

Chapter 2: Download and Setup

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This article continues from Chapter 1: Intro to Emulation

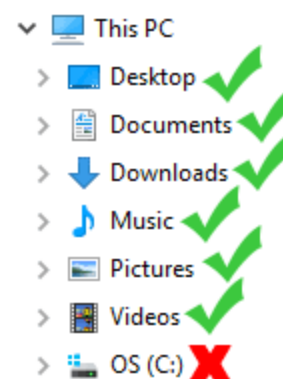
[\[http://fantasyanime.com/emuhelp/intro-to-emulation\]](http://fantasyanime.com/emuhelp/intro-to-emulation). I discussed everything a newcomer needs to know about video game emulation: what it is, the cool things it offers, and the legality.

In this article, I review details pertaining to downloading ROMs.

Where to place your emulators

Newbies tend to make the mistake of placing emulators on their C drive. Starting with Windows 8, Microsoft made the C drive a bit restricted to protect you from viruses. Any new folders you create in there will be read-only. Emulators need write access so they can save configurations and save your game progress. To avoid that simply place all your video game emulators in a common location on your computer. For example, such as your *Documents*, *Downloads*, or a folder on your desktop.

You can organize your emulators however you wish. You might want to start by creating a folder called *Emulation*. Inside there create new folders called *NES*, *SNES*, *Genesis*, etc.



Installing an emulator

In the previous article, I talked about how most emulators are portable. To 'install' a *portable* emulator, check out the video posted on the web version of this tutorial. The process is pretty straight-forward - all that you're doing is extracting a zip file while doing a little bit of folder management. If you want to 'uninstall' a portable emulator, simply delete it! For the sake of this text-only guide, I'll break down the steps in the video if you can't access the web version of this guide right now.

1. Move the emulator's zip file from your *Downloads* folder to *Documents*. Well, you don't *have* to, but for the sake of these directions I'm suggesting *Documents* as the ideal place to house your emulators.
2. Create a new folder called "*Video Game Emulators*". Again, this is an organizational suggestion and not required.
3. Move the emulator's zip file into "*Video Game Emulators*". Open the emulator's zip file and copy its contents. In "*Video Game Emulators*", create a new folder and give it the name of the emulator you downloaded (i.e. "*Snes9x*").
4. Enter this new folder for your emulator and paste the files.
5. We don't need the zip file for the emulator anymore, so you can go ahead and delete it.
6. To start the emulator, go into your emulator's folder and double-click on its EXE (i.e. "*snes9x-x64.exe*"). Enjoy! :)

I want to point out a few more details:

Opening a portable emulator

To open a portable emulator, you need to look for an EXE file. My video above shows that. But, by default, Windows hides file extensions, so you won't immediately see the EXE file. I recommend enabling them - here's a video showing how: how to show file extensions in Windows: <https://youtu.be/PoTah9YBG2Y>

Creating a shortcut (optional)

You might want to create a shortcut to a portable emulator and place it on your desktop for easy access. On Windows 11, creating a shortcut involves a few steps - look at these YouTube videos for help with that:

https://www.youtube.com/results?search_query=windows+11+create+shortcut

On Windows 8 and Windows 10, just right-click on the emulator's EXE and click Create Shortcut. Then drag the shortcut file to your desktop.

Some emulators offer an install wizard

Some emulators such as PCSX2 offer an install wizard. If you opt to use the install wizard, you don't need my help with that. Simply double-click on it and follow the directions. Once installed through the wizard, you can uninstall the emulator via Windows (YouTube has help with that [\[https://www.youtube.com/results?search_query=windows+10+uninstall+program\]](https://www.youtube.com/results?search_query=windows+10+uninstall+program)).

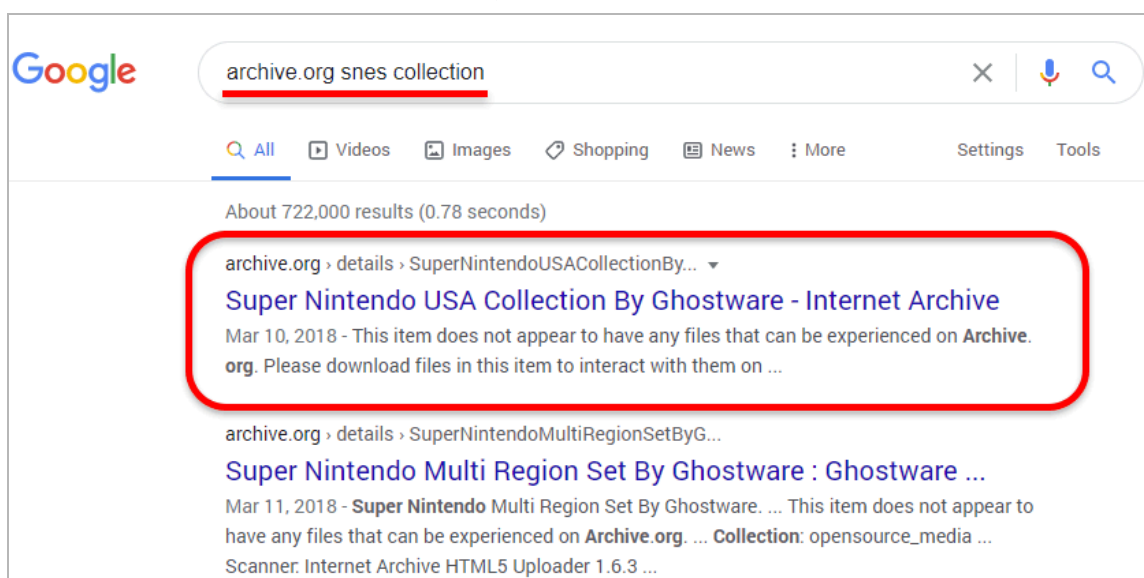
Finding ROMs

In my links page [<https://fantasyanime.com/links>], I have some good links to sites where you can download ROMs and ISOs for classic video game systems.

Finding games for PS2/PS3/PSP/GameCube/Wii and beyond is trickier due to how large games are. These games are typically not available in ROM sites readily found on Google. However, Archive.org [<https://archive.org/>] is a superb site where you can find these games for download. Navigating that site isn't easy. But yet, you can 'hack' this usability problem by using Google to search Archive.org. Search Google with such phrases as “*archive.org playstation 2*”.

I'll walk you through navigating Archive.org. For example, let's say you want to download Super Nintendo games:

1. On Google, search for: “*archive.org snes collection*”.
2. Click the first link in the search results, as shown here:



3. In the right column, you'll see a box with “*Download options*”:



SNES Romset Ultra (U) [!]
by [Nintendo](#)

Publication date: 1991
Topics: [snes](#), [super nes](#), [super nintendo](#), [usa](#), [nintendo](#), [rom](#), [roms](#), [romset](#), [rom set](#), [nintendo](#), [super nintendo](#), [entertainment system](#), [nintendo snes](#), [retroarch](#), [retropie](#), [libretro](#)
Language: English

Get all the SNES USA Releases plus New SNES Games

"Now, You Playing with Power!"

Super Power!

Addeddate: 2020-11-17 02:23:55
Identifier: snes-romset-ultra-us
Scanner: Internet Archive HTML5 Uploader 1.6.4
Year: 1991

407,885 Views
292 Favorites
11 Reviews

DOWNLOAD OPTIONS

ITEM TILE	1 file
JPEG	1 file
TORRENT	1 file
ZIP	988 files
SHOW ALL	999 Files 998 Original

IN COLLECTIONS

Click **SHOW ALL** to access the download links to the ROMs.

Another way you can try to find large/newer games is through Reddit. The best way to find them is by searching Google with such phrases as “*reddit download playstation 2*”

<https://www.google.com/search?q=reddit+download+playstation+2>

Bulk download of ROMs

I'm going to again bring up Archive.org and tout how awesome that site is. Typical ROM sites require you to download ROMs one at a time. It can be annoying when you just want to download all SNES games with a single click. Fortunately, it is possible to download all ROMs with a single click at Archive.org!

When you follow my directions in Finding ROMs and arrive at a ROM collection page, click on **ZIP**. See below:

SNES Romset Ultra (U) [!]
by Nintendo

Publication date: 1991
Topics: snes, super nes, super nintendo, usa, nintendo, rom, roms, romset, rom set, nintendo, super nintendo entertainment system, nintendo snes, retroarch, retropie, libretro
Language: English

Get all the SNES USA Releases plus New SNES Games

"Now, You Playing with Power!"

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Addeddate: 2020-11-17 02:23:55
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407,885 Views
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DOWNLOAD OPTIONS

ITEM TILE	1 file
JPEG	1 file
TORRENT	1 file
ZIP	996 files
SHOW ALL	999 Files 998 Original

Reviews [Add Review](#)

Bulk download only works with systems up to the 16-bit era. The games for 32-bit era systems (PlayStation 1, N64) and beyond are too large to download in a single zip file. However, Archive.org does offer games for 32-bit/64-bit systems for *individual* download (one game at a time).

Total memory sizes per video game system

On a related subject to bulk downloads, you might be wondering how large all the ROMs are per video game system. To put memory size totals in perspective, here's a list. This would be the total memory size if you were to download all the ROMs/ISOs for the given system.

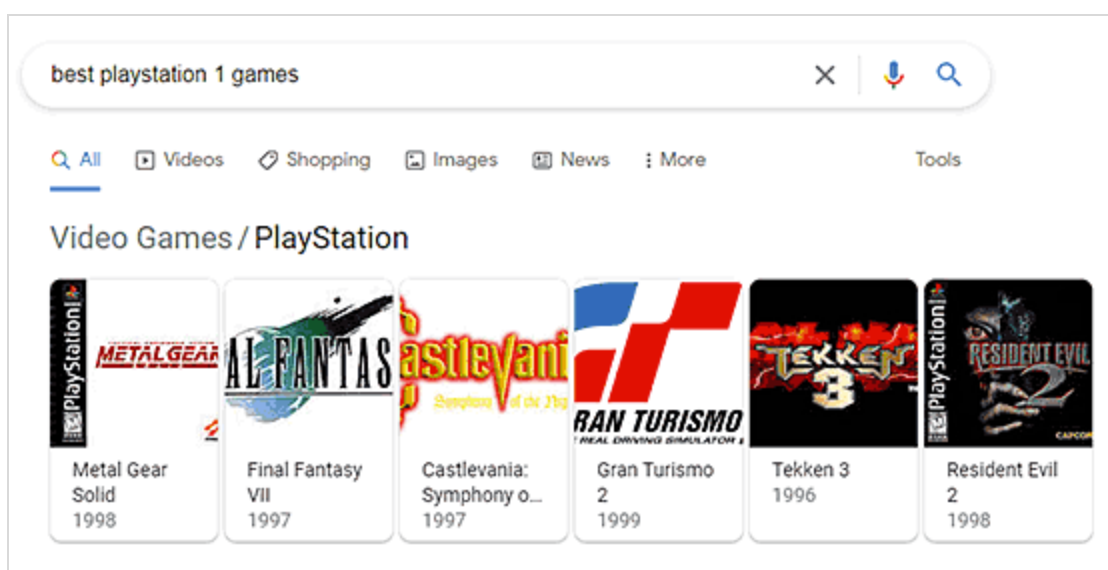
- **NES** – around 240 MB
- **Super Nintendo** - around 2 GB
- **Nintendo 64** - around 5.5 GB
- **Game Boy & Game Boy Color** - around 600 MB
- **Game Boy Advance** – around 8.5 GB
- **Nintendo DS** - around 85 GB
- **GameCube** - around 870 GB
- **Nintendo Wii** - around 6.5 TB
- **PlayStation 1** - around 4 TB
- **PlayStation 2** - around 20 TB
- **PlayStation 3** - around 20 TB

Keep in mind these totals are based on the games compressed in a ZIP, RAR, or 7Z file. SNES games, for example, can be played from their zip file. PlayStation games, though, need to be extracted to be played. So expect their size totals listed above to double or even triple when all the games are extracted.

Tip: Finding the Best Games

As seen in the totals above, ROM collections per system are quite massive. While it's tempting to load all ROMs for every system onto your device, it simply isn't possible (or expensive to do).

So why not load only the very best games on your device? Instead of loading every single PlayStation 1 ISO, you could load 10 or 20 of the top games. Sure, we all have our favorites, but are you curious to know about every single top game? Part of the reason for getting into emulation is to discover new games, after all.



Search Google with this phrase: *"best [system] games"*. For example, here's *"best playstation 1 games"* - <https://www.google.com/search?q=best+playstation+1+games>

This will return a list of top games according to Google searches. Additionally, these searches return numerous articles where people list their top games.

ROM Naming Conventions

Many emulation websites list games like this:

- Super Mario All-Stars & World (E) [!]
- Super Mario All-Stars & World (U)
- Super Mario World (J) [!]
- Super Mario World (U) [!]
- Super Mario World (U) [T-Norwegian_V2001.04.28_Just4Fun]
- Super Mario World (V1.0) (E)

- Super Mario World (V1.1) (E) [!]

So what do those symbols at the end mean? Here's the key:

- (U) United States release
- (E) Europe release
- (J) Japan release
- (###) Checksum
- (##k) ROM Size
- (M#) Multilanguage (# of Languages)
- (V#.#) Version
- [!] Verified Good Dump
- [a] Alternate
- [b] Bad Dump
- [f] Fixed
- [h] Hack
- [o] Overdump
- [p] Pirate
- [t] Trained
- [T] Translation
- [x] Bad Checksum
- ZZZ_ Unclassified

After downloading a ROM

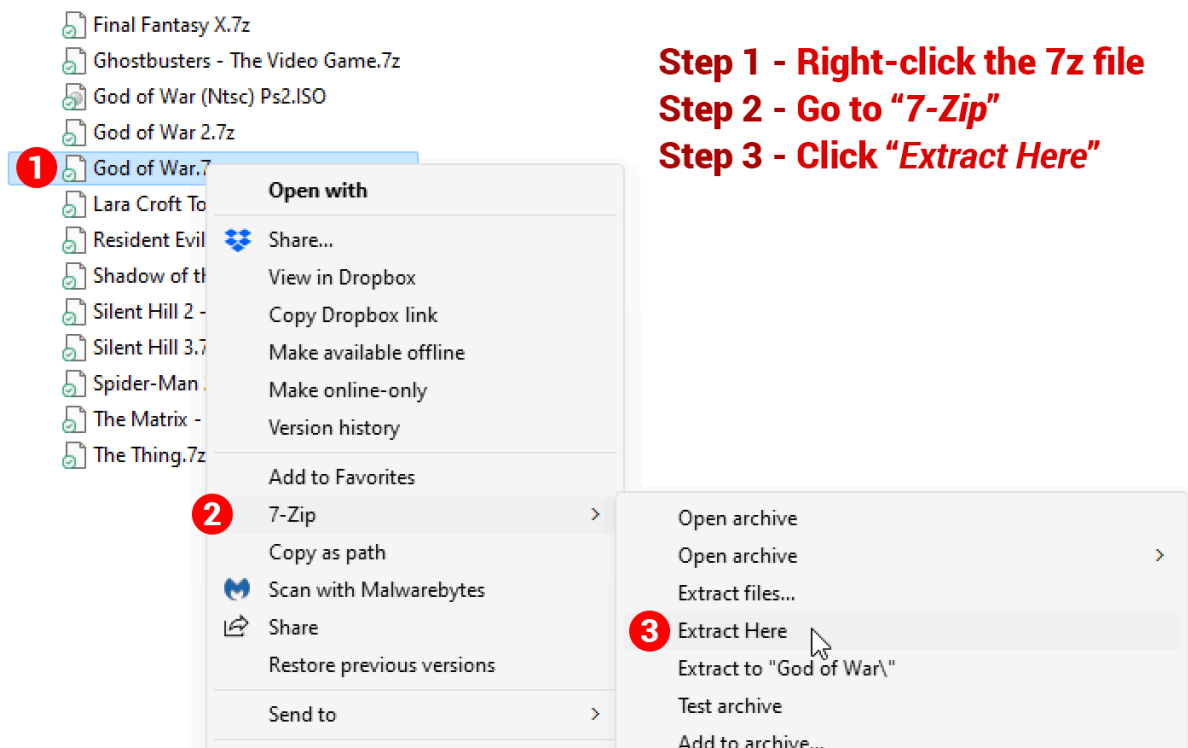
So you downloaded a ROM to your Downloads folder. Now what? If the ROM belongs to an 8-bit or 16-bit system (or N64), you don't need to extract it from its zip file. Emulators can run the game directly from the zip file.

However, larger games such as for PlayStation 1-4, Sega CD/Mega CD, GameCube/Wii, and newer need to be extracted from their ZIP, RAR, or 7Z file to work with emulators. Windows can extract zip files by default - here's help with that:

https://www.youtube.com/results?search_query=windows+extract+zip+file

To extract 7Z or RAR files, you can use 7-Zip (it's free): <https://www.7-zip.org/>

See the image below on how to extract a 7z file.



The next step is to move the ROM over to a folder that is most convenient for you. You can place it inside the folder where your emulator resides. You can create a new folder and call it "SNES ROMs" - however you want to organize it.

Patching ROMs (what is that?)

The coolest things about video game emulation are ROM hacks and fan translations! See below for some examples for Super Nintendo games.



"New Super Mario World 2: Around The



The English fan translation for Tales of

World”, the most popular ROM hack for Super Mario World that rearranges all levels and adds custom graphics.

Learn more -

<https://www.smwcentral.net/?p=section&a=de tails&id=21541>

Phantasia. This game never left Japan, so the fan translation is the only way to play this game in English.

Learn more -

<https://fantasyanime.com/legacy/top.htm>

ROM hacks offer a new experience for your favorite games. Hacks can:

- Increase the game's difficulty
- Rearrange things to create an entirely new game
- Translate a Japan-exclusive game to English
- Fix bugs, correct typos, uncensored graphics

This is accomplished by applying a patch (a.k.a. an IPS file) to a ROM. In the root of my FantasyAnime.com, I have a detailed patching tutorial explaining the process:

<http://fantasyanime.com/patching>. I also recommend checking out RomHacking.net [<http://romhacking.net>]. That website contains the largest repository of ROM hacks on the Internet.

Sensitive emulators for PS1 & Saturn

As mentioned in the previous article, an “ISO” is what we call the ROM for a CD-based game. When it comes to working with ROMs and emulators (i.e. Super Nintendo and Sega Genesis), it's easy because ROMs are standardized under a single file format. Emulators always load ROMs with no problem.

ISOs, though, don't have a single file format. They can come in “ISO”, “BIN/CUE”, “CHD”, and other file formats. As a result, emulators can be finicky with different ISO types and refuse to load them. I want to highlight the emulators that I consider to be “ISO-sensitive”.

PlayStation 1 emulation

I don't know the exact reason why, but modern PlayStation 1 emulators have issues with 'old' ISOs. Maybe you downloaded your collection of PlayStation 1 ISOs a decade ago. Then, you recently tried using them with DuckStation (the #1 PS1 emulator at the moment), only to find that they don't work.

Sega Saturn emulation

Saturn emulators are notorious for having a high rate of ISOs failing to load. Many of the Saturn ISOs readily available in ROM sites don't work with emulators. By



“don't work” I mean upon loading the ISO, the emulator gives you a black screen, or it takes you to the CD player screen. It's very frustrating.

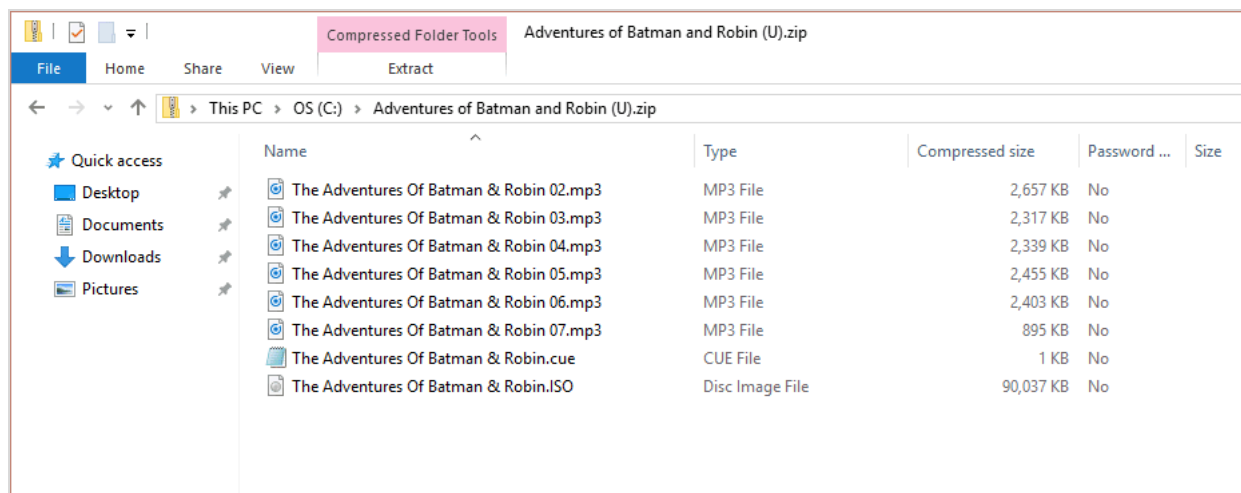
The solution: Fortunately, the solution to “ISO-sensitive” emulators is to use ISOs that are in “CHD” format. CHD is a relatively new ISO format that is fully supported by all modern video game emulators. PS1 and Saturn games in CHD format run on emulators with no problem. You can easily find CHDs when you look for ISOs at Archive.org, the same site I mentioned in “Finding ROMs” earlier in this guide. Here are some Google searches to help you directly find CHD games there:

- “archive.org playstation 1 chd”
<https://www.google.com/search?q=archive.org+playstation+1+chd>
- “archive.org saturn chd”
<https://www.google.com/search?q=archive.org+saturn+chd>

Sensitive emulators for Sega CD & TG16-CD

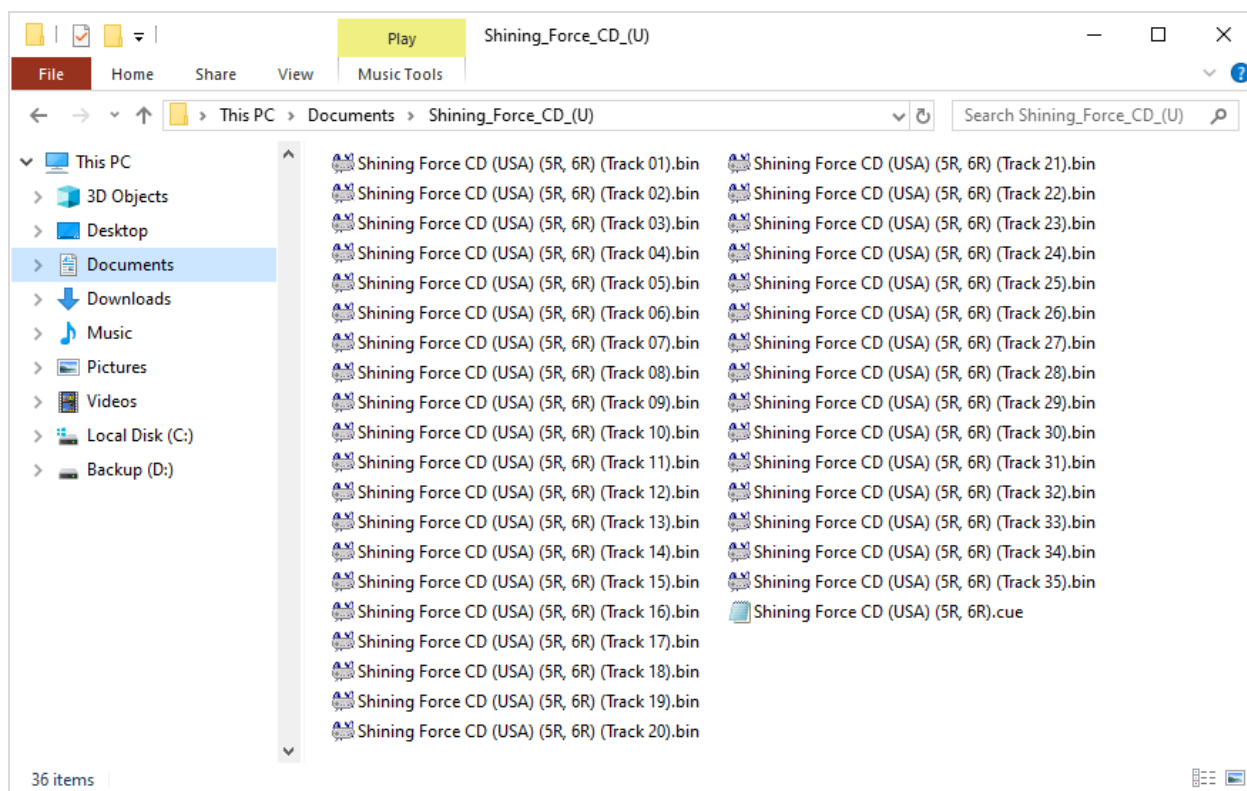
These systems have several aliases. Sega CD is known as “Mega CD” in Europe. PC Engine CD is known as “TurboGrafx16-CD” in North America. Anyway, my emulator tutorials for these video game systems explain that their ISOs come in four different formats. My RetroArch tutorial covers this in more detail.

In the 2000s and 2010s, Kega Fusion and Gens reigned supreme as the top emulators for Sega CD. On the TurboGrafx16-CD side, MagicEngine reigned supreme. Back in those days, ROM sites delivered their ISOs in 3 different formats, with “ISO/MP3 ” being the most popular. See below for an example of how they look. Notice the audio tracks are MP3s.



Name	Type	Compressed size	Password ...	Size
The Adventures Of Batman & Robin 02.mp3	MP3 File	2,657 KB	No	
The Adventures Of Batman & Robin 03.mp3	MP3 File	2,317 KB	No	
The Adventures Of Batman & Robin 04.mp3	MP3 File	2,339 KB	No	
The Adventures Of Batman & Robin 05.mp3	MP3 File	2,455 KB	No	
The Adventures Of Batman & Robin 06.mp3	MP3 File	2,403 KB	No	
The Adventures Of Batman & Robin 07.mp3	MP3 File	895 KB	No	
The Adventures Of Batman & Robin.cue	CUE File	1 KB	No	
The Adventures Of Batman & Robin.ISO	Disc Image File	90,037 KB	No	

Now in the 2020s, people are preparing ISOs for these systems differently. A fourth ISO format was born, which I call “binary BIN/CUE”. See below for an example of how they look. Notice the audio tracks are BIN files.



The 'old' ISOs that work with Kega Fusion/Gens/MagicEngine don't work with modern emulators such as RetroArch (the top emulator for these systems now). This is a problem because if you download these games from a ROM site today, you might be getting 'old' ISOs that won't work with RetroArch.

The solution: I can point you in the right direction to find and download the new type of ISOs that work with RetroArch (and other modern emulators). You can easily find the new ISOs when you look for ISOs at Archive.org, the same site I mentioned in Finding ROMs. Here are some Google searches to help you directly find these games there:

- “archive.org sega cd”
<https://www.google.com/search?q=archive.org+sega+cd>
- “archive.org pc engine cd”
<https://www.google.com/search?q=archive.org+pc+engine+cd>
- “archive.org turbografx16 cd”
<https://www.google.com/search?q=archive.org+turbografx16+cd>

Side note: People more commonly call this system PC Engine CD, so searching Google

with TurboGrafx16 CD brings up less options. Although it still might be worth it because searching with PC Engine CD might bring up too many Japanese games (if you're looking for games in English). I know, this can be a little confusing.

Video game emulation on Android

This website is primarily dedicated to video game emulators on Windows, but I do cover a good portion of Android. Check out my guides:

- **Android Video Game Emulators**
[<http://fantasyanime.com/emuhelp/android-video-game-emulators>]
A general run-through of video game emulation on Android.
- **DuckStation** [<https://fantasyanime.com/emuhelp/duckstation-android>]
The #1 PS1 emulator on Windows is also the #1 PS1 emulator on Android.
- **RetroArch** [<http://fantasyanime.com/emuhelp/retroarch>]
A massive emulator that supports over 40 video game systems!
- **MAME4droid** [<https://fantasyanime.com/emuhelp/mame4droid>]
The top emulator for arcade games.

Video game emulation on iOS

Again, this site's focus is on Windows. But, I offer some help for iOS users as well.

- **iOS Video Game Emulators**
[<https://fantasyanime.com/emuhelp/ios-video-game-emulators>]
A general run-through of video game emulation on iOS and Apple TV. All of the best, top emulators are highlighted.

Continue reading: Chapter 3, Gamepads

[<http://fantasyanime.com/emuhelp/gamepads>]

Thank you for reading my tutorial! If you have questions you can email me or message me on social media [<http://fantasyanime.com/contact>].