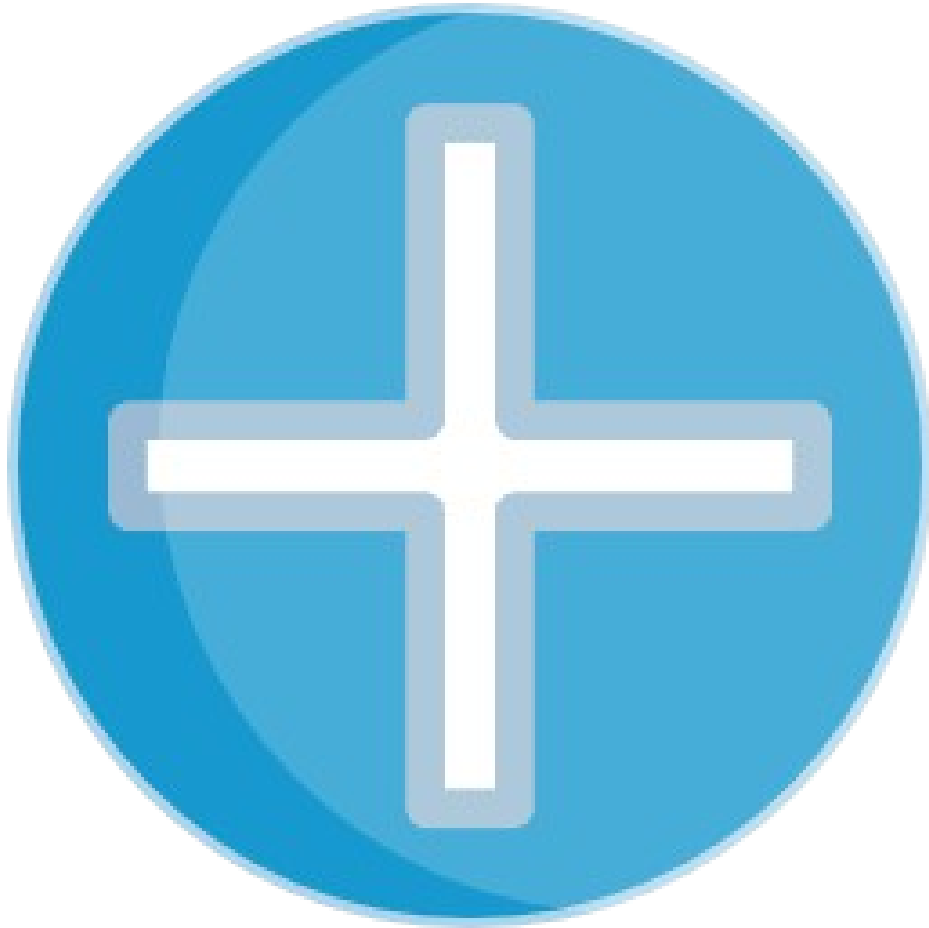


GB ENHANCED+ USER MANUAL



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1. Foreword

This manual will attempt to cover all the functions users may encounter while operating GB Enhanced+. The information contained herein doubles as both an operating guide and reference to the emulator's various features.

GB Enhanced+ is the successor to the original GB Enhanced project (note the shiny "+"). It is a Game Boy, Game Boy Color, and Game Boy Advance emulator that aims to provide as many enhancements as reasonably possible. Although there is much work to be done in later releases, such as cheat code support, emulation of the GB Camera and Printer, and implementing pixel shaders, GBE+ is dedicated to pursuing these types of things.

Perhaps most importantly, GBE+ supports an emerging emulation technique for 2D games, what the project refers to as **Custom Graphics**, or **CGFX** for short. Like HD textures for N64 games, CGFX lets users replace in-game graphics with their own pixels, from simple recolors to full-blown high-definition versions. While replacing graphics for 2D systems is not common among other emulators, GBE+ is proud to push the boundaries in this field of emulation.

What started as an idle dream to make my own NDS emulator has become something much more than the humble project I founded in 2012. GBE+ is still in early development, despite its 1.0 release. Many, many rough edges remain. There is still a lot more to go through before I can see my vision completed, however, I believe this project is on the right path. In the coming years, we'll see where the road takes this emulator. In the meantime, I hope this manual will give users an insight to how the program works, what it's capable of, and where it's going.

D.S. Baxter - aka Shonumi

2. Getting Started

Getting started with GBE+ is relatively simple. The emulator does not have many requirements to build from source, and installation should be simple for most operating systems. Please consider, however, that GBE+ has not been tested on OS X in any way, shape, or form. This is due to the lack of access to the operating system. Users can still build it themselves on OS X.

Currently, GBE+ has minimal hardware requirements. Any recent computer should be able to run the emulator just fine. Certain tasks, such as processing large amounts of CGFX, require more single-threaded processing power. Under some circumstances CGFX may also benefit from more RAM. Generally, however, these scenarios are reserved for intense use of HD graphics. Otherwise GBE+ is not a demanding emulator.

It should be noted, however, that as of 1.0, GBA games in general eat up a lot of CPU resources. This is due to inefficiencies in the GBA core that will be addressed in the very near future.

GBE+ aims to build and run with minimal dependencies. The recommended minimum version of OpenGL is 2.1. Any computer released in the past decade should support this without any trouble. Future versions of GBE+ will move to OpenGL 3.3 (for backward compatibility) and Vulkan.

Currently, GBE+ supports both 32-bit and 64-bit systems. For the foreseeable future, this will remain the case. For CPU emulation, any dynamic recompilers added to later releases, will only target x64 systems. Nevertheless, GBE+ will technically continue support 32-bit systems at that time through CPU interpreters.

For a general roadmap of where GBE+ will go from here, please see the FAQ in **Section 6** for more details.

2.1 Obtaining, Compiling, & Installing GBE+

For Windows users who do not want to build from source code, please visit the project's GitHub page and check out the 1.0 release on the Release page. Download the zip file and extract it. Simply double-click the executable file *gbe_plus_qt.exe* to run the GUI version of the emulator. For those interested in the command-line version of GBE+, run the *gbe_plus.exe* file from the command prompt. The majority of this manual focuses on the Qt version of GBE+, however, please refer to **Section 2.3** for more details about running the command-line version.

Linux users have to compile the source code themselves. Compiling from source requires prior installation of the following programs and libraries:

- GIT
- CMake
- SDL 1.2
- OpenGL
- Qt4 or Qt5 (optional)

CMake will check to make sure it can find all of the necessary dependencies before the build process begins. Before that happens, however, GIT must retrieve the source, or the source tarball from the Release page must be downloaded and extracted. The following terminal instructions detail how to download the source code through GIT, compile it, and install the emulator:

```
git clone https://github.com/shonumi/gbe-plus.git
cd gbe-plus
mkdir build && cd build
cmake ..
make && make install
```

Note that this will install the very latest source code. GIT can check out specific revisions based on the hash of that commit. Consult the GIT documentation for checking out revisions and the GBE+ GitHub repository for the appropriate hash. Once CMake installs GBE+, the emulator can be called via *gbe_plus* for the command-line version, or *gbe_plus_qt* for the Qt version.