The WWW Common Gateway Interface
Version 1.1

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Abstract

The Common Gateway Interface (CGI) is a simple interface for running
external programs, software or gateways under an information server
in a platform-independent manner. Currently, the supported
information servers are HTTP servers.

The interface has been in use by the World-Wide Web since 1993. This
specification defines the 'current practice' parameters of the
'CGI/1.1' interface developed and documented at the U.S. National
Centre for Supercomputing Applications [NCSA-CGI]. This document also
defines the use of the CGI/1.1 interface on the Unix and AmigaDOS(tm)
systems.

Discussion of this draft occurs on the CGI-WG mailing list; see the
project Web page at <URL:http://Web.Golux.Com/coar/cgi/> for details
on the mailing list and the status of the project.

Table of Contents

1 Introduction................................................2
1. Introduction

1.1. Purpose

Together the HTTP [3],[8] server and the CGI script are responsible for servicing a client request by sending back responses. The client request comprises a Universal Resource Identifier (URI) [1], a request method and various ancillary information about the request provided by the transport mechanism.

1.2. Requirements

This specification uses the same words as RFC 1123 [5] to define the significance of each particular requirement. These are:

MUST
This word or the adjective 'required' means that the item is an absolute requirement of the specification.

SHOULD
This word or the adjective 'recommended' means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighed before choosing a different course.

MAY
This word or the adjective 'optional' means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.

An implementation is not compliant if it fails to satisfy one or more of the 'must' requirements for the protocols it implements. An
implementation that satisfies all of the 'must' and all of the 'should' requirements for its features is said to be 'unconditionally compliant'; one that satisfies all of the 'must' requirements but not all of the 'should' requirements for its features is said to be 'conditionally compliant'.

1.3. Specifications

Not all of the functions and features of the CGI are defined in the main part of this specification. The following phrases are used to describe the features which are not specified:

**system defined**

The feature may differ between systems, but must be the same for different implementations using the same system. A system will usually identify a class of operating-systems. Some systems are defined in section 12 of this document. New systems may be defined by new specifications without revision of this document.

**implementation defined**

The behaviour of the feature may vary from implementation to implementation, but a particular implementation must document its behaviour.

1.4. Terminology

This specification uses many terms defined in the HTTP/1.1 specification [8]; however, the following terms are used here in a sense which may not accord with their definitions in that document, or with their common meaning.

**meta-variable**

A named parameter that carries information from the server to the script. It is not necessarily a variable in the operating-system's environment, although that is the most common implementation.

**script**

The software which is invoked by the server via this interface. It need not be a standalone program, but could be a dynamically-loaded or shared library, or even a subroutine in the server.
server
The application program which invokes the script in order to service requests.

2. Notational Conventions and Generic Grammar

2.1. Augmented BNF

All of the mechanisms specified in this document are described in both prose and an augmented Backus-Naur Form (BNF) similar to that used by RFC 822 [6]. This augmented BNF contains the following constructs:

name = definition
the definition by the equal character ("="). Whitespace is only significant in that continuation lines of a definition are indented.

"literal"
Quotation marks (") surround literal text, except for a literal quotation mark, which is surrounded by angle-brackets ("<" and ">"). Unless stated otherwise, the text is case-sensitive.

rule1 | rule2
Alternative rules are separated by a vertical bar ("|").

(rule1 rule2 rule3)
Elements enclosed in parentheses are treated as a single element.

*rule
A rule preceded by an asterisk ("*") may have zero or more occurrences. A rule preceded by an integer followed by an asterisk must occur at least the specified number of times.

2.2. Basic Rules

The following rules are used throughout this specification to describe basic parsing constructs.
alpha = lowalpha | hialpha
lowalpha = "a" | "b" | "c" | "d" | "e" | "f" | "g" | "h"
| "i" | "j" | "k" | "l" | "m" | "n" | "o" | "p"
| "q" | "r" | "s" | "t" | "u" | "v" | "w" | "x"
| "y" | "z"
hialpha = "A" | "B" | "C" | "D" | "E" | "F" | "G" | "H"
| "I" | "J" | "K" | "L" | "M" | "N" | "O" | "P"
| "Q" | "R" | "S" | "T" | "U" | "V" | "W" | "X"
| "Y" | "Z"
digit = "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7"
| "8" | "9"
OCTET = <any 8-bit byte>
CHAR = <any character>
CTL = <any control character>
SP = <space character>
HT = <horizontal tab character>
NL = <newline>
LWSP = SP | HT | NL
tspecial = "(" | ")" | ";" | ":" | "]" | ">
| "," | ":" | ";" | ":" | "]" | ">
| "," | ":" | ";" | ":" | "]" | ">
| '"' | "<" | """ | """ | '"'
| SP | HT
token = 1*<any CHAR except CTls or tspecials>
quoted-string = ( '"' *qdtext '"' ) | ( '"' *qatext '")
qdtext = <any CHAR except '"' and CTls but including LWSP>
qatext = <any CHAR except '"', '"' and CTls but
including LWSP>

Note that newline (NL) need not be a single character, but can be a character sequence.

3. Protocol Parameters

3.1. URL Encoding

Some variables and constructs used here are described as being 'URL-encoded'. This encoding is described in section 2.2 of RFC 1738 [4]. In a URL encoded string an escape sequence consists of a percent character ('%') followed by two hexadecimal digits, where the two hexadecimal digits form an octet. An escape sequence represents the graphic character which has the octet as its code within the US-ASCII [12] coded character set, if it exists. If no such graphic character exists, then the escape sequence represents the octet value itself.
An alternate "shortcut" encoding for representing the space character exists and is in common use. Scripts MUST be prepared to recognise both '+' and '%20' as an encoded space in a URL.

Note that some unsafe characters may have different semantics if they are encoded. The definition of which characters are unsafe depends on the context. See section 2.2 of RFC 1738 [4] for authoritative treatment of this issue.

3.2. The Script URI

The 'Script-URI' is defined as the URI of the resource identified by the meta-variables. Often, this URI will be the same as the URI requested by the client (the 'Client-URI'); however, it need not be. Instead, it could be a URI invented by the server, and so it can only be used in the context of the server and its CGI interface.

The Script-URI has the syntax of generic-RL as defined in section 2.1 of RFC 1808 [7], with the exception that object parameters and fragment identifiers are not permitted:

<scheme>://<host><port>/<path>?<query>

The various components of the script URI are defined by some of the meta-variables (see below);

script-uri = protocol "://" SERVER_NAME ":" SERVER_PORT enc-script enc-path-info "?" QUERY_STRING

where 'protocol' is found from SERVER_PROTOCOL, 'enc-script' is a URL-encoded version of SCRIPT_NAME and 'enc-path-info' is a URL-encoded version of PATH_INFO.

Note that the scheme and the protocol are not identical; for instance, a resource accessed via an SSL mechanism may have a Client-URI with a scheme of "https" rather than "http". There is no way in CGI/1.1 for the script to reconstruct this, and therefore the Script-URI includes the base protocol used.

4. Request Metadata (Meta-Variables)

Each CGI implementation MUST define a mechanism to pass data about the request from the server to the script. The meta-variables containing these data are accessed by the script in a system defined manner. In all cases, a missing meta-variable is equivalent to a zero-length (NULL) value, and vice versa. The representation of the characters in the meta-variables is system defined.
Case is not significant in the meta-variable names, in that there cannot be two different variables whose names differ in case only. Here they are shown using a canonical representation of capitals plus underscore ("_"). The actual representation of the names is system defined; for a particular system the representation MAY be defined differently than this.

The variables are:

- AUTH_TYPE
- CONTENT_LENGTH
- CONTENT_TYPE
- GATEWAY_INTERFACE
- HTTP_*
- PATH_INFO
- PATH_TRANSLATED
- QUERY_STRING
- REMOTE_ADDR
- REMOTE_HOST
- REMOTE_IDENT
- REMOTE_USER
- REQUEST_METHOD
- SCRIPT_NAME
- SERVER_NAME
- SERVER_PORT
- SERVER_PROTOCOL
- SERVER_SOFTWARE

4.1. AUTH_TYPE

This variable is specific to requests made with HTTP.

If the script URI would require access authentication for external access, then this variable is found from the 'auth-scheme' token in the request, otherwise NULL.

\[
\text{AUTH_TYPE} = "" \mid \text{auth-scheme} \\
\text{auth-scheme} = \text{"Basic"} \mid \text{token}
\]

HTTP access authentication schemes are described in section 11 of the HTTP/1.1 specification [8]. The auth-scheme is not case-sensitive.
4.2. CONTENT_LENGTH

The size of the entity attached to the request, if any, in decimal number of octets. If no data are attached, then NULL. The syntax is the same as the HTTP Content-Length header field (section 14.14, HTTP/1.1 specification [8]).

\[ \text{CONTENT_LENGTH} = \"\" \mid \text{1*digit} \]

4.3. CONTENT_TYPE

The Internet Media Type [9] of the attached entity. The syntax is the same as the HTTP Content-Type header field.

\[ \text{CONTENT_TYPE} = \"\" \mid \text{media-type} \]

\[ \text{media-type} = \text{type} \slash \text{subtype} \ast( \text{";" parameter}) \]

\[ \text{type} = \text{token} \]

\[ \text{subtype} = \text{token} \]

\[ \text{parameter} = \text{attribute} \text{"=" value} \]

\[ \text{attribute} = \text{token} \]

\[ \text{value} = \text{token} | \text{quoted-string} \]

The type, subtype and parameter attribute names are not case-sensitive. Parameter values MAY be case sensitive. Media types and their use in HTTP are described section 3.7 of the HTTP/1.1 specification [8]. Example:

\[ \text{application/x-www-form-urlencoded} \]

There is no default value for this variable. If and only if it is unset, then the script MAY attempt to determine the media type from the data received. If the type remains unknown, then the script MAY choose to either assume a content-type of application/octet-stream or reject the request with either a 406 ("Not Acceptable") or 415 ("Unsupported Media Type") error.

4.4. GATEWAY_INTERFACE

The version of the CGI specification to which this server complies. Syntax:
GATEWAY_INTERFACE = "CGI" "/" 1×digit "." 1×digit

Note that the major and minor numbers are treated as separate integers and hence each may be incremented higher than a single digit. Thus CGI/2.4 is a lower version than CGI/2.13 which in turn is lower than CGI/12.3. Leading zeros MUST be ignored by scripts and SHOULD NOT be generated by servers.

This document defines the 1.1 version of the CGI interface.

4.5. HTTP_*

These variables are specific to requests made with HTTP. Interpretation of these variables depends on the value of SERVER_PROTOCOL.

Meta-variables with names beginning with "HTTP_" contain header data read from the client, if the protocol used was HTTP. The HTTP header field name is converted to upper case, has all occurrences of "-" replaced with "_" and has "HTTP_" prepended to give the meta-variable name. The header data MAY be presented as sent by the client, or MAY be rewritten in ways which do not change its semantics. If multiple header fields with the same field-name are received then they MUST be rewritten as a single header field having the same semantics before being represented in a meta-variable. Similarly, a header field that is received on more than one line MUST be merged into a single line. The server MUST, if necessary, change the representation of the data (for example, the character set) to be appropriate for a CGI meta-variable.

The server is not required to create meta-variables for all the header fields that it receives. In particular, it MAY remove any header fields carrying authentication information, such as "Authorization"; and it MAY remove header fields whose value is available to the script via other variables, such as "Content-Length" and "Content-Type".

4.6. PATH_INFO

A path to be interpreted by the CGI script. It identifies the source or sub-resource to be returned by the CGI script. The syntax and semantics are similar to a decoded HTTP URL 'hpath' token (defined in RFC 1738 [4]), with the exception that a PATH_INFO of "/" represents
a single void path segment.

\[
\text{PATH_INFO} = "" | ( "/" \text{path} )  \\
\text{path} = \text{segment} * ( "/" \text{segment} )  \\
\text{segment} = *\text{pchar}  \\
\text{pchar} = <\text{any CHAR except "/"> \\
\]

The PATH_INFO string is the trailing part of the <path> component of the script URI that follows the SCRIPT_NAME part of the path.

4.7. PATH_TRANSLATED

The OS path to the file that the server would attempt to access were the client to request the absolute URL containing the path PATH_INFO. I.e., for a request of

\[
\text{protocol ":://" SERVER_NAME ":" SERVER_PORT enc-path-info} \\
\]

where 'enc-path-info' is a URL-encoded version of PATH_INFO. If PATH_INFO is NULL then PATH_TRANSLATED is set to NULL.

\[
\text{PATH_TRANSLATED} = *\text{CHAR} \\
\]

PATH_TRANSLATED need not be supported by the server. The server may choose to set PATH_TRANSLATED to NULL for reasons of security, or because the path would not be interpretable by a CGI script; such as the object it represented was internal to the server and not visible in the file-system; or for any other reason.

The algorithm the server uses to derive PATH_TRANSLATED is obviously implementation defined; CGI scripts which use this variable may suffer limited portability.

4.8. QUERY_STRING

A URL-encoded search string; the <query> part of the script URI.

\[
\text{QUERY_STRING} = \text{query-string}  \\
\text{query-string} = *\text{qchar}  \\
\text{qchar} = \text{unreserved} | \text{escape} | \text{reserved}  \\
\text{unreserved} = \text{alpha} | \text{digit} | \text{safe} | \text{extra} \\
\]
The URL syntax for a search string is described in RFC 1738 [4].

4.9. REMOTE_ADDR

The IP address of the agent sending the request to the server. This is not necessarily that of the client.

REMOTE_ADDR = hostnumber
hostnumber = digits "." digits "." digits "." digits
digits = 1*digit

4.10. REMOTE_HOST

The fully qualified domain name of the agent sending the request to the server, if available, otherwise NULL. Not necessarily that of the client. Fully qualified domain names take the form as described in section 3.5 of RFC 1034 [10] and section 2.1 of RFC 1123 [5]; a sequence of domain labels separated by ".", each domain label starting and ending with an alphanumerical character and possibly also containing "-" characters. The rightmost domain label will never start with a digit. Domain names are not case sensitive.

REMOTE_HOST = "" | hostname
hostname = *( domainlabel ".") toplabel
domainlabel = alphadigit [ *alphahypdigit alphadigit ]
toplabel = alpha [ *alphahypdigit alphadigit ]
alphahypdigit = alphadigit | "-"
alphadigit = alpha | digit

4.11. REMOTE_IDENT

The identity information reported about the connection by a RFC 1413 [11] request to the remote agent, if available. The server MAY choose not to support this feature, or not to request the data for
efficiency reasons.

REMOTE_IDENT = *CHAR

The data returned are not appropriate for use as authentication information.

4.12. REMOTE_USER

This variable is specific to requests made with HTTP.

If AUTH_TYPE is "Basic", then the user-ID sent by the client. If AUTH_TYPE is NULL, then NULL, otherwise undefined.

REMOTE_USER = "" | userid | *OCTET
userid = token

4.13. REQUEST_METHOD

This variable is specific to requests made with HTTP.

The method with which the request was made, as described in section 5.1.1 of the HTTP/1.0 specification [3] and section 5.1.1 of the HTTP/1.1 specification [8].

REQUEST_METHOD = http-method
http-method = "GET" | "HEAD" | "POST" | "PUT" | "DELETE" | extension-method
extension-method = token

The method is case sensitive. Note that of the new methods defined by the HTTP/1.1 specification [8], OPTIONS and TRACE are not appropriate for the CGI/1.1 environment.

4.14. SCRIPT_NAME

A URL path that could identify the CGI script (rather than the particular CGI output). The syntax and semantics are identical to a decoded HTTP URL 'hpath' token [4].

SCRIPT_NAME = "" | ( "/" [ path ] )

The leading "/" is not part of the path. It is optional if the path is NULL.

The SCRIPT_NAME string is some leading part of the <path> component of the script URI derived in some implementation defined manner.
4.15. SERVER_NAME

The name for this server, as used in the <host> part of the script URI. Thus either a fully qualified domain name, or an IP address.

\[
\text{SERVER\_NAME} = \text{hostname} | \text{hostnumber}
\]

4.16. SERVER_PORT

The port on which this request was received, as used in the <port> part of the script URI.

\[
\text{SERVER\_PORT} = 1\text{digit}
\]

4.17. SERVER_PROTOCOL

The name and revision of the information protocol with which this request arrived. This is not necessarily the same as the protocol version used by the server in its response.

\[
\begin{align*}
\text{SERVER\_PROTOCOL} & = \text{HTTP\text{-Version}} | \text{extension\text{-version}} \\
\text{HTTP\text{-Version}} & = "\text{HTTP} \"/\" 1\text{digit} "." 1\text{digit} \\
\text{extension\text{-version}} & = \text{protocol} "/\" 1\text{digit} "." 1\text{digit} \\
\text{protocol} & = 1*( \text{alpha} | \text{digit} | "\+" | "\-" | "." )
\end{align*}
\]

'\text{protocol}' is a version of the <scheme> part of the script URI, but is not identical to it. For example, the scheme of a request may be "https" while the protocol remains "http". The protocol is not case sensitive. By convention, 'protocol' is in upper case.

4.18. SERVER_SOFTWARE

The name and version of the information server software answering the request (and running the gateway).

\[
\text{SERVER\_SOFTWARE} = \star \text{CHAR}
\]

5. Invoking the Script
This script is invoked in a system defined manner. Unless specified otherwise, this will be by treating the file containing the script as an executable program, and running it as a child process of the server.

6. The CGI Script Command Line

Some systems support a method for supplying an array of strings to the CGI script. This is only used in the case of an 'indexed' query. This is identified by a "GET" or "HEAD" HTTP request with a URL search string not containing any unencoded "=" characters. For such a request, the server SHOULD parse the search string into words, using the rules:

Coar, et al.          INTERNET-DRAFT          [Page 12]

CGI/1.1      Expires: 29 November, 1998

search-string = search-word *( "+" search-word )
ssearch-word = 1*schar
schar = xunreserved | escape | xreserved
xunreserved = alpha | digit | xsafe | extra
xsafe = "$" | "-" | "_" | "."
xreserved = ";" | "/" | "?" | ":" | "@" | "&"

After parsing, each word is URL-decoded, optionally encoded in a system defined manner and then the argument list is set to the list of words.

If the server cannot create any part of the argument list, then the server SHOULD NOT generate any command line information. For example, the number of arguments may be greater than operating system or server limitations permit, or one of the words may not be representable as an argument.

7. Data Input to the CGI Script

As there may be a data entity attached to the request, there MUST be a system defined method for the script to read these data. Unless defined otherwise, this will be via the 'standard input' file descriptor.

There MUST be at least CONTENT_LENGTH bytes available for the script to read if CONTENT_LENGTH is not NULL. The script is not obliged to read the data, but it MUST NOT attempt to read more than CONTENT_LENGTH bytes, even if more data are available.
For non-parsed header (NPH) scripts (see below), the server SHOULD attempt to ensure that the script input comes directly from the client, with minimal buffering. For all scripts the data will be as supplied by the client.

8. Data Output from the CGI Script

There MUST be a system defined method for the script to send data back to the server or client; a script MUST always return some data. Unless defined otherwise, this will be via the 'standard output' file descriptor.

There are two forms of output that the script can give; non-parsed header (NPH) output, and parsed header output. A server is only required to support the latter; distinguishing between the two types of output (or scripts) is implementation defined.

8.1. Non-Parsed Header Output

The script MUST return a complete HTTP response message, as described in Section 6 of the HTTP specifications [3],[8]. The script MUST use the SERVER_PROTOCOL variable to determine the appropriate format for a response.

The server SHOULD attempt to ensure that the script output is sent directly to the client, with minimal internal and no transport-visible buffering.

8.2. Parsed Header Output

The script returns a CGI response message as follows:

```
CGI-Response = *( CGI-Header | HTTP-Header ) NL [ Entity-Body ]
CGI-Header   = Content-type
                | Location
                | Status
                | extension-header
```

The response comprises a header and a body, separated by a blank line. The header fields are either CGI header fields to be interpreted by the server, or HTTP headers to be included in the response returned to the client if the request method is HTTP. At least one CGI-Header MUST be supplied, but no CGI header field can be
repeated with the same field-name. If a body is supplied, then a
Content-type header field is required, otherwise the script MUST send
a Location or Status header field. If a Location CGI-header field is
returned, then the script MUST NOT supply any HTTP-Headers.

All header fields occurring in a CGI-Response MUST be specified one
per line; CGI/1.1 makes no provision for continuation lines.

The CGI header fields have the generic syntax:

    generic-header = field-name "." [ field-value ] NL
    field-name = 1*(<any CHAR, excluding CTLs, SP and ":">)
    field-value = *( field-content | LWSP )
    field-content = *( token | tspecial | quoted-string )

The field-name is not case sensitive; a NULL field value is
equivalent to the header field not being sent.

Content-Type
The Internet Media Type [9] of the entity body, which is to be
sent unmodified to the client.

Content-Type = "Content-Type" ":" media-type NL

This is actually an HTTP-Header rather than a CGI-header
field, but it is listed here because of its importance in the
CGI dialogue as a member of the "one of these is required" set
of header fields.

Location
This is used to specify to the server that the script is
returning a reference to a document rather than an actual
document.

Location = "Location" ":"
    ( fragment-URI | rel-URL-abs-path ) NL
    fragment-URI = URI [ # fragmentid ]
    URI = scheme ":" *qchar
    fragmentid = *qchar
    rel-URL-abs-path = "/" [ hpath ] [ "?" query-string ]
    hpath = fpsegment *( "/" psegment )
    fpsegment = 1*hchar
The Location value is either an absolute URI with optional fragment, as defined in RFC 1630 [1], or an absolute path and optional query-string. If an absolute URI is returned by the script, then the server will generate a '302 redirect' HTTP response message, and if no entity body is supplied by the script, then the server will produce one. If the Location value is a path, then the server will generate the response that it would have produced in response to a request containing the URL

protocol "://" SERVER_NAME ":" SERVER_PORT rel-URL-abs-path

The location header field MUST only be sent if the REQUEST_METHOD is HEAD or GET.

Status

The Status header field is used to indicate to the server what status code the server MUST use in the response message. It SHOULD NOT be sent if the script returns a Location header field.

Status = "Status" "" digit digit digit SP reason-phrase NL
reason-phrase = *<CHAR, excluding CTLs, NL>

The valid status codes are listed in section 6.1.1 of the HTTP/1.0 specifications [3]. If the SERVER_PROTOCOL is "HTTP/1.1", then the status codes defined in the HTTP/1.1 specification [8] may be used. If the script does not return a Status header field, then "200 OK" SHOULD be assumed by the server.

If a script is being used to handle a particular error or condition encountered by the server, such as a 404 Not Found error, the script SHOULD use the Status CGI header field to propagate the error condition back to the client. E.g., in the example mentioned it SHOULD include a "Status: 404 Not Found"
HTTP header fields

The script MAY return any other header fields defined by the specification for the SERVER_PROTOCOL (HTTP/1.0 [3] or HTTP/1.1 [8]). The server MUST translate the header data from the CGI header field syntax to the HTTP header field syntax if these differ. For example, the character sequence for newline (such as Unix's ASCII NL) used by CGI scripts may not be the same as that used by HTTP (ASCII CR followed by LF). The server MUST also resolve any conflicts between header fields returned by the script and header fields that it would otherwise send itself.

9. Requirements for Servers

Servers MUST support the standard mechanism (described below) which allows the script author to determine what URL to use in documents which reference the script. Specifically, what URL to use in order to achieve particular settings of the meta-variables. This mechanism is as follows:

The value for SCRIPT_NAME is governed by the server configuration and the location of the script in the OS file-system. Given this, any access to the partial URL

    SCRIPT_NAME extra-path ? query-information

where extra-path is either NULL or begins with a "/" and satisfies any other server requirements, will cause the CGI script to be executed with PATH_INFO set to the decoded extra-path, and QUERY_STRING set to query-information (not decoded).

Servers MAY reject with error 404 any requests that would result in an encoded "/" being decoded into PATH_INFO or SCRIPT_NAME, as this might represent a loss of information to the script.

Although the server and the CGI script need not be consistent in their handling of URL paths (client URLs and the PATH_INFO data, respectively), server authors may wish to impose consistency. So the server implementation SHOULD define its behaviour for the following cases:

1. define any restrictions on allowed characters, in particular whether ASCII NUL is permitted;
2. define any restrictions on allowed path segments, in particular whether non-terminal NULL segments are permitted;
3. define the behaviour for "." or ".." path segments; i.e., whether they are prohibited, treated as ordinary path segments or interpreted in accordance with the relative URL specification [7];
4. define any limits of the implementation, including limits on path or search string lengths, and limits on the volume of header data

the server will parse.

Servers MAY generate the script URI in any way from the client URI, or from any other data (but the behaviour SHOULD be documented).

**10. Recommendations for Scripts**

Scripts SHOULD reject unexpected methods (such as DELETE, etc.) with error 405 Method Not Allowed. If the script does not intend processing the PATH_INFO data, then it SHOULD reject the request with 404 Not Found if PATH_INFO is not NULL.

If the output of a form is being processed, check that CONTENT_TYPE is "application/x-www-form-urlencoded" [2].

If parsing PATH_INFO, PATH_TRANSLATED or SCRIPT_NAME then be careful of void path segments ("/"), and special path segments ("." and ".."). They SHOULD either be removed from the path before use in OS system calls, or the request SHOULD be rejected with 404 Not Found. It is very unlikely that any other use could be made of these.

As it is impossible for the script to determine the client URI that initiated this request without knowledge of the specific server in use, the script SHOULD NOT return text/html documents containing relative URL links without including a <BASE> tag in the document.

When returning header fields, the script SHOULD try to send the CGI header fields as soon as possible, and preferably before any HTTP header fields. This may help reduce the server's memory requirements.

**11. System Specifications**

**11.1. AmigaDOS**

The implementation of the CGI on an AmigaDOS operating system platform SHOULD use environment variables as the mechanism of providing request metadata to CGI scripts.

Environment variables

These are accessed by the DOS library routine GetVar. The flags argument SHOULD be 0. Case is ignored, but upper case is recommended for compatibility with case-sensitive systems.
The current working directory

The current working directory for the script is set to the directory containing the script.

Character set

The US-ASCII character set is used for the definition of environment variable names and header field names; the newline (NL) sequence is LF; servers SHOULD also accept CR LF as a newline.

11.2. Unix

Coar, et al. INTERNET-DRAFT [Page 17]

CGI/1.1 Expires: 29 November, 1998

The implementation of the CGI on a UNIX operating system platform SHOULD use environment variables as the mechanism of providing request metadata to CGI scripts.

For Unix compatible operating systems, the following are defined:

Environment variables

These are accessed by the C library routine getenv.

The command line

This is accessed using the the argc and argv arguments to main(). The words have any characters which are 'active' in the Bourne shell escaped with a backslash.

The current working directory

The current working directory for the script SHOULD be set to the directory containing the script.

Character set

The US-ASCII character set is used for the definition of environment variable names and header field names; the newline (NL) sequence is LF; servers SHOULD also accept CR LF as a newline.

12. Security Considerations

12.1. Safe Methods

As discussed in the security considerations of the HTTP specifications [3],[8], the convention has been established that the GET and HEAD methods should be 'safe'; they should cause no
side-effects and only have the significance of resource retrieval.

12.2. HTTP Header Fields Containing Sensitive Information

Some HTTP header fields may carry sensitive information which the server SHOULD NOT pass on to the script unless explicitly configured to do so. For example, if the server protects the script using the Basic authentication scheme, then the client will send an Authorization header field containing a username and password. If the server, rather than the script, validates this information then the password SHOULD NOT be passed on to the script via the HTTP_AUTHORIZATION meta-variable.

12.3. Script Interference with the Server

The most common implementation of CGI invokes the script as a child process using the same user and group as the server process. It SHOULD therefore be ensured that the script cannot interfere with the server process, its configuration, or documents.

If the script is executed by calling a function linked in to the server software (either at compile-time or run-time) then precautions

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Coar, et al. INTERNET-DRAFT [Page 18]

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CGI/1.1 Expires: 29 November, 1998

SHOULD be taken to protect the core memory of the server, or to ensure that untrusted code cannot be executed.

13. Acknowledgements

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14. References


15. Authors' Addresses

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