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Cookie Prefixes
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Abstract

This document updates [RFC6265](#) by adding a set of restrictions upon the names which may be used for cookies with specific properties. These restrictions enable user agents to smuggle cookie state to the server within the confines of the existing "Cookie" request header syntax, and limits the ways in which cookies may be abused in a conforming user agent.

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1. Introduction

[Section 8.5](#) and [Section 8.6 of \[RFC6265\]](#) spell out some of the drawbacks of cookies' implementation: due to historical accident, it is impossible for a server to have confidence that a cookie set in a secure way (e.g., as a domain cookie with the "Secure" (and possibly "HttpOnly") flags set) remains intact and untouched by non-secure subdomains.

We can't alter the syntax of the "Cookie" request header, as that would likely break a number of implementations. This rules out sending a cookie's flags along with the cookie directly, but we can smuggle information along with the cookie if we reserve certain name prefixes for cookies with certain properties.

This document describes such a scheme, which enables servers to set cookies which conforming user agents will ensure are "Secure", and locked to a domain.

2. Terminology and notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [\[RFC2119\]](#).

The "scheme" component of a URI is defined in [Section 3 of \[RFC3986\]](#).

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3. Prefixes

3.1. The "\$Secure-" prefix

If a cookie's name begins with "\$Secure-", the cookie MUST be set with a "Secure" attribute.

The following cookie would be rejected:

```
Set-Cookie: $Secure-SID=12345; Domain=example.com
```

While the following would be accepted:

```
Set-Cookie: $Secure-SID=12345; Secure; Domain=example.com
```

3.2. The "\$Origin-" prefix

If a cookie's name begins with "\$Origin-", the cookie MUST be:

1. Sent only to hosts which are identical to the host which set the cookie. That is, a cookie named "\$Origin-cookie1" set from "https://example.com" MUST NOT contain a "Domain" attribute (and will therefore sent only to "example.com", and not to "subdomain.example.com").
2. Sent to every request for a host. That is, a cookie named "\$Origin-cookie1" MUST contain a "Path" attribute with a value of "/".
3. Sent only to secure origins, if set from a secure origin. That is, a cookie named "\$Origin-cookie1" set from "https://example.com" MUST contain a "Secure" attribute, as it was set from a URI whose "scheme" is considered "secure" by the user agent.

The following cookies would always be rejected:

```
Set-Cookie: $Origin-SID=12345  
Set-Cookie: $Origin-SID=12345; Secure  
Set-Cookie: $Origin-SID=12345; Domain=example.com  
Set-Cookie: $Origin-SID=12345; Secure; Domain=example.com
```

The following would be rejected, if set from a secure origin, but accepted if set from a non-secure origin:

```
Set-Cookie: $Origin-SID=12345; Path=/  

```

While the following would be accepted, if set from a secure origin:

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Set-Cookie: \$Origin-SID=12345; Secure; Path=/

4. User Agent Requirements

This document updates [Section 5.3 of \[RFC6265\]](#) as follows:

After step 10 of the current algorithm, the cookies flags are set. Insert the following steps to perform the prefix checks this document specifies:

1. If the "cookie-name" begins with the string "\$Origin-", then:
 1. If the "scheme" component of the "request-uri" denotes a "secure" protocol (as determined by the user agent), and the cookie's "secure-only-flag" is "false", abort these steps and ignore the cookie entirely.
 2. If the cookie's "host-only-flag" is "false", abort these steps and ignore the cookie entirely.
 3. If the cookie's "path" is not "/", abort these steps and ignore the cookie entirely.
2. If the "cookie-name" begins with the string "\$Secure-", and the cookie's "secure-only-flag" is "false", abort these steps and ignore the cookie entirely.

5. Aesthetic Considerations

Prefixes are ugly. :(

6. Security Considerations

This scheme gives no assurance to the server that the restrictions on cookie names are enforced. Servers could certainly probe the user agent's functionality to determine support, or sniff based on the "User-Agent" request header, if such assurances were deemed necessary.

7. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.

[RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), DOI 10.17487/RFC3986, January 2005, <<http://www.rfc-editor.org/info/rfc3986>>.

[RFC6265] Barth, A., "HTTP State Management Mechanism", [RFC 6265](#), DOI 10.17487/RFC6265, April 2011, <<http://www.rfc-editor.org/info/rfc6265>>.

[Appendix A](#). Acknowledgements

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