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New protocol elements for HTTP Status Code 451  
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Abstract

This draft recommends protocol updates to Hypertext Transfer Protocol (HTTP) status code 451 (defined by RFC7725) based on an examination of how the new status code is being used by parties involved in denial of Internet resources because of legal demands.

Discussion of this draft is at <https://www.ietf.org/mailman/listinfo/hrpc> and <https://lists.ghserv.net/mailman/listinfo/statuscode451>.

Status of This Memo

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## 1. Introduction

[RFC7725] was standardized by the IETF in February 2016. It defined HTTP status code 451 - to be used when a "a server operator has received a legal demand to deny access to a resource or to a set of resources that includes the requested resource". The intention was to provide a uniform mechanism to indicate online censorship.

Subsequently, an effort was made to investigate usage of 451 status code and evaluate if it fulfills its mandate of providing "transparency in circumstances where issues of law or public policy affect server operations" [IMPL\_REPORT\_DRAFT]. This draft attempts to explicate the protocol recommendations arising out of that investigation.

## 2. Requirements

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].

## 3. Existing Protocol Elements

The status code as standardized by the IETF specifies the following elements [RFC7725] -

- A server can return status code 451 to indicate that it is denying access to a resource or multiple resources on account of a legal demand.
- Responses using the status code SHOULD include an explanation in the response body of the details of the legal demand.

- Responses SHOULD include a "Link" HTTP header field [RFC8288] whose value is a URI reference [RFC3986] identifying itself. The "Link" header field MUST have a "rel" parameter whose value is "blocked-by". The intent is that the header be used to identify the entity actually implementing blockage, not any other entity mandating it.

#### 4. Recommendations

- In addition to the "blocked-by" header, an HTTP response with status code 451 SHOULD include another "Link" HTTP header field which has a "rel" parameter whose value is "blocking-authority". It's important to distinguish between the implementer of the block, and the authority that mandated the block in the first place. This is because these two organizations might not be the same - a government (the blocking authority) could force an Internet Service Provider (the implementer of the block) to deny access to a certain resource.
- HTTP status code 451 is increasingly being used to deny access to resources based on geographical IP. The scope of this denial is sometimes as finely scoped as a city or a province. The response SHOULD contain a provisional header with geographical scope of block.

#### 5. Security Considerations

This document does not add additional security considerations to [RFC7725].

#### 6. IANA Considerations

The Link Relation Type Registry should be updated with the following entry [TBD]:

- Relation Name: blocking-authority
- Description: Identifies the authority that has issued the block.
- Reference: This document

In addition, IANA should be updated with the following provisional header [TBD]:

- Header field name: geo-scope-block
- Applicable protocol: http

- Status: provisional
- Specification document(s): this document

## 7. Normative References

### [IMPL\_REPORT\_DRAFT]

Abraham, S., Canales, MP., Hall, J., Khrustaleva, O., ten Oever, N., Runnegar, C., and S. Sahib, "Implementation Report for HTTP Status Code 451", 2017, <<https://tools.ietf.org/html/draft-451-imp-report-00>>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://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, <<https://www.rfc-editor.org/info/rfc3986>>.

[RFC7725] Bray, T., "An HTTP Status Code to Report Legal Obstacles", RFC 7725, DOI 10.17487/RFC7725, February 2016, <<https://www.rfc-editor.org/info/rfc7725>>.

[RFC8288] Nottingham, M., "Web Linking", RFC 8288, DOI 10.17487/RFC8288, October 2017, <<https://www.rfc-editor.org/info/rfc8288>>.

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