



AirPort Time Capsule

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The **AirPort Time Capsule** (originally named **Time Capsule**) is a wireless router sold by Apple Inc., featuring network-attached storage (NAS) and a residential gateway router, and is one of Apple's AirPort products. They are, essentially, versions of the AirPort Extreme with an internal hard drive. Apple describes it as a "Backup Appliance", designed to work in tandem with the Time Machine backup software utility introduced in Mac OS X 10.5.^[1]

Introduced on January 15, 2008 and released on February 29, 2008, the device has been upgraded several times, matching upgrades in the Extreme series routers. The earliest versions supported 802.11n wireless and came with a 500 GB hard drive in the base model, while the latest model, introduced in 2013, features 802.11ac and a 3 TB hard drive.^[2] All models include three Gigabit Ethernet ports and a single USB port. The USB port can be used for external peripheral devices to be shared over the network, such as external hard drives or printers. The NAS functionality utilizes a built-in "server grade" hard drive. On April 26, 2018, Bloomberg announced that Apple's entire AirPort line had been discontinued without replacement.^[3]

History

The AirPort Time Capsule was introduced at Macworld Conference & Expo on January 15, 2008 and released on February 29, 2008, with pricing announced at US\$299 (£199) for the 500 GB version and US\$499 (£329) for the 1 TB version. It was the first wireless network-attached storage device combined with a wireless gateway router made by Apple.

The first generation Time Capsule included a full AirPort Extreme Base Station with 802.11n wireless, one Ethernet WAN port, three Ethernet LAN ports, and one USB port. The USB port could be used for an external hard drive or a printer to be shared over the network, or both, by using a third-party USB hub.

In early 2009, Apple released the second generation Time Capsule. It offered simultaneous 802.11n dual-band operation, which allows older devices to use slower wireless speeds, without affecting the overall performance of devices that can use higher 802.11n speeds.^[4] The second generation model also included the addition of

AirPort Time Capsule

Developer	<u>Apple Inc.</u>
Type	Backup drive, AirPort Extreme base station
Release date	February 29, 2008
Discontinued	April 26, 2018
Storage	500 GB to 3 TB Server-grade <u>HDD</u>
Website	<u>https://www.apple.com/timecapsule</u>

Guest Networking, a feature which allows creation of a separate wireless network for guests. The guest network uses different authentication credentials, ensuring the security of the primary network.^[4] The hard disk storage space of each model was doubled: capacities were 1 TB 2 TB, while the prices remained unchanged.^[5]

In October 2009, several news sites reported that many first generation Time Capsules were failing after 18 months,^[6] with some users alleging that this was due to a design failure in the power supplies.^[7] Apple confirmed that certain Time Capsules sold between February 2008 and June 2008 do not power on, or may unexpectedly turn off. Apple offered free repair or replacement to affected units.^[8]

The third generation Time Capsule was released in October 2009. The only change was a reconfiguration of the internal wireless antenna, resulting in an Apple-reported 50% increase in wireless performance and 25% increase in wireless range when compared to previous models.^[9]

The fourth generation Time Capsule, released in June 2011, increased the range of WiFi signals. The internal Wi-Fi card was changed from a Marvell Wi-Fi chip to a better-performing Broadcom BCM4331 chip.^[10] Apple again increased the storage space in each model as the hard drive sizes were increased to 2 and 3 TB. The 2 TB and 3 TB models were kept at the \$299 and \$499 price points.

The fifth generation Time Capsule was released in June 2013 alongside the sixth generation AirPort Extreme. This generation saw the name change to AirPort Time Capsule and to a taller form factor. 802.11ac support was added with this generation. The 2 TB model was kept at \$299, but the 3 TB model dropped to \$399.

Features

The currently available fifth generation Time Capsule includes a fully featured, 802.11ac, Wi-Fi access point^[11] including simultaneous dual-band operation. The Time Capsule supports the Sleep Proxy Service,^[12] a technology that allows clients to partially shut down to conserve energy, yet still be responsive to network traffic.

Hardware interfaces on the Time Capsule include four Gigabit Ethernet ports (3 LAN ports, and 1 WAN port), and a USB interface for external peripheral device sharing. Commonly connected peripherals include printers and external hard drives.^[13] A built-in fileserver that supports both AFP and SMB provides network access to files stored on the built-in hard drive. The 7.6.1 Time Capsule firmware enables remote access of the harddisk with an iCloud account. In the past, users needed a MobileMe account to remotely access data. Fourth generation models are available with 2 TB and 3 TB of built-in storage.

The software is specially built by Apple and is not user modifiable. While the firmware has been decrypted,^[14] a suitable privilege escalation exploit to run custom firmware is not developed for the latest firmware. However, the device runs a POSIX standard platform. The Time Capsule up to the fourth generation runs on the ARM port of operating system NetBSD 4.0, while the fifth generation model runs NetBSD 6.^{[15][16]} It is possible to securely connect to the device via SSH and run statically-linked binaries on it.

One of the key features of Time Capsule is the ability to back up a system and files wirelessly and automatically, eliminating the need to attach an external backup drive. This feature requires OS X 10.5.2 Leopard or greater on the client computers. The backup software is Apple's Time Machine, which, by default, makes hourly images of the files that are being changed, and condenses backup images as they become older, to save space. Even when using an 802.11n wireless or Gigabit Ethernet connection, the initial backup of any Mac to the drive requires

significant time; Apple suggests that the first backup will take "overnight or longer".^[17] Subsequent backups are incremental, thus will typically be quicker, as they only include changed files. Clients using Mac OS X Snow Leopard, can perform the initial backup twice as fast as Leopard clients. The backup disk can also be used by Windows-based computers, and the files on it can be managed by another OS such as Windows.

The hard drive typically found in a Time Capsule is the Hitachi Deskstar, which is sold by Hitachi as a consumer-grade product—the Hitachi Ultrastar is the enterprise version.^[18] Apple labeled the drive as a server-grade drive in promotional material for Time Capsule, and also used this type of drive in its discontinued Xserve servers. Apple states that the Hitachi Deskstar meets or exceeds the 1 million hours mean time between failures (MTBF) recommendation for server-grade hard drives.^[19]

The 500 GB, first generation Time Capsule shipped with a Seagate Barracuda ES-series drive.^[20] More recently, other hard drives such as the Western Digital Caviar Green series,^[21] and the Samsung EcoGreen series have been reported.

The Time Capsules up to the 4th generation measure 7.7 inches (20 cm) square, and 1.4 inches (3.6 cm) high,^[11] slightly larger than the AirPort Extreme Base Station and close to the first generation Apple TV in volume. Its size is partly due to the inclusion of an internal power supply, which eliminates the requirement for a separate external power supply, enabling a direct connection between the household power outlet and the back of the Time Capsule.

The June 2013 release of the 5th generation models features a name change to AirPort Time Capsule, and a redesign with measurements 3.85 inches (9.8 cm) square, and 6.6 inches (17 cm) high. The square dimensions echo the size of both the latest AirPort Express and Apple TVs (2nd generation onwards), just with the height being significantly higher. The 2013 models feature the same I/O ports on the back as previous generations, and come in the same capacities as the 4th generation of 2 TB & 3 TB, but have introduced the newest Wi-Fi standard 802.11ac. The AirPort Extreme released at the same time is exactly the same in dimensions and I/O ports, just without the internal harddrive of the AirPort Time Capsule. 2013 models feature faster download speed, beam-forming improvements and wireless or desktop network control with iCloud integration. Airport is compatible with devices using the 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac specifications. Also improved, Airport Utility has added one click Time Capsule format from the utility's Airport Time Capsule, Edit, Disks menu, allowing easy and rapid Erase Disk and Archive Disk to start over or configure Network. Disk Erase includes up to 35 passes and device includes encrypted storage plus optional WAN sharing, making Airport extremely secure and flexible for home, class and office environments. Airport Utility is a free download.^[22]

Product numbers

Apple Time Capsule product codes are constructed with the 5 first characters identifying the "product version" and the remaining ones indicating the localization, such as country-specific power supply.

As of the fourth generation, all generations have had two models; one with a smaller capacity hard drive, and one with a larger capacity hard drive, with those always being priced at US\$299 and US\$499 respectively.

As of the fifth generation, Apple has maintained the US\$299 price of the smaller 2 TB version while the larger 3 TB version has been lowered to US\$399.

Comparison chart

Model	1st generation (early 2008)		2nd generation, part 1 (early 2009)		2nd generation, part 2 (mid 2009)		3rd gen (late 2009)
Marketing name	Time Capsule						
Release date	February 29, 2008		March 3, 2009		July 30, 2009		October 20, 2009
Marketing model number	MB276LL/A	MB277LL/A	MB764LL/A	MB765LL/A	MB765LL/A (same as early 2009)	MB996LL/A	MC343LL/A
Model number	A1254		A1302				A1355
Hard drive	500 GB	1 TB	500 GB	1 TB	1 TB	2 TB	1 TB
Original price	<u>US\$299</u> (smaller hard drive model) / <u>US\$499</u> (larger hard drive model)						
Guest networking	No		Yes				
802.11a/b/g/n 2.4 GHz / 5 GHz bands	Single-band operation		Dual-band operation				
Internal Wi-Fi	<u>Marvell</u>		<u>Atheros</u> AR9220/AR9223				<u>Marvell</u>
Standards	802.11 <u>DSSS</u> 1 & 2 Mbit/s standard, 802.11a/b/g/n (draft)						802.11 <u>DSSS</u>
Data link protocol	<u>Gigabit Ethernet</u> , <u>IEEE 802.11a/b/g/n</u> (draft)						Gigabit Ethernet
Network / transport protocol	<u>Bonjour</u> , <u>IPsec</u> , <u>L2TP</u> , <u>PPTP</u>		<u>Bonjour</u> , <u>DHCP</u> , <u>DNS</u> , <u>IPsec</u> , <u>L2TP</u> , <u>PPPoE</u> , <u>PPTP</u>				



See also

- [AirPlay](#)



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External links

- [AirPort Time Capsule \(http://www.apple.com/airport-time-capsule\)](http://www.apple.com/airport-time-capsule) – official site
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Retrieved from "https://en.wikipedia.org/w/index.php?title=AirPort_Time_Capsule&oldid=838737267"

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