

# CnC Tools and Resources

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# 1. Welcome

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## 1.1 Beginnings

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The project started as a list of all the relevant mapping resources i have discovered, placed inside my mapping discord server in a dedicated channel. Due to discord's limitations, and a few other factors, I decided it was not wise to lock my first draft of information up in a discord server, and so I added it to github. While gists was also an option, it did not have the complexity and collaboration element that i wanted this project to achieve.

Over time i have worked on the list, adding new entries and improving it's relevance by mentioning areas such as the [World Altering Editor](#).

Since i frequently use linux as a daily driver, and have been since mid 2020, i realised there was relatively little formalised information about running WW 2.5D games on linux, and what there was tended to be un-coordinated. As with most linux users, I broke my build several times, and as a result got tired of having to dig out the same information each time in order to make a game somewhat run through trial and error. In 2023 I started my writeup, and as of October I pushed the first edition of my linux guide. I have since worked on expanding and simplifying the guide into the product that it is today.

After suggestions to move to ReadTheDocs i finally took on this task in December 2023, and a month on I have finished the transition, meaning all materials are now re-formatted and are on this web page.

I hope you find the spectrum of information available to be useful.

## 1.2 Contributions

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While this is currently a solo project, i am always up for collaboration if anyone wisahes to expand and contribute to this guide. If you wish to have any input, you can reach me in most major CnC discords.

This project's raw documentation is hosted in [this project's github page](#) if you spot any bugs, have a request or simply want to contribute, please open an issue and I can address it from there.

## 1.3 Credits

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- CatTanker, project lead.  
I also need to provide a special thanks to:
- Kerbiter, for technical support and suggestions.
- Doomguy, moral support.
- Lylak and AlliedG for suggesting that i improve the guide when it was only in my discord server.
- The developers of tools and resources linked, who without this project would be pointless.
- SCIPCION for occasional input.

## 1.4 PDF Download

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A downloadable PDF should be available [here](#)

## 2. Mapping Tools

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### 2.1 Core Tools

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This section covers the core editors that have been an essential part of mapping for the past 20+ years. I highly recommend checking the 'Modern Options' page as well, as this will significantly improve the user experience of the following editors, and offer an alternative.

The 'Assistive Tools' page is fairly self explanatory. These tools cannot replace a core editor, but may significantly help your workflow through the utilities they provide.

#### [FA2] Final Alert 2:

The Map Editor for Yuris Revenge.

Contains patches which have been developed by multiple members of the community

The patched FA2 link provides a clean working FA2 setup for the vanilla game (RA2/YR Unmodded) The FA2Sp link directs you to the extension itself, which can be dropped into a mod's FA2, and should work fine assuming you check the changelog under releases

Topic	Source + Link
Patched FA2 [Vanilla]	<a href="#">PPM - Forum</a>
FA2SP [Mods]	<a href="#">Github - Main Page</a>
FA2SP [Mods]	<a href="#">Github - Releases</a>

#### [FS] Final Sun:

Description: The necessary Map Editor for Tiberian Sun + Firestorm

The Patched FS option is directly compatible with TS. It contains some of fa2sp's features, so it is a massive improvement over the unmodded editor. The toolkit option attempts to provide a direct application using several of the tools listed below. The forum contains a link to an older fork of FS that may be useful to some. The Tiberian Sun Client [TSC] also includes a build.

Topic	Source + Link
Patched FS [Vanilla]	<a href="#">PPM - Forum</a>
"Toolkit" + Clutter	<a href="#">CnCNet - Forum</a>
Tiberian Sun Client	<a href="#">ModDB</a>

## 2.2 Modern Options

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This section covers improving the core experience of mapping. This includes both modifications to the original editors, and the alternatives that the community has made since, specifically the World Altering Editor.

### Editor Modifications:

#### DDRAW RENDERER

Instead of using the system DDraw, FA2 and FS can instead use a local proxy DDraw.dll, improving the editor's speed considerably, which is especially useful for resource-heavy maps. Several of the *patched* map editors have this included but not in use, so check your map editor's folder as the files may already exist, such as in a "ForWindows10" folder, containing a pre-configured setup. If you want an un-configured setup for unknown reasons, or simply want to know more about the wrapper, check the unconfigured link below. I also included a direct download, although I have lost which thread this is on so I am unable to verify if it is the latest download.

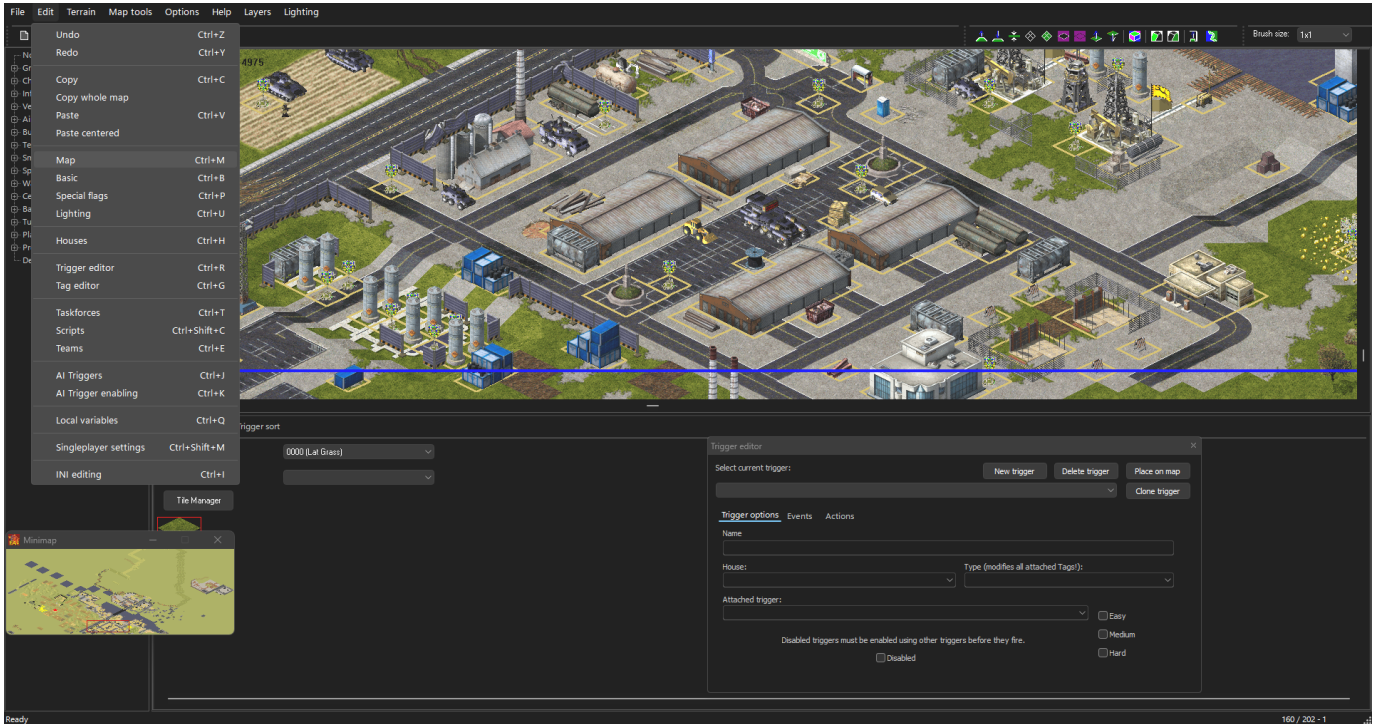
Topic	Source + Link
Unconfigured	<a href="#">BitPatch</a>
Pre-Configured	<a href="#">PPM</a>

#### DARK AND CUSTOM THEMES

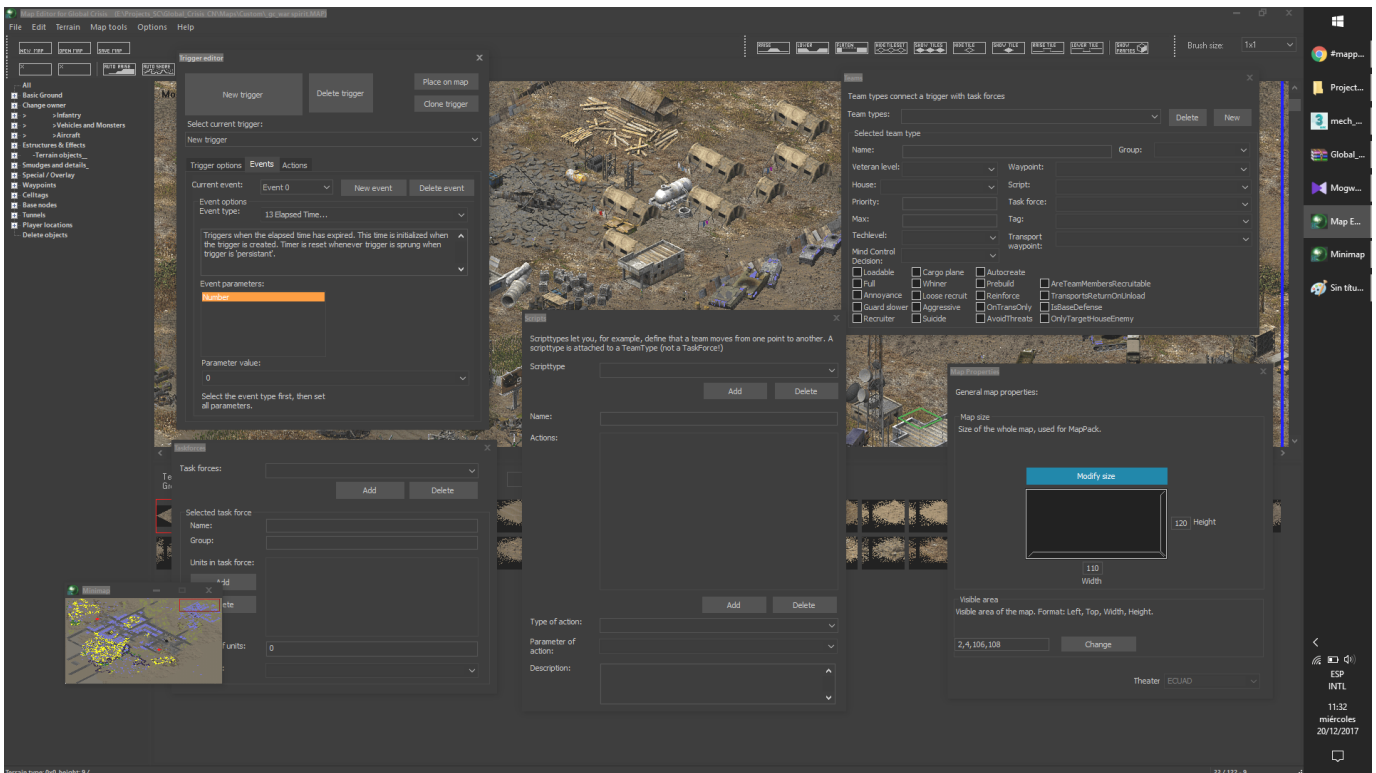
Assuming you use the Sp version of the editor, it is certainly possible to modify the theme. This comes with a risk however, as on Windows you have to modify your entire system's theme in order to achieve this, and if you install the wrong theme for your Windows version, your Windows updates and therefore becomes incompatible with the theme you are using, or of course simply mess something up you could easily break your system and be left to the mercy of restore points or a fresh boot. There are a number of Windows 'ricing' tutorials and lists online, but a lot of recommendations from major publishers seem to only use what Windows 10+ already allows you to do, which doesn't really help you. I found and recommend [this reddit post](#) for the basics as it describes most options available for modernising theming 10, with a lot being applicable to Windows 11 as well. While you are of course free to read the entire section, you should focus on the *Before Starting* and the themes section. If you decide to further rice your system, I recommend [this](#), as although it focuses on Windows 11 a lot of the tools work with 10.

I have included below an example of what FA2 looks like using dark theme from [rectify11](#) on Windows 11, which is available for free. Sadly the Windows 11 elements carry over, including spacings in dropdowns, and the extremely dark colour scheme doesn't

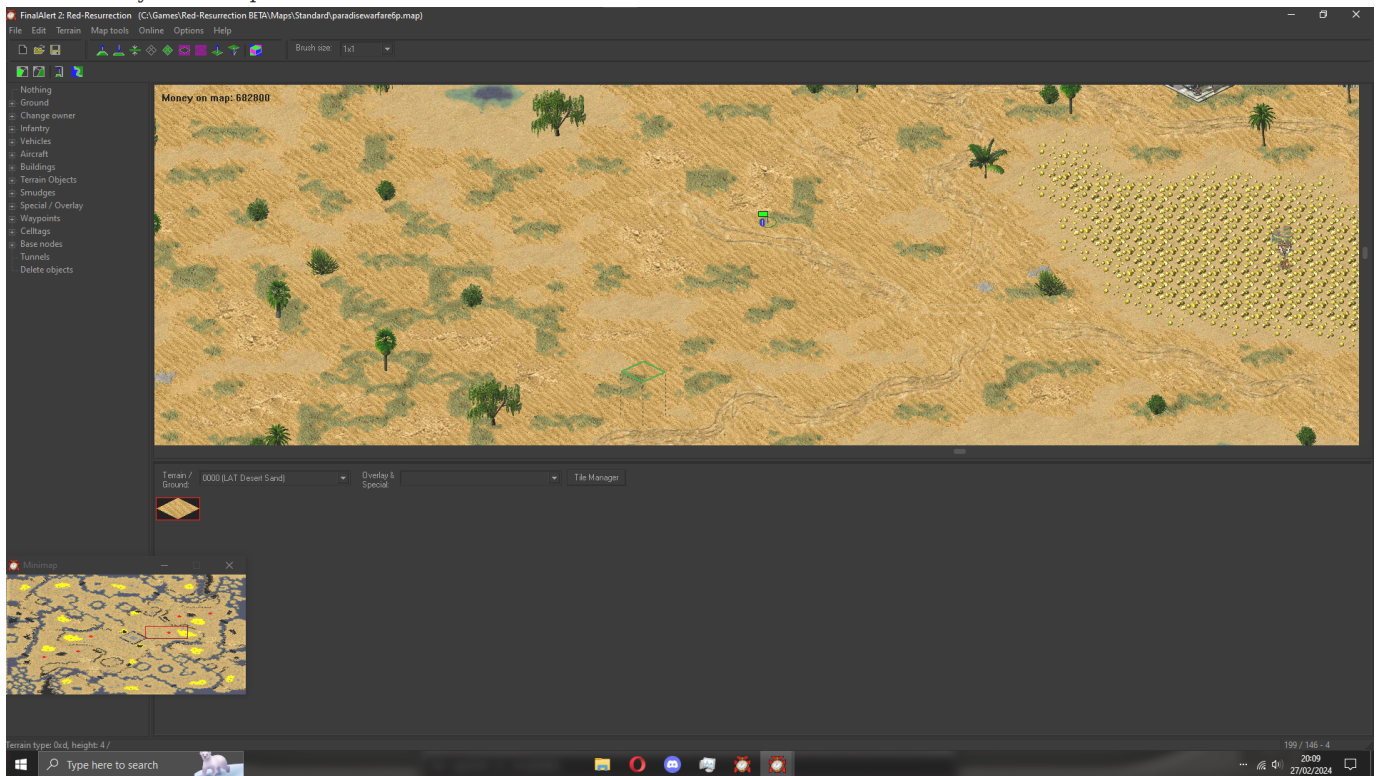
sit too well.



Another example is After Dark CC Blue, provided by SCIPCION on Windows 10. I believe this is no longer available for free however.



This example uses [fluent from niivu's Windows 10 Themes](#). The creator also has a large collection of other windows 10 & 11 themes that you can experiment with as well.



Ultimately it is your decision if you wish to risk modifying windows in such a way, especially with WAE as a modern alternative. I have also written advice on applying a dark theme in [linux](#), however the options are more limited.

### World Altering Editor :

Author: Rampastrang + Contributors

Description: The World Altering Editor (WAE) is an open source replacement to the traditional editors. Unlike the originals, it is built using a modern code base, and as a result of being open source it does not require the use of dll injection to improve. Formerly known as the DTA Scenario Editor, as it was built for [Dawn of the Tiberium Age](#), it has since been growing in compatibility for TS/YR. A release for TSClient and Vanilla YR both available on the [releases page](#). As of v0.9.6 the editor now has a voxel renderer, meaning that the editor can effectively replace FA2 for all quality PCs using win7 or later, although it is arguably still behind in a few areas. As of version 1.0, the editor will require dotnet runtime 8, and is only built for Windows, although running it through modern wine solutions are an option for linux.

I **highly** recommend trying this editor out, as it contains a lot of new features that would be out of scope for FA2/FS. Check the [releases page](#) for an up-to-date YR and TSClient build. The releases page also includes a full changelog, which at the moment is the most comprehensive list of features.

Topic	Source + Link
World Altering Editor	<a href="#">Github - Main Page</a>
World Altering Editor	<a href="#">Github - Releases</a>
Mod Haven Channel	<a href="#">Discord</a>

### Incomplete / WIP:

Mostly remains here as an archive of github links that *once* existed. Might be a useful reference one day. Relert ++ : <https://github.com/secsome/relertplusplus>

Relert Sharp Private Thread : <https://github.com/FrozenFog/relertsharp>

<https://github.com/FrozenFog/rs-dev-public-snapshot/blob/dev/pic/preview-migdal.png> <https://github.com/FrozenFog/rs-dev-public-snapshot>



## 2.3 Assistive Tools

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This page covers peripheral tools that can significantly boost your workflow. Some are ideal for the release stage, such as the map renderer to generate a map preview and compress the map, while others are better for the in-development stage, such as the Trigger Analyser.

### Trigger Analyser (html/java)

Author: Whensons

Description: A tool in javascript to analyse and map out triggers in a graph. This shows the connections, links and is useful for spotting issues within your triggers, and is excellent for collaborative projects.

Although it is hosted on GitHub you can download the page and use it offline.

Topic	Source + Link
Self-documentation	<a href="#">Github - Main Page</a>
Hosted Tool	<a href="#">Github Pages</a>

### Trigger Analyser (Python)

Author: FrozenFrog

Description: A script to generate a trigger map graphically on the TS/RA2 Engine.

Topic	Source + Link
Self-documentation	<a href="#">Github - Main Page</a>

### Map Conversion Tool

Author: Starkku

Description: A tool which can convert the theatre, tiles, rules and overlay of maps based off user-configurable scripts. Essential if you wish to change the theatre of a map.

Topic	Source + Link
General Information	<a href="#">Github - Main Page</a>
Preset Documentation	<a href="#">Github - Main Page</a>
Preset Download	<a href="#">Github - Releases</a>
Forum Thread	<a href="#">PPM - Forum</a>

### Tunnel Drawer

Author: Q45

Description: A tool to generate tunnels in TS/YR Maps.

This allows customisation of coordinates, direction, path, ect

However, it is .SWF so requires a flash player.

WARNING: No longer supported as it requires flash, i recommend using WAE's tunnel tools instead.

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>
Flash Player	<a href="#">Adobe</a>

**Wavemaker**

Author: PTapioK

Description: A brilliant tool which streamlines the production of mission and survival maps

It allows manipulation of Triggers, Scripts, Taskforces, Teams and Variables on both a single and batch scale through an easy-to-see user interface.

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>
Source Code	<a href="#">Github - Main Page</a>

**Map Renderer**

Author: zzattack + Others

Description: A Full Map Preview Renderer for maps

Also contains other features such as height maps, position markers as well as debug features!

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>
Source Code	<a href="#">Github - Original Source</a>

**Map Resize Tool**

Author: E1 Elite

Description: A tool to resize maps. Unlike the standard map editor this moves everything, including tunnels and smudges. The UI is also very simply to understand.

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>
Source Code	<a href="#">Github - Main Page</a>

**Final Sun Toolkit**

Author: Holland (and various other authors for the tools)

Description: Software which contains multiple tools with it, as well as other optimisations. TS Only

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>

**Map Rename Tool**

Author: Snark

Description: This program will convert your .map file names to the map name written internally. It's useful for organizing the maps that you download inside the cncnet client that are given a random file name, and means you can tell which map is which

Topic	Source + Link
Direct Download	<a href="#">Google Drive</a>

**Trigger Index Parameter Tool**

Author: Starkku

Description: A simple GUI program for adjusting numerical index values used as parameters for map trigger events & actions

aswell as AI team scripts in Command & Conquer: Tiberian Sun & Red Alert 2. Useful for Mod / Mission developers to fix any issues that occur after a house index change.

Topic	Source + Link
Source Code	<a href="#">Github - Main Page</a>

#### Map Tool

Author: vananasun

Description: A command line tool to manipulate Red Alert 2 Yuri's Revenge maps

Topic	Source + Link
Source Code	<a href="#">Github - Main Page</a>

#### MISTEST Map Checker

Author: GE

Description: "Mission Tester is designed primarily to help troubleshoot mission maps, but is useful for quickly resolving trigger or object placement errors on mutiplayer maps as well. It will warn of errors like objects outside of the map bounds, often caused by resizing maps, it will find errors like missing waypoints for actions, or even nonexistent sounds being played."

Topic	Source + Link
Forum Thread	<a href="#">PPM - Forum</a>

## 3. Map Resources

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### 3.1 Map Tutorials:

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I have outlined several useful mapping tutorials and mapping archives that i have either found to be useful, notable or just generally good workflow examples.

Description	Source + Link	Author
FA2 Tutorials Playlist	<a href="#">YouTube</a>	Burg
FA2 Tutorials Playlist	<a href="#">YouTube</a>	YosefAnan
FS Tutorials Playlist	<a href="#">YouTube</a>	Holland
FA2 Written Guide	<a href="#">CnCNet Forums</a>	RaVaGe
Scripting Index	<a href="#">PPM Forums</a>	McPwny
FA2 Tutorials Playlist	<a href="#">YouTube</a>	[FC]
TS Written Guide	<a href="#">CnCNet</a>	LucasSK
YR Mod Mapping Timelape(s)	<a href="#">YouTube</a>	CatTanker
Brief tutorials and resources	<a href="#">Custom</a>	FlyingZ

### 3.2 Community Mapping Archives:

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Relevance	Source + Link
Public Map Archives	<a href="#">PPM Forums</a>
MadHQ's Maps + Resources	<a href="#">MadHQ's Graveyard</a>
Public Map Archives	<a href="#">CncNet</a>
Temporary Map Archives	<a href="#">CnCNet</a>
Tutorials and Resources, WAE channel	<a href="#">Discord - C&amp;C Mod Haven</a>
Map Downloads and discussions	<a href="#">Discord - Yuri's Revenge</a>

### 3.3 Noteworthy Projects:

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MadHQ has remade the RA2 Allied and Soviet Campaigns entirely, designed for the vanilla game. These are significantly larger than their predecessors, and do offer a long playthrough. These are hosted in [MadHQ's Graveyard](#)

Almost Perfect Red Alert 2 (APRA2) is a fan project to produce a Red Alert 2 campaign in Mental Omega.

The team has made a nearly complete lineup of high quality work that is publicly available, and consists of quite a few skilled and experienced mappers who can likely offer experience and advice. An excellent benchmark for any modern campaign developers who intend to use a mod's features (including assets and engine extensions) to create something adventurous. You can find out more on their [discord](#)

Dawn of the Tiberium Age has been working on recreating the [original TD Campaigns](#) Co-Op maps, which is representative of what can be achieved even on TS and with online limitations. You can also find out more on their [discord](#)

Flipped Missions is a mod for YR which reverses the roles of original YR missions so you play as the other side, of course with some methods to make this playable and not an instant win against an Ai conyard. You can find out more on their [ModDB](#) and [discord](#)

## 4. Linux Resources

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### 4.1 Introduction

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#### 4.1.1 Introduction

This guide gives mostly step-by-step instructions, useful tips and advice on running Yuri's Revenge, the Map Editor and indirectly Tiberian Sun on Linux. These guides all assume *you are using the cncnet client, either officially or on a mod*

The first step you will need to do is to figure out which client version you are using. Most pre-2024 CnCNet clients use the .NET framework. This includes, but is not limited to:

- Mental Omega 3.3.6
- Rise of the East 3.0.0j
- RA20XX
- Red Ressurrection
- C&C Reloaded
- Mods forked off [TSClient](#)

According to the build instructions of the cncnet client in 2020:

```
The client has 3 builds: Windows (DirectX11), OpenGL and XNA.

The Windows and OpenGL builds rely on .NET Framework 4.5 and MonoGame.

The XNA build relies on .NET Framework 4.0 and Microsoft's XNA Framework 4.0 Refresh.
```

The above lines are where most of my reasoning lies for the dependencies installed.

Following discussions within the CnCNet development team, the dotnet 7 build that has been developed was being being rolled back due to dotnet 7 providing [a considerably worse user experience](#), mostly through microsoft choosing not to provide this by default in windows like they did with Dotnet 4. Although a major part of this initial push was for better support on Mac / Linux, the vast majority of the userbase is on windows, and so the profits of this are limited. In my experience i also met several issues with the dotnet 7 build that i did not meet in the dotnet 4.5 build, mostly down to the client initialising wine rather than using wine to run the client and the game.

However, as a result of this push, the current (March 2024) build appears to use dotnet 8 for native running on Mac/linux.

```
Windows: Windows 7 SP1 or higher is required. The preferred build is DirectX11 (.NET 4.8), i.e., clientdx.exe. If your GPU does not support DX11, consider using the OpenGL or XNA build instead. Advanced users may experiment with the .NET 8 builds at their discretion.
Other OS: Use the Universal OpenGL build.

##

Linux requirements:

The .NET 8.0 Runtime for your specific platform.
```

As a result, linux users using the latest client should head to the `Resources\Binaries\NET8\OpenGL.dll`. Ideally, the launcher in the main folder should detect the correct framework though.

The Bottles method is suited only for those using older client frameworks, including but not limited to the list above. This is easy to follow and requires barely any command line usage, none if you choose to use a GUI package manager. The WineTricks method is suited for the older client frameworks as well, but also requires much more command line usage for arguably less customisable results. This does include parts that may help people using the Dotnet 7/8 client though.

The reason you will often see a ddraw or cnc-ddraw package mentioned as this means the game will use the ddraw supplied by the [client](#), which will improve your experience significantly. I *highly recommend* you perform this recommendations. Although for some users the game may run fairly well without such support, this should improve your experience.

## 4.2 Bottles

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### 4.2.1 Bottles Instructions

I find bottles seems to give me the most reliable result on my many re-installs, find information about it [here](#) and download it to your OS.

Most guides seem to recommend using Flatpack for the download, which may help if you are experiencing issues, as well as providing some areas such as sandboxing, but I have tested on the non-flatpack version.

Below I have included the configuration that I use for Bottles so that you can produce the bottle in steps following the GUI. You should complete the main initial steps and then follow either Config 1 or Config 2 (Recommended). There are also runner options included in a table a little further down.

If you would prefer, I now include a bottles configuration .yml that you can [download](#) and then import back into bottles as a configuration.

#### Dotnet 4.\* Clients + OpenGL (ogl) Build - Manually Entered

Create new --> *Application*

In Settings:

- Runner: Check Runner Compatibility Table
- DXVK/VKD3D : Enabled
- LatencyFleX : Disabled
- Windows Version: Windows 10 (since some builds of phobos and other extensions require Windows 7 or higher)

#### CONFIG 1: MANUALLY ENTERED

*Dll Overrides:* (Assume :Native, then Builtin, unless specified otherwise)

- ddraw as a DLL Override *Enter Manually*

*Installed Dependencies:*

- arial32/times32/courie32 [By Default]
- Mono (Wine Mono) [Install Yourself]

#### CONFIG 2: CNC-DDRAW DEPENDENCY (RECOMMENDED)

*Installed Dependencies:*

- arial32/times32/courie32 [By Default]
- Mono (Wine Mono) [Install Yourself]
- CnC-DDraw as a dependency [Install Yourself]

After following all of the steps above, enter your bottle, click "Run Executable", and guide it to your client folder / Resources, and then try "clientogl.exe", and the client should run fine, as well as the game. In some cases the xna client also seems to work, but try the ogl build first. **Do not expect the exe included in the root of the mod folder, eg. 'MentalOmegaClient.exe' to work, use the .ogl build!**

**Runner Compatability**

<b>Recommended</b>	<b>Runner</b>	<b>Client Compatability</b>	<b>Offline Compatability</b>	<b>Online Compatability</b>	<b>Notes</b>
☑	Soda-7.0.9	Fully Functional	Functional	Functional	Pressing esc -- > Game Controls instantly closes gamemd
☒	Soda-8.0.2	Fully Functional	Launches Incorrectly	Unaccessible - launch Issue	
☒	Vanigilla-8.6	Not Functional	Unnacesible	Unaccessible	Error upon launching the client
☒	Lutris-7.2	Fully Functional	Functional	Fails to connect to gamesurge - Error Denied	Port/ICMP Issue?
☒	wine-ge- proton8-25	Fully Functional	Launches Incorrectly	Unaccessible - Launch Issue	Pressing esc -- > Game Controls instantly closes gamemd
☒	Sys-Wine-9.1 (From package Manager)	Fully Functional	Syringe Issue	Unaccessible - Syringe Issue	Pressing esc -- > Game Controls instantly closes gamemd
☑	Caffe-8.21	Fully Functional	Fully Functional	Fully Functional	
☑	kron4ek- wine-8.20- amd64	Fully Functional	Fully Functional	Fully Functional	

This table has been tested using the Bottles Config 2 specifically on MO 3.3.6, with fully functional runners also tested on other mods. This was only tested with DXVK/VKD3D disabled due to physical limitations at the time. You will need to install most of these runners from inside bottles, through the 'Main Menu' button in the top-right corner, 'Preferences', and then from the 'Runners' tab.



## 4.3 WineTricks

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### 4.3.1 Winetricks Instructions

[Winetricks](#) is another method we can use to run TS and YR through cncnet. While it is possible to perform all of this using wine only, it is not recommended and will require a few extra steps and alterations. It is mostly run from the command line with a very limited GUI, so i recommend Bottles instead, although winetricks should be fully functional.

- Install `wine` (Ideally a modern verion, as this is a dependency for winetricks), through your package manager.
- Install `winetricks` for greater control over individual prefixes (just do it)

#### Dotnet 4.\* Clients + OpenGL (ogl) Build

##### INSTALLATION OF PREFIXES

After installing relevant dependencies listed above, open up a command line and put in

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/cncnet_4_X_ddraw" winetricks cnc_ddraw
```

The next step is to see if wine-mono is installed or not. Run

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/cncnet_4_X_ddraw" wine uninstaller
```

If you see Wine Mono Runtime & Wine Mono Windows Support, you have wine-mono installed and you should be safely able to move on to running the application (skip to the next section)

If you do not have Wine Mono Runtime & Wine Mono Windows Support listed, you can either install [wine mono](#), which i recommend doing through your distribution's package manager, *or* you can run:

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/cncnet_4_X_ddraw" winetricks dotnet48
```

Okay, you have your prefix set up. There are several ways tha you can run your client's exe. Two methods require some terminal usage.

##### RUNNING THROUGH YOUR PREFIX COMPLETELY IN THE TERMINAL

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/cncnet_4_X_ddraw" wine "Absolute path to your client's /... /resources/clientogl.exe"
```

You can navigate to your mod's resources folder through a file explorer, right click to find "Open Terminal Here", and then simply use the line above but with clientogl.exe only rather than the entire absolute path.

##### RUNNING THROUGH YOUR PREFIX MOSTLY IN THE TERMINAL

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/cncnet_4_X_ddraw" winetricks
```

Run this inside the terminal and a basic GUI will open up. Select "Select Default Wineprefix", and at the top of the GUI it should have a path that matches the WINEPREFIX= line. Scroll down to find the "Run Arbitrary Excutable" option. Select it and click ok, then navigate to your client's clientogl.exe excutable inside the resources folder, run it and it should open fine.

##### USER INTERFACE ONLY

In some installs you may be able to search for a `winetricks` application from your system's menu. From here you a GUI called `Winetricks - choose a wineprefix` will appear. Scrtoll down the list until you find the wineprefix you just made, `cncnet_4_X_ddraw`, and select ok. Scroll down to find the "Run Arbitrary Excutable" option. Select it and click ok, then navigate to your client's clientogl.exe excutable inside the resources folder, run it and it should open fine.

## Dotnet 7+ Client - Native

### RUNNING IT

First of all, make sure you have the [dotnet runtime](#), either from microsoft directly or downloaded through your [Distribution](#). The Dotnet7 Client should be able to run natively with linux, only using wine for running the game itself. Most mods using dotnet 7 should provide a .sh script alongside the main exe, which should run the client if run through your command line. if it exists, you should be able to run it with bash if your file explorer allows it, or you can simply open up that folder in terminal and type `bash scriptname.sh`. If it does not exist, use this:

```
#!/bin/sh
dotnet Resources/Binaries/UniversalGL/clientogl.dll
```

by heading to the top of your mod directory (where gamemd.exe is), opening a terminal up and running the command above.

### GAME COMPATABILITY

One issue that i noticed several of the dotnet 7 builds have is that in order to run the game they use a .sh script to run a .bat script to run the game. While this works fine in principle, it uses the default wine prefix, which will not have any ddraw modifications, and therefore means that the game will run extremely slow and may even have graphical artifacts.

if you notice this, first of all make a new prefix which just contains the ddraw dependency. I am listing ddraw manually as an override for this instance, although the `cnc_ddraw` method i used earlier should work fine.

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/only_ddraw_override" winecfg
```

This should take a moment and then open wine configuration. Once this opens, you need to head to the Libraries tab and write `ddraw` into the entrybox below "New Override for library", then click add, apply, and then ok. You then need to go into the `Resources/Compatability/Unix` folder of the game/mod, there should be a `gamemd.sh` script or something similar. Edit this with a text editor of your choosing so that it matches the text below.

```
#!/bin/sh

export WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/only_ddraw_override"

wineconsole Resources/Compatibility/Unix/gamemd.bat & <-- this line should pre-exist and you should therefore not need to modify it, but the .bat file name may differ.
BACK_PID=$!
wait $BACK_PID
```

Be warned, most mod updaters *Will Override This File* - Back it up to save you repeating this process later on.

Try launching the game again, and it should be a bit smoother. You may still notice some major artefacts/glitches when using the esc menu and returning to the game. Go into the client options and try all of the renderers in there, and hopefully (as with windows) one runs like a charm. For me, most tend to work (Default/CnC-DDraw), but TS-DDraw GDI fixes the esc menu breaking and lets me enter/exit between my game and other applications as I please. Check the Game Compatability section.

## 4.4 Support and Compatability

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### 4.4.1 General Compatability and Troubleshooting Advice

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#### Connection Issues

if your game works fine in skirmish but upon connecting to cncnet or upon entering an online match you either can't connect or get a desync, follow these [instructions](#). Also check your firewall is open and that it allows you to send/recieve packets.

#### Permission Errors

Getting an error complaining about permissions? `chmod +x ...` all of the exes in the game/mod folder. For the later client, i found this fixed a permissions issue on the dotnet 7 client. Also check you as a non-root user actually have access to the files and folders

**Do Not** run wine as root however, this will cause more consequences and fix nothing. Administrator-related fixes tend to be as a result of permissions being incorrect. make sure to open the mod or game's folder and check everything has both read and write permissions, and make sure you apply any fixes to subfolders and subfiles too.

#### Dotnet Not Found

if you get an error message, especially while attempting to run the dotnet7 client (specifically the client, not the game), complaining something similar to "dotnet not a known command" or "dotnet unrecognised script", then you *need* to install dotnet 7 runtime. Check [Arch Wiki](#) for further details.

#### Wine-Introduced Limitations

- Often with 'mono' it appears that the client is without sound.
- With some renderers the minimap is black and appears very glitchy ingame. Works in functionality though. **Changes between renderers.**
- I usually listen to my own music while i play, but i have noticed that multiple runners seem to *fail* to load *music* from theme files, so while you can hear structures being built and "conscript reporting", you may not be able to listen to hell march through the game itself. *Requires Investigation.*

#### General Support

As a general word of advice, if there is a known and trusted fix for an issue in a formal location, then it's alternative will likely work in linux. If your having an issue with a **specific** mod, i advise looking at their discord and asking for help there, just don't ask in another mod's support channel. [Mental Omega's Discord](#) has a Support Solutions FAQ, as well as an active support channel, so if you are struggling to run **MO** then i recommend seeking help there. [CnCNet also has a FAQ](#) webpage that you may find useful, as well as an active support channel in their discord.

#### Renderer Advice

Most cncnet clients offer only one build of CnC-DDraw, and often limited builds of other renderers such as TS-DDraw. If you want to test your renderer options thoroughly, check your game's main folder for a file called `ddraw.ini`. Open it through a text editor, and look for a tag called `Renderer=`. This is likely set to Auto, but i recommend manually changing this for each option on CnC-DDraw and TS-DDraw.

```
; Select the renderer, opengl,dx, gdi, auto. Default = auto = if OpenGL fails automatically use GDI
renderer=auto
```

#### 4.4.2 External Sources and Notes

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I have looked around into other guides for running CnC games on linux. There are quite a mix of methods, some requiring snap, some lutris and some just being general guidelines.

A generic Linux Gaming post summarising all of the CnC Games [https://www.reddit.com/r/linux\\_gaming/comments/mtixee/a\\_linux\\_users\\_guide\\_to\\_command\\_conquer/](https://www.reddit.com/r/linux_gaming/comments/mtixee/a_linux_users_guide_to_command_conquer/)

Advice on using CnCnet YR with linux, marginally outdated due to a change in client, but it is a useful reference <https://www.speich.net/articles/en/2021/12/19/how-to-install-the-cncnet-client-on-linux/>

Snap Package Github for CnCnet YR] - <https://github.com/mmtrt/cncra2yr>

When looking at Linux tutorials, you will find a lot of outdated sources. This is important because:

- Wine has improved significantly in the past few years, especially with enhancements from proton due to the steam deck
- Anything that uses packages can become unmaintained and quickly out of date, or is broken in dependency hell
- Linux distributions can change and drop out of favour, or the guide may advise on dependencies that no longer exist E.g. a guide may specify wine 4.5, when 8.xx is the current latest. Generally, use the latest wine where possible.
- Sadly most of the CnC games are not on steam, but if they are then check <https://www.protondb.com> for how well they run on linux from people's experiences, including computer specs and comments. wineHQ's application database <https://appdb.winehq.org> is fairly limited, often outdated, but may be worth a check. Same applies to CrossOver <https://www.codeweavers.com/compatibility>

In theory, running the client and game through lutris is an option, however i have heard people who have tried this have noticed the game always instantly desyncs

#### 4.4.3 Next Steps

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Although i have covered most of the *basics*, I am unable to test and approve everything myself. Parts may not work 100% consistently, and i only have EndeavourOS (Arch) to test on, and i am testing on an 13 y/o Desktop PC. This means that i am unable to test some new possibilities, such as combining vkd3d and cnc-ddraw.

Any support from experienced users to expand this guide, such as tests with vulkan and certain graphical alterations would be greatly appreciated. Contributions to this [repository](#) for any fixes and new methods or scripts would also be greatly appreciated.

## 4.5 Editor Tool Compatability

### 4.5.1 Final Alert 2 (and FS)

Linux provides several new opportunities for people using FA2(SP) and FS(SP) The map editor can be run straight out of wine / bottles without any dependencies.

#### FA2SP with a Dark Theme

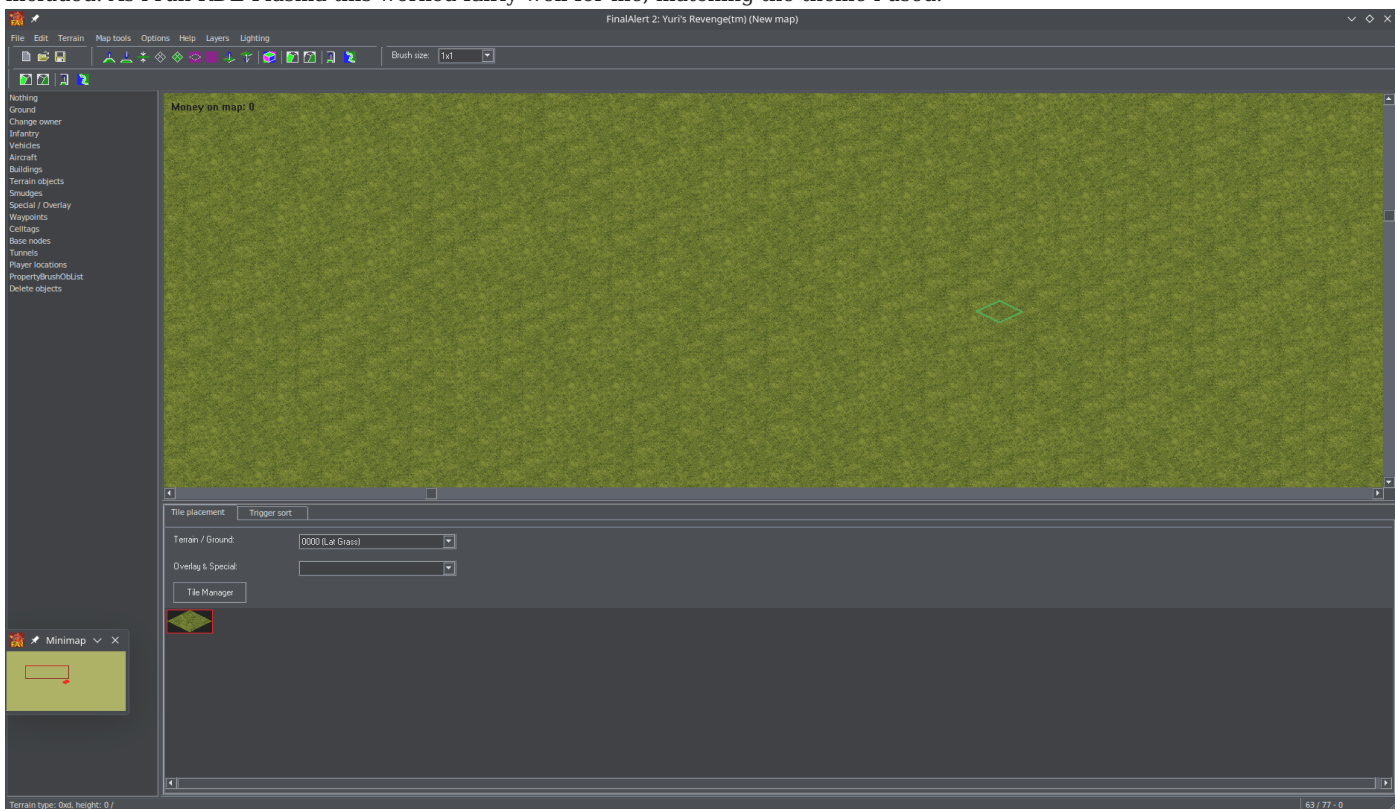
A Word of warning: there are a LOT of windows themes out there, i tried a few on my previous install and some seemed to work but most were a little dodgy (Some panels didn't change, some didn't sit nicely, some were too sharp....).

You can change themes using winecfg through the terminal (better yet through a wineprefix)

```
WINEPREFIX="/home/YOUR_USERNAME_GOES_HERE/.local/share/wineprefixes/map_editor" winecfg
```

I believe this *only works* on recently [patched Fa2s](#). Mental Omega 3.3.6, RR 2.2.13 and any mod which has not been updated since 2020 do not have this patch, and so you will need to add it yourself if you want a dark theme.

I found this [gist](#) which on my system seems to provide a fully functioning dark theme based on Breeze, guidance for usage is included. As i run KDE Plasma this worked fairly well for me, matching the theme i used.



Note that the missing + icons to the left are a result of running it through my system's wine, but if you use [Bottles](#) the glitch no longer occurs.

I seem to recall [this](#) working as well, providing a more modern light theme option. Sadly this was a while back and i am unable to confirm so. The script also downloads off discord rather than a formal file source, and given discord's proposed changes to stop external download links, this may need to be mirrored.

Wine supports the theme engine of **XP**, so a lot of your choiches are limited, although any modifications you make only apply to your wineprefix, so unlike windows you cannot brick your system with it.

