Kiosk-mode browser using Chromium Embedded Framework (CEF)

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CEF Overview

- Based on Chromium.
- Suitable for adding web experience to an existing application or building a new Chromium-based browser from scratch.
- Is built as a set of libraries which provide an interface to access a big subset of browser's features.
- Uses Chromium's multi-process model and sandboxing, provides an IPC API to send messages between processes.
- Provides default behavior for most features, so you only need to change what you use.
- CEF is a C++ library, but a lot of alternative language bindings are available.

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Customer’s feature requests

- Terminals are running Windows in kiosk-mode.
- Fullscreen browser experience with no tabs, operating system runs the browser exclusively.
- Filesystem access (file upload or download) is disabled.
- PDFs and spreadsheets are opened read-only in popup windows.
- Some preloaded JS code (extensions) is needed for the customer’s websites (logging, keybindings).

Customer’s feature requests

- Only webcams and microphones whitelisted by the administrator are available and are selected automatically.
- Support several custom URL schemes (like chrome://)
- Custom web pages for HTTP errors.
- Windows printing dialog is used instead of Chromium one, printers are pre-configured to use the correct settings.

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How CEF helps us

- Overriding web request's behavior.
- Custom URL schemes (like chrome://).
- Callbacks for when the user tries to upload or download a file.
- Subset of Chromium's views framework for window management.
- Common Chromium features like logging, locales, proxy support and remote web pages debugging.
- Standard library to work strings, processes, threads, reference counting, etc. (similar but not the same as Chromium's base).

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JavaScript

- Any JavaScript code can be executed from C++ in the “render” process of any page.
- CEF provides C++ wrappers around Chromium’s V8 objects for using C++ implementation for JS functions.
- A simple extension system is provided, you have to implement the extension APIs that you need and a mechanism for loading extensions code. Not compatible with Chrome extensions.
- JavaScript bindings can be asynchronous.

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Size and performance

- RAM usage with a single Google homepage is ~70MB on a virtual machine with 500MB available.
- A Windows installer including the browser and required libraries is ~60MB.
- CPU usage is similar to Chromium.

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Updating CEF

- CEF is tracking Chromium releases.
- APIs are stable.
- More bugs are fixed than introduced (subjectively).

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First Impressions

- Easy to set up and get started both on Windows and Linux.
- Documentation, community and CEF source code are great!
- CEF bugs are rare but Chromium bugs are still there.
- Never had to change CEF source code or send patches.

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Links and resources

- CEF's repository on Bitbucket
- CEF Forum