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NHS.uk security vulnerability

protection from http-accept header forgery

SECURITY REPORT:
STRICTLY CONFIDENTIAL
UNTIL ACTIONED AND FULLY FIXED

This document contains a proof of concept code to help developer test for this issue on local development server. **Do not run it agains the live site.** Author is not responsible for any damage caused by misuse of this report.

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Introduction

While researching family planning I noticed a random webpage of NHS choices does not render, only returns code. See Figure 1.

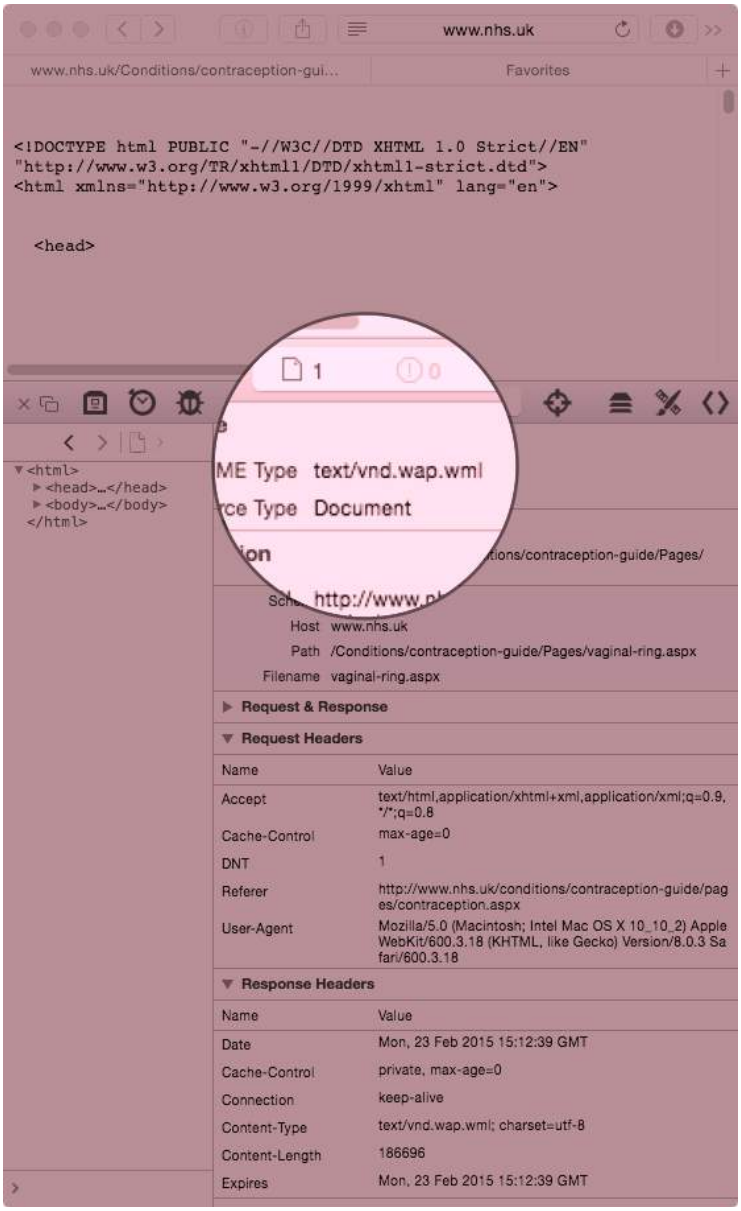
It's an interesting problem, because HTTP Content-Type header for the page looks correct: "Content-Type: text/html", when checked using "curl -i" and the error does not expose itself. This is misleading. The Content-Type header a user agent gets when the error appears is: "Content-Type: text/vnd.wap.wml"

So what is broken

This is due to broken/badly implemented IIS/ASP.NET behaviour where it tries to accommodate for old feature phones, and BREAKS things when such response happens to get cached and subsequently fed to users who were expecting "text/html".

This bug opens a security issue for caches generated on demand because an insisting crawler (or just wget --recursive) with forged http accept header (full code below) can mislead the NHS.uk to regenerate broken cache and take the site down.

Figure 1


www.nhs.uk
www.nhs.uk/Conditions/contraception-gui...
Favorites
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en">
<head>
1
0
ME Type text/vnd.wap.wml
rce Type Document
ion
tions/contraception-guide/Pages/
Host www.nhs.uk
Path /Conditions/contraception-guide/Pages/vaginal-ring.aspx
Filename vaginal-ring.aspx
Request & Response
Request Headers
Name
Value
Accept
text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Cache-Control
max-age=0
DNT
1
Referer
http://www.nhs.uk/conditions/contraception-guide/pages/contraception.aspx
User-Agent
Mozilla/5.0 (Macintosh; Intel Mac OS X 10_10_2) AppleWebKit/600.3.18 (KHTML, like Gecko) Version/8.0.3 Safari/600.3.18
Response Headers
Name
Value
Date
Mon, 23 Feb 2015 15:12:39 GMT
Cache-Control
private, max-age=0
Connection
keep-alive
Content-Type
text/vnd.wap.wml; charset=utf-8
Content-Length
186696
Expires
Mon, 23 Feb 2015 15:12:39 GMT

How to fix it

Specify content-type explicitly.

E.g. change the content-type in the _ViewStart.cshtml (or other shared view start)

```
Response.ContentType = "text/html";
```

your actual views can still override this:

```
@{
 Layout = null;
 Response.ContentType = "application/atom+xml";
}
```

To test for this issue on your local development server
(with a clean cache to avoid false results by previous cached data), use wget or curl:

```
wget yourpage --header="Accept: text/vnd.wap.wml"
  --server-response
  --header="Accept-Encoding: gzip, deflate"
```

and look for:

```
Content-Type: text/vnd.wap.wml; charset=utf-8
```

Source: stackoverflow.com/questions/1261144