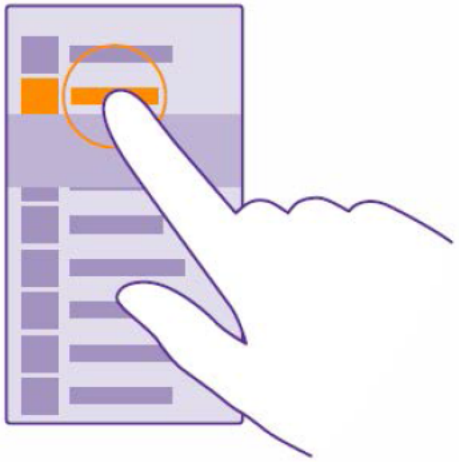
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
1. A computing device comprising:	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 is a computing device.* A cellular smartphone with tethering capabilities (i.e., capable of acting as a wifi hotspot for other devices) is a computing device. The Microsoft Lumia 435 user manual referenced below is distributed by T-Mobile at: https://support.t-mobile.com/docs/DOC-21990
at least one communication module adapted to: (1) wirelessly connect said computing device to an IP based network via a first wireless access point (AP) having a first AP Identification (APID); and (2) wirelessly communicate with other wireless enabled computing devices;	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 provides communication module adapted to wirelessly connect the device to an IP-based network via a first wireless access point (AP) having a first AP Identification (APID).* *Cellular smartphones are able to communicate using radio frequency signals over a cellular network and over a wifi network. Conducting such communications requires communications circuitry that comprises one or more communication modules.* A cellular base station acts as a first wireless AP and connects to an IP-based network through, e.g., a base transceiver station in GSM networks or node B in UMTS networks. Base stations, node B entities, and other similar devices have a unique identifier (e.g., cell ID) that enables mobile smartphones and the core cellular network to identify them and distinguish between different stations. Communications with a base station or node B are generally conducted using various cellular multiple access technologies. A cellular smartphone that is capable of supporting wireless tethering (acting as a mobile hotspot) wirelessly communicates with the tethered devices (e.g., laptop or tablet computer). Such communications are generally carried out using either a wifi or Bluetooth connection. See User Manual, pp. 90-91:

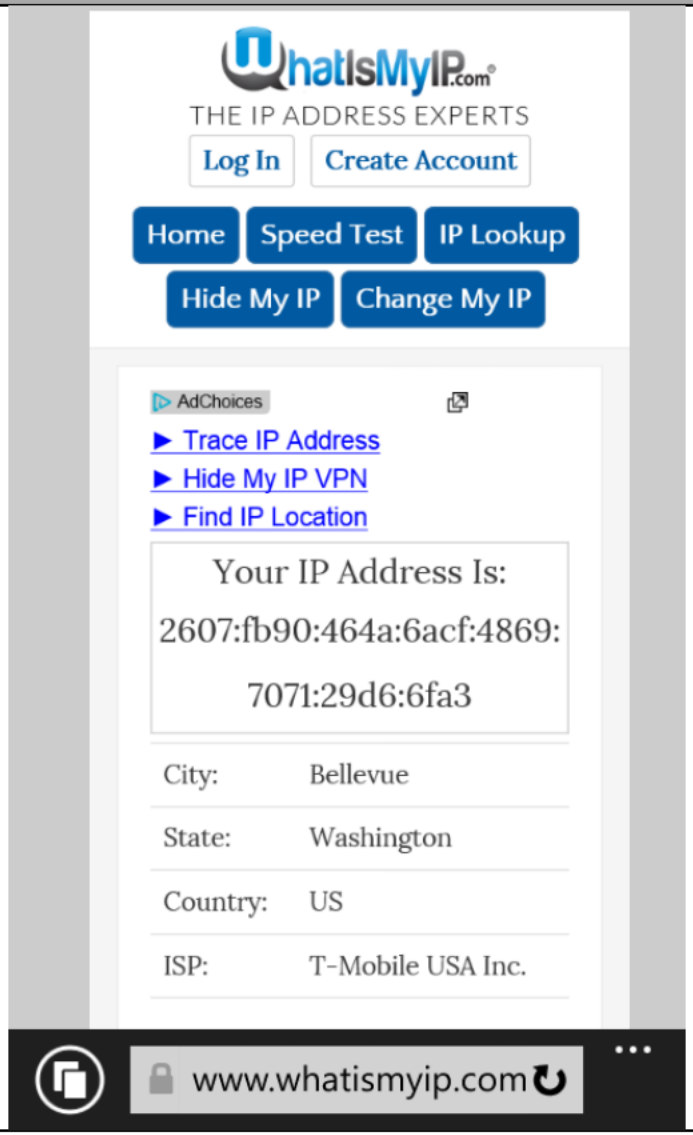
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Connect your computer to the web It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On**  . **3.** To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider.
a user interface and display adapted to allow a user of said computing device to interact with destinations over the IP based network, through the first wireless AP, using a first public IP address associated with the computing device; and	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 provides a user interface and display to allow a user of the device to interact with destinations over the IP-based network, through the first wireless AP, using a first public IP address associated with the computing device.* A smartphone has a user interface and display and can interact with web pages and other servers using an IP address assigned by the cellular service provider. Web page requests are sent over the cellular air interface to the cellular base station and routed over the Internet, which is an IP based network. The computing device provides a user interface and display. See User Manual, p. 18:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Use the touch screen Explore your phone with a tap, swipe, or drag. **1.** To use your phone, simply tap or tap and hold the touch screen. **2.** To open further options, place your finger on an item until the menu opens. **Example:** To open an app or other item, tap the app or item. To edit or delete a calendar appointment, tap and hold the appointment, and select the appropriate option.  **Tap and hold to drag an item** Place your finger on the item for a couple of seconds, and slide your finger across the screen. The computing device allows a user to interact with destinations over the IP based network. See User Manual, p. 91:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Web browser Catch up on the news, and visit your favorite websites. You can use Internet Explorer 11 in your phone to view web pages on the internet. Your browser can also help warn you against security threats. Tap **Internet Explorer**. To browse the web, you must be connected to the internet. **Browse the web** Who needs a computer, when you can browse the internet on your phone? **Tip:** If your network service provider doesn't charge you a fixed fee for data transfer, to save on data costs, use a Wi-Fi network to connect to the internet. **1.** Tap **Internet Explorer**. **2.** Tap the address bar. **3.** Write a web address. The computing device allows a user to interact with destinations over the IP based network, through the first wireless AP. See User Manual, p. 90: **Use a mobile data connection** On the start screen, swipe down from the top of the screen, tap **ALL SETTINGS** > **cellular +SIM**, and switch **Data connection** to **On**. The computing device allows a user to interact with destinations over the IP based network, through the first wireless AP, using a first public IP address: [Screen capture of application showing IP address used by the phone:] The computing device allows a user to interact with destinations over the IP based network, through the first wireless AP. See User Manual, p. 90:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Use a mobile data connection On the start screen, swipe down from the top of the screen, tap **ALL SETTINGS** > **cellular +SIM**, and switch **Data connection** to **On**  . The computing device allows a user to interact with destinations over the IP based network, through the first wireless AP, using a first public IP address: [Screen capture of application showing IP address used by the phone:]

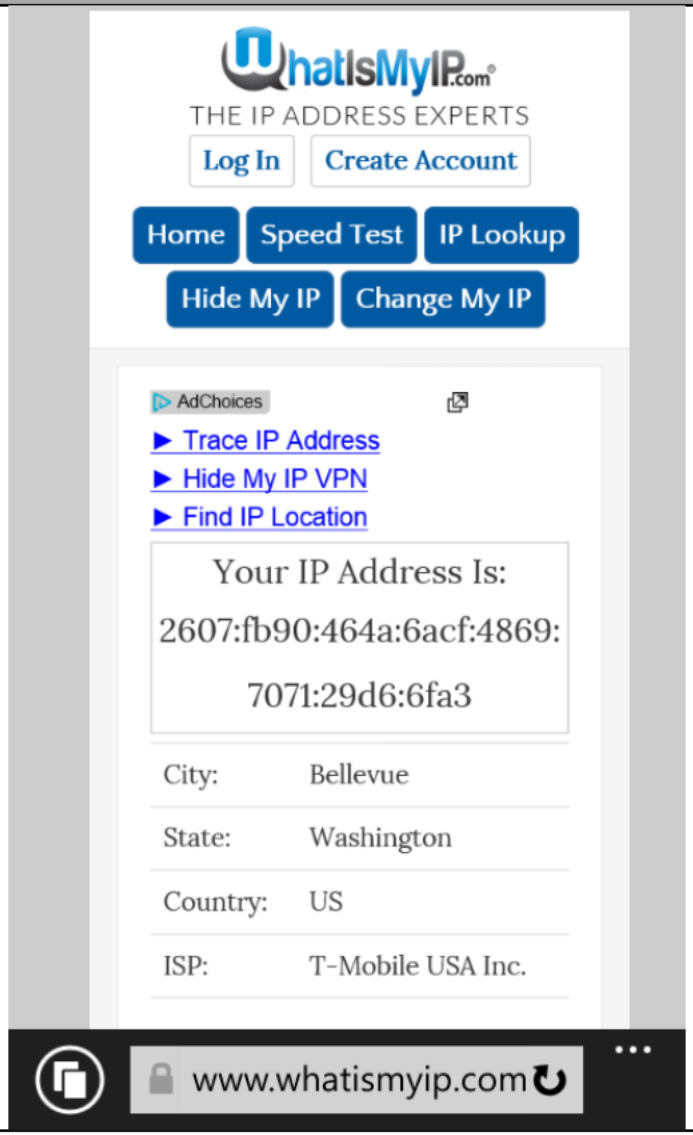
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
an AP module adapted to: (1) provide a given device of the other wireless enabled computing devices with access to the IP based network by causing said computing device to serve the given device as a second AP having a second APID, distinct from the first APID, and provide the given device access to the network via the first AP; and	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 provides an AP module adapted to provide another wireless-enabled computing device with access to the IP-based network by causing said computing device to serve the given device as a second AP having a second APID, distinct from the first APID, and provide the given device access to the network via the first AP.* Most smartphones have the capability to act as a mobile hotspot, which is implemented by an access point module. Cellular carriers offer plans that enable users to activate the mobile hotspot functionality. The tethering functionality allows the smartphone to act as an access point through which other devices can access the Internet. The smartphone appears to such other devices as a wifi or Bluetooth access point (i.e., the second AP) with an identifier that is different from the ID of the cellular base station or node B (i.e., the first AP) through which the smartphone routes communications to and from the tethered device. Typically, the access point has a name that has been assigned or given to the smartphone or that is defined by the owner of the smartphone. The computing device provides an AP module adapted to provide a given device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP based network… and provide the given device access to the network via the first AP. See User Manual, p. 90: **Connect your computer to the web** It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On** .

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	3. To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider. The computing device provides an AP module adapted to provide a given device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP based network by causing said computing device to serve the given device as a second AP having a second APID, distinct from the first APID. The IP address used by the phone is different from the IP address used by the other device. [Screen capture of application showing IP address used by the first device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	[Screen capture of application showing IP address used by the other device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
(2) tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server, such that the proxy server acts as a proxy of the given device and the data traffic is secure from said computing device and first AP and the given device operates on the network using a second public IP address distinct from the first public IP address, with the second public IP address associated with the given device.	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 provides an AP module adapted to tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server, such that the proxy server acts as a proxy of the given device and the data traffic is secure from said computing device and first AP and the given device operates on the network using a second public IP address distinct from the first public IP address, with the second public IP address associated with the given device.* The tethering functionality routes data traffic from a tethered device through the smartphone to the cellular connection, through the base station or node B, and through an IP network. The data is routed through the IP network to a packet data proxy server. In at least some circumstances, a tunnel is created between the tethered device and a packet data network server and such tunneled data is secure from the smartphone. In addition, the packet data proxy server assigns an IP address that is seen by external web servers for the tethered device that is different from the IP address used for the smartphone. For example, a packet data gateway in at least some cases performs network address translation and assigns a different IP address for the tethered device than for the smartphone itself. The computing device provides an AP module adapted to tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server. The AP module may be comprised of software, including, without limitation, one or more processing routines within an operating system executing within the computing device; specialty hardware, such as a microprocessor or application-specific integrated circuit; or a combination of hardware and software, such as a microprocessor executing one or more software routines. For example, and without limitation, the operating system on the computing device prevents the given device and its applications from accessing data contained within the computing device.

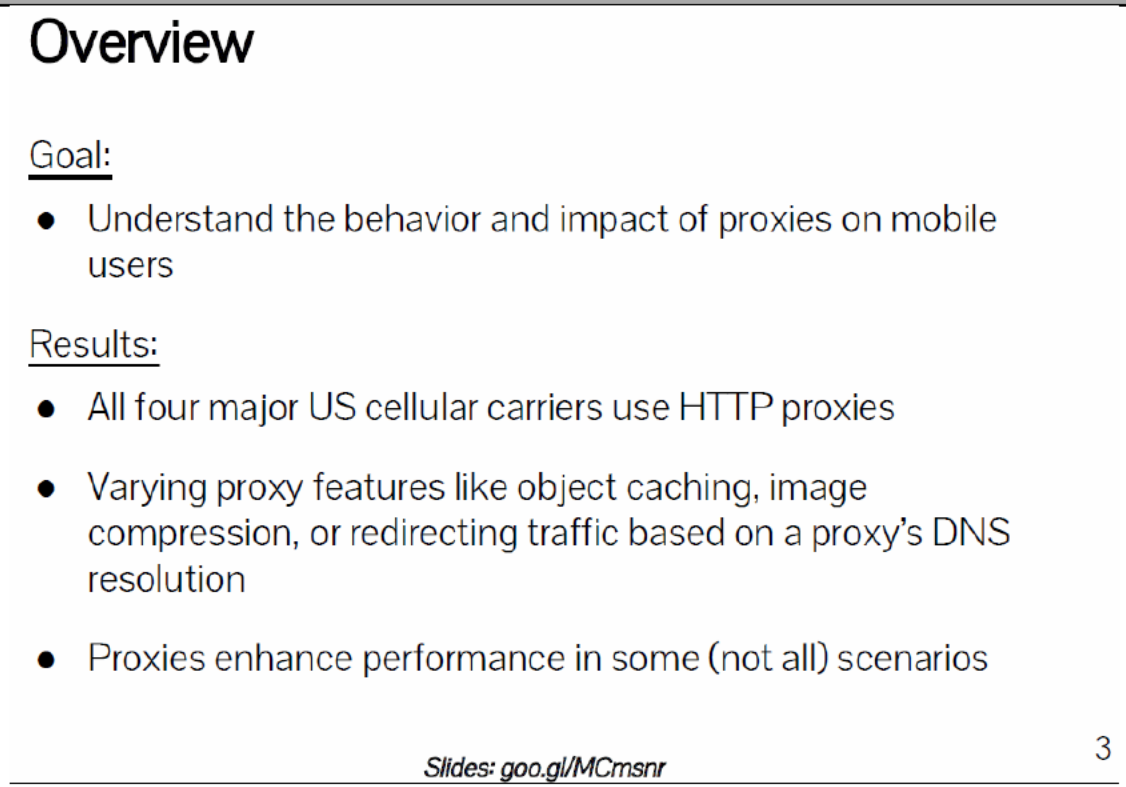
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	In order to access the Internet, data traffic is tunneled from the given device, through the Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server. On information and belief, all major U.S. cellular carriers use HTTP proxies. T-Mobile uses a proxy server. *See, e.g.,* Xu, et al., Investigating Transparent Web Proxies in Cellular Networks, USC & Northeastern University, Mar. 20, 2015, available at goo.gl/MCmsnr **Overview** Goal: • Understand the behavior and impact of proxies on mobile users Results: • All four major US cellular carriers use HTTP proxies • Varying proxy features like object caching, image compression, or redirecting traffic based on a proxy's DNS resolution • Proxies enhance performance in some (not all) scenarios *Slides: goo.gl/MCmsnr* 3

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	As shown in the above rows, the second public IP address is distinct from the first public IP address.
2. The computing device of claim 1 wherein the second APID is associated with the proxy server.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second APID is associated with the proxy server.
3. The computing device of claim 1 wherein the AP module is adapted to tunnel data traffic from the given device through said computing device, through the first AP, through the IP network, to a proxy server in response to at least activating data service for the given device through a captive portal web interface.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
4. The computing device of claim 1 wherein the first wireless AP is included in a cellular telephone network.	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 connects to the first wireless AP which is part of a cellular telephone network.* T-Mobile operates a cellular telephone network.
5. The computing device of claim 4 wherein the first wireless AP is a cellular cell.	T-Mobile operates cellular telephone networks that include cellular cells.
6. The computing device of claim 1 wherein the AP module is controlled by a network entity in a cellular	T-Mobile operates a cellular telephone network. As such, T-Mobile utilizes a Mobile Telephone Switching Office ("MTSO"). T-Mobile's MTSO, or other network entity, exerts control of the AP module of the computing device by enabling or disabling is access on the cellular network, and the ability of the computing device to provide tethering.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
system.	
7. The computing device of claim 1 wherein the first wireless AP and the second wireless AP use different wireless communication protocols.	T-Mobile uses the GSM protocol for the first wireless AP. T-Mobile also uses "HSCSD" and "EDGE" for data transmission. The protocol used for the second wireless AP between the computing device and the other STAs is based on IEEE 802.11. Thus, the first wireless AP and the second wireless AP use different wireless communication protocols.
8. The computing device of claim 1 wherein the first wireless AP is included in a terrestrial wireless network.	T-Mobile operates a cellular telephone network that is terrestrial, that is, it uses ground-based cellular equipment. The first wireless AP is ground-based.
9. The computing device of claim 1 wherein the proxy server acts as a proxy of the given device for the given device to interact with destinations over the IP based network.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server coordinates the mapping of the address of the given node during its interaction with the IP-based network.
10. The computing device of claim 1 wherein the AP module is adapted to prevent data packets destined for the user interface and display from being accessed by the given device.	The computing device does not allow the other wireless-enabled computing devices to access the data packets destined for the user interface and display. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access the data packets destined for the user interface and display.
11. The computing device of claim 1 wherein the AP module is adapted to disconnect the given device after a predetermined period.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
12. The computing device of	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
claim 1 wherein the second public IP address is shared by the given device with at least one other device of the other wireless enabled computing devices.	based on information derived through discovery.
13. The computing device of claim 12 wherein data packets destined for each of the given device and the at least one other device are differentiated using different port numbers.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
14. The computing device of claim 1 wherein the AP module is adapted to prevent the given device from accessing internal IP addresses associated with the computing device.	The computing device does not allow the other wireless-enabled computing devices to access internal IP addresses associated with the computing device. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access internal IP addresses associated with the computing device.
15. The computing device of claim 1 wherein the AP module is adapted to restrict the given device from accessing a predetermined set of IP addresses.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
16. A system comprising:	*Accused component: T-Mobile network, operating in conjunction with computing devices sold by T-Mobile. Basis of Infringement Contention: T-Mobile operates a wireless network, and sells computing devices that operate on the network.* A cellular base station acts as a first wireless AP and connects to an IP-based network through, e.g., a base transceiver station in GSM networks or node B in UMTS networks. Base stations, node B

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	entities, and other similar devices have a unique identifier (e.g., cell ID) that enables mobile smartphones and the core cellular network to identify them and distinguish between different stations. Communications with a base station or node B are generally conducted using various cellular multiple access technologies.
a first wireless access point (AP) connected to an IP based network,	T-Mobile, as part of its wireless network, provides an access point (AP) connected to an IP-based network (e.g., the Internet).
the first wireless AP having a first AP Identification (APID);	The first wireless AP has a first APID.
a proxy server connected to the IP based network and adapted to act as a proxy of at least a subset of computing devices that connect via the first wireless AP;	The T-Mobile wireless network provides a proxy server connected to the IP-based network, e.g., the Internet). The proxy server acts as a proxy of at least a subset of computing devices. The tethering functionality routes data traffic from a tethered device through the smartphone to the cellular connection, through the base station or node B, and through an IP network. The data is routed to a packet data proxy server connected to the IP network that acts as a proxy of the tethered devices. In some cases, the packet data proxy performs network address translation and assigns a different public IP address for the tethered device than is used on the private cellular network. On information and belief, all major U.S. cellular carriers use HTTP proxies. T-Mobile uses a proxy server. *See, e.g.,* Xu, et al., Investigating Transparent Web Proxies in Cellular Networks, USC & Northeastern University, Mar. 20, 2015, available at goo.gl/MCmsnr

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	
and a first computing device having a user interface,	The computing device, e.g., Microsoft Lumia 435 provides a user interface. A cellular smartphone with tethering capabilities (i.e., capable of acting as a wifi hotspot for other devices) is a computing device that includes a user interface. See User Manual, p. 18:

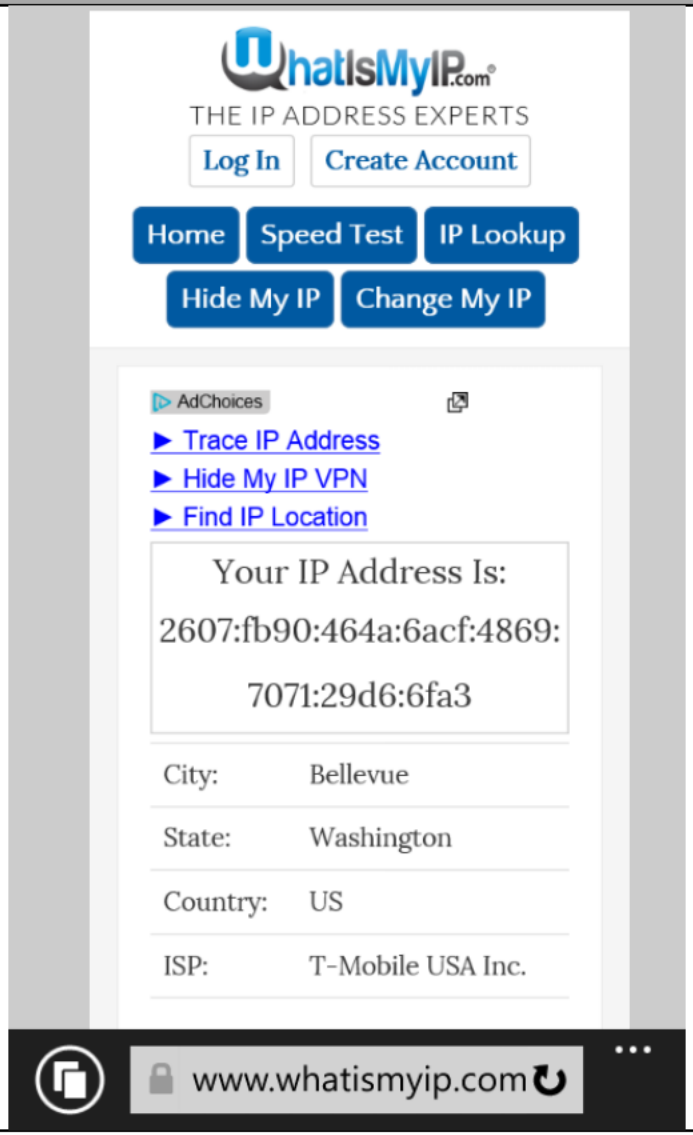
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Use the touch screen Explore your phone with a tap, swipe, or drag. **1.** To use your phone, simply tap or tap and hold the touch screen. **2.** To open further options, place your finger on an item until the menu opens. **Example:** To open an app or other item, tap the app or item. To edit or delete a calendar appointment, tap and hold the appointment, and select the appropriate option.  **Tap and hold to drag an item** Place your finger on the item for a couple of seconds, and slide your finger across the screen.
wherein the first computing device is adapted to:	
wirelessly connect to the IP based network via the first wireless AP;	The first computing device, e.g., the Microsoft Lumia 435, is adapted to wirelessly connect to the IP based network, e.g., the Internet, via the first wireless AP: Smartphones connect to IP based networks via a base station (i.e., the first wireless AP).

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Communications with a base station or node B are generally conducted using various cellular multiple access technologies. The computing device allows a user to interact with destinations over the IP based network. See User Manual, p. 91: **Web browser** Catch up on the news, and visit your favorite websites. You can use Internet Explorer 11 in your phone to view web pages on the internet. Your browser can also help warn you against security threats. Tap **Internet Explorer**. To browse the web, you must be connected to the internet. **Browse the web** Who needs a computer, when you can browse the internet on your phone? **Tip:** If your network service provider doesn't charge you a fixed fee for data transfer, to save on data costs, use a Wi-Fi network to connect to the internet. **1.** Tap **Internet Explorer**. **2.** Tap the address bar. **3.** Write a web address. The first computing device, e.g., the Microsoft Lumia 435, is adapted to wirelessly connect to the IP based network, e.g., the Internet, via the first wireless AP. See User Manual, p. 90: **Use a mobile data connection** On the start screen, swipe down from the top of the screen, tap **ALL SETTINGS** > **cellular +SIM**, and switch **Data connection** to **On**.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
wirelessly communicate with other wireless enabled computing devices;	The first computing device, e.g., the Microsoft Lumia 435, can wirelessly communicate with other wireless-enabled computing devices, e.g., other mobile telephones. A cellular smartphone that is capable of supporting wireless tethering (acting as a mobile hotspot) wirelessly communicates with the tethered devices (e.g., laptop or tablet computer). Such communications are generally carried out using either a wifi or Bluetooth connection. The computing device provides an AP module adapted to provide a given device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP based network… and provide the given device access to the network via the first AP. See User Manual, p. 90: **Connect your computer to the web** It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On** . **3.** To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider.
[the first computing device is adapted to] enable a user of the first computing device to interact, through the user	A smartphone has a user interface and display and can interact with web pages and other servers using an IP address assigned by the cellular service provider. Web page requests are sent over the cellular air interface to the cellular base station and routed over the Internet, which is an IP based network.

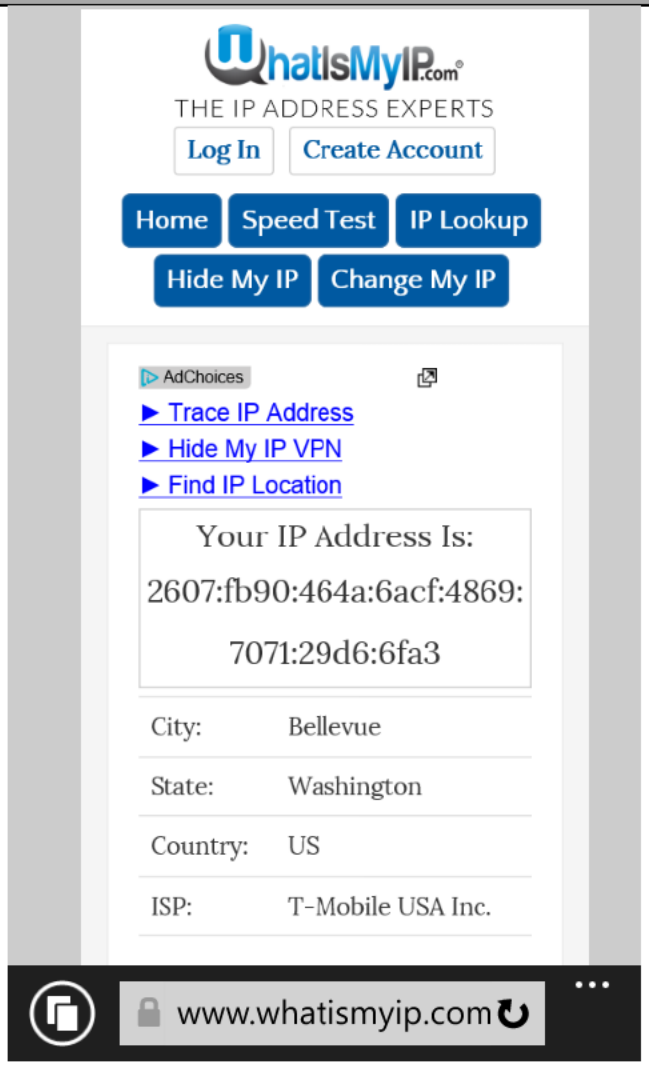
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
interface, with destinations over the IP based network, through the first wireless AP, using a first public IP address associated with the first computing device;	The user of the first computing device can interact, through the user interface. See User Manual, p. 91: **Web browser** Catch up on the news, and visit your favorite websites. You can use Internet Explorer 11 in your phone to view web pages on the internet. Your browser can also help warn you against security threats. Tap **Internet Explorer**. To browse the web, you must be connected to the internet. **Browse the web** Who needs a computer, when you can browse the internet on your phone? **Tip:** If your network service provider doesn't charge you a fixed fee for data transfer, to save on data costs, use a Wi-Fi network to connect to the internet. **1.** Tap **Internet Explorer**. **2.** Tap the address bar. **3.** Write a web address. The user of the first computing device allows a user to interact with destinations over the IP based network, through the first wireless AP, using a first public IP address: [Screen capture of application showing IP address used by the phone:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



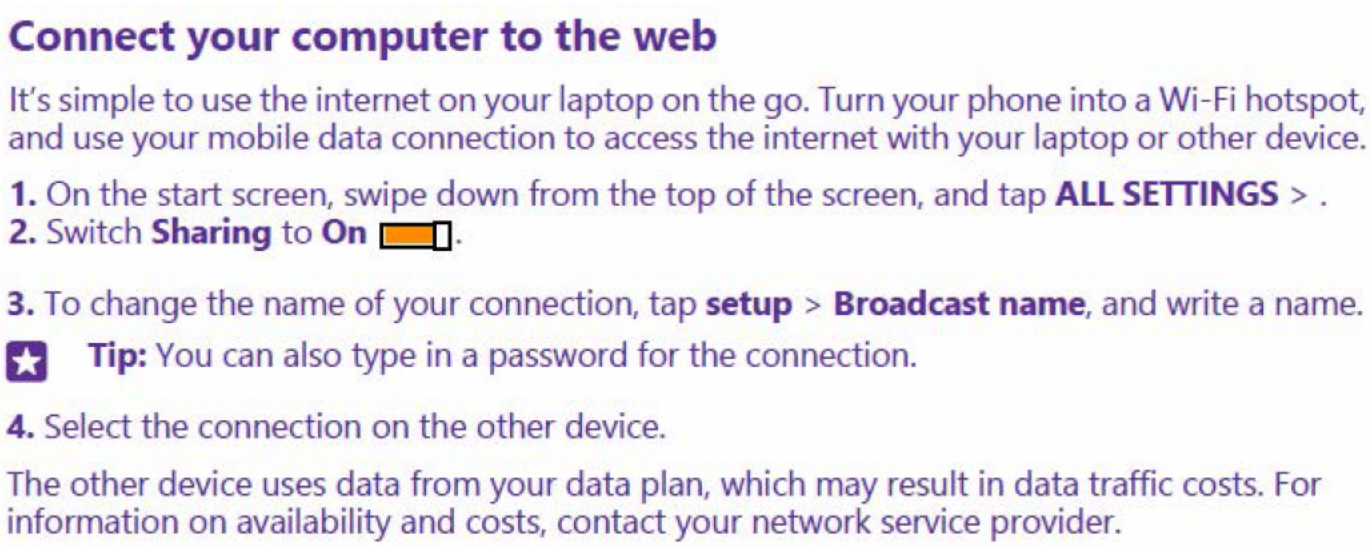
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
[the first computing device is adapted to] provide a second computing device of the other wireless enabled computing devices with access to the IP based network by causing the first computing device to serve the second computing device as a second AP having a second APID, distinct from the first APID, and provide the second computing device access to the IP based network via the first AP; and	The first computing device, e.g., the Microsoft Lumia 435, provides a second computing device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP-based network, e.g., the Internet, by causing the first computing device, e.g., the Microsoft Lumia 435, to serve the second computing device, e.g., the laptop computer, as a second AP having a second APID, distinct from the first APID: The tethering functionality allows the smartphone to act as an access point through which other devices can access the Internet. The smartphone appears to such other devices as a wifi or Bluetooth access point (i.e., the second AP) with an identifier that is different from the ID of the cellular base station or node B (i.e., the first AP) through which the smartphone routes communications to and from the tethered device. Typically, the access point has a name that has been assigned or given to the smartphone or that is defined by the owner of the smartphone. [Screen capture of application showing IP address used by the first computing device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



[Screen capture of application showing IP address used by the other device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	and provide the second computing device access to the IP based network via the first AP. See User Manual, p. 90:  **Connect your computer to the web** It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On** . **3.** To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider.
[the first computing device is adapted to] tunnel data traffic from the second computing device, through the first computing device, through the first AP, through the IP network, to the proxy server, wherein the proxy server acts as a proxy of the second computing device and the data traffic is secure from the first	The first computing device, e.g., the Microsoft Lumia 435, tunnels data traffic from the second computing device, e.g., a laptop computer, through the first computing device, e.g., the Microsoft Lumia 435, through the first AP (part of the T-Mobile network), through the IP network, to the proxy server, wherein the proxy server acts as a proxy of the second computing device, e.g., a laptop computer, and the data traffic is secure from the first computing device, e.g., the Microsoft Lumia 435, and the first AP and the second computing device, e.g., the laptop computer, operates on the IP based network, e.g., the Internet, using a second public IP address distinct from the first public IP address, with the second public IP address associated with the second computing device. The tethering functionality routes data traffic from a tethered device through the smartphone to the cellular connection, through the base station or node B, and through an IP network. The data is

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
computing device and the first AP and the second computing device operates on the IP based network using a second public IP address distinct from the first public IP address, with the second public IP address associated with the second computing device.	routed through the IP network to a packet data proxy server. In at least some circumstances, a tunnel is created between the tethered device and a packet data network server and such tunneled data is secure from the smartphone. In addition, the packet data proxy server assigns an IP address that is seen by external web servers for the tethered device that is different from the IP address used for the smartphone. For example, a packet data gateway in some cases performs network address translation and assigns a different IP address for the tethered device than for the smartphone itself. See the above screenshots showing that the second public IP address is distinct from the first public IP address.
17. The system of claim 16 wherein the first computing device is further adapted to:	*Accused component: T-Mobile network, operating in conjunction with computing devices sold by T-Mobile. Basis of Infringement Contention: T-Mobile operates a wireless network, and sells computing devices that operate on the network.*
[the first computing device is adapted to] provide a third computing device of the other wireless enabled computing devices with access to the IP based network by causing the first computing device to serve the third computing device as the second AP having the second APID, distinct from the first APID, and provide the third computing device access to the IP based network via the first AP; and	The first computing device, e.g., the Microsoft Lumia 435, provides a third computing device, e.g., a tablet computer, of the other wireless enabled computing devices with access to the IP-based network, e.g., the Internet, by causing the first computing device, e.g., the Microsoft Lumia 435, to serve the third computing device, e.g., the tablet computer, as a second AP having a second APID, distinct from the first APID: [Screen capture of application showing IP address used by the other device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	and provide the third computing device access to the IP based network via the first AP. See User Manual, p. 90: **Use a mobile data connection** On the start screen, swipe down from the top of the screen, tap **ALL SETTINGS** > **cellular +SIM**, and switch **Data connection** to **On**  .
[the first computing device is adapted to] tunnel data traffic from the third computing device, through the first computing device, through the first AP, through the IP network, to the proxy server, wherein the proxy server acts as a proxy of the third computing device and the data traffic is secure from the first computing device and the first AP and the third computing device operates on the IP based network using a third public IP address distinct from the first public IP address, with the third public IP address associated with the third computing device.	The first computing device, e.g., the Microsoft Lumia 435, tunnels data traffic from the third computing device, e.g., a tablet computer, through the first computing device, e.g., the Microsoft Lumia 435, through the first AP (part of the T-Mobile network), through the IP network, to the proxy server, wherein the proxy server acts as a proxy of the second computing device, e.g., a tablet computer, and the data traffic is secure from the first computing device, e.g., the Microsoft Lumia 435, and the first AP and the third computing device, e.g., the tablet computer, operates on the IP based network, e.g., the Internet, using a third public IP address distinct from the first public IP address, with the third public IP address associated with the third computing device. See the above screenshots showing that the second public IP address is distinct from the first public IP address.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
18. The system of claim 16 wherein the second APID is associated with the proxy server.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second APID is associated with the proxy server.
19. The system of claim 16 wherein the proxy server acts as a proxy of the second computing device for the second computing device to interact with destinations over the IP based network.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second APID is associated with the proxy server. The proxy server acts as a proxy of the second computing device, e.g., a laptop computer, to interact with destinations over the IP-based network, e.g., the Internet. See User Manual, p. 90: **Connect your computer to the web** It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On** . **3.** To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider.
20. The system of claim 16 wherein the second computing device connects to	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
the IP based network through a third AP having a third APID, distinct from the first APID and the second APID, concurrently with connecting to the IP based network through the second AP.	
21. The system of claim 16 wherein the first computing device is adapted to prevent data packets destined for the user interface from being accessed by the second computing device.	The first computing device does not allow the other wireless-enabled computing devices to access data packets destined for its user interface. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access data packets destined for the first computing device's user interface.
22. The system of claim 16 wherein the first computing device is adapted to disconnect the second computing device from the second AP after a predetermined period.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
23. The system of claim 16 wherein the proxy server allocates the second public IP address for the second computing device and forwards data packets destined for the second public IP address to a current IP address associated with the second computing device,	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second public IP is associated with (and known by) the proxy server. See the above screenshots showing that the second public IP address is distinct from the first public IP address.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
wherein the current IP address is distinct from the first public IP address and the second public IP address.	
24. The system of claim 23 wherein the proxy server replaces the current IP address with the second public IP address in data packets destined for other servers on the IP based network, wherein the data packets are tunneled from the second computing device, through the first computing device, through the first AP, through the IP network, to the proxy server.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second public IP is associated with (and known by) the proxy server.
25. The system of claim 23 wherein the proxy server updates the current IP address associated with the second computing device in response to the second computing device connecting through a different AP.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second public IP is associated with (and known by) the proxy server.
26. The system of claim 16 wherein the first computing device is adapted to tunnel data traffic from the second computing device through the first computing device,	The first computing device, e.g., the Microsoft Lumia 435, provides an AP module adapted to tunnel data traffic from the given device (second computing device), through the first computing device, through the first AP, through the IP network, to a proxy server. In order to access the Internet, data traffic is tunneled from the given device, through the first computing device, e.g., the Microsoft Lumia 435, through the first AP, through the IP network, to a

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
through the first AP, through the IP network, to a proxy server in response to at least activating data service for the second computing device through a captive portal web interface.	proxy server.
27. The system of claim 16 wherein the first wireless AP is included in a cellular telephone network.	The first wireless AP is included in a cellular telephone network. T-Mobile operates a cellular telephone network.
28. The system of claim 27 wherein the first wireless AP is a cellular cell.	*Accused component: Microsoft Lumia 435* *Basis of Infringement Contention: The Microsoft Lumia 435 connects to the first wireless AP which is part of a cellular telephone network.* T-Mobile operates a cellular telephone network.
29. The system of claim 16 wherein the second AP is controlled, at least in part, by a network entity in a cellular system.	T-Mobile operates cellular telephone networks that include cellular cells.
30. The system of claim 16 wherein the first wireless AP and the second wireless AP use different wireless communication protocols.	T-Mobile uses the GSM protocol for the first wireless AP. T-Molbile also uses "HSCSD" and "EDGE" for data transmission. The protocol used for the second wireless AP between the computing device and the other STAs is based on IEEE 802.11. Thus, the first wireless AP and the second wireless AP use different wireless communication protocols.
31. The system of claim 16 wherein the first wireless AP is included in a terrestrial wireless network.	T-Mobile operates a cellular telephone network that is terrestrial, that is, it uses ground-based cellular equipment. The first wireless AP is ground-based.
32. The system of claim 16	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
wherein the second computing device is further adapted to provide a third wireless enabled computing device with access to destinations on the IP based network by causing the second computing device to serve the third device as a third AP having a third APID, distinct from the first APID and from the second APID, and provide the third device access to the IP based network via the second AP using the connection between the first computing device and the IP based network through the first AP.	based on information derived through discovery.
33. The system of claim 32 wherein the second computing device restricts destinations on the IP based network accessible by the third device.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
34. The system of claim 16 wherein the tunneled data traffic includes data packets for use in conducting a IP based phone call.	The computing device provides an AP module adapted to tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server. In order to access the Internet, data traffic is tunneled from the given device, through the Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server. The data traffic may comprise data packets for use in conducting an IP-based phone call.

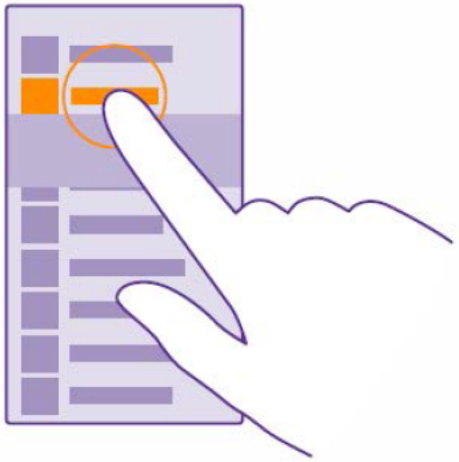
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	The Microsoft Lumia 435 may be used to make an IP-based call using Skype.
35. The system of claim 16 wherein the tunneled data traffic includes data packets representing data to be uploaded to a remote server from the second computing device.	Data packets from the second computing device can include data packets representing data to be uploaded to a remote server. See User Manual, p. 69: **Share a photo in social networking services** After you take a photo, upload it to the web so all your friends can see what you're up to. **1.** Tap **Photos**. **2.** Browse your photo albums for the photo you want to share. **3.** Tap and hold the photo, and tap **share...**. **4.** Tap the social networking service where you want to upload the photo. **5.** Add a caption if you want, and share or send your photo.
36. The system of claim 16 wherein data packets received by the second computing device from a destination through the proxy server, through the IP network, through the first AP, through the first computing device, through the second AP include at least one of a picture, video, or audio.	Data packets from the Internet destined for the second computing device will be processed be the proxy server and traverse through the UP network, through the first AP, through the first computing devices, and through the second AP. The data traffic may comprise data packets comprising picture, video, or audio. See User Manual, p. 69: **Share a photo in social networking services** After you take a photo, upload it to the web so all your friends can see what you're up to. **1.** Tap **Photos**. **2.** Browse your photo albums for the photo you want to share. **3.** Tap and hold the photo, and tap **share...**. **4.** Tap the social networking service where you want to upload the photo. **5.** Add a caption if you want, and share or send your photo.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	See User Manual, p. 95: **Entertainment** Having a spare moment and in need of entertainment? Learn how to watch videos, listen to your favorite music, and play games. **Watch and listen** You can use your phone to watch videos and listen to music and podcasts while on the move. **Play music** Listen to your favorite music wherever you are. Tap **Music**. Tap the song, artist, album, or playlist you want to play.
37. The system of claim 16 wherein the second public IP address is shared by the second computing device with at least one other device of the other wireless enabled computing devices.	The first wireless device tethered with a second wireless device on a foreign network will use the same IP address that is represented outside of the carrier network as being assigned to the mobile device.
38. The system of claim 37 wherein data packets destined	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
for each of the second computing device and the at least one other device are differentiated using different port numbers.	
39. The system of claim 16 wherein the first computing device is adapted to prevent the second computing device from accessing internal IP addresses associated with the first computing device.	The first computing device does not allow the other wireless-enabled computing devices to access internal IP addresses associated with the first computing device. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access internal IP addresses associated with the first computing device.
40. The system of claim 16 wherein the first computing device is adapted to restrict the second computing device from accessing a predetermined set of IP addresses.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
41. The system of claim 16 wherein the proxy server provides a dynamic host configuration protocol (DHCP) service that assigns an IP address for the second computing device.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server keeps track of the forwarding of data packets for a given mobile terminal as the mobile device migrates from network to network. In order to do so, the proxy server acts as a DHCP server by assigning an IP address for the mobile device.
42. The system of claim 16 wherein the proxy server provides a network address translation (NAT) service that translates IP addresses for the	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server keeps track of the forwarding of data packets for a given mobile terminal as the mobile device migrates from network to network. In order to do so, the proxy server acts as a DHCP server by assigning an IP address for the mobile device.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
second computing device.	
43. A method comprising:	
wirelessly connecting a first computing device to an IP based network via a first wireless access point (AP) having a first AP Identification (APID), wherein the first computing device wirelessly communicates with other wireless enabled computing devices;	*Basis of Infringement Contention: The T-Mobile network wirelessly connects a first computing device, e.g., the Microsoft Lumia 435, to an IP-based network, e.g., the Internet, via a first wireless access point (AP) provided by T-Mobile having a first AP Identification (APID).* A cellular base station acts as a first wireless AP and connects to an IP-based network through, e.g., a base transceiver station in GSM networks or node B in UMTS networks. Base stations, node B entities, and other similar devices have a unique identifier (e.g., cell ID) that enables mobile smartphones and the core cellular network to identify them and distinguish between different stations. Communications with a base station or node B are generally conducted using various cellular multiple access technologies. A cellular smartphone that is capable of supporting wireless tethering (acting as a mobile hotspot) also wirelessly communicates with the tethered devices (e.g., laptop or tablet computer). Such communications are generally carried out using either a wifi or Bluetooth connection. The first computing device, e.g., the Microsoft Lumia 435, wirelessly communicates with other wireless enabled computing devices. See User Manual, p. 90: **Connect your computer to the web** It's simple to use the internet on your laptop on the go. Turn your phone into a Wi-Fi hotspot, and use your mobile data connection to access the internet with your laptop or other device. **1.** On the start screen, swipe down from the top of the screen, and tap **ALL SETTINGS** > . **2.** Switch **Sharing** to **On**  .

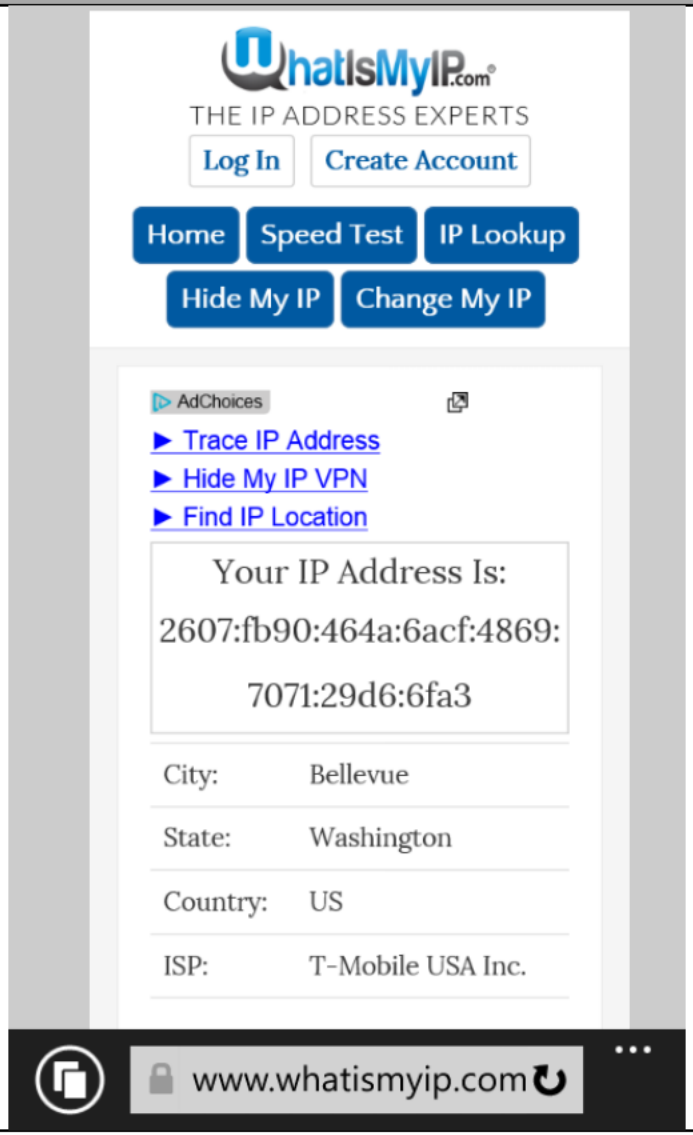
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	3. To change the name of your connection, tap **setup** > **Broadcast name**, and write a name. **Tip:** You can also type in a password for the connection. **4.** Select the connection on the other device. The other device uses data from your data plan, which may result in data traffic costs. For information on availability and costs, contact your network service provider.
enabling a user of the first computing device to interact, through a user interface of the first computing device, with destinations over the IP based network, through the first wireless AP, using a first public IP address associated with the first computing device;	*Basis of Infringement Contention: The T-Mobile network enables the user of a first computing device, e.g., a Microsoft Lumia 435, to interact through a user interface of the first computing device, with destinations over the IP-based network, through the first wireless AP, using a first public IP address associated with the computing device.* A smartphone has a user interface and display and can interact with web pages and other servers using an IP address assigned by the cellular service provider. Web page requests are sent over the cellular air interface to the cellular base station and routed over the Internet, which is an IP based network. The computing device provides a user interface and display. See User Manual, p. 18:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Use the touch screen Explore your phone with a tap, swipe, or drag. **1.** To use your phone, simply tap or tap and hold the touch screen. **2.** To open further options, place your finger on an item until the menu opens. **Example:** To open an app or other item, tap the app or item. To edit or delete a calendar appointment, tap and hold the appointment, and select the appropriate option.  **Tap and hold to drag an item** Place your finger on the item for a couple of seconds, and slide your finger across the screen. The computing device allows a user to interact with destinations over the IP based network. See User Manual, p. 91:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Web browser Catch up on the news, and visit your favorite websites. You can use Internet Explorer 11 in your phone to view web pages on the internet. Your browser can also help warn you against security threats. Tap **Internet Explorer**. To browse the web, you must be connected to the internet. **Browse the web** Who needs a computer, when you can browse the internet on your phone? **Tip:** If your network service provider doesn't charge you a fixed fee for data transfer, to save on data costs, use a Wi-Fi network to connect to the internet. **1.** Tap **Internet Explorer**. **2.** Tap the address bar. **3.** Write a web address.
providing a second computing device of the other wireless enabled computing devices with access to the IP based network via the first wireless AP by causing the first computing device to serve the second computing device as a second AP having a second APID, distinct from the first APID, and provide the second computing device access to the IP based network via the	*Basis of Infringement Contention: The T-Mobile network provides a second computing device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP-based network via the first wireless AP by causing said computing device to serve the given device as a second AP having a second APID, distinct from the first APID, and provide the given device access to the network via the first AP.* The tethering functionality allows the smartphone to act as an access point through which other devices can access the Internet. The smartphone appears to such other devices as a wifi or Bluetooth access point (i.e., the second AP) with an identifier that is different from the ID of the cellular base station or node B (i.e., the first AP) through which the smartphone routes communications to and from the tethered device. Typically, the access point has a name that has been assigned or given to the smartphone or that is defined by the owner of the smartphone.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
first AP; and	The computing device provides an AP module adapted to provide a given device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP based network… and provide the given device access to the network via the first AP. See User Manual, p. 90: **Use a mobile data connection** On the start screen, swipe down from the top of the screen, tap **ALL SETTINGS** > **cellular +SIM**, and switch **Data connection** to **On**  . The computing device provides an AP module adapted to provide a given device, e.g., a laptop computer, of the other wireless enabled computing devices with access to the IP based network by causing said computing device to serve the given device as a second AP having a second APID, distinct from the first APID. The IP address used by the phone is different from the IP address used by the other device. [Screen capture of application showing IP address used by the first device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



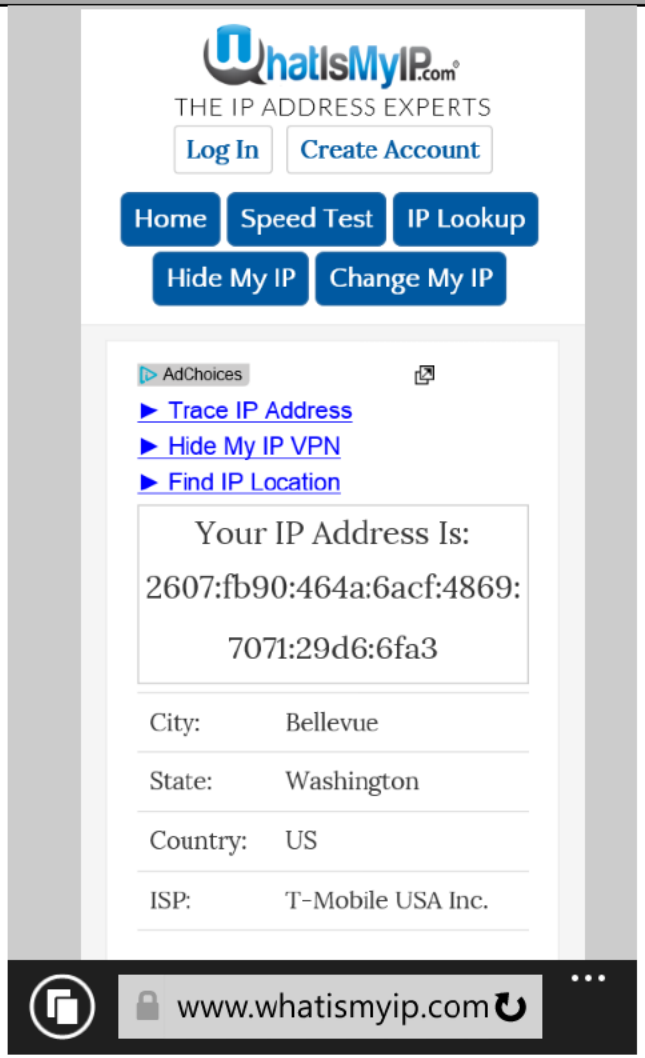
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	[Screen capture of application showing IP address used by the other device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
tunneling data traffic from the second computing device, through the first computing device, through the first AP, through the IP network, to a proxy server, wherein the proxy server acts as a proxy of the second computing device and the data traffic is secure from the first computing device and the first AP and the second computing device operates on the IP based network using a second public IP address distinct from the first public IP address, with the second public IP address associated with the second computing device.	*Basis of Infringement Contention: The T-Mobile network tunnels data traffic from the second computing device, e.g., a laptop computer, through the first computing device, a Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server, such that the proxy server acts as a proxy of the given device and the data traffic is secure from the first computing device and first AP and the second computing device operates on the network using a second public IP address distinct from the first public IP address, with the second public IP address associated with the given device.* The computing device provides an AP module adapted to tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server. The AP module may be comprised of software, including, without limitation, one or more processing routines within an operating system executing within the computing device; specialty hardware, such as a microprocessor or application-specific integrated circuit; or a combination of hardware and software, such as a microprocessor executing one or more software routines. For example, and without limitation, the operating system on the computing device prevents the given device and its applications from accessing data contained within the computing device. The tethering functionality routes data traffic from a tethered device through the smartphone to the cellular connection, through the base station or node B, and through an IP network. The data is routed through the IP network to a packet data proxy server. In at least some circumstances, a tunnel is created between the tethered device and a packet data network server and such tunneled data is secure from the smartphone. In addition, the packet data proxy server assigns an IP address that is seen by external web servers for the tethered device that is different from the IP address used for the smartphone. For example, a packet data gateway, in at least some cases performs network address translation and assigns a different IP address for the tethered device than for the smartphone itself. In order to access the Internet, data traffic is tunneled from the given device, through the Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server. On information and belief, all major U.S. cellular carriers use HTTP proxies. T-Mobile uses a proxy server. *See, e.g.,* Xu, et

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	al., Investigating Transparent Web Proxies in Cellular Networks, USC & Northeastern University, Mar. 20, 2015, available at goo.gl/MCmsnr **Overview** Goal: • Understand the behavior and impact of proxies on mobile users Results: • All four major US cellular carriers use HTTP proxies • Varying proxy features like object caching, image compression, or redirecting traffic based on a proxy's DNS resolution • Proxies enhance performance in some (not all) scenarios *Slides: goo.gl/MCmsnr* 3 [Screen capture of application showing IP address used by the first device:]

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones



[Screen capture of application showing IP address used by the other device:]

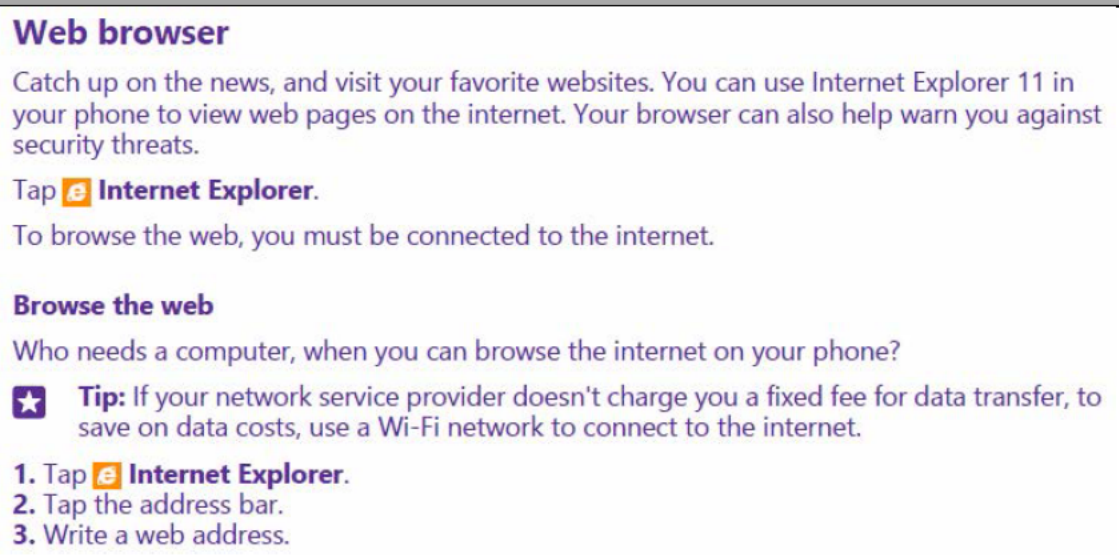
Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	As shown in the above rows, the second public IP address is distinct from the first public IP address.
44. The method of claim 43 further comprising:	
allocating, by the proxy server, the second public IP address for the second computing device;	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server keeps track of the forwarding of data packets for a given mobile terminal as the mobile device migrates from network to network. In order to do so, the proxy server acts as a DHCP server by assigning a local IP address for the mobile device. Alternatively, and in addition, the proxy server allocates the "external" IP address for the second computing device.
and forwarding data packets destined for the second public IP address to a current IP address associated with the second computing device, wherein the current IP address is distinct from the first public IP address and the second public IP address.	The proxy server maintains the association between the actual IP address of the second computing device and the external IP address assigned to the second computing device. When the proxy server receives data packets from the IP based network, e.g., the Internet, the proxy server forwards the packets to the second computing device.
45. The method of claim 44 further comprising: replacing, by the proxy server, the current IP address with the second public IP address in data packets destined for other servers on the IP based network, wherein the data	The proxy server maintains the association between the actual IP address of the second computing device and the external IP address assigned to the second computing device. When the proxy server receives data packets from the IP based network, e.g., the Internet, the proxy server forwards the packets to the second computing device. Equivalently, the proxy server encapsulates the data packets destined for the second computing device by adding a header containing the actual contemporary IP address of the second computing device. This information is added and is in addition to the external IP address.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
packets are tunneled from the second computing device, through the first computing device, through the first AP, through the IP network, to the proxy server.	
46. The method of claim 44 further comprising updating, by the proxy server, the current IP address associated with the second computing device in response to the second computing device connecting through a different AP.	The proxy server maintains the association between the actual IP address of the second computing device and the external IP address assigned to the second computing device. When the proxy server receives data packets from the IP based network, e.g., the Internet, the proxy server forwards the packets to the second computing device. When the second computing device moves to a foreigh network, the proxy server is updated and associates the external IP address with the new IP address of the second computing device.
47. The method of claim 43 wherein the second APID is associated with the proxy server.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second APID is associated with the proxy server.
48. The method of claim 43 further comprising tunneling data traffic from the second computing device through the first computing device, through the first AP, through the IP network, to a proxy server in response to at least activating data service for the second computing device through a captive portal web interface.	The first computing device, e.g., the Microsoft Lumia 435, provides an AP module adapted to tunnel data traffic from the given device (second computing device), through the first computing device, through the first AP, through the IP network, to a proxy server. In order to access the Internet, data traffic is tunneled from the given device, through the Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server. On information and belief, all major U.S. cellular carriers use HTTP proxies.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
49. The method of claim 43 wherein the first wireless AP is included in a cellular telephone network.	The wireless AP is part of a cellular phone network operated by T-Mobile.
50. The method of claim 49 wherein the first wireless AP is a cellular cell.	The wireless AP is part of a cellular phone network operated by T-Mobile. The first wireless AP is embodied within a cellular cell.
51. The method of claim 43 wherein tunneling data traffic is controlled, at least in part, by a network entity in a cellular system.	T-Mobile operates a cellular telephone network. As such, T-Mobile utilizes a Mobile Telephone Switching Office ("MTSO"). T-Mobile's MTSO, or other network entity, exerts control of the AP module of the computing device by enabling or disabling is access on the cellular network, and the ability of the computing device to provide tethering.
52. The method of claim 43 wherein the first wireless AP and the second wireless AP use different wireless communication protocols.	T-Mobile uses the GSM protocol for the first wireless AP. T-Molbile also uses "HSCSD" and "EDGE" for data transmission. The protocol used for the second wireless AP between the computing device and the other STAs is based on IEEE 802.11. Thus, the first wireless AP and the second wireless AP use different wireless communication protocols.
53. The method of claim 43 wherein the first wireless AP is included in a terrestrial wireless network.	T-Mobile operates a cellular telephone network that is terrestrial, that is, it uses ground-based cellular equipment. The first wireless AP is ground-based.
54. The method of claim 43 further comprising providing, by the second computing device, a third wireless enabled computing device with access to destinations on the IP based network by causing the second computing device to serve the third device as a third AP having a	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
third APID, distinct from the first APID and from the second APID, and provide the third device access to the IP based network via the second AP using the connection between the first computing device and the IP based network through the first AP.	
55. The method of claim 54 further comprising restricting destinations on the IP based network accessible by the third device.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
56. The method of claim 43 wherein the proxy server acts as a proxy of the second computing device for the second computing device to interact with destinations over the IP based network.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the second APID is associated with the proxy server. The proxy server acts as a proxy of the second computing device, e.g., a laptop computer, to interact with destinations over the IP-based network, e.g., the Internet. See User Manual, p. 91:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	
57. The method of claim 43 wherein the second computing device connects to the IP based network through a third AP having a third APID, distinct from the first APID and the second APID, concurrently with connecting to the IP based network through the second AP.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
58. The method of claim 43 further comprising preventing data packets destined for the user interface from being accessed by the second	The computing device does not allow the other wireless-enabled computing devices to access the data packets destined for the user interface and display. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access the data packets destined for the user interface and display.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
computing device.	
59. The method of claim 43 further comprising disconnecting the second computing device after a predetermined period.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
60. The method of claim 43 wherein the tunneled data traffic includes data packets for use in conducting a IP based phone call.	The computing device provides an AP module adapted to tunnel data traffic from the given device, through said computing device, through the first AP, through the IP network, to a proxy server. In order to access the Internet, data traffic is tunneled from the given device, through the Microsoft Lumia 435, through the first AP, through the IP network, to a proxy server. The data traffic may comprise data packets for use in conducting an IP-based phone call. The Microsoft Lumia 435 may be used to make an IP-based call using Skype.
61. The method of claim 43 wherein the tunneled data traffic includes data packets representing data to be uploaded to a remote server from the second computing device.	Data packets from the second computing device can include data packets representing data to be uploaded to a remote server. See User Manual, p. 69: **Share a photo in social networking services** After you take a photo, upload it to the web so all your friends can see what you're up to. **1.** Tap **Photos**. **2.** Browse your photo albums for the photo you want to share. **3.** Tap and hold the photo, and tap **share...**. **4.** Tap the social networking service where you want to upload the photo. **5.** Add a caption if you want, and share or send your photo.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
62. The method of claim 43 wherein data packets received by the second computing device from a destination through the proxy server, through the IP network, through the first AP, through the first computing device, through the second AP include at least one of a picture, video, or audio.	Data packets from the Internet destined for the second computing device will be processed be the proxy server and traverse through the UP network, through the first AP, through the first computing devices, and through the second AP. The data traffic may comprise data packets comprising picture, video, or audio. See User Manual, p. 69: **Share a photo in social networking services** After you take a photo, upload it to the web so all your friends can see what you're up to. **1.** Tap **Photos**. **2.** Browse your photo albums for the photo you want to share. **3.** Tap and hold the photo, and tap **share...**. **4.** Tap the social networking service where you want to upload the photo. **5.** Add a caption if you want, and share or send your photo. See User Manual, p. 95:

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
	Entertainment Having a spare moment and in need of entertainment? Learn how to watch videos, listen to your favorite music, and play games. **Watch and listen** You can use your phone to watch videos and listen to music and podcasts while on the move. **Play music** Listen to your favorite music wherever you are. Tap **Music**. Tap the song, artist, album, or playlist you want to play.
63. The method of claim 43 wherein the second public IP address is shared by the second computing device with at least one other device of the other wireless enabled computing devices.	The first wireless device tethered with a second wireless device on a foreign network will use the same external IP address.
64. The method of claim 63 wherein data packets destined for each of the second computing device and the at least one other device are differentiated using different	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.

Claim Limitation	Accused Instrumentalities: Exemplary T-Mobile Cellular Phones
port numbers.	
65. The method of claim 43 further comprising preventing the second computing device from accessing internal IP addresses associated with the first computing device.	The first computing device does not allow the other wireless-enabled computing devices to access internal IP addresses associated with the first computing device. There is no capability to allow the other STAs, that are connected via the AP Module of the computing device, to access internal IP addresses associated with the first computing device.
66. The method of claim 43 further comprising restricting the second computing device from accessing a predetermined set of IP addresses.	Not presently asserted. Barkan expresly reserves the right to amend its infringement contentions based on information derived through discovery.
67. The method of claim 43 wherein the proxy server provides a dynamic host configuration protocol (DHCP) service that assigns an IP address for the second computing device.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server keeps track of the forwarding of data packets for a given mobile terminal as the mobile device migrates from network to network. In order to do so, the proxy server acts as a DHCP server by assigning an IP address for the mobile device.
68. The method of claim 43 wherein the proxy server provides a network address translation (NAT) service that translates IP addresses for the second computing device.	The cellular network uses a proxy server to coordinate the mapping between an address that may change as individual cellular networks are traversed. Thus, the proxy server keeps track of the forwarding of data packets for a given mobile terminal as the mobile device migrates from network to network. In order to do so, the proxy server acts as a DHCP server by assigning an IP address for the mobile device.