INTRODUCTION

Genesis Plus emulates a Sega Genesis or MegaDrive console. It has been originally written by Charles MacDonald and ported to the Nintendo GameCube and now the Wii 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 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 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/Savestate (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 Savestate 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
    - cycle accurate VDP (DMA, FIFO, HV interrupts, HBLANK,…)
    - 6-Buttons gamepad
    - Sega TeamPlayer & EA 4-Way Play multitap adapters
    - J-Cart adapter
    - Sega Menacer & Konami Justifier lightguns
    - 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)
    - PICO hardware (experimental)

CREDITS

- Original emulation code by Charles Mac Donald (http://cgfm2.emuviews.com/)
- Z80, 68000 and YM2612 cores by the MAME team (http://mamedev.org/)
- YM2612 fixes by Alone Coder
- 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 for their help, the source code of their respective emulator, Picodrive and Gens, was also a great source of inspiration.
- AamirM, author of Regen, for some emulation fixes
- Nemesis, for having tested and documented many unknown YM2612 features
- Charles Mc Donald for his excellent documentation covering the Genesis hardware and for having designed such a great emulator.
- Softdev for all his great work and inspiration.
- Tmbinc for having made Gamecube homebrew possible.
- The Twiizer team and affiliates for their work around hacking the Wii
- Tehskeen's forum members for their feedbacks and support.
- SMS Power and Spritesmind members for their technical help.

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 application 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.dol is the application 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. To use it with the Homebrew Channel, simply rename genplus_wii.dol to boot.dol and place it, with meta.xml & icon.png, on your sdcard, in the /apps/genplus directory.

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.

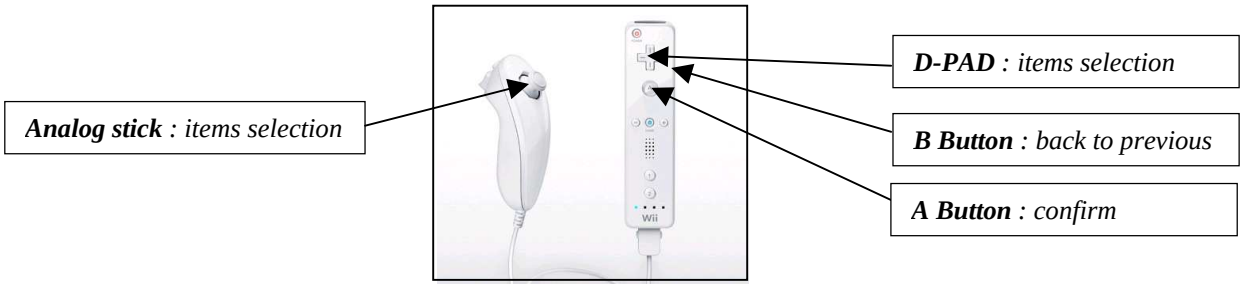
HOW TO USE ?

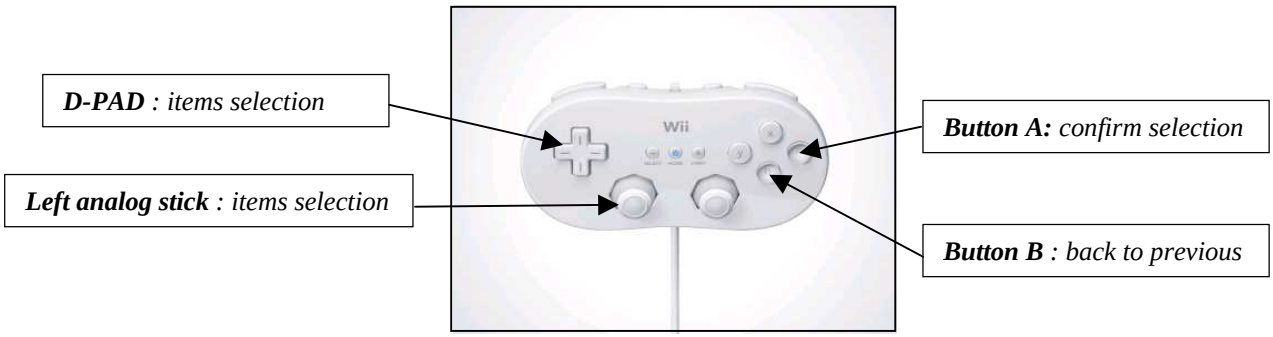
You'll start off with the main introduction screen and after pressing "A" you will be at the main menu.

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:





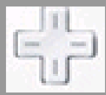
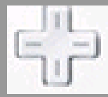
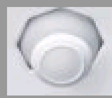
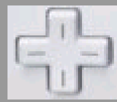
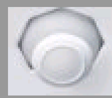
PLAY GAME

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: WIIMOTE only, WIIMOTE + NUNCHUK combination or CLASSIC controller

Each of three configurations have a default key mapping listed below but can also be reconfigured separately (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
MODE	START ○ Z	−	−	−
MENU	Z	⌂	⌂	⌂

SOFT RESET	L + Z			

Note: Soft Reset can also be performed by pressing the gamecube/Wii RESET button.

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

Load Recent let you browse a ROM history list with the ten last opened roms.

Load from SDCARD let you browse a SDCARD. The Wii version requires a SDCARD inserted in the native SD slot, whereas the Gamecube version requires using a SD-Adapter plugged either in MCARD Slot A or B (automatically detected upon start-up)

Load from DVD let you browse a ISO9660 DVD. Actually, only the Gamecube version supports this feature. A modchip is also required .

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:

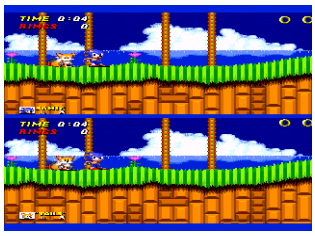
- ORIGINAL mode automatically set the correct aspect ratio exactly as if you connected a real Genesis/Megadrive on your TV. In this mode, the full resolution (720 x 480 or 720x574 pixels) is used to include horizontal and vertical borders around the active display area.

- 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 enables 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.

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: when ON, the YM2612 is emulated at the original frequency, using sample interpolation and 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 still not accurately emulated so you can deactivate it if some games sound too weird. Actually, the MAME core handles this feature better than the GENS core.

FM CORE let you choose which YM2612 emulation core to use:

- 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 auto-saving when you quit the emulator or load a new game. This option also let you specify the default location for the SRAM files : SDCARD, MEMCARD (slot A or slot B)

FREEZE AUTO let you enable/disable automatic *Savestate* loading when a new game has been loaded and auto-saving when you quit the emulator or load a new game. This option also let you specify the default location for the Savestate 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 genesis controller (3 or 6-buttons, see above)
  - TEAMPLAY: Sega TeamPlayer multitap (can be affected to each port for max. 8 players)
  - WAYPLAY: EA 4-WayPlay multitap (use both ports, max. 4 players)
  - MENACER: Sega Lightgun
  - JUSTIFIERS: Konami Lightguns
  - NONE: unplugged

  Notes:

  (1) when loading some specific games, these options are automatically set to match the appropriate configuration.

  (2) when a game is known to use J-CART, it is impossible to connect any multitap adapter.

  (3) when using EA 4-WayPlay, both ports are automatically used.

  (4) it is impossible to have both port simultaneously unplugged.

  (5) it is only possible to connect lightguns (MENACER or JUSTIFIERS) on Port B.

- **Gun Cursor** let you enable/disable guns cursor display when lightgun configuration is used.

- **Set Player** let you change the current player number that should be configured below.

Note: Up to 4 gamecube controllers and 4 wiimotes with expansion are supported, making a maximum of 8 players in the Wii version, and 4 players in the Gamecube version.

- **Device** let you choose the type of device assigned to the current player. NONE means that no device is assigned, GAMECUBE means that a gamecube controller will be used, WIIMOTE, NUNCHUK or CLASSIC, that the wiimote or his expansion configuration will be used.

Note: The device port will automatically be set according to the player number. Players 1-4 and Players 5-8 use ports 1-4. With one exception: if a CLASSIC controller is plugged into a WIIMOTE, the WIIMOTE can be also affected to any unaffected players. This way, you could for example use a two-player configuration with only one connected Wiimote and a Classic Controller. Also, when selecting an already assigned device, the player that used to be assigned to this device will become unaffected.

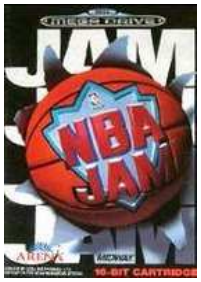
- **Type** let you change the type of the Genesis gamepad (3-Buttons or 6-Buttons) : Genesis Plus automatically detects and set this option if the current game supports 6-Buttons but you can also force 3-Buttons gamepads if you want.

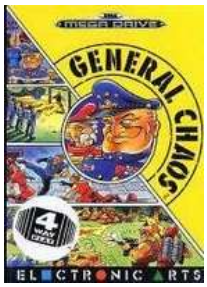
Note: When using a Wiimote, the pad type is automatically forced to 3BUTTONS as there aren't enough available buttons to emulate a 6-Buttons pad.

- **Configure Inputs** let you modify the default key mapping of the selected device.

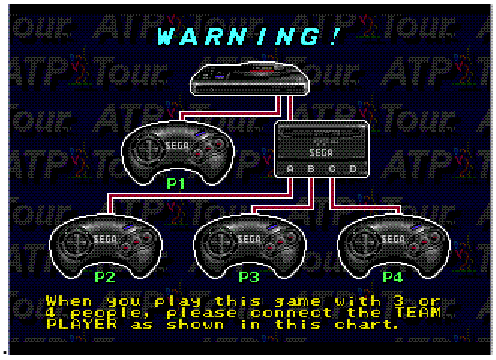
Some notes about Peripherals:

- Multitap is disabled by default. Only activate it with games supporting either ***EA 4-Way Play*** or ***Sega TeamPlayer*** adapters. If you don't know which one the game is supporting, set TEAMPLAY as default, the emulator automatically detects if a game requires WAYPLAY and will switch the configuration automatically.

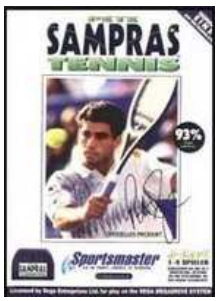




- Most multiplayer games will work with TEAMPLAY plugged in PORTA but some of them require a GAMEPAD to be plugged in PORTA and the TEAMPLAY to be plugged in PORTB. Some games can support up to 8 players, this is enabled by plugging the TEAMPLAY in both ports. Please note that the gamecube version only support a maximum of 4 players.



- ***J-CART games*** (Micro Machines series, Pete Sampras series, 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. They are automatically detected by the system which configure itself to enable up to 4 players support.



- When **MENACER** or **JUSTIFIERS** are enabled, lightgun games often require a gamepad to be connected on Port A. To get around this, the emulator will automatically switch player inputs so that Player 1 (and eventually Player 2) will corresponds to the devices on **Port B**. In that case only, if a device is connected on Port A, it will be affected to Player 3 and afterwards. When using JUSTIFIERS, a maximum of 2 players are supported.

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 differ between GC and WII versions:

- **GC version:**

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) .

- **Wi version:**

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.

Thank you for reading !

eke-eke