



Touchstone TG9452 Telephony Gateway

User Guide, DRAFT Revision 1.2

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Table of contents

CommScope legal statements.....	2
 Chapter 1: Safety requirements.....	5
FCC Part 15.....	6
RF Exposure.....	6
Canadian compliance.....	7
RF Exposure.....	7
License exempt.....	7
 Chapter 2: Get started.....	8
Introduction.....	8
About your new Telephony Gateway.....	9
What's in the box.....	9
Items you need.....	9
Contact your service provider.....	10
System requirements.....	11
Recommended hardware.....	11
Windows.....	11
macOS.....	11
Linux/Unix.....	12
About this manual.....	12
What about security?.....	12
Ethernet or wireless?.....	13
Ethernet.....	13
Wireless.....	14
Both.....	14
Get support.....	14
 Chapter 3: Install and connect your Telephony Gateway.....	15
Front panel.....	15
Rear panel.....	16
Choose an installation location.....	17
Desktop mounting instructions.....	18
Factors that affect wireless range.....	18
Connect the Telephony Gateway.....	18
Configure your wireless connection.....	20
Access the configuration interface.....	20
Set parental controls.....	21
Find the MAC address of a computer.....	21
Set up your parental controls.....	21

Chapter 4: Configure your Ethernet connection.....	24
Requirements.....	24
How to use this section.....	24
Configure TCP/IP for Windows Vista.....	24
Configure TCP/IP for Windows 7, Windows 8, or Windows 10.....	25
Configure TCP/IP for macOS.....	25
 Chapter 5: Operate the Telephony Gateway.....	 27
Set up your computer to use the Telephony Gateway.....	27
Indicator light for the TG9452.....	27
LED patterns.....	28
Wiring problems.....	29
 Chapter 6: Troubleshooting.....	 30
The Telephony Gateway is plugged in, but the power light is off.....	30
I'm not getting on the Internet (all connections).....	30
I'm not getting on the Internet (Ethernet).....	30
I'm not getting on the Internet (wireless).....	31
My wireless Internet connection stops working sometimes.....	31
I can get on the Internet, but everything is slow.....	31
I don't have a dial tone when I pick up the phone.....	31
 Appendix A: Glossary.....	 33

Safety requirements

The ARRIS Telephony Gateway complies with the applicable requirements for performance, construction, labeling, and information when used as outlined below:



CAUTION:

Potential equipment damage.

Potential loss of service.

Connecting the Telephony Gateway to existing telephone wiring should only be performed by a professional installer. Physical connections to the previous telephone provider must be removed and the wiring must be checked; there must not be any voltages. Cancellation of telephone service is not adequate. Failure to do so may result in loss of service and/or permanent damage to the Telephony Gateway.



CAUTION:

This device is restricted to indoor use.

- The Telephony Gateway is designed to be connected directly to a telephone.
- Connecting the Telephony Gateway to the home's existing telephone wiring should only be performed by a professional installer.
- Do not use product near water (i.e. wet basement, bathtub, sink or near a swimming pool, etc.), to avoid risk of electrocution.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- The product shall be cleaned using only a damp, lint-free, cloth. No solvents or cleaning agents shall be used.
- Do not use spray cleaners or aerosols on the Telephony Gateway.
- Avoid using and/or connecting the equipment during an electrical storm, to avoid risk of electrocution.
- Do not locate the equipment within 6 feet (1.9 m) of a flame or ignition source (i.e. heat registers, space heaters, fireplaces, etc.).
- Use only the external AC power adapter (if provided) and power cord included with the equipment.
- Equipment should be installed near the power outlet and should be easily accessible.
- The shield of the coaxial cable must be connected to earth (grounded) at the entrance to the building in accordance with applicable national electrical installation codes. In the U.S., this is required by NFPA 70 (National Electrical Code) Article 820. In the European Union and in certain other countries, CATV installation equipotential bonding requirements are specified in IEC 60728-11, Cable networks for television signals, sound signals and interactive services, Part 11: Safety. This equipment is intended to be installed in accordance with the requirements of IEC 60728-11 for safe operation.

- If the equipment is to be installed in an area serviced by an IT power line network, as is found in many areas of Norway, special attention should be given that the installation is in accordance with IEC 60728-11, in particular Annex B and Figure B.4.
- In areas of high surge events or poor grounding situations and areas prone to lightning strikes, additional surge protection may be required (i.e. PF11VNT3 from American Power Conversion) on the AC, RF, Ethernet and Phone lines.
- When the Telephony Gateway is connected to a local computer through Ethernet cables, the computer must be properly grounded to the building/residence AC ground network. All plug-in cards within the computer must be properly installed and grounded to the computer frame per the manufacturer's specifications.
- Ensure proper ventilation. Position the Telephony Gateway so that air flows freely around it and the ventilation holes on the unit are not blocked.
- Do not mount the Telephony Gateway on surfaces that are sensitive to heat and/or which may be damaged by the heat generated by the modem, its power supply, or other accessories.

FCC Part 15

This equipment has been tested and found to comply with the requirements for a Class B digital device under Part 15 of the Federal Communications Commission (FCC) rules. These requirements are intended 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.



CAUTION:

FCC Caution.

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

RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 10.2 inches (26 cm) between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Canadian compliance

This Class B digital device complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

RF Exposure

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with a minimum distance of 26 centimeters between the radiator and your body.

Cet émetteur ne doit pas être Co-placé ou ne fonctionnant en même temps qu'aucune autre antenne ou émetteur. Cet équipement devrait être installé et actionné avec une distance minimum de 26 centimètres entre le radiateur et votre corps.

Operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

License exempt

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Get started

Introduction

Get ready to experience the Internet's express lane! Whether you're checking out streaming media, downloading new software, checking your email, or talking with friends on the phone, the Touchstone TG9452 Telephony Gateway brings it all to you faster and more reliably. All while providing toll quality Voice over IP telephone service and both wired and wireless connectivity.

The Touchstone TG9452 Telephony Gateway provides four Ethernet connections for use as the hub of your home/office Local Area Network (LAN). The TG9452 also provides 802.11a/b/g/n/ac wireless connectivity for enhanced mobility and versatility. In addition, the TG9452 provides for up to two separate lines of telephone service.



Installation is simple, and your service provider will help you with any special requirements.

About your new Telephony Gateway

The TouchstoneTG9452Telephony Gateway is DOCSIS compliant with the following features:

- Speed: up to 24 times faster than DOCSIS 2.0 cable modems.
- Convenience: supports Ethernet and 802.11a/b/g/n/ac wireless connections; both can be used simultaneously
- Flexibility: provides two independent lines of telephone service as well as high speed data
- Compatibility:
 - Data services: DOCSIS 3.1 compliant and backward-compatible with DOCSIS 3.0, 2.0, or 1.1; supports tiered data services (if offered by your service provider)
 - Telephony services: PacketCable™ 2.0 compliant

The TG9452 provides:

- Wireless 802.11a/b/g/n/ac connectivity
- A 2.5GigE Ethernet port and two 1GigE Ethernet ports for connections to non-wireless devices
- Up to two lines of telephone service
- DOCSIS 3.1 compliant

What's in the box

Make sure you have the following items before proceeding. Call your service provider for assistance if anything is missing.

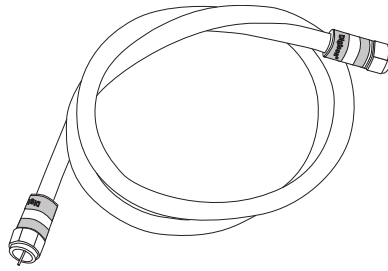
- Telephony Gateway
- Power Cord
- Battery (not included with all models)
- Wireless Connection Configuration Guide
- Ethernet Cable
- End User License Agreement

Items you need

Telephony Gateway See [What's in the box](#) (page 9) for a list of items in the package.
package

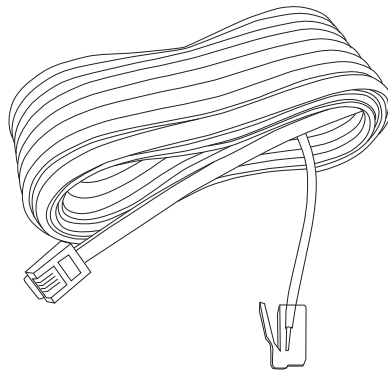
Coaxial cable (coax) This is a round cable with a connector on each end. It is the same kind of wire used to connect to your television for cable TV. You can buy coax from any electronics retailer and many discount stores; make sure it has connectors on both ends. There are two types of connectors, slip-on and screw-on; the screw-on connectors are

best for use with your Telephony Gateway. The coax should be long enough to reach from your Telephony Gateway to the nearest cable outlet.



Phone Cable

This is a standard phone cable with standard phone connectors (RJ11 type) on both ends. You can buy phone cables from any electronics retailer and many discount stores.



Splitter (optional)

Provides an extra cable connection by splitting a single outlet into two. You may need a splitter if you have a TV already connected to the cable outlet that you want to use. You can buy a splitter from any electronics retailer and most discount stores; you may also need a short piece of coax cable (with connectors); use it to connect the splitter to the cable outlet and then connect the Telephony Gateway and TV to the splitter.



Note: Using several splitters in a line may deteriorate the quality of your television, telephone, and/or internet connection.

Information packet

Your service provider should give you a packet containing information about your service and how to set it up. Read this information carefully and contact your service provider if you have any questions.

Contact your service provider

Before trying to use your new Telephony Gateway, contact your local service provider to establish an Internet account and telephone service. When you call, have the following information ready:

- the Telephony Gateway serial number and cable MAC addresses of the unit (printed on the Telephony Gateway)
- the model number of the Telephony Gateway (printed on the Telephony Gateway)

If the Telephony Gateway was provided by your service provider, they already have the required information.

In addition, you should ask your service provider the following questions:

- Do you have any special system requirements or files that I need to download after I am connected?
- When can I start using my Telephony Gateway?
- Do I need a user ID or password to access the Internet or my e-mail?
- Will my phone number(s) change?
- What new calling features will I have and how do I use them?

System requirements

The TG9452 Telephony Gateway operates with most computers. The following describes requirements for each operating system; see the documentation for your system for details on enabling and configuring networking.

To use the Telephony Gateway, you need DOCSIS high-speed Internet service from your service provider. Telephone service requires that the service provider has PacketCable support.

Recommended hardware

The following hardware configuration is recommended. Computers not meeting this configuration can still work with the TG9452, but may not be able to make maximum use of TG9452 throughput.

- CPU: P4, 3GHz or faster.
- RAM: 1GB or greater.
- Hard drive: 7200 RPM or faster.
- Ethernet: Gig-E (1000BaseT).

Windows

Windows Vista, Windows 7, Windows 8, Windows 10, or Android OS (for mobile devices). A supported Ethernet or wireless LAN connection must be available.

macOS

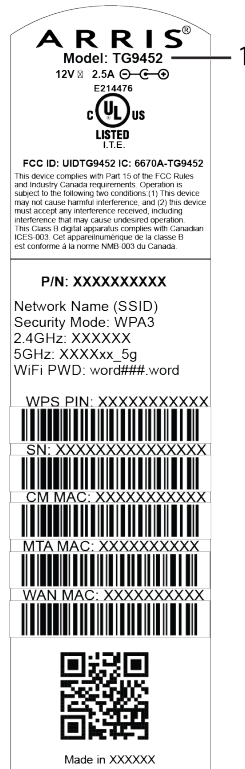
System 7.5 to Mac OS 9.2 (Open Transport recommended), macOS X, or iOS (for mobile devices). A supported Ethernet or wireless LAN connection must be available.

Linux/Unix

Hardware drivers, TCP/IP, and DHCP must be enabled in the kernel. A supported Ethernet or wireless LAN connection must be available.

About this manual

This manual covers the Touchstone TG9452 Telephony Gateway. The model number is on the label affixed to the Telephony Gateway.



1. Model Number

What about security?

Having a high-speed, always-on connection to the Internet requires a certain amount of responsibility to other Internet users — including the need to maintain a reasonably secure system. While no system is 100% secure, you can use the following tips to enhance your system's security:

- Keep the operating system of your computer updated with the latest security patches. Run the system update utility at least weekly.
- Keep your email program updated with the latest security patches. In addition, avoid opening email containing attachments, or opening files sent through chat rooms, whenever possible.

- Install a virus checker and keep it updated.
- Avoid providing web or file-sharing services over your Telephony Gateway. Besides certain vulnerability problems, most service providers prohibit running servers on consumer-level accounts and may suspend your account for violating your terms of service.
- Use the service provider's mail servers for sending email.
- Avoid using proxy software unless you are certain that it is not open for abuse by other Internet users (some are shipped open by default). Criminals can take advantage of open proxies to hide their identity when breaking into other computers or sending spam. If you have an open proxy, your service provider may suspend your account to protect the rest of the network.
- The TG9452 ships with wireless LAN security set by default (for the same reasons that you should run only secured proxies). See the security label on your product for the factory security settings. If you need to modify the default wireless security settings, see [Configure your wireless connection](#).
- Set up a strong password for both your Wi-Fi access and your web administration login. Change the password regularly, every three months or so.

Ethernet or wireless?

There are two ways to connect your computer (or other equipment) to the Telephony Gateway.

Ethernet

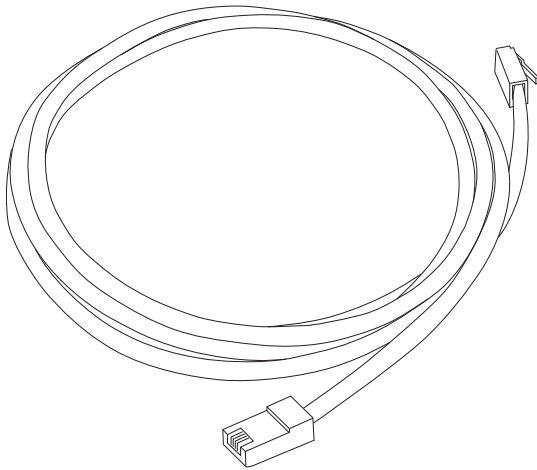
Ethernet is a standard method of connecting two or more computers into a Local Area Network (LAN). You can use the Ethernet connection if your computer has built-in Ethernet hardware.

Ethernet connections are slightly more secure than wireless connections, making it harder for unauthorized users to “eavesdrop” on communications between the router and the connected device. However, Ethernet connections are not as convenient or easy to install as wireless connections.



Note: To connect more than four computers to the TG9452 through the Ethernet ports, you need an Ethernet hub (available at computer retailers).

The Telephony Gateway package comes with one Ethernet cable (the connectors look like wide telephone connectors); you can purchase more cables if necessary at a computer retailer. If you are connecting the Telephony Gateway directly to a computer, or to an Ethernet hub with a cross-over switch, ask for Category 6 (CAT6) straight-through cable. CAT6 cable is required for best Ethernet performance. Regular CAT5 or CAT5e cable may not allow full-speed Ethernet operation.



Wireless

Wireless access lets you connect additional (wireless-capable) devices to Telephony Gateway. The 802.11 wireless LAN standard allows one or more computers to access the TG9452 using a wireless (radio) signal. These connections are in addition to the connections supported via Ethernet.

Wireless connections are easier to install than standard Ethernet connections. However, wireless connections are slightly less secure, increasing the chances that unauthorized users could “eavesdrop” on connections between the router and the connected device.



Note: You can use the wireless connection if your computer has a built-in or aftermarket plug-in wireless adapter. To learn more about which wireless hardware works best with your computer, see your computer dealer.

Both

If you have two or more computers, you can use Ethernet for up to four devices and wireless for the others. To connect five or more computers to the Ethernet ports, you will need an Ethernet hub (available at computer retailers.)

Get support

If you need assistance with your ARRIS product please contact your service provider.

For additional technical information and product user guides please visit the ARRIS Support website at <http://www.arris.com/consumers>.

Install and connect your Telephony Gateway

Before you start, make sure that:

- You have contacted your service provider and verified that they provide data and telephone service using standard DOCSIS technology.
- You have all the [Items you need](#) (page 9).
- Cable, phone, and power outlets are available near the computer. If a cable outlet is not conveniently located, your service provider can install a new one.

If you have ordered service, your service provider should configure the Telephony Gateway automatically. You need only follow the instructions in this section to install and connect the Telephony Gateway.



CAUTION:

Risk of equipment damage.

Only qualified installation technicians should connect the Telephony Gateway to house wiring. Incumbent telephone service must be physically disconnected at the outside interface box before making any connections.

Front panel

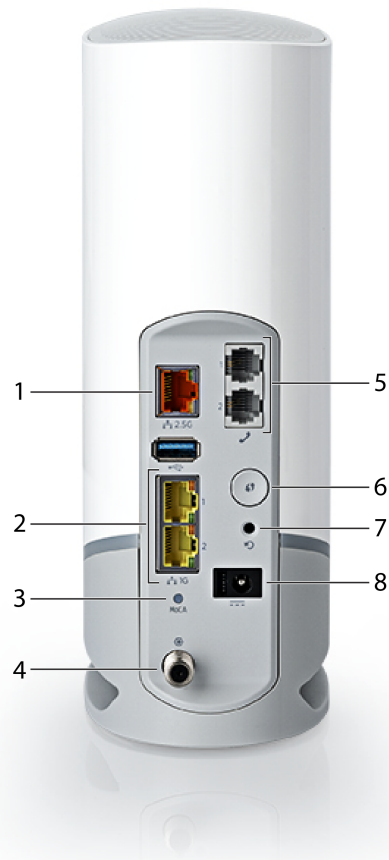
The front of the TG9452 has the following indicators.



1. Status LED: Indicates the device power and status.

Rear panel

The rear of the TG9452 has the following connectors and controls.



1. 2.5GigE Ethernet connect:or: 2.5GigE connector for use with a computer LAN port.
2. 1GigE Ethernet connectors: 1GigE connectors for use with a computer LAN port.
3. MoCA: Indicates connectivity between the Telephony Gateway and other home devices connected via the MoCA network.
4. Cable: Connector for the coaxial cable.
5. Tel (1 - 2): Connector for the first phone line (or both lines of a 2-line phone).
6. WPS button: Begins associating the Telephony Gateway with a wireless device.
7. Reset button: Resets the Telephony Gateway as if you power cycled the device. Use a pointed non-metallic object to press this button.
8. Power: Connector for the power cord.

Choose an installation location

There are a number of factors to consider when choosing a location to install your Telephony Gateway:

- Is an AC outlet available nearby? For best results, the outlet should not be switched and should be close enough to the Telephony Gateway that extension cords are not required.
- Is a cable jack available? For best performance, keep the number of splitters between the jack and cable drop to a minimum. Each splitter attenuates (reduces) the signal

available to the Telephony Gateway. A large number of splitters can slow down the Internet connection and even affect your telephone service.

- Can you easily run cables between the Telephony Gateway's location and the phones?
- If you are connecting devices to the Ethernet ports, can you easily run cables between the Telephony Gateway's location and those devices?
- If you want to install the Telephony Gateway on a desktop, is there enough space on either side to keep the vents clear? Blocking the vents may cause overheating.
- How close are your wireless devices? The Telephony Gateway wireless connection range is typically 100–200 feet (30m–65m). A number of factors can affect connection range, as described below.

Desktop mounting instructions

Position the Telephony Gateway so that:

- it stands vertically on its base (do not lay it flat on its side.)
- air flows freely around it
- the back faces the nearest wall
- it will not fall to the floor if bumped or moved
- the ventilation holes on the sides of the unit are not blocked

Factors that affect wireless range

A number of factors can affect the usable range for wireless connections.

Increases range	■ Adding a wireless extender to the network
Decreases range	■ Metal or concrete walls between the Telephony Gateway and other devices
	■ Large metal appliances, aquariums, or metal cabinets between the Telephony Gateway and other devices
	■ Interference and RF noise (2.4 GHz wireless phones, microwave ovens, or other wireless networks)



Note: Set the transmit power level to High to increase the range. Set it to Medium or Low to decrease the range proportionately.



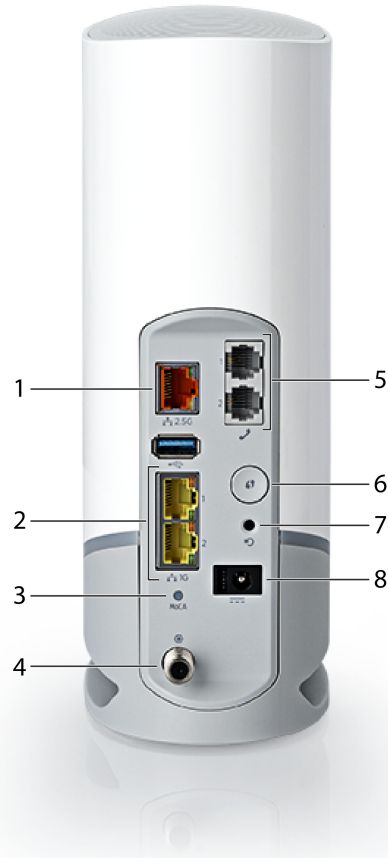
Note: You may decide to decrease the range of your wireless network, as long as the decreased range is sufficient for your needs. By limiting your network's range, you reduce interference with other networks and make it harder for unwanted users to find and connect to your network.

Connect the Telephony Gateway



Warning:
Risk of injury or equipment damage.

Connecting the Telephony Gateway to the home's existing telephone wiring should only be performed by a professional installer. Physical connections to the previous telephone provider must be removed and the wiring must be checked; there must not be any voltage. Cancellation of telephone service is not adequate. Failure to do so may result in loss of service or permanent damage to the Telephony Gateway.



1. Connect one end of the coax cable to the cable outlet or splitter, and the other end to the Telephony Gateway's Cable connector (4). Tighten the connections by hand, then tighten an additional 1/8 turn with a wrench.



Note: For best performance, use high-quality coax cable and minimize or eliminate splitters between the cable jack and the Telephony Gateway. If you are using MoCA for your home network, MoCA filters must be installed on any legacy client devices. Your service provider will install these filters for you.

2. Insert the plug from the power cord into the Power connector on the back of the Telephony Gateway (8) and insert the power cord into a convenient AC outlet.
3. Connect one end of the Ethernet cable to any Ethernet port on the back of the Telephony Gateway (1 or 2), and the other end to the Ethernet port on a computer or other client device.



Note: Use the Ethernet cable included in the Telephony Gateway package.

4. Connect one end of the telephone cable to the telephone port on the back of the Telephony Gateway (5). Connect the other end to the telephone.

Configure your wireless connection

The TG9452 ships with wireless LAN security enabled by default. See the security label on your product for the factory security settings.



Note: You must set up your computer and other client devices to work with the security settings on the TG9452. Refer to the documentation for your client device for instructions on setting security. On most computer systems you only need to select the network name (SSID) and enter the encryption key. If your computer or client device supports Wi-Fi Alliance WPS (Wireless Protected Setup), activate WPS on your computer or client device and the TG9452 simultaneously to easily set up your system security.



If you need to modify the Telephony Gateway's default wireless security settings, or if you want to configure any other wireless LAN settings, refer to the following instructions.

Access the configuration interface

1. If security has been properly set up on your computer to access the wireless LAN on the TG9452, use the connection utility for your operating system to connect to the wireless LAN using its network name (SSID), as shown on the security label.
2. If you cannot access the wireless LAN, you must first establish a wired Ethernet connection between your computer and the TG9452.
3. In your web browser, navigate to <http://192.168.0.1/> to access the wireless router setup. The Login screen appears.



Note: The default user name is **admin**. The default password is **password**, in lower case letters.

4. Enter the user name and password, and click **Apply** to log in.

The System Basic Setup screen appears.

5. Use the online help information to set configuration parameters as required.



Note: Most configuration parameters that you may want to set can be accessed on the System Basic Setup screen, including the security mode and setting a system password.

Set parental controls

The parental control feature lets you block specified keywords and web sites from being accessed and also lets you specify trusted computers in the network. Trusted computers are not affected by the parental control settings.

Find the MAC address of a computer

Use the operating system of your computer to find its MAC address, as follows:

Windows: from the Start menu, select the **Control Panel**. Double-click **Network & Sharing Center**. Then double-click either "Wireless Network Connection" for a wireless connection, or "Local Area Connection" for an Ethernet connection. Next click the **Details** button. The "Physical Address" line shows the MAC address.

macOS: open System Preferences and click the Network icon. To find the Ethernet MAC address, select **Built-in Ethernet** from the Show drop-down, then click the **Ethernet** tab. The "Ethernet ID" field shows the MAC address. To find the wireless MAC address, select **Airport** from the Show drop-down, then click the Airport tab. The "Airport ID" field shows the MAC address.

Linux: open a shell window and type `/sbin/ifconfig` (and press **Enter**). The wireless interface is `eth1` (unless there is no Ethernet adapter, in which case the interface is `eth0`).

Set up your parental controls

1. Access and log into the wireless configuration interface as explained in [Access the configuration interface](#) (page 20).
2. Click the **Firewall** tab and then click **Parental Controls** in the side menu to display the Parental Controls screen.
3. Check the **Enable Parental Controls** checkbox and click the **Apply** button.

The screenshot shows the 'Parental Controls' configuration page. On the left is a sidebar with navigation links: FIREWALL, FIREWALL SETTINGS, VIRTUAL SERVERS, PORT TRIGGERS, CLIENT IP FILTERS, DMZ, and PARENTAL CONTROLS (which is highlighted). The main content area has a title 'Parental Controls' and a descriptive paragraph. Below this are three sections: 'Parental Controls' with an 'Enable Parental Controls' checkbox (checked), 'Trusted Mac' with two input fields for MAC addresses and an 'Apply' button, 'Keyword Filtering' with a table for keywords and days/times, and 'Web Site Filtering' with a similar table. Each table has 'Add' and 'Delete' buttons.

4. Configure any or all of the following parental controls:

a. Trusted MAC Addresses:

Enter the MAC addresses of any "trusted" computers on the network and click the **Apply** button. You can add two trusted computers. Once added, these trusted computers will not be affected by the parental control settings. For example, you may want the computers of the father and mother to be trusted, while the childrens' computers have parental controls in effect.



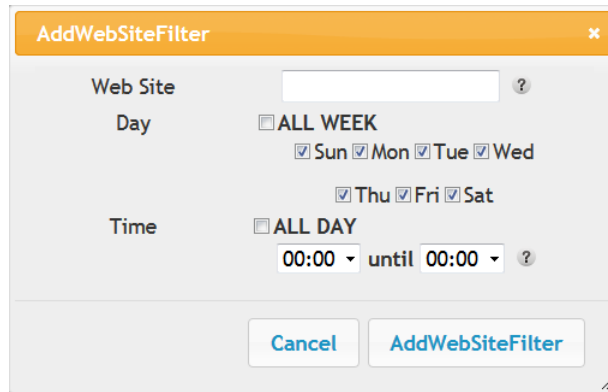
Note: Refer to the [Find the MAC address of a computer](#) (page 21) for information on determining the MAC address of your computer.

b. Keyword and Web Site Filtering:

You can add a list of keywords and web sites that you want to block. To add a keyword or web site to the list, click the respective **Add** button. To delete a keyword or web site from the list, first click its check box and then click the **Delete** button.

The screenshot shows the 'AddKeywordFilter' dialog box. It has a title bar with the text 'AddKeywordFilter' and a close button. Inside, there are fields for 'Keyword', 'Day', and 'Time'. The 'Day' field has a dropdown menu with 'ALL WEEK' selected, and checkboxes for 'Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', and 'Sat'. The 'Time' field has a dropdown menu with 'ALL DAY' selected, and two time input fields: '00:00' and 'until 00:00'. At the bottom are 'Cancel' and 'AddKeywordFilter' buttons.

Add Keyword Filter Dialog Box

The image shows a dialog box titled "AddWebSiteFilter" with a close button (X) in the top right corner. The dialog is divided into three main sections: "Web Site", "Day", and "Time". The "Web Site" section has a text input field and a help icon (?). The "Day" section has a checkbox for "ALL WEEK" and checkboxes for each day of the week: Sun, Mon, Tue, Wed, Thu, Fri, and Sat. The "Time" section has a checkbox for "ALL DAY" and two time selection fields: "00:00" and "until 00:00", each with a help icon (?). At the bottom of the dialog are two buttons: "Cancel" and "AddWebSiteFilter".

Add Web Site Filter Dialog Box

► **Adding a Keyword or Web Site Filter**

5. Enter the keyword in the Keyword field or web site URL address in the Web Site field.
6. Click the checkboxes for the days you want access blocked, or click the All Week checkbox for all week.
7. Set the start time and end time during the specified days (24-hour clock). (0:00 until 0:00 indicates all day, or just click the All Day checkbox.)
8. Click the **Add Keyword Filter** or **Add Web Site Filter** button respectively. Then click the **Apply** button.

Configure your Ethernet connection

If your computer has a LAN card that provides an Ethernet connection, you may have to configure your computer's TCP/IP settings. The following steps will guide you through setting your computer's TCP/IP settings to work with the Telephony Gateway.

Requirements

Make sure you have the following before attempting to configure your Ethernet connection:

- Computer with Ethernet interface.
- Ethernet cable.
- IP address, subnet, gateway, and DNS information for installations not using DHCP.

How to use this section

The following list shows the procedures for modifying the TCP/IP settings on the computer. The procedure is slightly different depending on the operating system that you are using. Please ensure you are using the correct steps for the operating system on your computer. Follow the links below for instructions to configure your Ethernet connection on your operating system.

- [Configure TCP/IP for Windows Vista](#) (page 24)
- [Configure TCP/IP for Windows 7, Windows 8, or Windows 10](#) (page 25)
- [Configure TCP/IP for macOS](#) (page 25)

Configure TCP/IP for Windows Vista

1. Open the Vista Control Panel.
2. Double-click **Network and Sharing Center** to display the Network and Sharing Center Window.
3. Click **Manage network connections**. If prompted for a connection, choose **Local Area Connection**.
The Network Connections window appears.
4. Double-click the **Local Area Connection** to open the Properties window:



Note: If Windows requests permission to continue, click **Continue**.

5. Double-click **Internet Protocol Version 4 (TCP/IPv4)** to configure TCP/IPv4.



Note: If your service provider requires TCP/IP version 6, double-click **Internet Protocol Version 6 (TCP/IPv6)** to configure TCP/IPv6.

The TCP/IP properties window for the version you selected appears.

6. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your service provider.
7. Click **OK** to accept the new settings and close the Properties window.

Configure TCP/IP for Windows 7, Windows 8, or Windows 10

1. Click the **Start** menu and type **network and sharing** into the Search box.
2. Select **Network and Sharing Center** when it appears.
3. Click **Change adapter settings** from the left-side menu.
4. Right-click on your local area connection icon and select **Properties** to open the Properties window.
5. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties** to configure TCP/IPv4.



Note: If your service provider requires TCP/IP version 6, select **Internet Protocol Version 6 (TCP/IPv6)** and click **Properties** to configure TCP/IPv6.

The TCP/IP properties window for the version you selected appears.

6. For either TCP/IPv4 or TCP/IPv6, select **Obtain an IP address automatically** and **Obtain DNS server address automatically**, unless instructed otherwise by your service provider.
7. Click **OK** to accept the new settings and close the Properties window. Then click **Close** to back out of the remaining setup screens.

Configure TCP/IP for macOS

1. Open System Preferences, either by choosing **System Preferences** from the Apple menu or by clicking the System Preferences icon in the dock.
2. Click the **Network** icon.
3. Choose **Automatic** from the Location drop-down menu, and **Built-in Ethernet** from the Show menu.
4. Choose the TCP/IP tab, if necessary.

If you are using **TCP/IPv4**, go to step 5. If your service provider requires **TCP/IPv6**, go to step 8.
5. Choose **Using DHCP** from the Configure IPv4 menu.
6. If necessary, click the **Renew DHCP Lease** button.
7. Close the System Properties application.

TCP/IPv4 configuration is completed.
8. If you are using TCP/IPv6, click **Configure IPv6** near the bottom of the previous window.

9. Choose **Automatically** from the Configure IPv6 drop-down menu and click **OK**.
10. Close the System Properties application.

Operate the Telephony Gateway

This chapter describes the controls and features available on the Telephony Gateway, and covers basic troubleshooting procedures.

- [Set up your computer to use the Telephony Gateway](#) (page 27)
- [Indicator lights for the TG9452](#)
- [Use the Reset button](#)
- [Reset the Telephony Gateway to factory defaults](#)

Set up your computer to use the Telephony Gateway

Follow the instructions in the information packet supplied by your service provider. Contact your service provider if you need help setting up your computer.

Indicator light for the TG9452

The Telephony Gateway has an LED indicator light to assist in troubleshooting.



1. Status LED: Indicates the device power and status.

LED patterns

Light patterns that may appear on the status LED

Status LED	Behavior
Off	Powered off
Solid green	Powering on
Flashing green (1/second)	Booting up
Solid white	Online and functioning
Solid red	No Internet connectivity
Flashing blue	WPS mode (times out after two minutes)
Flashing green (5/second)	Factory reset in process

Wiring problems

If the Telephony Gateway begins flashing its LED for more than 10 seconds, this indicates a problem with the telephone wiring — the red and green wires may be shorted (touching), or there may be undesired voltage on the lines. If this pattern persists for more than 10 seconds, disconnect the telephone lines from the Telephony Gateway, then call a wiring technician for assistance.

Troubleshooting

The Telephony Gateway is plugged in, but the power light is off

Check all power connections. Is the power cord plugged in firmly at both ends?



Note: Use only the power adapter and power cord included with the equipment.

If you plugged the power cord into a power strip, make sure the strip is switched on.

Make sure that the rear panel power switch is set to the ON position.

Avoid using an outlet controlled by a wall switch, if possible.

Finally, check the fuse or circuit breaker panel.

I'm not getting on the Internet (all connections)

It may take over 30 minutes to establish a connection the first time you power up your Telephony Gateway, especially when many people are online. Always leave your Telephony Gateway plugged into AC power and connected to the cable system.

Check the front panel lights. The Power light should be on. If the light blinks for more than 30 minutes, call your service provider for assistance.

Check your cable connections. Connectors should be tight. The coax cable should not be pinched, kinked, or bent sharply—any of these can cause a break or short in the cable (you may have to replace the cable). If you have one or more splitters between the Telephony Gateway and CATV outlet, remove the splitters and connect the Telephony Gateway directly to the outlet.

I'm not getting on the Internet (Ethernet)

If you are using an Ethernet hub, is it turned on?

Are you using the right type of Ethernet cable? Use the supplied cable for direct connection to a computer; use a cross-over cable for connection to an Ethernet hub.

Press the **Reset** button on the back of the Telephony Gateway.

A misconfiguration could lock out all access to the Telephony Gateway. If you think this has happened, see [Reset the Telephony Gateway to factory defaults](#).

I'm not getting on the Internet (wireless)

Check to be sure that the **Wi-Fi** light is on. See [Operate the Telephony Gateway](#) (page 27) for more information.

Does your connection utility discover your wireless LAN? If you turned off "Broadcast SSID" you need to manually enter the name of your wireless LAN in the connection utility.

Change your security mode to "disabled." Enable one of the other security modes as soon as you find the problem.

A misconfiguration could lock out all access to the Telephony Gateway. If you think this has happened, see [Reset the Telephony Gateway to factory defaults](#).

My wireless Internet connection stops working sometimes

This is usually caused by interference. Two common sources are 2.4GHz "remote" telephones and microwave ovens. If you cannot remove the interfering product, try using a different channel or setting Protected Mode.

I can get on the Internet, but everything is slow

If the website you are visiting is very popular, that site may be having trouble servicing all the requests. If other sites download quickly, wait for a few minutes and try again. Usage during peak hours may also affect the connection speed.

Other communications on the LAN, or interference with wireless connections, may slow down the connection.

I don't have a dial tone when I pick up the phone

In order for telephone service to be functional on the Telephony Gateway, telephone service must have been purchased from the service provider and configured on your Telephony Gateway. The following steps should help in identifying the source of the problem.

1. Check to make sure the Telephony Gateway is plugged in and the outlet has power. Use only the external AC power adapter (if provided) and power cord included with the equipment.
2. Check the coax connection at the Telephony Gateway and the wall. Ensure they are connected and tight. If they are and you do not have dial tone, contact your service provider.
3. Is the phone plugged directly into the Telephony Gateway?

Make sure the phone is plugged into the port on the back of the Telephony Gateway labeled "Tel 1" for line 1, and "Tel 2" for line 2.

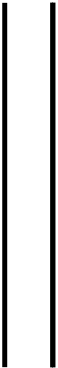
- If so, try a different phone. Make sure the new phone is a working phone.
 - If a known good phone is used and you still don't have dial tone, try a different phone cable. If a new phone and cable do not restore dial tone, call your service provider.
4. Is the Telephony Gateway plugged into a wall outlet?
- If so, unplug the phone connector at the back of the Telephony Gateway and plug in a known working phone. If you now have dial tone, the problem is with the house wiring. Contact your cable company or a qualified wiring technician to correct the house wiring. If you still do not have dial tone, contact your service provider.

Glossary

Category 5e (Cat5e)	A high-quality type of cable, used for gigabit Ethernet (1000BaseT) connections. When purchasing Ethernet cables, always look for Category 5e cable or higher.
Coaxial cable (coax)	A thin wire, used to connect your television and Telephony Gateway to the cable TV system. You can buy coax from any electronics retailer and many discount stores.
CPE	Customer Premise Equipment. This is the equipment that is plugged in to the Telephony Gateway; typically a computer or hub.
Cross-over	An Ethernet cable used to connect two hubs (or a hub and a cable modem) together. Also, some Ethernet hubs may have built-in cross-over on one or more ports (which eliminates the need for a cross-over cable).
DHCP	Dynamic Host Configuration Protocol. An IP protocol used to provide an IP address and location of services (such as DNS and TFTP) needed by a device connecting to the network. DHCP allows the service provider to configure your computer's networking software for you.
DNS	Domain Name Service (Server). An IP service that associates a domain name (such as www.example.com) with an IP address.
DOCSIS	Data Over Cable System Interface Specification. The interoperability standards used for data communications equipment on an HFC network.
Downstream	In an HFC network, the direction from the head-end to the subscriber. Some older cable documentation may refer to this as the forward path.
EMTA	Embedded Multimedia Terminal Adapter. An MTA device that is integrated with a cable modem.
Ethernet	A standard method of connecting two or more computers into a Local Area Network (LAN).
EuroDOCSIS	The European version of DOCSIS.
Event	An informational message used for monitoring network status.
F-connector	The type of connector used on coax cable. There are two common types of F-connector, slip-on and screw-on. Use

	coax with screw-on connectors for connecting your Telephony Gateway.
Firewall	A hardware or software device that prevents unauthorized access to a private network from the Internet. The TG9452 provides a built-in firewall.
Gateway	The device, usually a router, that connects devices on a given IP subnet to other IP subnets.
Headend	The "central office" in an HFC network. The headend houses both video and data equipment. In larger cable networks, a "master" headend often feeds several "remote" headends to provide distributed services.
HTTP	HyperText Transfer Protocol.
Hub	A box with several Ethernet connectors. Ethernet hubs provide a common point of contact for all connected devices.
IP address	A number assigned to your computer by your service provider, used to identify your computer to other systems on the Internet.
ISDN	Integrated Services Digital Network. A digital telephony standard that provides communication speeds about twice as fast as standard dialup.
LAN	Local Area Network. A network that allows computers in a single location (such as a building) to communicate with one another.
LED	Light Emitting Diode. A semi-conductor diode that emits light when current is passed through it.
MAC address	A number that uniquely identifies any device connected to a network. Your service provider uses your Telephony Gateway's MAC address to authorize access to the Internet. The MAC address is printed on a label affixed to your Telephony Gateway.
Protocol	A set of rules and formats that determines the communication behavior of network entities at a given layer.
Proxy	A device or program that stands in between a server (for example, a web site) and a client (your browser), providing a way to relieve some of the burden from the server. For example, your service provider may have a web proxy that keeps copies of popular web pages; the proxy can send you those pages instead of fetching them directly from the web site, resulting in faster page loading and less network congestion.
RF	Abbreviation for Radio Frequency. Some literature refers to coax as "RF cable" and the connectors as "RF connectors."
RJ-11	A standard 2-conductor modular connector, commonly used in North America for connecting telephones.

RJ-45	A standard 8-conductor modular connector, commonly used on Ethernet cable. An RJ-45 connector looks like a wide RJ-11 (telephone) connector.
Splitter	A small box with three cable connectors: one input and two outputs. You may need a splitter if you have a TV already connected to the cable outlet that you want to use for your Telephony Gateway. You can buy a splitter from any electronics retailer and most discount stores.
SSID	Service Set IDentifier. A string of text (up to 32 characters long) that uniquely identifies a wireless LAN.
Switched outlet	A power outlet that may be turned on and off using a wall switch. Usually intended for lamps. Avoid plugging your computer or Telephony Gateway into a switched outlet to avoid disruptions.
TCP/IP	Transmission Control Protocol/Internet Protocol. The protocols used to facilitate communications across one or more connected networks.
TDMA	Time Division Multiple Access. A method used by DOCSIS-compliant cable modems for sending upstream data with minimal interference.
Upstream	The path from a subscriber device to the headend. Some older cable documentation may refer to this as the return path or reverse path.
WEP	Wired Equivalent Privacy. A common standard for encrypting data sent over a wireless LAN.
WPA	Wi-fi Protected Access. A standard for encrypting data sent over a wireless LAN. WPA offers improved security over WEP.



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