

User Guide

Verizon Internet Gateway for Business

[SKU: FSNO21VA]



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1. Inside the box

Thank you for choosing Verizon Internet Gateway (Model Num. FSNO21VA). Once you open the product package, you should find the following items inside:

Verizon Internet Gateway



Power Adapter



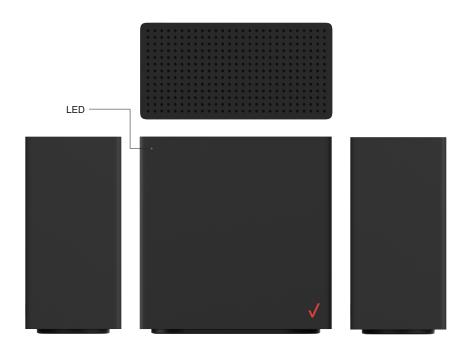
Ethernet Cable



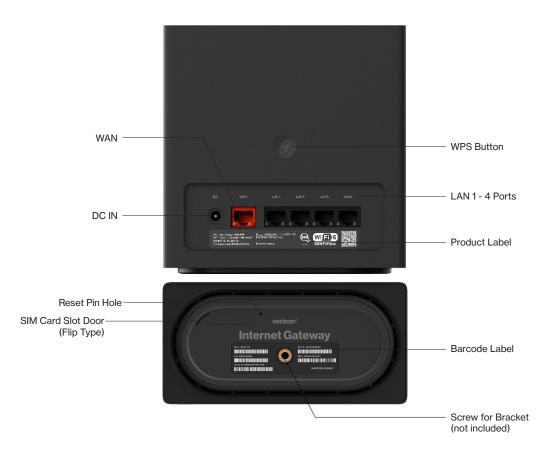
2. Introducing Your Verizon Internet Gateway

Your Verizon Internet Gateway supports multi-connectivity of 5G, 4G LTE, and Wi-Fi 6 to provide users with fast wireless networks*, and offers connectivity for up to 128 devices (64 devices for 2.4 GHz and 5.0 GHz each) within the range. This feature-rich router is also designed with various functions including band-steering, security, routing, and service improvements.

Take a quick tour of your device.



^{*}Network performance varies depending on the available frequency bands in places where the router is in use.



2.1 Parts and Functions

Parts	Description			
LED	Indicate the status of power and connectivity, as well as WPS connectivity.			
LAN 1 - 4 ports	Four RJ-45 GbE LAN ports for connections with external devices through Ethernet cable(s).			
WAN	The WAN port supports WAN connectivity using another CPE (customer premise equipment) or external modem.			
DC IN	DC Power In - The DC power jack that connects the router to a power outlet.			
WPS button	Push this button to enable WPS (Wi-Fi Protected Setup). Use WPS to add supported Wi-Fi devices to your network. Remember to enable WPS on the Wi-Fi devices you wish to add.			
SIM card slot door	The router is pre-installed with a Verizon SIM card. However, if you are advised to change the SIM card for certain reasons, flip the door cover to locate the SIM card slot and insert/remove the SIM card.			
Reset pin hole	Press the reset pin hole with pin to force a cold reset of your router. Your router will return to factory default setting. Only use the Reset when you experience issues with the router or have to revert all the settings you have configured for the router.			
Label	The label provides default URL and password for you to connect to wireless network at the first time you set up this device. The label also provides information about the product's ID and regulatory standards.			

2.2 LED Status and Indications

LED Mode	Status	LED Pattern
	System Off	Off
Bootup	System Booting	Soft Blink White
	Firmware Update (FOTA)	Fast Blink White
Oalladan ainmal (an	Passing Signal	Solid White
Cellular signal (or after single-clicking	No Signal, Cold SIM	Solid Red
the pair button)	No SIM Card	Hard Blink Red
	Setup Complete	50% Bright White
Regular usage	Wi-Fi Disabled by User	Solid Green
Paring	WPS Pairing	Hard Blink Blue
Other	Factory Reset	Fast Blink Lime
Other	FW Error	Soft Blink Red

2.3 Ethernet Port LED Mode

Ethernet Port LED Mode	Status	Left LED		Right LED	
	Ethernet > 100M* Link	Off	0	Solid White	0
147	Ethernet > 100M* Activity	Off	0	Blinking White	\circ
Wired LAN connection	Ethernet < 100M* Link	Solid Yellow		Off	
Connection	Ethernet < 100M* Activity	Blinking Yellow		Off	
	No Ethernet Connection	Off	0	Off	

Note about *: Threshold level can be determined based on port capability.

3. Setting Up Your Verizon Internet Gateway

Your Verizon Internet Gateway comes with a pre-installed SIM card and the following sections will help you connect and configure your device to the network.

Note: Before you start setting up your router, remove the protective film on the housing first to prevent overheating.

3.1 Positioning Your Router

Before setting up the router, it is recommened to take the following into considerations for optimal signal strength:

- Near a window where the signal is mostly uninterrupted
 - On a flat surface
- Keep a minimum distance of 35 centimeters between the router and your body
- In an open space with as few blocking objects or obstructions as possible. For instance, make sure the number of walls and ceilings between the router and your wireless devices are
- Elevated surface
- Keep the router away from 802.11g or 20MHz only Wi-Fi devices, 2.4GHz computer peripherals, Bluetooth devices, cordless phones, heavy-duty motors, fluorescent lights, and some industrial equipments that may generate signal interferences with your router.
- · Do not place heavy objects on the device, for instance, sitting on the device.
- Avoid positioning it
 - next to a wall that may obstruct the signal
 - near heavy-duty appliances
 - close to metal fixtures, enclosures, cabinets, or thick concrete.
 - in a basement
 - on the floor or lower surface

Note: Try not to reposition the router if the signal is good. If the position of the installation changes, the signal strength may be affected.

3.2 Setup Requirements

To configure wireless network with a PC, your computer shall meet the following requirements:

- For Wired Connection --> Ethernet RJ 45 (LAN) port (10Base T/100Base TX/1000BaseTX)
- For Wi-Fi Connection --> IEEE 802.11a/b/g/n/ac /ax wireless capability
- TCP/IP protocol support
- Web browser such as Microsoft Edge , Firefox, Safari, or Google Chrome

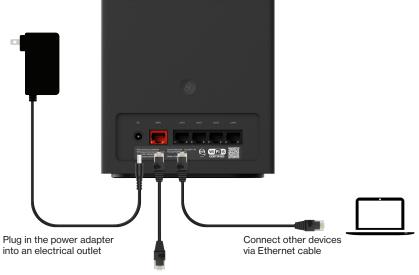
3.3 Setting Up

- 1. Connect the included Power Adapter to the DC IN power port of the router.
- 2. Plug the Power Adapter to an electrical outlet.
- 3. Wait for a short moment for the router to power up and connect to 4G LTE/5G network.
- 4. The LED shall display ON (White) after powering up.
- 5. Your Internet device shall be able to connect to the Wi-Fi network of your router named Verizon_<your network>.

For information about the default name and password of the router's Wi-Fi network, check the product label on the back side of your router.

Connecting via Ethernet

- The router can connect to other devices via Ethernet connections. Use the supplied Ethernet cable and plug one end
 into one of the LAN ports of the router (as shown below), and plug another end of the cable into an available LAN port
 of the other device.
- The router can also connect to a CPE or an external modem via WAN port by using the supplied Ethernet cable.



Connect a CPE or modem

4. Logging Into Your Verizon Internet Gateway

Once you have connected your device to your router, you can log in to your router's Web User Interface (Web UI) to access network information such as connected devices and data usage, and to configure the setting and functions, such as Wi-Fi security. You may log to the Web UI through a computer or a mobile device.

The following sections will describe how to access the Web UI and perform your configurations.

4.1 Connect and Log in via Wi-Fi

- 1. You can automatically connect your device by scanning the QR code on the product label. To connect manually, move to step 2.
- 2. Scan available Wi-Fi networks with your mobile device (the image below is a sample screenshot from a mobile phone).



- 3. Select the Wi-Fi network named **Verizon_<your network>** (check your router's product label on the back side for your unique Wi-Fi network name).
- 4. Enter your Wi-Fi password, which can also be found on your router 's product label on the back side of the unit.
- 5. Open a web browser and enter the router's default address http://192.168.0.1 in the address bar.



6. Log in using the default password (the default address and password are displayed on the product label on the back side of the router, labeled **Admin URL and Admin password**).

4.2 Connect and Log in via Ethernet

- You can use an Ethernet cable to connect your computer to the router 's LAN port for configuration (instead of Wi-Fi).
 Simply connect to one of the four LAN ports by using the supplied Ethernet cable.
- 2. Open a web browser and enter the router's default address http://192.168.0.1 in the address bar.
- 3. Log in default password (the default address and password are displayed on the product label on the back side of the router, labeled **Admin URL and Admin password**).



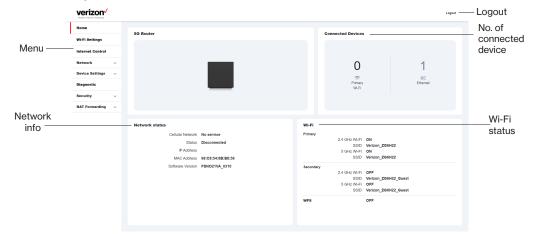
5. Configuring Your Router with the Web GUI

You can configure functions of your router on the Web GUI. To access the Web GUI, open a web browser and enter the router's admin address http://192.168.0.1 in the address bar. Then, enter the default admin password (check the product label of your router for your default admin password).

5.1 Home

> Home

The **Home** page features the Menu at the left side to navigate the functions, and shows the general system information of your router, including the number of connected devices, network status, and Wi-Fi status.



Web UI Home Page

-	
	Use the Menu at the left side to navigate functions of your router, such as Wi-Fi Settings, Internet Control, Device Settings, Network, Diagnostic, Security, and NAT Forwarding.
Logout	Click it to log out. You will be asked if you want to continue to log out.
No. of connected device	Shows the number of connected devices via Wi-Fi (Primary) and Ethernet.
	Displays general network information, including Cellular Network, Status, IP Address, MAC Address, and Software version
Wi-Fi status	Shows the general status of the Wi-Fi connections of your router.

Note: the images in this chapter serve as reference only and are subject to change due to future updates without prior notices.

5.2 Wi-Fi Settings

> Wi-Fi settings

From the Wi-Fi Settings screen, you can set your bandsteering preferences, Wi-Fi name (SSID) and password, security level, and encryption types. Your router supports dual-band Wi-Fi frequencies (2.4GHz and 5GHz) for enhanced wireless network performance.

5.2.1 Basic

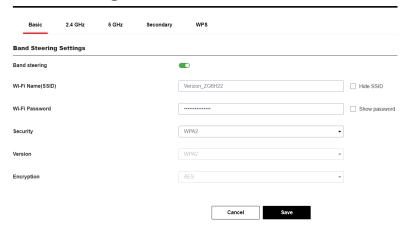
> Wi-Fi settings > Basic

From the Basic page, you can configure your basic Wi-Fi settings.

Band Steering enables your router to dynamically assign wireless devices (smartphones, laptops, or tablets) to their capable frequency (2.4GHz or 5GHz). For example, if your device supports 5GHz band, it will be steered to that frequency while legacy connected devices are assigned to 2.4GHz. When Band Steering is enabled, your dual-band router will have one Wi-Fi name (SSID).

To save changes, click Save.

Wi-Fi Settings



Bandsteering settings

Band steering

Use the toggle switch to enable or disable it. When Band Steering is enabled, your dual-band router will show one Wi-Fi name (SSID), and your wireless devices will be assigned to their capable frequencies (2.4GHz or 5GHz) automatically. When enabled, all the settings in this tab can be configured.

Note: Information under Basic Tab is automatically filled on 2.4 GHz and 5 GHz Tabs. It should not be updatable in 2.4 GHz and 5 GHz Tab

Wi-Fi Name (SSID)

This is the name of your Wi-Fi network for identification, which is also known as "SSID". **Note about input conditions:** Input value size (1 - 32) bytes with alphabet (A-Z and a-z), digits (0-9), and/or symbols (ALL).

Wi-Fi Password

Enter the password for your Wi-Fi network. A complex, strong password is highly recommended. **Note about input conditions:** 8 - 63 characters with alphabet (A-Z and a-z), digits (0-9) and/or symbols (ALL).

Security

Select a Wi-Fi security type from the drop down menu, which includes None, Mix WPA/WPA2, WPA2, and WPA3.

Version

Shows which version of security type is in use. The version corresponds to the selected Wi-Fi security type.

Encryption

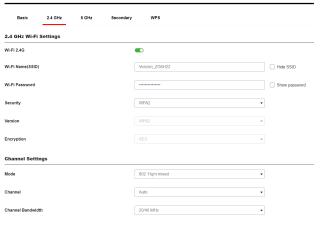
Displays encryption type according to the selected version. AES encryption is the default encryption type for WPA standards.

5.2.2 2.4GHz/5.0GHz

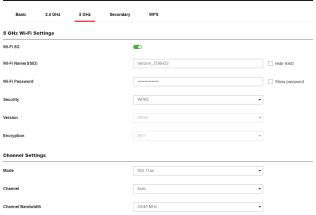
> Wi-Fi settings > 2.4GHz / 5GHz

If you disable Band Steering, you will have to configure 2.4GHz or 5GHz separately in their respective tab(s).

Wi-Fi Settings



Wi-Fi Settings



2.4GHz / 5GHz Wi-Fi settings

WI-FI 2.4G/5G Use the toggle switch to enable or disable this Wi-Fi frequency.

Wi-Fi Name (SSID) This is the name of this Wi-Fi network for identification

Hide SSID Check the box to hide your SSID. When hidden, the SSID will not be visible as an available Wi-Fi

network to clients. Clients must manually enter the SSID in order to connect. A hidden SSID is

more secure.

Wi-Fi Password Enter the password for this Wi-Fi network. A complex, strong password is highly recommended.

Security Select a Wi-Fi security type from the drop down menu, which includes None, Mix WPA/WPA2,

WPA2, and WPA3.

Version Shows which version of security type is in use. The version corresponds to the selected Wi-Fi

security type.

Encryption Displays encryption type according to the selected version.

AES encryption is the default encryption type for WPA standards.

2.4GHz / 5GHz Channel settings

Mode Select the wireless standard for the router's Wi-Fi network.

The supported standards for 2.4 GHz include 802.11b only, 802.11b/g mixed, 802.11g/n mixed,

and 802.11ax.

The supported standards for 5 GHz include 802.11a only, 802.11a/n mixed, 802.11ac only,

802.11a/ac/n mixed, and 802.11ax.

Channel Select a wireless radio channel from the drop-down menu.

The default is **Auto**. Changing the radio channel may positively or negatively influence the signal

depending on how crowded the channel is with other radio signals and interference.

Channel Bandwidth

Set the channel bandwidth:

20 MHz (lower performance but less interference)

 20/40 MHz (40 MHz offers higher throughputs and better performance, but higher interferences

20/40/80 MHz (for 5 GHz)

20/40/80/160 MHz (for 5 GHz)

To save changes, click **Save**.

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5.2.3 Secondary

> Wi-Fi settings > Secondary

The **Secondary** setting allows you to set up additional "Secondary" Wi-Fi networks (2.4GHz and/or 5GHz), so designated users can enjoy Wi-Fi connectivity without accessing your primary Wi-Fi networks. Once enabled with the toggle switches, you can set the Wi-Fi name (SSID), Wi-Fi password, and security settings for your 2.4 GHz / 5 GHz secondary Wi-Fi network (s).

Wi-Fi Settings



5.2.4 WPS

> Wi-Fi settings > WPS

Wi-Fi Protected Setup (WPS) is a simple way to add Wi-Fi devices to your network. To use this function, your Wi-Fi client device(s) must be WPS compatible.

If your client device has a WPS button, push it and click the Pair button below to start WPS pairing.

If pairing is successful, input the Client WPS PIN and click **Register** if your client device has a WPS PIN (usually found on a sticker on the back of the device).

Basic 2.4 GHz 5 GHz Secondary WPS Wi-Fi Protected Setup is an easy way to add Wi-Fi devices to your network. To use this feature, your Wi-Fi client device needs to support WPS. Warning: Wi-Fi devices may briefly lose connectivity when turning WPS On or Off. Wi-Fi Protected Setup (Band Steering ON) Push to Pair If your client device has a WPS button, press it and click the button below to start WPS pairing.

Warning: Wi-Fi devices may briefly lose connectivity when turning WPS On/Off.

5.3 Internet Control

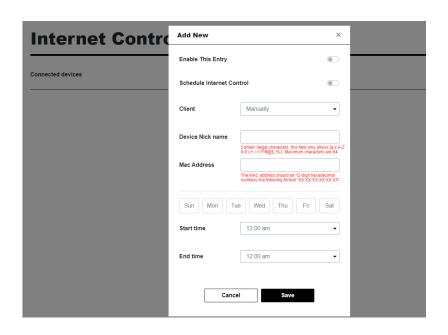
> Internet Control

The Internet Control feature allows you to restrict selected devices to access Internet on your network at specified times.

To start using this feature, click Add New to set the connected device with Internet access controls.

Internet Control





Internet Control settings

Enable this entryUse the toggle switch to enable this entry of the connected device to be restricted or controlled.

Schedule Internet Use the toggle switch to enable Schedule Internet Control.

Control

Client (Device Nickname and Mac Address) Use the drop-down arrow to select a device from a list of connected devices (via Wi-Fi/Ethernet). Once you select a device, the Device Nickname and Mac Address of the selected device will be auto-filled.

You may choose Manually to fill out the Device Nickname and Mac Address manually.

Sun - Sat Select the day(s) from Sunday to Saturday

Start time Set the start time for the scheduled Internet Control

End time Set the end time for the scheduled Internet Control

To save settings, click Save.

5.4 Network

> Network

The **Network** menu shows available options to set the networking functions of your router, including

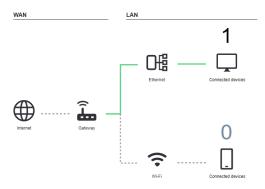
- Network Map
 - Network Status
- Cellular Traffic Usage
- WAN
- Cellular
- LAN
- IPv6 Settings
- Client List

5.4.1 Network Map

> Network > Network Map

When you click **Network Map**, you will see a visual overview and status information of the network and devices on your wireless network. You may click on **Connected devices** to view information of your connected client devices, for example, Mac Address, IP address, and IPv6 address for devices connected through Ethernet, as well as devices under Primary/ Secondary network of your Wi-Fi. Green lines indicate the connection has been established.

Network Map



5.4.2 Network Status

> Network > Network Status

Network Status displays the status of the network in Internet, Cellular, LAN, Wi-Fi, and System Information.

> Network > Network Status > Internet

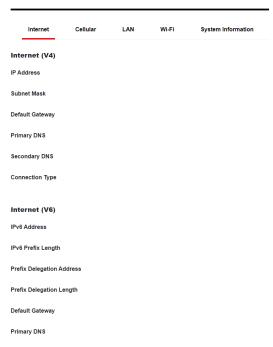
Internet v4

Displays IPv4 parameter information about your router's Internet connection. IPv4 is the default Internet protocol on the Internet.

Internet v6

Displays IPv6 parameter information about your router's Internet connection. IPv6 is the next-generation Internet protocol which will replace IPv4 to deal with the anticipated address exhaustion. To set up IPv6, go to **Network > IPv6 Settings**.

Network Status



Displays cellular network information including Operator name, SIM status, Roaming status and TECH status.

Network Status

Internet	Cellular	LAN	Wi-Fi	System Information
Operator Name				
SIM Status				ABSENT
Roaming Status				
TECH Status				

> Network > Network Status > LAN

Displays the router 's Local Area Network (LAN) information including MAC Address, IP Address, Subnet Mask, and DHCP Server status. To edit LAN settings, go to **Network > LAN**.

Network Status

	Internet	Cellular	LAN	Wi-Fi	System Information
MAC	Address				98:C8:54:8B:B8:56
IP A	ddress				192.168.0.1
Sub	net Mask				255.255.255.0
DHC	P Server				On

> Network > Network Status > Wi-Fi 2.4GHz & 5GHz

Displays your router 's Wi-Fi information for both 2.4GHz & 5GHz frequencies, including network name (SSID), radio, mode, channel bandwidth and other parameter information. To edit these Wi-Fi settings, go to **Wi-Fi Settings**.

Network Status

Internet	Cellular	LAN	Wi-Fi	System Information
Wi-Fi 2.4G				
Wi-Fi Name(SSID)				Verizon_ZG6H22
Wi-Fi Radio				2.4G
Mode				802.11g/n mixed
Channel				Auto
Channel Bandwidth				20/40 MHz
MAC Address				98:C8:54:8B:B8:BA
Secondary SSID				Verizon_ZG6H22_Guest
Secondary Wi-Fi Radi	lo			2.4G
Wi-Fi 5G				
Wi-Fi Name(SSID)				Verizon_ZG6H22
Wi-Fi Radio				5G
Mode				802.11ax
Channel				Auto

> Network > Network Status > System Information Displays system identifiers unique to your hardware.

Network Status

Internet	Cellular	LAN	Wi-Fi	System Information
IMEI				356405430007626
ICCID				
IMSI				
MDN				

5.4.3 Cellular Traffic Usage

> Network > Cellular Traffic Usage

Cellular Traffic Usage displays your network data usage, with upload and download data displayed in MB/KB for monthly and current periods.

Ensure that your router 's date and time settings are correct for accurate Monthly usage information. To check date and time settings, go to **Device Settings** > **Date / Time**.

Cellular Traffic Usage

Monthly Usage	
Upload	14.30 MB
Download	0.00 KB
Current Usage	
Query Range	2022.Jul.05 12:00 am ~ 06:07 pm
Upload	6.77 MB
Download	0.00 KB

5.4.4 WAN Settings

> Network > WAN

WAN Settings allows you to assign Dynamic IP or Static IP for the connected WAN device.

Once you select Dynamic IP, the page will display Dynamic IP information. If Static IP is selected, you will have to manually input the information in Static Setup.

In advanced setting, you may choose to get DNS address dynamically from ISP (Internet Service Providers or manually input the Primary/Secondary DNS addresses if you choose Use the following Address.

About IP Passthrough:

You may use the toggle switch to enable or disable IP Passthrough function. If IP Passthrough is enabled, Wi-Fi, IPv6, firewall and ALG will be off. The Wi-Fi, the IPv6, the firewall and the ALG setting pages will show IP Passthrough is on. It will prioritize WAN connections over cellular if WAN is connected.

To enable Wi-Fi, IPv6, firewall, and ALG again and resume prioritizing cellular connection, IP Passthrough must be disabled.

WAN Settings

WAN Type	
Connection Type	Dynamic IP ▼
IP Passthrough	
Dynamic IP Information	
IP Address	
Subnet Mask	
Default Gateway	
Primary DNS	
Secondary DNS	
Dynamic IP Advanced Settings	
DNS Address	Get dynamically from ISP ▼
Primary DNS	

Additional notes about IP Passthrough (IPPT) mode:

- When IPPT is enabled, only one of the four LAN ports can be used to an external device through Ethernet for obtaining IP address. The IP address will then be assigned to the only external device connected to this router.
- When IPPT is enabled, there could be potential signal disruption to WWAN network, such as carrier network outage, and no IP address is available for this router. In this case, connect your computer to the WAN port of this router and access the Web UI (192.168.0.1) on a web browser. Then disable IP Passthrough with the toggle switch to resume default router functions.

To save settings, click Save.

5.4.5 Cellular Settings

> Network > Cellular

Cellular Settings displays your cellular status including Internet status, SIM status, cellular type (4G/5G) and other parameters.

You may click Refresh to refresh the displayed status, or click Connect/Disconnect if necessary.

In APN Settings, you may input or set your APN information.

Cellular Settings



To save settings, click Save.

5.4.6 LAN Settings

> Network > LAN

LAN Settings page allows you to configure your router on your Local Area Network (LAN). You may assign an IP address and corresponding subnet mask for your router, and configure your router as a DHCP server to assign IP addresses and/or DNS to other devices on your LAN.

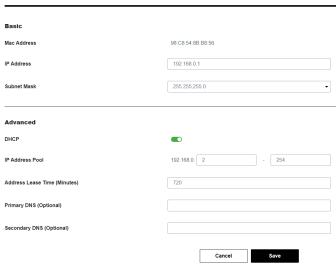
Basic

- IP Address: enter an IP address for your router (the router's default IP address is 192.168.0.1).
- Subnet mask: use the drop-down menu to select an available subnet mask (the router's default subnet mask is 255,255,255,0).

Advanced

- **DHCP**: use the toggle switch to enable/disable your router as a DHCP server.
- IP Address Pool: provides a sequential range of IP addresses within a certain network for you to assign to devices on your LAN network.
- Address Lease Time (hours): enter the address lease time
- Primary/Secondary DNS (optional): enter the primary/secondary DNS. This is optional.

LAN Settings



To save settings, click Save.

5.4.7 IPv6 Settings

> Network > IPv6 Settings

IPv6 Settings allows you to enable/disable IPv6 protocol and set the related features.

- IPv6: use the toggle switch to enable/disable IPv6 protocol.
- WAN: use the drop-down menu to select your preferred WAN connection (for instance, Ethernet or wireless mobile network)
- Profile name: use the drop-down menu to select your profile name -- Dynamic IP or Static IP. The latter is available if
 you choose Ethernet as your WAN connection in the last step. Manual input is required for Static IP.

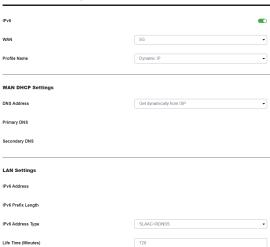
WAN DHCP Settings

- DNS Address: use the drop-down menu to choose Get dynamically from ISP or Use the following Address. If you choose Get dynamically from ISP, the Primary/Secondary DNS will be auto-filled. If you choose Use the following Address, you will have to manually input the addresses.
- Primary/Secondary DNS: these items will be auto-filled if you choose Get dynamically from ISP in the last parameter.
 If you choose Use the following Address, you will have to fill out these two items manually.

LAN Settings:

- IPv6 Address: displays IPv6 address.
- IPv6 Prefix Length: displays IPv6 prefix length.
- IPv6 Address type: use the drop-down menu to select from SLAAC + RDNSS, SLAAC + DHCPv6, or DHCPv6.
- Life time (Minutes): input the life time.

IPv6 Settings



5.4.8 Client List

> Network > Client List

Client List displays general device information under your LAN and Wi-Fi networks.

Client List

LAN (1)

Wi-Fi (0)

JackSNHsu

Mac Address: 7c:d3:0a:90:7f:71 IP Address: 192.168.0.153

IPv6 Address: fe80::58e3:54b6:7b9f:79b3

5.5 Device Settings

> Device Settings

From **Device Settings** menu, you can configure various administrative functions of your router, including the Web UI login password, router date & time settings, backup, and router firmware updates.

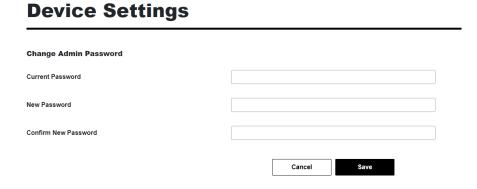
5.5.1 Change Admin Password

> Device Settings > Admin Password

From **Admin Password** page, you can change the login password for the router's Web UI. It is essential to change the password regularly for the security of your router. Use complex, strong password with a mixed combination of numbers, letters and symbols.

To change admin password for your router,

- 1. Enter the current password.
- 2. Enter your new password in the New Password field and again in Confirm New Password to confirm.
- 3. To save new password, click Save.



5.5.2 Date / Time

> Device Settings > Date / Time

The Date and Time for your router is configured automatically over the cellular network by default and is displayed in Gateway Current Time.

You may select SNTP mode to enter NTP server and time zone manually.

Device Settings



To save settings, click Save.

5.5.3 Backup and Restore

> Device Settings > Backup & Restore

From the **Backup & Restore** page, you can save and backup your router's current settings as a file in your local device storage (e.g. a computer storage). You can then restore your router to the previously saved settings by loading this file. If necessary, you may also reset your router back to factory default settings.

If the router is not responding or experiences some issues, it is recommended that you first reboot the device. If the issue(s) remains, you may reset the device back to factory default settings. To perform a cold reset to factory default settings, use a pin to insert the Reset Hole on the front of the device for few seconds.

Backup Save a copy of your current settings. Restore Restore saved settings from a file. Select File No File Selected Factory Default Restore Revert all the settings to their default values. Factory Restore

Backup & Restore settings

Backup	Save a copy of your current settings. To save current settings as a backup file, click or tap Backup .
Restore	Restore saved settings from a file. To restore saved settings, click or tap Select File to locate a file on your device storage (e.g. a computer storage).
Factory Default Restore	Reset the router to its factory default values. To perform a factory reset, click or tap Factory Restore .

5.5.4 Firmware Update

> Device Settings > Firmware Update

The **Firmware Update** page displays your router 's software version information. Firmware is the software that your router runs on. You can click or tap **Check for New Version** to manually check if new firmware version is available.

Device Settings

Software Update		
Current Software		
Software Version	FSNO21VA_0310	
Applied On	2022/07/04 03:49	Check For New Version

5.6 Diagnostic Setting

> Diagnostic

From **Diagnostic** menu, you can run **Ping / Tracerroute** diagnostic tests with the router. Enter the IP address to use for the test and click **Start**. The results will be displayed in the **Result** box.

Diagnostic Setting



Diagnostic settings

Ping / Traceroute	Use the drop-down menu to select Ping or Traceroute as the diagnostic tool.
Туре	Use the drop-down menu to select IPv4 or IPv6 as the protocol type.
	Enter the IP address or domain name to run the diagnostic. Input field: 0-255.0-255.0-255.0-255

5.7 Security

> Security

Use the **Security** menu to configure various security functions if necessary, including Firewall, IP/MAC Binding and Access Control.

5.7.1 Firewall Settings

> Security > Firewall

The router features a built-in firewall with four modules to give your network comprehensive protections from unauthorized intrusions from malicious attacks on the Internet. Use the toggle switches to enable or disable the four firewall modules.

Firewall Settings



Firewall settings

WAN Block Ping

SPI firewall protection means only packets matching a known active connection will be allowed by the firewall, and others will be rejected. An SPI firewall goes beyond stateless filtering and checks an entire packet's content rather than only packet headers. This is a security feature to halp dictinguish between legitimete packets and
help distinguish between legitimate packets of information and potentially harmful packets, and
provides greater security for your network.

Dos Protection

Denial-of-Service (DoS) is a common form of malicious attack against a network. The router's firewall can protect against such attacks by filtering abnormal packets that could flood and disable a network with large amounts of traffic.

When active, the router will not answer ping requests from the Internet. This can increase security as pinging is a common method used by hackers to test networks.

LAN Block PingWhen active, the router will not answer ping requests from the local network. This can increase security as pinging is a common method used by hackers to test networks.

To save settings, click Save.

5.7.2 IP/MAC Binding Settings

> Security > IP/MAC Binding

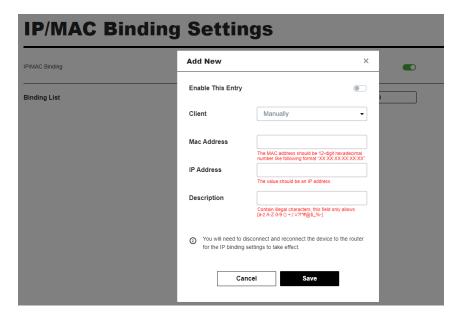
IP/MAC Binding allows you to reserve a static IP address for a device on the network, rather than being assigned a new dynamic IP address by the router 's DHCP Server every time the device connects to the router. Static IP addresses can be used to host various services on the local network. Every device is identified by a unique MAC address, and the IP address can be bound to the MAC address.

IP/MAC Binding Settings



To set IP/ MAC binding,

- Use the toggle switch to enable IP/MAC Binding.
- 2. Click or tap Add New to setup a new client for IP/MAC Binding.
- 3. Select a device from the Client menu or enter the MAC address manually.
- 4. Specify the IP Address the client will use, and enter a Description of the device for easy reference.



To save settings, click Save.

5.7.3 Access Control Settings

> Security > Access Control

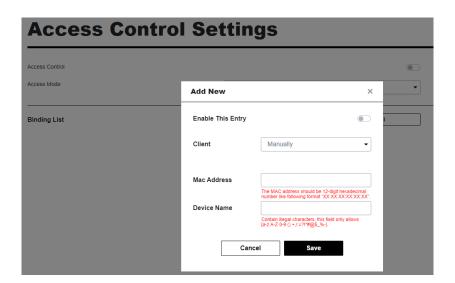
Access Control is a security feature that can help prevent unauthorized users from connecting to your router. You can set the access mode of network devices as permitted (Whitelist) or denied (Blacklist) to connect to the router. Each device is identified by its unique MAC address or IP address.

Access Control Settings



To set Access Control,

- 1. Use the toggle switch to enable Access Control
- 2. Select Blacklist (not permitted) or Whitelist (permitted), and click Add New.
- 3. Use the toggle switch to turn on Enable This Entry
- 4. Select a device from the Client menu or enter the MAC address manually.
- 5. Enter the Name of the device for easy reference.



To save settings, click Save.

5.8 NAT Forwarding

> NAT Forwarding

The **Network Address Translation (NAT) Forwarding** menu provides functional configurations to improve network performance and security of your network.

5.8.1 DMZ Settings

> NAT Forwarding > DMZ

A Demilitarized Zone (DMZ) is an isolated area in your local network where a computer runs outside the firewall and receives/intercepts all incoming Internet traffic. This can provide an extra layer of security to the rest of the network, or can be useful if a network client PC cannot run an application properly from behind an NAT firewall. However since it opens the client up to unrestricted two-way access this computer is vulnerable. DMZ should be configured only by expert network users aware of the security risks.

DMZ Settings



To set DMZ,

- 1. Use the toggle switch to set DMZ to active.
- Enter the IP Address of the computer to provide the DMZ service. Make sure this computer is using a Static IP Address.
- To save settings, click Save.

5.8.2 UPnP Settings

> NAT Forwarding > UPnP

Universal plug-and-play (UPnP) is a set of networking protocols which enables devices on the same network to automatically connect and communicate with each other, such as computers, printers, mobile devices, and etc.

Some devices may require UPnP to be enabled to function properly. Use the toggle switch to enable or disable UPnP, according to requirements by your device(s).

If there are security concerns, use the toggle switch to disable UPnP.

UPnP Settings



To save settings, click Save.

5.8.3 ALG Settings

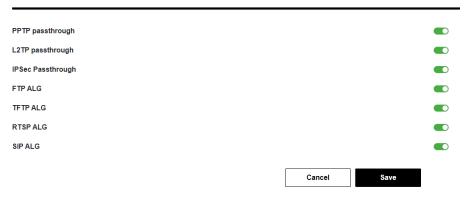
> NAT Forwarding > ALG

ALG settings are advanced functions that can resolve issues where services are disrupted by the firewall. Each ALG module is a security component that augments the firewall. Services such as VPNs or Virtual Servers may require ALG modules enabled.

By default all ALG modules are active. Use the toggle switches to disable any ALG module if necessary. ALG Settings are recommended for expert users only.

Note: SIP ALG may disrupt Wi-Fi calling for cellphones connected to the network.

ALG Settings



Manage ALG Settings

Point-to-Point Tunneling Protocol (PPTP) Passthrough allows PPTP to pass through NAT router, which enables VPN clients connected to the router to make PPTP connections.

L2TP Passthrough

Layer 2 Tunneling Protocol (L2TP) is a tunneling protocol for point-to-point sessions via the Internet on layer 2. It is another passthrough protocol to transmit packets in VPNs.

IPSec Passthrough

Internet Protocol Security (IPsec) is a protocol suite for data packet encryptions and secure network connections. IPSec Passthrough allows IPSec tunnels to pass through the router.

FTP ALG

File Transfer Protocol is a widely and commonly used method of exchanging files over IP networks. The FTP ALG scans PORT and PASV commands, as well as 227 responses. It performs NAT on the IP and port, or both in the data transfer between client and server.

TFTP ALG

Trivial File Transfer Protocol (TFTP) is a simple protocol used for processing TFTP packets and sends requests to UDP destination port 69. Certain firewall and NAT services require TFTP ALG configurations.

RTSP ALG

The Real Time Streaming Protocol (RTSP) is a network control protocol that controls the delivery of real-time media data. This ALG is mostly used in servers that control streaming media.

SIP ALG

SIP ALG is a feature found in most networked routers, operating as a function of its firewall. It consists of two different technologies: SIP and ALG.

- Session Initiation Protocol (SIP) The underlying service that powers all Voice over Internet Protocol (VoIP) phones, apps, and devices. SIP manages registering devices, maintaining call presence, and overseeing the call audio. Read more about SIP in our deep dive here.
- Application Layer Gateway (ÅLG) Routers segments your ISP and your internal network through a process known as Network Address Translation (NAT). An ALG acts as a proxy to rewrite the destination addresses in data packets for improved connectivity.

5.8.4 Virtual Servers Settings

> NAT Forwarding > Virtual Servers

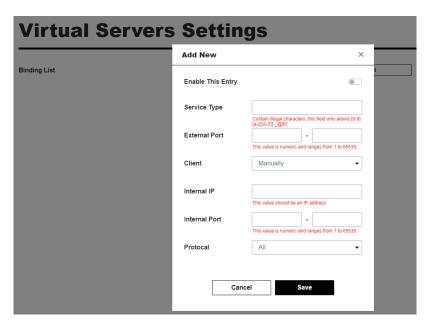
Virtual Servers allows you to set up a server in the local network to host online services, such as FTP, VoIP, printer, HTTP, or web servers. Meanwhile, the virtual server can keep the local network invisible to the public Internet. Internet traffic is directed to a specifically assigned port(s) of a router (or routers) on your local network. Different services can be redirected to certain ports. For instance, Port 80 is set for FTP service. You may establish various sets of port redirections to provide multiple Internet services on different local computers through a single Internet IP address.

To set up virtual servers,

- 1. Click Add New in the Binding List.
- 2. Use the toggle switch to turn on Enable This Entry.
- 3. Enter the parameters to set up a virtual server.

Virtual Servers Settings

Binding List Add new Delete All



Parameters

Service Type Specify the service type, for example, HTTP, FTP, etc.

External Port Specify the external/public port to access the computer on your local network.

Client Select a device from the menu or manually assign Internal (Private) IP & Port.

Internal IP Enter the IP address of the computer on your local network. If you select a device from the drop-

down menu, Internal IP will be auto-filled.

Internal Port Specify the internal/private port you wish to use on the computer in your local network.

Protocol Select the connection protocol: TCP, UDP or All.

6. Technical Specifications

Frequency bands 5G NR: n2, n5, n48, n66, n77

4G LTE: B2, B5, B13, B48, B66

Memory RAM: 1GB ROM: 8GB

Wi-Fi Wi-Fi 6 (802.11 a/b/g/n/ac/ax)

Support simultaneous 2.4Hz (2x2 MIMO) and 5GHz (4x4 MIMO),

4x SSID w/ band-steering (Single SSID on both 2.4/5GHz)

WiFi coverage supports 64 simultaneous clients

Downlink CA of LTE B5 with 4X4 MIMO and LTE B13 with 4X4 MIMO

LED Front-facing dimmable tri-color LED x 1

WPS button x 1

Max. connected

Up to 128 devices (64 devices for 2.4 GHz and 5 GHz each)

LAN RJ-45 Gigabit LAN ports x 4

WAN port x 1

Reset pin hole x 1

Power DC power jack x 1

SIM card slot door x 1

Dimensions 164 x 160 x 80 mm

Weight 970g

Accessories 12V/3A AC Adapter

Ethernet cable

Optional Wall/Ceiling Mounting Brackets

OS Linux

Built-in features WebUI, TR-69, REST API, OMA-DM, IP Pass-through

7. Troubleshooting

If you are experiencing some issues in using the router, try here first for some guick fixes to common problems.

Dropped Wi-Fi connection

Wi-Fi connections can occasionally drop for any number of reasons, such as interference or system updates.

Try to ensure the space between your router and Wi-Fi devices is as clear as possible and make sure you're not moving too far away from your router.

Check that your router has a good cellular connection and that your Wi-Fi device isn't trying to connect to any other saved Wi-Fi networks.

Can't connect to Wi-Fi

If your router's Wi-Fi doesn't appear when scanning available networks on your device, or if you can't make a connection, try switching both your router and Wi-Fi device off and back on again, and move closer to your router. If your router has a good cellular connection and you still can't establish a Wi-Fi connection, try a factory reset. To perform a factory reset and return the Verizon Internet Gateway to default settings, use a pin to insert into the Reset Hole for a few seconds.

Can't login to the Web UI

If you can't access the Web UI, it might be an issue with your device or computer's proxy or IP address settings. Make sure that proxy settings are disabled and that your device or computer can be allocated an IP address on the network by the router's DHCP server. You'll need to check the support for your device or computer's operating system e.g. Windows or Mac OS, for detailed instructions on how to do this.

Unable to connect to the

IP address conflict may occur if you connect another routing device, such as an ADSL **Internet upon IP address conflict** router or fiber optic modem, to your router's WAN port through an Ethernet cable. In this case, the two devices are trying to use the same default IP address (which is 192.168.0.1 in most cases) and probably similar default DHCP ranges (which is 192.168.0.2~255 in most cases). When the two devices are competing for IP address and subnet on the same network, your router may lose network connectivity.

To solve this, you may follow the 3 simple steps:

- 1. Unplug the routing device connected to your router.
- 2. Change the IP address of your router under LAN Settings (see 5.4.6 LAN Settings for reference). For example, change IP address from 192.168.0.1 to 192.168.2.1 or 192.168.3.1.
- Reconnect the routing device you want to connect with your router. After the 3 steps, each routing device on the same network will have its own IP address to connect to the Internet.

If you are still unable to connect to the Internet after the 3 steps above, or if you have probems through the 3 steps, consult with Verizon or experienced network technicians.

Unable to connect to the address conflict

If you have more than one devices connected to your router on the same network, it Internet caused by duplicated IP is possible that duplicated IP address conflicts may occur and you may not be able to connect to the Internet. For example, you have two devices connected to the network, A (for example, a notebook) and B (for example, your mobile phone), and you define a static IP address for device A. However, your router may assign an IP address to device B that is already the static IP address for device A. In this scenario, duplicated IP address conflict occurs and you may not be able to connect to the network.

To solve this issue, you may

- Convert the device with the static IP address to a DHCP client (the device A in the scenario described earlier).

Or

- Exclude the static IP address from the DHCP scope on the DHCP server, which is your router. To do so, go to LAN Settings (see 5.4.6 LAN Settings for reference), and
 - 1. Use the togale switch to turn on DHCP.
- 2. Redefine the range that does not include the static IP address of your device.

Where can I get more help?

If you have any problem setting up your router, please visit setup.verizon.com/ businessinternetgateway for help. For further assistance, call the Verizon Technical Support Team at 1.800.922.0204. Please have yoru order confirmation email ready when vou make the call.

FCC Declaration of Conformance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Operations in the 5.850-5.895GHz band are restricted to indoor usage only.

FCC RF Radiation Exposure Statement (SAR)

This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 35 centimeters between the radiator and your body.

Safety Warnings

Adapter

- Do not use any other power adapter except the one that accompanies this unit or a power adapter identified in the list below.
- Use of another adapter could result in damage to the unit.
- The following power adapter is qualified for use with this Verizon Internet Gateway for Business: (specified the
 adapter specifications, brand, make, type and other restrictions)

Caution

Ensure to connect the power cord of power adapter to a socket-outlet with grounding connection.

Safety and Compliance

Read before Use

We recommend you read the following sections thoroughly before use. Verizon is not liable for malfunctions or damages resulting from misuse of the handset.

Safety Precaution

Please observe the following safety precautions.

- Use the chargers, cables or accessories approved by the device manufacturer.
- Do NOT disassemble or modify the device. Doing so voids the warranty.
- Prevent wetness from penetrating internal parts. Using the device in wet or damp environment (for instance, charging
 it in a wet environment like bathtub or bathroom) may result in malfunctions,
- Do NOT use this device near source of heat or fire, such as oven, microwave, stove, or heater.
- Keep your device away from cooking appliances.
- Do NOT place the device in places with heated atmosphere (dryer, sauna, hot water).
- Do NOT use the device and disconnect all cables at places with fire or explosion risks.
- Avoid strong physical impact (heavy objects or excessive force).
- Keep your device away from liquid or conductive materials.
- Do NOT charge the device when either the device, the adapter, or the cable is wet. It may cause short-circuit.
- Power off the device when near medical equipment or high-precision control systems to avoid potential interference.
- Charge with specified voltage only.
- Place the device on a flat, stable surface for optimal use.
- Keep the device and adapter away from children and pets.
- The device must be disposed of in accordance with the locally applicable. environmental regulations.
- Keep the device away from magnetic items such as magnetic strip cards or items that generate strong electronic or magnetic fields, such as a microwave.
- Do NOT store the device in an overheated environment.
- Do NOT use the device when it is overheated.
- Disconnect all the the cable connections when the device is not in use.
- Place the device in places with good signal strength.
- Make sure the adapter you use with the device meets the approved standards and specifications. See Section 3.1, Positioning Your Router.

Disposal and Recycling



Do not dispose of the router in a household garbage bin.

Products with this label must be taken to specific collection points at the end of their life.

You can learn more about how to recycle your mobile device by visiting the CTIA website at www.ctia.org/news/how-to-recycle-your-mobile-device

Maintenance & Care

- Avoid extreme temperature or direct sunlight
- Clean handset with soft, dry cloth. Do NOT use alcohol solvent (color may fade)
- Warranty does not cover malfunctions caused by misuse.
- Stop all the applications and shut down the device before cleaning it.
- Keep the device and its accessories dry at all times.
- If anomaly occurs, contact Verizon Support immediately.
- · When storing the device, do NOT store it in a container with dampness or under extended heat.
- Avoid dropping the device or strong physical impact at all times.

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Changes

The functions of the product and associated peripherals or accessories are described in this document are based on the current hardware, software and/or local network conditions at the time of writing, and thus may vary due to conditions set by local network service providers or carriers. Therefore, all information described herein is subject to change without prior notice