

U.S. Patent No. 8,711,866 Claim language	Evidence						
22. Apparatus for routing and rerouting streaming data, the apparatus being mobile and comprising: a streaming device comprising:	An Apple mobile apparatus (e.g., an iPhone) can route and reroute streaming data. On information and belief, various apps that come pre-installed (or can be installed later) on many Apple iPhones are streaming enabled, such as Apple Music, Apple Podcasts, Amazon Music and Spotify. “AirPlay lets you share videos, photos, music, and more from Apple devices to your Apple TV, favorite speakers, and popular smart TVs. And what you share always stays personal and private. So sit back and enjoy everything you love — in more places than ever.” Ref. 1, https://www.apple.com/airplay/ “Stream music, podcasts, and other audio to Apple TV, HomePod, or AirPlay 2-compatible speakers or smart TVs. Play audio across multiple speakers throughout your home in perfect sync. Or play something different in every room — all with AirPlay.” “Play audio on your iPhone or iPad with iOS 11.4 or later, Apple TV, or a Mac with macOS Catalina or later. Then use AirPlay to stream that audio to your AirPlay-compatible speakers or smart TVs.” Ref. 2, https://support.apple.com/en-il/HT202809 Handoff works with these devices and operating systems: <table><tr><th>iOS 8 or later</th><th>OS X Yosemite or later</th><th>watchOS 1.0 or later</th></tr><tr><td> • iPhone 5 or later • iPad Pro (all models) </td><td> • MacBook introduced in 2015 or later </td><td> • Apple Watch (all models) </td></tr></table>	iOS 8 or later	OS X Yosemite or later	watchOS 1.0 or later	• iPhone 5 or later • iPad Pro (all models)	• MacBook introduced in 2015 or later	• Apple Watch (all models)
iOS 8 or later	OS X Yosemite or later	watchOS 1.0 or later					
• iPhone 5 or later • iPad Pro (all models)	• MacBook introduced in 2015 or later	• Apple Watch (all models)					

	• iPad (4th generation) or later • iPad Air or later • iPad mini or later • iPod touch (5th generation) or later • MacBook Pro introduced in 2012 or later • MacBook Air introduced in 2012 later • Mac mini introduced in 2012 or later • iMac introduced in 2012 or later • iMac Pro • Mac Pro introduced in 2013 or later • Mac Studio introduced in 2022 or later https://support.apple.com/en-us/108046 iPhone Cellular Calls iPhone Cellular Calls requires any iPhone using iOS 8.1 or later and an activated carrier plan. You can then relay calls to and from that iPhone from these devices: • Any Mac using OS X Yosemite or later. Mac mini and Mac Pro require an external microphone or headset. • Any iPhone, iPad, or iPod touch using iOS 8 or later.
--	---

	https://support.apple.com/en-us/108046 Make and receive phone calls on Mac or iPad With the iPhone Cellular Calls feature, you can make and receive phone calls from your Mac or iPad when those devices are on the same network as your iPhone. Set up iPhone Cellular Calls Make sure that your Mac, iPhone, and iPad meet the Continuity system requirements. Your devices must also be near each other and set up as follows: • Each device is signed in with the same Apple ID. • Each device is signed in to FaceTime with the same Apple ID. • Each device has Wi-Fi turned on. • Each device is connected to the same network using Wi-Fi or Ethernet. • On your iPhone, go to Settings > Phone > Calls on Other Devices, then turn on Allow Calls on Other Devices. • On your iPad, go to Settings > FaceTime > Calls from iPhone, then turn on Calls from iPhone. • On your Mac, open the FaceTime app, choose FaceTime > Settings (or Preferences), then select Calls From iPhone. If your carrier supports Wi-Fi calling on other devices, you can set up those devices to make and receive calls even when your iPhone isn't turned on or nearby. Learn about Wi-Fi calling. https://support.apple.com/en-us/102405 Route the audio of an existing call through HomePod Do either of the following:
--	--

- On your iOS or iPadOS device, tap Audio in the Phone or FaceTime app, then choose your HomePod.
- Hold your iPhone near the top of HomePod.

To hand off audio, your device must have Bluetooth turned on and be on the same Wi-Fi network as HomePod. You must also turn on Transfer to HomePod in Settings > General > AirPlay & Handoff.



To change who can hand off phone calls to HomePod, see [Allow others to control audio on HomePod](#).

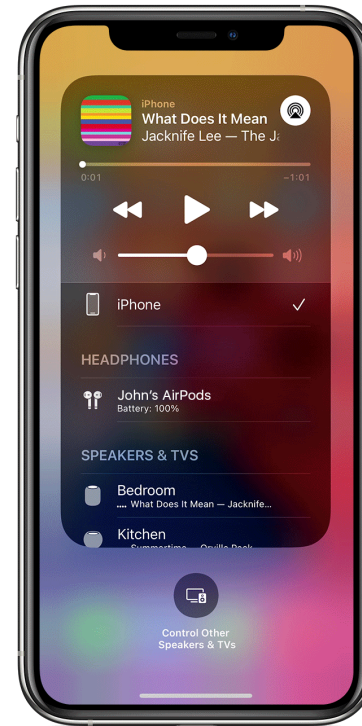
<https://support.apple.com/guide/homepod/use-for-phone-calls-apdeaa15a6c3/homepod>

an announcer device configured to indicate to surrounding media handling devices that said streaming device is available to receive streaming data, thereby to enable receipt of rerouted data from said surrounding media handling devices, and	An Apple mobile apparatus (e.g., an iPhone) comprises an announcer device configured to indicate to surrounding media handling devices that said streaming device is available to receive streaming data, thereby to enable receipt of rerouted data from said surrounding media handling devices. For example, an Apple mobile apparatus (e.g., an iPhone) announces its availability to receive streaming data from surrounding equipment. “...AirPlay and AirPlay 2 will work over any IP network connection, whether wired or wireless (Wi-Fi). The only rule is that all AirPlay devices must be on the same network.” Ref. 3, https://www.digitaltrends.com/home-theater/apple-airplay-2-explained/ Connecting to the Wi-Fi network, the Apple mobile apparatus (e.g. the wi-fi client) announces itself by sending probe request frames in accordance with the wi-fi protocol. “The client sends probe request frames which contain supported data rates and 802.11 capabilities.” Ref. 4, https://netbeez.net/blog/how-wifi-connection-works/ “Internet connectivity occurs through a wireless router. When you access Wi-Fi, you are connecting to a wireless router that allows your Wi-Fi-compatible devices to interface with the Internet.” Ref. 5, https://www.cisco.com/c/en/us/products/wireless/what-is-wifi.html
a scout device configured to scan surroundings of said streaming device to identify surrounding media handling devices as being compatible to handle given media, and determine availability of said identified compatible media handling devices, thereby to reroute streaming data between	An Apple mobile apparatus (e.g., an iPhone) comprises a scout device configured to scan surroundings of said streaming device to identify surrounding media handling devices as being compatible to handle given media, and determine availability of said identified compatible media handling devices, thereby to reroute streaming data between said streaming device and a selected one of said surrounding media handling devices, said scout device further being configured to determine media type requirements of said compatible media handling devices.

said streaming device and a selected one of said surrounding media handling devices, said scout device further being configured to determine media type requirements of said compatible media handling devices,

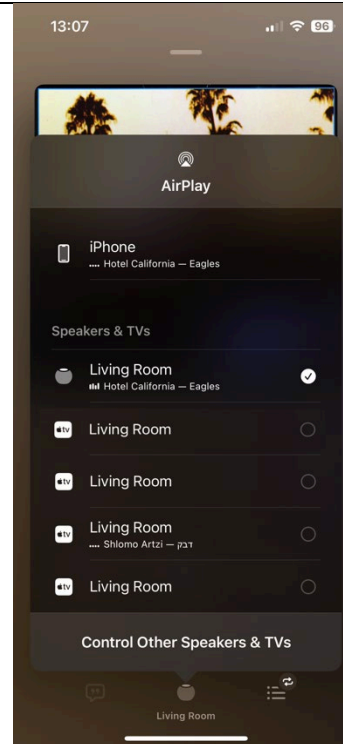
For example, an Apple mobile apparatus (e.g., an iPhone) scans the surroundings to identify compatible Wi-Fi clients (e.g. Apple TV or an Apple HomePod smart speaker) connected to the same network and available to receive data, including for example, music, video, or phone calls.

Once connected to the Wi-Fi network, tapping the AirPlay icon  on your device will list all compatible equipment, connected to the same network, available to receive the routed data (e.g. streamed music).



Ref. 2, <https://support.apple.com/en-us/HT202809>

	The following links provide documentation information on different AirPlay objects providing a user interface for the user to select from available devices: “AVRouteDetector: An object that detects available media playback routes.” Ref. 11, https://developer.apple.com/documentation/avfoundation/streaming_and_airplay/supporting_airplay_in_your_app The Apple mobile apparatus scout device determines AirPlay-compatible media handling devices, allowing streaming media data only to these devices as can be seen in the below iPhone screen capture.
--	---



[Handoff](#) works with these devices and operating systems:

iOS 8 or later

- iPhone 5 or later
- iPad Pro (all models)
- iPad (4th generation) or later

OS X Yosemite or later

- MacBook introduced in 2015 or later

watchOS 1.0 or later

- Apple Watch (all models)

	• iPad Air or later • iPad mini or later • iPod touch (5th generation) or later	• MacBook Pro introduced in 2012 or later • MacBook Air introduced in 2012 later • Mac mini introduced in 2012 or later • iMac introduced in 2012 or later • iMac Pro • Mac Pro introduced in 2013 or later • Mac Studio introduced in 2022 or later
	https://support.apple.com/en-us/108046 iPhone Cellular Calls iPhone Cellular Calls requires any iPhone using iOS 8.1 or later and an activated carrier plan. You can then relay calls to and from that iPhone from these devices: • Any Mac using OS X Yosemite or later. Mac mini and Mac Pro require an external microphone or headset. • Any iPhone, iPad, or iPod touch using iOS 8 or later.	

	https://support.apple.com/en-us/108046 Make and receive phone calls on Mac or iPad With the iPhone Cellular Calls feature, you can make and receive phone calls from your Mac or iPad when those devices are on the same network as your iPhone. Set up iPhone Cellular Calls Make sure that your Mac, iPhone, and iPad meet the Continuity system requirements. Your devices must also be near each other and set up as follows: • Each device is signed in with the same Apple ID. • Each device is signed in to FaceTime with the same Apple ID. • Each device has Wi-Fi turned on. • Each device is connected to the same network using Wi-Fi or Ethernet. • On your iPhone, go to Settings > Phone > Calls on Other Devices, then turn on Allow Calls on Other Devices. • On your iPad, go to Settings > FaceTime > Calls from iPhone, then turn on Calls from iPhone. • On your Mac, open the FaceTime app, choose FaceTime > Settings (or Preferences), then select Calls From iPhone. If your carrier supports Wi-Fi calling on other devices, you can set up those devices to make and receive calls even when your iPhone isn't turned on or nearby. Learn about Wi-Fi calling. https://support.apple.com/en-us/102405 Route the audio of an existing call through HomePod Do either of the following:
--	--

- On your iOS or iPadOS device, tap Audio in the Phone or FaceTime app, then choose your HomePod.
- Hold your iPhone near the top of HomePod.

To hand off audio, your device must have Bluetooth turned on and be on the same Wi-Fi network as HomePod. You must also turn on Transfer to HomePod in Settings > General > AirPlay & Handoff.



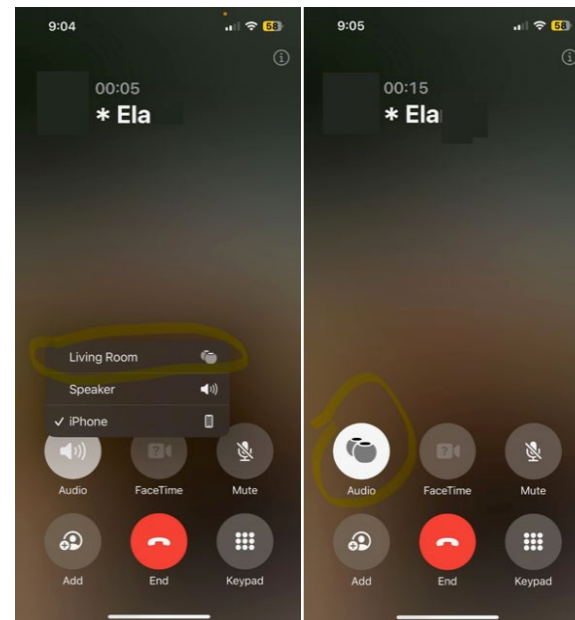
To change who can hand off phone calls to HomePod, see [Allow others to control audio on HomePod](#).

<https://support.apple.com/guide/homepod/use-for-phone-calls-apdeaa15a6c3/homepod>

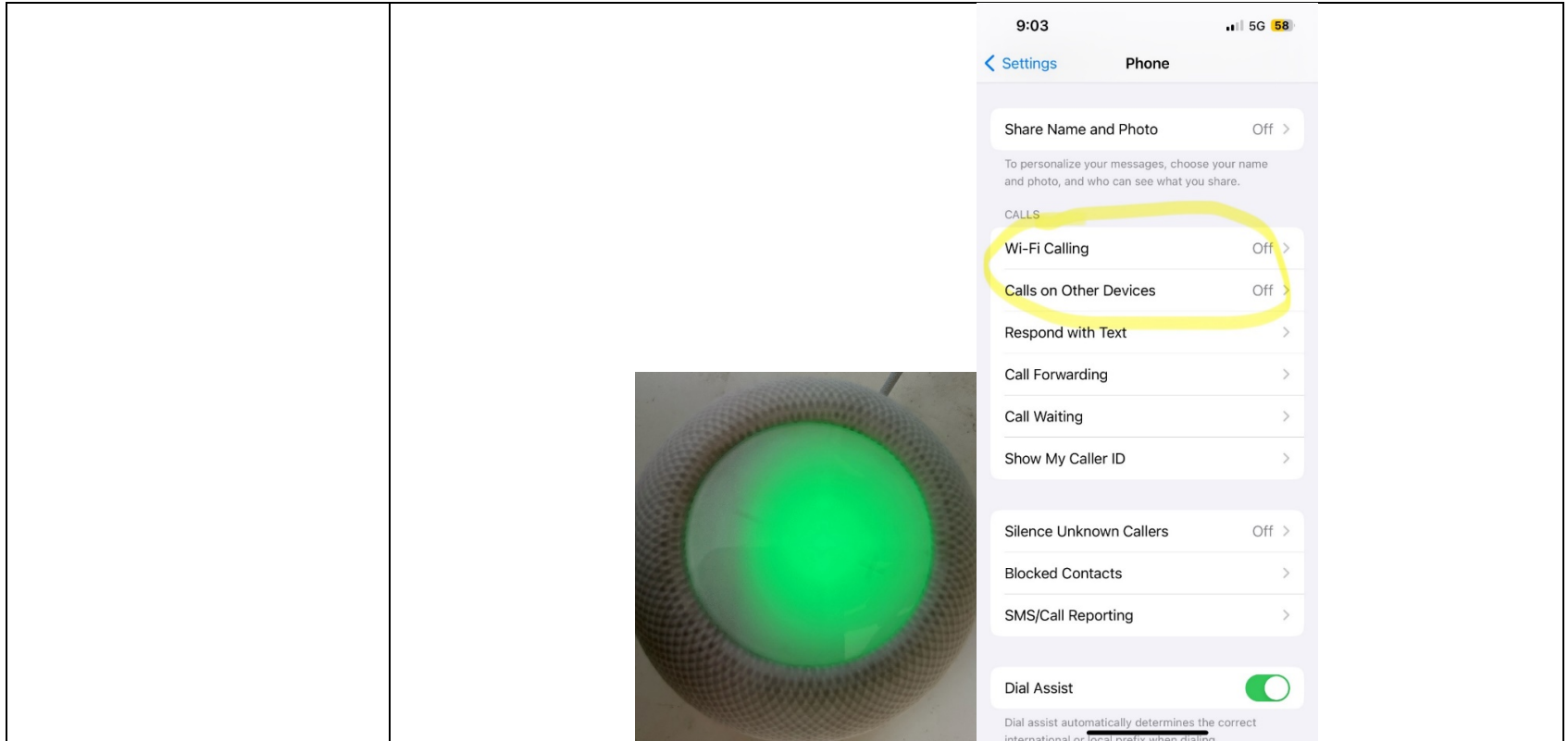
said apparatus configured to set up a bidirectional wireless communication link between said streaming device and a respective one of said media handling devices, said bidirectional link carrying streaming data over either direction as required of said bidirectional link;

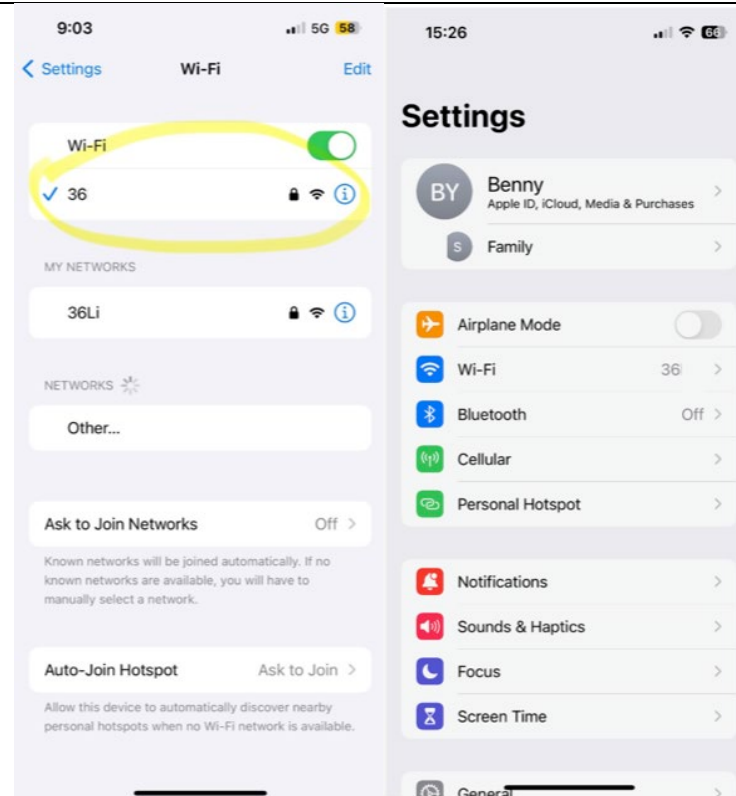
An Apple mobile apparatus (e.g., an iPhone) is configured to set up a bidirectional wireless communication link between said streaming device and a respective one of said media handling devices, said bidirectional link carrying streaming data over either direction as required of said bidirectional link.

The following screenshots depict the use of an iPhone to route a phone call to an Apple HomePod, which on information and belief utilizes a bidirectional link carrying streaming data over either direction of said bidirectional link.¹

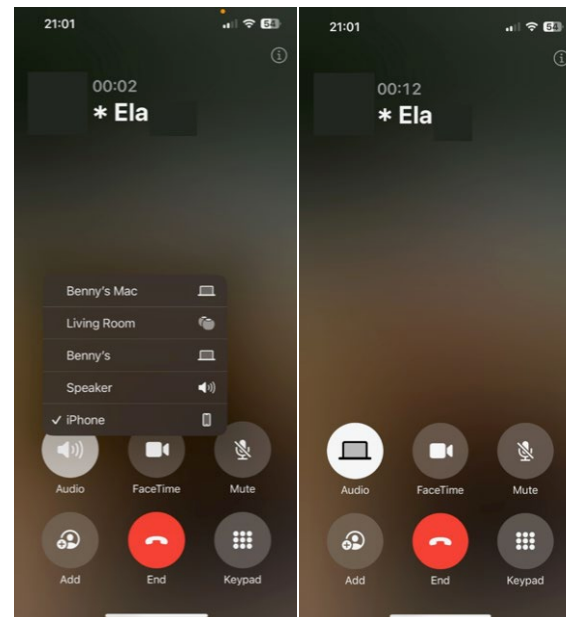
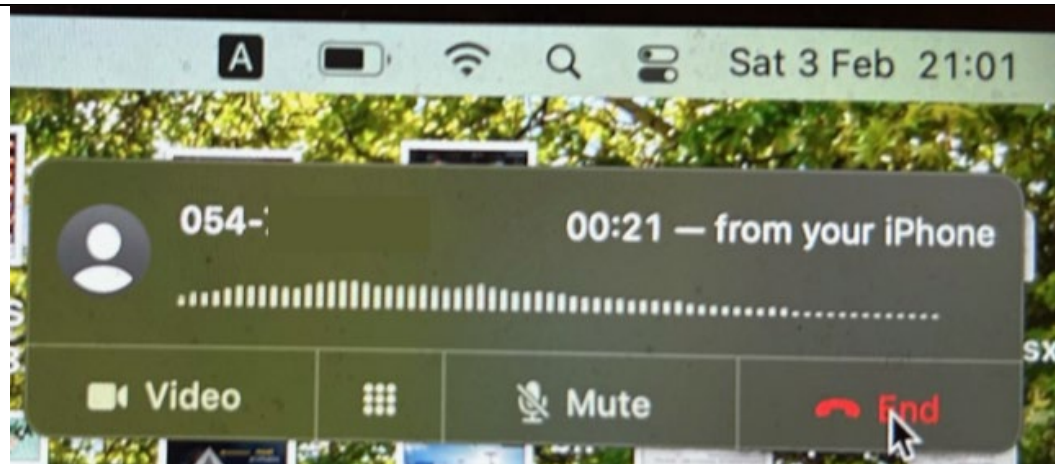


¹ The screenshots included herein have been edited to remove certain identifying information, such as full names and phone numbers, Wi-Fi network names, and user photographs.





The following screenshots depict the use of an iPhone to route a phone call to a Mac, which on information and belief utilizes a bidirectional link carrying streaming data over either direction of said bidirectional link.



	CALLS Wi-Fi Calling Off > Calls on Other Devices When Nearby > Respond with Text > Call Forwarding > Call Waiting > Show My Caller ID > iPhone Cellular Calls iPhone Cellular Calls requires any iPhone using iOS 8.1 or later and an activated carrier plan. You can then relay calls to and from that iPhone from these devices: - Any Mac using OS X Yosemite or later. Mac mini and Mac Pro require an external microphone or headset. - Any iPhone, iPad, or iPod touch using iOS 8 or later. https://support.apple.com/en-us/108046 Make and receive phone calls on Mac or iPad With the iPhone Cellular Calls feature, you can make and receive phone calls from your Mac or iPad when those devices are on the same network as your iPhone.
--	---

<https://support.apple.com/en-us/102405>

Route the audio of an existing call through HomePod

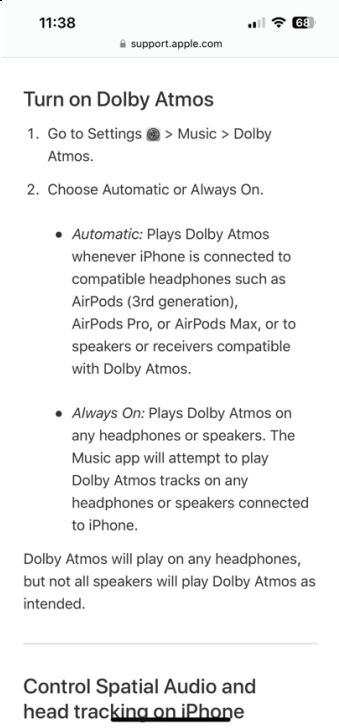
Do either of the following:

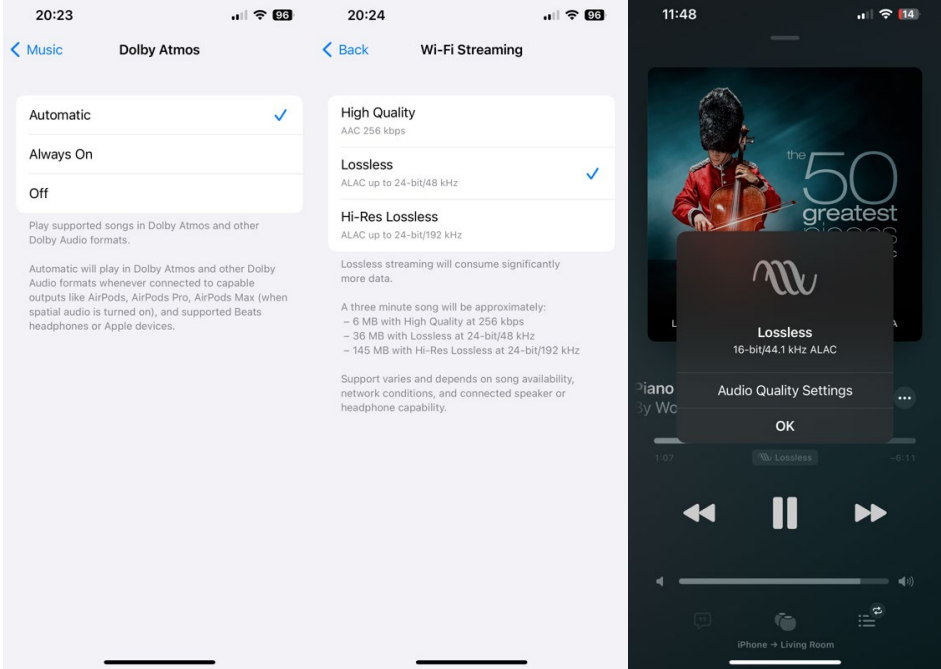
- On your iOS or iPadOS device, tap Audio in the Phone or FaceTime app, then choose your HomePod.
- Hold your iPhone near the top of HomePod.

To hand off audio, your device must have Bluetooth turned on and be on the same Wi-Fi network as HomePod. You must also turn on Transfer to HomePod in Settings > General > AirPlay & Handoff.



	To change who can hand off phone calls to HomePod, see Allow others to control audio on HomePod. https://support.apple.com/guide/homepod/use-for-phone-calls-apdeaa15a6c3/homepod
a media transformer, configured to transform media into forms that accord with respective determined media type requirements, wherein there are a plurality of said types; a user interface for allowing a user to select one of said media type requirements for transforming at said media transformer, and	As described above, the scout device of Apple iPhones identifies and determines availability of compatible equipment in the vicinity. An Apple mobile apparatus (e.g., an iPhone) comprises a media transformer, configured to transform media into forms that accord with respective determined media type requirements, wherein there are a plurality of said types, as well as a user interface for allowing a user to select one of said media type requirements for transforming at said media transformer. For example, as evidenced below, an audio stream routed to compatible devices (e.g., Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) via AirPlay can be transformed to a format compatible with the destination device. “...with regards to using AirPlay 2 to send lossless Apple Music streams. Apple Music’s Lossless streams supposedly convert from ALAC (Apple’s lossless codec) into AAC (Apple’s lossy codec) at a pretty lowly 256kbps when transmitted over AirPlay – and therefore <i>not</i> losslessly.” Ref. 9, https://www.whathifi.com/advice/apple-airplay-2-everything-you-need-to-know When an Apple mobile apparatus (e.g., an iPhone) streams the audio to the compatible devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) via AirPlay it converts the audio format to AAC. As can be seen in the below iPhone screen capture, the iPhone further plays Dolby Atmos format on specific compatible speakers.

	 The following links provide documentation information on different formats supported by AirPlay: https://developer.apple.com/documentation/avfaudio/avaudioformat; https://developer.apple.com/documentation/avfoundation/streaming_and_airplay/supporting_airplay_in_your_app. The following iPhone screen shots show a user interface allowing a user to select media type for transforming the media data.
--	---

	
a media cloner, associated with said media transformer, for making multiple copies of a single incoming data stream, thereby to enable said apparatus to redirect said single incoming data stream to a plurality of locations, at least some of said multiple copies being transformed via said media transformer.	An Apple mobile apparatus (e.g., an iPhone) comprises a media cloner, associated with said media transformer, for making multiple copies of a single incoming data stream, thereby to enable said apparatus to redirect said single incoming data stream to a plurality of locations, at least some of said multiple copies being transformed via said media transformer. For example, an Apple mobile apparatus (e.g., an iPhone) is capable of streaming a single data stream (i.e., an audio stream) via AirPlay to one or more compatible devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) connected to the same network. “Play audio on multiple AirPlay 2-enabled devices: With AirPlay 2 and iPhone, you can play audio on multiple AirPlay 2-enabled devices connected to the same Wi-Fi network. For example, you can play a party playlist on HomePod speakers in the

	living room and kitchen, on an Apple TV in the bedroom, and on an AirPlay 2-enabled smart TV in the den.” Ref. 10, https://support.apple.com/en-il/guide/iphone/iph315e0d58d/ios “As long as all the devices are on the same wi-fi network (remember, AirPlay requires a wi-fi connection to work), you simply have to access the music controls on, say, your iPhone, iPad or Apple TV, and select a connected speaker (or more than one) to send the music to.” Ref. 9, https://www.whathifi.com/advice/apple-airplay-2-everything-you-need-to-know 
23. Apparatus for routing'and rerouting media data, the	An Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay comprises a media data transfer device that can route and reroute media data. On information and

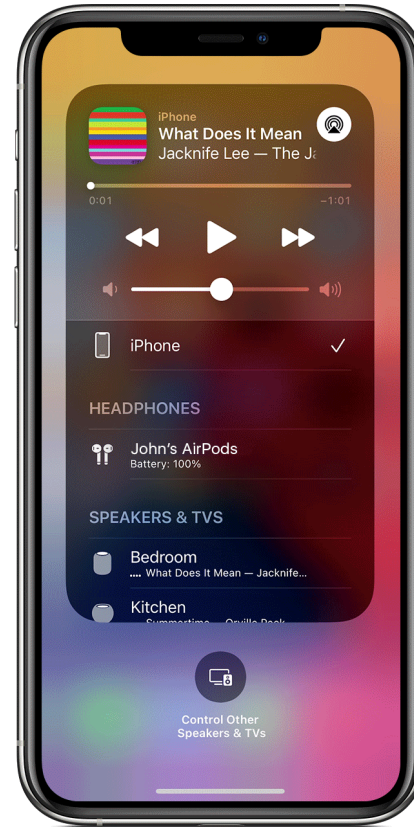
apparatus being mobile and comprising: a media data transfer device comprising:	belief, various apps that come pre-installed (or can be installed later) on many Apple iPhones and tablets (iPads or iPod Touch) are media data streaming enabled, such as the Apple Music, Apple Podcasts, Amazon Music and Spotify. “AirPlay lets you share videos, photos, music, and more from Apple devices to your Apple TV, favorite speakers, and popular smart TVs. And what you share always stays personal and private. So sit back and enjoy everything you love — in more places than ever.” Ref. 1, https://www.apple.com/airplay/ “Stream music, podcasts, and other audio to Apple TV, HomePod, or AirPlay 2-compatible speakers or smart TVs. Play audio across multiple speakers throughout your home in perfect sync. Or play something different in every room — all with AirPlay.” “Play audio on your iPhone or iPad with iOS 11.4 or later, Apple TV, or a Mac with macOS Catalina or later. Then use AirPlay to stream that audio to your AirPlay-compatible speakers or smart TVs.” Ref. 2, https://support.apple.com/en-il/HT202809
an announcer device configured for indicating to surrounding media handling devices that said media data transfer device is available to receive media data, thereby to enable receipt of rerouted data from said surrounding media handling devices, and	An Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay comprises an announcer device configured for indicating to surrounding media handling devices that said media data transfer device is available to receive media data, thereby to enable receipt of rerouted data from said surrounding media handling devices. An Apple mobile apparatus (e.g., a smartphone or tablet) running AirPlay announces its availability to receive media data to surrounding equipment (e.g. APs, routers and other wi-fi clients like Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) as well as its availability to receive rerouted data from said surrounding equipment. “...AirPlay and AirPlay 2 will work over any IP network connection, whether wired or wireless (Wi-Fi). The only rule is that all AirPlay devices must be on the same network.”

	Ref. 3, https://www.digitaltrends.com/home-theater/apple-airplay-2-explained/ Connecting to the Wi-Fi network, the Apple mobile apparatus (e.g. the wi-fi client) announces itself by sending probe request frames in accordance with the wi-fi protocol. “The client sends probe request frames which contain supported data rates and 802.11 capabilities.” Ref. 4, https://netbeez.net/blog/how-wifi-connection-works/ The Apple mobile apparatus can further receive acknowledgments (ACK) data from the surrounding media handling device rerouted via the router or AP devices. “In WiFi networks when a device sends a data packet, the receiving device sends an acknowledgement (ACK) back to the transmitter.” Ref. x, https://blog.apnic.net/2021/01/18/is-wifi-too-polite/#:~:text=In%20WiFi%20networks%20when%20a,ACK)%20back%20to%20the%20transmitter. “Internet connectivity occurs through a wireless router. When you access Wi-Fi, you are connecting to a wireless router that allows your Wi-Fi-compatible devices to interface with the Internet.” Ref. 5, https://www.cisco.com/c/en/us/products/wireless/what-is-wifi.html
a scout device configured for scanning surroundings to identify surrounding media handling devices as being compatible with given media and determine availability of said identified compatible media handling devices,	An Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay comprises a scout device configured for scanning surroundings to identify surrounding media handling devices as being compatible with given media and determine availability of said identified compatible media handling devices, thereby to reroute media data from said media data transfer device to a selected one of said surrounding media handling devices, said scout device further being configured to determine media type requirements of said media handling devices.

thereby to reroute media data from said media data transfer device to a selected one of said surrounding media handling devices, said scout device further being configured to determine media type requirements of said media handling devices;

For example, an Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay scans the surroundings, while connected to a Wi-Fi network, to identify compatible media handling Wi-Fi client devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) connected to the same network and available to receive media data.

Once connected to the Wi-Fi network, tapping the AirPlay icon  on your device will list all compatible media handling devices, connected to the same network, available to receive the rerouted media data (e.g. streamed music).



Ref. 2, <https://support.apple.com/en-us/HT202809>

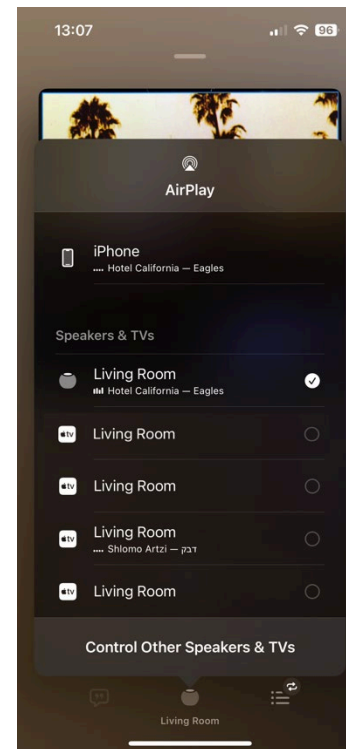
The following links provide documentation information on different AirPlay objects providing user interface for the user to select from available devices:

“AVRouteDetector: An object that detects available media playback routes.”

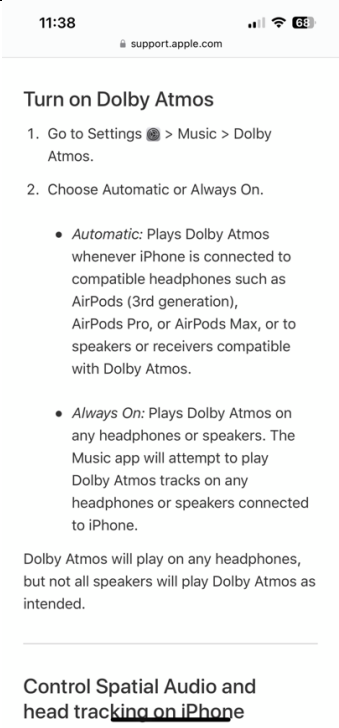
Ref. 11,

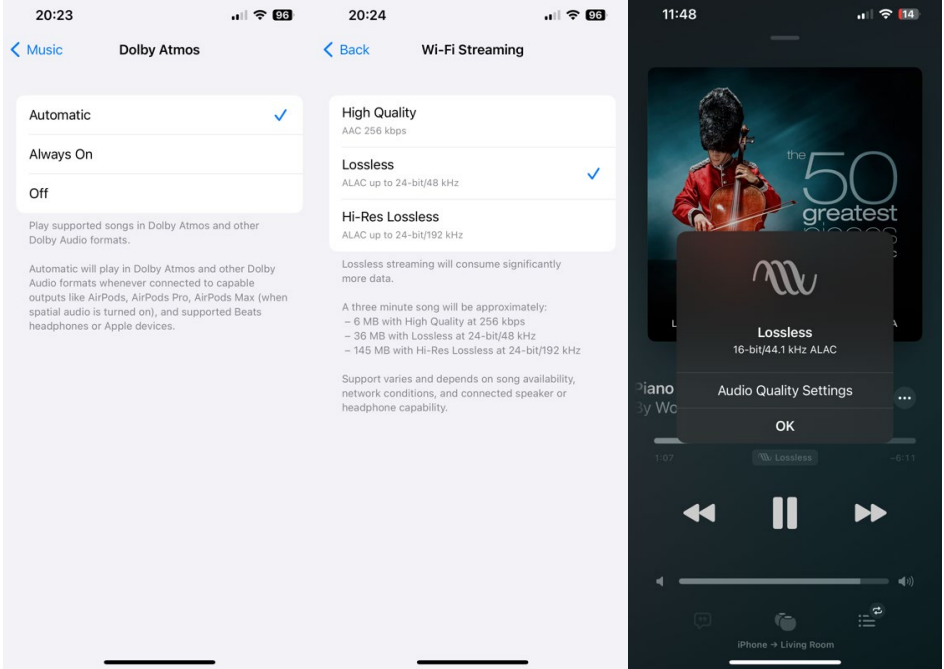
https://developer.apple.com/documentation/avfoundation/streaming_and_airplay/supporting_airplay_in_your_app

The Apple mobile apparatus scout device determine AirPlay compatible media handling devices allowing streaming media data to these devices only as can be seen in the below iPhone screen capture.



a media transformer, configured to transform media into a form that accords with respective determined media type requirements, there being a plurality of said media type requirements; a user interface for allowing a user to select one of said plurality of media type requirements for transforming at said media transformer, and	An Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay comprises a media transformer, configured to transform media into a form that accords with respective determined media type requirements, there being a plurality of said media type requirements; a user interface for allowing a user to select one of said plurality of media type requirements for transforming at said media transformer. For example, an Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay includes a media transformer. The audio stream routed to the compatible devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) is being transformed to a format compatible with the destination device. “...with regards to using AirPlay 2 to send lossless Apple Music streams. Apple Music’s Lossless streams supposedly convert from ALAC (Apple’s lossless codec) into AAC (Apple’s lossy codec) at a pretty lowly 256kbps when transmitted over AirPlay – and therefore <i>not</i> losslessly.” Ref. 9, https://www.whathifi.com/advice/apple-airplay-2-everything-you-need-to-know When an Apple mobile apparatus (iPhone or iPad) running AirPlay streams the audio to the compatible devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) it is converting the audio format to AAC. As can be seen in the below iPhone screen capture, the iPhone further plays Dolby Atmos format on specific compatible speakers.
---	---

	 The following links provide documentation information on different formats supported by AirPlay: https://developer.apple.com/documentation/avfaudio/avaudioformat; https://developer.apple.com/documentation/avfoundation/streaming_and_airplay/supporting_airplay_in_your_app. The following iPhone screen shots show a user interface allowing a user to select media type for transforming the media data.
--	--

	
a media cloner, associated with said media transformer, for making multiple copies of said media data, thereby to enable said apparatus to redirect said media data to a plurality of locations, at least some of said multiple copies being transformed at said media transformer.	An Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay comprises a media cloner, associated with said media transformer, for making multiple copies of said media data, thereby to enable said apparatus to redirect said media data to a plurality of locations, at least some of said multiple copies being transformed at said media transformer. For example, an Apple mobile apparatus (e.g., a smartphone or tablet – iPhone or iPad) running AirPlay is capable of streaming a data stream (i.e. audio stream) to one or more compatible devices (e.g. Apple TV, Apple HomePod smart speaker and other Airplay-compatible speakers) connected to the same network.

“Play audio on multiple AirPlay 2-enabled devices:
With AirPlay 2 and iPhone, you can play audio on multiple AirPlay 2-enabled devices connected to the same Wi-Fi network. For example, you can play a party playlist on HomePod speakers in the living room and kitchen, on an Apple TV in the bedroom, and on an AirPlay 2-enabled smart TV in the den.”

Ref. 10, <https://support.apple.com/en-il/guide/iphone/iph315e0d58d/ios>

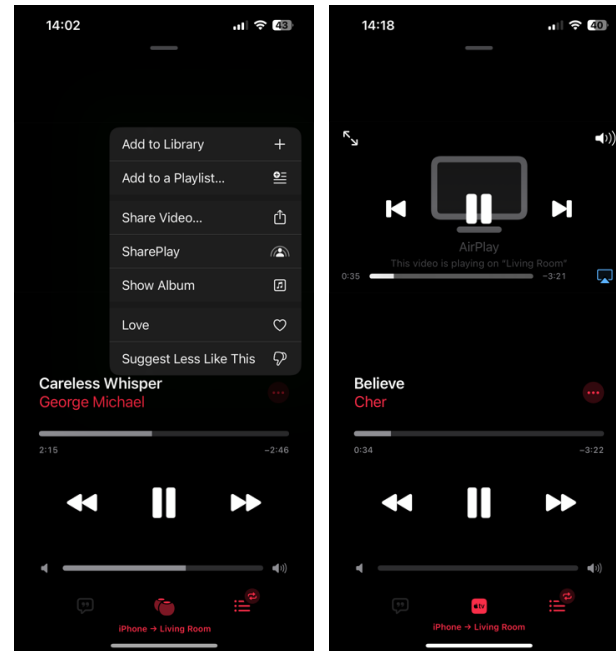
“As long as all the devices are on the same wi-fi network (remember, AirPlay requires a wi-fi connection to work), you simply have to access the music controls on, say, your iPhone, iPad or Apple TV, and select a connected speaker (or more than one) to send the music to.”

Ref. 9, <https://www.whathifi.com/advice/apple-airplay-2-everything-you-need-to-know>

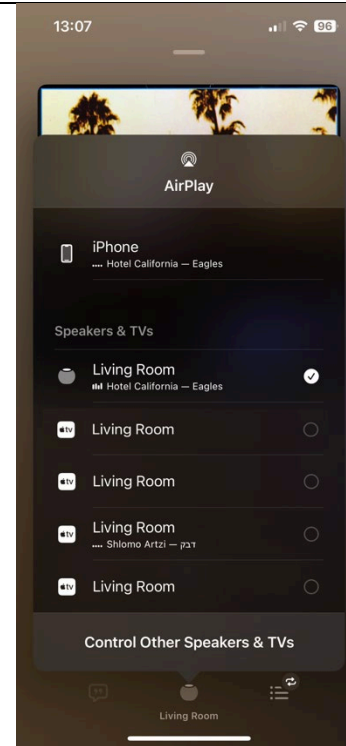


24. The apparatus of claim 23, wherein said media type requirements comprise a screen capability.

The below iPhone screen shots (“Apple Music stream Screens”) demonstrate the actual streaming of an Apple Music audio-video media data to a selected compatible media handling device identified by the Apple mobile apparatus – an Apple TV device and HomePod smart speaker.



The Apple mobile apparatus determines AirPlay-compatible equipment, allowing streaming media data to these devices only as can be seen in the below iPhone screen capture.



In the above “Apple Music stream Screens”, compatible equipment is identified by its screen capabilities.