Exploiting Logged Out XSS Vulnerabilities

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Content

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Usually when we consider vulnerabilities which are only rendered when a user is logged out (e.g. a side bar which renders a vulnerable login form when logged out, and a menu otherwise), the known methods of attack lie in, first getting the user logged out, and then doing one of the following:

- Extracting login information from the Password Manager
- Modifying a client-side data store, such as cookies or Flash LSO's to create an attack which fires later when a user is logged in
- Conducting a Session Fixation attack

Some new possibilities for attacking these vulnerabilities are:

- Reading the Browser Cache via XSS
- Semi-Logging the User Out

Reading the Browser Cache via XSS

Most browsers do not let you read pages which have not been explicitly cached, and where the Expires or Cache-Control headers have not been set, except Internet Explorer.

If you use the XmlHttpRequest object to make a request to a resource which has no caching information attached to it you will simply get back the cached copy which may contain sensitive information such as the person's billing details, or other juicy information you an use in other exploits.

But since security people have been parroting on about how websites need to make sure that they don't let the browser cache something because the user may be using a public computer, etc, etc,

this is much less viable, however at least we now have a real reason for recommending people to not let the browser cache things.

Semi-Logging the User Out

However before we jump to the conclusion that the vulnerability is only triggered when the user is logged out let us consider what it really means to be "logged in".

To be "logged in" is to send the web application a cookie header which gets parsed by the server/web application framework (e.g. Apache/PHP), and the parsed value is associated by the application with a valid session.

So conversely, when are you "logged out"? You're logged out whenever the above series of events (plus any other steps I missed) don't fall exactly into place.

So if we start with a user who is currently logged in; instead of logging them out completely via CSRF (or just waiting until they log themselves out), the trick here is to create an exploit which fires when the browser still holds the users cookies, but the application doesn't receive those cookies exactly.

The easiest and most generic place (I found) to attack this chain is to alter what the browser sends, and therefore the server receives.

Until the latest version of Flash (which is 9,0,115,0), the following code ran properly and let us tamper with the Cookie header:

```
class Attack { static function main(mc) { var req:LoadVars = new LoadVars(); req.addRequestHeader("Cookie", "PHPSESSID=junk"); req.x = "y"; req.send("http://site.com/page.php?variable=", "_self", "POST"); // Note: The method must be POST, and must contain // POST data, otherwise headers don't get attached } }
```

Unfortunately this does not work in IE, since IE seems to stop plugins from playing with the Cookie headers it sends.

Furthermore, this does not actually replace the Cookie header which the browser sends, rather it forces the browser to send an additional Cookie header which would make the relevant part of the HTTP request look something like to this:

```
Cookie: PHPSESSID=valid_id Cookie: PHPSESSID=junk
```

Which PHP (and pretty much every other Server/web application framework) would reconcile into the single PHPSESSID value of:

```
valid_id, PHPSESSID=junk
```

Which is of course not a valid session token, and the application treats the user as logged out, and our XSS executes as if the user was logged out, however since the browser still has all the cookies, so we can either steal them or get the user to perform actions on our behalf, etc.

The less generic, but still working approach is to overwrite overwrite the cookies for your particular path only, either via an XSS from a related subdomain or by abusing a cross-site cookie bug in a browser (check my last post).