

Mobile Browsers Fail Georgia Tech Safety Test

Georgia Institute of Technology

Study finds security indicators sacrificed to accommodate small screens

ATLANTA - Dec. 5, 2012 - How unsafe are mobile browsers? Unsafe enough that even cyber-security experts are unable to detect when their smartphone browsers have landed on potentially dangerous websites, according to a recent Georgia Tech study.

Like their counterparts for desktop platforms, mobile browsers incorporate a range of security and cryptographic tools to provide a secure Web-browsing experience. However in one critical area that informs user decisions—the incorporation of tiny graphical indicators in a browser’s URL field—all of the leading mobile browsers fail to meet security guidelines recommended by the World Wide Web Consortium (W3C) for browser safety, leaving even expert users with no way to determine if the websites they visit are real or imposter sites phishing for personal data.

“We found vulnerabilities in all 10 of the mobile browsers we tested, which together account for more than 90 percent of the mobile browsers in use today in the United States,” said Patrick Traynor, assistant professor in Georgia Tech’s School of Computer Science. “The basic question we asked was, ‘Does this browser provide enough information for even an information-security expert to determine security standing?’ With all 10 of the leading browsers on the market today, the answer was no.”

The graphic icons at issue are called either SSL (“secure sockets layer”) or TLS (“transport layer security”) indicators, and they serve to alert users (a) when their connection to the destination website is secure and (b) that the website they see is actually the site they intended to visit. The tiny “lock” icon that typically appears in a desktop browser window when users are providing payment information in an online transaction is one example of an SSL indicator. Another is the “https” keyword that appears in the beginning of a desktop browser’s URL field.

The [W3C has issued specific recommendations](#) [1] for how SSL indicators should be built into a browser’s user interface, and for the most part, Traynor said, desktop browsers do a good job of following those recommendations. In mobile browsers, however, the guidelines are followed inconsistently at best and often not at all.

The principal reason for this, Traynor admits, is the much smaller screen size with which designers of mobile browsers have to work. Often there simply isn’t room to incorporate SSL indicators in same way as with desktop browsers. However, given that mobile devices are widely predicted to face more frequent attacks from cyber-

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criminals, the vulnerability is almost sure to lead to increased cyber-crime unless it is addressed.

“Research has shown that mobile browser users are three times more likely to access phishing sites than users of desktop browsers,” said Chaitrali Amrutkar, a Ph.D. student in the School of Computer Science and principal author of the paper that described the SSL research. “Is that all due to the lack of these SSL indicators? Probably not, but giving these tools a consistent and complete presence in mobile browsers would definitely help.”

The paper, “[Measuring SSL Indicators on Mobile Browsers: Extended Life, or End of the Road](#) [2],” earned Amrutkar a Best Student Paper award at this year’s [Information Security Conference](#) [3], held Sept. 19-21 in Passau, Germany. Traynor and Amrutkar said the study, essentially a measurement analysis of the current state of visual security indicators in mobile browsers, is a necessary first step in developing a uniform set of security recommendations that can apply to mobile browsers.

“We understand the dilemma facing designers of mobile browsers, and it looks like all of them tried to do the best they could in balancing everything that has to fit within those small screens,” Traynor said. “But the fact is that all of them ended up doing something just a little different—and all inferior to desktop browsers. With a little coordination, we can do a better job and make mobile browsing a safer experience for all users.”

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[1] <http://www.w3.org/TR/2008/NOTE-wsc-usecases-20080306/>

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[2] http://link.springer.com/chapter/10.1007/978-3-642-33383-5_6?null

[3] <http://web.sec.uni-passau.de/isc2012/>

[4] <http://www.gatech.edu/newsroom/mail>