Prior to optimizing, the login process took roughly 0.5 seconds, or 500 milliseconds, from the time the Log In button is pressed until all parts of the process are finished.

Previously, a second API request was made for the user's information after their credentials were validated. The first request was to determine if the username and password matched an entry in the database. The second request was to fetch the non-password attributes of the entry for that username.

During testing, it was found that the API requests made up the vast majority of the process's time. However, by combining the two requests, we have eliminated the overhead time of one of the API requests. This was done by simply returning the non-password attributes for a user entry with the username and password. If none is returned, then the login isn't valid. If something is returned, then we will treat that as a valid login and set the user variable to the returned value.

The table below shows the average time elapsed in milliseconds since the login process started across 10 trials, both before and after optimizing. The automatic use of caching by any part of the system was avoided during testing, as that would not be present for initial log-ins.

Point in the code	**Before optimizing**	**After optimizing**	**Percent reduction**
Login button clicked.	0	0	0%
APIonLogin function just before API request is sent.	0.1	0	100% - Negligible
APIonLogin function just after API request is fulfilled.	320.4	325.7	-1.65%
doLogin function just before API request is sent.	320.8	326.2	-1.68%
doLogin function just after API request is fulfilled.	581.2	326.2	43.87%
After credentials are validated and user information is set. The login procedure is complete.	587.5	332.5	43.40%

As can be seen, combining the two API requests into one slightly increased the amount of time the first request takes, but that is more than made up for by the complete elimination of the second request. Overall, combining the two API requests has achieved a performance increase of more than 40%.