jamk.fi

HADES PROTOCOL

Protocol programming

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Contents

1 Protocols core information

- Protocols name is HADES and it is used for transferring files between client and server. It is also capable of listing and removing files.

- Protocols response lines, status lines, headers and body formats are very similar to HTTP-protocols equivalents.

- Stack used for the protocol will be TCP/IP.

- Fileserver owner may choose to specify a special header called "Key", which needs to contain a special value defined by the server. If the key is wrong, client will receive an error message. This means that the protocol does contain authentication, but it is not mandatory.

- Protocol is part of application layer protocols and it is stateless.

- Default port for the protocol is 1716.

2 Methods

2.1 Requests

Syntax of request line that all request methods use:

REQUESTMETHOD SP REQUESTTARGET SP HADES-VERSION CRLF

NOTICE! In this document, SP stands for space, and CRLF stands for carriage return and line feed (\r\n).

REQUESTMETHOD

Contains the used method.

REQUESTTARGET

Contains the location of the file or directory, depending on which method is used. For example, the syntax for directories will be: “directory1/directory2” and syntax for files: “directory1/file.txt”.

HADES-VERSION

Contains the version of HADES that were using. For example, it could be: “HADES/0.5”. There must always be a slash between the protocol and its version. Version must also be separated with a dot.

2.1.1 Request methods

LIST

Lists all the downloadable files on the server. You can list files inside certain directory and its sub-directories by putting the directory location to REQUESTTARGET. Reply to this method contains body that tells the maximum file size to upload, location of the files and size of them. Size header contains the body size.

Example:

LIST directory/subdirectory3 HADES/1.621 CRLF
HEADERS

REQUESTMETHOD = LIST
REQUESTTARGET = directory/subdirectory3
HADES-VERSION = HADES/1.621

UPLOAD

UPLOAD method is used for uploading files to the server. Filename is sent in a header called “Filename” and the actual file will be delivered in the body of the request. Request must also contain header called “Size” that tells the size of the file, so the server knows when to stop adding bytes from the body to the file. REQUESTTARGET contains the directory path, where to upload the file. For example, it can be “.” to upload the file to the default directory or “directory/subdirectory/subsubdirectory” to put it in a sub directory.

Example:

UPLOAD . HADES/0.1 CRLF
Filename:jamk.png CRLF
Size:3436389 CRLF
CRLF
Body

REQUESTMETHOD = UPLOAD
REQUESTTARGET = . (Default directory)

HADES-VERSION = HADES/0.1
Filename = jamk.png
Size = 3436389 Bytes

DOWNLOAD

DOWNLOAD method is used for downloading files from the server. REQUESTTARGET contains the files name and possibly its path.

Example:

DOWNLOAD totallynotvirus.exe HADES/0.82 CRLF
HEADERS

REQUESTMETHOD = DOWNLOAD
REQUESTTARGET = totallynotvirus.exe
HADES-VERSION = HADES/0.82

DELETE

DELETE method is used for deleting files from the server. REQUESTTARGET contains the file to be removed from the server and possibly its path.

DELETE directory/subdirectory/secrets.txt HADES/0.5 CRLF
HEADERS

REQUESTMETHOD = DELETE
REQUESTTARGET = directory/subdirectory/secrets.txt
HADES-VERSION = HADES/0.5

2.2 Responses

Syntax of response line that all response methods use:

HADES-VERSION SP RESPONSEMETHOD SP RESPONSECODE SP REASON-PHRASE CRLF

2.2.1 Response methods

ERROR

Request will be responded with ERROR method, if something goes wrong when processing it. For example, request is missing headers or body when uploading a file or file that client tries

to download does not exist. RESPONSECODE contains the right error code and REASON-PHRASE contains the reason for the error.

Example:

HADES/1.5 ERROR 600 Failure CRLF

HADES-VERSION = HADES/1.5
RESPONSEMETHOD = ERROR
RESPONSECODE = 600
REASON-PHRASE = Failure

FILE

Method is used within the response if DOWNLOAD request was processed successfully. REASON-PHRASE contains the path to file and body contains the content of the file. Response also contains headers “Size” and “Filename”. FILE uses code 200 in the response.

Example:

HADES/1.0 FILE 200 animals/cats/bluecat.jpg CRLF
Filename:bluecat.jpg CRLF
Size:1298525 CRLF
CRLF
BODY

HADES-VERSION = HADES/1.0
RESPONSEMETHOD = FILE
RESPONSECODE = 200
REASON-PHRASE = animals/cats/bluecat.jpg

REPLY

If request uses any of these methods: DELETE, UPLOAD or LIST and the processing of request is successful; REPLY method will be used in the response to the request. It uses few different response codes depending on request method (100, 101 and 102). REASON-PHRASE will contain the path to file or directory location. If LIST method was used, response body will contain information about the files (Code 102).

Example:

HADES/1.5 REPLY 100 directory/subdirectory/file.txt CRLF

HADES-VERSION = HADES/1.5
RESPONSEMETHOD = REPLY
RESPONSECODE = 100

REASON-PHRASE = directory/subdirectory/file.txt

3 Headers and body

Header syntax looks like this:

HEADERNAME:HEADERVALUE CRLF

Headers come after the start line. CRLF in the end of the start line separates headers from it.

3.1 Headers and their usage

Key

The Key header is an optional header, which can be used for authentication. Server may set up a passphrase and the Key-header value in request must be same to communicate with the server. Passphrase may for example be required for only certain methods like DELETE and UPLOAD, but that is up to the server. This header was implemented to the protocol for security reasons.

Example:

Start line CRLF
(other headers) CRLF
Key:verygoodpassphrase CRLF
CRLF
Body

Filename

This header is required when using the UPLOAD method in request or FILE method in response. In UPLOAD method, this header is used to tell server the name of the file that is uploaded. When using FILE method, headers value is the name of the file that is downloaded.

Example:

Start line CRLF
(other headers) CRLF
Filename:index.html CRLF
CRLF
Body

Size

This header is used with UPLOAD, LIST and FILE methods. When using UPLOAD or FILE methods, Size headers value is same as the size of the file (Body) downloaded or uploaded. Size is always displayed in bytes. Bytes of the file are in the body of the message. By reading the value of this header, server or client knows how many bytes to take from the message body. When server responds to LIST method with REPLY 102, Size-header also contains the size of the body.

example:

Start line CRLF
(other headers) CRLF
Size:245335 CRLF
CRLF
Body

Host

Optional header, which tells the webserver which virtual host to use.

Start line CRLF
(other headers) CRLF
Host:www.google.fi CRLF
CRLF
Body

3.2 Body structure

Body starts when two CRLF strings come in a row. In this protocol, body is used to transfer file content with UPLOAD and FILE methods or to display information about the files and directories with REPLY method, when LIST is used in request.

Example:

HADES/2.5 FILE 200 animals/dogs/happydog.jpg CRLF
Filename:happydog.jpg CRLF
Size:1289252 CRLF
CRLF
348hanljkdfnilhj34b528boulw…(Rest of the body that contains happydog.jpg data. Amount of the bytes should be the same as in the Size header.)

4 Response codes and reason-phrases

REPLY methods and codes are used when processing of the request has been successful. When something goes wrong, ERROR method, error code and reason-phrase are used in the response.

4.1 REPLY codes

100 <File destination>

File in the request was successfully uploaded to that destination, when UPLOAD method was used.

Example: HADES/1.5 REPLY 100 directory/subdirectory/file.txt CRLF

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101 <File destination>

File in the destination was successfully deleted, when DELETE method was used.

Example: HADES/1.5 REPLY 101 directory/subdirectory/file.txt CRLF

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102 <directory>

Location of the files, size of them and a maximum file size to upload are all displayed in the body, when LIST method was used and successfully processed. Size header contains the size of the body.

Example:

HADES/1.0 REPLY 102 directory/ CRLF
Size:212 CRLF
CRLF
Maximum file size: 2000 bytes
config.txt 4636
notabackdoor.php 2425
directory1/cat.jpg 4103535
directory1/dog.jpg 2442925
directory1/horse.jpg 9774225
directory1/subdirectory1/file.txt 253

directory1/subdirectory2/file1.txt 4352
directory2/passwords.txt 5643
directory2/usernames.txt 4053

4.2 ERROR codes

600 Failure

Unspecified failure in the processing of the request. Bug in the server-side code is a possible cause of this error.

Example: HADES/1.5 ERROR 600 Failure CRLF

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601 Bad Request

Request line syntax is invalid, and server is unable to process it.

Example: HADES/1.5 ERROR 601 Bad Request CRLF

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602 Not Found

File or directory specified, when using DELETE, UPLOAD, DOWNLOAD or LIST methods, cannot be found.

Example: HADES/1.5 ERROR 602 Not Found CRLF

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603 Unsupported Version

Version in the HADES-VERSION part of the request line is not supported.

Example: HADES/1.5 ERROR 603 Unsupported Version CRLF

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604 File Listing Failed

Directory was found, but server was unable to list files, when LIST method was used.

Example: HADES/1.5 ERROR 604 File Listing Failed CRLF

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605 File Upload Failed

Directory was found, but server was unable to upload the file, when UPLOAD method was used.

Example: HADES/1.5 ERROR 605 File Upload Failed CRLF

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606 File Download Failed

File was found, but server was unable to download it, when DOWNLOAD method was used.

Example: HADES/1.5 ERROR 606 File Download Failed CRLF

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607 File Deletion Failed

File was found, but server was unable to delete it, when DELETE method was used.

Example: HADES/1.5 ERROR 607 File Deletion Failed CRLF

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608 Filename Required

Missing Filename-header, when using UPLOAD method.

Example: HADES/1.5 ERROR 608 Filename Required CRLF

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609 Size Required

Missing Size-header, when using UPLOAD method.

Example: HADES/1.5 ERROR 609 Size Required CRLF

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610 Forbidden Access

Missing Key-header or it contains an invalid value.

Example: HADES/1.5 ERROR 610 Forbidden Access CRLF

In case of connection error while server is processing the request, no response will be delivered.