INTRODUCTION

Genesis Plus emulates a Sega Genesis or MegaDrive console. It has been originally written by Charles MacDonald and ported to the Nintendo GameCube by The “Genesis Plus” Team.

It is an open source emulator and a community project which aims to bring you blast processing into the past. Using this “emulator” you will be able to enjoy all of your classic 16bit games in all of their glory. Genesis Plus has been converted from a PC based platform to run on the GameCube’s proprietary PPC Gekko processor and features customized code to give you the best gaming experience possible.

This port is based on Genesis Plus 1.2 source code but it has been largely modified to improve overall compatibility, emulation accuracy as well as adding various peripheral supports and interface extra features. Please have a look at history.txt for a complete changelog.

FEATURES

- accurate & full speed Sega Genesis emulation
- Stereo Sound (@48 kHz)
- 1~4 Players support
- automatic SRAM/FreezeState (optional)
- ROM Information Screen
- Zipped roms support (.zip only !)
- Interleaved roms support (.smd, .bin are also supported)
- Load roms from SDCARD or DVD (4.7GB DVD support for Wii users, in GC mode only)
- Load/Save SRAM and FreezeState files from/to Memory Card & SDCARD (compressed)
- Original NTSC & PAL progressive rendering modes (240p/288p) support
- Enhanced Interlaced Mode 2 (double resolution screen) support
- Interlaced (576i/480i) & Progressive (480p) TV mode support
- Wiimote, Nunchuk & Classic Controller support (WII mode only)

- Extra emulation support for:

    - NTSC Genesis (60Hz) & PAL Megadrive (50Hz) timings
    - 6-Buttons gamepad
    - Sega TeamPlayer & EA 4-Way Play
    - J-Cart (autodetected)
    - Sega Menacer (autodetected for Menacer 6-in-1 game)
    - backup SRAM
    - serial EEPROM (used by a few games as backup memory)
    - ROM bankswitch (Super Street Fighter 2)
    - SRAM switch (Phantasy Star 4, Legend of Thor, Sonic 3 & Knuckles)
    - Mappers & copy protection devices used in many unlicensed/pirate cartridges
    - SVP dsp (Virtua Racing)
    - Game Genie
    - full Overscan area (horizontal & vertical colored borders)
    - TMSS BIOS (optional)

CREDITS

- Original emulation code by Charles Mac Donald (http://cgfm2.emuviews.com/)
- Z80, 68000 and YM2612 cores by the MAME team (http://mamedev.org/)
- Alternate YM2612 core by Stéphane Dallongeville (http://gens.consolemul.com/)
- SN76489 core by Maxim (http://www.smspower.org/maxim/)
- SVP Core by notaz (http://notaz.gp2x.de/svp.php)
- Original Gamecube's port by softdev, honkeykong & markcube
- Additional code (emulation core, extra features, compatibility fixes,…) by eke-eke
- Graphical interface and icon design by brakken (http://www.tehskeen.net)
- libFAT port by Sven Peter (_svpe) & wintermute
- Wiiuse library by Michael Laforest (para), Wii port by shagkur
- libOGC by shagkur and winterMute
- DevkitPPC & Devkitpro by winterMute

SPECIAL THANKS

- Tasco Deluxe for his work around the SVP chip and for his documentation of Realtec mapper,
- Bart Trzynadlowski for his documentation about SSFII and 68000 undocumented behaviour.
- Haze for having found and documented many unlicensed cartridges protections.
- Notaz & Stef, respective authors of Picodrive and Gens, their respective sourcecodes were a great source of inspiration
- Aamir, author of Regen, for some interesting tips
- Softdev for all his great work and inspiration.
- Tmbinc for having made Gamecube homebrew possible.
- The Twiizer team and affiliates for the incredible stuff they discovered.
- People at Tehskeen's forums for their feedbacks and support.
- People at SMS Power and Spritesmind forums for having provided so many useful technical informations

HOW TO COMPILE THE SOURCECODE ?

According to the GNU status of this project, the sourcecode MUST be provided for any binary releases you made. To recompile the sourcecode, you will need to have installed:

1. last DevkitPPC environment
2. last compiled libOGC sources

HOW TO RUN ?

genplus_cube.dol is the executable running in Gamecube mode. They can be loaded on a Gamecube or a Wii (using GC compatible mode) through various methods (Bootable DVD, SDLOAD,...). If you have no idea on how to load a DOL, please go here on follow the available guides: http://modyawii.tehskeen.com (Booting Homebrew Section).

genplus_wii.* are executables running in WII mode, using extra features like wiimotes and native SD slot support. They can be loaded on a Wii using either the TP Loader or the Homebrew Channel. See http://www.wiibrew.org/ and http://hbc.hackmii.com/ for more informations on how to run .dol and .elf files on your Wii.

.dol and .elf versions are provided, both are exactly the same binary, these are just two different file containers.

WHERE TO PUT ROMS ?

- SDCARD users can put roms anywhere. The program will always look first for the directory "**/genplus/roms**" so it's advised to create these directories and put your roms in there. If the directory does not exist, the program will browse the SDCARD from the ROOT directory.

  - In WII mode, insert the SDCARD in the native SD slot (SD-adapter are NOT supported).

  - In GC mode, you can use any of the two CARDSLOTS with a dedicated SD-adapter like the SD-Gekko. The default used slot will be detected during initialization.

- In GC mode only, you can also use a DVD to load the roms: the format of the image you burned must be ISO9960 compliant or you won't be able to read from it. The maximal readable size is 1.35GB for Gamecube users and 4.7GB for Wii users. Be aware that DVD is NOT accessible unless your console has been modified with a drivechip.

When putting roms either on DVD or SDCARD, it is recommended to use subdirectories: there is a limit of 1000 files per directory that could be read and the less files you put per directory, the fastest you will be able to browse them.

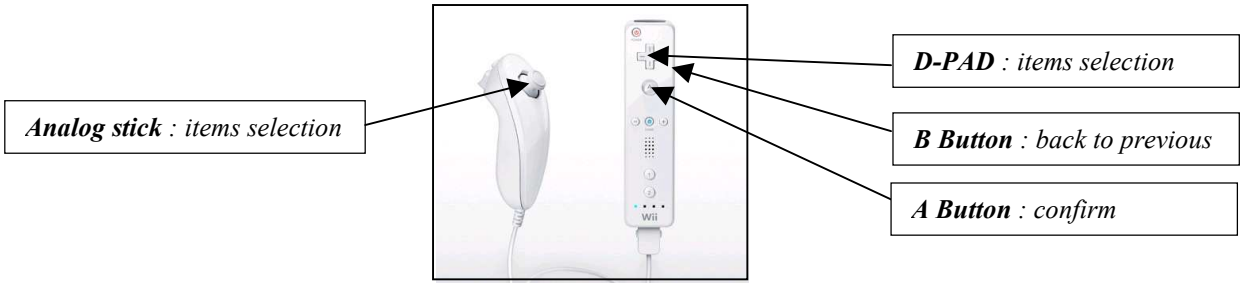
HOW TO USE ?

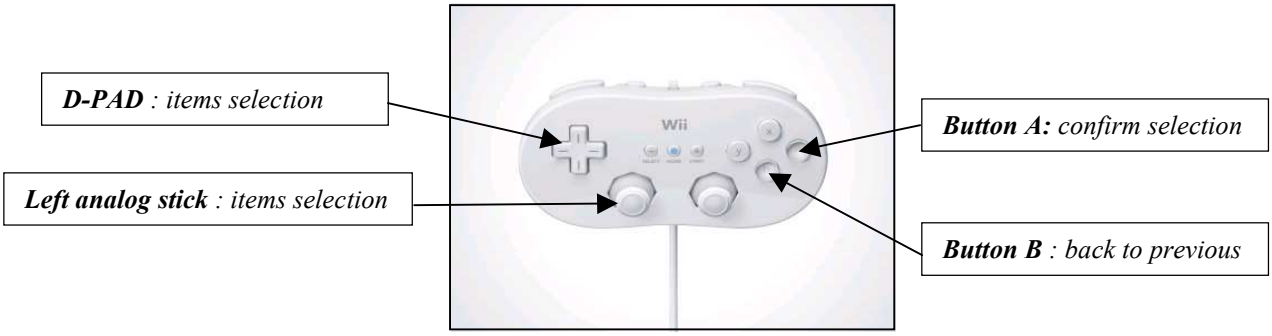
You'll start off with the main introduction screen and after pressing "A" you will be at the main menu.

When you are navigating through the menus, the following keys on your Gamecube controller are used:

WII version :

You can also navigate through the menu using the Wiimote and expansion controller. In the Menu, keys are mapped as the following:





PLAY GAME

This will takes you into or back to the game. During gameplay, use a Gamecube pad to control.

WII version :

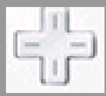
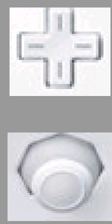
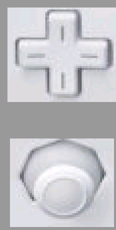
You can also use the Wiimote and expansion controllers. There are **3** possible configurations depending on the type of expansion controller that is inserted when you play a game:

1. WIIMOTE only
2. WIIMOTE + NUNCHUK combination
3. CLASSIC CONTROLLER

Each of three configurations have a default key mapping listed below but can also be reconfigured separetely (see "***Configure Inputs***" option) for each players. A maximum of 4 wiimotes can be synchronized.

Also, the gamecube controller might be reconfigured.

The following table gives you the default mapping for each configuration, dark grey entries aren't reconfigurable.

				
				
START	START ○	+	+	+
A	B	A	A	y
B	A	1	B	b
C	X	2	Z	a
X	L			L
Y	Y			X
Z	R			R
MENU	Z	⌂	⌂	⌂
SOFT RESET	L + Z	−	−	−

GAME INFOS

This screen shows some basic informations for the loaded ROM. You can use Up/Down buttons or Analog Stick to scrolldown the screen and display all informations. At the bottom of the list, you can see the peripherals that the game should be supporting: please note that if it supports 6-button gamepads, they are automatically selected for you. Otherwise, the standard 3-button pad is used (this can also be forced in Joypad Config menu).

HARD RESET

This should be like switching OFF/ON the POWER button on a real Genesis. This will completely reinitialize the genesis virtual machine.

LOAD NEW GAME

- In Wii mode, this will automatically let you browse into the SDCARD inserted in the native SD slot.

- In GC mode, you can choose to load a rom either from a SDCARD using a SD-adapter (slot is now automatically detected during initialization), or from a DVD.

A file selection menu should appear. In this new selection menu, the following controls can be used:

GAMECUBE PAD

- A button : load the selected file
- B button : go up one directory
- Z button : quit the file selection menu
- L/R triggers : go down/up one full page
- Left/Right buttons or Analog stick : scroll the selected entry's filename when it can't be full displayed
- Up/Down buttons or Analog stick : select previous/next file

WIIMOTE, WIIMOTE+NUNCHUK

- A button : load the selected file
- B button : go up one directory
- HOME button : quit the file selection menu
- -/+ Buttons: down/up one full page
- Left/Right buttons or Analog stick : scroll the selected entry's filename when it can't be full displayed
- Up/Down buttons or Analog stick : select previous/next file

CLASSIC CONTROLLER

- A button : load the selected file
- B button : go up one directory
- HOME button : quit the file selection menu
- L/R triggers: down/up one full page
- Left/Right buttons or Analog stick : scroll the selected entry's filename when it can't be full displayed
- Up/Down buttons or Analog stick : select previous/next file

FILE MANAGEMENT

Let you managed SRAM and FreezeState files:

- **SRAM Manager**: Let you load/save SRAM data from/to the selected device
- **STATE Manager**: Let you load/save FreezeState data from/to the selected device

NOTE: In WII mode ONLY, the configuration file (genplus.ini) is automatically loaded at startup and saved every time an option is modified. The file location is /genplus/ on the SDCARD.

For each submenu, you can choose the device type type (for SDCARD, the default slot is automatically detected upon startup). Be sure to set this according to your system configuration before saving/loading files.

- **DEVICE**: Let you choose the device to use (SDCARD , MCARD SLOT A, MCARD SLOT B).

NOTES: When using NGC Memory Card in SLOTA, some mounting errors may occur. In this case, remove and insert the Memory Card again before trying to save/load anything or use SLOTB. Be sure to have also enough space on the Card before trying to save something (Freeze State and SRAM files are usually compressed).

When using SDCARD, the directory **/genplus/saves** is automatically created. The default SDCARD location is detected during initialization.

EMULATOR OPTIONS

Video Options

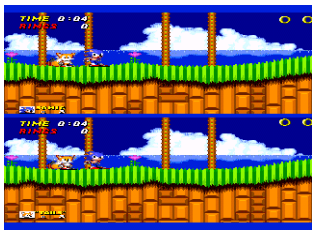
Aspect let you choose the Display Aspect Ratio:

- ORIGINAL mode automatically set the correct aspect ratio exactly as if you connected a real Genesis/Megadrive on your TV. In this mode, the full resolution (720 x 480 or 720x574 pixels) is used to include horizontal and vertical borders around the active display area.

- STRETCH mode let you adjust horizontal and vertical scale values so that the active display fits your TV screen. When using this mode, borders are not emulated.

Render let you choose the Display Rendering mode:

- ORIGINAL let you use the original Genesis/Megadrive rendering modes: these modes generally output a progressive 240 lines (288 lines for PAL) display. Interlaced modes (240i/288i), used in Sonic 2 (2 players mode) for example, are also supported and automatically detected. In this mode, games should look exactly as they did on the real hardware.



- BILINEAR vertically scales (using hardware filtering features) the original display to a 480 lines (574 lines for PAL) interlaced display. In this mode, because of the higher resolution, games generally look better than on the real hardware but some artifacts might appear during intensive and fast action.

- PROGRESS swith the rendering to Progressive Video Mode (480p), only use this with component cable and a compatible TV.

TV Mode let you choose the TV Mode to use:

- 50/60Hz: in this mode, the Gamecube automatically switch between the appropriates 50hz and 60Hz TV modes depending on the Genesis current region mode. This makes PAL & NTSC games looking exactly like they did on a real Megadrive/Genesis.

- 60Hz: in this mode, the Gamecube always use a 60Hz (NTSC or PAL60) TV mode, use this if your TV does not support 50Hz.

- 50Hz: in this mode, the Gamecube always use a 50Hz (PAL) TV mode, use this if your TV does not support 60Hz.

Borders let you enable/disable the border colour emulation: when ON, the background colour is used (like on a real Genesis/Megadrive). When OFF, borders are forced to black. When ASPECT mode is set to STRETCH, this option is automatically set to OFF. On the other way, enabling this option automatically set ASPECT mode to ORIGINAL.

Center X/Center Y let you adjust the screen position while keeping the display aspect ratio.

Scale X/Scale Y let you adjust the display aspect ratio. This option is only accessible when using STRETCH aspect mode.

Audio Options

PSG Volume let you adjust the global volume level for the PSG output (0~200%)

FM Volume let you adjust the global volume level for the FM output (0~200%)

Boost Volume let you modify the overall sound level (0~4x). This could be useful when adjusting FM and PSG relative levels.

Setting those values too high may produce some bad effects. Default values depends on the current selected FM & PSG core and are automatically set when switching between cores (see below).

HQ YM2612 is only used when selecting Gens FM core: when ON, the YM2612 is emulated at the original frequency, resulting in more accurate sound rendering.

SSG-EG is used to enable/disable the SSG envelope emulation. This feature exists on real YM2612 but is actually not properly emulated. Some games may sound weird when it's activated, where as others may need this to sound correctly.

FM CORE let you choose which YM2612 emulation core to use, both have specific issues with some games:

- GENS is the core used in Gens, a famous Genesis emulator for PC platforms
- MAME is the one used in the M.A.M.E emulator (default)

System Options

Region let you force the region setting for the Genesis system (This is also used to force PAL or NTSC timings):

- AUTO: original game region is automatically detected through ROM header when loading the game
- EUR (europe PAL)
- USA (usa NTSC)
- JAP (japan NTSC)

Some games may display various things depending on the selected Region setting but also may not work correctly if they have some internal region detection code.

Use BIOS let you enable/disable Genesis BIOS. If you want to use this feature (this is not required to play games), the BIOS rom (not provided) must be renamed as ***BIOS.bin*** and placed in the /genplus/ directory on the SDCARD.

SVP Cycles let you adjust the number of CPU cycles per line to run for the emulated SVP chip used in Virtua Racing. This additional CPU consumes a lot of resources so you can lower the default value to improve the emulation framerate. Although, keep in mind that the SVP chip will also be running slower, which will result in slower 3D rendering. In Wii mode, this is not necessary to modified the default value.

Force DTACK can be useful to prevent games accessing illegal memory area to lockup the system (as it indeed happens on the real hardware). When this option is enabled, the system continues to run even if an illegal area has been acceded (example: “Sonic Crackers” prototype).

SRAM AUTO let you enable/disable automatic *SRAM* loading when a new game has been loaded and autosaving when you quit the emulator or load a new game. This option let you specify the default location for the SRAM files : SDCARD, MEMCARD (slot A or slot B)

FREEZE AUTO let you enable/disable automatic *FreezeState* loading when a new game has been loaded and autosaving when you quit the emulator or load a new game. This option let you specify the default location for the FreezeState files : SDCARD, MEMCARD (slot A or slot B)

Controls Options

PORTA and **PORTB** let you choose which type of device to be plugged in each two Genesis input ports:

- GAMEPAD: single gamepad (3 or 6-buttons, see above)
- MULTITAP: multiplayer adapter (Sega Teamplayer or EA 4-Way Play)
- NONE: unplugged

Changing Controller Type or Port settings will automatically reset the current game.

Configure Player let you change the current input that should be modified by the options below.

NOTE: Actually, up to 4 gamecube controllers and up to 4 wiimotes+expansion are supported but the maximum of emulated input (i.e genesis input controllers) is still fixed to 4. Future versions might be able to support up to 8 players simultaneously for games that are supporting this feature.

TYPE let you choose the type of the emulated Genesis gamepads (3-Buttons or 6-Buttons) : Genesis Plus automatically detects and set this option if the current game supports 6-Buttons but you can also force 3-Buttons gamepads if you want:

- 3BUTTONS: use classic Genesis controllers
- 6BUTTONS: use 6-Buttons Genesis controllers

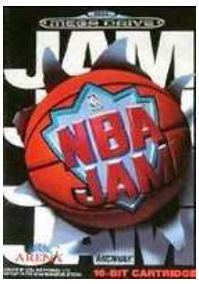
NOTE: When using the Wiimote or the WIIMOTE+NUNCHUK combination, the buttons layout is not really adapted for emulating a 6-buttons gamepad, so it is advised to force the option to 3BUTTONS after you loaded the game.

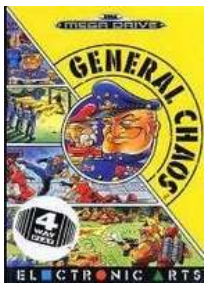
GAMEPAD let you modify the way buttons are mapped on the gamecube pad. Just follow the instructions and press the desired buttons when asked.

WIIMOTE let you modify the way buttons are mapped on the current wiimote configuration (remember that 3 configurations can be used: WIIMOTE, WIIMOTE+NUNCHUK and CLASSIC CONTROLLER). Just follow the instructions and press the desired buttons when asked.

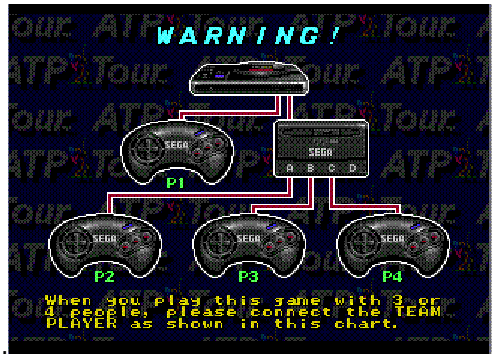
Some notes about Peripherals:

- MULTITAP is disabled by default. Only activate it with games supporting one of the following multiplayer adapters: actually, ***EA 4-Way Play*** and ***Sega TeamPlay*** adapters are fully supported.

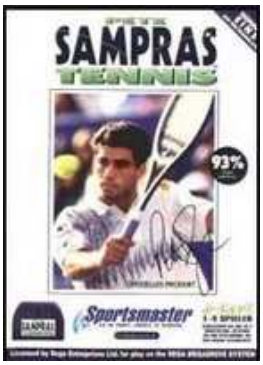


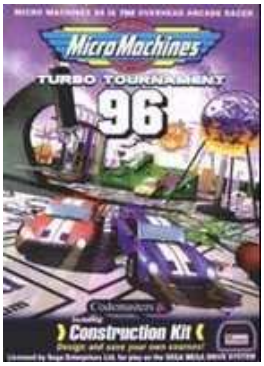


- Most multiplayer games will work with MULTITAP plugged in PORTA but some of them require a GAMEPAD to be plugged in PORTA and the MULTITAP to be plugged in PORTB. MULTITAP could be plugged in both ports but only games supporting more than 4 players can take advantage of this configuration. There is actuallya limit of max. 4 controllers so, only the 4 first gamepads will effectively been seen as plugged



- ***J-CART games*** (Micromachines games, Pete Sampras games, Super Skidmarks) use a built-in adapter to enable 2 additional gamepads to be plugged and are not compatible with any of the above adapters. So, do not activate MULTITAP with those games, they are automatically detected by the system which configure itself to enable up to 4 players support.





- When the 6-in-1 Menacer game is detected, PORTA is forced to NONE and PORTB forced to MENACER, you can not change those settings until another rom is loaded (previous settings will be restored). The only Genesis game that requires Sega Menacer lightgun support is the Menacer 6-in-1 game. Menacer input is automatically activated when you load this particular game: use the analog stick and be sure to activate the crosshair within game when it's possible.

Game Genie Codes

This screen lets you enter up to eight Game Genie codes. Use the A key to select/release an entry and the B key to exit.

NOTE: Game Genie codes are reseted each time a game is reloaded.

The last options are specific to GC and WII mode:

- **GC mode:**

STOP DVD MOTOR

Stop the DVD motor and the disc from spinning during playtime (GC mode only)

SD/PSO RELOAD

if you correctly used SDLoad or PSOLoad, it will reboot to them.

SYSTEM REBOOT

This will reset the system (hot reset) .

- **WII mode:**

RETURN TO LOADER

This will allow you to return to the Homebrew Channel or to TP Loader.

SYSTEM MENU

This will return to the Wii System Menu. Use this to quit the program if you are running it directly from is own channel.

Enjoy the Past !

Eke-Eke