What's new with the Firefox Profiler

Nazım Can Altınova
https://share.firefox.dev/profiler-whatsnew-fosdem-2023
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- Intro
  - What is a profiler?
  - What is Firefox Profiler?
- Importers from other profilers
- Other tools that use the Firefox Profiler
- New features & UI improvements
  - Power profiling
  - Source code view & inline call stacks
  - And many more!
What is a profiler?
Helps developers to analyze performance issues.
It gives insight and clues.

This is detective work.
What is the Firefox Profiler
Statistical profiler with additional data

Main data sources: Sampling + Markers
Introduction to Firefox Profiler
talk:

By Julien Wajsberg
JavaScript devroom
Sunday, 16:30 - 16:55
Importers from other profilers
Currently supported profile formats

1. Chrome Performance Tab – Trace Event Format
2. Linux perf script
3. ART Trace
4. Valgrind DHAT
All you need to do is drag and drop the file into profiler.firefox.com
Firefox Profiler — Web app for Firefox performance analysis

Capture a performance profile. Analyze it. Share it. Make the web faster.

Documentation

To start profiling, click on the profiling button, or use the keyboard shortcuts. The icon is blue when a profile is recording. Hit captur to load the data into profiler.firefox.com.

Start Recording

Ctrl+Shift+1 Stop and start profiling

Ctrl+Shift+2 Capture and load profile

You can also profile Firefox for Android. For more information, please consult this documentation: Profiling Firefox for Android directly on device.

Load existing profiles

You can drag and drop a profile file here to load it, or:

Load a profile from a file Load a profile from a URL

Your recent uploaded recordings

11:11 AM Profile #88f9e (1.0s)

Firefox 111 macOS 13.1.0
ETW importer
By Jeff Muizelaar

https://github.com/jrmuizel/etw-profiler/tree/main/etw-gecko
Other tools that use the Firefox Profiler
Java JFR Profiler
By Johannes Bechberger (SAP)

https://plugins.jetbrains.com/plugin/20937-java-jfr-profiler
Firefox Profiler beyond the web

By Johannes Bechberger (SAP)  
Mozilla devroom  
Saturday, 17:30 - 18:00
Samply
By Markus Stange

https://github.com/mstange/samply
FunctionTrace
By Matt Bryant

https://functiontrace.com/
New features & UI improvements
Power profiling
Profiler Settings

Recordings launch profiler.firefox.com in a new tab. All data is stored locally, but you can choose to upload it for sharing.

- Web Developer
  Recommended preset for most web app debugging, with low overhead.

- Nightly
  Recommended preset for profiling Nightly.

- Graphics
  Preset for investigating graphics bugs in Nightly.

- Media
  Preset for investigating audio and video bugs in Nightly.

- Networking
  Preset for investigating networking bugs in Nightly.

- Power
  Preset for investigating power use bugs in Nightly, with low overhead.

- Custom

Full Settings
With CO$_2$ emission information

Power: 2.68 W
Energy used in the current selection: 63 $\mu$Wh (0.028 mg CO$_2$e)
Energy used in the visible range: 168 $\mu$Wh (0.074 mg CO$_2$e)

Thanks to **Chris Adams** and **Fershad** from **The Green Web Foundation**.
Power profiling with the Firefox Profiler talk:

By Florian Quèze
Energy devroom
Saturday, 17:30 - 18:00
Source code view & inline call stacks
New DevTools performance panel
Marker Chart improvements
Instant markers
Short interval markers
One longer interval marker
One-click profiling on Task Manager (a.k.a. about:processes)

<table>
<thead>
<tr>
<th>Name</th>
<th>Memory</th>
<th>CPU</th>
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<tr>
<td>Data Decoder (45728)</td>
<td>129MB</td>
<td>40%</td>
</tr>
<tr>
<td>8 active threads out of 14: 4 x dav1d-worker 36.5%, 2 x MediaPDecoder 2.6%, MediaSupervisor 0.6%, IPC I/O Child 0.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nightly (45708)</td>
<td>738MB</td>
<td>9%</td>
</tr>
<tr>
<td>30 active threads out of 94: MainThread 2.2%, Socket Thread 1.7%, Compositor 1%, com.apple.audio.IOThread.client 0.7%, IPC I/O Parent 0.5%, AudioIPC Server Callback 0.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="https://youtube.com">https://youtube.com</a> (45715)</td>
<td>301MB</td>
<td>8.3%</td>
</tr>
<tr>
<td>Tab: Rick Astley - Never Gonna Give Up Profile all threads of this process for 5 seconds YouTube</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 22 active threads out of 46: MainThread 2.3%, MediaDecoderStateMachine 1.2%, 4 x MediaSupervisor 1.1%, RemVidChild 0.7%, IPC I/O Child 0.6%, AudioIPC Client Callback...
| Utility (45740)   | 21MB   | 1.4% |
Select multiple tracks

Use CTRL+Click or Shift+Click to select multiple tracks quickly.
Tracks selection list
New transform #1: Focus on Category

Thanks to our contributor Johannes Bechberger (SAP)!
New transform #2: Collapse Indirect Recursion

Thanks to our contributor Simmo Saan!
Localization

Thanks to our Outreachy intern Hasna Hena Mow for her internationalization project!
Locale picker
No periodic stack sampling feature

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<td>No Periodic Sampling</td>
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<tr>
<td>Disable interval-based stack sampling</td>
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- JavaScript
  Record JavaScript stack information, and interleave it with native stacks.

- CPU Utilization
  Record how much CPU has been used between samples by each profiled thread.

- Main Thread File IO
  Record main thread File I/O markers.

- Profiler Threads File IO
  Record File I/O markers from only profiled threads.

- All File IO
  Record File I/O markers from all threads, even unregistered threads.

- No File IO Stack Sampling
  Do not sample stacks when recording File I/O markers.

- Sequential Styling
  Disable parallel traversal in styling.

- Screenshots
  Record screenshots of all browser windows.
Documentation

Firefox Profiler

User Guide

Getting Started
This page is an overview of the general process of capturing a profile.

Access the Firefox Profiler controls
The Firefox Profiler can be used with 2 entry points, either from the popup, or from the devtools panel.

We recommend using the popup so that the overhead caused by the other devtools is avoided.

Enable the popup
The simplest way to enable the popup is going to https://profiler.firefox.com and clicking the big button Enable Firefox Profiler Menu Button in the page.

Advanced Topics
Profiling Firefox Startup & Shutdown
Perf profiling on Linux

https://profiler.firefox.com/docs/
Thank you!

Firefox Profiler docs:
https://profiler.firefox.com/docs/

Slides:
https://share.firefox.dev/profiler-whatsnew-fosdem-2023

Matrix channel:
https://chat.mozilla.org/#/room/#profiler:mozilla.org