

## 1.0 Service Description

Cincinnati Bell Wireless offers 3G and 4G wireless broadband Internet options for residential consumers and small businesses. The speeds available vary by offering. Cincinnati Bell's 3G and 4G mobile broadband Internet access services are not available in all areas.

### 1.1 Service Technology

Cincinnati Bell Wireless uses WCDMA 1700 / WCDMA 2100 (AWS Band IV 3G) for its 3G and 4G technologies.

### 1.2 Service Performance

Cincinnati Bell Wireless defines 4G performance characteristics based on a field test performed by Cincinnati Bell Wireless engineers from April 7 through April 14, 2011. Network speeds were measured at 21 locations throughout Greater Cincinnati by downloading and uploading a 25 MB file from a file server. To verify that the test results were consistent and repeatable, several locations were retested a few days later with no significant difference in speeds. These tests resulted in average download speeds of 10 Mbps and average upload speeds of 5 Mbps.<sup>1</sup> Average round trip latency results were 57.22ms. Actual speeds may vary. 4G is not available in all areas.

Customers using the Cincinnati Bell Wireless 3G network can expect to experience download speeds on average of 2.3 Mbps and upload speeds around 0.7 Mbps. Typical round trip latency is between 80 and 100ms.<sup>2</sup> Actual speeds may vary. 3G is not available in all areas. These 3G performance characteristics are based on a field test performed by Cincinnati Bell Wireless engineers during March/April of 2010. CBW conducted hundreds of miles of drive tests, covering both urban street and interstate conditions. CBW executed hundreds of download sessions of both large and small files in both stationary and mobile conditions.

These expected speeds apply only for Cincinnati Bell certified devices. Not all wireless devices with WCDMA 1700 / WCDMA 2100 (AWS Band IV 3G) can achieve the aforementioned expected speeds.

Customers can view coverage availability for Cincinnati Bell's 3G and 4G networks by accessing <http://www.cinbell.com/wireless/coverage/>.

### 1.3 Impact of Specialized Services

Cincinnati Bell Wireless does not offer any special services that may affect the capacity available for, and the performance of, mobile broadband Internet access service.

### 1.4 Real-Time Applications Support

Cincinnati Bell supports real-time applications and all other network usage on a best effort basis. All data traffic is prioritized equally; no priorities are assigned for real-time applications including streaming video, audio, and video chat applications. Best effort basis will assign bandwidth based on the available bandwidth of a particular cell site. Therefore, support will be provided for real-time applications as bandwidth is available.

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<sup>1</sup> Maximum speeds can only be achieved by devices capable of Category 14 for download operation and Category 6 for upload.

<sup>2</sup> Typical round trip latency is the best approximation available of the actual latency experienced by Cincinnati Bell Wireless subscribers.

## 2.0 Network Management

### 2.1 Principles for Cincinnati Bell Wireless Network Management

Cincinnati Bell's goal is to provide its customers with the best possible 3G/4G mobile broadband experience. In order to meet this standard, Cincinnati Bell implements a number of reasonable network management practices to ensure the best experience for the greatest number of customers while reducing the risk of exhausting available mobile broadband spectrum and service degradation.

"Congestion" is a period during which customer demand exceeds network capacity. Congestion can occur due to high usage or consumer demand during certain times of the day (i.e. during peak times), particularly in highly populated locations. Congestion occurs based on a variety of factors including, but not limited to, the season, unusual weather conditions, and special events.

"Degradation" is the inability of customers to gain access to the network, the loss of connection to a cell site, excess delay in the delivery of data, or poor throughput/speed for customers who have not exceeded defined usage limits during high usage periods.

### 2.2 Network Management Practices

Cincinnati Bell supports wireless broadband data usage on a best effort basis. All data traffic is prioritized equally based on the bandwidth available at a particular cell site and no priorities are assigned to particular types of data traffic or applications. However, Cincinnati Bell implements the reasonable network management practices described below to ensure the best possible experience for the greatest number of customers. These reasonable network management practices apply only to services and usage provided on the Cincinnati Bell Wireless network. Cincinnati Bell Wireless is not responsible for any delays or congestion that occurs on the Internet and on the networks of other carriers, including its roaming partners.

Subject to these reasonable network management practices, Cincinnati Bell does not block the ability of its customers to access lawful websites nor will Cincinnati Bell block any applications that compete with its own voice or video telephony services.

- When capacity reaches 100 percent on a portion of the network, voice traffic is given priority. The network will maintain existing customers on 3G/4G, while new customers trying to access the network and customers that have had idle data sessions will be switched to Cincinnati Bell's 2G network until the demand on the congested cell site is reduced or normalizes.
- Dynamically allocating IP addresses per data session to minimize excess IP address consumption. Cincinnati Bell Wireless does not assign static IP addresses.
- *Tethering*: "Tethering" is defined as using a Cincinnati Bell Wireless mobile device to connect another device to the network for accessing the Internet and using applications that consume data. In order to use a Cincinnati Bell Wireless mobile device for tethering, a customer must purchase the Tethering Premium Service Plan in addition to a monthly Wireless Data Service Plan. The Tethering Premium Service Plan may not be used while roaming internationally. Tethering Premium Service Plans are not available for prepaid service. If Cincinnati Bell determines that a customer is tethering without the Tethering Premium Service Plan or is attempting to tether internationally, Cincinnati Bell will block all data for a period of 30 minutes. After the initial 30 minutes, the customer will be able to resume using data on their wireless device. If tethering without a tethering plan or tethering internationally is detected again, data will be blocked for another period of 30 minutes.

- *Data Usage Management*: Cincinnati Bell may, at its discretion and without notice, reduce,<sup>3</sup> restrict,<sup>4</sup> suspend or cancel a customer's data service or change a customer's rate plan if total data usage (i) exceeds 5GB per billing period for postpaid data plan subscribers (limit is subject to change without notice), (ii) exceeds 1 GB per monthly billing period/256 MB per weekly billing period/35 MB per daily billing period for prepaid customers (limits are subject to change without notice), (iii) could interfere with other customers' service, affect Cincinnati Bell's ability to allocate network capacity among customers, or degrade service quality for other customers, (iv) is excessive and unusual,<sup>5</sup> or (v) violates the terms of Cincinnati Bell's data use policy.
- *Roaming Management*<sup>6</sup>: In accordance with the Cincinnati Bell Wireless General Terms and Conditions, a Cincinnati Bell Wireless data customer's principal residence must be within the eligible Cincinnati Bell Wireless Local Service Area. For corporate customer accounts, the end-customer's principal residence or principal business address must be within the eligible Cincinnati Bell Wireless Local Service Area. Visit <http://www.cinbell.com/wireless/coverage> or ask a Sales Representative to provide address verification. Eighty Percent (80%) of all data usage must be within the eligible Cincinnati Bell Wireless Local Service Area and Cincinnati Bell may, at its discretion, suspend or restrict an account, without notice, if data roaming is greater than twenty percent (20%) of a subscriber's total monthly data usage (as measured on a quarterly basis). International Data usage may be measured more frequently. In addition, if total roaming data usage exceeds 50 MB during a billing period, a subscriber's speeds may be reduced until the subscriber returns to the Cincinnati Bell Wireless Local Service Area, provided the subscriber's total data usage has not exceeded 2 GB for the billing period. Data roaming for prepaid customers is prohibited. Cincinnati Bell cannot be responsible for any delays or congestion that occurs on the network of the carrier used to initiate the roaming services.
- *Optimization*. Cincinnati Bell Wireless uses network optimization to improve the overall experience for all wireless video and web users and to increase network efficiency. Optimization is designed to transmit data more efficiently to improve page load times and reduce video viewing delays. Optimization eliminates wasted data transmission by downloading only the necessary amount of data, and excludes data transmission from video buffering after the user has stopped viewing the video. This frees network capacity to allow for provision of a better network experience for all Cincinnati Bell Wireless customers. Video optimization is used only on recorded video and does not affect live streaming video.

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<sup>3</sup> **Reduce** is defined as lowering data speeds to approximately 20-128 kbps for upload and download speeds. The speed is based on industry and engineering standards on replicating 2G speed experience.

<sup>4</sup> **Restrict** is defined as limited data usage availability. This includes, but is not limited to, restricting data usage to local service areas only.

<sup>5</sup> **Excessive and unusual** usage includes, but is not limited to, total usage falling within the top 5% of Cincinnati Bell Wireless data users, using excessive bandwidth causing excess network congestion, and causing high levels of service degradation to other users of the network or specific cell sites.

<sup>6</sup> **Roaming** is defined as the ability for a customer to make voice calls, send and receive data or access other services when traveling outside the geographical coverage area of the Cincinnati Bell Local Service Area by using another carrier's network. The availability of roaming outside of the Local Service Area depends upon the existence of roaming agreements with other wireless network providers and the specifications of the customer's handset. To view the Cincinnati Bell Wireless Local Service Area, visit <http://www.cinbell.com/wireless/coverage/>

*How Optimization Works.* Optimization is used for all HTTP (Port 80) video and web data traffic. Any changes to optimized data are not likely to be noticeable; however, the process of optimization may minimally impact the appearance of data as displayed on a device. All content, including Cincinnati Bell branded content, of the same content type, may be subject to optimization. Cincinnati Bell may use the following optimization techniques:

- *Web Optimization:* Text may be compressed without any loss of information. Web pages may be formatted to remove excessive white space. Image files (PNG, JPEG, GIF formats, for example) may be streamlined to remove data bits that would not be visible to the human eye, or to end users. On a mobile device images may be resized and adjusted for the screen resolution of the handset.
- *Video Optimization – Just-in-Time Delivery:* Often the portion of a video that is buffered by a user’s video player but never viewed is simply wasted. Just-In-Time Delivery delivers just enough content to allow the user’s video player to continue playback and prevent excessive buffering. Just-In-Time Delivery pushes video content onto the network over a longer time period, which can ease network congestion and reduce the need for Bandwidth Shaping.
- *Video Optimization – Bandwidth Shaping:* Bandwidth Shaping detects that the client connection cannot cope with the volume of data being sent (causing stalled/stuttered video viewing for the end user), and increases the optimization level of the video to reduce the number of bytes. This enables smoother video playback for end users under congestion.
- *Video Optimization – Transcoding/Adaptive Streaming:* Transcoding/Adaptive Streaming eliminates video waste by replacing less efficient video codecs with more efficient ones dependent on device capabilities. During this process original video file sizes may be compressed and reduced in size while maintaining a similar quality of video playback.
- *Video Optimization – Caching:* Frequently viewed videos may be cached to the network to reduce delays during video download and playback.

### 2.3 Cincinnati Bell Wireless Network Management FAQs

What type of traffic is subject to network management practices?

- All wireless data used within the Cincinnati Bell Wireless local, national, and international service areas is subject to the network management practices described herein. Wireless data may be in the following forms from wireless devices: (i) Internet browsing; (ii) e-mail; (iii) data applications; (iv) multi-media messaging (media includes but is not limited to pictures, audio files, and videos); (v) uploading or downloading files to/from the Internet (includes installing ringtones, games, wallpapers, & graphics); (vi) intranet access (including access to corporate intranets, e-mail and individual productivity applications such as customer relationship management, sales force and field service automation); (vii) tethering or using a Cincinnati Bell Wireless device as a modem integrated to a laptop computer, service device or with host computer applications. All of these are subject to network management policies.

Can Cincinnati Bell Wireless data plans be used with host computer applications?

- No. Pursuant to the Cincinnati Bell Wireless General Terms and Conditions, which are applicable to all customers, prohibited uses may include, but are not limited to, high bandwidth continuous JPEG file transfers, automatic data feeds, telemetry applications, automated functions or any other machine-to-machine applications. Data sessions cannot be used as a substitute for private lines or frame relay connections.

What types of customers are impacted by network management practices?

- Network management policies apply to both business and consumer services as well as prepaid and postpaid services.

Why does Cincinnati Bell use these network management practices?

- Cincinnati Bell uses the network management practices listed above to ensure the best possible experience for the greatest number of customers and to minimize the risk of exceeding capacity and degrading network performance. Cincinnati Bell measures network performance based on throughput, trip time/delay in packet delivery, and ability to connect to the network (accessibility).

How do these network management practices impact the customer and the use of the Internet service?

- When implemented, these reasonable network management techniques may result in reduced data speeds for high-end data customers until the start of the customer's next billing cycle. This slower speed will result in web-pages, files, videos, etc. taking longer to upload or download to/from the Internet, which may result in buffering while streaming videos and/or audio. These activities allow more bandwidth for customers who have not exceeded the data usage limits of their subscribed plan during the same period of time.
- Tethering without the appropriate tethering plan will result in data usage being blocked for 30 minutes (See section 1.1, *Tethering*).

How do customers know when their traffic is being managed?

- Customers will receive either a SMS text notification or a web page alert notifying them that their data speeds are being reduced or blocked.
  - o Customers tethering without a plan and any customer attempting to tether internationally will receive a web page alert in their web browser informing them that data usage will be blocked for 30 minutes.

- Postpaid customers with data plans whose total data usage exceeds 5GB per billing period and prepaid customers whose data usage exceeds 1GB per monthly billing period/256 MB per weekly billing period/35 MB per daily billing period (limits are subject to change without notice) will be notified via SMS text message the first time their speeds are reduced. After receiving the initial notification, customers exceeding these limits in subsequent billing cycles will not receive an SMS notification.
- Postpaid customers who are being managed due to total data roaming usage exceeding 50 MB per billing period (limit is subject to change without notice) will be notified the first time their speeds are reduced via SMS text notification. Customers will only receive one SMS notification. After receiving the initial notification, customers exceeding 50 MB of data while roaming in subsequent billing cycles will not receive an SMS notification.
- Prepaid customers who attempt to use data while roaming will receive a web page alert in their web browser informing them that the data is blocked while roaming.

What are the consequences of exceeding data plan limits?

- Customers who exceed the usage limits of data plans with specified limits will experience overage charges that include but are not limited to the following:
  - Wireless Handset Data Plans:
    - International Plan Overage = \$0.005/KB
    - Domestic Plan Overage = \$0.05/KB, \$0.02/MB, \$15/300 MB, \$15/GB, or \$25/GB depending on the selected data plan.
    - PC Card & Tablet Data Plans: Overage = \$15/GB or \$25/GB depending on the selected data plan.
  - These rates are not applicable to all plans. Customers should visit My Account on [www.cincinnati-bell.com](http://www.cincinnati-bell.com) or contact Cincinnati Bell Wireless for complete details about their subscribed data plan.
- Postpaid customers with data plans who exceed 5GB per billing period and prepaid customers who exceed 1 GB per monthly billing period/256 MB per weekly billing period/35 MB per daily billing period (limits are subject to change without notice) will have their speeds reduced until the start of their next billing cycle.
- Postpaid customers who exceed 50 MB of data roaming per billing period (limits are subject to change without notice) will have their speeds reduced until the start of their next billing cycle.

How will Cincinnati Bell Wireless communicate changes in network management practices?

- Cincinnati Bell may update its General Terms and Conditions, including section 1(h) regarding use of wireless data service plans, when changes are made to its network management practices. Cincinnati Bell may notify customers of changes to the General Terms and Conditions and/or its network management practices by any of the following methods: (i) SMS notification, (ii) email (iii) direct mail (i.e. letter), (iv) bill message, (v) My Account message, and (vi) notifications on this webpage.

How can customers contact Cincinnati Bell if they have questions or wish to file a complaint about wireless network management practices?

- Contact Cincinnati Bell Wireless by accessing <http://www.cinbell.com/contact-us> or by dialing 611 from a Cincinnati Bell Wireless device (a free call).

## 2.4 Device Attachment Rules

Cincinnati Bell Wireless has the following rules regarding the attachment of devices to its network by customers:

- Cincinnati Bell Wireless requires the following for any 3G/4G broadband devices to operate on its 3G or 4G networks:
  - o WCDMA 1700 / WCDMA 2100 (AWS Band IV 3G)
  - o 4G devices must be capable of 14.4 Mbps download speeds (HSPA+)
  - o Meet standardized FCC RF requirements
  - o Cincinnati Bell Wireless SIM card
  
- Any device meeting the above baseline requirements should work on the Cincinnati Bell Wireless 3G and 4G networks. Additionally, in order to be certified by Cincinnati Bell for use on its network, devices must meet the following specifications and be tested and approved:
  - o GSM 850 / GSM 900 / GSM 1800 / GSM 1900 or at Minimum GSM 850/ 1900
  - o SIM/Subsidy Network Lock to 310/420
  - o HAC M3/T3 Strong Preference
  - o Basic interworking of the TU/GUI and SIM
  - o Basic call functions
  - o Advanced call function testing
  - o Scanning and display functions for roaming on non-CBW Networks
  - o Basic and Advanced RF TEMS testing
  - o In Market/Out of Market Roam Testing
  - o SMS
  - o MMS
  - o OTA-SIM programming
  - o Voicemail/Call Forwarding/NR/etc.
  - o GPRS/EDGE/3G operation
  - o Mobile Station Handoff Testing
  - o Mobile Station Operating System Testing
  - o WAP/Internet
  - o E-Mail Testing
  - o Application Market Testing (If Applicable)
  - o 3rd Party CBW partner application testing
  - o Bluetooth Stack Testing
  - o On Board Application Testing
  - o Support the standard 3GPP OPL alpha-tag naming function. This function supports the control of the alpha tag displayed on the Mobile Equipment (ME) and is mandatory for Cincinnati Bell handsets.
  - o Cincinnati Bell RF Engineering requires GSM, UMTS, and any related RF studies or case documentation to be provided by the OEM/ODM. This includes but is not limited to FCC SAR, TRP/TIS, PTCRB, NAC, etc.
  - o Industry standard 3GPP technical specifications and guidelines
  - o Passes industry standard GSM test plan<sup>7</sup>

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<sup>7</sup> GSM Association (GSMA) handset test plan is an industry standard test. For more information on this test plan or to find out how to obtain a copy, visit [www.gsmworld.com](http://www.gsmworld.com)

- If a non-certified device is degrading the network, Cincinnati Bell reserves the right to test that device and determine its impact on the network. After testing, if the non-certified device is determined to negatively impact the network and cause degradation, Cincinnati Bell reserves the right to block that device from using the Cincinnati Bell Wireless network to protect the integrity of the Cincinnati Bell Wireless network.
- Without prior consent, unauthorized signal boosters are prohibited on Cincinnati Bell Wireless networks.
- Upon request, Cincinnati Bell will review devices to determine if the device meets minimum attachment technical requirements and specifications. All requests will be addressed via the following procedures:
  - o Requests must be e-mailed to : [cbwdevicecertification@cinbell.com](mailto:cbwdevicecertification@cinbell.com)
  - o Requests will be reviewed in the order they are received
  - o Cincinnati Bell will review to determine if the device meets the minimum attachment technical requirements and specifications.
  - o A response will be sent to the requestor indicating whether the device meets minimum attachment technical requirements and specifications.
  - o If the requestor requests the device to be certified, testing and technical acceptance will be required and must be paid for by the requesting party. Costs vary based on the device's technical specifications and features.

### 2.5 Security

Cincinnati Bell Wireless deploys security measures to help prevent unwanted communications as well as to protect the security of its customers and network. Cincinnati Bell Wireless has firewalls in place to secure inbound data traffic. Data may not be used to (i) generate or disseminate viruses, malware, or "denial of service" attacks, (ii) access or attempt to access without authority, the information, accounts, or devices of others, (iii) penetrate, or attempt to penetrate Cincinnati Bell Wireless' or another entity's network or system or (iv) run software or other devices that maintain continuously active Internet connections when a computer's connection would otherwise be idle. If Cincinnati Bell detects any traffic that is malicious, (i.e., traffic that is negatively impacting Cincinnati Bell's network and/or customer experiences), Cincinnati Bell reserves the right to take action to block the data service and malicious traffic, and/or to restrict or block IP address assignments and IP Ports.

Cincinnati Bell Wireless uses Access Point Names (APNs) to provide its customers with specific data services to access the Internet using the mobile network. These APNs are titled Internet, WAP, Web, and BlackBerry.<sup>8</sup>

- When using the Internet APN, Cincinnati Bell blocks ports found to be malicious or harmful to the network in order to keep the network secure. Ports that are normally used for port scanning are blocked due to the creation of unsolicited traffic that causes additional overhead and degradation of the network.
- When using the Web or WAP APN, Cincinnati Bell utilizes Network Address Port Translation (NAPT), also called Port Address Translation (PAT) or Network Address Translation (NAT). PAT allows many internal hosts to share a single external IP address. Customers who do not require support for inbound connections do not consume public IP addresses. All outbound connections are permitted. Certain protocols (for example RTSP and FTP) require an inbound connection to be made. Our firewalls support a "fix-up" mechanism that allows these connections.

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<sup>8</sup> WAP APN = [wap.gocbw.com](http://wap.gocbw.com), Web = [web.gocbw.com](http://web.gocbw.com), BlackBerry APN = [blackberry.net](http://blackberry.net),



### 3.0 Commercial Terms

#### 3.1 Pricing

For current Cincinnati Bell Wireless pricing on monthly service fees, usage-based fees, and fees for early termination, please visit <http://www.cinbell.com/wireless/rates>. For specific pricing information related to your plan, visit your My Account on [www.cincinnati-bell.com](http://www.cincinnati-bell.com).

#### 3.2 Privacy Policy

Cincinnati Bell is not liable for any lack of privacy that may be experienced with regard to use of broadband wireless data service. Users authorize Cincinnati Bell Wireless' monitoring and recording of calls to it concerning their account or the service and consent to Cincinnati Bell's use of automatic dialing equipment to contact you. Cincinnati Bell has the right to intercept and disclose any transmissions over its facilities to the appropriate law enforcement authorities in order to protect its rights or property.

#### 3.3 Redress Options

Cincinnati Bell commits to resolving customer issues, complaints, and questions through its customer service channels. To contact Cincinnati Bell Wireless, go to <http://www.cinbell.com/contact-us> or dial 611 as a free call from a Cincinnati Bell Wireless device.

### 4.0 Law Enforcement Obligations

Nothing in these network management practices supersedes or limits the ability of Cincinnati Bell Wireless to address the needs of emergency communications or law enforcement, public safety or national security authorities, consistent with or as permitted by applicable law.

### 5.0 Glossary

- **1GB (gigabyte)** is defined as equaling 1024 MB (megabyte), 1MB is defined as equaling 1024 KB (kilobyte), and 1KB is defined as equaling 1024 bytes.
- **Cincinnati Bell Wireless LLC** ("Cincinnati Bell," "Cincinnati Bell Wireless" "us," "we," or "our"), which is licensed to provide Service in the area associated with your assigned telephone, data and/or messaging number(s) ("Number").
- **Congestion** is defined as a period during which customer demand exceeds network capacity.
- **Degradation** is defined as the inability of customers to gain access to the network, a loss of connection to a cell site, excess delay in delivery of data, or poor throughput for customers who have not exceeded defined usage limits during high usage periods.
- **Host Computer Applications** uses may include, but are not limited to, high bandwidth continuous JPEG file transfers, automatic data feeds, telemetry applications, automated functions or any other machine-to-machine applications.

- **Reduce** is defined as lowering data speeds to approximately 128 kbps for upload and download speeds. The speed is based on industry and engineering standards on replicating 2G speed experience.
- **Restrict** is defined as limited data usage availability. This includes, but is not limited to, restricting data usage to local service areas only.
- **Roaming** is defined as the ability of a customer to make voice calls, send and receive data or access other services when traveling outside the geographical coverage area of the Cincinnati Bell Wireless Local Service Area by using another wireless carrier's network. The availability of roaming outside of the Local Service Area depends upon the existence of roaming agreements between Cincinnati Bell Wireless and other wireless network providers and the specifications of the customer's handset. To view Cincinnati Bell Wireless' Local Service Area, visit <http://www.cinbell.com/wireless/coverage/>.
- **Service Devices** are defined as any device that uses a Cincinnati Bell SIM card and network to transmit data wirelessly. Such devices include but are not limited to wireless handsets (phones, PDAs, and smartphones), tablets, mobile hotspot devices, USB modems, and computers.
- **Tethering** is defined as using a Cincinnati Bell Wireless mobile device to connect another device to the network for accessing the Internet and using applications that consume data.