

■ 4G Devices

Last month we discussed two types of mobile broadband: 3G and WiMAX (pre-4G). These services enable you to surf the web, email, watch videos and more whether you're at home, at work, or on-the-go.

3G and WiMAX services are provided by telecom companies for a monthly charge. While 3G is fast and reliable for most people, WiMAX is even faster and offers DSL speeds while traveling. Wi-Fi, another option that provides fast Internet access, is oftentimes free but it requires the user to be within 300 feet of a hotspot (such as in a hotel, cafe, or library).

While upgrading to the WiMAX network will give you faster access, speed is only one part of the equation. Hardware advancements are equally important and can enhance the faster Internet connection. With the right equipment, your connection can be even more

convenient and reliable. For this newsletter, we'll discuss 4G devices such as wireless routers, Smartphones and wireless hotspots but first a quick explanation on the difference between modems and routers and show a typical small office/home office network setup.

Modems

Traditional modems transmit data over phone lines (i.e., 56K modem, DSL modem, cable modem). In most cases, the modem plugs into a phone jack (RJ-11 for DSL) or coax jack (F-connector for cable) in the building. For wireless access, cellular modems or broadband wireless modems were created and take the form of PC Cards and Express Cards, which plug into your laptop's PCMCIA slot, or USB modems, which plug into a USB port. Most modems transmit data from a single device.

Routers

Routers enable users to share network and Internet connection resources either with Ethernet cables or via wireless radio frequencies. Multiple computers can gain access to one Internet connection as well as multiple printers, scanners, and other devices connected on the network. Routers enable the transmission of data between different networks.

The diagram on the next page (*Figure 1*) shows a typical setup for a Small Office / Home Office with a modem, wireless router, two computers, printer, Smartphone and laptop.

■ Websites Worth Watching

1. sprint.com/4g - Visit Sprint's site and click "See 4G Cities" at the bottom of the page for a list of cities where WiMAX is offered. 30 cities in 11 states have 4G service with more coming soon.
2. www.clear.com - Partnering with Sprint, Clear offers WiMAX service in 27 markets.

■ Tip of the Month

Wi-fi hotspots, whether free or fee-based, are open networks that are vulnerable to breaches. Here are some tips for staying safe while accessing the Internet in public places.

1. Log onto secure networks that require WPA credentials (i.e., a passphrase).
2. Make sure your PC has the latest OS and software updates.
3. Activate your firewall
4. Disable file and printer sharing – by enabling this feature you allow others access to your laptop. By disabling this feature, you close a potential entry door.
5. Make your folders private and prevent others from accessing them by turning off sharing. In Win XP, open Windows Explorer, right click a local folder, scroll down to **Sharing and Security** and select Do not share this folder.

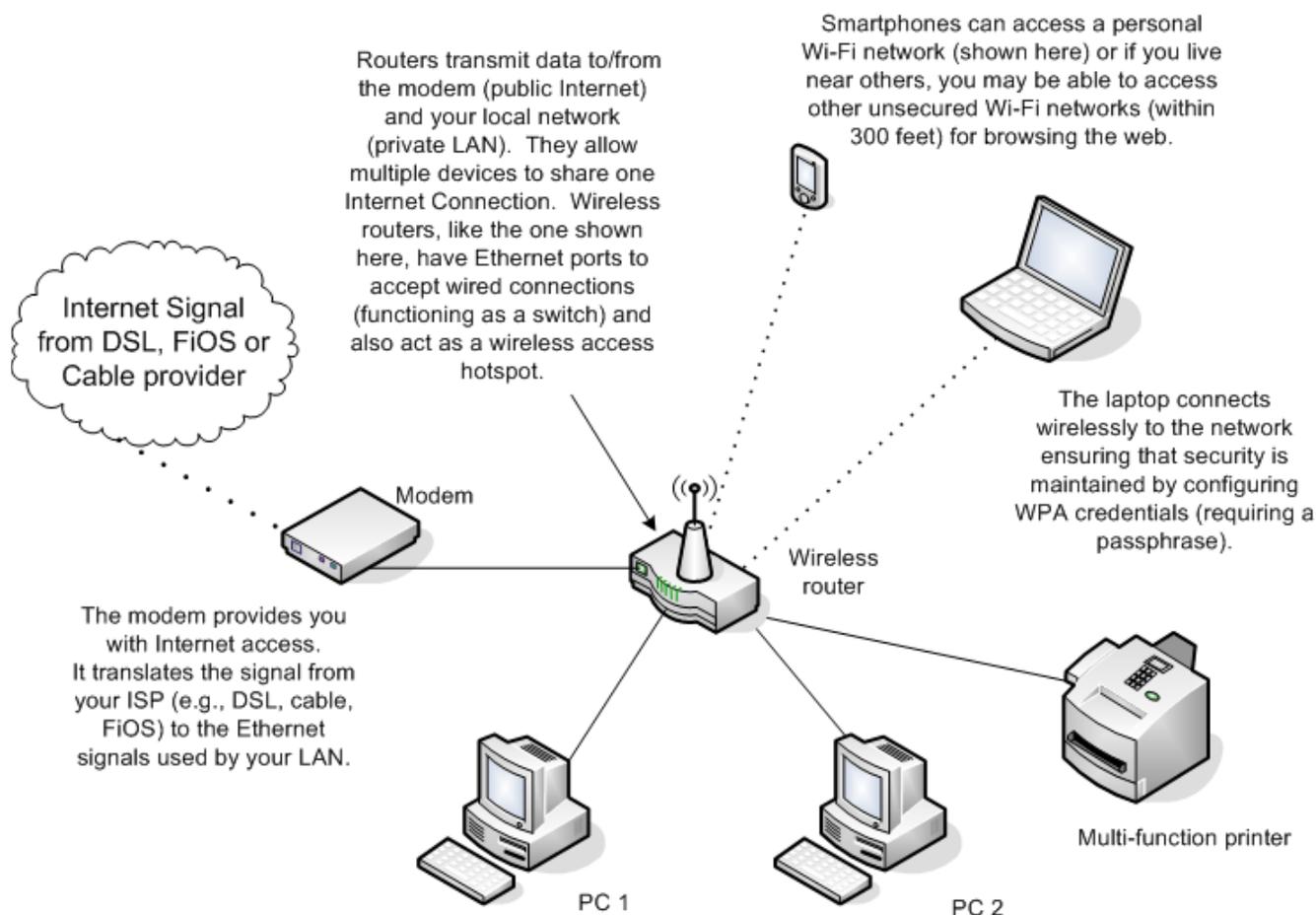


Figure 1. Network diagram showing a modem, wireless router, PCs, printer, laptop and Smartphone. The solid lines between each device and the router indicate a wired connection via Ethernet cables. The dotted lines indicate a wireless connection via radio frequencies.

3G/4G Connections

There is tremendous demand right now for bandwidth intensive activities like downloading full length movies from Netflix, uploading full resolution photos to Flickr or Facebook, and watching videos on YouTube. All of these activities require a robust connection to expedite the flow of data and avoid stutters and dropped connections.

In 2008, Clearwire partnered with Sprint and released their WiMAX service under the Clear brand. WiMAX speeds are rated at 3 - 6 Mbps for downloads, comparable to a fast DSL connection or low end cable modem connection. The faster the connection the better, and these speeds will be adequate, for most people, for the activities listed above.

In the past year, manufacturers have been busy

creating 4G Smartphones, 4G routers/hotspots, and streaming media services like FloTV (a personal TV service) that can take advantage of the WiMAX network.

These newer devices are being built to accommodate the increased data flow the new WiMAX network can support. A major benefit is that these devices will bridge the gap between 3G and 4G service enabling you to stay connected as the 4G network matures.

We'll go over some of the main device categories next.

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3G/4G Routers, Modems, and Hotspots

Routers

One segment of the 4G device market are routers. 4G routers can connect to 3G or 4G (WiMAX currently) networks, operate in the 2.4 or 5 GHz frequencies, and have an indoor range of approximately 230 feet and an outdoor range of approximately 800 feet.

Wireless routers are highly mobile and can be used anywhere you have an electric outlet while being in range of a 3G/4G/WiMAX transmission tower. Some, like Cradlepoint's MBR1000 (*Figure 2*), can connect up to 64 devices, offer password protected Internet access, support VPN Pass-through sessions and offer remote online management. For businesses that require multiple modes of connectivity, wireless 4G routers can provide fast Internet access reliably.



Figure 2. Cradlepoint MBR1000 3G/4G Failsafe Mobile Broadband 'N' Router

Figure 3. Sprint's 3G/4G USB Modem U300



USB Modems

If your current device doesn't have an embedded cellular modem, you can purchase an external USB modem or Express Card to get connected while traveling. Sprint now offers a 3G/4G modem (*Figure 3*) that plugs into a USB port on your laptop or netbook. With the added bandwidth of a 4G connection, you can now stream HD videos, download large files, connect to VPN and corporate networks and join a videoconference without being tethered to your desk.

Mobile Hotspots

Another 3G/4G device that combines the functionality of both modems and routers is a Hotspot. Devices like Sierra Wireless' Overdrive 3G/4G Mobile Hotspot (*Figure 4*), allow up to 5 Wi-Fi enabled devices to share a 3G or 4G connection. Wi-Fi enabled devices such as cameras, portable gaming devices, and laptops can all connect wirelessly to a mobile hotspot and gain access to one Internet connection.

What can you do with a mobile hotspot?

- Stream HD movies from Netflix directly to your TV
- Download music to your MP3 player without turning on your computer
- Move pictures from your camera to a digital picture frame wirelessly, and much more.

With a 4G mobile hotspot, speed and convenience are heightened allowing you to do more quickly.



Figure 4. Overdrive 3G/4G Mobile Hotspot by Sierra Wireless

3G/4G Smartphones

Smartphones are multi-purpose devices that are becoming ubiquitous - iPhones, Blackberries, Droids and many other brands all have the capacity to make phone calls, browse the web, email, take pictures, and, in general, enable people to stay connected for work or personal reasons. Sprint will be releasing (summer 2010) the first 4G smartphone from HTC which will take advantage of the faster WiMAX speeds.

The HTC EVO 4G (Figure 5) has a 4.3" capacitive touchscreen with multitouch capabilities, runs the Android OS, has 1GB of onboard memory (storage), GPS navigation, microSD slot and will be able to surf and make voice calls simultaneously. It has two cameras on either side of the device; the back side will take high resolution photos (8 megapixel) while the front side will take low resolution photos (1.3 megapixel). This setup is ideal for videoconferencing since it supports 720p video.

Since 4G is not available in all areas yet, the HTC EVO will be able to connect to Sprint's 3G network as well. It can even act as a Wi-Fi hotspot supporting up to 8 additional devices.



Figure 5. HTC EVO 4G - a next generation Smartphone.

One last distinguishing feature of this device is the kickstand (on the back) which allows you to prop it upright and watch videos or use it as a hands-free clock or alarm. Truly multifunctional!

Conclusion

As we mentioned in last month's newsletter, broadband access while on-the-go is extremely popular and will only see continued growth in the coming years. Telecom companies will continue to improve the connections by installing more cell towers and upgrading infrastructure while hardware companies will manufacture new devices in order to take advantage of those faster upload and download speeds.

If you are interested in exploring pre-4G, **Clear's WiMAX service** is available in 27 markets; by the end of 2010, that figure will jump to 45 giving you many choices if you travel for work or pleasure.

Some notable cities include: Philadelphia, Las Vegas, Chicago, Seattle, Atlanta, Dallas, and even Honolulu, Hawaii. Coming soon: Washington DC, Baltimore, New York, Los Angeles and many others.

For a detailed map of cities where Clear is now offered, go to: <http://www.clear.com/map> and click on any

Clear cities marker for a close-up view of the coverage area.

If you want to wait or prefer other carriers, Verizon and T-Mobile will be releasing their LTE (Long Term Evolution) service by the beginning of 2011. Note that Clear (and Sprint) have the capability of upgrading their network to LTE as well so if you start with WiMAX now, you may get LTE in the future on the same Clear (or Sprint) network.

Telecom companies have been working feverishly to upgrade their networks the past couple of years. By using WiMAX or the upcoming LTE network, along with 4G devices, you will be surfing faster and in more places wherever life takes you.

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