

GUI Documentation - Secure Patient Record Store/Persona Firefox extension

CS448 Capstone

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Document purpose: This document serves as documentation for the Firefox extension named Persona which is the Secure Patient Record Storage's GUI interface. This document does not cover details related to the Wrapper nor to the hardware (ACR100, ACOS5) or any software (ACOSPKCS11 dll) other than the Firefox extension. Refer to the Medivault PKCS Wrapper Documentation for details regarding the Wrapper, and refer to the doxygen files for source code comments on the Wrapper and XPCOM components.

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Q: Why did we choose to go with a pre-existing Firefox extension versus building one from scratch?

Due to the time constraint of only having ten weeks to build the prototype, the group decided that leveraging pre-existing code was the most efficient path to take. Instead of "reinventing the wheel" and building our own file manager, less time and effort would be required if we found a Firefox extension which was already a file manager. Vincent found FireFTP, which is a Firefox extension that serves as an FTP client with a dual-pane layout.

Q: Because pre-existing code not created by Capstone Team B was used, what is the licensing covering FireFTP?

Refer to 'licenses.txt' for more information.

Q: What are the pros and cons of using FireFTP as our GUI base?

Pro: Take advantage of functionality that is already built-in that we need: file manager functionality including creating, deleting, moving directories and files.

Pro: Take advantage of the dual-pane layout which is conducive to transferring files from one location to another; a key aspect of the Persona project.

Con: Need to remove FTP-related functionality which is integrated throughout the extension.

Con: To fully understand the FireFTP code, a lot of time would need to be spent reading through the code whereas building an extension from scratch, one knows and understands all aspects of the program.

Q: What functionality did we add to FireFTP to become Persona?

The Wrapper API that was created contains functionality to encrypt, decrypt, verify, sign, and load files as well as utility functions to handle the setup of initializing and connecting to an ACR100 USB Flash drive. Refer to 'API.odt' for the Wrapper API specification.

FireFTP was modified to then provide this functionality to users. When using Persona, one does not need to know the details of how a file is encrypted or decrypted. The design is such that complex functionality is hidden within the Wrapper and the user is given dialog prompts and buttons to navigate encryption, decryption, verifying, signing, etc.

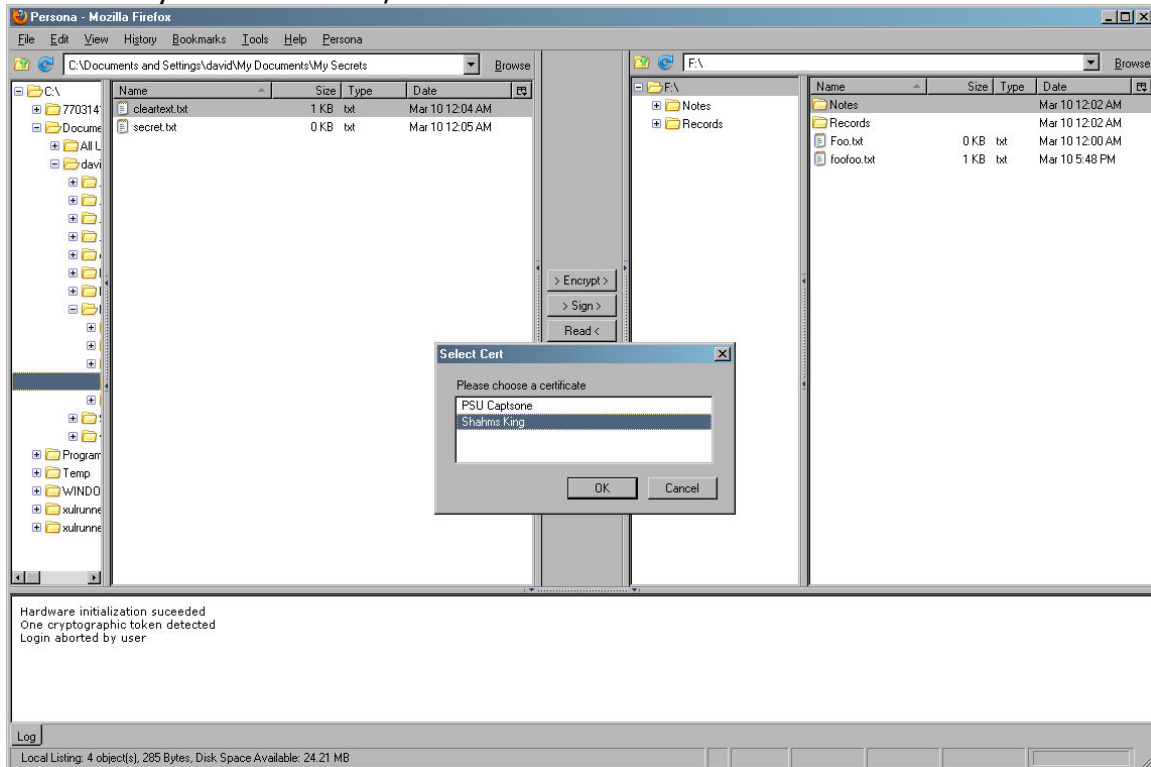
In between the two panes of Persona, four buttons can be found, Encrypt, Sign, Read, and Initialize.

Encrypt - use this button to encrypt a file

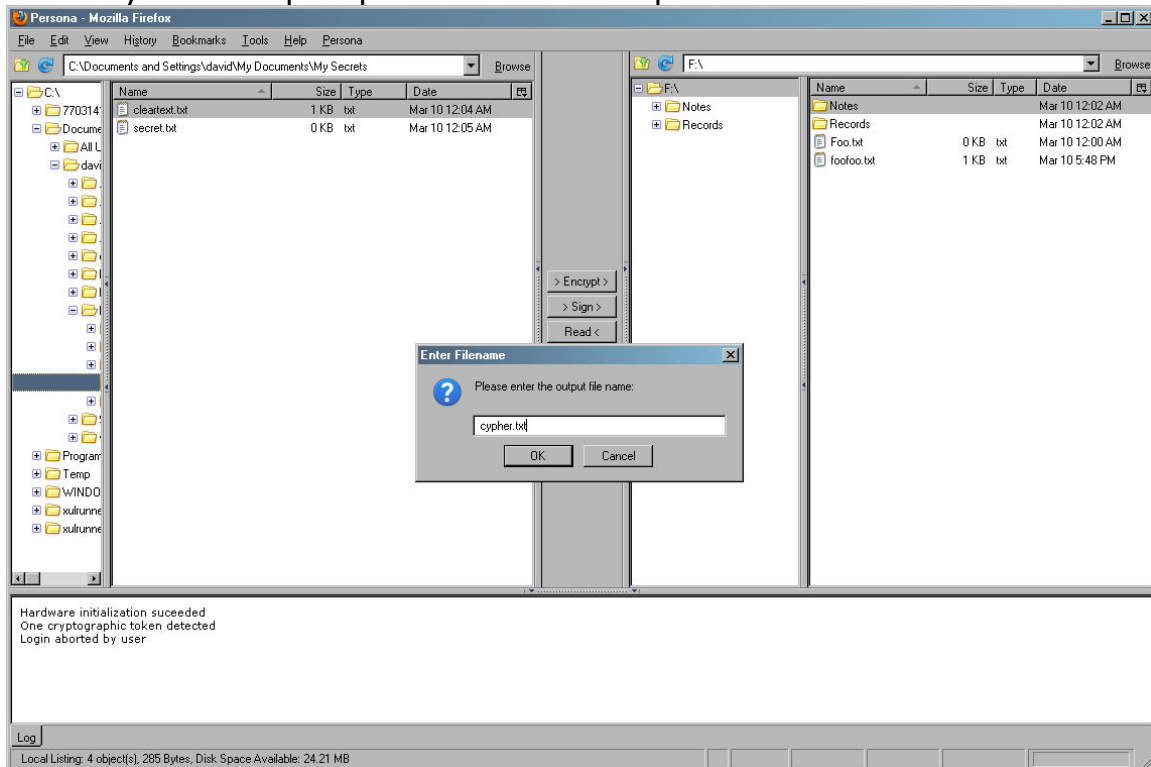
Steps:

1. Select a file in the left pane
2. Hit Encrypt

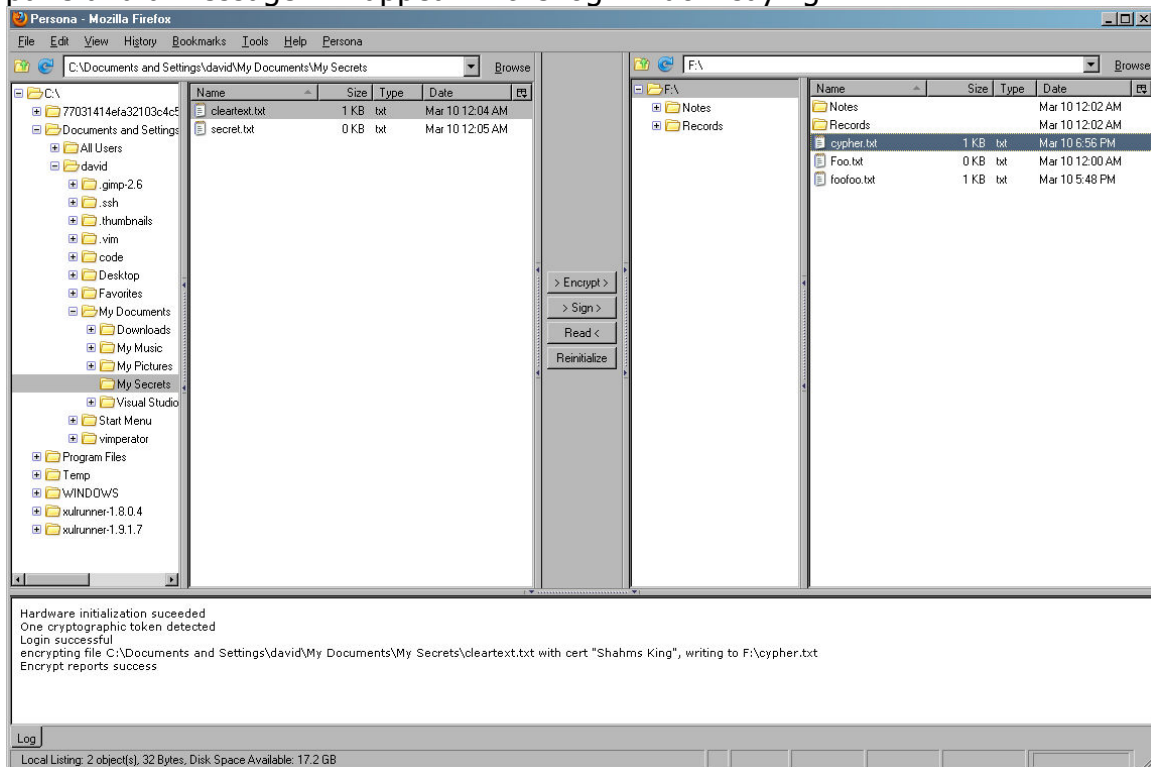
3. A dialog prompt will appear asking you to choose a certificate on the smartcard you want to use, hit OK



4. Then you will be prompted to enter the output file name

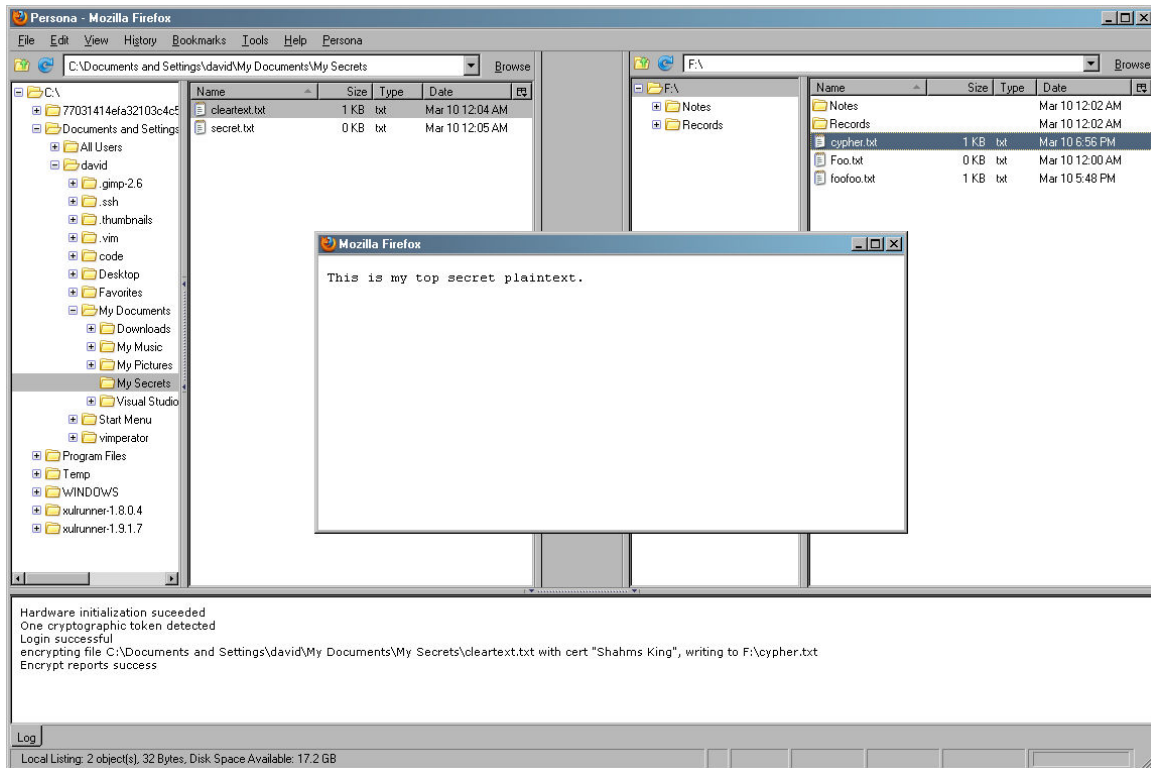


5. If everything goes smoothly then the encrypted file should appear in the right pane and a message will appear in the log window saying



Sign - use this button to sign a file, steps are very similar to the Encrypt functionality

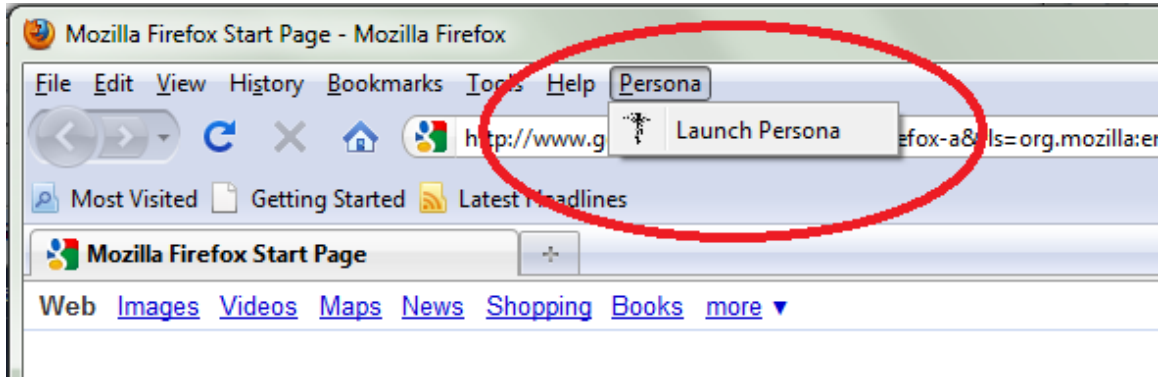
Read - use this button to load the contents of a file selected in the right pane into a new window. Persona internally figures out if the file is encrypted, signed, or is just a plain text file; thus the user does not need to worry about using three different buttons to go through three different processes (decryption, verification, or no action) to open different files. An example of reading an encrypted file is shown below:



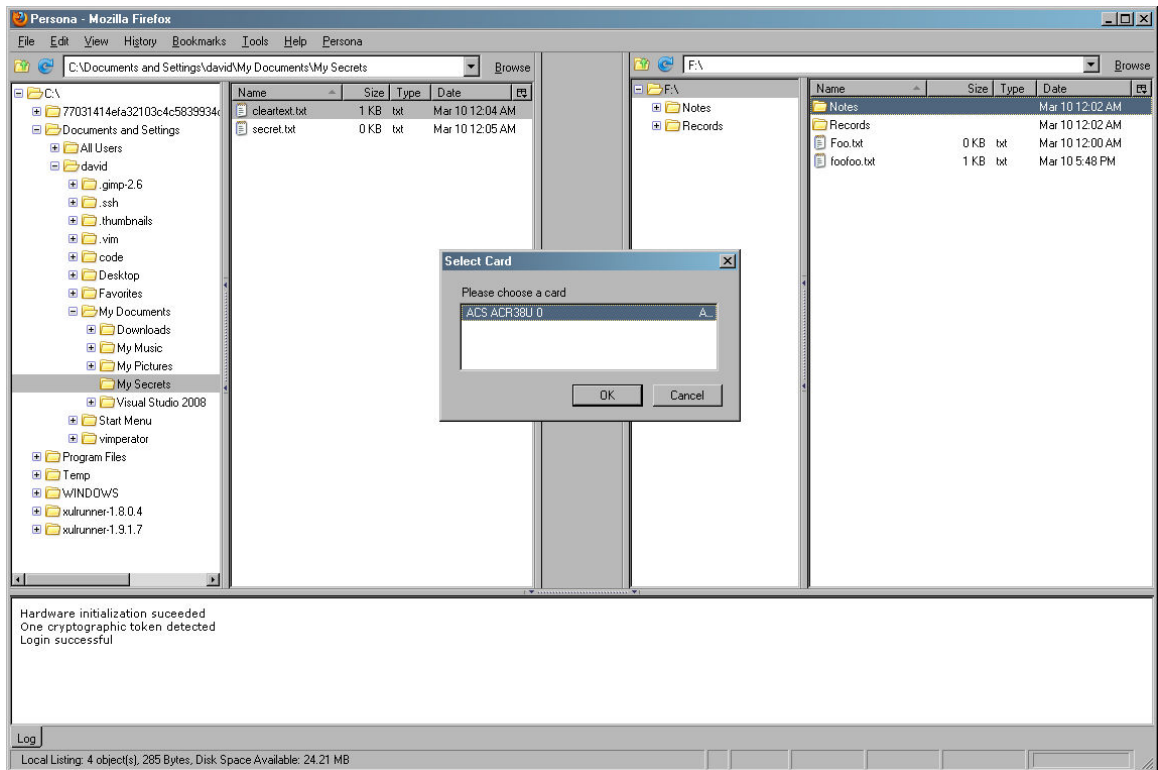
Initialize - use this button to reinitialize the Wrapper if you want to switch to another smartcard, failed logging in, or didn't have your hardware connected.

Persona Menu

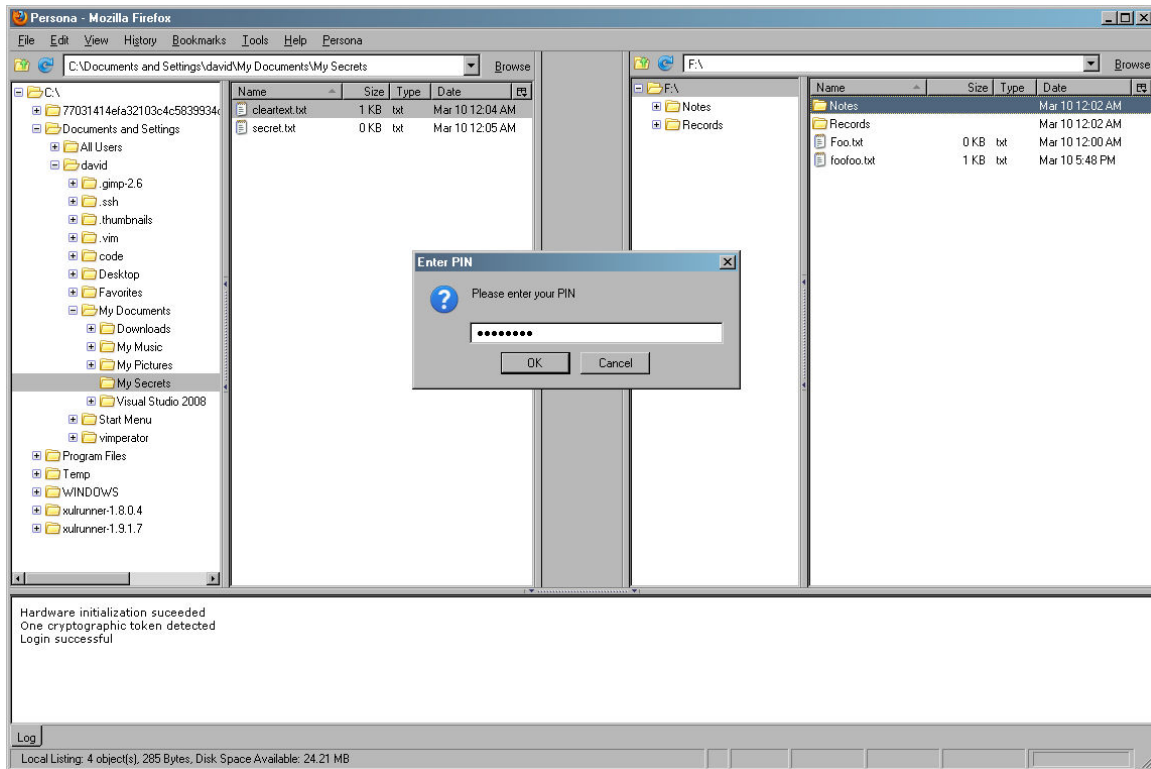
A Persona menu was added in the main menu bar after 'Help' called 'Persona' which has one entry, 'Launch Persona'. Use this to launch the Persona extension.



You will then be prompted to select a connected card...



Then you will be prompted to enter your pin...



Resources

Q: What knowledge and resources are required to build upon the FireFTP/Persona GUI?

To expand upon the Firefox extension, familiarity with developing Firefox extensions is needed; knowing the directory layout, familiarity with writing XUL and using XPCOM, as well as knowledge with HTML and JavaScript.

Links to resources used in developing the FireFTP/Persona GUI:

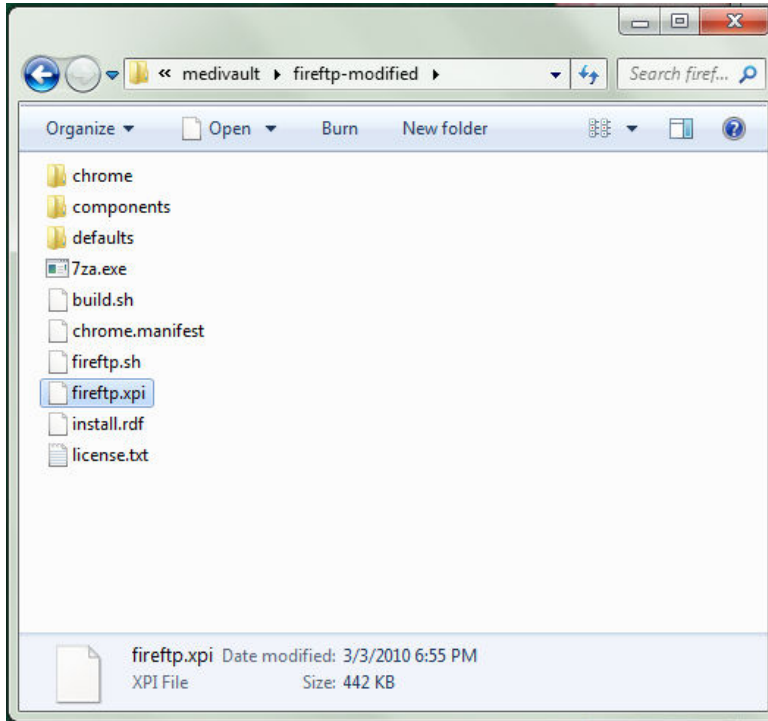
- XUL Tutorial - <https://developer.mozilla.org/En/XUL>
- XUL Structure - https://developer.mozilla.org/en/XUL_Tutorial%3aXUL_Structure
- Programming Firefox by Kenneth C. Feldt, © April 2007
- Learning JavaScript by Shelley Powers, © 2008
- 'Hello World' Extension development tutorial - http://kb.mozillazine.org/Getting_started_with_extension_development
- Setting up extension development environment - https://developer.mozilla.org/en/Setting_up_extension_development_environment

Additional resources used for the project as a whole:

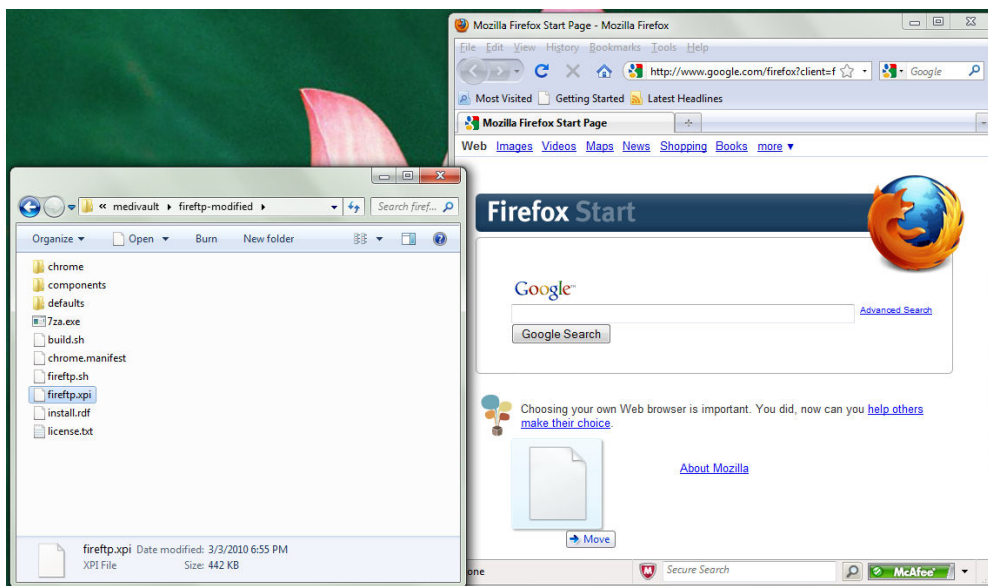
- GitHub: github.com
- Git main site, lots of docs: git-scm.org
- msysgit: <http://code.google.com/p/msysgit/>
- TortoiseGit: <http://code.google.com/p/tortoisegit/>
- PuTTY and PuTTYGen: <http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

Installing Persona

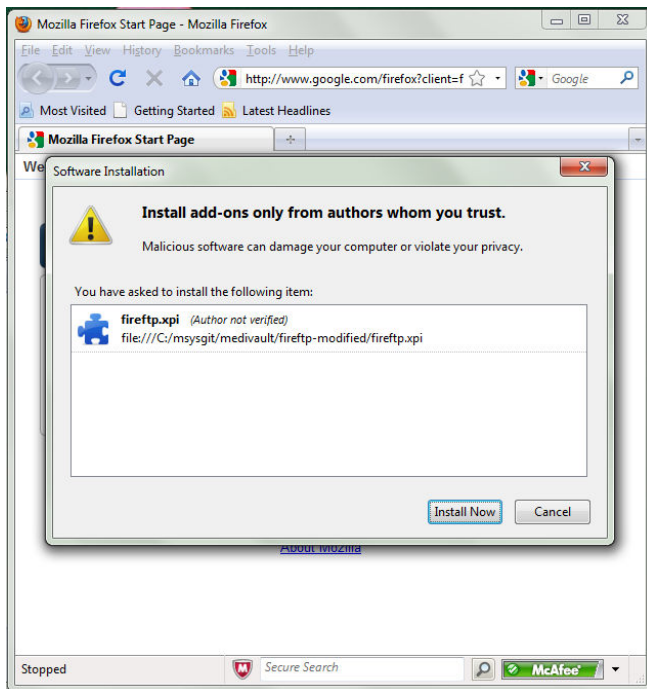
1. To install Persona you need fireftp.xpi which is located in the repository at medivault/fireftp-modified/. (The repository will be burned to a CD and given to Kal.)



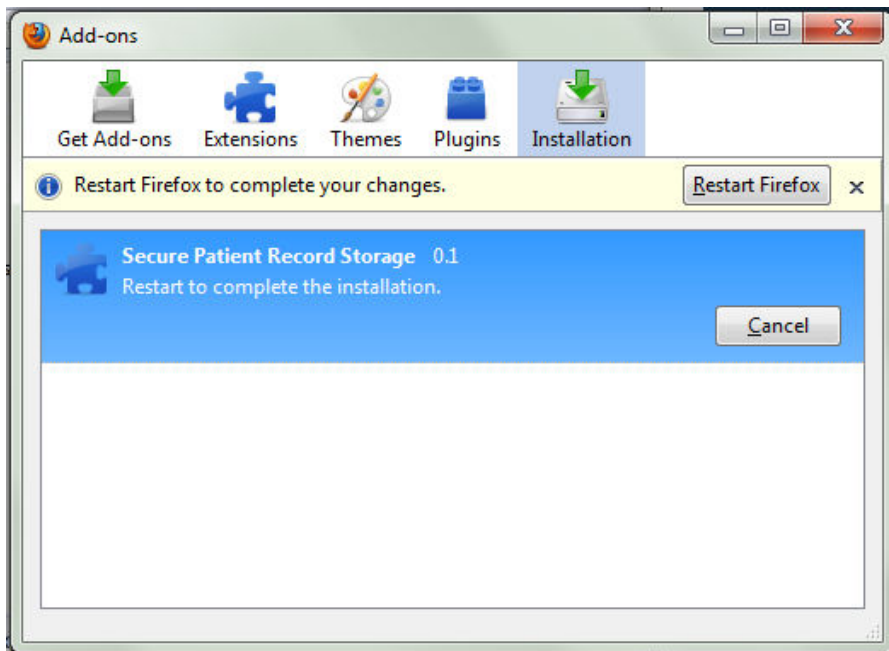
2. Open a Firefox 3.5 browser and drag the fireftp.xpi file into Firefox, or you may use the other way of installing extensions but those steps will not be listed here.



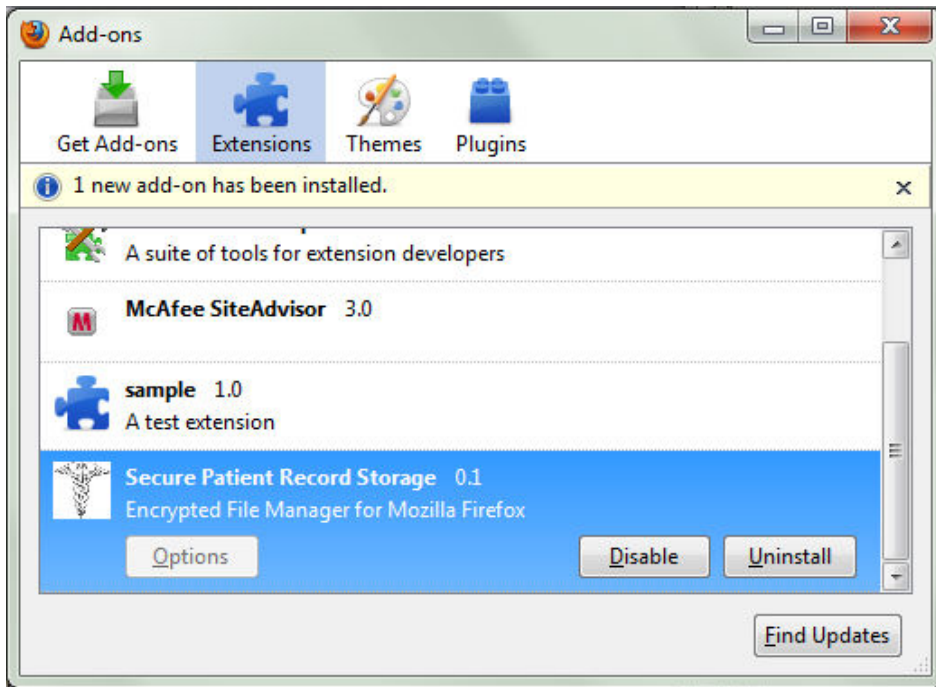
3. A Software Installation dialog will pop-up, hit 'Install Now'.



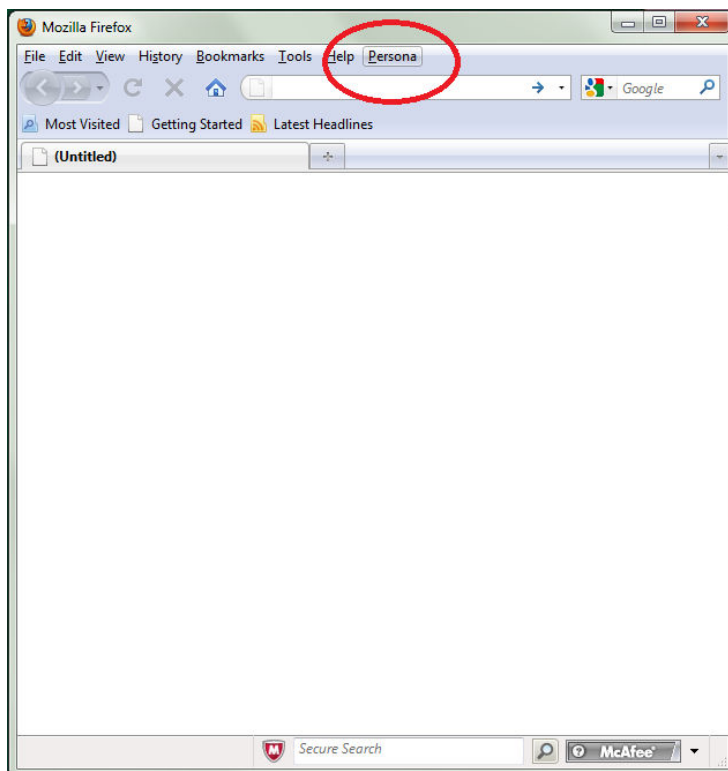
4. After it installs, Firefox will show an Add-ons dialog box when installation completes. Hit 'Restart Firefox' button to see the newly installed extension.



5. Once Firefox restarts, the Add-ons dialog box will appear again showing Secure Patient Record Storage as installed.



6. The Firefox browser will now have a Persona Menu at the top. Installation a success!



How to build Persona after making modifications

For development, Capstone Team B decided to use GitHub to store our repository at and to use Git as our source code management tool. (If you are developing on Windows, msysgit exists and is the equivalent of Git). Links to download each are in the [Resources](#) section of this document, including tutorials and help guides to use Git.

Assuming you installed msysgit, cloned the repository to your machine (steps included below), and the repository, named medivault, is located at GitHub at this location ([git@github.com:usernameOfWhereRepositoryIsAt/medivault.git](https://github.com/usernameOfWhereRepositoryIsAt/medivault.git)), this is how you build the extension after you have made changes:

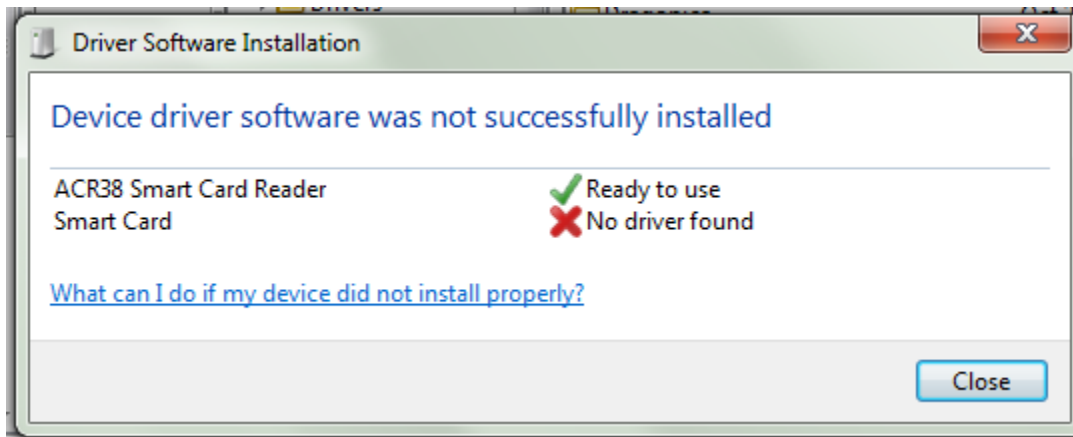
Open a msysgit bash prompt and navigate to the fireftp-modified folder where the repository was cloned. Run the build.sh script and it will build a new chrome.manifest and new fireftp.xpi file.

How to Clone the Repository:

To clone the repository at [git@github.com:usernameOfWhereRepositoryIsAt/medivault.git](https://github.com/usernameOfWhereRepositoryIsAt/medivault.git), open a msysgit bash prompt and navigate to the location where you want to clone the repository. Then enter the following command (you will be prompted for your passphrase for your public key):

```
git clone git@github.com:<...>/medivault.git <nameOfFolderRepositoryWillBeClonedTo>
```

Persona Errors



If you plug in the ACR100 or your USB smartcard reader and get a 'DLL Load Error' message in the log window, this means ACOS drivers are needed. You need the ACOS5 development kit and install the drivers found there.

Important to Know

Provided that you have loaded your ACOSPKCS11 dll into Firefox, you can leverage Firefox's Security Device Manager (located from the Firefox menu at Tools > Options > Advanced > Encryption Tab > Security Devices) to do such things as changing the pin code of the smartcard.

