PlayStation 4

The PlayStation 4 (abbreviated as PS4) is a home video game console developed by Sony Interactive Entertainment , formerly Sony Computer Entertainment . Announced as the successor to the PlayStation 3 during a press conference on February 20 , 2013 , it was launched on November 15 , 2013 in North America , and November 29 , 2013 in Europe , South America and Australia , and February 22 , 2014 in Japan . It competes with Nintendo 's Wii U and Microsoft 's Xbox One , as part of the eighth generation of video game consoles .

Moving away from the more complex Cell microarchitecture of its predecessor , the console features an AMD Accelerated Processing Unit (APU) built upon the x86 @-@ 64 architecture , which has a theoretical peak performance of 1 @.@ 84 teraflops ; AMD stated that it was the " most powerful " APU they had developed to date . The PlayStation 4 places an increased emphasis on social interaction and integration with other devices and services , including the ability to play games off @-@ console on PlayStation Vita and supported Sony Xperia mobile devices (" Remote Play ") , the ability to stream gameplay online , or to friends with them controlling gameplay remotely (" Share Play ") . The console 's controller was also redesigned and improved over the PlayStation 3 , with improved buttons and analog sticks , and an integrated touchpad among other changes .

Reception to the PlayStation 4 prior to its launch was positive , with critics praising Sony for acknowledging its consumers ' needs , embrace of independent game development , and for not imposing the same digital rights management schemes that Microsoft had previously announced for Xbox One prior to its release . Critics and third @-@ party studios also praised the capabilities of the PlayStation 4 in comparison to its competitors ; developers described the performance difference between the console and Xbox One as being " significant " and " obvious " . Heightened demand for the PS4 helped Sony top global console sales . As of May 22 , 2016 , more than 40 million consoles have been sold worldwide .

History

According to lead architect Mark Cerny , development of Sony 's fourth video game console began as early as 2008 . Less than two years earlier , the PlayStation 3 had launched after months of delays due to issues with production . The delay placed Sony almost a year behind Microsoft 's Xbox 360 , which was already approaching unit sales of 10 million by the time the PS3 launched . PlayStation Europe CEO Jim Ryan said Sony wanted to avoid repeating the same mistake with PS3 's successor .

In designing the system , Sony worked with software developer Bungie , who offered their input on the controller and how to make it better for shooting games . In 2012 , Sony began shipping development kits to game developers , consisting of a modified PC running the AMD Accelerated Processing Unit chipset . These development kits were known as " Orbis " .

In early 2013 , Sony announced that an event known as PlayStation Meeting 2013 would be held in New York City , U.S. , on February 20 , 2013 , to cover the " future of PlayStation " . Sony officially announced the PlayStation 4 at the event . They revealed details about the console 's hardware and discussed some of the new features it will introduce . Sony also showed off real @-@ time footage of games in development , as well as some technical demonstrations . The design of the console was unveiled in June 2013 at the Electronic Entertainment Expo , and the initial recommended retail prices of $ 399 (NA) , ? 399 (Europe) , and £ 349 (UK) given .

The company revealed release dates for North America , Central America , South America , Europe and Australia , as well as final pieces of information , at a Gamescom press event in Cologne , Germany , on August 20 , 2013 . The console was released on November 15 , 2013 in the United States and Canada , followed by further releases on November 29 , 2013 . By the end of 2013 , the PS4 was launched in more European , Asian and South American countries The PS4 released in Japan at ¥ 39 @,@ 980 on February 22 , 2014 .

Sony finalized a deal with the Chinese government in May 2014 to sell its products in mainland China , and the PS4 will be the first product to be released . Kazuo Hirai , chief executive officer of

Sony , said in May : " The Chinese market , just given the size of it , is obviously potentially a very large market for video game products ... I think that we will be able to replicate the kind of success we have had with PS4 in other parts of the world in China . "

In September 2015 , Sony reduced the price of the PS4 in Japan to ¥ 34 @,@ 980 , with similar price drops in other Southeast Asian markets . The first official sub £ 300 PS4 bundle was the £ 299 @.@ 99 ' Uncharted Nathan Drake Collection 500GB ' , released in the UK on October 9 , 2015 ; a 1TB £ 329 @.@ 99 version was offered at the same time . On October 9 , 2015 , the first official price cut of the PS4 in North America was announced : a reduction of $ 50 to $ 349 @.@ 99 (US) and by $ 20 to $ 429 @.@ 99 (Canada) . An official price cut in Europe followed in late October 2015 , reduced to ? 349 @.@ 99 / £ 299 @.@ 99 .

On June 10 , 2016 , Sony confirmed that a hardware revision of PlayStation 4 , rumored to be codenamed " Neo " , was under development . The new revision is a higher @-@ end model that is meant to support gameplay in 4K . The new model will be sold alongside the existing model , and all existing software will be compatible between the two models . Layden stated that they have no plans to " bifurcate the market " , only that gamers playing on the Neo will " have the same experience , but one will be delivered at a higher resolution , with an enhanced graphical experience , but everything else is going to be exactly as you ? d expect " .

= = Hardware = =

The technology in the PlayStation 4 is similar to the hardware found in modern personal computers . This familiarity is designed to make it easier and less expensive for game studios to develop games for the PS4 .

= = = Technical specifications = = =

The PlayStation 4 uses an Accelerated Processing Unit (APU) developed by AMD in cooperation with Sony . It combines a central processing unit (CPU) and graphics processing unit (GPU) , as well as other components such as a memory controller and video decoder . The CPU consists of two quad @-@ core Jaguar modules totaling 8 x86 @-@ 64 cores . The GPU consists of 18 compute units to produce a theoretical peak performance of 1 @.@ 84 TFLOPS . The system 's GDDR5 memory is capable of running at a maximum clock frequency of 2 @.@ 75 GHz (5500 MT / s) and has a maximum memory bandwidth of 176 GB / s . The console contains 8 GB of GDDR5 memory , 16 times the amount of RAM found in the PS3 and is expected to give the console considerable longevity . It also includes secondary custom chips that handle tasks associated with downloading , uploading , and social gameplay . These tasks can be handled seamlessly in the background during gameplay or while the system is in sleep mode . The console also contains an audio module , which can support in @-@ game chat as well as " a very large number " of audio streams for use in @-@ game .

Its read @-@ only optical drive is capable of reading Blu @-@ ray Discs at speeds of up to three times that of its predecessor . The console features a hardware on @-@ the @-@ fly decompression module boosting optical disc reading speed and buffer unread data when a game is not actively accessing the optical drive . Although the console supports photos and videos at 4K resolution , the system is not expected to render games at 4K . The console includes a 500 gigabyte hard drive for additional storage , which can be upgraded by the user .

The PlayStation 4 features Wi @-@ Fi and Ethernet connectivity , Bluetooth , and two USB 3 @.@ 0 ports . An auxiliary port is also included for connection to the PlayStation Camera , a motion detection digital camera device first introduced on the PS3 . A mono headset , which can be plugged into the DualShock 4 , is bundled with the system . Audio / video output options include HDMI TV and optical S / PDIF audio . The console does not have an analog audio / video output .

The PS4 features a " Rest mode " feature . This places the console in a low @-@ power state , while allowing users to immediately resume their game or app once the console is awoken . The console also is able to download content such as game and OS updates while it is in this state .

= = = Controllers = = =

The DualShock 4 is the PlayStation 4 's primary controller . Similar to the DualShock 3 , it connects to the console via Bluetooth , but the DualShock 3 , however , is not compatible with the PS4 . The DualShock 4 is equipped with several new features , including a touchpad on the front . The controller supports motion detection via a gyroscope and an accelerometer , plus improved vibration , as well as being the first PlayStation DualShock controller to feature official support for the Windows operating system . It is powered by a non @-@ removable rechargeable battery .

The controller features several output connectors . A stereo headphone jack supports the connection of regular earphones or a headset to allow a user to speak and hear audio simultaneously . A micro @-@ USB and extension port , as well as a mono speaker are also included . The controller can be charged three ways : via micro @-@ USB , a dedicated charging station , or the console , even while powered off .

DualShock 4 features the following buttons : PS button , SHARE button , OPTIONS button , directional buttons , action buttons (triangle , circle , cross , square) , shoulder buttons (R1 / L1) , triggers (R2 / L2) , analog stick click buttons (L3 / R3) and a touchpad click button . These mark several changes from the DualShock 3 and other previous PlayStation controllers . The START and SELECT buttons were merged into the OPTIONS button . The SHARE button allows players to upload videos from their gameplay experiences , as well as stream to streaming services . The joysticks and triggers have been redesigned based on developer input , as they feature a concave surface and an etched backing to enhance grip .

The DualShock 4 is the first to feature a unique " light bar " that can display variant colors , based on the existing technology used in PlayStation Move . The colors help identify players and alert them with critical messages such as low health in @-@ game , while also interacting with the PlayStation Camera to perceived movement and depth by using the controller 's light bar as a positional LED .

Existing PlayStation Move controllers are supported on the PS4 .

= = = Camera = = =

The PlayStation Camera is an optional motion sensing accessory for the PlayStation 4 , similar to Kinect on Xbox . It includes two 1280 × 800 pixel lenses operating with an aperture of f / 2 @.@ 0 , with 30 cm focusing distance , and an 85 ° field of view . The dual camera setup allows for different modes of operation , depending on the initiated and running application . The two cameras can be used together for depth @-@ sensing of its surrounding objects in its field of vision . Alternatively , one of the cameras can be used for generating the video image , with the other used for motion tracking .

PlayStation Camera also features a four @-@ channel microphone array , which helps reduce unwanted background noise and can be used for voice commands . With the PlayStation Camera connected , different users can automatically log @-@ on to the system via face detection .

= = = PlayStation VR = = =

In March 2014 , Sony unveiled " Playstation VR " , a virtual reality device for the PlayStation 4 featuring a head @-@ mounted OLED display with 1080p resolution and a 100 @-@ degree field of view . The device is scheduled to be released on October 13 , 2016 with a retail price of $ 399 @.@ 99 for the headset , or $ 549 @.@ 99 for the headset , camera , two move controllers and free game . The headset is tracked with 9 positional LEDs on its surface , guided by the PlayStation Camera primarily . A variety of games are soon to be set for the PlayStation VR exclusively . PSVR is one of the major virtual reality headsets to target consumers , as well as the Oculus Rift and HTC Vive , as well as the cheapest alternative .

= = Software and services = =

= = = PlayStation 4 system software = = =

The PlayStation 4 's operating system is called " Orbis OS " , based upon a customized FreeBSD 9 @.@ 0 .

The console does not require an Internet connection to function , although more functionality is available when connected to the internet . The PS4 is the first to include a WebKit @-@ based web browser , which is a departure from its predecessor , which uses the NetFront browser ; it is based on the same modern WebKit core as Google Chrome and Apple Safari , giving it a high compatibility in HTML5 compliance testing and helps it stand out from all the consoles .

The PlayStation 4 introduces a new customizable menu interface titled the " PlayStation Dynamic Menu " , featuring a variety of color schemes . The interface displays the player 's identity , recent activity , notifications , and other details in addition to unlocked trophies . It allows multiple user accounts , all with their own passcodes . Each player account has the option to share their real name with friends , or use a nickname in other situations when anonymity is important . Facebook profiles can be connected to PlayStation Network accounts , making it easier to recognize friends . The default home screen features real time content from friends . The " What 's New " activity feed includes shared media , recently played games , and other notifications . Services from third @-@ party vendors , such as Netflix and Amazon Video , can be accessible within the interface . Multitasking is an option during gameplay , such as opening a web browser or managing party chat and switching rapidly between applications , by double @-@ tapping the " PS " button .

The PlayStation camera or a microphone enables the users to control the system through voice input . The PS4 comes with a microphone which plugs into the controller . Players can command the interface to start a game , take screenshots , and save videos . Saying " PlayStation " initiates voice control , and " All Commands " displays a list of possible commands .

= = = Multimedia features = = =

The PlayStation 4 system software supports Blu @-@ ray disc playback , including 3D functionality , and DVD playback . Playing a CD is now no longer supported , but music and video files can be streamed from DLNA media servers and USB drives using the Media Player app .

= = = PlayStation Network = = =

The PlayStation 4 allows users to access a variety of free and premium PlayStation Network (PSN) services , including the PlayStation Store , PlayStation Plus subscription service , PlayStation Music powered by Spotify , and the PlayStation Video subscription service , which allows owners to rent or buy TV shows and films à la carte . A United States @-@ only cloud @-@ based television programming service known as PlayStation Vue began beta testing in late November 2014 . Sony intends to expand and evolve the services it offers over the console 's lifespan . Unlike PS3 , a PlayStation Plus membership is required to access multiplayer in most games ; this requirement does not apply to free @-@ to @-@ play or subscription @-@ based titles .

= = = Second screen and remote play = = =

Smartphones and tablets can interact with the PlayStation 4 as second screen devices , and can also wake the console from sleep mode . A Sony Xperia smartphone , tablet or the PlayStation Vita can be used for streaming gameplay from the console to handheld , allowing supported games to be played remotely from around a household or away from home . Sony has ambitions to make all PS4 games playable on PlayStation Vita . Developers can add Vita @-@ specific controls for use via Remote Play .

This feature was later expanded to enable PS4 Remote Play functionality on Microsoft Windows PCs and on Apple OS X Macs . The update , scheduled for April 6 , will allow Remote Play functionality on computers running Windows 8 @.@ 1 , Windows 10 , OS X Yosemite , and OS X El Capitan . Remote Play will support resolution options of 360p , 540p , and 720p , frame rate options of 30 FPS and 60 FPS , and that one DualShock 4 controller can be connected via the computer 's USB port .

The PlayStation App allows iOS and Android mobile devices to interact with the PlayStation 4 from their device . The user can use this application to purchase PS4 titles from the console and have them remotely downloaded , watch live streams of other gamers , and / or view in @-@ game maps while playing games .

= = Social features = =

Sony is focused on " social " aspects as a major feature of the console . Although the PS4 has improved social functionality , the features are optional and can be disabled .

= = = Community creation = = =

Users have the option to create or join community groups based upon personal interest . Communities include a discussion board , accomplishments and game clips shared by other members , plus the ability to join group chat and launch cooperative games . Sony stated that " communities are a good way to socialize with like @-@ minded players " , particularly when " you want to tackle a big multiplayer raid , but don 't have enough friends available " .

= = = Media sharing = = =

The DualShock 4 controller includes a " SHARE " button , allowing the player to cycle through the last 15 minutes of gameplay to select a screenshot or video clip appropriate for sharing . Media is uploaded seamlessly from the console to other PSN users or social networking sites such as Dailymotion , Facebook , Twitter and YouTube , or else users can copy media to a USB flash drive and upload to a social network or website of their preference .

= = = Live broadcasting = = =

Gamers can either watch live game @-@ play footage of titles which their friends are playing through the PS4 interface with cross @-@ game camera and microphone input , spectate silently , or broadcast live video of their own game @-@ play via public services Twitch , Ustream , Niconico , or YouTube Gaming , allowing for friends and members of the public to view and comment upon them from other web browsers and devices . If a user is not broadcasting footage of their play session , a friend can send them a " Request to Watch " notification .

= = = Share Play = = =

The Share Play feature allows for users to invite an online friend to join their play session via streaming , even if they do not own a copy of the game . Users can pass control of the game entirely to the remote user , or partake in cooperative multiplayer as if they were physically present . Mark Cerny says that remote assistance is particularly useful when confronted by a potentially game defeating obstacle . " You can even see that your friend is in trouble and reach out through the network to take over the controller and assist them through some difficult portion of the game " , he said . Share Play requires a PlayStation Plus subscription and can only be used for one hour at a time .

= = Games = =

PlayStation 4 games are distributed at retail on Blu @-@ ray Disc , and digitally as downloads through the PlayStation Store . Games are not region @-@ locked , so titles purchased in one region can be played on consoles in all regions , and players can sign @-@ on to any PS4 console to access their entire digital game library . All PlayStation 4 games must be installed to the console 's storage : users can begin to play portions of a game (such as opening levels) once the installation or download reaches a specific point , while the remainder of the game is downloaded or installed in the background . Updates to games and system software are also downloaded in the background and while in standby . PS4 users will , in the future , be able to browse titles and stream games via Gaikai to demo them almost instantaneously . Sony says they are committed to releasing an ever @-@ increasing number of free @-@ to @-@ play games , including PlanetSide 2 and War Thunder . Sony also took steps to make it easier for independent game developers to release titles for the PS4 by giving them the option to self @-@ publish their own games rather than rely upon others to distribute their titles .

= = = Backward compatibility = = =

PlayStation 4 is not compatible with PlayStation 3 games directly . Selected PS3 games are available for streaming via PlayStation Now . On December 5 , 2015 , Sony first released emulated versions of selected PlayStation 2 games as digital purchases , upscaled to high definition and with support for PS4 social features . PlayStation 4 is , otherwise , not compatible with PS2 games .

= = = PlayStation Now = = =

In December 2013 , Andrew House indicated that Sony was planning to launch a cloud gaming service for the PS4 in North America within the third quarter of 2014 , with a European launch to follow in 2015 .
At Consumer Electronics Show on January 7 , 2014 , Sony unveiled PlayStation Now , a digital distributions service which will initially allow users to access PlayStation 3 games on the PS4 via a cloud @-@ based streaming system , purchasing games individually or via a subscription , as a solution of no backwards compatibility on the hardware of the console . The United States Open Beta went live on July 31 , 2014 . The official United States release of the service was on January 13 , 2015 . PlayStation Now is in closed beta in the United Kingdom .

= = Release = =

= = = Critical reception = = =

= = = = Pre @-@ release = = = =

Pre @-@ release reception to the console from developers and journalists was positive . Mark Rein of Epic Games praised the " enhanced " architecture of Sony 's system , describing it as " a phenomenal piece of hardware " . John Carmack , programmer and co @-@ founder of id Software , also commended the design by saying " Sony made wise engineering choices " , while Randy Pitchford of Gearbox Software expressed satisfaction with the amount of high @-@ speed memory in the console . Eurogamer also called the graphics technology in the PS4 " impressive " and an improvement from the difficulties developers experienced on the PlayStation 3 .
Numerous industry professionals have acknowledged the PlayStation 4 's performance advantage over the Xbox One . Speaking to Edge magazine , multiple game developers have described the difference as " significant " and " obvious " . ExtremeTech says the PS4 's graphics processing unit offers a " serious advantage " over the competition , but due to the nature of cross @-@ platform

development , titles that share the same assets will appear " very similar " . In other scenarios , designers may tap some of PS4 's additional power in a straightforward manner , to boost frame rate or output at a higher resolution , whereas games from Sony 's own first @-@ party studios that take full advantage of the hardware " will probably look significantly better than anything on the Xbox One . "

In response to concerns surrounding the possibility of DRM measures to hinder the resale of used games (and in particular , the initial DRM policies of Xbox One , which did contain such restrictions) , Jack Tretton explicitly stated during Sony 's E3 press conference that there would be " no restrictions " on the resale and trading of PS4 games on physical media , while software product development head Scott Rohde specified that Sony was planning to disallow online passes as well , going on to say that the policies were designed to be " consumer @-@ friendly , extremely retailer @-@ friendly , and extremely publisher @-@ friendly . " After Sony 's E3 2013 press conference , IGN responded positively to Sony 's attitude towards indie developers and trading games , stating they thought " most gamers would agree " that " if you care about games like [Sony] do , you 'll buy a PlayStation 4 . " PlayStation 4 's removable and upgradable hard drive also drew praise from IGN , with Scott Lowe commenting that the decision gave the console " another advantage " over the Xbox One , of which the hard drive cannot be accessed .

GameSpot called the PlayStation 4 " the gamer 's choice for next @-@ generation " , citing its price , lack of restrictive digital rights management , and most importantly , Sony 's efforts to " acknowledge its consumers " and " respect its audience " as major factors .

= = = = Post @-@ release = = = =

The PlayStation 4 has been acclaimed by critics . Scott Lowe of IGN gave it an 8 @.@ 2 rating out of 10 praising the console 's DualShock 4 design and social integration features . He criticized the console 's lack of software features and for underutilizing the DualShock 4 's touch pad . The Gadget Show gave a similar review complimenting the DualShock 4 's new triggers and control sticks , in addition to the new Remote Play feature , yet criticized the system 's lack of media support at launch . IGN compared the Xbox One and the PlayStation 4 over various categories , allowing their readers to vote for their preferred system . The PS4 won every category offered , and IGN awarded the PS4 with their People 's Choice Award .

Shortly following the launch , it became apparent that some games released on multiple platforms were available in higher resolutions on the PS4 as opposed to other video game consoles . Kirk Hamilton of Kotaku reported on the differences in early games such as Call of Duty : Ghosts and Assassin 's Creed IV : Black Flag which ran in 720p and 900p , respectively , on the Xbox One yet ran at 1080p on the PS4 .

= = = Sales = = =

Demand for PlayStation 4 was strong . In August 2013 , Sony announced the placement of over a million preorders for the console , while on the North American launch date alone , one million PlayStation 4 consoles were sold . In the UK , the PlayStation 4 became the best @-@ selling console at launch , with the sale of 250 @,@ 000 consoles within a 48 @-@ hour period and 530 @,@ 000 in the first five weeks .

On January 7 , 2014 , Andrew House announced in his Consumer Electronics Show (CES) keynote speech that 4 @.@ 2 million PS4 units had been sold @-@ through by the end of 2013 , with more than 9 @.@ 7 million software units sold . On February 18 , 2014 , Sony announced that , as of February 8 , it had sold over 5 @.@ 3 million console units following the release of the PS4 onto the North American and Western European markets . Within the first two days of release in Japan during the weekend of February 22 , 2014 , 322 @,@ 083 consoles were sold . PS4 software unit sales surpassed 20 @.@ 5 million on April 13 , 2014 . During Japan 's 2013 fiscal year , heightened demand for the PS4 helped Sony top global console sales , beating Nintendo for the first time in eight years .

According to data released by Nielsen in August 2014 , nine months after the PS4 was released , thirty @-@ one percent of its sales were to existing Wii and Xbox 360 owners , none of whom had by then owned a PS3 . At Gamescom 2014 , it was announced that 10 million PS4 units had been sold @-@ through to consumers worldwide , and on November 13 , it was announced that the PlayStation 4 was the top @-@ selling console in the U.S. for the tenth consecutive month .

In its first sales announcement of 2015 , Sony confirmed on January 4 that it had sold @-@ through 18 @.@ 5 million PlayStation 4 units . Sony updated the sell @-@ through figures for the system throughout 2015 : over 20 million consoles as of March 3 , 2015 , over 30 million as of November 22 , 2015 , and over 35 million by the end of 2015 . As of May 22 , 2016 , total worldwide sales reached 40 million .

The PlayStation 4 holds a market share of at least 70 % within all European countries , as of June 2015 .