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Glossary
Chapter 1

Inets

1.1 Inets Release Notes

1.1.1 Inets 3.0.9

Fixed Bugs and Malfunctions

http.server Illegal hexadecimal code in URL was not handled. The validation of URI:s are therefore updated.
Own Id: OTP-6078 Aux Id: seq10306

1.1.2 Inets 3.0.8

Fixed Bugs and Malfunctions

- The URI check that disables relative links that goes outside the server-root missed a few cases.
  Own Id: OTP-5249

Improvements and New Features

- The inets shutdown times have proven to be too short under some circumstances, as a heavy load, therefore they have been prolonged.
  Own Id: OTP-5261 Aux Id: seq9624

1.1.3 Inets 3.0.7

Improvements and new features

-
Chapter 1: Inets

Reported Fixed Bugs and Malfunctions

httpd  Fixed a number of transfer-encoding problems.

First part of the data received from a CGI-script was sent as chunked even if the client was HTTP/1.0.

Introduced new directive (DisableChunkedTransferEncodingSend) to turn off usage of chunked transfer-encoding (when sending) since it appear's some browser's have problems handling this. This applies if the client is HTTP/1.1.

(Own Id: OTP-4806)

Aux Id: Seq 8150

httpc HTTP client reformats some URLs (e.g. containing %20, space).

Updated client from sowap.sf.net as of 2003-09-08.

Johan Blom of Mobile Arts AB

(Own Id: OTP-4807)

httpd In module mod_browser, malformed search for parsed header, user-agent.

Also added new os and browser

(Own Id: OTP-4808)

ftp FTP client doesn't notice when disk is full.

(Own Id: OTP-4822)

Aux Id: Seq 8175

1.1.4 Inets 3.0.6

Improvements and new features

- 

Reported Fixed Bugs and Malfunctions

- On Windows the ftp:ls function sometimes exits.

Workaroud for a problem that seems to happen only on Windows when calling the ls function. Closing an already closed socket will result in enotsock returned which will result in an exit.

(Own Id: OTP-4770)

1.1.5 Inets 3.0.5

Improvements and new features

- 

Reported Fixed Bugs and Malfunctions

- Web server does not handle econnaborted accept result.

This results in an unnecessary acceptor process restart.

(Own Id: OTP-4732)
1.1.6 Inets 3.0.4

Improvements and new features

Reported Fixed Bugs and Malfunctions

- ESI callback generates broken HTTP. This was a problem for (at least) Netscape 4.75. It worked for Mozilla 1.4a (on Solaris 8) and rumor has it that it also worked for IE.

  Sean Hinde (Own Id: OTP-4696)

- Log-size values ignored for security- and error disk-logs (SecurityDiskLogSize and ErrorDiskLogSize in mod_disk_log). Instead the TransferDiskLogSize was used.

  Thomas Lange
  (Own Id: OTP-4659)

1.1.7 Inets 3.0.3

Improvements and new features

Reported Fixed Bugs and Malfunctions

- HTTP client called undefined function in HTTP server (httpd_response:send_status/3).

  (Own Id: OTP-4628)

1.1.8 Inets 3.0.2

Improvements and new features

Reported Fixed Bugs and Malfunctions

- HTTP client now updated to jnets-0.1.
  Author: Johan Blom of Mobile Arts AB.
  (Own Id: OTP-4588)
1.1.9 Inets 3.0.1

Improvements and new features

  (Own Id: OTP-4549)
- HTTP client updated to jnets-0.1, now supporting proxy.
  Author: Johan Blom of Mobile Arts AB.
  (Own Id: OTP-4552)

Reported Fixed Bugs and Malfunctions

- Body length calculation incorrect.
  (Own Id: OTP-4548)
  (Aux Id: OTP-4207, Seq 7209)
- HTTP-request with a BODY length longer than 0 does not work.
  (Own Id: OTP-4550)
  (Aux Id: Seq 7653)
- Calculation of remaining chunk size incorrect.
  (Own Id: OTP-4551)
- Wrong module name used when attempting to stop the security server (mod_secure_server instead of mod_security_server).
  (Own Id: OTP-4556)

1.1.10 Inets 3.0.0

Improvements and new features

- Added HTTP client to the application.
  Author: Johan Blom of Mobile Arts AB.
- FTP: More info in exit reason when socket operation fails.
  (Own Id: OTP-4429)
- Make install targets corrected (INSTALL_SCRIPT is used instead of INSTALL_PROGRAMS for scripts).
  (Own Id: OTP-4428)
- In inets, mod_cgi crashes when a directory is protected for a group or for a user and we try to execute a CGI script inside this protected directory.
  Guillaume Bongenaar.
  (Own Id: OTP-4416)
- Removed crypto application dependency.
  Matthias Lang
  (Own Id: OTP-4417)
- Use the same read algorithm for socket type ssl as is used for ip_comm. As of version 2.3.5 of the ssl application it is possible to use socket option {active, once}, so the same algorithm can be used for both ip_comm and ssl.
  (Own Id: OTP-4374)
  (Aux Id: Seq 7417)
- Added inets test suite to the release. Including the lightweight inets test server.
• Incorrectly formated disk log entries `term_to_binary` was (incorrectly) used for the external format.
  Own Id: OTP-4228
  Aux Id: Seq 7239
• Adding verbosity printouts to `catch` cgi problems on some platforms.
• Updated to handle HTTP/1.1.
  - Persistent connections are now default for http/1.1 clients
  - Module `mod_esi` can send data to the client in chunks
  - Updated configuration directives `KeepAlive`
  - New configuration directives:
    • `MaxKeepAliveRequests`
    • `ErlScriptTimeout`
    • `ErlScriptNoCache`
    • `ScriptTimeout`
    • `ScriptNoCache`
  - New functions in `httpd_utility` to ease the development of http/1.1 compliant modules.
  - Record mod has a new field `absolute_uri`.
  - All header field names in `parsed-header` is in lowercase.
  - `httpd` handles chunked requests.
  - New module `mod_range` that handles range-requests.
  - New module `mod_responsecontrol` that controls how the request will be handled due to the If-Modified, If-Match and If-Range http header fields.

Reported Fixed Bugs and Malfunctions

• POST requests not properly handled.
  (Own Id: OTP-4409)
  (Aux Id: Seq 7485)
• Incompatible change in the inets API.
  (Own Id: OTP-4408)
  (Aux Id: Seq 7485)
• When opening the disk log (mod_disk_log), an open attempt is made without a size option. If the file exist, then it is opened. If the file does not exist, then another attempt is made, this time with the size option.
  (Own Id: OTP-4281)
  (Aux Id: Seq 7312)
• Changing of disk log format failes. Restart of webserver after change of disk log format (DiskLogFormat) fails with `argument mismatch`.
  (Own Id: OTP-4231)
  (Aux Id: Seq 7244)
Inets Reference Manual

Short Summaries

- Application inets [page 18] - Inets
- Erlang Module httpd [page 27] - An implementation of an HTTP 1.1 compliant Web server, as defined in RFC 2616.
- Erlang Module httpd_conf [page 40] - Configuration utility functions to be used by the EWSAPI programmer.
- Erlang Module httpd_core [page 42] - The core functionality of the Web server.
- Erlang Module httpd_socket [page 51] - Communication utility functions to be used by the EWSAPI programmer.
- Erlang Module httpd_util [page 52] - Miscellaneous utility functions to be used when implementing EWSAPI modules.
- Erlang Module mod_alias [page 60] - This module creates aliases and redirections.
- Erlang Module mod_auth [page 63] - User authentication using text files, dets or mnesia database.
- Erlang Module mod_browser [page 74] - Tries to recognize the browser and operating-system of the client.
- Erlang Module mod_cgi [page 75] - Invoking of CGI scripts.
- Erlang Module mod_dir [page 78] - Basic directory handling.
- Erlang Module mod_esi [page 83] - Efficient Erlang Scripting
- Erlang Module mod_get [page 89] - Handle GET requests.
- Erlang Module mod_head [page 90] - Handles HEAD requests to regular files.
- Erlang Module mod_htaccess [page 91] - This module provides per-directory user configurable access control.
- Erlang Module mod_include [page 96] - Server-parsed documents.
- Erlang Module mod_range [page 102] - Handle requests for parts of a file
- Erlang Module mod_responsecontrol [page 103] - Controls that the request conditions is fulfilled.
- Erlang Module mod_security [page 104] - Security Audit and Trailing Functionality
- Erlang Module mod_trace [page 109] - handle trace requests
inets

No functions are exported.

ftp

The following functions are exported:

- `account(Pid, Account) -> ok | {error, Reason}`
  [page 20] Specify which account to use.
- `append(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`
  [page 20] Transfer file to remote server, and append it to RemoteFile.
- `append_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`
  [page 20] Transfer a binary into a remote file.
- `append_chunk(Pid, Bin) -> ok | {error, Reason}`
  [page 20] Append a chunk to the remote file.
- `append_chunk_start(Pid, File) -> ok | {error, Reason}`
  [page 20] Start transfer of file chunks for appending to File.
- `append_chunk_end(Pid) -> ok | {error, Reason}`
  [page 21] Stop transfer of chunks for appending.
- `cd(Pid, Dir) -> ok | {error, Reason}`
  [page 21] Change remote working directory.
- `close(Pid) -> ok`  
  [page 21] End ftp session.
- `delete(Pid, File) -> ok | {error, Reason}`
  [page 21] Delete a file at the remote server.
- `formaterror(Tag) -> string()`  
- `lcd(Pid, Dir) -> ok | {error, Reason}`
  [page 21] Change local working directory.
- `lpwd(Pid) -> {ok, Dir}`
- `ls(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`
  [page 22] List contents of remote directory.
- `mkdir(Pid, Dir) -> ok | {error, Reason}`
  [page 22] Create remote directory.
- `nlist(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`
  [page 22] List contents of remote directory.
- `open(Host [, Port] [, Flags]) -> {ok, Pid} | {error, Reason}`
- `open({option_list,Option_list}) -> {ok, Pid} | {error, Reason}`
- `pwd(Pid) -> {ok, Dir} | {error, Reason}`
  [page 23] Get remote current working directory.
- `recv(Pid, RemoteFile [, LocalFile]) -> ok | {error, Reason}`
  [page 23] Transfer file from remote server.
- `recv_bin(Pid, RemoteFile) -> {ok, Bin} | {error, Reason}`
  [page 23] Transfer file from remote server as a binary.
- `recv_chunk_start(Pid, RemoteFile) -> ok | {error, Reason}`
- `recv_chunk(Pid) -> ok | {ok, Bin} | {error, Reason}`
- `rename(Pid, Old, New) -> ok | {error, Reason}`
  [page 24] Rename a file at the remote server.
- `rmdir(Pid, Dir) -> ok | {error, Reason}`
  [page 24] Remove a remote directory.
- `send(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`
  [page 24] Transfer file to remote server.
- `send_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`
  [page 24] Transfer a binary into a remote file.
- `send_chunk(Pid, Bin) -> ok | {error, Reason}`
- `send_chunk_start(Pid, File) -> ok | {error, Reason}`
- `send_chunk_end(Pid) -> ok | {error, Reason}`
  [page 25] Stop transfer of chunks.
- `type(Pid, Type) -> ok | {error, Reason}`
  [page 25] Set transfer type to ascii or binary.
- `user(Pid, User, Password) -> ok | {error, Reason}`
- `user(Pid, User, Password, Account) -> ok | {error, Reason}`
  [page 26] User login.

httpd

The following functions are exported:

- `start()`
  [page 30] Start a server as specified in the given config file.
- `start(ConfigFile) -> ServerRet`
  [page 30] Start a server as specified in the given config file.
- `start_link()`
  [page 30] Start a server as specified in the given config file.
- `start_link(ConfigFile) -> ServerRet`
  [page 30] Start a server as specified in the given config file.
- `restart()`
  [page 30] Restart a running server.
- `restart(Port) -> ok | {error, Reason}`
  [page 30] Restart a running server.
- `restart(ConfigFile) -> ok | {error, Reason}`
  [page 30] Restart a running server.
- `restart(Address,Port) -> ok | {error, Reason}`
  [page 30] Restart a running server.
-\texttt{stop()} [page 30] Stop a running server.
-\texttt{stop(Port)} -> ServerRet [page 31] Stop a running server.
-\texttt{stop(ConfigFile)} -> ServerRet [page 31] Stop a running server.
-\texttt{stop(Address,Port)} -> ServerRet [page 31] Stop a running server.
-\texttt{block()} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(Port)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(ConfigFile)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(Address,Port)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(Port,Mode)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(ConfigFile,Mode)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(Address,Port,Mode)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(ConfigFile,Mode,Timeout)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{block(Address,Port,Mode,Timeout)} -> ok | \{error,Reason\} [page 31] Block a running server.
-\texttt{unblock()} -> ok | \{error,Reason\} [page 31] Unblock a blocked server.
-\texttt{unblock(Port)} -> ok | \{error,Reason\} [page 31] Unblock a blocked server.
-\texttt{unblock(ConfigFile)} -> ok | \{error,Reason\} [page 31] Unblock a blocked server.
-\texttt{unblock(Address,Port)} -> ok | \{error,Reason\} [page 32] Unblock a blocked server.
-\texttt{parse\_query(QueryString)} -> ServerRet [page 32] Parse incoming data to erl and eval scripts
-\texttt{Module:do(Info)} -> \{proceed, OldData\} | \{proceed, NewData\} | \{break, NewData\} | done [page 32] The do/1 i called for each request to the Web server.
-\texttt{Module:remove(ConfigDB)} -> ok | \{error, Reason\} [page 34] Callback function that is called when the Web server is closed.
httpd_conf

The following functions are exported:

- check_enum(EnumString,ValidEnumStrings) -> Result
  [page 40] Check if string is a valid enumeration.
- clean(String) -> Stripped
  [page 40] Remove leading and/or trailing white spaces.
- custom_clean(String,Before,After) -> Stripped
  [page 40] Remove leading and/or trailing white spaces and custom characters.
- is_directory(FilePath) -> Result
  [page 40] Check if a file path is a directory.
- is_file(FilePath) -> Result
  [page 41] Check if a file path is a regular file.
- make_integer(String) -> Result
  [page 41] Return an integer representation of a string.

httpd_core

No functions are exported.

httpd_socket

The following functions are exported:

- deliver(SocketType,Socket,Binary) -> Result
  [page 51] Send binary data over socket.
- peername(SocketType,Socket) -> {Port,IPAddress}
  [page 51] Return the port and IP-address of the remote socket.
- resolve() -> HostName
  [page 51] Return the official name of the current host.

httpd_util

The following functions are exported:

- convert_request_date(DateString) -> ErlDate|bad_date
  [page 52] Convert the date to the Erlang date format.
- create_etag(FileInfo) -> Etag
  [page 52] Calculates the Etag for a file.
- decode_base64(Base64String) -> ASCIIString
  [page 52] Convert a base64 encoded string to a plain ascii string.
- decode_hex(HexValue) -> DecValue
  [page 52] Convert a hex value into its decimal equivalent.
- day(NthDayOfWeek) -> DayOfWeek
  [page 52] Convert the day of the week (integer [1-7]) to an abbreviated string.
- encode_base64(ASCIIString) -> Base64String
  [page 53] Convert an ASCII string to a Base64 encoded string.
- `flatlength(NestedList) -> Size`  
  [page 53] Compute the size of a possibly nested list.
- `header(StatusCode, PersistentConn)`  
  [page 53] Generate a HTTP 1.1 header.
- `header(StatusCode, Date)`  
  [page 53] Generate a HTTP 1.1 header.
- `header(StatusCode, MimeType, Date)`  
  [page 53] Generate a HTTP 1.1 header.
- `header(StatusCode, MimeType, PersistentConn, Date) -> HTTPHeader`  
  [page 53] Generate a HTTP 1.1 header.
- `bhexlist_to_integer(HexString) -> Number`  
  [page 53] Convert a hexadecimal string to an integer.
- `integer_to_hexlist(Number) -> HexString`  
  [page 53] Convert an integer to a hexadecimal string.
- `key1search(TupleList, Key)`  
  [page 54] Search a list of key-value tuples for a tuple whose first element is a key.
- `key1search(TupleList, Key, Undefined) -> Result`  
  [page 54] Search a list of key-value tuples for a tuple whose first element is a key.
- `lookup(ETSTable, Key) -> Result`  
  [page 54] Extract the first value associated with a key in an ETS table.
- `lookup(ETSTable, Key, Undefined) -> Result`  
  [page 54] Extract the first value associated with a key in an ETS table.
- `lookup_mime(ConfigDB, Suffix)`  
  [page 54] Return the mime type associated with a specific file suffix.
- `lookup_mime(ConfigDB, Suffix, Undefined) ->_mime Type`  
  [page 54] Return the mime type associated with a specific file suffix.
- `lookup_mime_default(ConfigDB, Suffix)`  
  [page 54] Return the mime type associated with a specific file suffix or the value of the DefaultType.
- `lookup_mime_default(ConfigDB, Suffix, Undefined) -> _mime Type`  
  [page 54] Return the mime type associated with a specific file suffix or the value of the DefaultType.
- `message(StatusCode, PhraseArgs, ConfigDB) -> Message`  
  [page 55] Return an informative HTTP 1.1 status string in HTML.
- `month(NthMonth) -> Month`  
  [page 55] Convert the month as an integer (1-12) to an abbreviated string.
- `multi_lookup(ETSTable, Key) -> Result`  
  [page 55] Extract the values associated with a key in a ETS table.
- `reason_phrase(StatusCode) -> Description`  
  [page 55] Return the description of an HTTP 1.1 status code.
- `rfc1123_date() -> RFC1123Date`  
  [page 56] Return the current date in RFC 1123 format.
- `rfc1123_date({[YYYY,MM,DD],[Hour,Min,Sec]}) -> RFC1123Date`  
  [page 56] Return the current date in RFC 1123 format.
- `split(String, RegExp, N) -> SplitRes`  
  [page 56] Split a string in N chunks using a regular expression.
• `split_script_path(RequestLine)` -> Split
  [page 56] Split a RequestLine in a file reference to an executable and a
  QueryString or a PathInfo String.
• `split_path(RequestLine)` -> `{Path,QueryStringOrPathInfo}
  [page 56] Split a RequestLine in a file reference and a QueryString or a
  PathInfo String.
• `strip(String)` -> Stripped
  [page 56] Returns String where the leading and trailing space and tabs has been
  removed.
• `suffix(FileName)` -> Suffix
  [page 57] Extract the file suffix from a given filename.
• `to_lower(String)` -> ConvertedString
  [page 57] Convert upper-case letters to lower-case.
• `to_upper(String)` -> ConvertedString
  [page 57] Convert lower-case letters to upper-case.

**mod_actions**

No functions are exported.

**mod_alias**
The following functions are exported:

• `default_index(ConfigDB,Path)` -> NewPath
  [page 61] Return a new path with the default resource or file appended.
• `path(Data,ConfigDB,RequestURI)` -> Path
  [page 61] Return the actual file path to a URL.
• `real_name(ConfigDB,RequestURI,Aliases)` -> Ret
  [page 62] Expand a request uri using Alias config directives.
• `real_script_name(ConfigDB,RequestURI,ScriptAliases)` -> Ret

**mod_auth**
The following functions are exported:

• `add_user(UserName, Options)` -> true | {error, Reason}
  [page 69] Add a user to the user database.
• `add_user(UserName, Password, UserData, Port, Dir)` -> true | {error, Reason}
  [page 69] Add a user to the user database.
• `add_user(UserName, Password, UserData, Address, Port, Dir)` -> true | {error, Reason}
  [page 69] Add a user to the user database.
• `delete_user(UserName,Options)` -> true | {error, Reason}
  [page 69] Delete a user from the user database.
• delete_user(UserName, Port, Dir) -> true | {error, Reason}  
  [page 69] Delete a user from the user database.

• delete_user(UserName, Address, Port, Dir) -> true | {error, Reason}  
  [page 69] Delete a user from the user database.

• get_user(UserName, Options) -> {ok, #httpd_user} | {error, Reason}  
  [page 69] Returns a user from the user database.

• get_user(UserName, Port, Dir) -> {ok, #httpd_user} | {error, Reason}  
  [page 69] Returns a user from the user database.

• get_user(UserName, Address, Port, Dir) -> {ok, #httpd_user} | {error, Reason}  
  [page 69] Returns a user from the user database.

• list_users(Options) -> {ok, Users} | {error, Reason}  
  [page 70] List users in the user database.

• list_users(Port, Dir) -> {ok, Users} | {error, Reason}  
  [page 70] List users in the user database.

• list_users(Address, Port, Dir) -> {ok, Users} | {error, Reason}  
  [page 70] List users in the user database.

• add_group_member(GroupName, UserName, Options) -> true | {error, Reason}  
  [page 70] Add a user to a group.

• add_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}  
  [page 70] Add a user to a group.

• add_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}  
  [page 70] Add a user to a group.

• delete_group_member(GroupName, UserName, Options) -> true | {error, Reason}  
  [page 71] Remove a user from a group.

• delete_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}  
  [page 71] Remove a user from a group.

• delete_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}  
  [page 71] Remove a user from a group.

• list_group_members(GroupName, Options) -> {ok, Users} | {error, Reason}  
  [page 71] List the members of a group.

• list_group_members(GroupName, Port, Dir) -> {ok, Users} | {error, Reason}  
  [page 71] List the members of a group.

• list_group_members(GroupName, Address, Port, Dir) -> {ok, Users} | {error, Reason}  
  [page 71] List the members of a group.

• list_groups(Options) -> {ok, Groups} | {error, Reason}  
  [page 71] List all the groups.

• list_groups(Port, Dir) -> {ok, Groups} | {error, Reason}  
  [page 71] List all the groups.
mod_browser
The following functions are exported:

- `getBrowser(AgentString) -> {Browser,OperatingSystem}`
  [page 74] Extracts the browser and operating-system from AgentString

mod_cgi
The following functions are exported:

- `env(Info,Script,AfterScript) -> EnvString`
  [page 76] Return a CGI-1.1 environment variable string to be used by open_port/2.

- `status_code(CGIOutput) -> {ok,StatusCode} | {error,Reason}`
  [page 77] Parse output from a CGI script and generates an appropriate HTTP status code.

mod_dir
No functions are exported.

mod_disk_log
The following functions are exported:

- `error_log(Socket,SocketType,ConfigDB,Date,Reason) -> ok | no_error_log`
  [page 81] Log an error in the error log file.

- `security_log(User,Event) -> ok | no_security_log`
  [page 82] Log an security event in the error log file.
mod_esi

The following functions are exported:

- `deliver(SessionID, Data) -> ok | {error,Reason}`
  [page 87] Sends Data back to client.
- `Module::Function(Env, Input) -> Response`
  [page 88] Creates a dynamic web page and return it as a list.
- `Module::Function(SessionID, Env, Input) -> void`
  [page 88] Creates a dynamic web page and return it as a list.

mod_get

No functions are exported.

mod_head

No functions are exported.

mod_htaccess

No functions are exported.

mod_include

No functions are exported.

mod_log

The following functions are exported:

- `error_log(Socket,SocketType,ConfigDB,Date,Reason) -> ok | no_error_log`
  [page 101] Log an error in the a log file.

mod_range

No functions are exported.

mod_responsecontrol

No functions are exported.
**mod_security**

The following functions are exported:

- `list_auth_users(Port) -> Users | []`  
  [page 106] List users that have authenticated within the SecurityAuthTimeout time for a given address (if specified), port number and directory (if specified).

- `list_auth_users(Address, Port) -> Users | []`  
  [page 106] List users that have authenticated within the SecurityAuthTimeout time for a given address (if specified), port number and directory (if specified).

- `list_auth_users(Port, Dir) -> Users | []`  
  [page 106] List users that have authenticated within the SecurityAuthTimeout time for a given address (if specified), port number and directory (if specified).

- `list_auth_users(Address, Port, Dir) -> Users | []`  
  [page 106] List users that have authenticated within the SecurityAuthTimeout time for a given address (if specified), port number and directory (if specified).

- `list_blocked_users(Port) -> Users | []`  
  [page 106] List users that are currently blocked from access to a specified port number, for a given address (if specified).

- `list_blocked_users(Address, Port) -> Users | []`  
  [page 106] List users that are currently blocked from access to a specified port number, for a given address (if specified).

- `list_blocked_users(Port, Dir) -> Users | []`  
  [page 106] List users that are currently blocked from access to a specified port number, for a given address (if specified).

- `list_blocked_users(Address, Port, Dir) -> Users | []`  
  [page 106] List users that are currently blocked from access to a specified port number, for a given address (if specified).

- `block_user(User, Port, Dir, Seconds) -> true | {error, Reason}`  
  [page 107] Block user from access to a directory for a certain amount of time.

- `block_user(User, Address, Port, Dir, Seconds) -> true | {error, Reason}`  
  [page 107] Block user from access to a directory for a certain amount of time.

- `unblock_user(User, Port) -> true | {error, Reason}`  
  [page 107] Remove a blocked user from the block list.

- `unblock_user(User, Address, Port) -> true | {error, Reason}`  
  [page 107] Remove a blocked user from the block list.

- `unblock_user(User, Port, Dir) -> true | {error, Reason}`  
  [page 107] Remove a blocked user from the block list.

- `unblock_user(User, Address, Port, Dir) -> true | {error, Reason}`  
  [page 107] Remove a blocked user from the block list.

- `event(What, Port, Dir, Data) -> ignored`  
  [page 108] This function is called whenever an event occurs in mod_security.

- `event(What, Address, Port, Dir, Data) -> ignored`  
  [page 108] This function is called whenever an event occurs in mod_security.

**mod_trace**

No functions are exported.
Inets is a container for Internet clients and servers. Currently, an HTTP server, an FTP client and, unsupported, an HTTP client has been incorporated in Inets. The HTTP server is an efficient implementation of HTTP 1.1 as defined in RFC 2616, namely a Web server.

The HTTP client is developed by Johan Blom of Mobile Arts AB (see also sowap.sf.net\(^1\)). The only documentation is the source code.

### Configuration

It is possible to start a number of Web servers in an embedded system using the services config parameter from an application config file. A minimal application config file (from now on referred to as inets.config) starting two HTTP servers typically looks as follows:

```erlang
[[inets,
  [{services, [{httpd, "/var/tmp/server_root/conf/8888.conf"},
               {httpd, "/var/tmp/server_root/conf/8080.conf"}]}]].
```

A server config file is specified for each HTTP server to be started. The config file syntax and semantics is described in httpd(3) [page 27].

inets.config can be tested by copying the example server root to a specific installation directory, as described in httpd(3) [page 30]. The example below shows a manual start of an Erlang node, using inets.config, and the start of two HTTP servers listening on ports 8888 and 8080.

```bash
$ erl -config ./inets
Erlang (BEAM) emulator version 4.9
Eshell V4.9 (abort with ^G)
1> application:start(inets).
ok
```

### SEE ALSO

httpd(3) [page 27]

---

\(^1\)URL: http://sowap.sf.net/
The `ftp` module implements a client for file transfer according to a subset of the File Transfer Protocol (see RFC 959).

The following is a simple example of an `ftp` session, where the user `guest` with password `password` logs on to the remote host `erlang.org`, and where the file `appl.erl` is transferred from the remote to the local host. When the session is opened, the current directory at the remote host is `/home/guest`, and `/home/fred` at the local host. Before transferring the file, the current local directory is changed to `/home/eproj/examples`, and the remote directory is set to `/home/guest/appl/examples`.

```
ok, Pid = ftp:open("erlang.org").
ok,<<0.22.0>>
ftp:user(Pid, "guest", "password").
ok
ftp:pwd(Pid).
ok, "/home/guest"
ftp:cd(Pid, "appl/examples").
ok
ftp:lpwd(Pid).
ok, "/home/fred"
ftp:lcd(Pid, "/home/eproj/examples").
ok
ftp:recv(Pid, "appl.erl").
ok
ftp:close(Pid).
ok
```

In addition to the ordinary functions for receiving and sending files (see `recv/2`, `recv/3`, `send/2` and `send/3`) there are functions for receiving remote files as binaries (see `recv_bin/2`) and for sending binaries to be stored as remote files (see `send_bin/3`).

There is also a set of functions for sending and receiving contiguous parts of a file to be stored in a remote file (for send see `send_chunk_start/2`, `send_chunk/2` and `send_chunk_end/1` and for receive see `recv_chunk_start/2` and `recv_chunk/1`).

The particular return values of the functions below depend very much on the implementation of the FTP server at the remote host. In particular the results from `ls` and `nlist` varies. Often real errors are not reported as errors by `ls`, even if for instance a file or directory does not exist. `nlist` is usually more strict, but some implementations have the peculiar behaviour of responding with an error, if the request is a listing of the contents of directory which exists but is empty.
Exports

account(Pid,Account) -> ok | {error, Reason}
Types:
- Pid = pid()
- Account = string()
- Reason = eacct | econn
If an account is needed for an operation set the account with this operation.

append(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}
Types:
- Pid = pid()
- LocalFile = RemoteFile = string()
- Reason = epath | elogin | econn | enospc | epnospc | efnamena
Transfers the file LocalFile to the remote server. If RemoteFile is specified, the name of the remote file that the file will be appended to is set to RemoteFile; otherwise the name is set to LocalFile. If the file does not exists the file will be created.

append_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}
Types:
- Pid = pid()
- Bin = binary()()
- RemoteFile = string()
- Reason = epath | elogin | enotbinary | econn | enospc | epnospc | efnamena
Transfers the binary Bin to the remote server and append it to the file RemoteFile. If the file does not exists it will be created.

append_chunk(Pid, Bin) -> ok | {error, Reason}
Types:
- Pid = pid()
- Bin = binary()
- Reason = elogin | echunk | enotbinary | econn
Transfer the chunk Bin to the remote server, which append it into the file specified in the call to append_chunk_start/2.
Note that for some errors, e.g. file system full, it is necessary to to call append_chunk_end to get the proper reason.

append_chunk_start(Pid, File) -> ok | {error, Reason}
Types:
- Pid = pid()
- File = string()
- Reason = epath | elogin | econn
Start the transfer of chunks for appending to the file `File` at the remote server. If the file does not exists it will be created.

```
append_chunk_end(Pid) -> ok | {error, Reason}
```

Types:
- Pid = pid()
- Reason = elogin | echunk | econn | enospc | epnospc | enamena

Stops transfer of chunks for appending to the remote server. The file at the remote server, specified in the call to `append_chunk_start/2` is closed by the server.

```
cd(Pid, Dir) -> ok | {error, Reason}
```

Types:
- Pid = pid()
- Dir = string()
- Reason = epath | elogin | econn

Changes the working directory at the remote server to `Dir`.

```
close(Pid) -> ok
```

Types:
- Pid = pid()

Ends the ftp session.

```
delete(Pid, File) -> ok | {error, Reason}
```

Types:
- Pid = pid()
- File = string()
- Reason = epath | elogin | econn

Deletes the file `File` at the remote server.

```
formaterror(Tag) -> string()
```

Types:
- Tag = {error, atom()} | atom()

Given an error return value `{error, Reason}`, this function returns a readable string describing the error.

```
lcd(Pid, Dir) -> ok | {error, Reason}
```

Types:
- Pid = pid()
- Dir = string()
- Reason = epath

Changes the working directory to `Dir` for the local client.

```
lpwd(Pid) -> {ok, Dir}
```
Types:
- Pid = pid()

Returns the current working directory at the local client.

\( \text{ls} \)(Pid [, Dir]) -> {ok, Listing} | {error, Reason}

Types:
- Pid = pid()
- Dir = string()
- Listing = string()
- Reason = epath | elogin | econn

Returns a listing of the contents of the remote current directory (\( \text{ls}/1 \)) or the specified directory (\( \text{ls}/2 \)). The format of Listing is operating system dependent (on UNIX it is typically produced from the output of the \( \text{ls} \ -1 \) shell command).

\( \text{mkdir} \)(Pid, Dir) -> ok | {error, Reason}

Types:
- Pid = pid()
- Dir = string()
- Reason = epath | elogin | econn

Creates the directory Dir at the remote server.

\( \text{nlist} \)(Pid [, Dir]) -> {ok, Listing} | {error, Reason}

Types:
- Pid = pid()
- Dir = string()
- Listing = string()
- Reason = epath | elogin | econn

Returns a listing of the contents of the remote current directory (\( \text{nlist}/1 \)) or the specified directory (\( \text{nlist}/2 \)). The format of Listing is a stream of file names, where each name is separated by \( \text{CRLF} \) or \( \text{NL} \). Contrary to the \( \text{ls} \) function, the purpose of \( \text{nlist} \) is to make it possible for a program to automatically process file name information.

\( \text{open} \)(Host [, Port] [, Flags]) -> {ok, Pid} | {error, Reason}
\( \text{open} \)([option_list, Option_list]) -> {ok, Pid} | {error, Reason}

Types:
- Host = string() | ip_address()
- ip_address() = {byte(), byte(), byte(), byte()}
- byte() = 0 | 1 | ... | 255
- Port = integer()
- Flags = [Flag]
- Flag = verbose | debug
- Pid = pid()
- Reason = ehost
Option list=[Options]
Option=[host,Host] | [port,Port] | [flags,Flags] | [timeout,Timeout]
Timeout=integer()

Opens a session with the ftp server at Host. The argument Host is either the name of the host, its IP address in dotted decimal notation (e.g. "150.236.14.136"), or a tuple of arity 4 (e.g. {150, 236, 14, 136}).

If Port is supplied, a connection is attempted using this port number instead of the default (21).

If the atom verbose is included in Flags, response messages from the remote server will be written to standard output.

The file transfer type is set to binary when the session is opened.

The current local working directory (cf. lpwd/1) is set to the value reported by file:get_cwd/1, the wanted local directory.

The timeout value is default set to 60000 milliseconds.

The return value Pid is used as a reference to the newly created ftp client in all other functions. The ftp client process is linked to the caller.

pwd(Pid) -> {ok, Dir} | {error, Reason}

Types:
- Pid = pid()
- Reason = elogin | econn

Returns the current working directory at the remote server.

recv(Pid, RemoteFile [, LocalFile]) -> ok | {error, Reason}

Types:
- Pid = pid()
- RemoteFile = LocalFile = string()
- Reason = epath | elogin | econn | file_write_error_reason()
- file_write_error_reason() = see file:write/2

Transfer the file RemoteFile from the remote server to the file system of the local client. If LocalFile is specified, the local file will be LocalFile; otherwise it will be RemoteFile.

If the file write fails (e.g. enospc), then the command is aborted and {error, file_write_error_reason()} is returned. The file is however not removed.

recv_bin(Pid, RemoteFile) -> {ok, Bin} | {error, Reason}

Types:
- Pid = pid()
- Bin = binary()
- RemoteFile = string()
- Reason = epath | elogin | econn

Transfers the file RemoteFile from the remote server and receives it as a binary.

recv_chunk_start(Pid, RemoteFile) -> ok | {error, Reason}
Types:
- $\text{Pid} = \text{pid()}$
- $\text{RemoteFile} = \text{string()}$
- $\text{Reason} = \text{epath} \mid \text{elogin} \mid \text{econn}$

Start transfer of the file $\text{RemoteFile}$ from the remote server.

recv_chunk($\text{Pid}$) $\rightarrow$ ok $\mid$ {ok, Bin} $\mid$ {error, Reason}

Types:
- $\text{Pid} = \text{pid()}$
- $\text{Bin} = \text{binary()}$
- $\text{Reason} = \text{epath} \mid \text{eclosed} \mid \text{econn}$

Receive a chunk of the remote file ($\text{RemoteFile}$ of $\text{recv\_chunk\_start}$). The return values have the following meaning:
- {ok} the transfer is complete.
- {ok, Bin} just another chunk of the file.
- {error, Reason} transfer failed.

rename($\text{Pid}$, $\text{Old}$, $\text{New}$) $\rightarrow$ ok $\mid$ {error, Reason}

Types:
- $\text{Pid} = \text{pid()}$
- $\text{CurrFile} = \text{NewFile} = \text{string()}$
- $\text{Reason} = \text{epath} \mid \text{elogin} \mid \text{econn}$

Renames $\text{Old}$ to $\text{New}$ at the remote server.

rmdir($\text{Pid}$, $\text{Dir}$) $\rightarrow$ ok $\mid$ {error, Reason}

Types:
- $\text{Pid} = \text{pid()}$
- $\text{Dir} = \text{string()}$
- $\text{Reason} = \text{epath} \mid \text{elogin} \mid \text{econn}$

Removes directory $\text{Dir}$ at the remote server.

send($\text{Pid}$, $\text{LocalFile}$ [$\text{RemoteFile}$]) $\rightarrow$ ok $\mid$ {error, Reason}

Types:
- $\text{Pid} = \text{pid()}$
- $\text{LocalFile} = \text{RemoteFile} = \text{string()}$
- $\text{Reason} = \text{epath} \mid \text{elogin} \mid \text{econn} \mid \text{etnospc} \mid \text{enomsc} \mid \text{efnamena}$

Transfers the file $\text{LocalFile}$ to the remote server. If $\text{RemoteFile}$ is specified, the name of the remote file is set to $\text{RemoteFile}$; otherwise the name is set to $\text{LocalFile}$.

send\_bin($\text{Pid}$, $\text{Bin}$, $\text{RemoteFile}$) $\rightarrow$ ok $\mid$ {error, Reason}

Types:
- $\text{Pid} = \text{pid()}$
- Bin = binary()
- RemoteFile = string()
- Reason = epath | elogin | enotbinary | econn | etnospc | epnospc | efnamena

Transfers the binary Bin into the file RemoteFile at the remote server.

send_chunk(Pid, Bin) -> ok | {error, Reason}

Types:
- Pid = pid()
- Bin = binary()
- Reason = elogin | echunk | enotbinary | econn

Transfer the chunk Bin to the remote server, which writes it into the file specified in the call to send_chunk_start/2.

Note that for some errors, e.g. file system full, it is necessary to call send_chunk_end to get the proper reason.

send_chunk_start(Pid, File) -> ok | {error, Reason}

Types:
- Pid = pid()
- File = string()
- Reason = epath | elogin | econn

Start transfer of chunks into the file File at the remote server.

send_chunk_end(Pid) -> ok | {error, Reason}

Types:
- Pid = pid()
- Reason = elogin | echunk | econn | etnospc | epnospc | efnamena

Stops transfer of chunks to the remote server. The file at the remote server, specified in the call to send_chunk_start/2 is closed by the server.

type(Pid, Type) -> ok | {error, Reason}

Types:
- Pid = pid()
- Type = ascii | binary
- Reason = etype | elogin | econn

Sets the file transfer type to ascii or binary. When an ftp session is opened, the transfer type is set to binary.

user(Pid, User, Password) -> ok | {error, Reason}

Types:
- Pid = pid()
- User = Password = string()
- Reason = euser | econn

Performs login of User with Password.
user(Pid, User, Password, Account) -> ok | {error, Reason}

Types:
- Pid = pid()
- User = Password = string()
- Reason = euser | econn

Performs login of User with Password to the account specified by Account.

**ERRORS**

The possible error reasons and the corresponding diagnostic strings returned by formaterror/1 are as follows:

- echunk Synchronisation error during chunk sending.
  A call has been made to send_chunk/2 or send_chunk_end/1, before a call to send_chunk_start/2; or a call has been made to another transfer function during chunk sending, i.e. before a call to send_chunk_end/1.
- eclosed The session has been closed.
- econn Connection to remote server prematurely closed.
- ehost Host not found, FTP server not found, or connection rejected by FTP server.
- elogin User not logged in.
- enotbinary Term is not a binary.
- enospace Insufficient storage space in system [452].
- etnospc Exceeded storage allocation (for current directory or dataset) [552].
- efnamena File name not allowed [553].

**SEE ALSO**

HTTP (Hypertext Transfer Protocol) is an application-level protocol with the lightness and speed necessary for distributed, collaborative and hyper-media information systems. The httpd module handles HTTP requests as described in RFC 2616 with a few exceptions such as Gateway and Proxy functionality. The same is true for servers written by NCSA and others.

The server implements numerous features such as SSL [page 43] (Secure Sockets Layer), ESI [page 83] (Erlang Scripting Interface), CGI [page 75] (Common Gateway Interface), User Authentication [page 63] (using Mnesia, dets or plain text database), Common Logfile Format (with [page 79] or without [page 99] disklog(3) support), URL Aliasing [page 60], Action Mappings [page 58], Directory Listings [page 78] and SSI [page 96] (Server-Side Includes).

The configuration [page 27] of the server is done using Apache2-style configuration directives. The goal is to be plug-in compatible with Apache.

All server functionality has been implemented using an especially crafted server API; EWSAPI [page 34] (Erlang Web Server API). This API can be used to advantage by all who wants to enhance the server core functionality, for example custom logging and authentication.

**RUN-TIME CONFIGURATION**

All functionality in the server can be configured using Apache-style configuration directives stored in a configuration file. Take a look at the example config files in the conf directory3 of the server root for a complete understanding.

An alphabetical list of all config directives:

- AccessFileName [page 91]
- Action [page 58]
- Alias [page 60]
- allow [page 67]
- AuthName [page 66]
- AuthGroupFile [page 66]
- AuthUserFile [page 65]
- BindAddress [page 43]
- DefaultType [page 44]
- deny [page 67]

---

2URL: http://www.apache.org
3In Windows: %INETS_ROOT%\examples\server_root\conf. In UNIX: $INETS_ROOT/examples/server_root/conf.
- `<Directory>` [page 63]
- `DirectoryIndex` [page 60]
- `DisableChunkedTransferEncodingSend` [page 44]
- `DocumentRoot` [page 44]
- `ErlScriptAlias` [page 86]
- `ErlScriptNoCache` [page 86]
- `ErlScriptTimeout` [page 86]
- `ErrorLog` [page 99]
- `ErrorDiskLog` [page 80]
- `ErrorDiskLogSize` [page 80]
- `EvalScriptAlias` [page 87]
- `KeepAlive` [page 44]
- `KeepAliveTimeout` [page 45]
- `MaxBodySize` [page 45]
- `MaxBodyAction` [page 45]
- `MaxClients` [page 45]
- `MaxHeaderSize` [page 46]
- `MaxHeaderAction` [page 46]
- `MaxKeepAliveRequest` [page 46]
- `Modules` [page 46]
- `Port` [page 47]
- `require` [page 68]
- `SecurityAuthTimeout` [page 106]
- `SecurityBlockTime` [page 105]
- `SecurityCallbackModule` [page 106]
- `SecurityDataFile` [page 104]
- `SecurityDiskLog` [page 80]
- `SecurityDiskLogSize` [page 80]
- `SecurityFailExpireTime` [page 105]
- `SecurityLog` [page 100]
- `SecurityMaxRetries` [page 105]
- `ServerAdmin` [page 47]
- `ServerName` [page 47]
- `ServerRoot` [page 47]
- `Script` [page 58]
- `ScriptAlias` [page 61]
- `ScriptNoCache` [page 75]
- `ScriptTimeout` [page 76]
- `SocketType` [page 48]
- `SSLCACertificateFile` [page 48]
- `SSLCertificateFile` [page 48]
- SSLCertificateKeyFile [page 48]
- SSLCiphers [page 49]
- SSLPasswordCallbackFunction [page 49]
- SSLPasswordCallbackModule [page 50]
- SSLVerifyClient [page 49]
- SSLVerifyDepth [page 49]
- TransferLog [page 100]
- TransferDiskLog [page 81]
- TransferDiskLogSize [page 81]

**EWSAPI MODULES**

All server functionality has been implemented using EWSAPI (Erlang Web Server API) modules. The following modules are available:

- **httpd_core** [page 42] Core features.
- **mod_actions** [page 58] Filetype/method-based script execution.
- **mod_alias** [page 60] Aliases and redirects.
- **mod_auth** [page 63] User authentication using text files, mnesia or dets.
- **mod_browser** [page 74] Tries to recognize the clients browser and operating system.
- **mod_cgi** [page 75] Invoking of CGI scripts.
- **mod_dir** [page 78] Basic directory handling.
- **mod_disk_log** [page 79] Standard logging in the Common Logfile Format using `disk_log(3)`. 
- **mod_esi** [page 83] Efficient Erlang Scripting.
- **mod_get** [page 89] Handle HTTP GET Method.
- **mod_head** [page 90] Handle HTTP HEAD Method.
- **mod_htacceess** [page 91] User configurable user authentication.
- **mod_include** [page 96] Server-parsed documents
- **mod_log** [page 99] Standard logging in the Common Logfile Format using text files.
- **mod_range** [page 102] Handles GET requests for parts of files.
- **mod_responsecontrol** [page 103] Controls the restrictions in the request i.e. If-Match, If-Range,If-Modified-Since, and take the appropriate action.
- **mod_security** [page 104] Filter authenticated requests.
- **mod_trace** [page 109] Handles, HTTP TRACE Method

Each module has a man page that further describe it's functionality.

The *Module* configuration directive can be used to alter the server behavior, by alter the EWSAPI Module Sequence. An example module sequence can be found in the example config directory. If this needs to be altered read the EWSAPI Module Interaction [page 39] section below.
Exports

```
start()
start(ConfigFile) -> ServerRet
start_link()
start_link(ConfigFile) -> ServerRet
```

Types:
- ConfigFile = string()
- ServerRet = [ok, Pid] | ignore | [error,REason] | [stop, SReason]
- Pid = pid()
- REason = [already_started, Pid] | term()
- SReason = string()

\`start/1\` and \`start_link/1\` starts a server as specified in the given ConfigFile. The ConfigFile supports a number of config directives specified below.

\`start/0\` and \`start_link/0\` starts a server as specified in a hard-wired config file, that is start("/var/tmp/server_root/conf/8888.conf"). Before utilizing \`start/0\` or \`start_link/0\`, copy the example server `root`\(^4\) to a specific installation directory\(^5\) and you have a server running in no time.

If you copy the example server `root` to the specific installation directory it is furthermore easy to start an SSL enabled server, that is start("/var/tmp/server_root/conf/ssl.conf").

```
restart()
restart(Port) -> ok | [error,Reason]
restart(ConfigFile) -> ok | [error,Reason]
restart(Address,Port) -> ok | [error,Reason]
```

Types:
- Port = integer()
- Address = [A,B,C,D] | string() | undefined
- ConfigFile = string()
- Reason = term()

\`restart\` restarts the server and reloads its config file.

The following directives cannot be changed: BindAddress, Port and SocketType. If these should be changed, then a new server should be started instead.

**Note:**
Before the \`restart\` function can be called the server must be blocked [page 31]. After \`restart\` has been called, the server must be unblocked [page 32].

```
stop()
```

\(^4\) In Windows: %INETS_ROOT%\examples\server_root\.
In UNIX: $INETS_ROOT/examples/server_root/.
\(^5\) In Windows: X:\var\tmp\.
In UNIX: /var/tmp/.
stop(Port) -> ServerRet
stop(ConfigFile) -> ServerRet
stop(Address,Port) -> ServerRet

Types:
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- ConfigFile = string()
- ServerRet = ok | not_started

stop/2 stops the server which listens to the specified Port on Address.
stop(integer()) stops a server which listens to a specific Port. stop(string())
eextracts BindAddress and Port from the config file and stops the server which
listens to the specified Port on Address. stop/0 stops a server which listens to
port 8888, that is stop(8888).

block() -> ok | {error,Reason}
block(Port) -> ok | {error,Reason}
block(ConfigFile) -> ok | {error,Reason}
block(Address,Port) -> ok | {error,Reason}
block(Port,Mode) -> ok | {error,Reason}
block(ConfigFile,Mode) -> ok | {error,Reason}
block(Address,Port,Mode) -> ok | {error,Reason}
block(ConfigFile,Mode,Timeout) -> ok | {error,Reason}
block(Address,Port,Mode,Timeout) -> ok | {error,Reason}

Types:
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- ConfigFile = string()
- Mode = disturbing | non_disturbing
- Timeout = integer()
- Reason = term()

This function is used to block a server. The blocking can be done in two ways,
disturbing or non-disturbing.

By performing a disturbing block, the server is blocked forcefully and all
ongoing requests are terminated. No new connections are accepted. If a timeout
time is given then on-going requests are given this much time to complete before the server is
forcefully blocked. In this case no new connections is accepted.

A non-disturbing block is more gracefull. No new connections are accepted, but the
ongoing requests are allowed to complete. If a timeout time is given, it waits this long
before giving up (the block operation is aborted and the server state is once more
not-blocked)

Default mode is disturbing.
Default port is 8888

unblock() -> ok | {error,Reason}
unblock(Port) -> ok | {error,Reason}
unblock(ConfigFile) -> ok | {error,Reason}
unblock(Address,Port) -> ok | {error,Reason}

Types:
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- ConfigFile = string()
- Reason = term()

Unblocks a server. If the server is already unblocked this is a no-op. If a block is
ongoing, then it is aborted (this will have no effect on ongoing requests).

parse_query(QueryString) -> ServerRet

Types:
- QueryString = string()
- ServerRet = [{Key,Value}]
- Key = Value = string()

parse_query/1 parses incoming data to erl and eval scripts (See mod_esi(3) [page
83]) as defined in the standard URL format, that is '+' becomes 'space' and decoding of
hexadecimal characters (%xx).

ESWAPI CALLBACK FUNCTIONS

Exports

Module:do(Info) -> {proceed, OldData} | {proceed, NewData} | {break, NewData} | done

Types:
- Info = mod()
-OldData = list()
- NewData = [{response,{StatusCode,Body}}] || [{response, {response,Head,Body2}}] ||
  [{response, {already_sent,StatusCode,Size}}]
- StatusCode = integer()
- Body = String
- Head = [HeaderOption]
- HeaderOption = {Key, Value} | {code, StatusCode}
- Key = allow | cache_control | content_MD5 | content_encoding | content_encoding
  | content_language.Value | content_length | content_location | content_range | content_type | date | etag | expires | last_modified | location | pragma | retry_after
  | server | trailer | transfer_encoding
- Value = string()
- Body2 = {Fun,Arg} | Body | nobody
- Fun = fun( Arg ) -> sent | close | Body
- Arg = [term()]
Info is a record of type mod, this record is defined in httpd.hrl see EWSAPI Module programming [page 34] for more information.

When a valid request reaches httpd it calls do/1 in each module defined by the Modules configuration directive. The function may generate data for other modules or a response that can be sent back to the client.

The field data in Info is a list. This list will be the list returned from the from the last call to do/1.

Body is the body of the http-response that will be sent back to the client an appropriate header will be appended to the message. StatusCode will be the status code of the response see RFC 2616 for the appropriate values.

Head is a key value list of HTTP header fields the server will construct a HTTP header from this data. See RFC 2616 for the appropriate value for each header field. If the client is a HTTP/1.0 client then the server will filter the list so that only HTTP/1.0 header fields will be sent back to the client.

If Body2 is returned and equal to {Fun, Arg} The Web server will try apply/2. on Fun with Arg as argument and expect that the fun either returns a list (Body) that is a HTTP-response or the atom sent if the HTTP-response is sent back to the client. If close is returned from the fun something has gone wrong and the server will signal this to the client by closing the connection.

Module:load(Line, Context) -> eof | ok | {ok, NewContext} | {ok, NewContext, Directive} | {ok, NewContext, DirectiveList} | {error, Reason}

Types:
- Line = string()
- Directive = (DirectiveKey, DirectiveValue)
- DirectiveKey = DirectiveValue = term()
- Reason = term()

load/2 takes a row Line from the configuration file and tries to convert it to a key value tuple. If a directive is dependent on other directives, the directive may create a context. If the directive is not dependent on other directives return {ok, []}, Directive, otherwise return a new context, that is {ok, NewContext} or {ok, Context, Directive}. If {error, Reason} is returned the configuration directive is assumed to be invalid.


Types:
- DirectiveKey = DirectiveValue = term()
- Directive = {Key, Value}
- Reason = term()
When all rows in the configuration file is read the function store/2 is called for each configuration directive. This makes it possible for a directive to alter other configuration directives. DirectiveList is a list of all configuration directives read in from load. If a directive may update other configuration directives then use this function.

Module:remove(ConfigDB) -> ok | {error, Reason}

Types:
- ConfigDB = ets_table()
- Reason = term()

When httpd shutdown it will try to execute remove/1 in each ewsapi module. The ewsapi programmer may use this to close ets tables, save data, or close down background processes.

**EWSAPI MODULE PROGRAMMING**

**Note:**

The Erlang/OTP programming knowledge required to undertake an EWSAPI module is quite high and is not recommended for the average server user. It is best to only use it to add core functionality, e.g. custom authentication or a RFC 21096 implementation.

EWSAPI should only be used to add core functionality to the server. In order to generate dynamic content, for example on-the-fly generated HTML, use the standard CGI [page 75] or ESI [page 83] facilities instead.

As seen above the major part of the server functionality has been realized as EWSAPI modules (from now on only called modules). If you intend to write your own server extension start with examining the standard modules\(^7\) mod_*.*erl and note how to they are configured in the example config directory\(^8\).

Each module implements do/1 (mandatory), load/2, store/2 and remove/1. The latter functions are needed only when new config directives are to be introduced, see EWSAPI Module Configuration [page 37].

A module can choose to export functions to be used by other modules in the EWSAPI Module Sequence (See Modules [page 46] config directive). This should only be done as an exception! The goal is to keep each module self-sustained thus making it easy to alter the EWSAPI Module Sequence without any unnecessary module dependencies.

A module can furthermore use data generated by previous modules in the EWSAPI Module Sequence or generate data to be used by consecutive EWSAPI modules. This is made possible due to an internal list of key-value tuples, see EWSAPI Module Interaction [page 39].

---

\(^7\)In Windows: %INETS_ROOT%\src\ In UNIX: $INETS_ROOT/src/.

\(^8\)In Windows: %INETS_ROOT%\examples\server_root\conf\ In UNIX: $INETS_ROOT/examples/server_root/conf/.
The server executes do/1 (using apply/1) for each module listed in the Modules [page 46] config directive. do/1 takes the record mod as an argument, as described below. See httpd.hrl9:

\[-record(mod, \{data=[],
  socket_type=ip_comm,
  socket,
  config_db,
  method,
  absolute_uri,
  request_uri,
  http_version,
  request_line,
  parsed_header=[],
  entity_body,
  connection\}).\]

The fields of the mod record has the following meaning:

data  Type \{\{InteractionKey,InteractionValue\}\} is used to propagate data between modules (See EWSAPI Module Interaction [page 39] below). Depicted interaction_data() in function type declarations.
socket_type  socket_type(), Indicates whether it is a ip socket or a ssl socket.
socket  The actual socket in ip_comm or ssl format depending on the socket_type.
config_db  The config file directives stored as key-value tuples in an ETS-table. Depicted config_db() in function type declarations.
method  Type "GET" | "POST" | "HEAD" | "TRACE", that is the HTTP method.
absolute_uri  If the request is a HTTP/1.1 request the URI might be in the absolute URI format. In that case httpd will save the absolute URI in this field. An Example of an absolute URI could be "http://ServerName:Port/cgi-bin/find.pl?person=jocke"
request_uri  The Request-URI as defined in RFC 1945, for example "cgi-bin/find.pl?person=jocke"
http_version  The HTTP version of the request, that is "HTTP/0.9", "HTTP/1.0", or "HTTP/1.1".
request_line  The Request-Line as defined in RFC 1945, for example "GET /cgi-bin/find.pl?person=jocke HTTP/1.0".
parsed_header  Type \{\{HeaderKey,HeaderValue\}\}, parsed_header contains all HTTP header fields from the HTTP-request stored in a list as key-value tuples. See RFC 2616 for a listing of all header fields. For example the date field would be stored as: \{"date","Wed, 15 Oct 1997 14:35:17 GMT\}". RFC 2616 defines that HTTP is a case insensitive protocol and the header fields may be in lowercase or upper case. Httpd will ensure that all header field names are in lowe case.
entity_body  The Entity-Body as defined in RFC 2616, for example data sent from a CGI-script using the POST method.
connection  true | false  If set to true the connection to the client is a persistent
connections and will not be closed when the request is served.

A do/1 function typically uses a restricted set of the mod record’s fields to do its stuff
and then returns a term depending on the outcome. The outcome is either
{proceed, NewData} | {break, NewData} | done. Which has the following meaning:

{proceed, OldData}  Proceed to next module as nothing happened. OldData refers to
the data field in the incoming mod record.

{proceed, [[response, {StatusCode, Response}]] | OldData}  A generated response
(Response) should be sent back to the client including a status code (StatusCode)
as defined in RFC 2616.

{proceed, [[response, {response, Head, Body}]] | OldData}  Head is a list of
key/value tuples. Each HTTP-header field that will be in the response header must
be in the list. The following atoms are allowed header field keys:

  code,
  allow,
  cache_control,
  content_MD5,
  content_encoding,
  content_language,
  content_length,
  content_location,
  content_range,
  content_type,
  date,
  etag,
  expires,
  last_modified
  location,
  pragma,
  retry_after,
  server,
  trailer,
  transfer_encoding,

The key code is a special case since the value to this key is a integer and not a
string. The value will be used as status code for the response.

The benefit of this method is that the same request may be generated for both
HTTP/1.1 and HTTP/1.0 clients since the list of header fields will be filtered due
to the version of the request. Body is either the tuple (Fun,Arg) a list or the atom
nobody. If Body is (Fun,Arg) Fun is assumed to be a fun that returns either close,
sent or (ok,Body). If close is returned the connection to the client will be closed.
If sent is returned the connection to the client will be maintained if the connection
is persistent. If (ok,Body) is returned the Body is sent back to the client as the
response body.

This is the prefered response since it makes it a lot easier to generate a response
that can be sent back to both HTTP/1.0 and HTTP/1.1 clients. A warning might
be in place that if content_length is not send the client might hang if the body is
not send with chunked encoding.
A generated response has already manually been sent back to the client, using the socket provided by the mod record (see above), including a valid status code (StatusCode) as defined in RFC 1945 and the size (Size) of the response in bytes.

A generic status message should be sent back to the client (if the next module in the EWSAPI Module Sequence does not think otherwise!) including at status code (StatusCode) as defined in RFC 1945, a term describing how the client will be informed (PhraseArgs) and a reason (Reason) to why it happened. Read more about PhraseArgs in httpd_util: message/3 [page 55].

Has the same semantics as proceed above but with one important exception; No more modules in the EWSAPI Module Sequence are executed. Use with care!

No more modules in the EWSAPI Module Sequence are executed and no response should be sent back to the client. If no response is sent back to the client, using the socket provided by the mod record, the client will typically get a “Document contains no data...”.

**Warning:**
Each consecutive module in the EWSAPI Module Sequence can choose to ignore data returned from the previous module either by trashing it or by “enhancing” it.

Keep in mind that there exist numerous utility functions to help you as an EWSAPI module programmer, e.g. nifty lookup of data in ETS-tables/key-value lists and socket utilities. You are well advised to read httpd_util(3) [page 52] and httpd_socket(3) [page 51].

**EWSAPI MODULE CONFIGURATION**

An EWSAPI module can define new config directives thus making it configurable for a server end-user. This is done by implementing load/2 (mandatory), store/2 and remove/1.

The config file is scanned twice (load/2 and store/2) and a cleanup is done (remove/1) during server shutdown. The reason for this is: “A directive A can be dependent upon another directive B which occur either before or after directive A in the config file”. If a directive does not depend upon other directives; store/2 can be left out. Even remove/1 can be left out if neither load/2 nor store/2 open files or create ETS-tables etc.

load/2 takes two arguments. The first being a row from the config file, that is a config directive in string format such as “Port 80”. The second being a list of key-value tuples (which can be empty!) defining a context. A context is needed because there are directives which defines inner contexts, that is directives within directives, such as <Directory> [page 63]. load/2 is expected to return:

- **eof** End-of-file found.
- **ok** Ignore the directive.
{ok,ContextList} Introduces a new context by adding a tuple to the context list or
reverts to a previous context by removing a tuple from the context list. See
63] which reverts to a previous one (Advice: Look at the source code for
mod_auth:load/2).

{ok,ContextList,[DirectiveKey,DirectiveValue]} Introduces a new context (see
above) and defines a new config directive, e.g. {port,80}.

{ok,ContextList,[[DirectiveKey,DirectiveValue]]} Introduces a new context
(see above) and defines a several new config directives, e.g.
[[port,80],[foo,on]].

{error,Reason} An invalid directive.

A naive example of a load function from mod_log.erl:

define_load_func() ->
  {ok,ContextList} -> load(ContextList,{});
  load([T,R,S,F,E,L,O,G, |TransferLog],[]) ->
    ok, {{transfer_log, httpd_conf:clean(TransferLog)});
  load([E,R,O,L, |ErrorLog],[]) ->
    ok, {{error_log, httpd_conf:clean(ErrorLog)}];

store/2 takes two arguments. The first being a tuple describing a directive
([DirectiveKey,DirectiveValue]) and the second argument a list of tuples describing
all directives ([[DirectiveKey,DirectiveValue]]). This makes it possible for
directive A to be dependent upon the value of directive B. store/2 is expected to
return:

{ok,[DirectiveKey,NewDirectiveValue]} Introduces a new value for the specified
directive replacing the old one generated by load/2.

{ok,[[DirectiveKey,NewDirectiveValue]]} Introduces new values for the specified
directives replacing the old ones generated by load/2.

{error,Reason} An invalid directive.

A naive example of a store function from mod_log.erl:

define_store_func() ->
  store([error_log,ErrorLog],ConfigList) ->
    case create_log(ErrorLog,ConfigList) of
      ok, {error_log, ErrorLogStream} ->
        ok, [error_log,ErrorLogStream];
      {error,Reason} ->
        {error,Reason}
    end.

remove/1 takes the ETS-table representation of the config-file as input. It is up to you
to cleanup anything you opened or created in load/2 or store/2. remove/1 is expected to
return:

ok If the cleanup was successful.

{error,Reason} If the cleanup failed.

A naive example from mod_log.erl:
remove(ConfigDB) ->
  lists:foreach(fun([Stream]) -> file:close(Stream) end,
    ets:match(ConfigDB, [transfer_log,'$1']))),
  lists:foreach(fun([Stream]) -> file:close(Stream) end,
    ets:match(ConfigDB, [error_log,'$1']))),
  ok.

EWSAPI MODULE INTERACTION

Modules in the EWSAPI Module Sequence [page 46] uses the \texttt{mod} record's data field to propagate responses and status messages, as seen above. This data type can be used in a more versatile fashion. A module can prepare data to be used by subsequent EWSAPI modules, for example the \texttt{mod_alias} [page 60] module appends the tuple \texttt{[real.name,string()]} to inform subsequent modules about the actual file system location for the current URL.

Before altering the EWSAPI Modules Sequence you are well advised to observe what types of data each module uses and propagates. Read the “EWSAPI Interaction” section for each module.

An EWSAPI module can furthermore export functions to be used by other EWSAPI modules but also for other purposes, for example \texttt{mod_alias:path/3} [page 62] and \texttt{mod_auth:add_user/5} [page 69]. These functions should be described in the module documentation.

\textbf{Note:}

When designing an EWSAPI module try to make it self-contained, that is avoid being dependent on other modules both concerning exchange of interaction data and the use of exported functions. If you are dependent on other modules do state this clearly in the module documentation!

You are well advised to read \texttt{httpd_util(3)} [page 52] and \texttt{httpd_conf(3)} [page 40].

BUGS

If a Web browser connect itself to an SSL enabled server using a URL not starting with \texttt{https://} the server will hang due to an ugly bug in the SSLeay package!

SEE ALSO

\texttt{httpd_core(3)} [page 42], \texttt{httpd_conf(3)} [page 40], \texttt{httpd_socket(3)} [page 18], \texttt{httpd_util(3)} [page 52], \texttt{inets(6)} [page 18].
This module provides the EW S A PI programmer with utility functions for adding run-time configuration directives.

**Warning:**
The current implementation of E W S A PI is under review and feedback is welcomed.

## Exports

**check_enum**(*EnumString*, *ValidEnumStrings*) \(\rightarrow\) *Result*

Types:
- *EnumString* = string()
- *ValidEnumStrings* = [string()]
- *Result* = \{ok, atom()\} | \{error, not_valid\}

*check_enum/2* checks if *EnumString* is a valid enumeration of *ValidEnumStrings* in which case it is returned as an atom.

**clean**(*String*) \(\rightarrow\) *Stripped*

Types:
- *String* = *Stripped* = string()

clean/1 removes leading and/or trailing white spaces from *String*.

**custom_clean**(*String*, *Before*, *After*) \(\rightarrow\) *Stripped*

Types:
- *Before* = *After* = regexp()
- *String* = *Stripped* = string()

custom_clean/3 removes leading and/or trailing white spaces and custom characters from *String*. *Before* and *After* are regular expressions, as defined in regexp(3), describing the custom characters.

**is_directory**(*FilePath*) \(\rightarrow\) *Result*

Types:
- *FilePath* = string()
is_directory/1 checks if FilePath is a directory in which case it is returned. Please read file(3) for a description of enoent, eaccess and enotdir. The definition of the file info record can be found by including file.hrl from the kernel application, see file(3).

is_file(FilePath) -> Result

Types:
- FilePath = string()
- Result = {ok,File} | {error,Reason}
- File = string()
- Reason = string() | enoent | eaccess | enotdir | FileInfo
- FileInfo = File info record

is_file/1 checks if FilePath is a regular file in which case it is returned. Read file(3) for a description of enoent, eaccess and enotdir. The definition of the file info record can be found by including file.hrl from the kernel application, see file(3).

make_integer(String) -> Result

Types:
- String = string()
- Result = {ok,integer()} | {error,nomatch}

make_integer/1 returns an integer representation of String.

SEE ALSO

httpd(3) [page 27]
This manual page summarize the core features of the server not being implemented as EW SAPI modules. The following core config directives are described:

- BindAddress [page 43]
- DefaultType [page 44]
- DocumentRoot [page 44]
- MaxBodyAction [page 45]
- MaxBodySize [page 45]
- MaxClients [page 45]
- KeepAlive [page 44]
- KeepAliveTimeout [page 45]
- MaxHeaderAction [page 46]
- MaxHeaderSize [page 46]
- MaxKeepAliveRequest [page 46]
- Modules [page 46]
- Port [page 47]
- ServerAdmin [page 47]
- ServerName [page 47]
- ServerRoot [page 47]
- SocketType [page 48]
- SSLCACertificateFile [page 48]
- SSLCertificateFile [page 48]
- SSLCertificateKeyFile [page 48]
- SSLCiphers [page 49]
- SSLPasswordCallbackFunction [page 49]
- SSLPasswordCallbackModule [page 50]
- SSLVerifyClient [page 49]
- SSLVerifyDepth [page 49]
- DisableChunkedTransferEncodingSend [page 44]
SECURE SOCKETS LAYER (SSL)

The SSL support is realized using the SSLeay\(^{10}\) package. Please refer to \textit{ssl}(3). SSLeay is an implementation of Netscape's Secure Socket Layer specification - the software encryption protocol specification behind the Netscape Secure Server and the Netscape Navigator Browser.

The SSL Protocol can negotiate an encryption algorithm and session key as well as authenticate a server before the application protocol transmits or receives it's first byte of data. All of the application protocol data is transmitted encrypted, ensuring privacy.

The SSL protocol provides “channel security” which has three basic properties:

- The channel is private. Encryption is used for all messages after a simple handshake is used to define a secret key.
- The channel is authenticated. The server end-point of the conversation is always authenticated, while the client endpoint is optionally authenticated.
- The channel is reliable. The message transport includes a message integrity check (using a MAC).

The SSL mechanism can be enabled in the server by using the SSLCACertificateFile \([\text{page 48}]\), SSLCertificateFile \([\text{page 48}]\), SSLCertificateKeyFile \([\text{page 48}]\), SSLCiphers \([\text{page 49}]\), SSLVerifyDepth \([\text{page 49}]\), and the SSLVerifyClient \([\text{page 49}]\) config directives.

MIME TYPE SETTINGS

Files delivered to the client are MIME typed according to RFC 1590. File suffixes are mapped to MIME types before file delivery.

The mapping between file suffixes and MIME types are specified in the \textit{mime.types} file. The \textit{mime.types} reside within the \texttt{conf} directory of the ServerRoot \([\text{page 47}]\). Refer to the example server root\(^{11}\). MIME types may be added as required to the \textit{mime.types} file and the DefaultType \([\text{page 44}]\) config directive can be used to specify a default mime type.

DIRECTIVE: "BindAddress"

Syntax: \texttt{BindAddress address}
Default: \texttt{BindAddress *}
Module: \texttt{httpd\_core}(3) \([\text{page 42}]\)

\texttt{BindAddress} defines which address the server will listen to. If the argument is * then the server listens to all addresses otherwise the server will only listen to the address specified. Address can be given either as an IP address or a hostname.

\(^{10}\)URL: \url{http://psych.psy.uq.oz.au/~ftp/Crypto/}

\(^{11}\)In Windows: \%INETS\_ROOT\%\examples\server\_root. In UNIX: \$INETS\_ROOT/\examples/\server\_root.
DIRECTIVE: "DefaultType"

Syntax: DefaultType mime-type
Default: None Module: httpd_core(3) [page 42]

When the server is asked to provide a document type which cannot be determined by the MIME Type Settings [page 43], the server must inform the client about the content type of documents and mime-type is used if an unknown type is encountered.

DIRECTIVE: "DisableChunkedTransferEncodingSend"

Syntax: DisableChunkedTransferEncodingSend true | false
Default: false Module: httpd_core(3) [page 42]

This directive tells the server whether to use chunked transfer-encoding when sending a response to a HTTP/1.1 client.

DIRECTIVE: "DocumentRoot"

Syntax: DocumentRoot directory-filename
Default: Mandatory Module: httpd_core(3) [page 42]

DocumentRoot points the Web server to the document space from which to serve documents from. Unless matched by a directive like Alias [page 60], the server appends the path from the requested URL to the DocumentRoot to make the path to the document, for example:

DocumentRoot /usr/web

and an access to http://your.server.org/index.html would refer to /usr/web/index.html.

DIRECTIVE: "KeepAlive"

Syntax: KeepAlive true | false
Default: true Module: httpd_core(3) [page 42]

This directive tells the server whether to use persistent connection or not when the client claims to be HTTP/1.1 compliant. Note: the value of KeepAlive has changed from previous versions to be compliant with Apache.
**DIRECTIVE: "KeepAliveTimeout"**

Syntax: KeepAliveTimeout seconds  
Default: 150  
Module: httpd, core(3) [page 42]

The number of seconds the server will wait for a subsequent request from the client before closing the connection. If the load on the server is high you may want to shorten this.

**DIRECTIVE: "MaxBodyAction"**

Syntax: MaxBodyAction action  
Default: MaxBodyAction close Module: httpd, core(3) [page 42]

MaxBodyAction specifies the action to be taken when the message body limit has been passed.

close  the default and preferred communication type. ip, comm is also used for all remote message passing in Erlang.

reply414  a reply (status) message with code 414 will be sent to the client prior to closing the socket. Note that this code is not defined in the HTTP/1.0 version of the protocol.

**DIRECTIVE: "MaxBodySize"**

Syntax: MaxBodySize size  
Default: MaxBodySize nolimit Module: httpd, core(3) [page 42]

MaxBodySize limits the size of the message body of HTTP request. The reply to this is specified by the MaxBodyAction directive. Valid size is:

nolimit  the default message body limit, e.g. no limit.

integer() any positive number.

**DIRECTIVE: "MaxClients"**

Syntax: MaxClients number  
Default: MaxClients 150 Module: httpd, core(3) [page 42]

MaxClients limits the number of simultaneous requests that can be supported. No more than this number of child server processes can be created.
DIRECTIVE: "MaxHeaderAction"

Syntax: MaxHeaderAction action
Default: MaxHeaderAction close Module: httpd_core(3) [page 42]
MaxHeaderAction specifies the action to be taken when the message Header limit has been passed.

close the socket is closed without any message to the client. This is the default action.
reply414 a reply (status) message with code 414 will be sent to the client prior to closing the socket. Note that this code is not defined in the HTTP/1.0 version of the protocol.

DIRECTIVE: "MaxHeaderSize"

Syntax: MaxHeaderSize size
Default: MaxHeaderSize 10240 Module: httpd_core(3) [page 42]
MaxHeaderSize limits the size of the message header of HTTP request. The reply to this is specified by the MaxHeaderAction directive. Valid size is:

integer() any positive number (default is 10240)
nolimit no limit should be applied

DIRECTIVE: "MaxKeepAliveRequest"

Syntax: MaxKeepAliveRequest NumberOfRequests
Default: Disabled Module: httpd_core(3) [page 42]
The number of request that a client can do on one connection. When the server has responded to the number of requests defined by MaxKeepAliveRequest the server close the connection. The server will close it even if there are queued request.

DIRECTIVE: "Modules"

Syntax: Modules module module ...
Default: Modules mod_get mod_head mod_log Module: httpd_core(3) [page 42]
Modules defines which EWSAPI modules to be used in a specific server setup. module is a module in the code path of the server which has been written in accordance with the EWSAPI [page 34] (Erlang Web Server API). The server executes functionality in each module, from left to right (from now on called EWSAPI Module Sequence).

Before altering the EWSAPI Modules Sequence please observe what types of data each module uses and propagates. Read the “EWSAPI Interaction” section for each module and the EWSAPI Module Interaction [page 39] description in httpd(3).
DIRECTIVE: "Port"

Syntax: Port number
Default: Port 80
Module: httpd_core(3) [page 42]

Port defines which port number the server should use (0 to 65535). Certain port numbers are reserved for particular protocols, i.e., examine your OS characteristics\textsuperscript{12} for a list of reserved ports. The standard port for HTTP is 80.

All ports numbered below 1024 are reserved for system use and regular (non-root) users cannot use them, i.e., to use port 80 you must start the Erlang node as root. (sic!) If you do not have root access choose an unused port above 1024 typically 8000, 8080 or 8888.

DIRECTIVE: "ServerAdmin"

Syntax: ServerAdmin email-address
Default: ServerAdmin unknown@unknown
Module: httpd_core(3) [page 42]

ServerAdmin defines the email-address of the server administrator, to be included in any error messages returned by the server. It may be worth setting up a dedicated user for this because clients do not always state which server they have comments about, for example:

ServerAdmin www-admin@white-house.com

DIRECTIVE: "ServerName"

Syntax: ServerName fully-qualified domain name
Default: - Mandatory -
Module: httpd_core(3) [page 42]

ServerName sets the fully-qualified domain name of the server.

DIRECTIVE: "ServerRoot"

Syntax: ServerRoot directory-filename
Default: - Mandatory -
Module: httpd_core(3) [page 42]

ServerRoot defines a directory-filename where the server has its operational home, e.g., used to store log files and system icons. Relative paths specified in the config file refer to this directory-filename (See mod_log(3) [page 99]).

\textsuperscript{12}In UNIX: /etc/services.
DIRECTIVE: “SocketType”

Syntax: SocketType type
Default: SocketType ip comm
Module: httpd_core(3) [page 42]

SocketType defines which underlying communication type to be used. Valid socket types are:

- ip comm: the default and preferred communication type. ip comm is also used for all remote message passing in Erlang.
- ssl: the communication type to be used to support SSL (Read more about Secure Sockets Layer (SSL) [page 43] in httpd(3)).

DIRECTIVE: “SSLCACertificateFile”

Syntax: SSLCACertificateFile filename
Default: - None -
Module: httpd_core(3) [page 42]

SSLCACertificateFile points at a PEM encoded certificate of the certification authorities. Read more about PEM encoded certificates in the SSL application documentation.

DIRECTIVE: “SSLCertificateFile”

Syntax: SSLCertificateFile filename
Default: - None -
Module: httpd_core(3) [page 42]

SSLCertificateFile points at a PEM encoded certificate. The dummy certificate server.pem13, in the Inets distribution, can be used for test purposes. Read more about PEM encoded certificates in the SSL application documentation.

DIRECTIVE: “SSLCertificateKeyFile”

Syntax: SSLCertificateKeyFile filename
Default: - None -
Module: httpd_core(3) [page 42]

SSLCertificateKeyFile is used to point at a certificate key file. This directive should only be used if a certificate key has not been bundled with the certificate file pointed at by SSLCertificateFile [page 48].

13 In Windows: %INETS%\examples\server_root\ssl\ In UNIX: $INETS/examples/server_root/ssl/.
DIRECTIVE: "SSLVerifyClient"

Syntax: SSLVerifyClient type
Default: - None -
Module: httpd_core(3) [page 42]
Set type to:

0 if no client certificate is required.
1 if the client may present a valid certificate.
2 if the client must present a valid certificate.
3 if the client may present a valid certificate but it is not required to have a valid CA.

Read more about SSL in the application documentation.

DIRECTIVE: "SSLVerifyDepth"

Syntax: SSLVerifyDepth integer
Default: - None -
Module: httpd_core(3) [page 42]
This directive specifies how far up or down the (certification) chain we are prepared to go before giving up.
Read more about SSL in the application documentation.

DIRECTIVE: "SSLCipher"

Syntax: SSLCipher ciphers
Default: - None -
Module: httpd_core(3) [page 42]
SSLCiphers is a colon separated list of ciphers.
Read more about SSL in the application documentation.

DIRECTIVE: "SSLPasswordCallbackFunction"

Syntax: SSLPasswordCallbackFunction function
Default: - None -
Module: httpd_core(3) [page 42]
The SSLPasswordCallbackFunction function in module SSLPasswordCallbackModule is called in order to retrieve the user's password.
Read more about SSL in the application documentation.
DIRECTIVE: "SSLPasswordCallbackModule"

Syntax: SSLPasswordCallbackModule function
Default: - None -
Module: httpd_core(3) [page 42]

The SSLPasswordCallbackFunction function in the SSLPasswordCallbackModule module is called in order to retrieve the user's password.

Read more about SSL in the application documentation.

SEE ALSO

httpd(3) [page 27]
httpd_socket

Erlang Module

This module provides the EW SAPI module programmer with utility functions for generic sockets communication. The appropriate communication mechanism is transparently used, that is ip_comm or ssl.

Exports

deliver(SocketType,Socket,Binary) -> Result

Types:
- SocketType = socket_type()
- Socket = socket()
- Binary = binary()
- Result = socket_closed | void()

deliver/3 sends the Binary over the Socket using the specified SocketType. Socket and SocketType should be the socket and the socket_type form the mod record as defined in httpd.

peername(SocketType,Socket) -> {Port,IPAddress}

Types:
- SocketType = socket_type()
- Socket = socket()
- Port = integer()
- IPAddress = string()

peername/3 returns the Port and IPAddress of the remote Socket.

resolve() -> HostName

Types:
- HostName = string()

resolve/0 returns the official HostName of the current host.

SEE ALSO

httpd(3) [page 27]
httpd_util

Erlang Module

This module provides the EW SAPI [page 34] module programmer with miscellaneous utility functions.

Exports

convert_request_date(DateString) -> ErlDate|bad_date

Types:
- DateString = string()
- ErlDate = {Year,Month,Date},{Hour,Min,Sec}
- Year = Month = Date = Hour = Min = Sec = integer()

convert_request_date/1 converts DateString to the Erlang date format. DateString must be in one of the three date formats that is defined in the RFC 2616.

create_etag(FileInfo) -> Etag

Types:
- FileInfo = file_info()
- Etag = string()

create_etag/1 calculates the Etag for a file, from it’s size and time for last modification. fileinfo is a record defined in kernel/include/file.hrl

decode_base64(Base64String) -> ASCIIString

Types:
- Base64String = ASCIIString = string()

decode_base64/1 converts Base64String to the plain ascii string (ASCIIString). The string “BAD!” is returned if Base64String is not base64 encoded. Read more about base64 encoding in RFC 1521.

decode_hex(HexValue) -> DecValue

Types:
- HexValue = DecValue = string()

Converts the hexadecimal value HexValue into it’s decimal equivalent (DecValue).

day(NthDayOfWeek) -> DayOfWeek

Types:
**Util**

- `NthDayOfWeek = 1-7`
- `DayOfWeek = string()`

`day/1` converts the day of the week (`NthDayOfWeek`) as an integer (1-7) to an abbreviated string, that is:

1 = “Mon”, 2 = “Tue”, ..., 7 = “Sat”.

**encode_base64**

- `encode_base64(ASCIIString) => Base64String`

**Types:**
- `ASCIIString = string()`
- `Base64String = string()`

`encode_base64` encodes a plain ascii string to a Base64 encoded string. See RFC 1521 for a description of Base64 encoding.

**flatlength**

- `flatlength(NestedList) => Size`

**Types:**
- `NestedList = list()`
- `Size = integer()`

`flatlength/1` computes the size of the possibly nested list `NestedList`. Which may contain binaries.

**header**

- `header(StatusCode,PersistentConn)`
- `header(StatusCode,Date)`
- `header(StatusCode,MimeType,Date)`
- `header(StatusCode,MimeType,PersistentConn,Date) => HTTPHeader`

**Types:**
- `StatusCode = integer()`
- `Date = rfc1123 date()`
- `MimeType = string()`
- `PersistentConn = true | false`

`header` returns a HTTP 1.1 header string. The `StatusCode` is one of the status codes defined in RFC 2616 and the `Date` string is RFC 1123 compliant. (See `rfc1123_date/0 [page 56]`).

Note that the two version of `header/1` that does not has a `PersistentConn` argument is there only for backward compatibility, and must not be used in new EW SAPI modules that will support persistent connections.

**hexlist_to_integer**

- `hexlist_to_integer(HexString) => Number`

**Types:**
- `Number = integer()`
- `HexString = string()`

`hexlist_to_integer` Convert the Hexadecimal value of `HexString` to an integer.

**integer_tohexlist**

- `integer_tohexlist(Number) => HexString`

**Types:**
- `HexString = string()`
- `Number = integer()`
- `HexString = string()`

`integer_to_hexlist/1` returns a string that represents the `Number` in a hexadecimal form.

```prolog
key1search(TupleList, Key)
key1search(TupleList, Key, Undefined) -> Result
```

Types:
- `TupleList = [tuple()]`
- `Key = term()`
- `Result = term() | undefined | Undefined`
- `Undefined = term()`

`key1search` searches the `TupleList` for a tuple whose first element is `Key`. `key1search/2` returns `undefined` and `key1search/3` returns `Undefined` if no tuple is found.

```prolog
lookup(ETSTable, Key) -> Result
lookup(ETSTable, Key, Undefined) -> Result
```

Types:
- `ETSTable = ets_table()`
- `Key = term()`
- `Result = term() | undefined | Undefined`
- `Undefined = term()`

`lookup` extracts `{Key, Value}` tuples from `ETSTable` and returns the `Value` associated with `Key`. If `ETSTable` is of type `bag` only the first `Value` associated with `Key` is returned. `lookup/2` returns `undefined` and `lookup/3` returns `Undefined` if no `Value` is found.

```prolog
lookup_mime(ConfigDB, Suffix)
lookup_mime(ConfigDB, Suffix, Undefined) -> MimeType
```

Types:
- `ConfigDB = ets_table()`
- `Suffix = string()`
- `MimeType = string() | undefined | Undefined`
- `Undefined = term()`

`lookup_mime` returns the mime type associated with a specific file suffix as specified in the `mime.types` file (located in the config directory). In Windows: `%SERVER_ROOT%\conf\mime.types`. In UNIX: `$SERVER_ROOT/conf/mime.types`.

```prolog
lookup_mime_default(ConfigDB, Suffix)
lookup_mime_default(ConfigDB, Suffix, Undefined) -> MimeType
```

Types:
- `ConfigDB = ets_table()`
- `Suffix = string()`
- `MimeType = string() | undefined | Undefined`

In Windows: `%SERVER_ROOT%\conf\mime.types`. In UNIX: `$SERVER_ROOT/conf/mime.types`.
lookup_mime_default returns the mime type associated with a specific file suffix as specified in the mime.types file (located in the config directory\(^\text{15}\)). If no appropriate association can be found the value of DefaultType [page 44] is returned.

message(StatusCode,PhraseArgs,ConfigDB) -> Message

Types:
- StatusCode = 301 | 400 | 403 | 404 | 500 | 501 | 504
- PhraseArgs = term()
- ConfigDB = ets_table
- Message = string()

message/3 returns an informative HTTP 1.1 status string in HTML. Each StatusCode requires a specific PhraseArgs:

- 301 string(): A URL pointing at the new document position.
- 400 | 401 | 500 none (No PhraseArgs)
- 403 | 404 string(): A Request-URI as described in RFC 2616.
- 504 string(): A string describing why the service was unavailable.

month(NthMonth) -> Month

Types:
- NthMonth = 1-12
- Month = string()

month/1 converts the month NthMonth as an integer (1-12) to an abbreviated string, that is:
1 = "Jan", 2 = "Feb", ..., 12 = "Dec".

multi_lookup(ETSTable,Key) -> Result

Types:
- ETSTable = ets_table()
- Key = term()
- Result = [term()]

multi_lookup extracts all {Key,Value} tuples from an ETSTable and returns all Values associated with the Key in a list.

reason_phrase(StatusCode) -> Description

Types:
- StatusCode = 100 | 200 | 201 | 202 | 204 | 205 | 206 | 300 | 301 | 302 | 303 | 304 | 400 | 401 | 402 | 403 | 404 | 405 | 406 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 500 | 501 | 502 | 503 | 504 | 505
- Description = string()

\(^\text{15}\)In Windows: %SERVER_ROOT%\conf\mime.types. In UNIX: $SERVER_ROOT/conf/mime.types.
reason_phrase returns the description of an HTTP 1.1 StatusCode, for example 200 is “OK” and 201 is “Created”. Read RFC 2616 for further information.

rfc1123_date() -> RFC1123Date
rfc1123_date({YYYY,MM,DD},{Hour,Min,Sec}) -> RFC1123Date
Types:
- YYYY = MM = DD = Hour = Min =Sec = integer()
- RFC1123Date = string()
rfc1123_date/0 returns the current date in RFC 1123 format. rfc_date/1 converts the date in the Erlang format to the RFC 1123 date format.

split(String,RegExp,N) -> SplitRes
Types:
- String = RegExp = string()
- SplitRes = {ok, FieldList} | {error, errordesc()}
- Fieldlist = [string()]
- N = integer
split/splits the String in N chunks using the RegExp. split/3 is is equivalent to regexp:split/2 with one exception, that is N defines the number of maximum number of fields in the FieldList.

split_script_path(RequestLine) -> Splitted
Types:
- RequestLine = string()
- Splitted = not_a_script | {Path, PathInfo, QueryString}
- Path = QueryString = PathInfo = string()
split_script_path/1 is equivalent to split_path/1 with one exception. If the longest possible path is not a regular, accessible and executable file not_a_script is returned.

split_path(RequestLine) -> [Path,QueryStringOrPathInfo]
Types:
- RequestLine = Path = QueryStringOrPathInfo = string()
split_path/1 splits the RequestLine in a file reference (Path) and a QueryString or a PathInfo String as specified in RFC 2616. A QueryString is isolated from the Path with a question mark (?) and PathInfo with a slash (/). In the case of a QueryString, everything before the ? is a Path and everything after a QueryString. In the case of a PathInfo the RequestLine is scanned from left-to-right on the hunt for longest possible Path being a file or a directory. Everything after the longest possible Path, isolated with a /, is regarded as PathInfo. The resulting Path is decoded using decode_hex/1 before delivery.

strip(String) -> Stripped
Types:
- String = Stripped = string()
strip/1 removes any leading or trailing linear white space from the string. Linear white space should be read as horisontal tab or space.

suffix(FileName) -> Suffix

Types:
- FileName = Suffix = string()

suffix/1 is equivalent to filename:extension/1 with one exception, that is Suffix is returned without a leading dot (.).

to_lower(String) -> ConvertedString

Types:
- String = ConvertedString = string()

to_lower/1 converts upper-case letters to lower-case.

to_upper(String) -> ConvertedString

Types:
- String = ConvertedString = string()

to_upper/1 converts lower-case letters to upper-case.

SEE ALSO

httpd(3) [page 27]
This module runs CGI scripts whenever a file of a certain type or HTTP method (See RFC 1945) is requested. The following config directives are described:

- **Action** [page 58]
- **Script** [page 58]

**DIRECTIVE: "Action"

Syntax: Action mime-type cgi-script
Default: - None -
Module: mod_actions(3) [page 58]

**Action** adds an action, which will activate a **cgi-script** whenever a file of a certain **mime-type** is requested. It propagates the URL and file path of the requested document using the standard CGI **PATH_INFO** and **PATH_TRANSLATED** environment variables.

Examples:

- `Action text/plain /cgi-bin/log_and_deliver_text`
- `Action home-grown/mime-type1 /~bob/do_special_stuff`

**DIRECTIVE: "Script"

Syntax: Script method cgi-script
Default: - None -
Module: mod_actions(3) [page 58]

**Script** adds an action, which will activate a **cgi-script** whenever a file is requested using a certain **HTTP method**. The method is either GET or POST as defined in RFC 1945. It propagates the URL and file path of the requested document using the standard CGI **PATH_INFO** and **PATH_TRANSLATED** environment variables.

Examples:

- `Script GET /cgi-bin/get`
- `Script POST /~bob/put_and_a_little_more`
EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:
{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 60].

Exports the following EWSAPI interaction data, if possible:
{new_request_uri, RequestURI} An alternative RequestURI has been generated.

Uses the following exported EWSAPI functions:
- mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_alias(3) [page 60]
This module makes it possible to map different parts of the host file system into the document tree. The following config directives are described:

- Alias [page 60]
- DirectoryIndex [page 60]
- ScriptAlias [page 61]

**DIRECTIVE: ”Alias”**

Syntax: Alias url-path directory-filename

Default: - None -

Module: mod_alias(3) [page 60]

The Alias directive allows documents to be stored in the local file system instead of the DocumentRoot [page 44] location. URLs with a path that begins with url-path is mapped to local files that begins with directory-filename, for example:

```
Alias /image /ftp/pub/image
```

and an access to http://your.server.org/image/foo.gif would refer to the file /ftp/pub/image/foo.gif.

**DIRECTIVE: ”DirectoryIndex”**

Syntax: DirectoryIndex file file ...

Default: - None -

Module: mod_alias(3) [page 60]

DirectoryIndex specifies a list of resources to look for if a client requests a directory using a / at the end of the directory name. file depicts the name of a file in the directory. Several files may be given, in which case the server will return the first it finds, for example:

```
DirectoryIndex index.html
```

and access to http://your.server.org/docs/ would return http://your.server.org/docs/index.html if it existed.
DIRECTIVE: "ScriptAlias"

Syntax: ScriptAlias url-path directory-filename
Default: - None -
Module: mod_alias(3) [page 60]

The ScriptAlias directive has the same behavior as the Alias [page 60] directive, except that it also marks the target directory as containing CGI scripts. URLs with a path beginning with url-path are mapped to scripts beginning with directory-filename, for example:

ScriptAlias /cgi-bin/ /web/cgi-bin/

and an access to http://your.server.org/cgi-bin/foo would cause the server to run the script /web/cgi-bin/foo.

EWSAPI MODULE INTERACTION

Exports the following EWSAPI interaction data, if possible:

{real_name, {Path, AfterPath}} Path and AfterPath is as defined in httpd_util:split_path/1 [page 56] with one exception - Path has been run through default_index/2 [page 61].

Uses the following exported EWSAPI functions:

- mod_alias:default_index/2 [page 61]
- mod_alias:path/3 [page 62]
- mod_alias:real_name/3 [page 62]

This module furthermore exports a batch of functions to be used by other EWSAPI modules:

Exports

default_index(ConfigDB, Path) -> NewPath

Types:
- ConfigDB = config_db()
- Path = NewPath = string()

If Path is a directory, default_index/2, it starts searching for resources or files that are specified in the config directive DirectoryIndex [page 60]. If an appropriate resource or file is found, it is appended to the end of Path and then returned. Path is returned unaltered, if no appropriate file is found, or if Path is not a directory. config_db() is the server config file in ETS table format as described in httpd(3) [page 34].

path(Data, ConfigDB, RequestURI) -> Path

Types:
- Data = interaction_data()
real_name(ConfigDB, RequestURI, Aliases) -> Ret

Types:
- ConfigDB = config_db()
- RequestURI = string()
- Aliases = [{FakeName, RealName}]
- Ret = {ShortPath, Path, AfterPath}
  ShortPath = Path = AfterPath = string()

real_name/3 traverses Aliases, typically extracted from ConfigDB, and matches each FakeName with RequestURI. If a match is found FakeName is replaced with RealName in the match. The resulting path is split into two parts, that is ShortPath and AfterPath as defined in httpd_util:split_path/1 [page 56]. Path is generated from ShortPath, that is the result from default_index/2 [page 61] with ShortPath as an argument. config_db() is the server config file in ETS table format as described in httpd(3) [page 34].

real_script_name(ConfigDB, RequestURI, ScriptAliases) -> Ret

Types:
- ConfigDB = config_db()
- RequestURI = string()
- ScriptAliases = [{FakeName, RealName}]
- Ret = {ShortPath, AfterPath} | not_a_script
  ShortPath = AfterPath = string()

real_script_name/3 traverses ScriptAliases, typically extracted from ConfigDB, and matches each FakeName with RequestURI. If a match is found FakeName is replaced with RealName in the match. If the resulting match is not an executable script not_a_script is returned. If it is a script the resulting script path is in two parts, that is ShortPath and AfterPath as defined in httpd_util:split_script_path/1 [page 56]. config_db() is the server config file in ETS table format as described in httpd(3) [page 34].

SEE ALSO

httpd(3) [page 27]
mod_auth

Erlang Module

This module provides for basic user authentication using textual files, dets databases as well as mnesia databases. The following config directives are supported:

- `<Directory>` [page 63]
- `AuthDBType` [page 64]
- `AuthAccessPassword` [page 67]
- `AuthUserFile` [page 65]
- `AuthGroupFile` [page 66]
- `AuthName` [page 66]
- `allow` [page 67]
- `deny` [page 67]
- `require` [page 68]

The `Directory` [page 63] config directive is central to be able to restrict access to certain areas of the server. Please read about the `Directory` [page 63] config directive.

**DIRECTIVE: "Directory"**

Syntax: `<Directory regexp-filename>`
Default: - None -
Module: mod_auth(3) [page 63]
Related: `allow` [page 67], `deny` [page 67], `AuthAccessPassword` [page 67], `AuthUserFile` [page 65], `AuthGroupFile` [page 66], `AuthName` [page 66], `require` [page 68]

`<Directory>` and `</Directory>` are used to enclose a group of directives which applies only to the named directory and sub-directories of that directory. `regexp-filename` is an extended regular expression (See `regexp(3)`). For example:

```ini
<Directory /usr/local/httpd[12]/htdocs>
    AuthAccessPassword sOmEpAsSwOrD
    AuthDBType plain
    AuthName My Secret Garden
    AuthUserFile /var/tmp/server_root/auth/user
    AuthGroupFile /var/tmp/server_root/auth/group
    require user ragnar edward
    require group group1
    allow from 123.145.244.5
</Directory>
```

If multiple directory sections match the directory (or its parents), then the directives are applied with the shortest match first. For example if you have one directory section for `garden/` and one for `garden/flowers`, the `garden/` section matches first.
DIRECTIVE: "AuthDBType"

Syntax: AuthDBType plain | dets | mnesia
Default: - None -
Module: mod_auth(3) [page 63]
Context: <Directory> [page 63]
Related: allow [page 67], deny [page 67], AuthAccessPassword [page 67], AuthName [page 66], AuthUserFile [page 65], AuthGroupFile [page 66], require [page 68]

AuthDBType sets the type of authentication database that is used for the directory. The key difference between the different methods is that dynamic data can be saved when Mnesia and Dets is used.

If Mnesia is used as storage method, Mnesia must be started prior to the webserver. The first time Mnesia is started, the schema and the tables must be created before Mnesia is started. A naive example of a module with two functions that creates and starts mnesia is provided here. The function shall be used the first time. first_start/0 creates the schema and the tables. The second function start/0 shall be used in consecutive startups. start/0 starts Mnesia and waits for the tables to be initiated. This function must only be used when the schema and the tables already is created:

```erlang
-module(mnesia_test).
-export([start/0,load_data/0]).
-include("mod_auth.hrl").

first_start() ->
    mnesia:create_schema([node()]),
    mnesia:start(),
    mnesia:create_table(httpd_user,
        [{type,bag},{disc_copies,[node()]},
         {attributes,record_info(fields,httpd_user)}]),
    mnesia:create_table(httpd_group,
        [{type,bag},{disc_copies,[node()]},
         {attributes,record_info(fields,httpd_group)}]),
    mnesia:wait_for_tables([httpd_user,httpd_group],60000).

start() ->
    mnesia:start(),
    mnesia:wait_for_tables([httpd_user,httpd_group],60000).
```

To create the Mnesia tables we use two records defined in mod_auth.hrl so the file must be included.

The first function first_start/0 creates a schema that specify on which nodes the database shall reside. Then it starts Mnesia and creates the tables. The first argument is the name of the tables, the second argument is a list of options how the table will be created, see Mnesia documentation for more information. Since the current implementation of the mod_auth_mnesia saves one row for each user the type must be bag.

When the schema and the tables is created the second function start/0 shall be used to start Mnesia. It starts Mnesia and wait for the tables to be loaded. Mnesia use the directory specified as mnesia_dir at startup if specified, otherwise Mnesia use the current directory.
Warning:
For security reasons, make sure that the Mnesia tables are stored outside the document tree of the Web server. If it is placed in the directory which it protects, clients will be able to download the tables.

Note:
Only the dets and mnesia storage methods allow writing of dynamic user data to disk. plain is a read only method.

DIRECTIVE: “AuthUserFile”

Syntax: AuthUserFile filename
Default: -None-
Module: mod_auth(3) [page 63]
Context: <Directory> [page 63]
Related: allow [page 67], deny [page 67], AuthDBType [page 64], AuthAccessPassword [page 67], AuthGroupFile [page 66], AuthName [page 66], require [page 68]

AuthUserFile sets the name of a file which contains the list of users and passwords for user authentication. filename can be either absolute or relative to the ServerRoot.

If using the plain storage method, this file is a plain text file, where each line contains a user name followed by a colon, followed by the non-encrypted password. The behavior is undefined if user names are duplicated. For example:

ragnar:s7Xxv7
edward:wwjau8

If using the dets storage method, the user database is maintained by dets and should not be edited by hand. Use the API [page 69] in this module to create / edit the user database.

This directive is ignored if using the mnesia storage method.

Warning:
For security reasons, make sure that the AuthUserFile is stored outside the document tree of the Web server. If it is placed in the directory which it protects, clients will be able to download it.
DIRECTIVE: “AuthGroupFile”

Syntax: AuthGroupFile filename
Default: - None -
Module: mod_auth(3) [page 63]
Context: <Directory> [page 63]
Related: allow [page 67], deny [page 67], AuthName [page 66], AuthUserFile [page 65], AuthDBType [page 64], AuthAccessPassword [page 67], require [page 68]

AuthGroupFile sets the name of a file which contains the list of user groups for user authentication. filename can be either absolute or relative to the ServerRoot.

If you use the plain storage method, the group file is a plain text file, where each line contains a group name followed by a colon, followed by the member user names separated by spaces. For example:

```
group1: bob joe ante
```

If using the dets storage method, the group database is maintained by dets and should not be edited by hand. Use the API [page 69] in this module to create / edit the group database.

This directive is ignored if using the mnesia storage method.

**Warning:**
For security reasons, make sure that the AuthGroupFile is stored outside the document tree of the Web server. If it is placed in the directory which it protects, clients will be able to download it.

DIRECTIVE: “AuthName”

Syntax: AuthName auth-domain
Default: - None -
Module: mod_auth(3) [page 63]
Context: <Directory> [page 63]
Related: allow [page 67], deny [page 67], AuthGroupFile [page 66], AuthUserFile [page 65], AuthDBType [page 64], AuthAccessPassword [page 67], require [page 68]

AuthName sets the name of the authorization realm (auth-domain) for a directory. This string informs the client about which user name and password to use.
**DIRECTIVE: ”AuthAccessPassword”**

Syntax: AuthAccessPassword password  
Default: NoPassword  
Module: mod_auth(3)  
Context: <Directory>  
Related: allow [page 67], deny [page 67], AuthGroupFile [page 66], AuthUserFile [page 65], AuthDBType [page 64], AuthName [page 66], require [page 68]

If AuthAccessPassword is set to other than NoPassword the password is required for all API calls. If the password is set to DummyPassword the password must be changed before any other API calls. To secure the authenticating data the password must be changed after the webserver is started since it otherwise is written in clear text in the configuration file.

**DIRECTIVE: ”allow”**

Syntax: allow from host host ...  
Default: allow from all  
Module: mod_auth(3)  
Context: <Directory>  
Related: AuthAccessPassword [page 67], deny [page 67], AuthUserFile [page 65], AuthGroupFile [page 66], AuthName [page 66], AuthDBType [page 64], require [page 68]

allow defines a set of hosts which should be granted access to a given directory. host is one of the following:

all  All hosts are allowed access.

A regular expression (Read regexp(3)) All hosts having a numerical IP address matching the specific regular expression are allowed access.

For example:

allow from 123.34.56.11 150.100.23

The host 123.34.56.11 and all machines on the 150.100.23 subnet are allowed access.

**DIRECTIVE: ”deny”**

Syntax: deny from host host ...  
Default: deny from all  
Module: mod_auth(3)  
Context: <Directory>  
Related: allow [page 67], AuthUserFile [page 65], AuthGroupFile [page 66], AuthName [page 66], AuthDBType [page 64], AuthAccessPassword [page 67], require [page 68]

deny defines a set of hosts which should not be granted access to a given directory. host is one of the following:

all  All hosts are denied access.
A regular expression (Read regexp(3)) All hosts having a numerical IP address matching the specific regular expression are denied access.

For example:
deny from 123.34.56.11 150.100.23

The host 123.34.56.11 and all machines on the 150.100.23 subnet are denied access.

DIRECTIVE: ”require”

Syntax: require entity-name entity entity ...
Default: - None -
Module: mod_auth(3) [page 63]
Context: <Directory> [page 63]
Related: allow [page 67], deny [page 67], AuthUserFile [page 65], AuthGroupFile [page 66], AuthName [page 66], AuthDBType [page 64], AuthAccessPassword [page 67]

require defines users which should be granted access to a given directory using a secret password. The allowed syntaxes are:

require user user-name user-name ... Only the named users can access the directory.
require group group-name group-name ... Only users in the named groups can access the directory.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:
{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 60].
Exports the following EWSAPI interaction data, if possible:
{remote_user, User} The user name with which the user has authenticated himself.
Uses the following exported EWSAPI functions:
  - mod_alias:path/3 [page 62]
Exports

add_user(UserName, Options) -> true | [error, Reason]
add_user(UserName, Password, UserData, Port, Dir) -> true | [error, Reason]
add_user(UserName, Password, UserData, Address, Port, Dir) -> true | [error, Reason]

Types:
- UserName = string()
- Options = [Option]
- Option = {password, Password} | {userData, UserData} | {port, Port} | {addr, Address} | {dir, Directory} | {authPassword, AuthPassword}
- Password = string()
- UserData = term()
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- Dir = string()
- AuthPassword = string()
- Reason = term()

add_user/2, add_user/5 and add_user/6 adds a user to the user database. If the operation is successful, this function returns true. If an error occurs, [error, Reason] is returned. When add_user/2 is called the Password, UserData Port and Dir options are mandatory.

delete_user(UserName, Options) -> true | [error, Reason]
delete_user(UserName, Port, Dir) -> true | [error, Reason]
delete_user(UserName, Address, Port, Dir) -> true | [error, Reason]

Types:
- UserName = string()
- Options = [Option]
- Option = {port, Port} | {addr, Address} | {dir, Directory} | {authPassword, AuthPassword}
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- Dir = string()
- AuthPassword = string()
- Reason = term()

delete_user/2, delete_user/3 and delete_user/4 deletes a user from the user database. If the operation is successful, this function returns true. If an error occurs, [error, Reason] is returned. When delete_user/2 is called the Port and Dir options are mandatory.

get_user(UserName, Options) -> [ok, #httpd_user] | {error, Reason}
get_user(UserName, Port, Dir) -> [ok, #httpd_user] | {error, Reason}
get_user(UserName, Address, Port, Dir) -> [ok, #httpd_user] | {error, Reason}

Types:
- UserName = string()
Options = [Option]
Option = {port,Port} | {addr,Address} | {dir,Directory} | {authPassword,AuthPassword}
Port = integer()
Address = {A,B,C,D} | string() | undefined
Dir = string()
AuthPassword = string()
Reason = term()

get_user/2, get_user/3 and get_user/4 returns a httpd user record containing the
userdata for a specific user. If the user cannot be found, {error, Reason} is returned.
When get_user/2 is called the Port and Dir options are mandatory.

list_users(Options) -> {ok, Users} | {error, Reason}
list_users(Port, Dir) -> {ok, Users} | {error, Reason}
list_users(Address, Port, Dir) -> {ok, Users} | {error, Reason}

Types:
Options = [Option]
Option = {port,Port} | {addr,Address} | {dir,Directory} | {authPassword,AuthPassword}
Port = integer()
Address = {A,B,C,D} | string() | undefined
Dir = string()
Users = list()
AuthPassword = string()
Reason = atom()

list_users/1, list_users/2 and list_users/3 returns a list of users in the user
database for a specific Port/Dir. When list_users/1 is called the Port and Dir options
are mandatory.

add_group_member(GroupName, UserName, Options) -> true | {error, Reason}
add_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}
add_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}

Types:
GroupName = string()
UserName = string()
Options = [Option]
Option = {port,Port} | {addr,Address} | {dir,Directory} | {authPassword,AuthPassword}
Port = integer()
Address = {A,B,C,D} | string() | undefined
Dir = string()
AuthPassword = string()
Reason = term()
add_group_member/3, add_group_member/4 and add_group_member/5 adds a user to a group. If the group does not exist, it is created and the user is added to the group. Upon successful operation, this function returns true. When add_group_members/3 is called the Port and Dir options are mandatory.

delete_group_member(GroupName, UserName, Options) -> true | {error, Reason}
delete_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}
delete_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}

Types:
- GroupName = string()
- UserName = string()
- Options = [Option]
  - Option = [port,Port] | [addr,Address] | [dir,Directory] | [authPassword,AuthPassword]
  - Port = integer()
  - Address = [A,B,C,D] | string() | undefined
  - Dir = string()
  - AuthPassword = string()
  - Reason = term()

delete_group_member/3, delete_group_member/4 and delete_group_member/5 deletes a user from a group. If the group or the user does not exist, this function returns an error, otherwise it returns true. When delete_group_member/3 is called the Port and Dir options are mandatory.

list_group_members(GroupName, Options) -> {ok, Users} | {error, Reason}
list_group_members(GroupName, Port, Dir) -> {ok, Users} | {error, Reason}
list_group_members(GroupName, Address, Port, Dir) -> {ok, Users} | {error, Reason}

Types:
- GroupName = string()
- Options = [Option]
  - Option = [port,Port] | [addr,Address] | [dir,Directory] | [authPassword,AuthPassword]
  - Port = integer()
  - Address = [A,B,C,D] | string() | undefined
  - Dir = string()
  - Users = list()
  - AuthPassword = string()
  - Reason = term()

list_group_members/2, list_group_members/3 and list_group_members/4 lists the members of a specified group. If the group does not exist or there is an error, {error, Reason} is returned. When list_group_members/2 is called the Port and Dir options are mandatory.

list_groups(Options) -> {ok, Groups} | {error, Reason}
list_groups(Port, Dir) -> {ok, Groups} | {error, Reason}
list_groups(Address, Port, Dir) -> {ok, Groups} | {error, Reason}

Types:
- Options = [Option]
  - Option = {port, Port} | {addr, Address} | {dir, Directory} |
  - {authPassword, AuthPassword}
  - Port = integer()
  - Address = [A, B, C, D] | string() | undefined
  - Dir = string()
  - Groups = list()
  - AuthPassword = string()
  - Reason = term()

list_groups/1, list_groups/2 and list_groups/3 lists all the groups available. If there is an error, {error, Reason} is returned. When list_groups/1 is called the Port and Dir options are mandatory.

delete_group(GroupName, Options) -> true | {error, Reason}
  <name>delete_group(GroupName, Port, Dir) -> true | {error, Reason}

delete_group(GroupName, Address, Port, Dir) -> true | {error, Reason}

Types:
- Options = [Option]
  - Option = {port, Port} | {addr, Address} | {dir, Directory} |
  - {authPassword, AuthPassword}
  - Port = integer()
  - Address = [A, B, C, D] | string() | undefined
  - Dir = string()
  - GroupName = string()
  - AuthPassword = string()
  - Reason = term()

delete_group/2, delete_group/3 and delete_group/4 deletes the group specified and returns true. If there is an error, {error, Reason} is returned. When delete_group/2 is called the Port and Dir options are mandatory.

update_password(Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}

update_password(Address, Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}

Types:
- Port = integer()
- Address = [A, B, C, D] | string() | undefined
- Dir = string()
- GroupName = string()
- OldPassword = string()
- NewPassword = string()
- Reason = term()
update_password/5 and update_password/6 Updates the AuthAccessPassword for the specified directory. If NewPassword is equal to "NoPassword" no password is required to change authorisation data. If NewPassword is equal to "DummyPassword" no changes can be done without changing the password first.

SEE ALSO

httpd(3) [page 27], mod_alias(3) [page 60],
**mod_browser**

Erlang Module

When a client requests for an asset the request-header may contain a string that identifies the product. Many browsers also send information about which operating-system the client use. This can be used in conjunction with mod_esi to tailor the response according to the users operating-system and browser.

This module can be used to recognize the browser and operating-system of the client in two ways either as a module in the EWSAPI response chain or by a separate call to the function `getBrowser/1`.

**Exports**

```erlang
getBrowser(AgentString) -> {Browser,OperatingSystem}
```

Types:
- `AgentString` = string() | unknown
- `Browser` = {Name,Version} | unknown
- `OperatingSystem` = win3x | win95 | win98 | winnt | win2k | sunos4 | sunos5 | sun | aix | linux | sco | freebsd | bsd | macos | unknown
- `Name` = opera | msie | netscape | lynx | mozilla | emacs | soffice | mosaic | safari
- `Version` = float().

The function `getBrowser/1` tries to detect which browser and operating system the user has. Note that the answer is just a best guess since some browsers can identify themselves as other browsers, read Opera.

**EWSAPI MODULE INTERACTION**

Exports the following EWSAPI interaction data, if possible:

```erlang`
{‘user-agent’,AgentData} Where AgentData is the same as the return value from getBrowser/1. Note that the answer is just a best guess, since some browsers can identify themselves as other browsers, read Opera.
```
mod_cgi

Erlang Module

This module makes it possible to execute vanilla CGI (Common Gateway Interface) scripts in the server. A file that matches the definition of a ScriptAlias [page 61] config directive is treated as a CGI script. A CGI script is executed by the server and it's output is returned to the client.

`mod_cgi` sends the response transfer-encoded to HTTP/1.1 compatible clients. The content is transfer encoded with the chunked encoding algorithm. This means that the Content-Length field not should be in the HTTP header. Furthermore assumes `mod_cgi` that the first chunk of data from the script is the only chunk with header information. If the first chunk of data from the script does not contain "\r\n\r\n" `mod_cgi` assumes that no HTTP-header information is to come from the script. A chunk of data with HTTP header fields from a script might look something like this:

"Content-Type:text/plain\r\nAccept-Ranges:none\r\n\r\nsome very plain text"

Support for CGI-1.1 is implemented in accordance with the CGI-1.1 specification16.

**Note:**

CGI is currently available for Erlang/OTP running on a UNIX platform. These number of platforms will be increased.

- ScriptNoCache [page 75]
- ScriptTimeout [page 76]

**DIRECTIVE: ”ScriptNoCache”**

Syntax: `ScriptNoCache true | false`  
Default: `-false-`  
Module: `mod_cgi(3)` [page 75]

If `ScriptNoCache` is set to true the Web server will by default add the header fields necessary to prevent proxies from caching the page. Generally this is something you want.

```
ScriptNoCache true
```

---

16URL: http://hoohoo.ncsa.uiuc.edu/cgi/
DIRECTIVE: "ScriptTimeout"

Syntax:

ScriptTimeout Seconds

Default: 15

Module: mod_cgi(3) [page 75]

The time in seconds the web server will wait between each chunk of data from the
script. If the CGI-script not delivers any data before the timeout the connection to the
client will be closed.

ScriptTimeout 15

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{new_request_uri, NewRequestURI} as defined in mod_actions(3) [page 59].
{remote_user, RemoteUser} as defined in mod_auth(3) [page 68].

Uses the following EWSAPI functions:

- mod_alias: real_name/3 [page 62]
- mod_alias: script_name/3 [page 62]
- mod_cgi: env/3 [page 76]
- mod_cgi: status_code: env/1 [page 77]

This module furthermore exports a batch of functions to be used by other EWSAPI
modules:

Exports

env(Info, Script, AfterScript) -> EnvString

Types:

- Info = mod_record()
- Script = AfterScript = EnvString = string()

Note:

This function should only be used when implementing CGI-1.1 functionality on
UNIX platforms.

open_port/2 is normally used to start and interact with CGI scripts. open_port/2 takes
an external program as input; env(1) (GNU Shell Utility) is typically used in the case
of a CGI script. env(1) execute the CGI script in a modified environment and takes the
CGI script and a string of environment variables as input. env/3 returns an appropriate
CGI-1.1 environment variable string to be used for this purpose. The environment
variables in the string are those defined in the CGI-1.1 specification17. mod_record() is

17URL: http://hoohoo.ncsa.uiuc.edu/cgi/
a record as defined in the EWSAPI Module Programming [page 34] section of httpd(3).

\[ \text{status code(CGIOutput)} \rightarrow \{ \text{ok, StatusCode} \} \mid \{ \text{error, Reason} \} \]

Types:
- CGI output = Reason = string()
- StatusCode = integer()

Certain output from CGI scripts has a special meaning, as described in the CGI specification\(^\text{18}\), for example if "Location: http://www.yahoo.com\n\n" is returned from a CGI script the client gets automatically redirected to Yahoo!\(^\text{19}\), using the HTTP 302 status code (RFC 1945).

SEE ALSO

httpd(3) [page 27], mod_auth(3) [page 63], mod_security(3) [page 104], mod_alias(3) [page 60], mod_es(3) [page 83], mod_include(3) [page 96]

---

\(^\text{18}\)URL: http://hoohoo.ncsa.uiuc.edu/cgi/

\(^\text{19}\)URL: http://www.yahoo.com
mod_dir

Erlang Module

This module generates an HTML directory listing (Apache-style) if a client sends a request for a directory instead of a file. This module is not configurable and it needs to be removed from the Modules [page 46] config directive if directory listings is unwanted.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 61].

Exports the following EWSAPI interaction data, if possible:

{mime_type, MimeType} The file suffix of the incoming URL mapped into a MimeType as defined in the Mime Type Settings [page 43] section of httpd_core(3).

Uses the following EWSAPI functions:

- mod_alias:default_index/2 [page 61]
- mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_alias(3) [page 60]
mod_disk_log

Erlang Module

This module uses disk_log(3) to make it possible to log all incoming requests to an access log file. The de-facto standard Common Logfile Format is used for this purpose. There are numerous statistic programs available to analyze Common Logfile Format log files. The Common Logfile Format looks as follows:

remotehost rfc931 authuser [date] “request” status bytes

remotehost  Remote hostname (or IP number if the DNS hostname is not available).
rfc931  The client's remote username (RFC 931).
authuser  The username with which the user has authenticated himself.
[date]  Date and time of the request (RFC 1123).
“request”  The request line exactly as it came from the client (RFC 1945).
status  The HTTP status code returned to the client (RFC 1945).
bytes  The content-length of the document transferred.

This module furthermore uses disk_log(3) to support the use of an error log file to record internal server errors. The error log format is more ad hoc than Common Logfile Format, but conforms to the following syntax:

[date] access to path failed for remotehost, reason: reason

DIRECTIVE: ”DiskLogFormat”

Syntax: DiskLogFormat internal | external
Default: - external -
Module: mod_disk_log(3) [page 79]

DiskLogFormat defines the file-format of the log files see disk_log for more information. If the internal file-format is used, the logfile will be repaired after a crash. When a log file is repaired data might get lost. When the external file-format is used httpd will not start if the log file is broken.

DiskLogFormat external
DIRECTIVE: "ErrorDiskLog"

Syntax: ErrorDiskLog filename
Default: - None -
Module: mod_disk_log(3) [page 79]

ErrorDiskLog defines the filename of the (disk_log(3)) error log file to be used to log server errors. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 47], for example:

ErrorDiskLog logs/error_disk_log 8080

and errors will be logged in the server root20 space.

DIRECTIVE: "ErrorDiskLogSize"

Syntax: ErrorDiskLogSize max-bytes max-files
Default: ErrorDiskLogSize 512000 8
Module: mod_disk_log(3) [page 79]

ErrorDiskLogSize defines the properties of the (disk_log(3)) error log file. The disk_log(3) error log file is of type wrap log and max-bytes will be written to each file and max-files will be used before the first file is truncated and reused.

DIRECTIVE: "SecurityDiskLog"

Syntax: SecurityDiskLog filename
Default: - None -
Module: mod_disk_log(3) [page 79]

SecurityDiskLog defines the filename of the (disk_log(3)) access log file which logs incoming security events i.e authenticated requests. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 47], see TransferDiskLog [page 81] for more information.

DIRECTIVE: "SecurityDiskLogSize"

Syntax: SecurityDiskLogSize max-bytes max-files
Default: SecurityDiskLogSize 512000 8
Module: mod_disk_log(3) [page 79]

SecurityDiskLogSize defines the properties of the disk_log(3) access log file. The disk_log(3) access log file is of type wrap log and max-bytes will be written to each file and max-files will be used before the first file is truncated and reused.

DIRECTIVE: "TransferDiskLog"

Syntax: TransferDiskLog filename
Default: -None-
Module: mod_disk_log(3) [page 79]
TransferDiskLog defines the filename of the (disk_log(3)) access log file which logs incoming requests. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 47], for example:
TransferDiskLog logs/transfer_disk_log_8080

and errors will be logged in the server root21 space.

DIRECTIVE: "TransferDiskLogSize"

Syntax: TransferDiskLogSize max-bytes max-files
Default: TransferDiskLogSize 512000 8
Module: mod_disk_log(3) [page 79]
TransferDiskLogSize defines the properties of the disk_log(3) access log file. The disk_log(3) access log file is of type wrap log and max-bytes will be written to each file and max-files will be used before the first file is truncated and reused.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:
{remote_user,RemoteUser} as defined in mod_auth(3) [page 68].

This module furthermore exports a batch of functions to be used by other EWSAPI modules:

Exports

error_log(Socket,SocketType,ConfigDB,Date,Reason) -> ok | no_error_log

Types:
- Socket = socket()
- SocketType = ip_comm | ssl
- ConfigDB = config_db()
- Date = Reason = string()

error_log/5 uses disk_log(3) to log an error in the error log file. Socket is a handler to a socket of type SocketType and config_db() is the server config file in ETS table format as described in httpd(3) [page 27]. Date is a RFC 1123 date string as generated by httpd_util:rfc1123_date/0 [page 56].

security_log(User, Event) -> ok | no_security_log

Types:
- User = String()
- Event = String

security_log/2 uses disk_log(3) to log a security event in the security log file. User is the user's name.

SEE ALSO

httpd(3) [page 27], mod_auth(3) [page 63], mod_security(3) [page 104], mod_log(3) [page 99]
The Erlang Scripting Interface (ESI) provides a tight and efficient interface to the
execution of Erlang functions. Erlang functions can be executed with two alternative
schemes, `eval` and `erl`. Both of these schemes can utilize the functionality in an Erlang
node efficiently.

Even though the server supports CGI-1.1 [page 75] the use of the Erlang Scripting
Interface (ESI) is encouraged for reasons of efficiency. CGI is resource intensive because
of it's design. CGI requires the server to fork a new OS process for each executable it
needs to start.

An Erlang function can be written and executed as a CGI script by using `erl_call(3)`
in the `erl_interface` library, for example. The cost is a forked OS process, as described
above. This is a waste of resources, at least when the Web server itself is written in
Erlang (as in this case).

The following config directives are described:

- ErlScripAlias [page 86]
- EvalScriptAlias [page 87]
- ErlScriptNoCache [page 86]
- ErlScriptTimeout [page 87]

**ERL SCHEME**

The `erl` scheme is designed to mimic plain CGI, but without the extra overhead. A URL which calls an Erlang `erl` function has the following syntax (regular expression):

```
http://your.server.org/***/Mod:[/]Func(?QueryString|/PathInfo)
```

The module (Mod) referred to must be found in the code path, and it must define a
function (Func) with an arity of two or three i.e. `Func(Env,Input)` or
`Func(SessionID,Env,Input)`. `Env` contains information about the connecting client (see
below), and `Input` the `QueryString` or `PathInfo` as defined in the CGI specification 22.
`SessionID` is a identifier that is used to send parts of the web page back to the user
through the function `mod_esi:deliver/2`

*** above depends on how the ErlScriptAlias [page 86] config directive has been used.
Data returned from the function with arity of two must furthermore take the form as
specified in the CGI specification 23.

It is preferable to use the callback function with an arity of three, since the function can
send the data back to the clients in parts instead of generating the whole page before it

22URL: http://hoohoo.ncsa.uiuc.edu/cgi/
23URL: http://hoohoo.ncsa.uiuc.edu/cgi/
is sent. The Web server sends the data back to HTTP/1.1 compliant clients with chunked encoding this means that the Content-Length header field is not necessary, and should indeed be avoided.

mod_esi assumes that if the first chunk of data delivered to the client through the function mod_esi:deliver/2 contains all HTTP-header fields the script will generate. If the first chunk does not contain the string "\r\n\r\n" mod_esi assumes that the script not will generate any header data.

Take a look at httpd_example.erl in the code release\(^{24}\) for a clarifying example. Start an example server as described in httpd:start/0 [page 30] and test the following from a browser (The server name for your example server will differ!):

http://your.server.org:8888/cgi-bin/erl/httpd_example/newformat and a call will be made to httpd_example:newformat/3 Something like this will promptly be shown in the browser:

This new format is nice. 
This new format is nice. 
This new format is nice.

http://your.server.org:8888/cgi-bin/erl/httpd_example/get and a call will be made to httpd_example:get/2 and two input fields and a Submit button will promptly be shown in the browser. Enter text into the input fields and click on the Submit button. Something like this will promptly be shown in the browser:

Environment:

```
{{query_string,"input1=blaaha&input2=blaha"},
 {server_software,"eddie/2.2"},
 {server_name,"localhost"},
 {gateway_interface,"CGI/1.1"},
 {server_protocol,"HTTP/1.0"},
 {server_port,8080},
 {request_method,"GET"},
 {remote_addr,"127.0.0.1"},
 {script_name,"/cgi-bin/erl/httpd_example:get?input1=blaaha&
 input2=blaha"},
 {http_accept_charset,"iso-8859-1,*,utf-8"},
 {http_accept_language,"en"},
 {http_accept,"image/gif, image/x-xbitmap, image/jpeg,
 image/pjpeg, */*"},
 {http_host,"localhost:8080"},
 {http_user_agent, "Mozilla/4.03 [en] (XII;
               X11; I; Linux 2.0.30 i586)"},
 {http_connection,"Keep-Alive"},
 {http_referer, "http://localhost:8080/cgi-bin/erl/
 httpd_example/get"} ]
```

Input:

```
input1=blaaha&input2=blaha
```

Parsed Input:

\(^{24}\)In Windows: %INETS%\src. In UNIX: $INETS$/src.
{{"input1","blaha"},{"input2","blaha"}}

http://your.server.org:8888/cgi-bin/erl/httpd_example:post A call will be made to httpd_example:post/2. The same thing will happen as in the example above but the HTTP POST method will be used instead of the HTTP GET method.

http://your.server.org:8888/cgi-bin/erl/httpd_example:yahoo A call will be made to httpd_example:yahoo/2 and the Yahoo! site will promptly be shown in your browser.

**Note:**

httpd:parse_query/1 [page 32] is used to generate the Parsed Input: ... data in the example above.

If a client closes the connection prematurely a message will be sent to the function, that is either {tcp_closed, _} or {_, {socket_closed, _}}.

**EVAL SCHEME**

**Warning:**

The eval scheme can seriously threaten the integrity of the Erlang node housing a Web server, for example:

```
http://your.server.org/eval?httpd_example:
  print(atom_to_list(apply(erlang,halt,[[]])))
```

which effectively will close down the Erlang node, that is use the erl scheme instead until this security breach has been fixed.

Today there are no good way of solving this problem and therefore Eval Scheme may be removed in future release-s of Inets.

The eval scheme is straight-forward and does not mimic the behavior of plain CGI. An URL which calls an Erlang eval function has the following syntax:

```
http://your.server.org/***/Mod:Func(Arg1,...,ArgN)
```

The module (Mod) referred to must be found in the code path, and data returned by the function (Func) is passed back to the client. *** depends on how the EvalScriptAlias [page 87] config directive has been used. Data returned from the function must furthermore take the form as specified in the CGI specification.

Take a look at httpd_example.erl in the code release for an example. Start an example server as described in httpd:start/0 [page 30] and test the following from a browser (The server name for your example server will differ!):

---

25URL: http://www.yahoo.com
26URL: http://hoohoo.ncsa.uiuc.edu/cgi/
27In Windows: %INETS\src. In UNIX: $INETS/src.
http://your.server.org:8888/eval?httpd_example:print("Hi!") and a call will be made to httpd_example:print/1 and "Hi!" will promptly be shown in your browser.

DIRECTIVE: "ErlScriptAlias"

Syntax: ErlScriptAlias url-path allowed-module allowed-module ...
Default: - None -
Module: mod_esi(3) [page 83]
ErlScriptAlias marks all URLs matching url-path as erl scheme [page 83] scripts. A matching URL is mapped into a specific module and function. The module must be one of the allowed-module:s. For example:

ErlScriptAlias /cgi-bin/hit_me httpd_example md4

and a request to http://your.server.org/cgi-bin/hit_me/httpd_example:yahoo would refer to httpd_example:yahoo/2. Refer to the Erl Scheme [page 83] description above.

DIRECTIVE: "ErlScriptNoCache"

Syntax: ErlScriptNoCache true | false
Default: false
Module: mod_esi(3) [page 83]
If ErlScriptNoCache is set to true the server will add http header fields that prevents proxies from caching the page. This is generally a good idea for dynamic content, since the content often vary between each request.

ErlScriptNoCache true

DIRECTIVE: "ErlScriptTimeout"

Syntax: ErlScriptTimeout seconds
Default: 15
Module: mod_esi(3) [page 83]
If ErlScriptTimeout sets the time in seconds the server will wait between each chunk of data is delivered through mod_esi:deliver/2 when the new Erl Scheme format, that takes three argument is used.

ErlScriptTimeout 15
DIRECTIVE: ”EvalScriptAlias”

Syntax: EvalScriptAlias url-path allowed-module allowed-module ...
Default: -None-
Module: mod-esi(3) [page 83]
EvalScriptAlias marks all URLs matching url-path as eval scheme [page 85] scripts. A matching URL is mapped into a specific module and function. The module must be one of the allowed-modules. For example:

EvalScriptAlias /cgi-bin/hit me to httpd_example md5

and a request to
http://your.server.org/cgi-bin/hit me to/httpd_example:print("Hi!") would refer to httpd_example:print/1. Refer to the Eval Scheme [page 85] description above.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{remote_user,RemoteUser} as defined in mod_auth(3) [page 68].

Exports the following EWSAPI interaction data, if possible:

{mime_type,MimeType} The file suffix of the incoming URL mapped into a MimeType as defined in the Mime Type Settings [page 43] section of httpd_core(3).

Uses the following EWSAPI functions:

- mod_alias:real_name/3 [page 62]
- mod_cgi:status_code/1 [page 77]

Exports

deliver(SessionID, Data) -> ok | {error,Reason}

Types:
- SessionID = term()
- Data = string()
- Reason = term()

This function is only intended to be used from functions called by the Erl Scheme interface to deliver parts of the content to the user.

Sends data from a Erl Scheme script back to the client. Note that if any HTTP-header fields will be sent back to the client they must be in the first call to deliver/2. Do not assume anything about the data type of SessionID, the SessionID must be the SessionID from the Erl Scheme call.
ESWAPI CALLBACK FUNCTIONS

Exports

Module:Function(Env, Input) -> Response

Types:

- Env = [EnvironmentDirectives] ++ ParsedHeader
- EnvironmentDirectives = [Key, Value]
- Key = query string | content_length, server_software, gateway_interface,
  server_protocol, server_port, request_method, remote_addr, script_name.
- Input = Response = string()

The Module must be found in the code path and export Function with an arity of two. An erlScriptAlias must also be set up in the configuration file for the Web server.

If the HTTP request is a post request and a body is sent then content_length will be the length of the posted data. If get is used query string will be the data after ? in the url.

ParsedHeader is the HTTP request as a key value tuple list. The keys in parsed header will be in lower case.

This callback format consumes quite much memory since the whole response must be generated before it is sent to the user. Therefore it is better to use the callback function with an arity of three.

Module:Function(SessionID, Env, Input) -> void

Types:

- SessionID = term()
- Env = [EnvironmentDirectives] ++ ParsedHeader
- EnvironmentDirectives = [Key, Value]
- Key = query string | content_length, server_software, gateway_interface,
  server_protocol, server_port, request_method, remote_addr, script_name.
- Input = Response = string()

For information about Environment and Input see Module:Function/2 above. SessionID is an identifier the server use when deliver/2 is called, do not assume any-thing about the datatype.

Use this callback function to dynamically generate dynamic web content. when a part of the page is generated send the data back to the client through deliver/2. Note that the first chunk of data sent to the client must at least contain all HTTP header fields that the response will generate. If the first chunk not contains End of HTTP header that is "\r\n\r\n" the server will assume that no HTTP header fields will be generated.

SEE ALSO

httpd(3) [page 27], mod_alias(3) [page 60], mod_auth(3) [page 63], mod_security(3) [page 104], mod_cgi(3) [page 75]
mod_get

Erlang Module

This module is responsible for handling GET requests to regular files. GET requests for parts of files is handled by mod_range.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 61].

Exports the following EWSAPI interaction data, if possible:
Uses the following EWSAPI functions:

• mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_range(3) [page 102]
mod_head

Erlang Module

This module is responsible for handling HEAD requests to regular files. HEAD requests for dynamic content is handled by each module responsible for dynamic content.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 61].

Exports the following EWSAPI interaction data, if possible:

Uses the following EWSAPI functions:

- mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_esi(3) [page 83], mod_cgi(3) [page 83]
**mod_htaccess**

Erlang Module

This module provides per-directory runtime configurable user-authentication. Each directory in the path to the requested asset is searched for an access-file (default .htaccess), that restricts the webserver’s rights to respond to a request. If an access-file is found the rules in that file is applied to the request.

The rules in an access-file applies both to files in the same directories and in subdirectories. If there exists more than one access-file in the path to an asset, the rules in the access-file nearest the requested asset will be applied.

If many users have web pages on the webserver and every user needs to manage the security issues alone, use this module.

To change the rules that restricts the use of an asset. The user only needs to have write access to the directory where the asset exists.

When a request comes, the path to the requested asset is searched for access-files with the name specified by the AccessFileName parameter, default .htaccess. When such a file is found it is parsed and the restrictions in the file is applied to the request. This means that a user do not need to have access to the webserver’s configuration-file to limit the access to an asset. Furthermore the user can change the rules and the changes will be applied immediately.

All the access-files in the path to a requested asset is read once per request, this means that the load on the server will increase when this module is used.

The following configuration directives are supported

- AccessFileName [page 91]

**DIRECTIVE:** "AccessFileName"

Syntax: AccessFileNameFileName1 FileName2
Default: .htaccess Module: mod_htaccess(3) [page 91]

AccessFileName Specify which filenames that are used for access-files. When a request comes every directory in the path to the requested asset will be searched after files with the names specified by this parameter. If such a file is found the file will be parsed and the restrictions specified in it will be applied to the request.
Access Files Directives

In every directory under the DocumentRoot or under an Alias a user can place an access-file. An access-file is a plain text file that specify the restrictions that shall be considered before the webserver answer to a request. If there are more than one access-file in the path to the requested asset, the directives in the access-file in the directory nearest the asset will be used.

- allow [page 92]
- AllowOverRide [page 92]
- AuthGroupFile [page 93]
- AuthName [page 93]
- AuthType [page 93]
- AuthUserFile [page 93]
- deny [page 94]
- <Limit> [page 94]
- order [page 94]
- require [page 95]

DIRECTIVE: ”allow”

Syntax: Allow from subnet subnet | from all
Default: from all
Module: mod_\htaccess(3) [page 91]
Context: <Limit> [page 94]
Related: mod_auth(3), [page 63]

See the allow directive in the documentation of mod_auth(3) for more information.

DIRECTIVE: ”AllowOverRide”

Syntax: AllowOverRide all | none | Directives
Default: - None -
Module: mod_\htaccess(3) [page 91]

AllowOverRide Specify which parameters that not access-files in subdirectories are allowed to alter the value for. If the parameter is set to none no more access-files will be parsed.

If only one access-file exists setting this parameter to none can lessen the burden on the server since the server will stop looking for access-files.
DIRECTIVE: "AuthGroupFile"

Syntax: AuthGroupFile Filename
Default: - None -
Module: mod_auth(3) [page 91]
Related: mod_auth(3) [page 63],
AuthGroupFile indicates which file that contains the list of groups. Filename must contain the absolute path to the file. The format of the file is one group per row and every row contains the name of the group and the members of the group separated by a space, for example:

GroupName: Member1 Member2 .... MemberN

DIRECTIVE: "AuthName"

Syntax: AuthName auth-domain
Default: - None -
Module: mod_auth(3) [page 91]
Related: mod_auth(3) [page 63],
See the AuthName directive in the documentation of mod_auth(3) for more information.

DIRECTIVE: "AuthType"

Syntax: AuthType Basic
Default: Basic
Module: mod_auth(3) [page 91]
AuthType Specify which authentication scheme that shall be used. Today only Basic Authenticating using UUEncoding of the password and user ID is implemented.

DIRECTIVE: "AuthUserFile"

Syntax: AuthUserFile Filename
Default: - None -
Module: mod_auth(3) [page 91]
Related: mod_auth(3) [page 63],
AuthUserFile indicate which file that contains the list of users. Filename must contain the absolute path to the file. The users name and password are not encrypted so do not place the file with users in a directory that is accessible via the webserver. The format of the file is one user per row and every row contains User Name and Password separated by a colon, for example:

UserName:Password
UserName:Password
DIRECTIVE: "deny"

Syntax: deny from subnet subnet | from all
Default: from all
Module: mod htaccess(3) [page 91]
Context: <Limit> [page 94]
Related: mod auth(3) [page 63],
See the deny directive in the documentation of mod auth(3) for more information.

DIRECTIVE: "Limit"

Syntax: <Limit RequestMethods>
Default: - None -
Module: mod auth(3) [page 63]
Related: order [page 94], allow [page 92], deny [page 94], require [page 95]

<Limit> and </Limit> are used to enclose a group of directives which applies only to requests using the specified methods. If no request method is specified all request methods are verified against the restrictions.

    <Limit POST GET HEAD>
    order allow deny
    require group group1
    allow from 123.145.244.5
    </Limit>

DIRECTIVE: "order"

Syntax: order allow deny | deny allow
Default: allow deny
Module: mod htaccess(3) [page 91]
Context: order [page 94]
Related: allow [page 92], deny [page 94]

order, defines if the deny or allow control shall be performed first.

If the order is set to allow deny, then first the users network address is controlled to be in the allow subset. If the users network address is not in the allowed subset he will be denied to get the asset. If the network-address is in the allowed subset then a second control will be performed, that the users network address is not in the subset of network addresses that shall be denied as specified by the deny parameter.

If the order is set to deny allow then only users from networks specified to be in the allowed subset will succeed to request assets in the limited area.
DIRECTIVE: "require"

Syntax: require group group1 group2... | user user1 user2...
Default: - None -
Context: <Limit> [page 94]
Module: mod htaccess(3) [page 91]
Related: mod auth(3) [page 63],
See the require directive in the documentation of mod auth(3) for more information.

EWSAPI MODULE INTERACTION

If a directory is limited both by mod auth and mod htaccess the user must be allowed to request the asset for both of the modules.
Uses the following EWSAPI interaction data, if available:

{real_name, {Path, AfterPath}} as defined in mod alias(3) [page 60].

Exports the following EWSAPI interaction data, if possible:

{remote_user_name, User} The user name with which the user has authenticated himself.

Uses the following exported EWSAPI functions:

• mod alias:path/3 [page 62]
mod\_include

Erlang Module

This module makes it possible to expand “macros” embedded in HTML pages before they are delivered to the client, that is Server-Side Includes (SSI). To make this possible the server parses HTML pages on-the-fly and optionally includes the current date, the requested file’s last modification date or the size (or last modification date) of other files. In its more advanced form, it can include output from embedded CGI and /bin/sh scripts.

**Note:**
Having the server parse HTML pages is a double edged sword! It can be costly for a heavily loaded server to perform parsing of HTML pages while sending them. Furthermore, it can be considered a security risk to have average users executing commands in the name of the Erlang node user. Carefully consider these items before activating server-side includes.

**SERVER-SIDE INCLUDES (SSI) SETUP**

The server must be told which filename extensions to be used for the parsed files. These files, while very similar to HTML, are not HTML and are thus not treated the same. Internally, the server uses the magic MIME type `text/x-server-parsed-html` to identify parsed documents. It will then perform a format conversion to change these files into HTML for the client. Update the `mime.types` file, as described in the Mime Type Settings [page 43] section of `httpd(3)`, to tell the server which extension to use for parsed files, for example:

```
text/x-server-parsed-html shtml shtm
```

This makes files ending with `.shtml` and `.shtm` into parsed files. Alternatively, if the performance hit is not a problem, all HTML pages can be marked as parsed:

```
text/x-server-parsed-html html htm
```
SERVER-SIDE INCLUDES (SSI) FORMAT

All server-side include directives to the server are formatted as SGML comments within the HTML page. This is in case the document should ever find itself in the client’s hands unparsed. Each directive has the following format:

<!--#command tag1="value1" tag2="value2" -->

Each command takes different arguments, most only accept one tag at a time. Here is a breakdown of the commands and their associated tags:

**config**  
The config directive controls various aspects of the file parsing. There are two valid tags:
- **errmsg** controls the message sent back to the client if an error occurred while parsing the document. All errors are logged in the server’s error log.
- **sizefmt** determines the format used to display the size of a file. Valid choices are
  - **bytes** for a formatted byte count
  - **abbrev** for an abbreviated version displaying the number of kilobytes.

**include** will insert the text of a document into the parsed document. This command accepts two tags:
- **virtual** gives a virtual path to a document on the server. Only normal files and other parsed documents can be accessed in this way.
- **file** gives a pathname relative to the current directory. ../ cannot be used in this pathname, nor can absolute paths. As above, you can send other parsed documents, but you cannot send CGI scripts.

**echo** prints the value of one of the include variables (defined below). The only valid tag to this command is **var**, whose value is the name of the variable you wish to echo.

**fsize** prints the size of the specified file. Valid tags are the same as with the include command. The resulting format of this command is subject to the sizefmt parameter to the config command.

**flastmod** prints the last modification date of the specified file. Valid tags are the same as with the include command.

**exec** executes a given shell command or CGI script. Valid tags are:
- **cmd** executes the given string using /bin/sh. All of the variables defined below are defined, and can be used in the command.
- **cgi** executes the given virtual path to a CGI script and includes its output. The server does not perform error checking on the script output.

SERVER-SIDE INCLUDES (SSI) ENVIRONMENT VARIABLES

A number of variables are made available to parsed documents. In addition to the CGI variable set, the following variables are made available:

- **DOCUMENT_NAME**  The current filename.
- **DOCUMENT_URI**  The virtual path to this document (such as /docs/tutorials/foo.shtml).
QUERY_STRING_UNESCAPED  The unescaped version of any search query the client sent, with all shell-special characters escaped with \\.

DATE_LOCAL  The current date, local time zone.
DATE_GMT   Same as DATE_LOCAL but in Greenwich mean time.
LAST_MODIFIED  The last modification date of the current document.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{real_name, {Path, AfterPath}}  as defined in mod_alias(3) [page 61].
{remote_user, RemoteUser}  as defined in mod_auth(3) [page 68]

Exports the following EWSAPI interaction data, if possible:

{mime_type, MimeType}  The file suffix of the incoming URL mapped into a MimeType as defined in the Mime Type Settings [page 43] section of httpd_core(3).

Uses the following EWSAPI functions:

- mod cgi:env/3 [page 76]
- mod alias:path/3 [page 62]
- mod alias:real name/3 [page 62]
- mod alias:real script name/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_alias(3) [page 60], mod_auth(3) [page 63], mod_security(3) [page 104], mod cgi(3) [page 75]
mod_log
Erlang Module

This module makes it possible to log all incoming requests to an access log file. The
de-facto standard Common Logfile Format is used for this purpose. There are numerous
statistics programs available to analyze Common Logfile Format. The Common Logfile
Format looks as follows:

remotehost rfc931 authuser [date] “request” status bytes

remotehost  Remote hostname
rfc931    The client’s remote username (RFC 931).
authuser  The username with which the user authenticated himself.
[date]    Date and time of the request (RFC 1123).
“request” The request line exactly as it came from the client (RFC 1945).
status    The HTTP status code returned to the client (RFC 1945).
bytes     The content-length of the document transferred.

This module furthermore supports the use of an error log file to record internal server
errors. The error log format is more ad hoc than Common Logfile Format, but conforms
to the following syntax:

[date] access to path failed for remotehost, reason: reason

DIRECTIVE: ”ErrorLog”

Syntax: ErrorLog filename
Default: - None -
Module: mod_log(3) [page 99]

ErrorLog defines the filename of the error log file to be used to log server errors. If the
filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot
[page 47], for example:

ErrorLog logs/error_log 8080

and errors will be logged in the server root space.

DIRECTIVE: “SecurityLog”

Syntax: SecurityLog filename
Default: -None-
Module: mod_log(3) [page 99]

SecurityLog defines the filename of the access log file to be used to log security events. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 47]. For example:

SecurityLog logs/security.log 8080

and security events will be logged in the server root space.

DIRECTIVE: “TransferLog”

Syntax: TransferLog filename
Default: -None-
Module: mod_log(3) [page 99]

TransferLog defines the filename of the access log file to be used to log incoming requests. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 47]. For example:

TransferLog logs/access.log 8080

and errors will be logged in the server root space.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{remote_user, RemoteUser} as defined in mod_auth(3) [page 68].

This module furthermore exports a batch of functions to be used by other EWSAPI modules:

---

Exports

\texttt{error\_log(Socket,SocketType,ConfigDB,Date,Reason) - \{ ok, no\_error\_log \}}

Types:
- \texttt{Socket = socket()}
- \texttt{SocketType = ip\_comm | ssl}
- \texttt{ConfigDB = config\_db()}
- \texttt{Date = Reason = string()}

\texttt{error\_log/5} logs an error in a log file. \texttt{Socket} is a handler to a socket of type \texttt{SocketType} and \texttt{config\_db()} is the server config file in ETS table format as described in httpd(3) [page 27]. \texttt{Date} is a RFC 1123 date string as generated by \texttt{httpd\_util:rfc1123\_date/0} [page 56].

SEE ALSO

httpd(3) [page 27], mod\_auth(3) [page 63], mod\_security(3) [page 104], mod\_disk\_log(3) [page 79]
mod_range

Erlang Module

This module response to requests for one or many ranges of a file. This is especially useful when downloading large files, since a broken download may be resumed.
Note that request for multiple parts of a document will report a size of zero to the log file.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:
{real_name, {Path, AfterPath}} as defined in mod_alias(3) [page 61].
Uses the following EWSAPI functions:
  • mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_get(3) [page 60]
mod_responsecontrol

Erlang Module

This module controls that the conditions in the requests is fullfilled. For example a request may specify that the answer only is of interest if the content is unchanged since last retrieval. Or if the content is changed the range-request shall be converted to a request for the whole file instead.

If a client sends more then one of the header fields that restricts the servers right to respond, the standard does not specify how this shall be handled. httpd will control each field in the following order and if one of the fields not match the current state the request will be rejected with a proper response.

1. If-modified
2. If-Unmodified
3. If-Match
4. If-NotMatch

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{real_name,[Path,AfterPath]} as defined in mod_alias(3) [page 61].

Exports the following EWSAPI interaction data, if possible:

{if_range,send_file} The conditions for the range request was not fullfilled. The response must not be treated as a range request, instead it must be treated as a ordinary get request.

Uses the following EWSAPI functions:

- mod_alias:path/3 [page 62]

SEE ALSO

httpd(3) [page 27], mod_get(3) [page 60]
mod_security

Erlang Module

This module serves as a filter for authenticated requests handled in mod_auth. It provides possibility to restrict users from access for a specified amount of time if they fail to authenticate several times. It logs failed authentication as well as blocking of users, and it also calls a configurable call-back module when the events occur.

There is also an API to manually block, unblock and list blocked users or users, who have been authenticated within a configurable amount of time.

This module understands the following configuration directives:

- <Directory> [page 63]
- SecurityDataFile [page 104]
- SecurityMaxRetries [page 105]
- SecurityBlockTime [page 105]
- SecurityFailExpireTime [page 105]
- SecurityAuthTimeout [page 106]
- SecurityCallbackModule [page 106]

**DIRECTIVE: “SecurityDataFile”**

*Syntax:* SecurityDataFile filename

*Default:* - None -

*Module:* mod_security(3) [page 104]

*Context:* <Directory> [page 63]


SecurityDataFile sets the name of the security modules for a directory. The filename can be either absolute or relative to the ServerRoot. This file is used to store persistent data for the mod_security module.

**Note:**

Several directories can have the same SecurityDataFile.
DIRECTIVE: ”SecurityMaxRetries”

Syntax: SecurityMaxRetries integer() | infinity
Default: 3
Module: mod_security(3) [page 104]
Context: <Directory> [page 63]
Related: SecurityDataFile [page 104], SecurityBlockTime [page 105],
SecurityFailExpireTime [page 105], SecurityAuthTimeout [page 106],
SecurityCallbackModule [page 106]

SecurityMaxRetries specifies the maximum number of tries to authenticate a user has
before he is blocked out. If a user successfully authenticates when he is blocked, he will
receive a 403 (Forbidden) response from the server.

Note:
For security reasons, failed authentications made by this user will return a message
401 (Unauthorized), even if the user is blocked.

DIRECTIVE: ”SecurityBlockTime”

Syntax: SecurityBlockTime integer() | infinity
Default: 60
Module: mod_security(3) [page 104]
Context: <Directory> [page 63]
Related: SecurityDataFile [page 104], SecurityMaxRetries [page 105],
SecurityFailExpireTime [page 105], SecurityAuthTimeout [page 106],
SecurityCallbackModule [page 106]

SecurityBlockTime specifies the number of minutes a user is blocked. After this
amount of time, he automatically regains access.

DIRECTIVE: ”SecurityFailExpireTime”

Syntax: SecurityFailExpireTime integer() | infinity
Default: 30
Module: mod_security(3) [page 104]
Context: <Directory> [page 63]
Related: SecurityDataFile [page 104], SecurityMaxRetries [page 105],
SecurityFailExpireTime [page 105], SecurityAuthTimeout [page 106],
SecurityCallbackModule [page 106]

SecurityFailExpireTime specifies the number of minutes a failed user authentication
is remembered. If a user authenticates after this amount of time, his previous failed
 authentications are forgotten.
DIRECTIVE: "SecurityAuthTimeout"

Syntax: SecurityAuthTimeout integer() | infinity
Default: 30
Module: mod_security(3) [page 104]
Context: <Directory> [page 63]

SecurityAuthTimeout specifies the number of seconds a successful user authentication is remembered. After this time has passed, the authentication will no longer be reported by the list_auth_users [page 106] function.

DIRECTIVE: "SecurityCallbackModule"

Syntax: SecurityCallbackModule atom()
Default: - None -
Module: mod_security(3) [page 104]
Context: <Directory> [page 63]

SecurityCallbackModule specifies the name of a callback module. This module only has one export, event/4 [page 108], which is called whenever a security event occurs. Read the callback module [page 107] documentation to find out more.

Exports

list_auth_users(Port) -> Users | []
list_auth_users(Address, Port) -> Users | []
list_auth_users(Port, Dir) -> Users | []
list_auth_users(Address, Port, Dir) -> Users | []

Types:
- Port = integer()
- Address = {A,B,C,D} | string() | undefined
- Dir = string()
- Users = list() = [string()]

list_auth_users/1, list_auth_users/2 and list_auth_users/3 returns a list of users that are currently authenticated. Authentications are stored for SecurityAuthTimeout seconds, and are then discarded.

list_blocked_users(Port) -> Users | []
list_blocked_users(Address, Port) -> Users | []
list_blocked_users(Port, Dir) -> Users | []
list_blocked_users(Address, Port, Dir) -> Users | []
Types:
- Port = integer()
- Address = \{A,B,C,D\} | string() | undefined
- Dir = string()
- Users = list() = [string()]

list\_blocked\_users/1, list\_blocked\_users/2 and list\_blocked\_users/3 returns a list of users that are currently blocked from access.

\texttt{block\_user(User, Port, Dir, Seconds) -> true | \{error, Reason\}}
\texttt{block\_user(User, Address, Port, Dir, Seconds) -> true | \{error, Reason\}}

Types:
- User = string()
- Port = integer()
- Address = \{A,B,C,D\} | string() | undefined
- Dir = string()
- Seconds = integer() | infinity
- Reason = no\_such\_directory

\texttt{block\_user/4 and block\_user/5} blocks the user \texttt{User} from the directory \texttt{Dir} for a specified amount of time.

\texttt{unblock\_user(User, Port) -> true | \{error, Reason\}}
\texttt{unblock\_user(User, Address, Port) -> true | \{error, Reason\}}
\texttt{unblock\_user(User, Port, Dir) -> true | \{error, Reason\}}
\texttt{unblock\_user(User, Address, Port, Dir) -> true | \{error, Reason\}}

Types:
- User = string()
- Port = integer()
- Address = \{A,B,C,D\} | string() | undefined
- Dir = string()
- Reason = term()

\texttt{unblock\_user/2, unblock\_user/3 and unblock\_user/4} removes the user \texttt{User} from the list of blocked users for the Port (and Dir) specified.

\textbf{The SecurityCallbackModule}

The SecurityCallbackModule is a user written module that can receive events from the \texttt{mod\_security} EWSAPI module. This module only exports one function, \texttt{event/4} [page 108], which is described below.
Exports

\[
\text{event(What, Port, Dir, Data)} \rightarrow \text{ignored}
\]
\[
\text{event(What, Address, Port, Dir, Data)} \rightarrow \text{ignored}
\]

Types:

- \text{What} = \text{atom()}
- \text{Port} = \text{integer()}
- \text{Address} = \{A,B,C,D\} \mid \text{string()}
- \text{Dir} = \text{string()}
- \text{What} = [\text{Info}]
- \text{Info} = \{\text{Name, Value}\}

\text{event/4} or \text{event/5} is called whenever an event occurs in the \text{mod_security EWSAPI} module (\text{event/4} is called if \text{Address} is undefined and \text{event/5} otherwise). The \text{What} argument specifies the type of event that has occurred, and should be one of the following reasons: \text{auth fail} (a failed user authentication), \text{user block} (a user is being blocked from access) or \text{user unblock} (a user is being removed from the block list).

\textbf{Note:}

Note that the \text{user unblock} event is not triggered when a user is removed from the block list explicitly using the \text{unblock user} function.
mod_trace

Erlang Module

This module is responsible for handling of TRACE requests. Trace is a new request method in HTTP/1.1. The intended use of trace requests is for testing. The body of the trace response is the request message that the responding Web server or proxy received.

EWSAPI MODULE INTERACTION

Uses the following EWS API interaction data, if available:

SEE ALSO

httpd(3) [page 27],
Glossary

Gateway
A server which acts as an intermediary for some other server. Unlike a proxy, a gateway receives requests as if it were the origin server for the requested resource; the requesting client may not be aware that it is communicating with a gateway.

HTTP
Hypertext Transfer Protocol.

MIME
Multi-purpose Internet Mail Extensions.

Proxy
An intermediary program which acts as both a server and a client for the purpose of making requests on behalf of other clients.

RFC
A “Request for Comments” used as a proposed standard by IETF.
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