

# Inets

version 2.6

Typeset in L<sup>A</sup>T<sub>E</sub>X from SGML source using the DOCBUILDER 3.2.2 Document System.

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# Inets Reference Manual

## Short Summaries

- Application **inets** [page 11] – Inets
- Erlang Module **ftp** [page 12] – A File Transfer Protocol client
- Erlang Module **httpd** [page 20] – An implementation of an HTTP 1.0 compliant Web server, as defined in RFC 1945.
- Erlang Module **httpd.conf** [page 30] – Configuration utility functions to be used by the EWSAPI programmer.
- Erlang Module **httpd.core** [page 32] – The core functionality of the Web server.
- Erlang Module **httpd.socket** [page 40] – Communication utility functions to be used by the EWSAPI programmer.
- Erlang Module **httpd.util** [page 42] – Miscellaneous utility functions to be used when implementing EWSAPI modules.
- Erlang Module **mod\_actions** [page 47] – Filetype/method-based script execution.
- Erlang Module **mod\_alias** [page 49] – This module creates aliases and redirections.
- Erlang Module **mod\_auth** [page 52] – User authentication using text files, dets or mnesia database.
- Erlang Module **mod\_browser** [page 63] – Tries to recognize the browser and operating-system of the client.
- Erlang Module **mod\_cgi** [page 64] – Invoking of CGI scripts.
- Erlang Module **mod\_dir** [page 66] – Basic directory handling.
- Erlang Module **mod\_disk\_log** [page 67] – Standard logging using the "Common Logfile Format" and disk\_log(3).
- Erlang Module **mod\_esi** [page 70] – Efficient Erlang Scripting
- Erlang Module **mod\_htaccess** [page 74] – This module provides per-directory user configurable access control.
- Erlang Module **mod\_include** [page 79] – Server-parsed documents.
- Erlang Module **mod\_log** [page 82] – Standard logging using the "Common Logfile Format" and text files.
- Erlang Module **mod\_security** [page 84] – Security Audit and Trailing Functionality

## inets

No functions are exported.

## ftp

The following functions are exported:

- `account(Pid,Account) -> ok | {error, Reason}`  
[page 13] Specify which account to use.
- `append(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`  
[page 13] Transfer file to remote server, and append it to Remotefile.
- `append_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`  
[page 13] Transfer a binary into a remote file.
- `append_chunk(Pid, Bin) -> ok | {error, Reason}`  
[page 13] append a chunk to the remote file.
- `append_chunk_start(Pid, File) -> ok | {error, Reason}`  
[page 13] Start transfer of file chunks for appending to File.
- `append_chunk_end(Pid) -> ok | {error, Reason}`  
[page 14] Stop transfer of chunks for appending.
- `cd(Pid, Dir) -> ok | {error, Reason}`  
[page 14] Change remote working directory.
- `close(Pid) -> ok`  
[page 14] End ftp session.
- `delete(Pid, File) -> ok | {error, Reason}`  
[page 14] Delete a file at the remote server..
- `formaterror(Tag) -> string()`  
[page 14] Return error diagnostics.
- `lcd(Pid, Dir) -> ok | {error, Reason}`  
[page 14] Change local working directory.
- `lpwd(Pid) -> {ok, Dir}`  
[page 14] Get local current working directory.
- `ls(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`  
[page 15] List contents of remote directory.
- `mkdir(Pid, Dir) -> ok | {error, Reason}`  
[page 15] Create remote directory.
- `nlist(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`  
[page 15] List contents of remote directory.
- `open(Host [, Port] [, Flags]) -> {ok, Pid} | {error, Reason}`  
[page 15] Start an ftp client.
- `open({option_list,Option_list}) -> {ok, Pid} | {error, Reason}`  
[page 15] Start an ftp client.
- `pwd(Pid) -> {ok, Dir} | {error, Reason}`  
[page 16] Get remote current working directory.
- `recv(Pid, RemoteFile [, LocalFile]) -> ok | {error, Reason}`  
[page 16] Transfer file from remote server.
- `recv_bin(Pid, RemoteFile) -> {ok, Bin} | {error, Reason}`  
[page 16] Transfer file from remote server as a binary.
- `rename(Pid, Old, New) -> ok | {error, Reason}`  
[page 16] Rename a file at the remote server..

- `rmdir(Pid, Dir) -> ok | {error, Reason}`  
[page 17] Remove a remote directory.
- `send(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`  
[page 17] Transfer file to remote server.
- `send_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`  
[page 17] Transfer a binary into a remote file.
- `send_chunk(Pid, Bin) -> ok | {error, Reason}`  
[page 17] Write a chunk to the remote file.
- `send_chunk_start(Pid, File) -> ok | {error, Reason}`  
[page 17] Start transfer of file chunks.
- `send_chunk_end(Pid) -> ok | {error, Reason}`  
[page 18] Stop transfer of chunks.
- `type(Pid, Type) -> ok | {error, Reason}`  
[page 18] Set transfer type to ascii or binary.
- `user(Pid, User, Password) -> ok | {error, Reason}`  
[page 18] User login.
- `user(Pid, User, Password, Account) -> ok | {error, Reason}`  
[page 18] User login.

## httpd

The following functions are exported:

- `start()`  
[page 22] Start a server as specified in the given config file.
- `start(ConfigFile) -> ServerRet`  
[page 22] Start a server as specified in the given config file.
- `start_link()`  
[page 22] Start a server as specified in the given config file.
- `start_link(ConfigFile) -> ServerRet`  
[page 22] Start a server as specified in the given config file.
- `restart()`  
[page 23] Restart a running server.
- `restart(Port) -> ok | {error, Reason}`  
[page 23] Restart a running server.
- `restart(ConfigFile) -> ok | {error, Reason}`  
[page 23] Restart a running server.
- `restart(Address, Port) -> ok | {error, Reason}`  
[page 23] Restart a running server.
- `stop()`  
[page 23] Stop a running server.
- `stop(Port) -> ServerRet`  
[page 23] Stop a running server.
- `stop(ConfigFile) -> ServerRet`  
[page 23] Stop a running server.
- `stop(Address, Port) -> ServerRet`  
[page 23] Stop a running server.

- `block()` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(Port)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(ConfigFile)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(Address,Port)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(Port,Mode)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(ConfigFile,Mode)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(Address,Port,Mode)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(ConfigFile,Mode,Timeout)` -> `ok` | `{error,Reason}`  
[page 23] Block a running server.
- `block(Address,Port,Mode,Timeout)` -> `ok` | `{error,Reason}`  
[page 24] Block a running server.
- `unblock()` -> `ok` | `{error,Reason}`  
[page 24] Unblock a blocked server.
- `unblock(Port)` -> `ok` | `{error,Reason}`  
[page 24] Unblock a blocked server.
- `unblock(ConfigFile)` -> `ok` | `{error,Reason}`  
[page 24] Unblock a blocked server.
- `unblock(Address,Port)` -> `ok` | `{error,Reason}`  
[page 24] Unblock a blocked server.
- `parse_query(QueryString)` -> `ServerRet`  
[page 24] Parse incoming data to `erl` and `eval` scripts.

## httpd\_conf

The following functions are exported:

- `check_enum(EnumString,ValidEnumStrings)` -> `Result`  
[page 30] Check if string is a valid enumeration.
- `clean(String)` -> `Stripped`  
[page 30] Remove leading and/or trailing white spaces.
- `custom_clean(String,Before,After)` -> `Stripped`  
[page 30] Remove leading and/or trailing white spaces and custom characters.
- `is_directory(FilePath)` -> `Result`  
[page 30] Check if a file path is a directory.
- `is_file(FilePath)` -> `Result`  
[page 31] Check if a file path is a regular file.
- `make_integer(String)` -> `Result`  
[page 31] 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 40] Send binary data over a socket in 2kB packets.
- `peername(SocketType,Socket) -> {Port,IPaddress}`  
[page 40] Return the port and IP-address of the remote socket.
- `resolve() -> HostName`  
[page 40] Return the official name of the current host.

## httpd\_util

The following functions are exported:

- `decode_base64(Base64String) -> ASCIIStr`  
[page 42] Convert a base64 encoded string to a plain ascii string.
- `decode_hex(HexValue) -> DecValue`  
[page 42] Convert a hex value into its decimal equivalent.
- `day(NthDayOfWeek) -> DayOfWeek`  
[page 42] Convert the day of the week (integer [1-7]) to an abbreviated string.
- `encode_base64(ASCIIStr) -> Base64String`  
[page 42] Convert an ASCII string to a Base64 encoded string.
- `header(StatusCode,Date)`  
[page 43] Generate a HTTP 1.0 header.
- `header(StatusCode,MimeType,Date) -> HTTPHeader`  
[page 43] Generate a HTTP 1.0 header.
- `flatlength(NestedList) -> Size`  
[page 43] Compute the size of a possibly nested list.
- `key1search(TupleList,Key)`  
[page 43] Search a list of key-value tuples for a tuple whose first element is a key.
- `key1search(TupleList,Key,Undefined) -> Result`  
[page 43] Search a list of key-value tuples for a tuple whose first element is a key.
- `lookup(ETSTable,Key) -> Result`  
[page 43] Extract the first value associated with a key in an ETS table.
- `lookup(ETSTable,Key,Undefined) -> Result`  
[page 43] Extract the first value associated with a key in an ETS table.
- `lookup_mime(ConfigDB,Suffix)`  
[page 43] Return the mime type associated with a specific file suffix.
- `lookup_mime(ConfigDB,Suffix,Undefined) -> MimeType`  
[page 43] Return the mime type associated with a specific file suffix.
- `lookup_mime_default(ConfigDB,Suffix)`  
[page 44] Return the mime type associated with a specific file suffix or the value of the DefaultType.

- `lookup_mime_default(ConfigDB,Suffix,Undefined) -> MimeType`  
[page 44] Return the mime type associated with a specific file suffix or the value of the DefaultType.
- `message(StatusCode,PhraseArgs,ConfigDB) -> Message`  
[page 44] Return an informative HTTP 1.0 status string in HTML.
- `month(NthMonth) -> Month`  
[page 44] Convert the month as an integer (1-12) to an abbreviated string.
- `multi_lookup(ETSTable,Key) -> Result`  
[page 45] Extract the values associated with a key in a ETS table.
- `reason_phrase(StatusCode) -> Description`  
[page 45] Return the description of an HTTP 1.0 status code.
- `rfc1123_date() -> RFC1123Date`  
[page 45] Return the current date in RFC 1123 format.
- `split(String,RegExp,N) -> SplitRes`  
[page 45] Split a string in N chunks using a regular expression.
- `split_script_path(RequestLine) -> Splitted`  
[page 45] Split a RequestLine in a file reference to an executable and a QueryString or a PathInfo string.
- `split_path(RequestLine) -> {Path,QueryStringOrPathInfo}`  
[page 45] Split a RequestLine in a file reference and a QueryString or a PathInfo string.
- `suffix(FileName) -> Suffix`  
[page 46] Extract the file suffix from a given filename.
- `to_lower(String) -> ConvertedString`  
[page 46] Convert upper-case letters to lower-case.
- `to_upper(String) -> ConvertedString`  
[page 46] 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 50] Return a new path with the default resource or file appended.
- `path(Data,ConfigDB,RequestURI) -> Path`  
[page 50] Return the actual file path to a URL.
- `real_name(ConfigDB,RequestURI,Aliases) -> Ret`  
[page 51] Expand a request uri using Alias config directives.
- `real_script_name(ConfigDB,RequestURI,ScriptAliases) -> Ret`  
[page 51] Expand a request uri using ScriptAlias config directives.

## mod\_auth

The following functions are exported:

- `add_user(Username, Options) -> true | {error, Reason}`  
[page 58] Add a user to the user database.
- `add_user(Username, Password, UserData, Port, Dir) -> true | {error, Reason}`  
[page 58] Add a user to the user database.
- `add_user(Username, Password, UserData, Address, Port, Dir) -> true | {error, Reason}`  
[page 58] Add a user to the user database.
- `delete_user(Username, Options) -> true | {error, Reason}`  
[page 58] Delete a user from the user database.
- `delete_user(Username, Port, Dir) -> true | {error, Reason}`  
[page 58] Delete a user from the user database.
- `delete_user(Username, Address, Port, Dir) -> true | {error, Reason}`  
[page 58] Delete a user from the user database.
- `get_user(Username, Options) -> {ok, #httpd_user} | {error, Reason}`  
[page 58] Returns a user from the user database.
- `get_user(Username, Port, Dir) -> {ok, #httpd_user} | {error, Reason}`  
[page 58] Returns a user from the user database.
- `get_user(Username, Address, Port, Dir) -> {ok, #httpd_user} | {error, Reason}`  
[page 58] Returns a user from the user database.
- `list_users(Options) -> {ok, Users} | {error, Reason}`  
`<name>list_users(Port, Dir) -> {ok, Users} | {error, Reason}`  
[page 59] List users in the user database.
- `list_users(Address, Port, Dir) -> {ok, Users} | {error, Reason}`  
[page 59] List users in the user database.
- `add_group_member(Groupname, Username, Options) -> true | {error, Reason}`  
[page 59] Add a user to a group.
- `add_group_member(Groupname, Username, Port, Dir) -> true | {error, Reason}`  
[page 59] Add a user to a group.
- `add_group_member(Groupname, Username, Address, Port, Dir) -> true | {error, Reason}`  
[page 59] Add a user to a group.
- `delete_group_member(Groupname, Username, Options) -> true | {error, Reason}`  
[page 60] Remove a user from a group.
- `delete_group_member(Groupname, Username, Port, Dir) -> true | {error, Reason}`  
[page 60] Remove a user from a group.
- `delete_group_member(Groupname, Username, Address, Port, Dir) -> true | {error, Reason}`  
[page 60] Remove a user from a group.

- `list_group_members(GroupName, Options) -> {ok, Users} | {error, Reason}`  
[page 60] List the members of a group.
- `list_group_members(GroupName, Port, Dir) -> {ok, Users} | {error, Reason}`  
[page 60] List the members of a group.
- `list_group_members(GroupName, Address, Port, Dir) -> {ok, Users} | {error, Reason}`  
[page 60] List the members of a group.
- `list_groups(Options) -> {ok, Groups} | {error, Reason}`  
[page 60] List all the groups.
- `list_groups(Port, Dir) -> {ok, Groups} | {error, Reason}`  
[page 60] List all the groups.
- `list_groups(Address, Port, Dir) -> {ok, Groups} | {error, Reason}`  
[page 61] List all the groups.
- `delete_group(GroupName, Options) -> true | {error, Reason}`  
    `<name>delete_group(GroupName, Port, Dir) -> true | {error, Reason}`  
[page 61] Deletes a group
- `delete_group(GroupName, Address, Port, Dir) -> true | {error, Reason}`  
[page 61] Deletes a group
- `update_password(Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}`  
[page 61] Change the AuthAccessPassword
- `update_password(Address, Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}`  
[page 61] Change the AuthAccessPassword

## mod\_browser

The following functions are exported:

- `getBrowser(AgentString) -> {Browser, OperatingSystem}`  
[page 63] Extracts the browser and operating-system from AgentString

## mod\_cgi

The following functions are exported:

- `env(Info, Script, AfterScript) -> EnvString`  
[page 65] Return a CGI-1.1 environment variable string to be used by `open_port/2`.
- `status_code(CGIOutput) -> {ok, StatusCode} | {error, Reason}`  
[page 65] 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 69] Log an error in the error log file.

## mod\_esi

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 83] Log an error in the a log file.

## mod\_security

The following functions are exported:

- `list_auth_users(Port) -> Users | []`  
[page 86] 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 86] 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 86] 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 86] 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 86] 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 86] 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 86] 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 86] 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 87] Block user from access to a directory for a certain amount of time.
- `block_user(User, Address, Port, Dir, Seconds) -> true | {error, Reason}`  
[page 87] Block user from access to a directory for a certain amount of time.
- `unblock_user(User, Port) -> true | {error, Reason}`  
[page 87] Remove a blocked user from the block list
- `unblock_user(User, Address, Port) -> true | {error, Reason}`  
[page 87] Remove a blocked user from the block list
- `unblock_user(User, Port, Dir) -> true | {error, Reason}`  
[page 87] Remove a blocked user from the block list
- `unblock_user(User, Address, Port, Dir) -> true | {error, Reason}`  
[page 87] Remove a blocked user from the block list
- `event(What, Port, Dir, Data) -> ignored`  
[page 88] This function is called whenever an event occurs in mod\_security
- `event(What, Address, Port, Dir, Data) -> ignored`  
[page 88] This function is called whenever an event occurs in mod\_security

# inets

## Application

Inets is a container for Internet clients and servers. Currently, an HTTP server and an FTP client has been incorporated in Inets. The HTTP server is an efficient implementation of *HTTP* 1.0 as defined in *RFC* 1945, namely a Web server.

## 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:

```
[{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 20].

`inets.config` can be tested by copying the example server root to a specific installation directory, as described in `httpd(3)` [page 22]. The example below shows a manual start of an Erlang node, using `inets.config`, and the start of two HTTP servers listening listen on ports 8888 and 8080.

```
$ 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 20]

# ftp

Erlang Module

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`.

```
1> {ok, Pid} = ftp:open("erlang.org").  
{ok, <0.22.0>}  
2> ftp:user(Pid, "guest", "password").  
ok  
3> ftp:pwd(Pid).  
{ok, "/home/guest"}  
4> ftp:cd(Pid, "appl/examples").  
ok  
5> ftp:lpwd(Pid).  
{ok, "/home/fred"}.  
6> ftp:lcd(Pid, "/home/eproj/examples").  
ok  
7> ftp:recv(Pid, "appl.erl").  
ok  
8> 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 to be stored as remote files (see `send_bin/3`).

There is also a set of functions for sending contiguous parts of a file to be stored in a remote file (see `send_chunk_start/2`, `send_chunk/2` and `send_chunk_end/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 | etnospc | egnospc | 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 exist 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 | etnospc | egnospc | efnamena

Transfers the binary Bin to the remote server and append it to the file RemoteFile. If the file does not exist 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 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 exist it will be created.

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

Types:

- `Pid = pid()`
- `Reason = elogin | echunk | econn | etnospc | egnospc | efnamena`

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.

```
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 (ls/1) or the specified directory (ls/2). The format of Listing is operating system dependent (on UNIX it is typically produced from the output of the `ls -l` shell command).

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

Types:

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

Creates the directory Dir at the remote server.

```
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 (nlist/1) or the specified directory (nlist/2). The format of Listing is a stream of file names, where each name is separated by <CRLF> or <NL>. Contrary to the `ls` function, the purpose of `nlist` is to make it possible for a program to automatically process file name information.

```
open(Host [, Port] [, Flags]) -> {ok, Pid} | {error, Reason}
```

```
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]
- Options={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. `1pwd/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

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

```
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.

```
rename(Pid, Old, New) -> ok | {error, Reason}
```

Types:

- Pid = pid()
- CurrFile = NewFile = string()

- Reason = epath | elogin | econn

Renames Old to New at the remote server.

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

Types:

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

Removes directory Dir at the remote server.

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

Types:

- Pid = pid()
- LocalFile = RemoteFile = string()
- Reason = epath | elogin | econn | etnospc | epnospc | efnamena

Transfers the file LocalFile to the remote server. If RemoteFile is specified, the name of the remote file is set to RemoteFile; otherwise the name is set to LocalFile.

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

Types:

- Pid = 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.

`epath` No such file or directory, or directory already exists, or permission denied.

`etype` No such type.

`euser` User name or password not valid.

`etnospc` Insufficient storage space in system [452].

`epnospc` Exceeded storage allocation (for current directory or dataset) [552].

`efnamena` File name not allowed [553].

## SEE ALSO

`file`, `filename`, J. Postel and J. Reynolds: File Transfer Protocol (RFC 959).

# httpd

## Erlang Module

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 1.0 as described in *RFC 1945* 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 33] (Secure Sockets Layer), ESI [page 70] (Erlang Scripting Interface), CGI [page 64] (Common Gateway Interface), User Authentication [page 52] (using Mnesia, dets or plain text database), Common Logfile Format (with [page 67] or without [page 82] `disk_log(3)` support), URL Aliasing [page 49], Action Mappings [page 47], Directory Listings [page 66] and SSI [page 79] (Server-Side Includes).

The configuration [page 20] of the server is done using Apache<sup>1</sup>-style run-time configuration directives. The goal is to be plug-in compatible with Apache but with enhanced fault-tolerance, scalability and load-balancing characteristics.

All server functionality has been implemented using an especially crafted server API; EWSAPI [page 25] (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 run-time configuration directives stored in a configuration file. Take a look at the example config files in the `conf` directory<sup>2</sup> of the server root for a complete understanding.

An alphabetical list of all config directives:

- Action [page 47]
- Alias [page 49]
- allow [page 56]
- deny [page 56]
- AuthName [page 55]
- AuthGroupFile [page 55]
- AuthUserFile [page 54]
- BindAddress [page 33]
- DefaultType [page 34]

---

<sup>1</sup>URL: <http://www.apache.org>

<sup>2</sup>In Windows: `%INETS_ROOT%\examples\server_root\conf\`. In UNIX: `$INETS_ROOT/examples/server_root/conf/`.



- <Directory> [page 52]
- DirectoryIndex [page 49]
- DocumentRoot [page 34]
- ErlScriptAlias [page 72]
- ErrorLog [page 82]
- ErrorDiskLog [page 68]
- ErrorDiskLogSize [page 68]
- EvalScriptAlias [page 73]
- MaxBodySize [page 34]
- MaxBodyAction [page 34]
- MaxClients [page 35]
- MaxHeaderSize [page 35]
- MaxHeaderAction [page 35]
- Modules [page 35]
- Port [page 36]
- require [page 57]
- ServerAdmin [page 36]
- ServerName [page 36]
- ServerRoot [page 36]
- Script [page 47]
- ScriptAlias [page 50]
- SocketType [page 37]
- SSLCACertificateFile [page 37]
- SSLCertificateFile [page 37]
- SSLCertificateKeyFile [page 37]
- SSLCiphers [page 38]
- SSLPasswordCallbackFunction [page 38]
- SSLPasswordCallbackModule [page 39]
- SSLVerifyClient [page 38]
- SSLVerifyDepth [page 38]
- KeepAlive [page 39]
- KeepAliveTimeout [page 39]
- TransferLog [page 83]
- TransferDiskLog [page 68]
- TransferDiskLogSize [page 68]

## EWSAPI MODULES

All server functionality below has been implemented using EWSAPI (Erlang Web Server API) modules. The following modules all have separate manual pages (`mod_cgi(3)`, `mod_auth(3)`, ...):

**httpd.core** [page 32] Core features.

**mod\_actions** [page 47] Filetype/method-based script execution.

**mod\_alias** [page 49] Aliases and redirects.

**mod\_auth** [page 52] User authentication using text files, mnesia or dets

**mod\_cgi** [page 64] Invoking of CGI scripts.

**mod\_dir** [page 66] Basic directory handling.

**mod\_esi** [page 70] Efficient Erlang Scripting.

**mod\_get** HTTP GET Method

**mod\_head** HTTP HEAD Method

**mod\_include** [page 79] Server-parsed documents.

**mod\_log** [page 82] Standard logging in the Common Logfile Format using text files.

**mod\_disk\_log** [page 67] Standard logging in the Common Logfile Format using `disk_log(3)`.

The Modules [page 35] config directive can be used to alter the server behavior, that is to 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 29] section below.

## Exports

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

Types:

- ConfigFile = string()
- ServerRet = {ok,Pid} | ignore | {error,EReason} | {stop,SReason}
- Pid = pid()
- EReason = {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<sup>3</sup> to a specific installation directory<sup>4</sup> and you have a server running in no time.

<sup>3</sup>In Windows: %INETSR00T%\examples\server\_root\. In UNIX: \$INETSR00T/examples/server\_root/.

<sup>4</sup>In Windows: X:\var\tmp\. In UNIX: /var/tmp/.

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 24]. After restart has been called, the server must be unblocked [page 24].

```
stop()
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()) extracts 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 70]) as defined in the standard URL format, that is '+' becomes 'space' and decoding of hexadecimal characters (%xx).

## 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 2109<sup>5</sup> implementation.

**Warning:**

The current implementation of EWSAPI is under review and feedback is welcomed.

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 64] or ESI [page 70] 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<sup>6</sup> `mod_*.erl` and note how to they are configured in the example config directory<sup>7</sup>.

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 27] below).

A module can choose to export functions to be used by other modules in the EWSAPI Module Sequence (See Modules [page 35] 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 29] below).

**Note:**

The server executes `do/1` (using `apply/1`) for each module listed in the Modules [page 35] config directive. `do/1` takes the record `mod` as an argument, as described below. See `httpd.hrl`<sup>8</sup>:

<sup>6</sup>In Windows: `%INETS_ROOT%\src\`. In UNIX: `$INETS_ROOT/src/`.

<sup>7</sup>In Windows: `%INETS_ROOT%\examples\server_root\conf\`. In UNIX: `$INETS_ROOT/examples/server_root/conf/`.

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

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 29] below). Depicted `interaction_data()` in function type declarations.

**socket\_type** Type `ip_comm | ssl`, that is the socket type.

**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" | "DELETE" | "PUT"`, that is the HTTP method.

**request\_uri** The Request-URI as defined in RFC 1945, for example `"/cgi-bin/find.pl?person=jocke"`

**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}]]`, that is all HTTP header fields stored in a list of key-value tuples. See RFC 1945 for a listing of all header fields, for example `{date,"Wed, 15 Oct 1997 14:35:17 GMT"}`.

**entity\_body** The Entity-Body as defined in RFC 1945, for example data sent from a CGI-script using the POST method.

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, that is `{proceed,NewData} | {break,NewData} | done` which has the following meaning (OldData refers to the data field in the incoming mod record):

`{proceed,OldData}` Proceed to next module as nothing happened.

`{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 1945.

`{proceed,[{response,{already_sent,StatusCode,Size}}|OldData]}` 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.

`{proceed,[{status,{StatusCode,PhraseArgs,Reason}}|OldData]}` 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 44].

- `{break,NewData}` 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!
- `done` 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 42] and `httpd_socket(3)` [page 40].

## 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 52]. `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 `<Directory>` [page 52] which introduces a new context and `</Directory>` [page 52] 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 from mod\_log.erl:

```
load([$T,$r,$a,$n,$s,$f,$e,$r,$L,$o,$g,$ |TransferLog],[]) ->
    {ok,[],{transfer_log,httpd_conf:clean(TransferLog)}};
load([$E,$r,$r,$o,$r,$L,$o,$g,$ |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 from mod\_log.erl:

```
store({error_log,ErrorLog},ConfigList) ->
    case create_log(ErrorLog,ConfigList) of
        {ok,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.
```

Keep in mind that there exists numerous utility functions to help you as an EWSAPI module programmer, e.g. nifty lookup of data in ETS-tables/key-value lists and configure utilities. You are well advised to read httpd\_conf(3) [page 30] and httpd\_util(3) [page 42].



## EWSAPI MODULE INTERACTION

Modules in the EWSAPI Module Sequence [page 35] uses the `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 `mod_alias` [page 49] module appends the tuple `{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 `mod_alias:path/3` [page 51] and `mod_auth:add_user/5` [page 58]. These functions should be described in the module documentation.

**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 `httpd_util(3)` [page 42] and `httpd_conf(3)` [page 30].

## BUGS

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

## SEE ALSO

`httpd_core(3)` [page 32], `httpd_conf(3)` [page 30], `httpd_socket(3)` [page 11], `httpd_util(3)` [page 42], `inets(6)` [page 11], `mod_actions(3)` [page 47], `mod_alias(3)` [page 49], `mod_auth(3)` [page 52], `mod_security(3)` [page 84], `mod_cgi(3)` [page 64], `mod_dir(3)` [page 66], `mod_disk_log(3)` [page 67], `mod_esi(3)` [page 70], `mod_include(3)` [page 79], `mod_log(3)` [page 82]

# httpd\_conf

Erlang Module

This module provides the EWSAPI programmer with utility functions for adding run-time configuration directives.

**Warning:**

The current implementation of EWSAPI is under review and feedback is welcomed.

## Exports

`check_enum(EnumString,ValidEnumStrings) -> 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) -> Stripped`

Types:

- String = Stripped = string()

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

`custom_clean(String,Before,After) -> 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) -> Result`

Types:

- FilePath = string()

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

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 20]

# httpd\_core

---

Erlang Module

This manual page summarize the core features of the server not being implemented as EWSAPI modules. The following core config directives are described:

- [BindAddress](#) [page 33]
- [DefaultType](#) [page 34]
- [DocumentRoot](#) [page 34]
- [MaxBodyAction](#) [page 34]
- [MaxBodySize](#) [page 34]
- [MaxClients](#) [page 35]
- [MaxHeaderAction](#) [page 35]
- [MaxHeaderSize](#) [page 35]
- [Modules](#) [page 35]
- [Port](#) [page 36]
- [ServerAdmin](#) [page 36]
- [ServerName](#) [page 36]
- [ServerRoot](#) [page 36]
- [SocketType](#) [page 37]
- [SSLCACertificateFile](#) [page 37]
- [SSLCertificateFile](#) [page 37]
- [SSLCertificateKeyFile](#) [page 37]
- [SSLCiphers](#) [page 38]
- [SSLPasswordCallbackFunction](#) [page 38]
- [SSLPasswordCallbackModule](#) [page 39]
- [SSLVerifyClient](#) [page 38]
- [SSLVerifyDepth](#) [page 38]
- [KeepAlive](#) [page 39]
- [KeepAliveTimeout](#) [page 39]

## SECURE SOCKETS LAYER (SSL)

The SSL support is realized using the SSLeay<sup>9</sup> package. Please refer to `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 its 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` [page 37], `SSLCertificateFile` [page 37], `SSLCertificateKeyFile` [page 37], `SSLCiphers` [page 38], `SSLVerifyDepth` [page 38], and the `SSLVerifyClient` [page 38] 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 `mime.types` file. The `mime.types` reside within the `conf` directory of the `ServerRoot` [page 36]. Refer to the example server root<sup>10</sup>. MIME types may be added as required to the `mime.types` file and the `DefaultType` [page 34] config directive can be used to specify a default mime type.

## DIRECTIVE: "BindAddress"

*Syntax:* `BindAddress address`

*Default:* `BindAddress *`

*Module:* `httpd_core(3)` [page 32]

`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.

<sup>9</sup>URL: <http://psych.psy.uq.oz.au/~ftp/Crypto/>

<sup>10</sup>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 32]

When the server is asked to provide a document type which cannot be determined by the MIME Type Settings [page 33], the server must inform the client about the content type of documents and `mime-type` is used if an unknown type is encountered.

## DIRECTIVE: "DocumentRoot"

*Syntax:* DocumentRoot directory-filename

*Default:* - Mandatory - *Module:* httpd\_core(3) [page 32]

DocumentRoot points the Web server to the document space from which to serve documents from. Unless matched by a directive like Alias [page 49], 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: "MaxBodyAction"

*Syntax:* MaxBodyAction action

*Default:* MaxBodyAction close *Module:* httpd\_core(3) [page 32]

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 32]

MaxBodySize limits the size of the message body of HPPD 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 32]

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 32]

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 32]

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: "Modules"

*Syntax:* Modules module module ...

*Default:* Modules mod\_get mod\_head mod\_log

*Module:* httpd\_core(3) [page 32]

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 25] (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 29] description in `httpd(3)`.

## DIRECTIVE: "Port"

*Syntax:* Port number

*Default:* Port 80

*Module:* httpd\_core(3) [page 32]

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<sup>11</sup> 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 32]

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 32]

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

## DIRECTIVE: "ServerRoot"

*Syntax:* ServerRoot directory-filename

*Default:* - Mandatory -

*Module:* httpd\_core(3) [page 32]

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 82]).

---

<sup>11</sup>In UNIX: /etc/services.



## DIRECTIVE: "SocketType"

*Syntax:* SocketType type

*Default:* SocketType ip\_comm

*Module:* httpd\_core(3) [page 32]

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 33] in `httpd(3)`).

## DIRECTIVE: "SSLCACertificateFile"

*Syntax:* SSLCACertificateFile filename

*Default:* - None -

*Module:* httpd\_core(3) [page 32]

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

## DIRECTIVE: "SSLCertificateFile"

*Syntax:* SSLCertificateFile filename

*Default:* - None -

*Module:* httpd\_core(3) [page 32]

SSLCertificateFile points at a PEM encoded certificate. Read more about PEM encoded certificates in the SSL application documentation. The dummy certificate `server.pem`<sup>12</sup>, 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 32]

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 37].

---

<sup>12</sup>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 32]

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 32]

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: "SSLCiphers"

*Syntax:* SSLCiphers ciphers

*Default:* - None -

*Module:* httpd\_core(3) [page 32]

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 32]

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 32]

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.

## DIRECTIVE: "KeepAlive"

*Syntax:* KeepAlive max-requests

*Default:* - Disabled -

*Module:* httpd\_core(3) [page 32]

This directive enables Keep-Alive support. Set `max-requests` to the maximum number of requests you want the server to serve per connection. A limit is imposed to prevent a client from hogging your server resources. To disable Keep-Alive support, do not set this directive.

The Keep-Alive extension to HTTP, as defined by the HTTP/1.1 draft, allows persistent connections. These long-lived HTTP sessions allow multiple requests to be sent over the same TCP connection, and in some cases have been shown to result in almost 50% speedup in latency times for HTML documents with lots of images.

## DIRECTIVE: "KeepAliveTimeout"

*Syntax:* KeepAliveTimeout seconds

*Default:* - Disabled -

*Module:* httpd\_core(3) [page 32]

The number of seconds the server will wait for a subsequent request before closing the connection.

## SEE ALSO

httpd(3) [page 20]

# httpd\_socket

Erlang Module

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

**Warning:**

The current implementation of EWSAPI is under review and feedback is welcomed.

## Exports

`deliver(SocketType,Socket,Binary) -> Result`

Types:

- `SocketType = ip_comm | {ssl,SSLConfigString}`
- `SSLConfigString = string()`
- `Socket = socket()`
- `Binary = binary()`
- `Result = socket_closed | void()`

`deliver/3` sends a `Binary` over a `Socket` in 2kB chunks using the specified `SocketType`. `SSLConfigString` is a SSL configuration string as described in the SSL application documentation.

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

Types:

- `SocketType = ip_comm | {ssl,SSLConfigString}`
- `SSLConfigString = string()`
- `Socket = socket()`
- `Port = integer()`
- `IPAddress = string()`

`peername/3` returns the `Port` and `IPAddress` of the remote `Socket`. `SSLConfigString` is a SSL configuration string as described in the SSL application documentation.

`resolve() -> HostName`

Types:

- `HostName = string()`

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

## SEE ALSO

httpd(3) [page 20]

# httpd\_util

Erlang Module

This module provides the EWSAPI [page 25] module programmer with miscellaneous utility functions.

**Warning:**

The current implementation of EWSAPI is under review and feedback is welcomed.

## Exports

`decode_base64(Base64String) -> ASCIIStr`

Types:

- `Base64String = ASCIIStr = string()`

`decode_base64/1` converts `Base64String` to the plain ascii string (`ASCIIStr`). 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 its decimal equivalent (`DecValue`).

`day(NthDayOfWeek) -> DayOfWeek`

Types:

- `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(ASCIIStr) -> Base64String`

Types:

- `ASCIIStr = string()`
- `Base64String = string()`

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

`header(StatusCode,Date)`

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

Types:

- `StatusCode = integer()`
- `Date = rfc1123_date()`
- `MimeType = string()`

`header` returns a HTTP 1.0 header string. The `StatusCode` is one of the status codes defined in RFC 1945 and the `Date` string is RFC 1123 compliant. (See `rfc1123_date/0` [page 45]).

`flatlength(NestedList) -> Size`

Types:

- `NestedList = list()`
- `Size = integer()`

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

`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.

`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.

`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<sup>13</sup>).

```
lookup_mime_default(ConfigDB,Suffix)
```

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

Types:

- ConfigDB = ets\_table()
- Suffix = string()
- MimeType = string() | undefined | Undefined
- Undefined = term()

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<sup>14</sup>). If no appropriate association can be found the value of DefaultType [page 34] 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 1.0 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 1945.

501 {Method,RequestURI,HTTPVersion}: The HTTP Method, Request-URI and HTTP-Version as defined in RFC 1945.

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".

<sup>13</sup>In Windows: %SERVER\_ROOT%\conf\mime.types. In UNIX: \$SERVER\_ROOT/conf/mime.types.

<sup>14</sup>In Windows: %SERVER\_ROOT%\conf\mime.types. In UNIX: \$SERVER\_ROOT/conf/mime.types.



`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 = 200 | 201 | 204 | 301 | 302 | 304 | 400 | 401 | 403 | 404 | 500 | 501 | 502 | 504`
- `Description = string()`

`reason_phrase` returns the Description of an HTTP 1.0 `StatusCode`, for example 200 is "OK" and 201 is "Created". Read RFC 1945 for further information.

`rfc1123_date() -> RFC1123Date`

Types:

- `RFC1123Date = string()`

`rfc1123_date/0` returns the current date in RFC 1123 format.

`split(String,RegExp,N) -> SplitRes`

Types:

- `String = RegExp = string()`
- `SplitRes = {ok, FieldList} | {error, errordesc()}`
- `Fieldlist = [string()]`
- `N = integer`

`split/3` splits the `String` in `N` chunks using the `RegExp`. `split/3` is equivalent to `regexp:split/2` with one exception, that is `N` defines the 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 1945. 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.

`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 20]

# mod\_actions

Erlang Module

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 47]
- Script [page 47]

## DIRECTIVE: "Action"

*Syntax:* Action mime-type cgi-script

*Default:* - None -

*Module:* mod\_actions(3) [page 47]

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 47]

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 PUT /~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 49].

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 51]

## SEE ALSO

`httpd(3)` [page 20], `mod_alias(3)` [page 49]

# mod\_alias

## Erlang Module

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 49]
- DirectoryIndex [page 49]
- ScriptAlias [page 50]

## DIRECTIVE: "Alias"

*Syntax:* Alias url-path directory-filename

*Default:* - None -

*Module:* mod\_alias(3) [page 49]

The Alias directive allows documents to be stored in the local file system instead of the DocumentRoot [page 34] 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 49]

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 49]

The ScriptAlias directive has the same behavior as the Alias [page 49] 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 46] with one exception - Path has been run through
    default_index/2 [page 50].
```

Uses the following exported EWSAPI functions:

- mod\_alias:default\_index/2 [page 50]
- mod\_alias:path/3 [page 51]
- mod\_alias:real\_name/3 [page 51]

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 49]. 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 25].

```
path(Data, ConfigDB, RequestURI) -> Path
```

Types:

- Data = interaction\_data()

- ConfigDB = config\_db()
- RequestURI = Path = string()

path/3 returns the actual file Path in the RequestURI (See RFC 1945). If the interaction data {real\_name, {Path, AfterPath}} has been exported by mod\_alias(3) [page 50]; Path is returned. If no interaction data has been exported, ServerRoot [page 36] is used to generate a file Path. config\_db() and interaction\_data() are as defined in httpd(3) [page 25].

`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 46]. Path is generated from ShortPath, that is the result from default\_index/2 [page 50] with ShortPath as an argument. config\_db() is the server config file in ETS table format as described in httpd(3) [page 25].

`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\_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 45]. config\_db() is the server config file in ETS table format as described in httpd(3) [page 25].

## SEE ALSO

httpd(3) [page 20]

# 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 52]
- AuthDBType [page 53]
- AuthAccessPassword [page 56]
- AuthUserFile [page 54]
- AuthGroupFile [page 55]
- AuthName [page 55]
- allow [page 56]
- deny [page 56]
- require [page 57]

The Directory [page 52] config directive is central to be able to restrict access to certain areas of the server. Please read about the Directory [page 52] config directive.

## DIRECTIVE: "Directory"

*Syntax:* <Directory regexp-filename>

*Default:* - None -

*Module:* mod\_auth(3) [page 52]

*Related:* allow [page 56], deny [page 56], AuthAccessPassword [page 56] AuthUserFile [page 54], AuthGroupFile [page 55], AuthName [page 55], require [page 57]

<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:

```
<Directory /usr/local/httpd[12]/htdocs>
    AuthAccessPassword s0mEpAsSw0rD
    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 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthAccessPassword [page 56], AuthName [page 55], AuthUserFile [page 54], AuthGroupFile [page 55], require [page 57]

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 start 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 wait for the tables to be initiated. This function must only be used when the schema and the tables already is created.

```
-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 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthDBType [page 53], AuthAccessPassword [page 56], AuthGroupFile [page 55], AuthName [page 55], require [page 57]

`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 58] 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 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthName [page 55], AuthUserFile [page 54], AuthDBType [page 53], AuthAccessPassword [page 56], require [page 57]

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 58] 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 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthGroupFile [page 55], AuthUserFile [page 54], AuthDBType [page 53], AuthAccessPassword [page 56], require [page 57]

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) [page 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthGroupFile [page 55], AuthUserFile [page 54], AuthDBType [page 53], AuthName [page 55], require [page 57]

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) [page 52]

*Context:* <Directory> [page 52]

*Related:* AuthAccessPassword [page 56], deny [page 56], AuthUserFile [page 54], AuthGroupFile [page 55], AuthName [page 55], AuthDBType [page 53] require [page 57]

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) [page 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], AuthUserFile [page 54], AuthGroupFile [page 55], AuthName [page 55], AuthDBType [page 53], AuthAccessPassword [page 56], require [page 57]

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 52]

*Context:* <Directory> [page 52]

*Related:* allow [page 56], deny [page 56], AuthUserFile [page 54], AuthGroupFile [page 55], AuthName [page 55], AuthDBType [page 53], AuthAccessPassword [page 56]

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 49].

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 51]

## 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 succesful, 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 is 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 succesful, 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 requires 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 20], `mod_alias(3)` [page 49],

# mod\_browser

## Erlang Module

When a client requests for an asset the request-header may contain a string that identifies the product. Many browsers even sends 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

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

Types:

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

`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 has the same

## EWSAPI MODULE INTERACTION

Exports the following EWSAPI interaction data, if possible:

`{'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 50] config directive is treated as a CGI script. A CGI script is executed by the server and its output is returned to the client.

Support for CGI-1.1 is implemented in accordance with the CGI-1.1 specification<sup>15</sup>.

**Note:**

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

## EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{new\_request\_uri, NewRequestURI} as defined in mod\_actions(3) [page 48].

{remote\_user, RemoteUser} as defined in mod\_auth(3) [page 57].

Uses the following EWSAPI functions:

- mod\_alias:real\_name/3 [page 51]
- mod\_alias:real\_script\_name/3 [page 51]
- mod\_cgi:env/3 [page 65]
- mod\_cgi:status\_code:env/1 [page 65]

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

---

<sup>15</sup>URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

## 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 specification<sup>16</sup>. `mod_record()` is a record as defined in the EWSAPI Module Programming [page 25] section of `httpd(3)`.

`status_code(CGIOutput) -> {ok,StatusCode} | {error,Reason}`

Types:

- CGIOutput = Reason = `string()`
- StatusCode = `integer()`

Certain output from CGI scripts has a special meaning, as described in the CGI specification<sup>17</sup>, for example if "Location: `http://www.yahoo.com\n\n`" is returned from a CGI script the client gets automatically redirected to Yahoo!<sup>18</sup>, using the HTTP 302 status code (RFC 1945).

## SEE ALSO

`httpd(3)` [page 20], `mod_auth(3)` [page 52], `mod_security(3)` [page 84], `mod_alias(3)` [page 49], `mod_esi(3)` [page 70], `mod_include(3)` [page 79]

<sup>16</sup>URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

<sup>17</sup>URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

<sup>18</sup>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 35] 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 50].

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 33] section of `httpd_core(3)`.

Uses the following EWSAPI functions:

- `mod_alias:default_index/2` [page 50]
- `mod_alias:path/3` [page 51]

## SEE ALSO

`httpd(3)` [page 20], `mod_alias(3)` [page 49]

# 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 67]

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 67]

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 36], for example:

```
ErrorDiskLog logs/error_disk_log_8080
```

and errors will be logged in the server root<sup>19</sup> space.

## DIRECTIVE: "ErrorDiskLogSize"

*Syntax:* ErrorDiskLogSize max-bytes max-files

*Default:* ErrorDiskLogSize 512000 8

*Module:* mod\_disk\_log(3) [page 67]

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: "TransferDiskLog"

*Syntax:* TransferDiskLog filename

*Default:* - None -

*Module:* mod\_disk\_log(3) [page 67]

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 36], for example:

```
TransferDiskLog logs/transfer_disk_log_8080
```

and errors will be logged in the server root<sup>20</sup> space.

## DIRECTIVE: "TransferDiskLogSize"

*Syntax:* TransferDiskLogSize max-bytes max-files

*Default:* TransferDiskLogSize 512000 8

*Module:* mod\_disk\_log(3) [page 67]

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.

---

<sup>19</sup>In Windows: %SERVER\_ROOT%\logs\error\_disk\_log\_8080. In UNIX: \$SERVER\_ROOT/logs/error\_disk\_log\_8080.

<sup>20</sup>In Windows: %SERVER\_ROOT%\logs\transfer\_disk\_log\_8080. In UNIX: \$SERVER\_ROOT/logs/transfer\_disk\_log\_8080.



## EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{remote_user,RemoteUser}` as defined in `mod_auth(3)` [page 57].

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 20]. `Date` is a RFC 1123 date string as generated by `httpd_util:rfc1123_date/0` [page 45].

## SEE ALSO

`httpd(3)` [page 20], `mod_auth(3)` [page 52], `mod_security(3)` [page 84], `mod_log(3)` [page 82]

# mod\_esi

## Erlang Module

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 64] the use of the Erlang Scripting Interface (ESI) is encouraged for reasons of efficiency. CGI is resource intensive because of its 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:

- `ErlScriptAlias` [page 72]
- `EvalScriptAlias` [page 73]

## ERL SCHEME

The `erl` scheme is designed to mimic plain CGI, but without the extra overhead. An 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, i.e. `Func(Env, Input)`. `Env` contains information about the connecting client (see below), and `Input` the `QueryString` or `PathInfo` as defined in the CGI specification<sup>21</sup>. `***` above depends on how the `ErlScriptAlias` [page 72] config directive has been used. Data returned from the function must furthermore take the form as specified in the CGI specification<sup>22</sup>.

Take a look at `httpd_example.erl` in the code release<sup>23</sup> for a clarifying example. Start an example server as described in `httpd:start/0` [page 22] and test the following from a browser (The server name for your example server *will* differ!):

---

<sup>21</sup>URL: `http://hoohoo.ncsa.uiuc.edu/cgi/`

<sup>22</sup>URL: `http://hoohoo.ncsa.uiuc.edu/cgi/`

<sup>23</sup>In Windows: `%INETS\src`. In UNIX: `$INETS/src`.

`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=blaha&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=blaha&
                                     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] (X11;
                                     I; Linux 2.0.30 i586)"},
 {http_connection,"Keep-Alive"},
 {http_referer,
  "http://localhost:8080/cgi-bin/erl/
   httpd_example/get"}]
```

Input:

`input1=blaha&input2=blaha`

Parsed Input:

```
[{"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!<sup>24</sup> site will promptly be shown in your browser.

### Note:

`httpd:parse_query/1` [page 24] 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,_}}`.

<sup>24</sup>URL: <http://www.yahoo.com>

## 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.

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 73] config directive has been used. Data returned from the function must furthermore take the form as specified in the CGI specification<sup>25</sup>.

Take a look at httpd\_example.erl in the code release<sup>26</sup> for an example. Start an example server as described in httpd:start/0 [page 22] and test the following from a browser (The server name for your example server *will* differ!):

```
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 70]

ErlScriptAlias marks all URLs matching url-path as erl scheme [page 70] 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 70] description above.

<sup>25</sup>URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

<sup>26</sup>In Windows: %INETS\src. In UNIX: \$INETS/src.

## DIRECTIVE: "EvalScriptAlias"

*Syntax:* EvalScriptAlias url-path allowed-module allowed-module ...

*Default:* - None -

*Module:* mod\_esi(3) [page 70]

EvalScriptAlias marks all URLs matching url-path as eval scheme [page 72] scripts. A matching URL is mapped into a specific module and function. The module must be one of the allowed-module:s. 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 72] description above.

## EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{remote_user, RemoteUser}` as defined in `mod_auth(3)` [page 57].

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 33] section of `httpd_core(3)`.

Uses the following EWSAPI functions:

- `mod_alias:real_name/3` [page 51]
- `mod_cgi:status_code/1` [page 65]

## SEE ALSO

`httpd(3)` [page 20], `mod_alias(3)` [page 49], `mod_auth(3)` [page 52], `mod_security(3)` [page 84], `mod_cgi(3)` [page 64]

# 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 74]

## DIRECTIVE: "AccessFileName"

*Syntax:* `AccessFileNameFileName1 FileName2`

*Default:* .htaccess *Module:* mod\_htaccess(3) [page 74]

`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 75]
- `AllowOverride` [page 75]
- `AuthGroupFile` [page 76]
- `AuthName` [page 76]
- `AuthType` [page 76]
- `AuthUserFile` [page 76]
- `deny` [page 77]
- `<Limit>` [page 77]
- `order` [page 77]
- `require` [page 78]

### DIRECTIVE: "allow"

*Syntax:* `Allow from subnet subnet|from all`

*Default:* `from all`

*Module:* `mod_htaccess(3)` [page 74]

*Context:* `<Limit>` [page 77]

*Related:* `mod_auth(3)`, [page 52]

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 74]

`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\_htaccess(3) [page 74]

*Related:* mod\_auth(3) [page 52],

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\_htaccess(3) [page 74]

*Related:* mod\_auth(3) [page 52],

See the AuthName directive in the documentation of mod\_auth(3) for more information.

## DIRECTIVE: "AuthType"

*Syntax:* AuthType Basic

*Default:* Basic

*Module:* mod\_htaccess(3) [page 74]

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\_htaccess(3) [page 74]

*Related:* mod\_auth(3) [page 52],

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 74]

*Context:* <Limit> [page 77]

*Related:* mod\_auth(3) [page 52],

See the deny directive in the documentation of mod\_auth(3) for more information.

## DIRECTIVE: "Limit"

*Syntax:* <Limit RequestMethod>

*Default:* - None -

*Module:* mod\_auth(3) [page 52]

*Related:* order [page 77], allow [page 75], deny [page 77], require [page 78]

<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 74]

*Context:* order [page 77]

*Related:* allow [page 75], deny [page 77]

order, defines if the deny or allow control shall be preformed 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 preformed, 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 77]

*Module:* mod\_htaccess(3) [page 74]

*Related:* mod\_auth(3) [page 52],

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 49].

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 51]

# 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 33] 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** or **abbrev. bytes** for a formatted byte count or **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 50].

`{remote_user, RemoteUser}` as defined in `mod_auth(3)` [page 57]

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 33] section of `httpd_core(3)`.

Uses the following EWSAPI functions:

- `mod_cgi:env/3` [page 65]
- `mod_alias:path/3` [page 51]
- `mod_alias:real_name/3` [page 51]
- `mod_alias:real_script_name/3` [page 51]

## SEE ALSO

`httpd(3)` [page 20], `mod_alias(3)` [page 49], `mod_auth(3)` [page 52], `mod_security(3)` [page 84], `mod_cgi(3)` [page 64]

# 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 82]

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 36], for example:

ErrorLog logs/error\_log\_8080

and errors will be logged in the server root<sup>27</sup> space.

---

<sup>27</sup>In Windows: %SERVER\_ROOT%\logs\error\_log\_8080. In UNIX: \$SERVER\_ROOT/logs/error\_log\_8080.

## DIRECTIVE: "TransferLog"

*Syntax:* TransferLog filename

*Default:* - None -

*Module:* mod\_log(3) [page 82]

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 36]. For example:

```
TransferLog logs/access_log.8080
```

and errors will be logged in the server root<sup>28</sup> space.

## EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{remote\_user, RemoteUser} as defined in mod\_auth(3) [page 57].

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 logs an error in a 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 20]. Date is a RFC 1123 date string as generated by httpd\_util:rfc1123\_date/0 [page 45].

## SEE ALSO

httpd(3) [page 20], mod\_auth(3) [page 52], mod\_security(3) [page 84], mod\_disk\_log(3) [page 67]

---

<sup>28</sup>In Windows: %SERVER\_ROOT%\logs\access\_log.8080. In UNIX: \$SERVER\_ROOT/logs/access\_log.8080.

# 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 52]
- SecurityDataFile [page 84]
- SecurityMaxRetries [page 85]
- SecurityBlockTime [page 85]
- SecurityFailExpireTime [page 85]
- SecurityAuthTimeout [page 86]
- SecurityCallbackModule [page 86]

## DIRECTIVE: "SecurityDataFile"

*Syntax:* SecurityDataFile filename

*Default:* - None -

*Module:* mod\_security(3) [page 84]

*Context:* <Directory> [page 52]

*Related:* SecurityMaxRetries [page 85], SecurityBlockTime [page 85], SecurityFailExpireTime [page 85], SecurityAuthTimeout [page 86], SecurityCallbackModule [page 86]

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 84]

*Context:* <Directory> [page 52]

*Related:* SecurityDataFile [page 84], SecurityBlockTime [page 85], SecurityFailExpireTime [page 85], SecurityAuthTimeout [page 86], SecurityCallbackModule [page 86]

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 84]

*Context:* <Directory> [page 52]

*Related:* SecurityDataFile [page 84], SecurityMaxRetries [page 85], SecurityFailExpireTime [page 85], SecurityAuthTimeout [page 86], SecurityCallbackModule [page 86]

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 84]

*Context:* <Directory> [page 52]

*Related:* SecurityDataFile [page 84], SecurityMaxRetries [page 85], SecurityFailExpireTime [page 85], SecurityAuthTimeout [page 86], SecurityCallbackModule [page 86]

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 84]

*Context:* <Directory> [page 52]

*Related:* SecurityDataFile [page 84], SecurityMaxRetries [page 85], SecurityFailExpireTime [page 85], SecurityFailExpireTime [page 85], SecurityCallbackModule [page 86]

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 86] function.

## DIRECTIVE: "SecurityCallbackModule"

*Syntax:* SecurityCallbackModule atom()

*Default:* - None -

*Module:* mod\_security(3) [page 84]

*Context:* <Directory> [page 52]

*Related:* SecurityDataFile [page 84], SecurityMaxRetries [page 85], SecurityFailExpireTime [page 85], SecurityFailExpireTime [page 85], SecurityAuthTimeout [page 86]

SecurityCallbackModule specifies the name of a callback module. This module only has one export, event/4 [page 88], which is called whenever a security event occurs. Read the callback module [page 87] 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.

```
block_user(User, Port, Dir, Seconds) -> true | {error, Reason}
```

```
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

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

```
unblock_user(User, Port) -> true | {error, Reason}
```

```
unblock_user(User, Address, Port) -> true | {error, Reason}
```

```
unblock_user(User, Port, Dir) -> true | {error, Reason}
```

```
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()

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

## The SecurityCallbackModule

The SecurityCallbackModule is a user written module that can receive events from the mod\_security EWSAPI module. This module only exports one function, event/4 [page 88], which is described below.

## Exports

`event(What, Port, Dir, Data) -> ignored`

`event(What, Address, Port, Dir, Data) -> ignored`

Types:

- What = atom()
- Port = integer()
- Address = {A,B,C,D} | string() <v>Dir = string()
- What = [Info]
- Info = {Name, Value}

`event/4` or `event/5` is called whenever an event occurs in the `mod_security` EWSAPI module (`event/4` is called if `Address` is undefined and `event/5` otherwise). The `What` argument specifies the type of event that has occurred, and should be one of the following reasons; `auth_fail` (a failed user authentication), `user_block` (a user is being blocked from access) or `user_unblock` (a user is being removed from the block list).

**Note:**

Note that the `user_unblock` event is not triggered when a user is removed from the block list explicitly using the `unblock_user` function.

# 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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