# **Home consoles**

## **Color TV-Game (1977–1983)**

Color TV-Game is a series of five dedicated home consoles released only in Japan. Each of the consoles contained a small number of games and a built-in controller.

## **Family Computer and Nintendo Entertainment System (1983 and 1985)**

The Nintendo Entertainment System (NES) is an [8-bit](https://en.wikipedia.org/wiki/8-bit) home video game console. It was first released in Japan on July 15, 1983, as the Family Computer (Famicom). It was released in US test markets as the redesigned NES in October 1985 and fully launched in [North America](https://en.wikipedia.org/wiki/North_America) the following year.

The NES was the first console for which the manufacturer openly courted [third-party developers](https://en.wikipedia.org/wiki/Third-party_developer). The console also launched many of Nintendo's most iconic franchises, such as [*The Legend of Zelda*](https://en.wikipedia.org/wiki/The_Legend_of_Zelda) and [*Metroid*](https://en.wikipedia.org/wiki/Metroid_(series)).

Nintendo released a software emulation-based version of the Nintendo Entertainment System on November 10, 2016. Called the [NES Classic Edition](https://en.wikipedia.org/wiki/NES_Classic_Edition), it is a [dedicated console](https://en.wikipedia.org/wiki/Dedicated_console) that comes with a single controller and 30 preloaded games.

|  |  |
| --- | --- |
| CPU | 8-bit, 1.66 Mhz |
| Memory | 2 Kb RAM - Video RAM 2 Kb |
| Display | 256 x 240 pixel maximum resolution, 52 colours, 8 x 16 pixel maximum sprite size, 64 sprites on-screen |
| Size | 255mm x 85mm x 202mm |

## **Super Famicom and Super Nintendo Entertainment System (1990 and 1991)**

The Super Nintendo Entertainment System (SNES), colloquially shortened to Super Nintendo, is a [16-bit](https://en.wikipedia.org/wiki/History_of_video_game_consoles_(fourth_generation)) home console that was released in 1990 in Japan, 1991 in North America, 1992 in Europe and Ocean and 1993 in South America.

The SNES library is known for upgrading some of Nintendo's most famous franchises, and making the games even more critically acclaimed, such as [*Super Metroid*](https://en.wikipedia.org/wiki/Super_Metroid), [*The Legend of Zelda: A Link to the Past*](https://en.wikipedia.org/wiki/The_Legend_of_Zelda:_A_Link_to_the_Past), [*Final Fantasy IV*](https://en.wikipedia.org/wiki/Final_Fantasy_IV) and [*VI*](https://en.wikipedia.org/wiki/Final_Fantasy_VI), [*Donkey Kong Country*](https://en.wikipedia.org/wiki/Donkey_Kong_Country), and [*Super Mario World*](https://en.wikipedia.org/wiki/Super_Mario_World), as well starting some popular franchises such as [*Star Fox*](https://en.wikipedia.org/wiki/Star_Fox) and [*Mega Man X*](https://en.wikipedia.org/wiki/Mega_Man_X).

Similarly to the NES Classic Edition released prior, Nintendo released a software-emulation-based version of the Super Nintendo Entertainment System on September 29, 2017. Called the [*Super NES Classic Edition*](https://en.wikipedia.org/wiki/Super_NES_Classic_Edition), it, like its predecessor, is a [dedicated console](https://en.wikipedia.org/wiki/Dedicated_console) that comes with two controllers and 21 preloaded games, one of which, [*Star Fox 2*](https://en.wikipedia.org/wiki/Star_Fox_2), is a title originally developed for the system that went unreleased.

|  |  |
| --- | --- |
| CPU | 16-bit 65816 processor, 2.68 Mhz |
| Graphics Processor | 16-bit |
| Memory | RAM: 1 Mbit, Video RAM: 0.5 Mbit, Cart size: 2 Mbit - 48 Mbit |
| Display | 512 x 448 pixel maximum resolution, 32,768 colours, 256 colours on-screen, 64 x 64 pixel maximum sprite size, 128 sprites on-screen |
| Size | 200mm x 72mm x 242mm |
| Video Output | RF, RGB, S-Video |
| Sound Chip | 8-bit Sony SPC700, 8 sound channels |
| Other Features | Mode 7, Two controller ports |

## **Nintendo 64 (1996 and 1997)**

The Nintendo 64 (N64), is a [64-bit](https://en.wikipedia.org/wiki/Fifth_generation_of_video_game_consoles) home console released in 1996 (Japan, North America), and 1997 (Europe, Australia). The Nintendo 64 was Nintendo's third home [video game console](https://en.wikipedia.org/wiki/Video_game_console) for the international market.

|  |  |
| --- | --- |
| CPU | MIPS 64-bit RISC CPU (customized R4000 series), Clock Speed: 93.75 MHz |
| Co-processor | RCP: SP (sound and graphics processor) and DP (pixel drawing processor) incorporated, Clock Speed: 62.5MHz |
| Graphic Processing | Z buffer, Anti-aliasing, Realistic texture mapping: Tri-linear filtered MIP-map interpolation, Perspective correction, Environment mapping |
| Memory | RAMBUS D-RAM 36M bit, Transfer Speed: 4,500M bit/sec maximum. |
| Display | 256 x 224 ~ 640 x 480 dots, Flicker-free interlace mode support |
| Size | Width 260mm, Depth 190mm, Height 73mm |
| Weight | 1.1kg (2.42 lb.) |
| Colour/Output | Colour frame buffer support, 21-bit colour video output |

## **GameCube (2001)**

The GameCube was released in 2001. It was Nintendo's [sixth generation home console](https://en.wikipedia.org/wiki/Sixth_generation_of_video_game_consoles), the same generation as [Sega](https://en.wikipedia.org/wiki/Sega)'s [Dreamcast](https://en.wikipedia.org/wiki/Dreamcast), [Sony](https://en.wikipedia.org/wiki/Sony)'s [PlayStation 2](https://en.wikipedia.org/wiki/PlayStation_2), and [Microsoft](https://en.wikipedia.org/wiki/Microsoft)'s [Xbox](https://en.wikipedia.org/wiki/Xbox_(console)). The GameCube is the most compact sixth generation console. The GameCube is Nintendo's first game console to use [optical discs](https://en.wikipedia.org/wiki/Optical_disc) rather than [game cartridges](https://en.wikipedia.org/wiki/Game_cartridge). An agreement with the optical drive manufacturer [Matsushita](https://en.wikipedia.org/wiki/Panasonic_Corporation) led to a DVD-playing GameCube system named the [Panasonic Q](https://en.wikipedia.org/wiki/Panasonic_Q), which was only released in Japan. Much of Nintendo's core line-up centered on sequels to their established hit franchises such as [*Super Mario Sunshine*](https://en.wikipedia.org/wiki/Super_Mario_Sunshine), [*Super Smash Bros. Melee*](https://en.wikipedia.org/wiki/Super_Smash_Bros._Melee), [*The Legend of Zelda: Wind Waker*](https://en.wikipedia.org/wiki/The_Legend_of_Zelda:_Wind_Waker), [*Metroid Prime*](https://en.wikipedia.org/wiki/Metroid_Prime), [*Pokémon Colosseum*](https://en.wikipedia.org/wiki/Pok%C3%A9mon_Colosseum), and [*Star Fox Adventures*](https://en.wikipedia.org/wiki/Star_Fox_Adventures), while new franchises like [*Animal Crossing*](https://en.wikipedia.org/wiki/Animal_Crossing) and [*Pikmin*](https://en.wikipedia.org/wiki/Pikmin) were born, although the former franchise had seen a Japan-exclusive release on the N64.

|  |  |
| --- | --- |
| MPU ("Microprocessor Unit") | Custom IBM Power PC "Gekko" |
| Manufacturing Process | 0.18 micron IBM Copper Wire Technology |
| Clock Frequency | 485 MHz |
| CPU Capacity | 1125 Dmips (Dhrystone 2.1) |
| Internal Data Precision | 32-bit Integer & 64-bit Floating-point |
| External Bus | 1.3GB/second peak bandwidth (32-bit address space, 64-bit data bus 162 MHz clock) |
| Internal Cache | L1: Instruction 32KB, Data 32KB (8 way}, L2: 256KB (2 way) |
| System LSI | Custom ATI/Nintendo "Flipper" |
| Manufacturing Process | 0.18 micron NEC Embedded DRAM Process |
| Clock Frequency | 162 MHz |
| Embedded Frame Buffer | Approx. 2MB, Sustainable Latency : 6.2ns (1T-SRAM) |
| Embedded Texture Cache | Approx. 1MB, Sustainable Latency : 6.2ns (1T-SRAM) |
| Texture Read Bandwidth | 10.4GB/second (Peak) |
| Main Memory Bandwidth | 2.6GB/second (Peak) |
| Pixel Depth | 24-bit Colour, 24-bit Z Buffer |
| Image Processing Functions | Fog, Subpixel Anti-aliasing, 8 Hardware Lights, Alpha Blending, Virtual Texture Design, Multi-texturing, Bump Mapping, Environment Mapping, MIP Mapping, Bilinear Filtering, Trilinear Filtering, Anisotropic Filtering, Real-time Hardware Texture Decompression (S3TC), Real-time Decompression of Display List, HW 3-line Deflickering filter |
| System Floating-point Arithmetic Capability | 10.5 GFLOPS (Peak) (MPU, Geometry Engine, HW Lighting Total) |
| Real-world polygon | 6 million to 12 million polygons/second (Peak) (Assuming actual game conditions with complex models, fully textured, fully lit, etc.) |
| System Memory | 40MB |
| Main Memory | 24 MB MoSys 1T-SRAM, Approx 10ns Sustainable Latency |
| A-Memory | 16MB (81MHz DRAM) |
| Disc Drive | CAV (Constant Angular Velocity) System |
| Average Access Time | 128ms |
| Data Transfer Speed | 16Mbps to 25Mbps |
| Media | 3 inch Nintendo GameCube Disc based on Matsushita's Optical Disc Technology, approx 1.5GB Capacity |
| Input/Output | Controller Port x4, Memory Card Slot x2, Analogue AV Output x1, Digital AV Output x1, High-Speed Serial Port x2, High-speed Parallel Port x1 |
| Power Supply | AC Adapter DC12V x 3.25A |
| Main Unit Dimensions | 11.4cm (Height) x 15cm (Width) x 16cm (Depth) |

The following sound-related functions are all incorporated into the System LSI

|  |
| --- |
| Sound Processor | Custom Macronix 16-bit DSP |
| Instruction Memory | 8KB RAM + 8KB ROM |
| Data Memory | 8KB RAM + 4KB ROM |
| Clock Frequency | 81 MHz |
| Performance | 64 simultaneous channels, ADPCM encoding |
| Sampling Frequency | 48KHz |

## **Wii (2006)**

Nintendo released the Wii in 2006, as their [seventh generation home console](https://en.wikipedia.org/wiki/Seventh_generation_of_video_game_consoles). Nintendo designed the console to appeal towards a wider audience than those of its main competitors, the [PlayStation 3](https://en.wikipedia.org/wiki/PlayStation_3) and [Xbox 360](https://en.wikipedia.org/wiki/Xbox_360), including ["casual"](https://en.wikipedia.org/wiki/Casual_game) players and audiences that were new to video games.

These aims were emphasized by the console's distinguishing feature, the [Wii Remote](https://en.wikipedia.org/wiki/Wii_Remote)—a handheld [motion controller](https://en.wikipedia.org/wiki/Motion_controller) that can [detect motion and rotation](https://en.wikipedia.org/wiki/Motion_detection) in [three dimensions](https://en.wikipedia.org/wiki/Three-dimensional_space), using a mixture of internal sensors and infrared positioning. The controller includes an expansion port that can be used to connect other accessories, such as the Nunchuk—an attachment with an [analog stick](https://en.wikipedia.org/wiki/Analog_stick) and additional buttons, a "[Classic Controller](https://en.wikipedia.org/wiki/Classic_Controller)" [gamepad](https://en.wikipedia.org/wiki/Gamepad) providing a traditional control scheme, and [Wii MotionPlus](https://en.wikipedia.org/wiki/Wii_MotionPlus)—an accessory designed to enhance the motion detection capabilities of the original Wii Remote models.

The Wii's internal hardware is an updated derivative of that of the GameCube; in comparison to its seventh-generation competitors, the Wii had lower overall graphics capabilities, and does not output in [high-definition](https://en.wikipedia.org/wiki/High-definition_television). The Wii also featured [internet](https://en.wikipedia.org/wiki/Online_game)-enabled features; the [Nintendo Wi-Fi Connection](https://en.wikipedia.org/wiki/Nintendo_Wi-Fi_Connection) service allowed supported games to offer online multiplayer and other features, while the [WiiConnect24](https://en.wikipedia.org/wiki/WiiConnect24) feature allowed messages and updates to be downloaded while the console was in standby. Through [Wii Shop Channel](https://en.wikipedia.org/wiki/Wii_Shop_Channel), additional [games](https://en.wikipedia.org/wiki/WiiWare) and apps can be downloaded or purchased for the console, including [Virtual Console](https://en.wikipedia.org/wiki/Virtual_Console)—a selection of classic video games [emulated](https://en.wikipedia.org/wiki/Video_game_emulation) from older consoles. That service was discontinued as of January 30, 2019. Early models of the Wii also had backwards compatibility with GameCube games and controllers, but this was dropped from later hardware revisions, namely the [Wii Family Edition](https://en.wikipedia.org/wiki/Wii#Redesigned_model) and the [Wii Mini](https://en.wikipedia.org/wiki/Wii#Wii_Mini).

Introducing a new generation in gaming, Wii moves you with unprecedented gameplay experiences that take fun to a whole new level.

**Wii Remote Plus**

The Wii Remote Plus is the Wii console's revolutionary controller. It contains a built-in motion sensor and communicates wirelessly with the Sensor Bar for unprecedented precision and ease of use. It also has a rumble feature and a built-in speaker to immerse you even more in your favourite games.

One Wii Remote Plus comes with every Wii console. You can buy additional Wii Remote Plus controllers separately (or in a bundle, for example with Wii Sports Resortor FlingSmash). It's available in black, white, blue and pink.

The Wii Remote Plus is powered by two AA batteries (included). Use only high quality alkaline batteries for the best gameplay experience and longevity of battery life.

*\*Wii Remote Plus replaces the original Wii Remote and Wii MotionPlus accessory. The Wii Remote Plus controller combines the advanced motion-sensing features of Wii MotionPlus with the Wii Remote.*

**Classic Controller**

Enjoy Virtual Console games the way they were meant to be played. The Classic Controller blends design elements from Nintendo's classic video game controllers, such as the NES, Super Nintendo and Nintendo 64, into one comfortable control pad.

The Classic Controller is connected to the Wii Remote by a short cable. The Wii Remote provides the Controller with a wireless connection to the Wii console.

The Classic Controller is primarily used for playing Virtual Console games available for download from the Wii Shop Channel. Some Wii Disc games also use the Classic Controller. Look on the back of Wii game packaging to see which games are compatible.

**Wii Balance Board**

The active-play phenomenon started by Wii Sports now spreads to your whole body thanks to the pressure-sensitive Wii Balance Board, which comes packed with Wii Fit Plus. The board is used for an extensive array of fun and dynamic activities, including aerobics, yoga, muscle stretches and games.

**Wii Component Cable**

The Wii Component Cable links your Wii console to your TV, allowing you to view and enjoy your games with the best possible image display.

Component video splits the signal into three separate channels of video information for the ultimate connection quality.

The cable includes five connectors - three for video, and two for left and right stereo audio. Cable length is approximately 2.5 metres.

Before using the Wii Component Cable, make sure your TV can accept component video connections - they are usually marked Y, PB, PR and are coloured green, blue and red.

*Cannot be used with Wii mini.*

**Nunchuk**

The Nunchuk is a Wii Remote accessory that gives you an additional means of control in Nunchuk-compatible games. By connecting the Nunchuk to the Wii Remote via a short cable you can benefit from its extra buttons, analogue joystick and additional motion-sensing controls.

With a Wii Remote in one hand and Nunchuk in the other, you have a new level of control. For instance in The Legend of Zelda: Twilight Princess, the Wii Remote is your sword while the Nunchuk is your shield.

One Nunchuk comes with every Wii console. Additional white Nunchuk controllers can be purchased at retailers.

**Wii Wheel**

Mario Kart Wii comes with the Wii Wheel, a steering wheel housing for the Wii Remote that brings new controls and challenges for veteran gamers, while making getting into a race easy and intuitive for newcomers.

## **Wii U (2012)**

The Wii U was released in 2012 as a direct successor to the Wii, and the first entry in the [eighth generation](https://en.wikipedia.org/wiki/History_of_video_game_consoles_(eighth_generation)) of home consoles. The Wii U's distinguishing hardware feature is the [GamePad](https://en.wikipedia.org/wiki/Wii_U_GamePad), a [tablet](https://en.wikipedia.org/wiki/Tablet_computer)-like controller which contains a [touchscreen](https://en.wikipedia.org/wiki/Touchscreen) that wirelessly streams a video output from the console. The GamePad's display can be used to provide alternative or complementary perspectives within a game, or as the main display instead of a television. In particular, Nintendo promoted the concept of "[asymmetric](https://en.wikipedia.org/wiki/Asymmetry)" multiplayer, where a player with the GamePad would have a different objective and perspective than that of other players. Alongside the GamePad, the Wii U supports Wii controllers and games. A conventional gamepad known as the [Wii U Pro Controller](https://en.wikipedia.org/wiki/Wii_U_Pro_Controller) was also released.

The Wii U features more-extensive online functionality than the Wii, using the [Nintendo Network](https://en.wikipedia.org/wiki/Nintendo_Network) platform; as with the Wii, it supports online multiplayer and [downloading and purchasing new games and apps](https://en.wikipedia.org/wiki/Nintendo_eShop), but also allows video chat. It previously featured an internal social network known as [Miiverse](https://en.wikipedia.org/wiki/Miiverse), which allowed users to write and draw posts in game-specific communities, the service was discontinued on November 8, 2017. Nintendo also attempted to provide [second screen](https://en.wikipedia.org/wiki/Second_screen) experiences for television programming for the Wii U through a feature known as [Nintendo TVii](https://en.wikipedia.org/wiki/Nintendo_TVii), but it was discontinued outside of Japan in August 2015. Unlike the Wii, the Wii U's hardware is capable of high-definition graphics.

The Wii U was met with low adoption, attributed by Nintendo executives to a lack of third-party support; poor marketing of the system, which led to a lack of clarity of the Wii U game pad from being a tablet device; and the subsequent release of the [PlayStation 4](https://en.wikipedia.org/wiki/PlayStation_4) and [Xbox One](https://en.wikipedia.org/wiki/Xbox_One) the following year. However, some critics argued that the Wii U still had advantages over PS4 and Xbox One, including its lower cost and notable early exclusives such as [*Super Mario 3D World*](https://en.wikipedia.org/wiki/Super_Mario_3D_World). Sales steadily increased following the release of several notable first-party exclusives, including new entries in the [*Mario Kart*](https://en.wikipedia.org/wiki/Mario_Kart_8) and [*Super Smash Bros.*](https://en.wikipedia.org/wiki/Super_Smash_Bros._for_Wii_U) franchises, and the new franchise [*Splatoon*](https://en.wikipedia.org/wiki/Splatoon).

Wii U is a brand new home videogame console from Nintendo that fundamentally changes the relationship between you and your TV and how you, your friends and family all connect. It's a powerful, high definition system with an extraordinary new controller that redefines the dynamic of playing games together: the Wii U GamePad.

**I can see things that I couldn't see before**

The Wii U GamePad is your second window into the game world, opening up all-new perspectives for solo and multiplayer gaming. Access rich information without breaking from the action, or enjoy fresh takes on multiplayer by seeing what other players can't.

**I can do things that I couldn't do before**

Together, the Wii U console and Wii U GamePad create totally new ways to play. Experience unique gameplay opportunities only made possible by the GamePad's integrated second screen.

**Everyone can play**

Everyone in the family can have their own user and Mii character, making it even easier to enjoy games together, while system updates keep Wii U evolving.

**Explore Miiverse**

Miiverse is a brand new network communication system that lets gamers from around the world share experiences, discuss games and discover new content.

**Control the TV**

Use the GamePad to turn on your TV, select a channel and start watching – even when the Wii U console is turned off.

# **Handheld consoles**

## **Game & Watch (1980–1991)**

The Game & Watch series of [handheld electronic games](https://en.wikipedia.org/wiki/Handheld_electronic_game) made by Nintendo and created by its game designer Gunpei Yokoi from 1980 to 1991. Each featured a single game that could be played on a [segmented LCD](https://en.wikipedia.org/wiki/Segmented_LCD) screen, in addition to a clock and an alarm. Most titles had a "GAME A" (easy mode) and a "GAME B" (hard mode) button. Game B is usually a faster, more difficult version of Game A. Different models were manufactured, with some consoles having two screens (the Multiscreen Series) and a clam-shell design. The Nintendo DS later reused this design. The Game & Watch made handhelds vastly popular. Many toy companies followed in the footsteps of Game & Watch, such as Tiger Electronics and their Star Wars themed games. Nintendo's Game & Watch units were eventually superseded by the original Game Boy. Each Game & Watch was only able to play one game, due to the use of a segmented LCD display pre-printed with an overlay. The speed and responsiveness of the games was also limited by the time it took the LCD to change state.

## **Game Boy (1989)**

The Game Boy is an [8-bit](https://en.wikipedia.org/wiki/Fourth_generation_of_video_game_consoles) handheld game console, the first such device developed by Nintendo, featuring interchangeable [ROM cartridges](https://en.wikipedia.org/wiki/ROM_cartridge), allowing it to act more like a portable version of a home console. It launched in Japan on April 21, 1989, followed by North America later that year and other territories from 1990 onwards. The device features a [dot-matrix display](https://en.wikipedia.org/wiki/Dot-matrix_display), a [directional pad](https://en.wikipedia.org/wiki/Directional_pad), four game buttons, a single speaker, and uses [Game Pak](https://en.wikipedia.org/wiki/Game_Boy_Game_Pak) cartridges. Despite mixed reviews criticizing its monochrome graphics compared to competitors, the Game Boy's affordability, battery life, and extensive game library propelled it to market dominance. The Game Boy received several redesigns during its lifespan, including the smaller [Game Boy Pocket](https://en.wikipedia.org/wiki/Game_Boy_Pocket) (1996) and the [Game Boy Light](https://en.wikipedia.org/wiki/Game_Boy_Light) (1998).

The Game Boy Color (GBC or CGB) was transitional upgrade of the original [Game Boy](https://en.wikipedia.org/wiki/Game_Boy), part of the [fifth generation of handheld consoles](https://en.wikipedia.org/wiki/Fifth_generation_of_video_game_consoles), made to better compete with the [WonderSwan](https://en.wikipedia.org/wiki/WonderSwan) and [Neo Geo Pocket](https://en.wikipedia.org/wiki/Neo_Geo_Pocket). Compared to the original [Game Boy](https://en.wikipedia.org/wiki/Game_Boy), the Game Boy Color features a color [TFT screen](https://en.wikipedia.org/wiki/TFT_screen) rather than [monochrome](https://en.wikipedia.org/wiki/Monochrome_monitor), a processor that can operate twice as fast, and four times as much memory. It retains [backward compatibility](https://en.wikipedia.org/wiki/Backward_compatibility) with games initially developed for its predecessor. While the handheld was slightly thicker, taller and had a smaller screen than its immediate predecessor, the Game Boy Pocket, the Color was significantly smaller than the original Game Boy.

|  |
| --- |
| CPU | Custom 8-Bit CMOS, 2.2Mhz clock speed |
| Memory | 64-Kbit static RAM |
| Screen | STN type dot matrix LCD, 160 x 144 pixels, 4 shades of grey |
| Size | 90mm x 148mm x 32mm (Game Boy) |
| Weight | Approx. 300g with batteries (Game Boy) |
| Power | 4 x AA batteries (Game Boy), 2 x AAA batteries (Game Boy Pocket) |
| Battery Life | Approx. 15 hours (Game Boy), approx 10 hours (Game Boy Pocket) |
| Sound | 4-channel FM stereo, Output: Speaker (10mW), Headphones (2mW) |

GameBoy Color

|  |  |
| --- | --- |
| CPU | 8-bit Z80 |
| Memory | 32 Kbyte + 96 Kbyte VRAM (in CPU), 256 Kbyte WRAM (external of CPU) |
| Screen | Sharp colour LCD screen, 44 x 39mm size, 160x140 resolution, 32,768 possible colours, 56 simultaneous colours |
| Size | Width 75mm, Depth 27mm, Height 133mm |
| Weight | 138g |
| Power | 2 AA batteries |
| Battery Life | 10 hours |

## **Game Boy Advance (2001)**

The Game Boy Advance (GBA) is a [32-bit](https://en.wikipedia.org/wiki/Sixth_generation_of_video_game_consoles) handheld game console which was released in Japan on March 21, 2001, and to international markets that June. It was later released in mainland China in 2004, under the name iQue Game Boy Advance*.* Compared to the [Game Boy Color](https://en.wikipedia.org/wiki/Game_Boy_Color) it succeeded, the console offered a significantly more powerful [ARM7](https://en.wikipedia.org/wiki/ARM7) processor and improved graphics, while retaining backward compatibility with games initially developed for its predecessor. The original model was followed in 2003 by the [Game Boy Advance SP](https://en.wikipedia.org/wiki/Game_Boy_Advance_SP), a redesigned model with a [frontlit](https://en.wikipedia.org/wiki/Frontlight) screen and [clamshell](https://en.wikipedia.org/wiki/Clamshell_design) form factor. [A newer revision](https://en.wikipedia.org/wiki/Game_Boy_Advance_SP#Backlit_model_(AGS-101)) of the SP with a [backlit](https://en.wikipedia.org/wiki/Backlight) screen was released in 2005. A miniaturized redesign, the [Game Boy Micro](https://en.wikipedia.org/wiki/Game_Boy_Micro), was released in September 2005.

|  |  |
| --- | --- |
| CPU | 32-Bit ARM with embedded memory |
| Memory | 32 Kbyte + 96 Kbyte VRAM (in CPU), 256 Kbyte WRAM (external of CPU) |
| Screen | 2.9" TFT reflective screen, 240x160 resolution, 40.8mm x 61.2mm screen size, 32,768 possible colours, 511 simultaneous colours in character mode, 32,768 simultaneous colours in bitmap mode |
| Size | Width 144.5mm / Depth 24.5mm / Height 82mm |
| Weight | 140g |
| Power | 2 AA batteries |
| Battery Life | 15 hour |

## **Pokémon Mini (2001)**

[A handheld game console with buttons

AI-generated content may be incorrect.](https://en.wikipedia.org/wiki/File:Pok%C3%A9mon_mini_system.jpg)

Pokémon Mini

The Pokémon Mini (stylized as Pokémon mini) is an 8-bit handheld game console designed and manufactured by Nintendo in conjunction with [The Pokémon Company](https://en.wikipedia.org/wiki/The_Pok%C3%A9mon_Company) and themed around the [*Pokémon*](https://en.wikipedia.org/wiki/Pok%C3%A9mon) [media franchise](https://en.wikipedia.org/wiki/Media_franchise). It is the smallest game system with interchangeable [cartridges](https://en.wikipedia.org/wiki/ROM_cartridge) ever produced by Nintendo, weighing just under two and a half ounces (71 grams). It was also Nintendo's cheapest console ever produced at US$45 (equivalent to $80 in 2024) and came bundled with the game *Pokémon Party mini*. It was first released in North America on November 16, 2001, and was only available for purchase at the [Pokémon Center](https://en.wikipedia.org/wiki/Nintendo_New_York) and via its website. This was followed by releases in Japan on December 14, 2001, and in Europe on March 15, 2002. Features of the Pokémon mini include an internal [real-time clock](https://en.wikipedia.org/wiki/Real-time_clock), an [infrared](https://en.wikipedia.org/wiki/Infrared) port used to facilitate [multiplayer gaming](https://en.wikipedia.org/wiki/Multiplayer), a [reed switch](https://en.wikipedia.org/wiki/Reed_switch) for detecting shakes, and a [motor](https://en.wikipedia.org/wiki/Electric_motor) used to implement force feedback.

|  |  |
| --- | --- |
| Size | 74mm x 58mm x 23mm |
| Weight | 70g (with battery and game) |
| Power | 1 x AAA battery |
| Battery Life | approx. 60 hours |

## **Nintendo DS (2004)**

The Nintendo DS (iQue DS in [China](https://en.wikipedia.org/wiki/China)) is a [handheld game console](https://en.wikipedia.org/wiki/Handheld_game_console) developed and manufactured by Nintendo, released on November 21, 2004, as the first system in the Nintendo DS family. It is visibly distinguishable by its horizontal [clamshell](https://en.wikipedia.org/wiki/Flip_(form)) design, and the presence of two displays, the lower of which acts as a [touchscreen](https://en.wikipedia.org/wiki/Touchscreen). The system also has a built-in [microphone](https://en.wikipedia.org/wiki/Microphone) and supports wireless [IEEE 802.11](https://en.wikipedia.org/wiki/IEEE_802.11) ([Wi-Fi](https://en.wikipedia.org/wiki/Wi-Fi)) standards, allowing players to interact with each other within short range (10–30 meters, depending on conditions) or over the [Nintendo Wi-Fi Connection](https://en.wikipedia.org/wiki/Nintendo_Wi-Fi_Connection) service via a standard Wi-Fi access point. According to Nintendo, the letters "DS" in the name stand for "Developers' System" and "Double Screen", the former of which refers to the features of the handheld designed to encourage innovative gameplay ideas among developers. The system was known as "Project Nitro" during development.

On March 2, 2006, Nintendo released the [Nintendo DS Lite](https://en.wikipedia.org/wiki/Nintendo_DS_Lite), a redesigned model of the Nintendo DS, in Japan. It was later released in [North America](https://en.wikipedia.org/wiki/North_America), [Australia](https://en.wikipedia.org/wiki/Australia), and [Europe](https://en.wikipedia.org/wiki/Europe). A second redesign of the Nintendo DS, the [Nintendo DSi](https://en.wikipedia.org/wiki/Nintendo_DSi), was released on November 1, 2008, in Japan, on April 2, 2009, in Australia, April 3, 2009, in Europe, and April 5, 2009, in North America. It contains two cameras and downloadable software capabilities, plus a built-in flash memory and web browser. An SD card slot replaces the [Game Boy Advance](https://en.wikipedia.org/wiki/Game_Boy_Advance) cartridge slot. A similar model, known as the [Nintendo DSi XL](https://en.wikipedia.org/wiki/Nintendo_DSi#Larger_model), was released in 2009 in Japan and 2010 worldwide. It features the same configurations as its predecessor, but is slightly larger and features a large stylus designed for home use.

**Dual Screens**

Two super-sharp, backlit LCD screens offer a new approach to gaming. The possibilities are limitless - one screen can be used to show the main action, while another might be used as a map, inventory, or secondary viewpoint - or both screens can be used simultaneously to depict huge boss characters!

**Touch Screen Technology**

The lower screen utilises Touch Screen technology for a true hands-on experience. Draw pictures and send them to your friends with PictoChat, control the on-screen action with extra finesse, or navigate menus instantly at the touch of a fingertip.

**Backwards Compatibility**

The system features two separate ports, one for DS Game Cards and one for Game Boy Advance Game Paks. The system is compatible with the GBA's entire back catalogue of games (playable in single player mode only).

**Microphone**

All systems feature a microphone port, allowing you to communicate with your friends in selected games, as well as interact with the game environment in brand-new ways!

## **Nintendo 3DS (2011)**

Although the name and look of the device are similar to that of the DS series, the Nintendo 3DS is the successor to the DS and is a brand new console. The Nintendo 3DS was released on February 26, 2011. It contains three cameras, two on the outside (for 3D photographs) and one internal one above the top screen. The bottom screen is a touch screen comparable to the DS bottom screens, and the top screen is Wide Screen and an autostereoscopic 3D LCD. [*Autostereoscopy*](https://en.wikipedia.org/wiki/Autostereoscopy) is a process that sends different images to the left and right eyes to enable the viewer to view the screen in 3D "without the need for special glasses". The 3DS is said to enhance Nintendo's online experience. In July 2012, the [3DS XL](https://en.wikipedia.org/wiki/Nintendo_3DS#Larger_model) was released, similar to the change between the DSi and DSi XL. It has 90% larger screens and design changes such as a matte finish and the stylus in a more accessible area. The [Nintendo 2DS](https://en.wikipedia.org/wiki/Nintendo_2DS) was released on October 12, 2013. It is a variant designed to be affordable without the clamshell design or 3D capabilities of the 3DS. Another redesign, the [New Nintendo 3DS](https://en.wikipedia.org/wiki/New_Nintendo_3DS) and New 3DS XL, was released in Japan in October 2014, Australia for November 2014, and everywhere else in February 2015. It includes a C-Stick, ZR and ZL shoulder buttons, and a faster CPU, allowing for more software specifically for the New Nintendo 3DS (such as [*Xenoblade Chronicles 3D*](https://en.wikipedia.org/wiki/Xenoblade_Chronicles_3D)). Like the original 3DS, the New Nintendo 3DS also has an XL form.

Introducing glasses-free 3D gaming on the go, Nintendo 3DS offers new surprises every day via StreetPass and SpotPass if you carry it with you wherever you go!

3D gaming without the need for special glasses can be experienced anytime, anywhere. The level of 3D is entirely up to you and you always have the option to play in pure 2D by adjusting the 3D depth slider if you prefer.

**Capture special moments**

Having your system on hand means you can capture those unique moments in your life in seconds. The three cameras allow you to take both 3D photos and 3D videos, making your captured memories even more life-like!

**Unique games**

Dive straight into the Nintendo franchises you don’t find anywhere else and experience Zelda, Mario, Animal Crossing, Kirby and more in glorious 3D. With an amazing catalogue of games that is growing every month, there’s something for everyone to enjoy on Nintendo 3DS.

**Enjoy Nintendo DS games**

Nintendo 3DS is backwards compatible, so you have the entire library of Nintendo DS games to replay or discover!

**Nintendo 3DS connects you**

Swap game data with other gamers as you pass them by with StreetPass, receive new game content and news automatically with SpotPass and play online with others anytime.

Find out more about [StreetPass](https://www.nintendo.com/en-gb/Hardware/Nintendo-3DS-Family/Nintendo-3DS/StreetPass/StreetPass-827713.html)

**Unique ways to play**

Complementing the classic Touch Screen controls and 3D upper screen graphics come gyro sensors and motion sensors to throw you right into the action. Add Augmented Reality capabilities and suddenly your gaming looks a whole lot different!

See more on [Unique Controls](https://www.nintendo.com/en-gb/Hardware/Nintendo-3DS-Family/Nintendo-3DS/Unique-Controls/Unique-Controls-115025.html) and [Augmented Reality](https://www.nintendo.com/en-gb/Hardware/Nintendo-3DS-Family/Instant-Software/AR-Games-Augmented-Reality/AR-Games-Augmented-Reality-115169.html)

# **Hybrid consoles**

## **Virtual Boy (1995)**

The Virtual Boy was the first portable game console capable of displaying [true 3D](https://en.wikipedia.org/wiki/True_3D) graphics. Most video games are forced to use [monocular cues](https://en.wikipedia.org/wiki/Depth_perception) to achieve the illusion of three dimensions on a two-dimensional screen, but the Virtual Boy was able to create a more accurate illusion of depth through an effect known as parallax. The Nintendo 3DS also uses this technology. In a manner similar to using a [head-mounted display](https://en.wikipedia.org/wiki/Head-mounted_display), the user looks into an eyepiece made of neoprene on the front of the machine, and then an eyeglass-style projector allows viewing of the monochromatic (in this case, red) image. It was released on July 21, 1995, in Japan and August 14, 1995, in North America and at a price of around US$180. It was never released in Europe, although a release schedule was initially planned. The system met with a lukewarm reception that was unaffected by continued price drops. Exactly 14 titles were released for *Virtual Boy* in North America, but only a few were met with positive reception. Nintendo discontinued the Virtual Boy within a few months of release.

## **Nintendo Switch (2017)**

The Nintendo Switch was released on March 3, 2017, and is Nintendo's second entry in the [eighth generation](https://en.wikipedia.org/wiki/History_of_video_game_consoles_(eighth_generation)) of video game consoles. The system was code-named "NX" prior to its official announcement. It is a hybrid device that can be used as a home console inserted to the Nintendo Switch Dock attached to a television, stood up on a table with the kickstand, or as a tablet-like portable console. It features two detachable wireless controllers called Joy-Con, that can be used individually or attached to a grip to provide a more traditional gamepad form. Both Joy-Con are built with motion sensors and HD Rumble, Nintendo's haptic vibration feedback system for improved gameplay experiences. However, only the right Joy-Con has an NFC reader on its analog joystick for [Amiibo](https://en.wikipedia.org/wiki/Amiibo) and an IR sensor on the back. The Nintendo Switch Pro Controller is a traditional style controller much like that of the [GameCube](https://en.wikipedia.org/wiki/GameCube).

The Nintendo Switch Lite is a more affordable version of the Nintendo Switch released by Nintendo on September 20, 2019. The Switch Lite console is similar to a regular Nintendo Switch and can play almost all standard Switch games, but is a handheld portable-only version and is also slightly smaller. It comes in five color variations: grey, turquoise, coral, yellow, and blue, as well as some special editions. Its Joy-Con controllers cannot be detached like in the original Nintendo Switch model.

A second variation, the Nintendo Switch – OLED Model, was released in 2021, which makes several adjustments and improvements over the original, including an improved kickstand, a larger OLED screen, and more storage (64 GB instead of the regular 32 GB present in the original Nintendo Switch and Switch Lite).

## **Nintendo Switch 2 (2025)**

On January 16, 2025, Nintendo announced its successor to the Nintendo Switch after 8 years, the Nintendo Switch 2. The Switch 2 is backwards compatible with most physical and digital Switch games. The console was released on June 5, 2025. Like the original [Switch](https://en.wikipedia.org/wiki/Nintendo_Switch), it can be used as a portable [handheld](https://en.wikipedia.org/wiki/Handheld_game_console), as a [tablet](https://en.wikipedia.org/wiki/Tablet_computer), or connected via the dock to an external display. The [Joy-Con 2](https://en.wikipedia.org/wiki/Joy-Con_2) controllers can be used while attached to or detached from the device. It has a larger [liquid-crystal display](https://en.wikipedia.org/wiki/Liquid-crystal_display) and more internal storage than the original Switch. It has updated graphics, controllers, and social features. It supports [1080p](https://en.wikipedia.org/wiki/1080p) resolution and a 120Hz [refresh rate](https://en.wikipedia.org/wiki/Refresh_rate) in handheld or tabletop mode, and [4K resolution](https://en.wikipedia.org/wiki/4K_resolution) with a 60Hz refresh rate when docked.