

Inets

version 4.3

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Chapter 1

Inets User's Guide

The *Inets Application* provides a set of Internet related services. Currently supported are a HTTP client, a HTTP server and a ftp client.

1.1 Introduction

1.1.1 Purpose

Inets is a container for Internet clients and servers. Currently, an *HTTP* server, a FTP client and an HTTP client has been incorporated into Inets. The HTTP server and client is HTTP 1.1 compliant as defined in *RFC 2616*.

The HTTP client is now documented `http(3)` [page 33] and supported. It is loosely based on the earlier unsupported client developed by Johan Blom of Mobile Arts AB.

1.1.2 Prerequisites

It is assumed that the reader is familiar with the Erlang programming language, concepts of OTP and has a basic understanding of the HTTP and FTP protocols.

1.1.3 The Service Concept

Each client and server in inets is viewed as service. When starting the inets application the inets top supervisor will start a number of sub-supervisors and worker processes for handling the different services provided. Some services require that there exist a configuration file, such as HTTP server(s), in order for the service(s) to be started. While the HTTP clients main process always will be started (it remains idle until some process issues a request) in this case the configuration is optional. Other services may not be configurable and have a more dynamic character, such as ftp clients, that will add worker processes to the supervision tree every time you do `ftp:open/[1,2,3]` and remove them every time you do `ftp:close/1`.

Services that needs configuring should be put into the inets applications configuration file on the form:

```
[{inets, [{services, ListofConfiguredServices}]}].
```

For details of exactly what to put in the list of configured services see the documentation for the services that needs configuring.

1.2 FTP client

1.2.1 Introduction

Ftp client processes exist only when you use them. When you open a ftp connection a client process will be spawned and added as a dynamic child to the ftp supervisor in the inets supervision tree. When you close the connection the client process will be terminated.

1.2.2 Using the ftp client API

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> application:start(inets).
ok
2> {ok, Pid} = ftp:open("erlang.org").
{ok,<0.22.0>}
3> ftp:user(Pid, "guest", "password").
ok
4> ftp:pwd(Pid).
{ok, "/home/guest"}
5> ftp:cd(Pid, "appl/examples").
ok
6> ftp:lpwd(Pid).
{ok, "/home/fred"}
7> ftp:lcd(Pid, "/home/eproj/examples").
ok
8> ftp:recv(Pid, "appl.erl").
ok
9> ftp:close(Pid).
ok
```

1.3 HTTP client

1.3.1 Introduction

The HTTP client will be started when the inets application is started and is then available to all processes on that erlang node. The client will spawn a new process to handle each request unless there is a possibility to pipeline a request. The client will add a host header and an empty te header if there are no such headers present in the request. The client supports ipv6 as long as the underlying mechanisms also do so.

1.3.2 Configuration

It is possible to configure what directory the HTTP client should use to store information. Currently the only information stored here is cookies. If the HTTP client service is not configured all cookies will be treated as session cookies. Here follows a description of a configuration entry for the HTTP client in the application configuration file.

```
[{inets, [{services, [{httpc, {Profile, Dir}}]}]}
```

Profile = atom() - default is the only valid value, as profiles are currently not supported.

Dir = string()

1.3.3 Using the HTTP client API

```
1 > application:start(inets).
ok
```

Use the proxy “www-proxy.mycompany.com:8000”, but not for requests to localhost. This will apply to all subsequent requests

```
2 > http:set_options([{proxy, {"www-proxy.mycompany.com", 8000},
["localhost"]}]).
ok
```

An ordinary synchronous request.

```
2 > {ok, {{Version, 200, ReasonPhrase}, Headers, Body}} =
http:request(get, {"http://www.erlang.org", []}, [], []).
```

An ordinary asynchronous request. The result will be sent to the calling process on the form {http, {RequestId, Result}}

```
3 > {ok, RequestId} =
http:request(get, {"http://www.erlang.org", []}, [], [{sync, false}]).
```

In this case the calling process is the shell, so we receive the result.

```
4 > receive {http, {RequestId, Result}} -> ok after 500 -> error end.
ok
```

Send a request with a specified connection header.

```
5 > {ok, {{NewVersion, 200, NewReasonPhrase}, NewHeaders, NewBody}} =
http:request(get, {"http://www.erlang.org", [{"connection", "close"}]},
[], []).
```

1.4 HTTP server

1.4.1 Introduction

The HTTP server also referred to as `httpd` handles HTTP requests as described in *RFC 2616* with a few exceptions such as *Gateway* and *Proxy* functionality. The same is true for servers written by NCSA and others.

The server implements numerous features such as SSL [page 46] (Secure Sockets Layer), ESI [page 86] (Erlang Scripting Interface), CGI [page 78] (Common Gateway Interface), User Authentication [page 66] (using Mnesia, dets or plain text database), Common Logfile Format (with [page 82] or without [page 102] `disk_log(3)` support), URL Aliasing [page 63], Action Mappings [page 61], Directory Listings [page 81] and SSI [page 99] (Server-Side Includes).

The configuration of the server is done using Apache¹-style configuration directives. The goal is to be plug-in compatible with Apache.

Allmost all server functionality has been implemented using an especially crafted server API, it is described in the 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.

1.4.2 HTTP Server Setup

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 the run time configuration section.

`inets.config` can be tested by copying the example server root to a specific installation directory, as described in the run time configuration section. 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
```

¹URL: <http://www.apache.org>

1.4.3 Run-Time Configuration

All functionality in the server can be configured using Apache-style configuration directives stored in a configuration file. Take a look at the example config files in the conf directory² of the server root for a complete understanding.

An alphabetical list of all config directives:

- AccessFileName [page 94]
- Action [page 61]
- Alias [page 63]
- allow [page 70]
- AuthName [page 69]
- AuthGroupFile [page 69]
- AuthUserFile [page 68]
- BindAddress [page 46]
- DefaultType [page 47]
- deny [page 70]
- <Directory> [page 66]
- DirectoryIndex [page 63]
- DisableChunkedTransferEncodingSend [page 47]
- DocumentRoot [page 47]
- ErlScriptAlias [page 89]
- ErlScriptNoCache [page 89]
- ErlScriptTimeout [page 89]
- ErrorLog [page 102]
- ErrorDiskLog [page 83]
- ErrorDiskLogSize [page 83]
- EvalScriptAlias [page 90]
- KeepAlive [page 47]
- KeepAliveTimeout [page 48]
- MaxBodySize [page 48]
- MaxBodyAction [page 48]
- MaxClients [page 48]
- MaxHeaderSize [page 49]
- MaxHeaderAction [page 49]
- MaxKeepAliveRequests [page 49]
- Modules [page 49]
- Port [page 50]
- require [page 71]
- SecurityAuthTimeout [page 109]
- SecurityBlockTime [page 108]

²In Windows: %INETS_ROOT%\examples\server_root\conf\. In UNIX: \$INETS_ROOT/examples/server_root/conf/.

- SecurityCallbackModule [page 109]
- SecurityDataFile [page 107]
- SecurityDiskLog [page 83]
- SecurityDiskLogSize [page 83]
- SecurityFailExpireTime [page 108]
- SecurityLog [page 103]
- SecurityMaxRetries [page 108]
- ServerAdmin [page 50]
- ServerName [page 50]
- ServerRoot [page 50]
- Script [page 61]
- ScriptAlias [page 64]
- ScriptNoCache [page 78]
- ScriptTimeout [page 79]
- SocketType [page 51]
- SSLCACertificateFile [page 51]
- SSLCertificateFile [page 51]
- SSLCertificateKeyFile [page 51]
- SSLCiphers [page 52]
- SSLPasswordCallbackFunction [page 52]
- SSLPasswordCallbackModule [page 53]
- SSLVerifyClient [page 52]
- SSLVerifyDepth [page 52]
- TransferLog [page 103]
- TransferDiskLog [page 84]
- TransferDiskLogSize [page 84]

1.4.4 Erlang Web Server API

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

httpd_core [page 45] Some core features are not implemented using EWSAPI you can read about these in the virtual module `httpd_core`.

mod_actions [page 61] Filetype/method-based script execution.

mod_alias [page 63] Aliases and redirects.

mod_auth [page 66] User authentication using text files, mnesia or dets.

mod_browser [page 77] Tries to recognize the clients browser and operating system.

mod_cgi [page 78] Invoking of CGI scripts.

mod_dir [page 81] Basic directory handling.

mod_disk_log [page 82] Standard logging in the Common Logfile Format using `disk_log(3)`.

mod_esi [page 86] Efficient Erlang Scripting.

mod_get [page 92] Handle HTTP GET Method.
mod_head [page 93] Handle HTTP HEAD Method.
mod_htaccess [page 94] User configurable user authentication.
mod_include [page 99] Server-parsed documents.
mod_log [page 102] Standard logging in the Common Logfile Format using text files.
mod_range [page 105] Handles GET requests for parts of files.
mod_responsecontrol [page 106] Controls the restrictions in the request i.e. If-Match, If-Range, If-Modified-Since, and take the appropriate action.
mod_security [page 107] Filter authenticated requests.
mod_trace [page 112] Handles. HTTP TRACE Method

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

The Modules [page 49] config directive can be used to alter the server behavior, by alter the EWSAPI Module Sequence. An example module sequence can be found in the example config directory. If this needs to be altered read the EWSAPI Module Interaction section below.

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 2109³ implementation.

EWSAPI should only be used to add *core* functionality to the server. In order to generate dynamic content, for example on-the-fly generated HTML, use the standard CGI [page 78] or ESI [page 86] 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 modules⁴ `mod_*.erl` and note how to they are configured in the example config directory⁵.

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.

A module can choose to export functions to be used by other modules in the EWSAPI Module Sequence (See Modules [page 49] 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.

⁴In Windows: `%INETS_ROOT%\src\`. In UNIX: `$INETS_ROOT/src/`.

⁵In Windows: `%INETS_ROOT%\examples\server_root\conf\`. In UNIX: `$INETS_ROOT/examples/server_root/conf/`.

Note:

The server executes `do/1` function of each module listed in the `Modules` [page 49] `config` directive. `do/1` takes the record `mod` as an argument, as described below. See `httpd.hrl`⁶:

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

The fields of the `mod` record has the following meaning:

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

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

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

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

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

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

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

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

This is the preferred response since it makes it a lot easier to generate a response that can be sent back to both HTTP/1.0 and HTTP/1.1 clients. A warning might be in place that if `content_length` is not sent to the client, it might hang unless the body is sent with chunked encoding.

`{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 58].

`{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 55] and `httpd_socket(3)` [page 54].

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 66]. `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 66] which introduces a new context and `</Directory>` [page 66] 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.

An example of a load function from `mod_log.erl`:

```

load("TransferLog " ++ TransferLog, []) ->
  {ok, [], {transfer_log, httpd_conf:clean(TransferLog)}};

load("ErrorLog " ++ 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.

```

An example of a store function 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.

```

EWSAPI Module Interaction

Modules in the EWSAPI Module Sequence [page 49] 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 63] 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 65] and `mod_auth:add_user/5` [page 72]. 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 55] and `httpd_conf(3)` [page 43].

Inets Reference Manual

Short Summaries

- Erlang Module **ftp** [page 25] – A File Transfer Protocol client
- Erlang Module **http** [page 33] – A HTTP/1.1 client
- Erlang Module **http_base.64** [page 37] – Implements base 64 encode and decode, see RFC2045.
- Erlang Module **httpd** [page 38] – An implementation of an HTTP 1.1 compliant Web server, as defined in RFC 2616.
- Erlang Module **httpd_conf** [page 43] – Configuration utility functions to be used by the EWSAPI programmer.
- Erlang Module **httpd_core** [page 45] – The core functionality of the Web server.
- Erlang Module **httpd_socket** [page 54] – Communication utility functions to be used by the EWSAPI programmer.
- Erlang Module **httpd_util** [page 55] – Miscellaneous utility functions to be used when implementing EWSAPI modules.
- Erlang Module **mod_actions** [page 61] – Filetype/method-based script execution.
- Erlang Module **mod_alias** [page 63] – This module creates aliases and redirections.
- Erlang Module **mod_auth** [page 66] – User authentication using text files, dets or mnesia database.
- Erlang Module **mod_browser** [page 77] – Tries to recognize the browser and operating-system of the client.
- Erlang Module **mod_cgi** [page 78] – Invoking of CGI scripts.
- Erlang Module **mod_dir** [page 81] – Basic directory handling.
- Erlang Module **mod_disk_log** [page 82] – Standard logging using the "Common Logfile Format" and `disk_log(3)`.
- Erlang Module **mod_esi** [page 86] – Efficient Erlang Scripting
- Erlang Module **mod_get** [page 92] – Handle GET requests.
- Erlang Module **mod_head** [page 93] – Handles HEAD requests to regular files.
- Erlang Module **mod_htaccess** [page 94] – This module provides per-directory user configurable access control.
- Erlang Module **mod_include** [page 99] – Server-parsed documents.
- Erlang Module **mod_log** [page 102] – Standard logging using the "Common Logfile Format" and text files.
- Erlang Module **mod_range** [page 105] – handle requests for parts of a file

- Erlang Module **mod_responsecontrol** [page 106] – Controls that the request conditions is fulfilled.
- Erlang Module **mod_security** [page 107] – Security Audit and Trailing Functionality
- Erlang Module **mod_trace** [page 112] – handle trace requests

ftp

The following functions are exported:

- `account(Pid,Account) -> ok | {error, Reason}`
[page 25] Specify which account to use.
- `append(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`
[page 25] Transfer file to remote server, and append it to Remotefile.
- `append_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`
[page 25] Transfer a binary into a remote file.
- `append_chunk(Pid, Bin) -> ok | {error, Reason}`
[page 26] append a chunk to the remote file.
- `append_chunk_start(Pid, File) -> ok | {error, Reason}`
[page 26] Start transfer of file chunks for appending to File.
- `append_chunk_end(Pid) -> ok | {error, Reason}`
[page 26] Stop transfer of chunks for appending.
- `cd(Pid, Dir) -> ok | {error, Reason}`
[page 26] Change remote working directory.
- `close(Pid) -> ok`
[page 26] End ftp session.
- `delete(Pid, File) -> ok | {error, Reason}`
[page 27] Delete a file at the remote server.
- `formaterror(Tag) -> string()`
[page 27] Return error diagnostics.
- `lcd(Pid, Dir) -> ok | {error, Reason}`
[page 27] Change local working directory.
- `lpwd(Pid) -> {ok, Dir}`
[page 27] Get local current working directory.
- `ls(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`
[page 27] List contents of remote directory.
- `mkdir(Pid, Dir) -> ok | {error, Reason}`
[page 27] Create remote directory.
- `nlist(Pid [, Dir]) -> {ok, Listing} | {error, Reason}`
[page 28] List contents of remote directory.
- `open(Host [, Port] [, Flags]) -> {ok, Pid} | {error, Reason}`
[page 28] Start an ftp client.
- `open({option_list,Option_list}) -> {ok, Pid} | {error, Reason}`
[page 28] Start an ftp client.
- `pwd(Pid) -> {ok, Dir} | {error, Reason}`
[page 28] Get remote current working directory.

- `recv(Pid, RemoteFile [, LocalFile]) -> ok | {error, Reason}`
[page 29] Transfer file from remote server.
- `recv_bin(Pid, RemoteFile) -> {ok, Bin} | {error, Reason}`
[page 29] Transfer file from remote server as a binary.
- `recv_chunk_start(Pid, RemoteFile) -> ok | {error, Reason}`
[page 29] Start chunk-reading of the remote file.
- `recv_chunk(Pid) -> ok | {ok, Bin} | {error, Reason}`
[page 29] Receive a chunk of the remote file.
- `rename(Pid, Old, New) -> ok | {error, Reason}`
[page 29] Rename a file at the remote server.
- `rmdir(Pid, Dir) -> ok | {error, Reason}`
[page 30] Remove a remote directory.
- `send(Pid, LocalFile [, RemoteFile]) -> ok | {error, Reason}`
[page 30] Transfer file to remote server.
- `send_bin(Pid, Bin, RemoteFile) -> ok | {error, Reason}`
[page 30] Transfer a binary into a remote file.
- `send_chunk(Pid, Bin) -> ok | {error, Reason}`
[page 30] Write a chunk to the remote file.
- `send_chunk_start(Pid, File) -> ok | {error, Reason}`
[page 30] Start transfer of file chunks.
- `send_chunk_end(Pid) -> ok | {error, Reason}`
[page 31] Stop transfer of chunks.
- `type(Pid, Type) -> ok | {error, Reason}`
[page 31] Set transfer type to ascii or binary.
- `user(Pid, User, Password) -> ok | {error, Reason}`
[page 31] User login.
- `user(Pid, User, Password, Account) -> ok | {error, Reason}`
[page 31] User login.
- `quote(Pid, Command) -> [FTPLine]`
[page 31] Sends an arbitrary FTP command.

http

The following functions are exported:

- `cancel_request(RequestId) -> ok`
[page 34] Cancels an asynchronous HTTP-request.
- `request(Method, Request, HTTPOptions, Options) -> {ok, Result} | {error, Reason}`
[page 34] Sends a HTTP-request
- `set_options(Options) -> ok`
[page 35] Sets options to be used for subsequent requests.
- `verify_cookie(SetCookieHeaders, Url) -> ok`
[page 36] Saves the cookies defined in SetCookieHeaders in the client managers cookie database.
- `cookie_header(Url) -> header()`
[page 36] Returns the cookie header that would be sent when making a request to Url.

http_base_64

The following functions are exported:

- `decode_base64(PlainASCII) -> Base64`
[page 37] Encodes a plain ASCII string into base64.
- `decode(Base64) -> PlainASCII`
[page 37] Decodes an base64 encoded string to plain ASCII.

httpd

The following functions are exported:

- `start()`
[page 38] Start a server as specified in the given config file.
- `start(ConfigFile) -> ServerRet`
[page 38] Start a server as specified in the given config file.
- `start_link()`
[page 38] Start a server as specified in the given config file.
- `start_link(ConfigFile) -> ServerRet`
[page 38] Start a server as specified in the given config file.
- `restart()`
[page 38] Restart a running server.
- `restart(Port) -> ok | {error,Reason}`
[page 38] Restart a running server.
- `restart(ConfigFile) -> ok | {error,Reason}`
[page 38] Restart a running server.
- `restart(Address,Port) -> ok | {error,Reason}`
[page 38] Restart a running server.
- `stop()`
[page 39] Stop a running server.
- `stop(Port) -> ServerRet`
[page 39] Stop a running server.
- `stop(ConfigFile) -> ServerRet`
[page 39] Stop a running server.
- `stop(Address,Port) -> ServerRet`
[page 39] Stop a running server.
- `block() -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(Port) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(ConfigFile) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(Address,Port) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(Port,Mode) -> ok | {error,Reason}`
[page 39] Block a running server.

- `block(ConfigFile,Mode) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(Address,Port,Mode) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(ConfigFile,Mode,Timeout) -> ok | {error,Reason}`
[page 39] Block a running server.
- `block(Address,Port,Mode,Timeout) -> ok | {error,Reason}`
[page 39] Block a running server.
- `unblock() -> ok | {error,Reason}`
[page 40] Unblock a blocked server.
- `unblock(Port) -> ok | {error,Reason}`
[page 40] Unblock a blocked server.
- `unblock(ConfigFile) -> ok | {error,Reason}`
[page 40] Unblock a blocked server.
- `unblock(Address,Port) -> ok | {error,Reason}`
[page 40] Unblock a blocked server.
- `parse_query(QueryString) -> ServerRet`
[page 40] Parse incoming data to erl and eval scripts.
- `Module:do(Info)-> {proceed,OldData} | {proceed,NewData} | {break,NewData} | done`
[page 41] The do/1 i called for each request to the Web server.
- `Module:load(Line,Context)-> eof | ok | {ok,NewContext} | {ok,NewContext,Directive} | {ok,NewContext,DirectiveList} | {error,Reason}`
[page 41] Load a configuration directive.
- `Module:store({DirectiveKey,DirectiveValue},DirectiveList)-> {ok,{DirectiveKey,NewDirectiveValue}} | {ok,[{ok,{DirectiveKey,NewDirectiveValue}}]} | {error,Reason}`
[page 42] Alter the value of one or more configuration directive.
- `Module:remove(ConfigDB)-> ok | {error,Reason}`
[page 42] Callback function that is called when the Web server is closed.

httpd_conf

The following functions are exported:

- `check_enum(EnumString,ValidEnumStrings) -> Result`
[page 43] Check if string is a valid enumeration.
- `clean(String)-> Stripped`
[page 43] Remove leading and/or trailing white spaces.
- `custom_clean(String,Before,After) -> Stripped`
[page 43] Remove leading and/or trailing white spaces and custom characters.
- `is_directory(FilePath) -> Result`
[page 43] Check if a file path is a directory.
- `is_file(FilePath) -> Result`
[page 44] Check if a file path is a regular file.
- `make_integer(String) -> Result`
[page 44] 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 54] Send binary data over socket.
- `peername(SocketType,Socket) -> {Port,IPaddress}`
[page 54] Return the port and IP-address of the remote socket.
- `resolve() -> HostName`
[page 54] Return the official name of the current host.

httpd_util

The following functions are exported:

- `convert_request_date(DateString) -> ErlDate|bad_date`
[page 55] Convert The the date to the Erlang date format.
- `create_etag(FileInfo) -> Etag`
[page 55] Calculates the Etag for a file.
- `decode_base64(Base64String) -> ASCIIString`
[page 55] Convert a base64 encoded string to a plain ascii string.
- `decode_hex(HexValue) -> DecValue`
[page 55] Convert a hex value into its decimal equivalent.
- `day(NthDayOfWeek) -> DayOfWeek`
[page 55] Convert the day of the week (integer [1-7]) to an abbreviated string.
- `encode_base64(ASCIIString) -> Base64String`
[page 56] Convert an ASCII string to a Base64 encoded string.
- `flatlength(NestedList) -> Size`
[page 56] Compute the size of a possibly nested list.
- `header(StatusCode,PersistentConn)`
[page 56] Generate a HTTP 1.1 header.
- `header(StatusCode,Date)`
[page 56] Generate a HTTP 1.1 header.
- `header(StatusCode,MimeType,Date)`
[page 56] Generate a HTTP 1.1 header.
- `header(StatusCode,MimeType,PersistentConn,Date) -> HTTPHeader`
[page 56] Generate a HTTP 1.1 header.
- `hexlist_to_integer(HexString) -> Number`
[page 56] Convert a hexadecimal string to an integer.
- `integer_tohexlist(Number) -> HexString`
[page 56] Convert an integer to a hexadecimal string.
- `key1search(TupleList,Key)`
[page 57] Search a list of key-value tuples for a tuple whose first element is a key.

- `key1search(TupleList,Key,Undefined) -> Result`
[page 57] Search a list of key-value tuples for a tuple whose first element is a key.
- `lookup(ETSTable,Key) -> Result`
[page 57] Extract the first value associated with a key in an ETS table.
- `lookup(ETSTable,Key,Undefined) -> Result`
[page 57] Extract the first value associated with a key in an ETS table.
- `lookup_mime(ConfigDB,Suffix)`
[page 57] Return the mime type associated with a specific file suffix.
- `lookup_mime(ConfigDB,Suffix,Undefined) -> MimeType`
[page 57] Return the mime type associated with a specific file suffix.
- `lookup_mime_default(ConfigDB,Suffix)`
[page 57] Return the mime type associated with a specific file suffix or the value of the `DefaultType`.
- `lookup_mime_default(ConfigDB,Suffix,Undefined) -> MimeType`
[page 57] Return the mime type associated with a specific file suffix or the value of the `DefaultType`.
- `message(StatusCode,PhraseArgs,ConfigDB) -> Message`
[page 58] Return an informative HTTP 1.1 status string in HTML.
- `month(NthMonth) -> Month`
[page 58] Convert the month as an integer (1-12) to an abbreviated string.
- `multi_lookup(ETSTable,Key) -> Result`
[page 58] Extract the values associated with a key in a ETS table.
- `reason_phrase(StatusCode) -> Description`
[page 58] Return the description of an HTTP 1.1 status code.
- `rfc1123_date() -> RFC1123Date`
[page 59] Return the current date in RFC 1123 format.
- `rfc1123_date({{YYYY,MM,DD},{Hour,Min,Sec}}) -> RFC1123Date`
[page 59] Return the current date in RFC 1123 format.
- `split(String,RegExp,N) -> SplitRes`
[page 59] Split a string in N chunks using a regular expression.
- `split_script_path(RequestLine) -> Splitted`
[page 59] Split a `RequestLine` in a file reference to an executable and a `QueryString` or a `PathInfo` string.
- `split_path(RequestLine) -> {Path,QueryStringOrPathInfo}`
[page 59] Split a `RequestLine` in a file reference and a `QueryString` or a `PathInfo` string.
- `strip(String)-> Stripped`
[page 59] Returns `String` where the leading and trailing space and tabs has been removed.
- `suffix(FileName) -> Suffix`
[page 60] Extract the file suffix from a given filename.
- `to_lower(String) -> ConvertedString`
[page 60] Convert upper-case letters to lower-case.
- `to_upper(String) -> ConvertedString`
[page 60] 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 64] Return a new path with the default resource or file appended.
- `path(Data,ConfigDB,RequestURI) -> Path`
[page 64] Return the actual file path to a URL.
- `real_name(ConfigDB,RequestURI,Aliases) -> Ret`
[page 65] Expand a request uri using Alias config directives.
- `real_script_name(ConfigDB,RequestURI,ScriptAliases) -> Ret`
[page 65] Expand a request uri using ScriptAlias config directives.

mod_auth

The following functions are exported:

- `add_user(UserName, Options) -> true | {error, Reason}`
[page 72] Add a user to the user database.
- `add_user(UserName, Password, UserData, Port, Dir) -> true | {error, Reason}`
[page 72] Add a user to the user database.
- `add_user(UserName, Password, UserData, Address, Port, Dir) -> true | {error, Reason}`
[page 72] Add a user to the user database.
- `delete_user(UserName,Options) -> true | {error, Reason}`
[page 72] Delete a user from the user database.
- `delete_user(UserName, Port, Dir) -> true | {error, Reason}`
[page 72] Delete a user from the user database.
- `delete_user(UserName, Address, Port, Dir) -> true | {error, Reason}`
[page 72] Delete a user from the user database.
- `get_user(UserName,Options) -> {ok, #httpd_user} | {error, Reason}`
[page 72] Returns a user from the user database.
- `get_user(UserName, Port, Dir) -> {ok, #httpd_user} | {error, Reason}`
[page 72] Returns a user from the user database.
- `get_user(UserName, Address, Port, Dir) -> {ok, #httpd_user} | {error, Reason}`
[page 72] Returns a user from the user database.
- `list_users(Options) -> {ok, Users} | {error, Reason}`
`<name>list_users(Port, Dir) -> {ok, Users} | {error, Reason}`
[page 73] List users in the user database.
- `list_users(Address, Port, Dir) -> {ok, Users} | {error, Reason}`
[page 73] List users in the user database.

- `add_group_member(GroupName, UserName, Options) -> true | {error, Reason}`
[page 73] Add a user to a group.
- `add_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}`
[page 73] Add a user to a group.
- `add_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}`
[page 73] Add a user to a group.
- `delete_group_member(GroupName, UserName, Options) -> true | {error, Reason}`
[page 74] Remove a user from a group.
- `delete_group_member(GroupName, UserName, Port, Dir) -> true | {error, Reason}`
[page 74] Remove a user from a group.
- `delete_group_member(GroupName, UserName, Address, Port, Dir) -> true | {error, Reason}`
[page 74] Remove a user from a group.
- `list_group_members(GroupName, Options) -> {ok, Users} | {error, Reason}`
[page 74] List the members of a group.
- `list_group_members(GroupName, Port, Dir) -> {ok, Users} | {error, Reason}`
[page 74] List the members of a group.
- `list_group_members(GroupName, Address, Port, Dir) -> {ok, Users} | {error, Reason}`
[page 74] List the members of a group.
- `list_groups(Options) -> {ok, Groups} | {error, Reason}`
[page 74] List all the groups.
- `list_groups(Port, Dir) -> {ok, Groups} | {error, Reason}`
[page 74] List all the groups.
- `list_groups(Address, Port, Dir) -> {ok, Groups} | {error, Reason}`
[page 75] List all the groups.
- `delete_group(GroupName, Options) -> true | {error, Reason}`
`<name>delete_group(GroupName, Port, Dir) -> true | {error, Reason}`
[page 75] Deletes a group
- `delete_group(GroupName, Address, Port, Dir) -> true | {error, Reason}`
[page 75] Deletes a group
- `update_password(Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}`
[page 75] Change the AuthAccessPassword
- `update_password(Address, Port, Dir, OldPassword, NewPassword, NewPassword) -> ok | {error, Reason}`
[page 75] Change the AuthAccessPassword

mod_browser

The following functions are exported:

- `getBrowser(AgentString)-> {Browser,OperatingSystem}`
[page 77] Extracts the browser and operating-system from AgentString

mod_cgi

The following functions are exported:

- `env(Info,Script,AfterScript) -> EnvString`
[page 79] Return a CGI-1.1 environment variable string to be used by `open_port/2`.
- `status_code(CGIOutput) -> {ok,StatusCode} | {error,Reason}`
[page 80] 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 84] Log an error in the error log file.
- `security_log(User,Event) -> ok | no_security_log`
[page 85] Log an security event in the error log file.

mod_esi

The following functions are exported:

- `deliver(SessionID, Data) -> ok | {error,Reason}`
[page 90] Sends Data back to client..
- `Module:Function(Env, Input)-> Response`
[page 91] Creates a dynamic web page and return it as a list.
- `Module:Function(SessionID, Env, Input)-> void`
[page 91] Creates a dynamic web page and return it as a list.

mod_get

No functions are exported.

mod_head

No functions are exported.

mod_htaccess

No functions are exported.

mod_include

No functions are exported.

mod_log

The following functions are exported:

- `error_log(Socket,SocketType,ConfigDB,Date,Reason) -> ok | no_error_log`
[page 104] Log an error in the a log file.

mod_range

No functions are exported.

mod_responsecontrol

No functions are exported.

mod_security

The following functions are exported:

- `list_auth_users(Port) -> Users | []`
[page 109] 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 109] 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 109] 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 109] 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 109] 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 109] 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 109] 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 109] 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 110] Block user from access to a directory for a certain amount of time.
- `block_user(User, Address, Port, Dir, Seconds) -> true | {error, Reason}`
[page 110] Block user from access to a directory for a certain amount of time.
- `unblock_user(User, Port) -> true | {error, Reason}`
[page 110] Remove a blocked user from the block list
- `unblock_user(User, Address, Port) -> true | {error, Reason}`
[page 110] Remove a blocked user from the block list
- `unblock_user(User, Port, Dir) -> true | {error, Reason}`
[page 110] Remove a blocked user from the block list
- `unblock_user(User, Address, Port, Dir) -> true | {error, Reason}`
[page 110] Remove a blocked user from the block list
- `event(What, Port, Dir, Data) -> ignored`
[page 111] This function is called whenever an event occurs in `mod_security`
- `event(What, Address, Port, Dir, Data) -> ignored`
[page 111] This function is called whenever an event occurs in `mod_security`

`mod_trace`

No functions are exported.

ftp

Erlang Module

The `ftp` module implements a client for file transfer according to a subset of the File Transfer Protocol (see *RFC 959*).

For a simple example of an ftp session see Inets User's Guide. [page 2]

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

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

Exports

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

Types:

- `Pid = pid()`
- `Account = string()`
- `Reason = eacct | econn`

If an account is needed for an operation set the account with this operation.

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

Types:

- `Pid = pid()`
- `LocalFile = RemoteFile = string()`
- `Reason = epath | elogin | econn | 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 exists it will be created.

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

Types:

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

Transfer the chunk Bin to the remote server, which append it into the file specified in the call to `append_chunk_start/2`.

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

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

Types:

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

Start the transfer of chunks for appending to the file File at the remote server. If the file does not exists it will be created.

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

Types:

- Pid = pid()
- Reason = elogin | echunk | econn | 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. `lpwd/1`) is set to the value reported by `file:get_cwd/1`. the wanted local directory.

The timeout value is default set to 60000 milliseconds.

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

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

Types:

- Pid = pid()

- Reason = elogin | econn

Returns the current working directory at the remote server.

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

Types:

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

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

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

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

Types:

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

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

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

Types:

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

Start transfer of the file RemoteFile from the remote server.

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

Types:

- Pid = pid()
- Bin = binary()
- Reason = epath | eclosed | econn

Receive a chunk of the remote file (RemoteFile of recv_chunk_start). The return values has the following meaning:

- ok the transfer is complete.
- {ok, Bin} just another chunk of the file.
- {error, Reason} transfer failed.

```
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 | chunk | 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 | egnospc | 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`.

```
quote(Pid, Command) -> [FTPLine]
```

Types:

- Pid = pid()
- Command = string()
- FTPLine = A string terminated by CRLF e.g. "\r\n".

Sends an arbitrary FTP command and returns verbatimly a list of the lines sent back by the FTP server. This functions is intended to give an application accesses to FTP commands that are server specific or that may not be provided by this FTP client.

Note:

FTP commands that require a data connection can not be successfully issued with this function.

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].

`eunospc` 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).

http

Erlang Module

This module provides the API to a HTTP/1.1 client according to RFC 2616, however this early version is somewhat limited for instance caching is not supported.

Note:

The functions `request/4`, and `set_options/1`, will start the inets application if it was not already started. When starting the inets application the client manager process that spawns request handlers, keeps track of proxy options etc will be started.

Normally the application using this API should have started inets application. This is also true for the ssl application when using https.

Also note that an application that does not set the `pipeline-timeout` value will benefit very little from pipelining as the default timeout is 0.

Note that there are some usage examples in the Inets User's Guide. [page 2]

COMMON DATA TYPES

Here follows type definitions that are used more than once in this module.

`boolean()` = `true` | `false`

`string()` = list of ASCII characters

`request_id()` = `ref()`

HTTP DATA TYPES

Here follows type definitions that are related to the HTTP protocol. For more information about the HTTP protocol see rfc 2616

`method()` = `head` | `get` | `put` | `post` | `trace` | `options` | `delete`

`request()` = `{url(), headers()} | {url(), headers(), content_type(), body()}`

`url()` = `string()` - Syntax according to the URI definition in rfc 2396, ex: "http://w

`status_line()` = `{http_version(), status_code(), reason_phrase()}`

`http_version()` = `string()` ex: "HTTP/1.1"

`status_code()` = `integer()`

```

reason_phrase() = string()
content_type() = string()
headers() = [{field(), value()}]
filed() = string()
value() = string()
body() = string() | binary()

```

SSL DATA TYPES

Here follows some type definitions relevant when using https. for details [ssl(3)]

```

ssl_options() =
  {verify, code()} | {depth, depth()} | {certfile, path()}
  | {keyfile, path()} | {password, string()} | {cacertfile, path()}
  | {ciphers, string()}

```

Exports

```
cancel_request(RequestId) -> ok
```

Types:

- RequestId = request_id() - A unique identifier as returned by request/4

Cancels an asynchronous HTTP-request.

```
request(Method, Request, HTTPOptions, Options) -> {ok, Result} | {error, Reason}
```

Types:

- Method = method()
- Request - request()
- HTTPOptions - [HttpOption]
- HTTPOption - {timeout, integer()} | {ssl, ssl_options()} | {autoredirect, boolean()}
autoredirect - is true by default e.i. the client will automatically retrieve the information from the new URI and return that as the result instead of a 30X-result code. Note that for some 30X-result codes automatic redirect is not allowed in these cases the 30X-result will always be returned.
- Options - [option()]
- Option - {sync, boolean()} | {body_format, body_format()} | {full_result, boolean()}
The request function will be synchronous and return a full http response by default.
- body_format() = string() | binary()
The body_format options is only valid for the synchronous request and the default is string, when making an asynchronous request the body will always be received as a binary.
- Result = {status_line(), headers(), body()} | {status_code(), body()} | request_id()

Sends a HTTP-request. The function can be both synchronus and asynchronous in the later case the function will return {ok, RequestId} and later on a message will be sent to the calling process on the format {http, {RequestId, Result}} or {http, {RequestId, {error, Reason}}}.

```
set_options(Options) -> ok
```

Types:

- Options = [Option]
- Option = {proxy, {Proxy, NoProxy}} | {max_sessions, MaxSessions} | {max_pipeline_length, MaxPipeline} | {pipeline_timeout, PipelineTimeout} | {cookies | CookieMode}
- Proxy = {Hostname, Port}
- Hostname = string()
ex: "localhost" or "foo.bar.se"
- Port = integer()
ex: 8080
- NoProxy = [NoProxyDesc]
- NoProxyDesc = DomainDesc | HostName | IPDesc
- DomainDesc = "*.Domain"
ex: "*.ericsson.se"
- IPDesc = string()
ex: "134.138" or "[FEDC:BA98]" (all IP-adresses starting with 134.138 or FEDC:BA98), "66.35.250.150" or "[2010:836B:4179::836B:4179]" (a compleat IP-address).
- MaxSessions = integer()
Maximum number of persistent connections to a host.Default is 2.
- MaxPipeline = integer()
Maximum number of outstanding requests on the same connection to a host. Default is 2.
- PipelineTimeout = integer()
If a persistant connection is idle longer than the pipeline_timeout the client will close the connection. Default is 0. The server may also have a such a time out but you should not count on it!
- CookieMode = enabled | disabled | verify
Default is disabled. If Cookies are enabled all valid cookies will automaticly be saved in the client managers cookie database. If the option verify is used the function http:verify_cookie/2 has to be called for the cookie to be saved.

Sets options to be used for subsequent requests. Later implementations may support user profiles, but currently these are global settings for all clients running on the same erlang node.

Note:

If possible the client will keep its connections alive and uses them to pipeline requests whenever the circumstances allow. The HTTP/1.1 specification does not provide a guideline for how many requests that would be ideal to pipeline, this very much depends on the application. Note that a very long pipeline may cause a user perceived delays as earlier request may take a long time to complete. The HTTP/1.1 specification does suggest a limit of 2 persistent connections per server, which is the default value of the `max_sessions` option.

```
verify_cookie(SetCookieHeaders, Url) -> ok
```

Types:

- SetCookieHeaders = headers() - where field = "set-cookie"
- Url = url()

Saves the cookies defined in SetCookieHeaders in the client managers cookie database. You need to call this function if you set the option `cookies` to `verify`.

```
cookie_header(Url) -> header()
```

Types:

- Url = url()

Returns the cookie header that would be sent when making a request to Url.

SEE ALSO

RFC 2616, [ssl(3)]

http_base_64

Erlang Module

Implements base 64 encode and decode, see RFC2045.

COMMON DATA TYPES

Here follows type definitions that are used by more than once this module.

`string()` = list of ASCII characters

Exports

`decode_base64(PlainASCII) -> Base64`

Types:

- `PlainASCII = string()`
- `Base64 = string()`

Encodes a plain ASCII string into base64.

`decode(Base64) -> PlainASCII`

Types:

- `PlainASCII = string()`
- `Base64 = string()`

Decodes an base64 encoded string to plain ASCII.

httpd

Erlang Module

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 root¹ to a specific installation directory² and you have a server running in no time.

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

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

Types:

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

¹In Windows: %INETS_ROOT%\examples\server_root\. In UNIX: \$INETS_ROOT/examples/server_root/.

²In Windows: X:\var\tmp\. In UNIX: /var/tmp/.

`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 40]. After `restart` has been called, the server must be unblocked [page 40].

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

ESWAPI CALLBACK FUNCTIONS

Exports

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

Types:

- Info = mod()
- OldData = list()
- NewData = [{response,{StatusCode,Body}}] | [{response,{response,Head,Body2}}] | [{response,{already_sent,StatusCode,Size}}]
- StatusCode = integer()
- Body = String
- Head = [HeaderOption]
- HeaderOption = {Key, Value} | {code, StatusCode}
- Key = allow | cache_control | content_MD5 | content_encoding | content_encoding | content_language,Value | content_length | content_location | content_range | content_type | date | etag | expires | last_modified | location | pragma | retry_after | server | trailer | transfer_encoding
- Value = string()
- Body2 = {Fun,Arg} | Body | nobody
- Fun = fun(Arg)->sent | close | Body
- Arg = [term()]

`Info` is a record of type `mod`, this record is defined in *httpd.hrl* see EWSAPI Module programming in the Inets Users Guide [page 4] for more information.

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

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

`Body` is the body of the `http`-response that will be sent back to the client an appropriate header will be appended to the message. `StatusCode` will be the status code of the response see RFC2616 for the appropriate values.

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

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

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

Types:

- Line = string()

- Context = NewContext = DirectiveList = [Directive]
- Directive = {DirectiveKey , DirectiveValue}
- DirectiveKey = DirectiveValue = term()
- Reason = term()

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

```
Module:store({DirectiveKey, DirectiveValue}, DirectiveList)-> {ok, {DirectiveKey,
NewDirectiveValue}} | {ok, [{ok, {DirectiveKey, NewDirectiveValue}}] |
{error, Reason}
```

Types:

- DirectiveList = [{DirectiveKey, DirectiveValue}]
- DirectiveKey = DirectiveValue = term()
- Context = NewContext = DirectiveList = [Directive]
- Directive = {Key , Value}
- Reason = term()

When all rows in the configuration file is read the function store/2 is called for each configuration directive. This makes it possible for a directive to alter other configuration directives. DirectiveList is a list of all configuration directives read in from load. If a directive may update other configuration directives then use this function.

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

Types:

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

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

SEE ALSO

httpd_core(3) [page 45], httpd_conf(3) [page 43], httpd_socket(3) [page 54],
httpd_util(3) [page 55],

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 38]

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:

Note:

There is no erlang module called httpd_core. This manual page is just a place to put the documentation for the core directives.

- [BindAddress](#) [page 46]
- [DefaultType](#) [page 47]
- [DocumentRoot](#) [page 47]
- [MaxBodyAction](#) [page 48]
- [MaxBodySize](#) [page 48]
- [MaxClients](#) [page 48]
- [KeepAlive](#) [page 47]
- [KeepAliveTimeout](#) [page 48]
- [MaxHeaderAction](#) [page 49]
- [MaxHeaderSize](#) [page 49]
- [MaxKeepAliveRequests](#) [page 49]
- [Modules](#) [page 49]
- [Port](#) [page 50]
- [ServerAdmin](#) [page 50]
- [ServerName](#) [page 50]
- [ServerRoot](#) [page 50]
- [SocketType](#) [page 51]
- [SSLCACertificateFile](#) [page 51]
- [SSLCertificateFile](#) [page 51]
- [SSLCertificateKeyFile](#) [page 51]
- [SSLCiphers](#) [page 52]
- [SSLPasswordCallbackFunction](#) [page 52]
- [SSLPasswordCallbackModule](#) [page 53]
- [SSLVerifyClient](#) [page 52]
- [SSLVerifyDepth](#) [page 52]
- [DisableChunkedTransferEncodingSend](#) [page 47]

SECURE SOCKETS LAYER (SSL)

The SSL support is realized using the SSL application based on OpenSSL. Please refer to [ssl(4)] for installation requirements for OpenSSL.

SSLey is an implementation of Netscape's Secure Socket Layer specification - the software encryption protocol specification behind the Netscape Secure Server and the Netscape Navigator Browser.

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

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

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

The SSL mechanism can be enabled in the server by using the SSLCACertificateFile [page 51], SSLCertificateFile [page 51], SSLCertificateKeyFile [page 51], SSLCiphers [page 52], SSLVerifyDepth [page 52], and the SSLVerifyClient [page 52] 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 50]. Refer to the example server root³. MIME types may be added as required to the mime.types file and the DefaultType [page 47] config directive can be used to specify a default mime type.

DIRECTIVE: "BindAddress"

Syntax: BindAddress address

Default: BindAddress *

Module: httpd_core(3) [page 45]

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.

³In 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 45]

When the server is asked to provide a document type which cannot be determined by the MIME Type Settings [page 46], the server must inform the client about the content type of documents and mime-type is used if an unknown type is encountered.

DIRECTIVE: "DisableChunkedTransferEncodingSend"

Syntax: DisableChunkedTransferEncodingSend true | false

Default: false

Module: httpd_core(3) [page 45]

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

DIRECTIVE: "DocumentRoot"

Syntax: DocumentRoot directory-filename

Default: - Mandatory - *Module:* httpd_core(3) [page 45]

DocumentRoot points the Web server to the document space from which to serve documents from. Unless matched by a directive like Alias [page 63], the server appends the path from the requested URL to the DocumentRoot to make the path to the document, for example:

```
DocumentRoot /usr/web
```

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

DIRECTIVE: "KeepAlive"

Syntax: KeepAlive true | false

Default: true

Module: httpd_core(3) [page 45]

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

DIRECTIVE: "KeepAliveTimeout"

Syntax: KeepAliveTimeout seconds

Default: 150

Module: httpd_core(3) [page 45]

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

DIRECTIVE: "MaxBodyAction"

Syntax: MaxBodyAction action

Default: MaxBodyAction close *Module:* httpd_core(3) [page 45]

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 45]

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

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

`integer()` any positive number.

DIRECTIVE: "MaxClients"

Syntax: MaxClients number

Default: MaxClients 150 *Module:* httpd_core(3) [page 45]

MaxClients limits the number of simultaneous requests that can be supported. No more than this number of child server process's can be created.

DIRECTIVE: "MaxHeaderAction"

Syntax: MaxHeaderAction action

Default: MaxHeaderAction close *Module:* httpd_core(3) [page 45]

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 45]

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: "MaxKeepAliveRequests"

Syntax: MaxKeepAliveRequests NumberOfRequests

Default: Disabled -

Module: httpd_core(3) [page 45]

The number of request that a client can do on one connection. When the server has responded to the number of requests defined by MaxKeepAliveRequests the server close the connection. The server will close it even if there are queued request.

DIRECTIVE: "Modules"

Syntax: Modules module module ...

Default: Modules mod_get mod_head mod_log

Module: httpd_core(3) [page 45]

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 Erlang Web Server API in the Inets Users Guide. [page 4] 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 in the Inets Users Guide [page 4] description in httpd(3).

DIRECTIVE: "Port"

Syntax: Port number

Default: Port 80

Module: httpd_core(3) [page 45]

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 characteristics⁴ 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 45]

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 45]

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

DIRECTIVE: "ServerRoot"

Syntax: ServerRoot directory-filename

Default: - Mandatory -

Module: httpd_core(3) [page 45]

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 102]).

⁴In UNIX: /etc/services.

DIRECTIVE: "SocketType"

Syntax: SocketType type

Default: SocketType ip_comm

Module: httpd_core(3) [page 45]

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 46] in `httpd(3)`).

DIRECTIVE: "SSLCACertificateFile"

Syntax: SSLCACertificateFile filename

Default: - None -

Module: httpd_core(3) [page 45]

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 45]

SSLCertificateFile points at a PEM encoded certificate. Read more about PEM encoded certificates in the SSL application documentation. The dummy certificate `server.pem`⁵, 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 45]

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 51].

⁵In 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 45]

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 45]

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 45]

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 45]

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 45]

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

Read more about SSL in the application documentation.

SEE ALSO

httpd(3) [page 38]

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`.

Exports

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

Types:

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

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

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

Types:

- `SocketType = socket_type()`
- `Socket = socket()`
- `Port = integer()`
- `IPaddress = string()`

`peername/3` returns the `Port` and `IPaddress` of the remote `Socket`.

`resolve() -> HostName`

Types:

- `HostName = string()`

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

SEE ALSO

`httpd(3)` [page 38]

httpd_util

Erlang Module

This module provides the Erlang Web Server API in the Inets Users Guide [page 4] module programmer with miscellaneous utility functions.

Exports

`convert_request_date(DateString) -> ErlDate|bad_date`

Types:

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

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

`create_etag(FileInfo) -> Etag`

Types:

- `FileInfo = file_info()`
- `Etag = string()`

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

`decode_base64(Base64String) -> ASCIIString`

Types:

- `Base64String = ASCIIString = string()`

Deprecated use `http_base_64:decode/1` [page 37]

`decode_hex(HexValue) -> DecValue`

Types:

- `HexValue = DecValue = string()`

Converts the hexadecimal value `HexValue` into it's 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(ASCIIString) -> Base64String`

Types:

- `ASCIIString = string()`
- `Base64String = string()`

Deprecated use `http_base_64:decode/1` [page 37]

`flatlength(NestedList) -> Size`

Types:

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

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

`header(StatusCode,PersistentConn)`

`header(StatusCode,Date)`

`header(StatusCode,MimeType,Date)`

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

Types:

- `StatusCode = integer()`
- `Date = rfc1123_date()`
- `MimeType = string()`
- `PersistentConn = true | false`

`header` returns a HTTP 1.1 header string. The `StatusCode` is one of the status codes defined in RFC 2616 and the `Date` string is RFC 1123 compliant. (See `rfc1123_date/0` [page 59]).

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

`hexlist_to_integer(HexString) -> Number`

Types:

- `Number = integer()`
- `HexString = string()`

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

`integer_tohexlist(Number) -> HexString`

Types:

- `Number = integer()`
- `HexString = string()`

`integer_to_hexlist/1` Returns a string that represents the Number in a Hexadecimal form.

`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` directory⁶).

`lookup_mime_default(ConfigDB,Suffix)`

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

Types:

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

⁶In Windows: `%SERVER_ROOT%\conf\mime.types`. In UNIX: `$SERVER_ROOT/conf/mime.types`.

`lookup_mime_default` returns the mime type associated with a specific file suffix as specified in the `mime.types` file (located in the config directory⁷). If no appropriate association can be found the value of `DefaultType` [page 47] is returned.

`message(StatusCode,PhraseArgs,ConfigDB) -> Message`

Types:

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

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

301 `string()`: A URL pointing at the new document position.

400 | 401 | 500 `none (No PhraseArgs)`

403 | 404 `string()`: A Request-URI as described in RFC 2616.

501 `{Method,RequestURI,HTTPVersion}`: The HTTP Method, Request-URI and HTTP-Version as defined in RFC 2616.

504 `string()`: A string describing why the service was unavailable.

`month(NthMonth) -> Month`

Types:

- `NthMonth = 1-12`
- `Month = string()`

`month/1` converts the month `NthMonth` as an integer (1-12) to an abbreviated string, that is:

1 = "Jan", 2 = "Feb", ..., 12 = "Dec".

`multi_lookup(ETSTable,Key) -> Result`

Types:

- `ETSTable = ets_table()`
- `Key = term()`
- `Result = [term()]`

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

`reason_phrase(StatusCode) -> Description`

Types:

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

⁷In Windows: `%SERVER_ROOT%\conf\mime.types`. In UNIX: `$SERVER_ROOT/conf/mime.types`.

`reason_phrase` returns the Description of an HTTP 1.1 StatusCode, for example 200 is "OK" and 201 is "Created". Read RFC 2616 for further information.

`rfc1123_date()` -> RFC1123Date

`rfc1123_date({{YYYY,MM,DD},{Hour,Min,Sec}}})` -> RFC1123Date

Types:

- YYYY = MM = DD = Hour = Min =Sec = integer()
- RFC1123Date = string()

`rfc1123_date/0` returns the current date in RFC 1123 format. `rfc_date/1` converts the date in the Erlang format to the RFC 1123 date format.

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

Types:

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

`split/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 number of maximum number of fields in the FieldList.

`split_script_path(RequestLine)` -> Splitted

Types:

- RequestLine = string()
- Splitted = not_a_script | {Path, PathInfo, QueryString}
- Path = QueryString = PathInfo = string()

`split_script_path/1` is equivalent to `split_path/1` with one exception. If the longest possible path is not a regular, accessible and executable file `not_a_script` is returned.

`split_path(RequestLine)` -> {Path,QueryStringOrPathInfo}

Types:

- RequestLine = Path = QueryStringOrPathInfo = string()

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

`strip(String)` -> Stripped

Types:

- String = Stripped = string()

`strip/1` removes any leading or trailing linear white space from the string. Linear white space should be read as horizontal tab or space.

`suffix(FileName) -> Suffix`

Types:

- `FileName = Suffix = string()`

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

`to_lower(String) -> ConvertedString`

Types:

- `String = ConvertedString = string()`

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

`to_upper(String) -> ConvertedString`

Types:

- `String = ConvertedString = string()`

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

SEE ALSO

[httpd\(3\)](#) [page 38]

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 61]
- Script [page 61]

DIRECTIVE: "Action"

Syntax: Action mime-type cgi-script

Default: - None -

Module: mod_actions(3) [page 61]

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 61]

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

Examples:

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{real_name, {Path, AfterPath}}` as defined in `mod_alias(3)` [page 63].

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 65]

SEE ALSO

`httpd(3)` [page 38], `mod_alias(3)` [page 63]

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 63]
- [DirectoryIndex](#) [page 63]
- [ScriptAlias](#) [page 64]

DIRECTIVE: "Alias"

Syntax: `Alias url-path directory-filename`

Default: - None -

Module: `mod_alias(3)` [page 63]

The `Alias` directive allows documents to be stored in the local file system instead of the `DocumentRoot` [page 47] 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 63]

`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 63]

The ScriptAlias directive has the same behavior as the Alias [page 63] 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 59] with one exception - Path has been run through `default_index/2` [page 64].

Uses the following exported EWSAPI functions:

- `mod_alias:default_index/2` [page 64]
- `mod_alias:path/3` [page 65]
- `mod_alias:real_name/3` [page 65]

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 63]. 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 EWSAPI Module Programming in the Inets Users Guide. [page 4].

```
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 64]; Path is returned. If no interaction data has been exported, ServerRoot [page 50] is used to generate a file Path. config_db() and interaction_data() are as defined in EWSAPI Module Programming in the Inets Users Guide [page 4].

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 59]. Path is generated from ShortPath, that is the result from default_index/2 [page 64] with ShortPath as an argument. config_db() is the server config file in ETS table format as described in EWSAPI Module Programming in the Inets User Guide. [page 4].

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 59]. config_db() is the server config file in ETS table format as described in EWSAPI Module Programming in the Inets Users Guide. [page 4].

SEE ALSO

httpd(3) [page 38]

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 66]
- AuthDBType [page 67]
- AuthAccessPassword [page 70]
- AuthUserFile [page 68]
- AuthGroupFile [page 69]
- AuthName [page 69]
- allow [page 70]
- deny [page 70]
- require [page 71]

The Directory [page 66] config directive is central to be able to restrict access to certain areas of the server. Please read about the Directory [page 66] config directive.

DIRECTIVE: "Directory"

Syntax: <Directory regexp-filename>

Default: - None -

Module: mod_auth(3) [page 66]

Related: allow [page 70], deny [page 70], AuthAccessPassword [page 70] AuthUserFile [page 68], AuthGroupFile [page 69], AuthName [page 69], require [page 71]

<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 66]

Context: <Directory> [page 66]

Related: allow [page 70], deny [page 70], AuthAccessPassword [page 70], AuthName [page 69], AuthUserFile [page 68], AuthGroupFile [page 69], require [page 71]

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 prio 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 sued 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 Mensia. 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 66]

Context: <Directory> [page 66]

Related: allow [page 70], deny [page 70], AuthDBType [page 67], AuthAccessPassword [page 70], AuthGroupFile [page 69], AuthName [page 69], require [page 71]

`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 72] 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 66]

Context: <Directory> [page 66]

Related: allow [page 70], deny [page 70], AuthName [page 69], AuthUserFile [page 68], AuthDBType [page 67], AuthAccessPassword [page 70], require [page 71]

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 72] 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 66]

Context: <Directory> [page 66]

Related: allow [page 70], deny [page 70], AuthGroupFile [page 69], AuthUserFile [page 68], AuthDBType [page 67], AuthAccessPassword [page 70], require [page 71]

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 66]

Context: <Directory> [page 66]

Related: allow [page 70], deny [page 70], AuthGroupFile [page 69], AuthUserFile [page 68], AuthDBType [page 67], AuthName [page 69], require [page 71]

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 66]

Context: <Directory> [page 66]

Related: AuthAccessPassword [page 70], deny [page 70], AuthUserFile [page 68], AuthGroupFile [page 69], AuthName [page 69], AuthDBType [page 67] require [page 71]

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 66]

Context: <Directory> [page 66]

Related: allow [page 70], AuthUserFile [page 68], AuthGroupFile [page 69], AuthName [page 69], AuthDBType [page 67], AuthAccessPassword [page 70], require [page 71]

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 66]

Context: `<Directory>` [page 66]

Related: `allow` [page 70], `deny` [page 70], `AuthUserFile` [page 68], `AuthGroupFile` [page 69], `AuthName` [page 69], `AuthDBType` [page 67], `AuthAccessPassword` [page 70]

`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 63].
```

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 65]

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} <name>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 38], `mod_alias(3)` [page 63],

mod_browser

Erlang Module

When a client requests for an asset the request-header may contain a string that identifies the product. Many browsers also 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 | macosx | unknown`
- `Name = opera | msie | netscape | lynx | mozilla | emacs | soffice | mosaic | safari`
- `Version = float()`.

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

EWSAPI MODULE INTERACTION

Exports the following EWSAPI interaction data, if possible:

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

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

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

Support for CGI-1.1 is implemented in accordance with the CGI-1.1 specification⁸.

Note:

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

- ScriptNoCache [page 78]
- ScriptTimeout [page 79]

DIRECTIVE: "ScriptNoCache"

Syntax: ScriptNoCache true | false

Default: - false -

Module: mod_cgi(3) [page 78]

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

```
ScriptNoCache true
```

⁸URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

DIRECTIVE: "ScriptTimeout"

Syntax: ScriptTimeout Seconds

Default: 15

Module: mod_cgi(3) [page 78]

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

ScriptTimeout 15

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{new_request_uri, NewRequestURI} as defined in mod_actions(3) [page 62].

{remote_user, RemoteUser} as defined in mod_auth(3) [page 71].

Uses the following EWSAPI functions:

- mod_alias:real_name/3 [page 65]
- mod_alias:real_script_name/3 [page 65]
- mod_cgi:env/3 [page 79]
- mod_cgi:status_code:env/1 [page 80]

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

Exports

env(Info,Script,AfterScript) -> EnvString

Types:

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

Note:

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

open_port/2 is normally used to start and interact with CGI scripts. open_port/2 takes an external program as input; env(1) (GNU Shell Utility) is typically used in the case of a CGI script. env(1) execute the CGI script in a modified environment and takes the CGI script and a string of environment variables as input. env/3 returns an appropriate CGI-1.1 environment variable string to be used for this purpose. The environment variables in the string are those defined in the CGI-1.1 specification⁹. mod_record() is a

⁹URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

record as defined in the EWSAPI Module Programming in the Inets Users Guide [page 4].

```
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 specification¹⁰, for example if "Location: http://www.yahoo.com\n\n" is returned from a CGI script the client gets automatically redirected to Yahoo!¹¹, using the HTTP 302 status code (RFC 1945).

SEE ALSO

httpd(3) [page 38], mod_auth(3) [page 66], mod_security(3) [page 107], mod_alias(3) [page 63], mod_esi(3) [page 86], mod_include(3) [page 99]

¹⁰URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

¹¹URL: <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 49] 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 64].

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 46] section of `httpd_core(3)`.

Uses the following EWSAPI functions:

- `mod_alias:default_index/2` [page 64]
- `mod_alias:path/3` [page 65]

SEE ALSO

`httpd(3)` [page 38], `mod_alias(3)` [page 63]

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 82]

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 82]

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 50], for example:

```
ErrorDiskLog logs/error_disk_log_8080
```

and errors will be logged in the server root¹² space.

DIRECTIVE: "ErrorDiskLogSize"

Syntax: ErrorDiskLogSize max-bytes max-files

Default: ErrorDiskLogSize 512000 8

Module: mod_disk_log(3) [page 82]

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

DIRECTIVE: "SecurityDiskLog"

Syntax: SecurityDiskLog filename

Default: - None -

Module: mod_disk_log(3) [page 82]

SecurityDiskLog defines the filename of the (disk_log(3)) access log file which logs incoming security events i.e authenticated requests. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 50], see TransferDiskLog [page 84] for more information.

DIRECTIVE: "SecurityDiskLogSize"

Syntax: SecurityDiskLogSize max-bytes max-files

Default: SecurityDiskLogSize 512000 8

Module: mod_disk_log(3) [page 82]

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

¹²In Windows: %SERVER_ROOT%\logs\error_disk_log_8080. In UNIX: \$SERVER_ROOT/logs/error_disk_log_8080.

DIRECTIVE: "TransferDiskLog"

Syntax: TransferDiskLog filename

Default: - None -

Module: mod_disk_log(3) [page 82]

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 50], for example:

```
TransferDiskLog logs/transfer_disk_log.8080
```

and errors will be logged in the server root¹³ space.

DIRECTIVE: "TransferDiskLogSize"

Syntax: TransferDiskLogSize max-bytes max-files

Default: TransferDiskLogSize 512000 8

Module: mod_disk_log(3) [page 82]

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

```
{remote_user, RemoteUser} as defined in mod_auth(3) [page 71].
```

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 38]. `Date` is a RFC 1123 date string as generated by `httpd_util:rfc1123_date/0` [page 59].

¹³In Windows: %SERVER_ROOT%\logs\transfer_disk_log.8080. In UNIX: \$SERVER_ROOT/logs/transfer_disk_log.8080.

`security_log(User,Event) -> ok | no_security_log`

Types:

- User = String()
- Event = String

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

SEE ALSO

`httpd(3)` [page 38], `mod_auth(3)` [page 66], `mod_security(3)` [page 107], `mod_log(3)` [page 102]

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

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

The following config directives are described:

- `ErlScriptAlias` [page 89]
- `EvalScriptAlias` [page 90]
- `ErlScriptNoCache` [page 89]
- `ErlScriptTimeout` [page 90]

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 or three i.e. `Func(Env, Input)` or `Func(SessionID, Env, Input)`. `Env` contains information about the connecting client (see below), and `Input` the `QueryString` or `PathInfo` as defined in the CGI specification¹⁴. `SessionID` is a identifier that is used to send parts of the web page back to the user through the function `mod_esi:deliver/2`

`***` above depends on how the `ErlScriptAlias` [page 89] config directive has been used. Data returned from the function with arity of two must furthermore take the form as specified in the CGI specification¹⁵.

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

¹⁴URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

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

is sent. The Web server sends the data back to HTTP/1.1 compliant clients with chunked encoding this means that the Content-Length header field is not necessary, and should indeed be avoided.

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

Take a look at `httpd_example.erl` in the code release¹⁶ for a clarifying example. Start an example server as described in `httpd:start/0` [page 38] and test the following from a browser (The server name for your example server *will* differ!):

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

```

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

```

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

```

Environment:
[{query_string, "input1=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:

```

¹⁶In Windows: `%INETS\src`. In UNIX: `$INETS/src`.

```
[{"input1", "blaha"}, {"input2", "blaha"}]
```

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

`http://your.server.org:8888/cgi-bin/erl/httpd_example:yahoo` A call will be made to `httpd_example:yahoo/2` and the Yahoo!¹⁷ site will promptly be shown in your browser.

Note:

`httpd:parse_query/1` [page 40] is used to generate the Parsed Input: ... data in the example above.

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

EVAL SCHEME

Warning:

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

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

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

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

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

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

The module (`Mod`) referred to must be found in the code path, and data returned by the function (`Func`) is passed back to the client. `***` depends on how the `EvalScriptAlias` [page 90] config directive has been used. Data returned from the function must furthermore take the form as specified in the CGI specification¹⁸.

Take a look at `httpd_example.erl` in the code release¹⁹ for an example. Start an example server as described in `httpd:start/0` [page 38] and test the following from a browser (The server name for your example server *will* differ!):

¹⁷URL: <http://www.yahoo.com>

¹⁸URL: <http://hoohoo.ncsa.uiuc.edu/cgi/>

¹⁹In Windows: `%INETS\src`. In UNIX: `$INETS/src`.

`http://your.server.org:8888/eval?httpd_example:print("Hi!")` and a call will be made to `httpd_example:print/1` and "Hi!" will promptly be shown in your browser.

DIRECTIVE: "ErlScriptAlias"

Syntax: `ErlScriptAlias url-path allowed-module allowed-module ...`

Default: - None -

Module: `mod_esi(3)` [page 86]

`ErlScriptAlias` marks all URLs matching `url-path` as `erl` scheme [page 86] 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 86] description above.

DIRECTIVE: "ErlScriptNoCache"

Syntax: `ErlScriptNoCache true | false`

Default: `false`

Module: `mod_esi(3)` [page 86]

If `ErlScriptNoCache` is set to `true` the server will add http header fields that prevents proxies from caching the page. This is generally a good idea for dynamic content, since the content often vary between each request.

```
ErlScriptNoCache true
```

DIRECTIVE: "ErlScriptTimeout"

Syntax: `ErlScriptTimeout seconds`

Default: `15`

Module: `mod_esi(3)` [page 86]

If `ErlScriptTimeout` sets the time in seconds the server will wait between each chunk of data is delivered through `mod_esi:deliver/2` when the new Erl Scheme format, that takes three argument is used.

```
ErlScriptTimeout 15
```

DIRECTIVE: "EvalScriptAlias"

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

Default: - None -

Module: mod_esi(3) [page 86]

EvalScriptAlias marks all URLs matching url-path as eval scheme [page 88] 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 88] description above.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{remote_user, RemoteUser} as defined in mod_auth(3) [page 71].

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 46] section of httpd_core(3).

Uses the following EWSAPI functions:

- mod_alias:real_name/3 [page 65]
- mod_cgi:status_code/1 [page 80]

Exports

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

Types:

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

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

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

ESWAPI CALLBACK FUNCTIONS

Exports

`Module:Function(Env, Input)-> Response`

Types:

-
- `Env = [EnvironmentDirectives] ++ ParsedHeader`
- `EnvironmentDirectives = {Key,Value}`
- `Key = query_string | content_length, server_software, gateway_interface, server_protocol, server_port, request_method, remote_addr, script_name. <v>Input = Response = string()`

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

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

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

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

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

Types:

- `SessionID = term()`
- `Env = [EnvironmentDirectives] ++ ParsedHeader`
- `EnvironmentDirectives = {Key,Value}`
- `Key = query_string | content_length, server_software, gateway_interface, server_protocol, server_port, request_method, remote_addr, script_name. <v>Input = Response = string()`

For information about `Environment` and `Input` see `Module:Function/2` above.

`SessionID` is a identifier the server use when `deliver/2` is called, do not assume any-thing about the datatype.

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

SEE ALSO

`httpd(3)` [page 38], `mod_alias(3)` [page 63], `mod_auth(3)` [page 66], `mod_security(3)` [page 107], `mod_cgi(3)` [page 78]

mod_get

Erlang Module

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{real_name, {Path, AfterPath}}` as defined in mod_alias(3) [page 64].

Exports the following EWSAPI interaction data, if possible:

Uses the following EWSAPI functions:

- mod_alias:path/3 [page 65]

SEE ALSO

httpd(3) [page 38], mod_range(3) [page 105]

mod_head

Erlang Module

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{real_name, {Path, AfterPath}}` as defined in `mod_alias(3)` [page 64].

Exports the following EWSAPI interaction data, if possible:

Uses the following EWSAPI functions:

- `mod_alias:path/3` [page 65]

SEE ALSO

`httpd(3)` [page 38], `mod_esi(3)` [page 86] `mod_cgi(3)` [page 86]

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 webservers 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 webservers 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 94]

DIRECTIVE: "AccessFileName"

Syntax: `AccessFileNameFileName1 FileName2`

Default: .htaccess *Module:* mod_htaccess(3) [page 94]

`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 95]
- `AllowOverride` [page 95]
- `AuthGroupFile` [page 96]
- `AuthName` [page 96]
- `AuthType` [page 96]
- `AuthUserFile` [page 96]
- `deny` [page 97]
- `<Limit>` [page 97]
- `order` [page 97]
- `require` [page 98]

DIRECTIVE: "allow"

Syntax: `Allow from subnet subnet|from all`

Default: `from all`

Module: `mod_htaccess(3)` [page 94]

Context: `<Limit>` [page 97]

Related: `mod_auth(3)`, [page 66]

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 94]

`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 94]

Related: mod_auth(3) [page 66],

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 94]

Related: mod_auth(3) [page 66],

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 94]

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 94]

Related: mod_auth(3) [page 66],

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 94]

Context: <Limit> [page 97]

Related: mod_auth(3) [page 66],

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 66]

Related: order [page 97], allow [page 95], deny [page 97], require [page 98]

<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 94]

Context: order [page 97]

Related: allow [page 95], deny [page 97]

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 97]

Module: mod_htaccess(3) [page 94]

Related: mod_auth(3) [page 66],

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 63].

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 65]

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 46] 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 64].

`{remote_user, RemoteUser}` as defined in `mod_auth(3)` [page 71]

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 46] section of `httpd_core(3)`.

Uses the following EWSAPI functions:

- `mod_cgi:env/3` [page 79]
- `mod_alias:path/3` [page 65]
- `mod_alias:real_name/3` [page 65]
- `mod_alias:real_script_name/3` [page 65]

SEE ALSO

`httpd(3)` [page 38], `mod_alias(3)` [page 63], `mod_auth(3)` [page 66], `mod_security(3)` [page 107], `mod_cgi(3)` [page 78]

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 102]

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 50], for example:

```
ErrorLog logs/error_log_8080
```

and errors will be logged in the server root²⁰ space.

²⁰In Windows: %SERVER_ROOT%\logs\error_log_8080. In UNIX: \$SERVER_ROOT/logs/error_log_8080.

DIRECTIVE: "SecurityLog"

Syntax: SecurityLog filename

Default: - None -

Module: mod_log(3) [page 102]

SecurityLog defines the filename of the access log file to be used to log security events. If the filename does not begin with a slash (/) it is assumed to be relative to the ServerRoot [page 50]. For example:

```
SecurityLog logs/security_log_8080
```

and security events will be logged in the server root²¹ space.

DIRECTIVE: "TransferLog"

Syntax: TransferLog filename

Default: - None -

Module: mod_log(3) [page 102]

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 50]. For example:

```
TransferLog logs/access_log_8080
```

and errors will be logged in the server root²² space.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

{remote_user, RemoteUser} as defined in mod_auth(3) [page 71].

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

²¹In Windows: %SERVER_ROOT%\logs\security_log_8080. In UNIX: \$SERVER_ROOT/logs/security_log_8080.

²²In Windows: %SERVER_ROOT%\logs\access_log_8080. In UNIX: \$SERVER_ROOT/logs/access_log_8080.

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 38]. `Date` is a RFC 1123 date string as generated by `httpd_util:rfc1123_date/0` [page 59].

SEE ALSO

`httpd(3)` [page 38], `mod_auth(3)` [page 66], `mod_security(3)` [page 107],
`mod_disk_log(3)` [page 82]

mod_range

Erlang Module

This module response to requests for one or many ranges of a file. This is especially useful when downloading large files, since a broken download may be resumed.

Note that request for multiple parts of a document will report a size of zero to the log file.

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{real_name, {Path, AfterPath}}` as defined in `mod_alias(3)` [page 64].

Uses the following EWSAPI functions:

- `mod_alias:path/3` [page 65]

SEE ALSO

`httpd(3)` [page 38], `mod_get(3)` [page 63]

mod_responsecontrol

Erlang Module

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

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

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

`{real_name, {Path, AfterPath}}` as defined in `mod_alias(3)` [page 64].

Exports the following EWSAPI interaction data, if possible:

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

Uses the following EWSAPI functions:

- `mod_alias:path/3` [page 65]

SEE ALSO

`httpd(3)` [page 38], `mod_get(3)` [page 63]

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 66]
- SecurityDataFile [page 107]
- SecurityMaxRetries [page 108]
- SecurityBlockTime [page 108]
- SecurityFailExpireTime [page 108]
- SecurityAuthTimeout [page 109]
- SecurityCallbackModule [page 109]

DIRECTIVE: "SecurityDataFile"

Syntax: SecurityDataFile filename

Default: - None -

Module: mod_security(3) [page 107]

Context: <Directory> [page 66]

Related: SecurityMaxRetries [page 108], SecurityBlockTime [page 108], SecurityFailExpireTime [page 108], SecurityAuthTimeout [page 109], SecurityCallbackModule [page 109]

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 107]

Context: <Directory> [page 66]

Related: SecurityDataFile [page 107], SecurityBlockTime [page 108], SecurityFailExpireTime [page 108], SecurityAuthTimeout [page 109], SecurityCallbackModule [page 109]

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 107]

Context: <Directory> [page 66]

Related: SecurityDataFile [page 107], SecurityMaxRetries [page 108], SecurityFailExpireTime [page 108], SecurityAuthTimeout [page 109], SecurityCallbackModule [page 109]

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 107]

Context: <Directory> [page 66]

Related: SecurityDataFile [page 107], SecurityMaxRetries [page 108], SecurityFailExpireTime [page 108], SecurityAuthTimeout [page 109], SecurityCallbackModule [page 109]

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 107]

Context: <Directory> [page 66]

Related: SecurityDataFile [page 107], SecurityMaxRetries [page 108], SecurityFailExpireTime [page 108], SecurityFailExpireTime [page 108], SecurityCallbackModule [page 109]

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 109] function.

DIRECTIVE: "SecurityCallbackModule"

Syntax: SecurityCallbackModule atom()

Default: - None -

Module: mod_security(3) [page 107]

Context: <Directory> [page 66]

Related: SecurityDataFile [page 107], SecurityMaxRetries [page 108], SecurityFailExpireTime [page 108], SecurityFailExpireTime [page 108], SecurityAuthTimeout [page 109]

SecurityCallbackModule specifies the name of a callback module. This module only has one export, event/4 [page 111], which is called whenever a security event occurs. Read the callback module [page 110] 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 111], 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.

mod_trace

Erlang Module

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

EWSAPI MODULE INTERACTION

Uses the following EWSAPI interaction data, if available:

SEE ALSO

[httpd\(3\)](#) [page 38],

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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