

Battlezone II version 1.3.7.2 Public Beta

Readme

This project has been in development since September/October 2001, headed by two programmers from the Battlezone II team: Ken 'Ultraken' Miller, and Nathan 'GSH' Mates.

A number of tweaks and enhancements are in v1.3:

- Updated graphics engine that uses (and requires) DirectX 9.0c for the best balance of compatibility and speed. Hardware transform & lighting is now supported, allowing a lot of work to be offloaded from your CPU and onto your graphics card. New DirectX features like fullscreen antialiasing (aka multisample antialiasing) are supported to improve visual quality. DXT Textures are supported to more efficiently use graphics card memory.
- Music from the BZ2 CD is now distributed with this patch, in ogg vorbis format, allowing for better performance. You can also set up a random playlist of music to be played ingame, if you copy in .ogg files to the right place and the right name. (Note: other music needs to be user-supplied.)
- Much greater MOD (game modification) support, allowing up to 26 total races to be active at once. Recycler variants and Exta Options pages allow easy tweaks to gameplay with much lower chance of bad assets. Maximum vertex counts for models has been increased over sevenfold. Many MODders have been among 1.3 beta testers, and have been working to take advantage of the new features. Mods supporting 1.3 are not included in this download, but are available.
- Developed/Tested on Windows 2000/XP/Vista, for much better compatibility out of the box. Should work on Vista without requiring Administrator access. Limited WINE testing has been done as well. For Vista/Win7, should fully support being installed to paths with unicode, has high-resolution icon for Windows Explorer
- Many crashes/freezes fixed.
- Performance optimizations to DirectX 9 graphics, most noticeably in the terrain rendering. Satellite view should be far faster, especially on slower machines
- EMBM bumpmaps work once again. High res shadows are re-enabled, but still just as buggy as it's always been (since Battlezone II v1.0)
- Local fog should look better
- Various crash bugs fixed

- Max vertex count for models has been upped to 20,000 verts/model; old limit was 2730 verts/model. No stock assets have higher poly counts, but mods may take advantage of that.
- Redone audio system that supports far more channels (up to 64) and DirectSound3D for a far more immersive experience. Note: not all sound cards on the market support that many channels; if the driver on your system notes a limit under 64, BZ2 will use that instead.
- Support for Ogg Vorbis compressed sounds - similar to mp3 files, but with higher quality.
- Enhancements to many parts of the game, including AI, craft handling, etc.
- Many more pregame options for IA, DM, Strat & MPI games (feature available to MODs to define custom options pages on a per-map basis)
- Bots in DM, and some additional DM gameplay modes.
- Strategy-CTF game mode -- capture a goal, tug it back to your recycler to win, on 6 classic maps. Finally a good use for tugs in MP!
- Over 80 additional Instant Action & Multiplayer maps by several mapmakers within the BZ2 community, and tweaks to some existing maps to reduce bugs. As of 1.3.7.2, there are over 20 classic & additional IA maps, and over 140 classic & additional MP maps installed.
- Several additional security measures to make cheating in multiplayer much more difficult; deliberate remote crashing of games should be fixed.
- New BZ2 editor screen layout files contributed by testers to expose more functionality that was already there.
- Ability to rotate buildings (on 90-degree increments) for even more base-building fun
- Updates to the manual (located in the Extras folder where BZ2 is installed to) to give updated and more accurate information
- Includes over 1.1MB of text files listing changes made since 1.2. This changelog contains our (minimalist) notes as to what changed for each version, and isn't guaranteed to be easily understood. But, it may be useful reading.
- More features, including weapon linking, thumpers, and variable gravity DM maps

- Many more modder features, such as 60-char ODF names, inheritance, tons of new tuning values, etc
- Performance optimizations - Streaming SIMD Extensions (SSE) are used to take more efficient use of your CPU
- Fewer resyncs, units (human & AI) should warp less online
- Easier to host games w/ automatic UPNP, Windows Firewall support(*)

*: requires router w/ UPNP support, and Windows Firewall as your primary firewall; other firewall software/hardware will still need some manual attention

The major changes for 1.3.7.2 Public Beta are:

- Wrote a RakNet master server replacement in Google Go with a SQL backend. This is hosted on my own server
- Implemented light-weight multithreading where it seemed safe to do so; this and SSE2 optimizations should now provide a smoother framerate ingame
- FOV is adjustable in the menus (about time!)
- Work to make 1-shot weapons (e.g. laser) in MP more visible to remote players
- Fonts should look cleaner at larger resolutions ($\geq 960 \times 720$), and up to a 5x resolution scale is possible
- Various other fixes and optimizations.

For now, this patch will be pretty much English-only. If you have a foreign (French or German) version of BZ2, this patch will replace a lot (but not all) of the files used to display text ingame with English. Voiceovers and other sound effects will remain in the installed language. A translated version of these text items may happen at a later time.

A special note: one of the **bugs** fixed is the infinite flying bug present in BZ2 1.0 - 1.2. This was removed because it is considered to be a bug by those of us who worked on BZ2 from the beginning. It is not due to complaints from "newbies" or the like. Certain people certainly feel strongly about this. Fine. Please realize that feelings are not an argument. Whining about this will not change anything-- we've heard such complaints for years, and your comments will only serve to harden our resolve in this.

Compatibility w/ previous BZ2 versions

Some notes on compatibility w/ previous versions:

- Like all other BZ2 patches, the 1.3 patch is not network compatible with any other version-- all players in the game must be running the exact same version (i.e. 1.3.7.2 public beta)
- Maps & DLLs for BZ2 1.2 should load fine. However, any map/dll that depends on certain behavior in the AI, etc for scripting may need tweaking.
- Progress in Singleplayer missions, preferences should be read fine; where more options than 1.2 exist (especially the sound setup), users may need to adjust those new options if they don't like the defaults. 1.3 uses a new file format for pilots/prefs, and upgrades 1.2's files on reading them. Those new preferences files can not be read by 1.2.
- Mid-mission savegames from BZ2 1.0, 1.1, 1.2 or 1.3pb1-pb4 can not be read, as the file formats changed too much. But, as noted above, progress in SP missions is left untouched.
- Missions created with the editor in 1.3 will not be readable in previous versions, same with savegames, etc.
- Many MODs for BZ2 will be uninstalled as part of the install of 1.3. Some broken MODs that installed themselves into the Data folder (which should **never** have happened, but some people refused to do things right and install to addon) may have to be manually deleted.
- MODs that replaced out large chunks of the BZ2 shell (aka Forgotten Enemies) may need extensive tweaks before they can work with 1.3. There are various works in progress to make such MODs work, and they may be complete by the time you read this.

Requirements for this patch:

HD Space:

The 1.3.7.2 patch is currently about a 140MB download, with the bulk of that coming from additional maps, as well as updates to all the textures. The 1.3 download is designed to upgrade any previous version of BZ2 (1.0-1.2) to 1.3. Approximately 194MB free HD space is required to install this patch over and above the disk usage of your existing BZ2 install.

If you're under 300MB free HD space, it is highly recommended that you get another HD. BZ2, like all Windows apps, uses your HD as swap (pagefile) space if your physical RAM is exhausted. You should have at least 100MB free (250MB recommended) on your HD before starting BZ2. The 1.3 installer can be deleted (or moved to another

system, drive, CD backup, etc) before running 1.3 to get a bit more space.

A unique directory on disk per install of BZ2, based on a fresh install from CD, is the preferred method of installing 1.3.7.2 public beta, as it helps get rid of any debris left over from broken MODs that installed themselves into the data directory, doesn't have any compatibility issues with MODs not yet updated for 1.3, and gives you a clean slate to begin with. If you take this route, you should have at least 650MB of free HD space before starting the separate install is required -- doing some tests here, an install of 1.3.7.2 over a BZ2 1.0 install from CD took a total of over 610MB, not counting the installer.

CPU:

Battlezone II v1.3.7.2 requires Streaming SIMD Extensions version 2 (SSE2), which were introduced with the Pentium IV (4). AMD's Opteron 64 / Athlon 64 (and newer) CPUs also support SSE2. SSE2 provides some framerate boosts, and is now required.

Graphics Card:

Battlezone II v1.3 requires a graphics card (or integrated video) that has DirectX/Direct3D 9.0 (or higher) drivers. A card that can do hardware vertex Transform & Lighting (aka T&L) is highly recommended, and may be required. Limited to no testing has been done on graphics cards without Transform & Lighting. As the first graphics card T&L was first introduced August 1999 -- before Battlezone II 1.0 shipped to stores in December 1999 -- most systems should now have T&L support.

RAM:

Battlezone II's original box specs noted that it required 64MB RAM. However, Windows 2000/XP/Vista and the like require *more* memory than that as their base specs. You should add at least 128MB RAM to what the requirements for your version of Windows are (see Microsoft's website for exact details). Thus, 192MB is a practical minimum amount of RAM for Win2000/XP, though Windows itself will crawl on such a system -- 512MB or more will be better. Vista and/or Win7 will probably require at least 512MB memory; 1GB or better of memory recommended.

Audio:

BZ2 also requires an audio output device (sound card, motherboard audio, etc) that supports DirectX 8.x. 3D positional audio through DirectSound3D is supported, but not required.

Operating System, DirectX:

Windows Vista/7/8/10 (or newer) are required. Support for Windows XP has been dropped by Microsoft, including their compiler. The final standalone DirectX SDK (June 2010) is in use; an installer for that is present in the BZ2 patch installer.

System Recommendations for this patch

Most testing and development of 1.3 has taken place on machines with at least a 500Mhz processor, 256MB ram, and a GeForce or better video card. This may be a good baseline; 1.5Ghz, 512MB ram, and a GeForce 2/Radeon 7200 or better might work even better. With Vista/Win7, at least 1GB of memory is recommended.

Installing Battlezone II from CD on Windows XP/Vista/7

The Battlezone II CD does not contain the best installer, as many have noticed. Especially for 64-bit versions of Windows, the setup.exe in the root folder of the BZ2 CD does **NOT** run, because that setup.exe is a 16-bit application. Battlezone II (the game) is a proper 32-bit application that runs on 32 or 64 bit versions of Windows. But, the CD's initial installer does not run well on modern systems. The best thing to do is to try this first:

1. Insert BZ2 CD. Do not run anything if prompted
2. In Windows, go to 'My Computer' (Windows XP), or 'Computer' (Windows 7)
3. Find the BZ2 CD entry, click on it
4. Go to the setup directory in the BZ2 CD
5. Run the setup.exe (shown simply as the application called 'setup' if you use the Windows default of hiding file extensions)

Hopefully, the above steps work. However, it will sometimes put up a dialog box saying that Windows NT is not supported. For some, click 'ok' to dismiss that message, and the installer works perfectly well after that. If the installer crashes, the following steps may help:

1. Open the BZ2 CD
2. Go to the Setup directory
3. Right-click on Setup.exe, and drag it onto the desktop.
4. Right-click on the shortcut, and select Properties.
5. Select the "Compatibility" tab.
6. Check the "Run in compatibility mode" box.
7. Select "Windows 95 Compatibility Layer" in the popup.
8. Click "OK" to close the Properties dialog box.
9. Double-click on the shortcut to install BZ2.

What uninstalling 1.3?

Sorry, there is no uninstaller for 1.3 specifically. For this reason, it is recommended that

you reinstall BZ2 into a separate directory specifically for 1.3, and apply the 1.3 patch to that directory. There is no need to install any other patches (e.g. 1.2) before installing 1.3 -- there is only a cumulative patch able to upgrade any 1.x release of BZ2 to 1.3.

A separate 1.3 directory is the preferred method of installing 1.3, as it helps get rid of any debris left over from broken MODs that installed themselves into the data directory, doesn't have any compatibility issues with MODs not yet updated for 1.3, and gives you a clean slate to begin with. If you take this route, you should have at least 600MB of free HD space before starting the separate install is required.

What new options are available with 1.3.7.2's changed network code?

There are several new options that people may want to look into. First is voice communication, and the second is natneg technology.

Voice Communication

Battlezone 2 1.3.7.2 contains support for voice communication in multiplayer games, should your computer have a microphone and/or speakers. There is no need for external applications to do the voice chat now that this is integrated. If a BZ2 game host (i.e. the player who clicked 'create') chooses, voice communication can be enabled in their game.

There is a second page of sound options (look for the blinking 'More Options' in the bottom right of the Sound options page). On there, you can select things including which audio device(s) are used for recording, voice playback, and general sound playback. You can also adjust volumes for capture and playback.

While playing, the microphone defaults to 'push to talk' (aka PTT) mode. That means you must press and hold a key, which defaults to 'V', for your microphone to be enabled for transmission. The PTT key can be bound to any other key via the Options -> Input -> Command screen; look for it near the top of the right column. In the pregame/postgame shell (i.e. where the map and starting unit(s) are selected), the PTT key is not used. Instead, it is always a 'hot' microphone transmitting whenever your microphone is over a certain volume. Via the second sound options page, you can switch your microphone between always hot ingame, and PTT mode.

NAT Negotiation (natneg) technology

Battlezone 2 1.3.7.2 contains support for natneg through RakNet's servers. Prior to 1.3.6, users who wished to host a game session had to manually forward ports from their router to their machines. Now, with natneg support, the RakNet servers can act as an intermediary while joining a session to help open up ports through a router without reconfiguring the router. Once a client has successfully joined, all communication is then between the BZ2 players; the RakNet servers are not used after that initial join. This means that far more people can create games; no need to whine and beg for others to create a game for you.

When creating a game, there is a new option as to whether prospective clients should use natneg or not. By default, this is set to true (on). If, however, you find that people cannot join your game, try switching this to off and rehosting a game. If your router has been configured to forward ports to the right machine, setting this to 'off' may work more reliably, but there is almost no way for BZ2 to reliably detect if you've got ports forwarded before a game starts. This 'clients should use natneg' option has no effect on LAN games. Also, this option should be stored between games, and your choice from last time should be remembered.

What new options are available with DirectX 9?

There are a lot of new options for graphics -- the entire graphics options page has been reorganized and new options added. There are now so many options that there's a second page of options. Items on the first page of graphics options are all options that can be adjusted in realtime, and their changes will take effect immediately. The second page of options contains items that require exiting to Windows and restarting BZ2 before they take effect. Here's a short rundown of the new and/or changed options:

Reflections

Note - this option will disappear if your selected 'Depthbuffer format' (on the second page of graphics options, see more below) doesn't have stencil capabilities. This option can be turned off and on at will, and may be auto-disabled during network games if your framerate isn't high enough.

Texture size

Changes to this option require quitting and restarting BZ2.

Wait for VSync (second page of graphics options)

Vertical Sync (VSync) is a way to either optimize for framerate or quality. There are two options: 'Off (fast)' and 'On (no tearing)'. This replaces the console 'vid.waitretrace' console command, and other ways to turn vsync off/on. When vsync is off, then it runs faster -- as soon as a frame is ready, it's sent to your screen. When vsync is on, then it waits for the next time your monitor has finished presenting a frame, and then presents that frame. That is obviously slower due to the wait, but prevents some 'tearing' when you see part of one frame, and part of a second frame. The 'refresh rate' option (right column, see below) is how long it'll have to wait. Changes to this option require quitting and restarting BZ2.

Triple Buffer (second page of graphics options)

Triple buffering allows your system to try and run faster than monitor framerate when vsync is on. Triple buffering should be off when vsync is off; if vsync is on, then triple buffering on will generally improve overall framerate if you have a fast video card. See

http://en.wikipedia.org/wiki/Multiple_buffering#Triple_buffering for a short summary of it.

Longer summary: If triple buffering is off, it uses 'double buffering'. In double-buffering, it has two fullscreen buffers. One of those two is being shown, and the other is being rendered into. When it's done with a frame, it tells the GPU "hey, I'm done, go swap the show & render buffers." If vsync is off, it does that right away. That can lead to tearing on the screen when it changes in the middle of the frame. If vsync is on, the swap happens at the next multiple of 1/60th of a second (or whatever your monitor refresh is set to). That can lead to a lot of waiting, where modern CPUs/GPUs can be sitting around for your monitor to say "hey, I'm done, let's swap."

Triple buffering gets around that wait by doing this: assume you have buffers A, B & C, and that 'A' is the one being shown to the user. The game can then render into B. When done, it tells the graphics card "show B when ready" -- i.e. the next 1/60 boundary. The game doesn't wait at all, but begins rendering into C. When done with C, it says "show C when ready." Here's where it helps: if it has a ready frame in B, but C is ready, then it just squelches the frame in B, and puts C on the ready-to-display slot. (And, can start rendering into B right away.) If B has been displayed, C goes on the wait until the next 1/60 second. So, triple buffering allows your system to queue up frames as fast as possible, and avoid all of the stalls waiting for vsync that happen with double buffering; unused frames get silently discarded.

Anisotropic Filtering (second page of graphics options)

This option will disappear if your card says that it can't do any anisotropic filtering at all. This is a horizontal slider, going from 0 to the maximum value your card supports. 0 means 'off', and is the fastest. Higher values increase quality of triangles that rotated relative to the camera, especially the terrain. You can adjust anisotropic filtering in realtime to see its effects -- try launching an Instant Action mission, and adjusting the anisotropic filtering slider while looking at the terrain in the background. It'll look best from pilot or craft view, not comm bunker.

Video adapter (second page of graphics options)

This will list all monitor(s) connected to your system, and what graphics card is driving them. If you have only one monitor in your system, then there will only be one option in here, and not changeable. Changes to this option require quitting and restarting BZ2.

Video Mode (second page of graphics options)

This has a list of graphics modes (resolutions) that can be run on the selected monitor. Minimum supported resolution is 640x480. Changes to this option require quitting and restarting BZ2.

Refresh Rate (second page of graphics options)

This controls how fast your monitor refreshes, in hertz (times per second), and can vary

based on the video mode selected. If you have a Cathode Ray Tube (CRT, tube) monitor, you will usually have more options in here. LCD screens will typically only refresh at 60 hertz. Changes to this option require quitting and restarting BZ2.

Video Adapter Format (second page of graphics options)

This controls how many bits per color are used when the screen is presented to the user. The default, 24-bit color, is fine for most users; 16-bit color will tend to produce banding. The abbreviation after the format name (e.g. 'X8R8G8B8') is the order of the colors, and how many bits are given to each. For more information on these abbreviations, see [http://msdn.microsoft.com/en-us/library/bb172558\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/bb172558(VS.85).aspx) . Changes to this option require quitting and restarting BZ2.

Backbuffer Format (second page of graphics options)

This controls how many bits per color are used in the intermediate buffers while the frame is being rendered. The default is fine for most users. See the description and link under 'Video Adapter Format' for that the abbreviations after the name mean. Changes to this option require quitting and restarting BZ2.

Depthbuffer Format (second page of graphics options)

This controls how many bits per pixel of Z-buffer are available, and optionally, how many bits for stencil buffers are available. The default of '24 bits Z w/ 8 bits for Stencil' is recommended for most users. If a mode without stencil bits is selected, then reflections will be unavailable. Reducing your Z depth to 16 bits may slightly increase framerate at the cost of some visual artifacts -- experiment to see what this does. See the description and link under 'Video Adapter Format' for that the abbreviations after the name mean. Changes to this option require quitting and restarting BZ2.

Multisample Type (second page of graphics options)

This is a choice of what multisampling antialiasing (MSAA, also sometimes known as fullscreen antialiasing, FSAA) is set. The choice of 'None' (default) disables MSAA. There may be more options in this list based on what your graphics card supports at the given video mode/refresh rate/formats picked above. In general, the higher the setting (lower down in the list), you will see better results onscreen at the cost of some framerate. For more information on these modes, see [http://msdn.microsoft.com/en-us/library/bb172574\(VS.85\).aspx](http://msdn.microsoft.com/en-us/library/bb172574(VS.85).aspx) . Changes to this option require quitting and restarting BZ2.

Multisampling Quality (second page of graphics options)

For the given multisample type, you may have one or more options for the quality level applied to it. There may be more options in this list based on what your graphics card supports at the given video mode/refresh rate/formats picked above. In general, the higher the setting (lower down in the list), you will see better results onscreen at the cost of some framerate. Changes to this option require quitting and restarting BZ2.

Will I get a bajillion FPS with 1.3 like I do with game XYZ?

With 1.3.7.2, you just might. 1.3.7.2 contains support for DirectX 9 and hardware Transformation & Lighting (commonly abbreviated 'T&L'). Support for that means that such work is offloaded to your graphics card, freeing up your CPU to be able to do more work. 1.3 also has a few speed optimizations in place, most of them not in the graphics code-- AI overbuild (which should be fixed) can cripple your FPS, but isn't graphics code related.

Further note - some graphics options, like local fog and reflections will definitely affect your framerate. Reflections, if enabled and the current map has water, will cause the entire world to be drawn twice -- once upside down in the water view, and once normally. That doubles the amount of work for BZ2 (figuring out what to draw, and telling DirectX about that), and doubles the work for DirectX 9 (the drawing). Thus, enabling reflections can and will drop your framerate.

Local fog submits many transparent polygons in order to provide a hemisphere of fogging over an area. BZ2 1.0-1.3pb4a did local fogging purely on the CPU; this can't easily be replicated with the 'fixed function pipeline' in DirectX 9. Thus, many transparent planes are drawn in order to draw something of a parallel effect. This will almost certainly reduce framerates when local fogging is enabled, and you are looking at such a region.

Also, turning on anisotropic filtering and/or multisampling antialiasing (MSAA) from the graphics options page will increase quality at the cost of framerate. (Anisotropic is generally cheaper than MSAA, I think.) Anisotropic filtering improves the look of triangles that are relatively perpendicular compared to the camera -- e.g. the terrain. If MSAA is set to anything above 'none' makes your card draw everything at a higher resolution than what is displayed, and then scale it down before drawing. This can drastically increase the load on your video card. As above, higher values for MSAA setting and quality will make things look better while reducing framerate. Lower MSAA setting & quality will make things look a little worse, but increase framerate. MSAA settings can't be changed without quitting restarting BZ2.

What about my overclocked system?

As noted above BZ2 puts *much more* work on your CPU than some other games. That amount of stress may expose faults in your overclocked setup far earlier than other games may do. If you are experiencing problems, then **please** try temporarily undoing your overclocking, and rerun BZ2. If the problem goes away, then the problem has been isolated to the overclocking, and not BZ2. No two applications use the same parts of the CPU, memory, etc, and "stability" in one application does not guarantee it being in all

applications.

When I host a game, nobody can see it. How do I fix this?

With the NatNeg technology present in the Battlezone II 1.3.6 (and up) patch series, most of the time, you don't need to forward ports to host. If you have a software firewall on your Windows box, it's usually the cause of any inability to host. If you're having difficulties having your game seen by others, try hosting, then hitting Alt-Tab (i.e. hold down the alt key on your keyboard, press and release the tab key, then release alt.) If your firewall program has a window open asking you to approve an exception for BZ2, please do it. But, in cases where you're behind more than one level of NAT, or your router has an obscure NAT type that can't be worked around by the NatNeg, then you'll need to open ports.

First off, read the nettips.rtf file included in this patch. It points out which ports you need to open, and how to do that on many setups -- visit <http://www.portforward.com/>, for example. [Note: that is a 3rd party site; no guarantees if it'll still be functional or useful when you read this.] In short, by default, your internet router (either part of where your internet connection (DSL, Cable, wireless, etc) arrives, or a separate box directly connected to your internet connection), and software firewall are set to be maximally secure. To host, you **must** train your router and all firewall(s) to allow BZ2's packets through. If you don't do this, then hosting is impossible. Because there are so many companies producing routers, and models of routers, short instructions can not be given here; you must use a site like <http://www.portforward.com/>'s extensive database of routers, or you'll need to read the manual for your router. (Most manuals are available online from the manufacturer)

Why do I see a lot of games with a ping of "???" How do I fix this?

This is a side effect of the NatNeg technology present in the Battlezone II 1.3.6 (and up) patch series. To get a ping between you and the hosted games, a direct connection must be possible. If the server hosting a game has opened ports, then a ping is possible. If the server has not opened ports but is relying on NatNeg, there is no direct connection until you join the game. Only after a successful join to that game can ping be measured. So, in short, a ping of ??? means that the server has *not* manually forwarded ports, and so pings can't be calculated on the join game screen. Join to determine the true ping.

Why does my music player fade out when playing BZ2 multiplayer? How do I fix this?

If you listen to music from a program other than BZ2 (i.e. a program like Microsoft

Media Player, Winamp, streaming internet radio, etc), and play BZ2 multiplayer, the other programs may be faded out. This is a 'feature' introduced by Microsoft Windows; Windows XP does not have this issue, but Windows 7 definitely does have the issue. The feature is called 'ducking' or 'steam attenuation' where other sounds are reduced so that you can hear voice output better. See [http://msdn.microsoft.com/en-us/library/dd316773\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/dd316773(v=vs.85).aspx) for more info; the steps from that page say to do this:

The default attenuation experience depends on the user's preference, as specified in the control panel's Sound option. On the Communications tab, the user can choose an attenuation level (default value is 80%), mute all non-communication streams, or disable the default stream attenuation experience. The system allows new non-communication streams (except for new system sounds) to be opened during the communication session but the new streams are not automatically attenuated. When all of the communication streams are closed, the system ends the communication session and restores the volume of the streams that were attenuated during the communication session.

I'm trying to take screenshots in BZ2, but they come out black. How do I fix this?

In a non-MP BZ2 game (not the pre-game 2D menus), the control-G key can take a screenshot. Screenshots are disabled in multiplayer games as they can slow down your system and introduce problems elsewhere. Screenshots from singleplayer or instant action are saved to a 'Screenshots' folder, which on Windows XP is located in the same folder you installed 1.3.7.2 into; on Vista or Windows 7, look in the {My Documents}/My Games/Battlezone II/Screenshots folder. If your attempts to take screenshots come out all black and you're running Vista or Windows 7, the usual cause of this issue is 'Desktop Composition.' You will need to disable this option by following steps similar to <http://www.sevenforums.com/tutorials/22803-desktop-composition-disable-program.html> :

- Open up the Start menu, and locate the Battlezone II 1.3.7.2 shortcut(s)
- Right click on that shortcut, and select Properties
- Select the Compatibility tab and check Disable desktop composition, then click on OK.

After that, try running Battlezone II through the shortcut again.

How do I reset input bindings?

If your input bindings aren't as you like, and you want to reset to defaults, the way to do

this since 1.0 has been to do Main Menu -> Options -> Input -> (pick a default; keyboard or mouse are good starting points) -> Load button.

The ~ key doesn't work in game. How do I fix this?

First off, even though it's shown as ~ in the game menus, it's actually using the ` (grave, the apostrophe slanted towards the bottom right) key. Certain keyboards, or the Windows Media Center Edition may try and steal that key. BZ2 is not the only game that has issues with it. Some possible suggestions can be found at http://fallout.wikia.com/wiki/Talk:Fallout_3_console_commands#Troubleshooting or http://fallout.wikia.com/wiki/Fallout_3_console_commands#Other_bugs -- there are several pieces of info that might be useful.

Alternatively, you can rebind the console key to a different key. To do this, open up the addon\config\gameprefs.ini file. (Note: Windows will, by default, hide the file extension and show this file as "gameprefs", not "gameprefs.ini" in Windows Explorer. This is a stupid decision on their part, and opens you up to dangerous actions. I'm going to mention the full, true filename in this document; if your Windows is still misconfigured, you're going to have to mentally subtract ".ini" from these filenames.) Open it up, and look for this section:

```
// What key (when used with the control key) is used to toggle the
// ingame console on/off. See the bottom of this file for what values
// are valid here; this is NOT an ascii code, but rather a DirectInput
// keyboard char. Made editable after so many non-US keyboards had
// issues with this key. For US keyboard, this default key is the one
// with ~ ` on it. For UK keyboards, this default key is the one with
// ` ~ on it.
ToggleConsoleKey = 0x29
```

Also open up the localprefs.ini file, found in the same folder. Copy the last line of the above (ToggleConsoleKey = 0x29) to the bottom of localprefs.ini. Then scroll to the very bottom of Gameprefs.ini, and look at the list of possible keys, the entries that look like this:

```
// DIK_ESCAPE           0x01
// DIK_1                 0x02
// DIK_2                 0x03
// DIK_3                 0x04
```

(Rest of list truncated). Find a key that you like, and is not in use in BZ2, and set the localprefs.ini entry to the 0x## value. Save the localprefs.ini, then start BZ2.

Known Issues:

The following are some issues/quirks/bugs/whatever that are known, but weren't considered bad enough to hold up shipping

- Installer can leave readme in Windows tempdir if you view it from the installer.
- Editor switches to windowed mode while entering path editing mode (Shift-F9), this avoids AVs on some boxes. This behavior can be changed in `render_editor.cfg`, look for the `EditorSchematicIsWindowed` parameter
- MODs should distribute .MSH files for all their models. A console-warning will appear if BZ2 has to rebuild a .MSH file-- if end users have to do this, it can lead to bad assets
- Local fog had to be drastically rewritten for DirectX9, and will look different in 1.3.7.2. Height based fog is not supported at all in 1.3.7.2.
- The movie in the shell's main page will go white if you alt-tab away and back. So, don't alt-tab if you really need to see that movie for the millionth time. If you've got a compulsive need to alt-tab, just run the shell windowed.
- On certain cards, excessive use of lighting (usually seen in some MODs) may cause framerate reductions. On other cards, running terrain in med/high will cause drastic slowdowns. Not investigated yet.

Helpful Commandline switches:

The following are presented for reference only; be careful in how you use them-- they may seriously compromise your ability to enjoy BZ2 if misused. To add parameters to a commandline, you need to find (or make) a shortcut to the executable in question, then edit properties on the shortcut. At the end of the target edit box, put a space, then the command(s) and their arguments, separated by spaces. [If you don't know what this means, editing commandlines probably isn't for you.] For each of these commands, the '-', '/' or '+' (minus-sign, forward slash, or plus-sign) can be used to start them; the descriptions below start with - because I don't like the forward-slash convention started back in MS-DOS 1.0.

Commandline flags in both executables

- `-win` Starts BZ2 in windowed mode

- `-nointro` Skips the opening movie
- `-trackfps` Shows the framerate ingame in the upper left corner of the screen
- `-nomovies` Skips all prerendered movies.
- `-resolution Width Height` Sets ingame width/height of BZ2. Make sure that this is a size your video card supports
- `-safemode` Resets all graphics options to a safe setup. Useful to try when BZ2 isn't starting.
- `-shell16bpp` Sets the pregame shell to 16BPP (can also be adjusted in `render.cfg/render_editor.cfg`)
- `-shell32bpp` Sets the pregame shell to 32BPP (can also be adjusted in `render.cfg/render_editor.cfg`)
- `-poweruser` Sets a number of ingame preferences the way I'd prefer
- `-nointerface` Starts BZ2 w/o ingame interface. Use Shift-F5 to toggle,
- `-nolights` Turns off lights ingame. Should be same as graphics preferences
- `-noparticles` Turns off particle effects ingame completely
- `-nods3d` Turns off 3D sound effects, forcing everything to use 2D pan/fades
- `-nods` Should turn off sound effects completely. [Not tested recently]
- `-slowaudio` When present, uses an slower but more compatible audio play code. Use if your machine stutters when sfx are played, especially machineguns
- `-nocdmusic` Turns off any access to the CD drive for ingame music. Useful if your CD drive can take a while starting up.
- `-multiworld` Starts with 'multiworld' (smoothing/prediction for network play) on, even if not playing multiplayer. Note that this does not take any arguments -- if "-multiworld" is on the commandline, multiworld is on. If it's not

on the commandline, it's off unless multiplayer forces it on. Also, once multiworld is on, it cannot be toggled off without quitting to the pregame menus.

- `-resave` Forces a mission to be resaved immediately after loading. Used mainly to ensure .bzns are at the latest versions
- `-shellmap PixelSize` Saves a bmp preview of the map, with the specified pixel size. Use a power-of-2 for the size, like 128 or 256
- `-aipLogging` Turns on logging of AIPs (AI Plans, used by computer teams in IA/MPI/etc) to disk. Useful for mapmakers or AIP designers
- `-config <foo.cfg>` Overrides the use of the bzone.cfg as default startup file with a custom one.
- `-UseMyDocs` Stores pilots, saves, etc under the My Documents folder, instead of directory with bzone.exe (automatically set if running under Windows Vista or later). This can be useful if multiple people play BZ2 on the same computer.
- `-Vista` Stores pilots, saves, etc under the My Documents folder, instead of directory with bzone.exe (automatically set if running under Windows Vista or later). This can be useful if multiple people play BZ2 on the same computer.
- `-NoVista` Stores pilots, saves, etc in same directory as bzone.exe, even if running under Windows Vista or later
- `-odfwarnings` If this is present, then it'll complain about game object class lines in ODFs that aren't specified to the battlezone.log file. If not present, it won't log anything. Note that most items being missing is normal, one major reason why this is off by default. Note: this is really for modders only.
- `-nodxt` **DEPRECATED** -- does NOTHING. Edit `render*.cfg` to achieve the same functionality.
- `-uniquelogfile` If present, the normal logfile of 'battlezone.log' is timestamped w/ the current system clock at app startup. Note - this can create a LOT of logfiles and use a lot of disk space, which is why it's not on by default.

BZ2Edit.exe - ONLY - commandline flags

- `-nobodyhome` Forces a map to not load any objects. Useful when starting a new one or as an emergency when everything is really broken

- `-noscript` Skips loading of map's DLL. In other words, loads all objects on the map, but not the DLL associated with a `.sav/.bnz`.
- `-snapscrap` On first load of a `.bnz`, moves all scrap to terrain level. To change another map, must exit & relaunch `bz2edit.exe`
- `-DeleteAOIsOnLoad` On first load, deletes all AOIs (Areas of Interest). Useful when a map has accreted too many. To change another map, must exit & relaunch `bz2edit.exe`
- `-AdjustHeightOnLoad 0.0` On first load, adjusts the y-position of all items on the map vertically by the specified floating point value

Bzone.exe - ONLY - commandline flags (network code isn't in bz2edit.exe)

[For more info, please see the `nettips.rtf` file installed to the same directory as BZ2 by this patch]

- `-net` Turns on networking code
- `-mapname name` Sets the initial mapname used [Not tested recently]
- `-hostname "Hosted by Me"` Sets the initial session name used
- `-host Port#` Starts hosting a game on the specified port (default of 17770 is used if an invalid value is specified)
- `-name "MyGameName"` Sets the BZ2 playername of the host
- `-password "TopSecret"` Sets the initial password used
- `-connect aaa.bbb.ccc.ddd:eeee` Tries to connect to a server on the specified IP address & port
- `-ip aaa.bbb.ccc.ddd` Tells BZ2 to bind to the network adaptor with the specified IP address. [Not tested recently]
- `-lanonly` Sets the default network behavior to LAN, as opposed to via the RakNet master servers. Can be changed from session search page

Other cool options

BZ2 1.3 adds in a new file in the addon\Config\ directory, GamePrefs.ini. It has a number of extra tuning values and the like in it. This can be edited in any standard text editor like Notepad. [Note: by default, Windows hides the file extension, so it may show only as "GamePrefs".] Please back up that file before messing with it-- it may be possible to degrade your game experience if things are edited too much. Most options have comments before them to explain a little of what they do, and what some of the allowable values are. Note that as of 1.3pb4, you should NOT directly edit the GamePrefs.ini file directly, but put changed lines in the LocalPrefs.ini file, also found in the same directory.

Installer standalone mode

You can run the 1.3 installer from the commandline if desired. If, for example, you wanted to place a copy in C:\temp\InstallTemp, then run

```
BZ2_v13_PublicBeta_6_1_english.exe /S /D=C:\temp\InstallTemp
```

or

```
BZ2_v13_PublicBeta_6_1_english.exe /NOREDIST /S /D=C:\temp  
\InstallTemp
```

No quotes should be used after /D, if you're installing to a directory with spaces in the name. The first line above will run the vcredist_x86.exe afterwards, the second version won't.

Release History:

Short history of BZ2 1.3 releases, sorted by date. Please refer to the extras/changelog/changelog*.txt files for what changed in each release:

BZ2 1.3pb1	February 28, 2004
BZ2 1.3pb2	February 28, 2006
BZ2 1.3pb3	August 10, 2006
BZ2 1.3pb4	June 11, 2008
BZ2 1.3pb4a	August 4, 2008
BZ2 1.3tech alpha 5	April 24, 2009
BZ2 1.3pb5.1	September 6, 2009
BZ2 1.3pb6	August 26, 2010

BZ2 1.3.6.1	June 9, 2011
BZ2 1.3.6.2	July 30, 2011
BZ2 1.3.6.3	February 12, 2013
BZ2 1.3.6.4	June 1, 2013
BZ2 1.3.6.5	June 8, 2014
BZ2 1.3.7.0	November 14, 2015
BZ2 1.3.7.1	March 19, 2016
BZ2 1.3.7.2	October 25, 2016

Special thanks:

What follows is a list of 1.3 testers alphabetized by board handles. Some names might have been inadvertently lost during various board switchovers; apologies if you're caught in this category.

sinbad, @4u, AHadley, APCs r Evil, arcer, aougli, Avatar, Axeminister, bigbadbogie, Big_Kenny, Blarbo, blewyn, BS-er, Bull Dog, BZ Wardog , BZZERKER, Centerline, Chipotle, CmptrWz, Commando, Condor, Coxson, Cyber, Dataanti, DarkFox, darkwarrior, Daylight, dazza9075, DF-Mj.Gen.Dead_Eye, Dirty Rooster, DutchBoy, enzo.matrix, Feared_1, FireFLY, Fishbone, Fixxxer, FraKTal, Fried, General BlackDragon, General_Hoohah, General Manson, Grass69er, GreenHeart, Huib-Bloodstone, Huscar, IceWendigo, Infro, Jabbapop, Jetfire, JOKesTER, Juggernaut, Juvat, Killer][nstinct, LastBoyScout, Lizard, LoClubberlick, Lordtac, lucky_foot, MalevolenceE, markshelby, Marksman, Marzipan, Marzipan2u, Mattroxx, mauler_bait, MAUS, Menacer, Michael, Montana, Mother's Helper, MowerMan, MrTwoSheds, Namarrgon, Natty Bumppo, NFuser, Nielk1, NoK0mm3nt, NukeDaddy, OldManGloom, Onyx, OvermindDL1, Pastell, Pedro, psych0fred, PurpleHaze, Rapier, Red Devil, RubiconAlpha, RustyBones, Ryoanji, sabrebattletank, Scout, (SFP)Shadower, Shane Ward, SilverBlrd, Slaor, Smoke_Jaguar, Smuggler, SFP Sonic, spAce, Spacecomber, Spawn, Speedy, spiritplumber, SquareEyes, squirrel09, SUB-0, StrangeFLY, technoid, Tempest Storm, TheJamsh, TimeVirus, TopGun, Total Oblivion Omnis, TwinShadow, Tyreal Mathias, VSMIT, Warfreak, Wraith, wug, Xtr.GAMER, yeah, Z28, zax, zeeder, Zero Angel, ZOEbart, {VnB}Aegeis, ~RIP~Maverick==F=-

Special recognition (from GSH) should go to the honorary lead tester, Commando, for spending countless hours looking for and reproducing bugs so they can be efficiently squashed. Also, an honorary lead asset manager should go to GreenHeart for dozens of

model, asset, map creation & tweaking.

Programming thanks:

Thanks to the following groups who generously contributed the following source code and DLLs to the world. BZ2 v1.3 uses them, and their contributions are appreciated. All of these are (to the best of our knowledge) freely available, and includable in commercial software without having to redistribute source. The specific licenses for them can be found in the Extras/3rdPartyLicenses folder, installed with this

The following are used by bzone.exe and bz2edit.exe, directly. [DLLs are used for all of the ones below except Boost, the GameSpy libraries, dlmalloc, speex and stackwalk]

- Boost version 1.45.0 from <http://www.boost.org/> , though using only the mutex libs (thread/mutex, thread/recursive_mutex). These are statically linked inside the bzone/bz2edit.exe executables.
- Bullet Physics v2.83 from <http://www.bulletphysics.org/Bullet/phpBB3/viewtopic.php?f=18&t=10527> is used to help accelerate some SSE/SSE2 math
- dlmalloc version 2.8.5, from <http://g.oswego.edu/dl/html/malloc.html> . Public domain. This memory allocator is faster and more efficient than the one that ships with DevStudio. Statically linked inside the bzone/bz2edit.exe executables.
- dbghelp.dll version 6.11.1.404, freely downloadable from <http://www.microsoft.com/whdc/devtools/debugging/default.msp> . This helps generate callstacks when the app crashes -- hopefully less often than it did in the past.
- GameSpy libraries: Chat, HTTP, and Voice. These are statically linked into bzone.exe
- Independent JPEG Group's JPEG source version 9b, from <http://www.ijg.org/>
- JasPer version 1.900.1, from <http://www.ece.uvic.ca/~mdadams/jasper/> (Note: this lib is statically linked into the OpenIL DLL, as the JasPer libs are not set up to be built as a separate DLL.)
- libpng version 1.6.21 from <http://www.libpng.org/>
- libtiff 4.0.6, 12-Sep-2015 version from <http://www.remotesensing.org/libtiff/> 's CVS instructions

- libmng 1.0.10 from <http://gjuyn.xs4all.nl/libmng/>
- libvorbis 1.3.5 and libogg 1.3.2 from <http://www.vorbis.com/> are used to play .ogg sound/music files.
- Little CMS library, v2.7 from <http://www.littlecms.com/>
- Lua 5.1.4 from <http://www.lua.org/> , available under the MIT license.
- LZMALib, v15.14, from <http://www.7-zip.org/sdk.html>
- MiniUPNP client DLL built from miniupnpc-2.0.tar.gz , from <http://miniupnp.free.fr/> . Copyright (c) 2005-2016, Thomas BERNARD All rights reserved.
- PCRE - Perl Compatible Regular Expressions v8.38 from <http://www.pcre.org/>
- OpenIL v1.7.8, from <http://openil.sourceforge.net/> , which statically links to the JasPer library, and dynamically links to the Independent JPEG, PNG, TIFF, MNG, LCMS, and ZLib libraries. (Some .vcproj modifications to default install were made to compile under VS.NET 2008, and aggressively optimize; copy of changed files is included as addon\OpenILChanges.7z)
- RakNet, from <http://www.jenkinssoftware.com/> is used for LAN & online matchmaking, packet sending, NAT Negotiation, etc.
- Rapidjson 1.02, from <https://github.com/miloyip/rapidjson/> is used for getting and sending JSON data to the master servers in the RakNet API format.
- Speex 1.2rc1 from <http://www.speex.org/> is used by bzone.exe, but not bz2edit.exe See the licensing info below.
- zlib v1.2.8, from <http://www.zlib.net/> (linked by bzone.exe/bz2edit.exe and various OpenIL-derived libs)

BZ2 1.3 installer uses:

- 7Zip decompression DLL, 7zxa.dll . Per <http://www.7-zip.org/faq.html> , I note that (1) that the installer used parts of the 7-Zip program, (2) that 7-Zip is licensed under the GNU LGPL license and (3) curious users should look at www.7-zip.org, where the source code can be found.
- zlib, same as bzone.exe/bz2edit.exe, as above, though statically linked.
- Code from [http://msdn2.microsoft.com/en-us/library/aa364726\(VS.85\).aspx](http://msdn2.microsoft.com/en-us/library/aa364726(VS.85).aspx) -

very easy to use code that allows the installer to register Battlezone II with WinXP SP2 (or newer OSs, like Vista)'s firewall. If other firewall apps have really simple to use code like this, I'd consider including it too.

DXTGen.exe (a separate tool for modders, download separately from pb4) , uses the following:

- The same OpenIL and helper DLLs as above (CMS, JPEG, mng, OpenIL/ILU, png, tiff, zlib)
- The same dbghelp.dll as above.
- nVidia DXT compression libraries from DDS_Utilities_8.31.0225.1745.exe from <http://developer.nvidia.com/page/tools.html> .
- hqx 1.1 from <http://code.google.com/p/hqx/> is used for high quality upscaling by BZ2DXGen only
- WTL 8.0, from <http://www.microsoft.com/downloads/details.aspx?familyid=E5BA5BA4-6E6B-462A-B24C-61115E846F0C&displaylang=en> , available under Microsoft Permissive License

[BLATANT PLUG] Other games you may want to buy:

While 1.3 has been in development, Nathan and Ken have worked on the following games for Pandemic Studios: [aka, the day jobs that allowed us to work on 1.3 in our spare time.]

- Triple Play 2002 for PS2/XBox. See <http://www.easports.com/> for more info
- Star Wars: The Clone Wars for Gamecube, PS2, XBox. See <http://www.lucasarts.com/products/starwarstheclonewars/> for more info
- Star Wars: Battlefront for PS2, XBox, PC. See <http://www.lucasarts.com/games/swbattlefront/> for more info
- Star Wars: Battlefront II for PS2, XBox, PC. See <http://www.lucasarts.com/games/swbattlefrontii/> for more info
- Mercenaries 2: World in Flames. See

http://www.pandemicstudios.com/proj_mercs2.php or <http://www.mercs2.com/> for more info.

- Lord of the Rings: Conquest. See <http://pandemicstudios.com/conquest/> for more info.
- The Saboteur. See <http://www.pandemicstudios.com/thesaboteur/index.php> for more info.

Pandemic Studios also has shipped a lot of titles since BZ2 was released, not just the above list, but also Full Spectrum Warrior (XBox/PC/PS2), Full Spectrum Warrior: Ten Hammers (XBox/PC), Mercenaries: Playground of Destruction (XBox/PS2), and Destroy All Humans (XBox/PS2). Purchasing games is the best way to show your support for those involved in creating them.

Note: in November, 2005, Pandemic Studios merged with Bioware -- <http://www.bioware.com/> . In January 2008, Electronic Arts -- <http://www.ea.com/> -- purchased Pandemic & Bioware. You may want to also consider games by them. It would be remiss to not mention Activision -- <http://www.activision.com/> , as the publisher of Battlezone 1 & 2. In November 2009, Pandemic Studios closed its doors for good, sadly.

Also, in January 2009, Ken Miller started working for Armature Studio, see <http://www.armaturestudio.com/> .

In December 2009, Nathan Mates started working for Total Immersion Software, which in 2011 renamed itself to Intific. See <http://www.intific.com/> . As of November 2013, Nathan Mates moved to <http://www.certainaffinity.com/> - working on Halo: The Master Chief Collection and other title(s).

Final words:

This patch was created by Ken "Ultraken" Miller & Nathan "GSH" Mates in their spare time working from home.

Nathan would like to acknowledge the patient understanding of his wife, Andrea, and their children, in putting up with his continued work on Battlezone 2 in his spare time.

Nathan would like to dedicate this patch to the victims and heroes of September 11, 2001 and the efforts since then to bring the perpetrators to justice.

"But those who hope in the LORD will renew their strength. They will soar on

wings

like eagles; they will run and not grow weary, they will walk and not be faint." -
Isaiah 40:31

Ken cannot top Nathan's dedication, so he will just let it speak for itself.