

9.6.2 Mobile Device Connection Facts

The following table lists different mobile connection types:

Connection Types	Description
Generations	<p>Cellular networks used for voice and data include the following types:</p> <ul style="list-style-type: none"> 2G (second generation) networks were the first to offer digital data services. 2G data speeds are slow (14.4 Kbps) and are used mainly for text messaging, not internet connectivity. 2.5G supports speeds up to 144 Kbps. EDGE (also called 2.75G) networks are an intermediary, between 2G and 3G networks. EDGE is the first cellular technology to be truly internet-compatible, with speeds of 400–1,000 Kbps. 3G offers simultaneous voice and data. Minimum speeds for stationary users are quoted at 2 Mbps or higher. The following extensions enhance 3G networks: <ul style="list-style-type: none"> HSPA+ (also known as <i>smart antenna</i>) uses multiple-input and multiple-output (MIMO). It significantly increases data throughput and link range without additional bandwidth or increased transmit power. Long Term Evolution (LTE) and LTE-Advanced increase download/uplink speeds to 100/50 Mbps and 1Gbps/500Mbps, respectively. 4G is available with minimum speeds around 3–8 Mbps, with over 100 Mbps possible. 4G: <ul style="list-style-type: none"> Uses MIMO. Is not compatible with 3G; 4G requires a complete retrofit on the part of service providers and new equipment for the consumer. Utilizes Worldwide Interoperability for Microwave Access (WiMAX). WiMAX delivers high-speed internet service (up to 1 Gbps for stationary users) to large geographical areas. 5G is able to achieve speeds twenty times faster than 4G; its peak speed is 20Gb per second. <ul style="list-style-type: none"> Uses MIMO. Includes lower frequencies than previous generations, down to 600 MHz. Uses Long-Term Evolution (LTE) for wireless connections.
Hotspot	A <i>hotspot</i> is a physical location where you can obtain wireless internet access using a wireless local area network (WLAN) with a router connected to an internet service provider.
Tethering	<i>Tethering</i> is connecting one device to another. In the context of mobile phones and tablet computers, tethering allows sharing the internet connection of the phone or tablet with other devices like laptops. Connection of the phone or tablet with other devices can be done over wireless LAN (Wi-Fi), over Bluetooth, or by physical connection using a cable like USB.
Airplane Mode	<i>Airplane mode</i> is a setting available on many smart phones, portable computers, and other electronic devices that suspends the device's radio-frequency signal transmitting functions, which disables telephone, Wi-Fi, and Bluetooth when activated.
VPN	A mobile virtual private network (mobile VPN) provides mobile devices with access to network resources and software applications on their home network when they connect using other wireless or wired networks.
Bluetooth	<i>Bluetooth</i> is a wireless technology standard for exchanging data over short distances from fixed and mobile devices and for building personal area networks (PANs). It can connect several devices, overcoming problems of synchronization.
NFC	An <i>NFC connector</i> is used to emulate cryptographic smart card functionalities for RFID tags or memory cards.
miniUSB/microUSB	A <i>mini-USB connector</i> is a small USB cable connector that is often used by handheld electronic devices like mobile phones, MP3 players, and digital cameras. On mobile phones it is often used for both USB data connectivity and charging. The new connector, called micro-USB, is smaller than the mini-USB connector and allows for even thinner device designs.
Lightning	<i>Lightning</i> is a proprietary computer bus and power connector created by Apple Inc. to replace its previous proprietary 30-pin dock connector. It is used to connect Apple mobile devices like iPhones, iPads and iPods to host computers, external monitors, cameras, USB battery chargers, and other peripherals.
IR	An <i>infrared port</i> is a port on a mobile device that enables devices to exchange data without using cables.

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