

- 1** Why am I not getting advertised speeds on my Wi-Fi network?
- 2** What factors affect the speed of my Internet access?
- 3** What is the difference when using a “Wired” vs. “Wireless” connection?
- 4** Is my Internet speed affected by the number of devices I use?
- 5** What is a Router?
- 6** What is the maximum number of Wireless Users I should have on my Router?
- 7** Is the location of my Wi-Fi modem or Router important to my wireless speed?
- 8** What is the recommended distance between household appliances and my In-Home Wi-Fi device?
- 9** Are there other ways to maximize my wireless network performance?
- 10** What equipment should I have for the best Internet experience?
- 11** What system requirements does RCN recommend for optimal Internet experience?
- 12** What is 2.4GHz vs. 5GHz? What are Single-band and Dual-band Routers?
- 13** How do I reboot my Modem?
- 14** What is “802.11ac or 802.11n”? What do all those numbers and letters mean?
- 15** What type of security should I use for my Wi-Fi network?
- 16** Does the website I’m attempting to access impact my Internet speed?
- 17** What is “Internet Congestion” and does that impact my Internet speed?
- 18** Does the time-of-day impact my Internet speed?
- 19** How do I do a speed test?
- 20** How can I obtain additional Wi-Fi support?

Why am I not getting advertised speeds on my Wi-Fi network?

RCN Internet advertised speeds are based upon a direct connection to the modem. Actual wireless performance will vary, and depends on many factors, including interference with other wireless devices, the amount of bandwidth others are using on your Wi-Fi network and obstructions such as walls, doors, floors, furniture, fish tanks, appliances and other objects that are between you and the wireless router. Some devices cannot support today's speeds which slows down Wi-Fi for all other devices in the home. Most routers will slow down to the speed of your slowest device.



What factors affect the speed of my Internet access?

Here are the top factors that will impact your speed:



Whether you are directly “wired” to your Internet connection or operating on a “wireless” network or Wi-Fi network. Wired connections always deliver faster speeds than Wi-Fi.



Location, location, location — make sure your modem and router are in an open space, up off the floor, in a room where the Internet is frequently accessed. Walls, doors, floors, steel, furniture, and appliances can all block or reduce your Wi-Fi signal. Don’t hide your router in a cabinet or behind walls.



The number of devices using your Wi-Fi connection at one time may slow you down. Turn off those devices not being used. Most wireless routers will slow down to the speed of your slowest device.



Viruses — run regular virus scans and keep your devices clean.



Check your equipment — can your tablet, PC, laptop, smartphone, modem, deliver today’s speeds? Different equipment has different speed capabilities. Some are unable to deliver today’s fastest speeds and could slow you down. Most wireless routers will slow down to the speed of your slowest device.



Always use a password for your Wi-Fi connection — using a password prevents others from using your Wi-Fi without you knowing and slowing you down.

What is the difference when using a “Wired” vs. “Wireless” connection?



Wired speeds are delivered when you plug an Ethernet cable from your modem or router directly into your device – typically a computer, laptop, television, gaming console or other Internet-enabled device. When a device is connected with an Ethernet cable it can achieve its fastest speeds. Why? Because your Internet is physically attached to your device, there’s nothing coming between it and your Internet signal. A wired connection is always better and should be used wherever it makes sense to do so. Try to match each device with its best connection. PCs, laptops, media players and gaming consoles work best with a wired connection; mobile devices and tablets work best on Wi-Fi.

3

Is my Internet speed affected by the number of devices I use?

Yes. Today's U.S. household has an average of 7 Internet-connected devices, by 2016 that number is projected to be at least 11. With various types of devices connecting to the Internet in your home, it's important to understand the speeds those devices are capable of receiving.

Specific devices will be limited by their Wi-Fi capability or the wired connection speed if your devices are directly plugged in to your modem. Different devices can support certain maximum speeds, many of which are often lower than RCN's top Internet speed of 1 GIG. For details on the speeds your device can support, consult your owner's manual (for your tablet, smartphone, laptop, television, gaming system, blue-ray player, etc.), or manufacturers website.

As an RCN Internet customer, you can connect many devices and utilize them to surf the Internet, keep in touch with friends and family, find the best entertainment and play games online. Just note that the more devices you connect to your router, the more your speed is divided amongst them – so advertised speeds will not be achieved on every single device when they are all in use – instead, speed is shared between them. RCN Internet does offer all the speed you need, just make sure you have a device that can support your speed.



What is a Router?



A router is a network device that can be used to share your RCN Internet connection with multiple computers or devices usually wirelessly. It is connected directly to your RCN modem and then to each computer on your home network, either wirelessly or through a network cable.

5

What is the maximum number of Wireless Users I should have on my Router?



The maximum number of wireless users you can connect through a Wi-Fi Router differs from brand to brand. Good performance is attainable with multiple devices sharing an Internet connection on a single router. But the more devices you connect, the more your speed is divided amongst them and the slower your wireless speed will be.

If you purchased your own router, please consult the user guide that came with your router. Here are sites for some of the more popular manufacturers:

- [Linksys](#)
- [Netgear](#)
- [Belkin](#)
- [Dlink](#)

Is the location of my Wi-Fi modem or Router important to my wireless speed?

Yes, the location of your Wi-Fi modem or router is very important to your wireless speed. The farther your computer or other devices are from the router, the slower the speed of your wireless Internet connection. It is always best to place the Wi-Fi router or modem in an open, central location and up off the floor. This will provide the best wireless coverage to the most number of devices. Kitchen equipment (microwave ovens, refrigerators, etc.), baby monitors, physical obstructions such as fish tanks, walls and floors, garage door openers, cordless phones and other Wi-Fi networks in your area can all cause interference with your router's signal and slow down your wireless connection. Identifying the specific interference is difficult due to multiple factors in a typical home.

It is always best to place the Wi-Fi router or modem in an open, central location and up off the floor.



What is the recommended distance between household appliances and my In-Home Wi-Fi device?

That will vary depending on if you live in an apartment or single-family home. The rule of thumb is that you should avoid placing your router next to things like microwave ovens, baby monitors, cordless phones, phones, Bluetooth devices and other objects that slow your wireless speed.



Are there other ways to maximize my wireless network performance?



Security

Security is important so that unauthorized persons cannot use your Wi-Fi and slow your speeds. Always use a password for your Wi-Fi connection. Using a password prevents others from accessing your Wi-Fi network without you knowing it.



Viruses

Run regular virus scans and keep your devices clean.



Metals and Liquids

Because they can reflect or absorb radio signals, physical items within your household can reduce Wi-Fi performance. Common household interference sources include metal studs, nails and foil-backed insulation, thick concrete walls, large mirrors, metal cabinets and aquariums.

What equipment should I have for the best Internet experience?

DOCSIS 3.0 or higher equipment (modem, router, gateway) should be used to ensure the best and fastest Internet experience. DOCSIS 3.1 is the very latest Data Over Cable Systems Interface Specification (DOCSIS), and includes many new, advanced performance-enhancing features that are not available on DOCSIS 1.0, 1.1, or 2.0 devices.

Minimum Modem Requirements

Service Speed	Minimum Modem DOCSIS Type	RCN Equipment Required	Minimum Downstream Channel(s)	Minimum Upstream Channel(s)
25 Mbps or less	DOCSIS 3.0	N/A	N/A	N/A
50 Mbps	DOCSIS 3.0	N/A	8 Channels	2 Channels
155 Mbps	DOCSIS 3.0	3:1 RCN Gateway	8 Channels	2 Channels
330 Mbps	DOCSIS 3.0	3:1 RCN Gateway	16 Channels	4 Channels
1 GIG	DOCSIS 3.1*	RCN Modem/Router	32 Channels	8 Channels

For Internet speeds of 1 GIG, customers cannot bring their own equipment as the RCN 3-in-1 Gateway is required. Because this is an integrated device and includes a cable modem and wireless router, you do not need a separate wired or wireless router nor is an Ethernet MoCa bridge required — this functionality is built into the device.

If you wish to use your own equipment for up to 330Mbps, please see the manufacturer's website for technical specifications. Please note that while some manufacturers indicate they provide a specific range of speeds, they must meet the above downstream/upstream channels in order to receive optimal RCN Internet speeds. If you're looking to purchase your own modem you should always consider ones that offer the most downstream channels you can get.

* RCN does not currently support customer owned DOCSIS 3.1 modems.



What system requirements does RCN recommend for optimal Internet experience?

DOCSIS compliant 3.0 or higher modem is required.

System Requirements	PC	Mac/Apple
Operating System	Windows XP, Windows Vista, Windows 7	OSX 10.5 (Leopard), OSX 10.6 (Snow Leopard)
Processor	Pentium-class (or equivalent), 450 MHz (800 MHz or greater recommended)	G3 or higher, or Intel Processor
Memory (RAM)	128 MB (256 MB recommended)	256 MB or higher
Free Hard Drive Space	300 MB (500 MB recommended)	300 MB (500 MB recommended)
Networking Capability	Ethernet Card with RJ45 connector or Open USB port	Ethernet card with RJ45 connector, Open slot, or USB port
Browser	Chrome 41.x Internet Explorer 9.x / 8.x Firefox 2.x / 3.x	Safari 3.x / 4.x Firefox 2.x / 3.x
Other	CD/DVD drive, sound card and speakers recommended	CD/DVD drive, sound card and speakers recommended

What is 2.4GHz vs. 5GHz? What are Single-band and Dual-band Routers?



GHz is simply the range — how it travels and how far it goes. There's 2.4GHz and 5GHz. You would think 5GHz is better because it's a bigger number. Not necessarily.

2.4GHz is used for a lot of things around most homes — garage door openers, wireless home security sensors, etc. It's also the frequency that has been used for every wireless router sold since 1999. 2.4GHz is fine in many households, but in others it can be VERY crowded.

Single-band routers can only use one band at a time (either 2.4GHz or 5GHz). A dual band router gets both 2.4GHz and 5GHz. Many of today's new routers are dual-band which gives you the best of both worlds. But remember, 5GHz has limitations (walls, ceilings, floors). Depending on where you place your router, you may still need a Wi-Fi extender or a second router to maximize Wi-Fi speeds in your home. And while newer devices are going this route, many devices more than 2 years old may not be capable of using 5GHz. If you are upgrading a device in your home, you should ensure that it can support 5GHz, wireless AC, and dual band.

How do I reboot my Modem?



When you reboot a cable modem, it is best if the computer is turned off, so shutdown all programs and power down your computer before rebooting your modem. On the back of the cable modem, there should be a large black wire that leads from the back of the cable modem to the power outlet on the wall. Unplug that power wire from the power outlet on the wall. (Do not do it from the back of the cable modem as you might damage the small pins of the connector.) Wait about 30 seconds to a full minute, and plug the power cable back into the wall outlet. The power light should light up on the cable modem. If it does not, make sure that there is power to the wall outlet and that the power cable is plugged in all the way on the back of the cable modem and at the wall. Turn on the computer, laptop etc. to bring it back online.

What is “802.11ac or 802.11n”? What do all those numbers and letters mean?

First, “ac, n, g, b, a” are Wireless Standards. They’re like different languages that your devices speak. As technology changes, the “languages” of newer devices differ.

Service Speed	Wireless Standard or “Language”	Speed
1999	A	Slow
2000	B	Slow
2003	G	Moderate
2009	N	Moderate
2013	AC	Fastest

The good news is you will find “ac” in many of today’s new smartphones, laptops and smart TVs – and it can talk backwards meaning it can speak to the older languages (n, g, b, etc.).

The bad news is the older languages don’t speak to the newer ones. It is also important to understand that Wi-Fi devices using “802.11g” or “802.11b” can in fact slow down the wireless speeds for everybody on your network. Most wireless routers will slow down to the speed of your slowest device.

What type of security should I use for my Wi-Fi network?



Security is necessary so that unauthorized persons cannot use your Wi-Fi and slow your speeds. The type of security you choose is important to maximize your wireless network's performance. Today, the most widely used and Wi-Fi Alliance approved security method is WPA2-PSK (AES) security. It is the security method that provides the best performance on your network. Some Wi-Fi devices (laptops, computers) will not support this method, so be aware if you must choose older security methods like WEP, your wireless network's performance will be slowed down. If you have a device that only supports WEP you should strongly consider upgrading that device.

Does the website I'm attempting to access impact my Internet speed?



Yes. Whenever you attempt to visit a website or access content from a website, the actual delivery of information comes from a server operated by another company and not RCN. The server has its own connection to the Internet. Sometimes, many people are connecting to the same company's website and server you are connecting to at the same time. This will limit your speed to that particular website. If you were to connect to another website that does not have such high usage, then you would see faster speeds.

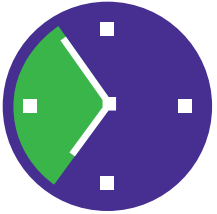
- Think of it like a busy restaurant. If the restaurant is properly staffed, you will be seated and receive your food quickly. If the restaurant does not have sufficient resources, you face longer wait times for service. Just as in a restaurant, you receive better service when there are plenty of resources to go around. The resources are set by the owner of that website.
- In these situations, RCN Internet is delivering the speed you need, but the limitations on a specific website make it appear as if your Internet is slow. Checking other websites can help you identify where the slow speed is, and whether or not a temporary slowdown in speed is due to traffic on a particular website.
- Confirm your RCN speed connection by visiting speedtest.rcn.net. This site measures the speed you are receiving from the point of your cable modem to the RCN network.
- Try to connect at a different time, this may allow you to connect at faster speeds. Some websites may be congested more often. If a particular website continues to have poor speeds, contact the website owner to report the issue.

What is “Internet Congestion” and does that impact my Internet speed?



Yes, internet congestion can impact speed. As you can imagine, the Internet is actually quite extensive, like a highway system. It’s not a single path, but a series of interconnected “roads” that take you to and from different servers across the world. The RCN network “is like the local highway up to the entrance ramp” to the world-wide-web. The path your device takes to reach the information you requested can be a long series of connections between different networks. How much time it takes for the requests to reach the designated server and return in a round trip is commonly called “latency”. If a server is physically far away, there are a lot of different steps to reach that server. The longer it takes the round trip data to return to your computer, the slower the speed you can achieve. Trying different websites on different servers that use different pathways may work faster than others.

Does the time-of-day impact my Internet speed?



Yes. Sometimes, a lot of people are online surfing the Internet, updating their social network, downloading movies, gaming or chatting with friends/family. RCN's fiber optic network is designed to provide all customers the best Internet experience possible, but during certain times of the day, all Internet connections are more heavily used. When there is a lot of Internet traffic in general, you will see temporary periods where your connection may slow down. Typically, you will see this during the peak hours of usage between 7 PM and 11 PM. Generally, this congestion exists on the destination website or server you are trying to reach. One way to confirm your RCN speed using a wired connection is by visiting speedtest.rcn.net This site measures the speed you are receiving from the point of your cable modem to the RCN network.

How do I do a speed test?

* **A wired connection will always provide a faster speed than Wi-Fi.**

- First, limit the number of applications and devices using your Internet connection before starting the test.
- Connect the Ethernet cable from the back of the modem to the open Ethernet port on your computer.
- Make sure the power cord from the back of the modem is connected to an electrical outlet.
- Check the modem and router lights to confirm they have power, and are connected to the network and your computer.
- Go to speedtest.rcn.net
- The test takes less than a minute and measures both download and upload speeds.



How can I obtain additional Wi-Fi support?

RCN's technical support service is available anytime you need assistance.



1-800-746-4726



Live chat

20