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AS2 Restart for Very Large Messages
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Abstract

AS2 Restart provides a method for AS2 clients and servers to restart payload transfers from the point of failure without requiring the entire document to be resent.

Keywords

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 [RFC 2119](#).

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1. Introduction

AS2 [[RFC4130](#)] has experienced widespread adoption and is continually being asked to send or receive larger files by the business community. As the size of the file transfers increase it has become evident that a mechanism is required that will allow trading partners to restart failed transfers from the point of failure. This document will outline a method of implementing a failed transfer restart mechanism using existing HTTP headers so backwards compatibility will exist with AS2 servers not wishing to support AS2 Restart.

2. Overview

Clients wishing to utilize the AS2 Restart mechanism for a particular file transfer will include the HTTP ETAG header which contains an unique transfer-id. The message will contain an HTTP Content-Range header indicating the start and end byte range of the message. The receiving HTTP server will utilize the ETAG and Content-Range headers to perform a temporary cache of the received file. In the event of a transfer failure a restart from the point of failure can occur. A client can query a server using the HTTP HEAD request to determine the number of bytes of data already received by the server. The HTTP Head request will contain an ETAG header with a transfer-id of a previous transfer so the server can respond with a Content-length header value equalling the number of bytes already received from a previous transfer.

3. Protocol

3.1. Transfer ID

The transfer id is a unique value that references a previous file transfer. The uniqueness of the transfer id is guaranteed by the sending client and will reference only one instantiation of a particular file transfer. The transfer id will follow the definitions of an entity tag as per [\[RFC2616\] section 3.11](#) minus the weak indicator.

3.2. HEAD Query

The HEAD query will be used by the sending client to query a server as to the status of a previous file transfer. The server will respond to the HEAD query with the number of bytes already received for a particular transfer-id value. The returned Content-Length byte count is the number of bytes of the received content which does not include the http headers. If the returned Content-Length value from

the HEAD query equals the total instance value the sending system will send at least one byte of data in the next POST. The value of the single byte that is transferred MUST equal the value of the last byte of data of the transferred message. This will allow the client to reestablish a network connection to the server while it waits for the appropriate response from the server. The HEAD query MUST include the AS2-To and AS2-From headers from [\[RFC4130\]](#) to accommodate firewalls and proxies looking for the presence of these headers.

HEAD Query

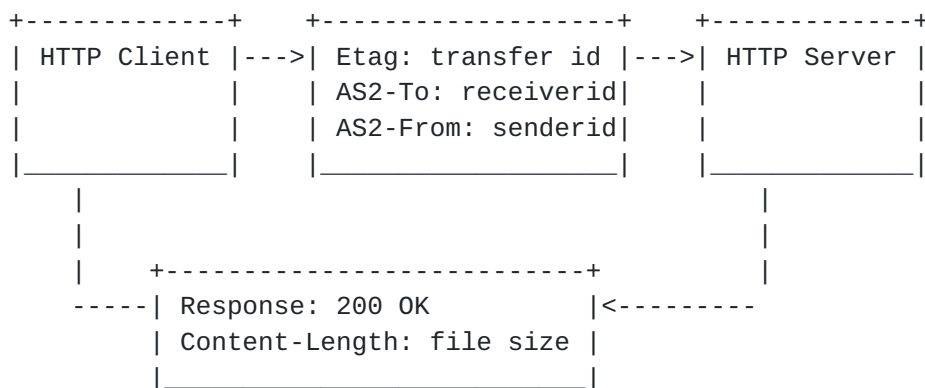


Figure 1

AS2 servers that do not understand the HEAD query or do not support AS2 Restart may return a non 200 ok response or return a Content-Length of zero. In either case the client will (re)send the complete AS2 message to the server.

3.3. POST

A posted message will contain the ETAG header with an unique transfer id and a Content-Range header indicating the range of bytes contained within the message. The Content-Range header value will be the range within the body of the message and does not include the http headers of the message. A Content-Range header is not required if the sending client is sending a file for the first time or wishes to overwrite all existing data on the server. However, if chunked transfer encoding is utilized a Content-Range header is recommended as some receiving systems implement a minimum file caching size and will not cache the inbound message if the message size cannot be determined from the inbound http headers. If a server determines that the supplied Content-Range header field value is not valid the server MUST return an http response code of 416. The returned 416 http response will indicate the valid starting byte position for the requested resource, See [\[RFC2616\] section 14.16](#). Example: Content-Range: bytes */233333 The instance-length specifies the current

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length of the selected resource.

POST

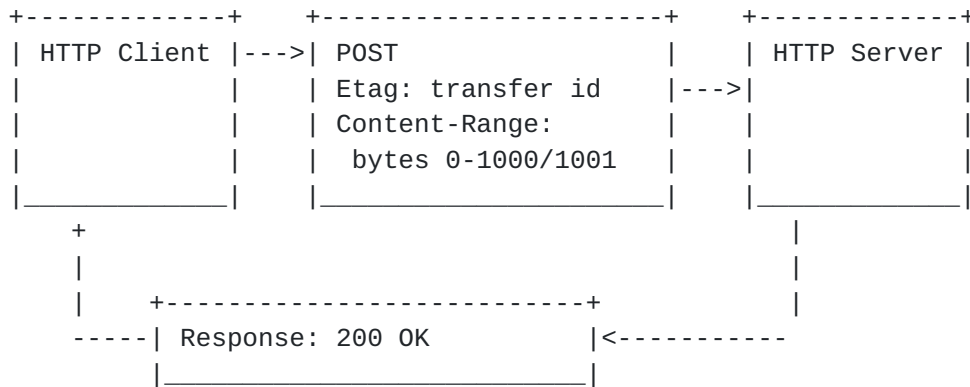


Figure 2

4. Important Considerations

The HTTP restart server will be concerned with temp files bogging down the system disk space and should develop a routine to garbage collect any old (aged) files in the restart directory. If a client queries the server about a existing file that was partially sent and the file was deleted due to aging from the system, the server will return a 200 ok response with a content-length of zero bytes. Therefore the client will be required to resend the complete message.

The unique id mentioned earlier in this document must be unique so no two systems create the same id.

It is strongly recommended that the Content-Range header be included in all POSTed messages as some systems use the values present in the header to determine inbound file size and whether this exceeds a minimum file size restriction for caching files.

5. Example Messages

5.1. Initial Send

HEAD Command

```
HEAD /exchange/axway1 HTTP/1.1\n
Etag: "ci1257348820455.829541_tharding_2k_te"
AS2-To: sender_id
AS2-From: receiver_id
AS2-Version: 1.2
Connection: close
Host: yourhost.com
```

The HEAD request is used to query the server to determine if a partially transferred file exists on the server. The HEAD request MUST contain the AS2-To and AS2-From header fields with the identifiers associated with the cached file. The AS2-Version value MUST be 1.2. The format of the included AS2 header fields are defined in [\[RFC4130\] Section 6.1](#). The HEAD request query is OPTIONAL before the initial send of a document, however some systems may use the HEAD request as a way to determine if the ETAG value is already in use.

Response

```
HTTP/1.1 200 OK
Connection: close
Content-Length: 0
```

The returned Content-Length value indicates the number of bytes associated with a specific transfer that resides on the server. A returned Content-Length value of 0 indicates that the server does not have a partially saved file or the server does not support AS2 restart. In either case the sending system will send all bytes associated with a message. Non 2xx http return codes will indicate that the receiving server does not support AS2 restart.

POST Command

```
POST /exchange/axway1 HTTP/1.1
<existing AS2 HTTP header fields>
Etag: "ci1257348820455.829541_tharding_2k_te"
Content-Length: 307502443

<Message body>
```

The initial POST of a message SHOULD include a method to determine the overall size of the incoming message. This can be a Content-

Length header field or a Content-Range header field or both. Systems that support a min file size for restart will required at least one of the these headers.

5.2. Restart

HEAD Command

```
HEAD /exchange/axway1 HTTP/1.1\n
Etag: "ci1257348820455.829541_tharding_2k_te"
AS2-To: sender_id
AS2-From: receiver_id
AS2-Version: 1.2
Connection: close
Host: yourhost.com
```

Response

```
HTTP/1.1 200 OK
Connection: close
Content-Length: 65982464
```

The returned Content-Length value indicates the number of bytes of data already received from a previous send. This value does not include the HTTP headers of the message but only the Content data.

POST Command

```
POST /exchange/axway1 HTTP/1/1
<existing AS2 HTTP header fields>
Etag: "ci1257348820455.829541_tharding_2k_te"
Content-Range: bytes 65982464-307502442/307502443
Content-Length: 241519979
```

<Message body>

A message that is resent will indicate the starting byte of the content data by using the Content-Range header. The Content-Range header value will indicate the first byte and the last byte of the message.

6. IANA Considerations

This memo includes no request to IANA.

7. Security Considerations

Refer to the Security Considerations section of AS2 [[RFC4130](#)].

8. Normative References

- [RFC2616] Fielding, R., Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and T. Berners-Lee, "Hypertext Transfer Protocol -- HTTP/1.1", [RFC 2616](#), June 1999.
- [RFC4130] Moberg, D. and R. Drummond, "MIME-Based Secure Peer-to-Peer Business Data Interchange Using HTTP, Applicability Statement 2 (AS2)", [RFC 4130](#), July 2005.

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