TheC64 Maxi Game Tool 2020

Software v1.01 / Last Updated: 2020-02-27

Welcome!

TheC64 Game Tool 2020 is a tool designed to let you create a custom firmware .bin file to inject your favorite Commodore 64 games into the carousel UI of TheC64 classic computer.

This can be accomplished without altering your TheC64 device's hardware or wiping out the actual operating system of the unit. This makes it safe to use and revertable; best of all - anyone can use it without any advanced technical skills or hardware experience.

Note: the title of the tool suggests it is for TheC64 Maxi (or full sized) version, but it has been tested work fine on TheC64 Mini version as well. Additional features added to the tool in the future may not work properly with the Mini and this documentation will be updated to reflect changes and limitations imposed.

Visual Tour

Let's cover the layout of the various screens in the application.

Main Screen



- A Metadata for Selected Game
- B Screenshots for Selected Game
- C Games currently installed
- D Open Make Firmware Window
- E Launch VICE emulator
- F Import an existing game set (overwrites existing set; warning will be given)
- G Add a Game to the carousel

- H Edit the Selected Game
- I Delete the Selected Game (warning will be given)
- J Scroll through games on the carousel

Add/Edit

ame info		Description
Game Name:	Aztec Challenge	The player must reach and explore an Aztec temple while avoiding a variety of dangerous obstacles. Each level is like
Author:	posmi	different types of scrolling and exploration. The game
Composer:	Paul Norman	a gauntiet of spear-throwing natives towards a pyramid
Year:	1983	
Genre:	Adventure	
e paths Game:	E: Wew Folder \games \games \AZTECCHALLENG	Input O Joy 1:

- A Metadata for the game
- B Files for the game (with selectors)
- C Game System configuration (with selectors)
- D Add/Edit Multi Easy Cart Games

Make FW

Making custom firmware			×
Making custom firmwar	e file		
0			
12.			
		F	G
Backup games		Make	Save Cancel

- A Log/Output area
- B When building, delete all existing games
- C When EXECUTING the firmware, backup existing game carousel
- D When EXECUTING the firmware, backup TheC64's NAND memory
- E Puts a game entry for running the C64 BASIC input screen
- F Perform the firmware build
- G Once built, save the firmware file to your USB memory stick

Input Configuration

UP: Down: Left: Right: Left Fire:	UP Down Left Right Fire	> > >	Cance
Down: Left: Right: Left Fire:	Down Left Right Fire	~ ~ ~	
Left: Right: Left Fire:	Left Right Fire	~	
Right: Left Fire:	Right Fire	~	
Left Fire:	Fire		A
	10000	~	
Right Fire:	Fire	~	
TL:	Fire F1	^	
TR:	F2		
Unused1:	F4		
A:	F6		
в:	F8		
C:	A B		
Unused2:	CD		
Unused3:	E		B
Unused4:	GH		Save Def

- A Input Assignment for TheC64 Joystick
- B Make all the currently assigned inputs the DEFAULT values when adding games

System Configuration

System Type	Drive Emulation
PAL	Drive Icon B
ONTSC	Accurate Disk
Display	
Full Height	C
0 Vert	ical Display Shift D
Audio	
Sid 6581	No Audio Scale
🔾 Sid 8580 📙	r 7
O Sid 8580D	\mathbf{k}

A - PAL (50hz) or NTSC (60hz) system emulation

B - Show disk drive access icon / Turn on True Drive Emulation

C - This forces the entire display – including top and bottom borders – into the 720p output image, sacrificing the accurate display but showing everything

D - On some TVs with some games that bleed graphics into the borders, you may want to shift the display up or down some pixels to aid in the display

E - Change the type of SID audio chip to emulate

F - This disables audio scaling, which automatically compensates for the adjustments in pitch of generated (rather than sampled) audio when running a computer at different refresh rates

Note: Not all features work on the original TheC64Mini classic console.

The Process

To successfully create, build and execute custom firmware - you'll need to perform the following process:

- 1. Gather Games and Assets
- 2. Add the Game to the carousel
- 3. Make or Build the Firmware file
- 4. Save the file to a compatible USB media stick
- 5. Flash the custom Firmware file to your TheC64 device
- 6. Test Your Games
- 7. Return to the tool to fix Games that may not have worked properly or change configurations that didn't work as expected

Gather Games and Assets

For each game you want to add, you'll need a few things.

- A C64 game image file (.d64, .t64, .prg, .crt, etc)
- A PNG file of the front of the game box
- Two PNG files of screenshots to be shown when the game is selected in the carousel
- Metadata (title, description, author, music composer, year released and genre)

If you're going to add a large quantity of games to TheC64, I recommend gathering all your assets and making them as ready as possible **prior** to actually adding the games to your carousel.

Add the Game to the carousel

Once you have all your assets together, open TheC64 Maxi Game Tool and click ADD.



Fill in the metadata you collected for the game.

Select the game image file, cover and screens.

Choose the default joystick and alter any input configuration changes you would like to do.

Make any changes necessary to the emulation system parameters. Most games will not require changes and the defaults are the best place to start.

Note: Avoid editing the text box containing the settings unless you're sure you know what you're doing. Using the buttons next to each field and choosing options via the user interface is more reliable.

ame info		Description
Game Name:	Aztec Challenge	The player must reach and explore an Aztec temple while avoiding a variety of dangerous obstades. Each level is like
Author:	bosmi	different types of scrolling and exploration. The game starts with an over-the-shoulder view of the player running
Composer:	Paul Norman	a gauntlet of spear-throwing natives towards a pyramid which rises on the horizon.
Year:	1983	
Genre:	Adventure ~	
e paths		Input
Game:	E:\New Folder\games\games\AZTECCHALLENG	. O Joy1:
Cover:	E: Wew Folder \games \covers \AZTECCHALLENG	O Joy2: JU, JD, JL, JR, JF, JF, JF, JF, F1, F3, F5, JF,
Screen1:	E: Wew Folder \games \screens \AZTECCHALLEN	System
		Vic 20 64,pal,sid6581

When finished, hit OK and the game will be added to the carousel within the tool.

Note: You must have a minimum of 6 games and a maximum of 150 games in order to successfully flash the firmware. This number will likely be increased for TheC64 Maxi in the future.

Make or Build the Firmware file

Once you have added all the games you would like, you're ready to make a firmware file.

Click Make FW from the main screen.

There are four options available when making your firmware file.

Delete All Games First

When selecting this, it will remove all the games CURRENTLY on TheC64 when you flash the firmware file (including the games that came with the console)

• Backup Games

This backs up all the games on TheC64 during the firmware flashing process. This option is required if you select to **Delete All Games First**

Backup NAND

Selecting this will backup your TheC64 NAND memory; this is the operating system for your TheC64. It is recommended you perform a firmware install at least once with this option selected

Restore BASIC

When flashing the firmware, the option to run TheC64 BASIC interpreter will be wiped. This option restores it as a game icon within the carousel.

Note: Backups made during the firmware flashing process will be stored on the root of your USB memory stick. It is highly recommended you back these files up somewhere safe like a computer hard drive or even a cloud storage solution like Google Drive.

With your options selected, click MAKE. Watch the logging/output window to see what is being done.

Making custom firmware				x
Adding: "E:\New Folder	\games\screens\REALMOFIN	1POSSIBILITY-01.png"		^
Adding: "E:\New Folder Adding: "E:\New Folder Adding: "E:\New Folder Adding: "E:\New Folder	\games\games\AZTECCHALI \games\covers\AZTECCHALI \games\screens\AZTECCHALI \games\screens\AZTECCHAL \games\screens\AZTECCHAL	LENGE.vsf.gz" LENGE-cover.png" LLENGE-00.png" LLENGE-01.png"		
Creating firmware file: Reading: "E:\New Folde Reading: "E:\New Folde Reading: "E:\New Folde Writing pour firmware t	r\custom_games.tar.gz" r\custom_games.tar.gz" r\custom_games.tar.gz" o: "E:\Now Folder\theC64-0	0.0 bin"		
User options: * ALL GAMES WILL BE I * Games will be backed * BASIC will be restored	ELETED BEFORE FIRMWARE up to usb	UPDATE		
DONE				~
Delete all games first	Backup nand			
Backup games	Restore BASIC	Make	Save	Cancel

Save the file to a compatible USB media stick

After a few moments, the MAKE process will complete - saving all the files it needs to the tool's directory.

Click SAVE and save the final firmware file (named **theC6409_9_9.bin**) to your TheC64 USB memory stick. It will not erase the contents. If you're using a stick already to house your custom game files, you can use the same stick for the firmware.

The USB memory stick must be formatted as FAT32. Most smaller memory sticks are probably already formatted as such, but if you have a larger stick it may be formatted as NTFS or ExFAT. These will not work. On your PC, right click your memory stick drive letter and select PROPERTIES. Look at the File System.

General Tools	Hardware	Sharing	ReadyBoo	ost Cust	omize
~ [JSBSTORAC	SË			
Type: US	SB Drive				
File system: F/	AT32				
Used space:	2	69,254,65	6 bytes	256 MB	0
Free space:	15,6	57,041,92	0 bytes	14.5 GB	
Capacity:	15,9	26, <mark>296,</mark> 57	'6 bytes	14.8 GB	1
		Drive E:			

If it is not FAT32, you'll need to reformat it (make sure you save the contents on the stick first if you want to keep it).

To format, right click the drive letter for your memory stick and select Format. Choose the FAT32 file system.

Format USBSTORAGE (E:)	×
Cagacity:	
14.8 GB	~
<u>File system</u>	
FAT32 (Default)	~
Allocation unit size	
32 kilobytes しろ	~
Volume label USBSTORAGE	
USBSTORAGE	
Format options	
Quick Format	
<u>Start</u>	lose

If your memory stick is too big, you'll need to format it to FAT32 using a tool like GUIFormat.

FAT32 Format		\square	_		×
Drive					
E:\ 🗸 15	G FAT32 USBSTORAGE				
<u>Allocation unit size</u>					
8192 ~					
Volume <u>l</u> abel					
USBSTORAGE					
Quick Format					
		Start		Close	

Flash the custom Firmware

After you've saved the firmware .bin file to your USB memory stick, you're ready to flash it.

Eject the stick from your PC and insert it into your TheC64.

Select the **wrench icon** to open the SETTINGS.



Choose System Information from the options.



If you've done everything right, you will see a prompt to install the custom firmware file.



Select Apply.

An on-screen indicator will show progress; don't worry - there will be multiple indicators.

Upon success, it will reboot your TheC64 system automatically.

Congratulations! You've flashed your custom firmware.

Note: At this point, it is highly recommended that you retrieve the backups made during the firmware flashing process - they are stored at the root of your USB flash drive. Copy these files off to a secure, safe location - even multiple locations such as cloud storage.

Test Your Games

You're probably very excited to play your games!

As you try each one, you'll probably run into a few issues. Some common things you'll find are:

- You can't get past some intro, crack or boot screen
- The game won't load to completion (or at all)
- You can't start the game from its title screen
- The controller doesn't seem to work at all
- Games require special keys to play like Space Bar, letters, SHIFT or Commodore key and while you can use the virtual keyboard it makes playing the game rather miserable

Some issues can be solved by changing which joystick is default (most games run on Port 2, but a surprising number require the controller to be mapped to Port 1) or by turning on True Drive Emulation (aka Accurate Disk option). Others can be solved by remapping special keys needed by the game to the various buttons on the controller using the Input configuration within the EDIT GAME window.

Return to the tool

To make changes, open TheC64 Maxi Game Tool, select the game and click EDIT. *Archon*, for example, must use Joystick Port 1. While we're in there, the game needs Function Keys to work - so we'll map those to A, B and C button.

	il guine			,
Game	e info			Description
Ga	me Name: Archo oystick Configura	n ition		Archon: The Light and the Dark is a strategic board game with some similarities to chess. Two sides, a light one and a dark one, consisting of 18 pieces each compete on a board divided into (9 by 9) squares. You win the game by having one of your upits on each of the five powerpoint square
	Joystick 1		ОК	
	UP:	UP ~	Cancel	
	Down:	Down ~		
-	Left:	Left \vee		
File	Right:	Right \checkmark		Input
	Left Fire:	Fire ~		Joy1: JU,JD,JL,JR,JF,N,RS,SP,SP,F3,F5,F7,RS
	Right Fire:	N ~		○ Joy2:
	TL:	RUN/STOP ~		System
	TR:	SPACE ~		O Vic 20 64,pal,sid6581
	Unused1:	SPACE ~		(● C64
	A:	F3 ~		RT Cancel
	B:	F5 ~		
	C:	F7 ~		
	Unused2:	RUN/STOP ~		
	Unused3:	~		
	Unused4:	~	Save Default	

Make changes to all your games that require them, then follow the Make FW process again and reflash.

If you decide you no longer wish to keep a game, you can select the game and hit DELETE. A warning will be given before the game is removed.



That does it for the basics, keep reading for some more advanced techniques and processes.

Advanced Techniques

Now that we've covered the basics, let's look at some more advanced things you can do with this tool.

Testing Before Flashing Using VICE

Once you've added a game and it appears on the carousel, you can double click the game cover and it will launch the game in the included special version of the VICE emulator (don't use a newer or different version or you may get unexpected results).



This is exactly how the game will run when selected on TheC64.

During the booting of the game, make notes of the keystrokes (Space, Run/Stop, Y, N, D, H or other special keys you might need to get through intro and trainer.

Determine what keys are needed to actually START the game (F1, F3, F7 etc.) and any special keys you might need during play such as RETURN or SHIFTLOCK. You can reassign the keys to a button when configuration the inputs in the tool.

If the game doesn't boot, you can try changing to True Drive Emulation (also known as Accurate Disk in TheC64).

VICE: C64 emulator at 101% speed, 51 fps

File	Edit	Snapshot	Options	Settings	Language	Help		
			Re	fresh rate			>	
			Ma	aximum spe	ed		>	
			Wa	arp mode			Alt+W	
			Fu	llscreen			Alt+D	
		-	Ah	ways on Top	,			1
			Dis	able Direct	X9 video driv	er		Ľ
			Vic Vic	leo cache			1	
			✓ Do	uble size				
	Ĩ		✓ Do	uble scan				
			Sw	ap joysticks	;		Alt+J	
	2	1.2	Sw	ap userport	joysticks		1	
		S. C.	All	ow opposite	e directions			
	11		🗸 En	able Joy Key	/5			
			🗸 So	und playba	ck			
		1	Tru	ie drive emi	ulation			
			Dri	ve sound er	mulation	3		

After selecting, reload the game image file via File-> Autostart disk/tape image and try again.

To test the game's control port, try using arrow keys and Left CTRL to fire. If your player doesn't control properly, change to Port 1. Open **Settings->Joystick settings**.

or at 100% speed, 50 fps



Change Port 1 to Keyset A and Port 2 to None.

Joystick in port #1	Joystick in port #2
Keyset A 🛛 🗸 🗸	None
Select fire button	Select fire button
All buttons used as fire \sim	All buttons used as fire
All buttons used as rire	All buttons used as rire Auto fire button settings

Hit OK and try to move the character around now. Make a note that you need to update the input configuration for the game.

Close the VICE window when you're done and update your game settings based on the new information you've discovered.

Using a VICE Snapshot As Game Image

Instead of booting a game from scratch and going through intros, trainers, crack screens and more - you can try to create a "snapshot" of the game once it has loaded past all those things.

Look at this example comparing a long standard load versus using a snapshot for the game Archon.

https://www.youtube.com/watch?v=ZnOmqzuVhjc

Pretty impressive, right? Not every game works using this technique, but probably 95%+ will.

In the TheC64 Maxi Game Tool, find a game you have already added that has a long loader or lots of crack screens and trainers. Double click the cover to launch the game in the VICE emulator.

Get to the point where you want to snapshot the game (such as the main title screen - after the loading is done) and select **Snapshot->Save Snapshot image**.



If you believe the game will return to the disk for loading levels or otherwise accessing the disk, then check the box **Save currently attached disk images** before saving the .VSF file.

Save in: USBSTORAGE (E:)		
Name	Date modified	^
Archived	2/16/2020 7:41 PM	
games	2/13/2020 5:38 AM	
Negro	2/13/2020 1:16 PM	
New Folder	2/13/2020 6:27 PM	
STRIPPO0_07496_02	2/17/2020 11:21 AM	
T&T	2/13/2020 1:14 PM	
- vice	2/3/2020 11:11 PM	× 111
<		
File name: volfied.vsf	S	ave
Save as type: VICE snapshot files (*.vsf)	∼ Ca	ncel
Save currently attached disk images		
Save currently loaded RUM images		

Go back and edit your game, substituting the VSF for the game image.

		Description	
Game Name:	Volfied	The space ship Monotros has returned after receiving an SOS call to save his home world (Volfied) from alien	
Author:	Empire Software	invaders and has to dereat a different boss and his minions in each level. Volfied is very similar to Qix the player takes control of an ship/object whose purpose is to roam the screen, forming shapes and removing them from the play field. By way of reward, a picture is gradually	
Composer:	Mark Wilson		
Year:	1991	revealed in the removed areas of the screen.	
Genre:	Adventure 🗸		
, n			
Game:	E: Wew Folder \games \games \VOLFIED.vsf) Joy1:	
Cover:	E:\Wew Folder\games\covers\VOLFIED-cover.p	Joy2: JU,JD,JL,JR,JF,JF,RS,SP,SP,F1,F3,F5,RS	
Constants	E:\Wew Folder\games\screens\VOLFIED-00.pnc	System	
Screen1;		O Vic 20 64,pal,sid6581	
Screen1:	E: Wew Folder \games \screens \VOLFIED-01.pnc		

Hit OK and rebuild your firmware file. Flash the new firmware to your TheC64 system. Test your game.

Multi-Game Easy Cart (.CRT) Images

TBA

Restoring Games Backups

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