

Linux Gaming Beyond Steam

Building native support for GOG, Epic and more...



Who we are?

Dennis Sädtler / derrod

- CompSci Student (FH Trier)
- OBS Studio Developer
- Creator/Maintainer of Legendary

Paweł / imLinguin

- High School Student
- Heroic developer (GOG)

What we've built



Legendary (2020)

- FLOSS replacement for the Epic Games Launcher
- Command Line Interface only
- Written in python (3.9+)
- Licenced under GPLv3
- >100k monthly users
 - Mostly through Heroic

github.com/derrod/legendary

About

Legendary - A free and open-source replacement for the Epic Games Launcher

epic-games epicgames-launcher epic-games-launcher linux-gaming epic-games-client

🛱 Readme

- GPL-3.0 license
- <mark>អ</mark> 2 Branches
- 🟷 53 Tags
- -^- Activity
- ☆ 4.2k stars
- **೪ 154** forks

Releases 52

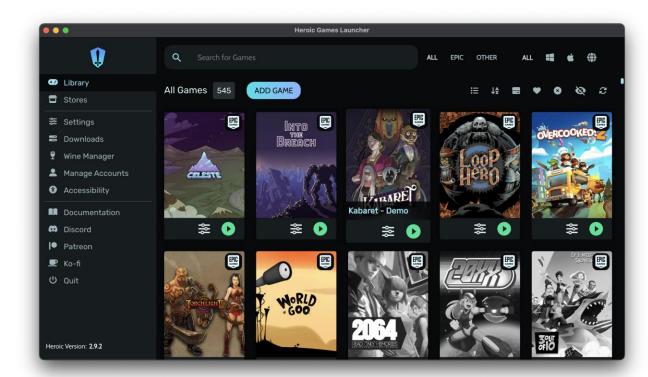
S 0.20.33 - Undue Alarm Latest

+ 51 releases

Heroic Games Launcher (2021)

- Created by Flávio Fearn as a GUI for Legendary
- Built on Electron / Node
- Runs on macOS, Linux, Windows
- Later expanded with support for GOG (2022) and Amazon Games (2023)
- GPLv3

github.com/Heroic-Games-Launcher



GOGDL (2022)

- Created specifically for Heroic Games Launcher
- CLI only (not user friendly)
- Written in Python
- Licensed under GPLv3

About

GOG Downloading module for Heroic Games Launcher

🛱 Readme

- কা GPL-3.0 license
- <mark>អ</mark>ੈ Branches
- 🛇 Tags
- -⁄- Activity
- ☆ 59 stars
- ⊙ 4 watching
- 앟 11 forks

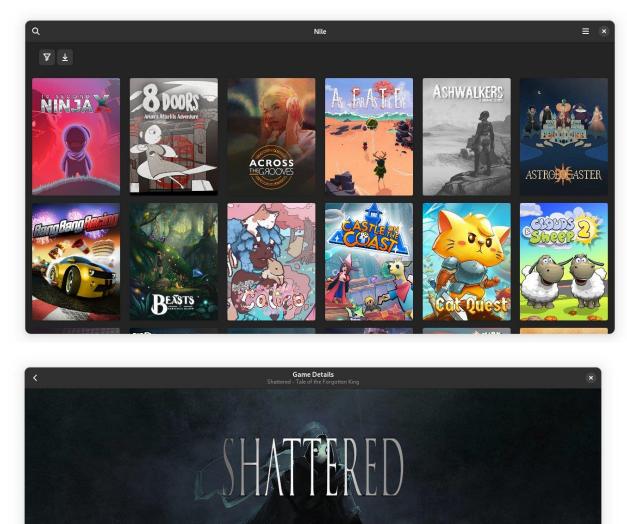
Report repository

github.com/Heroic-Games-Launcher/heroic-gogdl

Nile (2023)

- Based on Dennis's twl.py github.com/derrod/twl.py
- CLI only
- Initially planned to be GUI too
- Written in Python
- Licensed under GPLv3

github.com/imLinguin/nile



TALE OF THE FORGOTTEN KING

Install

Overview

> Developer

er Genres Platform, Puzzle, Role-playing (RPG)

About the game

The world as it was is gone, lost with the disappearance of the King

As a Wanderer of these forsaken lands, it is up to you to piece together the fragments of reality and retrace the fall of civilization through skill based combat, innovative open-world platforming and the testimonies of survivors.

ome more trustworthy than others.

Why?





Freedom of choice



Fun / Challenge



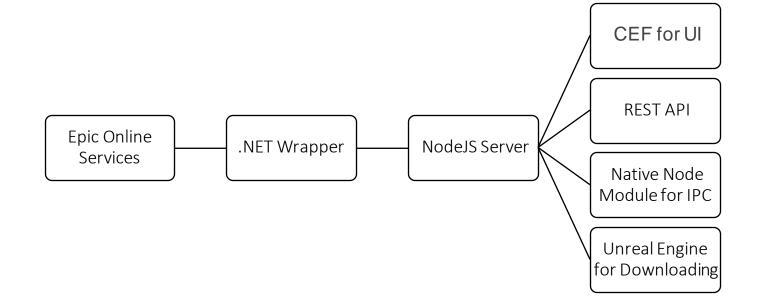
Spite?

- The game I backed on Kickstarter went exclusive...
- Epic Games Launcher is a mess
- Epic Online Services is even worse
- Let's build my own!

Epic's Client Mess

- Launcher runs Unreal Engine to show you a web UI...
- Windows service (daemon) written in Node?!
 - Bonus .NET wrapper just to run it as a service
- 2 copies of Unreal Engine for Launcher + Service
- 6 copies of Chromium Embedded Framework (CEF)

Size: 1.58 GB (1,701,691,631 bytes)





How?



Documentation (if exists)

- Doesn't exist for the most part
- Some exceptions
 - Itch.io (github.com/itchio/itch-docs)

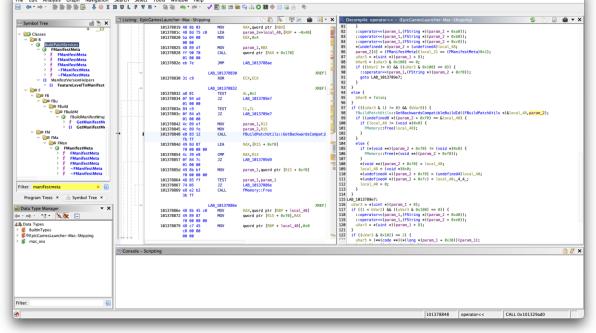
Reverse engineering

- Network capture
 - mitmproxy
 - Fiddler
 - Proxifier
- Decompiling
 - Ghidra (it's free!)
 - Binary Ninja
 - IDA

Pro tip: macOS binaries often have symbols!

	Result	Protocal	Host		Body Process	🔨 🔟 Pidder Orchestra Beta 🛛 🤯 Pidder Script 🔃 Log 🔲 Pilters 🚍 Timelin
238	200	HTTPS		//ff6/3c70dca833a24f88a40f537988d324be+H5_PVE_shop_Digital_Product_PM_Vert.jpg	177.695 battle.net: 1644	Get Started 🕐 Statistics 🔍 Inspectors 🗲 AutoResponder 📝 Compose
239	200	HITPS		//ff7/e764732da0c0c2365fb77d6a23F463c9-prod-card-wide.jpg	148.726 battle.net:1644	Headers Texthiew Syntaxiliew WebForms HexView Protobul Auth Cookies Raw JSON XML
240		HTTPS		(//f8/1aac598bb6dcbdfd24505dbea1b7be53+H514_Product_Cards_700x850_vertical_Chp_2-5_BK02.jpg	93,595 battle.net:1644	Request Headers [Baw] Director Defen
241		HTTPS		(/ff9/2a76bd53c9a3bf8108897cf810f2fcb0-COD8O4_Black_Ops_Pass-Bnet_Fixed-Family_Card_Vert-70	478.543 battle.net: 1644	GET //#6/3c70dca833a2498a40537388d324beHS_PVE_Shop_Digtal_Product_PM_Vet.jpg HTTP/1.1
242		HTTPS		(/ff9/8901b298b0f0e1c98c493d9d3f90fd6d-prod-card-vert_RoS.jpg	251.841 battle.net:1644	Clent
243	200			//ffa/66a4a0abaa76b49b7487e1e94cf5aeba-OW_Legendary9.cot8bs9romo_BizzardShopHeaders_P	\$79.623 battle.net: 1644	Accept: mage/webp.image/apng.image/*,*/*jg=0.8
244	290	HTTPS		//ffa/96290efff95a74a90d3bc6d05041cf2b-prod-card-wide.jpg	145.163 battle.net:1644	Accept-Encoding: gzip, deflate, br
245	200	HETPS		//ffa/e6150+0021c651d0719e73c2220+d10c-prod-full-bg.jpg	685.023 battle.net: 1644	Accept-Language: de-DE,derg=0.9
246		HETPS		//fff/155c60a0322ae5402f8cbae3c4108297-dablo-III-base=1000x700.png	1.297.800 battle.net:1644	User-Agent: Mozila/5.0 (Windows NT 10.0; WOW64) AppleWebKit/537.36 (VirtML, like Gedio) Battle.net/2.0.0.12862 (retail) Chro
247		HTTPS		//fff/36f7576d8503f4f723671d1504564481-prod-card-tall.jpg	127.998 battle.net: 1644	Hiscellaneous
248	200			//fff/fa65ca191fa0d40bffc8cb20ba7547dd-prod-card-wide.jpg	136.235 battle.net: 1644	Referer: https://eu.shop.battle.net/
249	200	HTTPS		/(/5e3cc31b567a=3428643488sa=1.8v=1130.54e767a8t=Umamed%20Transaction8rst=106598ref=	57 battle.net: 1644	X-BNET-SSO: true
S 250	302	HTTPS		/App/ideDE/ident/content/u/browser/world-of-warcraft-classic?targetRegion+EU	256 battle.net: 1644	Security
251	302	HTTPS		/App/ideDE/dient/content/u/browser/world-of-warcraft?targetRegion=EU	248 battle.net: 1644	SecFetch-Destrimage
252	302	HTTPS		/App/ideDE/dient/content/ul/viewer?targetRegion~EU	234 battle.net: 1644	Sec Fetch Mode: no-cars
253	302	HTTPS		/App/deDE/dient/content/ui/viewer?targetRegion=EU	234 battle.net: 1644	Sec Fetch Site: cross-site
254	302	HTTPS		/App/deDE/dient/patchnotes?targetRegion=EU8program=s18region=eu8locale=deDE8type=retail8pa	398 battle.net: 1644	Transport
255	302	HTTPS		/App/deDE/dient/patchnotes?targetRegion=EU8program=s18region=us8iocale=deDE8type=PTR8pag	395 battle.net: 1644	Connection: keep-alve
256	302	HTTPS		/App/ideDE/dient/patchnotes?targetRegion=EU8program=war38region=eu8locale=deDE8type=retail8	401 battle.net: 1644	Host: bnetproduct-a.akamaihd.net
257	302	HTTPS		/App/ideDE/ident/patchnotesPtargetRegion=EU8program=wow8region=eu8locale=deDE8type=retail8	400 battle.net: 1644	
258	302	HTTPS		/App/deDE/dient/patchnotes?targetRegion=EU8program=wow-dassic®ion=eu8locale=deDE&type	408 battle.net: 1644	
259	302	HTTPS		/ApplideDE/dient/patchnotesPtargetRegion=EU8program=wtcg8region=eu8iocale=deDE8type=retail8	401 battle.net: 1644	
260	302	HTTPS		/App/deDE/dient/patchnotes?targetRegion=EU&type=RETAIL&program=app®ion=EU&locale=deDE	379 battle.net: 1644	
261	302	HTTPS		/App;/deDE/client/shop;buy/W3?targetRegion=EU	262 battle.net: 1644	
262	302	HTTPS		/App/deDE/dient/shop/product/diablo_i_resurrected?targetRegion=EU	262 battle.net: 1644	
263	302	HTTPS	nydus.battle.net	(App/deDE/dient/shop/upgrade/WoW-NextExpansion?targetRegion=EU	270 battle.net: 1644	
264	302	HTTPS		/App/deDE/dent/shop?targetRegion=EU	233 battle.net: 1644	
265	304	HTTPS		/_next/static/3.0.0-cd384b50-41/_buildNanifest.js	0 battle.net: 1644	10 million
260	304	HTTPS		/_next/static/3.0.0-cd384b50-41/_ssgManifest.js	0 battle.net:1644	N
267	304	HTTPS		/_next/static/chunks/072d336b7ed7831fe1fa132e8216f91432f63056.6d0fb924e5abc8e6159a.js	8 battle.net:1644	Transformer Headers Textiliew Syntaxiliew Imageiliew HexView WebView Protobul Auth Caching
268	304			/_next/static/chunks/1a0f24eb.18b31baaf9a7637a9ad9.js	0 battle.net:1644	Cookies Raw JSON XML
269	304	HTTPS	d9qcypg7oS8bv.cloudfrant.net	/_next/static/chunks/La8bfb1381b8ff18955481d8a26ca96a52ff7db7.015a86811c68ec0c30a6.js	0 battle.net:1644	Formet JPEG
270	304	HTTPS		/_pext/static/chunks/2852872c.aaf6cc50ddb9611265ba.js	0 battle.net: 1644	fomat: JPES 177 695 bytes
271	304	HTTPS	d9qcypg7o58bv.cloudfront.net	/_next/static/chunks/36a89214.124096b9998cfe55ce0c.js	0 battle.net: 1644	
272	304	HTTPS	d9qcypg7o58bv.doudfrant.net	/_next/statc/chunks/4072747d.09af0c526ee4a9cc5adf.js	0 battle.net: 1644	700w x 850h
273		HTTPS		/_next/static/chunks/75fc9c18.407a7997aa3le8F3ac4ee.js	0 battle.net: 1644	0.30 bytes (bx
274				/_next/static/chunks/d4d3983ee587e08f6efae097e3aebfc1a33569f2.d41e9a3aeb85d8837091.js	0 battle.net: 1644	Basking State Stat
275	304	HTTPS		/_next/static/chunks/e6f59a6c6d27a9aeb13897681ac0af34dbccad9.30bbb96e78587124630c.js	0 battle.net: 1644	Subsample@4.4.4 (non-opt)
276	304	HTTPS		/_next/static/chunks/framework.4df82c4704a0136f6a4b.js	0 battle.net: 1644	HuffmanTables: 1
2277	304	HTTPS		/_next/static/chunks/man-50b6397cF4c39af89ca3.js	0 battle.net:1644	
278	304	HTTPS		/_next/static/chunks/pages/%3Blocale%5D/browse/%5Bgame%5D-3e96e5e905b7dcc6550c.js	0 battle.net: 1644	
279	304	HITTPS		/_next/static/chunks/pages/_app-6d576dc26d82869e350c.js	0 battle.net: 1644	
280	304			/_next/static/chunis/styles.b7fd9fbca3168d4e2eea.js	0 battle.net:1644	
281	304			/_next/static/chunks/webpack-22eaaa575d3c455933b4.js	0 battle.net:1644	
282	200	HTTPS		/api/sgegate/status/165996	51 battle.net: 1644	
283	200	HTTPS		/api/agegate/status/168327	50 battle.net: 1644	
	200	HTTPS		/api/sgegate/status/168327	50 battle.net: 1644	and the second se
284		HTTPS		/api/agegate/status/168327		
284 285 286	200 200	HITTPS		(api/agegate/status/43191	50 battle.net: 1644 49 battle.net: 1644	

Progress Telerik Fiddler Classic



Pre-existing projects

- twl.py
 - Twitch Game Launcher (later renamed Amazon Games Launcher)
 - Incomplete PoC
- Igogdownloader
 - GOG, limited to downloading
- otool
 - Origin, limited to downloading
- EGL2
 - Epic Games Store, but Fortnite only

Trial & Error / Educated guesses

Just guess your way to working code!

Or fail trying...

Traceback (most recent call last):
File "/Users/dennis/Projects/legendary/venv/bin/legendary", line 33, in <module>
sys.exit(load_entry_point('legendary-gl', 'console_scripts', 'legendary')())
File "/Users/dennis/Projects/legendary/legendary/cli.py", line 3087, in main
cli.info(args)
File "/Users/dennis/Projects/legendary/legendary/cli.py", line 1776, in info
manifest = self.core.load_manifest(manifest_data)
File "/Users/dennis/Projects/legendary/legendary/core.py", line 1201, in load_manifest
return JSONManifest.read_all(data)
File "/Users/dennis/Projects/legendary/legendary/models/json_manifest.py", line 50, in read_all
_m.chunk_data_list = JSONCDL.read(_tmp, manifest_version=_m.version)
File "/Users/dennis/Projects/legendary/legendary/models/json_manifest.py", line 115, in read
_cdl.count = len(json_data['ChunkFilesizeList'])
KeyError: 'ChunkFilesizeList'

Where are we at?

Legendary

Supported Features

- Download / Verify / Update
- DLC
- Cloud Saves
- Multiplayer
- In-Game Overlay
- SDL Selective Download
- Older versions of games (requires backup of game manifest)

Missing Features

- Mod Support
- Play time tracking
- Replacement for EOS service / daemon
- Social Features (Friends, Achievements, etc.)
 - Can mostly be done through in-game overlay

Where are we at?

GOGDL

Features

- Download / Verify / Update
- DLC
- Cloud Saves (Windows and Mac)
- Older versions of games (Windows and Mac)

Missing features

- Multiplayer
- Achievements
- Stats
- Leaderboards

Where are we at?

Nile

Features

- List games
- Download
- Verify
- Update

Missing Features

• FuelPump DRM – a Twitch App leftover

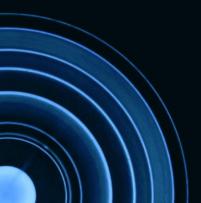
Platform reaction

" Thank you! "



What's next?

future plans and dreams section



Improvements

- Online features via comet (GOG) <u>github.com/imLinguin/comet</u>
- More features for Linux native games (GOG)
- Mods (Epic)
- EOS service / daemon replacement (Epic)
- Rewrite it in Rust \bigotimes \bigotimes \bigotimes \bigotimes \bigotimes \bigotimes (only kind of joking)

New platforms

- IndieGala github.com/Gustash/FreeCarnival
- Ubisoft
- EA



• Who knows!

Other projects

I usebottles.com btw



Other approaches

- Running official launchers in WINE
 - Lutris
 - Bottles
 - CrossOver
- Aggregation from official launchers
 - Lutris (Linux)
 - GOG Galaxy (Windows, macOS)
 - Playnite (Windows)
 - ...and many more

Reverse-engineering projects

- YoobieRE github.com/YoobieRE
- UplayDB github.com/UplayDB
- SteamRE github.com/SteamRE
- OpenXbox github.com/OpenXbox
- gogdb.org

Launcher Replacements

- Minigalaxy (GOG)
- Igogdownloader (GOG)*
- otool (Origin) only downloading
- Lutris (Amazon Games, GOG, Itch.io, Humble Bundle)

Get Involved!

<u>https://discord.gg/FJc6kw2UkT</u>





Thank you!



@Nocccer



@CommandMC

@flavioislima

Alar K Sab



@arielj



@Etaash-mathamsetty