

# A History of Gaming Platforms: The Commodore 64

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## Summary

The Commodore 64 (C64) is perhaps the best known 8-bit computing platform ever designed, rivaled only by the Apple II in terms of popularity and longevity. Within a few short years after its introduction in 1982, the Commodore 64 dominated the low-end computer market, receiving a steady stream of software and peripheral support that lasted through the decade.

In 1985, Commodore followed up with the lesser known Commodore 128 (C128), a technically superior machine that failed to win over the massive base of C64 fans and developers.

## History

The Commodore 64 (C64) wasn't Commodore's first foray into the home computer industry. In 1977, Commodore had earned some recognition with its ground-breaking PET, which went through several iterations over the years and was quite popular in schools.

The PET was followed by the VIC 20 in 1981, the direct ancestor of the C64. The VIC 20 was a smashing success, eventually selling millions of units and establishing Commodore's reputation for making highly capable computers at prices that rivaled the era's videogame consoles. "Why buy a videogame when you can have a computer?," asked *Star Trek's* William Shatner in a famous series of print and television advertisements.



## The legendary Commodore 64

Still, although the VIC 20 was a great value for the budget-conscious, its limitations were onerous for many enthusiasts. They wanted a more powerful machine and were willing to pay extra to get it. Commodore heard their call, and the first C64 went straight from the assembly lines to the headlines. The personal computer industry would never be the same.

The C64's unprecedented success demonstrated, once and for all, that there was a strong and viable market for inexpensive personal computers that could run the latest videogames. Today, tens of thousands of avid C64 fans publish websites, populate online forums, run C64 games in emulators, and develop new homebrew software and other products for the system. There are even bands who specialize in arranging old Commodore favorites for the pub and bar crowds. For countless fans of the system, the "Commie" is still the best personal computer ever to grace the living room.



Besides being featured in countless general videogame and computer magazines, the Commodore 64 series of systems had magazines devoted specifically to the platform, like the pictured Ahoy!, Run, Compute!'s Gazette and Commodore Microcomputers publications

During a 12-year production cycle from 1982 to 1994, Commodore managed to sell over 17 million C64 computers worldwide, and software developers and publishers released over 10,000 commercial programs. Obviously, the C64 played a definitive role in the evolution of computer gaming -- especially since the C64's low price and subsequent popularity may well have played a small role in The Great Videogame Crash of 1984. Commodore saw the line in the silicon between computers and consoles and didn't just step over it -- they erased it.

But really, what made the C64 so successful? The machine's rise to glory may seem obvious today, but that's hindsight. In 1982, the C64 cost \$595 and looked like a VIC 20. Who was Commodore kidding? The reason for the similarity was actually quite pragmatic -- to speed up production of the first run, Commodore crammed all of the C64's components into VIC 20 cases (Commodore soon adopted the famous brown "breadbox" case that most fans of the system remember).

*"All we saw at our booth were Atari people with their mouths dropping open, saying, 'How can you do that for \$595?'" -- David A. Ziembicki, codesigner of the C-64*

However, internally the C64 varies significantly from the VIC 20. The C64 is based on a MOS 6510 processor, with 64K of RAM standard. It can display up to 40 columns and 25 lines of text with 16 colors on-screen. Almost every program runs at a standard 320x200 resolution. Furthermore, game development is aided by built-in "sprite" capabilities, which simplify and standardize the basic graphic and animation routines used by most games. Perhaps more impressive still is the C64's sound output, powered by a professional synthesizer chip called SID (Sound Interface Device). SID enables three voices (channels) at nine octaves and four waveforms -- enough power for serious electronic music. Like its predecessor, the C64 could be plugged directly into a common television set. This feature meant that the C64 could be marketed not just by authorized computer dealers, but also by the countless department and toy stores all across the country.

Perhaps the best explanation for the C64's unparalleled success was the combination of talented engineering and executive management brought to bear on the project. The C64 was designed by Robert Russell, Robert Yannes, and David Ziembicki under the direction of the company president, Jack Tramiel. Tramiel had long been working to vertically integrate his computer company since the mid-1970s, with the most significant purchase being MOS Technology, who produced Commodore's microchips.

The vertical integration meant that Commodore could acquire critical components at cost, driving prices much lower than the prices paid by Commodore's competition -- each unit had an estimated production cost of only \$135. As a result, the C-64 steadily dropped in price after its release; a few months after sales began, it was available for \$400 at Kmart stores nationwide. In a bold move for market domination, Commodore offered customers a \$100 rebate if they traded in their old videogame console or computer. For many videogame console owners, this promotion meant that they could acquire a full-featured computer for only \$300 at a time when comparable machines began in the thousand-dollar range. A later price drop to \$200 drove companies like Texas Instruments (TI-99/4A) clean out of the industry.

William Shatner continued to offer his endorsement to Commodore, starring in a number of ads that again asked consumers why they were buying game consoles when they could afford a computer. But no one was fooled -- the C64 was first and foremost a games machine, and a damn good one. Like Atari's popular 2600 Video Computer System (VCS) game console, the C64 had a huge and rapidly expanding game library, and was even compatible with most Atari joysticks and other peripherals. Chances were, if you couldn't play it on your C64, it wasn't worth playing anyway. The C-64 was also fully programmable and supported a wide range of productivity applications, features that made a difference to parents shopping for Junior's gateway to college.

Although the C64 had slots for games on cartridge and supported a "datasette" tape drive, the medium of choice soon became the floppy disk. The infamous Commodore 1541, a single-sided, 170K 5.25" floppy drive released in 1982, was by far the most common choice. The drive features its own microprocessor, the MOS 6502, and even contains its own operating system -- CBM DOS 2.6. It was also noisy, slow, prone to overheating, and downright unreliable. At least it didn't eat crackers in bed.

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Thankfully, the some of the 1541's deficiencies were addressed by a thriving aftermarket for acceleration cartridges and other devices, which also often reduced the need to type arcane commands to get the drive to do something. In 1982, a 1541 floppy drive and a C64 could be yours for under \$1,000 -- a nice price considering that an Apple II with

no floppy drive cost nearly \$1,400. Compared to the datasette, the 1541 ran at lightspeed, and games on disks, unlike cartridges, could easily be copied and distributed -- unless they were copy protected (and users quickly found ways around that). The drive turned out to be much more popular than Commodore had expected, and the company was at first unable to match demand, even though the early models suffered from an extraordinarily high rate of failure.

*"The Commodore 64... has to be the most overpraised, deceptively advertised, and 'user-hostile' machine to appear in years. If you've already got one, you may not (yet) realize how thoroughly you've been hornswoggled."* -- Jon Freeman in *Computer Gaming World*, September 1983

Commodore's next trick was a C64 in a briefcase: an AC-powered portable unit called the SX-64, which looked like the popular transportable *CP/M* computers from Osborne and Kaypro. Released in 1984, the SX-64 has the distinction of being the first full-color transportable computer, though its small 5-inch screen, heavy weight (23 pounds), and lack of focus on serious business software may have contributed to its lackluster sales (the sticker price was relatively competitive at \$995). The SX-64 features a built-in 1541 floppy drive and a sturdy handle, which doubles as an adjustable stand. The only feature missing from the SX-64, standard in the C64, is the datasette port.



### **The transportable Commodore SX-64**

In 1985, Commodore released the Commodore 128 (C128), which also failed to perform commercially as well as its predecessor. The C128 features 128K of RAM, a MOS 8502 processor clocked at 2MHz, and a Zilog Z80 clocked at 4MHz. It also boasts an updated operating system, Commodore BASIC V7.0, which addressed many of the deficiencies of the earlier C64 version. While the system is almost entirely C64 compatible, it did receive a new, higher-speed, higher-capacity disk drive called the 1571, which is also necessary for *CP/M* compatibility (*CP/M* was an optional and underpowered cartridge add-on on the original C64). A sleeker and more professional-looking model, the C128D, was released soon after and features a built-in 1571 and external keyboard. These multiprocessor systems can be switched between three different operational modes -- C128, C64, and *CP/M*. In

short, it's three computers in one, but, unfortunately for Commodore, most gamers were happy enough with the one.



### **The powerful Commodore 128**

In C128 mode, the computer makes up for most of its older brother's technical shortcomings -- it has the ability, for instance, to display 80 instead of 40 columns of text on a monitor thanks to 16KB of dedicated video RAM (64K of VRAM in the 128D). These enhancements, along with a new numeric keypad, make it far more useful for business and productivity applications. Unfortunately, few games were ever developed specifically for the C128, though it was highly useful for running an enhanced version of *GEOS*, a Mac-like graphical operating system originally released in 1986 by Berkeley Softworks.



**A close-up of the more professional looking Commodore 128D, shown with two standard Atari-style joysticks in front and the popular Commodore 1084S on top**

The *CP/M* mode suffers from occasional sluggishness, but makes up for it with versatility; the 1571 can access a variety of otherwise incompatible read/write formats. Unfortunately, by the time the C128 was released, the *CP/M* operating system was already on its way out as the business operating system of choice, replaced by IBM PCs and "compatibles" running Microsoft's *DOS*.



**The infamous Commodore 1541 and versatile Commodore 1571 disk drives**

In 1986, Commodore released the C64c, which is basically a C64 system with more modern styling, matching the sleeker lines of the C-128. The C64c was bundled with its own version of the *GEOS* operating system.



The restyled Commodore 64c

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## Software

Although the C64 supported a wide variety of business and productivity software, such as Broderbund's *The Print Shop* desktop publishing package and Microsoft's *Multiplan* spreadsheet program, the game library is what brought most users to the system. With such a huge library of commercial and public domain games available, C64 owners had access to every conceivable genre. Even when games originated on other systems, the C64 ports tended to contain graphics and sound enhancements only available on the platform.

*"We were fresh out of ideas for whatever chips the rest of the world might want us to do. So we decided to produce state-of-the-art video and sound chips for the world's next great video game."* -- Albert Charpentier, as quoted by Ian Matthews in *"The Commodore 64: The Machine of Destiny"* on the [Commodore.ca](http://Commodore.ca) website

Even into the early 1990s, long after the C64 and other 8-bit computers were rendered technically obsolete by 16-bit machines like the Atari ST and the Commodore Amiga, several major game developers continued to offer scaled-down ports of their games for the system, like Capcom's *Street Fighter II* (1992) arcade fighting game and Ocean's *The Addams Family* (1992) platformer. Of course, there are still games being made by independent developers for the system today, particularly in Eastern Europe.



Accolade pushed the audio-visual capabilities of the Commodore 64 as well as any publisher, with classics like *Test Drive* (1987) and the games from the pictured box backs, *Psi 5 Trading Co.* (1985) and *Hardball!* (1985)

One reason the C64 was able to endure for so long is somewhat paradoxical. The longer software developers have to learn a particular platform, the more likely they are to find innovative ways to harness its power -- to pull off feats that the hardware engineers never dreamed were possible. This phenomenon is demonstrated on the C64, where many early games like Commodore's *Wizard* arcade clone, Sirius Software's *The Blade of Blackpoole* text and graphics adventure, and Broderbund's *Choplifter!* action game, all released in 1982, look almost childishly simplistic compared to Core Design's *Chuck Rock* or Thalamus' *Creatures 2: Torture Trouble* platformers, both released in 1992.



Datasoft not only supported the Commodore 64 with licensed classics like action platformer, *Bruce Lee* (1984), which featured an innovative two player mode, but also with little known games like the *Joust*-inspired racer, *Mancopter* (1984), shown via direct screen capture

Perhaps the most visually stunning C64 game of all time was platformer *Mayhem in Monsterland*, released in 1993 by Apex Computer Productions. *Mayhem in Monsterland* was so artfully programmed that some gamers felt it could pass for a 16-bit console game.



Electronic Arts released a wide range of software for the platform, including their famous customization and construction set titles, including *Adventure Construction Set* (1984), *Mail Order Monsters* (1985), *Racing Destruction Set* (1985) and *Pinball Construction Set* (1983), box backs pictured

Some of the most popular games for the C64 include Electronic Arts' hybrid action strategy game *Archon* and multiplayer strategy game *M.U.L.E.* (both 1983), First Star Software's *Boulder Dash* puzzler and Epyx's *Impossible Mission* platformer (both 1984), Rainbow Arts' *Great Giana Sisters* platformer, Elite's *Commando* arcade conversion, Microprose's *Pirates!* action adventure, System 3's *IK+* fighting game and *Last Ninja* action platformer, and Lucasfilm Games' adventure, *Maniac Mansion* (all 1987). These 10 games demonstrate the diversity of the C64's game library, which truly had something for everyone.

Indeed, anyone who grew up with the system could easily add another 20, 30, or even 50 more games to this list. For sports fans, there was Epyx's impressive *Games* series, like *Summer Games* (1984) and *Winter Games* (1985); shoot-'em-up fans had Synsoft's *Blue Max* (1983), Elite's *1942*, and Electric Dream's *R-Type*; and even the "adult" genre was well represented by games like Artworx's *Strip Poker* (1984). Role-playing fans could choose between several prominent franchises: SSI's Gold Box *Dungeons & Dragons* games, Interplay's *Bard's Tale* series, Sir-Tech's *Wizardry* series, and Origin's *Ultima* series.

There were even open-ended or, "sandbox," games like Firebird's space simulator/strategy game *Elite* (1985), and strategy games like Wil Wright's legendary *Sim City* (1989), which was the only version that came standard with a terrain editor. Incidentally, Wright's inspiration for *Sim City* came while he developed game-play maps for his first game, the innovative overhead-perspective action-strategy game, *Raid on Bungeling Bay* (Broderbund, 1984). He had so much fun creating these maps that he thought it would make a fun game by itself!



**Epyx was a prime supporter, not only with classics like the *Games* series (1984+) and *Impossible Mission* (1984), but also with unusual licensed games, like *G.I. Joe* (1985), shown via direct screen capture**

Although much is often made of the C64's relative graphical capabilities, others point out that SID, the system's powerful sound chip, was even more impressive for its time. Indeed, the C64 was where "chiptune" maestros like Rob Hubbard, Jeroen Tel, Martin Galway, David Whittaker, Ben Dalglish, and so many others got their start. Rob Hubbard's music in the otherwise-forgettable shooter game *Sanxion*, released in 1986 by Thalamus, caused the game to be praised for its distinctive loading music.

At a time when most computer games contained no music or, at best, a melodic sequence of beeps and bleeps, Hubbard's tunes demonstrated the potential of the C64 as a truly musical instrument. The work of Hubbard and many of his contemporary SID composers has been remixed and updated for modern audiences, though the original tunes are available on any number of fans' websites. Just like any other musical instrument, the SID chip can sound slightly different depending upon the system model from which it is used and the version.

Another benefit of the SID was that quality speech synthesis was a possibility without external add-ons (though both those and speech input devices were readily available), found in many popular games such as the aforementioned *Impossible Mission*, *Kennedy Approach* (Microprose, 1985) air traffic control simulator, *Beach-Head II: The Dictator Strikes Back* (Access, 1985) multi-screen action game, *Jump Jet* (Anirog Software, 1985) flight simulator, *Ghostbusters* (Activision, 1984) movie translation, and *Transformers: Battle to Save the Earth* (Activision, 1986) platformer, which filled the entire side of a game disk with an unprecedented fully narrated intro story.

Of special note was the release of Quantum Link (Q-Link) in late 1985 exclusively for the various C64-compatible systems with modems, allowing for multiplayer online games via its proprietary service. What made Q-Link different from other online services at the time, like CompuServe and The Source, was not only the graphical interface, but also Lucasfilm Games' revolutionary *Club Caribe* (aka *Habitat*), where users could control an onscreen avatar that could chat with other users, carry and use objects and money, and travel around an island. *Club Caribe* inspired LucasArts' successful adventure game series that began with the aforementioned *Maniac Mansion* and was the forebearer to today's graphically rich, massively multiplayer online games. *Q-Link* itself ended in late 1994, but not before morphing into America Online (AOL).



**Text and graphics adventures, like Activision's *The Tracer Sanction* (1984), shown via direct screen capture, were a staple on the platform**

In short, the C64 was a powerful gaming platform for its time, and it was heavily supported by some of the most innovative and talented game developers of all time. There is no doubt that along with the Apple II, Atari VCS, and Nintendo Entertainment System (NES), it represents one of the most influential game platforms ever built.

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## Modern Activity

Because the C64 was such a ubiquitous platform throughout most of the 1980s and into the early 1990s, finding a unit in working or even mint condition is not a problem. Obviously, since so much software was released in disk form, a collector will also want to add a disk drive -- perhaps a Commodore 1571, which is more versatile and quieter than the 1541. Collectors who aren't nostalgic for the old breadbox styling of the early C-64 would do well to look for a C64c. In any case, a patient collector should be able to find a full system in good working order for under \$30.

The much rarer portable SX-64 is hard to find in decent condition for less than \$75, with mint condition units starting around \$150. The C128 by itself can be found for under \$40, but a working C128D easily surpasses \$100. The C128 line is preferred by some C64 enthusiasts for their more reliable and capable power supplies (which readily support memory expansion cartridges) and greater overall capabilities, but the trade-offs in extra bulk, complexity, and 100 percent compatibility may not be worth it for those just looking to play games.

Software is easy to find for the C64, though prices range widely depending on the relative obscurity and desirability of the individual game. Many games, though, can be had for under \$10, and there are plenty of opportunities to purchase large collections of diverse titles for very reasonable prices, even at the various auction websites.

Emulation is very mature and well implemented on a variety of platforms. Various online software repositories are readily accessible, and it's easy to get support from the large community of enthusiasts that still exist for the platform. The most popular emulation software is *VICE*, which also works well for other Commodore 8-bit platforms, like the VIC 20 and PET.

In 2004, the Commodore 64 30-in-1 was released, a battery powered plug-and-play TV Game joystick that functioned almost exactly like a real C64. It's still available for less than \$15 and the authentic C64 experience can be simulated with the built-in selection of more than 30 games. The device can also be hacked for use with a keyboard and Commodore disk drive.



**The pictured Commodore 64 30-in-1 is one of a handful of TV Game devices based on C64 technology**

New hardware and software developments are taking place all the time, including cables and small devices that make the transfer of software and files to and from a modern computer quick and simple. In short, as with the other great systems to be covered in this series, the C64 will never truly be obsolete -- just older and more distinguished.

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