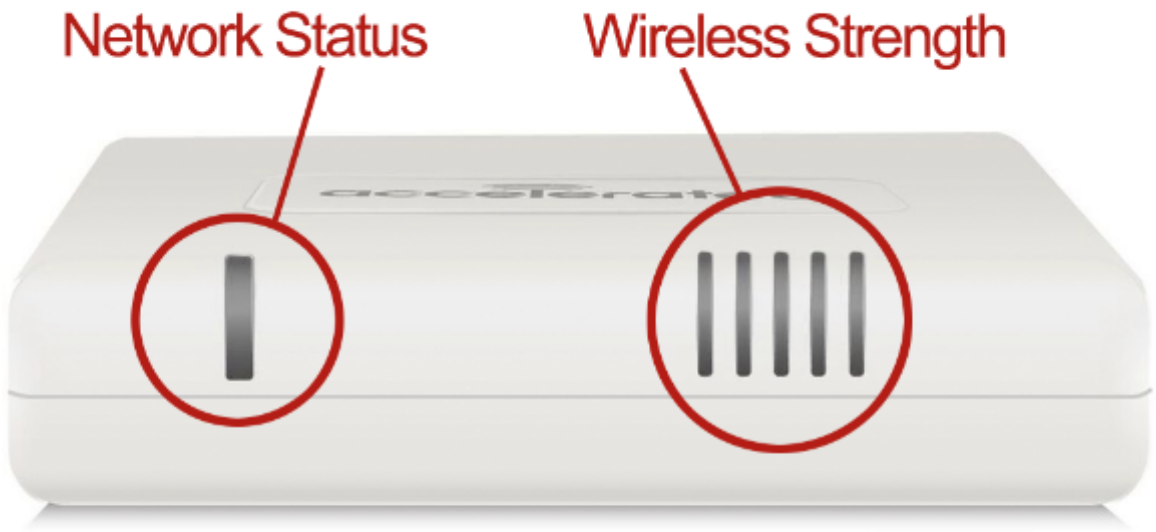
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port Internet 1 (to use the cellular network as the primary connection) or port Internet 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the cellular network signal strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit accelerated.com for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

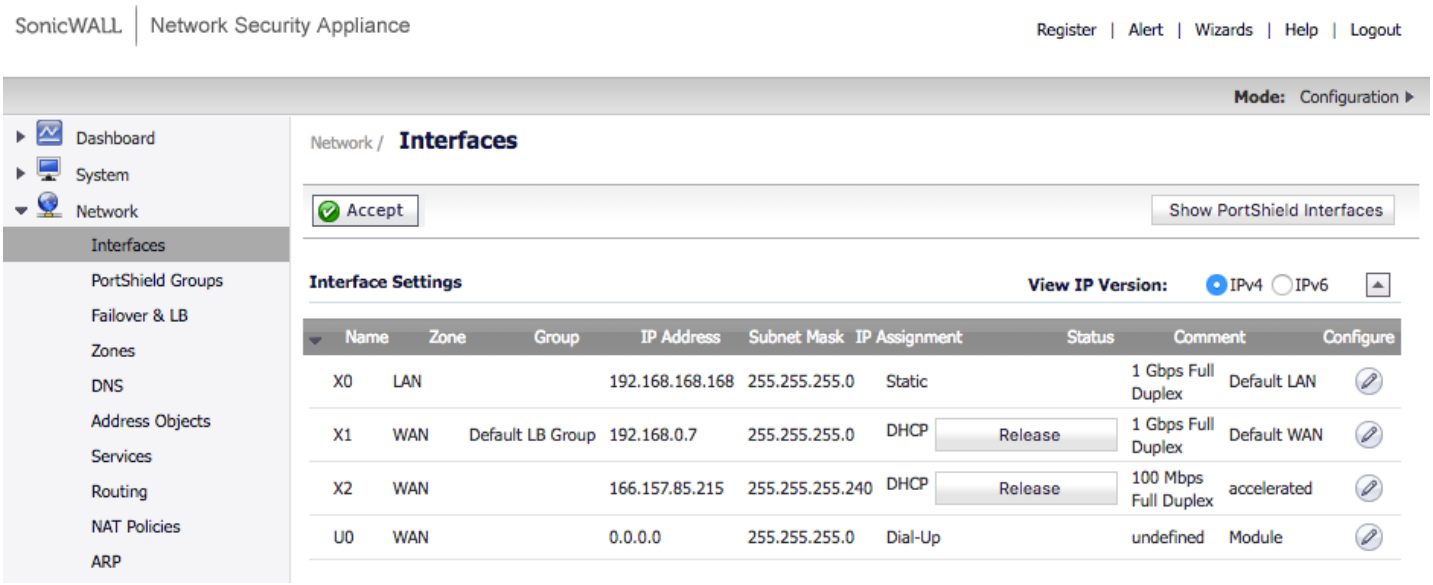
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

SonicWall Configuration with the Accelerated 6300-CX

Multiple WAN (MWAN) Configuration

More than one network must be assigned to the SonicWall's WAN Zone to create a contingency solution. Once assigned to a zone, configure the connection's IP assignment, group membership, and any other relevant specifications. MWAN functionality automatically assigns the primary WAN interface from the X1 port. All other ports can be manually allocated for WAN network routing aside from X0, which must remain dedicated to local administration (LAN).

Access the SonicWall admin portal at 192.168.168.168



Please refer to the SonicWall knowledge article for an in-depth walkthrough of the Interfaces Screen.

Step-by-Step Guidance: MWAN Configuration

NOTE: X0 is reserved for the default LAN and X1 is predefined as the default WAN, making X2 the first available interface for a failover WAN.

1. From the Interfaces tab of the admin portal, click on the edit icon under configure.
2. Choose WAN from the Zone pull-down menu.
3. Unless otherwise specified, select DHCP from the IP Assignment pull-down menu.
4. Assign reference labels to entries using the comments field.
5. Click the OK button to finalize any changes.
6. The new interface is now configured for WAN, X2 in the image above.

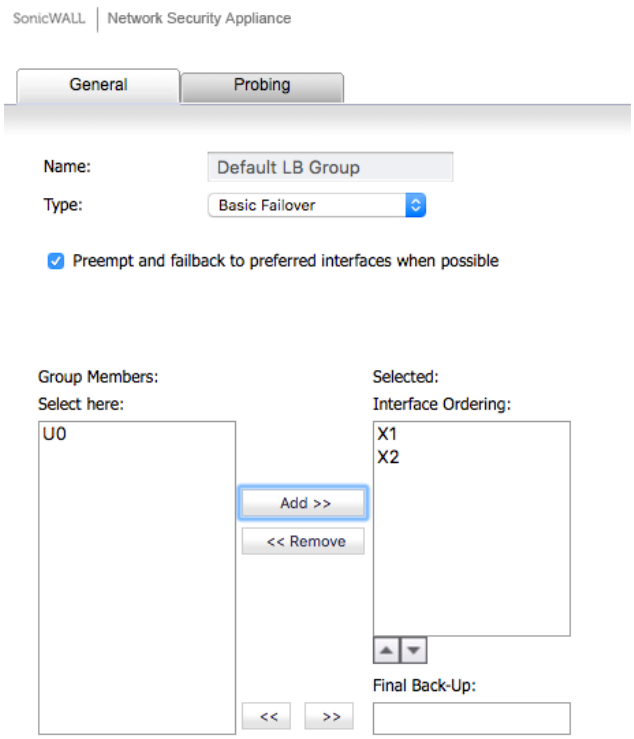
Failover & LB Management

TZ-Series Firewalls feature customizable, load-balancing (LB) automation that reroutes traffic to contingency networks when triggered by outages or user-defined limits. SonicWall recommends that load balancing remains enabled at all times, even when a single-WAN solution is in use. (It is activated by default.)

Groups respond to specific network conditions depending on their assigned type: Basic Failover, Round Robin, Spill-over, and Ratio. To set a backup connection so it takes over for the primary line in the event of a service outage, add both interfaces to the “Default LB Group” (the firewall’s basic failover grouping) and confirm that the main interface (X1) is listed above the auxiliary WAN (X2).

The “preempt and failback to preferred interfaces when possible” checkbox appears only for the “Basic Failover” type. Selected by default, it enforces the preferences established by the sort order of the interface list. These options change contextually depending on the group type, including options to set ratio or spill-over thresholds. Use the Probing tab to modify parameters for failback detection via Logical probes, which verify whether or not connectivity has been restored to an inactive interface before reestablishing it as the primary WAN.

Please refer to the SonicWall knowledge article for an in-depth walkthrough of the Failover & LB Screen.



Step-by-Step Guidance: Failover & LB Management

1. After setting up the WAN from the Accelerated 6300-CX LTE, navigate to the Failover & LB page of the SonicWall admin portal.
2. Next to “Default LB Group,” click the configure button to add a new member.
3. The Group Members column on the left lists all available interfaces.
4. Select X2.
5. Use the Add button to move the chosen interface(s) to the Selected column.
6. The Probing tab specifies how test packets are sent and received to verify WAN path availability.
7. Click OK to finish editing the group’s settings.
8. The X2 interface is now set as a failover for the primary network.

***NOTE:** Interface priority within a group is established by list position, which can be adjusted using the Up/Down buttons or the Final Back-Up field. The member listed first takes*

precedence over subsequent members; the final back-up is always considered last.

Site-to-Site VPN with SonicWall Firewalls

Skill level: ***Expert*** (requires knowledge of IPSec tunnel setup)

Goal

To build an IPSec tunnel through the 63xx router's WAN internet connection, and use that IPSec tunnel to access endpoints inside a VPN.

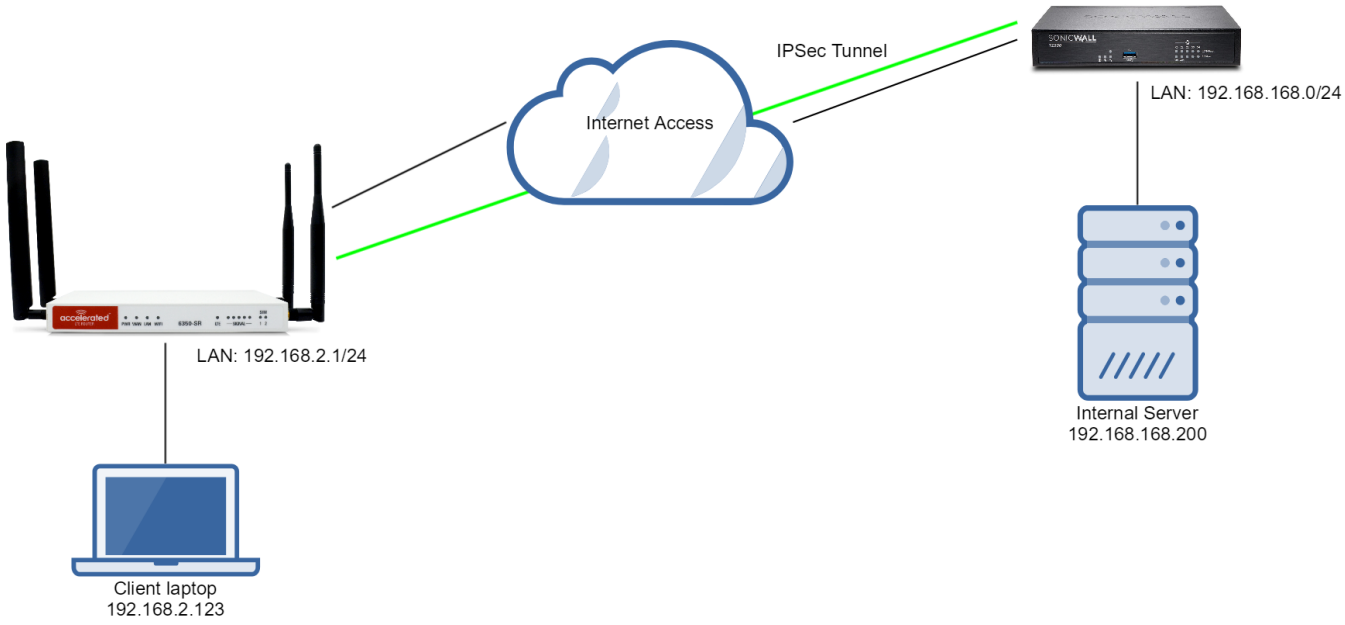
Setup

For this setup the Accelerated router will need an active WAN Internet connection (cellular for the CX series, cellular or wireline broadband for the SR and MX series). This connection must have a publicly reachable IP address.

Similarly, the SonicWall firewall must have an active Internet connection with a publicly reachable IP address.

Sample

The sample configuration below shows a 6350-SR building a tunnel to a SonicWall TZ300 through its cellular modem. A client laptop connected to the LAN Ethernet port of the 6350-SR will be able to access the SonicWall's LAN (and vice versa).



Sample Configuration: 6350-SR

Open the configuration profile for the 6350-SR. Under IPSec, create a new entry with the following settings:

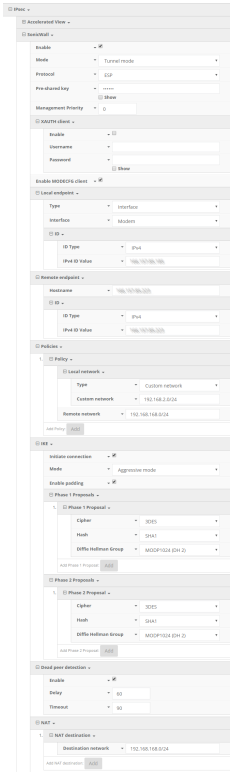
1. Enter in a PSK into the *Pre-shared key*. This must match what is ultimately entered as the SonicWall's "Shared Secret."
2. Check the *Enable MODECFG client* box.
3. Change *Local endpoint* to *Interface* and select the intended route for the IPSec tunnel: "Modem" to leverage a cellular connection or "WAN" for a wireline ISP.
4. Set *Local Endpoint -> ID -> ID type* to "IPv4"
5. Set the local ID in *Local endpoint -> ID -> IPv4 ID Value* to the publicly reachable IP address associated with the selected Interface in step 3.

> NOTE: Leaving *Local endpoint -> type* to *Interface* as *Default route* will allow the tunnel to be built through any available WAN interface.

6. The *Remote endpoint Hostname* is the publicly reachable IP address of the SonicWall.
7. Change *Remote endpoint -> ID -> ID type* to *IPv4*
8. Set the IP address of the SonicWall device in *Remote endpoint -> ID -> IPv4 ID Value* (same value as step 6).
9. Set *IKE -> Mode* to *Aggressive mode*.
10. Set *IKE -> Phase 1 Proposals* and *IKE -> Phase 2 Proposals* to match the IKE settings required by the SonicWall. In this example, both proposals are set to 3DES, SHA1, MODP1024 (DH 2).
11. Under *NAT* click the *Add* button and specify the *Destination network*. This will be the same value entered in the remote policy specified below.

Under IPSec -> Policies, click "Add" to create a new policy, and enter the following settings:

1. Set *Policy -> Local network -> Type* to *Custom network.*
2. Enter the local subnet of the Accelerated router in the *Custom network* field (192.168.2.0/24 by default).
3. Set *Policy -> Remote network* to the IPv4 network you wish to access through the tunnel. (The local subnet of the SonicWall.)



Under Firewall -> Packet filtering, create a new entry by clicking Add and enter the following settings:

Action: Accept

IP Version: IPv4

Protocol: UDP

Secure zone: IPsec

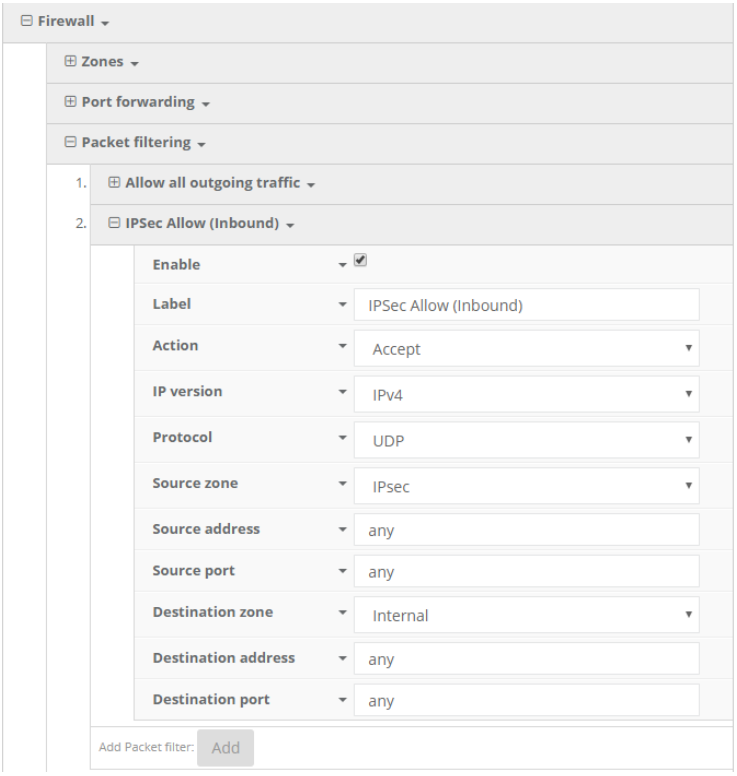
Source address: any

Source port: any

Destination zone: Internal

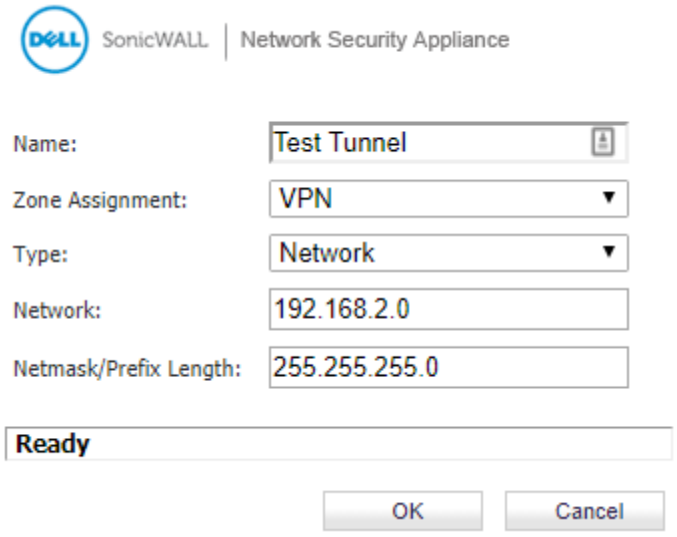
Destination address: any

Destination port: any



Sample Configuration: SonicWall TZ300

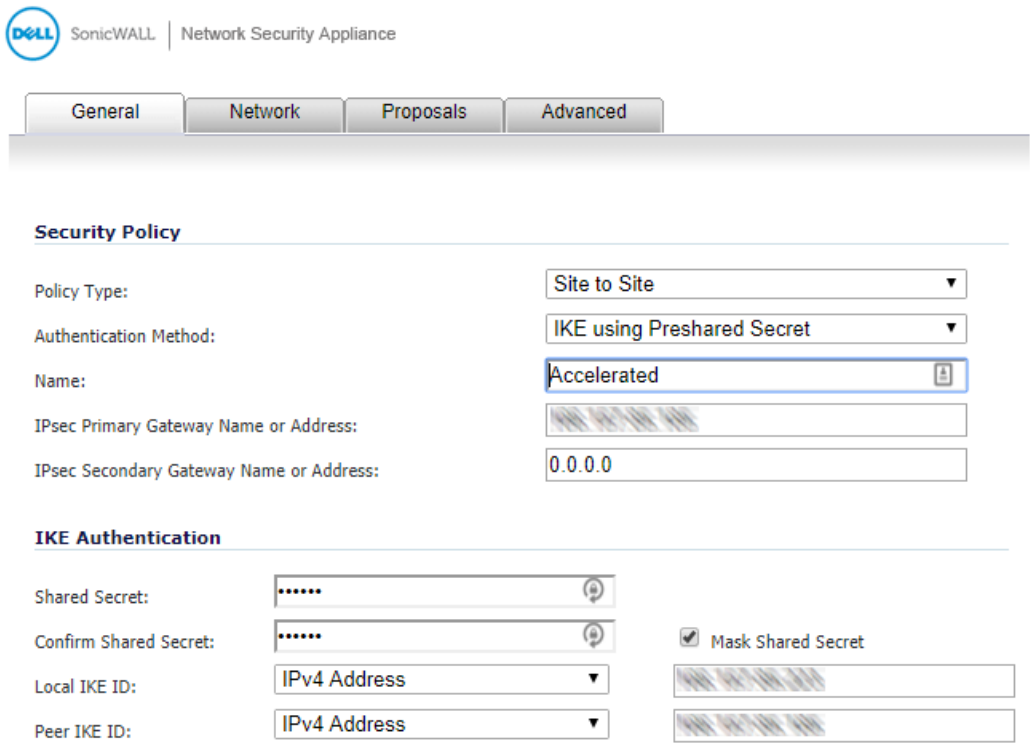
Step 1: Create a new Address Object for VPN Subnets



1. Log in to the SonicWall Management Interface
2. Navigate to *Network > Address Objects*, click on *ADD* button.
3. Configure the Address Object as depicted above, click *Add* and click *Close* when finished.

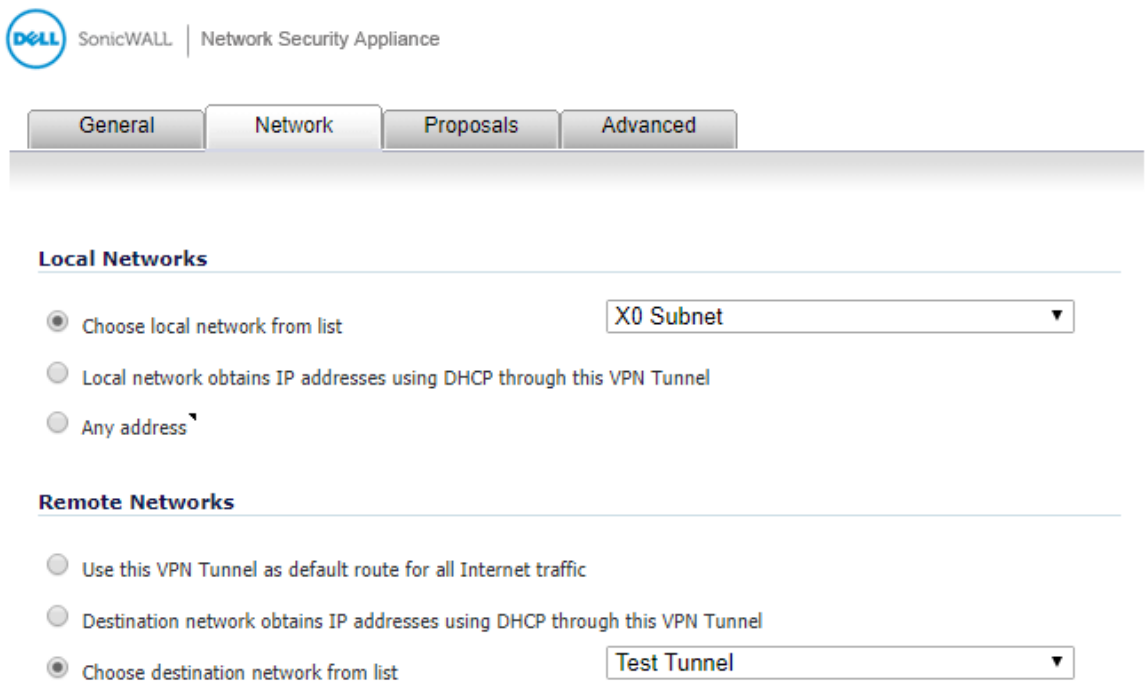
NOTE: The *Network* and *Netmask* must match the local subnet on the Accelerated router. Settings depicted in the screenshot above assume the router is still configured per its defaults.

Step 2: Configure a VPN policy on the SonicWall

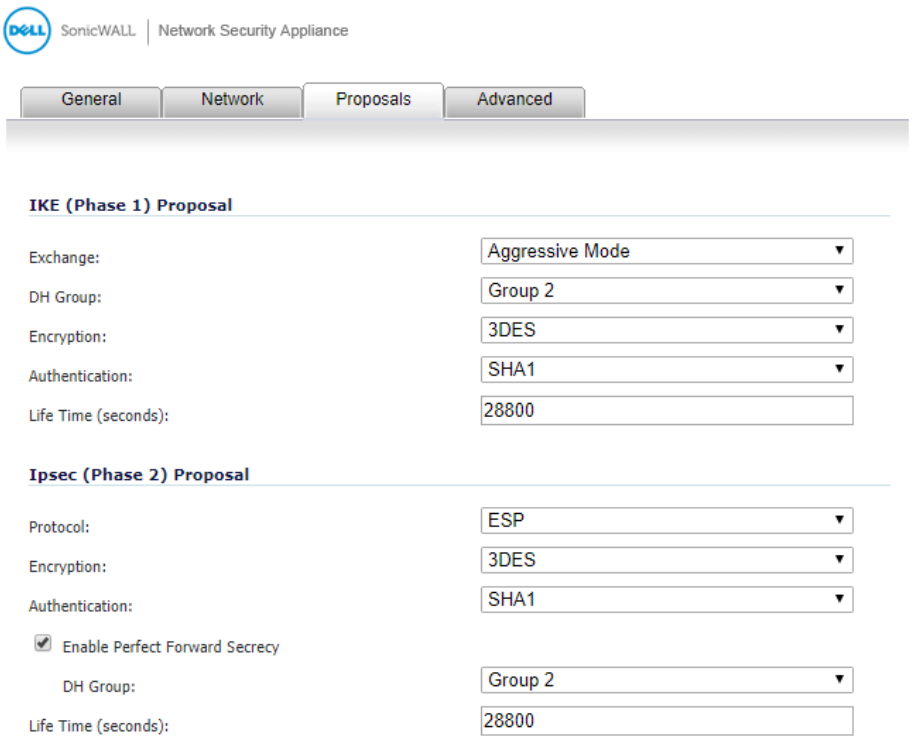


1. Navigate to *VPN > Settings* page. Click *Add* button. The VPN Policy window is displayed.
2. Click the *General* tab.
3. Select *IKE using Preshared Secret* from the *Authentication Method* menu.
4. Enter a name for the policy in the *Name* field.
5. Enter the WAN IP address of the Accelerated connection in the *IPsec Primary Gateway Name or Address* field.
6. Enter a *Shared Secret* password to be used to setup the Security Association the Shared Secret and Confirm Shared Secret fields. The Shared Secret must be at least 4 characters long, and should comprise both numbers and letters.

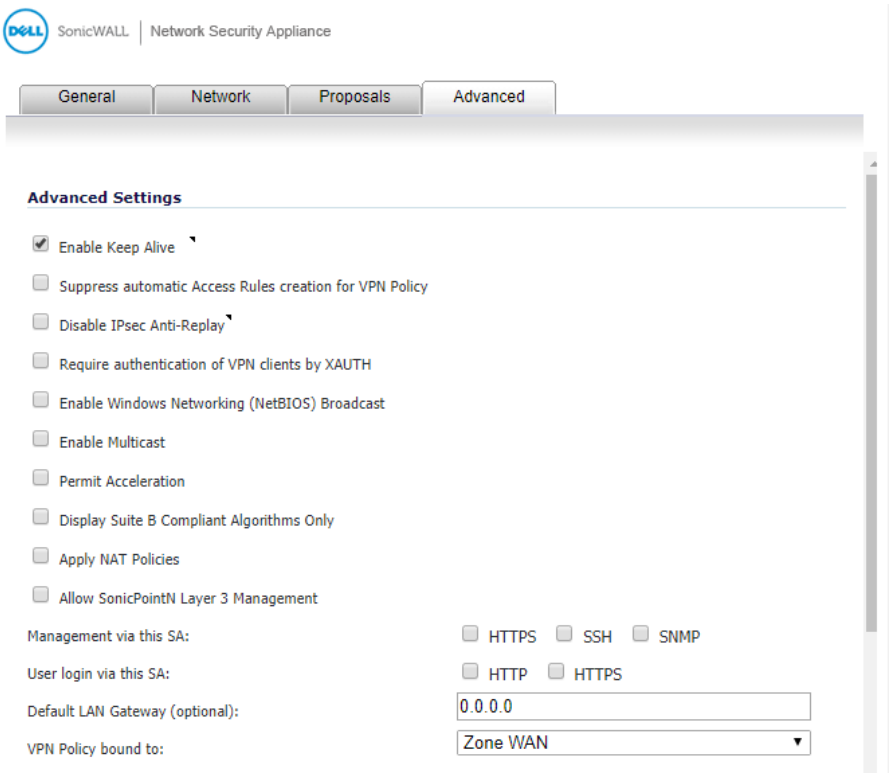
NOTE: The shared secret must match the Pre-shared key entered into the Accelerated configuration.



7. Click the *Network* tab.
8. Under *Local Networks*, select *Choose local network from list* and specify the "X0 Subnet."
9. Under *Remote Networks*, select *Choose destination network from list* and specify the Address Object created in Step 1 above.



10. Click the *Proposals* tab.
11. Under *IKE (Phase 1) Proposal*, change the *Exchange* field to "Aggressive Mode."
12. Leave the default settings for *Encryption* and *Authentication* ("3DES" and "SHA1," respectively) for both *Phase 1* and *Phase 2 Proposals*.
13. *Life Time* may be left at its default value as well.
14. Under *Ipsec (Phase 2) Proposal*, leave "ESP" as the selected *Protocol*
15. Check *Enable Perfect Forward Secrecy*, leaving Group 2 selected in the corresponding field.



16. Click the *Advanced* tab.
17. Select *Enable Keep Alive*.
18. Finalize these settings by clicking the *OK* button.

Configuration for Meraki MX Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. Accelerated Concepts extensively tests the 6300-CX LTE router to ensure its interoperability with a wide variety of security appliances, including equipment produced by Meraki, to best accommodate enterprise networks. Pairing the Accelerated 6300-CX with one of Meraki's MX-series devices offers comprehensive security and flexibility for small business, retail, government, remote sites, and branch offices.

Meraki's MX of Security Appliances are configured using a cloud-based dashboard designed to offer a dynamic management platform reachable via any web browser. From the dashboard, administrators have access to zero-touch provisioning, remote troubleshooting, and real-time reporting on all Meraki equipment within their network. Devices must maintain an active Internet connection to take advantage of cloud functionality, of course, which is why the MX line supports dual WAN interfaces with automated failover and load balancing. The Accelerated 6300-CX's embedded, carrier-certified cellular modem integrates effortlessly with all MX appliances as either the primary or backup uplink.

For additional information, please refer to Meraki's MX-series user guides.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	Meraki Firmware	6300-CX Firmware
12/2016	N/A*	16.10.13

*At this time, Meraki does not publish firmware version numbers or specific change logs.

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a primary WAN Ethernet cable is plugged into the Internet-1 port on the Meraki device. Connect the 6300-CX's backup Ethernet cable to port labeled Internet 2 and proceed to the configuration described herein. (Compatible with all MX Security Appliances.)

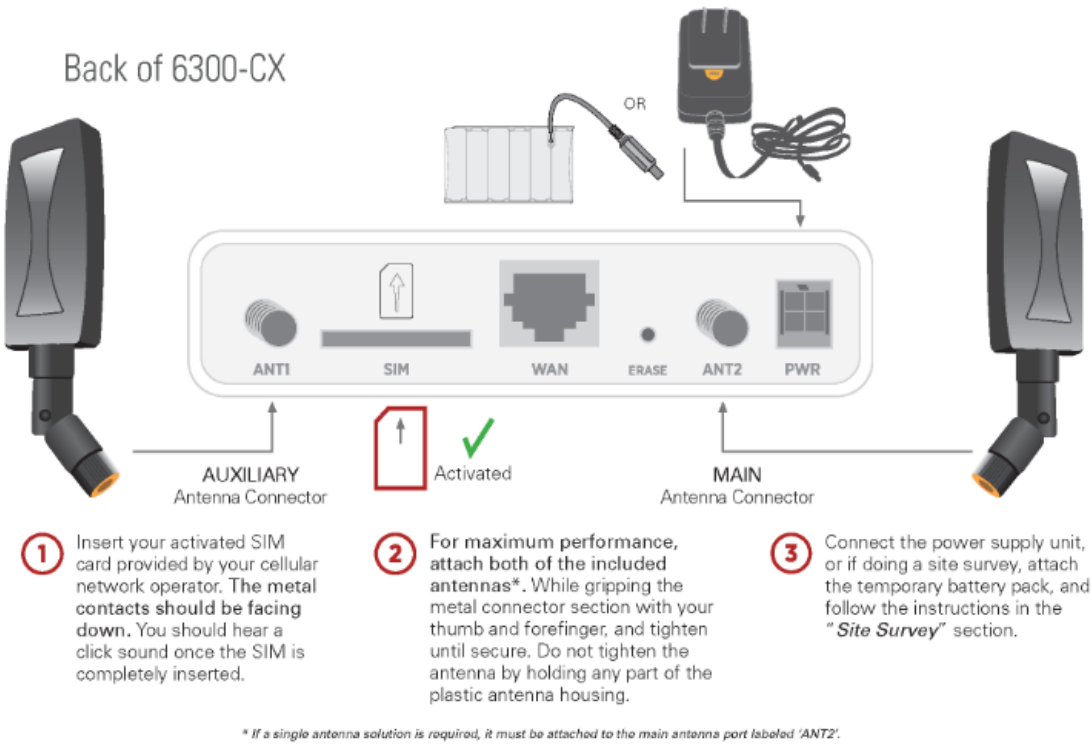
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

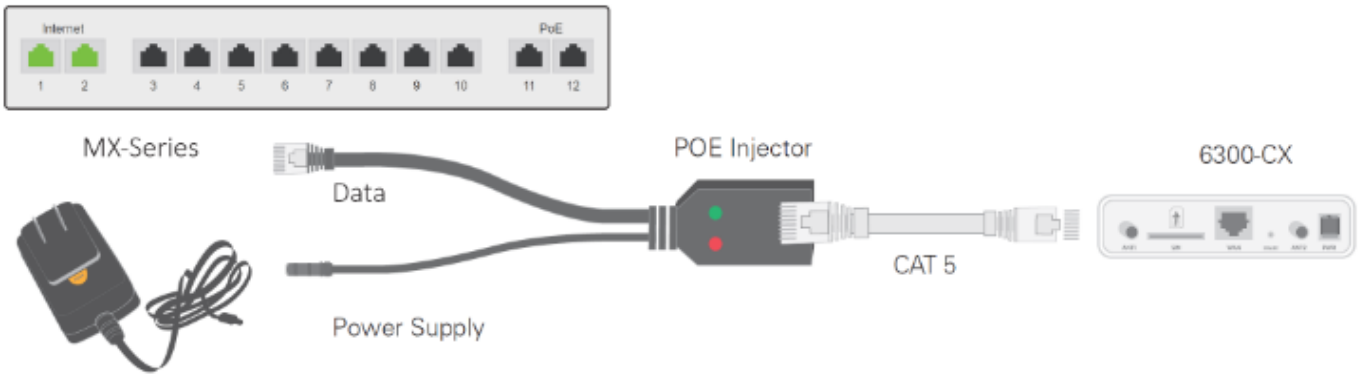
1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator on the front of the device.** Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Power Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX’s power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the Meraki.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

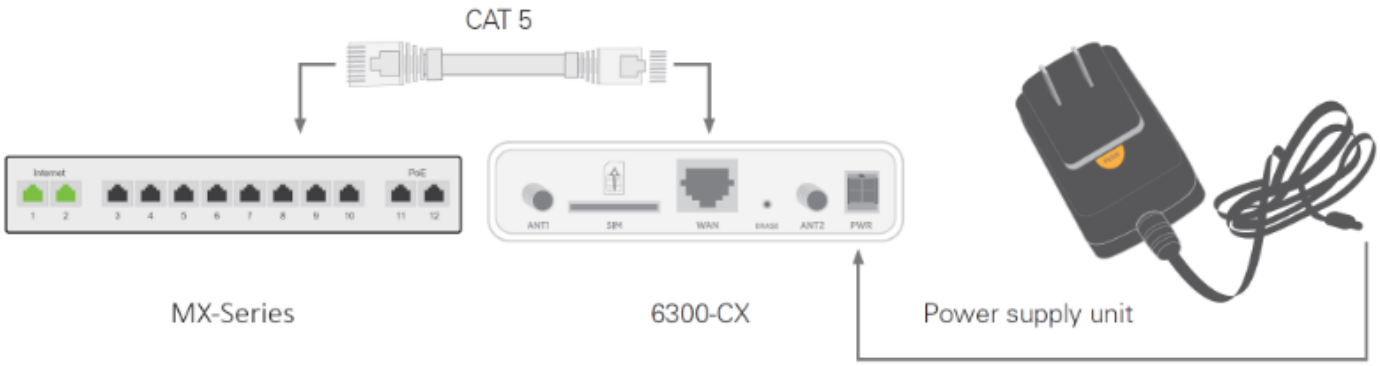


Direct Power Installation – Power Option #2

If you plan to collocate the 6300-CX with the MX device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port Internet 1 (to use the cellular network as the primary connection) or port Internet 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)

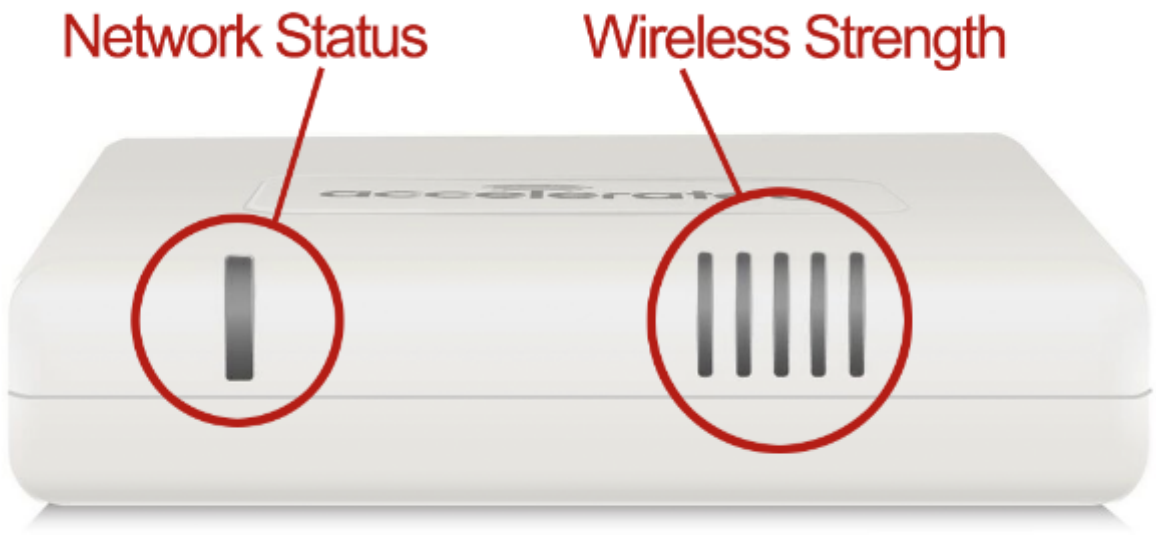


Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength**

Indicator show you the cellular network signal strength. The Network Status Light on the front left of the device displays connectivity information.

Please visit accelerated.com for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

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

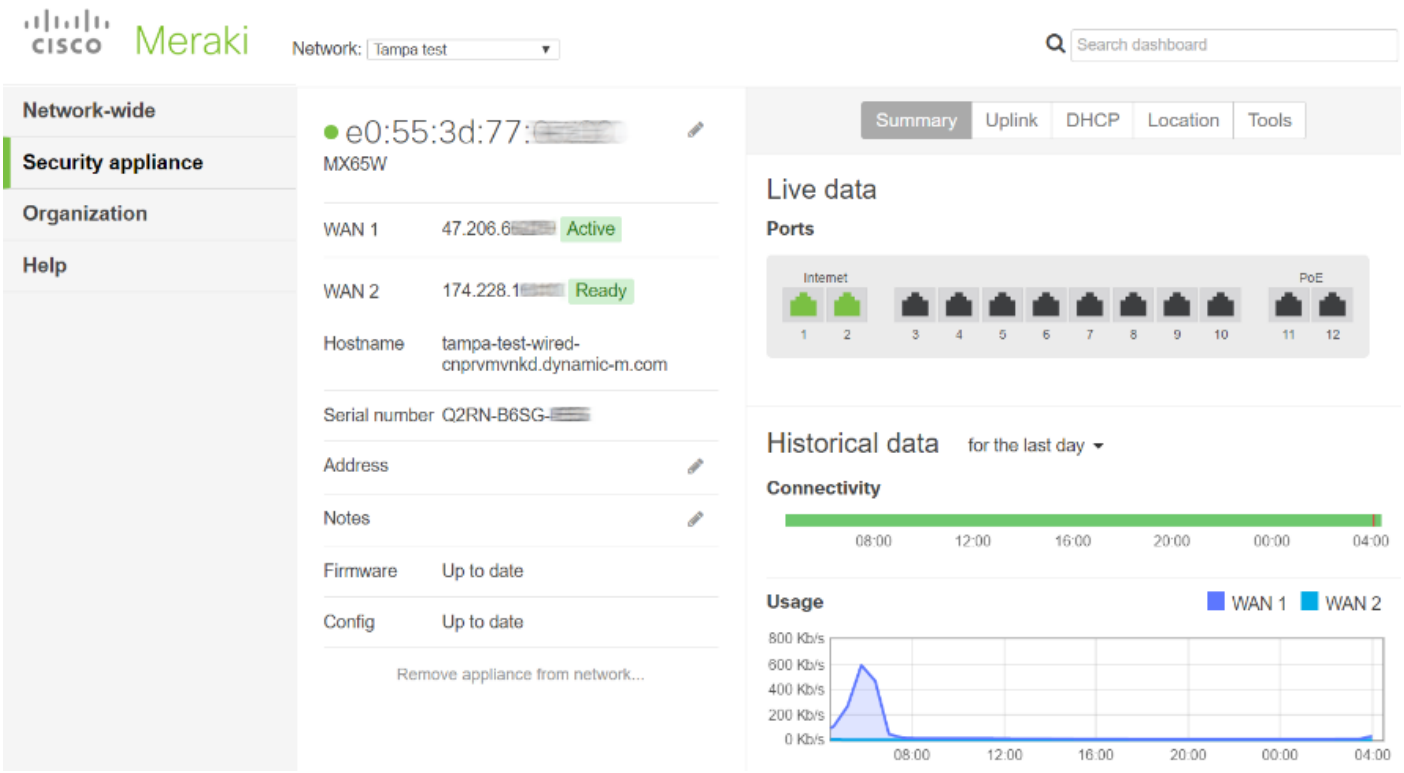
MX-Series Configuration with the Accelerated 6300-CX

Dual WAN Configuration

All Meraki MX Security Appliances support dual WAN connectivity right out of the box. To establish primary and secondary uplinks, connect an Ethernet cable from your modem to one of the interfaces labeled Internet 1 or Internet 2 on the back of the MX appliance. The secondary connection, WAN 2 unless otherwise specified, activates automatically to keep the device online should its primary WAN lose connectivity. While load balancing between the two uplinks is disabled by default, it and other traffic-related preferences can be configured to a

variety of specifications via the **Traffic shaping** menu option found in the dashboard's **Security appliance** tab.

Access the Meraki dashboard at [dashboard.meraki.com.](dashboard.meraki.com)



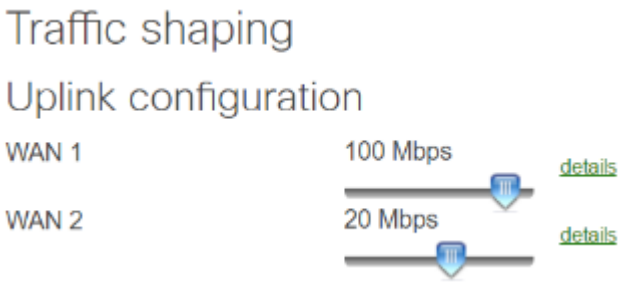
Please refer to the [MX Quick Start guide](#) for an in-depth walkthrough of how to manage your Meraki MX device.

Step-by-Step Guidance: Dual WAN Configuration

***NOTE:** Verify the device's MAC address, found on the bottom label of the MX series, to ensure the correct device is selected in the dashboard. (MACs, IPs, and Serial #s have been partially obscured in the screenshot above.)*

1. From the **Security appliance** tab of the admin portal, select **Appliance status** (found under **Monitor**).
2. The **Live data** view shows which interfaces are currently in use by highlighting active ports green. When configured for primary and secondary internet connections, the device should indicate activity on its first two ports – Internet 1 and Internet 2.
3. Each connection's IP address is displayed next to its WAN designation along with its connection status.

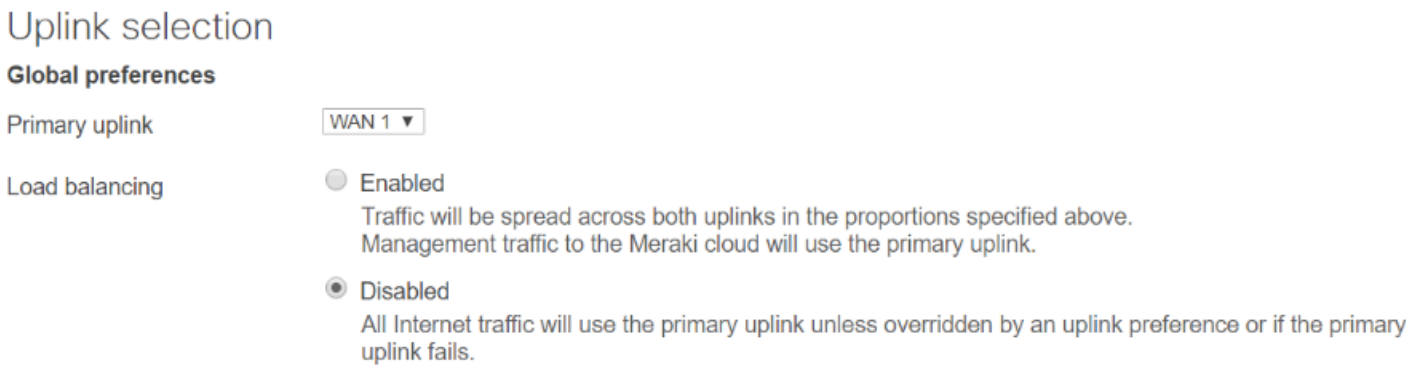
Load Balancing and Automatic Failover



From the Meraki dashboard, MX Security Appliances can be configured for customized WAN utilization, or "traffic shaping," which allows network administrators to model the flow of data according to the needs and specifications of their enterprise environment.

The **uplink configuration** sliders define the throughput for WAN 1 and WAN 2 to implement load distribution (or load balancing) across the two connections. When set to differing values, a ratio is established that defines flow control. For example, setting WAN 1 to 100 Mbps and WAN 2 to 20 Mbps creates a 5:1 ratio between the two for every five "flows" sent over WAN 1, a single flow will be sent over WAN 2.

Before the uplink configuration takes effect, load balancing must be initialized from the corresponding menu option found under **Global preferences**. Traffic will route according to the slider-defined proportion so long as the feature is enabled. When disabled, data transmission defaults to the primary uplink. Exceptions can be defined on a case-by-case basis with or without active load balancing via flow preferences and traffic-shaping rules.



Please refer to the Meraki knowledge article for an in-depth walkthrough of load balancing and flow preferences.

Step-by-Step Guidance: Load Balancing and Automatic Failover

NOTE: Clicking the details link allows for upload- and download-specific settings.

1. From the **Security appliance** tab of the admin portal, select **Traffic shaping** (found under **Configure**).
2. Use the **Uplink configuration** sliders to establish a proportional rate between WAN 1 and WAN 2.
3. These settings are not active until selecting **Enable** next to **Load balancing** under the **Global preferences** heading of the **Uplink selection** menu.
4. The **Primary uplink** pull-down establishes which WAN serves as the primary connection. The secondary WAN handles traffic only when load balancing is enabled (or if the primary WAN goes offline).
5. Define any exceptions by setting **Flow preferences** or **Traffic-shaping rules**, which allows for utilization of the secondary WAN on a case-by-case basis.

Configuration for Fortinet FortiGate Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. Accelerated Concepts extensively tests the 6300-CX LTE router to ensure its interoperability with a wide variety of security appliances, including equipment produced by Fortinet, to best accommodate enterprise networks. Pairing the Accelerated 6300-CX with a dedicated firewall offers comprehensive security and flexibility for small business, retail, government, remote sites, and branch offices.

Fortinet's FortiGate series of next-generation firewalls (NGFWs) offers award-winning network security capable of accommodating all scales of distributed enterprise data usage. FortiGate NGFWs are powered by the proprietary FortiASIC SoC3 technology, which consolidates its security and networking functionality into a single, optimized SoC (system on a chip). This innovative architecture surpasses industry standards for data throughput, latency, and the hosting of concurrent sessions, all while reducing each model’s power consumption and heat signature. Network performance settings, such as WAN Optimization and Load Balancing, can be configured locally via command-line interface (CLI) or centrally by way of FortiOS to communicate with all FortiGates connected to the same environment.

For additional information, please refer to Fortinet's FortiOS Handbook.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	Fortigate Firmware	6300-CX Firmware
12/2016	5.4.3	16.11.142

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a primary WAN Ethernet cable is plugged into port WAN 1 on the Fortinet device. Connect the 6300-CX's backup Ethernet cable to port labeled WAN 2 and proceed to the configuration described herein. (Compatible with all FortiGate Series Firewalls.)

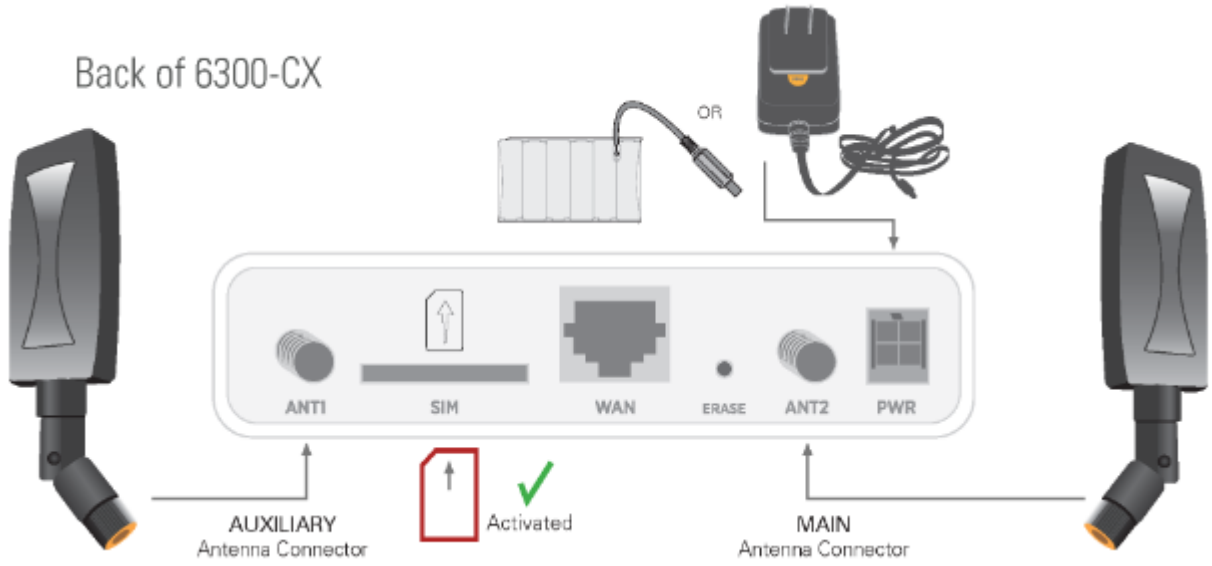
Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the "Site Survey" section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.

5. The 6300-CX uses DHCP with IP Passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

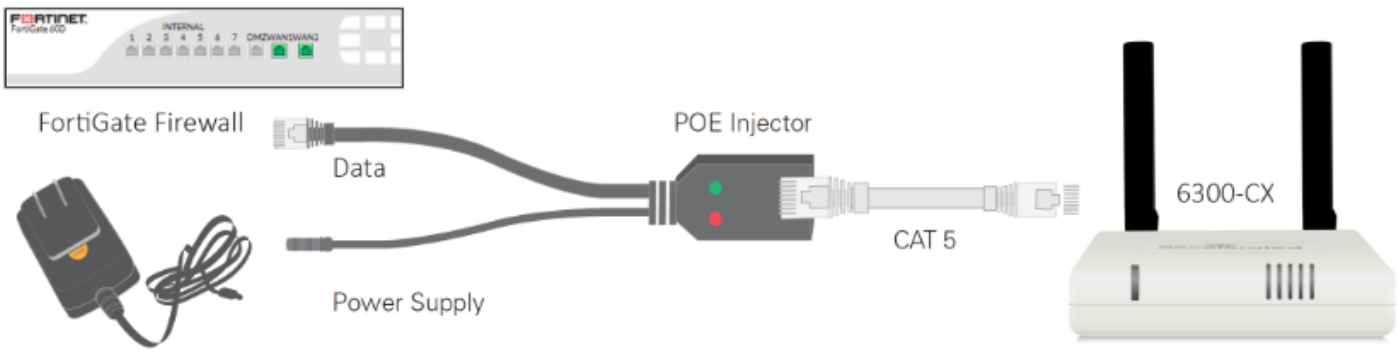
1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator** on the front of the device. Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Powering Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the firewall.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

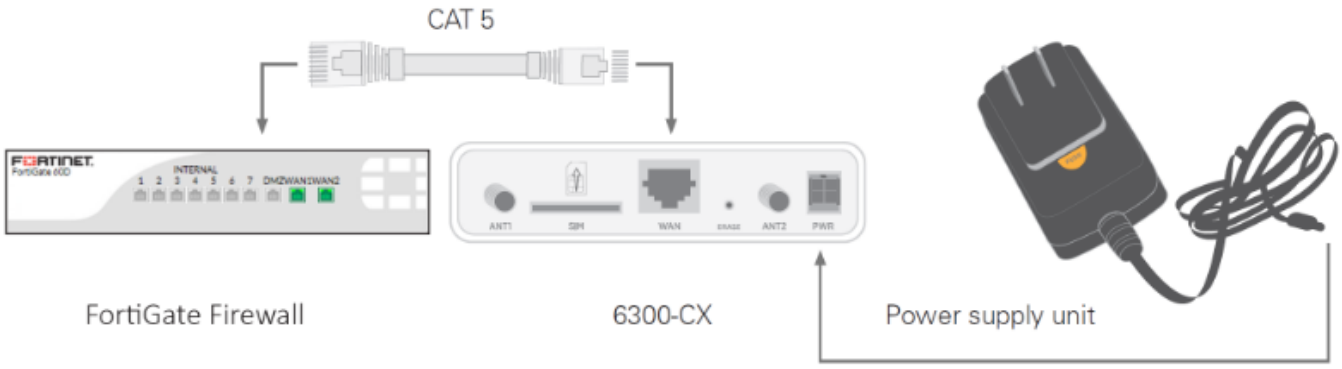


Direct Power Installation – Powering Option #2

If you plan to collocate the 6300-CX with the firewall device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

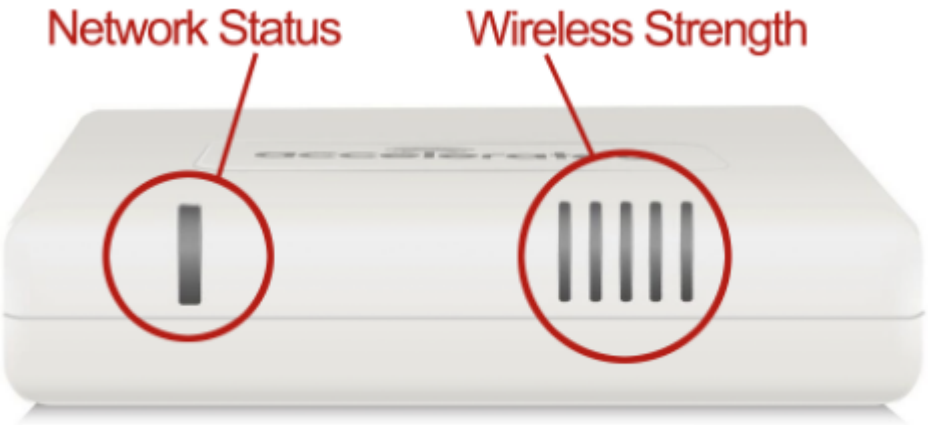
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port wan1 (to use the cellular network as the primary connection) or port wan2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the Cellular Network Signal Strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit www.accelerated.com for additional information and trouble-shooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

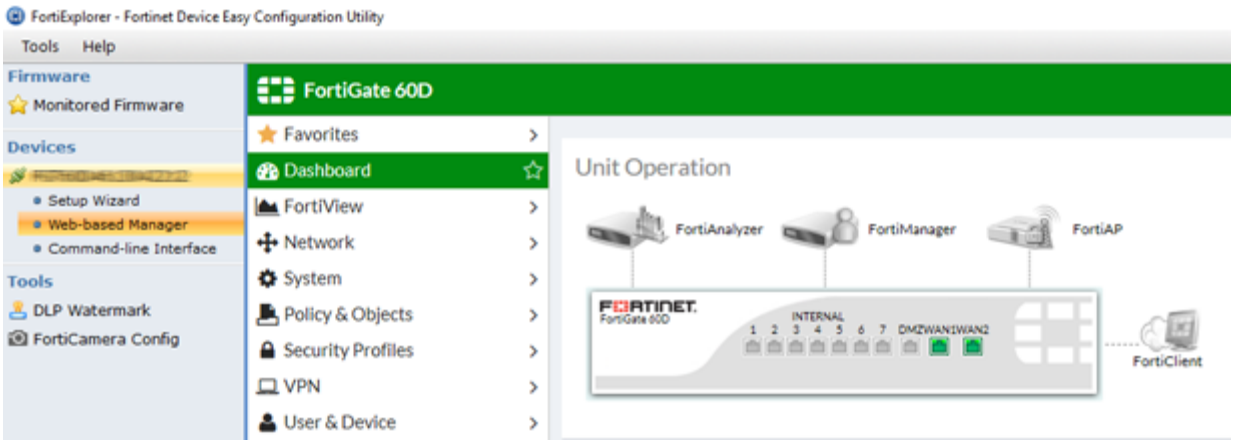
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

FortiGate Configuration with the Accelerated 6300-CX

Verify Interface Settings

IP Policies and Static Routes serve as the foundation for how firewalls control and shape the flow of data through the networks they safeguard. FortiGate devices come preconfigured with security settings in place, though these routes and policies assume a traditional, single-WAN setup. It is critical to remove any default values before implementing failover to ensure proper traffic prioritization.

NOTE: Device administration is best handled using the FortiExplorer desktop application, which connects a computer to the firewall via its USB MGMT console port. (Both the CLI and web-facing GUI, FortiOS, are available using this tool.) If necessary, FortiOS can also be accessed via its default gateway IP: 192.168.1.99.



For an in-depth walkthrough of how to manage your FortiGate device, please refer to Fortinet's [FortiOS Handbook](#).

Step-by-Step Guidance: Verify Interfaces, Routes, and Policies

*NOTE: Both wan1 and wan2 should be set for DHCP **Addressing** mode.*

1. From the **Web-based Manager**, expand the **Network** menu and navigate to **Interfaces**.
2. Confirm that both wan1 and wan2 are online, indicated by the green arrow pointing up.
3. View interface details by double clicking on its entry in the **Physical** table.
4. Set wan1's **Distance** value so it's LOWER than the value used for wan2 (e.g. set wan1 to 1 and wan2 to 5).
5. Deactivate **Override internal DNS** if it is enabled.
6. Click **OK** to finalize any configuration changes.
7. Select **Routing** from the **Network** menu – delete any pre-defined **Static Routes**.
8. Expand the **Policy & Objects** menu and navigate to **IPv4 Policy** – delete all existing policies for wan1 & 2.

NOTE: Please refer to Fortinet's guidance on how to perform a configuration backup if there is concern over being able to recreate any policies or routes.

Dual-WAN Routes and Policies

The FortiGate device is ready for dual-WAN configuration once its preexisting settings have been cleared out and its two WAN connections are properly set (per the guidance from page 6 of this document). Any active interface must have an IPv4 Policy defined in order to bypass the "Implicit Deny" default policy that is used as a failsafe for unauthorized traffic. Networks can then leverage advanced prioritization options to further reinforce the failover redundancy provided by the 6300-CX's backup LTE connection by establishing a static route for each WAN interface.

For an in-depth walkthrough of how to manage your FortiGate device, please refer to Fortinet's FortiOS Handbook.

Step-by-Step Guidance: Dual-WAN Routes and Policies

NOTE: *Just like the **Distance** value set during Interface setup (step 4 on the previous page), FortiGate firewalls give precedence to whichever static route has the lowest **Priority** value.*

1. From the **Web-based Manager**, expand the **Network** menu and navigate to **Routing**.
2. Click the **Create New** button under the **Static Routes** section.
3. Select a **Device:** either wan1 or wan2.

4. Enter the **Gateway** IP address, which can be found by viewing the uplink's corresponding entry in the **Interfaces** menu.
5. Also enter this Gateway IP into the **Destination** field.
6. Expand **Advanced Options** and set the **Priority** for wan1 so that its value is LOWER than wan2 to establish failover prioritization.
7. Click **OK** to finalize any configuration changes.
8. Repeat steps 1–7 for the second WAN interface, ensuring that the intended primary connection has the lowest priority value.
9. Expand the **Policy & Objects** menu and navigate to **IPv4 Policy**.
10. Click the **Create New** button found at the top of the screen.
11. Set the **Incoming Interface** to "internal" and the **Outgoing Interface** to the intended WAN uplink (1 or 2).
12. Enter a **Name** that corresponds to the **Outgoing Interface** (e.g. "Primary" for wan1).
13. Select "All" for the **Source**, **DestinationAddress**, and **Service**.
14. Unless otherwise required per existing security standards, all other values can be left as defaults.
15. Ensure **Enable this policy** is active and click **OK** to finalize its configuration.
16. Repeat steps 9–15 for the second WAN interface.

WAN Status Check

Failover is established by the proper configuration of two WAN interfaces as well as their related policies and routes, which ensures the FortiGate knows how to reroute traffic if its active uplink goes offline. The backup/ secondary connection, however, will stay active indefinitely unless WAN Status Check is activated and configured.

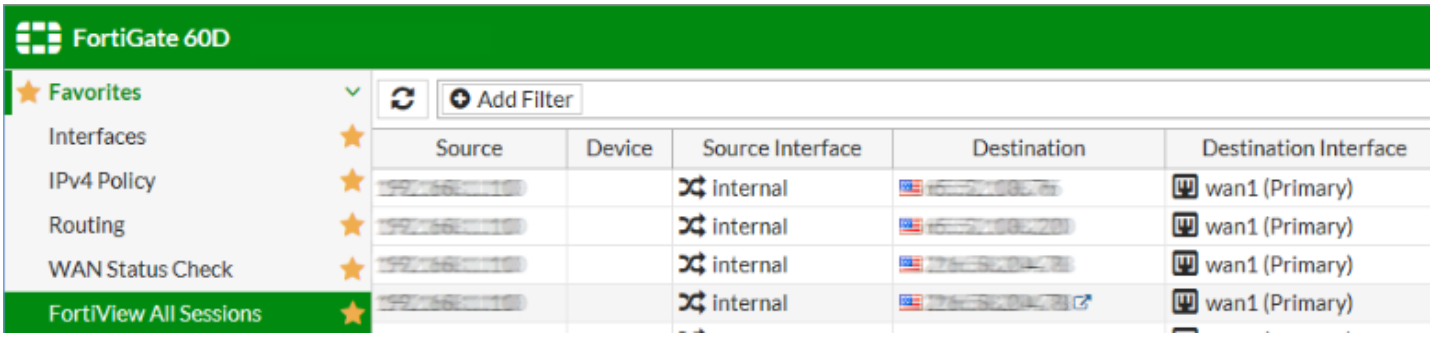
For an in-depth walkthrough of how to manage your FortiGate device, please refer to Fortinet's FortiOS Handbook.

Step-by-Step Guidance: FortiView Verification

1. From the **Web-based Manager**, expand the **Network** menu and navigate to **WAN Status Check**.
2. Click the **Create New** button found at the top of the screen.
3. Enter a **Name** for tracking purposes (e.g. Active Recovery).
4. Set the **Protocol** as "Ping".
5. Unless an alternative is preferred, point the **Server** to "8.8.8.8".
6. The **Link Status** fields can be adjusted as necessary; the default values suffice.

FortiView Verification

FortiView provides real-time monitoring of traffic flowing through FortiGate devices. After completing the Accelerated 6300-CX configuration to establish backup connectivity, FortiView can confirm that both the failover and failback mechanisms are functioning as intended.



For an in-depth walkthrough of how to manage your FortiGate device, please refer to Fortinet's [FortiOS Handbook](#).

Step-by-Step Guidance: FortiView Verification

1. From the **Web-based Manager**, expand the **FortiView** menu and navigate to **All Sessions**.
2. Reference the **Destination Interface** column to see which WAN uplink is currently active (wan1 unless there is a service interruption).
3. To confirm failover, unplug the Ethernet cable from the wan1 Interface. Refresh the **All Sessions** view to see wan2 become the new **Destination Interface**, and similarly confirm wan1 reverts to being the active interface once it is reconnected.

Configuration for Juniper SRX Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. For these reasons Juniper and Accelerated Concepts have teamed up to offer comprehensive security and flexibility for small businesses, retail, government, remote sites, and branch offices.

Combining next-generation firewall functionality with unified threat management (UTM) services, the Juniper SRX Series Services Gateways provides high-performance, cost-effective network security. It optimizes and fortifies networked environments thanks to a robust suite of administrative utilities ranging from automated configuration to enhanced Web filtering though this functionality hinges upon an active WAN connection. An SRX Series device paired with an Accelerated 6300-CX LTE Router will ensure your enterprise network remains secure and operational should its primary ISP go offline. Running a cellular backup via an Ethernet cable preserves the full security functionality of the SRX Gateway, which isn't the case for USB-connected Aircards.

For additional information, please refer to Juniper's SRX Series datasheet and the J-Web User Guide.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	JUNOS Release	6300-CX Firmware
05/2017	15.1X49-D5	17.2.22

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), availability of bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a primary WAN Ethernet cable is plugged into the 0/0 port on the Juniper device. Connect the 6300-CX's backup Ethernet cable to port 0/2 and proceed to the configuration described herein. (Compatible with all SRX Series Services Gateways.)

Accelerated 6300-CX LTE Router Setup

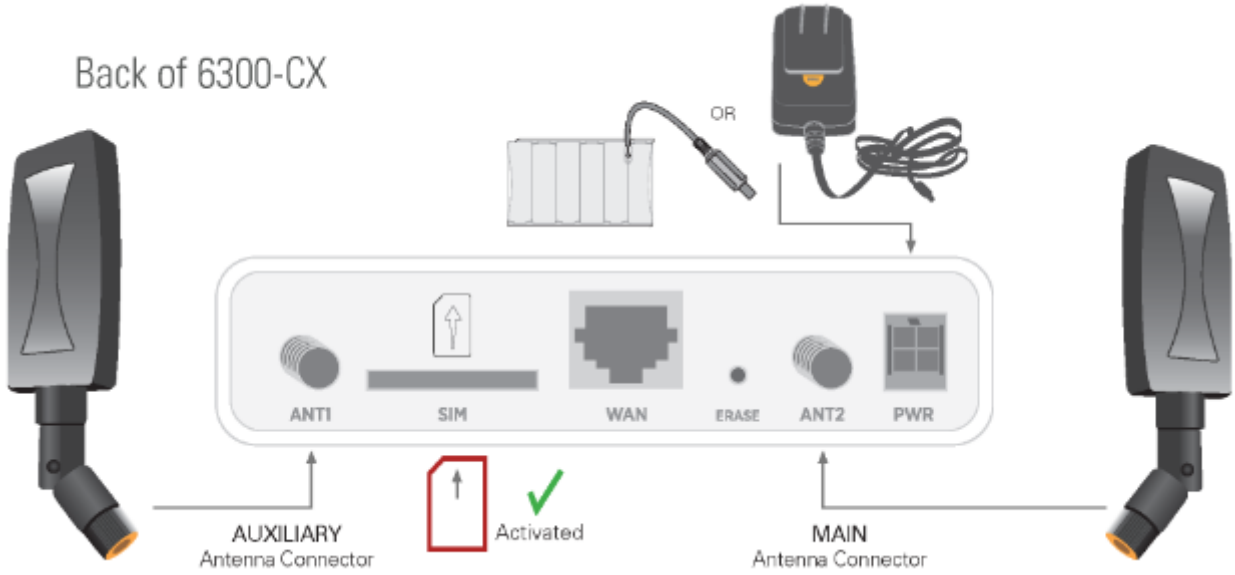
Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.

2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site

Step-by-Step Guidance: Site Survey

1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator** on the front of the device. Minimum cellular signal strength for operation is 2 bars (3+ is preferred).

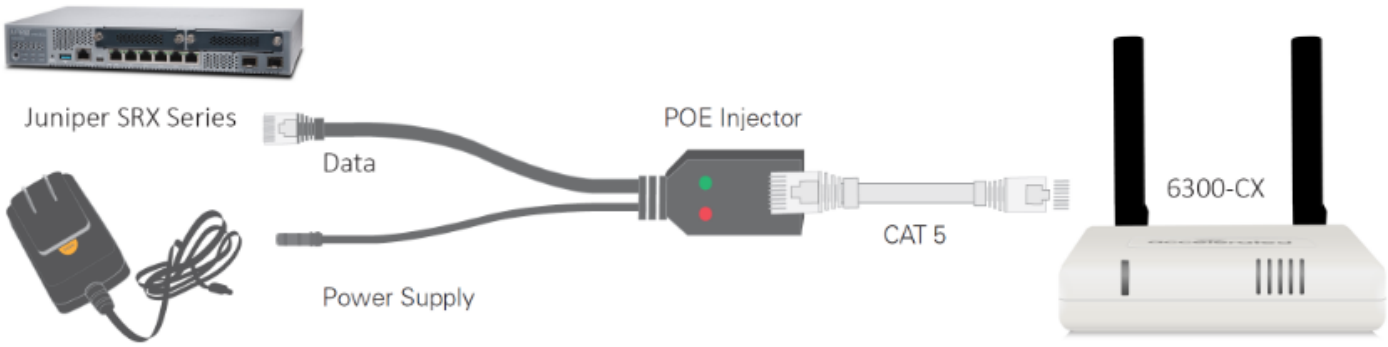
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Powering Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the SRX device.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

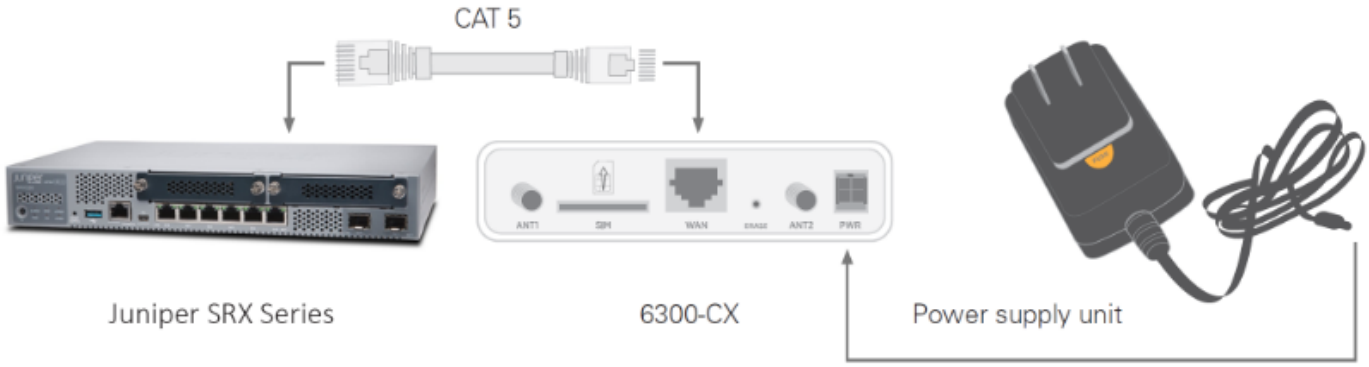


Direct Power Installation – Powering Option #2

If you plan to collocate the 6300-CX with the MX device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

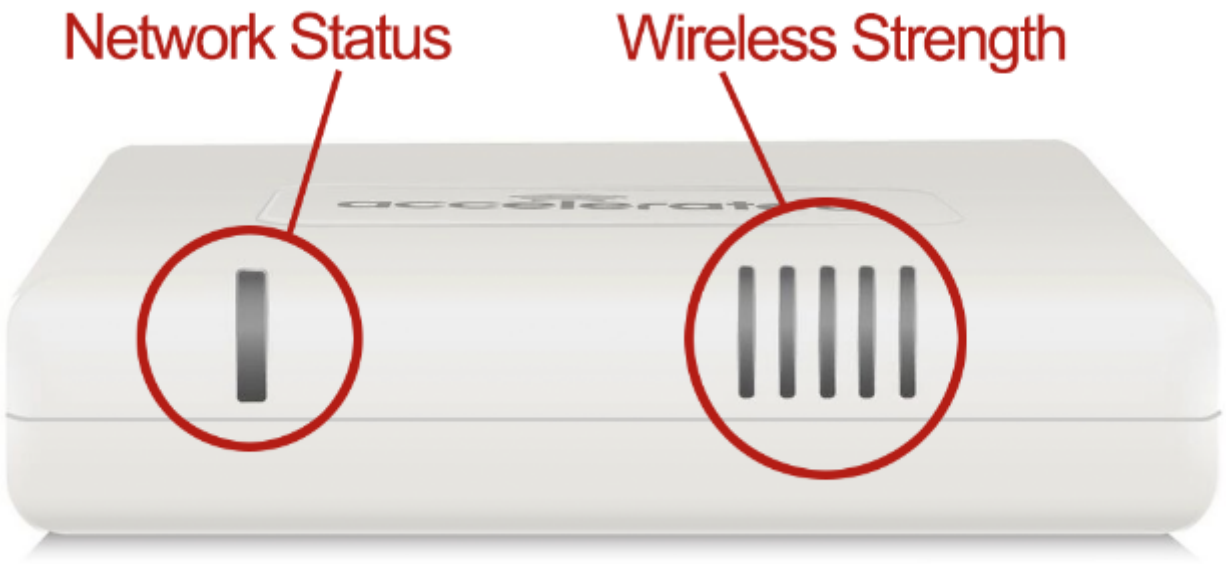
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port Internet 1 (to use the cellular network as the primary connection) or port Internet 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the cellular network signal strength. The **Network Status Light** on the front left of the 6300-CX displays connectivity information.

Please visit *www.accelerated.com* for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

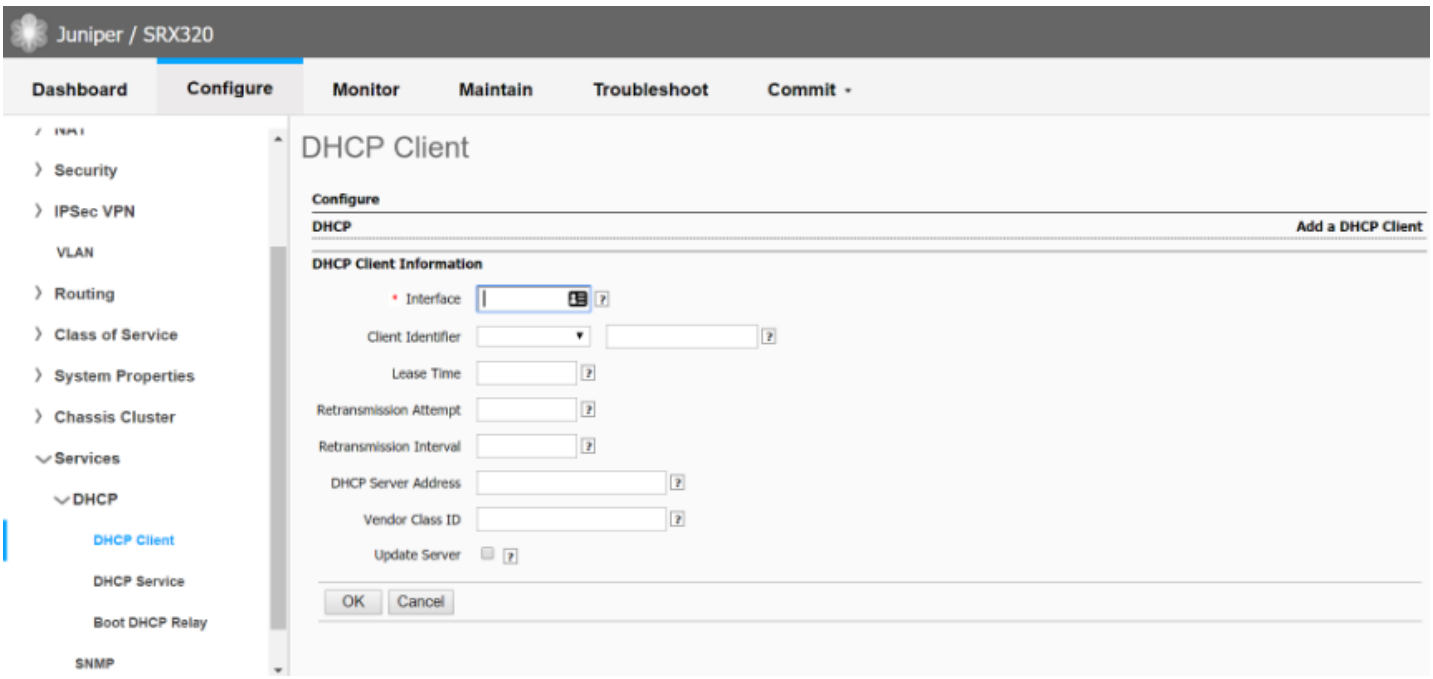
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

Juniper Configuration with the Accelerated 6300-CX

DHCP Client Configuration

The 6300-CX's cellular network access must be associated with a specific Ethernet port on the SRX Series security appliance before it can serve as a backup connection. Once assigned to an interface, additional options are available to further define the new DHCP Client's characteristics (lease time, retransmission intervals, and other supplemental information). Since Juniper SRXs come preconfigured with the first two Ethernet ports assigned to WAN and LAN functionality (in that order), the third port (labeled 0/2) will be the first available interface for assignment in new deployments.

Access the J-Web admin portal at 192.168.1.1



Please refer to the [Juniper knowledge article] for an in-depth walkthrough of the DHCP Client screen.

Step-by-Step Guidance: DHCP Client Configuration

NOTE:Port0/0 is reserved for the default WAN and 0/1 is predefined as the default LAN, making 0/2 the first available interface for a failover WAN uplink. Be sure to type the full name, ge-0/0/2.0

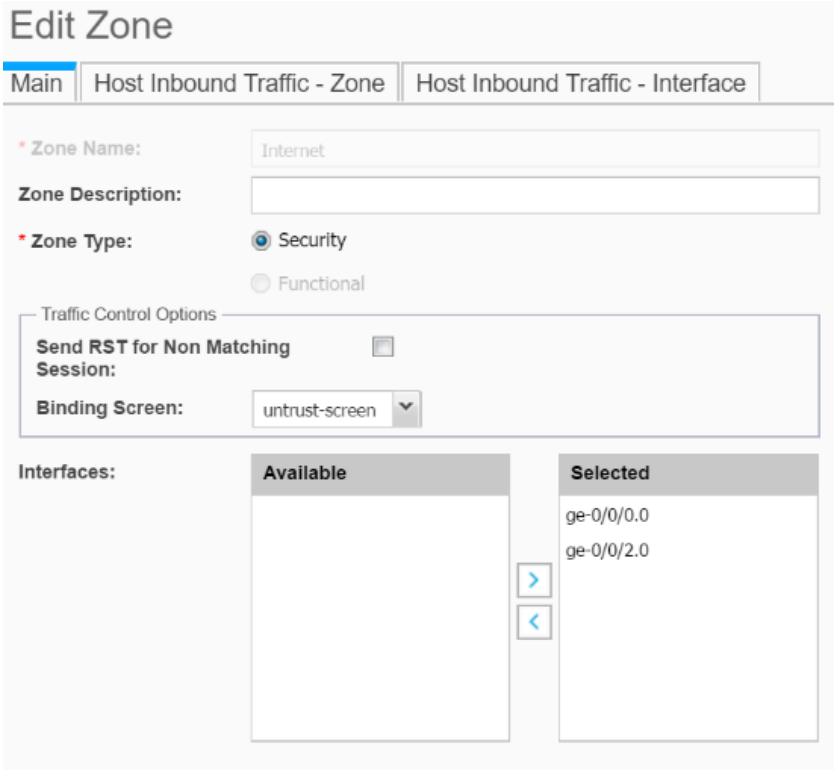
1. From the **Configure** tab of the admin portal, click on the **Services** menu option, select **DHCP**, and navigate to the **DHCP Client** page.
2. Click the **Add** button.
3. Specify which Ethernet **Interface** (port) will be assigned the cellular WAN connection.
4. Enter any other relevant information, clicking **Ok** to create the DHCP client.
5. Click the **Apply** button to finalize any changes.

Zones/Screens Settings

SRX Series Services Gateways leverage security zones to streamline the coordination of services and protocols associated with Ethernet traffic. The two default zones, “Internal” and “Internet,” are respectively used to delineate between LAN and WAN connections. Zone “junos-host” provides a dedicated means of managing self-traffic, both host-inbound and host-outbound. (Please refer to the Juniper knowledge article, *Understanding Security Policies for Self Traffic*, for more information regarding the junos-host zone.

Edit the Internet zone to establish the mechanisms required for WAN failover, allowing the SRX to retain an active Internet connection in light of a service interruption to its primary uplink. After configuring an interface for DHCP Clients, per the guidance on the previous page of this document, it becomes available for selection. Once assigned to the proper zone, the interface can be granted permission to JunOS' predefined services and protocols.

The SRX device is ready for failover once the new interface has been set to recognize the CX's cellular connection and it is subsequently assigned to the Internet zone with the required services enabled.



Please refer to the [Juniper knowledge article] for an in-depth walkthrough of the Zones/Screens menu.

Step-by-Step Guidance: Zones/Screens Settings

1. From the **Configure** tab of the admin portal, click on the **Security** menu option and navigate to **Zones/Screens**.
2. Select the **Internet** zone and click **Edit**.
3. The **Main** tab contains a column of **Available** interfaces. Use the > arrow to move the cellular interface to the **Selected** column.
4. Navigate to the **Host Inbound Traffic – Interface** tab and select the cellular interface.
5. Move **dhcp** and **ping** from the **Available Services** column to **Selected**. Enable other protocols or services as needed.
6. Click **Ok** to complete the configuration.

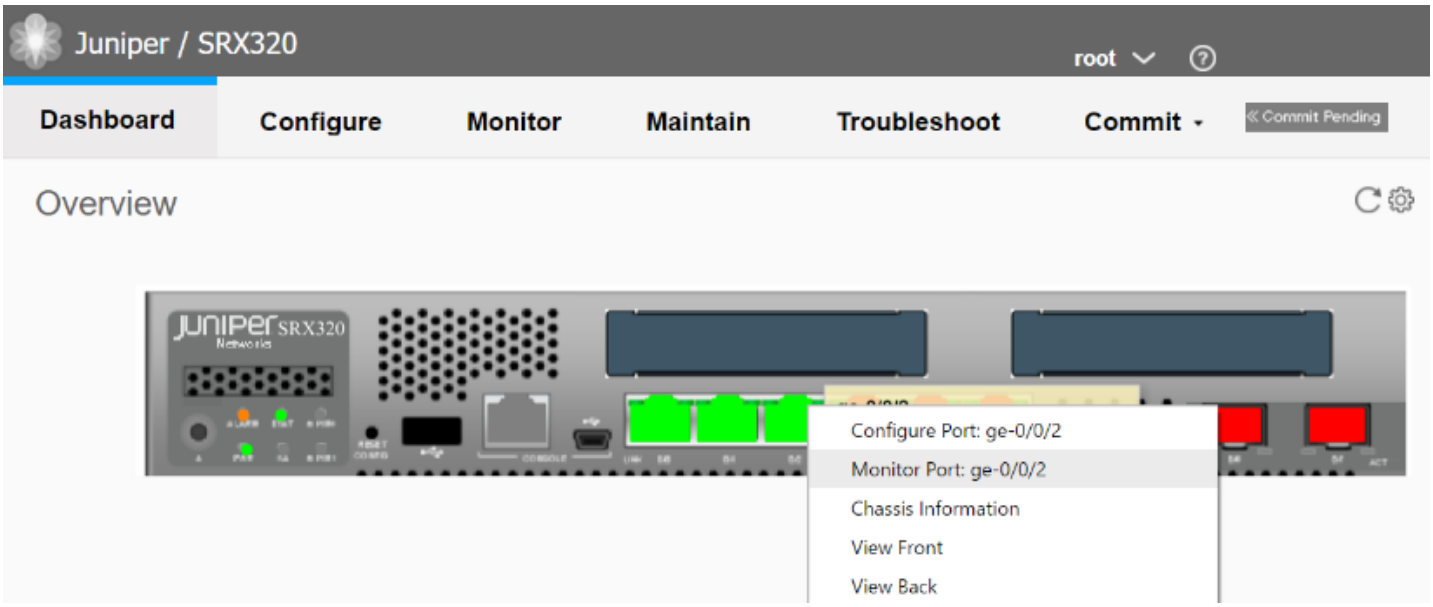
7. From the horizontal menu bar at the top of the screen, select **Commit** from the corresponding pull-down to apply any changes.

Interface Monitoring

J-Web provides real-time monitoring of traffic as it flows through SRX Series Services Gateways. After completing the Accelerated 6300-CX configuration to establish backup connectivity, JunOS can confirm that the failover and failback mechanisms are functioning as intended.

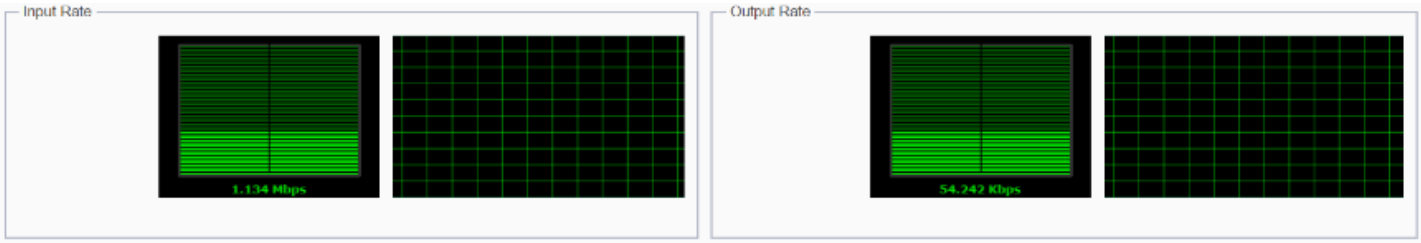
To do so, monitor the port on the SRX device that is assigned for backup connectivity. After triggering a failover condition (disabling the primary Internet connection), traffic will switch over to the secondary interface. This activity registers as input and output viewable in the Interface Statistics table.

For an in-depth walkthrough of how to monitor with J-Web, please refer to chapter 4 of [this Juniper knowledge article](#).



Step-by-Step Guidance: Interface Monitoring

1. Navigate to the Dashboard tab of the J-Web admin portal.
2. The Overview section contains a diagram of the SRX device, including green lights to indicate active Ethernet interfaces. Right click the desired interface and select Monitor Port.
3. Refer to the Interface Statistics to confirm connectivity.


Input Rate
1.134 Mbps
Output Rate
54.242 Kbps

Configuration for Cisco ASA Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. Accelerated Concepts extensively tests the 6300-CX LTE router to ensure its interoperability with a wide variety of security appliances, including equipment produced by Fortinet, to best accommodate enterprise networks. Pairing the Accelerated 6300-CX with a dedicated firewall offers comprehensive security and flexibility for small business, retail, government, remote sites, and branch offices.

Cisco's Adaptive Security Appliance (ASA) series is a threat-focused line of next-generation firewalls (NGFWs) designed for multilayered network protection. The latest ASA hardware is capable of integrating its proven security capabilities with Cisco's FirePOWER service that bolsters the device's readiness to defend against advanced and zero-day attacks. This next-generation intrusion prevention system (NGIPS) incorporates comprehensive access and

application control, threat prevention, routing policies, and contextual network awareness all under a single security appliance, a solution that was previously achieved by pairing an ASA firewall with a separate module dedicated to FirePOWER functionality.

For additional information, please refer to Cisco's ASA 5500 Series Configuration Guide.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	ASA Firmware	ASDM Version	6300-CX Firmware
12/2016	9.6(1)	7.6(1)	16.11.142

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a WAN Ethernet cable is plugged into the port configured for the primary uplink on the ASA device. Connect the 6300-CX's backup Ethernet cable to a port available for configuration as the secondary interface and proceed to the configuration described herein. (Compatible with all ASA series firewalls.)

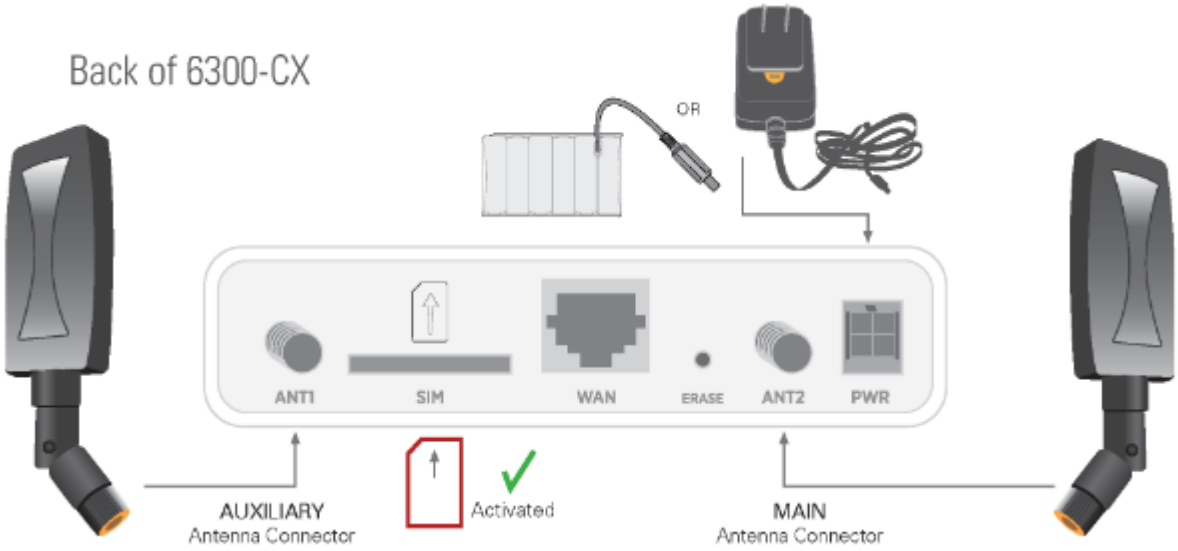
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP Passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.

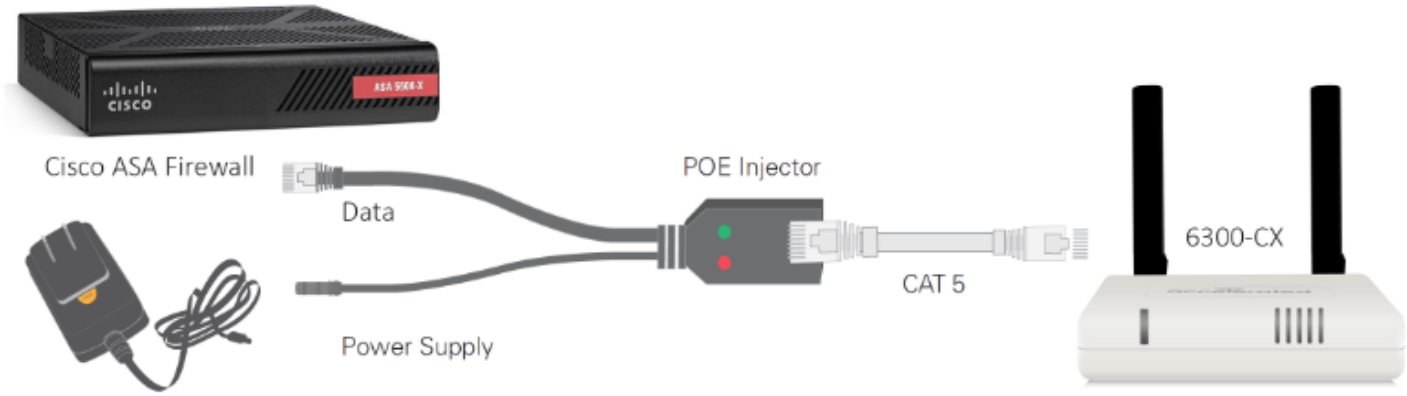
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator** on the front of the device. Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Powering Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the firewall.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

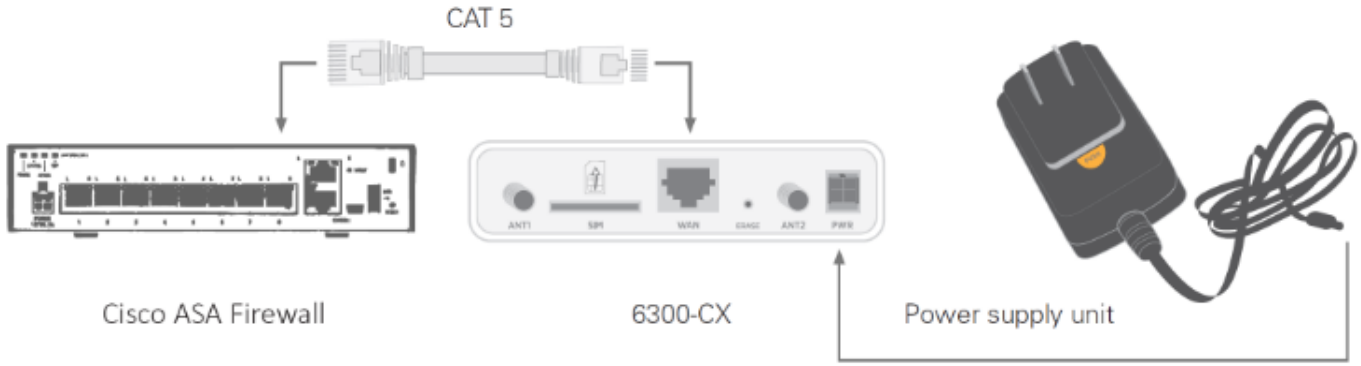


Direct Power Installation – Powering Option #2

If you plan to collocate the 6300-CX with the firewall device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

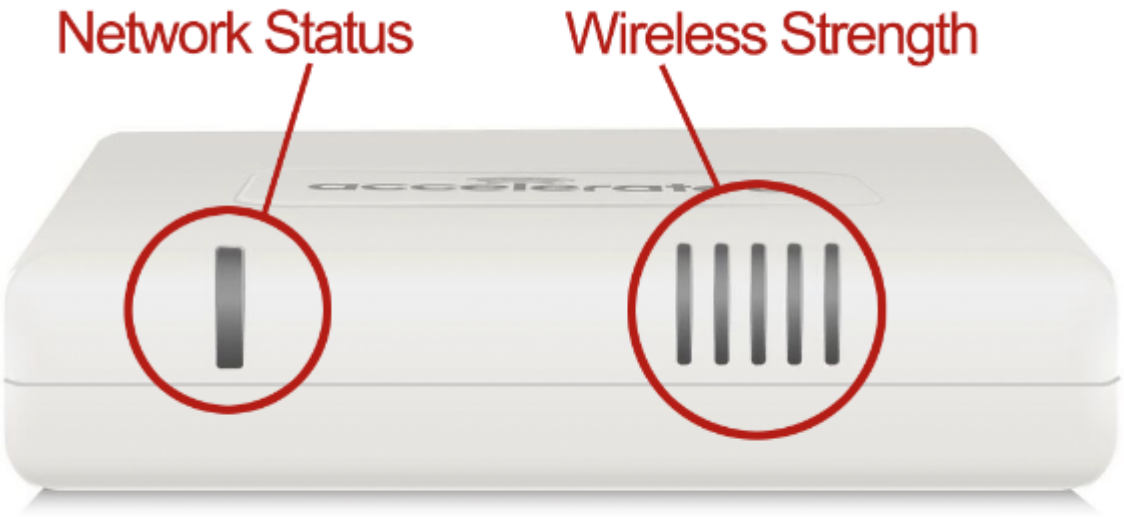
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port 1 (to use the cellular network as the primary connection) or port 3 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the Cellular Network Signal Strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit www.accelerated.com for additional information and trouble-shooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

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

Disable IP Passthrough on the Accelerated 6300-CX LTE Router

For failover configuration with a Cisco ASA firewall, the 6300-CX must be able to provide a static IP address to the secondary WAN interface (port). It cannot do so, however, until IP Passthrough is disabled on the Accelerated device. Reconfiguring the 6300-CX in this manner places the CX in "Router Mode." The settings outlined below should be applied from the Configuration tab of Accelerated View™ although local administration is also possible if the need arises.

The step-by-step guidance provided below assumes that default configurations, most notably the stock IP subnets, are being leveraged on both the Accelerated 6300-CX and the Cisco ASA. These values can be altered as necessary to meet any preexisting network conditions; unless otherwise indicated, assume the 192.168.0.X subnet belongs to the 6300-CX and that the 192.168.1.X subnet is assigned to the ASA.

Please refer to the 6300-CX User Manual for an in-depth walkthrough of both remote and local administration.

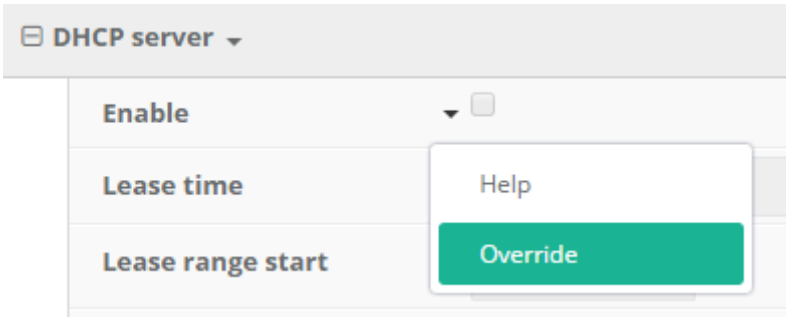
Step-by-Step Guidance: Disable IP Passthrough

NOTE: *The MAC address is a 12-character code included on the 6300-CX's bottom label.*

1. Sign in to Accelerated View and locate the 6300-CX by entering its **MAC address** in the **Search** field.
2. Click on the link in the **MAC** column to bring up the device's profile.
3. Navigate to the **Configuration** tab.
4. When configuring Accelerated devices, it is best to utilize new or existing **Group Configuration** profiles so that settings can be centrally stored and later applied to additional devices. Click the **Edit group configuration** link to proceed with the device setup.
5. **Settings** in Accelerated View are categorized and nested according to their scope of configuration:
6. Modem ? Passthrough: deselect the Enable checkbox
   Network ? Interfaces ? LAN ? IPv4: confirm the Interface type is set to Static IP address
   Network ? Interfaces ? LAN ? IPv4: confirm the Address is 192.168.0.1/24
   Network ? Interfaces ? LAN ? IPv4 ? DHCP server: select Enable
   (The "?" symbol denotes nested categories. Network ? Interfaces ? LAN, for example, points to the LAN menu nested inside the Interfaces section within the Network category.)
   points to the **LAN** menu nested inside the **Interfaces** section within the **Network** category.)
7. Click **Update** to finalize the new settings.
8. To apply the new settings immediately, reboot the CX or reference the step-by-step guidance for issuing remote commands.

NOTE:*Changes made to a group configuration are applied to ALL devices assigned to that group. To adjust settings for individual devices, select the **Override** button from the pull-down menu situated next to each field/ setting in question and make any necessary changes without editing the group config.*

NOTE:*Devices sync with Accelerated View once a day by default; pending configuration updates will apply at this time.*



ASA Configuration with the Accelerated 6300-CX

Failover Interface Settings

IP Policies and Static Routes serve as the foundation for how firewalls control and shape the flow of data through the networks they safeguard. Cisco ASA devices come preconfigured with security settings in place, though these routes and policies assume a traditional, single-WAN setup. The first Ethernet port, labeled "1," is designated for the primary WAN uplink with the remaining ports relegated to LAN access. An interface must be configured for the secondary WAN uplink to establish failover functionality. More importantly, both uplink interfaces must be configured to use a static IP address.

NOTE: Device administration is best handled using the Cisco ASDM desktop application, which connects a computer to the firewall's GUI without having to enable http server access. Initialize the ASDM-IDM Launcher and connect to the default gateway address provided by the ASA firewall: 192.168.1.1; the username and password are blank by default.

For an in-depth walkthrough of how to manage your ASA device via ASDM, please refer to Cisco's Configuration Guide.

Step-by-Step Guidance: Interface Settings

NOTE: *If the primary Internet connection routes traffic using either the 192.168.1.X or 192.168.0.X subnet, an alternative subnet will need to be used for the ASA and 6300-CX respectively.*

1. After connecting to the firewall via Cisco ASDM, navigate to the **Configuration** tab and select **Interfaces**.
2. ASA devices have two default interface configurations: GigabitEthernet1/1, allocated for the "outside" route, and GigabitEthernet1/2, allocated for the "inside" route.
3. Double click GigabitEthernet1/1 to edit the interface – rename it to "Primary" and select **Use Static IP**.
4. Specify the **IP Address** and **Subnet Mask** for the static IP assignment associated with the primary Internet connection. Contact your network administrator if these values are unknown.
5. Enter a **Description** for tracking purposes if desired. "FiOS Broadband," for example.
6. Click **OK** to finalize any changes. ASDM may display a warning about static routes being altered – click **OK**.
7. Double click GigabitEthernet1/3 to edit the secondary WAN uplink.
8. Select **Enable Interface**, assign an **Interface Name** (and optional **Description**), and toggle to **Use Static IP**.

9. Specify the static IP Address and Subnet Mask. If the 6300-CX is configured to use its default IP range, feel free to use the following values: 192.168.0.120 (IP Address) and 255.255.255.0 (Subnet Mask).
10. There should now be 3 interfaces configured: Primary, inside, and Secondary.

NOTE: Changes made to the ASA configuration via ASDM are inactive until the **Apply** button is clicked.

Static Routes and Tracking

The Cisco ASA device is ready for dual-WAN configuration once its two WAN connections are properly set (per the guidance from page 7 of this document). Any active interface must have a static route defined in order authorize traffic over the network. The firewall can then leverage advanced prioritization options to further reinforce the failover redundancy provided by the 6300-CX's backup LTE connection.

Failover itself is accomplished by the simultaneous application of interface metrics, which allows the network to establish a primary (the shorter/ smaller metric) and secondary (the longer/ larger metric) uplink, coupled with the tracking options configurable via static routes. With tracking enabled, the firewall actively verifies whether or not its primary WAN interface is online.

For an in-depth walkthrough of how to manage your ASA device via ASDM, please refer to Cisco's Configuration Guide.

Step-by-Step Guidance: Static Routes and Tracking

NOTE:*Please refer to Cisco's guidance on how to perform a configuration backup if there is concern over being able to recreate any policies or routes.*

1. After connecting to the firewall via Cisco ASDM, navigate to the **Configuration** tab and select **Static Routes from the Routing menu (found under Device Setup).**
2. Delete any existing static routes. These will need to be recreated with dual-WAN failover taken into consideration.
3. Click **Add** to create a new static route for each interface. Unless otherwise specified by the network administrator, use the following values:

Primary	Secondary

IP Address Type: IPv4 **Interface:** Primary **Network:** any4 **Gateway IP:** Use the corresponding Gateway IP established on page 7, step 4 **Metric:** 1	**IP Address Type:** IPv4 **Interface:** Secondary **Network:** any4 **Gateway IP:** Use the corresponding Gateway IP established on page 6, step 5 **Metric:** 120

1. For the **Primary** route, under **Options**, select **Tracked**. The **Track ID** and **SLA ID** are used to distinguish this configuration within ASDM. The **Track IP** Address can be set to any valid address used for connectivity testing (8.8.8.8 is a safe bet) and the **Target Interface** should remain "Primary."
2. Select Monitoring Options and set the **Frequency** to establish how often the ASA firewall should verify the connectivity of the primary WAN uplink. (10 seconds, for example.) Other settings can be adjusted as needed.

NOTE:*Set the **Number of Packets** to 3 unless otherwise specified.*

NAT Rules

The Cisco ASA comes with a default NAT rule for its primary interface to ensure the proper flow of traffic as packets travel across static routes. Once configured for two WAN interfaces, a second NAT rule should be defined for the failover connection. Note that any additional preexisting rules will need to be recreated for the secondary interface to maintain security continuity during failover.

For an in-depth walkthrough of how to manage your ASA device via ASDM, please refer to Cisco's Configuration Guide.

Step-by-Step Guidance: NAT Rules

1. After connecting to the firewall via Cisco ASDM, navigate to the Configuration tab and select the Firewall menu. Click on NAT Rules.
2. Click the Add button to generate a new rule.
3. Unless otherwise specified by your network administrator, apply the new rule as follows: **Match Criteria (Source Interface, Source Address, Destination Address, Service)** – any **Action: Translated Packet – Source NAT Type:** Dynamic PAT (Hide); **Source Address:** Secondary; **Destination Address** and **Service:** Original
4. Be sure "Enable rule" is selected under **Options**.
5. Click **OK** to finalize the new rule.

DHCP and DNS Configuration

To ensure seamless failover, it is best to specify DHCP and DNS settings so that the internal interface is used to provide consistency no matter whether the primary or failover WAN is leveraged for connectivity.

Step-by-Step Guidance: DHCP and DNS Configuration

1. From the **Configuration** tab, select the **Device Management** menu. Expand **DNS** and click on **DNS Client**.
2. Using the pull-down menus in the **DNS Lookup** table, set the WAN **Interfaces** to "False" so that their DNS is disabled. Set the "inside" interface to "True."
3. Ensure **Enable DNS Guard on all interfaces** is selected.
4. Expand the **DHCP** menu and select **DHCP Server**. Double click on "inside."
5. Select **Enable DHCP server** and utilize the predefined **DHCP Address Pool** unless otherwise notified by your network administrator.
6. Specify any DNS preferences using the **Optional Parameters**.
7. Click **OK** to finalize the configuration.

NOTE: Changes made to the ASA configuration via ASDM are inactive until the **Apply** button is clicked.

Verification/ Monitoring

Cisco ASDM provides real-time monitoring of traffic flowing through ASA devices. After completing the Accelerated 6300-CX configuration to establish backup connectivity, route monitoring can confirm that both the failover and failback mechanisms are functioning as intended.

Look for the line currently selected as the **DEFAULT**. This will change from the primary to secondary interface as soon as the failover condition is triggered (per the tracking parameters established during static route configuration), and revert back to primary once the connection is reestablished.

Protocol	Type	Destination IP	Netmask/ Prefix Length	Gateway	Interface	[AD/Metric]
STATIC	DEFAULT	0.0.0.0	0.0.0.0	172.16.3.1	Primary	[1/0]
CONNECTED		172.16.3.0	255.255.255.0		Primary	
LOCAL		172.16.3.62	255.255.255.255		Primary	
CONNECTED		192.168.0.0	255.255.255.0		Secondary	
LOCAL		192.168.0.120	255.255.255.255		Secondary	
CONNECTED		192.168.1.0	255.255.255.0		inside	
LOCAL		192.168.1.1	255.255.255.255		inside	

For an in-depth walkthrough of how to manage your ASA device via ASDM, please refer to Cisco's Configuration Guide.

Step-by-Step Guidance: Verification/ Monitoring

1. After connecting to the firewall via Cisco ASDM, navigate to the **Monitoring** tab and select the **Routing** menu. Click on **Routes**.
2. The **Type** column indicates which route is serving traffic currently by indicating the **DEFAULT** route.
3. Disconnect the primary interface by unplugging the Ethernet cable and click **Refresh**. The new default should be associated with the secondary connection.
4. Reconnect the primary interface and wait 10 to 30 seconds. Click **Refresh** and verify that the default route has reverted back to the primary WAN uplink.

NOTE: Changes made to the ASA configuration via ASDM are inactive until the **Apply** button is clicked.

Configuration for Edgewater EdgeMarc Series

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. For these reasons Edgewater Networks and Accelerated Concepts have teamed up to offer comprehensive control and flexibility for small businesses, retail, government, remote sites, and branch offices.

To optimize high-quality communications for scalable voice, video, and data traffic, Edgewater Networks enterprise session border controller (ESBC) can be introduced into the infrastructure though this functionality hinges upon an active WAN connection. An EdgeMarc ESBC paired with the Accelerated 6300-CX LTE Router will ensure your enterprise network remains robust and operational should its primary ISP go offline. Running a cellular backup via an Ethernet cable preserves the full QoS optimization of the EdgeMarc ESBC, which isn't the case for USB-connected Aircards.

For additional information, please refer to Edgewater Network's Knowledge Base.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	VOS Release	6300-CX Firmware
10/2016	14.1	16.3.15

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection requires dual WAN ports on the EdgeMarc. Therefore, the service described herein is compatible with the following devices: EM-4700, EM-4750, EM-4800, EM-4806, EM-4808, and EM-7301.

Notice that some Wireless Service Providers may assign a private IP to the device and voice traffic may be behind NAT. Contact your VoIP Service Provider to verify if voice traffic from a private IP is accepted and/or the Wireless Service Provider to request a static public IP for your service. While a public IP address is not an absolute requirement for the LTE Modem, the address needs to be routable and not behind NAT.

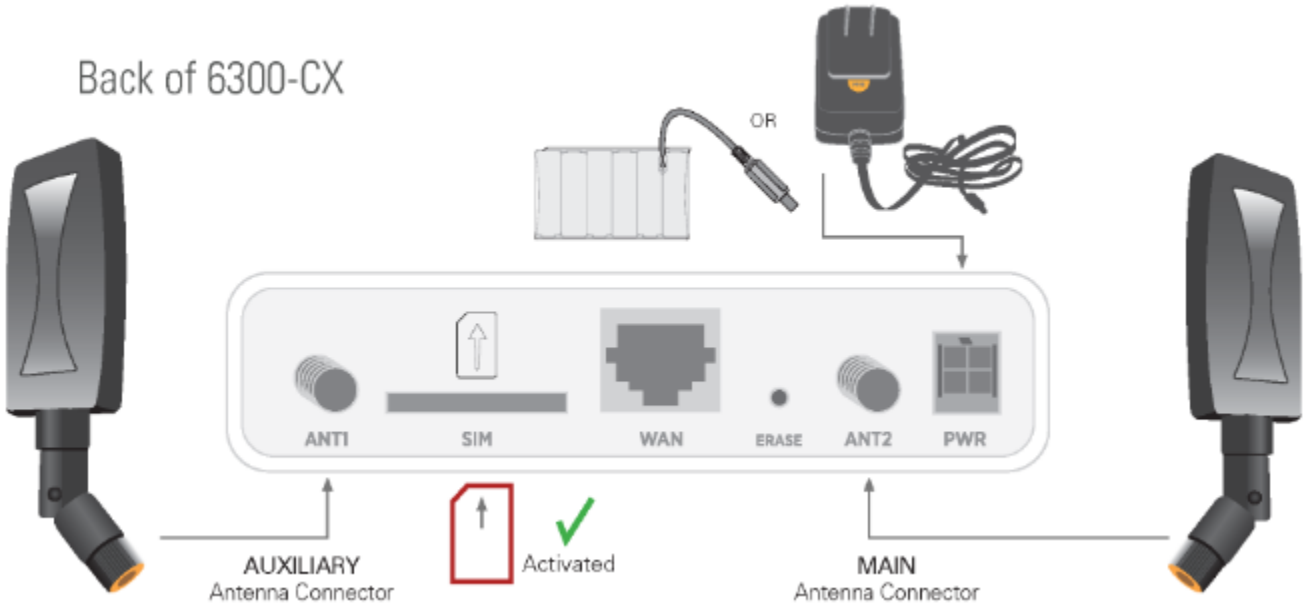
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP Passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

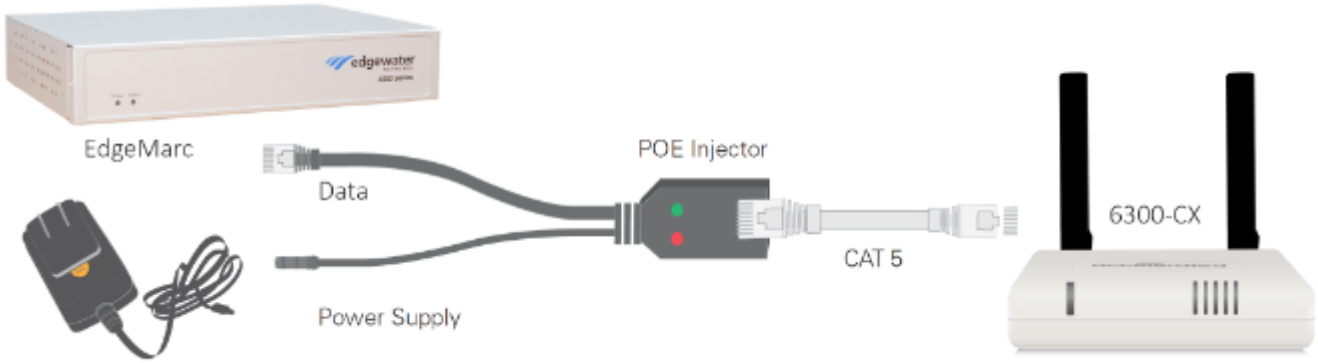
1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator** on the front of the device. Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Powering Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX’s power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the EdgeMarc.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

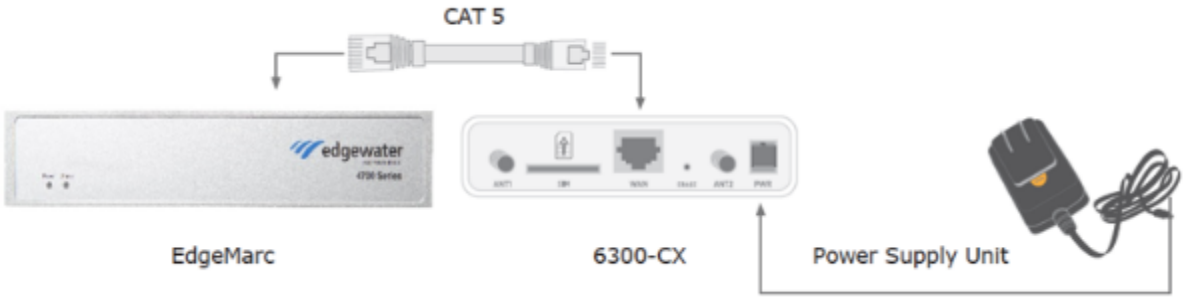


Direct Power Installation – Powering Option #2

If you plan to collocate the 6300-CX with the EdgeMarc device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

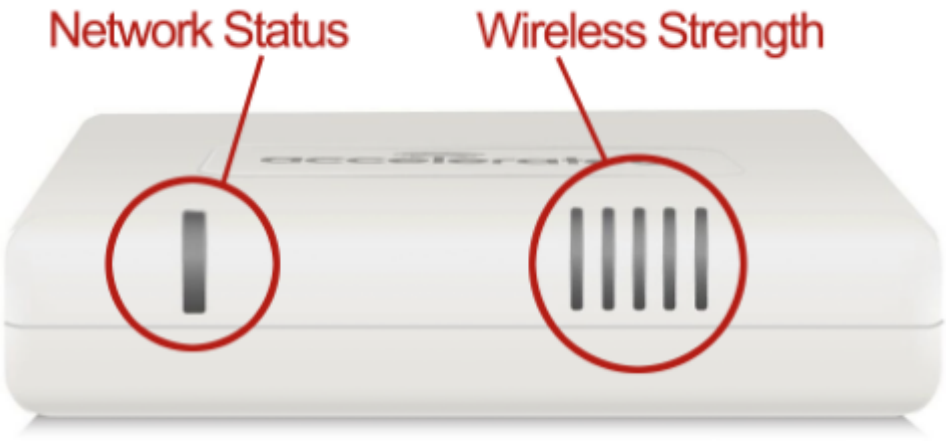
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port WAN 1 (to use the cellular network as the primary connection) or port WAN 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the Cellular Network Signal Strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit www.accelerated.com for additional information and trouble-shooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

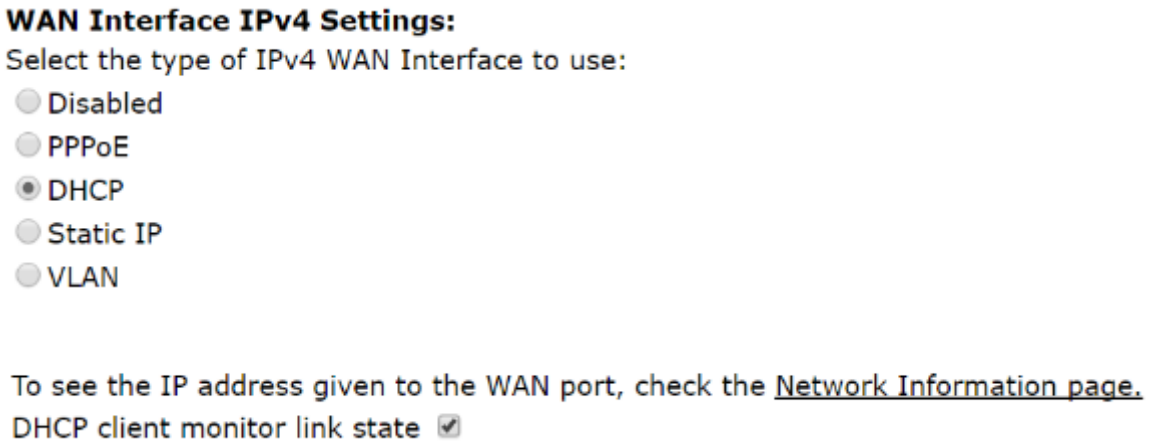
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

EdgeMarc Configuration with the Accelerated 6300-CX

WWAN as the Primary Interface

The back panel of the EdgeMarc ESBC features an array of LAN ports and two dedicated WAN interfaces. To utilize the 6300-CX's LTE Wireless WAN (WWAN) connectivity as the primary means of Internet access, connect the Accelerated LTE router to port WAN 1 on the EdgeMarc device using an Ethernet cable. A solid blue light on the 6300-CX confirms that its 4G LTE modem is online and an Ethernet connection has been established with another device. Similarly, a green light (blinking or solid) next to the ESBC's WAN port indicates that the EdgeMarc is connected to the LTE router.

Access the Edgewater admin portal at 192.168.1.1



Please refer to the EdgeMarc VOS User Guide for an in-depth walkthrough of the device's local GUI.

Step-by-Step Guidance: WWAN as the Primary Interface

NOTE: The Static IP radio button is selected by default.

1. From the **Configuration Menu**, select **Network.**
2. Locate the **WAN Interface IPv4 Settings** and select **DHCP.**
3. Enable **DHCP client monitor link state** to display detailed network configuration information.
4. Click **Submit.**
5. Click the **OK** button to finalize any changes.

NOTE: A message will indicate that service will be temporarily interrupted as the new settings are established.

WAN Link Redundancy (WLR) with WWAN Failover

The WAN Failover menu initializes WLR and further configures the interaction between primary and secondary WANs. Even with both WAN ports connected to an active Internet connection, the EdgeMarc ESBC is unable to utilize the secondary uplink until WAN Link Redundancy is enabled by selecting the corresponding check box. Additional settings may be engaged once the WLR status is updated.

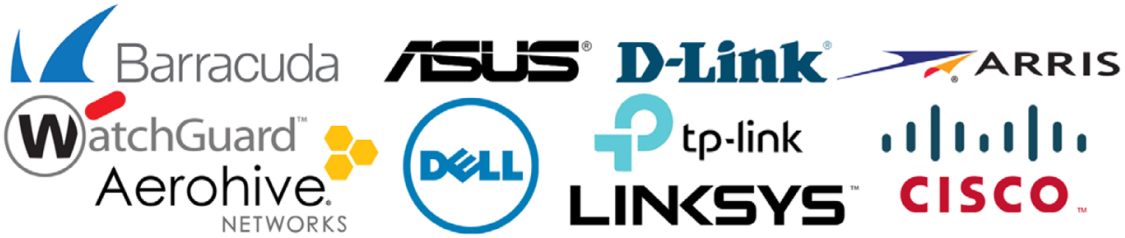
Please refer to the EdgeMarc VOS User Guide for an in-depth walkthrough of the device's local GUI.

Step-by-Step Guidance: WAN Link Redundancy with WWAN Failover

1. From the **Configuration Menu**, select **Network**.
2. Navigate to the **WAN Failover** screen.
3. Select the **Enable WAN Link Redundancy**, **Enable Revertive Mode**, and **Enable Dual WAN Ports** checkboxes.
4. Click **Submit**. See Note (a)
5. Click the **OK** button to finalize any changes.
6. Once the page reloads, verify that both the primary and secondary links are listed under **WAN Link Redundancy Status**. See Note (b)
7. Under **WAN Failover**, select **Secondary WAN**.
8. Locate the **WAN Interface IPv4 Settings** and select **DHCP**.
9. Enable **DHCP client monitor link state** to display detailed network configuration information.
10. Click **Submit** and then **OK** (per steps 4 & 6) to finalize any changes.
11. Navigate back to the **WAN Failover** screen. There should now be an address listed for the **Secondary Link IPv4 Address**.
12. Designate the desired interface for **Data** and **Voice** using the corresponding pull-down menus.
13. The **Switchover Interfaces** establishes which systems (between data and voice) will be affected by the WLR settings, allowing for selective failover functionality.
14. Failback detection is customized via the **Advanced** menu, located under **WAN Failover**. See Note (c)

NOTE (a):*A message will indicate that service will be temporarily interrupted as the new settings are established.*
NOTE (b):*The* ***Secondary Link Status*** *will read* ***UNAVAILABLE*** *until DHCP is enabled for the failover interface (explained in the following steps).*
NOTE (c):*These fields come pre-populated by default.*

Configuration for Dual-WAN Routers



Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. Accelerated Concepts extensively tests the 6300-CX LTE Router to ensure its interoperability with a wide variety of security appliances, including equipment produced by SonicWall, Edgewater, Meraki, Fortinet, and others to best accommodate enterprise networks. Pairing the Accelerated 6300-CX with a dedicated firewall offers comprehensive security and flexibility for small business, retail, government, remote sites, and branch offices.

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	6300-CX Firmware
12/2016	16.11.142

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary uplink requires dual WAN ports on the appliance to which it provides connectivity. Therefore, the service described herein assumes the following:

- Two available WAN ports (primary and secondary interfaces)
- Administrative access to the dual-WAN device's local GUI

Some networking appliances have interfaces that can be used as either WAN or LAN ports depending on how they're currently configured. If this is the case, please consult the documentation included with the firewall or router for step-by-step guidance before referencing the configuration notes included in this document.

NOTE: If additional LAN ports are necessary for practical use, a switch can be introduced without requiring additional configuration. Connect the switch to an available LAN port and proceed with the processes described herein.

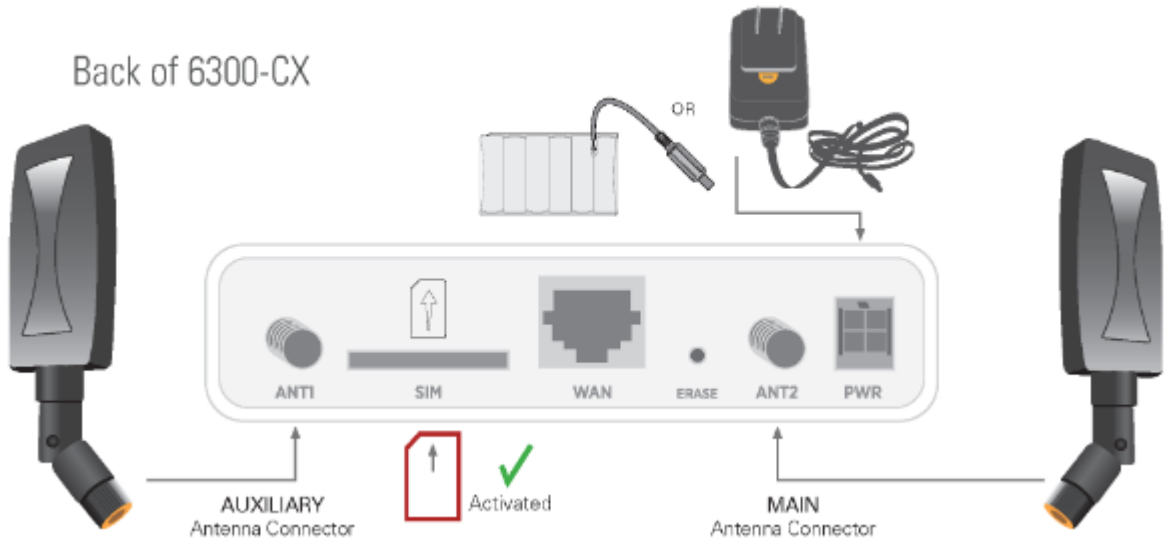
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.

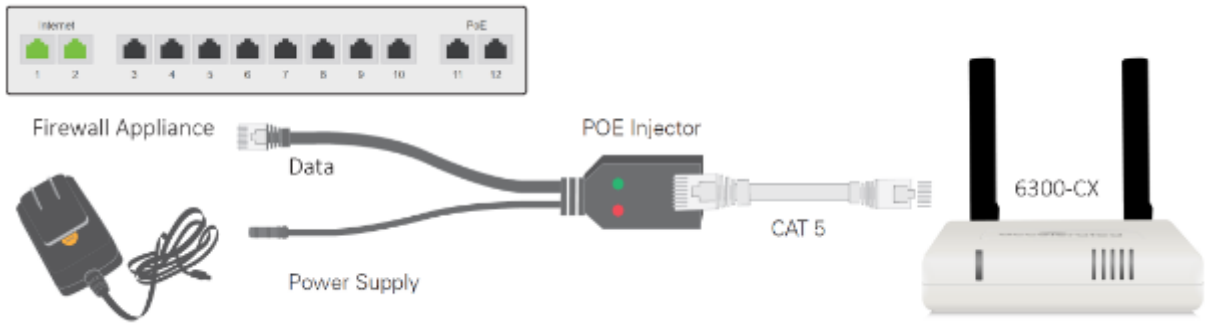
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator on the front of the device.** Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Power Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the SonicWall.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

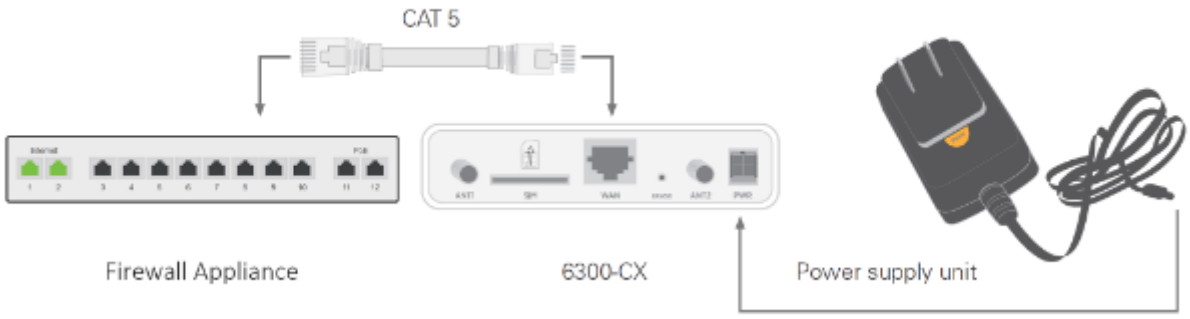


Direct Power Installation – Power Option #2

If you plan to collocate the 6300-CX with the MX device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

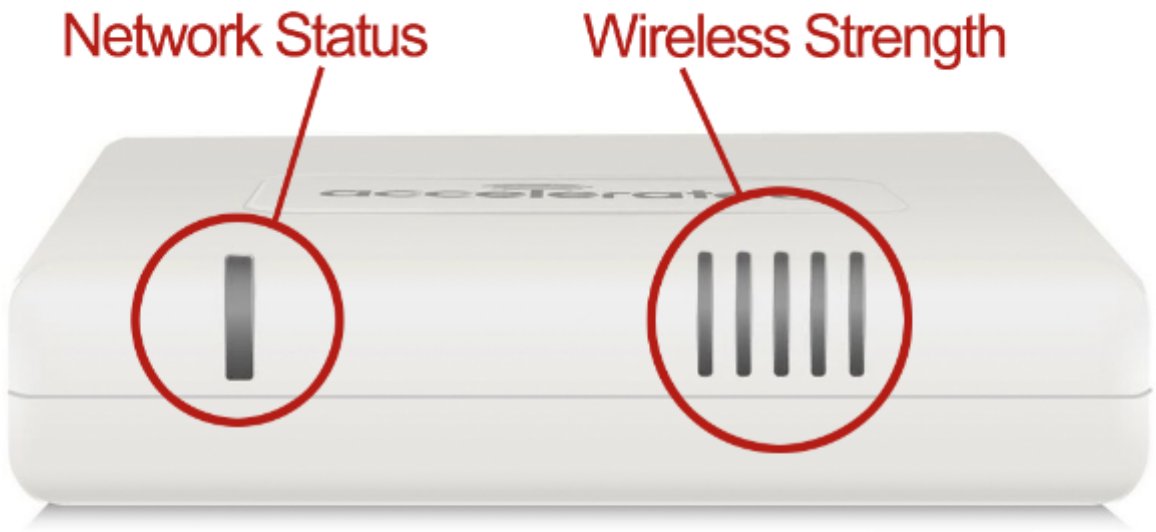
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port Internet 1 (to use the cellular network as the primary connection) or port Internet 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the cellular network signal strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit accelerated.com for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

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

Router Configuration with the Accelerated 6300-CX

Dual-WAN Configuration

Before designating the primary and secondary Internet connections, first identify the available ports on the dual-WAN appliance's back panel. While most modern devices support multiple WAN interfaces, not all equipment contains a separate grouping specifically for WAN uplinks. Should this be the case, and there is no distinct labeling to differentiate between ports for Ethernet (LAN) and Internet (WAN), the best practice is best to start with the lowest available port (usually either 0 or 1 unless otherwise specified) for the primary uplink and to use its adjacent port for the secondary connection. Follow the same rule of thumb if the firewall features dedicated WAN interfaces, starting with the first port for the primary WAN before assigning the secondary line.

Network devices typically feature a local (or web) GUI to handle configuration settings. More often than not, this administration portal is accessed by navigating to the device's IP address using a web browser. Administration portals may vary greatly, depending on the make and model of the appliance in question, though the overall process remains the same: enable (or confirm) multiple WAN support and establish failover prioritization. Additional settings will likely be available to offer further control over how the two interfaces cooperate, such as automatic failback/ reversion, load balancing, and traffic-shaping rules or exceptions. Please refer to the proprietary documentation included with the device for an in-depth walkthrough of its local GUI/ admin portal.

In most dual-WAN scenarios, the connection supplied by the 6300-CX is best leveraged as the backup WAN interface. Its embedded cellular modem allows network administrators to run an LTE backup via an Ethernet cable as opposed to a USB solution, which preserves the full security functionality of most firewalls. (DPI-SSL inspection, for example, is not guaranteed when failover connectivity is provided by a USB-connected modem.) It is important to note that IP Passthrough must be enabled on the 6300, which is the device's default setting, to ensure that the dedicated firewall or router is able to properly control how Internet traffic is being routed. This configuration and other administrative settings can be handled remotely by logging into Accelerated View™, a centralized system for network administration that allows for web-based monitoring, management, reporting, and alerts on all Accelerated devices.

NOTE: When integrating cellular failover into existing infrastructure, it is critical to consider all factors in play. Business continuity solutions must be as reliable as they are cost-effective to mitigate the impact of network outages. Firewalls and similar appliances have many supplemental features that allow for advanced control over how data flows between the two WAN connections, but the nature of mobile data plans may not be conducive toward enabling all of these settings. Load balancing, for instance, would consume additional data so it is important to stay aware of any data caps or limitations (or at least assess the cost of exceeding them). Similarly, customizing the parameters for failback the process of switching back to the primary WAN once its connectivity is restored can optimize dual-WAN configurations by actively checking the status of both uplinks, minimizing the data usage and response time for failover while maximizing continuity. Please refer to your cellular or internet service provider for additional information about available data plans.

6300-CX Quick List

1. Place LTE router for optimal signal strength
2. Connect Ethernet cable to available WAN port
3. Confirm solid blue (4G) or green (3G) LED for network status and device connectivity
4. Verify IP Passthrough is active (it is enabled by default for the 6300-CX)
5. Reference device documentation to proceed with dual-WAN configuration via local GUI
6. Test failover scenarios for business continuity

Configuration for Single-WAN Routers

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

The vast majority of residential broadband connections grant users Internet access using a router with a coaxial WAN interface, though Ethernet-based LAN ports can often be configured to route WAN traffic as well. Pairing the Accelerated 6300-CX with a traditional, single-WAN router facilitates the best redundancy possible by allowing for cellular data (4G LTE) to bypass physical infrastructure (the coaxial-based broadband connection) and provide WAN connectivity should the primary uplink fail.

Accelerated Concepts extensively tests the 6300-CX LTE Router to ensure its interoperability with a wide variety of network appliances, including equipment provided by Frontier, Spectrum, and many other ISPs. The solution outlined in this document relies primarily upon settings

controlled by the 6300-CX, minimizing any configuration requirements for the single-WAN router (to promote universal compatibility with most broadband networks).

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of the device(s) as well as the date of testing.

Date	6300-CX FIrmware
12/2016	16.11.142

Caveats

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), available bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

The processes described herein assume the following:

- Broadband router with a single RJ45 (Ethernet) WAN interface
- Available LAN ports
- Administrative access to the broadband router's local GUI

While administration portals may vary greatly, depending on the make and model of the router being utilized, the underlying configuration remains the same.

NOTE: If additional LAN ports are necessary for practical use, a switch can be introduced without requiring additional configuration. Connect the switch to an available LAN port and proceed with the processes described herein.

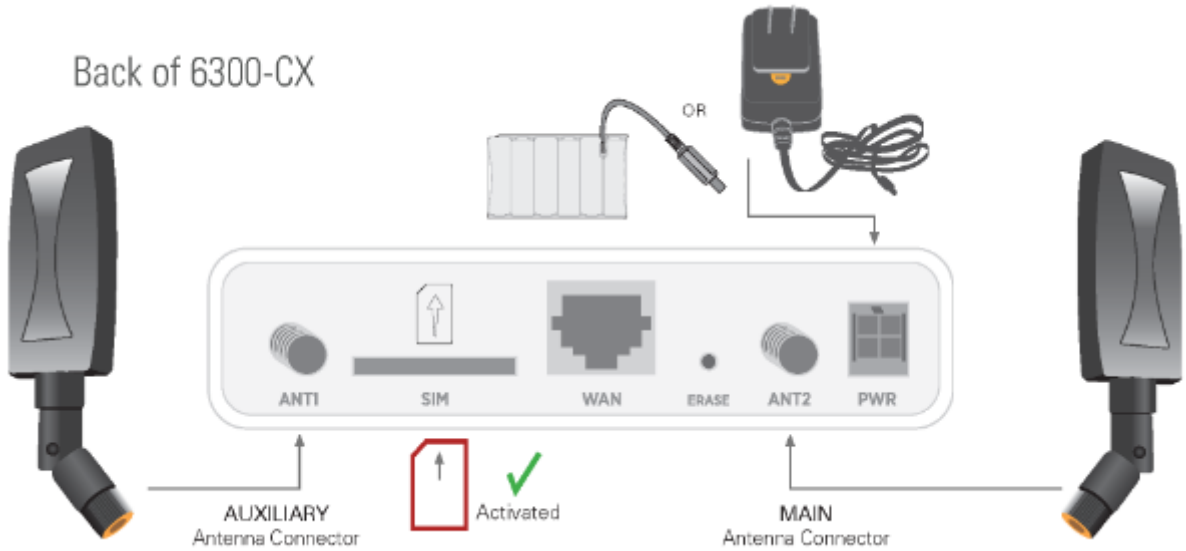
Accelerated 6300-CX LTE Router Setup

Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the “Site Survey” section.
4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP Passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.

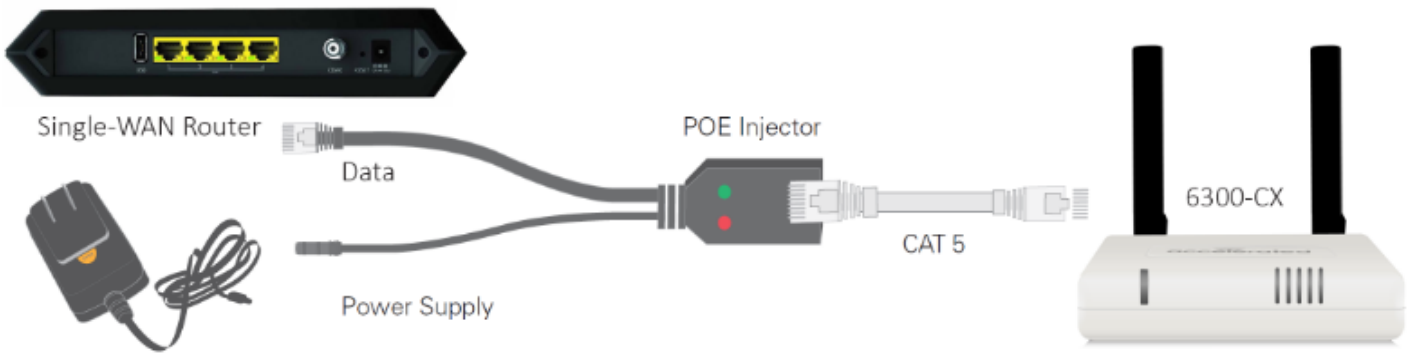
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator** on the front of the device. Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Powering Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the broadband router.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)



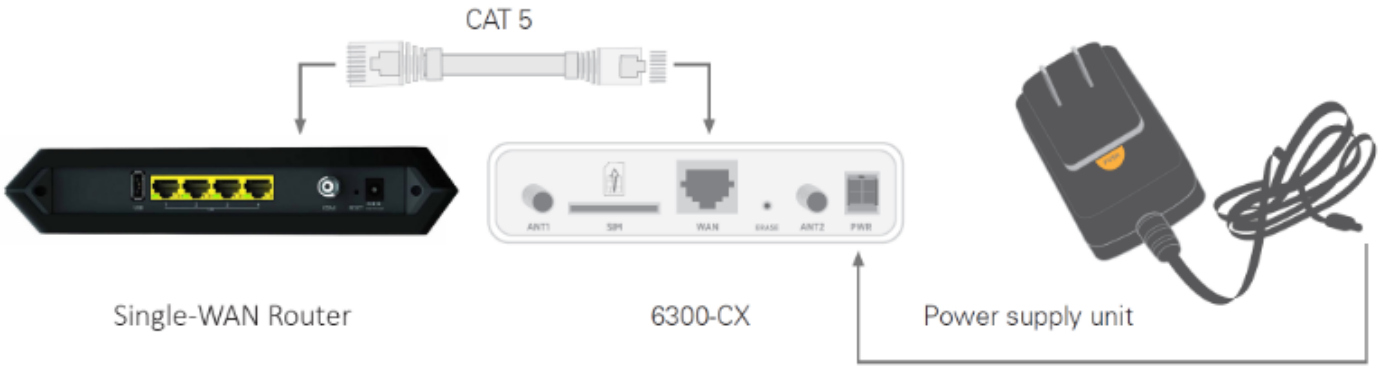
Direct Power Installation – Powering Option #2

If you plan to collocate the 6300-CX with the MX device, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

NOTE: A single-WAN router will not delineate between primary and secondary ports. This will be handled during device configuration.

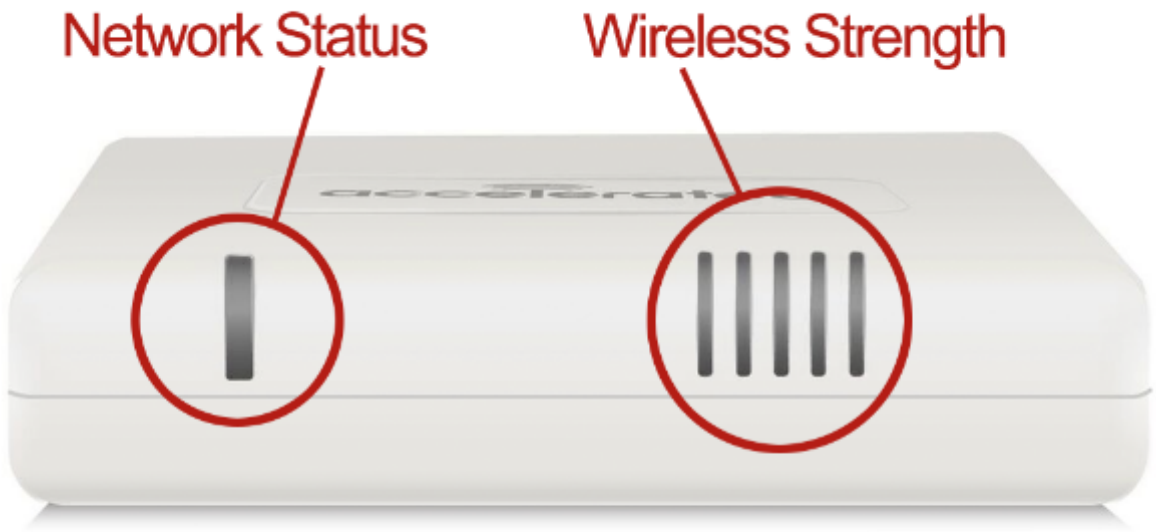
1. Use an Ethernet cable to connect the 6300-CX to the router using the primary WAN port (to use the cellular network as the primary connection) or the secondary WAN port (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the cellular network signal strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit accelerated.com for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

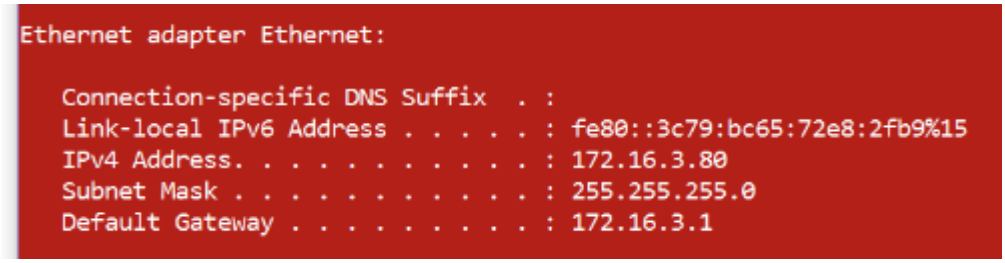
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

Single-WAN Router Configuration with the 6300-CX

Disable DHCP for the Single-WAN Router

Dynamic Host Configuration Protocol (DHCP) allows routers to assign IP addresses on a first-come, first-serve basis while also ensuring each device has a unique IP. Thanks to DHCP, routers can grant simultaneous Internet access to multiple devices using a single WAN interface. It is strongly encouraged that networks have only one active DHCP server at any given time or else overlapping IP addresses may be assigned to connected equipment. When integrating the Accelerated 6300-CX LTE Router as part of a single-WAN solution, the 6300-CX can act as the DHCP server even while using the wireline connection as its primary WAN route. Most of this configuration occurs within the CX's administration portal though the first step is always making sure the broadband router's DHCP services are disabled within the local GUI.

Most routers are configured by browsing to the IP address listed as the **Default Gateway** under ipconfig.



Proprietary GUIs will vary depending on the make and model of the single-WAN router, though the overall configuration remains the same. First, identify where the TCP/IP or LAN settings are located, and then navigate to the DHCP properties. These options are sometimes included as part of the device's "advanced" functionality and may not be directly accessible until advanced configuration is enabled. Note that devices connected to the router will lose Internet access after DHCP is disabled until the 6300-CX is configured per the steps outlined in the next section. The router's local GUI may take a minute or two to refresh as its DHCP settings are updated.

Please refer to the documentation included with the single-WAN router for a walkthrough of its configuration menu.

Step-by-Step Guidance: Disabling DHCP for the Single-WAN Router

1. Using a web browser, navigate to the single-WAN router's local GUI. This is most often the same address as the **Default Gateway**.
2. Identify the menu option that houses TCP/IP or LAN settings.
3. Disable the router's DHCP-Server functionality.
4. Finalize the configuration by clicking the "apply" or "save" button.
5. Wait for the device to reboot before continuing.

NOTE: Without DHCP enabled, the router will reboot and can still be reached via the local GUI through connected devices will no longer receive an IP address automatically (until the 6300-CX is configured per this document).

Enable Router Mode on the Accelerated 6300-CX

With DHCP routing disabled on the single-WAN device, the Accelerated 6300-CX must be configured to take over the assignment of IP addresses. It cannot do so, however, until IP Passthrough is disabled on the Accelerated device. Reconfiguring the 6300-CX in this manner places the CX in "Router Mode." The settings outlined below should be applied from the Configuration tab of Accelerated View™ although local administration is also possible if the need arises.

Please refer to the 6300-CX User Manual for an in-depth walkthrough of both remote and local administration.

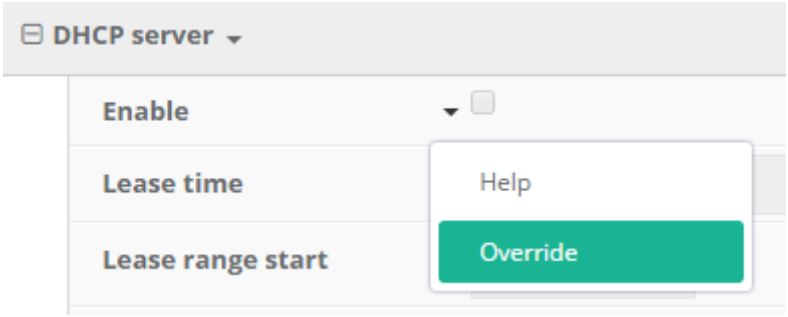
Step-by-Step Guidance: Enable Router Mode on the 6300-CX

1. Sign in to Accelerated View and locate the 6300-CX by entering its **MAC address** in the **Search** field. The MAC address is a 12-character code included on the 6300-CX's bottom label.
2. Click on link in the **MAC** column to bring up the device's profile.
3. Navigate to the **Configuration** tab.
4. When configuring Accelerated devices, it is best to utilize **Group Configuration** profiles so that settings can be centrally stored and later applied to additional devices. Click the **Edit group configuration** link to proceed with the device setup.
5. **Settings** in Accelerated View are categorized and nested according to their scope of configuration. The "-->" symbol denotes nested categories. **Network --> Interfaces --> LAN**, for example, points to the **LAN** menu nested inside the **Interfaces** section within the **Network** category:
6. **Modem --> Passthrough:** deselect the **Enable** checkbox
7. **Network --> Interfaces --> LAN:** select the **Enable** checkbox
8. **Network --> Interfaces --> LAN --> IPv4:** set **Interface type** to **Static IP address**
9. **Network --> Interfaces --> LAN --> IPv4:** specify the **Address** of the LAN DHCP network as X.X.X.65/26 *
10. **Network --> Interfaces --> LAN --> IPv4 --> DHCP server:** select the **Enable** checkbox and set the **lease range** to **start** at 66 and **end** at 126
11. **Network --> Interfaces --> LAN --> IPv4 --> DNS servers:** enter a pair of DNS servers to use by clicking the **Add** button; 8.8.8.8 and 4.2.2.4 are suitable defaults if no specific DNS address is preferred
12. Click **Update** to finalize the new settings.
13. To apply the new settings immediately, reboot the CX or reference the step-by-step guidance for issuing remote commands.

*The first three values of the IP address MUST match those belonging to the single-WAN router's default gateway. The fourth value corresponds to the lease range; use the values provided above unless otherwise notified.

Devices sync with Accelerated View once a day by default; pending configuration updates will apply at this time.

Changes made to a group configuration are applied to ALL devices assigned to that group. To adjust settings for individual devices, select the **Override** button from the pull-down menu situated next to each field/ setting in question and make any necessary changes without editing the group config.



Add a New WAN Interface

The Accelerated 6300-CX can be configured to interface with additional uplinks outside of the connectivity established by its cellular modem. When deployed with a single-WAN broadband modem, the 6300-CX is capable of acting as the network's DHCP server while still leveraging the coaxial WAN interface as its primary means of Internet access. The cellular connection then serves as a failover uplink that only becomes active if the broadband connection becomes unavailable. This functionality requires the creation of a new WAN interface in Accelerated View™.

Please refer to the 6300-CX User Manual for an in-depth walkthrough of both remote and local administration.

Step-by-Step Guidance: Adding a New WAN Interface

1. Sign in to Accelerated View and locate the 6300-CX by entering its **MAC address** in the **Search** field.
2. Click on link in the **MAC** column to bring up the device's profile.
3. Navigate to the **Configuration** tab.
4. When configuring Accelerated devices, it is best to utilize **Group Configuration** profiles so that settings can be centrally stored and later applied to additional devices. Click the **Edit group configuration** link to proceed with the device setup.
5. **Settings** in Accelerated View are categorized and nested according to their scope of configuration. To create a new interface, first expand the **Network** menu and then expand the **Interface** section.

6. Use the **Add Interface** field to enter a name for the connection coming from the single-WAN router (e.g. “Primary WAN”).
7. Set the **Zone** to “External” and the **Device** to “LAN” using the corresponding menu selections.
8. The **Default gateway** will be the same IP address used to connect to the single-WAN router (when disabling DHCP on the device as explained on page 6 of this document).
9. In the **Address** field, enter X.X.X.2/27*
10. Set the **Metric** to 1. The 6300-CX attempts to connect to the Internet using its active WAN uplink with the lowest metric value first before failing over to the cellular connection, which has a higher metric.
11. Click **Update** to finalize the new settings.
12. To apply the new settings immediately, reboot the CX or reference the step-by-step guidance for issuing remote commands.

*The first three values of the IP address **MUST** match those belonging to the single-WAN router’s default gateway. The fourth value corresponds to the lease range; use the values provided above unless otherwise notified.

Devices sync with Accelerated View once a day by default; pending configuration updates will apply at this time.

Changes made to a group configuration are applied to ALL devices assigned to that group. To adjust settings for individual devices, select the **Override** button from the pull-down menu situated next to each field/ setting in question and make any necessary changes without editing the group config.

Initialize Active Recovery

Active Recovery allows the 6300-CX to recognize when an interface has reconnected to the Internet in order to failback to the intended primary uplink. Connections can be monitored by a handful of preconfigured testing conditions, though the most common choice is to perform a ping test. Once the router recognizes that connectivity has been restored, based off of user-defined success conditions, the device can be configured to automatically restart the interface. The 6300-CX will then utilize the active WAN connection with the lowest metric value, per

Please refer to the 6300-CX User Manual for an in-depth walkthrough of both remote and local administration.

Step-by-Step Guidance: Initializing Active Recovery

1. Sign in to Accelerated View and locate the 6300-CX by entering its **MAC address** in the **Search** field.

2. Click on link in the **MAC** column to bring up the device's profile.
3. Navigate to the **Configuration** tab.
4. When configuring Accelerated devices, it is best to utilize **Group Configuration** profiles so that settings can be centrally stored and later applied to additional devices. Click the **Edit group configuration** link to proceed with the device setup.
5. **Settings** in Accelerated View are categorized and nested according to their scope of configuration. To create a new interface, first expand the **Network** menu and then expand the **Interface** section.
6. Expand the **WAN** interface (created per the previous page of this document) and expand **Active Recovery**.
7. Select the **Enable** and **Restart interface** checkboxes both must be checked.
8. Set the **Interval** to 1m or however often the 6300-CX should check on the interface.
9. Adjust the **Success condition** and its corresponding **Attempts** and **Response timeout** if necessary.
10. Expand **Test targets** and click the **Add** button.
11. Set the **Test type** to "Ping test" and point the **Ping host** to 8.8.8.8
12. Click the **Add** button.
13. Set the **Test type** to "DNS Test" and point the **DNS server** to 8.8.4.4 - **Note:** 2 different tests are recommended to prevent false positives.
14. Click **Update** to finalize the new settings.
15. To apply the new settings immediately, reboot the CX or reference the step-by-step guidance for issuing remote commands.

*The first three values of the IP address MUST match those belonging to the single-WAN router's default gateway. The fourth value corresponds to the lease range; use the values provided above unless otherwise notified.

NOTE: Best practices dictate that redundant tests (with divergent failure conditions) will be the best way to ensure proper connectivity monitoring/active recovery. With only a single test type, false positives could be reported.

Devices sync with Accelerated View once a day by default; pending configuration updates will apply at this time.

Changes made to a group configuration are applied to ALL devices assigned to that group. To adjust settings for individual devices, select the **Override** button from the pull-down menu situated next to each field/ setting in question and make any necessary changes without editing the group config.

Configuration for AT&T VPN Gateways

Overview

The Accelerated 6300-CX LTE Router provides a reliable, high-speed cellular connection that is compatible with existing wireline infrastructure. While its 4G LTE speeds are capable of operating as a primary WAN uplink, the 6300-CX can also be configured as a backup. This network redundancy solution delivers the ultimate flexibility to minimize expenses when it comes time for upgrading equipment to the latest wireless standards.

Business continuity depends on the seamless integration of failover-connectivity solutions to prevent service interruptions. Now more than ever, contingency networks play a strategic role in sustaining business operations. Unplanned outages can cost companies significant time and money, frustrating employees and clients alike, which creates a negative perception that is difficult to overcome.

Cellular data (4G LTE) bypasses wireline Internet service providers (ISPs) to facilitate the best redundancy possible. Additionally, in some situations it may be a challenge to acquire access to wired circuits or an event may call for temporary online access. For these reasons, Accelerated Concepts designed its 6300-CX LTE router to offer comprehensive, flexible cellular network integrations for small businesses, retail, government, remote sites, and branch offices.

The AT&T U110 is an eighth-generation AT&T VPN Gateway that has been developed by AT&T since 2001. As a customer premises equipment (CPE) hardware device, it serves as a centrally managed firewall, router, VPN device, and VLAN switch that acts as a fully managed security device. Networks that leverage the U110 are protected from the Internet while still having secure access to an enterprise environment through a secure IPSec VPN tunnel that supports the highest level of encryption (256-bit AES).

Leveraging the 6300-CX's flexible mounting options, the Accelerated LTE router can be deployed in a location with strong cellular reception and deliver LTE connectivity to the VPN Gateway via Ethernet cabling. Power-over-Ethernet extends the CX's reach to optimize signal strength without necessitating the relocation of the U110 or other client appliances.

Please refer to the AT&T VPN Gateway Datasheets for more information.

(Access to the URL linked above is private. Reach out to your AT&T rep for documentation if the link doesn't work.)

Interoperability Matrix

This section covers interoperability information of the hardware tested for this solution. It includes the firmware versions of both devices as well as the date of testing.

Date	U110 Firmware	6300-CX Firmware
05/2017	6.4.X	17.2.22

Caveats

IMPORTANT: U110s distributed for use in the United States are outfitted with an embedded LTE modem. This cellular connection may be leveraged for primary or backup Internet access, though the U110 can only be configured to recognize 2 WAN connections simultaneously. Interoperability with the 6300-CX implies that the VPN Gateway has been staged for single-WAN connectivity (either wireline or embedded cellular). Please refer to the U110 Install Guide for setup guidance.

The delivery of wireless services varies depending on the carrier and may lead to differences in the area of coverage, type of service (3G, 4G, LTE, etc.), availability of bandwidth, and IP address designation (Private or Public) among other factors. The interoperability test designed for this solution guide included LTE service, maximum coverage availability, and a public IP address assigned to each device.

Using the 6300-CX as a secondary connection assumes that a primary WAN is available, either via an Ethernet cable plugged into the WAN 1 port on the AT&T VPN Gateway or its embedded cellular connection. Connect the 6300-CX's Ethernet cable to port WAN 2 and proceed to the configuration described herein.

Accelerated 6300-CX LTE Router Setup

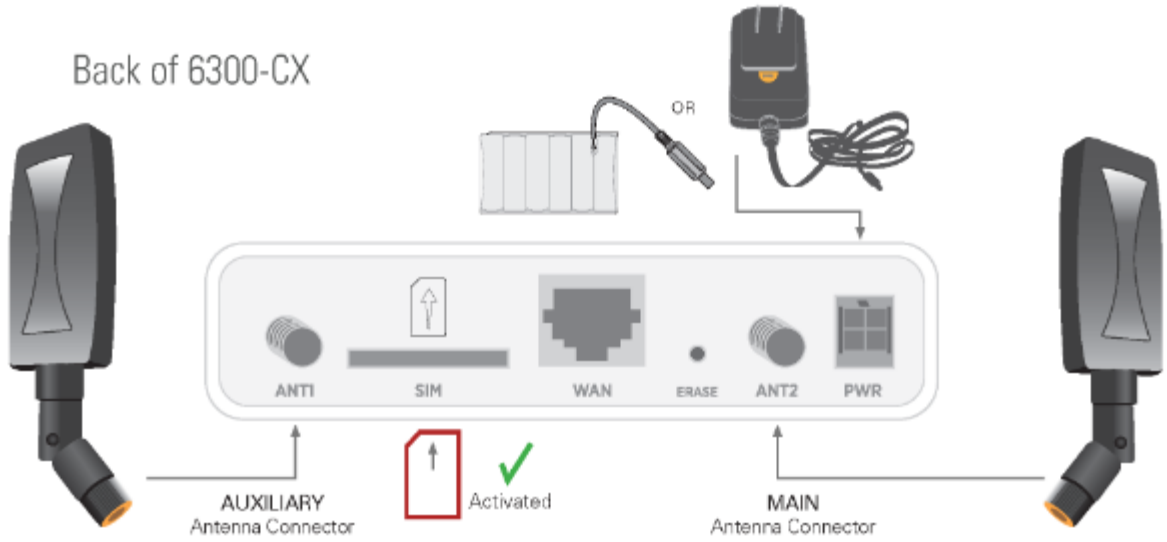
Initial Setup

Affix both antennas to the router and insert an activated SIM card before deploying the device. Be sure to select a location with optimal signal strength. For detailed instruction, refer to the tables that follow. Subsequent sections will outline site selection, powering options, and other device functionality.

Step-by-Step Guidance: Initial Setup

1. Insert the activated 2FF SIM card provided by your cellular network operator (putting the cut corner in first with metal contacts facing down). The card clicks into place when completely inserted.
2. Attach the two included antennas; both should be installed for optimal operation. Do this by gripping the metal connector section with your thumb and forefinger, tightening until secure. Do not tighten the antenna by holding any part of the plastic antenna housing.
3. To determine the optimal location for the 6300-CX, please see the "Site Survey" section.

4. Refer to the section(s) for Remote or Direct Power Installations when ready to connect the 6300-CX to the permanent power supply unit.
5. The 6300-CX uses DHCP with IP passthrough by default, which satisfies the setup requirements for most environments. If required, please use Accelerated View™ or the 6300-CX local GUI to configure the 6300-CX for router mode.



Site Survey

If you are unsure of the available cellular signal strength, or are choosing between several locations, please follow the instructions to identify the ideal installation site.

Step-by-Step Guidance: Site Survey

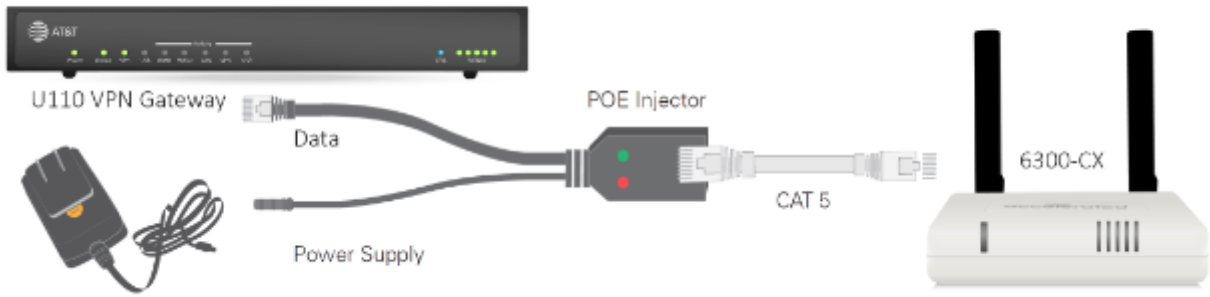
1. After following steps 1 and 2 in the “Initial Setup” section, connect the battery pack to temporarily power the Accelerated 6300-CX. The charge lasts two to four hours – it is not rechargeable and should be properly disposed of after use.
2. Move the 6300-CX to different locations within your site to determine the best compromise between signal strength and installation constraints. Since cellular signal strength may fluctuate, it is important to **wait at each location for 1 minute while observing the signal strength indicator on the front of the device.** Minimum cellular signal strength for operation is 2 bars (3+ is preferred).
3. After determining the optimal location, remove the battery pack and connect the main power supply unit or Ethernet cable connected to the PoE injector (per the power option outlined below).

Remote Power Installation – Power Option #1

The included Power-over-Ethernet (PoE) injector allows the device to be positioned away from power outlets to simplify its installation needs. The adaptor consolidates the DC power and Ethernet connections so that both can be run to the 6300-CX via a single Ethernet cable. Distances of 300 ft have been tested on CAT6 and 250 ft on CAT5e. Note that cable conditions and the number of splices will impact actual distance.

Step-by-Step Guidance: Remote Power Installation

1. Plug the 6300-CX's power supply unit (PSU) into an AC power outlet.
2. Connect the end of the PSU into the DC input (4 pin connector) of the PoE injector.
3. Insert the male RJ45 connector of the PoE injector cable into the VPN Gateway.
4. Connect an Ethernet cable from the RJ45 socket on the PoE injector cable to the Ethernet port of the 6300-CX. (See diagram.)

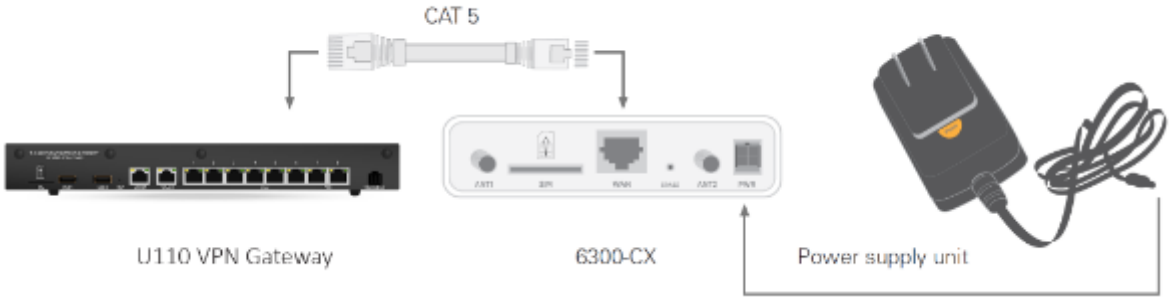


Direct Power Installation – Power Option #2

If you plan to collocate the 6300-CX with the VPN gateway, you can directly power the 6300-CX without the PoE cable.

Step-by-Step Guidance: Direct Power Installation

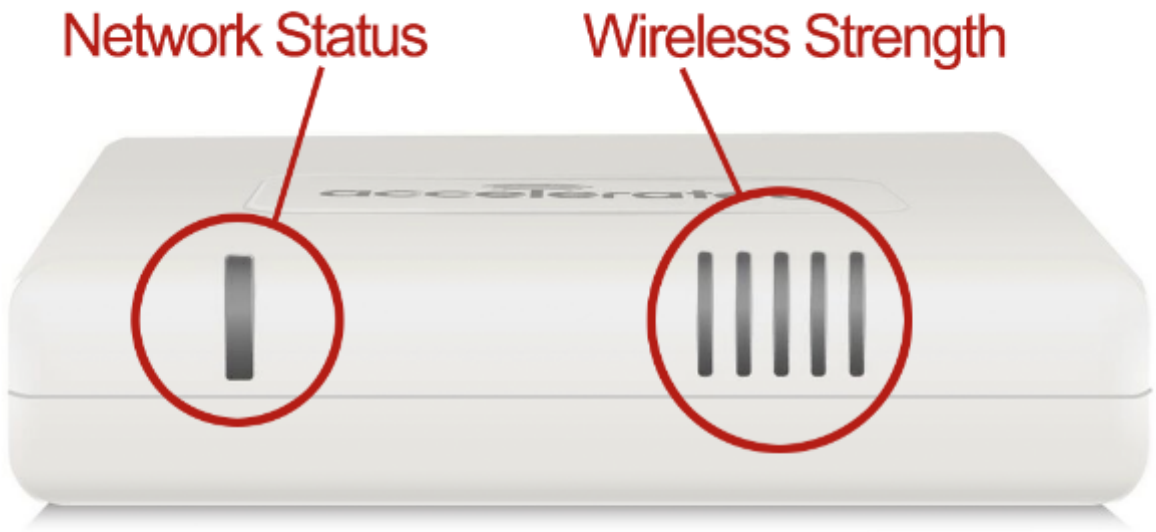
1. Use an Ethernet cable to connect the 6300-CX to the security appliance using port Internet 1 (to use the cellular network as the primary connection) or port Internet 2 (to configure a failover).
2. Plug the 6300-CX power supply unit (PSU) into an AC power outlet.
3. Connect the PSU into the 4-pin power connector of the 6300-CX. (See diagram.)



Understanding the 6300-CX LEDs

Once power has been established, your device will initialize and attempt to connect to the network. Device initialization may take 30-60 seconds. Indicator lights on the **Wireless Strength Indicator** show you the cellular network signal strength. The **Network Status Light** on the front left of the device displays connectivity information.

Please visit accelerated.com for additional information and troubleshooting tips.



Network Status LED

Solid Yellow
Initializing or starting up.

Flashing Yellow
In the process of connecting to the cellular network and to a device on its Ethernet port.

Flashing White
Has an Ethernet connection and is in the process of connecting to the cellular network.

Flashing Green
Connected to 2G or 3G and is in the process of connecting to a device on its Ethernet port (or nothing is connected to the port).

Solid Green
Connected to 2G or 3G and also has an Ethernet connection.

Flashing Blue
Connected to 4G LTE and in the process of connecting to a device on its Ethernet port.

Solid Blue
Connected to 4G LTE and also has an Ethernet connection.

Alternating Red/ Yellow
Upgrading firmware. **WARNING: DO NOT POWER OFF DURING FIRMWARE UPGRADE.**

Wireless Strength LEDs

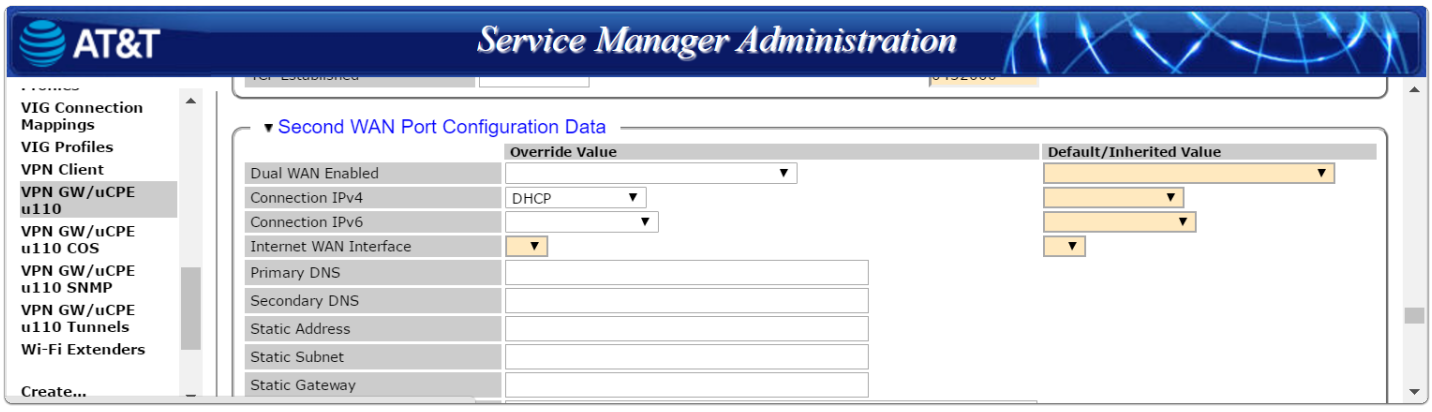
Signal Bars	Weighted dBm	Signal Strength %	Quality
	-113 to -99	0 - 23%	Bad
	-98 to -87	24 - 42%	Marginal
	-86 to -76	43 - 61%	OK
	-75 to -64	62 - 80%	Good
	-63 to -51	81 - 100%	Excellent

AT&T VPN Gateway Configuration with the 6300-CX

Cellular as Failover/ Backup WAN

After the 6300-CX is online with an activated cellular data plan, connect it to the WAN 2 port of the AT&T VPN Gateway via an Ethernet cable. The gateway is configured to recognize WAN 2 as a backup connection by default though additional settings must be enabled for optimal failover. These changes can be implemented using AT&T's Service Manager web-based administration GUI or via the x3270 terminal emulator, which offers a text-based user interface for managing devices.

Access to AT&T Service Manager Administration is [available at this URL](#).



Step-by-Step Guidance: DHCP Client Configuration

1. From the **Navigation Menu**, select **VPN GW/uCPE u110**.
2. Enter your device's **Account** and/ or **Device ID** and filter through available devices by clicking the **List AT&T VPN Gateways** button.
3. Select the intended **Device ID** to open its **Gateway Profile**.

4. Set **NAT-T Negotiation** to "Yes" using the corresponding pull-down menu.
5. Under the **Common Dial Settings** section, both **Initiate Dial Connection** and **Initiate VPN Backup Connection** should be set to "Persistent."
6. Scroll down to the **Second WAN Port Configuration Data** section and set the **Connection IPv4** pull-down menu to "DHCP."
7. Change the **WAN2 via Cell Extender** field to "NetBridge from Accelecon."
8. Enter "1410" for the **MTU Size**.

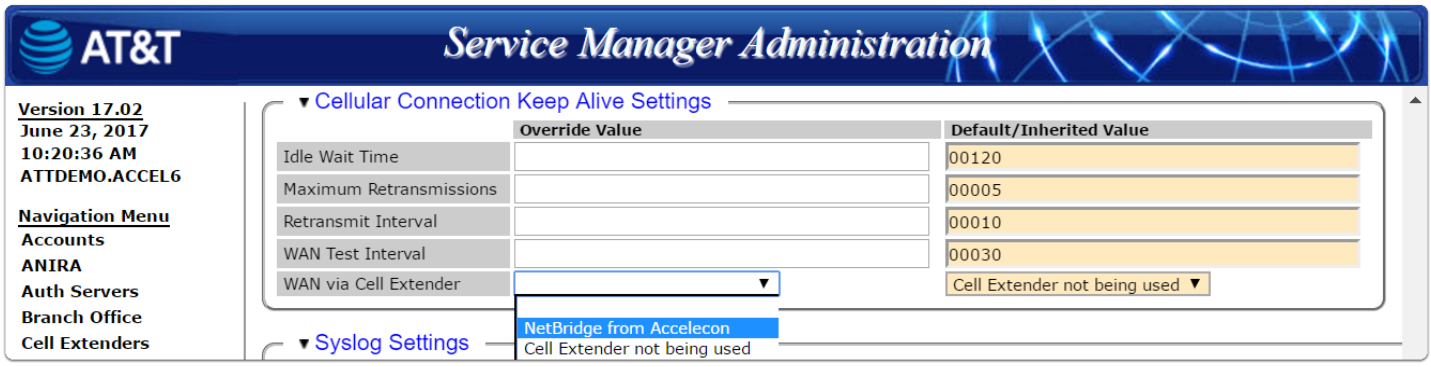
NOTE:*The last 8 fields of the **Second WAN Port Configuration Data** section establish the relevant keep-alive parameters used to establish failover intervals. These should never be changed unless Tier 4 support has been consulted.*

Cellular as Primary WAN

The back panel of the U110 features an array of LAN ports and two dedicated WAN interfaces. To utilize the 6300-CX's LTE Wireless WAN (WWAN) connectivity as the primary means of Internet access, connect the Accelerated LTE router to port WAN 1 on the VPN Gateway using an Ethernet cable. A solid blue light on the 6300-CX confirms that its 4G LTE modem is online and an Ethernet connection has been established with another device. Similarly, the U110's front panel features an Online indicator that will stay green to show that the device is connected to the Internet via the LTE router.

Please refer to the AT&T VPN Gateway Install Guides for an in-depth walkthrough.

(Access to the URL linked above is private. Reach out to your AT&T rep for documentation if the link doesn't work.)



Step-by-Step Guidance: Primary WWAN

1. From the **Navigation Menu**, select **VPN GW/uCPE u110**.
2. Enter your device's **Account** and/ or **Device ID** and filter through available devices by clicking the **List AT&T VPN Gateways** button.
3. Select the intended **Device ID** to open its **Gateway Profile**.

4. Set **NAT-T Negotiation** to “Yes” using the corresponding pull-down menu.
5. Enter “1410” for the **WAN MTU Size**
6. NOTE: *These fields are located under the **Basic Settings** section of the device administration portal.*
7. Under the **Cellular Connection Keep Alive Settings** section, change the **WAN via Cell Extender** field to “NetBridge from Accelcon.”

NOTE:*The first 4 fields of the **Cellular Connection Keep Alive Settings** section establish the relevant keep-alive parameters used to establish failover intervals. These should never be changed unless Tier 4 support has been consulted.*

Accelerated View Ports and URL Access

IP Address

128.136.167.120 with Ports (UDP: 123, 514 TCP: 443, 500/4500 IPsec)

URLs

time.accns.com; logs.accns.com; syslog.accns.com; certs.accns.com; configuration.accns.com; remote.accns.com

Optional IP

8.8.8.8 with UDP Port 53 – DNS backup and ping testing (customer can customize this value)

Data Usage Estimates

The 63xx LTE Routers are designed to be 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 Accelerated View™ 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 Accelerated View 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 Accelerated View 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

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 Accelerated 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 Accelerated for help)	IPSec disabled	2MB	Uses SMS on demand

Itemized Breakdown of Services via Accelerated View

Service/ Function	Status/ Interval	Usage per status/interval	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)

Signal Bars Explained

The cellular signal strength bars of Accelerated LTE routers 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.

Firewall Capabilities

Number of Supported Firewall Rules

There is no software-defined limit to the number of rules that may be created. A safe upper limit, due to potential hardware constraints, would be **25,000 lines**.

Encrypted Throughput Capacity

AES-128 was used for testing encrypted throughput on Accelerated LTE routers, yielding the following results:

	Download	Upload
CX Series	150 Mbps	50 Mbps
SR Series	100 Mbps	50 Mbps

Concurrent Sessions

Default settings allow **8,192 concurrent sessions** though this value can be adjusted via custom configuration.

The maximum is 65,536 -- though this assumes sessions are short lived and/ or low-bandwidth -- a good upper limit is 10,000.

New Sessions per Second

No limit exists in the software, though a safe upper limit would be **150** sessions.

Wildcard IP Support

Wildcard IPs are supported via **custom firewall rules** (iptables), which leverage CIDR networking to set up a range of IPs (e.g. 192.168.0.1/24).

FQDN Support

FQDN is supported via **custom firewall rules** (iptables).

However, the FQDN is resolved at the time of process/applying the firewall rule, not with each packet inspected. Meaning, if the IP of a domain changes, the firewall rule will not apply to the

new IP address. You would have to reload the firewall for the device to resolve the domain to the new IP. It is better to stick with IP addresses in firewall rules instead of FQDNs.

Sprint Activation

SIM Setup

Sprint grants devices access to their network using specific SIM cards that correspond to the LTE modem being used, as well as the category of that modem. Special attention should be paid to matching up the SIM card to the type of modem.

The Cat-3 Sierra MC7354 modem uses a USIM card and the Cat-6 Sierra MC7455 modem uses the ISIM card. The part number printed on the SIM card indicates its type (see chart below for reference).

The **6300-CX LTE Router** and **1002-CM03 Plug-in Modem** use the *Sierra MC7354* and the **1002-CM06 Plug-in Modem** uses the *Sierra MC7455*.

NOTE: It is not recommended to move an active Sprint SIM card between modems because the Sprint network may disconnect the connection due to a mismatch between the SIM and the device ID. SIMs should always be activated to the unique device being used. The ID used to identify the device is the IMEI, which should be printed on the device. If the MEID is required instead, this can be calculated by removing the last digit from the IMEI.

Accelerated products support the 2FF SIM standard.

MC7354 module's UICC cards (USIM)

	2FF	3FF
SKU	CZ2100LWR	CZ2102LWR
OEM Part No.	SIMGLW106R	SIMGLW206R
UPC	760494000091	760492013536

MC7455 module's UICC cards (ISIM)

	2FF	3FF
SKU	CZ2100LWQ	CZ2112LWQ
OEM Part No.	SIMGLW106Q	SIMGLW216Q
UPC	019962040740	019962040948

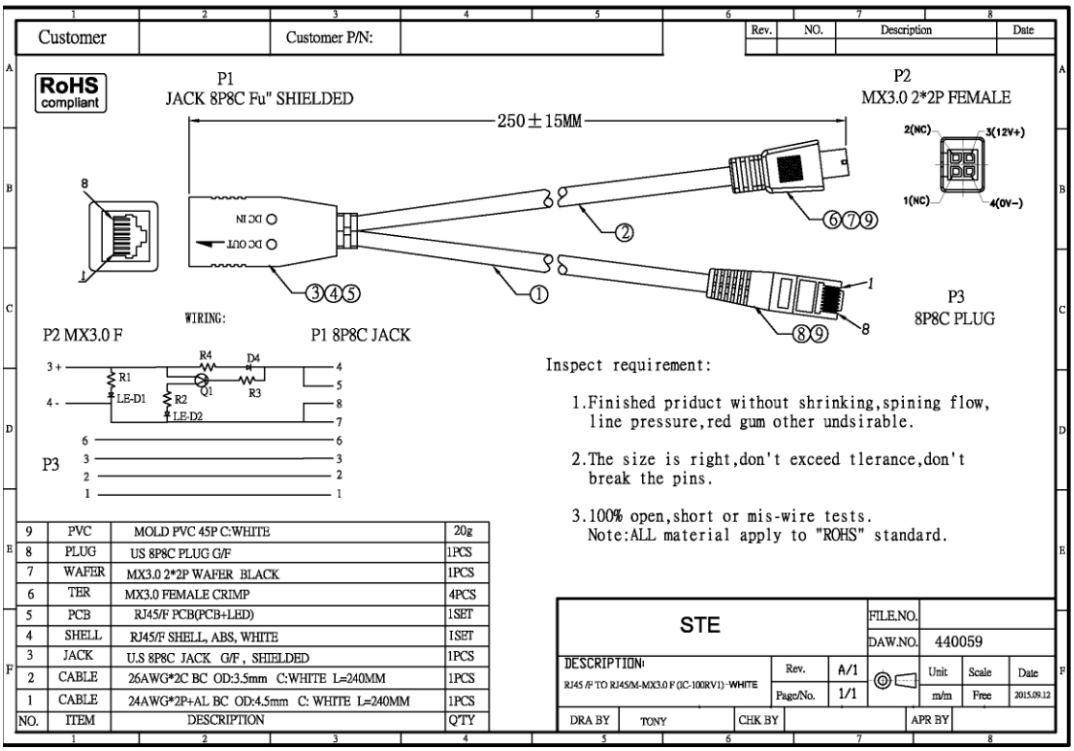
Default LTE APNs

r.ispsn

n.ispsn

x.ispsn

PoE Injector Schematic



6300-CX intermittent connectivity with static Verizon APNs [SOLVED]

Background

We've noticed a growing issue with some of our 6300-CX units that are connecting with Verizon SIM cards with static APNs (e.g. we01.vzwstatic, so01.vzwstatic, etc.). The problem is when bots or people on the internet try to attack the 6300-CX's passthrough IP, the 6300-CX is rejecting the attacks, which is good, but it's reject them with the wrong IP address, which Verizon doesn't like so they kill our cellular connection. The result is the 6300-CX's cellular connection will be bouncing up and down (evident by the fact that the LED on the 6300-CX goes from solid blue to flashing white, then solid blue for a few minutes and back to flashing white, rinse, repeat).

Solution

Firmware versions 17.2.22.5 or higher resolves the connectivity issues on the Verizon static APNs. You can use the following instructions to upgrade a 6300-CX or 6300-LX to the new 17.2.22.5 firmware:

https://accelerated.com/support/6300_CX/users_guide_web/#par-21

6300-CX provides intermittent connection to Cisco or Sonicwall Router [SOLVED]

Problem

Cisco or Sonicwall routers connected to the 6300-CX receive an IP address from the 6300-CX, but can only send packets for a few seconds before the connection drops.

Background

We've been running into this issue where 6300-CX units are sending out ARP requests with the default 192.168.210.1 IP address instaed of the gateway IP we get as part of the passthrough connection from the cellular network. I've encountered this issue while working with a Cisco Router and Sonicwall routers. In these cases, the routers would get a passthrough connection from the CX and work for a minute or so. However, when the CX sent an ARP request to the router to verify the IP and routes, the routers would not respond to the ARP request since the CX sent the ARP request with a source IP of 192.168.210.1. Since the routers weren't responding to the ARP request, the CX would not route packets to the router anymore, since it didn't know which interface/MAC to send those packets to.

Below are some links to articles I found from Sonicwall and Cisco as to why they don't respond to these ARP requests.

http://www.techrepublic.com/blog/smb-technologist/sonicwall-routers-and-dropped-arp-packets/

https://supportforums.cisco.com/document/100896/asa-843-arp-response-behavior-change

Solution

Firmware versions 17.5.108.6 or higher resolves the connectivity issues. The 6300-CX will use a gateway IP in the same subnet as the passthrough IP it gives to the Cisco/Sonicwall router for all ARP requests.

You can use the following instructions to upgrade a 6300-CX or 6300-LX to the new 17.5.108.6 firmware:

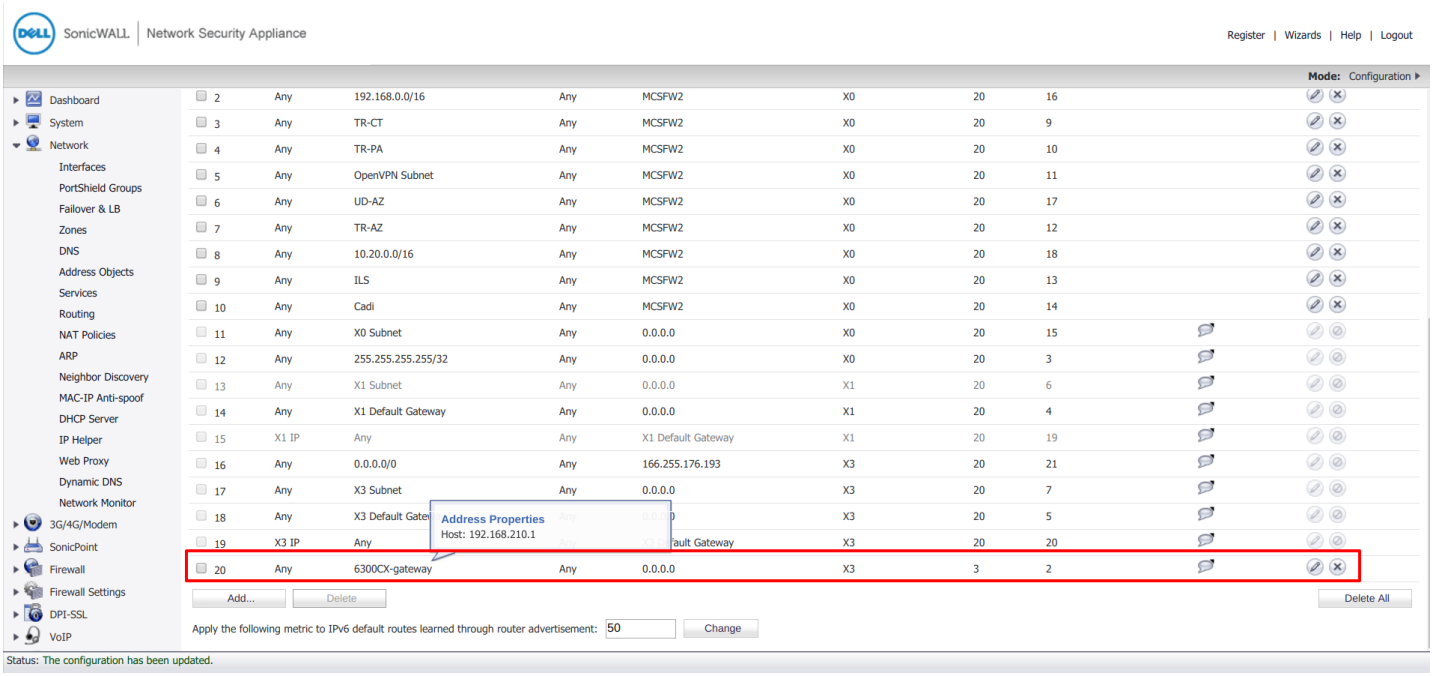
https://accelerated.com/support/6300_CX/users_guide_web/#par-21

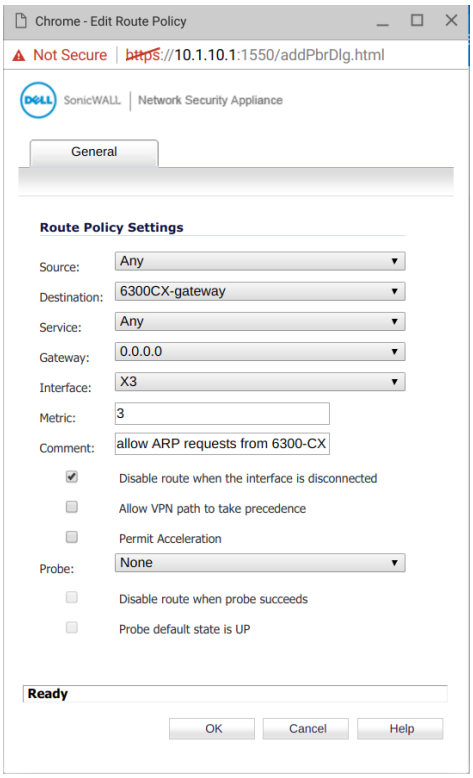
Manual Solution for Sonicwall

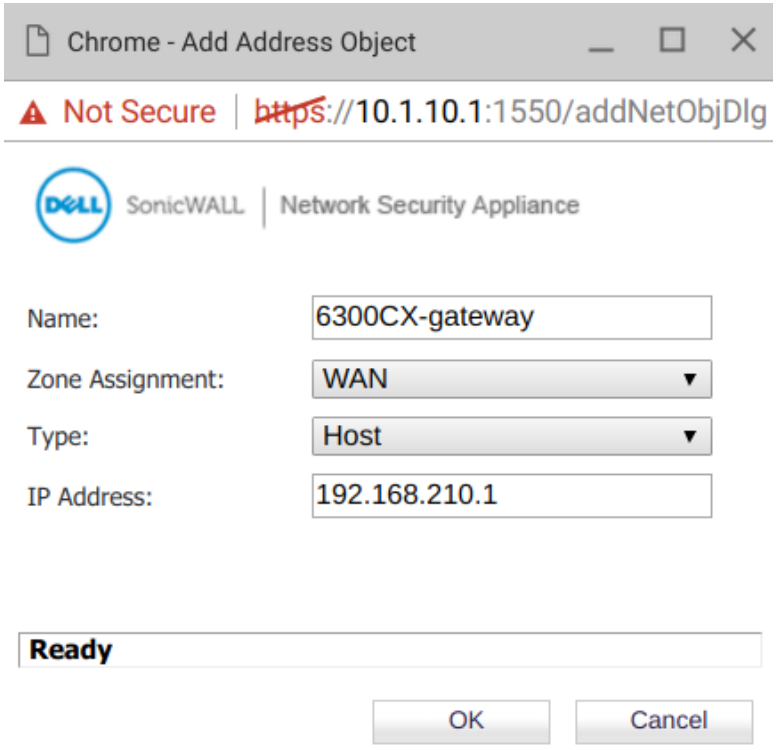
If you do not wish to upgrade the firmware on your 6300-CX, you can work around the issue by adding a manual route into the Sonicwall or Cisco router for the 192.168.210.1 address of the 6300-CX.

Follow the instructions here to resolve the issue by adding a route for 192.168.210.1 to the Sonicwall. I've also listed some screenshots below of when I added this route to a test TZ300 we have in the Tampa office

https://support.software.dell.com/sonicwall-e-class-nsa-series/kb/sw7587







I do not have an exact walkthough for adding a route for 192.168.210.1 to a Cisco router, but it should be very similar.

6300-CX provides invalid subnet for passthrough IP address [SOLVED]

Problem

The 6300-CX receives a passthrough IP address that is invalid with a /30 subnet, which prevents certain client routers connected to the 6300-CX from utilizing the passthrough connection due to an invalid gateway IP address.

Background

In firmware versions 16.7.49.12 or older, the 6300-CX always uses a /30 subnet in passthrough mode. However, not all cellular IP addresses are valid with a /30 subnet. As a result, the client device received a passthrough connection with a gateway IP address that did not match the ranger of the passthrough IP address and subnet.

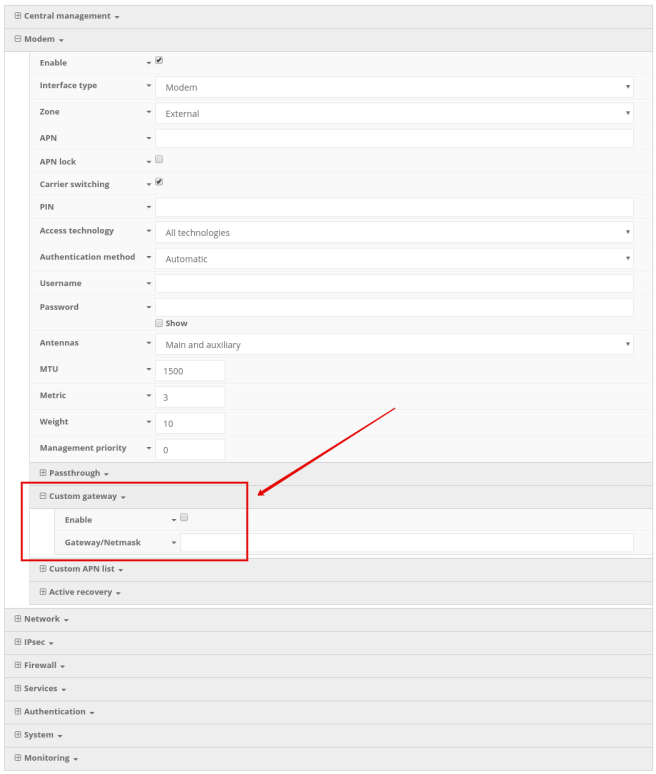
Solution

Firmware versions 16.10.32 or higher resolves the connectivity issues. The 6300-CX will automatically adjust the subnet if the /30 subnet does not match a valid range for the passthrough IP address. So as long as your 6300-CX devices are running firmware version 16.10.32 or higher, you should not see any subnet issues while in passthrough mode.

You can use the following instructions to upgrade a 6300-CX or 6300-LX to the new 16.10.32 firmware:

https://accelerated.com/support/6300_CX/users_guide_web/#par-21

Firmware versions 16.10.32 or higher also include extra options in the 6300-CX's configuration to manually set the subnet in passthrough mode, if desired. See screenshot below for reference.


Central management
Modem
Enable
Interface type
Modem
Zone
External
APN
APN lock
Carrier switching
PIN
Access technology
All technologies
Authentication method
Automatic
Username
Password
Show
Antennas
Main and auxiliary
MTU
1500
Metric
3
Weight
10
Management priority
0
Passthrough
Custom gateway
Enable
Gateway/Netmask
Custom APN list
Active recovery
Network
IPsec
Firewall
Services
Authentication
System
Monitoring

6300-CX only connects on 3G with Rogers SIM [SOLVED]

Problem

The 6300-CX is only able to establish a 3G cellular connection when using a Rogers SIM card.

Background

Rogers SIM cards with ICCIDs starting with 893027 were not properly recognized as Rogers SIMs by the 6300-CX device. As a result, the *Carrier Smart Select* tool would load the Generic carrier firmware onto the embedded modem inside the 6300-CX instead of the Rogers-specific carrier firmware. The generic carrier firmware only provides a 3G connection on the Rogers cellular network.

Solution

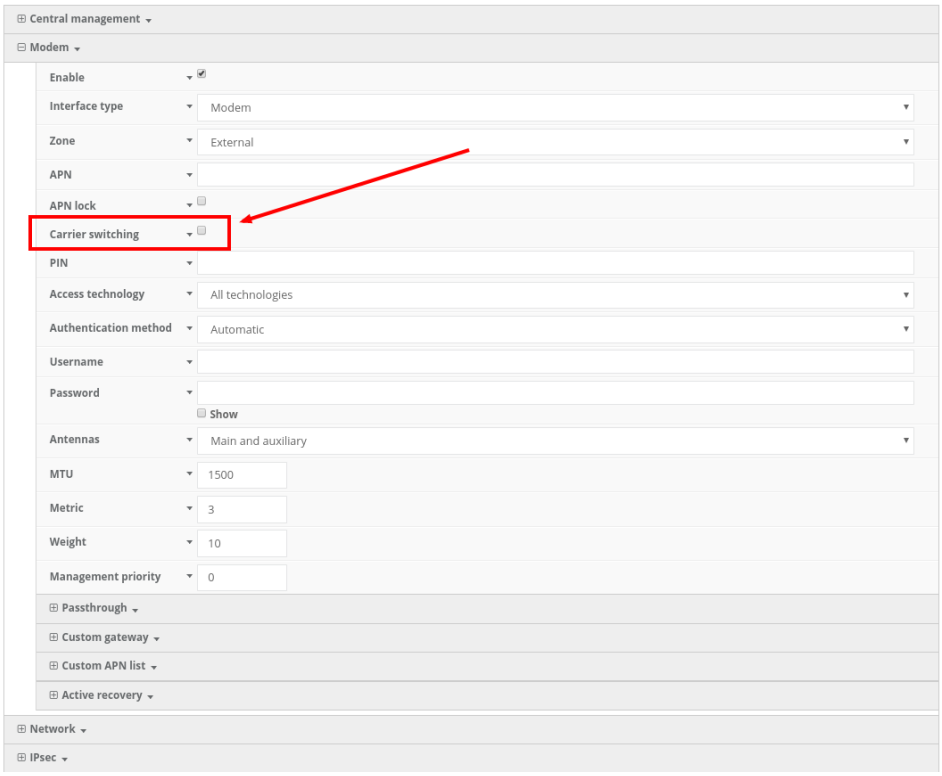
Firmware versions 17.8.128.24 or higher resolves the connectivity issues. You can use the following instructions to upgrade the 63xx-series router to the new 17.8.128.24 firmware:

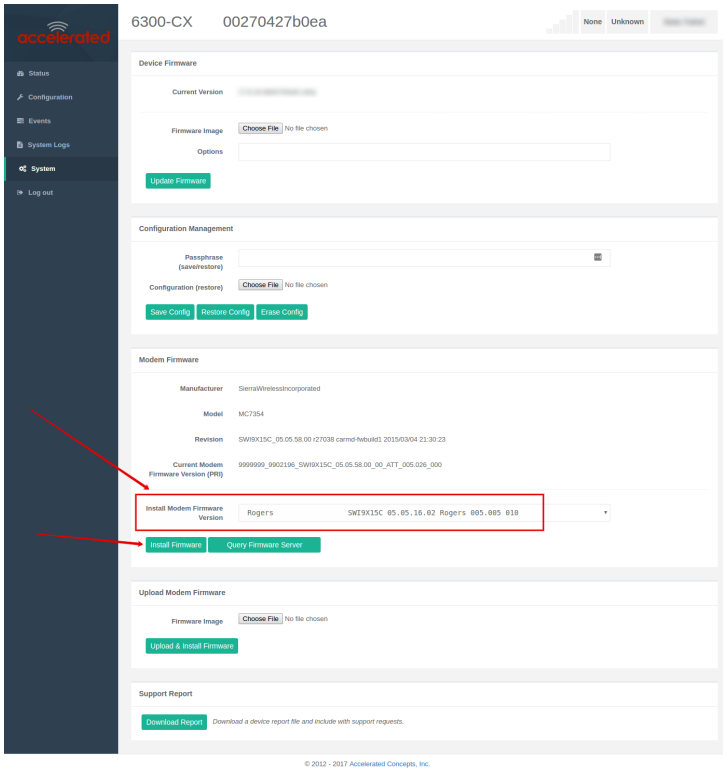
http://kb.accelerated.com/m/67492/l/742488-advanced-configuration-using-accelerated-view#upgrading_firmware

Manual Solution

Users can lock the 6300-CX LTE router to use the Rogers-specific carrier firmware. This will allow the 6300-CX to connect on the Rogers LTE network. To implement this manual solution:

1. Update the configuration profile of the Accelerated 6300-CX to disable the check-box under *Modem -> Carrier switching*.
2. Login to the local web UI of the 6300-CX, and access the *System* page. Use the drop-down in the *Modem firmware* section to select *Rogers,* and click *Install firmware*.


Central management
Modem
Enable
Interface type
Modem
Zone
External
APN
APN lock
Carrier switching
PIN
Access technology
All technologies
Authentication method
Automatic
Username
Password
Show
Antennas
Main and auxiliary
MTU
1500
Metric
3
Weight
10
Management priority
0
Passthrough
Custom gateway
Custom APN list
Active recovery
Network
IPsec


6300-CX
00270427b0ea
Status
Configuration
Events
System Logs
System
Log out
Device Firmware
Current Version
Firmware Image
Choose File
No file chosen
Options
Update Firmware
Configuration Management
Passphrase (save/restore)
Configuration (restore)
Save Config
Restore Config
Erase Config
Modem Firmware
Manufacturer
SierraWirelessIncorporated
Model
MC7354
Revision
Current Modem Firmware Version (PRI)
Install Modem Firmware Version
Rogers
SWI9X15C 05.05.16.02 Rogers 005.005 010
Install Firmware
Query Firmware Server
Upload Modem Firmware
Upload & Install Firmware
Support Report
Download Report
Download a device report file and include with support requests.
© 2012 - 2017 Accelerated Concepts, Inc.

Verizon SIM with static APN registers but doesn't connect [SOLVED]

Problem

A newly activated Verizon SIM with a static APN (e.g. ne01.vzwstatic) is inserted into a 63xx-series router. The 63xx-series router is able to detect the SIM and seeing an available Verizon network, but the 63xx-series router is unable to establish a cellular connection. The LED behavior on the front of the 63xx-series router will be a flashing white status/LTE LED, and intermittent 5 bars of signal strength.

Background

It can sometimes take longer than the 63xx-series router anticipates for the Verizon SIM to finish its registration process on the Verizon network. As a result, the 63xx-seris router tries establishing a cellular connection before this SIM finishes registering, which results in a failed connection. The 63xx-series router interprets this failed connection as it not using the correct APN, so it resorts to its fallback list of APNs to try alternate Verizon APNs with the SIM. Since the correct APN was already tried, this fallback list of APNs will try APNs that are not provisioned with the SIM. The result is the 63xx-series router gets stuck trying a fallback list of APNs, of which none will work with the given SIM.

Solution

Firmware versions 17.8.128.37 or higher resolves the connectivity issues. You can use the following instructions to upgrade the 63xx-series router to the new 17.8.128.37 firmware:

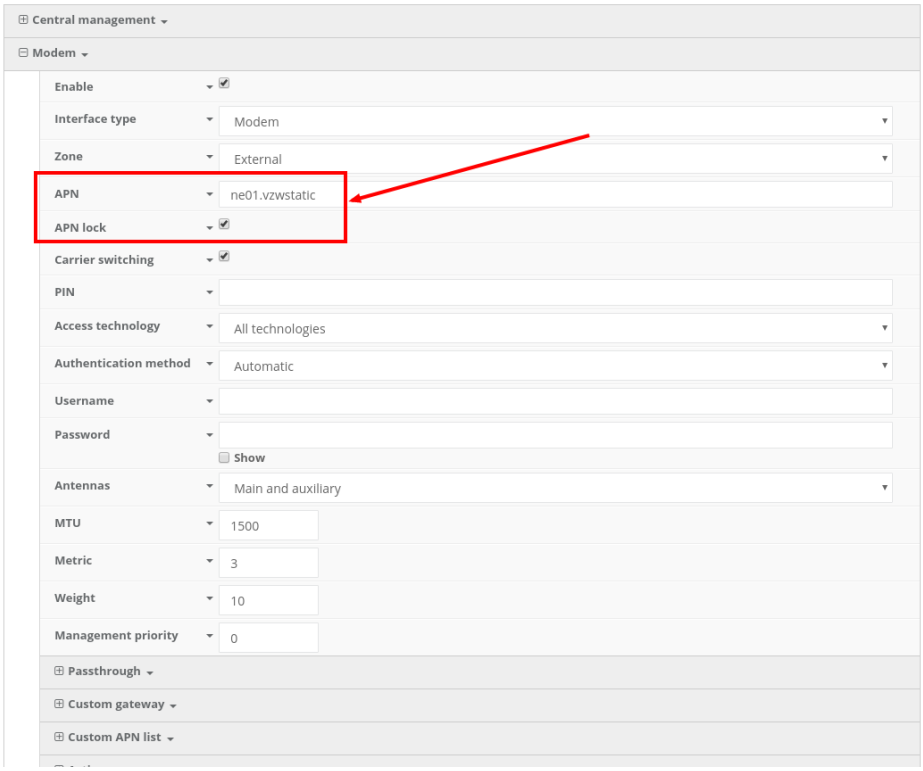
http://kb.accelerated.com/m/67105/l/729960-getting-started-with-accelerated-view#UpgradingFirmware

Manual Solution

Users can lock the 63xx-series router to keep trying the same APN. This allows the 63xx-series router to retry the same APN that the SIM card is provisioned with. Even if the 63xx-series router cannot establish a cellular connection with the SIM initially, it will keep trying with the same APN until it connects.

To implement this manual solution, update the configuration profile of the Accelerated 63xx-series router with the following configuration changes:

1. In ***Modem -> APN***, set the appropriate static APN (e.g. *ne01.vzwstatic*).
2. Enable the ***Modem -> APN lock*** checkbox.


Central management
Modem
Enable
Interface type
Modem
Zone
External
APN
ne01.vzwstatic
APN lock
Carrier switching
PIN
Access technology
All technologies
Authentication method
Automatic
Username
Password
Show
Antennas
Main and auxiliary
MTU
1500
Metric
3
Weight
10
Management priority
0
Passthrough
Custom gateway
Custom APN list

U110 unable to perform proactive monitoring through 63xx-series router [SOLVED]

Problem

An AT&T VPN Gateway or U110 is configured to perform Proactive Monitoring, but the monitoring tests fail when performed through a 63xx-series router.

Background

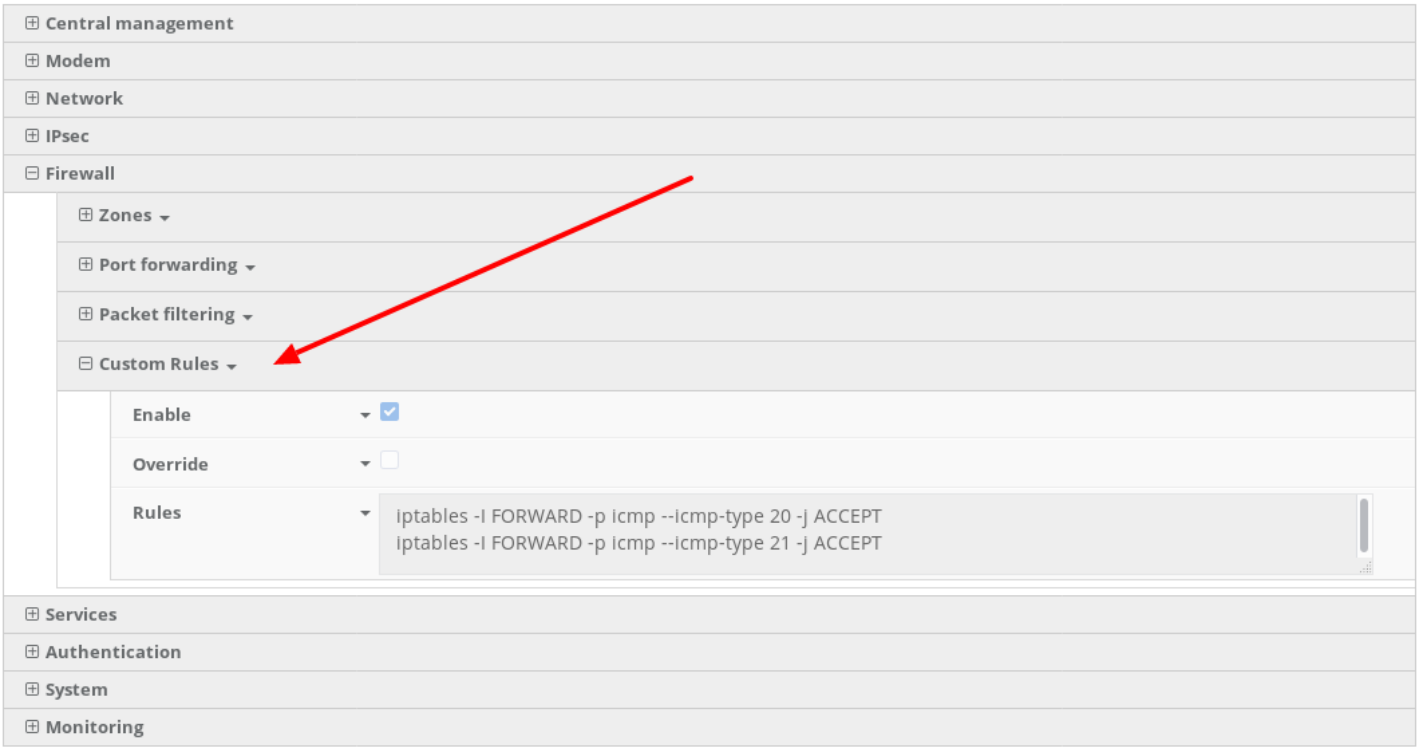
The Proactive Monitoring feature of the AT&T VPN Gateway performs a connectivity test on its WAN2 backup connection. This connectivity test employs a unique type of ICMP packet with type 20 outbound, and the response ICMP packet is of type 21. Since this is a non-standard ICMP packet, the 63xx-series router's firewall drops the packet, which results in the AT&T VPN Gateway failing its Proactive Monitoring test.

Solution

The firewall of the 63xx-series router must be updated to allow the unique ICMP packets through the cellular connection. To implement this solution, update the configuration profile of the Accelerated 63xx-series router with the following configuration changes:

1. Select the *Firewall -> Custom rules -> Enable* checkbox
2. Enter the following two firewall rules into the *Firewall -> Custom rules -> Rules* option:

```
iptables -I FORWARD -p icmp --icmp-type 20 -j ACCEPT
iptables -I FORWARD -p icmp --icmp-type 21 -j ACCEPT
```


Central management
Modem
Network
IPsec
Firewall
Zones
Port forwarding
Packet filtering
Custom Rules
Enable
Override
Rules
iptables -I FORWARD -p icmp --icmp-type 20 -j ACCEPT
iptables -I FORWARD -p icmp --icmp-type 21 -j ACCEPT
Services
Authentication
System
Monitoring

Upgrading Modem Firmware

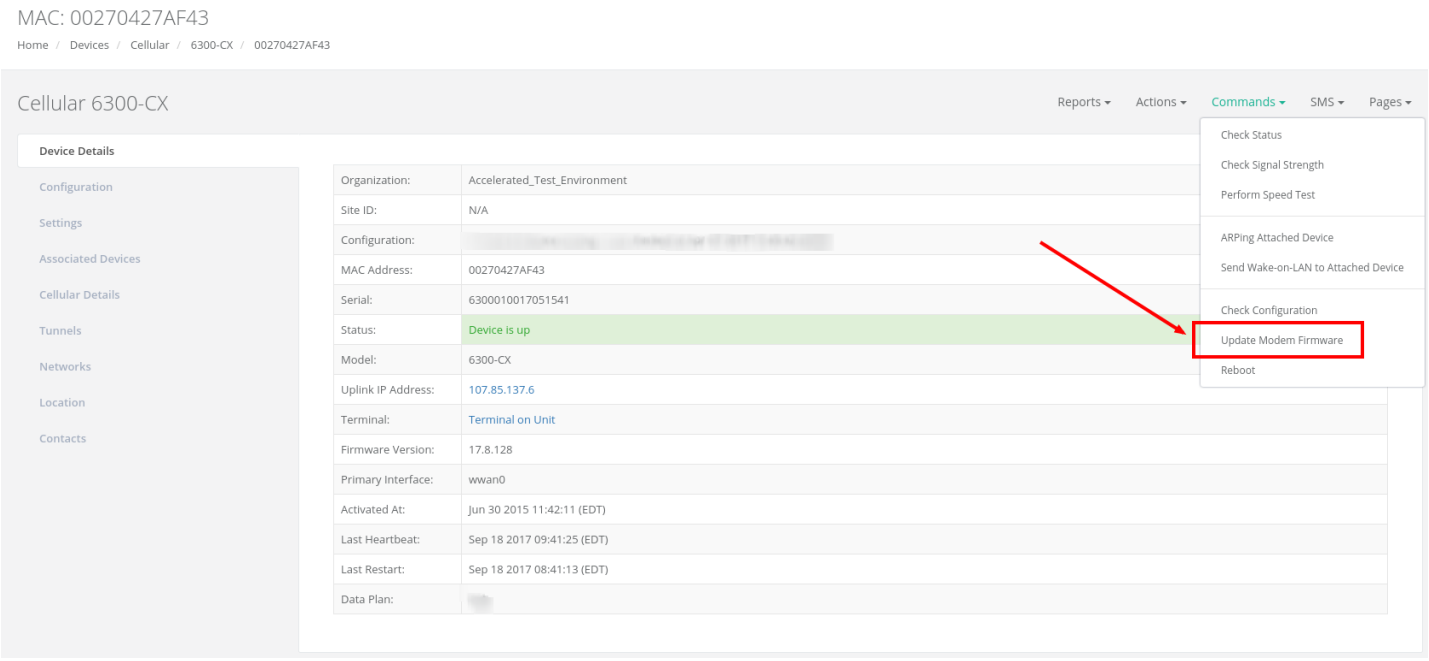
There are several options for upgrading the firmware on the modem inside your 63xx-series router. Users can upgrade the firmware on this modem either through the Accelerated View portal or the local web UI of the 63xx-series router, depending on the level of access and network connectivity the LTE router has and how the user has chosen to manage their devices.

OTA Update using Accelerated View

Upgrading the modem firmware using either of the options below requires the device to be online and in sync with Accelerated View.

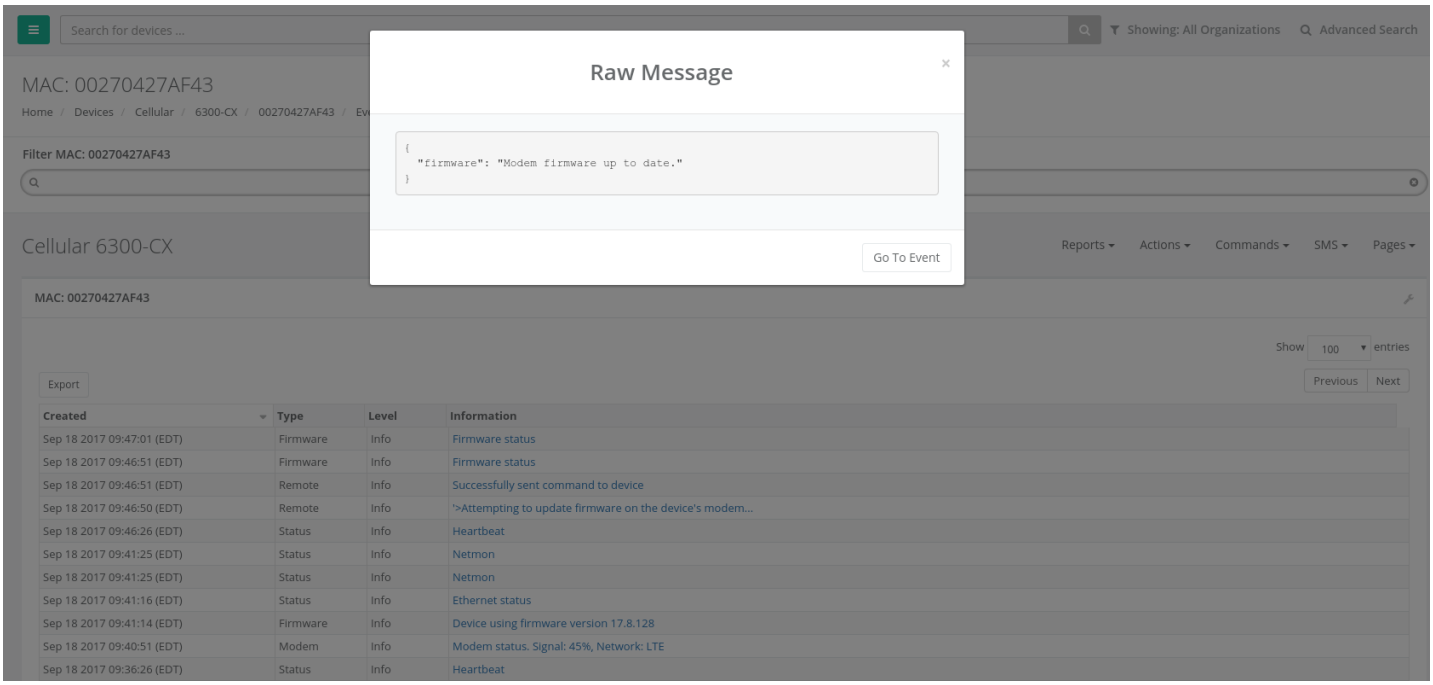
Option 1 - OTA command

If the 63xx-series router is on firmware version 17.8.128 or higher, users can send the ***Update Modem Firmware*** command from Accelerated View. Details on how to send a remote command from Accelerated View to a 63xx-series router can be found here.



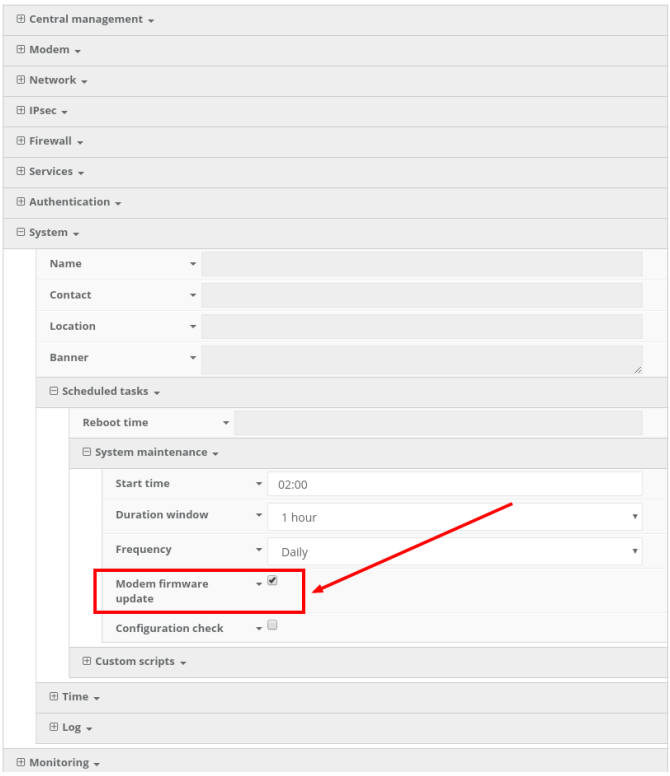
This command will trigger the 63xx-series router to query the Accelerated firmware server. If a newer modem firmware version is found for the current carrier-specific firmware used on the modem in the 63xx-series router, the 63xx-series router will automatically download the new firmware and flash it onto the modem.

If no new firmware is found, the 63xx-series router will send an event to Accelerated View stating that the modem firmware is up to date.



Option 2 - Scheduled OTA check/update

If the 63xx-series router is on firmware version 17.8.128 or higher, users can configure the router to check for modem firmware updates at a scheduled interval. This option is found under the *System -> Scheduled tasks -> System maintenance* section of the 63xx-series router's configuration profile. Details on configuring your 63xx-series router using Accelerated View can be found here.



Once the *Modem firmware update* scheduled task is enabled, the 63xx-series router will query the Accelerated firmware server at the specified timeframe. If a newer modem firmware version is found for the current carrier-specific firmware used on the modem in the 63xx-series router, the 63xx-series router will automatically download the new firmware and flash it onto the modem.

Manual Upgrade using the Local Web UI

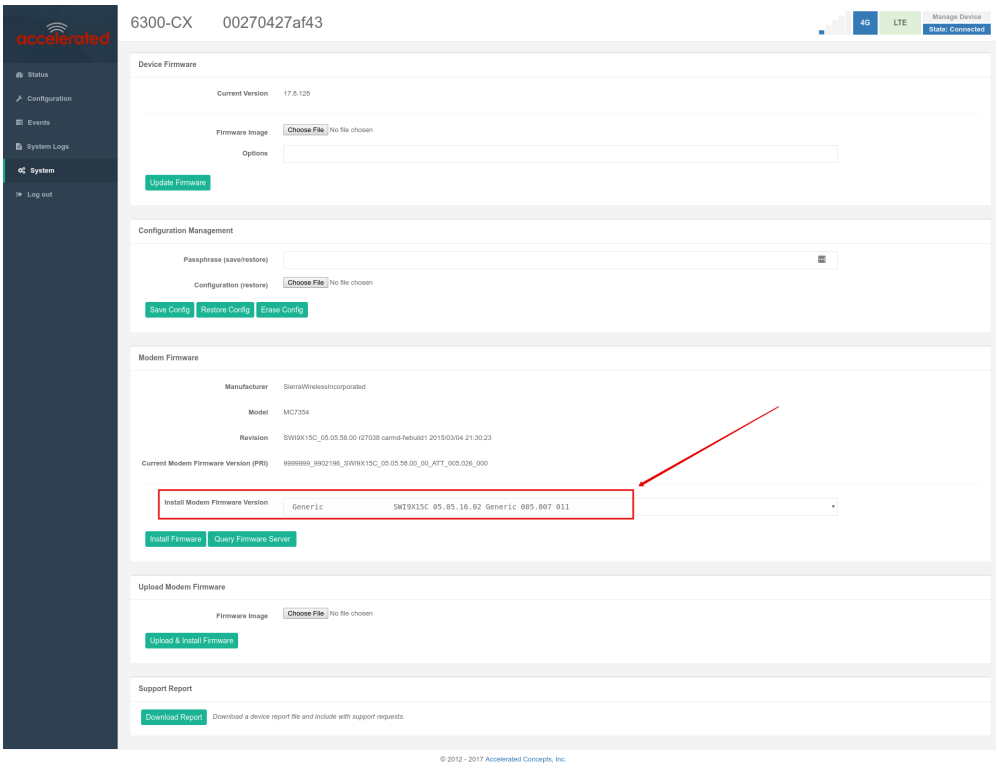
Upgrading the modem firmware using any of the following options requires the user to directly access the web UI of the 63xx-series router.

Option 1 - Select from pre-loaded firmware list

The Category 3 series of cellular modems have smaller firmwares that our 63xx-series routers have pre-loaded inside their flash memory. Users can update the modem in their 63xx-series router to one of these pre-loaded firmwares using the following steps:

1. Login to the web UI of the 63xx-series router.
2. Click on the *System* link on the left navigation bar of the site.
3. Under the *Modem firmware* section of the page, click the drop-down next to *Install Modem Firmware Version* and select the desired carrier firmware.

4. Click *Install Firmware*. A progress bar will appear indicating the status of the modem's firmware upgrade. Once the upgrade completes, the 63xx-series router will automatically reconnect to the cellular network.



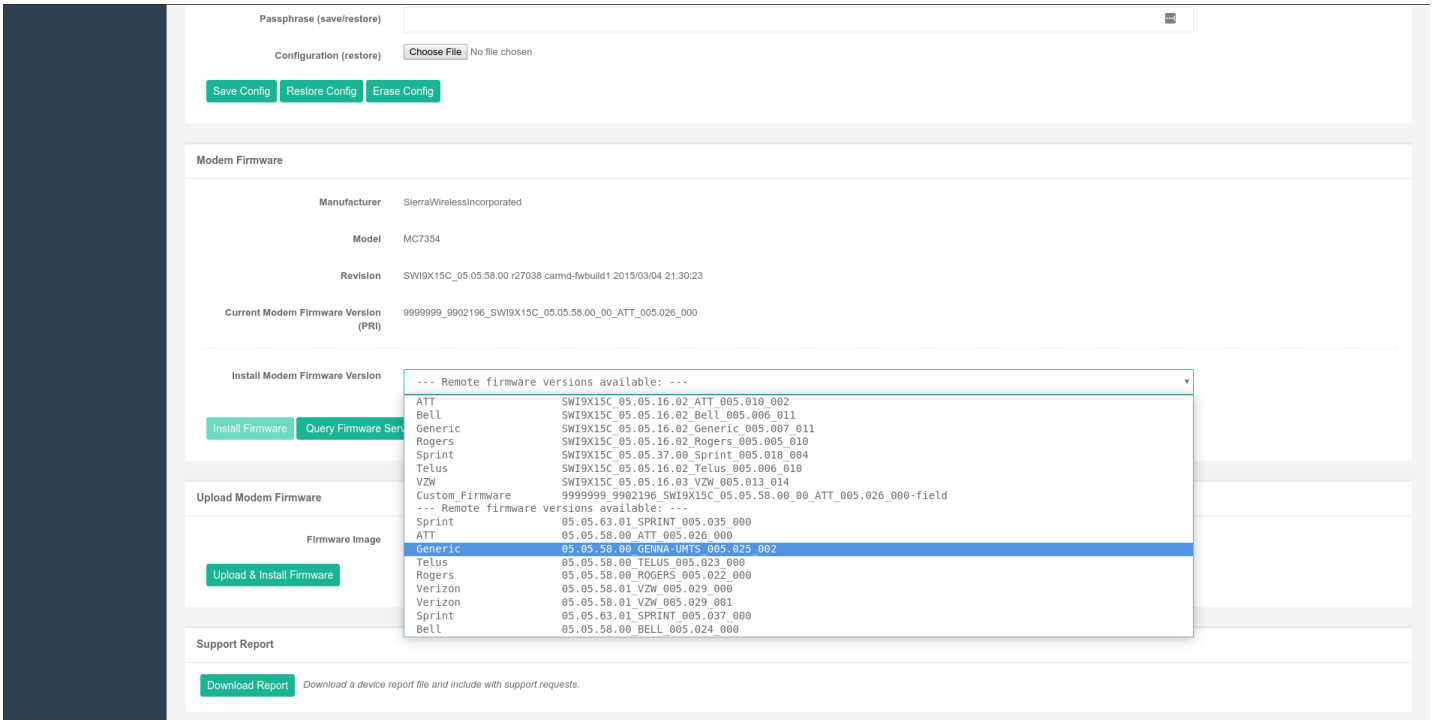
Option 2 - Query Firmware Server

If the desired modem firmware version is not listed in the pre-loaded firmware drop-down mentioned in option 1 above, users can query the Accelerated firmware server for additional firmwares for the modem inside the 63xx-seris router.

> Note, your 63xx-series router must be online and have access to the Accelerated firmware.accns.com server in order for this query to work. As part of this process, the 63xx-series router will download the new firmware file over the Internet (approximately 30-60MB) and onto the device.

To perform this query and upgrade the firmware on the modem:

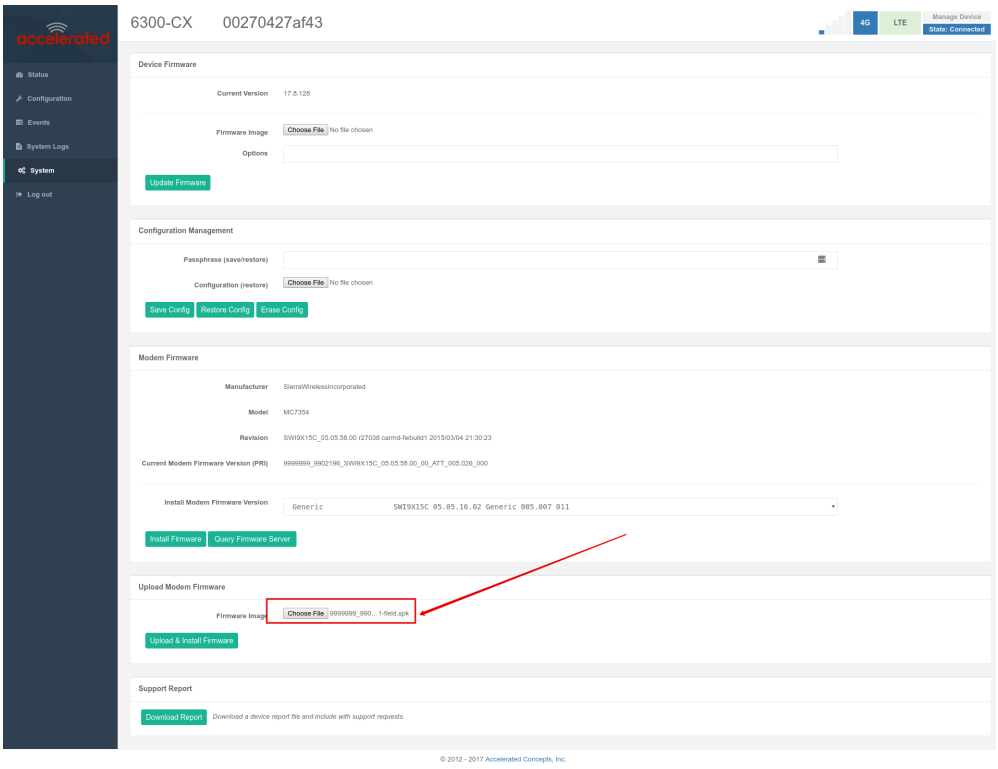
1. Click on the *Query Firmware Server* button.
2. Once the query completes, the drop-down will list the available remote firmware versions.
3. Select the desired firmware version from the list
4. Click the *Install Firmware* button. A progress bar will appear indicating the status of the modem's firmware upgrade. Once the upgrade completes, the 63xx-series router will automatically reconnect to the cellular network.



Option 3 - Manual Firmware Upload

Some vendors supply direct firmware images for their cellular modems. If you have a specific firmware file you would like to apply to the modem, you can use the *Upload Modem Firmware* section on the 63xx-series router's *System* web UI page to upload the firmware onto the modem. To manually upload a firmware file onto the modem inside a 63xx-series router:

1. Select the *Choose File* button under the *Upload Modem Firmware* section.
2. Select the desired firmware file from your file system.
3. Click *Upload & Install Firmware*. A progress bar will appear indicating the status of the modem's firmware upgrade. Once the upgrade completes, the 63xx-series router will automatically reconnect to the cellular network.


6300-CX
00270427af43
4G
LTE
Manage Device
State: Connected
Status
Configuration
Events
System Logs
System
Log out
Device Firmware
Current Version
17.8.126
Firmware Image
Choose File
No file chosen
Options
Update Firmware
Configuration Management
Passphrase (save/restore)
Configuration (restore)
Choose File
No file chosen
Save Config
Restore Config
Erase Config
Modem Firmware
Manufacturer
SierraWirelessIncorporated
Model
MC7354
Revision
SWI9X15C_05.05.58.00 r27038 carmd-fwbuild1 2015/03/04 21:30:23
Current Modem Firmware Version (PRI)
9999999_9902196_SWI9X15C_05.05.58.00_00_ATT_005.026_000
Install Modem Firmware Version
Generic
SWI9X15C 05.05.16.02 Generic 005.007 011
Install Firmware
Query Firmware Server
Upload Modem Firmware
Firmware Image
Choose File
9999999_990...1-field.spk
Upload & Install Firmware
Support Report
Download Report
Download a device report file and include with support requests.
© 2012 - 2017 Accelerated Concepts, Inc.

Updating Firmware

NOTE: *Due to a Linux Kernel update (from 4.14 to 4.15), devices running firmware versions 18.4.X.X or later can only complete a firmware **downgrade** to previous versions (18.1.X.X or lower) by **pressing the 'erase' button after pushing the firmware image to the router.***

Using Accelerated View

1. Log in to Accelerated View and use the **Search** tool to find the device by searching for its **MAC address**.
2. Select the MAC address of the device to bring up its **details** page.
3. Click on the **Configuration** tab, then select the **Edit Configuration** link in the **Group Configuration** section of the page.
4. Select the appropriate firmware version from the **Firmware** drop-down list.
5. Click the **Update** button.
6. All devices associated with that configuration profile will upgrade to the new firmware the next time the device syncs with Accelerated View (by default, once every 24 hours around 1AM UTC). If you want to apply the firmware upgrade immediately, please perform the following:

- Go back to the details page of the router (see steps 1 & 2 above).
- Select the **Commands** drop-down at the top-right of the page.
- Select **Check Configuration** option from the **Commands** drop-down.
- Once the command is received by the router, the device will automatically upgrade to the new firmware and then reboot.

Managing the Device Locally

1. **Download** the firmware file from Accelerated using the provided link:

- **CX**: https://accelerated.com/support/6300_CX/firmware/
- **SR**: https://accelerated.com/support/6350_sr/firmware/
- **MX**: https://accelerated.com/support/6330_mx/firmware/
- **LX**: https://accelerated.com/support/6300_LX/firmware/
- **RM**: https://accelerated.com/support/5400_RM/firmware/

2. **Connect** to the device's **web UI** by connecting your PC to the WAN Ethernet port of the device and then going to http://192.168.210.1. Click here for assistance with local device access.
3. Select the **System** tab on the left side of the page.
4. Select the **Browse** button next to the Firmware image section.
5. Browse for and select the downloaded firmware file.

6. Click the **Update Firmware** button.

Remote Control Tunnel Unresponsive [RESOLVED]

6300-CXs configured for IP Passthrough lose access to Remote Commands on 17.8 firmware

Available Workaround: Downgrade to 17.5 (available for download here)

Firmware Fix: 17.8.128.63 - November 9, 2017

RESOLUTION: Remote commands are once again available to devices provisioned for IP passthrough on firmware version *17.8.128.63 or later*. Upon upgrading firmware, please give the remote control tunnel 10 to 20 minutes to rebuild itself.

Support Report Overview

Generating a Support Report

Support reports provide a snapshot of a router's current settings and connection status at the time of the report's generation. The relevant log files are packaged into a .bin file that can be downloaded from the *local* (Web) UI of all Accelerated routers. For more information about generating support reports, please click here.

NOTE: *Information logged on the device will be erased when the router is powered off/ rebooted to avoid unnecessary wear to the flash memory. Click here for more information on how to enable persistent system logs.*

Use 7-Zip or any other file-archiving utility to extract a support report. Its contents are organized into the following directories:

/etc

This folder most notably contains a running list of the cellular connections that have been registered by the router's radio.

Directory	File Name		Notes
/etc			
	version		Active firmware version
	config/ mm.json		Cellular connections logged as having been engaged by the radio; establishes previous APN associations

/opt

Information stored here persists between reboots and system resets.

Directory	File Name		Notes
/opt			
	log_last/ messages		With persistent system logs enabled, syslog info will be stored in the /opt directory which isn't erased after reboots or system resets

/tmp

Output from a series of diagnostic queries is stored in a randomly generated sub-directory within /tmp. When combing through these logs, pay particular attention to ***config_dump-public*** (to verify local router settings) and ***mmcli-dump*** (to validate the cellular connection status).

Directory	File Name		Notes
/tmp/#*			*# is generated at random
	arp_-nv		The table of IP-address to MAC-address translations used by the address resolution protocol (ARP)
	arptables_-nvv_-L		The tables of ARP packet filter rules in the Linux kernel
	cat_procmeminfo		A breakdown of memory utilization at the time when the support report was generated
	cat_procslabinfo		Frequently used objects in the Linux kernel (buffer heads, inodes, dentries, etc.) have their own cache, contained in this output
	config_dump-public		The device's current settings, scrubbed of passwords and preshared keys
	conntrack_-L		A list of all currently tracked connections through the system
	conntrack_-S		A summary of currently tracked connections
	date		Local system time. If the device isn't online when the support report is generated, the date will be based on the date/month/year that the firmware running on the device was created (e.g. 18.4.54.41 was created 2018-07-05)
	df_-h		A report of the file system disk space usage
	event_list		A list of events leveraged for syslog messages
	fw_printenv		The entire environment for the bootloader U-Boot
	ip_addr_list		IP addresses listed per interface
	ip_route_list		Default routing information per interface
	ip6tables_-nv_-L		A list of IPv6 routing tables

Directory	File Name		Notes
	ip6tables_-nv_-L_-t_mangle		Firewall table used when handling mangled/fragmented IPv6 packets
	ip6tables_-nv_-L_-t_nat		Firewall table used to direct NAT'd traffic
	iptables_-nv_-L		A list of IPv4 firewall tables
	iptables_-nv_-L_-t_mangle		Firewall table used when handling mangled/fragmented IPv4 packets
	iptables_-nv_-L_-t_nat		Firewall table used to direct NAT'd traffic
	ls_-RlhA_etcconfig		An index of items in /etc/config (and its sub-directories)
	ls_-RlhA_opt		An index of items in /opt (and its sub-directories)
	ls_-RlhA_tmp		An index of items in /tmp (and its sub-directories)
	ls_-RlhA_var		An index of items in /var (and its sub-directories)
	lsusb		A list of USB ports and any connected peripherals
	mmcli-dump		A repository of critical information about the cellular radio based off of the cited modem-manager output and defined set of AT commands
	netstat_-i		Interface statistics for transmitted/ received packets
	netstat_-na		List of both listening and non-listening network sockets on the device
	netstat_-s		A statistical summary of network traffic broken down by protocol
	ps_l		A snapshot of the current processes running at the time of generating the report
	runt_json		Storage for active/ engaged system variables
	sprite_config_dump		Not used for cellular routers
	ubus-dump		A log of ubus calls for network devices and interfaces

Directory	File Name		Notes
	uptime		The device's uptime at the time of generating the report, along with CPU load averages for the past 1, 5, and 15 minutes

/var/log

The running system log is stored in "messages" until reaching a set line count (1,000 lines by default). Once this limit is exceeded, that file is renamed to "messages.0" and a new running log is written to the now-empty "messages" log.

Directory	File Name		Notes
/var/log			
	messages		Current syslog information
	messages.0		Rollover syslog information

/var/run

This directory can be disregarded for most troubleshooting/ diagnostic purposes.

Directory	File Name		Notes
/var/run			
	All files		Runtime settings for the device -- referenced in the syslog data gathered in /tmp (see above)

Standard APNs

Accelerated's APN List

Each carrier has a set of default Access Point Names (APNs) for their network. Accelerated automatically attempts to establish a connection using the below default APNs. If your carrier has provided you with a custom APN, it will need to be programmed into the router's configuration before connecting to the cellular network as intended.

NOTE: *For assistance with initial cellular connectivity using non-standard APNs, please click here.*

AT&T

- 10008
- i2gold
- 11226.mcs
- MNS-OOB-APN01.com.attz
- altaworx02.com.attz
- m2m.com.attz
- 11904.mcs
- broadband

Verizon

- mw01.vzwstatic
- ne01.vzwstatic
- so01.vzwstatic
- we01.vzwstatic
- vzwinternet

T-Mobile

- fast.t-mobile.com
- epc.tmobile.com
- internet.t-mobile

Sprint

- r.ispsn
- n.ispsn

Rogers

- ltemobile.apn
- lteinternet.apn
- ltestaticip.apn
- ltepublicip.apn
- ltemobile.com

Bell Canada

- crmstatic.bell.ca

Telstra Australia

- telstra.internet
- telstra.m2m

Vodafone

- live.vodafone.com (Australia)
- wbb.attbusiness.net (Netherlands)

Other

- blank
- 10008
- i2gold
- 11226.mcs
- MNS-OOB-APN01.com.attz
- altaworx02.com.attz
- 11904.mcs
- m2m.com.attz
- broadband
- mw01.vzwstatic
- ne01.vzwstatic
- so01.vzwstatic
- we01.vzwstatic
- vzwinternet
- telstra.internet
- fast.t-mobile.com
- epc.tmobile.com
- mobinilweb
- web.vodafone.de

- everywhere
- internet.com
- inet.bell.ca
- isp.telus.com
- internet.telecom.co.nz
- inetgsm.vzw3g.com
- isp.cingular
- internet
- everywhere
- ltemobile.apn

Default Service Provider List

Accelerated devices leverage ModemManager to control the router's cellular radio. This software includes a list of APNs associated with "default service providers" that the router will attempt to connect with should it fail to join a cellular network using Accelerated's APN list.

NOTE: If both the Accelerated and Default Provider list fail to yield a successful connection, the router will continue cycling through these APNs until joining a cellular network. Devices can be locked to specific APNs as necessary to prevent this behavior.

Default APNs by Service Provider

country code	carrier	plmnid	iccid prefix	apn	connection type	d
ad	Andorra Telecom (Mobiland)	21303	8937603	internetand	internet	d
ad	Andorra Telecom (Mobiland)	21303	8937603	internetclic	internet	d
ae	Etisalat	42402	8997102	mnet	internet	d 1
ae	Etisalat	42402	8997102	etisalat.ae	internet	d
ae	Etisalat	42402	8997102	etisalat	mms	d
ae	Etisalat	42402	8997102	etisalat	mms	d

ae	du	42403	8997103	du	internet	d
ae	du	42403	8997103	du	mms	d
af	AWCC	41201	899301	internet	internet	d
al	Vodafone	27602	8935502	Twa	internet	d
al	Vodafone	27602	8935502	vodafoneweb	internet	d
al	Vodafone	27602	8935502	mms	mms	d
al	Vodafone	27602	8935502	portalnmms	mms	d
am	Beeline	28301	8937401	internet.beeline.am	internet	d
am	Beeline	28301	8937401	mms.beeline.ua	mms	d
am	Beeline	28301	8937401	mms	mms	d
am	Orange	28310	8937410	internet.orange	internet	d
am	Orange	28310	8937410	internet	internet	d
am	Orange	28310	8937410	mms	mms	d
am	Orange	28310	8937410	orangemms	mms	d
am	Orange	28310	8937410	mms	mms	d
am	Orange	28310	8937410	orange.mms	mms	d
am	Orange	28310	8937410	orangemms	mms	d
am	Orange	28310	8937410	mms.orange.dk	mms	d
am	Orange	28310	8937410	mms.orange.md	mms	d
am	Orange	28310	8937410	mms.orange.jo	mms	d
am	Orange	28310	8937410	orangerun.acte	mms	d
am	VivaCell/MTS	28305	8937405	connect.vivacell.am	internet	d
am	VivaCell/MTS	28305	8937405	inet.vivacell.am	internet	d
am	Karabakh Telecom	28304	8937404	connect.kt.am	internet	d
ao	Unitel	63102	8924402	internet.unitel.co.ao	internet	d

ao	Unitel	63102	8924402	unitel	mms	dr
ar	Personal	722341 72234	8954341 895434	gprs.personal.com	internet	dr 17
ar	Personal	722341 72234	8954341 895434	datos.personal.com	internet	dr
ar	Arnet	722340	8954340	arnet.personal.com	internet	dr 17
ar	Arnet	722340	8954340	mms	mms	dr
ar	Arnet	722340	8954340	mms	mms	dr
ar	Claro	722310 722320 722330	8954310 8954320 8954330	gprs.claro.com.ar	internet	dr 17
ar	Claro	722310 722320 722330	8954310 8954320 8954330	internet.ctimovil.com.ar	internet	dr
ar	Claro	722310 722320 722330	8954310 8954320 8954330	mms.claro.com.br	mms	dr
ar	Movistar	722010 722070	8954010 8954070	internet.gprs.unifon.com.ar	internet	dr
ar	Movistar	722010 722070	8954010 8954070	internet.gprs.unifon.com.ar	internet	dr
at	A1/Telekom Austria	23201	894301	a1.net	internet	dr 19
at	A1/Telekom Austria	23201	894301	aon.data	internet	dr
at	A1/Telekom Austria	23201	894301	aon.at	internet	dr
at	A1/Telekom Austria	23201	894301	free.A1.net	mms	dr
at	ABroadband	23201	894301	mdata.com	internet	dr
at	Bob	23211	894311	bob.at	internet	dr

at	Bob	23211	894311	bob.at	internet	dr 19
at	Bob	23211	894311	mms.bob.at	internet	dr
at	Bob	23211	894311	mms.bob.at	mms	dr
at	HoT	23207	894307	webaut	internet	dr
at	HoT	23207	894307	mmsaut	mms	dr
at	Lycamobile	23208	894308	data.lycamobile.at	internet	dr
at	T-Mobile	23203	894303	gprswap	wap	dr
at	T-Mobile	23203	894303	gprsinternet	internet	dr 21
at	T-Mobile	23203	894303	business.gprsinternet	internet	dr
at	T-Mobile	23203	894303	general.t-mobile.uk	mms	dr
at	T-Mobile	23203	894303	wap.voicestream.com	mms	dr
at	tele.ring	23207	894307	web	internet	dr 21
at	tele.ring	23207	894307	mms	mms	dr
at	Orange	23205	894305	web.one.at	internet	dr 19
at	Orange	23205	894305	wap.one.at	wap	dr
at	Orange	23205	894305	mms.one.at	mms	dr
at	Orange	23205	894305	fullspeed	internet	dr
at	Orange	23205	894305	orange.web	internet	dr 19
at	Orange	23205	894305	orange.mms	mms	dr
at	Drei (3)	23210	894310	drei.at	internet	dr 21
at	Drei (3)	23210	894310	drei.at	mms	dr
at	Drei (3)	23210	894310	three.co.uk	mms	dr

at	Drei (3)	23210	894310	mobile.three.com.hk	mms	d
at	Drei (3)	23210	894310	3services	mms	d
at	Drei (3)	23210	894310	3mms	mms	d
at	Yesss	23212	894312	web.yesss.at	internet	d
at	VOLmobil	23203	894303	volmobil	internet	d
at	VOLmobil	23203	894303	gprsmms	mms	d
au	Amaysim	50502	896102	internet		d
au	Amaysim	50502	896102	mms	mms	d
au	Apex Telecom	50502	896102	splns357		d
au	Beagle	50502	896102	splns357		d
au	BLiNK	50502	896102	splns888a1		d
au	BLiNK	50502	896102	connect		d
au	Crazy John's	50503 50538	896103 896138	purtona.net	internet	d 2
au	Crazy John's	50503 50538	896103 896138	purtona.wap	wap	d
au	Crazy John's	50503 50538	896103 896138	purtona.wap	mms	d
au	Dodo	50502	896102	WirelessBroadband		d
au	Dodo	50502	896102	DODOLNS1		d
au	Escape Net	50502	896102	splns357		d
au	Exetel	50502	896102	exetel1		d
au	Exetel	50502	896102	INTERNET		d
au	Exetel	50502	896102	OPTUSWAP		d
au	Exetel	50502	896102	YesINTERNET		d
au	Exetel (Vodafone based)	50503	896103	vfinternet.au		d

au	Highway1	50502	896102	splns357		dr
au	iiNet	50502	896102	iinet	internet	dr
au	Internode	50502	896102	internode	internet	dr
au	Internode	50502	896102	splns333a1	internet	dr
au	iPrimus	50502	896102	primuslns1		dr
au	Lycamobile	50519	896119	data.lycamobile.com.au	internet	dr
au	Optus	50502	896102	internet	internet	dr 19
au	Optus	50502	896102	yesinternet	internet	dr 19
au	Optus	50502	896102	connect	internet	dr 19
au	Optus	50502	896102	connectcap	internet	dr 19
au	Optus	50502	896102	preconnect	internet	dr 19
au	Optus	50502	896102	mms	mms	dr
au	TPG Mobile	50502	896102	yesinternet		dr
au	TPG Mobile	50502	896102	internet	internet	dr
au	TPG Mobile	50502	896102	mms	mms	dr
au	Pennytel	50503	896103	live.vodafone.com		dr
au	Pennytel	50503	896103	vfinternet.au		dr
au	Smelly Black Dog	50502	896102	splns357		dr
au	Telstra	50501	896101	telstra.wap	internet	dr 20
au	Telstra	50501	896101	telstra.datapack	internet	dr 20

au	Telstra	50501	896101	telstra.internet	internet	d 1
au	Telstra	50501	896101	telstra.pcpack	internet	d 2
au	Telstra	50501	896101	telstra.iph	wap	d
au	Telstra	50501	896101	telstra.mms	mms	d
au	Telstra	50501	896101	telstra.bigpond	internet	d
au	Telstra	50501	896101	telstra.mms	mms	d
au	Three	50506	896106	3netaccess	internet	d 2
au	Three	50506	896106	3services	internet	d 2
au	Virgin Mobile	50502	896102	VirginInternet	internet	d
au	Virgin Mobile	50502	896102	VirginBroadband	internet	d
au	Vodafone	50503	896103	vfinternet.au	internet	d
au	Vodafone	50503	896103	vfprepaymbb	internet	d 2
au	Vodafone	50503	896103	live.vodafone.com	internet	d
au	Westnet	50502	896102	yesinternet		d
au	Westnet	50502	896102	internet		d
az	Azercell	40001	8999401	internet	internet	d
az	Azercell	40001	8999401	mms	mms	d
az	Bakcell	40002	8999402	mms	internet	d
az	Azerfon	40004	8999404	azerfon	internet	d
ba	BH GSM	21890	8938790	mms.bhmobile.ba	mms	d
ba	BH GSM	21890	8938790	mms.bhmobile.ba	mms	d
ba	m:tel	21805	8938705	mtelgprs1	internet	d 8

ba	m:tel	21805	8938705	mtelgprs2	internet	d 8
ba	m:tel	21805	8938705	mtelgprs3	internet	d 8
ba	m:tel	21805	8938705	mtelgprs4	internet	d 8
ba	m:tel	21805	8938705	mtelfun	internet	d 8
ba	m:tel	21805	8938705	mobismms	mms	d
ba	HT-ERONET	21803	8938703	gprs.eronet.ba	internet	d
ba	HT-ERONET	21803	8938703	mms.eronet.ba	mms	d
bb	Digicel	342750	891750	isp.digicelbarbados.com	internet	d
bd	Robi (AKTel)	47002	8988002	internet	internet	d
bd	Robi (AKTel)	47002	8988002	internet	internet	d
bd	Robi (AKTel)	47002	8988002	wap	mms	d
bd	Banglalink	47003	8988003	blweb	internet	d
bd	Banglalink	47003	8988003	blweb	internet	d
bd	Banglalink	47003	8988003	blmms	mms	d
bd	GrameenPhone	47001	8988001	gpinternet	internet	d 2
bd	GrameenPhone	47001	8988001	gpinternet	internet	d 2
bd	GrameenPhone	47001	8988001	gpmms	mms	d
bd	Airtel (Warid)	47007	8988007	internet	internet	d
bd	Airtel (Warid)	47007	8988007	internet	internet	d
bd	Airtel (Warid)	47007	8988007	mms	mms	d
bd	Teletalk	47004	8988004	wap	internet	d
bd	Teletalk	47004	8988004	mms	mms	d

be	Lycamobile	20606	893206	data.lycamobile.be	internet	d
be	Mobistar	20610	893210	web.pro.be	internet	d 2
be	Mobistar	20610	893210	internet.be	internet	d 2
be	Mobistar	20610	893210	iew.be	internet	d 2
be	Mobistar	20610	893210	mworld.be	internet	d 2
be	Mobistar	20610	893210	mms.be	mms	d
be	Telenet Mobile	20610	893210	mobile.internet.be	internet	d
be	Telenet Mobile	20610	893210	telenetwap.be	internet	d
be	Telenet Mobile	20610	893210	telenetwap.be	internet	d
be	Orange	20610	893210	orangeinternet	internet	d
be	Proximus	20601	893201	internet.proximus.be	internet	d 8
be	Proximus	20601	893201	intraprox.be	internet	d 1
be	Proximus	20601	893201	event.proximus.be	mms	d
be	Base	20620	893220	gprs.base.be	internet	d 2
be	Base	20620	893220	mms.base.be	mms	d
be	Mobile Vikings	20620	893220	web.be	internet	d
bf	Airtel 3G	61302	8922602	internet	internet	d
bg	GloBul	28405	8935905	internet.globul.bg	internet	d
bg	GloBul	28405	8935905	mms.globul.bg	mms	d
bg	M-Tel	28401	8935901	inet-gprs.mtel.bg	internet	d 2
bg	M-Tel	28401	8935901	mms-gprs.mtel.bg	mms	d

bg	Vivacom	28403	8935903	internet.vivacom.bg	internet	d
bg	Vivacom	28403	8935903	internet.vivatel.bg	internet	d '
bg	Vivacom	28403	8935903	mms.vivacom.bg	mms	d
bh	Batelco	42601	8997301	internet.batelco.com	internet	d
bh	Batelco	42601	8997301	mms.batelco.com	mms	d
bh	Zain BH	42602	8997302	internet	internet	d
bh	Zain BH	42602	8997302	hsdpa	internet	d
bh	Zain BH	42602	8997302	http://172.18.83.129	mms	d
bh	STC	42604	8997304	viva.bh	internet	d
br	Brasil Telecom	72416	895516	brt.br	internet	d
br	Brasil Telecom	72416	895516	mms.brt.br	mms	d
br	Claro	72405	895505	claro.com.br	internet	d
br	Claro	72405	895505	bandalarga.claro.com.br	internet	d
br	CTBC	72407 72432 72433 72434	895507 895532 895533 895534	ctbc.br	internet	d
br	CTBC	72407 72432 72433 72434	895507 895532 895533 895534	mms.ctbc.br	mms	d
br	Oi	72416 72431 72424	895516 895531 895524	gprs.oi.com.br	internet	d
br	Oi	72416 72431 72424	895516 895531 895524	wapgprs.oi.com.br	wap	d
br	Oi	72416 72431 72424	895516 895531 895524	mmsgprs.oi.com.br	mms	d

br	TIM	72402 72403 72404 72408	895502 895503 895504 895508	tim.br	internet	d 1
br	TIM	72402 72403 72404 72408	895502 895503 895504 895508	unico.tim.it	mms	d
br	TIM	72402 72403 72404 72408	895502 895503 895504 895508	timbrasil.br	mms	d
br	Velox			wap.telcel.com	internet	d
br	Vivo	72406 72410 72411 72423	895506 895510 895511 895523	zap.vivo.com.br	internet	d
br	Vivo	72406 72410 72411 72423	895506 895510 895511 895523	mms.vivo.com.br	mms	d
bs	Batelco	364390	891390	internet.btcbahamas.com	internet	d
bm	CellOne	35000	89100	web.c1.bm	internet	d
bn	B-Mobile	52802	8967302	bmobilewap	internet	d
bn	B-Mobile	52802	8967302	bmobilemms	mms	d
bn	DSTCOM	52811	8967311	dst.wap	internet	d
bn	DSTCOM	52811	8967311	mms.movistar.es	mms	d
by	velcom	25701	8937501	wap.velcom.by	wap	d
by	velcom	25701	8937501	web.velcom.by	internet	d
by	velcom	25701	8937501	plus.velcom.by	internet	d
by	velcom	25701	8937501	privet.velcom.by	internet	d
by	velcom	25701	8937501	web1.velcom.by	internet	d

by	velcom	25701	8937501	web2.velcom.by	internet	d
by	velcom	25701	8937501	web3.velcom.by	internet	d
by	velcom	25701	8937501	vmi.velcom.by	internet	d
by	velcom	25701	8937501	mms.velcom.by	mms	d
by	MTS	25702	8937502	internet.mts.by	internet	d
by	MTS	25702	8937502	mms	mms	d
by	MTS	25702	8937502	mms.mts.ru	mms	d
by	MTS	25702	8937502	mms.umc.ua	mms	d
by	MTS	25702	8937502	sp.mts	mms	d
by	life:)	25703	8937503	internet.life.com.by	internet	d
bw	Mascom Wireless	65201	8926701	internet.mascom	internet	d
bw	Mascom Wireless	65201	8926701	mms	mms	d
bw	Orange	65202	8926702	internet.orange.co.bw	internet	d
bi	Leo/UCom	64203	8925703	ucnet	internet	d
bi	Tempo/Africell	64202	8925702	internet	internet	d
bi	Tempo/Africell	64202	8925702	mms.mascom	mms	d
ca	Fido	302370	891370	internet.fido.ca	internet	d 2
ca	Fido	302370	891370	mms.fido.ca	mms	d
ca	Rogers	302720	891720	internet.com	internet	d 2
ca	Rogers	302720	891720	media.com	mms	d
ca	Bell Mobility	302610 302640 302651 302880	891610 891640 891651 891880	inet.bell.ca	internet	d

ca	Bell Mobility	302610 302640 302651 302880	891610 891640 891651 891880	pda.bell.ca	internet	d
ca	Bell Mobility	302610 302640 302651 302880	891610 891640 891651 891880	pda2.bell.ca	internet	d
ca	Bell Mobility	302610 302640 302651 302880	891610 891640 891651 891880	pda.bell.ca	mms	d
ca	Telus Mobility	302220 302860 302880	891220 891860 891880	isp.telus.com	internet	d
ca	Telus Mobility	302220 302860 302880	891220 891860 891880	vpn.telus.com	internet	d
ca	Telus Mobility	302220 302860 302880	891220 891860 891880	bb.telus.com	internet	d
ca	Telus Mobility	302220 302860 302880	891220 891860 891880	sp.telus.com	internet	d
ca	Telus Mobility	302220 302860 302880	891220 891860 891880	sp.telus.com	mms	d
ca	SaskTel Mobility	302680 302750 302780 302880	891680 891750 891780 891880	inet.stm.sk.ca	internet	d
ca	Vidéotron	302500 302510	891500 891510	media.videotron	internet	d
ca	Vidéotron	302500 302510	891500 891510	ihvm.videotron	internet	d
ca	Vidéotron	302500 302510	891500 891510	media.videotron	mms	d

ca	WIND Mobile	302490	891490	broadband.windmobile.ca	internet	d
ca	WIND Mobile	302490	891490	internet.windmobile.ca	internet	d
ca	WIND Mobile	302490	891490	mnet.b-online.gr	mms	d
ca	WIND Mobile	302490	891490	mms.windmobile.ca	mms	d
ca	Mobilicity	302320	891320	wap.davewireless.com	internet	d
ca	Mobilicity	302320	891320	internet.davewireless.com	internet	d
ca	Mobilicity	302320	891320	mms.davewireless.com	mms	d
cd	Vodacom	63001	8924301	vodanet	internet	d
cd	Vodacom	63001	8924301	vodalive	mms	d
ch	Lycamobile	22854	894154	data.lycamobile.ch	internet	d
ch	Orange	22803	894103	mobileoffice3g	internet	d 2
ch	Orange	22803	894103	click	internet	d 2
ch	Orange	22803	894103	intranetaccess	internet	d
ch	Orange	22803	894103	internet		d
ch	Sunrise	22802	894102	internet	internet	d 1
ch	Sunrise	22802	894102	wap.sunrise.ch		d
ch	Sunrise	22802	894102	mms.sunrise.ch		d
ch	Sunrise	22802	894102	mms.sunrise.ch	mms	d
ch	Swisscom	22801	894101	gprs.swisscom.ch	internet	d 1
ch	Swisscom	22801	894101	corporate.swisscom.ch	internet	d
ch	Swisscom	22801	894101	event.swisscom.ch	internet	d
ch	Swisscom	22801	894101	event.swisscom.ch	mms	d
ch	M-Budget	22801	894101	gprs.swisscom.ch	internet	d

ci	MTN	61205	8922505	internet	internet	d
ci	MTN	61205	8922505	fast-mms	mms	d
ci	MTN	61205	8922505	myMTN	mms	d
cl	Claro Chile	73003	895603	bam.clarochile.cl	internet	d
cl	Claro Chile	73003	895603	bap.clarochile.cl	internet	d
cl	Claro Chile	73003	895603	wap.clarochile.cl	wap	d
cl	Claro Chile	73003	895603	mms.clarochile.cl	mms	d
cl	Entel PCS	73001	895601	imovil.entelpcs.cl	internet	d
cl	Entel PCS	73001	895601	bam.entelpcs.cl	internet	d
cl	Entel PCS	73001	895601	mms.entelpcs.cl	mms	d
cl	Movistar	73002 73010	895602 895610	web.tmovil.cl	internet	d
cl	Movistar	73002 73010	895602 895610	wap.tmovil.cl	wap	d
cl	Movistar	73002 73010	895602 895610	dst.mms	mms	d
cl	Movistar	73002 73010	895602 895610	dst.mms	mms	d
cl	Virgin Mobile	73007	895607	imovil.virginmobile.cl	internet	d
cl	VTR Movil	73008	895608	movil.vtr.com	internet	d
cl	Nextel	73009	895609	wap.nextelmovil.cl	internet	d
cm	Orange	62402	8923702	orangecmgprs	internet	d
cm	MTN	62401	8923701	INTERNET	internet	d
cn	China Mobile	46000 46002	898600 898602	cmwap	wap	d
cn	China Mobile	46000 46002	898600 898602	cmnet	internet	d '

cn	China Mobile	46000 46002	898600 898602	cmwap	mms	dr
cn	China Unicom	46001	898601	3gnet	internet	dr
cn	China Unicom	46001	898601	3gwap	mms	dr
cr	IceCelular	71201 71202	8950601 8950602	icecelular	internet	dr '
cr	Kolbi	71203	8950603	kolbi3g	internet	dr
cr	Kolbi	71203	8950603	mms.ideasclaro	mms	dr
co	Claro	732101	8957101	internet.comcel.com.co	internet	dr
co	eTb			moviletb.net.co	internet	dr
co	Movistar	732102 732123	8957102 8957123	internet.movistar.com.co	internet	dr
co	Tigo	732103 732111	8957103 8957111	web.colombiamovil.com.co	internet	dr
co	Tigo	732103 732111	8957103 8957111	mms.sentelgsm.com	mms	dr
co	Uff			web.uffmovil.com.co	internet	dr
co	UNE	732103 732111	8957103 8957111	www.une.net.co	internet	dr
co	UNE	732103 732111	8957103 8957111	une4glte.net.co	internet	dr
co	UNE	732103 732111	8957103 8957111	mms.colombiamovil.com.co	mms	dr
co	Virgin Mobile	732123	8957123	web.vmc.net.co	internet	dr
co	Virgin Mobile	732123	8957123	mms.movistar.com.co	mms	dr
cy	Cytamobile-Vodafone	28001	8935701	internet	internet	dr
cy	Cytamobile-Vodafone	28001	8935701	pp.internet	internet	dr

cy	Cytamobile-Vodafone	28001	8935701	cytamobile	mms	d
cy	MTN	28010	8935710	internet	internet	d
cz	Vodafone	23003	8942003	internet	internet	d 2
cz	O2	23002	8942002	internet	internet	d 1
cz	O2	23002	8942002	internet.open	internet	d 1
cz	O2	23002	8942002	internet	internet	d
cz	O2	23002	8942002	mms	mms	d
cz	T-Mobile	23001	8942001	internet.t-mobile.cz	internet	d 2
cz	MOBIL.CZ	23001	8942001	internet.t-mobile.cz	internet	d
de	AldiTalk/ MedionMobile	26203 26205 26277	894903 894905 894977	internet.eplus.de	internet	d 2
de	AldiTalk/ MedionMobile	26203 26205 26277	894903 894905 894977	mms.eplus.de	mms	d
de	blau.de	26203 26205 26277	894903 894905 894977	internet.eplus.de	internet	d
de	blau.de	26203 26205 26277	894903 894905 894977	tagesflat.eplus.de	internet	d
de	Bild Mobil	26202	894902	access.vodafone.de	internet	d
de	Bild Mobil	26202	894902	web.vodafone.de	internet	d 1
de	Bild Mobil	26202	894902	event.vodafone.de	internet	d
de	Bild Mobil	26202	894902	event.vodafone.de	mms	d

de	E-Plus	26203 26205 26277	894903 894905 894977	internet.eplus.de	internet	dr 21
de	Lycamobile	26243	894943	data.lycamobile.de	internet	dr
de	O2	26207 26208 26211	894907 894908 894911	pinternet.interkom.de	internet	dr 19
de	O2	26207 26208 26211	894907 894908 894911	internet	internet	dr 62
de	O2	26207 26208 26211	894907 894908 894911	surfo2	internet	dr 62
de	O2	26207 26208 26211	894907 894908 894911	internet	mms	dr
de	Tchibo-Mobil	26207 26208 26211	894907 894908 894911	webmobil1	internet	dr
de	T-Mobile(Telekom)	26201 26206	894901 894906	internet.t-d1.de	internet	dr 19
de	T-Mobile(Telekom)	26201 26206	894901 894906	internet.t-mobile	internet	dr 19
de	T-Mobile(Telekom)	26201 26206	894901 894906	internet.t-mobile	mms	dr
de	Congstar	26201	894901	internet.t-mobile	internet	dr 10
de	Vodafone	26202 26204 26209	894902 894904 894909	web.vodafone.de	internet	dr 13
de	Vodafone	26202 26204 26209	894902 894904 894909	event.vodafone.de	internet	dr 13

de	FONIC	26207 26208 26211	894907 894908 894911	pinternet.interkom.de	internet	dr
de	simyo Internet	26203 26205 26277	894903 894905 894977	internet.eplus.de	internet	dr 21
de	Alice	26207	894907	internet.partner1	internet	dr 19
de	1&1	26202 26204 26209	894902 894904 894909	web.vodafone.de	internet	dr
de	1&1	26202 26204 26209	894902 894904 894909	mail.partner.de	internet	dr
de	Netzclub	26207 26208 26211	894907 894908 894911	pinternet.interkom.de	internet	dr
dk	3	23806	894506	bredband.tre.dk	internet	dr
dk	3	23806	894506	net.tre.dk	internet	dr
dk	3	23806	894506	data.tre.dk	internet	dr
dk	3	23806	894506	static.tre.dk	internet	dr
dk	OiSTER	23806	894506	bredband.oister.dk	internet	dr
dk	OiSTER	23806	894506	data.dk	internet	dr
dk	OiSTER	23806	894506	data.tre.dk	mms	dr
dk	Lycamobile	23812	894512	data.lycamobile.dk	internet	dr
dk	Telenor	23802 23877	894502 894577	internet	internet	dr 21
dk	Telenor	23802 23877	894502 894577	telenor	mms	dr
dk	CBB Mobil	23802 23877	894502 894577	internet	internet	dr

dk	TDC	23801	894501	internet	internet	dr 19
dk	TDC	23801	894501	internet.no	internet	dr
dk	TDC	23801	894501	internet.se	internet	dr
dk	TDC	23801	894501	mms.tdc.fi	mms	dr
dk	Fullrate			internet	internet	dr
dk	Telia	23830	894530	www.internet.mtelia.dk	internet	dr
dk	Telia	23830	894530	www.mms.mtelia.dk	mms	dr
dk	BiBoB	23802	894502	internet.bibob.dk	internet	dr
dk	Telmore	23801	894501	internet	internet	dr 19
dk	Telmore	23801	894501	mms	mms	dr
dk	Unotel	23801	894501	internet	internet	dr
dk	happiimobil	23801	894501	internet	internet	dr
dk	Onfone Internet DK	23801	894501	internet	internet	dr
do	Orange	37001	89101	orangenet.com.do	internet	dr
do	Claro	37002	89102	internet.ideasclaro.com.do	internet	dr 19
do	Viva	37004	89104	edge.viva.net.do	internet	dr
dz	Djezzy	60302	8921302	djezzy.internet	internet	dr
dz	Djezzy	60302	8921302	djezzy.mms	mms	dr
dz	Mobilis	60301	8921301	internet	internet	dr
dz	Mobilis	60301	8921301	mms	mms	dr
dz	Nedjma	60303	8921303	internet	internet	dr
dz	Nedjma	60303	8921303	nedjmaMMS	mms	dr
ec	Movistar UMTS	74000	8959300	navega.movistar.ec	internet	dr

ec	Movistar UMTS	74000	8959300	mms.movistar.com.ec	mms	d
ec	Porta 3G	74001	8959301	internet.porta.com.ec	internet	d
ec	Porta 3G	74001	8959301	mms.porta.com.ec	mms	d
ee	EMT	24801	8937201	internet.emt.ee	internet	d 2
ee	EMT	24801	8937201	mms.emt.ee	mms	d
ee	Nordea	24801	8937201	internet.emt.ee	internet	d
ee	Elisa	24802	8937202	internet	internet	d
ee	Elisa	24802	8937202	mms	mms	d
ee	Elisa	24802	8937202	mms	mms	d
ee	Tele2	24803	8937203	internet.tele2.ee	internet	d
ee	Tele2	24803	8937203	internet.tele2.fi	mms	d
eg	Vodafone	60202	892002	internet.vodafone.net	internet	d 2
eg	Etisalat	60203	892003	etisalat	internet	d
eg	Etisalat	60203	892003	Etisalat	mms	d
eg	MobiNil	60201	892001	mobinilweb	internet	d 1
eg	MobiNil	60201	892001	mobinilmms	mms	d
es	Euskaltel	21408	893408	internet.euskaltel.mobi	internet	d
es	Lebara			gprsmov.lebaramobile.es	internet	d
es	Lowi			lowi.private.omv.es	internet	d
es	Lycamobile	21425	893425	data.lycamobile.es	internet	d
es	Másmovil	21403	893403	internetmas	internet	d
es	móbil R (Mundo-R)	21417	893417	internet.mundo-r.com	internet	d
es	Happy Móvil/ moviData	21403	893403	INTERNETTPH	internet	d 6

es	ONO	21418	893418	internet.ono.com	internet	d 62
es	Pepephone	21406	893406	gprs.pepephone.com	internet	d
es	Pepephone	21406	893406	gprsmov.pepephone.com	internet	d
es	Orange	21403 21409	893403 893409	internet	internet	d 85
es	Simyo	21419	893419	gprs-service.com	internet	d 19
es	Telecable	21416	893416	internet.telecable.es	internet	d
es	Movistar (Telefónica)	21405 21407	893405 893407	telefonica.es	internet	d 19
es	Movistar (Telefónica)	21405 21407	893405 893407	movistar.es	internet	d
es	Vodafone	21401 21406 21456	893401 893406 893456	ac.vodafone.es	internet	d 21
es	Vodafone	21401 21406 21456	893401 893406 893456	airtelnet.es	internet	d 21
es	Vodafone	21401 21406 21456	893401 893406 893456	mms.vodafone.net	mms	d
es	Yoigo	21404	893404	internet	internet	d 21
es	Yoigo	21404	893404	mms	mms	d
es	Jazztel	21421	893421	jazzinternet	internet	d 87
es	Carrefour Móvil			CARREFOURINTERNET	internet	d
es	Tuenti Móvil	21405	893405	tuenti.com	internet	d
es	Eroski Móvil	21424	893424	gprs.eroskimovil.es		d
es	LlamaYa móvil	21403	893403	moreinternet	internet	d

es	Amena	21403	893403	orangeworld	internet	d
et	Ethio Telecom	63601	8925101	etc.com	internet	d 2
fo	Vodafone FO	28802	8929802	vmc.vodafone.fo	internet	d
fi	Kuiri	24431	8935831	kuirinet	internet	d
fi	DNA	24412	8935812	data.dna.fi	internet	d
fi	DNA	24412	8935812	internet	internet	d
fi	Elisa	24405	8935805	internet	internet	d
fi	Saunalahti	24421	8935821	internet.saunalahti	internet	d 1
fi	Saunalahti	24421	8935821	internet4	internet	d 1
fi	Saunalahti	24421	8935821	internet	internet	d 1
fi	Saunalahti	24421	8935821	mms.saunalahti.fi	mms	d
fi	Sonera	24491	8935891	internet	internet	d 1
fi	Sonera	24491	8935891	prointernet	internet	d 1
fi	Sonera	24491	8935891	telefinland	mms	d
fi	Welho			internet.welho.fi	internet	d
fj	Vodafone / Kidanet	54201	8967901	vfinternet.fj	internet	d
fj	Vodafone / Kidanet	54201	8967901	kidanet.fj	internet	d
fj	Vodafone / Kidanet	54201	8967901	prepay.vfinternet.fj	internet	d
fr	A Mobile (Auchan Telecom)			wap65	internet	d

fr	Bouygues Telecom	20820 20821	893320 893321	a2bouygtel.com	internet	d
fr	Bouygues Telecom	20820 20821	893320 893321	b2bouygtel.com	internet	d
fr	Bouygues Telecom	20820 20821	893320 893321	ebouygtel.com	internet	d
fr	Bouygues Telecom	20820 20821	893320 893321	mmsbouygtel.com	internet	d
fr	Bouygues Telecom	20820 20821	893320 893321	pcebouygtel.com	internet	d
fr	Bouygues Telecom	20820 20821	893320 893321	mmsbouygtel.com	mms	d
fr	Free Mobile	20815	893315	free	internet	d
fr	Free Mobile	20815	893315	mmsfree	mms	d
fr	Free Mobile	20815	893315	mmsfree	mms	d
fr	Lycamobile	20825	893325	data.lycamobile.fr	internet	d
fr	Orange	20801 20800	893301 893300	orange.fr	internet	d 1
fr	Orange	20801 20800	893301 893300	internet-entreprise	internet	d 1
fr	Orange	20801 20800	893301 893300	orange	internet	d 1
fr	Orange	20801 20800	893301 893300	orange-mib	internet	d 1
fr	Orange	20801 20800	893301 893300	orange-acte	mms	d
fr	Orange	20801 20800	893301 893300	orange.ie	internet	d
fr	Prixtel	20801 20810	893301 893310	Orange	internet	d
fr	Prixtel	20801 20810	893301 893310	orange.acte	mms	d

fr	Prixtel	20801 20810	893301 893310	sl2sfr	internet	dr
fr	Prixtel	20801 20810	893301 893310	sl2sfr	mms	dr
fr	SFR	20810 20811	893310 893311	websfr	internet	dr 17
fr	SFR	20810 20811	893310 893311	wapsfr	wap	dr
fr	SFR	20810 20811	893310 893311	internetpro	internet	dr
fr	SFR	20810 20811	893310 893311	ipnet	internet	dr
fr	SFR	20810 20811	893310 893311	slsfr	internet	dr 17
fr	SFR	20810 20811	893310 893311	sl2sfr	internet	dr
fr	SFR	20810 20811	893310 893311	internetneuf	internet	dr
fr	SFR	20810 20811	893310 893311	mms65	mms	dr
fr	Transatel Telecom	20822	893322	netgprs.com	internet	dr
fr	TEN	20801	893301	ao.fr	internet	dr
fr	TEN	20801	893301	ofnew.fr	internet	dr
fr	TEN	20801	893301	orange.acte	mms	dr
gb	BT Mobile	23400	894400	btmobile.bt.com	internet	dr
gb	Lycamobile	23426	894426	data.lycamobile.co.uk	internet	dr
gb	O2	23402 23410 23411	894402 894410 894411	mobile.o2.co.uk	internet	dr 19

gb	O2	23402 23410 23411	894402 894410 894411	mobile.o2.co.uk	internet	dr 19
gb	O2	23402 23410 23411	894402 894410 894411	payandgo.o2.co.uk	internet	dr
gb	O2	23402 23410 23411	894402 894410 894411	idata.o2.co.uk	internet	dr
gb	O2	23402 23410 23411	894402 894410 894411	m-bb.o2.co.uk	internet	dr 82
gb	O2	23402 23410 23411	894402 894410 894411	wap.o2.co.uk	wap	dr
gb	giffgaff	23402 23410 23411	894402 894410 894411	giffgaff.com	internet	dr
gb	giffgaff	23402 23410 23411	894402 894410 894411	wap.o2.co.uk	mms	dr
gb	TalkTalk			mobile.talktalk.co.uk		dr
gb	T-Mobile	23430	894430	general.t-mobile.uk	internet	dr 14
gb	T-Mobile	23430	894430	general.t-mobile.uk	internet	dr 14
gb	Tesco Mobile	23402 23410 23411	894402 894410 894411	prepay.tesco-mobile.com	internet	dr '
gb	Virgin Mobile	23431 23432	894431 894432	vdata	internet	dr 19
gb	Virgin Mobile	23431 23432	894431 894432	goto.virginmobile.uk	internet	dr
gb	Virgin Mobile	23431 23432	894431 894432	orange.acte	mms	dr

gb	Virgin Mobile	23431 23432	894431 894432	vmms	mms	d
gb	Vodafone	23415	894415	internet	internet	d 1
gb	Vodafone	23415	894415	pp.vodafone.co.uk	internet	d 1
gb	Vodafone	23415	894415	ppbundle.internet	internet	d 1
gb	Vodafone	23415	894415	pp.internet	internet	d
gb	Asda Mobile	23415	894415	asdamobiles.co.uk	internet	d
gb	Asda Mobile	23415	894415	asdamobiles.co.uk	mms	d
gb	3	23420	894420	3internet	internet	d
gb	3	23420	894420	three.co.uk	internet	d 1
gb	Orange	23433 23434	894433 894434	orangeinternet	internet	d 1
gb	Orange	23433 23434	894433 894434	internetvpn	internet	d 1
gb	Orange	23433 23434	894433 894434	orangewap	wap	d 1
ge	Geocell	28201	8999501	Internet	internet	d 2
ge	Geocell	28201	8999501	mms	mms	d
gg	Airtel-Vodaphone	23403	894403	airtel-ci-gprs.com	internet	d
gg	Sure (Cable & Wireless)	23455	894455	wap	wap	d
gg	Sure (Cable & Wireless)	23455	894455	internet	internet	d
gg	Sure (Cable & Wireless)	23455	894455	mms	mms	d

gg	Wave Telecom	23450	894450	pepper	internet	dr 21
gg	Wave Telecom	23450	894450	mms	mms	dr
gh	MTN	62001	8923301	internet	internet	dr
gh	Vodafone	62002	8923302	browse	internet	dr
gh	Tigo	62003	8923303	web.tigo.com.gh	internet	dr
gh	Airtel	62006	8923306	internet	internet	dr
gh	GloGhana	62007	8923307	internet	internet	dr
gh	GloGhana	62007	8923307	mms	mms	dr
gl	Tele Greenland A/S			internet	internet	dr
gr	Cosmote	20201	893001	internet	internet	dr
gr	Vodafone	20205	893005	internet	internet	dr
gr	Vodafone	20205	893005	web.session	internet	dr 21
gr	Wind	20209 20210	893009 893010	gint.b-online.gr	internet	dr
gr	Wind	20209 20210	893009 893010	q-mms.myq.gr	mms	dr
gt	Claro	70401	8950201	internet.ideasclaro	internet	dr
gt	Comcel / Tigo	70402	8950202	Wap.tigo.gt	internet	dr
gt	Comcel / Tigo	70402	8950202	mms.tigo.gt	mms	dr
gt	Movistar	70403	8950203	internet.movistar.gt	internet	dr
gn	Orange	61101	8922401	internetogn	internet	dr
gn	Cellcom	61105	8922405	internet.cellcom.com	internet	dr
gy	GT&T Cellink Plus	73802	8959202	wap.cellinkgy.com	internet	dr
gy	DigiCel	73801	8959201	internet	internet	dr

gy	DigiCel	73801	8959201	wap.digicelgy.com	mms	dr
hk	CSL	45400 45402	8985200 8985202	internet	internet	dr 20
hk	CSL	45400 45402	8985200 8985202	hkcsl	mms	dr
hk	New World	45410	8985210	internet	internet	dr
hk	New World	45410	8985210	peoples.mms	mms	dr
hk	China Mobile	45412	8985212	peoples.net	internet	dr
hk	China Mobile	45412	8985212	SmarTone-Vodafone	mms	dr
hk	SmarTone	45406	8985206	internet	internet	dr
hk	PCCW (Sunday)	45416 45419	8985216 8985219	internet	internet	dr
hk	PCCW (Sunday)	45416 45419	8985216 8985219	pccwdata	internet	dr
hk	PCCW (Sunday)	45416 45419	8985216 8985219	pccw	internet	dr
hk	PCCW (Sunday)	45416 45419	8985216 8985219	pccwmms	mms	dr
hk	PCCW (Sunday)	45416 45419	8985216 8985219	pccw	mms	dr
hk	Sunday	45416	8985216	internet	internet	dr
hk	Orange	45404	8985204	web.orangehk.com	internet	dr
hk	3	45403 45404	8985203 8985204	mobile.three.com.hk	internet	dr
hk	3	45403 45404	8985203 8985204	mobile.lte.three.com.hk	internet	dr
hk	Lycamobile	45423	8985223	data.lycamobile.hk	internet	dr
hn	Tigo	70802	8950402	internet.tigo.hn	internet	dr
hr	T-Mobile	21901	8938501	web.htgprs	internet	dr

hr	VIPNET	21910	8938510	data.vip.hr	internet	d
hr	VIPNET	21910	8938510	gprs5.vipnet.hr	internet	d
hr	VIPNET	21910	8938510	gprs0.vipnet.hr	internet	d
hr	VIPNET	21910	8938510	3g.vip.hr	internet	d 2
hr	VIPNET	21910	8938510	mms.vipnet.hr	mms	d
hr	CARNet VIPNET	21910	8938510	carnet.vip.hr	internet	d
hr	CARNet Tele2	21902	8938502	carnet.tele2.hr	internet	d
hr	CARNet Tele2	21902	8938502	internet.tele2.hr	mms	d
hr	Tele2	21902	8938502	mobileinternet.tele2.hr	internet	d '
hu	Telenor	21601	893601	net	internet	d 2
hu	Telenor	21601	893601	mms	mms	d
hu	DIGI	21601	893601	digi	internet	d
hu	T-Mobile	21630	893630	internet	internet	d 1
hu	T-Mobile	21630	893630	mms-westel	mms	d 1
hu	Vodafone	21670	893670	standardnet.vodafone.net	internet	d 8
hu	Vodafone	21670	893670	internet.vodafone.net	internet	d 8
hu	Vodafone	21670	893670	vitamax.snet.vodafone.net	internet	d 8
hu	Vodafone	21670	893670	vitamax.internet.vodafone.net	internet	d 8
hu	Invitel			invitel.mobilnet	internet	d
id	3	51089	896289	3gprs	internet	d

id	3	51089	896289	3data	internet	dr
id	AXIS	51008	896208	AXIS	internet	dr
id	AXIS	51008	896208	AXISmms	mms	dr
id	Indosat	51021 51001	896221 896201	indosatgprs	internet	dr
id	Indosat	51021 51001	896221 896201	indosatgprs	internet	dr
id	Indosat	51021 51001	896221 896201	indosatgprs	internet	dr
id	Indosat	51021 51001	896221 896201	indosatmms	mms	dr
id	Telkomsel	51010 51020	896210 896220	telkomsel	internet	dr 20
id	Telkomsel	51010 51020	896210 896220	flash	internet	dr
id	Telkomsel	51010 51020	896210 896220	internet	internet	dr
id	Telkomsel	51010 51020	896210 896220	mms	mms	dr
id	Excelcomindo (XL)	51011	896211	www.xlgprs.net	internet	dr 20
id	Excelcomindo (XL)	51011	896211	www.xlmms.net	mms	dr
ie	Lycamobile	27213	8935313	data.lycamobile.ie	internet	dr
ie	O2	27202	8935302	open.internet	internet	dr 62
ie	O2	27202	8935302	pp.internet	internet	dr 62
ie	O2	27202	8935302	internet	internet	dr
ie	O2	27202	8935302	internet	mms	dr

ie	Vodafone	27201	8935301	hs.vodafone.ie	internet	d 8
ie	Vodafone	27201	8935301	isp.vodafone.ie	internet	d
ie	Vodafone	27201	8935301	live.vodafone.com	internet	d
ie	E-Mobile	27203	8935303	broadband.eircommbb.ie	internet	d 2
ie	E-Mobile	27203	8935303	mms.mymeteor.ie	mms	d
ie	Meteor	27203	8935303	data.mymeteor.ie	internet	d
ie	Meteor	27203	8935303	broadband.mymeteor.ie	internet	d 2
ie	Meteor	27203	8935303	isp.mymeteor.ie	internet	d
ie	Three Ireland	27205	8935305	3ireland.ie	internet	d 1
ie	Three Ireland	27205	8935305	3ireland.ie	mms	d
il	CellCom	42502	8997202	internetg	internet	d
il	CellCom	42502	8997202	mms	mms	d
il	GolanTelecom	42508	8997208	internet.golantelecom.net.il	internet	d
il	Home Cellular	42515	8997215	hcminternet	internet	d
il	Hot Mobile	42507	8997207	net.hotm	internet	d
il	Orange	42501	8997201	uinternet	internet	d 1
il	Pelephone	42503	8997203	internet.pelephone.net.il	internet	d
il	Pelephone	42503	8997203	mms.pelephone.net.il	mms	d
il	Rami Levi	42516	8997216	internet.rl	internet	d
il	YouPhone 3G	42514	8997214	data.youphone.co.il	internet	d
im	Manx Telecom	23458	894458	3gpronto	internet	d
im	Manx Telecom	23458	894458	mms.manxpronto.net	mms	d

im	Sure (Cable & Wireless)	23436 23455	894436 894455	wap	wap	d
im	Sure (Cable & Wireless)	23436 23455	894436 894455	internet	internet	d
in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812	aircelweb	internet	d
in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812	aircelgprs	internet	d

in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812	aircelgprs.po	internet	dr
in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812	aircelgprs.pr	internet	dr
in	AIRCEL	40417 40428 40429 40437 40441	899117 899128 899129 899137 899141	aircelmms	mms	dr

		40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812			
in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802 405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802 8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812	aircelmms.po	mms	dr
in	AIRCEL	40417 40428 40429 40437 40441 40442 40491 405800 405801 405802	899117 899128 899129 899137 899141 899142 899191 8991800 8991801 8991802	aircelmms	mms	dr

		405803 405804 405805 405806 405807 405808 405809 405810 405811 405812	8991803 8991804 8991805 8991806 8991807 8991808 8991809 8991810 8991811 8991812			
in	Airtel	40402 40403 40406 40410 40428 40431 40437 40440 40441 40442 40445 40449 40470 40490 40492 40493 40496 40497 40498 40551 40552 40554 40556	899102 899103 899106 899110 899128 899131 899137 899140 899141 899142 899145 899149 899170 899190 899192 899193 899196 899197 899198 899151 899152 899154 899156	airtelgprs.com	internet	d 2
in	Vodafone	40401 40405 40411 40413 40415 40420 40427 40430 40443 40446 40460 40484	899101 899105 899111 899113 899115 899120 899127 899130 899143 899146 899160 899184	www	internet	d

		40486 40488 40566 405750 405751 405752 405753 405754 405755 405756	899186 899188 899166 8991750 8991751 8991752 8991753 8991754 8991755 8991756			
in	Vodafone	40401 40405 40411 40413 40415 40420 40427 40430 40443 40446 40460 40484 40486 40488 40566 405750 405751 405752 405753 405754 405755 405756	899101 899105 899111 899113 899115 899120 899127 899130 899143 899146 899160 899184 899186 899188 899166 8991750 8991751 8991752 8991753 8991754 8991755 8991756	portalnmms	mms	dr
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171	bsnlnet	internet	dr

		40472 40473 40474 40475 40476 40477 40480 40481	899172 899173 899174 899175 899176 899177 899180 899181			
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	bsnlwap	wap	d
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174	bsnlsouth	internet	d

		40475 40476 40477 40480 40481	899175 899176 899177 899180 899181			
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	gprssouth.cellone.in	internet	dr
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177	gprsnorth.cellone.in	internet	dr

		40480 40481	899180 899181			
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	gprswest.cellone.in	internet	dr
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	www.e.pr	internet	dr 21

in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	www.e.po	internet	d 2
in	BSNL/CellOne	40434 40438 40451 40453 40454 40455 40457 40458 40459 40462 40464 40466 40471 40472 40473 40474 40475 40476 40477 40480 40481	899134 899138 899151 899153 899154 899155 899157 899158 899159 899162 899164 899166 899171 899172 899173 899174 899175 899176 899177 899180 899181	bsnlmms	mms	d
in	Idea Cellular	40404 40407 40412	899104 899107 899112	internet	internet	d

		40414 40419 40422 40424 40444 40456 40482 40570 405799 405845 405848 405850	899114 899119 899122 899124 899144 899156 899182 899170 8991799 8991845 8991848 8991850			
in	Idea Cellular	40404 40407 40412 40414 40419 40422 40424 40444 40456 40482 40570 405799 405845 405848 405850	899104 899107 899112 899114 899119 899122 899124 899144 899156 899182 899170 8991799 8991845 8991848 8991850	mms	mms	dr
in	Idea Cellular	40404 40407 40412 40414 40419 40422 40424 40444 40456 40482 40570 405799 405845 405848 405850	899104 899107 899112 899114 899119 899122 899124 899144 899156 899182 899170 8991799 8991845 8991848 8991850	mmsc	mms	dr
in	MTNL	40468 40469	899168 899169	mtnl.net	internet	dr

in	MTNL	40468 40469	899168 899169	mtnl.net	internet	dr
in	MTNL	40468 40469	899168 899169	gprsmtnldel	internet	dr
in	MTNL	40468 40469	899168 899169	gprsppsmum	internet	dr
in	MTNL	40468 40469	899168 899169	gprsmtnlmum	internet	dr
in	MTNL	40468 40469	899168 899169	mmsmtnldel	mms	dr
in	Reliance	40409 40436 40452 40483 40485 40505 40510 40513	899109 899136 899152 899183 899185 899105 899110 899113	smartnet	internet	dr
in	Reliance	40409 40436 40452 40483 40485 40505 40510 40513	899109 899136 899152 899183 899185 899105 899110 899113	smartwap	wap	dr
in	Reliance	40409 40436 40452 40483 40485 40505 40510 40513	899109 899136 899152 899183 899185 899105 899110 899113	rcomnet	internet	dr
in	Reliance	40409 40436 40452 40483 40485	899109 899136 899152 899183 899185	mms	mms	dr

		40505 40510 40513	899105 899110 899113			
in	Reliance	40409 40436 40452 40483 40485 40505 40510 40513	899109 899136 899152 899183 899185 899105 899110 899113	rcommms	mms	dr
in	Spice telecom	40414 40444	899114 899144	Simplyenjoy	internet	dr
in	Spice telecom	40414 40444	899114 899144	simplydownload	internet	dr
in	Spice telecom	40414 40444	899114 899144	mmsc	mms	dr
in	Tata Docomo	405025 405026 405027 405029 405030 405031 405032 405034 405035 405036 405037 405038 405039 405041 405042 405043 405044 405045 405046 405047	8991025 8991026 8991027 8991029 8991030 8991031 8991032 8991034 8991035 8991036 8991037 8991038 8991039 8991041 8991042 8991043 8991044 8991045 8991046 8991047	TATA.DOCOMO.INTERNET	internet	dr
in	Tata Docomo	405025 405026 405027 405029	8991025 8991026 8991027 8991029	TATADOCOMO3G	internet	dr

		405030 405031 405032 405034 405035 405036 405037 405038 405039 405041 405042 405043 405044 405045 405046 405047	8991030 8991031 8991032 8991034 8991035 8991036 8991037 8991038 8991039 8991041 8991042 8991043 8991044 8991045 8991046 8991047			
in	Tata Docomo	405025 405026 405027 405029 405030 405031 405032 405034 405035 405036 405037 405038 405039 405041 405042 405043 405044 405045 405046 405047	8991025 8991026 8991027 8991029 8991030 8991031 8991032 8991034 8991035 8991036 8991037 8991038 8991039 8991041 8991042 8991043 8991044 8991045 8991046 8991047	TATA.DOCOMO.MMS	mms	dr
iq	Korek	41840	8996440	net.korek.com	internet	dr
iq	Asia Cell	41850	8996450	net.asiacell.com	internet	dr
iq	Asia Cell	41850	8996450	mtnirancell	mms	dr
ir	همراه اول	43211	899811	mcinet	internet	dr
ir	ایرانسل	43235	899835	mtnirancell	internet	dr

is	Vodafone	27402 27403	8935402 8935403	vmc.gprs.is	internet	d 2
is	Nova	27411	8935411	internet.nova.is	internet	d 1
is	Nova	27411	8935411	mms.nova.is	mms	d
is	Síminn	27401	8935401	internet	internet	d 2
is	Síminn	27401	8935401	mms.simi.is	mms	d
it	Vodafone	22210	893910	mobile.vodafone.it	internet	d
it	Vodafone	22210	893910	web.omnitel.it	internet	d
it	Vodafone	22210	893910	web.omnitel.it	internet	d 8
it	TIM	22201	893901	ibox.tim.it	internet	d 2
it	TIM	22201	893901	wap.tim.it	wap	d 2
it	Wind	22288	893988	internet.wind	internet	d 1
it	Wind	22288	893988	internet.wind.biz	internet	d 1
it	Wind	22288	893988	mms.wind	mms	d
it	3	22299	893999	tre.it	internet	d 6
it	3	22299	893999	datacard.tre.it	internet	d
it	Fastweb	22299	893999	apn.fastweb.it	internet	d
it	Fastweb	22299	893999	datacard.fastweb.it	internet	d 2
it	Fastweb	22299	893999	tre.it	mms	d
it	PosteMobile	22210	893910	internet.postemobile.it	internet	d
it	PosteMobile	22210	893910	mms.postemobile.it	mms	d

it	CoopVoce	22201	893901	web.coopvoce.it	internet	d
it	Bip	22299	893999	internet.vistream.it	internet	d
it	Nòverca	22207	893907	web.noverca.it	internet	d
it	Nòverca	22207	893907	mms.noverca.it	mms	d
it	Nòverca	22207	893907	wap.noverca.it	wap	d
it	Tiscali	22201	893901	tiscalimobileinternet	internet	d
it	Lycamobile	22235	893935	data.lycamobile.it	internet	d
je	Airtel-Vodaphone	23403	894403	airtel-ci-gprs.com	internet	d
je	Sure (Cable & Wireless)	23455	894455	wap	wap	d
je	Sure (Cable & Wireless)	23455	894455	internet	internet	d
je	Jersey Telecom	23450	894450	pepper	internet	d 2
jm	Cable & Wireless	338020	891020	wap	internet	d
jm	Digicel	338050	891050	web.digiceljamaica.com	internet	d 2
jo	Orange	41677	8996277	net.orange.jo	internet	d
jo	Zain	41601	8996201	zain	internet	d
jo	Zain	41601	8996201	Zain	mms	d
jp	Softbank Mobile	44004 44006 44020 44040 44041 44042 44043 44044 44045 44046 44047	898104 898106 898120 898140 898141 898142 898143 898144 898145 898146 898147	softbank	internet	d

		44048 44090 44092 44093 44094 44095 44096 44097 44098	898148 898190 898192 898193 898194 898195 898196 898197 898198			
jp	b-mobile	44010	898110	dm.jplat.net	internet	d
jp	e-mobile	44000	898100	emb.ne.jp	internet	d
jp	NTTdocomo	44001 44002 44003 44009 44010 44011 44012 44013 44014 44015 44016 44017 44018 44019 44021 44022 44023 44024 44025 44026 44027 44028 44029 44030 44031 44032 44033 44034 44035 44036 44037 44038 44039	898101 898102 898103 898109 898110 898111 898112 898113 898114 898115 898116 898117 898118 898119 898121 898122 898123 898124 898125 898126 898127 898128 898129 898130 898131 898132 898133 898134 898135 898136 898137 898138 898139	mopera.ne.jp	internet	d

		44049 44058 44060 44061 44062 44063 44064 44065 44066 44067 44068 44069 44087 44099	898149 898158 898160 898161 898162 898163 898164 898165 898166 898167 898168 898169 898187 898199			
jp	NTTdocomo	44001 44002 44003 44009 44010 44011 44012 44013 44014 44015 44016 44017 44018 44019 44021 44022 44023 44024 44025 44026 44027 44028 44029 44030 44031 44032 44033 44034 44035 44036 44037	898101 898102 898103 898109 898110 898111 898112 898113 898114 898115 898116 898117 898118 898119 898121 898122 898123 898124 898125 898126 898127 898128 898129 898130 898131 898132 898133 898134 898135 898136 898137	mopera.net	internet	d

		44038 44039 44049 44058 44060 44061 44062 44063 44064 44065 44066 44067 44068 44069 44087 44099	898138 898139 898149 898158 898160 898161 898162 898163 898164 898165 898166 898167 898168 898169 898187 898199			
ke	Airtel	63903	8925403	ke.celtel.com	internet	d
ke	Airtel	63903	8925403	mms.yu.co.ke	mms	d
ke	Safaricom	63902	8925402	safaricom	internet	d
ke	Safaricom	63902	8925402	safaricom	internet	d
ke	Safaricom	63902	8925402	mms.safaricom.com	mms	d
ke	yu (Econet)	63905	8925405	internet.econet.co.ke	internet	d
ke	Orange	63907	8925407	bew.orange.co.ke	internet	d
kg	Beeline	43701	8999601	internet.beeline.kg	internet	d
kg	MegaCom	43705	8999605	internet	internet	d
kg	O!	43709	8999609	internet	internet	d
kh	Cellcard	45601	8985501	cellcard	internet	d
kh	Cellcard	45601	8985501	internet	mms	d
kh	Cellcard	45601	8985501	mms	mms	d
kh	Hello	45602	8985502	hellowww	internet	d
kh	Hello	45602	8985502	hellomms	mms	d
kh	qb	45604	8985504	WAP	internet	d

kh	Smart Mobile	45606	8985506	smart	internet	dr
kh	Metfone	45608	8985508	metfone	internet	dr
kh	Beeline	45609	8985509	gprs.beeline.com.kh	internet	dr
kh	Mfone	45618	8985518	Mfone	internet	dr
kr	KT	45008	898208	alwayson.ktfwing.com	internet	dr
kr	KT	45008	898208	lte.ktfwing.com	internet	dr
kr	KT	45008	898208	lte.ktfwing.com	mms	dr
kr	LG U+	45006	898206	internet.lguplus.co.kr	internet	dr
kr	LG U+	45006	898206	internet.lguplus.co.kr	mms	dr
kr	SK Telecom	45005	898205	web.sktelecom.com	internet	dr
kr	SK Telecom	45005	898205	lte.sktelecom.com	internet	dr
kr	SK Telecom	45005	898205	lte.sktelecom.com	mms	dr
kw	Zain	41902	8996502	pps	internet	dr
kw	Zain	41902	8996502	apn01	internet	dr
kw	Wataniya	41903	8996503	action.wataniya.com	internet	dr
kw	Wataniya	41903	8996503	mms.wataniya.com	mms	dr
kw	Viva	41904	8996504	viva	internet	dr
kw	Viva	41904	8996504	viva	mms	dr
kz	Beeline	40101	89701	internet.beeline.kz	internet	dr 19
kz	K'CELL	40102	89702	internet	internet	dr
kz	K'CELL	40102	89702	mms	mms	dr
kz	Activ	40102	89702	internet	internet	dr
kz	Tele2	40177	89777	internet	internet	dr
kz	Altel 4G	40177	89777	internet	internet	dr
la	ETL	45702	8985602	etlnet	internet	dr

la	Lao Telecom	45701	8985601	ltcnet	internet	dr
la	Unitel	45703	8985603	startelecom	internet	dr
la	Unitel	45703	8985603	unitel3g	internet	dr
la	Beeline (Tigo)	45708	8985608	beelinenet	internet	dr
lb	MTC Touch	41503	8996103	gprs.mtctouch.com.lb	internet	dr
lb	MTC Touch	41503	8996103	mms.mtctouch.com.lb	mms	dr
li	Datamobile	29505	8942305	datamobile.ag	internet	dr
lc	Cable & Wireless	358110	891110	internet	internet	dr
lc	Cable & Wireless	358110	891110	multimedia	mms	dr
lk	Airtel	41305	899405	www.wap.airtel.lk	internet	dr
lk	Dialog GSM	41302	899402	www.dialogsl.com	internet	dr
lk	Dialog GSM	41302	899402	ppinternet	internet	dr
lk	Dialog GSM	41302	899402	dialogbb	internet	dr
lk	Dialog GSM	41302	899402	kitbb.com	internet	dr
lk	Dialog GSM	41302	899402	www.dialogsl.com	mms	dr
lk	Dialog GSM	41302	899402	ppwap	mms	dr
lk	Hutch	41308	899408	htwap	internet	dr
lk	Mobitel	41301	899401	isp	internet	dr
lk	Tigo	41303	899403	wap	internet	dr
ls	Vodacom Lesotho	65101	8926601	internet	internet	dr
lt	Bite	24602	8937002	banga	internet	dr 19
lt	Bite	24602	8937002	mms	mms	dr
lt	TELE2 GPRS	24603	8937003	internet.tele2.lt	internet	dr

lt	TELE2 GPRS	24603	8937003	mms.tele2.lt	mms	d
lt	TELE2 GPRS	24603	8937003	mms.tele2.lv	mms	d
lt	Omnitel (contract)	24601	8937001	gprs.omnitel.net	internet	d 1
lt	Omnitel (contract)	24601	8937001	gprs.startas.lt	internet	d 1
lt	Omnitel (contract)	24601	8937001	gprs.mms.lt	mms	d
lu	LUXGSM	27001	8935201	web.pt.lu	internet	d 1
lu	LUXGSM	27001	8935201	mms.pt.lu	mms	d
lu	Tango	27077	8935277	hspa	internet	d
lu	Tango	27077	8935277	internet	internet	d 2
lu	Tango	27077	8935277	mms	mms	d
lu	Tango	27077	8935277	mms.li	mms	d
lu	Orange	27099	8935299	orange.lu	internet	d 8
lu	VOXmobile	27099	8935299	vox.lu	internet	d
lu	VOXmobile	27099	8935299	vox.lu	mms	d
lv	LMT	24701	8937101	internet.lmt.lv	internet	d 2
lv	LMT	24701	8937101	open.lmt.lv	internet	d
lv	LMT	24701	8937101	okarte.lmt.lv	internet	d
lv	LMT	24701	8937101	mms.lmt.lv	mms	d
lv	Tele2	24702	8937102	internet.tele2.lv	internet	d
lv	Tele2	24702	8937102	mobileinternet.tele2.lv	internet	d
lv	Tele2	24702	8937102	data.tele2.lv	internet	d

lv	Bite	24705	8937105	wap	internet	d
lv	Bite	24705	8937105	internet	internet	d
ma	Ittissalat Al Maghrib (IAM)	60401	8921201	www.iamgprs1.ma	internet	d
ma	Ittissalat Al Maghrib (IAM)	60401	8921201	www.iamgprs2.ma	internet	d
ma	Ittissalat Al Maghrib (IAM)	60401	8921201	Mmsiam	mms	d
ma	Medi Telecom	60400	8921200	internet1.meditel.ma	internet	d
ma	Medi Telecom	60400	8921200	internet2.meditel.ma	internet	d
ma	Medi Telecom	60400	8921200	mms.meditel.ma	mms	d
ma	WANA	60402	8921202	www.wana.ma	internet	d
ma	WANA	60402	8921202	mms.wana.ma	mms	d
md	Moldcell	25902	8937302	internet	internet	d
md	Moldcell	25902	8937302	mms	mms	d
md	Unité	25905	8937305	internet.unite.md	internet	d
md	Unité	25905	8937305	internet3g.unite.md	internet	d
md	Orange	25901	8937301	internet	internet	d
me	ProMonte GSM	29701	8938201	gprs.promonte.com	internet	d
me	ProMonte GSM	29701	8938201	mms.promonte.com	mms	d
me	T-Mobile	29702	8938202	tmcg-data	internet	d
me	T-Mobile	29702	8938202	tmcg-nw	internet	d
me	T-Mobile	29702	8938202	internet-postpaid	internet	d
me	T-Mobile	29702	8938202	internet-prepaid	internet	d
me	m:tel	29703	8938203	gprsinternet	internet	d
me	m:tel	29703	8938203	mtelmms	mms	d
mg	Airtel	64601	8926101	internet	internet	d

mg	Orange	64602	8926102	orangeworld	internet	d
mg	Telma	64604	8926104	internet	internet	d
ml	Malitel	61001	8922301	web.malitel3.ml	internet	d
ml	Orange	61002	8922302	iew	internet	d
ml	Orange	61002	8922302	internet	internet	d
mm	MPT	41401	899501	mptnet	internet	d
mm	Telenor	41406	899506	internet	internet	d
mm	Ooredoo	41405	899505	internet	internet	d
mn	MobiCom	42899	8997699	internet	internet	d
mn	MobiCom	42899	8997699	mms	mms	d
mo	3 / Hutchison	45503 45505	8985303 8985305	web.hutchisonmacau.com	internet	d
mo	3 / Hutchison	45503 45505	8985303 8985305	mms.hutchisonmacau.com	mms	d
mo	CTM	45501 45504	8985301 8985304	ctm-mobile	internet	d
mo	CTM	45501 45504	8985301 8985304	ctmmms	mms	d
mk	T-Mobile	29401	8938901	internet	internet	d
mk	One	29402	8938902	datacard	internet	d
mk	One	29402	8938902	mms	mms	d
mk	Vodafone	29403	8938903	vipoperator	internet	d
mk	Lycamobile	29404	8938904	data.lycamobile.mk	internet	d
mt	GO Mobile	27821	8935621	gosurfing	internet	d
mt	GO Mobile	27821	8935621	rtgsurfing	internet	d
mt	GO Mobile	27821	8935621	gomms	mms	d
mt	Melita	27877	8935677	web.melita	internet	d

mt	Vodafone	27801	8935601	Internet	internet	d 8
mu	Emtel	61710	8923010	WEB	internet	d
mv	Dhiraagu	47201	8996001	internet.dhimobile	internet	d
mv	Dhiraagu	47201	8996001	mms.dhimobile	mms	d
mv	Wataniya	47202	8996002	WataniyaNet	internet	d
mw	TNM	65001	8926501	Internet	internet	d
mx	Telcel	33402	895202	internet.itelcel.com	internet	d
mx	Telcel	33402	895202	mms.itelcel.com	mms	d
mx	Movistar	33403	895203	internet.movistar.mx	internet	d
my	DiGi	50216	896016	diginet	internet	d 2
my	DiGi	50216	896016	3gdgnet	internet	d
my	DiGi	50216	896016	digimms	mms	d
my	Maxis	50212 50217	896012 896017	maxisbb	internet	d
my	Maxis	50212 50217	896012 896017	net	internet	d
my	Maxis	50212 50217	896012 896017	unet	internet	d 1
my	Maxis	50212 50217	896012 896017	unet	mms	d
my	Celcom	50213 50219	896013 896019	celcom.net.my	internet	d
my	Celcom	50213 50219	896013 896019	celcom3g	internet	d
my	Celcom	50213 50219	896013 896019	celcom3g	mms	d
mz	MCel	64301	8925801	isp.mcel.mz	internet	d 2

mz	MCel	64301	8925801	mms.mcel.mz	mms	d
mz	Vodacom	64304	8925804	internet	internet	d
na	MTC	64901	8926401	ppsinternet	internet	d
na	MTC	64901	8926401	internet	internet	d
na	Leo	64903	8926403	internet	internet	d
na	Leo	64903	8926403	mms	mms	d
ng	Airtel NG	62120 62180	8923420 8923480	internet.ng.airtel.com.ng	internet	d
ng	MTN	62130 62160	8923430 8923460	web.gprs.mtnnigeria.net	internet	d
ng	Glo Mobile	62150 62170	8923450 8923470	glosecure	internet	d
ng	Glo Mobile	62150 62170	8923450 8923470	gloflat	internet	d
ng	Etisalat	62190	8923490	etisalat	internet	d
ni	Claro	71021 71073	8950521 8950573	wap.emovil	wap	d
ni	Claro	71021 71073	8950521 8950573	web.emovil	internet	d
ni	Claro	71021 71073	8950521 8950573	internet.ideasalo.ni	internet	d
ni	Claro	71021 71073	8950521 8950573	wap.ideasalo.ni	wap	d
ni	Movistar	71030	8950530	internet.movistar.ni	internet	d
nl	Hi	20408	893108	portalmmm.nl	internet	d
nl	Hi	20408	893108	portalmmm.nl	mms	d
nl	Lebara	20412	893112	multimedia.lebara.nl	internet	d
nl	Lebara	20412	893112	internet	mms	d
nl	Lycamobile	20409	893109	data.lycamobile.nl	internet	d

nl	KPN NL	20408	893108	prepaidinternet	internet	d
nl	KPN NL	20408	893108	fastinternet	internet	d
nl	KPN NL	20408	893108	internet	internet	d 6
nl	KPN NL	20408	893108	KPN4G.nl	internet	d
nl	KPN NL	20408	893108	portalmmm.nl	internet	d
nl	KPN NL	20408	893108	portalmmm.nl	mms	d
nl	MEDIONmobile	20408 20410	893108 893110	portalmmm.nl	internet	d
nl	Telfort	20412	893112	internet	internet	d
nl	T-Mobile	20416	893116	internet	internet	d
nl	T-Mobile	20416	893116	smartsites.t-mobile	internet	d
nl	T-Mobile	20416	893116	mms	mms	d
nl	Ben	20416	893116	basic.internet.ben.data	internet	d 1
nl	Ben	20416	893116	internet.ben	internet	d 1
nl	Ben	20416	893116	mms.ben	mms	d
nl	Orange	20420	893120	internet	internet	d
nl	Tele2	20402	893102	data.tele2.nl	internet	d
nl	XS4ALL Mobiel Internet			umts.xs4all.nl	internet	d
nl	Vodafone	20404 20444	893104 893144	live.vodafone.com	internet	d 6
nl	Vodafone	20404 20444	893104 893144	office.vodafone.nl	internet	d
nl	Vodafone	20404 20444	893104 893144	m2m.global.vodafone.nl	internet	d
nl	Galaxy	20408	893108	internet	internet	d

no	Netcom	24202	894702	internet.netcom.no	internet	dr 21
no	Netcom	24202	894702	mms.netcom.no	mms	dr
no	Chess	24202	894702	netcom	internet	dr
no	Chess	24202	894702	mms.netcom.no	mms	dr
no	Telenor	24201	894701	telenor.smart	internet	dr
no	Telenor	24201	894701	telenor.smart	mms	dr
no	Telenor	24201	894701	mms.ventelo.no	mms	dr
no	TDC	24208	894708	internet.no	internet	dr 80
no	Network Norway	24205	894705	internet	internet	dr
no	Network Norway	24205	894705	mms	mms	dr
no	OneCall	24205	894705	internet	internet	dr
no	MyCall	24205	894705	internet	internet	dr
no	Altibox			internet	internet	dr
no	Telipol	24205	894705	internet	internet	dr
no	Ventelo	24207	894707	internet.ventelo.no	internet	dr
no	Ludo Mobil	24207	894707	internet.ventelo.no	internet	dr
no	Tele2	24202 24204	894702 894704	internet.tele2.no	wap	dr
no	Tele2	24202 24204	894702 894704	mobileinternet.tele2.no	internet	dr
no	Phonero	24201	894701	internet.phonero.no	internet	dr
no	Lycamobile	24223	894723	data.lyca-mobile.no	internet	dr
np	Nepal Telecom	42901	8997701	ntnet	internet	dr
np	Mero Mobile	42902	8997702	mero	internet	dr

nz	Telecom New Zealand	53000 53005	896400 896405	wap.telecom.co.nz	wap	d
nz	Telecom New Zealand	53000 53005	896400 896405	internet.telecom.co.nz	internet	d 2
nz	Telecom New Zealand	53000 53005	896400 896405	direct.telecom.co.nz	internet	d 2
nz	Telecom New Zealand	53000 53005	896400 896405	oa.telecom.co.nz	internet	d
nz	Telecom New Zealand	53000 53005	896400 896405	wap.telecom.co.nz	mms	d
nz	Vodafone	53001	896401	live.vodafone.com	internet	d 2
nz	Vodafone	53001	896401	www.vodafone.net.nz	internet	d
nz	Vodafone	53001	896401	internet	internet	d 2
nz	2-Degrees	53024	896424	mms	mms	d
nz	2-Degrees	53024	896424	internet	internet	d 1
nz	2-Degrees	53024	896424	mms	mms	d
nz	TelstraClear			www.telstraclear.net.nz	internet	d
nz	Orcon			www.orcon.net.nz	internet	d
om	Oman Mobile	42202	8996802	taif	internet	d
om	Oman Mobile	42202	8996802	internet	internet	d
om	Oman Mobile	42202	8996802	MMS	mms	d
om	Nawras	42203	8996803	isp.nawras.com.om	internet	d
om	Nawras	42203	8996803	mms.nawras.com.om	mms	d
pa	Cable and Wireless	71401	8950701	apn01.cwpanama.com.pa	internet	d
pa	Cable and Wireless	71401	8950701	apn02.cwpanama.com.pa	mms	d

pa	Movistar	71402	8950702	internet.movistar.pa	internet	d 2
pe	Claro	71610	895110	tim.pe	internet	d
pe	Claro	71610	895110	ba.amx	internet	d
pe	Movistar	71606	895106	movistar.pe	internet	d
pe	Nextel	71607	895107	datacard.nextel.com.pe	internet	d
pe	Nextel	71607	895107	mms	mms	d
pf	Vini	54720	8968920	internet	internet	d
pg	Digicel	53703	8967503	internet.digicelpng.com	internet	d 8.
ph	Globe Telecom	51502	896302	internet.globe.com.ph	internet	d 2
ph	Globe Telecom	51502	896302	http.globe.com.ph	internet	d 2
ph	Globe Telecom	51502	896302	www.globe.com.ph	internet	d 2
ph	Globe Telecom	51502	896302	mms.globe.com.ph	mms	d
ph	Smart	51503	896303	internet	internet	d 2
ph	Smart	51503	896303	mms	mms	d
ph	Digitel (Sun Cellular)	51505	896305	minternet	internet	d
ph	Digitel (Sun Cellular)	51505	896305	mms	mms	d
pk	Djuice	51506	899206	internet	internet	d
pk	Mobilink	51501	899201	connect.mobilinkworld.com	internet	d
pk	Mobilink	51501	899201	jazzconnect.mobilinkworld.com	internet	d
pk	Telenor	51506	899206	internet	internet	d
pk	Ufone	41003	899203	ufone.internet	internet	d

pk	Ufone	41003	899203	ufone.mms	mms	d
pk	Warid	51507	899207	warid	internet	d
pk	Warid	51507	899207	zongmms	mms	d
pk	ZONG	51504	899204	zonginternet	internet	d
pl	T-mobile	26002	894802	internet	internet	d 2
pl	T-mobile	26002	894802	mms	mms	d
pl	Play Online	26006	894806	internet	internet	d
pl	Play Online	26006	894806	mms	mms	d
pl	Orange	26003	894803	internet	internet	d 1
pl	Orange	26003	894803	vpn	internet	d 1
pl	Plus	26001	894801	www.plusgsm.pl	internet	d 2
pl	Plus	26001	894801	pro.plusgsm.pl	internet	d 2
pl	Plus	26001	894801	m2m.plusgsm.pl	internet	d 2
pl	Plus	26001	894801	optimizer	internet	d 2
pl	Plus	26001	894801	mms.plusgsm.pl	mms	d
pl	Cyfrowy Polsat	26012	894812	multi.internet	internet	d
pl	aero2	26017	894817	darmowy	internet	d
pl	Multimo	26003	894803	internet	internet	d
pl	Multimo	26003	894803	mni.internet	internet	d
pl	Multimo	26003	894803	telogic.internet	internet	d
pl	FreeM	26001	894801	freedata.pl	internet	d

pl	Heyah	26002	894802	heyah.pl	internet	dr 21
pl	GaduAIR	26001	894801	internet.gadu-gadu.pl	internet	dr
pl	Aster	26003	894803	aster.internet	internet	dr
pl	Netia	26006	894806	internet	internet	dr
pl	Vectra	26006	894806	internet	internet	dr
pl	mBank mobile	26001	894801	www.mobile.pl	internet	dr
pl	INEA	26003	894803	telogic.internet	internet	dr
pl	Mobilking	26002	894802	wapMOBILKING	internet	dr
pl	SamiSwoi	26001	894801	www.plusgsm.pl	internet	dr
pl	Lycamobile	26009	894809	data.lycamobile.pl	internet	dr
pt	Kanguru	26803	8935103	kanguru-portatil	internet	dr 62
pt	Kanguru	26803	8935103	kanguru-tempo	internet	dr 62
pt	Kanguru	26803	8935103	kangurufixo	internet	dr 62
pt	Kanguru	26803	8935103	noapn		dr 62
pt	Kanguru	26803	8935103	umts	mms	dr
pt	Clix	26803	8935103	clixinternetmovel	internet	dr
pt	Optimus	26803	8935103	umts	internet	dr
pt	Optimus	26803	8935103	internet	internet	dr
pt	Lycamobile	26804	8935104	data.lycamobile.pt	internet	dr
pt	TMN	26806	8935106	internet	internet	dr 88
pt	TMN	26806	8935106	mmsc.tmn.pt	mms	dr 19

pt	TMN	26806	8935106	mmsc.tmn.pt	mms	d
pt	Vodafone	26801	8935101	internet.vodafone.pt	internet	d 2
pt	Vodafone	26801	8935101	net2.vodafone.pt	internet	d
pt	Vodafone	26801	8935101	vas.vodafone.pt	mms	d
pt	ZON	26801	8935101	internet.zon.pt	internet	d
pt	ZON	26801	8935101	vas.zon.pt	mms	d
pt	ZON	26801	8935101	vas.zon.pt	mms	d
py	VOX	74401	8959501	vox.wap	internet	d
py	VOX	74401	8959501	vox.mms	mms	d
py	Personal	74405	8959505	internet	internet	d
py	Tigo	74404	8959504	internet.tigo.py	internet	d
py	Tigo	74404	8959504	broadband.tigo.py	internet	d
py	Claro	74402	8959502	gprs.claro.com.py	internet	d
qa	Vodafone	42702	8997402	web.vodafone.com.qa	internet	d
qa	Vodafone	42702	8997402	vodafone.com.qa	internet	d
qa	Q-Tel	42701	8997401	gprs.qtel	internet	d
qa	Q-Tel	42701	8997401	mms.qtel	mms	d
re	SFR Réunion	64710	8926210	websfr	internet	d
re	SFR Réunion	64710	8926210	slsfr	internet	d
re	SFR Réunion	64710	8926210	internetpro	internet	d
re	SFR Réunion	64710	8926210	ipnet	internet	d
re	SFR Réunion	64710	8926210	mmssfr	mms	d
ro	Orange	22610	894010	internet	internet	d 1
ro	Vodafone	22601	894001	tobe.vodafone.ro	internet	d

ro	Vodafone	22601	894001	internet.vodafone.ro	internet	d
ro	Vodafone	22601	894001	internet.pre.vodafone.ro	internet	d
ro	Vodafone	22601	894001	live.vodafone.com	internet	d
ro	Vodafone	22601	894001	live.pre.vodafone.ro	internet	d
ro	Digi.Net Mobil	22605	894005	internet	internet	d
ro	Digi.Net Mobil	22605	894005	static	internet	d
ro	Lycamobile	22616	894016	data.lycamobile.ro	internet	d
rs	Telenor	22001	8938101	internet	internet	d
rs	Telenor	22001	8938101	mms	mms	d
rs	Telekom Srbija	22003	8938103	gprsinternet	internet	d
rs	Telekom Srbija	22003	8938103	mms	mms	d
rs	VIP Mobile	22005	8938105	vipmobile	internet	d
rs	VIP Mobile	22005	8938105	vipmobile.mms	mms	d
rw	MTN	63510	8925010	internet.mtn	internet	d
rw	Tigo	63513	8925013	web.tigo.rw	internet	d
ru	BaikalWestCom	25012	89712	inet.bwc.ru	internet	d 8
ru	BaikalWestCom	25012	89712	mms.bwc.ru	mms	d
ru	Beeline	25028 25099	89728 89799	home.beeline.ru	internet	d 2
ru	Beeline	25028 25099	89728 89799	internet.beeline.ru	internet	d 2
ru	ETK	25005	89705	wap.etk.ru	internet	d
ru	MTS	25001	89701	internet.mts.ru	internet	d 2
ru	Megafon	25002	89702	internet	internet	d
ru	Megafon	25002	89702	mms	mms	d

ru	NCC	25003	89703	internet	internet	d
ru	NTC	25016	89716	internet.ntc	internet	d
ru	NTC	25016	89716	mms.ntc	mms	d
ru	Enisey TeleCom	25005	89705	internet.etk.ru	internet	d
ru	Motiv	25035	89735	inet.ycc.ru	internet	d
ru	Tatincom			internet.tatincom.ru	internet	d
ru	Tele2	25020	89720	internet.tele2.ru	internet	d
ru	U-tel	25039	89739	internet.usi.ru	internet	d
ru	U-tel	25039	89739	mnc039.mcc250.gprs	mms	d
sa	Mobily	42003	8996603	web1	internet	d
sa	Mobily	42003	8996603	web2	internet	d
sa	Mobily	42003	8996603	mms1	mms	d
sa	STC	42001	8996601	jawalnet.com.sa	internet	d
sa	STC	42001	8996601	mms.net.sa	mms	d
sa	STC	42001	8996601	mms.net.sa	mms	d
sa	Zain	42004	8996604	zain	internet	d
se	3	24002 24004	894602 894604	data.tre.se	internet	d
se	3	24002 24004	894602 894604	bredband.tre.se	internet	d
se	3	24002 24004	894602 894604	net.tre.se	internet	d
se	Glocalnet	24008	894608	bredband.glocalnet.se	internet	d

se	Glocalnet	24008	894608	internet.glocalnet.se	internet	dr
se	Glocalnet	24008	894608	services.glocalnet.se	mms	dr
se	Halebop	24001	894601	halebop.telia.se	internet	dr
se	Halebop	24001	894601	mms.telia.se	mms	dr
se	Tele2	24007 24005	894607 894605	internet.tele2.se	internet	dr
se	Tele2	24007 24005	894607 894605	mobileinternet.tele2.se	internet	dr
se	Comviq	24007 24005	894607 894605	data.comviq.se	internet	dr
se	Comviq	24007 24005	894607 894605	internet.tele2.se	internet	dr
se	Comviq	24007 24005	894607 894605	mobileinternet.tele2.se	internet	dr
se	Comviq	24007 24005	894607 894605	internet.tele2.se	mms	dr
se	Multicom Security	24001 24005	894601 894605	mobiflex.telia.se	internet	dr
se	Multicom Security	24001 24005	894601 894605	mms.telia.se	mms	dr
se	Telenor	24004 24006 24008	894604 894606 894608	internet.telenor.se	internet	dr
se	Telenor	24004 24006 24008	894604 894606 894608	services.telenor.se	internet	dr
se	Telenor	24004 24006 24008	894604 894606 894608	bredband.telenor.se	internet	dr
se	Telenor	24004 24006 24008	894604 894606 894608	sp-services	mms	dr

se	Telia	24001 24005	894601 894605	online.telia.se	internet	d
se	TDC	24014	894614	internet.se	internet	d
se	TDC	24014	894614	data.tre.se	mms	d
se	djuice	24009	894609	internet.djuice.se	internet	d
se	Com Hem	24002 24004	894602 894604	bredband.comhem.se	internet	d
se	Parlino	24007	894607	internet.parlino.se	internet	d
se	Universal Telecom			sp-internet	internet	d
se	Universal Telecom			internet.uvtc.com	internet	d
se	Lycamobile	24012	894612	data.lycamobile.se	internet	d
sg	M1	52503	896503	sunsurf	internet	d 2
sg	M1	52503	896503	miworld	internet	d
sg	M1	52503	896503	miworldcard	internet	d
sg	M1	52503	896503	prepaidbb	internet	d
sg	M1	52503	896503	sunsurfmcard	internet	d
sg	M1	52503	896503	miworld	mms	d
sg	SingTel	52501 52502	896501 896502	internet	internet	d 1
sg	SingTel	52501 52502	896501 896502	e-ideas	mms	d
sg	Starhub	52505	896505	shwap	wap	d
sg	Starhub	52505	896505	shppd	internet	d
sg	Starhub	52505	896505	shinternet	internet	d
sg	Starhub	52505	896505	shmms	mms	d

si	Mobitel	29341	8938641	internet	internet	dr 19
si	Mobitel	29341	8938641	internetpro	internet	dr 19
si	Vodafone / Simobil	29340	8938640	internet.simobil.si	internet	dr 19
si	Vodafone / Simobil	29340	8938640	mms.simobil.si	mms	dr
si	T-2	29364	8938664	internet.t-2.net	internet	dr
si	T-2	29364	8938664	mms.t-2.net	mms	dr
sk	Slovak Telekom	23102 23104	8942102 8942104	internet	internet	dr 19
sk	Slovak Telekom	23102 23104	8942102 8942104	mms	mms	dr
sk	Orange	23101	8942101	internet	internet	dr 21
sk	O2	23106	8942106	o2internet	internet	dr 19
sk	O2	23106	8942106	o2mms	mms	dr
sn	Tigo	60802	8922102	wap.sentelgsm.com	internet	dr 20
sv	Movistar	70604	8950304	internet.movistar.sv	internet	dr
sv	digicel	70602	8950302	wap.digicelsv.com	internet	dr
sv	digicel	70602	8950302	wap.digicelsv.com	mms	dr
sv	Tigo	70603	8950303	internet.tigo.sv	internet	dr
sv	Claro	70601	8950301	internet.ideasclaro	internet	dr
sd	Zain	63401	8924901	internet	internet	dr
sd	MTN	63402	8924902	internet	internet	dr
sd	Sudani	63407	8924907	sudaninet	internet	dr

th	AIS	52001	896601	internet	internet	dr 20
th	AIS	52001	896601	multimedia	mms	dr
th	DTAC	52018	896618	www.dtac.co.th	internet	dr 20
th	DTAC	52018	896618	mms	mms	dr
th	True Move	52099	896699	internet	internet	dr
th	True Move	52099	896699	mms	mms	dr
th	TOT 3G	52015	896615	internet	internet	dr
tn	Orange	60501	8921601	weborange	internet	dr
tn	Orange	60501	8921601	mms.otun	mms	dr
tn	Orange	60501	8921601	keygp	internet	dr
tn	Orange	60501	8921601	keypro	internet	dr
tn	Tunisie Télécom / TUNTEL	60502	8921602	mms.tn	mms	dr
tn	Tunisie Télécom / TUNTEL	60502	8921602	gprs.tn	internet	dr
tn	Tunisie Télécom / TUNTEL	60502	8921602	internet.tn	internet	dr
tn	Tunisie Télécom / TUNTEL	60502	8921602	mms.tn	mms	dr
tn	Lycamobile	60502	8921602	data.lycamobile.tn	internet	dr
tn	Tunisiana	60503	8921603	internet.tunisiana.com		dr
tn	Tunisiana	60503	8921603	mms.tunisiana.com	mms	dr
tr	Avea	28603 28604	899003 899004	internet	internet	dr 21
tr	Avea	28603 28604	899003 899004	aycell	internet	dr 21

tr	Avea	28603 28604	899003 899004	mms	mms	dr
tr	Turkcell	28601	899001	internet	internet	dr
tr	Turkcell	28601	899001	mgb	internet	dr
tr	Turkcell	28601	899001	mms	mms	dr
tr	Vodafone	28602	899002	internet	internet	dr
tr	Vodafone	28602	899002	edge.kktctelsim.com	internet	dr
tt	Digicel	37413	89113	wap.digiceltt.com	internet	dr
tt	Digicel	37413	89113	wap.digiceltt.com	mms	dr
tt	bmobile / TSTT	37412	89112	internet	internet	dr
tt	bmobile / TSTT	37412	89112	mms	mms	dr
tw	Chunghwa Telecom (emome)	46692	8992	emome	internet	dr
tw	Chunghwa Telecom (emome)	46692	8992	internet	internet	dr
tw	Chunghwa Telecom (emome)	46692	8992	emome	mms	dr
tw	Far EasTone / KGT	46601	8901	internet	internet	dr
tw	Far EasTone / KGT	46601	8901	fetnet01	mms	dr
tw	TW Mobile	46699	8999	internet	internet	dr
tw	TW Mobile	46699	8999	mms	mms	dr
tw	TransAsia	46697	8997	internet	internet	dr
tw	TransAsia	46697	8997	vibo	mms	dr
tw	Vibo Telecom / Aurora	46689	8989	vibo	internet	dr

tw	Vibo Telecom / Aurora	46689	8989	MMS	mms	d
tz	Airtel Tanzania	64005	8925505	internet	internet	d
tz	Vodacom	64004	8925504	internet	internet	d
tz	Zantel	64003	8925503	znet	internet	d
tz	tiGO	64002	8925502	internet	internet	d
ua	kyivstar	25503	8938003	www.ab.kyivstar.net	internet	d
ua	kyivstar	25503	8938003	www.kyivstar.net	internet	d
ua	kyivstar	25503	8938003	3g.kyivstar.net	internet	d
ua	kyivstar	25503	8938003	mms.kyivstar.net	mms	d
ua	Djuice	25503	8938003	www.djuice.com.ua	internet	d
ua	Djuice	25503	8938003	xl.kyivstar.net	internet	d
ua	Djuice	25503	8938003	3g.kyivstar.net	internet	d
ua	life:)	25506	8938006	internet	internet	d 2
ua	life:)	25506	8938006	speed	internet	d 2
ua	Beeline	25502	8938002	internet.beeline.ua	internet	d
ua	Jeans	25501	8938001	www.jeans.ua	internet	d 8
ua	Jeans	25501	8938001	hyper.net	internet	d 2
ua	MTS	25501	8938001	internet	internet	d 2
ua	MTS	25501	8938001	hyper.net	internet	d
ua	MTS	25501	8938001	active	internet	d
ua	MTS	25501	8938001	www.umc.ua	internet	d 8

ua	Utel	25507	8938007	3g.utel.ua	internet	dr
ua	Utel	25507	8938007	3g.utel.ua	mms	dr
ug	MTN	64110	8925610	yellopix.mtn.co.ug	internet	dr 19
ug	Orange	64114	8925614	orange.ug	internet	dr
ug	Orange	64114	8925614	mms.warid.co.ug	mms	dr
ug	UTL	64111	8925611	utbroadband	internet	dr
ug	UTL	64111	8925611	utweb	internet	dr
ug	UTL	64111	8925611	utwap	mms	dr
ug	Warid	64122	8925622	web.waridtel.co.ug	internet	dr
ug	Zain	64101	8925601	web.ug.zain.com	internet	dr
us	AT&T	310038 310090 310150 310410 310560 310680	891038 891090 891150 891410 891560 891680	wap.cingular	internet	dr
us	AT&T	310038 310090 310150 310410 310560 310680	891038 891090 891150 891410 891560 891680	Broadband	internet	dr
us	AT&T	310038 310090 310150 310410 310560 310680	891038 891090 891150 891410 891560 891680	isp.cingular	internet	dr
us	AT&T	310038 310090 310150 310410 310560 310680	891038 891090 891150 891410 891560 891680	pta	internet	dr

us	AT&T	310038 310090 310150 310410 310560 310680	891038 891090 891150 891410 891560 891680	wap.cingular	mms	dr
us	T-Mobile	310026 310160 310200 310210 310220 310230 310240 310250 310260 310270 310310 310490 310580 310660 310800	891026 891160 891200 891210 891220 891230 891240 891250 891260 891270 891310 891490 891580 891660 891800	fast.t-mobile.com	internet	dr
us	T-Mobile	310026 310160 310200 310210 310220 310230 310240 310250 310260 310270 310310 310490 310580 310660 310800	891026 891160 891200 891210 891220 891230 891240 891250 891260 891270 891310 891490 891580 891660 891800	epc.tmobile.com	internet	dr 10
us	T-Mobile	310026 310160 310200 310210 310220 310230 310240 310250	891026 891160 891200 891210 891220 891230 891240 891250	wap.voicestream.com	internet	dr

		310260 310270 310310 310490 310580 310660 310800	891260 891270 891310 891490 891580 891660 891800			
us	T-Mobile	310026 310160 310200 310210 310220 310230 310240 310250 310260 310270 310310 310490 310580 310660 310800	891026 891160 891200 891210 891220 891230 891240 891250 891260 891270 891310 891490 891580 891660 891800	internet2.voicestream.com	internet	d
us	T-Mobile	310026 310160 310200 310210 310220 310230 310240 310250 310260 310270 310310 310490 310580 310660 310800	891026 891160 891200 891210 891220 891230 891240 891250 891260 891270 891310 891490 891580 891660 891800	internet3.voicestream.com	internet	d
us	Cincinnati Bell Wireless	310420	891420	wap.gocbw.com	internet	d
us	Cincinnati Bell Wireless	310420	891420	wap.gocbw.com	mms	d

us	Verizon	310995 311480	891995 891480	vzwims	ims	d
us	Verizon	310995 311480	891995 891480	vzwinternet	internet	d 6
us	Verizon	310995 311480	891995 891480	vzwapp	wap	d
us	Alltel	310590	891590	MMS	mms	d
us	Alltel	310590	891590	cellular1wap	mms	d
us	BendBroadband	311570	891570	ISP	internet	d
us	MTPCS (Cellular One)	310570	891570	wapgw.chinookwireless.net	internet	d
us	Straight Talk	310410	891410	att.mvno	internet	d
us	Straight Talk	310410	891410	tfdata	internet	d
us	Lycamobile	311960	891960	data.lycamobile.com	internet	d
uy	Ancel	74800 74801	8959800 8959801	adslmovil	internet	d 2
uy	Ancel	74800 74801	8959800 8959801	prepago.ancel	internet	d
uy	Ancel	74800 74801	8959800 8959801	gprs.ancel	internet	d 2
uy	Ancel	74800 74801	8959800 8959801	mms	mms	d
uy	Claro	74810	8959810	gprs.claro.com.uy	internet	d
uy	Claro	74810	8959810	internet.ctimovil.com.uy	internet	d
uy	Movistar	74807	8959807	apnumt.movistar.com.uy	internet	d
uy	Movistar	74807	8959807	webapn.movistar.com.uy	internet	d
uz	Beeline	43404	8999804	internet.beeline.uz	internet	d
uz	Ucell	43405	8999805	internet		d
uz	UMS	43407	8999807	net.ums.uz	internet	d

vc	Digicel	360070	891070	wap.digiceloecs.com	internet	d
ve	Digitel TIM	73401 73402 73403	895801 895802 895803	gprsweb.digitel.ve	internet	d
ve	Digitel TIM	73401 73402 73403	895801 895802 895803	expresate.digitel.ve	mms	d
ve	Movilnet	73406	895806	int.movilnet.com.ve	internet	d 2
ve	Movilnet	73406	895806	mm.movilnet.com.ve	mms	d
ve	Movistar	73404	895804	internet.movistar.ve	internet	d 2
vn	MobiFone	45201	898401	m-wap	internet	d
vn	MobiFone	45201	898401	m-i090	mms	d
vn	Vinaphone	45202	898402	m3-world	internet	d
vn	Vinaphone	45202	898402	m3-card	internet	d
vn	Vinaphone	45202	898402	m3-mms	mms	d
vn	Viettel Mobile	45204	898404	v-internet	internet	d
vn	Viettel Mobile	45204	898404	e-connect	internet	d
vn	Viettel Mobile	45204	898404	v-mms	mms	d
vn	Vietnamobile	45205	898405	internet	internet	d
vn	Vietnamobile	45205	898405	mms	mms	d
vn	EVNTelecom/E-Mobile	45208	898408	e-internet	internet	d
vn	Beeline VN	45207	898407	internet	internet	d
za	Cell-c	65507	892707	internet	internet	d 1
za	MTN	65510	892710	internet	internet	d 2

za	Vodacom	65501	892701	internet	internet	dr 19
za	Vodacom	65501	892701	unrestricted	internet	dr 19
za	Vodacom	65501	892701	mms.vodacom.net	mms	dr
za	Virgin Mobile	65507	892707	vdata	internet	dr 19
za	8.ta	65502	892702	internet	internet	dr
za	8.ta	65502	892702	mms	mms	dr

Inbound IP Passthrough Activity Not Acting as Intended on Device Firmware [RESOLVED]

NOTE: This issue is resolved as of the 18.4.54.41 release.

Problem

Unable to send inbound traffic from an external source to the cellular IP (IE: ping) of an Accelerated cellular router on firmware 18.4.54.22 configured with IP Passthrough

Background

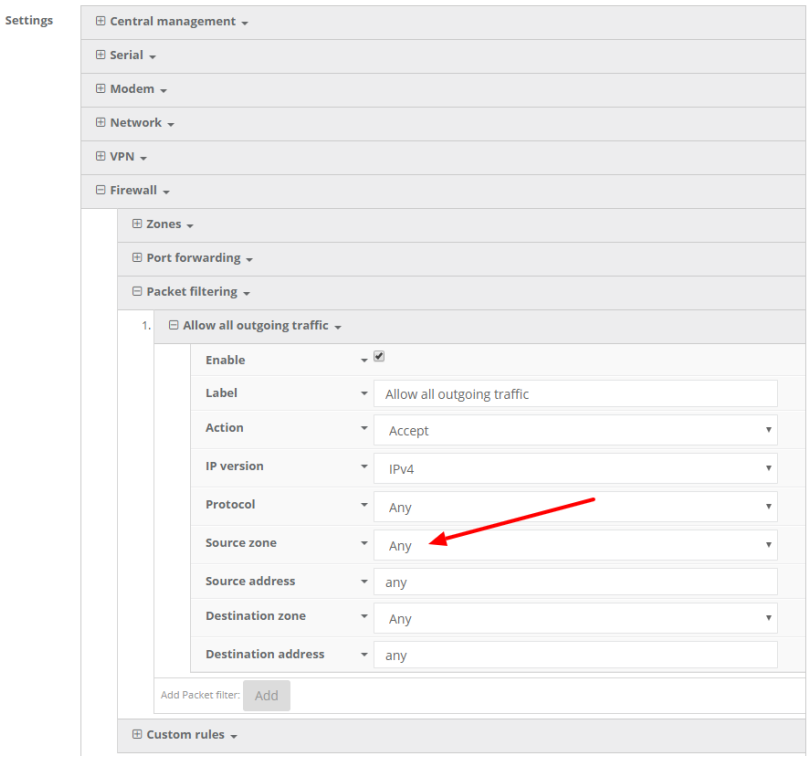
We've been seeing an issue where the latest firmware has unintentionally engaged the firewall for passthrough connections. This results in failed pings from an external source of the cellular IP of an Accelerated cellular router on firmware 18.4.54.22 configured with IP Passthrough.

IP Passthrough Knowledge Article: http://kb.accelerated.com/m/67105/l/745871-lan-port-with-ip-passthrough

Manual Solution

On firmware 18.4.54.22, a change can be made to the Packet Filter's config (Firewall > Packet filtering > Allow all outgoing traffic > Source Zone > Change to "Any" instead of "Internal"). This is the intended passthrough functionality and how it operates on firmware versions 18.1 and prior.

The unintentional engagement of the firewall for passthrough connections will be addressed in a subsequent firmware release.



Antenna Terminology

Electronics require antennas to convert data into RF signals (and vice versa). They are coupled with radio transmitters and/or receivers to process the information that is carried over cellular bands. Antenna design and functionality has evolved over time:

Internal Antennas: An antenna can be concealed within the casing of a device, as seen with most smart phones. Internal antennas are potentially more prone to interference due to the close grouping of electrical components.

External Antennas: Situating antennas further away from the rest of the circuit board can help alleviate this problem by maximizing a device's natural reach. Instead of sitting inside the device directly next to the modem or transceiver, they screw into place using SMA connectors and protrude from the equipment (think "rabbit ears").

MIMO: Multiple-Input and Multiple-Output (MIMO) technology expands the throughput capacity of a transceiver by leveraging multiple antennas to simultaneously convert RF signals into data (or vice versa), providing faster transfer speeds as a result. Think of it (loosely) as Carrier Aggregation for antennas -- once again combining individual lanes into a single, coordinated superhighway. Networks must leverage MIMO antenna transmission to be technically considered 4G.

Physical Specifications

Accelerated LTE Routers use industry-standard, female SMA connectors to affix antennas to the internal cellular radio. External antennas improve clarity when compared to internal antennas, which are prone to electromagnetic interference. An extension coaxial cable can also enhance the reach of a device; however, that cabling causes **attenuation** -- or a degradation in signal quality -- due to the distance the signal travels. Significant attenuation typically begins at 30 feet of cabling.

Certain Accelerated products, e.g. the 6300-CX and 6330-MX LTE Routers, are designed to provide the ability to place the cellular router where reception is best (moving the "radio" is always preferred). This allows the device to "capture" optimal Radio Frequency (RF) before converting it to IP packets and transmit data via Ethernet cabling, an approach that yields increased performance and cost savings over coax cabling. Accelerated can also provide a battery pack for site surveys, creative mounting options, and a (passive) Power-over-Ethernet injector to provide an efficient, flexible deployment at the lowest possible cost. Most Accelerated clients will not require third-party antennas unless deploying a more traditional LTE router (without PoE). It is always preferred to mount a PoE router on an external wall via Ethernet and use the shortest coax cable required to run the external antenna to the outside of a building.

CRITICAL NOTE: Please test the signal strength outside of the building to ensure you have cellular coverage in the area prior to any cabling work. (Tip: Use the site survey battery to do this.)

Best Practices for PoE Deployments

Most LTE specifications recommend (or even require) the use of dual antennas for a MIMO configuration. Many antennas include a MIMO configuration in a single antenna housing, which can be confirmed if there are two cellular coax connections running from the housing. A single-housing MIMO antenna would also require the use of dual coax extension cables. If you select a non-MIMO antenna it is recommended that two separate antennas are used, though this configuration doubles the cost of the antenna unit itself as well as the coax extension cabling. It is typically recommended to include some "separation" when mounting antennas to prevent interference (the antenna manufacturer may provide a recommendation but 18 to 24 inches should be sufficient).

Please consider the following when mounting your PoE LTE Router or third-party antennas:

1. Maximize Ethernet vs. coax extensions (e.g. inside vs. outside the building)
2. Avoid mounting inside metal enclosures or even near large metal objects
3. Within reason, maximize the distance from any other electronic equipment
4. Mount the device near an exterior wall or window (or run the antenna outdoors)
5. If possible, mount to the ceiling vs. the wall (the wall can introduce interference)
6. Generally mounting higher is better (but consider future serviceability)
7. Try to always use a MIMO antenna solution for the best results / RF performance

Accelerated has tested the following antenna solutions for performance and compatibility purposes. Please use this information as a reference to assist in determining the right antenna solution for your specific use case. It is important to test the antennas you select in your specific application environment (meaning your deployment site).

Please note that a booster, repeater, or amplifier may be another strategy to improve RF sensitivity. However, these technologies can also introduce issues because they may "amplify" bad signal. The focus of this chapter is on antennas but more information on boosters can be found on-line.

Antennas Tested by Accelerated

PLEASE NOTE: The below information has been compiled by Accelerated to assist clients in finding and sourcing an antenna solution to best meet their application and business needs. The information on availability and pricing is for planning purposes only and may vary. Clients should test and validate their own applications prior to selecting an antenna for their project.

These antennas are "Omni-Directional" or offer the ability to send/receive signals from any direction. Directional antennas may improve RF sensitivity, but they will require an expert knowledge to find a specific cellular tower and maintain the ongoing fine-tuning that may be required to keep the antenna positioned properly. Due to the challenges of directional antennas, Accelerated typically focuses on *MIMO omni-directional models*.

Extra-Small IoT "Paddle" Antennas

Manufacturer: Taoglas Antennas Solutions

Product: TG.08.0113 and the Product Datasheet

Sample Retailers: Accelerated; Digi-Key; Mouser; Tessco

MSRP: $12 per antenna ($24 for a pair)

NOTE: Use of 2 antennas is recommend for full MIMO Operation

Deployment Notes:

This is an antenna recommended for consideration when a project requires antennas with a small form factor (e.g. digital signage, small enclosures, rack mounted, in-vehicle, etc). The

performance of these antennas is surprisingly good considering the size. Although testing has shown they may slightly underperform compared to the antennas included with your Accelerated router, these smaller may provide the perfect balance between form factor and performance in your IoT application.

Large External MIMO Antenna (Outdoor Rated)

Manufacturer: EAD

Product: LMO7270 and the Product Datasheet

Sample Retailers: Accelerated

MSRP: $129 with dual 5M coax cabling (sold for use with Accelerated Routers)

Deployment Notes:

This is a hardened antenna designed to be mounted outdoors. This is a MIMO antenna with two short “pig tail” connectors and the overall dimensions are 187 mm in height and 106 mm at the base. Accelerated will typically provide this antenna with a kit including dual coax cables at 5M in length. If you are using this antenna with an Accelerated PoE router (e.g. the 6300-CX LTE Router) we typically recommend you mount the Accelerated router on the inside and run the “short” 5M cables to the outside. Meaning you save costs and eliminate attenuation (signal loss) by running Ethernet as far as possible and minimize the coax cable length. Accelerated testing of this antenna reveals performance gain.

Flat MIMO Antenna #1

Manufacturer: Taoglas Antennas Solutions

Product: Gemini LMA100 and the Product Datasheet

Sample Retailers: Accelerated

MSRP: $99 with dual 5M cables

Deployment Notes:

This is an easy-to-use MIMO antenna. It offers a low-profile form factor that accommodates simple mounting. This model is manufactured by Taoglas and showed solid RF performance in our testing. The antenna has a square shape, sized at 164 mm x 164 mm x 36.5 mm. The antenna cabling is built into the antenna, and typically reaches only one meter, but it can be built (sized) to order (lead time can take up to 8 weeks). This antenna typically includes a stand that can be used instead of mounting. The pricing above is based on 5M cables (~15 feet) and the antenna is rated for indoor and outdoor use.

Flat MIMO Antenna #2

Manufacturer: Mobile Mark

Product: PNM2-LTE and the Product Datasheet

Sample Retailers: Sold through Distribution

MSRP: PNM2-LTE-1C1C-WHT-180 (includes Cabling @ 15 feet) $176.40

Deployment Notes:

This is an additional easy-to-use MIMO antenna with a low-profile form factor and simple mounting. This model is manufactured by Mobile Mark and showed solid RF performance in our testing. With a square form factor of 146 mm x 146 mm x 18 mm, the antenna cabling is built into the antenna and can be sized to order (typically lead time from the manufacturer is 2 weeks).

Paddle Extender

Built for Accelerated

Product SKU:

Sample Retailers: Sold through Accelerated

Deployment Notes:

This unique product (termed "the paddle extender") is designed to “move” the standard LTE router antennas to a more optimal spot to obtain better RF connectivity. A typical use can may be where the router is installed in a metal enclosure or rack (think of a data center or digital signage enclosure). The “paddle antennas” can be mounted to the top SMA connector, escaping the limitations of having to stay affixed to the device's chassis. Remote mounting is then simplified thanks to the paddle extender's magnetic base (diameter of 48mm [1.9 inches]). The length of the cable 50cm (19.7 inches).