Your battery status is being used to track you online

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Battery status indicators are being used to track devices, say researchers from Princeton University – meaning warnings of privacy exposure have come to pass

Running low on power? Now people can track you with that. Photograph: Martin Abegglen/Flickr

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A little-known web standard that lets site owners tell how much battery life a mobile device has left has been found to enable tracking online, a year after privacy researchers warned that it had the potential to do just that.

The battery status API was introduced in HTML5, the fifth version of the code used to lay out the majority of the web, and had already shipped in Firefox, Opera and Chrome by August 2015. It allows site owners to see the percentage of battery life left in a device, as well as the time it will take to discharge or the time it will take to charge, if connected to a power source.

Intended to allow site owners to serve low-power versions of sites and web apps to users with little battery capacity left, soon after it was introduced, privacy researchers pointed out that it could also be used to spy on users. The combination of battery life as a percentage and battery life in seconds provides offers 14m combinations, providing a pseudo-unique identifier for each device.

Suppose a user loaded their church website in their version of Firefox, and then opened up the website for a satanic cult using a Chrome browser in private browsing mode piped through

a secure VPN. Ordinarily, the two connections should be very difficult to associate with one another, but an advert that was loaded on both pages at once would be able to tell that the two devices were almost certainly the same, with the certainty increasing the longer they stayed connected.

Now, two security researchers from Princeton University have shown that the battery status indicator really is being used in the wild to track users. By running a specially modified browser, Steve Engelhard and Arvind Narayanan found two tracking scripts that used the API to "fingerprint" a specific device, allowing them to continuously identify it across multiple contexts.

The research was highlighted by Lukasz Olejnik, one of the four researchers who first called attention to the potential issues with the battery status API in 2015. Although Olejnik achieved some success following his warning, with the body in charge of the web's standards thanking his group for the privacy analysis, the API still has the potential for misuse. And while it is only tracking scripts using it now, Olejnik warns that unscrupulous actors could do more.

"Some companies may be analysing the possibility of monetising the access to battery levels," he writes. "When battery is running low, people might be prone to some – otherwise different – decisions. In such circumstances, users will agree to pay more for a service."

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